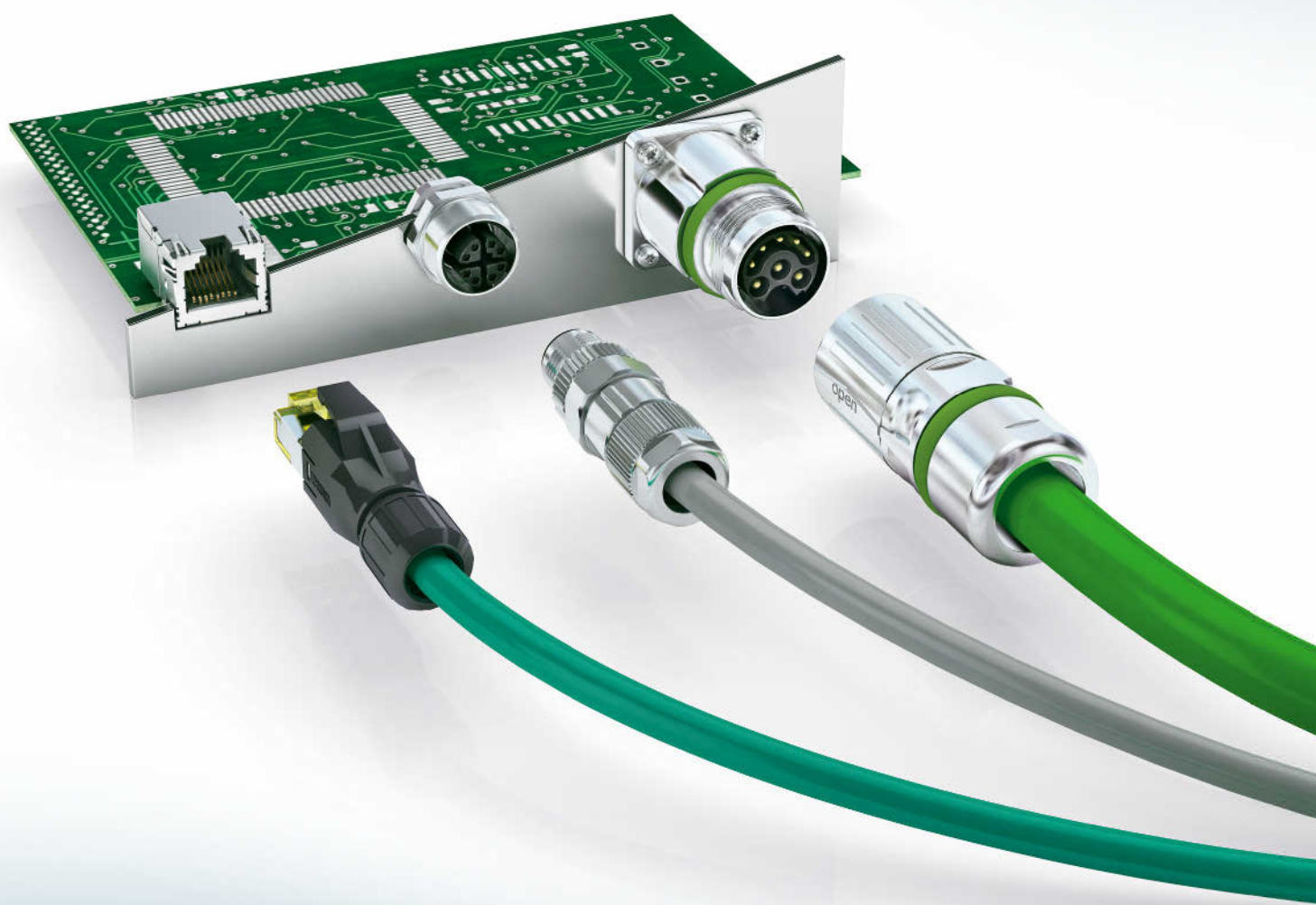


# Connection Technology for Field Devices

2013 / 2014

2





## PCB connection technology and electronics housing

- PCB terminal blocks and plug-in connectors
- Electronics housing



## Connection technology for field devices



## Modular terminal blocks

- Modular terminal blocks



## Sensor/actuator cabling and industrial plug-in connectors

- Sensor/actuator cabling
- Cables and connectors
- Plug-in connectors



## Marking systems, tools, and mounting material

- Marking and labeling
- Tools
- Installation and mounting material



## Surge protection and power supply units

- Lightning monitoring system
- Surge protection and interference filters
- Power supply units and UPS
- Protective devices



## Interface technology and switching devices

- Electronic switching devices and motor control
- Measurement and control technology • Monitoring
- Relay modules • System cabling for controllers



## Control technology, I/O systems and automation infrastructure

- Ethernet networks • Functional safety • HMIs and industrial PCs • I/O systems
- Industrial lighting and signaling • Industrial communication technology
- Fieldbus components and systems • Wireless data communication
- Process infrastructure • Software • Controllers



# Table of contents

|                                                                                                                                                                         |                  |                                                                                       |            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------|------------|
| <b>Connection technology for field devices from Phoenix Contact</b><br>Universal for signal/data and power transmission                                                 |                  |                                                                                       | <b>2</b>   |
| <b>Individual connection solutions</b><br>Implement your individual connection for devices and field cabling with the expertise of Phoenix Contact                      |                  |                                                                                       | <b>4</b>   |
| <b>Overview - connection technology for field devices</b><br>The illustrated table of contents will help you find the right product more quickly.                       | PLUSCON          |                                                                                       | <b>14</b>  |
| <b>Rectangular plug-in connectors</b><br>Device plug-in connectors with modular contact system for signals, power, and fiber optics.                                    | PLUSCON device   |   | <b>19</b>  |
| <b>Data plug-in connectors</b><br>Plug-in connectors, flush-type plug-in connectors, and cables for fieldbuses and networks: D-SUB, RJ45, M8, M12, 7/8", SCRJ, and USB. | PLUSCON data     |  | <b>61</b>  |
| <b>M5 to M12 circular plug-in connectors</b><br>Flush-type plug-in connectors and plug-in connectors for assembly from M5 to M12, for signals, data, and power.         | PLUSCON circular |  | <b>223</b> |
| <b>M17 to M58 circular plug-in connectors</b><br>Flush-type plug-in connectors and plug-in connectors for assembly from M17 to M58, for signals, data, and power.       | PLUSCON circular |  | <b>303</b> |
| <b>Photovoltaic plug-in connectors</b><br>AC and DC connection systems for photovoltaic modules, inverters, and micro inverters.                                        | PLUSCON solar    |  | <b>417</b> |
| <b>Charging plug-in connectors</b><br>Plug-in charging systems for electromobility up to 400 A and plug-in connectors for power electronics up to 150 A.                | PLUSCON power    |  | <b>431</b> |
| <b>Technical information</b><br>General information on the degree of protection, properties of plastics, approvals, insulation coordination, etc.                       |                  |                                                                                       | <b>442</b> |
| <b>Index</b>                                                                                                                                                            |                  |                                                                                       | <b>454</b> |

# Connection technology for field devices from Phoenix Contact

## COMBICON control

Connection technology for measurement and control technology and I/O modules: PCB terminal blocks and plug-in connectors with 2.54 to 7.62 mm pitch, screw, spring-cage, and insulation displacement connection, wave soldering.

See Catalog 1



## COMBICON high density & data

Plug-in connectors in miniature format - fast insulation displacement, spring, and pierce connection technology, T-branches for easy bus connections.

See Catalog 1



## COMBICON power

Connection technology for power electronics: PCB terminal blocks and plug-in connectors for currents up to 125 A, screw and spring-cage connection, panel feed-throughs.

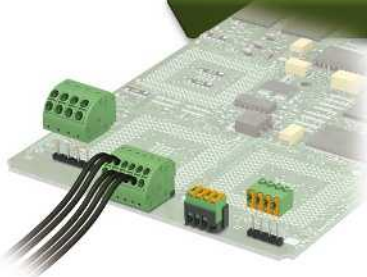
See Catalog 1



## COMBICON compact

Device connections for building technology and LED applications: PCB terminal blocks and plug-in connectors with 2.5 to 7.5 mm pitch, screw and spring-cage connection as well as pin strips.

See Catalog 1



## Housing

Plastic and aluminum electronics housing: component housing and panel mounting bases for industrial electronics, component housing for building installation, innovative bus connections between housing.

See Catalog 1







# Connection technology for field devices from Phoenix Contact



## Individual connection solutions

### Customer-specific adaptation of standard products

Found a product in our catalogs that meets your technical requirements, but you'd prefer a tailored solution? No problem – our Solution Center will be happy to provide you with support in implementing your requirements. Whether it's individual colors, special printing, a specific number of contacts or complete cable assembly – just let us know what you want.



## Ideas transformed into innovative products

Phoenix Contact has been producing high-quality products for worldwide use for over 80 years.

Benefit from our extensive development, manufacturing, and process expertise for your individual solution. Together with you, we can transform great ideas into innovative products.

Intelligent solutions in housing and connection technology increasingly require custom concepts.

As a manufacturer, you can develop products with us that meet the requirements of today's markets, such as high quality, individual design, and great customer benefits at a reasonable price.

You will have the entire expertise of the Phoenix Contact Group at your disposal. From our own tool shop and machine building through plastic injection molding and metal production to expertise in electronics production, we offer a depth of manufacturing that enables us to implement even demanding projects and complex products within a short development period.

Our own laboratory carries out testing throughout the process, handles the necessary qualifications and, of course, international approvals.

As a manufacturer, you can focus on your core competencies and benefit from our expertise as specialists in connection and housing technology.

Great products need great ideas and experience. Together with the expertise of Phoenix Contact, you can implement your individual solution - right from the initial idea to cost-effective series production.

Our products and services range from customer-specific PCB connection technology with screw, spring-cage or IDC fast connection, in all conceivable designs and colors...

...through corresponding electronics housing in special designs in the color and size of your choice, together with the appropriate connection technology...

...individual field cabling, with plug-in connectors with shielding for high data transmission rates, splash-proof housing for harsh industrial environments...

...to complete solutions consisting of, for example, splash-proof housing including the appropriate connection technology for signal, data, and power transmission, plus the ideal PCB connection.





# Connection technology for field devices from Phoenix Contact

## Our service – added value for you

Phoenix Contact doesn't just offer the right products, it also provides a professional service for all aspects of connection technology for field devices and field cabling. Wherever you are in the world, Phoenix Contact's global network means that you can rely on our service. Being at home all over the world and speaking the language of the user is what we understand by customer proximity. Proximity that ensures the best service for our partners. We live up to this with more than 40 customer-oriented subsidiaries and around 30 representatives in other countries.



## Personal consultation and support

As our customer, you are always the focus of attention at Phoenix Contact, whether during consultation or as part of after sales support. Expert and personal consultation forms the basis of this approach. Even though we live in the age of the Internet, personal interaction with our customers is of great importance to us.

Our team of highly motivated staff are available to you at locations around the world.



## Reliable delivery service

It goes without saying that our products are delivered reliably and on time. In addition to our optimized delivery service, we offer numerous options for making the purchasing process more efficient and transparent.

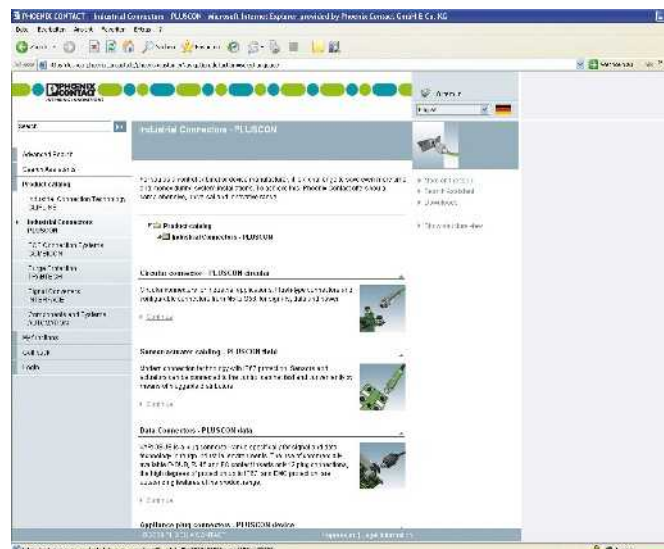
With warehouses in key industrial locations throughout the world, we ensure that you receive your products from Phoenix Contact cost-effectively and within the required delivery time.

## Online catalog

The online catalog provides comprehensive, up-to-date information in 7 languages for more than 22,000 products from Phoenix Contact. Here you can find product-specific information such as technical data, notes on approvals, dimensional drawings, 3D data, etc. At the click of the mouse, you can easily generate a product data sheet in PDF format.

In over 15 countries, e-shop functions complete the online catalog. Following successful registration, you can therefore access your prices and delivery schedules at any time and you also have the option of placing orders directly online.

[www.phoenixcontact.net/products](http://www.phoenixcontact.net/products)

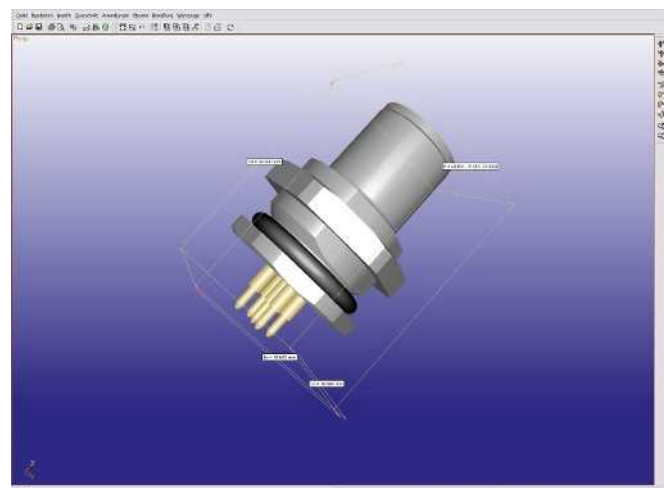


Quickly find product-specific information in the online catalog

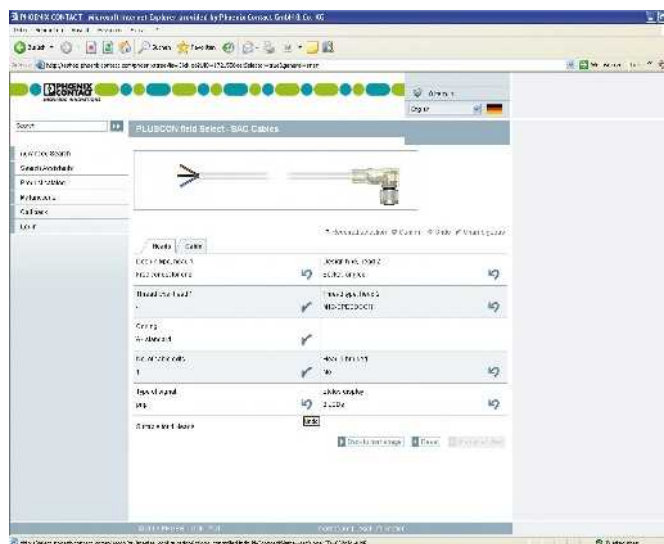
## Online search assistants

Online search assistants help you to search systematically and quickly for products from our extensive range of plug-in connectors. By selecting electrical values and other product properties, you are taken directly to the products that meet your requirements.

- COMBICON select  
PCB connection and electronics housing
- PLUSCON field select  
Sensor/actuator cabling
- PLUSCON data select  
Data plug-in connectors for fieldbuses and networks



Easy download of 3D data



User-friendly product search with PLUSCON field select

# Fast connection technology from Phoenix Contact

## QUICKON - proven fast connection technology

The secret behind QUICKON at Phoenix Contact is the tried-and-tested IDC connection technology. The term "IDC" stands for Insulation Displacement Connection - a form of insulation displacement contacting.

The key advantage is the lack of conductor preparation, which can save 60 - 80% of the usual connection time compared to spring-cage or screw connections.

In the field of automotive engineering, telecommunications, and household appliances, this type of fast contacting has been established for many years, but now Phoenix Contact has made it suitable for industrial applications. This includes contacts which can accommodate both solid and stranded conductors, which cover a large range of cross sections, which penetrate various wire insulations, and which function reliably and permanently under harsh industrial conditions.

### Advantages of QUICKON

- Time-saving connection
- High degree of reliability thanks to defined contact force
- Can be connected multiple times using standard tools

Individual conductors are simply inserted into the wiring space without preparation and pushed into the IDC terminal block by a screw or lever mechanism. Here the wire insulation is displaced without damaging or weakening the copper litz wires in any impermissible way, and a force-defined and thereby user-independent and gas-tight contact is established. The contact resistance values lie between the values for spring-cage or screw connections.

### Notes on IDC fast connection technology

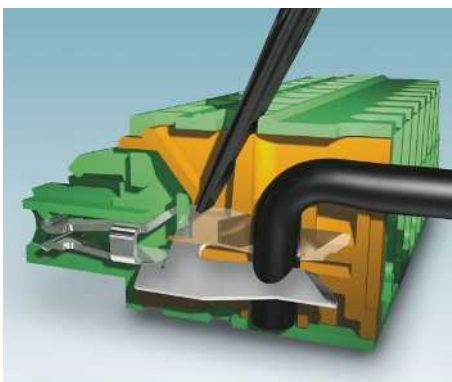
The specified cross section range must be observed.

If the conductors are too thin, the insulation will not be correctly displaced since the contact gap is too large, and if the conductors are too thick, it will either not be possible to connect them at all, or the system may be damaged as a result of excessive wiring forces.

QUICKON connections should not be installed at extremely low or high ambient temperatures.

Furthermore, the specified wire insulation must be observed or approved by Phoenix Contact on request. Extremely hard insulation materials, such as Teflon, or very viscoplastic insulation, such as silicone, can only be wired with IDC contacts specifically designed for this purpose. Solid and stranded conductors make very good contact. In the case of highly stranded Category 6 conductors, the minimum litz wire diameter must be observed.

For geometric reasons, two different types of contact have emerged:

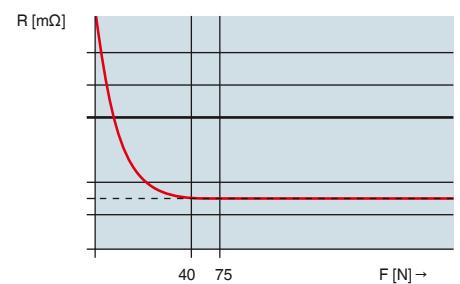


1. Flat contacts are characterized by their space-saving and cost-effective design.

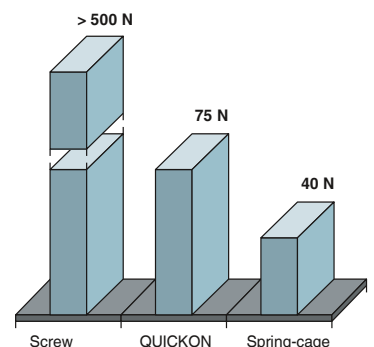


2. Tube contacts cover an even greater cross section range.

### Contact resistance



### Contact force





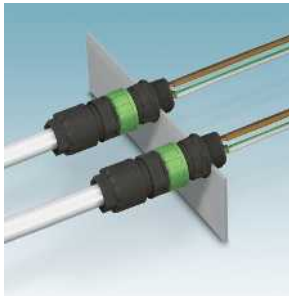
The positive properties and strong market acceptance of QUICKON have encouraged Phoenix Contact to develop a whole range of different products. This range covers numerous modular terminal blocks, PCB plugs, industrial plug-in connectors, and various customer-specific integrations within a cross section range from 0.14 mm<sup>2</sup> to 6.0 mm<sup>2</sup>.



Heavy-duty plug-in connectors



Sensor/actuator boxes



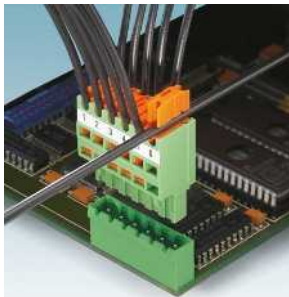
Power distributors



M8 and M12 plug-in connectors



Time savings with  
QUICKON fast connection



PCB plug-in connectors



Modular terminal blocks



A series plug-in connectors



Special solutions



T-distributors



RJ45 plug-in connectors

# Rapid interlock system from Phoenix Contact



SPEEDCON is the logical development of the M12 plug-in connector system that has been established and accepted for many years. Following the principle of "Plug & Turn", the connection time for M12 plug-in connectors is reduced by 90%.

The SPEEDCON rapid interlock system is 100% compatible with all M12 connections available on the market. It goes without saying that the SPEEDCON plug-in connectors meet all accepted standards and requirements for current M12 plug-in connector systems.



## Complete product range

The following pages contain a complete range of SPEEDCON products, consisting of molded cables, plug-in connectors for assembly, flush-type plug-in connectors, adapters, and passive distributor boxes. I/O modules with SPEEDCON connection can be found in the AUTOMATION catalog.

## SPEEDCON system partners

A number of well-known and international companies have been won over by the advantages and benefits of the SPEEDCON rapid interlock system and are now fully reliant on the new standard in the M12 world.

**Amphenol**

**BERNSTEIN**  
safe solutions

**binder**

**BIZERBA**

**CONINVERS**  
A Company of the Phoenix Contact Group

**FANUC**

**FESTO**

**INTER  
CONTROL**

**LITZE**

**Leuze electronic**

**MATROX**  
IMAGING

**menerga**  
KLIMATISIERUNG

Mercedes-Benz

**Miele**

**numatics**

**PEPPERL+FUCHS**

**p-u-l-s-o-l-t-r-o-n-i-c**

**Rexroth**  
Bosch Group

**SCHUBERT**

**SEW**  
EURODRIVE

**SICK**  
Sensor Intelligence.  
**SIEMENS**

**SVC**

**TRUMPF**

ThyssenKrupp Fahrtreppen  
Ein Unternehmen von ThyssenKrupp Elevator  
**ThyssenKrupp**

## Your advantages of using the SPEEDCON rapid interlock system

### Compatibility

SPEEDCON is 100% compatible with all current M12 plug-in connector systems. The user does not have to learn anything new, since the "Plug & Turn" principle has been retained.

### Fast assembly

Just half a turn and SPEEDCON creates a perfect plug-in connection. The assembly time is reduced by 90% as a result.

### Safe operation

SPEEDCON has all the electrical and mechanical properties required of conventional M12 plug-in connector systems.



Classic – SPEEDCON



Insert



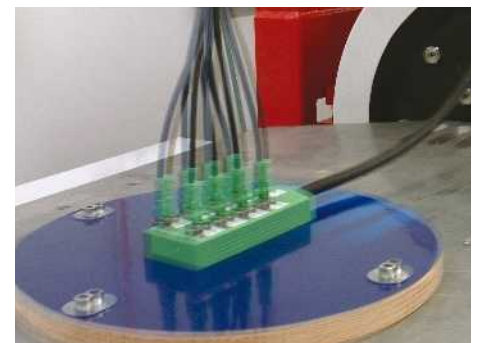
Temperature



SPEEDCON – Classic



1/2 turn



Vibration and shock



SPEEDCON – SPEEDCON



Done!



Noxious gases

**DKE**

**DIN**

**VDE**

**IEC**

**UL** US LISTED

**UL** US

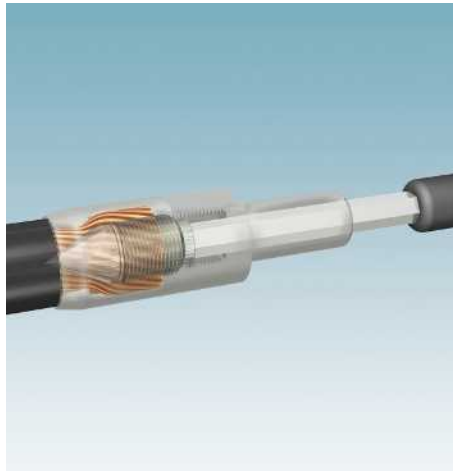
- Pin assignment, requirements, and testing according to **IEC 61076-2-101**
- IP65/IP67/IP69K protection according to EN 60529
- Vibration and shock resistance according to IEC 60512-6d





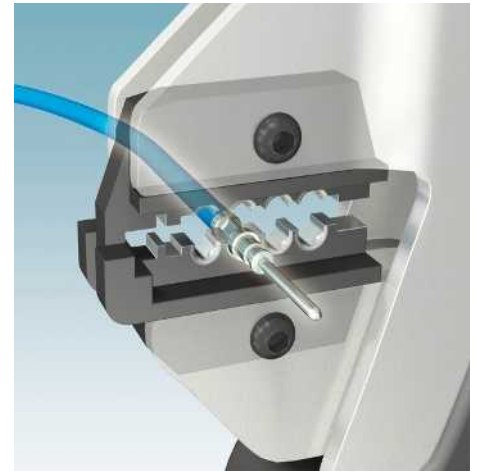
### Screw connection

The screw connection is the most universal and globally accepted conductor connection technology. An important characteristic is the maintenance-free conductor contact. It is not necessary to tighten the terminal screw again. All kinds of copper cables can be clamped without pretreatment, thereby making gas-tight and reliable contact. The wire protector, which protects the individual litz wires from damage, is located between the screw and the conductor. It also performs a screw locking function to prevent release due to vibrations and temperature fluctuations. Splicing protection can be implemented in the form of ferrules. With a screw connection, several wires may also be clamped under one screw. The current-carrying parts of the screw connections are made of high-grade, strain-crack, and corrosion-proof copper alloys.



### Axial screw connection

With this method, the wire end to be contacted is guided into the connection area of the pin or socket contact. A cone-shaped prong (part of the contact) is then screwed into the stranded wire from the front. The strands of the wire are radially pressed against the contact wall. This results in a gas-tight connection with long-term stability between the wire and contact. It is important that the specified tightening torque is observed. The prong is pressed in using a hexagon key which is applied to the front of the contact. This connection technology combines the advantages of screw and crimp connection. It requires very little space, is easy to execute, and only requires a standard Allen key.



### Crimp connection

The crimp connection impresses with its small space requirements and its cost-effective creation in series production. For a reliable connection, it is essential that the conductor cross section, the crimp contact, and the crimping tool are compatible. Furthermore, the crimping process must be monitored during large-scale production as the crimping tools are subject to a certain degree of wear.

Crimp connections can be established with the aid of crimping pliers or crimp machines through specific deformation of the crimping ranges of the contact. The requirements for crimp connections are defined in DIN EN 60352-2. Proof of the quality of a crimp connection can be seen in the tensile strength of the connection and crack-free deformation of the crimp contact. Crimping must not result in impermissible elongation of crimp contacts, as this would prevent them from latching correctly in the contact carrier. The contact is released using a contact removal tool. Assembly tools are also available for very thin conductors.





### Spring-cage connection

The spring-cage connection contains a steel spring which pushes the stripped conductor against a power rail. The terminal point is opened with a standard screwdriver. After the conductor has been inserted into the clamping space, the screwdriver is removed and the conductor automatically makes contact. The contact force is independent of the user and a vibration-proof, gas-tight connection with long-term stability is established. The front connection provides an additional advantage. The conductor and screwdriver come in parallel from the same direction and are always within the user's field of vision. Contact inserts can thereby also be connected or re-wired even when mounted. All kinds of copper cables can be clamped without pretreatment, thereby making gas-tight and reliable contact. Splicing protection can also be implemented in the form of a ferrule.



### Push-in connection

Stranded conductors with ferrules or solid conductors can be quickly and easily inserted directly into the connection without tools. The contact spring is formed in such a way that it opens automatically when the conductor is pushed in and thereby provides the required pressure force against the current bar for a gas-tight, vibration and shock-proof connection. With the aid of the orange pusher, the terminal block can be opened manually so that conductors with smaller cross sections can also be securely connected. To release the conductor, the orange pusher features a confusion-free and defined operating element. The conductive metals are made from high-grade copper alloys. All metal parts of the connection are made of corrosion-resistant materials.



### QUICKON fast connection for single wires

The QUICKON connection is equipped with an IDC insulation displacement contact. The term "IDC" stands for Insulation Displacement Connection. With this connection method, a non-stripped wire with insulation is positioned in front of the gap of the insulation displacement contact and then pushed into the blade gap through insulation displacement. In so doing, the wire insulation is severed and a gas-tight contact is made between the wire and the contact. This can save at least 60% of connection time.

The connection force is independent of the user and completely reliable provided the permitted conductor cross sections and connection conditions are observed. Solid and stranded conductors can be rewired up to 10 times. However, the wire end should be cut off before connecting again.

QUICKON connections have proven themselves in numerous applications for Phoenix Contact over recent years, such as plug-in connectors, for COMBICON, and modular terminal blocks to CEE plug-in equipment from 0.14 to 6.0 mm<sup>2</sup>.

### Circular plug-in connectors – PLUSCON device



Panel mounting plug-in connectors  
Page 24



Sleeve plug-in connectors  
Page 32



Contact carriers and contacts  
Page 38



Screw connections and accessories  
Page 42

### Data plug-in connectors - PLUSCON data



RJ45 plug-in connectors for Industrial Ethernet with IP20/IP67 protection  
Page 78



M12 plug-in connector for Industrial Ethernet  
Page 88



Assembled network cables  
Page 97



Patch panels, terminal outlets  
Page 114



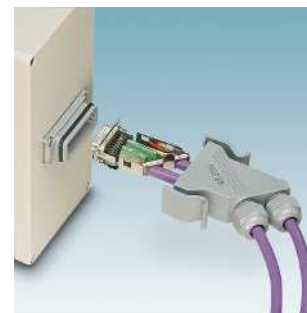
Power plug-in connectors for network cabling  
Page 124



Fiber optic network plug-in connectors  
Page 126



Assembled fiber optic cables  
Page 138



D-SUB-based fieldbus plug-in connectors  
Page 184



M12 flush-type plug-in connectors, plugs, and cables for fieldbuses  
Page 186



Cable range  
Page 194



IP20/IP67 USB plug-in connector  
Page 205



D-SUB-based plug-in connectors  
Page 185

### M5 - M12 circular plug-in connectors - PLUSCON circular



M5 device plug-in connectors  
Front mounting Page 224  
Rear mounting Page 224



M8 device plug-in connectors  
Front mounting Page 225  
Rear mounting Page 226



M12 device plug-in connectors with litz wire  
Front mounting Page 232  
Rear mounting Page 242



M12 device plug-in connectors with square flange  
Page 236



M12 device plug-in connectors for PCB mounting, wave soldering processes  
Page 246



M12 device plug-in connectors for PCB mounting, THR  
Page 256



7/8" device plug-in connectors with litz wire  
Front mounting Page 265  
Rear mounting Page 266



M12 device plug-in connectors, stainless steel design  
Page 268



M8 plug-in connectors for assembly with insulation displacement connection  
Page 272



M8 plug-in connectors for assembly with screw and solder connection  
Page 273



M12 plug-in connectors for assembly with Piercecon® connection  
Page 275



M12 plug-in connectors for assembly with insulation displacement connection  
Page 278



M12 plug-in connectors for assembly, screw and spring-cage connection, shielded and unshielded  
Page 279



7/8" plug-in connectors for assembly with screw connection  
Page 285



M12 power device plug-in connectors  
Page 286



M12 power plug-in connectors and cables for assembly  
Page 283

### M17 - M58 circular plug-in connectors - PLUSCON circular



M17 - signal plug-in connectors  
Page 308



M23 - signal plug-in connectors  
Page 324



M23 - feedback plug-in connectors  
Page 340



M17 - power plug-in connectors  
Page 352



M23 - power plug-in connectors  
Page 368



M40 - power plug-in connectors  
Page 380



M58 - power plug-in connectors  
Page 390



Signal/power plug-in connectors,  
plastic molded  
Page 394



Tools and accessories  
Page 404



## Photovoltaic plug-in connectors - PLUSCON solar



SUNCLIX panel feed-throughs and DC plug-in connectors

Page 420



SUNCLIX assembled cables

Page 425



SUNCLIX mini - plug-in connectors and module junction boxes

Page 426



Spring-cage terminal blocks for PCB connection

Page 428

## Charging plug-in connector systems - PLUSCON power



Combined AC/DC charging system

Page 435



Type 2 charging cables

Page 436



Type 2 and GB sockets

Page 438



GB charging cables

Page 440



# Rectangular plug-in connectors

Direct PCB connection and elimination of a panel mounting base – these are some of the outstanding features of the modular, compact, IP67 plug-in connector system.

This range is particularly suitable for use in devices, as well as terminal boxes and control cabinets in harsh industrial environments. Thanks to the modular structure and the numerous contact inserts, from signal to power connections with 70 A, VARIOCON provides proven solutions, particularly in the field of electrical drive technology.

The modular contact inserts with screw and PCB connection form the basis of the range, in addition to fixed contact inserts with crimp connection for turned and rolled contacts. The universal screw connections feature a high degree of reliability, low contact resistance, and a compact design. The contact insert modules are consistently touch proof and can be coded to prevent incorrect connection. The direct PCB connection saves you a complete jumpering level and enables controlled and space-saving device assembly.

Sleeve housing is available in plastic and seawater-resistant die-cast aluminum. The robust screw locking prevents the plug-in connectors from being unintentionally opened and protects them against mechanical disturbances such as shock and vibration.

## Note:

VDE 0100/1.97 § 411.1.3.2 and DIN EN 60 204/11.98 § 14.1.3 are applicable when combining several circuits in a cable and/or a plug-in connector.

|                                                          |           |
|----------------------------------------------------------|-----------|
| <b>Product range overview</b>                            | <b>20</b> |
| <b>System configuration</b>                              | <b>22</b> |
| <b>Panel mounting plug-in connectors</b>                 |           |
| Panel feed-throughs with screw connection                | 24        |
| Panel feed-throughs with PCB connection                  | 26        |
| Panel feed-throughs with power crimp connection          | 28        |
| Supporting base elements with screw connection           | 30        |
| <b>Sleeve plug-in connectors</b>                         |           |
| Sleeve frames and contact inserts                        | 32        |
| Sleeve housing                                           | 34        |
| <b>Contact carriers and contacts</b>                     |           |
| Fiber optic contact insert modules with screw connection | 36        |
| Contact carriers for turned and rolled crimp contacts    | 38        |
| Crimp contacts                                           | 40        |
| <b>Screw connections and accessories</b>                 |           |
| Full screw connections                                   | 42        |
| Half screw connections                                   | 44        |
| Protective covers and adapter plates                     | 48        |
| Accessories                                              | 49        |
| <b>Hybrid plug-in connectors</b>                         | <b>52</b> |
| <b>Derating diagrams and dimensional drawings</b>        | <b>54</b> |

# Rectangular plug-in connectors

## Product range overview



VARIOCON is suitable for use in devices, terminal boxes, and control cabinets.

Thanks to its modular structure and the variety of contact inserts from fiber optics to power connections, the range offers virtually unlimited application possibilities.

The range is based on modular contact inserts with screw and PCB connection, as well as fixed contact inserts with crimp connection for turned and rolled contacts. The variable structure enables the optimum and therefore inexpensive customization of the plug-in connector to suit individual applications.

Housing for direct wall mounting is available in various versions:

Plastic housing made of tough polyamide and aluminum housing with seawater-resistant surface and conductive seal. Together with EMC cable glands, these housings offer outstanding protection against electromagnetic interference fields.

## Six good reasons to use VARIOCON device plug-in connectors in industrial applications

### The advantages

1. Modularity of the contact inserts and housing

2. No panel mounting base required

3. Robust housing screw locking for startup and servicing

4. COMBICON screw connection technology

5. Direct PCB connection in the device

6. Power crimp connection

### Your benefits

- Tailored solution for contact inserts by combining power up to 70 A, signal up to 40 positions, and fiber optics
- Space savings thanks to compact design
- Free choice of housing designs: plastic, metal, and EMC protection

- Reduced assembly time
- IP67 protection with just one housing seal
- Outstanding EMC protection

- Resistant to mechanical disturbances (vibration, shock)
- Protected against unintentional opening of the plug-in connection
- Space savings compared to levers

- High degree of reliability
- Touch-proof
- Low contact resistance
- Compact design
- Can be coded to prevent incorrect connection
- Can be used universally

- Jumpering level eliminated
- Controlled assembly by means of soldering-in
- Space-saving installation

- Easiest means of wall mounting by snapping-in
- Cost-effective as no panel mounting frame or panel mounting flange required
- Controlled factory installation



## The product range

### Modular contact inserts

VARIOCON Modular enables power and signal transmission to be combined in a single plug-in connector.

The contact system is based on the proven COMBICON connection technology with tension sleeve principle and coding options. The panel mounting side can be supplied with screw connection or alternatively with direct PCB connection.

The connection capacity ranges from 4-pos./70 A/690 V to 40-pos./10 A/160 V. For data transmission, additional fiber optic modules are available.



from page 24

### Crimp contact carriers

The crimp contact carriers are available as pin or socket contact carriers and meet the requirements for high-position plug-in connections.

Turned and rolled crimp contacts from the proven HEAVYCON D series (EN 175301-801) are available for 15, 30, 50, and 65-pos. crimp contact carriers, plus 2 leading PE connections each.

All the advantages of crimp technology, such as machine pre-assembly or partial assembly, are available with VARIOCON Crimp.



from page 38

### Sleeve housing and supporting base elements

Sleeve housing is available in plastic and seawater-resistant die-cast aluminum:

VARIOCON sleeve housing is sealed directly to the mounting panel with two locking screws. This locking method saves space, is easily accessible from above, is vibration-resistant, and meets the requirements of IP65/IP66/IP67 protection (IP68 on request).

Versions with an easy-grip knurled screw are available for tool-free attachment.



from page 31

### Accessories

Half cable glands with Pg16 and Pg21 threads are available for VARIOCON housing. Alternatively, housing is also available with M20 and M25 threads.

With the VC adapter plates, VARIOCON plug-in connectors can also be easily used in standard panel cutouts for heavy-duty industrial plug-in connectors.

Protective covers protect the contact inserts when they are not plugged in.

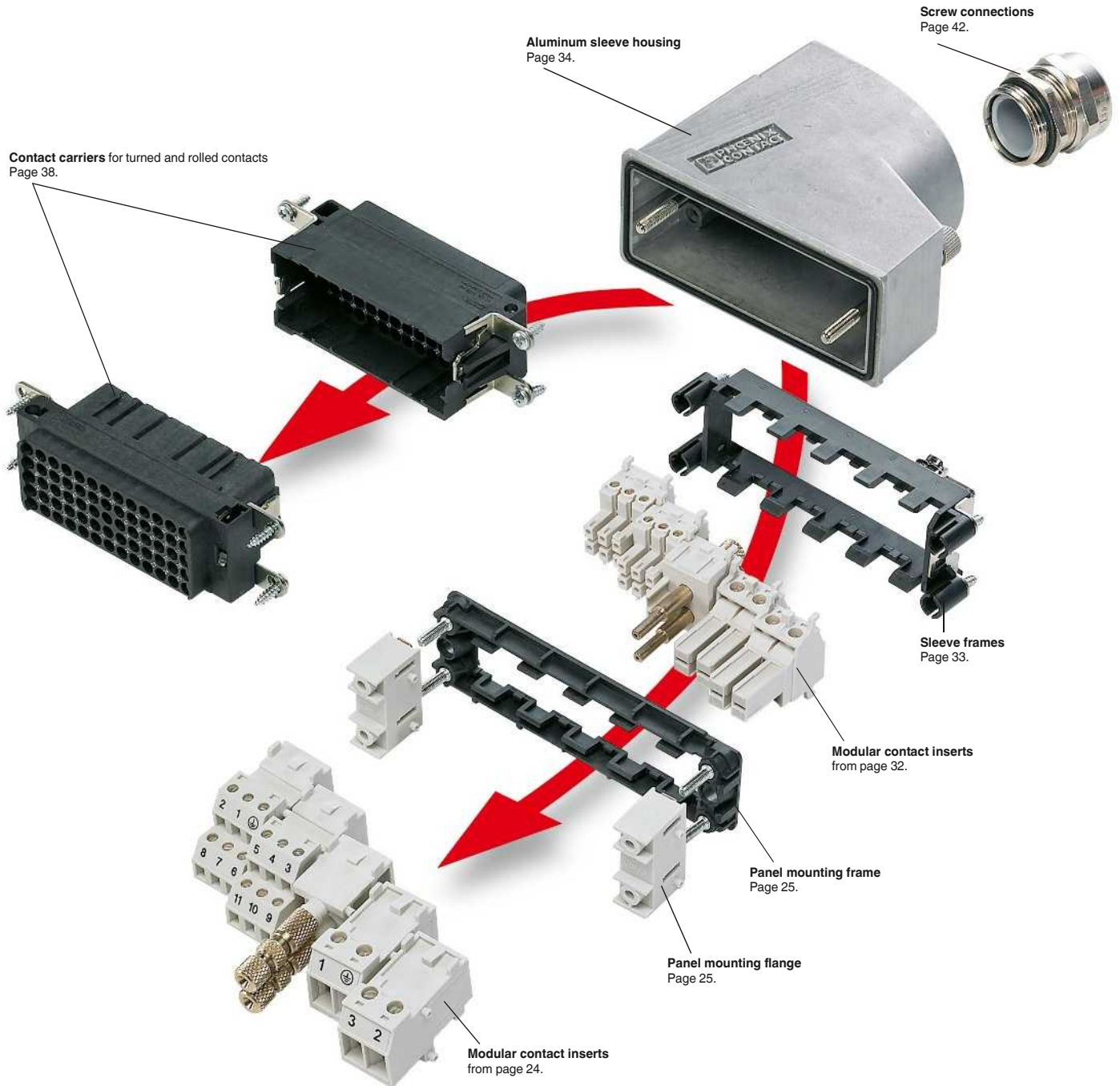


from page 42

### Modular plug-in connector

The key advantage of VARIOCON plug-in connectors is that a panel mounting base with mounting brackets is not required. The panel mounting plug-in connector is mounted directly on the device panel as a panel feed-through without a panel mounting base. Optional contact inserts with screw connection, crimp connection, and PCB connection are available. The PCB versions are available for parallel (180°) and perpendicular positioning (90°) of the PCB to the housing panel. The sleeve plug-in connector consists of sleeve housing, sleeve contact inserts, and sleeve frame.

Sleeve housing is available in plastic and seawater-resistant die-cast aluminum. The aluminum housings have an electrically conductive seal. In combination with the EMC cable glands, they possess outstanding shield attenuation. The easy and secure mounting principle applies to both the sleeve and housing side. The contact insert modules are snapped into the frame in the desired order and then screwed to the housing or the sleeve.



**Rectangular plug-in connector configurator**

The VARIOCON Select software enables rapid and targeted configuration of modular contact inserts to form a plug-in connector system. The contact inserts are available with different numbers of positions and rated data. They can also be combined in any order. The modularity of the contact inserts and housing allow you to configure tailored combinations of power up to 70 A, signal up to 40 positions, and fiber optics to form a modular plug-in connector. There is a choice of plastic and aluminum housing. In combination with EMC screw connections,

the aluminum housing offers safe protection against electromagnetic interference fields.

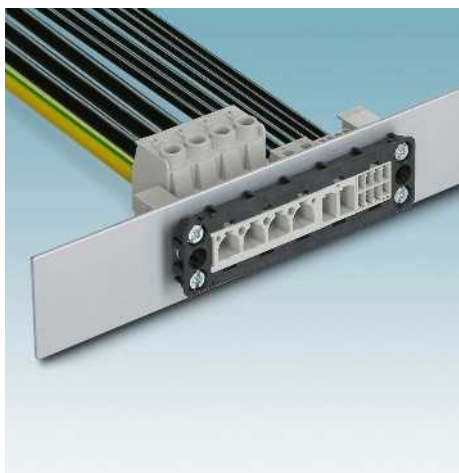




# Rectangular plug-in connectors

## Panel mounting plug-in connectors

### Panel feed-through with screw connection



- One panel mounting frame and two panel mounting flanges are required for each connector
- Contact insert sets make logistics easier
- Positions are consecutively marked with PE and from 1 to n.
- On the panel mounting frame, each module position is labeled from A-E

#### Advantages:

- Proven COMBICON technology
- Can be coded to prevent confusion of connectors
- Suitable for universal connection
- Compact design

#### Notes:

- The hinged cover on the power contact inserts must be closed after assembly to maintain insulation data
- VARIOCON contact insert modules meet the requirements of DIN EN 61984 (connectors without switching capacity)
- They should, therefore, only be operated under no load condition
- All inserts are protected against finger contact according to DIN EN 60529
- They fulfil the requirements of BGV A2 accident prevention regulations
- An insertion bridge EB3-10/ST (Order No. 5020823) is available for the power contact insert modules
- The power contact inserts cannot be used in VC supporting elements for space reasons

#### Notes:

- For dimensional drawings, refer to page 54
- For drilling diagrams, see page 55
- For accessories, refer to page 50



Contact insert sets

#### Technical data

|                             | VC-AR...S2... | VC-AR...S6... | VC-AR...S8... |
|-----------------------------|---------------|---------------|---------------|
| Rated voltage               | 400           | 250           | 160           |
| Rated current               | 20            | 10            | 10            |
| Connection cross section    | 0.2 ... 4     | 0.14 ... 1.5  | 0.14 ... 1.5  |
| Insertion/withdrawal cycles | ≥ 100         | ≥ 100         | ≥ 100         |

#### Ordering data

| Description                                                                                                                                             | Design | Module slots | Number of positions Incl. PE | Type                  | Order No. | Pcs. / Pkt. |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------|------------------------------|-----------------------|-----------|-------------|
| <b>Contact insert set</b> , consisting of: frame, four mounting screws and pre-assembled 2-pos. modules with screw connection, six coding profiles      |        |              |                              | VC-AR1/2M-S22-SET     | 1607298   | 5           |
|                                                                                                                                                         |        |              |                              | VC-AR2/3M-S222-SET    | 1607311   | 5           |
|                                                                                                                                                         |        |              |                              | VC-AR3/4M-S2222-SET   | 1607322   | 5           |
|                                                                                                                                                         |        |              |                              | VC-AR4/5M-S22222-SET  | 1607335   | 5           |
| <b>Contact insert set</b> , consisting of: frame, four mounting screws and pre-assembled 6-pos. modules with screw connection, six coding profiles      |        |              |                              | VC-AR1/2M-S66-SET     | 1607346   | 5           |
|                                                                                                                                                         |        |              |                              | VC-AR2/3M-S666-SET    | 1607359   | 5           |
|                                                                                                                                                         |        |              |                              | VC-AR3/4M-S6666-SET   | 1607370   | 5           |
|                                                                                                                                                         |        |              |                              | VC-AR4/5M-S66666-SET  | 1607383   | 5           |
| <b>Contact insert set</b> , consisting of: frame, four mounting screws and pre-assembled 8-pos. modules with screw connection, six coding profiles      |        |              |                              | VC-AR1/2M-S888-SET    | 1607394   | 5           |
|                                                                                                                                                         |        |              |                              | VC-AR2/3M-S8888-SET   | 1607407   | 5           |
|                                                                                                                                                         |        |              |                              | VC-AR3/4M-S88888-SET  | 1607418   | 5           |
|                                                                                                                                                         |        |              |                              | VC-AR4/5M-S888888-SET | 1607431   | 5           |
| <b>Power contact insert module</b> , for panel mounting frame, with screw connection                                                                    |        |              |                              |                       |           |             |
|                                                                                                                                                         |        |              |                              | VC2                   | 3         | 4           |
|                                                                                                                                                         |        |              |                              | VC3                   | 4         | 5           |
|                                                                                                                                                         |        |              |                              | VC4                   | 5         | 7           |
| <b>Contact insert module</b> , marking on screw connection:                                                                                             |        |              |                              |                       |           |             |
|                                                                                                                                                         |        |              |                              |                       | 1         | 2           |
|                                                                                                                                                         |        |              |                              |                       | 1         | 6           |
|                                                                                                                                                         |        |              |                              |                       | 1         | 8           |
| <b>Contact insert module</b> , marking on screw connection:                                                                                             |        |              |                              |                       |           |             |
| PE, 2                                                                                                                                                   |        |              |                              |                       | 1         | 2           |
| PE, 2 ... 6                                                                                                                                             |        |              |                              |                       | 1         | 6           |
| PE, 2 ... 8                                                                                                                                             |        |              |                              |                       | 1         | 8           |
| <b>Panel mounting frame</b> , for panel feed-throughs and for VARIOCON supporting base elements at voltages < 42 V                                      |        |              |                              |                       |           |             |
|                                                                                                                                                         |        |              |                              | VC1                   | 2         |             |
|                                                                                                                                                         |        |              |                              | VC2                   | 3         |             |
|                                                                                                                                                         |        |              |                              | VC3                   | 4         |             |
|                                                                                                                                                         |        |              |                              | VC4                   | 5         |             |
| <b>EMC shield adapter</b> , for EMC connectors                                                                                                          |        |              |                              |                       |           |             |
|                                                                                                                                                         |        |              |                              | VC1                   | 2         |             |
|                                                                                                                                                         |        |              |                              | VC2                   | 3         |             |
|                                                                                                                                                         |        |              |                              | VC3                   | 4         |             |
|                                                                                                                                                         |        |              |                              | VC4                   | 5         |             |
| <b>Panel-mounting flange</b> for screw locking, for wall thicknesses of 1-5 mm, 2 pcs. per panel feed-through required, not for supporting base element |        |              |                              |                       |           |             |





Power contact insert modules



Contact insert modules



Panel mounting frame,  
panel mounting flange

### Technical data

690  
70  
0.5 mm² ... 16 mm²  
≥ 500

### Technical data

| VC-AMS 2  | VC-AMS 6     | VC-AMS 8     |
|-----------|--------------|--------------|
| 400       | 250          | 160          |
| 20        | 10           | 10           |
| 0.2 ... 4 | 0.14 ... 1.5 | 0.14 ... 1.5 |
| ≥ 100     | ≥ 100        | ≥ 100        |

### Technical data

-  
-  
-  
-

### Ordering data

| Type | Order No. | Pcs. / Pkt. |
|------|-----------|-------------|
|------|-----------|-------------|

### Ordering data

| Type | Order No. | Pcs. / Pkt. |
|------|-----------|-------------|
|------|-----------|-------------|

### Ordering data

| Type | Order No. | Pcs. / Pkt. |
|------|-----------|-------------|
|------|-----------|-------------|

|          |         |   |
|----------|---------|---|
| VC-AMS 4 | 1607745 | 5 |
| VC-AMS 5 | 1607748 | 5 |
| VC-AMS 7 | 1607751 | 5 |

|          |         |    |
|----------|---------|----|
| VC-AMS 2 | 1853528 | 50 |
| VC-AMS 6 | 1854019 | 50 |
| VC-AMS 8 | 1854022 | 50 |

|             |         |    |
|-------------|---------|----|
| VC-AMS 2-PE | 1583542 | 50 |
| VC-AMS 6-PE | 1583555 | 50 |
| VC-AMS 8-PE | 1583568 | 50 |

|           |         |   |
|-----------|---------|---|
| VC-AR1/2M | 1852972 | 5 |
| VC-AR2/3M | 1852985 | 5 |
| VC-AR3/4M | 1852998 | 5 |
| VC-AR4/5M | 1853007 | 5 |

|            |         |   |
|------------|---------|---|
| VC-AR1-EMV | 1853214 | 5 |
| VC-AR2-EMV | 1853227 | 5 |
| VC-AR3-EMV | 1853230 | 5 |
| VC-AR4-EMV | 1853243 | 5 |

|       |         |    |
|-------|---------|----|
| VC-AF | 1852862 | 50 |
|-------|---------|----|

## Panel mounting plug-in connectors

## A close-up photograph of a green printed circuit board (PCB) with a black and white RJ45 connector. The connector is mounted on a silver metal plate. The PCB is populated with various electronic components, including resistors and integrated circuits. The background is a light blue gradient.

- VARIOCON contact insert modules meet the requirements of DIN EN 61984 (connectors without switching capacity)
- They should, therefore, only be operated under no load condition
- All inserts are protected against finger contact according to DIN EN 60529
- They fulfil the requirements of BGV A2 accident prevention regulations

|                                            |
|--------------------------------------------|
| For dimensional drawings, refer to page 54 |
| For drilling diagrams, see page 55         |
| For accessories, refer to page 50          |



### Power contact insert modules 90°

## Technical data

|                             |     |      |
|-----------------------------|-----|------|
| Rated voltage               | [V] | 690  |
| Rated current               | [A] | 63   |
| Insertion/withdrawal cycles |     | ≥ 50 |

## Ordering data

| Description                                                                                                                                             | Design | Module slots | Number of positions Incl. PE | Type                | Order No.      | Pcs. / Pkt. |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------|------------------------------|---------------------|----------------|-------------|
| <b>Power contact insert module</b>                                                                                                                      |        |              |                              |                     |                |             |
|                                                                                                                                                         | VC2    | 3            | 4                            | <b>VC-AML 4</b>     | <b>1607509</b> | <b>10</b>   |
|                                                                                                                                                         | VC3    | 4            | 5                            | <b>VC-AML 5</b>     | <b>1607523</b> | <b>5</b>    |
|                                                                                                                                                         | VC4    | 5            | 7                            | <b>VC-AML 7</b>     | <b>1607537</b> | <b>5</b>    |
| <b>Power contact insert module, with capacitive PE contact</b>                                                                                          |        |              |                              |                     |                |             |
|                                                                                                                                                         | VC2    | 3            | 4                            | <b>VC-AML 4-PEA</b> | <b>1607516</b> | <b>5</b>    |
|                                                                                                                                                         | VC3/-4 |              | 5                            | <b>VC-AML 5-PEA</b> | <b>1607530</b> | <b>5</b>    |
|                                                                                                                                                         | VC4    |              | 7                            | <b>VC-AML 7-PEA</b> | <b>1607544</b> | <b>5</b>    |
| <b>Contact insert module, marking on screw connection:</b>                                                                                              |        |              |                              |                     |                |             |
|                                                                                                                                                         |        | 1            | 2                            |                     |                |             |
|                                                                                                                                                         |        | 1            | 6                            |                     |                |             |
|                                                                                                                                                         |        | 1            | 8                            |                     |                |             |
| <b>Contact insert module, marking on screw connection:</b>                                                                                              |        |              |                              |                     |                |             |
|                                                                                                                                                         |        | 1            | 2                            |                     |                |             |
|                                                                                                                                                         |        | 1            | 6                            |                     |                |             |
|                                                                                                                                                         |        | 1            | 8                            |                     |                |             |
| <b>Panel mounting frame, for panel feed-throughs and for VARIOCON supporting base elements at voltages &lt; 42 V</b>                                    |        |              |                              |                     |                |             |
|                                                                                                                                                         | VC1    | 2            |                              |                     |                |             |
|                                                                                                                                                         | VC2    | 3            |                              |                     |                |             |
|                                                                                                                                                         | VC3    | 4            |                              |                     |                |             |
|                                                                                                                                                         | VC4    | 5            |                              |                     |                |             |
| <b>EMC shield adapter, for EMC connectors</b>                                                                                                           |        |              |                              |                     |                |             |
|                                                                                                                                                         | VC1    | 2            |                              |                     |                |             |
|                                                                                                                                                         | VC2    | 3            |                              |                     |                |             |
|                                                                                                                                                         | VC3    | 4            |                              |                     |                |             |
|                                                                                                                                                         | VC4    | 5            |                              |                     |                |             |
| <b>Panel-mounting flange</b> for screw locking, for wall thicknesses of 1-5 mm, 2 pcs. per panel feed-through required, not for supporting base element |        |              |                              |                     |                |             |



Contact insert modules 90°



Contact insert modules 180°



Panel mounting frame,  
panel mounting flange

| Technical data |          |          |
|----------------|----------|----------|
| VC-AML 2       | VC-AML 6 | VC-AML 8 |
| 400            | 250      | 160      |
| 20             | 10       | 10       |
| ≥ 100          | ≥ 100    | ≥ 100    |

| Ordering data |           |             |
|---------------|-----------|-------------|
| Type          | Order No. | Pcs. / Pkt. |

|          |         |    |
|----------|---------|----|
|          |         |    |
|          |         |    |
| VC-AML 2 | 1852859 | 50 |
| VC-AML 6 | 1853531 | 50 |
| VC-AML 8 | 1852833 | 50 |
|          |         |    |
|          |         |    |
|          |         |    |
|          |         |    |

| Technical data |           |           |
|----------------|-----------|-----------|
| VC-AMLV 2      | VC-AMLV 6 | VC-AMLV 8 |
| 400            | 250       | 160       |
| 20             | 10        | 10        |
| ≥ 100          | ≥ 100     | ≥ 100     |

| Ordering data |           |             |
|---------------|-----------|-------------|
| Type          | Order No. | Pcs. / Pkt. |

|           |         |    |
|-----------|---------|----|
|           |         |    |
|           |         |    |
| VC-AMLV 2 | 1884979 | 50 |
| VC-AMLV 6 | 1884872 | 50 |
| VC-AMLV 8 | 1884885 | 50 |
|           |         |    |
|           |         |    |
|           |         |    |
|           |         |    |

| Technical data |  |  |
|----------------|--|--|
| -              |  |  |
| -              |  |  |
| -              |  |  |

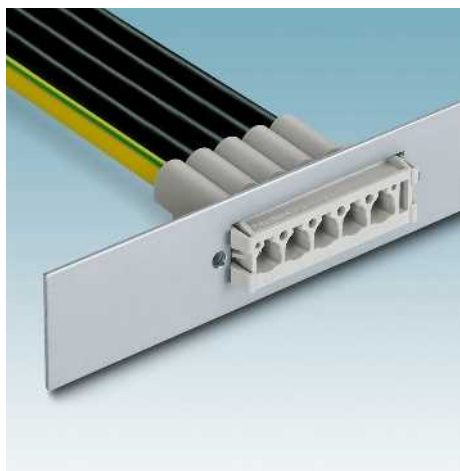
| Ordering data |           |             |
|---------------|-----------|-------------|
| Type          | Order No. | Pcs. / Pkt. |

|            |         |    |
|------------|---------|----|
|            |         |    |
|            |         |    |
|            |         |    |
|            |         |    |
| VC-AR1/2M  | 1852972 | 5  |
| VC-AR2/3M  | 1852985 | 5  |
| VC-AR3/4M  | 1852998 | 5  |
| VC-AR4/5M  | 1853007 | 5  |
| VC-AR1-EMV | 1853214 | 5  |
| VC-AR2-EMV | 1853227 | 5  |
| VC-AR3-EMV | 1853230 | 5  |
| VC-AR4-EMV | 1853243 | 5  |
|            |         |    |
| VC-AF      | 1852862 | 50 |

# Rectangular plug-in connectors

## Panel mounting plug-in connectors

### Panel feed-through with power crimp connection



#### Notes:

- 16 mm<sup>2</sup> contacts can only be crimped by machine.
- For mounting cutout, see page 56
- For accessories, refer to page 50



POWER crimp contact inserts

#### Advantages:

- No need for panel mounting frame
- No need for panel mounting flange
- Simply snap into the VC-AR... panel cutout and you're done!
- Crimp contacts are released using flat-bladed screwdriver

#### Typical applications

- Motors
- Inverter AC output
- Power supplies

#### Notes:

- VARIOCON contact insert modules meet the requirements of DIN EN 61984 (connectors without switching capacity)
- They should, therefore, only be operated under no load condition
- All inserts are protected against finger contact according to DIN EN 60529
- They fulfil the requirements of BGV A2 accident prevention regulations
- Combination with other VC modules is not possible

|                             |     |      |
|-----------------------------|-----|------|
| Rated voltage               | [V] | 690  |
| Rated current               | [A] | 70   |
| Insertion/withdrawal cycles |     | ≥ 50 |

#### Technical data

| Description | Design | Number of positions Incl. PE |
|-------------|--------|------------------------------|
|-------------|--------|------------------------------|

Contact carriers for pin crimp contacts, for snapping into mounting panel

|     |   |
|-----|---|
| VC2 | 4 |
| VC3 | 5 |

Crimp contacts, for conductor cross section:

4 mm<sup>2</sup>  
10 mm<sup>2</sup>  
16 mm<sup>2</sup>

Crimp contacts, taped, for conductor cross section:

4 mm<sup>2</sup>  
10 mm<sup>2</sup>

Crimping tool, for crimp contacts

|               |   |
|---------------|---|
| IPCC 16-4...  | 1 |
| IPCC 16-10... | 1 |

#### Ordering data

| Type     | Order No. | Pcs. / Pkt. |
|----------|-----------|-------------|
| VC-AMC 4 | 1583877   | 5           |
| VC-AMC 5 | 1583878   | 5           |
|          |           |             |
|          |           |             |
|          |           |             |





Power crimp contacts



Crimping tool

| Technical data    |                    |                    |
|-------------------|--------------------|--------------------|
| 4 mm <sup>2</sup> | 10 mm <sup>2</sup> | 16 mm <sup>2</sup> |
| -                 | -                  | -                  |
| 32                | 50                 | 60                 |
| >= 25             | >= 25              | ≥ 50               |

| Ordering data      |           |             |
|--------------------|-----------|-------------|
| Type               | Order No. | Pcs. / Pkt. |
| IPCC 16- 4-MT      | 1733385   | 100         |
| IPCC 16-10-MT      | 1733372   | 100         |
| IPCC 16-16-MT      | 1733367   | 100         |
| IPCC 16- 4-MT BAND | 1761467   | 3800        |
| IPCC 16-10-MT BAND | 1761470   | 2700        |

| Technical data           |           |             |
|--------------------------|-----------|-------------|
| -                        | -         | -           |
| -                        | -         | -           |
| -                        | -         | -           |
| Ordering data            |           |             |
| Type                     | Order No. | Pcs. / Pkt. |
| CRIMPFOX PCC 16 CS 4QMM  | 1743427   | 1           |
| CRIMPFOX PCC 16 CS 10QMM | 1743430   | 1           |

# Rectangular plug-in connectors

## Panel mounting plug-in connectors

### Supporting base elements and contact inserts with screw connection

- The panel mounting bases are designed for panel feed-throughs and create space in the interior of the device.
- Box mounting elements make it possible for the plug-in wiring to be directly on the device panel.
- Coupling housings are suitable for free-hanging connections where jumpering is necessary in the field.



Contact insert modules



Panel mounting frames with PE

| Notes:                                     |  |
|--------------------------------------------|--|
| For dimensional drawings, refer to page 54 |  |
| For drilling diagrams, see page 55         |  |
| For accessories, refer to page 50          |  |

|                                                                                                                            |        |              |                              | Technical data |              |              | Technical data                       |           |             |
|----------------------------------------------------------------------------------------------------------------------------|--------|--------------|------------------------------|----------------|--------------|--------------|--------------------------------------|-----------|-------------|
|                                                                                                                            |        |              |                              | VC-AMS 2       | VC-AMS 6     | VC-AMS 8     |                                      |           |             |
| Rated voltage                                                                                                              |        |              | [V]                          | 400            | 250          | 160          | -                                    |           |             |
| Rated current                                                                                                              |        |              | [A]                          | 20             | 10           | 10           | -                                    |           |             |
| Material data                                                                                                              |        |              |                              |                |              |              |                                      |           |             |
| Housing material                                                                                                           |        |              |                              | -              | -            | -            | -                                    |           |             |
| Housing surface material                                                                                                   |        |              |                              | -              | -            | -            | -                                    |           |             |
| Degree of protection                                                                                                       |        |              |                              | -              | -            | -            | -                                    |           |             |
| Connection cross section                                                                                                   |        |              | [mm²]                        | 0.2 ... 4      | 0.14 ... 1.5 | 0.14 ... 1.5 | 0.5 mm² ... 4 mm² (for PE conductor) |           |             |
| Insertion/withdrawal cycles                                                                                                |        |              |                              | ≥ 100          | ≥ 100        | ≥ 100        | -                                    |           |             |
|                                                                                                                            |        |              |                              | Ordering data  |              |              | Ordering data                        |           |             |
| Description                                                                                                                | Design | Module slots | Number of positions Incl. PE | Type           | Order No.    | Pcs. / Pkt.  | Type                                 | Order No. | Pcs. / Pkt. |
| <b>Contact insert module, marking on screw connection:</b>                                                                 |        |              |                              |                |              |              |                                      |           |             |
|                                                                                                                            |        | 1            | 2                            | VC-AMS 2       | 1853528      | 50           |                                      |           |             |
|                                                                                                                            |        | 1            | 6                            | VC-AMS 6       | 1854019      | 50           |                                      |           |             |
|                                                                                                                            |        | 1            | 8                            | VC-AMS 8       | 1854022      | 50           |                                      |           |             |
| <b>Contact insert module, marking on screw connection:</b>                                                                 |        |              |                              |                |              |              |                                      |           |             |
| PE, 2                                                                                                                      |        | 1            | 2                            | VC-AMS 2-PE    | 1583542      | 50           |                                      |           |             |
| PE, 2 ... 6                                                                                                                |        | 1            | 6                            | VC-AMS 6-PE    | 1583555      | 50           |                                      |           |             |
| PE, 2 ... 8                                                                                                                |        | 1            | 8                            | VC-AMS 8-PE    | 1583568      | 50           |                                      |           |             |
| <b>Panel mounting frame, with PE, for VARIOCON supporting base elements with voltages &gt; 42 V</b>                        |        |              |                              |                |              |              |                                      |           |             |
|                                                                                                                            | VC1    | 2            |                              |                |              |              | VC-AR1/2M-PEA                        | 1607761   | 1           |
|                                                                                                                            | VC2    | 3            |                              |                |              |              | VC-AR2/3M-PEA                        | 1607774   | 1           |
|                                                                                                                            | VC3    | 4            |                              |                |              |              | VC-AR3/4M-PEA                        | 1607787   | 1           |
|                                                                                                                            | VC4    | 5            |                              |                |              |              | VC-AR4/5M-PEA                        | 1607790   | 1           |
| <b>Housing, metal, powder-coated</b>                                                                                       |        |              |                              |                |              |              |                                      |           |             |
|                                                                                                                            | VC1    | 2            |                              |                |              |              |                                      |           |             |
|                                                                                                                            | VC2    | 3            |                              |                |              |              |                                      |           |             |
|                                                                                                                            | VC3    | 4            |                              |                |              |              |                                      |           |             |
|                                                                                                                            | VC4    | 5            |                              |                |              |              |                                      |           |             |
|                                                                                                                            |        |              |                              | Accessories    |              |              | Accessories                          |           |             |
| <b>Marker labels, unprinted, 5-section, for individual labeling with B-STIFT or CMS system (25 labels per pack), white</b> |        |              |                              |                |              |              |                                      |           |             |



**Panel mounting base  
with open bottom**



**Box mounting base  
with fixing holes**



**Coupling housing  
with enclosed bottom**

#### Technical data

VC-MP-A...

-

-

Zinc die-cast  
Powder coating  
IP65/IP66/IP67

-

-

#### Ordering data

| Type     | Order No. | Pcs. / Pkt. |
|----------|-----------|-------------|
| VC-MP-A1 | 1884403   | 5           |
| VC-MP-A2 | 1884416   | 5           |
| VC-MP-A3 | 1884429   | 5           |
| VC-MP-A4 | 1884432   | 5           |

#### Accessories

|           |         |   |
|-----------|---------|---|
| VC-BZS WH | 1852875 | 5 |
|-----------|---------|---|

#### Technical data

VC-MP-S...

-

-

Zinc die-cast  
Powder coating  
IP65/IP66/IP67

-

-

#### Ordering data

| Type     | Order No. | Pcs. / Pkt. |
|----------|-----------|-------------|
| VC-MP-S1 | 1884720   | 5           |
| VC-MP-S2 | 1884733   | 5           |
| VC-MP-S3 | 1884746   | 5           |
| VC-MP-S4 | 1884759   | 5           |

#### Accessories

|           |         |   |
|-----------|---------|---|
| VC-BZS WH | 1852875 | 5 |
|-----------|---------|---|

#### Technical data

VC-MP-K...

-

-

Zinc die-cast  
Powder coating  
IP65/IP66/IP67

-

-

#### Ordering data

| Type     | Order No. | Pcs. / Pkt. |
|----------|-----------|-------------|
| VC-MP-K1 | 1884568   | 5           |
| VC-MP-K2 | 1884571   | 5           |
| VC-MP-K3 | 1884584   | 5           |
| VC-MP-K4 | 1884597   | 5           |

#### Accessories

|           |         |   |
|-----------|---------|---|
| VC-BZS WH | 1852875 | 5 |
|-----------|---------|---|

# Rectangular plug-in connectors

## Sleeve plug-in connectors

### Sleeve frames and contact inserts



- Contact insert sets make logistics easier
- Positions are consecutively marked with PE and from 1 to n.
- On the panel mounting frame, each module position is labeled from A-E

#### Advantages:

- Proven COMBICON technology
- Can be coded to prevent confusion of connectors
- Suitable for universal connection
- Compact design

#### Notes:

- The hinged cover on the power contact inserts must be closed after assembly to maintain insulation data
- VARIOCON contact insert modules meet the requirements of DIN EN 61984 (connectors without switching capacity)
- They should, therefore, only be operated under no load condition
- All inserts are protected against finger contact according to DIN EN 60529
- They fulfil the requirements of BGV A2 accident prevention regulations
- An insertion bridge EB3-10/ST (Order No. 5020823) is available for the power contact insert modules
- The power contact inserts cannot be used in VC supporting elements for space reasons

#### Notes:

For dimensional drawings, refer to page 54  
For accessories, refer to page 50



Contact insert sets

#### Technical data

|                             | VC-TR...S2... | VC-TR...S6... | VC-TR...S8... |
|-----------------------------|---------------|---------------|---------------|
| Rated voltage               | 400           | 250           | 160           |
| Rated current               | 20            | 10            | 10            |
| Connection cross section    | 0.2 ... 4     | 0.14 ... 1.5  | 0.14 ... 1.5  |
| Insertion/withdrawal cycles | ≥ 100         | ≥ 100         | ≥ 100         |

#### Ordering data

| Description                                                                                                                                        | Design | Module slots | Number of positions Incl. PE | Type                     | Order No. | Pcs. / Pkt. |
|----------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------|------------------------------|--------------------------|-----------|-------------|
| <b>Contact insert set</b> , consisting of: frame, four mounting screws and pre-assembled 2-pos. modules with screw connection, six coding profiles |        |              |                              | VC-TR1/2M-PEA-S22-SET    | 1607143   | 5           |
|                                                                                                                                                    | VC1    | 2            | 4                            | VC-TR2/3M-PEA-S222-SET   | 1607154   | 5           |
|                                                                                                                                                    | VC2    | 3            | 6                            | VC-TR3/4M-PEA-S2222-SET  | 1607167   | 5           |
|                                                                                                                                                    | VC3    | 4            | 8                            | VC-TR4/5M-PEA-S22222-SET | 1607178   | 5           |
|                                                                                                                                                    | VC4    | 5            | 10                           |                          |           |             |
| <b>Contact insert set</b> , consisting of: frame, four mounting screws and pre-assembled 6-pos. modules with screw connection, six coding profiles |        |              |                              | VC-TR1/2M-PEA-S66-SET    | 1607191   | 5           |
|                                                                                                                                                    | VC1    | 2            | 12                           | VC-TR2/3M-PEA-S666-SET   | 1607202   | 5           |
|                                                                                                                                                    | VC2    | 3            | 18                           | VC-TR3/4M-PEA-S6666-SET  | 1607215   | 5           |
|                                                                                                                                                    | VC3    | 4            | 24                           | VC-TR4/5M-PEA-S66666-SET | 1607226   | 5           |
|                                                                                                                                                    | VC4    | 5            | 30                           |                          |           |             |
| <b>Contact insert set</b> , consisting of: frame, four mounting screws and pre-assembled 8-pos. modules with screw connection, six coding profiles |        |              |                              | VC-TR1/2M-PEA-S888-SET   | 1607239   | 5           |
|                                                                                                                                                    | VC1    | 2            | 16                           | VC-TR2/3M-PEA-S888-SET   | 1607250   | 5           |
|                                                                                                                                                    | VC2    | 3            | 24                           | VC-TR3/4M-PEA-S8888-SET  | 1607263   | 5           |
|                                                                                                                                                    | VC3    | 4            | 32                           | VC-TR4/5M-PEA-S88888-SET | 1607274   | 5           |
|                                                                                                                                                    | VC4    | 5            | 40                           |                          |           |             |
| <b>Sleeve contact insert module</b> , with PE conductor connection to the metal sleeve housing and integrated sleeve frame                         |        |              |                              |                          |           |             |
|                                                                                                                                                    | VC2    |              | 4                            |                          |           |             |
|                                                                                                                                                    | VC3    |              | 5                            |                          |           |             |
|                                                                                                                                                    | VC4    |              | 7                            |                          |           |             |
| <b>Sleeve contact insert module</b> , with PE conductor connection to the metal sleeve housing                                                     |        |              |                              |                          |           |             |
| One extra module                                                                                                                                   | VC3    | 3            | 4                            |                          |           |             |
| Two extra modules                                                                                                                                  | VC4    | 3            | 4                            |                          |           |             |
| One extra module                                                                                                                                   | VC4    | 4            | 5                            |                          |           |             |
| <b>Contact insert module</b> , marking on screw connection:                                                                                        |        |              |                              |                          |           |             |
| 1 ... 2                                                                                                                                            |        | 1            | 2                            |                          |           |             |
| 1 ... 6                                                                                                                                            |        | 1            | 6                            |                          |           |             |
| 1 ... 8                                                                                                                                            |        | 1            | 8                            |                          |           |             |
| <b>Contact insert module</b> , marking on screw connection:                                                                                        |        |              |                              |                          |           |             |
| PE, 2                                                                                                                                              |        | 1            | 2                            |                          |           |             |
| PE, 2 ... 6                                                                                                                                        |        | 1            | 6                            |                          |           |             |
| PE, 2 ... 8                                                                                                                                        |        | 1            | 8                            |                          |           |             |
| <b>Sleeve frame</b> , with PE, for contact insert modules in metal sleeves and operating voltages > 42 V                                           |        |              |                              |                          |           |             |
|                                                                                                                                                    | VC1    | 2            |                              |                          |           |             |
|                                                                                                                                                    | VC2    | 3            |                              |                          |           |             |
|                                                                                                                                                    | VC3    | 4            |                              |                          |           |             |
|                                                                                                                                                    | VC4    | 5            |                              |                          |           |             |





Power contact insert modules



Contact insert modules



Hood frames with PE

### Technical data

690  
70  
0.5 mm<sup>2</sup> ... 16 mm<sup>2</sup>  
≥ 50

### Technical data

| VC-TFS 2  | VC-TFS 6     | VC-TFS 8     |
|-----------|--------------|--------------|
| 400       | 250          | 160          |
| 20        | 10           | 10           |
| 0.2 ... 4 | 0.14 ... 1.5 | 0.14 ... 1.5 |
| ≥ 100     | ≥ 100        | ≥ 100        |

### Technical data

-  
-  
0.5 mm<sup>2</sup> ... 4 mm<sup>2</sup> (for PE conductor)  
-

### Ordering data

| Type            | Order No. | Pcs. / Pkt. |
|-----------------|-----------|-------------|
| VC-TFS 4-PEA    | 1607467   | 5           |
| VC-TFS 5-PEA    | 1607474   | 5           |
| VC-TFS 7-PEA    | 1607481   | 5           |
| VC-TFS 4/1M-PEA | 1607488   | 5           |
| VC-TFS 4/2M-PEA | 1607495   | 5           |
| VC-TFS 5/1M-PEA | 1607502   | 5           |

### Ordering data

| Type        | Order No. | Pcs. / Pkt. |
|-------------|-----------|-------------|
| VC-TFS 2    | 1852846   | 50          |
| VC-TFS 6    | 1853476   | 50          |
| VC-TFS 8    | 1852820   | 50          |
| VC-TFS 2-PE | 1583513   | 50          |
| VC-TFS 6-PE | 1583526   | 50          |
| VC-TFS 8-PE | 1583536   | 50          |

### Ordering data

| Type          | Order No. | Pcs. / Pkt. |
|---------------|-----------|-------------|
| VC-TR1/2M-PEA | 1607059   | 5           |
| VC-TR2/3M-PEA | 1607062   | 5           |
| VC-TR3/4M-PEA | 1607075   | 5           |
| VC-TR4/5M-PEA | 1607088   | 5           |

# Rectangular plug-in connectors

## Sleeve plug-in connectors

### Sleeve housing



- There is no need for a panel mounting base with standard panel feed-throughs.
- Seal housing directly to the wall with two attachment screws.

This screw locking is:

- Space-saving
- Easily accessible from above
- Vibration-resistant
- Conformant with requirements for protection up to IP69K
- Knurled head screw for fixing without tools
- Cylinder head screw for operation with standard bladed screwdriver

#### Advantages:

- Angled cable outlet so the cable can be routed as desired, from the side and straight
- Aluminum housing with extended cabling space for high-position and power contact inserts
- This allows space for M32 cable glands
- Housings with two cable inlets are available

For EMC applications:

- Conductive seals
- Mounting panel must also be conductive

#### Notes:

For dimensional drawings, see from page 58

For cable glands, see from page 42



Die-cast aluminum sleeve housing with metric cable outlet

#### Technical data

##### Cylinder head locking

IP65/IP68/IP69K  
NBR, conductive

##### Knurled head locking

IP65/IP68/IP69K  
NBR, conductive

#### Ordering data

##### Order No.

##### Pcs. / Pkt.

##### Order No.

##### Pcs. / Pkt.

##### Cylinder head locking

##### Knurled head locking

#### Sleeve housing, with metric cable outlet and screw locking

|     |               |
|-----|---------------|
| VC1 | M20 x 1.5     |
| VC1 | M25 x 1.5     |
| VC2 | M20 x 1.5     |
| VC2 | M25 x 1.5     |
| VC3 | M25 x 1.5     |
| VC3 | M25/M20 x 1.5 |
| VC3 | M32 x 1.5     |
| VC4 | M25 x 1.5     |
| VC4 | M25/M20 x 1.5 |
| VC4 | M32 x 1.5     |

#### Sleeve housing, with metric cable outlet and screw locking

|     |     |
|-----|-----|
| VC1 | M20 |
| VC2 | M25 |
| VC3 | M25 |
| VC4 | M25 |

#### Sleeve housing, with Pg screw connection gland and screw locking

|     |      |
|-----|------|
| VC1 | Pg16 |
| VC2 | Pg21 |
| VC3 | Pg21 |
| VC4 | Pg21 |

#### Sleeve housing, black, locking screws with Allen screw head, housing material:

|     |     |      |
|-----|-----|------|
| PA  | VC2 | Pg29 |
| PBT | VC3 | Pg29 |

#### Sleeve housing, plastic, locking screws with plus/minus head

|     |               |
|-----|---------------|
| VC2 | 6 x 20.5 mm   |
| VC2 | 7.5 x 29.5 mm |
| VC2 | 6 x 24 mm     |
| VC2 | 9 x 35 mm     |



Polyamide sleeve housing  
with metric cable outlet



Polyamide sleeve housing,  
with Pg screw connection gland



Special types



| Technical data        |             |                      |             |
|-----------------------|-------------|----------------------|-------------|
| Cylinder head locking |             | Knurled head locking |             |
| IP65                  |             | IP65                 |             |
| EPDM                  |             | EPDM                 |             |
| Ordering data         |             |                      |             |
| Order No.             | Pcs. / Pkt. | Order No.            | Pcs. / Pkt. |
| Cylinder head locking |             | Knurled head locking |             |

| Technical data        |             |                      |             |
|-----------------------|-------------|----------------------|-------------|
| Cylinder head locking |             | Knurled head locking |             |
| IP67                  |             | IP67                 |             |
| EPDM                  |             | EPDM                 |             |
| Ordering data         |             |                      |             |
| Order No.             | Pcs. / Pkt. | Order No.            | Pcs. / Pkt. |
| Cylinder head locking |             | Knurled head locking |             |

| Technical data       |             |                                  |             |
|----------------------|-------------|----------------------------------|-------------|
| Power sleeve housing |             | Flat-ribbon cable sleeve housing |             |
| IP65, IP67, IP68     |             | IP54                             |             |
| NBR                  |             | EPDM                             |             |
| Ordering data        |             |                                  |             |
| Order No.            | Pcs. / Pkt. | Order No.                        | Pcs. / Pkt. |
| Power sleeve housing |             | Flat-ribbon cable sleeve housing |             |

|         |   |         |   |
|---------|---|---------|---|
| 1852935 | 5 | 1855097 | 5 |
| 1852948 | 5 | 1855107 | 5 |
| 1852961 | 5 | 1855120 | 5 |
| 1852974 | 5 | 1855133 | 5 |

|  |  |  |  |
|--|--|--|--|
|  |  |  |  |
|--|--|--|--|

|  |  |  |  |
|--|--|--|--|
|  |  |  |  |
|--|--|--|--|

|  |  |  |  |
|--|--|--|--|
|  |  |  |  |
|--|--|--|--|

|         |   |         |   |
|---------|---|---------|---|
| 1852930 | 5 | 1855092 | 5 |
| 1852943 | 5 | 1855102 | 5 |
| 1852956 | 5 | 1855115 | 5 |
| 1852969 | 5 | 1855128 | 5 |

|         |   |  |  |
|---------|---|--|--|
| 1583880 | 1 |  |  |
| 1424368 | 1 |  |  |

|         |    |
|---------|----|
| 1607703 | 10 |
| 1607680 | 10 |
| 1607677 | 10 |
| 1607693 | 10 |

# Rectangular plug-in connectors

## Contact carriers and contacts

### FO contact insert modules with screw connection



The fiber optic modules of VARIOCON enable optical signal transmission over distances of up to 50 m by using polymer fiber optic cables.

Quick-assembly on the connector side and passive panel feed-through make assembly possible in 2 minutes, even in the field.

The single core is stripped, fixed in the ferrule with the knurled screw and then polished for the optical connection.

#### Coding:

The FO contact insert modules can be additionally protected against incorrect plugging with the red CP-HCC 4 coding profiles (Order No. 1600027).

#### Instructions for the fiber optic module

- Do not exceed the permissible bending radii for fiber optics
- Follow the instructions on the package slip when handling individual conductors
- Using a passive coupling reduces the transmission range by approx. 10 m

#### Notes:

Other fiber optic accessories and cables can be found from page 126



Contact insert module ferrules with F-SMA screw connection

| Material data                           |                               |
|-----------------------------------------|-------------------------------|
| Contact material                        | Nickel silver                 |
| Contact carrier material                | PA                            |
| Inflammability class in acc. with UL 94 | V0                            |
| Mechanical data                         |                               |
| Connection profile                      | F-SMA type 905, IEC 874-2     |
| Torque value knurled screw              | 0.1 Nm (hand tight)           |
| Connection data                         |                               |
| Stripping length                        | 12 [mm]                       |
| Cable type                              | Polymer fiber (980 / 1000 µm) |
| Insertion/withdrawal cycles             | > 100                         |
| Attenuation                             | < 3 dB                        |
| Temperature data                        |                               |
| Ambient temperature (operation)         | -20 °C ... 70 °C              |

#### Technical data

|                           |
|---------------------------|
| Nickel silver             |
| PA                        |
| V0                        |
| F-SMA type 905, IEC 874-2 |
| 0.1 Nm (hand tight)       |

|                               |
|-------------------------------|
| 12 [mm]                       |
| Polymer fiber (980 / 1000 µm) |
| > 100                         |
| < 3 dB                        |

|                  |
|------------------|
| -20 °C ... 70 °C |
|------------------|

#### Ordering data

| Type      | Order No. | Pcs. / Pkt. |
|-----------|-----------|-------------|
| VC-TFOS 2 | 1855814   | 10          |
|           |           |             |
|           |           |             |
|           |           |             |

#### Accessories

|                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------|
| <b>Stripping tool</b> for FO cables                                                                             |
| <b>Polisher</b> , metal, for repeated preparation of VARIOCON fiber optic ferrules                              |
| <b>Polymer fiber polishing set</b> for quick mounting connectors, comprising polishing pads and polishing disks |

|                     |         |   |
|---------------------|---------|---|
| PSM-FO-STRIP        | 2744199 | 1 |
| VC-POLISHER/M FSMA  | 1884982 | 1 |
| PSM-SET-FSMA-POLISH | 2799348 | 1 |





Mounting contact insert



F-SMA quick mounting plug for polymer fiber cables



F-SMA quick mounting plug for polymer fiber cables



## Technical data

Nickel silver  
PA  
V0

F-SMA type 905, IEC 874-2  
0.1 Nm (hand tight)

12  
Polymer fiber (980 / 1000 µm)  
> 100  
< 3 dB

-20 °C ... 70 °C

## Ordering data

| Type      | Order No. | Pcs. / Pkt. |
|-----------|-----------|-------------|
| VC-AFOS 2 | 1885240   | 10          |

## Accessories

|  |  |  |
|--|--|--|
|  |  |  |
|  |  |  |



## Technical data

Nickel silver  
-  
-

F-SMA type 905, IEC 874-2  
0.1 Nm (hand tight)

12  
Polymer fiber (980 / 1000 µm)  
> 100  
< 3 dB

-20 °C ... 70 °C

## Ordering data

| Type            | Order No. | Pcs. / Pkt. |
|-----------------|-----------|-------------|
| VC-FSMA-M-2 SET | 1855432   | 1           |

## Accessories

|                     |         |   |
|---------------------|---------|---|
| PSM-FO-STRIP        | 2744199 | 1 |
| VC-POLISHER/M FSMA  | 1884982 | 1 |
| PSM-SET-FSMA-POLISH | 2799348 | 1 |



## Technical data

Nickel silver  
-  
-

F-SMA type 905, IEC 874-2  
0.1 Nm (hand tight)

-  
Polymer fiber (980 / 1000 µm)  
> 100  
< 3 dB

-20 °C ... 70 °C

## Ordering data

| Type               | Order No. | Pcs. / Pkt. |
|--------------------|-----------|-------------|
| VC-FSMA-M-KT-2 SET | 1855703   | 1           |

## Accessories

|                     |         |   |
|---------------------|---------|---|
| PSM-FO-STRIP        | 2744199 | 1 |
| VC-POLISHER/M FSMA  | 1884982 | 1 |
| PSM-SET-FSMA-POLISH | 2799348 | 1 |

# Rectangular plug-in connectors

## Contact carriers and contacts

### Contact carriers for turned and rolled crimp contacts



- 15, 30, 50, and 65 positions are available, in accordance with housing sizes VC 1 - VC 4
- Pin and socket contacts can be used on both the connector and device sides
- Contact carriers additionally have two pre-mating protective ground contacts
- Connection data is 250 V/10 A and corresponds to that of the HEAVYCON DD series.
- Use of turned and even rolled contacts
- Contact types meet the requirements of IEC 60352/DIN EN 60352

#### Safety note:

- PE conductor must always be connected to the directly opposite positions
- Connectors may only be operated when not under load.



Pin contact carrier  
for turned and rolled contacts



#### Technical data

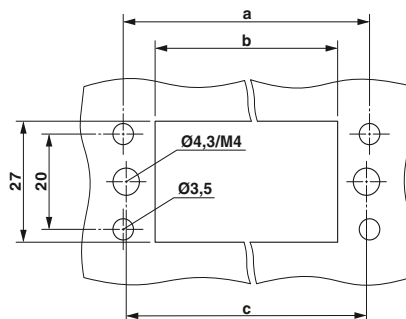
|                                              |                    |                                                         |
|----------------------------------------------|--------------------|---------------------------------------------------------|
| Electrical data in acc. with IEC 61076-2-101 |                    |                                                         |
| Rated voltage                                | [V]                | 250                                                     |
| Rated surge voltage                          | [kV]               | 4                                                       |
| Rated current                                | [A]                | 10                                                      |
| Surge voltage category / pollution degree    |                    | III / 2                                                 |
| Material data                                |                    |                                                         |
| Contact carrier material                     |                    | PA-GF                                                   |
| Connection data                              |                    |                                                         |
| Stripping length                             | [mm]               | 8                                                       |
| Connection cross section                     | [mm <sup>2</sup> ] | 0.14 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (stranded) |
| Connection cross section                     | AWG                | 22 ... 16                                               |
| Temperature data                             |                    |                                                         |
| Ambient temperature (operation)              |                    | -40 °C ... 125 °C                                       |

#### Ordering data

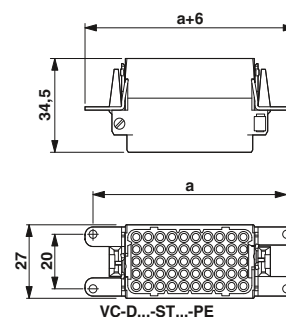
| Description                                                                                                                  | Design | Number of positions Incl. PE | Type          | Order No. | Pcs. / Pkt. |
|------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------|---------------|-----------|-------------|
| <b>Contact carrier</b> , with four ST 2,9 fastening screws                                                                   |        |                              |               |           |             |
|                                                                                                                              | VC1    | 15                           | VC-D1-ST15-PE | 1855018   | 10          |
|                                                                                                                              | VC2    | 30                           | VC-D2-ST30-PE | 1855021   | 10          |
|                                                                                                                              | VC3    | 50                           | VC-D3-ST50-PE | 1855034   | 10          |
|                                                                                                                              | VC4    | 65                           | VC-D4-ST65-PE | 1855047   | 10          |
| <b>Mounting flange</b> , to screw the contact insert to the housing panel                                                    |        |                              |               |           |             |
|                                                                                                                              |        |                              | VC-D-AF       | 1855319   | 20          |
| <b>Coding pins</b> , with ST2,9 thread for sleeve housings, to prevent identical plug-in connectors from being confused      |        |                              |               |           |             |
|                                                                                                                              |        |                              | VC-CB-T       | 1607884   | 10          |
| <b>Coding pins</b> , with M3 thread for VC panel mounting bases, to prevent identical plug-in connectors from being confused |        |                              |               |           |             |
|                                                                                                                              |        |                              | VC-CB-A       | 1607888   | 10          |

| Design | Number of positions | a [mm] | b [mm] | c [mm] |
|--------|---------------------|--------|--------|--------|
| VC 1   | 15                  | 42.8   | 31.5   | 40.0   |
| VC 2   | 30                  | 57.8   | 46.5   | 55.0   |
| VC 3   | 50                  | 72.8   | 61.5   | 70.0   |
| VC 4   | 65                  | 87.8   | 76.5   | 85.0   |

Dimensions table



Mounting cutout for VC-D...-PE



VC-D...-ST...-PE



Socket contact carrier,  
for turned contacts



Socket carrier,  
for rolled contacts



### Technical data

250  
4  
10  
III / 2  
PA-GF  
8  
0.14 mm<sup>2</sup> ... 1.5 mm<sup>2</sup> (stranded)  
22 ... 16  
-40 °C ... 125 °C

### Ordering data

| Type          | Order No. | Pcs. / Pkt. |
|---------------|-----------|-------------|
| VC-D1-BU15-PE | 1855050   | 10          |
| VC-D2-BU30-PE | 1855063   | 10          |
| VC-D3-BU50-PE | 1855076   | 10          |
| VC-D4-BU65-PE | 1855089   | 10          |
| VC-D-AF       | 1855319   | 20          |
| VC-CB-T       | 1607884   | 10          |
| VC-CB-A       | 1607888   | 10          |

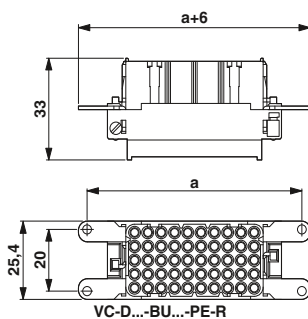
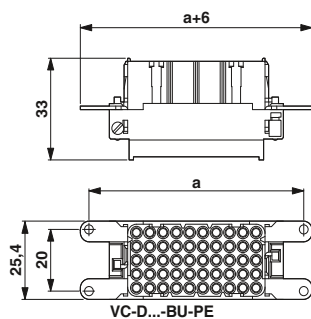


### Technical data

250  
4  
10  
III / 2  
PA-GF  
8  
0.14 mm<sup>2</sup> ... 1.5 mm<sup>2</sup> (stranded)  
22 ... 16  
-40 °C ... 125 °C

### Ordering data

| Type            | Order No. | Pcs. / Pkt. |
|-----------------|-----------|-------------|
| VC-D1-BU15-PE-R | 1884801   | 10          |
| VC-D2-BU30-PE-R | 1884791   | 10          |
| VC-D3-BU50-PE-R | 1884788   | 10          |
| VC-D4-BU65-PE-R | 1884775   | 10          |
| VC-D-AF         | 1855319   | 20          |
| VC-CB-T         | 1607884   | 10          |
| VC-CB-A         | 1607888   | 10          |



# Rectangular plug-in connectors

## Contact carriers and contacts

### Crimp contacts

The quality of a crimp connection is specified in DIN EN 60352 Part 2. The single most important criterion for the reliability of a crimp connection is the holding force of the litz wires in the crimp contact. DIN EN 60352-2 describes the extraction force of the cores from the crimp contact in relation to the conductor cross section.

|                                                                                               |
|-----------------------------------------------------------------------------------------------|
| <b>Notes:</b>                                                                                 |
| For voltages less than 5 V and currents less than 5 mA, gold-plated contacts are recommended. |
| Crimping pliers can be found in Catalog 4, in the "Heavy-duty plug-in connectors" section.    |



**Turned crimp contacts,  
Ø 1.6 mm, for VC-D contact carriers**



**Rollled crimp contacts, taped,  
Ø 1.6 mm, for VC-D...R contact carriers,  
contact entry from left**



|                                         |
|-----------------------------------------|
| <b>Material data</b>                    |
| Contact material                        |
| Stripping length of the individual wire |
| Insertion/withdrawal cycles             |
| Ambient temperature (operation)         |

| Technical data                              |                                             |
|---------------------------------------------|---------------------------------------------|
| Hard silver-plated                          | Hard gold-plated                            |
| Copper alloy                                | Copper alloy                                |
| 8 mm (6 mm in case of 2.5 mm <sup>2</sup> ) | 8 mm (6 mm in case of 2.5 mm <sup>2</sup> ) |
| ≥ 500                                       | ≥ 500                                       |
| -40 °C ... 125 °C                           | -40 °C ... 125 °C                           |

| Technical data         |                        |
|------------------------|------------------------|
| <b>CK1,6-BR-0,5...</b> | <b>CK1,6-BR-1,5...</b> |
| Copper alloy           | Copper alloy           |
| 3 mm +1                | 3.5 mm +1              |
| ≥ 500                  | ≥ 500                  |
| -40 °C ... 125 °C      | -40 °C ... 125 °C      |

| Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Turned socket contacts</b> , silver-plated contact surface,<br>for conductor cross section:<br>0.14 mm <sup>2</sup> ... 0.37 mm <sup>2</sup> /26 ... 22 AWG<br>0.50 mm <sup>2</sup> / AWG 20<br>0.75 mm <sup>2</sup> / AWG 18<br>0.75 mm <sup>2</sup> ... 1.00 mm <sup>2</sup> / AWG 18<br>1.50 mm <sup>2</sup> / AWG 16<br>2.50 mm <sup>2</sup> / AWG 14<br><b>Turned pin contacts</b> , silver-plated contact surface,<br>for conductor cross section:<br>0.14 mm <sup>2</sup> ... 0.37 mm <sup>2</sup> / AWG 26 ... 22<br>0.50 mm <sup>2</sup> / AWG 20<br>0.75 mm <sup>2</sup> / AWG 18<br>0.75 mm <sup>2</sup> ... 1.00 mm <sup>2</sup> / AWG 18<br>1.50 mm <sup>2</sup> / AWG 16<br>2.50 mm <sup>2</sup> / AWG 14<br><b>Turned socket contacts</b> , gold-plated contact surface,<br>for conductor cross section:<br>0.14 mm <sup>2</sup> ... 0.37 mm <sup>2</sup> /26 ... 22 AWG<br>0.50 mm <sup>2</sup> / AWG 20<br>0.75 mm <sup>2</sup> / AWG 18<br>0.75 mm <sup>2</sup> ... 1.00 mm <sup>2</sup> / AWG 18<br>1.50 mm <sup>2</sup> / AWG 16<br>2.50 mm <sup>2</sup> / AWG 14<br><b>Turned pin contacts</b> , gold-plated contact surface,<br>for conductor cross section:<br>0.14 mm <sup>2</sup> ... 0.37 mm <sup>2</sup> / AWG 26 ... 22<br>0.50 mm <sup>2</sup> / AWG 20<br>0.75 mm <sup>2</sup> / AWG 18<br>0.75 mm <sup>2</sup> ... 1.00 mm <sup>2</sup> / AWG 18<br>1.50 mm <sup>2</sup> / AWG 16<br>2.50 mm <sup>2</sup> / AWG 14<br><b>Rollled pin contacts</b> , silver-plated contact surface,<br>for conductor cross section:<br>0.14 mm <sup>2</sup> ... 0.50 mm <sup>2</sup> / AWG 26 ... 20<br>0.50 mm <sup>2</sup> ... 1.50 mm <sup>2</sup> / AWG 20 ... 16<br><b>Rollled socket contacts</b> , silver-plated contact surface,<br>for conductor cross section:<br>0.14 mm <sup>2</sup> ... 0.50 mm <sup>2</sup> / AWG 26 ... 20<br>0.50 mm <sup>2</sup> ... 1.50 mm <sup>2</sup> / AWG 20 ... 16<br><b>POF fiber optic contact</b> , turned, for VC-D contact carriers |
| Socket                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Plug                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

| Ordering data      |           |             |
|--------------------|-----------|-------------|
| Type               | Order No. | Pcs. / Pkt. |
| CK1,6-ED-0,37BU AG | 1663394   | 100         |
| CK1,6-ED-0,50BU AG | 1663404   | 100         |
| CK1,6-ED-0,75BU AG | 1663417   | 100         |
| CK1,6-ED-1,00BU AG | 1663420   | 100         |
| CK1,6-ED-1,50BU AG | 1663433   | 100         |
| CK1,6-ED-2,50BU AG | 1663446   | 100         |
| CK1,6-ED-0,37ST AG | 1663336   | 100         |
| CK1,6-ED-0,50ST AG | 1663349   | 100         |
| CK1,6-ED-0,75ST AG | 1663352   | 100         |
| CK1,6-ED-1,00ST AG | 1663365   | 100         |
| CK1,6-ED-1,50ST AG | 1663378   | 100         |
| CK1,6-ED-2,50ST AG | 1663381   | 100         |
| CK1,6-ED-0,37BU AU | 1674969   | 100         |
| CK1,6-ED-0,50BU AU | 1674480   | 100         |
| CK1,6-ED-0,75BU AU | 1672440   | 100         |
| CK1,6-ED-1,00BU AU | 1674943   | 100         |
| CK1,6-ED-1,50BU AU | 1674930   | 100         |
| CK1,6-ED-2,50BU AU | 1674985   | 100         |
| CK1,6-ED-0,37ST AU | 1674901   | 100         |
| CK1,6-ED-0,50ST AU | 1672453   | 100         |
| CK1,6-ED-0,75ST AU | 1674914   | 100         |
| CK1,6-ED-1,00ST AU | 1674888   | 100         |
| CK1,6-ED-1,50ST AU | 1674875   | 100         |
| CK1,6-ED-2,50ST AU | 1674927   | 100         |

| Ordering data      |           |             |
|--------------------|-----------|-------------|
| Type               | Order No. | Pcs. / Pkt. |
| CK1,6-BR-0,50ST AG | 1884157   | 2000        |
| CK1,6-BR-1,50ST AG | 1884144   | 2000        |
| CK1,6-BR-0,50BU AG | 1884186   | 2000        |
| CK1,6-BR-1,50BU AG | 1884173   | 2000        |



**Crimp contacts for fiber optic cables,  
polymer fibers (POF)**



| Technical data |
|----------------|
| Nickel silver  |
| -              |
| ≥ 500          |
| -              |

[illegible]





Plastic cable screw connections are easy to install and cover a wide range of conductor diameters, thanks to the clamping cage principle combined with excellent strain relief. They are suitable for universal application in mechanical and plant engineering, in measuring and control technology, in automation and electrical engineering and in robot construction.

- Full screw connection for use in housing with thread
- High strain relief forces and high cable diameter ranges thanks to clamping cage principle
- Brass screw connections for especially high demands in terms of stability and safety
- EMC screw connections offer an easy way of connecting shielded cables
- Easy to assemble thanks to highly elastic contact springs
- AS-Interface screw connections are available for inserting AS-Interface cables



Plastic gland



#### Technical data

|                                         |
|-----------------------------------------|
| <b>Material data</b>                    |
| Cable gland material                    |
| Material, insert                        |
| Seal material                           |
| Material, O-ring                        |
| Inflammability class according to UL 94 |
| <b>Mechanical data</b>                  |
| Degree of protection                    |
| <b>Temperature data</b>                 |
| Ambient temperature (operation)         |

Polyamide  
-  
Neoprene  
-  
V2

IP68, to 5 bar

-20 °C ... 100 °C

#### Ordering data

| Description                                                                   | Thread type |
|-------------------------------------------------------------------------------|-------------|
| <b>Plastic gland, gray,</b><br>for cable diameter [mm]:                       |             |
| 8 mm ... 13 mm                                                                | M20         |
| 11 mm ... 17 mm                                                               | M25         |
| 15 mm ... 21 mm                                                               | M32         |
| <b>Metal gland,</b><br>for conductor diameter [mm]:                           |             |
| 9 mm ... 13 mm                                                                | M20         |
| 11 mm ... 16 mm                                                               | M20         |
| 11 mm ... 16 mm                                                               | M25         |
| 14 mm ... 21 mm                                                               | M25         |
| 14 mm ... 21 mm                                                               | M32         |
| 19 mm ... 27 mm                                                               | M32         |
| <b>EMC screw connection,</b><br>for conductor diameter [mm]:                  |             |
| 7 mm ... 12.5 mm                                                              | M20         |
| 9 mm ... 16.5 mm                                                              | M25         |
| 11 mm ... 21 mm                                                               | M32         |
| <b>Metal gland,</b><br>for AS-Interface flat-ribbon conductor                 |             |
| Thread type: M20                                                              | M20         |
| Thread type: M25                                                              | M25         |
| <b>Special cable screw connection M25, brass</b><br>With 10 mm and 11 mm hole | M25         |

| Type                      | Order No.      | Pcs. / Pkt. |
|---------------------------|----------------|-------------|
| <b>HC-K-KV-M20(8-13)</b>  | <b>1690626</b> | 25          |
| <b>HC-K-KV-M25(11-17)</b> | <b>1690639</b> | 25          |
| <b>HC-K-KV-M32(15-21)</b> | <b>1690642</b> | 10          |
|                           |                |             |
|                           |                |             |
|                           |                |             |
|                           |                |             |
|                           |                |             |
|                           |                |             |
|                           |                |             |



Metal gland



EMC gland



| Technical data      |                     |
|---------------------|---------------------|
| Nickel-plated brass | Nickel-plated brass |
| PA                  | PA                  |
| Neoprene            | TPE                 |
| NBR                 | NBR                 |
| -                   | -                   |
| IP68, to 5 bar      | IP65                |
| -20 °C ... 100 °C   | -20 °C ... 100 °C   |

| Ordering data |           |             |
|---------------|-----------|-------------|
| Type          | Order No. | Pcs. / Pkt. |

|                    |         |    |
|--------------------|---------|----|
| HC-M-KV-M20(9-13)  | 1690561 | 25 |
| HC-M-KV-M20(11-16) | 1645998 | 25 |
| HC-M-KV-M25(11-16) | 1690574 | 25 |
| HC-M-KV-M25(14-21) | 1646007 | 25 |
| HC-M-KV-M32(14-21) | 1690587 | 10 |
| HC-M-KV-M32(19-27) | 1646010 | 10 |

|                   |         |    |
|-------------------|---------|----|
| HC-M-KV-M20(1ASI) | 1584017 | 10 |
| HC-M-KV-M25(1ASI) | 1584020 | 10 |

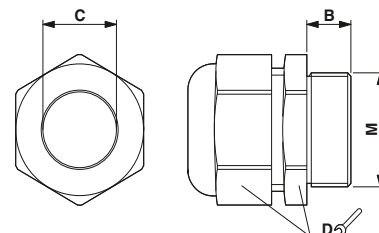
|                        |         |    |
|------------------------|---------|----|
| HC-M-KV-M25(1X10/1X11) | 1580228 | 10 |
|------------------------|---------|----|

| Technical data      |  |
|---------------------|--|
| Nickel-plated brass |  |
| PA                  |  |
| Neoprene            |  |
| NBR                 |  |
| -                   |  |
| IP68, to 5 bar      |  |
| -20 °C ... 100 °C   |  |

| Ordering data |           |             |
|---------------|-----------|-------------|
| Type          | Order No. | Pcs. / Pkt. |

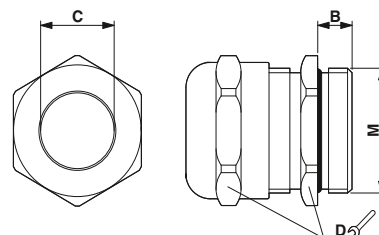
|                       |         |    |
|-----------------------|---------|----|
| HC-EMV-KV-M20(7-12,5) | 1690503 | 25 |
| HC-EMV-KV-M25(9-16,5) | 1690516 | 25 |
| HC-EMV-KV-M32(11-21)  | 1690529 | 25 |

| Type           | Dimensions [mm] |      | Thread |    |
|----------------|-----------------|------|--------|----|
|                | B               | C    | M      | D  |
| HC-K-KV-M20... | 8               | 13.5 | 20     | 24 |
| HC-K-KV-M25... | 8               | 17.5 | 25     | 29 |
| HC-K-KV-M32... | 10              | 21.5 | 32     | 36 |



Dimensional drawing: HC-K-KV-M...

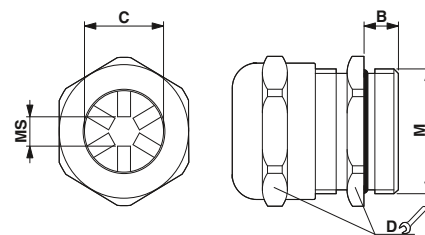
| Type                 | Dimensions [mm] |      | Thread |    |
|----------------------|-----------------|------|--------|----|
|                      | B               | C    | M      | D  |
| HC-M-KV-M20(9-13)    | 6               | 13.3 | 20     | 22 |
| HC-M-KV-M20(11-16)   | 6               | 16.2 | 20     | 27 |
| HC-M-KV-M25(11-16)   | 7               | 17.3 | 25     | 27 |
| HC-M-KV-M25(14-21)   | 7               | 21.2 | 25     | 34 |
| HC-M-KV-M32(14-21)   | 8               | 21.3 | 32     | 34 |
| HC-M-KV-M32(19-27)   | 8               | 27.5 | 32     | 43 |
| HC-M-KV-M20(1ASI)    | 6               | -    | 20     | 22 |
| HC-M-KV-M25(1ASI)    | 7               | -    | 25     | 27 |
| HC-M-KV-M25(1X10X11) | 7               | -    | 25     | 34 |



Dimensional drawing: HC-M-KV-M...

| Type             | Dimensions [mm] |      |    |                  |    |
|------------------|-----------------|------|----|------------------|----|
|                  | B               | C    | M  | MS <sup>1)</sup> | D  |
| HC-EMV-KV-M20... | 8               | 12.5 | 20 | 5                | 24 |
| HC-EMV-KV-M25... | 8               | 16.5 | 25 | 7.5              | 29 |
| HC-EMV-KV-M32... | 9               | 21.0 | 32 | 9                | 36 |

<sup>1)</sup> Minimum shield diameter



Dimensional drawing: HC-EMV-KV-M...

# Rectangular plug-in connectors

## Screw connections and accessories

### Pg16 cable glands for one cable



**Screw connection  
with plastic pressure screw**



**Screw connection  
with brass pressure screw,  
EMC screw connections with iris spring**



#### Technical data

|                                 |                   |
|---------------------------------|-------------------|
| Material data                   |                   |
| Sealing material                | TPE               |
| Cable gland material            | -                 |
| Material, pressure screw        | Polyamide         |
| Degree of protection            | IP67              |
| Torque                          | 5.00 [Nm]         |
| Ambient temperature (operation) | -20 °C ... 100 °C |

#### Ordering data

| Description | Cable Ø [mm] |
|-------------|--------------|
|-------------|--------------|

**Cable screw connection gland**, for adapting the Pg half screw connections to metric cable entry, M25

**Half screw connection Pg16**, consisting of rubber seal with a hole and a pressure screw, for type VC1 housing

|                |                         |
|----------------|-------------------------|
| 4 ... 6.5      | VC-K-KV-PG16( 4- 6,5)   |
| 5 ... 8        | VC-K-KV-PG16( 5- 8)     |
| 6,5 ... 9.5    | VC-K-KV-PG16( 6,5- 9,5) |
| 7 ... 10.5     | VC-K-KV-PG16( 7-10,5)   |
| 9 ... 13       | VC-K-KV-PG16( 9-13)     |
| 11,5 ... 15.5  | VC-K-KV-PG16(11,5-15,5) |
| Elongated hole | VC-K-KV-PG16 7/14       |
|                | VC-K-KV-PG16 3X7        |

**EMC half screw connection Pg16**, for metal housing, consisting of rubber seal, iris spring, cone disc and pressure screw, for type VC1 housing, shield diameter:

|         |             |
|---------|-------------|
| 6.5 mm  | 6.5 ... 9.5 |
| 8.5 mm  | 7 ... 10.5  |
| 10.5 mm | 9 ... 13    |

**Closing cap**, for closing unused bore holes in multiple seals and cable glands

|         |                       |
|---------|-----------------------|
| Ø 3 mm  | SEALING PLUG 3X12 RD  |
| Ø 5 mm  | SEALING PLUG 5X12 RD  |
| Ø 6 mm  | SEALING PLUG 6X16 RD  |
| Ø 7 mm  | SEALING PLUG 7X16 RD  |
| Ø 8 mm  | SEALING PLUG 8X16 RD  |
| Ø 12 mm | SEALING PLUG 12X22 RD |

#### Technical data

|                                 |                     |
|---------------------------------|---------------------|
| Material data                   |                     |
| Sealing material                | TPE                 |
| Cable gland material            | -                   |
| Material, pressure screw        | Nickel-plated brass |
| Degree of protection            | IP67                |
| Torque                          | 7.50                |
| Ambient temperature (operation) | -40 °C ... 125 °C   |

#### Ordering data

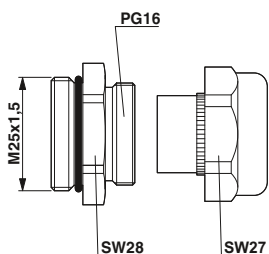
| Type | Order No. | Pcs. / Pkt. |
|------|-----------|-------------|
|------|-----------|-------------|

|                     |         |    |
|---------------------|---------|----|
| VC-M-KV-PG16/M25 ST | 1644407 | 10 |
|---------------------|---------|----|

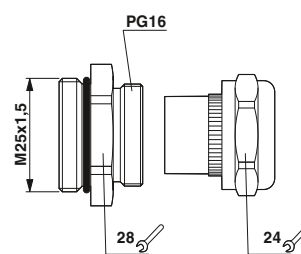
|                         |         |   |
|-------------------------|---------|---|
| VC-M-KV-PG16( 4- 6,5)   | 1853942 | 5 |
| VC-M-KV-PG16( 5- 8)     | 1853955 | 5 |
| VC-M-KV-PG16( 6,5- 9,5) | 1853968 | 5 |
| VC-M-KV-PG16( 7-10,5)   | 1853971 | 5 |
| VC-M-KV-PG16( 9-13)     | 1853984 | 5 |
| VC-M-KV-PG16(11,5-15,5) | 1854857 | 5 |
| VC-M-KV-PG16 2X6/1X7    | 1885512 | 5 |
| VC-M-KV-PG16 3X7        | 1885525 | 5 |

|                                |         |   |
|--------------------------------|---------|---|
| VC-EMV-KV-PG16( 6,5- 9,5/ 6,5) | 1854132 | 1 |
| VC-EMV-KV-PG16( 7-10,5/ 8,5)   | 1854161 | 1 |
| VC-EMV-KV-PG16( 9-13/10,5)     | 1854174 | 1 |

|                       |         |    |
|-----------------------|---------|----|
| SEALING PLUG 3X12 RD  | 1400238 | 10 |
| SEALING PLUG 5X12 RD  | 1400253 | 10 |
| SEALING PLUG 6X16 RD  | 1400254 | 10 |
| SEALING PLUG 7X16 RD  | 1400255 | 10 |
| SEALING PLUG 8X16 RD  | 1400257 | 10 |
| SEALING PLUG 12X22 RD | 1400260 | 10 |



VC-M-KV-PG16/M25 ST / VC-K-KV-PG16...



VC-M-KV-PG16/M25 ST / VC-M-KV-PG16...

## Pg21 cable glands for one cable

Screw connection  
with plastic pressure screwScrew connection  
with brass pressure screw,  
EMC screw connections with iris spring

## Technical data

|                                 |                   |
|---------------------------------|-------------------|
| Material data                   |                   |
| Sealing material                | TPE               |
| Cable gland material            | -                 |
| Material, pressure screw        | Polyamide         |
| Degree of protection            | IP67              |
| Torque                          | [Nm] 7.50         |
| Ambient temperature (operation) | -20 °C ... 100 °C |

## Ordering data

| Description | Cable Ø [mm] |
|-------------|--------------|
|-------------|--------------|

**Cable screw connection gland**, for adapting the Pg half screw connections to metric cable entry, M32

**Half screw connection Pg21**, consisting of rubber seal with a hole and a pressure screw, for type VC2 ... VC4 housing

|                |               |
|----------------|---------------|
|                | 7 ... 10.5    |
|                | 9 ... 13      |
|                | 11.5 ... 15.5 |
|                | 14 ... 18     |
|                | 17 ... 20.5   |
| Elongated hole | 20 x 7        |

**EMC half screw connection Pg21**, for metal housing, consisting of rubber seal, iris spring, cone disc and pressure screw, for type VC2 ... VC4 housing, shield diameter:

|         |               |
|---------|---------------|
| 9.5 mm  | 9 ... 13      |
| 12 mm   | 9 ... 13      |
| 13.5 mm | 11.5 ... 15.5 |
| 14.5 mm | 14 ... 18     |

**Dummy screw connection**, rubber seal without hole

**Closing cap**, for closing unused bore holes in multiple seals and cable glands

|         |
|---------|
| Ø 3 mm  |
| Ø 5 mm  |
| Ø 6 mm  |
| Ø 7 mm  |
| Ø 8 mm  |
| Ø 12 mm |
| Ø 13 mm |

## Technical data

|                     |
|---------------------|
| TPE                 |
| -                   |
| Nickel-plated brass |
| IP67                |
| 10.00               |
| -40 °C ... 125 °C   |

## Ordering data

| Type | Order No. | Pcs. / Pkt. |
|------|-----------|-------------|
|------|-----------|-------------|

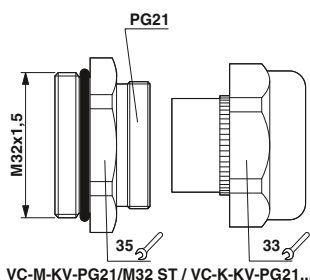
|                         |         |    |
|-------------------------|---------|----|
| VC-M-KV-PG21/M32 ST     | 1644397 | 10 |
| VC-M-KV-PG21( 7-10,5)   | 1853997 | 5  |
| VC-M-KV-PG21( 9-13)     | 1854006 | 5  |
| VC-M-KV-PG21(11,5-15,5) | 1854035 | 5  |
| VC-M-KV-PG21(14-18)     | 1854048 | 5  |
| VC-M-KV-PG21(17-20,5)   | 1854051 | 5  |
| VC-M-KV-PG21(20X 7)     | 1885305 | 5  |

|                                |         |   |
|--------------------------------|---------|---|
| VC-EMV-KV-PG21( 9-13/ 9,5)     | 1854200 | 1 |
| VC-EMV-KV-PG21( 9-13/12)       | 1854213 | 1 |
| VC-EMV-KV-PG21(11,5-15,5/13,5) | 1854242 | 1 |
| VC-EMV-KV-PG21(14-18/14,5)     | 1854255 | 1 |

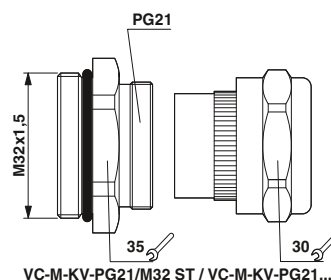
|                 |         |   |
|-----------------|---------|---|
| VC-M-KV-PG21- 0 | 1854983 | 5 |
|-----------------|---------|---|

|                       |         |    |
|-----------------------|---------|----|
| SEALING PLUG 3X12 RD  | 1400238 | 10 |
| SEALING PLUG 5X12 RD  | 1400253 | 10 |
| SEALING PLUG 6X16 RD  | 1400254 | 10 |
| SEALING PLUG 7X16 RD  | 1400255 | 10 |
| SEALING PLUG 8X16 RD  | 1400257 | 10 |
| SEALING PLUG 12X22 RD | 1400260 | 10 |
| SEALING PLUG 13X22 RD | 1400265 | 10 |

|                       |         |    |
|-----------------------|---------|----|
| SEALING PLUG 3X12 RD  | 1400238 | 10 |
| SEALING PLUG 5X12 RD  | 1400253 | 10 |
| SEALING PLUG 6X16 RD  | 1400254 | 10 |
| SEALING PLUG 7X16 RD  | 1400255 | 10 |
| SEALING PLUG 8X16 RD  | 1400257 | 10 |
| SEALING PLUG 12X22 RD | 1400260 | 10 |
| SEALING PLUG 13X22 RD | 1400265 | 10 |



VC-M-KV-PG21/M32 ST / VC-K-KV-PG21...



VC-M-KV-PG21/M32 ST / VC-M-KV-PG21...

# Rectangular plug-in connectors

## Screw connections and accessories

### Pg16 cable glands for several cables

The screw connection glands allow multiple grommets to be used.



Screw connection  
with plastic pressure screw



Screw connection  
with brass pressure screw

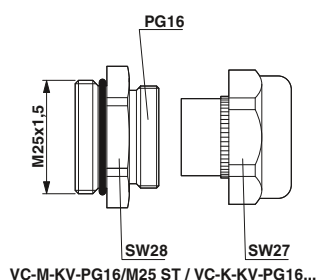


| Technical data        |                      |             |
|-----------------------|----------------------|-------------|
| VC-K-KV.../...        | VC-M-KV...ST         |             |
| -                     | Brass, nickel-plated |             |
| TPE                   | -                    |             |
| -                     | NBR                  |             |
| IP65                  | -                    |             |
| -20 °C ... 100 °C     | -                    |             |
| Ordering data         |                      |             |
| Type                  | Order No.            | Pcs. / Pkt. |
| VC-M-KV-PG16/M25 ST   | 1644407              | 10          |
| VC-K-KV-PG16 1X3/1X8  | 1885376              | 5           |
| VC-K-KV-PG16 1X3/1X9  | 1885389              | 5           |
| VC-K-KV-PG16 1X6/1X8  | 1885392              | 5           |
| VC-K-KV-PG16 1X5/1X9  | 1885402              | 5           |
| VC-K-KV-PG16 1X3/2X8  | 1885415              | 5           |
| VC-K-KV-PG16 1X5/2X6  | 1885428              | 5           |
| VC-K-KV-PG16 2X6/1X7  | 1885431              | 5           |
| VC-K-KV-PG16 3X7      | 1885444              | 5           |
| SEALING PLUG 3X12 RD  | 1400238              | 10          |
| SEALING PLUG 5X12 RD  | 1400253              | 10          |
| SEALING PLUG 6X16 RD  | 1400254              | 10          |
| SEALING PLUG 7X16 RD  | 1400255              | 10          |
| SEALING PLUG 8X16 RD  | 1400257              | 10          |
| SEALING PLUG 12X22 RD | 1400260              | 10          |
| SEALING PLUG 13X22 RD | 1400265              | 10          |

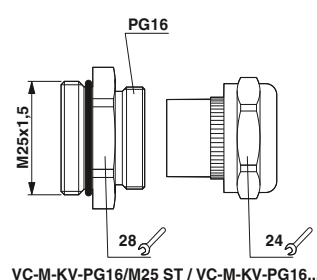


| Technical data        |                      |             |
|-----------------------|----------------------|-------------|
| VC-M-KV.../...        | VC-M-KV...ST         |             |
| Brass, nickel-plated  | Brass, nickel-plated |             |
| TPE                   | -                    |             |
| -                     | NBR                  |             |
| IP65                  | -                    |             |
| -40 °C ... 125 °C     |                      |             |
| -                     |                      |             |
| Ordering data         |                      |             |
| Type                  | Order No.            | Pcs. / Pkt. |
| VC-M-KV-PG16/M25 ST   | 1644407              | 10          |
| VC-M-KV-PG16 1X3/1X8  | 1885457              | 5           |
| VC-M-KV-PG16 1X3/1X9  | 1885460              | 5           |
| VC-M-KV-PG16 1X6/1X8  | 1885473              | 5           |
| VC-M-KV-PG16 1X5/1X9  | 1885486              | 5           |
| VC-M-KV-PG16 1X3/2X8  | 1885499              | 5           |
| VC-M-KV-PG16 1X5/2X6  | 1885509              | 5           |
| VC-M-KV-PG16 2X6/1X7  | 1885512              | 5           |
| VC-M-KV-PG16 3X7      | 1885525              | 5           |
| SEALING PLUG 3X12 RD  | 1400238              | 10          |
| SEALING PLUG 5X12 RD  | 1400253              | 10          |
| SEALING PLUG 6X16 RD  | 1400254              | 10          |
| SEALING PLUG 7X16 RD  | 1400255              | 10          |
| SEALING PLUG 8X16 RD  | 1400257              | 10          |
| SEALING PLUG 12X22 RD | 1400260              | 10          |
| SEALING PLUG 13X22 RD | 1400265              | 10          |

| Material data                                                                                                                                                |                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Material                                                                                                                                                     |                       |
| Sealing material                                                                                                                                             |                       |
| Material, O-ring                                                                                                                                             |                       |
| Degree of protection                                                                                                                                         |                       |
| Temperature data                                                                                                                                             |                       |
| Ambient temperature (operation)                                                                                                                              |                       |
| Description                                                                                                                                                  |                       |
| Cable Ø [mm]                                                                                                                                                 |                       |
| Cable screw connection gland, for adapting the Pg half screw connections to metric cable entry, M25                                                          |                       |
| Half screw connection Pg16, consisting of rubber seal with several holes and a pressure screw, for type VC1 housing and HEAVYCON, further types upon request |                       |
| 1 x 3 / 1 x 8                                                                                                                                                | VC-K-KV-PG16 1X3/1X8  |
| 1 x 3 / 1 x 9                                                                                                                                                | VC-K-KV-PG16 1X3/1X9  |
| 1 x 6 / 1 x 8                                                                                                                                                | VC-K-KV-PG16 1X6/1X8  |
| 1 x 5 / 1 x 9                                                                                                                                                | VC-K-KV-PG16 1X5/1X9  |
| 1 x 3 / 2 x 8                                                                                                                                                | VC-K-KV-PG16 1X3/2X8  |
| 1 x 5 / 2 x 6                                                                                                                                                | VC-K-KV-PG16 1X5/2X6  |
| 2 x 6 / 1 x 7                                                                                                                                                | VC-K-KV-PG16 2X6/1X7  |
| 3 x 7                                                                                                                                                        | VC-K-KV-PG16 3X7      |
| Closing cap, for closing unused bore holes in multiple seals and cable glands                                                                                |                       |
| Ø 3 mm                                                                                                                                                       | SEALING PLUG 3X12 RD  |
| Ø 5 mm                                                                                                                                                       | SEALING PLUG 5X12 RD  |
| Ø 6 mm                                                                                                                                                       | SEALING PLUG 6X16 RD  |
| Ø 7 mm                                                                                                                                                       | SEALING PLUG 7X16 RD  |
| Ø 8 mm                                                                                                                                                       | SEALING PLUG 8X16 RD  |
| Ø 12 mm                                                                                                                                                      | SEALING PLUG 12X22 RD |
| Ø 13 mm                                                                                                                                                      | SEALING PLUG 13X22 RD |



VC-M-KV-PG16/M25 ST / VC-K-KV-PG16...



VC-M-KV-PG16/M25 ST / VC-M-KV-PG16...



## Pg21 cable glands for several cables

The screw connection glands allow multiple grommets to be used.



Screw connection  
with plastic pressure screw



Screw connection  
with brass pressure screw



| Technical data                  |                   |
|---------------------------------|-------------------|
| VC-K-KV.../...                  | VC-M-KV...ST      |
| Material                        | PA                |
| Sealing material                | TPE               |
| Material, O-ring                | -                 |
| Degree of protection            | NBR               |
| Temperature data                | -                 |
| Ambient temperature (operation) | -20 °C ... 100 °C |

## Ordering data

| Type                      | Order No. | Pcs. / Pkt. |
|---------------------------|-----------|-------------|
| VC-M-KV-PG21/M32 ST       | 1644397   | 10          |
| VC-K-KV-PG21 1X6/2X9      | 1885538   | 5           |
| VC-K-KV-PG21-1X8,5/1X12   | 1885279   | 5           |
| VC-K-KV-PG21-2X4,5/1X13   | 1885282   | 5           |
| VC-K-KV-PG21 2X6/2X8      | 1885554   | 5           |
| VC-K-KV-PG21 2X7,2/1X10,5 | 1885567   | 5           |
| VC-K-KV-PG21 3X7          | 1885570   | 5           |
| VC-K-KV-PG21 3X9          | 1885583   | 5           |
| VC-K-KV-PG21 4X6,5        | 1885596   | 5           |
| VC-K-KV-PG21 4X8          | 1885606   | 5           |
| SEALING PLUG 3X12 RD      | 1400238   | 10          |
| SEALING PLUG 5X12 RD      | 1400253   | 10          |
| SEALING PLUG 6X16 RD      | 1400254   | 10          |
| SEALING PLUG 7X16 RD      | 1400255   | 10          |
| SEALING PLUG 8X16 RD      | 1400257   | 10          |
| SEALING PLUG 12X22 RD     | 1400260   | 10          |
| SEALING PLUG 13X22 RD     | 1400265   | 10          |



| Technical data                  |                      |
|---------------------------------|----------------------|
| VC-M-KV.../...                  | VC-M-KV...ST         |
| Material                        | Brass, nickel-plated |
| Sealing material                | TPE                  |
| Material, O-ring                | -                    |
| Degree of protection            | NBR                  |
| Temperature data                | -                    |
| Ambient temperature (operation) | -40 °C ... 125 °C    |

## Ordering data

| Type                      | Order No. | Pcs. / Pkt. |
|---------------------------|-----------|-------------|
| VC-M-KV-PG21/M32 ST       | 1644397   | 10          |
| VC-M-KV-PG21 1X6/2X9      | 1885619   | 5           |
| VC-M-KV-PG21-1X8,5/1X12   | 1854970   | 5           |
| VC-M-KV-PG21 2X6/2X8      | 1885635   | 5           |
| VC-M-KV-PG21 2X7,2/1X10,5 | 1885648   | 5           |
| VC-M-KV-PG21 3X7          | 1885651   | 5           |
| VC-M-KV-PG21 3X9          | 1885664   | 5           |
| VC-M-KV-PG21 4X6,5        | 1885677   | 5           |
| VC-M-KV-PG21 4X8          | 1885680   | 5           |
| SEALING PLUG 3X12 RD      | 1400238   | 10          |
| SEALING PLUG 5X12 RD      | 1400253   | 10          |
| SEALING PLUG 6X16 RD      | 1400254   | 10          |
| SEALING PLUG 7X16 RD      | 1400255   | 10          |
| SEALING PLUG 8X16 RD      | 1400257   | 10          |
| SEALING PLUG 12X22 RD     | 1400260   | 10          |
| SEALING PLUG 13X22 RD     | 1400265   | 10          |

| Material data                   |
|---------------------------------|
| Material                        |
| Sealing material                |
| Material, O-ring                |
| Degree of protection            |
| Temperature data                |
| Ambient temperature (operation) |

| Description | Cable Ø [mm] |
|-------------|--------------|
|-------------|--------------|

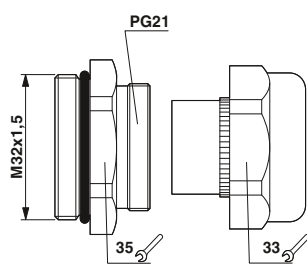
**Cable screw connection gland**, for adapting the Pg half screw connections to metric cable entry, M32

**Half screw connection Pg21**, consisting of rubber seal, several holes and a pressure screw, for type VC2 ... VC4 and HEAVYCON housing, additional types available on request

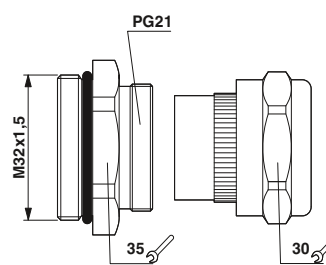
|                    |
|--------------------|
| 1 x 6 / 2 x 9      |
| 1 x 8,5 / 1 x 12   |
| 2 x 4,5 / 1 x 13   |
| 2 x 6 / 2 x 8      |
| 2 x 7,2 / 1 x 10,5 |
| 3 x 7              |
| 3 x 9              |
| 4 x 6,5            |
| 4 x 8              |

**Closing cap**, for closing unused bore holes in multiple seals and cable glands

|         |
|---------|
| Ø 3 mm  |
| Ø 5 mm  |
| Ø 6 mm  |
| Ø 7 mm  |
| Ø 8 mm  |
| Ø 12 mm |
| Ø 13 mm |



VC-M-KV-PG21/M32 ST / VC-K-KV-PG21...



VC-M-KV-PG21/M32 ST / VC-M-KV-PG21...

# Rectangular plug-in connectors

## Screw connections and accessories

### Protective covers

- Easy to assemble
- Contact inserts are protected when not plugged in



Protective cover for panel mounting bases and sleeve housings



Protective cover for panel mounting frame

Material  
Inflammability class in acc. with UL 94  
Degree of protection  
Temperature data  
Ambient temperature (operation)

PA  
V0  
IP50

-40 °C ... 80 °C

#### Technical data

#### Ordering data

| Description                                   | Design | Type     | Order No. | Pcs. / Pkt. |
|-----------------------------------------------|--------|----------|-----------|-------------|
| Protective covers, for sleeve housings        | VC1    | VC-SD-T1 | 1886728   | 5           |
|                                               | VC2    | VC-SD-T2 | 1886731   | 5           |
|                                               | VC3    | VC-SD-T3 | 1886744   | 5           |
|                                               | VC4    | VC-SD-T4 | 1886757   | 5           |
| Protective cover, for the panel mounting side | VC1    | VC-SD-A1 | 1886760   | 5           |
|                                               | VC2    | VC-SD-A2 | 1886773   | 5           |
|                                               | VC3    | VC-SD-A3 | 1886786   | 5           |
|                                               | VC4    | VC-SD-A4 | 1886799   | 5           |
| Protective cover, for panel mounting frame    | VC1    |          |           |             |
|                                               | VC2    |          |           |             |
|                                               | VC3    |          |           |             |
|                                               | VC4    |          |           |             |

PA  
V0  
IP40

-40 °C ... 80 °C

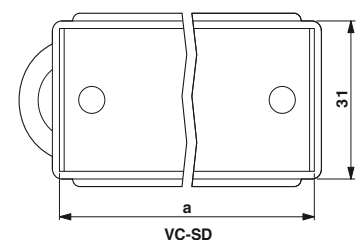
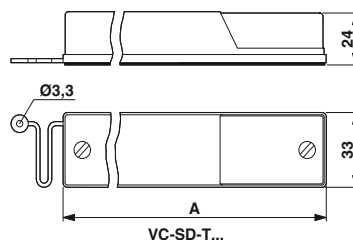
#### Technical data

#### Ordering data

| Type   | Order No. | Pcs. / Pkt. |
|--------|-----------|-------------|
| VC-SD1 | 1853670   | 5           |
| VC-SD2 | 1853683   | 5           |
| VC-SD3 | 1853696   | 5           |
| VC-SD4 | 1853706   | 5           |

| Type      | A [mm] | a [mm] |
|-----------|--------|--------|
| VC-SD...1 | 59     | 53.5   |
| VC-SD...2 | 74     | 68.5   |
| VC-SD...3 | 89     | 83.5   |
| VC-SD...4 | 104    | 98.5   |

Dimensions table



## Adapter plates for modular contact inserts

### Notes:

For dimensional drawings, refer to page 58



The adapter plates can be used to mount VARIOCON plug-in connectors on the popular panel cutouts of the HEAVYCON B series.

Material  
Sealing material  
Degree of protection

V2A  
NBR  
IP65



Adapter plates for modular contact inserts

### Technical data

### Ordering data

| Description                                                                           | Design |
|---------------------------------------------------------------------------------------|--------|
| <b>Adapter plates</b> , 2 mm thick, for HEAVYCON-B16 panel cutouts, incl. flat gasket | VC1    |
|                                                                                       | VC2    |
|                                                                                       | VC3    |
| <b>Adapter plates</b> , 2 mm thick, for HEAVYCON-B24 panel cutouts, incl. flat gasket | VC1    |
|                                                                                       | VC2    |
|                                                                                       | VC3    |
|                                                                                       | VC4    |

| Type             | Order No. | Pcs. / Pkt. |
|------------------|-----------|-------------|
| HC-B 16-ADP-VC-1 | 1885758   | 5           |
| HC-B 16-ADP-VC-2 | 1885761   | 5           |
| HC-B 16-ADP-VC-3 | 1885774   | 5           |
| HC-B 24-ADP-VC-1 | 1885813   | 5           |
| HC-B 24-ADP-VC-2 | 1885826   | 5           |
| HC-B 24-ADP-VC-3 | 1885839   | 5           |
| HC-B 24-ADP-VC-4 | 1885842   | 5           |

## Adapter plates for crimp contact carriers

### Notes:

For dimensional drawings, refer to page 58

Material  
Sealing material  
Degree of protection

V2A  
NBR  
IP65



Adapter plates for crimp inserts

### Technical data

### Ordering data

| Description                                                                           | Design |
|---------------------------------------------------------------------------------------|--------|
| <b>Adapter plates</b> , 2 mm thick, for HEAVYCON-B16 panel cutouts, incl. flat gasket | VC1    |
|                                                                                       | VC2    |
|                                                                                       | VC3    |
| <b>Adapter plates</b> , 2 mm thick, for HEAVYCON-B24 panel cutouts, incl. flat gasket | VC1    |
|                                                                                       | VC2    |
|                                                                                       | VC3    |
|                                                                                       | VC4    |

| Type              | Order No. | Pcs. / Pkt. |
|-------------------|-----------|-------------|
| HC-B 16-ADP-VC-C1 | 1885787   | 5           |
| HC-B 16-ADP-VC-C2 | 1885790   | 5           |
| HC-B 16-ADP-VC-C3 | 1885800   | 10          |
| HC-B 24-ADP-VC-C1 | 1885855   | 5           |
| HC-B 24-ADP-VC-C2 | 1885868   | 5           |
| HC-B 24-ADP-VC-C3 | 1885871   | 5           |
| HC-B 24-ADP-VC-C4 | 1885884   | 5           |

# Rectangular plug-in connectors

## Screw connections and accessories

### Accessories



| Ordering data                                                                                                                                                                                                                                                  |                                                                                      |                                                                      |                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------|------------------------|
| Description                                                                                                                                                                                                                                                    | Type                                                                                 | Order No.                                                            | Pcs. / Pkt.            |
| <b>Dummy modules</b> ①<br>for panel mounting connectors<br>for sleeve connectors                                                                                                                                                                               | <b>VC-A 2-BM</b><br><b>VC-T 2-BM</b>                                                 | <b>1607815</b><br><b>1607813</b>                                     | 50<br>50               |
| <b>Replacement profile gasket</b> , for sleeve housings and supporting base elements of type:<br>VC1<br>VC2<br>VC3<br>VC4 ②                                                                                                                                    | <b>VC-T1-PR-D1</b><br><b>VC-T2-PR-D1</b><br><b>VC-T3-PR-D1</b><br><b>VC-T4-PR-D1</b> | <b>1607832</b><br><b>1607835</b><br><b>1607838</b><br><b>1607841</b> | 50<br>50<br>50<br>50   |
| <b>FSMA connector set</b> , with bend protection sleeve for polymer fiber cable, for contact carrier module VC-AFOS 2, (2 pcs. each as set) ③                                                                                                                  | <b>VC-FSMA-M-KT-2 SET</b>                                                            | <b>1855703</b>                                                       | 1                      |
| <b>FSMA connector</b> , for polymer fiber cable, for contact carrier module VC-AFOS 2, (2 pcs. each as set) ④                                                                                                                                                  | <b>VC-FSMA-M-2 SET</b>                                                               | <b>1855432</b>                                                       | 1                      |
| <b>Polisher</b> , metal, for repeated preparation of VARIOCON fiber optic ferrules ⑤                                                                                                                                                                           | <b>VC-POLISHER/M FSMA</b>                                                            | <b>1884982</b>                                                       | 1                      |
| <b>Polymer fiber polishing set</b> for quick mounting connectors, comprising polishing pads and polishing disks<br>- For F-SMA connectors ⑥                                                                                                                    | <b>PSM-SET-FSMA-POLISH</b>                                                           | <b>2799348</b>                                                       | 1                      |
| <b>Stripping tool</b> for FO cables ⑦<br><br>- <b>stripping tool</b> for individual elements                                                                                                                                                                   | <b>PSM-FO-STRIP</b>                                                                  | <b>2744199</b>                                                       | 1                      |
| <b>Electronic diagonal cutter</b> , round head, with chamfer, with opening spring ⑧                                                                                                                                                                            | <b>MICROFOX-SB</b>                                                                   | <b>1212489</b>                                                       | 1                      |
| <b>Replacement screws</b> ⑨<br>for panel mounting frames<br>for sleeve frames                                                                                                                                                                                  | <b>VC-AR-S</b><br><b>VC-TR-S</b>                                                     | <b>1607829</b><br><b>1607826</b>                                     | 50<br>50               |
| <b>Coding pins</b> , to prevent identical connectors from being confused ⑩<br>Coding bolts with ST 2.9 thread for sleeve housings<br><br>Coding bolts with M3 thread for panel mounting bases<br><br>Coding profile, for VC-...6 and VC-...8<br>Coding profile | <b>VC-CB-T</b><br><b>VC-CB-A</b><br><b>CP-MSTB</b><br><b>CP-HCC 4</b>                | <b>1607884</b><br><b>1607888</b><br><b>1734634</b><br><b>1600027</b> | 10<br>10<br>100<br>100 |
| <b>Marker labels, unprinted</b> , 5-section, for individual labeling with B-STIFT or CMS system (25 labels per pack), white ⑪                                                                                                                                  | <b>VC-BZS WH</b>                                                                     | <b>1852875</b>                                                       | 5                      |
| <b>Plastic label sheet</b> , self-adhesive double-layer plastic labels, material thickness: 0.8 mm, with rounded corners, radius: 2 mm ⑫<br><br>1 sheet = 32 labels                                                                                            | <b>GPE 22X22 SR/R</b>                                                                | <b>0806628</b>                                                       | 10                     |

## Corrugated pipe, corrugated pipe screw connections

Using the Corrugated pipe screw connection, any number of wires or single cores can be led to one plug-in connector.

To disassemble the Corrugated pipe screw connection, the matching WR-OEF... Corrugated pipe opener is necessary.



Corrugated pipe



Corrugated pipe screw connections, seals, and N/C contacts



Material  
Inflammability class according to UL 94  
Degree of protection  
Temperature data  
Ambient temperature (operation)

PA  
HB  
-  
-40 °C ... 110 °C

### Technical data

### Ordering data

Description

**Corrugated pipe, design:**

Pg16, bending radius: 35 mm  
Pg21 / M25, bending radius: 40 mm  
Pg29 / M32, bending radius: 55 mm  
M40, bending radius: 60 mm

**Pg Corrugated pipe screw connection**, for Corrugated pipes to lead individual conductors and wires into the housings of HEAVYCON industrial connectors,  
Design:

Pg16  
Pg21  
Pg29

**Metric Corrugated pipe screw connection**, for insertion of individual conductors and wires in the housings of the HEAVYCON industrial connectors,  
Design:

M25  
M32  
M40

**Seal**, outside, to increase protection type to IP66,  
Design:

Pg16  
Pg21 / M25  
Pg29 / M32  
M40

**Opener for Corrugated pipe**, to corrugated pipe screw connection, design:

Pg16  
Pg21 / M25  
Pg29 / M32  
M40

PA  
HB  
-  
-40 °C ... 110 °C

Type

WR/PG16-50M  
WR/PG21-50M  
WR/PG29-25M  
WR/M40-25M

Order No.  
1666841  
1666867  
1666854  
1644889

Pcs. / Pkt.  
1  
1  
1  
1

### Technical data

PA  
HB  
IP65

-40 °C ... 110 °C

### Ordering data

Type

HC-WRV-PG16  
HC-WRV-PG21  
HC-WRV-PG29

Order No.  
1666812  
1666825  
1666838

Pcs. / Pkt.  
10  
10  
10

HC-WRV-M25  
HC-WRV-M32  
HC-WRV-M40

Order No.  
1644902  
1644915  
1644850

Pcs. / Pkt.  
10  
10  
10

WR-DA-PG16  
WR-DA-PG21  
WR-DA-M32/PG29  
WR-DA-M40

Order No.  
1686685  
1686698  
1644847  
1644876

Pcs. / Pkt.  
5  
5  
5  
5

WR-OEF-PG16  
WR-OEF-PG21  
WR-OEF-PG29  
WR-OEF-M40

Order No.  
1853638  
1853612  
1853641  
1644892

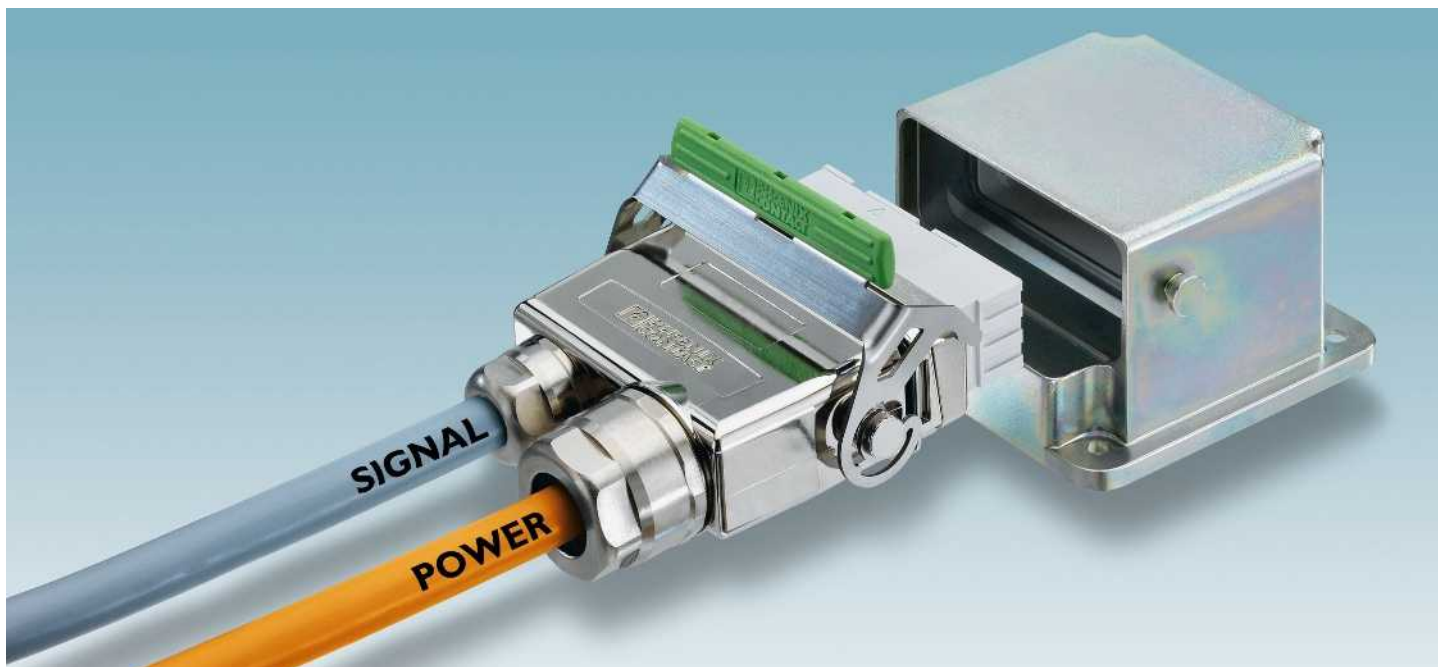
Pcs. / Pkt.  
5  
5  
5  
5



## Rectangular plug-in connectors

### Hybrid plug-in connectors

#### Hybrid plug-in connector for motor connection



Are motor terminal boxes the cheapest option?

Not always! When considered as a whole, a sophisticated connector concept is quite capable of replacing the motor terminal box.

The increasing automation of machines and systems, the demand for the best possi-

ble system availability and the need for a quick, uncomplicated startup are calling for new connector concepts.

The motor connectors from the DUPLICON series can save a huge amount of time:

The new hybrid plug-in connector combines signals and power in parallel in the

same housing. The two cables are connected to the contact insert using the push-in connection method without tools, quickly, and above all, reliably.

The housing on the motor side has an M12 thread for an external brake cable gland.



Thanks to the robust locking latch, the motor connection can be isolated in seconds. There is no need to call out a skilled electrical engineer.



With a motor connector, the star-delta bridge of the motor is located in the sleeve housing. In the event of changes to the wiring, the motor does not need to be opened in order to replace the bridges of the terminal board. Now, only the sleeve needs to be lifted and the star-delta bridge piece rotated.

The rewiring is complete.



Protection against mismating - the coding of the connector - is implemented by plastic profiles. Laborious and time-consuming coding using metal bolts is thus eliminated. coding is performed in a matter of moments by the simple placement of plastic profiles.

## Hybrid plug-in connector for motor connection

- Panel mounting base also available with third-party logo
- Other flange dimensions on request
- Crimp contacts can be removed without tool

### Notes:

Connectors may only be operated when not under load.

For dimensional drawings, connector pin assignments, and flange drawing, see page 59



**Sleeve connector,  
3-pos. + PE power contacts /  
4-pos. control contacts**



**Panel mounting base,  
6-pos. + PE power contacts /  
4-pos. control contacts**



### Technical data

|                                                | Power contacts                              | Control contacts                                                  |
|------------------------------------------------|---------------------------------------------|-------------------------------------------------------------------|
| Electrical data according to DIN EN 61984:2001 |                                             |                                                                   |
| Rated voltage                                  | 400/800 V                                   | 250 V                                                             |
| Rated current                                  | 16.5 A                                      | 2.5 A                                                             |
| Surge voltage category / pollution degree      |                                             | III / 3                                                           |
| Material data                                  |                                             |                                                                   |
| Housing material                               | GD-Zn                                       |                                                                   |
| Locking latch material                         | Stainless steel                             |                                                                   |
| Contact material                               | Copper alloy                                | Copper alloy                                                      |
| Contact surface material                       | Ag                                          | Au                                                                |
| Contact carrier material                       | PA                                          | PA                                                                |
| Inflammability class according to UL 94        | V0                                          | V0                                                                |
| External cable diameter                        | 7 mm ... 14.5 mm<br>(Unshielded cable)      | 4 mm ... 8.3 mm<br>(Unshielded cable)                             |
| External cable diameter                        | 9 mm ... 14.5 mm<br>(Shielded cable)        | 4 mm ... 8.3 mm<br>(Shielded cable, 4 mm<br>min. shield diameter) |
| Mechanical data                                |                                             |                                                                   |
| Conductor cross section                        | 0.5 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> | 0.5 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>                       |
| Connection cross section AWG                   | 20 ... 14                                   | 20 ... 16                                                         |
| Insertion/withdrawal cycles                    |                                             | ≥ 100                                                             |
| Degree of protection                           |                                             | IP67                                                              |
| Temperature data                               |                                             |                                                                   |
| Ambient temperature (operation)                | -30 °C ... 100 °C                           | -30 °C ... 100 °C                                                 |

### Ordering data

| Type           | Order No. | Pcs. / Pkt. |
|----------------|-----------|-------------|
| HC-MOT-TML-SET | 1409066   | 1           |

### Accessories

|                       |         |     |
|-----------------------|---------|-----|
| HC-MOT-SD-FLT-KU-IP54 | 1409134 | 10  |
| HC-MOT-ST/DR-BR       | 1409150 | 10  |
| CP-HCC 4              | 1600027 | 100 |



### Technical data

|                                                | Power contacts                               | Control contacts                           |
|------------------------------------------------|----------------------------------------------|--------------------------------------------|
| Electrical data according to DIN EN 61984:2001 |                                              |                                            |
| Rated voltage                                  | 400/800 V                                    | 250 V                                      |
| Rated current                                  | 16.5 A                                       | 2.5 A                                      |
| Surge voltage category / pollution degree      |                                              | III / 3                                    |
| Material data                                  |                                              |                                            |
| Housing material                               | GD-Zn                                        |                                            |
| Locking latch material                         | -                                            |                                            |
| Contact material                               | Copper alloy                                 | Copper alloy                               |
| Contact surface material                       | Au                                           | Au                                         |
| Contact carrier material                       | PA                                           | PA                                         |
| Inflammability class according to UL 94        | V0                                           | V0                                         |
| External cable diameter                        |                                              |                                            |
| Conductor cross section                        | 0.35 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> | 0.14 mm <sup>2</sup> ... 1 mm <sup>2</sup> |
| Connection cross section AWG                   | 20 ... 14                                    | 26 ... 18                                  |
| Insertion/withdrawal cycles                    |                                              | ≥ 100                                      |
| Degree of protection                           |                                              | IP67                                       |
| Temperature data                               |                                              |                                            |
| Ambient temperature (operation)                | -30 °C ... 100 °C                            | -30 °C ... 100 °C                          |

### Ordering data

| Type           | Order No. | Pcs. / Pkt. |
|----------------|-----------|-------------|
| HC-MOT-AFL-SET | 1409053   | 1           |

### Accessories

|                   |         |     |
|-------------------|---------|-----|
| HC-MOT-SD-L-KU    | 1409147 | 10  |
| CK2,0-ED-1,0ST AU | 1409118 | 100 |
| CK2,0-ED-2,5ST AU | 1409095 | 100 |
| CK1,0-ED-0,5ST AU | 1409121 | 100 |
| CK1,0-ED-1,0ST AU | 1409082 | 100 |
| CRIMPFOX-TC MP-1  | 1212620 | 1   |
| CP-HCC 4          | 1600027 | 100 |

### Description

**Motor connector for three-phase drive**, metal housing with EMC sleeves incl. push-in contact insert, with screw connections (power and control circuit), with filler plugs in the control cable screw connection, 4-pos. control circuit, with star-delta bridge, with IP54 protective cover

**Plug-in connector on motor side**, EMC metal housing attachment incl. crimp contact insert, with flat gasket and coated protective cover, without crimp contacts, housing with coatable thick-layer passivation

**Protective cover** for the sleeve housing, IP54

**Coated protective cover** for the housing on the motor side

**Star-delta replacement bridge**

**Turned power crimp contacts**, for connection cross section:

0.25 - 1.0 mm<sup>2</sup>, pin  
1.0 - 2.5 mm<sup>2</sup>, pin

**Turned signal crimp contacts**, for connection cross section:

0.14 - 0.5 mm<sup>2</sup>, pin  
0.50 - 1.0 mm<sup>2</sup>, pin

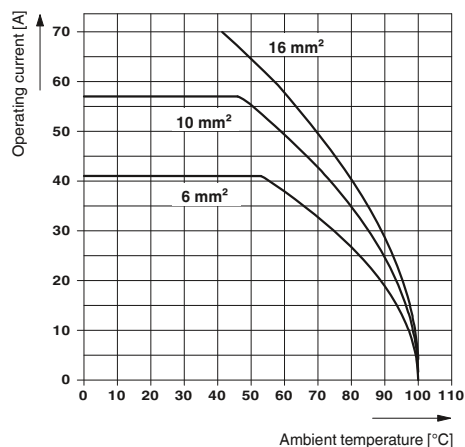
**Crimping pliers**

**Coding profile**, prevents similar connectors from being mixed up

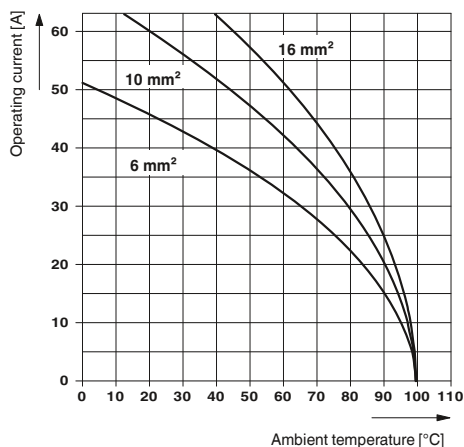
# Rectangular plug-in connectors

## Derating diagrams and dimensional drawings

### Power inserts Derating diagrams

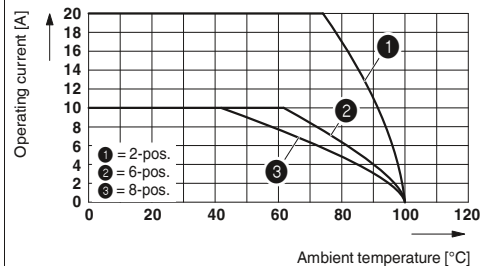


Derating diagram: VC-AMS 4



Derating diagram: VC-AML 4

### Contact inserts Derating diagrams



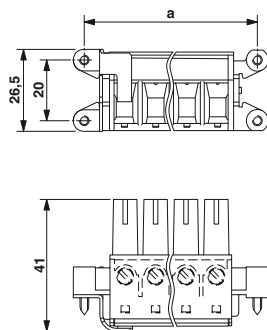
Derating diagram

## Dimensional drawings of power contact inserts

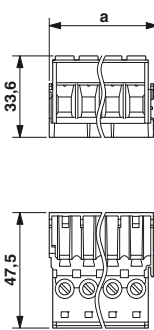
| Type        | Dimension a [mm] |
|-------------|------------------|
| VS-TFS 4... | 57.8             |
| VS-TFS 5... | 72.8             |
| VS-TFS 7... | 87.5             |

| Type        | Dimension a [mm] |
|-------------|------------------|
| VS-AMS 4... | 45               |
| VS-AMS 5... | 60               |
| VS-AMS 7... | 75               |

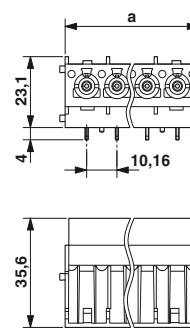
| Type        | Dimension a [mm] |
|-------------|------------------|
| VS-AML 4... | 45               |
| VS-AML 5... | 60               |
| VS-AML 7... | 75               |



Dimensional drawing: VC-TFS...



Dimensional drawing: VC-AMS...

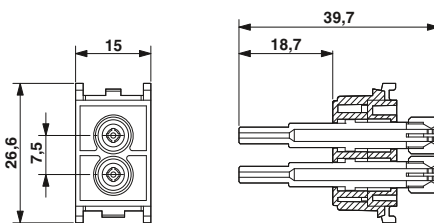
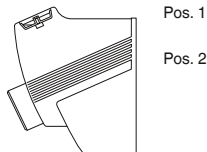


Dimensional drawing: VC-AML...

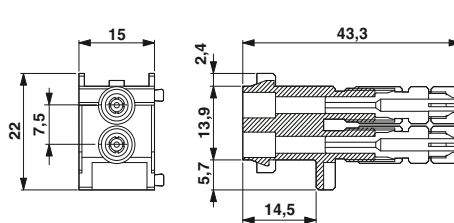
## Fiber optic contact insert modules with screw connection

### Recommended slots in the sleeve frame

| Sleeve frame size | VC-TFOS 2 module at position |
|-------------------|------------------------------|
| 1                 | 1                            |
| 2                 | 1                            |
| 3                 | 1 and/or 2                   |
| 4                 | 2                            |

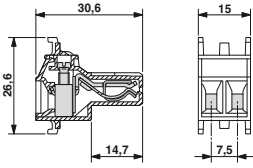


Dimensional drawing: VC-TFOS 2

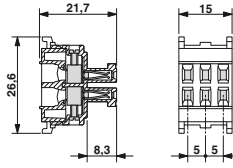


Dimensional drawing: VC-AFOS 2

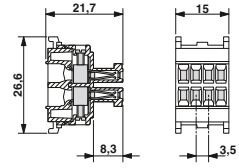
## Dimensional drawings of contact inserts



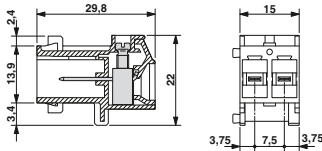
VC-TFS 2



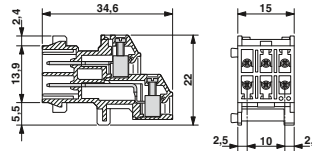
VC-TFS 6



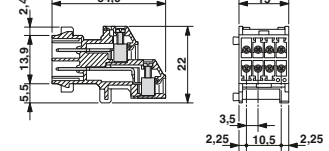
VC-TFS 8



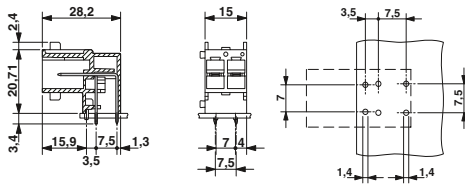
VC-AMS 2



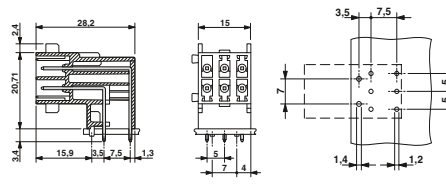
VC-AMS 6



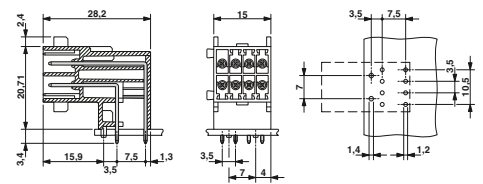
VC-AMS 8



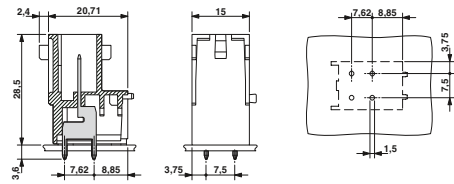
VC-AML 2



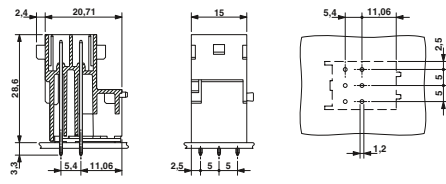
VC-AML 6



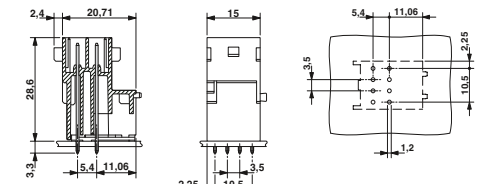
VC-AML 8



VC-AMLV 2



VC-AMLV 6



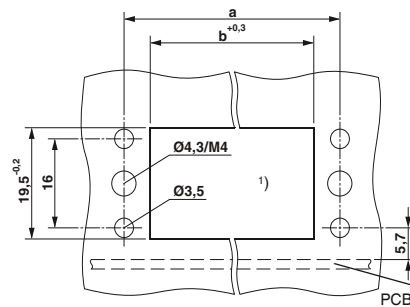
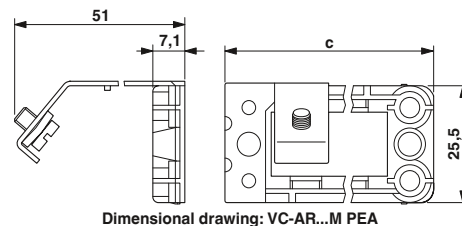
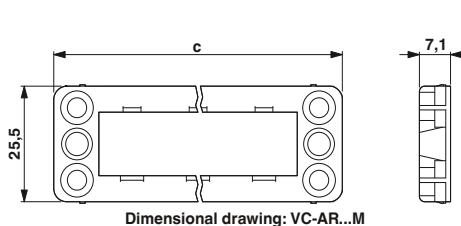
VC-AMLV 8

# Rectangular plug-in connectors

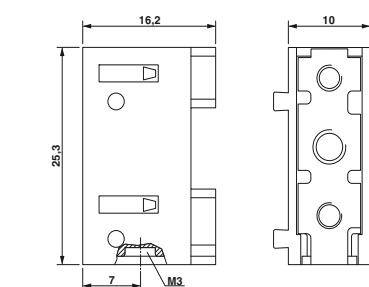
## Derating diagrams and dimensional drawings

### Panel mounting frame

| Panel mounting frame type | Dimensions [mm] |      |      |
|---------------------------|-----------------|------|------|
|                           | a               | b    | c    |
| VC-AR1/2M...              | 40.0            | 32.4 | 50.6 |
| VC-AR2/3M...              | 55.0            | 47.4 | 65.6 |
| VC-AR3/4M...              | 70.0            | 62.4 | 80.6 |
| VC-AR4/5M...              | 85.0            | 77.4 | 95.6 |

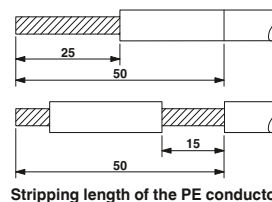


1) M3 and M4, if VC-AF is not needed.



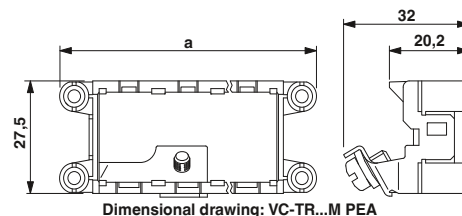
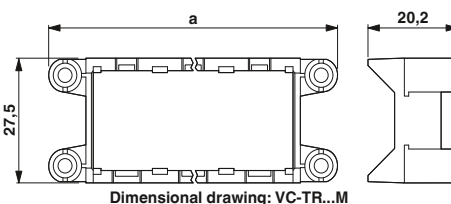
#### Assembly instructions:

Supporting base elements must be grounded at operating voltages > 42 V. The VC-AR...M-PEA frame has a PE sheet with a PE connection for this purpose. Strip 25 mm off the PE conductor and cut the insulation at 50 mm. Push the cut insulation forward by 15 mm. Connect the PE conductor to the contact of the module and clamp it to the PE sheet under the PE screw (see photo).



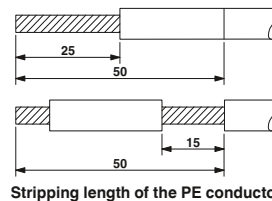
### Sleeve frames

| Sleeve frame type | Design | a [mm] |
|-------------------|--------|--------|
| VC-TR1/2M...      | VC 1   | 50.2   |
| VC-TR2/3M...      | VC 2   | 65.2   |
| VC-TR3/4M...      | VC 3   | 80.2   |
| VC-TR4/5M...      | VC 4   | 95.2   |



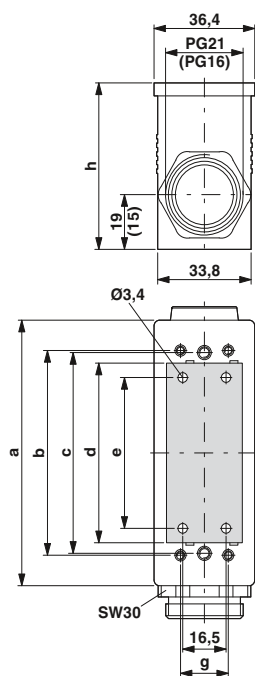
#### Assembly instructions:

Metal sleeves must be grounded at operating voltages > 42 V. The VC-TR...M-PEA frame has a PE sheet with a PE connection for this purpose. Strip 25 mm off the PE conductor and cut the insulation at 50 mm. Push the cut insulation forward by 15 mm. Connect the PE conductor to the contact of the module and clamp it to the PE sheet under the PE screw (see photo).

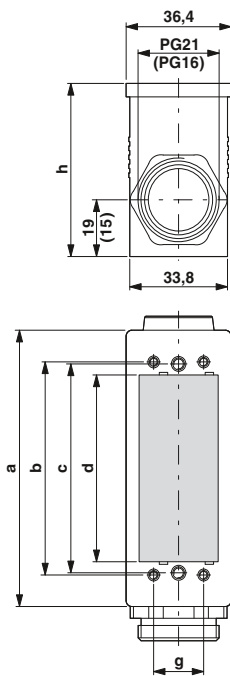




## Supporting base element



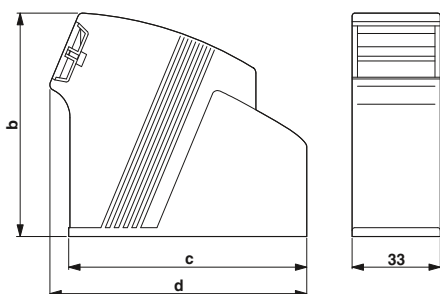
Box mounting base  
Base with 4 fixing holes



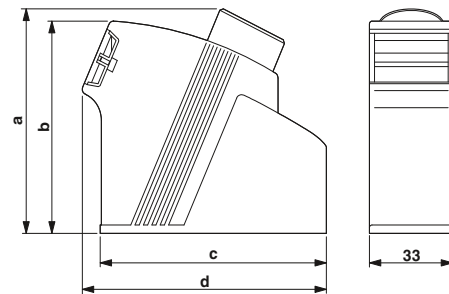
Coupling housing  
Enclosed base

| Dimensions<br>VC-M... | a<br>[mm] | b<br>[mm] | c<br>[mm] | d<br>[mm] | e<br>[mm] | g<br>[mm] | h<br>[mm] | Cable gland |
|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------------|
| Size 1                | 62.6      | 42.8      | 40        | 33        | 22.6      | 16        | 49        | Pg16        |
| Size 2                | 77.6      | 57.8      | 55        | 48        | 37.6      | 16        | 55        | Pg21        |
| Size 3                | 92.6      | 72.8      | 70        | 63        | 52.6      | 16        | 58        | Pg21        |
| Size 4                | 107.6     | 87.8      | 85        | 78        | 67.6      | 16        | 61        | Pg21        |

## Sleeve housing with metric cable entry

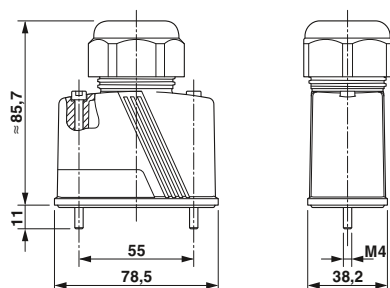


## Sleeve housing with Pg cable outlet

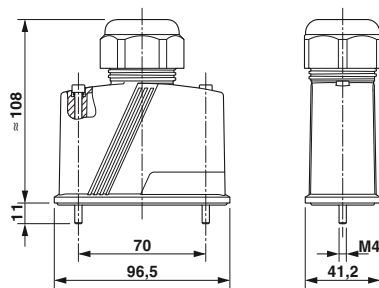


| Sleeve housing |            | Dimensions [mm] |    |     |     |
|----------------|------------|-----------------|----|-----|-----|
| Design         | Width [mm] | a               | b  | c   | d   |
| VC 1           | 33         | 71              | 65 | 59  | 66  |
| VC 2           | 33         | 73              | 65 | 74  | 81  |
| VC 3           | 33         | 79              | 75 | 89  | 96  |
| VC 4           | 33         | 79              | 75 | 104 | 111 |

## Sleeve housing special designs



Power sleeve housing, VC2 design

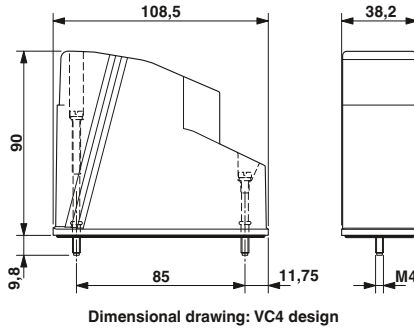
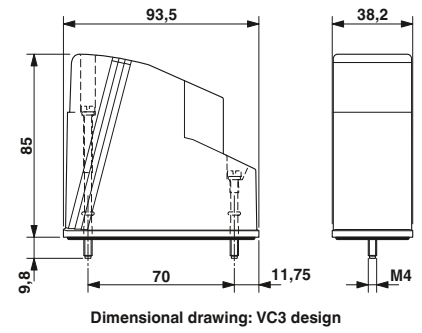
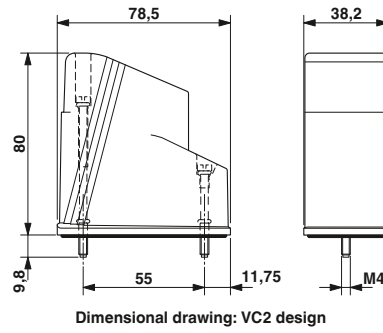
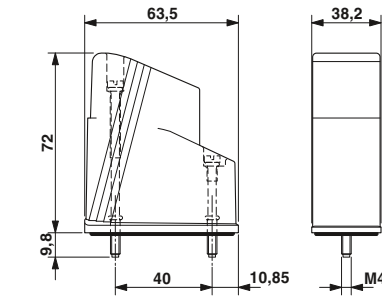


Power sleeve housing, VC3 design

# Rectangular plug-in connectors

## Derating diagrams and dimensional drawings

### Sleeve housing, with metric cable entry, EMC-compatible



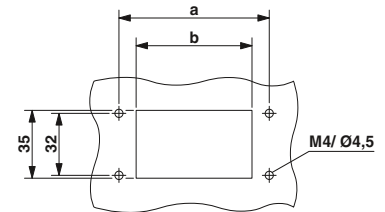
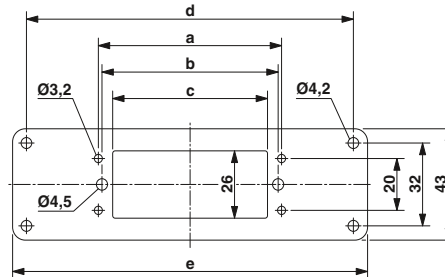
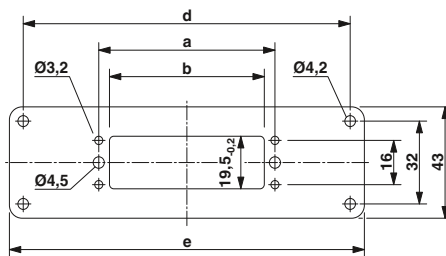
### Dimensional drawings of adapter plates

| Type             | a [mm] | b [mm] | d [mm] | e [mm] |
|------------------|--------|--------|--------|--------|
| HC-B 16-ADP-VC-1 | 40.0   | 32.0   | 114    | 103    |
| HC-B 16-ADP-VC-2 | 55.0   | 47.0   | 114    | 103    |
| HC-B 16-ADP-VC-3 | 70.0   | 62.0   | 114    | 103    |
| HC-B 24-ADP-VC-1 | 40.0   | 32.0   | 141    | 130    |
| HC-B 24-ADP-VC-2 | 55.0   | 47.0   | 141    | 130    |
| HC-B 24-ADP-VC-3 | 70.0   | 62.0   | 141    | 130    |
| HC-B 24-ADP-VC-4 | 85.0   | 77.0   | 141    | 130    |

| Type              | a [mm] | b [mm] | c [mm] | d [mm] | e [mm] |
|-------------------|--------|--------|--------|--------|--------|
| HC-B 16-ADP-VC-C1 | 42.8   | 40.0   | 31.5   | 114    | 103    |
| HC-B 16-ADP-VC-C2 | 57.8   | 55.0   | 46.5   | 114    | 103    |
| HC-B 16-ADP-VC-C3 | 72.8   | 70.0   | 61.5   | 114    | 103    |
| HC-B 24-ADP-VC-C1 | 42.8   | 40.0   | 31.5   | 141    | 130    |
| HC-B 24-ADP-VC-C2 | 57.8   | 55.0   | 46.5   | 141    | 130    |
| HC-B 24-ADP-VC-C3 | 72.8   | 70.0   | 61.5   | 141    | 130    |
| HC-B 24-ADP-VC-C4 | 87.8   | 85.0   | 76.5   | 141    | 130    |

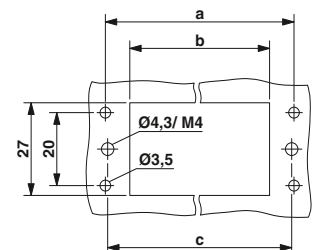
| Type           | a [mm] | b [mm] |
|----------------|--------|--------|
| VC-B 6-ADP...  | 70.0   | 52.0   |
| VC-B 10-ADP... | 83.0   | 65.0   |
| VC-B 16-ADP... | 103.0  | 86.0   |

Dimension table: VC-B...-ADP/2DSUB...

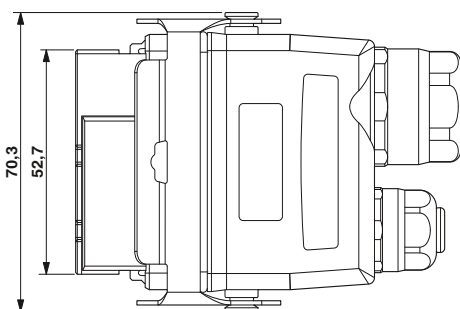
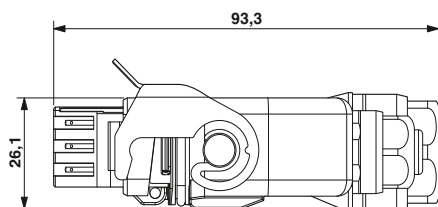


| Type         | a [mm] | b [mm] | c [mm] |
|--------------|--------|--------|--------|
| VC-C1-ADP... | 42.8   | 32.4   | 40.0   |
| VC-C2-ADP... | 57.8   | 47.4   | 55.0   |
| VC-C3-ADP... | 72.8   | 62.4   | 70.0   |

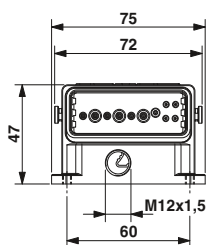
Dimension table: VC-C...-ADP/2DSUB...



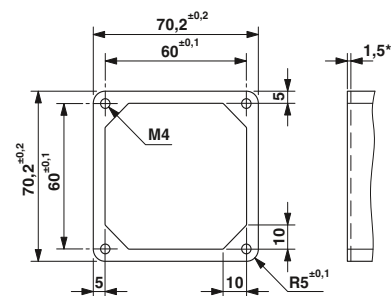
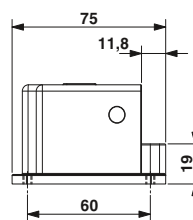
### Hybrid plug-in connectors



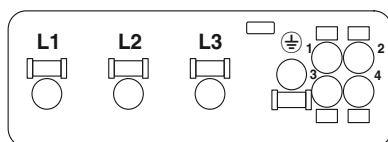
Dimensional drawing: sleeve plug-in connector



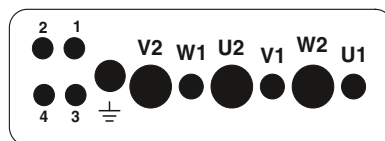
Dimensional drawing: panel mounting base



Dimensional drawing: flange  
(1.5\* = min. interface dimensions up to this height).



Pin assignment: socket  
(connection side)



Pin assignment: pin  
(connection side)



# Data plug-in connectors and cables

Standardized data interfaces are increasingly being used in industrial applications as part of the decentralization of complex manufacturing systems and the increasing need for rapid information and data exchange. Industrial conditions place high demands on plug-in connectors, the connection technology, and cabling, which are completely different from office environments. Conventional fieldbuses include INTERBUS and PROFIBUS, Industrial Ethernet, PROFINET, and USB. With PLUSCON data, Phoenix Contact offers components suitable for industrial applications with IP20 and IP65/IP67 protection for these communication interfaces.

## Complete installation system

The product range consists of plug-in connectors, panel feed-throughs, assembled cables, patch panels, terminal outlets, plus corresponding accessories and thereby forms a complete installation system. PLUSCON data is suitable for use in field and industrial hall cabling inside the control cabinet and for integration in devices with a high degree of protection.

## Easy field assembly

User-friendly fast connection technologies are available for plug-in connector assembly, even under the harshest industrial conditions. RJ45, M12 QUICKON, and M12 Piercecon® can be assembled for Ethernet and PROFINET cabling without the need for special tools.

## Copper and fiber optic

The SCRJ fiber optic plug-in connectors with IP20 and IP67 protection, which are particularly suitable for Industrial Ethernet and PROFINET, are available for all standard fiber types and are also equipped with established fast connection technologies. The assembly tool sets contain all the tools and materials needed for field assembly.

|                                       |            |
|---------------------------------------|------------|
| <b>System overview - network</b>      | <b>62</b>  |
| <b>System overview - fieldbuses</b>   | <b>64</b>  |
| <b>Network components</b>             |            |
| Topologies                            | 66         |
| RJ45 plug-in connectors               | 78         |
| M12 plug-in connectors                | 88         |
| Assembled cables                      | 96         |
| Patch panels, terminal outlets        | 114        |
| Power plug-in connectors              | 124        |
| Fiber optic plug-in connectors        | 126        |
| Assembled fiber optic cables          | 138        |
| Accessories                           | 168        |
| <b>Fieldbus components</b>            |            |
| Topologies                            | 172        |
| D-SUB plug-in connectors              | 184        |
| M12 plug-in connectors                | 186        |
| M12 flush-type plug-in connectors     | 188        |
| <b>Cable range</b>                    | <b>194</b> |
| <b>USB plug-in connectors</b>         | <b>205</b> |
| <b>D-SUB-based plug-in connectors</b> | <b>206</b> |



### Industrial Ethernet

#### Ethernet

#### Ethernet

#### Ethernet

#### Ethernet



#### Area of application

Ethernet M8 (4-pos.)  
All industrial environments

Ethernet M12 (4-pos.)  
All industrial environments

Ethernet M12 (8-pos.)  
All industrial environments

Ethernet M12/10G (8-pos.)  
All industrial environments

#### Topology

Star, tree or line topology

Star, tree or line topology

Star, tree or line topology

Star, tree or line topology

#### Data transmission

Up to 100 Mbps

Up to 100 Mbps

Up to 1 Gbps

Up to 10 Gbps

#### Special plug-in connectors

M12 with shield crossover

#### Pin assignment

| Signal des. | Plug-in connector |    | Signal des. | Plug-in connector |     | Signal des. | Plug-in connector |     | Signal des. | Plug-in connector |     |
|-------------|-------------------|----|-------------|-------------------|-----|-------------|-------------------|-----|-------------|-------------------|-----|
|             | RJ45              | M8 |             | RJ45              | M12 |             | RJ45              | M12 |             | RJ45              | M12 |
| TD+         | 1                 | 1  | TD+         | 1                 | 1   | D1+         | 1                 | 6   | D1+         | 1                 | 1   |
| TD-         | 2                 | 4  | TD-         | 2                 | 3   | D1-         | 2                 | 4   | D1-         | 2                 | 2   |
| RD+         | 3                 | 2  | RD+         | 3                 | 2   | D3-         | 5                 | 1   | D3-         | 5                 | 7   |
| RD-         | 6                 | 3  | RD-         | 6                 | 4   | D3+         | 4                 | 7   | D3+         | 4                 | 8   |
|             |                   |    |             |                   |     | D2+         | 3                 | 5   | D2+         | 3                 | 3   |
|             |                   |    |             |                   |     | D2-         | 6                 | 8   | D2-         | 6                 | 4   |
|             |                   |    |             |                   |     | D4+         | 7                 | 2   | D4+         | 7                 | 5   |
|             |                   |    |             |                   |     | D4-         | 8                 | 3   | D4-         | 8                 | 6   |

#### Signal designation, wire assignment

| Wire color |  | Signal | Wire color |  | Signal | Wire color |  | Signal | Wire color |  | Signal |
|------------|--|--------|------------|--|--------|------------|--|--------|------------|--|--------|
| YE         |  | TD+    | WHOG       |  | TD+    | WHOG       |  | D1+    | WHOG       |  | D1+    |
| OG         |  | TD-    | OG         |  | TD-    | OG         |  | D1-    | OG         |  | D1-    |
| WH         |  | RD+    | WHGN       |  | RD+    | WHBU       |  | D3-    | WHBU       |  | D3-    |
| BU         |  | RD-    | GN         |  | RD-    | BU         |  | D3+    | BU         |  | D3+    |
|            |  |        |            |  |        | WHGN       |  | D2+    | WHGN       |  | D2+    |
|            |  |        |            |  |        | GN         |  | D2-    | GN         |  | D2-    |
|            |  |        |            |  |        | WHBN       |  | D4+    | WHBN       |  | D4+    |
|            |  |        |            |  |        | BN         |  | D4-    | BN         |  | D4-    |

#### Segment length

Up to 100 m from hub/switch to termination device

Up to 100 m from hub/switch to termination device

Up to 100 m from hub/switch to termination device

Up to 100 m from hub/switch to termination device

#### User organization

#### Standardization of cabling

ISO/IEC 24702

ISO/IEC 24702

ISO/IEC 24702

ISO/IEC 24702

#### Plug-in connector pin assignments

|              |        |                      |        |                      |        |                      |        |
|--------------|--------|----------------------|--------|----------------------|--------|----------------------|--------|
|              |        |                      |        |                      |        |                      |        |
| Plug         | Socket | Plug                 | Socket | Plug                 | Socket | Plug                 | Socket |
| M8, 4-pos.   |        | M12, 4-pos., D-coded |        | M12, 8-pos., A-coded |        | M12, 8-pos., X-coded |        |
|              |        |                      |        |                      |        |                      |        |
| Plug         | Socket | Plug                 | Socket | Plug                 | Socket | Plug                 | Socket |
| RJ45, 8-pos. |        | RJ45, 8-pos.         |        | RJ45, 8-pos.         |        | RJ45, 8-pos.         |        |

#### Topology

See page 66

See page 66

See page 66

See page 68

## Ethernet

## EtherNet/IP™



## PROFINET



## EtherCAT



## sercos III



## VARAN



Ethernet hybrid M12 (8-pos.)  
All industrial environments

Automation applications in industrial control technology

Production, process automation in the automotive industry

Automation technology

Motion control applications

Automation technology

Star, tree or line topology

Usually active star topology

Star, line, tree, and ring structures. Hybrid forms also supported.

Line, tree, star, and combinations of these

Line, ring, and hierarchical, cascaded network structures

Tree, line, and star topology

Up to 100 Mbps

Up to 100 Mbps

100 Mbps to 1 Gbps

100 Mbps, upgrade to Gigabit Ethernet possible

Fast Ethernet with 100 Mbps

Up to Gigabit Ethernet

M12 with Y-shield

2+4 power/Ethernet connection technology (IP65 and IP67)

| Signal des. | Plug-in connector | Signal des. | Plug-in connector |     | Signal des. | Plug-in connector |     | Signal des. | Plug-in connector |     | Signal des. | Plug-in connector |     | Signal des. | Plug-in connector |     |
|-------------|-------------------|-------------|-------------------|-----|-------------|-------------------|-----|-------------|-------------------|-----|-------------|-------------------|-----|-------------|-------------------|-----|
|             | M12               |             | RJ45              | M12 |             | RJ45              | M12 |             | RJ45              | M12 |             | RJ45              | M12 |             | RJ45              | M12 |
| TD+         | 1                 | TD+         | 1                 | 1   | TD+         | 1                 | 1   | TD+         | 1                 | 1   | TD+         | 1                 | 1   | TD+         | 2                 | 3   |
| TD-         | 2                 | TD-         | 2                 | 3   | TD-         | 2                 | 3   | TD-         | 2                 | 3   | TD-         | 2                 | 3   | TD-         | 1                 | 2   |
| RD+         | 3                 | RD+         | 3                 | 2   | RD+         | 3                 | 2   | RD+         | 3                 | 2   | RD+         | 3                 | 2   | RD+         | 3                 | 5   |
| RD-         | 4                 | RD-         | 6                 | 4   | RD-         | 6                 | 4   | RD-         | 6                 | 4   | RD-         | 6                 | 4   | RD-         | 6                 | 8   |

| Wire color | Signal | Wire color | Signal | Wire color | Signal | Wire color | Signal | Wire color | Signal | Wire color | Signal |
|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|------------|--------|
| WHOG       | TD+    | WHOG       | TD+    | YE         | TD+    | YE         | TD+    | YE         | TD+    | n. c.      |        |
| OG         | TD-    | OG         | TD-    | OG         | TD-    | OG         | TD-    | OG         | TD-    | OG         | TD-    |
| WHGN       | RD+    | WHBU       | RD+    | WH         | RD+    | WH         | RD+    | WH         | RD+    | WHOG       | TD+    |
| GN         | RD-    | BU         | RD-    | BU         | RD-    | BU         | RD-    | BU         | RD-    | n. c.      |        |
| BU         |        | WHGN       | RD+    |            |        |            |        |            |        | WHGN       | RD+    |
| WH         |        | GN         | RD-    |            |        |            |        |            |        | BU         | RD-    |
| BN         |        | WHBN       | RD-    |            |        |            |        |            |        | BN         | RD-    |
| BK         |        | BN         |        |            |        |            |        |            |        | GN         | RD-    |

Up to 100 m from hub/switch to termination device

Up to 100 m from hub/switch to termination device

Up to 100 m from hub/switch to termination device

Up to 100 m from hub/switch to termination device

Up to 100 m from hub/switch to termination device

Up to 100 m from hub/switch to termination device

[www.odva.org](http://www.odva.org)

IEC 61784-5-2

[www.profibus.com](http://www.profibus.com)

IEC 61784-5-3

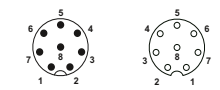
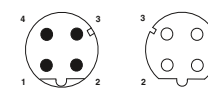
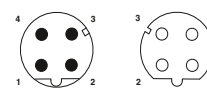
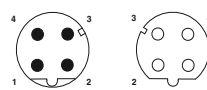
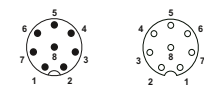
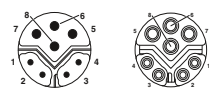
[www.ethercat.org](http://www.ethercat.org)

IEC 61784-5-12

[www.sercos.de](http://www.sercos.de)

IEC 61784-5-16

[www.varan-bus.net](http://www.varan-bus.net)



Plug Socket

Plug Socket

Plug Socket

Plug Socket

Plug Socket

Plug Socket

M12, hybrid, 8-pos., Y-coded

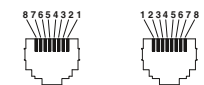
M12, 8-pos., A-coded

M12, 4-pos., D-coded

M12, 4-pos., D-coded

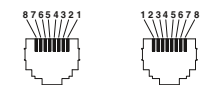
M12, 4-pos., D-coded

M12, 8-pos., A-coded



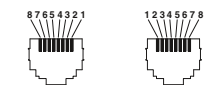
Plug Socket

RJ45, 8-pos.



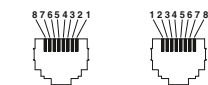
Plug Socket

RJ45, 8-pos.



Plug Socket

RJ45, 8-pos.



Plug Socket

RJ45, 8-pos.



Plug Socket

RJ45, 8-pos.

See page 66

See page 72

See page 74

See page 76

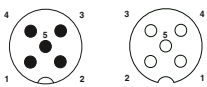
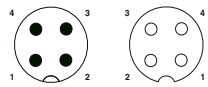
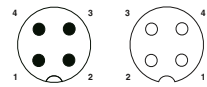
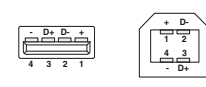
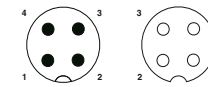
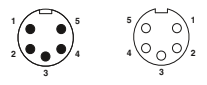
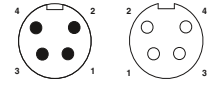
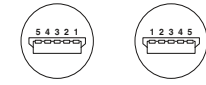
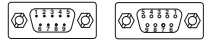
See [phoenixcontact.net/products](http://phoenixcontact.net/products)

See [phoenixcontact.net/products](http://phoenixcontact.net/products)

# Data plug-in connectors

## System overview - fieldbuses

|                                                                                                                             | INTERBUS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | PROFIBUS DP                                                                         | PROFIBUS PA                                                                         | DeviceNet™                                                                          |        |                      |     |                                                                                     |                                                                                     |      |        |         |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                     |                                                                                                                                    |            |        |                      |         |                                                                                     |                                                                                      |                                                                                                                                                                                                                                   |                    |                   |    |                                                                                                                                                                                                                                                                                                             |                                                                                       |                                                                                       |      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|                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |    |  |  |        |                      |     |                                                                                     |                                                                                     |      |        |         |     |                                                                                                                      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| Area of application                                                                                                         | Sensor/actuator level, process automation, monitoring PC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Distributed I/O devices for networking several controllers                          | Process automation for potentially explosive areas (Ex zone 0 and 1)                | Automation technology                                                               |        |                      |     |                                                                                     |                                                                                     |      |        |         |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                     |                                                                                                                      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| Topology                                                                                                                    | Active ring structure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Line, tree, ring or star depending on the physical network design                   | Line, tree or ring                                                                  | Line                                                                                |        |                      |     |                                                                                     |                                                                                     |      |        |         |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                     |                                                                                                                      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| Data transmission                                                                                                           | Between 500 kbps and 16 Mbps depending on the segment length                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Up to 12 Mbps                                                                       | Up to 31.25 kbps                                                                    | Up to 500 kbaud                                                                     |        |                      |     |                                                                                     |                                                                                     |      |        |         |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                     |                                                                                                                      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| Special plug-in connectors                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                     |                                                                                     |                                                                                     |        |                      |     |                                                                                     |                                                                                     |      |        |         |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                     |                                                                                                                      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| Pin assignment                                                                                                              | <table><tr><th>Signal designation</th><th colspan="2">Plug-in connector</th></tr><tr><td></td><th>D-SUB 9</th><th>M12</th></tr><tr><td>DQ</td><td>1</td><td>1</td></tr><tr><td>DO</td><td>6</td><td>2</td></tr><tr><td>DI</td><td>2</td><td>3</td></tr><tr><td>DI</td><td>7</td><td>4</td></tr><tr><td>COM</td><td>3</td><td>5</td></tr></table>                                                                                                                                                                                                                                                      | Signal designation                                                                  | Plug-in connector                                                                   |                                                                                     |        | D-SUB 9              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| Segment length                                                                                                              | 400 m segment length between two devices;<br>max. 13 km total length                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Up to 1200 m with copper installation, up to 15 km with fiber optic installation    | Max. 1900 m                                                                         | Up to 500 m                                                                         |        |                      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| User organization                                                                                                           | www.interbusclub.com                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | www.profibus.com                                                                    | www.profibus.com                                                                    | www.odva.org                                                                        |        |                      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| Plug-in connector pin assignments                                                                                           | <table><tr><td></td><td></td></tr><tr><td>Plug</td><td>Socket</td></tr><tr><td colspan="2">M12, 5-pos., B-coded</td></tr></table><br><table><tr><td></td><td></td></tr><tr><td>Plug</td><td>Socket</td></tr><tr><td colspan="2">D-SUB 9</td></tr></table> |  |  | Plug                                                                                | Socket | M12, 5-pos., B-coded |     |  |  | Plug | Socket | D-SUB 9 |     | <table><tr><td></td><td></td></tr><tr><td>Plug</td><td>Socket</td></tr><tr><td colspan="2">M12, 5-pos., B-coded</td></tr></table><br><table><tr><td></td><td></td></tr><tr><td>Plug</td><td>Socket</td></tr><tr><td colspan="2">D-SUB 9</td></tr></table> |  |                                                | Plug       | Socket | M12, 5-pos., B-coded |         |  |  | Plug                                                                                                                                                                                                                              | Socket             | D-SUB 9           |    | <table><tr><td></td><td></td></tr><tr><td>Plug</td><td>Socket</td></tr><tr><td colspan="2">M12, 3-pos., A-coded</td></tr></table> |  |  | Plug             | Socket | M12, 3-pos., A-coded                                                                                                                                                                         |            | <table><tr><td></td><td></td></tr><tr><td>Plug</td><td>Socket</td></tr><tr><td colspan="2">M8, 5-pos., B-coded</td></tr></table><br><table><tr><td></td><td></td></tr><tr><td>Plug</td><td>Socket</td></tr><tr><td colspan="2">M12, 5-pos., A-coded</td></tr></table><br><table><tr><td></td><td></td></tr><tr><td>Plug</td><td>Socket</td></tr><tr><td colspan="2">7/8" 16UNF, 5-pos.</td></tr></table> |  |                                                                                                                                                                            | Plug               | Socket            | M8, 5-pos., B-coded |    |  |  | Plug  | Socket | M12, 5-pos., A-coded |       |  |  | Plug   | Socket | 7/8" 16UNF, 5-pos. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                    |                   |  |  |  |  |          |     |      |    |       |   |   |   |   |       |   |   |   |   |    |   |   |   |   |    |   |   |   |   |       |   |   |   |   |
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| M12, 3-pos., A-coded                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                     |                                                                                     |                                                                                     |        |                      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| M8, 5-pos., B-coded                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                     |                                                                                     |                                                                                     |        |                      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| M12, 5-pos., A-coded                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                     |                                                                                     |                                                                                     |        |                      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| 7/8" 16UNF, 5-pos.                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                     |                                                                                     |                                                                                     |        |                      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| Topology                                                                                                                    | See page 172                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | See page 174                                                                        | See page 175                                                                        | See page 178                                                                        |        |                      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| Automation technology and for networking within complex devices                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Sensor/actuator level                                                               | Process automation                                                                                                                    | All industrial environments                                                         | Production level applications                                                         |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| Line or tree (when using repeaters)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Bus, star, ring, and tree structures                                                | Point-to-point line (with branch lines), tree structure, combination of all topologies                                                | Star topology, the connection is established at the star nodes via hubs             | Bus, multi-drop, T-branching, star                                                    |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| 10 kbaud to 1 Mbaud                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 167 kbps                                                                            | H1: 31.25 kbps, IEC physical transmission channel, incl. Ex bus<br>H2: 1.0 and 2.5 Mbps data rate, via two-wire cable or fiber optics | Up to 480 Mbps                                                                      | Up to 10 Mbps                                                                         |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| <table><tr><th>Signal designation</th><th colspan="5">Plug-in connector</th></tr><tr><td></td><th>COMBICON</th><th>D-SUB 9</th><th>M12</th><th>RJ45</th><th>7/8"</th></tr><tr><td>CAN_L</td><td>2</td><td>2</td><td>5</td><td>2</td><td>5</td></tr><tr><td>CAN_H</td><td>4</td><td>7</td><td>4</td><td>1</td><td>4</td></tr><tr><td>V+</td><td>5</td><td>9</td><td>2</td><td>8</td><td>2</td></tr><tr><td>V-</td><td>1</td><td>3</td><td>3</td><td>3</td><td>3</td></tr><tr><td>Drain</td><td>3</td><td>4</td><td>1</td><td>6</td><td>1</td></tr></table> | Signal designation                                                                  | Plug-in connector                                                                                                                     |                                                                                     |                                                                                       |      |       |    | COMBICON | D-SUB 9 | M12 | RJ45                                                                                                                                                                                     | 7/8"       | CAN_L  | 2  | 2     | 5  | 2 | 5  | CAN_H | 4  | 7 | 4                                                                                                                                                                            | 1          | 4      | V+ | 5     | 9  | 2     | 8                | 2 | V-                                                                                                                                                                                                                                      | 1          | 3      | 3    | 3  | 3  | Drain            | 3  | 4  | 1    | 6  | 1  | <table><tr><th>Signal designation</th><th>Plug-in connector</th></tr><tr><td>AS-i+</td><td>1</td></tr><tr><td>AS-i-</td><td>3</td></tr></table> | Signal designation                                                                                                                                                                          | Plug-in connector | AS-i+  | 1      | AS-i- | 3  | <table><tr><th>Signal designation</th><th colspan="2">Plug-in connector</th></tr><tr><td></td><th>M12</th><th>7/8"</th></tr><tr><td>DATA+</td><td>2</td><td>1</td></tr><tr><td>DATA-</td><td>1</td><td>4</td></tr><tr><td>Shield</td><td>3</td><td>3</td></tr></table> | Signal designation | Plug-in connector |    |    | M12 | 7/8" | DATA+ | 2 | 1 | DATA- | 1 | 4 | Shield | 3 | 3 | <table><tr><th>Signal designation</th><th colspan="2">Plug-in connector</th></tr><tr><td></td><th>M12, MINI - USB</th><th>USB</th></tr><tr><td>V<sub>BUS</sub></td><td>1</td><td>1</td></tr><tr><td>D-</td><td>2</td><td>2</td></tr><tr><td>D+</td><td>3</td><td>3</td></tr><tr><td>ID</td><td>4</td><td></td></tr><tr><td>GND</td><td>5</td><td>4</td></tr></table> | Signal designation | Plug-in connector |  |  | M12, MINI - USB | USB | V <sub>BUS</sub> | 1 | 1 | D- | 2 | 2 | D+ | 3 | 3 | ID | 4 |  | GND | 5 | 4 | <table><tr><th>Signal designation</th><th>Plug-in connector</th></tr><tr><td></td><td>M12</td></tr><tr><td>SLD</td><td>1</td></tr><tr><td>DS</td><td>2</td></tr><tr><td>DG</td><td>3</td></tr><tr><td>DA</td><td>4</td></tr></table> | Signal designation | Plug-in connector |  | M12 | SLD | 1 | DS | 2 | DG | 3 | DA | 4 |
| Signal designation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Plug-in connector                                                                   |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | COMBICON                                                                            | D-SUB 9                                                                                                                               | M12                                                                                 | RJ45                                                                                  | 7/8" |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| CAN_L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2                                                                                   | 2                                                                                                                                     | 5                                                                                   | 2                                                                                     | 5    |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| CAN_H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 4                                                                                   | 7                                                                                                                                     | 4                                                                                   | 1                                                                                     | 4    |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| V+                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 5                                                                                   | 9                                                                                                                                     | 2                                                                                   | 8                                                                                     | 2    |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| V-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1                                                                                   | 3                                                                                                                                     | 3                                                                                   | 3                                                                                     | 3    |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| Drain                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3                                                                                   | 4                                                                                                                                     | 1                                                                                   | 6                                                                                     | 1    |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| Signal designation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Plug-in connector                                                                   |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| AS-i+                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1                                                                                   |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| AS-i-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3                                                                                   |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| Signal designation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Plug-in connector                                                                   |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | M12                                                                                 | 7/8"                                                                                                                                  |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| DATA+                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2                                                                                   | 1                                                                                                                                     |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| DATA-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1                                                                                   | 4                                                                                                                                     |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| Shield                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 3                                                                                   | 3                                                                                                                                     |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| Signal designation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Plug-in connector                                                                   |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | M12, MINI - USB                                                                     | USB                                                                                                                                   |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| V <sub>BUS</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1                                                                                   | 1                                                                                                                                     |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| D-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2                                                                                   | 2                                                                                                                                     |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| D+                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 3                                                                                   | 3                                                                                                                                     |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| ID                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 4                                                                                   |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| GND                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 5                                                                                   | 4                                                                                                                                     |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| Signal designation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Plug-in connector                                                                   |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | M12                                                                                 |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| SLD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1                                                                                   |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| DS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2                                                                                   |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| DG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 3                                                                                   |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| DA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 4                                                                                   |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| <table><tr><th>Wire color</th><th>Signal</th></tr><tr><td>BU</td><td>CAN_L</td></tr><tr><td>WH</td><td>CAN_H</td></tr><tr><td>RD</td><td>V+</td></tr><tr><td>BK</td><td>V-</td></tr></table>                                                                                                                                                                                                                                                                                                                                                              | Wire color                                                                          | Signal                                                                                                                                | BU                                                                                  | CAN_L                                                                                 | WH   | CAN_H | RD | V+       | BK      | V-  | <table><tr><th>Wire color</th><th>Signal</th></tr><tr><td>BN</td><td>AS-i-</td></tr><tr><td>WH</td><td></td></tr><tr><td>BU</td><td>AS-i+</td></tr><tr><td>BK</td><td></td></tr></table> | Wire color | Signal | BN | AS-i- | WH |   | BU | AS-i+ | BK |   | <table><tr><th>Wire color</th><th>Signal</th></tr><tr><td>OG</td><td>DATA+</td></tr><tr><td>BU</td><td>DATA-</td></tr><tr><td colspan="2">Filler litz wire</td></tr></table> | Wire color | Signal | OG | DATA+ | BU | DATA- | Filler litz wire |   | <table><tr><th>Wire color</th><th>Signal</th></tr><tr><td>WHOG</td><td>D-</td></tr><tr><td>WH</td><td>V<sub>BUS</sub></td></tr><tr><td>OG</td><td>D+</td></tr><tr><td>n.c.</td><td>ID</td></tr><tr><td>BK</td><td>GND</td></tr></table> | Wire color | Signal | WHOG | D- | WH | V <sub>BUS</sub> | OG | D+ | n.c. | ID | BK | GND                                                                                                                                             | <table><tr><th>Wire color</th><th>Signal</th></tr><tr><td>Shield</td><td>SLD</td></tr><tr><td>WH</td><td>DS</td></tr><tr><td>YE</td><td>DG</td></tr><tr><td>BU</td><td>DA</td></tr></table> | Wire color        | Signal | Shield | SLD   | WH | DS                                                                                                                                                                                                                                                                     | YE                 | DG                | BU | DA |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| Wire color                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Signal                                                                              |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| BU                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | CAN_L                                                                               |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| WH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | CAN_H                                                                               |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| RD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | V+                                                                                  |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| BK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | V-                                                                                  |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| Wire color                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Signal                                                                              |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| BN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | AS-i-                                                                               |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| WH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                     |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| BU                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | AS-i+                                                                               |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| BK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                     |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| Wire color                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Signal                                                                              |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| OG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | DATA+                                                                               |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| BU                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | DATA-                                                                               |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| Filler litz wire                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                     |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| Wire color                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Signal                                                                              |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| WHOG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | D-                                                                                  |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| WH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | V <sub>BUS</sub>                                                                    |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| OG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | D+                                                                                  |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| n.c.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ID                                                                                  |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| BK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | GND                                                                                 |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| Wire color                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Signal                                                                              |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| Shield                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | SLD                                                                                 |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| WH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | DS                                                                                  |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| YE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | DG                                                                                  |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| BU                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | DA                                                                                  |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| Shield on pin                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                     | Shield on pin 3                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| Up to 1000 m depending on the transmission speed; can be increased by using repeaters                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Max. 100 m cable length, 300 m with termination resistors, 500 m with repeaters     | Max. 1900 m; max. 9500 m when using repeaters depending on the selected cable                                                         | 5 m per segment                                                                     | Max. 1200 m; max. 13.2 km with repeaters                                              |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| <a href="http://www.can-cia.de">www.can-cia.de</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <a href="http://www.as-interface.net">www.as-interface.net</a>                      | <a href="http://www.fieldbus.org">www.fieldbus.org</a>                                                                                | <a href="http://www.usb.org">www.usb.org</a>                                        | <a href="http://www.clpa-europe.com">www.clpa-europe.com</a>                          |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| EN 50325-4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | EN 50295 and IEC 62026-2                                                            | IEC 1158, IEC 61158                                                                                                                   | Not specified                                                                       | IEC 61784-1 CPF 8                                                                     |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
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| Plug                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Plug                                                                                | Plug                                                                                                                                  | Plug, type A                                                                        | Plug                                                                                  |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| Socket                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Socket                                                                              | Socket                                                                                                                                | Socket, type B                                                                      | Socket                                                                                |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| M12, 5-pos., A-coded                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | M12, 4-pos., A-coded                                                                | M12, 4-pos., A-coded                                                                                                                  | USB, 4-pos.                                                                         | M12, 4-pos., A-coded                                                                  |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                     |                                                    |  |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| Plug                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                     | Plug                                                                                                                                  | Plug                                                                                |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| Socket                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                     | Socket                                                                                                                                | Socket                                                                              |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| 7/8" 16UNF, 5-pos.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                     | 7/8" 16UNF, 4-pos.                                                                                                                    | M12 mini-USB, 5-pos.                                                                |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                     |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| Plug                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                     |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| Socket                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                     |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| D-SUB 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                     |                                                                                                                                       |                                                                                     |                                                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |
| See page 176                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | See page 180                                                                        | See page 182                                                                                                                          | See page 204                                                                        | See phoenixcontact.net/products                                                       |      |       |    |          |         |     |                                                                                                                                                                                          |            |        |    |       |    |   |    |       |    |   |                                                                                                                                                                              |            |        |    |       |    |       |                  |   |                                                                                                                                                                                                                                         |            |        |      |    |    |                  |    |    |      |    |    |                                                                                                                                                 |                                                                                                                                                                                             |                   |        |        |       |    |                                                                                                                                                                                                                                                                        |                    |                   |    |    |     |      |       |   |   |       |   |   |        |   |   |                                                                                                                                                                                                                                                                                                                                                                      |                    |                   |  |  |                 |     |                  |   |   |    |   |   |    |   |   |    |   |  |     |   |   |                                                                                                                                                                                                                                      |                    |                   |  |     |     |   |    |   |    |   |    |   |

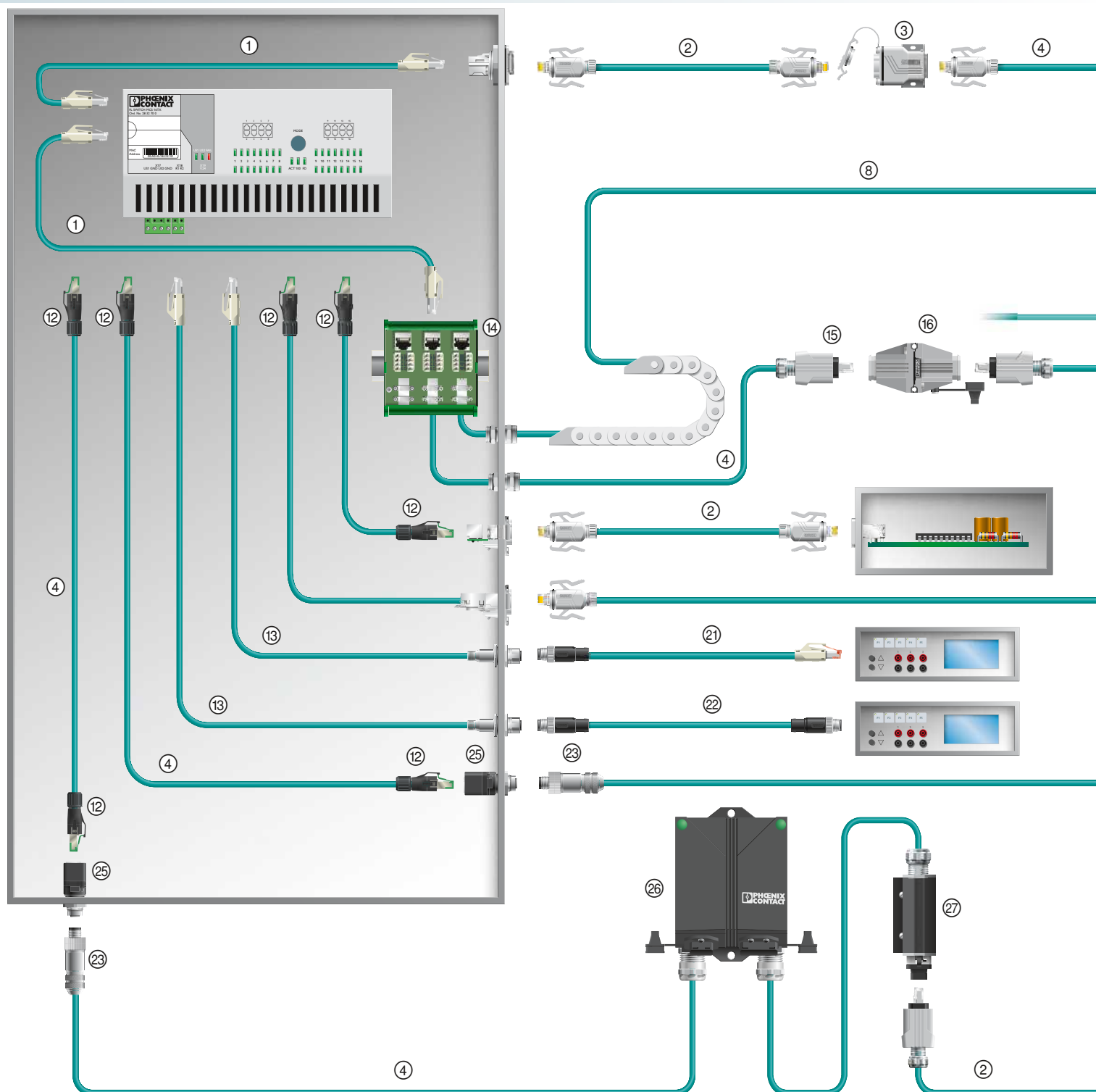
See page 176

See page 180

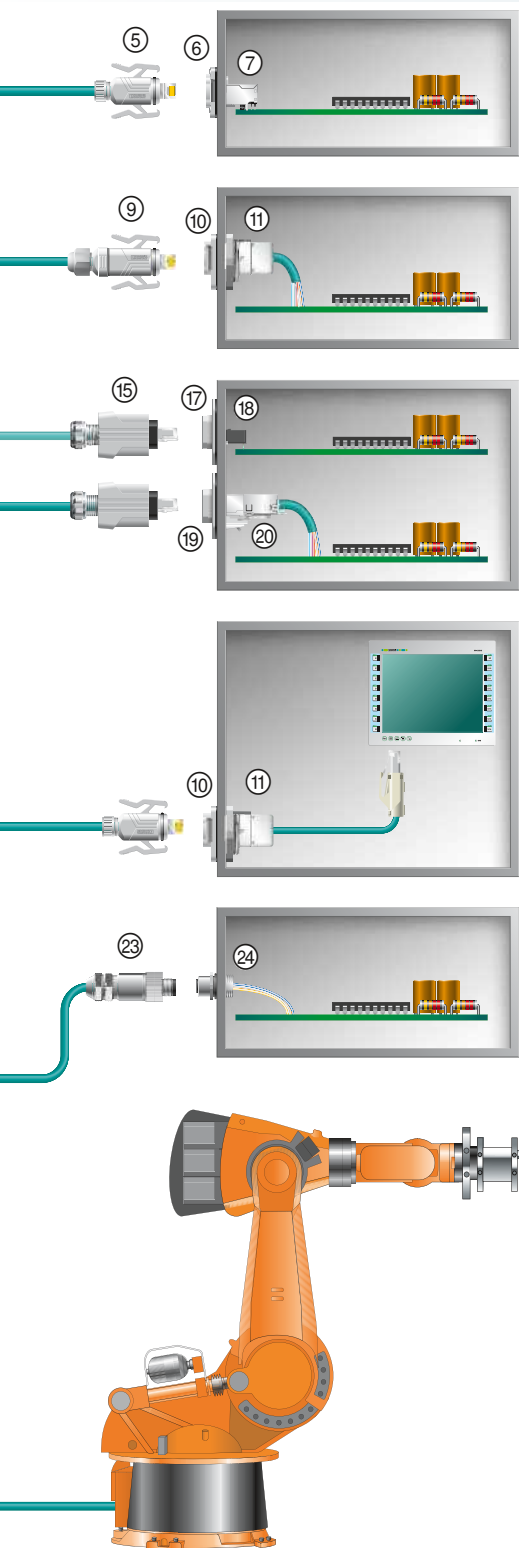
See page 182

See page 204

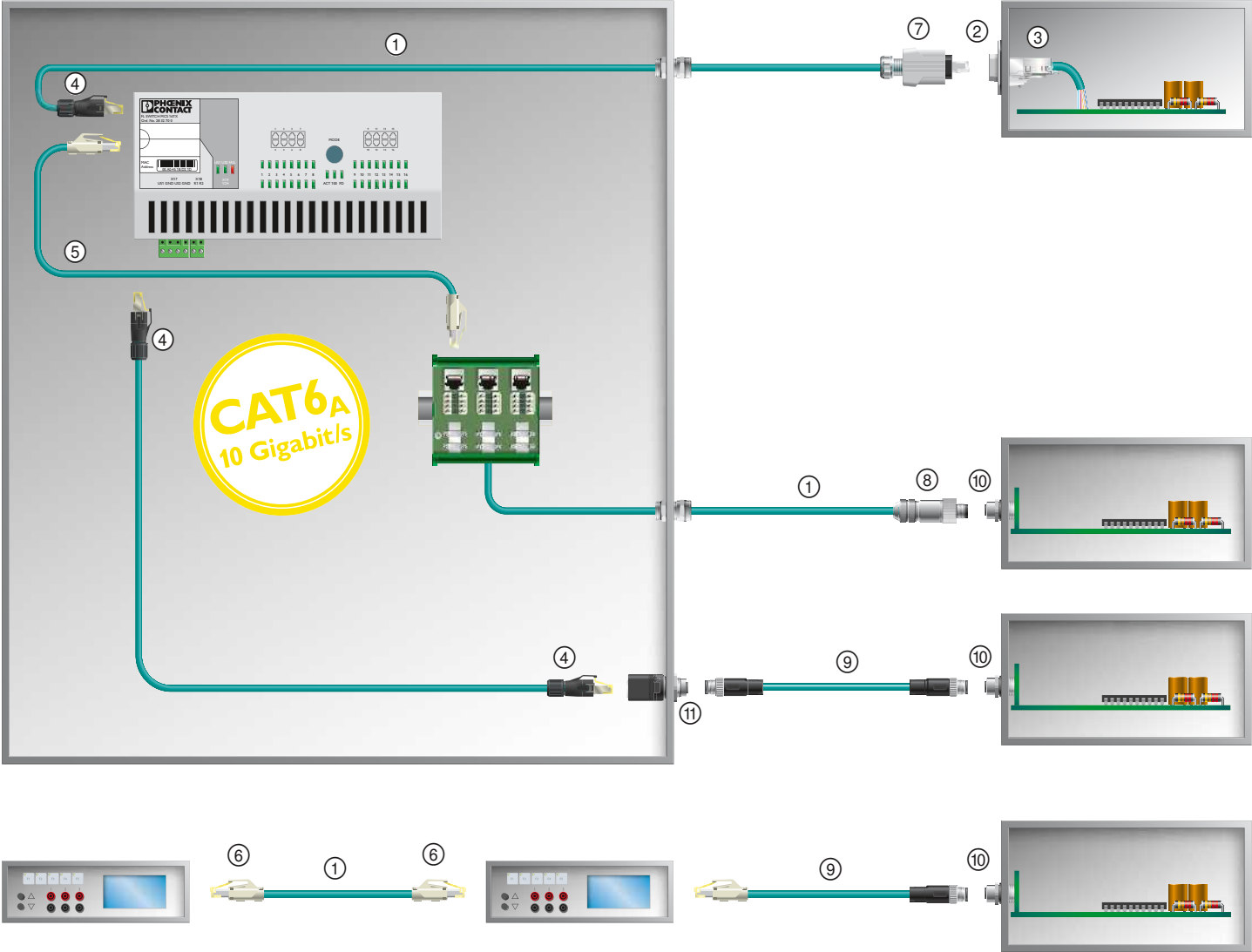
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[phoenixcontact.net/products](http://phoenixcontact.net/products)



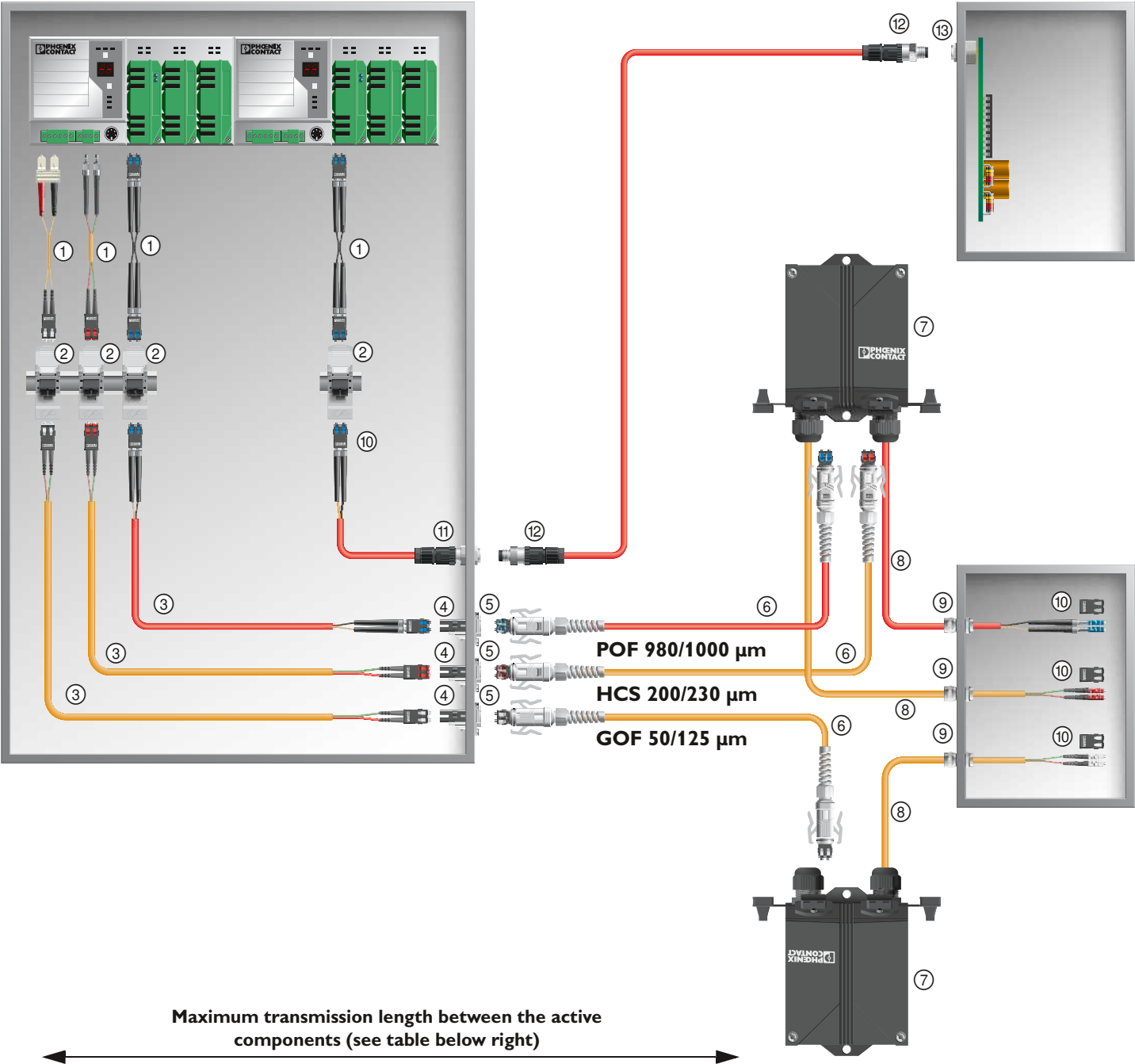




| No. | Designation                                                                             | Page |
|-----|-----------------------------------------------------------------------------------------|------|
| ①   | Assembled Ethernet cable with RJ45 plug-in connectors, IP20                             | 100  |
| ②   | Assembled Ethernet cable with RJ45 plug-in connectors, IP67                             | 100  |
| ③   | RJ45 coupling, IP67, version 6                                                          | 119  |
| ④   | Ethernet cable, by the meter                                                            | 96   |
| ⑤   | RJ45 plug-in connector, IP67, version 6, consisting of sleeve housing and pin insert    | 82   |
| ⑥   | RJ45 panel mounting frame, IP67, version 6, for PCB socket inserts                      | 83   |
| ⑦   | RJ45 socket insert for PCB mounting                                                     | 85   |
| ⑧   | Ethernet cable, for drag chain, by the meter                                            | 96   |
| ⑨   | RJ45 plug-in connector, IP67, for assembly without special tools                        | 82   |
| ⑩   | RJ45 panel mounting frame, IP67, for keystones, version 6                               | 84   |
| ⑪   | RJ45 keystone socket inserts                                                            | 84   |
| ⑫   | RJ45 plug-in connector, IP20, CAT5e, 8-pos., for assembly without special tools         | 78   |
| ⑬   | Assembled Ethernet cable, RJ45 to M12                                                   | 98   |
| ⑭   | RJ45 patch panel for the DIN rail                                                       | 120  |
| ⑮   | RJ45 plug-in connector, IP67, push/pull, version 14, for assembly without special tools | 80   |
| ⑯   | RJ45 field couplings, IP67                                                              | 119  |
| ⑰   | RJ45 panel mounting frame, IP67, push/pull, for PCB socket inserts, version 14          | 85   |
| ⑱   | RJ45 socket insert for PCB mounting, version 14                                         | 85   |
| ⑲   | RJ45 panel mounting frame, IP67, for the Freenet system, version 14                     | 83   |
| ⑳   | RJ45 socket inserts for the Freenet system                                              | 83   |
| ㉑   | Assembled Ethernet cable with RJ45 and M12 plug-in connectors                           | 98   |
| ㉒   | Assembled Ethernet cable with M12 plug-in connectors                                    | 98   |
| ㉓   | M12 plug-in connector, shielded, for assembly without special tools                     | 88   |
| ㉔   | M12 flush-type plug-in connector                                                        | 92   |
| ㉕   | RJ45 to M12 bulkhead                                                                    | 94   |
| ㉖   | Terminal outlets, IP65/IP67                                                             | 118  |
| ㉗   | RJ45 multi-port robot interface                                                         | 117  |



| No. | Designation                                                                           | Page |
|-----|---------------------------------------------------------------------------------------|------|
| ①   | Ethernet cable, by the meter, for 10 Gbps                                             | 96   |
| ②   | RJ45 panel mounting frame, IP67, for the Freenet system, version 14                   | 83   |
| ③   | RJ45 socket inserts for the Freenet system                                            | 83   |
| ④   | RJ45 plug-in connector, IP20, for 10 Gbps, for assembly without special tools         | 78   |
| ⑤   | Assembled Ethernet cable for 10 Gbps                                                  | 102  |
| ⑥   | RJ45 plug-in connector, IP20, consisting of sleeve housing and pin insert for 10 Gbps | 78   |
| ⑦   | RJ45 plug-in connector, IP67, version 14                                              | 80   |
| ⑧   | M12 plug-in connector for 10 Gbps, for assembly without special tools                 | 88   |
| ⑨   | Assembled Ethernet cable for 10 Gbps                                                  | 102  |
| ⑩   | M12 flush-type plug-in connector for 10 Gbps, for PCB mounting                        | 90   |
| ⑪   | Control cabinet feed-through, CAT6 <sub>A</sub> , M12, 8-pos., X-coded to RJ45 socket | 94   |



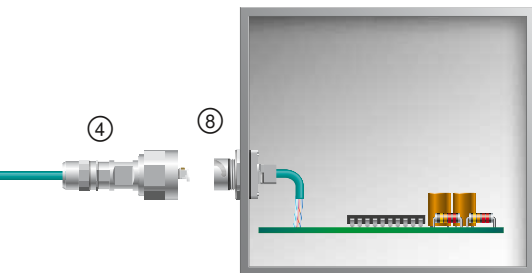
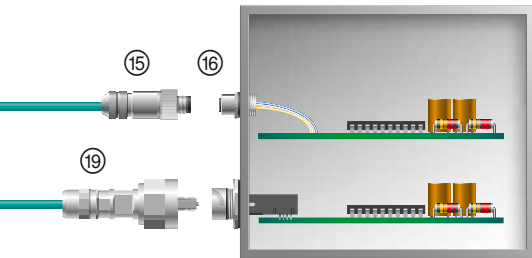
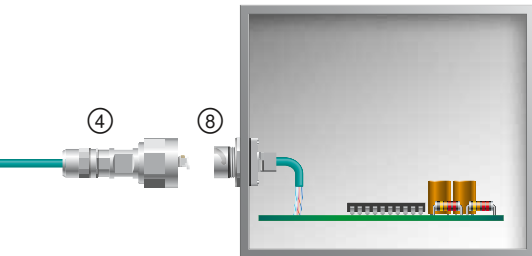
| No. | Designation                                                                          | Page     |          |          |
|-----|--------------------------------------------------------------------------------------|----------|----------|----------|
|     |                                                                                      | POF      | HCS      | GOF      |
| ①   | Adapter cable, SCRJ/IP20 to FSMA (with POF/HCS) or SCRJ/IP20 to SC duplex (with GOF) |          |          |          |
| ②   | Patch panel, SCRJ/IP20, for DIN rail mounting                                        | 134      | 134      | 134      |
| ③   | Assembled industrial cable, assembled at both ends with SCRJ/IP20 plug-in connectors | 138      | 152      | 156      |
| ④   | SCRJ socket insert for panel mounting frames                                         | From 127 | From 130 | From 132 |
| ⑤   | SCRJ/IP67 panel mounting frames                                                      | From 127 | From 130 | From 132 |
| ⑥   | Assembled fiber optic round cable with SCRJ plug-in connectors, IP67                 | From 138 | From 148 | From 156 |
| ⑦   | IP67 terminal outlet with 2 SCRJ/IP67 slots and integrated SCRJ socket inserts       | 134      | 134      | 134      |
| ⑧   | Industrial cable for fixed indoor installation                                       | From 138 | From 148 | From 156 |
| ⑨   | IP68 cable gland                                                                     | From 42  | From 42  | From 42  |
| ⑩   | SCRJ plug-in connector, IP20                                                         | 127      | 130      | 132      |
| ⑪   | Panel feed-through assembled with the cable                                          | 126      |          |          |
| ⑫   | M12 plug-in connector                                                                | 126      |          |          |
| ⑬   | M12 transceiver                                                                      | 126      |          |          |

| Standard                 | Transmission speed | Fiber type      | Wavelength | Length   |
|--------------------------|--------------------|-----------------|------------|----------|
| –                        | 10 Mbps            | POF 980/1000 µm | 660 nm     | 50 m*    |
| –                        | 10 Mbps            | HCS 200/230 µm  | 660 nm     | 300 m    |
| IEC 61784-5-3 (PROFINET) | 100 Mbps           | POF 980/1000 µm | 660 nm     | 50 m*    |
| IEC 61784-5-3 (PROFINET) | 100 Mbps           | HCS 200/230 µm  | 660 nm     | 100 m    |
| 100Base-SX               | 100 Mbps           | GOF 50/125 µm   | 850 nm     | 3800 m   |
| 100Base-FX               | 100 Mbps           | GOF 50/125 µm   | 1300 nm    | 10,000 m |
| 1000Base-SX              | 1000 Mbps          | GOF 50/125 µm   | 850 nm     | 550 m    |
| 1000Base-LX              | 1000 Mbps          | GOF 50/125 µm   | 1300 nm    | 550 m    |

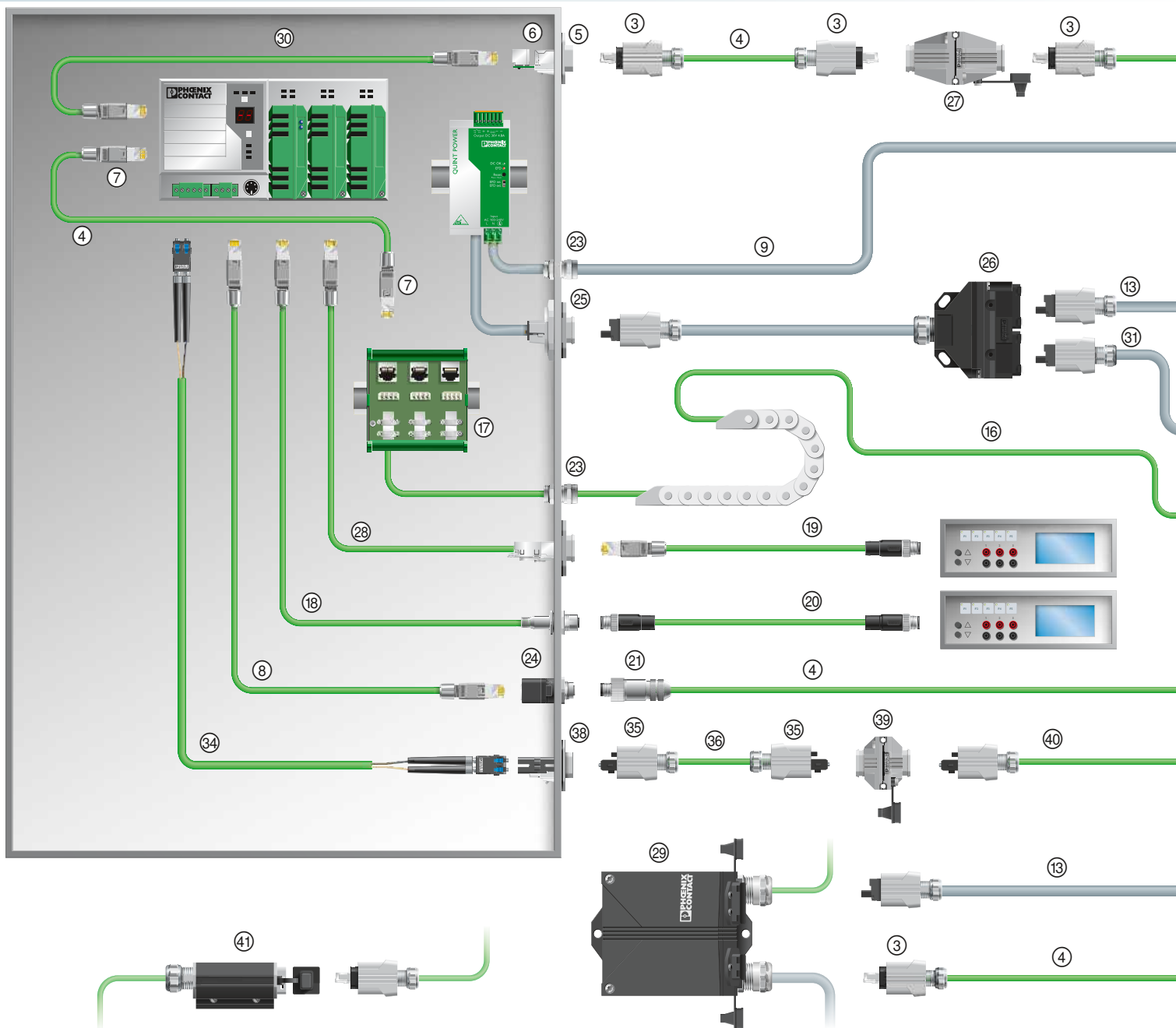
\* minus 10 meters per passive coupling, e.g., patch panel, panel feed-through or terminal outlet



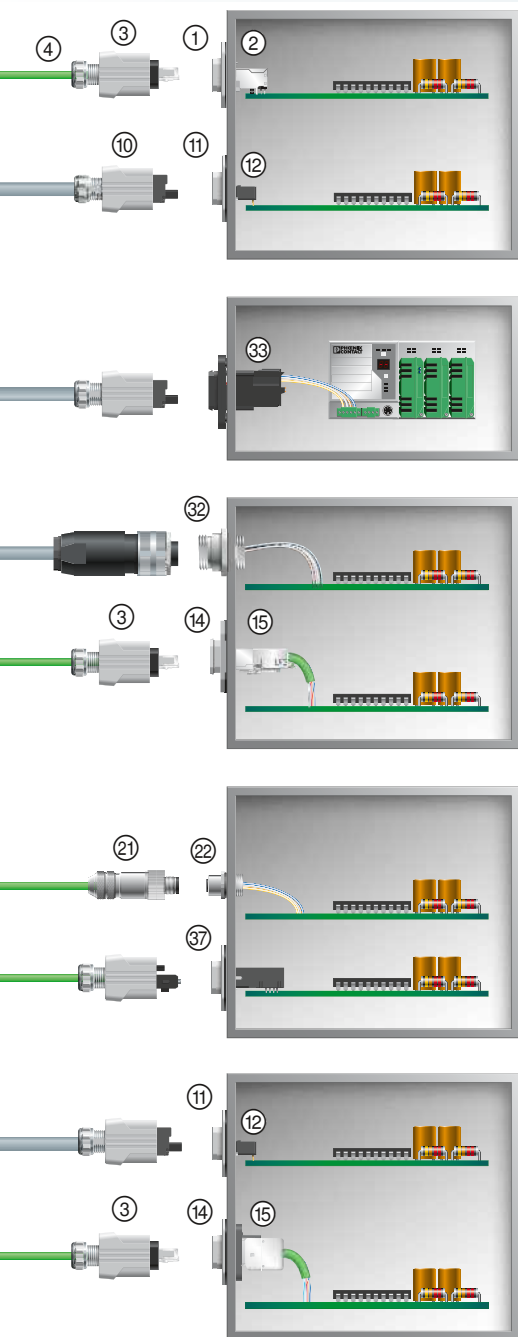




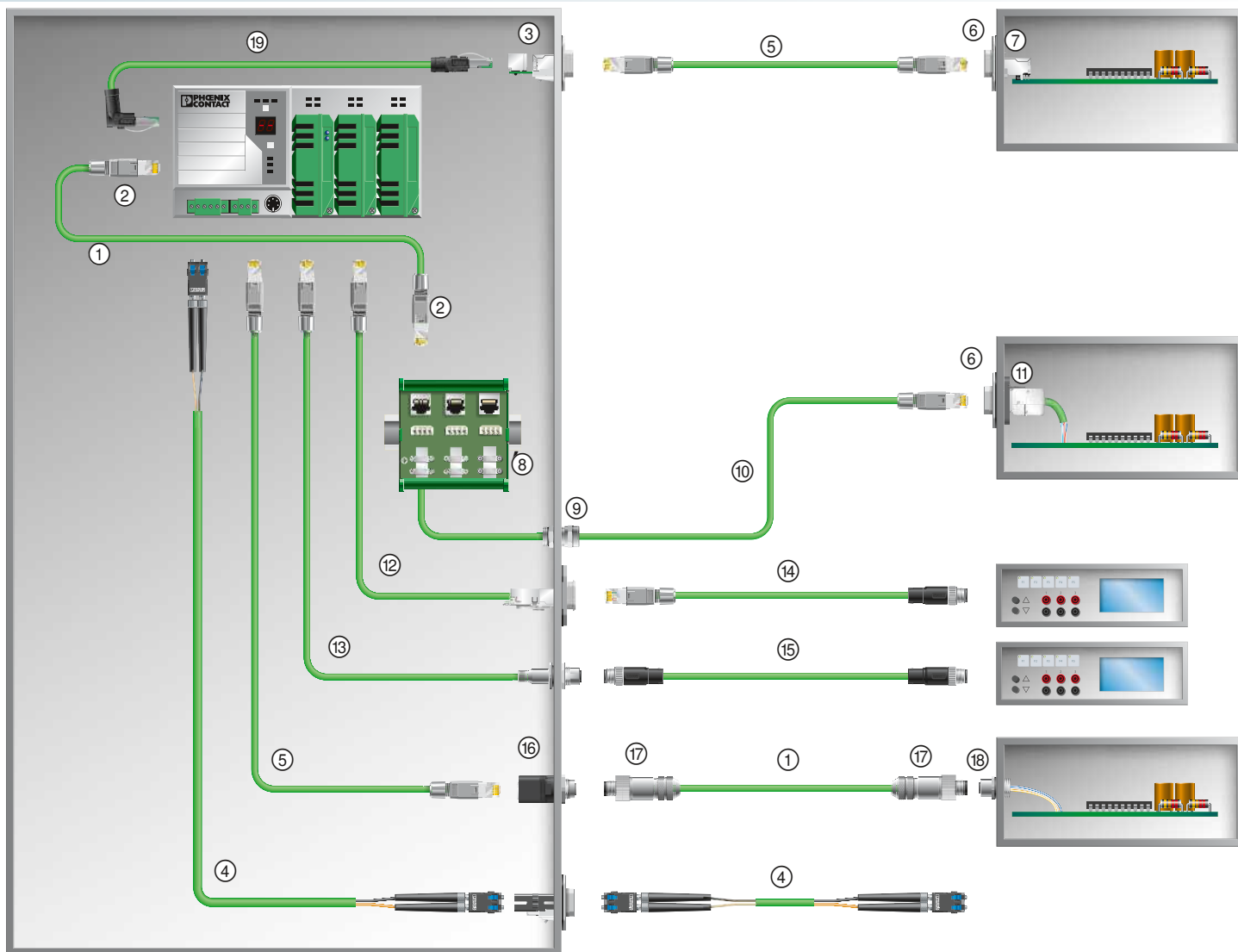
| No. | Designation                                                                               | Page |
|-----|-------------------------------------------------------------------------------------------|------|
| ①   | Cables for flexible installation, by the meter                                            | 96   |
| ②   | RJ45 plug-in connector, IP20, for tool-free assembly                                      | 78   |
| ③   | RJ45 panel feed-through, IP67, socket/socket                                              | 86   |
| ④   | RJ45 plug-in connector, IP67, with bayonet locking                                        | 82   |
| ⑤   | Assembled cables with RJ45 plug-in connectors, IP20                                       | 100  |
| ⑥   | RJ45 patch panel, IP20, for DIN rail mounting                                             | 120  |
| ⑦   | Cables for continuous motion applications, suitable for use with drag chain, by the meter | 96   |
| ⑧   | RJ45 panel feed-through, IP67, with cable connection                                      | 86   |
| ⑨   | IP68 cable gland                                                                          | 42   |
| ⑩   | M12 plug-in connector, with Ethernet cable and assembled RJ45 plug-in connector           | 98   |
| ⑪   | Assembled cable with M12 plug-in connectors, IP65/IP67                                    | 98   |
| ⑫   | Assembled cables with RJ45 plug-in connector and free cable end                           | 98   |
| ⑬   | Assembled cable with M12 flush-type socket to free cable end                              | 98   |
| ⑭   | Control cabinet feed-through, M12/RJ45, 180°                                              | 94   |
| ⑮   | M12 plug-in connector, IP65/IP67, shielded, for tool-free assembly                        | 89   |
| ⑯   | M12 flush-type plug-in connector, with litz wires                                         | 92   |
| ⑰   | Assembled fiber optic cable with SCRJ plug-in connector, IP20                             | 144  |
| ⑱   | SCRJ panel mounting frame, IP67, with bayonet locking, with SCRJ coupling                 | 129  |
| ⑲   | SCRJ plug-in connector, IP67, with bayonet locking                                        | 129  |
| ⑳   | Fiber optic cable, for flexible installation, by the meter                                | 137  |
| ㉑   | Terminal outlets, IP65/IP67                                                               | 118  |



| No. | Designation                                                                                     | Page |     |
|-----|-------------------------------------------------------------------------------------------------|------|-----|
|     |                                                                                                 | POF  | HCS |
| 34  | Assembled fiber optic cable with SCRJ plug-in connector, IP20                                   | 144  | 148 |
| 35  | SCRJ push/pull plug-in connector, IP67, with fast connection technology                         | 128  | 131 |
| 36  | PROFINET fiber optic cable, for flexible installation, by the meter                             | 144  | 148 |
| 37  | SCRJ panel mounting frame, IP67, for push/pull interlocking, for transceivers for PCB mounting  | 128  | 128 |
| 38  | SCRJ panel mounting frame, IP67, for push/pull interlocking, with SCRJ coupling, Freenet system | 128  | 128 |
| 39  | SCRJ coupling, IP67, for push/pull interlocking                                                 | 136  | 136 |
| 40  | Assembled fiber optic cable with SCRJ plug-in connector, IP67                                   | 144  | 148 |



| No. | Designation                                                                                                                          | Page          |
|-----|--------------------------------------------------------------------------------------------------------------------------------------|---------------|
| ①   | RJ45 panel mounting frame, IP67, for push/pull interlocking, for PCB mounting                                                        | 83            |
| ②   | RJ45 socket insert, for PCB mounting                                                                                                 | 83            |
| ③   | RJ45 push/pull plug-in connector, IP67, for tool-free assembly                                                                       | 80            |
| ④   | PROFINET cables, for flexible installation, by the meter                                                                             | 105           |
| ⑤   | RJ45 panel mounting frame, IP67, for push/pull interlocking, for Freenet socket inserts                                              | 83            |
| ⑥   | RJ45 socket insert, socket/socket, Freenet                                                                                           | 83            |
| ⑦   | RJ45 plug-in connector, IP20, for tool-free assembly                                                                                 | 78            |
| ⑧   | Assembled cables with RJ45 plug-in connectors, IP20                                                                                  | 106           |
| ⑨   | Power cables, for flexible installation, by the meter                                                                                | See Catalog 4 |
| ⑩   | MSTB push/pull plug-in connector, IP67, for 24 V, 5-pos., for free assembly                                                          | 124           |
| ⑪   | MSTB panel mounting frame, IP67, for 24 V, for push/pull interlocking                                                                | 124           |
| ⑫   | MSTB contact insert for 24 V, for PCB mounting                                                                                       | 124           |
| ⑬   | Assembled 24 V cable with MSTB push/pull plug-in connectors, IP67                                                                    | See Catalog 4 |
| ⑭   | RJ45 panel mounting frame, IP67, for push/pull interlocking                                                                          | 83            |
| ⑮   | RJ45 socket insert, with cable connection, for tool-free assembly, Freenet                                                           | 83            |
| ⑯   | PROFINET cables, for continuous motion applications, suitable for use with drag chain, by the meter                                  | 105           |
| ⑰   | RJ45 patch panel, IP20, for DIN rail mounting                                                                                        | 120           |
| ⑱   | M12 flush-type plug-in connector, with PROFINET cable and assembled RJ45 plug-in connector                                           | 106           |
| ⑲   | M12 plug-in connector, with PROFINET cable and assembled RJ45 plug-in connector                                                      | 106           |
| ⑳   | Assembled cable with M12 plug-in connectors, IP65/IP67                                                                               | 106           |
| ㉑   | M12 plug-in connector, IP65/IP67, shielded, for tool-free assembly                                                                   | 89            |
| ㉒   | M12 flush-type plug-in connector, with litz wires                                                                                    | 92            |
| ㉓   | IP68 cable gland                                                                                                                     | 42            |
| ㉔   | Control cabinet feed-through, M12/RJ45, 180°                                                                                         | 94            |
| ㉕   | MSTB panel mounting frame, IP67, for 24 V, for push/pull interlocking, with contact insert for conductor connection                  | 124           |
| ㉖   | Power Y-distributor, IP67, with push/pull interlocking                                                                               | 125           |
| ㉗   | Multi-port data coupling                                                                                                             | 119           |
| ㉘   | Assembled cables with RJ45 plug-in connector and socket, IP20                                                                        | 106           |
| ㉙   | Terminal outlet with 1 x RJ45, 1 x power connection, IP67, for push/pull interlocking                                                | 118           |
| ㉚   | PROFINET patch cable, RJ45 to RJ45, IP20                                                                                             | 106           |
| ㉛   | Assembled 24 V cable with MSTB push/pull plug-in connector, IP67, and 7/8" circular plug-in connector                                | See Catalog 4 |
| ㉜   | Flush-type plug-in connector, 5-pos., 7/8"                                                                                           | 266           |
| ㉝   | Panel mounting frame, IP67, for 24 V or 400 V, for push/pull interlocking with MSTB contact insert for conductor connection, plastic | 124           |
| ㉞   | Multi-port robot interface                                                                                                           | 117           |



| No. | Designation                                                      | Page |
|-----|------------------------------------------------------------------|------|
| ①   | EtherCAT cable, by the meter                                     | 108  |
| ②   | RJ45 plug-in connector, IP20,<br>for tool-free assembly          | 78   |
| ③   | RJ45 socket insert, socket/socket, Freetnet                      | 83   |
| ④   | Assembled fiber optic cable<br>with SCRJ plug-in connector, IP20 | 144  |
| ⑤   | Assembled cable with RJ45 plug-in connectors, IP20               | 108  |
| ⑥   | RJ45 panel mounting frame, IP20                                  | 79   |
| ⑦   | RJ45 socket insert,<br>for PCB mounting                          | 85   |
| ⑧   | RJ45 patch panel, IP20,<br>for DIN rail mounting                 | 120  |
| ⑨   | IP68 cable gland                                                 | 42   |
| ⑩   | Assembled cable with RJ45 plug-in connector<br>to free cable end | 108  |
| ⑪   | RJ45 socket insert, with cable connection                        | 83   |
| ⑫   | Assembled cable with RJ45 plug-in connector<br>to RJ45 socket    | 108  |
| ⑬   | Assembled cable with M12 flush-type socket<br>to free cable end  | 108  |
| ⑭   | Assembled cable with RJ45 plug<br>to M12 plug                    | 108  |
| ⑮   | Assembled cable<br>with M12 plug-in connectors                   | 108  |
| ⑯   | Control cabinet panel feed-through,<br>M12/RJ45, 180°            | 94   |
| ⑰   | M12 plug-in connector, shielded,<br>for tool-free assembly       | 89   |
| ⑱   | M12 flush-type plug-in connector,<br>with litz wires             | 92   |
| ⑲   | EtherCAT patch cable, RJ45 to RJ45, IP20                         | 108  |

# Data plug-in connectors

## Network components - RJ45 plug-in connectors

### RJ45 plug-in connector, IP20



Ethernet



**RJ45 plug-in connector  
with fast connection technology,  
for up to 10 Gbps**



Ethernet



**RJ45 pin inserts,  
CAT6<sub>A</sub> and CAT5**

| Technical data                          |  |
|-----------------------------------------|--|
| Electrical data                         |  |
| Transmission characteristics (category) |  |
| Surge voltage category                  |  |
| Material data                           |  |
| Housing material                        |  |
| Contact material                        |  |
| Inflammability class according to UL 94 |  |
| Pollution degree                        |  |
| External cable diameter                 |  |
| Insertion/withdrawal cycles             |  |
| Temperature data                        |  |
| Ambient temperature (operation)         |  |

| Technical data    |                                                 |
|-------------------|-------------------------------------------------|
| VS-08-RJ45-10G/Q  | VS-...-RJ45-...-Q...                            |
| CAT6 <sub>A</sub> | CAT5 (IEC 11801:2002),<br>CAT5e (TIA 568B:2001) |
| I                 | I                                               |
| PA 6.6            | PA 6.6                                          |
| CuSn              | CuSn                                            |
| V2                | V2                                              |
| 2                 | 2                                               |
| 4.5 mm ... 8 mm   | 4.5 mm ... 8 mm                                 |
| ≥ 750             | ≥ 750                                           |
| -20 °C ... 70 °C  | -20 °C ... 70 °C                                |

| Technical data    |                                                 |
|-------------------|-------------------------------------------------|
| VS-08-RJ45-10G/C  | VS-08-ST-H...-RJ45                              |
| CAT6 <sub>A</sub> | CAT5 (IEC 11801:2002),<br>CAT5e (TIA 568B:2001) |
| I                 | I                                               |
| -                 | -                                               |
| Phosphor bronze   | Copper alloy                                    |
| V2                | V2                                              |
| -                 | 2                                               |
| -                 | -                                               |
| -                 | ≥ 750                                           |
| -25 °C ... 60 °C  | -25 °C ... 60 °C                                |

| Ordering data                                                                                                                                                        |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Description                                                                                                                                                          |  |
| <b>RJ45 plug-in connector, IP20, CAT6<sub>A</sub>, 8-pos., with QUICKON fast connection technology, for 1-wire and 7-wire AWG 26 ... 24 conductors, color: black</b> |  |
| <b>RJ45 plug-in connector, IP20, CAT5, 8-pos., with QUICKON fast connection technology, for 1-wire and 7-wire AWG 26 ... 24 conductors, color: black</b>             |  |
| <b>RJ45 plug-in connector, 4-pos., with QUICKON fast connection technology, for 22 AWG, color: gray</b>                                                              |  |
| <b>RJ45 pin insert, CAT6<sub>A</sub>, 10 Gbps</b>                                                                                                                    |  |
| <b>RJ45 pin insert, 8-pos., shielded, IDC connection technology, for 27 ... 26 AWG litz wires, with strain relief</b>                                                |  |
| CAT5                                                                                                                                                                 |  |
| <b>RJ45 bend protection sleeve, for VS-08-ST-H11-RJ45 and VS-08-RJ45-10G/C pin inserts, for cable diameters up to 7 mm</b>                                           |  |
| Gray                                                                                                                                                                 |  |
| Green                                                                                                                                                                |  |

| Ordering data       |           |             |
|---------------------|-----------|-------------|
| Type                | Order No. | Pcs. / Pkt. |
| VS-08-RJ45-10G/Q    | 1419001   | 1           |
| VS-08-RJ45-Q        | 1402420   | 1           |
| VS-PN-RJ45-5-Q/IP20 | 1658435   | 1           |
|                     |           |             |
|                     |           |             |
|                     |           |             |
|                     |           |             |
|                     |           |             |
|                     |           |             |
|                     |           |             |

| Ordering data     |           |             |
|-------------------|-----------|-------------|
| Type              | Order No. | Pcs. / Pkt. |
|                   |           |             |
|                   |           |             |
|                   |           |             |
| VS-08-RJ45-10G/C  | 1418853   | 5           |
| VS-08-ST-H11-RJ45 | 1652716   | 5           |
| VS-08-KS-H/GY     | 1654743   | 5           |
| VS-08-KS-H/GN     | 1654756   | 5           |
|                   |           |             |
|                   |           |             |
|                   |           |             |
|                   |           |             |

| Accessories                                                                         |  |
|-------------------------------------------------------------------------------------|--|
| <b>Crimp tool, pliers with die, for VS-08-ST-H...-RJ45</b>                          |  |
| <b>Stripping tool, for multiple-stage repositioning of shielded conductors</b>      |  |
| <b>Shielding foil set, 25 pcs., replacement for RJ45 and M12-QUICKON connectors</b> |  |

| Accessories           |         |   |
|-----------------------|---------|---|
|                       |         |   |
| VS-CABLE-STRIP-VARIO  | 1657407 | 1 |
| VS-08-RJ45-FOLIEN-SET | 1417184 | 1 |

| Accessories          |         |   |
|----------------------|---------|---|
|                      |         |   |
| VS-CT-RJ45-H         | 1653265 | 1 |
| VS-CABLE-STRIP-VARIO | 1657407 | 1 |



## RJ45 panel mounting frames with IP20 and socket inserts



Ethernet

**RJ45 socket inserts  
and IP20 panel mounting frame,  
modular system, keystone**

| Technical data                                                                                            |                                                         |
|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| Electrical data                                                                                           | VS-08-BU-RJ45-6/KA/LSA VS-08-A-RJ45/MOD-1-IP20          |
| Rated current                                                                                             | 2 A -                                                   |
| Transmission characteristics (category)                                                                   | CAT6 -                                                  |
| Material data                                                                                             |                                                         |
| Housing material                                                                                          | Nickel-plated brass PA                                  |
| Contact material                                                                                          | Copper alloy -                                          |
| Inflammability class according to UL 94                                                                   | V0 V0                                                   |
| Mechanical data                                                                                           |                                                         |
| No. of pos.                                                                                               | 8 -                                                     |
| Connection method                                                                                         | LSA -                                                   |
| Conductor cross section                                                                                   | 0.13 mm <sup>2</sup> ... 0.32 mm <sup>2</sup> (solid) - |
| Connection cross section AWG                                                                              | 26 ... 22 (solid) -                                     |
| Temperature data                                                                                          |                                                         |
| Ambient temperature (operation)                                                                           | -20 °C ... 70 °C -40 °C ... 80 °C                       |
| Ordering data                                                                                             |                                                         |
| Description                                                                                               | Type Order No. Pcs. / Pkt.                              |
| <b>RJ45 socket insert</b> , 8-pos., shielded, socket to socket                                            |                                                         |
| CAT5                                                                                                      | VS-08-BU-RJ45/BU 1689064 5                              |
| <b>RJ45 socket insert</b> , 8-pos., shielded, with cable connection                                       |                                                         |
| CAT6                                                                                                      | VS-08-BU-RJ45-6/KA/LSA 1653168 5                        |
| <b>RJ45 panel mounting frame</b> , single, for modular socket inserts (keystone), without mounting screws |                                                         |
|                                                                                                           | VS-08-A-RJ45/MOD-1-IP20 1689433 5                       |
| Accessories                                                                                               |                                                         |
| <b>Split-core tool</b> , for connecting the copper wires to the LSA Plus strips                           | CT-WZ/A 2765505 1                                       |
| <b>Stripping tool</b> , for multiple-stage repositioning of shielded conductors                           | VS-CABLE-STRIP-VARIO 1657407 1                          |

# Data plug-in connectors

## Network components - RJ45 plug-in connectors

### RJ45 plug-in connector, version 14, IP65/IP67

Ethernet



RJ45 plug-in connector, version 14, push/pull, 10 Gbps

Ethernet



RJ45 plug-in connector, version 14, push/pull, fast connection technology

| Technical data                                                                                                                                                                                       |                           | Technical data                               |                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|----------------------------------------------|----------------------------------------------|
| Electrical data                                                                                                                                                                                      | VS-PPC-C1-...-8/10G       | VS-PPC-C1-...-PG9-8Q5                        | VS-PPC-C1-...-PG9-4Q5                        |
| Nominal voltage $U_N$                                                                                                                                                                                | 50 V                      | 50 V                                         | 50 V                                         |
| Rated current                                                                                                                                                                                        | 1.75 A                    | 1.75 A                                       | 1.75 A                                       |
| Transmission characteristics (category)                                                                                                                                                              | CAT6 <sub>A</sub>         | CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001) | CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001) |
| Surge voltage category                                                                                                                                                                               | I                         | I                                            | I                                            |
| Material data                                                                                                                                                                                        |                           |                                              |                                              |
| Housing material                                                                                                                                                                                     | Zinc die-cast             | Zinc die-cast                                | Zinc die-cast                                |
| Contact material                                                                                                                                                                                     | Copper alloy              | Copper alloy                                 | Copper alloy                                 |
| Inflammability class according to UL 94                                                                                                                                                              | V0                        | V0                                           | V0                                           |
| Pollution degree                                                                                                                                                                                     | 2                         | 2                                            | 2                                            |
| Connection data                                                                                                                                                                                      |                           |                                              |                                              |
| Connection method                                                                                                                                                                                    | IDC fast connection       | IDC fast connection                          | IDC fast connection                          |
| Connection cross section AWG                                                                                                                                                                         | 26 ... 24 (solid)         | 26 ... 22 (solid)                            | 26 ... 22 (solid)                            |
| Connection cross section AWG                                                                                                                                                                         | 26 ... 24 (7-wire)        | 26 ... 22 (stranded)                         | 26 ... 22 (stranded)                         |
| External cable diameter                                                                                                                                                                              | 5 mm ... 8 mm             | 5 mm ... 8 mm                                | 5 mm ... 8 mm                                |
| Insertion/withdrawal cycles                                                                                                                                                                          | ≥ 250                     | ≥ 250                                        | ≥ 500                                        |
| Temperature data                                                                                                                                                                                     |                           |                                              |                                              |
| Ambient temperature (operation)                                                                                                                                                                      | -40 °C ... 70 °C          | -40 °C ... 70 °C                             | -40 °C ... 70 °C                             |
| Ordering data                                                                                                                                                                                        |                           | Ordering data                                |                                              |
| Description                                                                                                                                                                                          | Type                      | Order No.                                    | Pcs. / Pkt.                                  |
| <b>Push/pull plug-in connector</b> (version 14) for 10 Gbps, with RJ45 crimp connection, for 26 ... 24 AWG stranded conductors, 5.0 mm ... 8.0 mm cable diameter                                     | VS-PPC-C1-RJ45-MNNA-8I10G | 1422108                                      | 1                                            |
|                                                                                                                                                                                                      | VS-PPC-C1-RJ45-POBK-8I10G | 1422205                                      | 1                                            |
| Metal housing                                                                                                                                                                                        |                           |                                              |                                              |
| Plastic housings                                                                                                                                                                                     |                           |                                              |                                              |
| <b>Push/pull plug-in connector</b> (version 14) optimized for use in environments subject to EMI, with RJ45 QUICKON fast connection technology, for 5.0 mm ... 8.0 mm cable diameter                 |                           |                                              |                                              |
| 4-pos., 22 AWG 1-wire and 7-wire conductors                                                                                                                                                          |                           |                                              |                                              |
| 8-pos., 26 ... 24 AWG 1-wire and 7-wire conductors                                                                                                                                                   |                           |                                              |                                              |
| <b>Push/pull plug-in connector</b> (version 14) for 1 Gbps, 8-pos., with RJ45 QUICKON fast connection technology, for 26 ... 24 AWG 1 and 7-wire conductors, 5.0 mm ... 8.0 mm cable diameter        |                           |                                              |                                              |
| Metal housing                                                                                                                                                                                        |                           |                                              |                                              |
| Plastic housings                                                                                                                                                                                     |                           |                                              |                                              |
| <b>Push/pull plug-in connector</b> (version 14) for 1 Gbps, 4-pos., PROFINET with RJ45 QUICKON fast connection technology, for 22 AWG 1-wire and 7-wire conductors, 5.0 mm ... 8.0 mm cable diameter |                           |                                              |                                              |
| Metal housing                                                                                                                                                                                        |                           |                                              |                                              |
| Plastic housings                                                                                                                                                                                     |                           |                                              |                                              |
| <b>Protective cover, IP65</b> , with push/pull interlocking, for covering the contact insert in the push/pull connector for RJ45 and SCRJ, plastic                                                   | VS-PPC-F1-PC-POBK         | 1405316                                      | 1                                            |
| <b>Shielding foil set</b> , 25 pcs., replacement for RJ45 and M12-QUICKON connectors                                                                                                                 | VS-08-RJ45-FOLIEN-SET     | 1417184                                      | 1                                            |
| <b>Stripping tool</b> , for multiple-stage repositioning of shielded conductors                                                                                                                      | VS-CABLE-STRIP-VARIO      | 1657407                                      | 1                                            |
| Accessories                                                                                                                                                                                          |                           | Accessories                                  |                                              |
|                                                                                                                                                                                                      | VS-PPC-F1-PC-POBK         | 1405316                                      | 1                                            |
|                                                                                                                                                                                                      | VS-08-RJ45-FOLIEN-SET     | 1417184                                      | 1                                            |
|                                                                                                                                                                                                      | VS-CABLE-STRIP-VARIO      | 1657407                                      | 1                                            |

# RJ45 plug-in connector, version 4, IP65/IP67



RJ45 plug-in connector



RJ45 socket insert

| Technical data                                                                                                                                     |                      |           |             | Technical data       |           |             |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------|-------------|----------------------|-----------|-------------|--|
| Electrical data                                                                                                                                    | -                    |           |             | -                    |           |             |  |
| Transmission characteristics (category)                                                                                                            | CAT6 <sub>A</sub>    |           |             | -                    |           |             |  |
| Material data                                                                                                                                      |                      |           |             |                      |           |             |  |
| Housing material                                                                                                                                   | Plastic              |           |             | -                    |           |             |  |
| Inflammability class according to UL 94                                                                                                            | V0                   |           |             | V0                   |           |             |  |
| Mechanical data                                                                                                                                    |                      |           |             |                      |           |             |  |
| No. of pos.                                                                                                                                        | 8                    |           |             | 8                    |           |             |  |
| Connection method                                                                                                                                  | Crimp connection     |           |             | -                    |           |             |  |
| Connection cross section AWG                                                                                                                       | 28 ... 24 (stranded) |           |             | -                    |           |             |  |
| Temperature data                                                                                                                                   |                      |           |             |                      |           |             |  |
| Ambient temperature (operation)                                                                                                                    | -40 °C ... 70 °C     |           |             | -40 °C ... 70 °C     |           |             |  |
| Ordering data                                                                                                                                      |                      |           |             | Ordering data        |           |             |  |
| Description                                                                                                                                        | Type                 | Order No. | Pcs. / Pkt. | Type                 | Order No. | Pcs. / Pkt. |  |
| <b>RJ45 plug-in connector</b> , IP67, with push/pull interlocking (version 4), plastic housing, for 10 Gbps, for 24 ... 28 AWG stranded conductors | CUC-V04-RJ45-POBK-8  | 1407413   | 1           |                      |           |             |  |
| <b>RJ45 socket insert</b> , 1-way, for PCB mounting, CAT5e, 8-pos., shielded                                                                       |                      |           |             | CUC-V04-BU-180       | 1407409   | 1           |  |
| Straight solder pins                                                                                                                               |                      |           |             | CUC-V04-BU-90        | 1407408   | 1           |  |
| Angled solder pins                                                                                                                                 |                      |           |             |                      |           |             |  |
| <b>Panel mounting frame</b>                                                                                                                        |                      |           |             | CUC-V04-F-POBK-180   | 1407410   | 1           |  |
| For 180° socket insert                                                                                                                             |                      |           |             | CUC-V04-F-POBK-90    | 1407411   | 1           |  |
| For 90° socket insert                                                                                                                              |                      |           |             |                      |           |             |  |
| <b>Panel mounting frame set</b>                                                                                                                    |                      |           |             | CUC-V04-F-BU/BU-RJ45 | 1407412   | 1           |  |
| Socket / Socket                                                                                                                                    |                      |           |             |                      |           |             |  |
| Accessories                                                                                                                                        |                      |           |             | Accessories          |           |             |  |
| <b>Stripping tool</b> , for multiple-stage repositioning of shielded conductors                                                                    | VS-CABLE-STRIP-VARIO | 1657407   | 1           |                      |           |             |  |
| <b>Electronic diagonal cutter</b> , tapered head, without chamfer, with opening spring, non-reflective phosphate-treated surface, punched version  | MICROFOX-SP-1        | 1212487   | 1           |                      |           |             |  |
| <b>Crimping pliers</b> , for assembling the RJ45 plug-in connectors                                                                                | FL CRIMPTOOL         | 2744869   | 1           |                      |           |             |  |

# Data plug-in connectors

## Network components - RJ45 plug-in connectors

### RJ45 plug-in connector, version 6 and version 1, IP65/IP67

#### Ethernet



RJ45 plug-in connector, version 6



RJ45 plug-in connector, version 1

|                                                                                                                                                                   | Technical data                               | Technical data                               |             |                                      |                |             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|----------------------------------------------|-------------|--------------------------------------|----------------|-------------|
|                                                                                                                                                                   | VS-08-RJ45-5-Q/IP67...                       | VS-V1-C-RJ45-MNNA-PG9-8-I-5-S                |             |                                      |                |             |
| Electrical data                                                                                                                                                   |                                              |                                              |             |                                      |                |             |
| Rated voltage                                                                                                                                                     | 50 V                                         | 50 V                                         |             |                                      |                |             |
| Rated current                                                                                                                                                     | 1.75 A                                       | 1.75 A                                       |             |                                      |                |             |
| Transmission characteristics (category)                                                                                                                           | CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001) | CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001) |             |                                      |                |             |
| Surge voltage category                                                                                                                                            | I                                            | I                                            |             |                                      |                |             |
| Material data                                                                                                                                                     |                                              |                                              |             |                                      |                |             |
| Housing material                                                                                                                                                  | PA                                           | Zinc die-cast                                |             |                                      |                |             |
| Contact material                                                                                                                                                  | Copper alloy                                 | -                                            |             |                                      |                |             |
| Inflammability class according to UL 94                                                                                                                           | V0                                           | V0                                           |             |                                      |                |             |
| Pollution degree                                                                                                                                                  | 2                                            | 2                                            |             |                                      |                |             |
| Connection data                                                                                                                                                   |                                              |                                              |             |                                      |                |             |
| Connection method                                                                                                                                                 | IDC fast connection                          | IDC connection                               |             |                                      |                |             |
| Connection cross section AWG                                                                                                                                      | 26 ... 22 (solid)                            | 27 ... 24 (stranded)                         |             |                                      |                |             |
| Connection cross section AWG                                                                                                                                      | 26 ... 22 (stranded)                         | -                                            |             |                                      |                |             |
| External cable diameter                                                                                                                                           | 5 mm ... 8 mm                                | 5 mm ... 10 mm                               |             |                                      |                |             |
| Insertion/withdrawal cycles                                                                                                                                       | ≥ 1000                                       | 750                                          |             |                                      |                |             |
| Temperature data                                                                                                                                                  |                                              |                                              |             |                                      |                |             |
| Ambient temperature (operation)                                                                                                                                   | -20 °C ... 70 °C                             | -40 °C ... 70 °C                             |             |                                      |                |             |
|                                                                                                                                                                   | Ordering data                                | Ordering data                                |             |                                      |                |             |
| Description                                                                                                                                                       | Type                                         | Order No.                                    | Pcs. / Pkt. | Type                                 | Order No.      | Pcs. / Pkt. |
| <b>RJ45 plug-in connector</b> , 8-pos., with QUICKON fast connection technology, for AWG 26 ... 22                                                                |                                              |                                              |             |                                      |                |             |
| Military gray RAL 7042                                                                                                                                            | <b>VS-08-RJ45-5-Q/IP67</b>                   | <b>1656990</b>                               | 1           |                                      |                |             |
| Deep black RAL 9005                                                                                                                                               | <b>VS-08-RJ45-5-Q/IP67-BK</b>                | <b>1658493</b>                               | 1           |                                      |                |             |
| <b>RJ45 pin insert</b> , 8-pos., shielded, IDC connection technology, for 27 ... 26 AWG litz wires, with strain relief                                            |                                              |                                              |             |                                      |                |             |
| CAT5                                                                                                                                                              | <b>VS-08-ST-H11-RJ45</b>                     | <b>1652716</b>                               | 5           |                                      |                |             |
| CAT6                                                                                                                                                              | <b>VS-08-ST-H21-RJ45</b>                     | <b>1652729</b>                               | 5           |                                      |                |             |
| <b>RJ45 pin insert</b> , 8-pos., shielded, IDC pierce connection, for litz wires AWG 27 ... 24, with strain relief                                                |                                              |                                              |             |                                      |                |             |
| CAT6                                                                                                                                                              | <b>VS-08-ST-H21P-RJ45</b>                    | <b>1404388</b>                               | 5           |                                      |                |             |
| <b>RJ45 pin insert</b> , CAT6 <sub>A</sub> , 10 Gbps                                                                                                              | <b>VS-08-RJ45-10G/C</b>                      | <b>1418853</b>                               | 5           |                                      |                |             |
| <b>RJ45 sleeve housing</b> for pin insert VS-08-ST-H...-RJ45, with push/pull interlocking for panel mounting frames, for cable diameters 5.0 mm ... 8.5 mm        |                                              |                                              |             |                                      |                |             |
| Military gray RAL 7042                                                                                                                                            | <b>VS-08-T-H-RJ45/IP67</b>                   | <b>1652732</b>                               | 5           |                                      |                |             |
| Deep black RAL 9005                                                                                                                                               | <b>VS-08-T-H-RJ45/IP67-BK</b>                | <b>1658671</b>                               | 5           |                                      |                |             |
| <b>RJ45 plug-in connector</b> , IP67, with bayonet locking, metal housing, CAT5e, 8-pos., IDC connection method, for 26 AWG 7-wire conductors, for cable diameter |                                              |                                              |             |                                      |                |             |
| 5.0 mm ... 8.0 mm                                                                                                                                                 |                                              |                                              |             | <b>VS-V1-C-RJ45-MNNA-PG9-8-I-5-S</b> | <b>1419182</b> | 1           |
|                                                                                                                                                                   | Accessories                                  | Accessories                                  |             |                                      |                |             |
| <b>Stripping tool</b> , for multiple-stage repositioning of shielded conductors                                                                                   | <b>VS-CABLE-STRIP-VARIO</b>                  | <b>1657407</b>                               | 1           | <b>VS-CABLE-STRIP-VARIO</b>          | <b>1657407</b> | 1           |
| <b>Protective cover</b> , IP67, plastic, for covering the contact insert in the RJ45, LC, and SCRJ connector                                                      |                                              |                                              |             | <b>VS-V1-C-PC-POBK</b>               | <b>1419183</b> | 1           |
| <b>Crimp tool</b> , pliers with die, for VS-08-ST-H...-RJ45                                                                                                       | <b>VS-CT-RJ45-H</b>                          | <b>1653265</b>                               | 1           |                                      |                |             |

## IP65/IP67 RJ45 panel mounting frame and Freenet socket inserts



Ethernet



Push/pull, version 14,  
Freenet system

Ethernet



Version 6,  
Freenet system

| Electrical data                         |                  |
|-----------------------------------------|------------------|
| Nominal voltage $U_N$                   | 50 V             |
| Rated current                           | 1 A              |
| Housing material                        | Polycarbonate    |
| Contact material                        | CuSn             |
| Inflammability class according to UL 94 | V0               |
| No. of pos.                             | 8                |
| Connection method                       | IDC              |
| Insertion/withdrawal cycles             | ≥ 750            |
| Temperature data                        |                  |
| Ambient temperature (operation)         | -10 °C ... 60 °C |

| Technical data      |                          |
|---------------------|--------------------------|
| VS-08-BU-RJ45/10G-F | VS-PPC-F1-RJ45-MNNA-1R-F |
| 50 V                | -                        |
| 1 A                 | -                        |
| Polycarbonate       | Zinc die-cast            |
| CuSn                | -                        |
| V0                  | V0                       |
| 8                   | -                        |
| IDC                 | -                        |
| ≥ 750               | -                        |
| -10 °C ... 60 °C    | -40 °C ... 70 °C         |

| Description                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>RJ45 Freenet socket insert</b> , 8-pos., shielded, with cable connection<br>10 Gbps, CAT6 <sub>A</sub>                             |
| <b>RJ45 Freenet socket insert</b> , 8-pos., shielded, with cable connection<br>1 Gbps, CAT5                                           |
| <b>RJ45 Freenet socket insert</b> , 8-pos., shielded, socket to socket<br>1 Gbps, CAT5                                                |
| <b>RJ45 Freenet panel mounting frame</b> , version 14, IP65/IP67, for rectangular mounting cutout, with seal, without mounting screws |
| Metal housing                                                                                                                         |
| Plastic housings                                                                                                                      |
| <b>RJ45 Freenet panel mounting frame</b> , version 14, IP65/IP67, for round mounting cutout, with seal and central nut                |
| Metal housing                                                                                                                         |
| <b>Freenet panel mounting frame</b> , version 6, for round mounting cutout, with seal, without mounting screws                        |
| Military gray RAL 7042                                                                                                                |
| Deep black RAL 9005                                                                                                                   |

| Ordering data            |           |             |  |
|--------------------------|-----------|-------------|--|
| Type                     | Order No. | Pcs. / Pkt. |  |
| VS-08-BU-RJ45/10G-F      | 1424009   | 1           |  |
| VS-08-BU-RJ45-5-F/PK     | 1652936   | 1           |  |
| VS-08-BU/BU-RJ45-F       | 1405617   | 1           |  |
| VS-PPC-F1-RJ45-MNNA-1R-F | 1405358   | 1           |  |
| VS-PPC-F1-RJ45-POBK-1R-F | 1608197   | 1           |  |
| VS-PPC-F1-RJ45-MNNA-1C-F | 1405222   | 1           |  |

| Accessories                                                                     |  |
|---------------------------------------------------------------------------------|--|
| <b>Protective cover</b> for version 6 panel mounting frame                      |  |
| Military gray RAL 7042                                                          |  |
| Deep black RAL 9005                                                             |  |
| <b>Protective cover</b>                                                         |  |
| For data port                                                                   |  |
| <b>Stripping tool</b> , for multiple-stage repositioning of shielded conductors |  |

| Accessories          |           |             |  |
|----------------------|-----------|-------------|--|
| Type                 | Order No. | Pcs. / Pkt. |  |
| VS-PPC-C1-PC-ROBK-L  | 1405293   | 1           |  |
| VS-CABLE-STRIP-VARIO | 1657407   | 1           |  |

| Technical data       |                  |
|----------------------|------------------|
| VS-08-BU-RJ45-5-F/PK | VS-A-F-IP67      |
| 50 V                 | -                |
| 1 A                  | -                |
| -                    | PA               |
| Copper alloy         | -                |
| V0                   | V0               |
| 8                    | -                |
| IDC                  | -                |
| ≥ 750                | ≥ 1000           |
| -20 °C ... 70 °C     | -40 °C ... 80 °C |

| Ordering data        |           |             |  |
|----------------------|-----------|-------------|--|
| Type                 | Order No. | Pcs. / Pkt. |  |
| VS-08-BU-RJ45/10G-F  | 1424009   | 1           |  |
| VS-08-BU-RJ45-5-F/PK | 1652936   | 1           |  |
| VS-08-BU/BU-RJ45-F   | 1405617   | 1           |  |
| VS-A-F-IP67          | 1653744   | 5           |  |
| VS-A-F-IP67-BK       | 1658668   | 5           |  |

| Accessories          |           |             |  |
|----------------------|-----------|-------------|--|
| Type                 | Order No. | Pcs. / Pkt. |  |
| VS-08-SD-F           | 1652606   | 5           |  |
| VS-08-SD-F-BK        | 1658066   | 5           |  |
| VS-CABLE-STRIP-VARIO | 1657407   | 1           |  |

### IP65/IP67 RJ45 panel mounting frame and socket inserts

#### Ethernet



Version 6,  
keystone

#### Technical data

|                                         | VS-08-BU-RJ45-6/KA/LSA | VS-08-A-RJ45/MOD-1-IP67 |
|-----------------------------------------|------------------------|-------------------------|
| Electrical data                         |                        |                         |
| Rated voltage                           | 250 V                  | -                       |
| Rated current                           | 2 A                    | -                       |
| Transmission characteristics (category) | CAT6                   | -                       |
| Housing material                        | Nickel-plated brass    | PA                      |
| Contact material                        | Copper alloy           | -                       |
| Inflammability class according to UL 94 | V0                     | V0                      |
| No. of pos.                             | 8                      | -                       |
| Connection method                       | LSA                    | -                       |
| Connection cross section AWG            | 26 ... 22 (solid)      | -                       |
| Insertion/withdrawal cycles             | ≥ 1000                 | ≥ 1000                  |
| Temperature data                        |                        |                         |
| Ambient temperature (operation)         | -20 °C ... 70 °C       | -40 °C ... 80 °C        |

#### Ordering data

| Description                                                                                                                 | Type                         | Order No. | Pcs. / Pkt. |
|-----------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------|-------------|
| <b>RJ45 socket insert</b> , 8-pos., shielded, with cable connection                                                         |                              |           |             |
| CAT6                                                                                                                        | VS-08-BU-RJ45-6/KA/LSA       | 1653168   | 5           |
| <b>RJ45 socket insert</b> , 8-pos., shielded, socket to socket                                                              |                              |           |             |
| CAT5                                                                                                                        | VS-08-BU-RJ45/BU             | 1689064   | 5           |
| CAT6                                                                                                                        | VS-08-BU-RJ45-6-MOD/BU       | 1653155   | 5           |
| <b>RJ45 keystone panel mounting frame</b> , version 6, for round mounting cutout, with seal and central nut                 |                              |           |             |
| Military gray RAL 7042                                                                                                      | VS-08-A-RJ45/MOD-1-R-IP67    | 1689844   | 1           |
| Deep black RAL 9005                                                                                                         | VS-08-A-RJ45/MOD-1-R-IP67 BK | 1658053   | 5           |
| <b>RJ45 keystone panel mounting frame</b> , version 6, with rectangular mounting cutout, with seal, without mounting screws |                              |           |             |
| Military gray RAL 7042                                                                                                      | VS-08-A-RJ45/MOD-1-IP67      | 1689080   | 5           |
| Deep black RAL 9005                                                                                                         | VS-08-A-RJ45/MOD-1-IP67-BK   | 1658642   | 5           |

#### Accessories

| <b>Stripping tool</b> , for multiple-stage repositioning of shielded conductors | VS-CABLE-STRIP-VARIO | 1657407 | 1 |
|---------------------------------------------------------------------------------|----------------------|---------|---|
| <b>Protective cover</b> for version 6 panel mounting frame                      |                      |         |   |
| Military gray RAL 7042                                                          | VS-08-SD-F           | 1652606 | 5 |
| Deep black RAL 9005                                                             | VS-08-SD-F-BK        | 1658066 | 5 |



## IP65/IP67 RJ45 panel mounting frame and socket inserts



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**Push/pull, version 14,  
with PCB connection**

**Ethernet**



**Version 6,  
with PCB connection**

| Electrical data                         |                  |
|-----------------------------------------|------------------|
| Rated voltage                           | 125 V            |
| Rated current                           | 1 A              |
| Housing material                        | Copper alloy     |
| Contact material                        | Copper alloy     |
| Inflammability class according to UL 94 | V0               |
| No. of pos.                             | 8                |
| Insertion/withdrawal cycles             | ≥ 750            |
| Temperature data                        |                  |
| Ambient temperature (operation)         | -25 °C ... 80 °C |

| Technical data      |                            |
|---------------------|----------------------------|
| VS-08-BU-RJ45-6/... | VS-PPC-F1-RJ45-MNNA-1R-PHA |
| 125 V               | -                          |
| 1 A                 | -                          |
| Copper alloy        | Zinc die-cast              |
| Copper alloy        | -                          |
| V0                  | V0                         |
| 8                   | -                          |
| ≥ 750               | ≥ 500                      |
| -25 °C ... 80 °C    | -40 °C ... 70 °C           |

| Description                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------|
| <b>RJ45 socket insert</b> , for PCB assembly, CAT6, 8-pos., shielded, with angled solder pins, 1x                             |
| <b>RJ45 socket insert</b> , for PCB mounting, CAT5, 8-pos., shielded, with angled solder pins                                 |
| <b>RJ45 socket insert</b> , single, for PCB mounting, CAT6, 8-pos., shielded                                                  |
| Straight solder pins                                                                                                          |
| Angled solder pins                                                                                                            |
| <b>RJ45 panel mounting frame</b> , version 14, IP65/IP67, for rectangular mounting cutout, with seal, without mounting screws |
| Metal housing                                                                                                                 |
| Plastic housings                                                                                                              |
| <b>RJ45 panel mounting frame</b> , version 6, for rectangular mounting cutout, with seal, without mounting screws             |
| Military gray RAL 7042                                                                                                        |
| Deep black RAL 9005                                                                                                           |

| Ordering data              |           |             |
|----------------------------|-----------|-------------|
| Type                       | Order No. | Pcs. / Pkt. |
| VS-08-BU-RJ45-10G/LH-1     | 1420401   | 1           |
| VS-08-BU-RJ45-6/LV-1       | 1653090   | 5           |
| VS-08-BU-RJ45-6/LH-1       | 1653087   | 5           |
| VS-PPC-F1-RJ45-MNNA-1R-PHA | 1608029   | 1           |
| VS-PPC-F1-RJ45-P0BK-1R-PHA | 1657847   | 1           |

| Stripping tool                                             |
|------------------------------------------------------------|
| for multiple-stage repositioning of shielded conductors    |
| <b>Protective cover</b>                                    |
| For data port                                              |
| <b>Protective cover</b> for version 6 panel mounting frame |
| Military gray RAL 7042                                     |
| Deep black RAL 9005                                        |

| Accessories          |         |   |
|----------------------|---------|---|
| VS-CABLE-STRIP-VARIO | 1657407 | 1 |
| VS-PPC-C1-PC-ROBK-L  | 1405293 | 1 |

| Technical data     |                           |
|--------------------|---------------------------|
| VS-08-BU-RJ45/LP-1 | VS-08-A-RJ45/LP-1-IP67... |
| 150 V              | -                         |
| 1.5 A              | -                         |
| -                  | PA                        |
| Copper alloy       | -                         |
| V0                 | V0                        |
| 8                  | -                         |
| ≥ 750              | ≥ 1000                    |
| -40 °C ... 85 °C   | -40 °C ... 80 °C          |

| Ordering data             |           |             |
|---------------------------|-----------|-------------|
| Type                      | Order No. | Pcs. / Pkt. |
| VS-08-BU-RJ45/LP-1        | 1688586   | 5           |
| VS-08-BU-RJ45-6/LV-1      | 1653090   | 5           |
| VS-08-BU-RJ45-6/LH-1      | 1653087   | 5           |
| VS-08-A-RJ45/LP-1-IP67    | 1689446   | 5           |
| VS-08-A-RJ45/LP-1-IP67-BK | 1658655   | 5           |

| Accessories          |         |   |
|----------------------|---------|---|
| VS-CABLE-STRIP-VARIO | 1657407 | 1 |
| VS-08-SD-F           | 1652606 | 5 |
| VS-08-SD-F-BK        | 1658066 | 5 |

### IP65/IP67 RJ45 panel mounting frame including socket inserts



**RJ45 panel mounting frame with socket insert, version 1**



**RJ45 panel mounting frame with socket insert, version 1**

#### Electrical data

|                                         |
|-----------------------------------------|
| Transmission characteristics (category) |
| Housing material                        |
| Inflammability class according to UL 94 |
| No. of pos.                             |
| Connection cross section AWG            |
| Insertion/withdrawal cycles             |
| Temperature data                        |
| Ambient temperature (operation)         |

#### Technical data

|                                              |
|----------------------------------------------|
| CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001) |
| Zinc die-cast                                |
| V0                                           |
| 8                                            |
| -                                            |
| 750                                          |
| -40 °C ... 70 °C                             |

#### Ordering data

#### Description

**RJ45 panel mounting frame, IP67, for bayonet locking, metal, with socket/socket contact insert, for round mounting cutout, with seal, without mounting screws**

**RJ45 panel mounting frame, IP67, for bayonet locking, metal, with contact insert for cable connection, for round mounting cutout, with seal, without mounting screws**

| Type                         | Order No. | Pcs. / Pkt. |
|------------------------------|-----------|-------------|
| VS-V1-F-RJ45-MNNA-1-C-S-JJ-S | 1419184   | 1           |

#### Accessories

**Protective cover, IP67, plastic, for covering the contact insert in the RJ45, LC, and SCRJ panel mounting frame**

|                 |         |   |
|-----------------|---------|---|
| VS-V1-F-PC-POBK | 1419186 | 1 |
|-----------------|---------|---|

#### Technical data

|                                              |
|----------------------------------------------|
| CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001) |
| Zinc die-cast                                |
| V0                                           |
| 8                                            |
| 26 ... 22 (stranded)                         |
| 750                                          |
| -40 °C ... 70 °C                             |

#### Ordering data

| Type                         | Order No. | Pcs. / Pkt. |
|------------------------------|-----------|-------------|
| VS-V1-F-RJ45-MNNA-1-C-S-JI-S | 1419185   | 1           |

#### Accessories

|                 |         |   |
|-----------------|---------|---|
| VS-V1-F-PC-POBK | 1419186 | 1 |
|-----------------|---------|---|



### M12 plug-in connector, for assembly

#### Ethernet



M12 plug-in connector, 10 Gbps, Piercecon® connection

#### Ethernet



M12 plug-in connector, 100 Mbps, screw connection



#### Technical data

VS-08-M12...-10G-P SCO

#### Electrical data

Nominal voltage  $U_N$   
Rated current  
Transmission characteristics (category)  
Material contact / contact surface  
Material of grip body  
Inflammability class according to UL 94  
No. of pos.  
Connection method  
Connection cross section AWG  
Insertion/withdrawal cycles  
Temperature data  
Ambient temperature (operation)

48 V  
0.5 A  
CAT6<sub>A</sub>  
CuSn / Ni/Au  
Zinc die-cast, nickel-plated  
V0  
8  
Piercecon®  
26  
≥ 100  
-40 °C ... 85 °C

#### Ordering data

| Type                  | Order No. | Pcs. / Pkt. |
|-----------------------|-----------|-------------|
| VS-08-M12MS-10G-P SCO | 1417430   | 1           |
| VS-08-M12MR-10G-P SCO | 1417443   | 1           |

#### Accessories

|                      |         |   |
|----------------------|---------|---|
| VS-CABLE-STRIP-VARIO | 1657407 | 1 |
|----------------------|---------|---|



#### Technical data

SACC-M12MSD-4CON-...-SH

60 V  
4 A  
CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)  
CuZn / Au  
Zinc die-cast, nickel-plated  
HB  
4  
Screw connection  
24 ... 18  
≥ 100  
-40 °C ... 85 °C

#### Ordering data

| Type                     | Order No. | Pcs. / Pkt. |
|--------------------------|-----------|-------------|
| SACC-M12MSD-4CON-PG 7-SH | 1521258   | 1           |
| SACC-M12MSD-4CON-PG 9-SH | 1521261   | 1           |

#### Accessories

|                      |         |   |
|----------------------|---------|---|
| VS-CABLE-STRIP-VARIO | 1657407 | 1 |
|----------------------|---------|---|

| Description                                                                                                |
|------------------------------------------------------------------------------------------------------------|
| <b>Plug-in connector, CAT6<sub>A</sub>, plug, 8-pos., shielded, X-coded, cable diameter: 4 mm ... 8 mm</b> |
| straight                                                                                                   |
| angled                                                                                                     |
| <b>Plug-in connector, Pg7 screw connection, 4-pos., D-coded, cable diameter: 4 mm ... 6 mm</b>             |
| Plug, straight                                                                                             |
| <b>Plug-in connector, Pg9 screw connection, 4-pos., D-coded, cable diameter: 4 mm ... 8 mm</b>             |
| Plug, straight                                                                                             |

|                                                                                |
|--------------------------------------------------------------------------------|
| <b>Stripping tool, for multiple-stage repositioning of shielded conductors</b> |
|--------------------------------------------------------------------------------|



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**CAT5/CAT5e**90 | PHOENIX CONTACT



## M12 flush-type plug-in connector, solder connection



X-coded

## Ethernet



Y-coded

| Electrical data                         |      |
|-----------------------------------------|------|
| Nominal voltage $U_N$                   |      |
| Rated current                           |      |
| Transmission characteristics (category) |      |
| Contact material                        |      |
| Material of grip body                   |      |
| Inflammability class according to UL 94 |      |
| No. of pos.                             |      |
| Insertion/withdrawal cycles             |      |
| Temperature data                        |      |
| Plug / socket                           | [°C] |

| Technical data               |  |
|------------------------------|--|
| SACC-DSI-FSX-8CON...         |  |
| 48 V                         |  |
| 0.5 A                        |  |
| CAT6 <sub>A</sub>            |  |
| CuZn                         |  |
| Zinc die-cast, nickel-plated |  |
| V0                           |  |
| 8                            |  |
| ≥ 100                        |  |
| -40 ... 85                   |  |

| Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>Flush-type socket</b> , CAT6 <sub>A</sub> , Ethernet, one-piece, 8-pos., M12 SPEEDCON, with straight solder connection, rear/screw mounting with:<br>M16 fastening thread<br>Pg9 fastening thread<br><b>Hybrid flush-type plug-in connector for the reflow soldering process</b> , with straight solder connection, 4 x power contacts, 4 x signal contacts, rear mounting, SPEEDCON<br><br>Socket<br><b>Hybrid flush-type plug-in connector for the wave soldering process</b> , with straight solder connection, 4 x power contacts, 4 x signal contacts, rear mounting, SPEEDCON<br><br>Socket<br><b>Contact carrier, two-piece</b> , CAT6 <sub>A</sub> , Ethernet, 8-pos., rear mounting, with angled solder connection<br><br><b>Hybrid contact carrier, two-piece</b> , Ethernet, 8-pos., rear/screw mounting, with angled solder connection |  |

| Ordering data                  |           |             |  |
|--------------------------------|-----------|-------------|--|
| Type                           | Order No. | Pcs. / Pkt. |  |
| SACC-DSI-FSX-8CON-M16-L180 SCO | 1424177   | 20          |  |
| SACC-DSI-FSX-8CON-PG9-L180 SCO | 1404741   | 20          |  |
|                                |           |             |  |
|                                |           |             |  |
| SACC-CI-M12FSX-8CON-L90        | 1424180   | 20          |  |

| Technical data                               |           |             |  |
|----------------------------------------------|-----------|-------------|--|
| VS-08-DSIV-L180-HYB SCO                      |           |             |  |
| 30 V (Data)                                  |           |             |  |
| 0.5 A (Data) / 6 A (Power)                   |           |             |  |
| CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001) |           |             |  |
| CuZn                                         |           |             |  |
| Zinc die-cast, nickel-plated                 |           |             |  |
| V0                                           |           |             |  |
| 8                                            |           |             |  |
| ≥ 100                                        |           |             |  |
| -40 ... 85                                   |           |             |  |
| Ordering data                                |           |             |  |
| Type                                         | Order No. | Pcs. / Pkt. |  |
| VS-08-DSIV-L180-HYB SCO                      | 1456666   | 20          |  |
|                                              |           |             |  |
| SACC-DSI-FSY-8CON-M16-L180 SCO               | 1407503   | 20          |  |
|                                              |           |             |  |
| SACC-CI-M12FSY-8CON-L90                      | 1424193   | 20          |  |

# Data plug-in connectors

## Network components - M12 plug-in connectors

### M12 flush-type plug-in connector, with 0.5 m litz wires



Front mounting, D-coded



Rear mounting, D-coded

| Electrical data                         |
|-----------------------------------------|
| Nominal voltage $U_N$                   |
| Rated current                           |
| Transmission characteristics (category) |
| Contact material                        |
| Material of grip body                   |
| Inflammability class according to UL 94 |
| Connection method                       |
| Insertion/withdrawal cycles             |
| Temperature data                        |
| Plug / socket                           |



| Technical data                               |
|----------------------------------------------|
| SACC-E-...-4CON-M16/0,5 SCO                  |
| 250 V                                        |
| 4 A                                          |
| CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001) |
| CuZn                                         |
| Zinc die-cast, nickel-plated                 |
| V0                                           |
| Individual wires                             |
| ≥ 100                                        |
| -25 ... 85                                   |

#### Ordering data

| Description                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Bus system flush-type socket, PROFINET</b> , 4-pos., M12 SPEEDCON, D-coded, front/screw mounting with M16 thread, with 0.5 m TPE litz wire, 4 x 0.34 mm <sup>2</sup>                    |
| Socket                                                                                                                                                                                     |
| <b>Bus system flush-type socket, PROFINET</b> , 4-pos., M12 SPEEDCON, D-coded, front/screw mounting with M16 thread, can be positioned, with 0.5 m TPE litz wire, 4 x 0.34 mm <sup>2</sup> |
| Socket                                                                                                                                                                                     |
| <b>Bus system flush-type socket, PROFINET</b> , 4-pos., M12 SPEEDCON, D-coded, rear/screw mounting with Pg9 thread, with 0.5 m TPE litz wire, 4 x 0.34 mm <sup>2</sup>                     |
| Socket                                                                                                                                                                                     |

| Type                         | Order No. | Pcs. / Pkt. |
|------------------------------|-----------|-------------|
| SACC-E-FSD-4CON-M16/0,5 SCO  | 1535202   | 1           |
| SACC-EC-FSD-4CON-M16/0,5 SCO | 1535215   | 1           |



| Technical data                               |
|----------------------------------------------|
| SACC-DSI-FSD-4CON...                         |
| 250 V                                        |
| 4 A                                          |
| CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001) |
| CuZn                                         |
| Zinc die-cast, nickel-plated                 |
| V0                                           |
| Individual wires                             |
| ≥ 100                                        |
| -25 ... 85                                   |

#### Ordering data

| Type                          | Order No. | Pcs. / Pkt. |
|-------------------------------|-----------|-------------|
| SACC-DSI-FSD-4CON-PG9/0,5 SCO | 1551529   | 1           |



# Data plug-in connectors

## Network components - M12 plug-in connectors

### Control cabinet feed-through/ bulkhead, M12/RJ45



Ethernet



Bulkhead, 10 Gbps



Ethernet



Bulkhead, 100 Mbps and 1 Gbps



#### Technical data

VS-BH-M12FSX-10G-RJ45/...

Electrical data  
Nominal voltage  $U_N$   
Rated current  
Transmission characteristics (category)

60 V  
0.5 A  
CAT6<sub>A</sub>

Contact material  
Material of grip body  
Inflammability class according to UL 94  
Connection method  
Insertion/withdrawal cycles

Copper alloy  
PA  
V0  
-  
≥ 100

Temperature data

Plug / socket

[°C] -25 ... 85

#### Ordering data

Description

**Control cabinet feed-through, CAT6<sub>A</sub>, M12, 8-pos.,**  
X-coded to RJ45 socket  
90° socket outlet  
180° socket outlet

**Control cabinet feed-through, M12, 8-pos.,**  
A-coded to RJ45 socket  
90° socket outlet  
180° socket outlet

**Control cabinet feed-through, M12, 4-pos.,**  
D-coded to RJ45 socket  
90° socket outlet  
180° socket outlet

Type

Order No.

Pcs. /  
Pkt.

VS-BH-M12FSX-10G-RJ45/90  
VS-BH-M12FSX-10G-RJ45/180

1404548  
1404549

1  
1

#### Technical data

VS-BH-M12FS-8CON-RJ45...

VS-BH-M12FSD-RJ45...

50 V  
1 A  
CAT5 (IEC 11801:2002),  
CAT5e (TIA 568B:2001)  
Copper alloy  
PA  
V0  
-  
≥ 100

50 V  
1 A  
CAT5 (IEC 11801:2002),  
CAT5e (TIA 568B:2001)  
Copper alloy  
-  
V0  
-  
-

-25 ... 85

-

#### Ordering data

Type

Order No.

Pcs. /  
Pkt.

VS-BH-M12FS-8CON-RJ45/ 90  
VS-BH-M12FS-8CON-RJ45/180

1405057  
1405060

1  
1

VS-BH-M12FSD-RJ45/90  
VS-BH-M12FSD-RJ45/180

1657261  
1657494

1  
1



# Data plug-in connectors

## Network components - assembled cables

**Network cables,  
sold by the meter,  
Ethernet, shielded**

### Ethernet



2-pair, twisted pair

### Ethernet



4-pair, twisted pair

| Description                                                                      | Ordering data             |                |             | Ordering data             |                |             |
|----------------------------------------------------------------------------------|---------------------------|----------------|-------------|---------------------------|----------------|-------------|
|                                                                                  | Type                      | Order No.      | Pcs. / Pkt. | Type                      | Order No.      | Pcs. / Pkt. |
| <b>PUR stranded</b> - blue, 2 x 2 x 26 AWG, CAT5e, SF/UTP                        |                           |                |             |                           |                |             |
| 100 m cable ring                                                                 | <b>VS-OE-OE-93E-100,0</b> | <b>1416295</b> | 1           |                           |                |             |
| Variable cable length                                                            | <b>VS-OE-OE-93E/...</b>   | <b>1417320</b> | 1           |                           |                |             |
| <b>PUR solid</b> - blue, 4 x 2 x 24 AWG, CAT5e, SF/UTP                           |                           |                |             |                           |                |             |
| 100 m cable ring                                                                 |                           |                |             | <b>VS-OE-OE-94A-100,0</b> | <b>1416305</b> | 1           |
| Variable cable length                                                            |                           |                |             | <b>VS-94A/...</b>         | <b>1416415</b> | 1           |
| <b>PUR stranded</b> - blue, 4 x 2 x 26 AWG, CAT5e, SF/UTP                        |                           |                |             |                           |                |             |
| 100 m cable ring                                                                 |                           |                |             | <b>VS-OE-OE-94B-100,0</b> | <b>1416567</b> | 1           |
| Variable cable length                                                            |                           |                |             | <b>VS-OE-OE-94B/...</b>   | <b>1417333</b> | 1           |
| <b>PUR suitable for use with drag chain</b> - blue, 4 x 2 x 26 AWG, CAT5e, S/UTP |                           |                |             |                           |                |             |
| 100 m cable ring                                                                 |                           |                |             | <b>VS-OE-OE-94C-100,0</b> | <b>1416318</b> | 1           |
| Variable cable length                                                            |                           |                |             | <b>VS-OE-OE-94C/...</b>   | <b>1417346</b> | 1           |
| <b>PVC stranded, outdoor</b> - black, 4 x 2 x 26 AWG, CAT5e, SF/UTP              |                           |                |             |                           |                |             |
| 100 m cable ring                                                                 |                           |                |             | <b>VS-OE-OE-94D-100,0</b> | <b>1416334</b> | 1           |
| Variable cable length                                                            |                           |                |             | <b>VS-94D/...</b>         | <b>1416444</b> | 1           |
| <b>FRNC solid</b> - blue, 4 x 2 x 23 AWG, CAT6 <sub>A</sub> , S/FTP              |                           |                |             |                           |                |             |
| 100 m cable ring                                                                 |                           |                |             | <b>VS-OE-OE-94E-100,0</b> | <b>1416350</b> | 1           |
| Variable cable length                                                            |                           |                |             | <b>VS-94E/...</b>         | <b>1416460</b> | 1           |

## Ordering example for cables with variable cable lengths:

For a network cable type **94A** with a cable length of 34.0 m,  
the ordering data is as follows:

| Order No. | Length [m]<br>Max. 100 m              |
|-----------|---------------------------------------|
| 1416415   | 34.0                                  |
|           | Increment:<br>1.0 m ... 100 m = 1.0 m |



## Assembled cables, Ethernet, 4-pos., shielded



### Ethernet

Open cable end



M8 plug



RJ45 plug, IP20



OE

M8MS

R4AC

M8 plug



M8 socket



M8MS

M8FS

Ordering data

Ordering data

Order No.

Order No.

1 m 1407344

2 m 1407345

5 m 1407346

10 m 1407347

Variable 1408719

Variable 1408716

1 m 1407348

2 m 1407349

5 m 1407350

10 m 1407351

Variable 1408718

Variable 1408715

1 m 1407352

2 m 1407353

5 m 1407354

10 m 1407355

Variable 1408717

Variable 1408714

## Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the **93B** cable type and are available from stock.

## Ordering data for cables with variable cable lengths:

For a network cable, type **93B**, fitted with a **straight M8 plug** at one end and an **RJ45 plug with IP20 protection** at the other end, and **4.5 m in length**, the ordering data is as follows:

| Order No.                                           | Cable type | Length [m]<br>Max. 100 m |
|-----------------------------------------------------|------------|--------------------------|
| 1408717                                             | 93B        | 4.5                      |
| Minimum order amount = 25                           |            |                          |
| Increments:<br>0.2 ... 3 m = 0.1 m<br>> 3 m = 0.5 m |            |                          |

| Pin<br>M8 | RJ45 | Wire color | Signal |
|-----------|------|------------|--------|
| 1         | 1    | YE         | TD+    |
| 4         | 2    | OG         | TD-    |
| 2         | 3    | WH         | RD+    |
| 3         | 6    | BU         | RD-    |

## Technical data

### PROFINET [93B]

CAT5 (IEC 11801:2002),  
CAT5e (TIA 568B:2001)

Transmission characteristics (category)

Cable structure  
Conductor cross section  
Conductor structure for signal  
AWG signal line  
Cable diameter  
Conductor resistance  
Type of shield

1x4xAWG22/7; SF/TQ  
4x 0.34 mm<sup>2</sup>  
7x 0.25 mm

22  
6.5 mm  
≤ 120 Ω/km

Aluminum-coated foil, tin-plated  
copper braided shield

Conductor material  
Outer sheath material  
Color of outer sheath  
Color, single wire

Tin-plated Cu litz wires  
PVC  
Green RAL 6018  
White, yellow, blue, orange

Ambient temperature

Fixed installation [°C]  
Flexible installation [°C]

-40 ... 70  
-40 ... 70

# Data plug-in connectors

## Network components - assembled cables

### Assembled cables, Ethernet, 4-pos., shielded



### Ethernet

Open cable end



OE

RJ45 plug, IP20



R4AC

RJ45 plug, version 6



R4MC

RJ45 plug, version 14,  
metal



R4RC

RJ45 plug, version 14,  
plastic



R4QC

M12 plug, SPEEDCON



MSD SCO

M12 plug, SPEEDCON



MRD SCO

RJ45 plug, IP20



R4AC

Ordering data

Order No.

1 m 1405633

RJ45 plug,  
version 6



R4MC

Ordering data

Order No.

2 m 1405675

RJ45 plug,  
version 14,  
metal



R4RC

Ordering data

Order No.

5 m 1405743

1 m 1408933  
2 m 1408934  
5 m 1408935  
10 m 1408936

2 m 1405921

5 m 1405992

1 m 1408937  
2 m 1408938  
5 m 1408939  
10 m 1408940

1 m 1408941  
2 m 1408942  
5 m 1408943  
10 m 1408945

### Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the **93E** cable type and are available from stock.

### Ordering data for cables with variable cable lengths:

For a network cable, type **93E**, fitted with a **straight M12 plug** at one end and an **RJ45 plug with IP20 protection** at the other end, and **4.5 m in length**, the ordering data is as follows:

| Order No.                 | Cable type | Length [m]<br>Max. 100 m                            |
|---------------------------|------------|-----------------------------------------------------|
| 1408712                   | 93E        | 4.5                                                 |
| Minimum order amount = 25 |            | Increments:<br>0.2 ... 3 m = 0.1 m<br>> 3 m = 0.5 m |

| Cable description                 | Cable type | Pin |      | Wire color |  | Signal |
|-----------------------------------|------------|-----|------|------------|--|--------|
| PUR stranded - blue, 2 x 2, CAT5e | 93E        | M12 | RJ45 |            |  |        |
|                                   |            | 1   | 1    | WHOG       |  | TD+    |
|                                   |            | 3   | 2    | OG         |  | TD-    |
|                                   |            | 2   | 3    | WHGN       |  | RD+    |
|                                   |            | 4   | 6    | GN         |  | RD-    |

| RJ45 plug,<br>version 14,<br>plastic                                              | M12 plug,<br>SPEEDCON                                                             | M12 plug,<br>SPEEDCON                                                             | M12 socket,<br>SPEEDCON                                                           | M12 socket,<br>SPEEDCON                                                             | M12 flush-type socket,<br>rear mounting                                             |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |  |
| R4QC                                                                              | MSD SCO                                                                           | MRD SCO                                                                           | FSD SCO                                                                           | FRD SCO                                                                             | FSDBP                                                                               |
| Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                       | Ordering data                                                                       |
| Order No.                                                                         | Order No.                                                                         | Order No.                                                                         | Order No.                                                                         | Order No.                                                                           | Order No.                                                                           |
| 5 m 1405772                                                                       | 1 m 1407356<br>2 m 1407357<br>5 m 1407358<br>10 m 1407359<br>Variable 1408713     | Variable 1408705                                                                  | 1 m 1407380<br>2 m 1407381<br>5 m 1407382<br>10 m 1407383<br>Variable 1408697     | Variable 1408690                                                                    | 2 m 1405866                                                                         |
| 5 m 1406030                                                                       | 1 m 1407360<br>2 m 1407361<br>5 m 1407362<br>10 m 1407363<br>Variable 1408712     | Variable 1408704                                                                  | 1 m 1407384<br>2 m 1407385<br>5 m 1407386<br>10 m 1407387<br>Variable 1408696     | Variable 1408689                                                                    | 2 m 1406085                                                                         |
|                                                                                   | 1 m 1407364<br>2 m 1407365<br>5 m 1407366<br>10 m 1407367<br>Variable 1408710     | Variable 1408703                                                                  | 1 m 1407388<br>2 m 1407389<br>5 m 1407390<br>10 m 1407391<br>Variable 1408695     | Variable 1408688                                                                    | 2 m 1406247                                                                         |
|                                                                                   | 1 m 1407368<br>2 m 1407369<br>5 m 1407370<br>10 m 1407371<br>Variable 1408709     | Variable 1408702                                                                  | 1 m 1407392<br>2 m 1407393<br>5 m 1407394<br>10 m 1407395<br>Variable 1408694     | Variable 1408687                                                                    | 2 m 1406519                                                                         |
| 1 m 1408947<br>2 m 1408948<br>5 m 1408946<br>10 m 1408949                         | 1 m 1407372<br>2 m 1407373<br>5 m 1407374<br>10 m 1407375<br>Variable 1408707     | Variable 1408701                                                                  | 1 m 1407396<br>2 m 1407397<br>5 m 1407398<br>10 m 1407399<br>Variable 1408693     | Variable 1408686                                                                    | 2 m 1406603                                                                         |
|                                                                                   | 1 m 1407376<br>2 m 1407377<br>5 m 1407378<br>10 m 1407379<br>Variable 1408706     | Variable 1408700                                                                  | 1 m 1407400<br>2 m 1407401<br>5 m 1407402<br>10 m 1407403<br>Variable 1408692     | Variable 1408684                                                                    |                                                                                     |
|                                                                                   |                                                                                   | Variable 1408699                                                                  | Variable 1408691                                                                  | Variable 1408683                                                                    |                                                                                     |

## Technical data

## Ethernet [93E]

Transmission characteristics (category)

CAT5 (IEC 11801:2002),  
CAT5e (TIA 568B:2001)

Cable structure

2x2xAWG26/7; SF/UTP

Conductor cross section

2x 2x 0.14 mm<sup>2</sup>

Conductor structure for signal

7x 0.16 mm

AWG signal line

26

Cable diameter

6.4 mm

Conductor resistance

≤ 290 Ω/km (at 20 °C)

Type of shield

Aluminum-coated foil, tin-plat-  
ed copper braided shield

Conductor material

Bare Cu litz wires

Outer sheath material

PUR

Color of outer sheath

water blue RAL 5021

Color, single wire

white/orange-orange,  
white/green-green

Ambient temperature

Fixed installation

[°C]

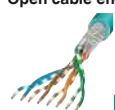
-20 ... 80

Flexible installation

[°C]

-20 ... 80

## Ethernet



RJ45 plug, IP20



RJ45 plug, version 6



RJ45 plug, version 14, metal



RJ45 plug, version 14, plastic



M12 plug, SPEEDCON



M12 plug, SPEEDCON



| RJ45 plug, IP20                                                                   | RJ45 plug, version 6                                                                | RJ45 plug, version 14, metal                                                        |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |
| R4AC                                                                              | R4MC                                                                                | R4RC                                                                                |
| Ordering data                                                                     | Ordering data                                                                       | Ordering data                                                                       |
| Order No.                                                                         | Order No.                                                                           | Order No.                                                                           |
| 5 m1407699                                                                        | 5 m1407725                                                                          | 5 m1407783                                                                          |
| 1 m1408950<br>2 m1408951<br>5 m1408952<br>10 m1408953                             | 5 m1407932<br><br>1 m1408955<br>2 m1408956<br>5 m1408954<br>10 m1408958             | 5 m1407990<br><br>1 m1408961<br>2 m1408962<br>5 m1408959<br>10 m1408963             |

| Cable description                                         | Cable type | Pin M12 | RJ45 | Wire color | Signal |
|-----------------------------------------------------------|------------|---------|------|------------|--------|
| PUR stranded - blue, 4 x 2, CAT5e                         | 94B        | 6       | 1    | WHOG       | D1+    |
|                                                           |            | 4       | 2    | OG         | D1-    |
| PUR suitable for use with drag chain - blue, 4 x 2, CAT5e | 94C        | 1       | 5    | WHBU       | D3+    |
|                                                           |            | 7       | 4    | BU         | D3-    |
|                                                           |            | 5       | 3    | WHGN       | D2+    |
|                                                           |            | 8       | 6    | GN         | D2-    |
|                                                           |            | 2       | 7    | WHBN       | D4+    |
|                                                           |            | 3       | 8    | BN         | D4-    |

| RJ45 plug,<br>version 14,<br>plastic                                              | M12 plug,<br>SPEEDCON                                                             | M12 plug,<br>SPEEDCON                                                             | M12 socket,<br>SPEEDCON                                                           | M12 socket,<br>SPEEDCON                                                             | M12 flush-type socket,<br>rear mounting                                             |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |  |
| R4QC                                                                              | MS SCO                                                                            | MR SCO                                                                            | FS SCO                                                                            | FR SCO                                                                              | FSBP                                                                                |
| Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                       | Ordering data                                                                       |
| Order No.                                                                         | Order No.                                                                         | Order No.                                                                         | Order No.                                                                         | Order No.                                                                           | Order No.                                                                           |
| 5 m 1407819                                                                       | 1 m 1407404<br>2 m 1407405<br>5 m 1407406<br>10 m 1407407<br>Variable 1408682     | Variable 1408675                                                                  | 1 m 1407439<br>2 m 1407440<br>5 m 1407441<br>10 m 1407442<br>Variable 1408665     | Variable 1408657                                                                    | 5 m 1407877                                                                         |
| 5 m 1412024                                                                       | 1 m 1407414<br>2 m 1407415<br>5 m 1407416<br>10 m 1407417<br>Variable 1408681     | Variable 1408674                                                                  | 1 m 1407443<br>2 m 1407444<br>5 m 1407445<br>10 m 1407446<br>Variable 1408664     | Variable 1408655                                                                    | 5 m 1412082                                                                         |
|                                                                                   | 1 m 1407422<br>2 m 1407423<br>5 m 1407424<br>10 m 1407425<br>Variable 1408679     | Variable 1408671                                                                  | 1 m 1407451<br>2 m 1407452<br>5 m 1407453<br>10 m 1407454<br>Variable 1408662     | Variable 1408653                                                                    | 5 m 1412231                                                                         |
|                                                                                   | 1 m 1407426<br>2 m 1407427<br>5 m 1407428<br>10 m 1407429<br>Variable 1408678     | Variable 1408670                                                                  | 1 m 1407455<br>2 m 1407456<br>5 m 1407457<br>10 m 1407458<br>Variable 1408661     | Variable 1408652                                                                    | 5 m 1412503                                                                         |
| 1 m 1408965<br>2 m 1408966<br>5 m 1408964<br>10 m 1408967                         | 1 m 1407430<br>2 m 1407431<br>5 m 1407432<br>10 m 1407433<br>Variable 1408677     | Variable 1408668                                                                  | 1 m 1407459<br>2 m 1407460<br>5 m 1407461<br>10 m 1407462<br>Variable 1408660     | Variable 1408651                                                                    | 5 m 1412590                                                                         |
|                                                                                   | 1 m 1407434<br>2 m 1407435<br>5 m 1407436<br>10 m 1407438<br>Variable 1408676     | Variable 1408667                                                                  | 1 m 1407463<br>2 m 1407464<br>5 m 1407465<br>10 m 1407466<br>Variable 1408659     | Variable 1408650                                                                    |                                                                                     |
|                                                                                   |                                                                                   | Variable 1408666                                                                  | Variable 1408658                                                                  | Variable 1408649                                                                    |                                                                                     |

|                                         | Technical data                                                                      | Technical data                                                                      |
|-----------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                         | Ethernet [94B]                                                                      | Ethernet [94C]                                                                      |
| Transmission characteristics (category) | CAT5 (IEC 11801:2002),<br>CAT5e (TIA 568B:2001)                                     | CAT5 (IEC 11801:2002),<br>CAT5e (TIA 568B:2001)                                     |
| Cable structure                         | 4x2xAWG26/7; SF/UTP                                                                 | 4x2xAWG26/19; S-UTP                                                                 |
| Conductor cross section                 | 4x 2x 0.14 mm <sup>2</sup>                                                          | 4x 2x 0.14 mm <sup>2</sup>                                                          |
| Conductor structure for signal          | 7x 0.16 mm                                                                          | 19x 0.10 mm                                                                         |
| AWG signal line                         | 26                                                                                  | 26                                                                                  |
| Cable diameter                          | 6.4 mm                                                                              | 6.9 mm                                                                              |
| Conductor resistance                    | ≤ 290 Ω/km (at 20 °C)                                                               | ≤ 290 Ω/km (at 20 °C)                                                               |
| Type of shield                          | Aluminum-coated foil, tin-plated<br>copper braided shield                           | Tin-plated copper<br>braided shield                                                 |
| Conductor material                      | Bare Cu litz wires                                                                  | Bare Cu litz wires                                                                  |
| Outer sheath material                   | PUR                                                                                 | PUR                                                                                 |
| Color of outer sheath                   | water blue RAL 5021                                                                 | water blue RAL 5021                                                                 |
| Color, single wire                      | white/blue-blue,<br>white/orange-orange,<br>white/green-green,<br>white/brown-brown | white/blue-blue,<br>white/orange-orange,<br>white/green-green,<br>white/brown-brown |
| Ambient temperature                     |                                                                                     |                                                                                     |
| Fixed installation                      | [°C] -40 ... 80                                                                     | -20 ... 80                                                                          |
| Flexible installation                   | [°C] -40 ... 80                                                                     | -20 ... 80                                                                          |

# Data plug-in connectors

## Network components - assembled cables

Assembled cables,  
Ethernet, 8-pos., shielded, CAT6<sub>A</sub>



### Ethernet

Open cable end



OE

RJ45 plug, IP20



R4AC

RJ45 plug, version 14,  
metal



R4RC

RJ45 plug, version 14,  
plastic



R4QC

M12 plug, SPEEDCON



MSX SCO

RJ45 plug, IP20



R4AC

Ordering data

Order No.

|      |         |
|------|---------|
| 1 m  | 1418866 |
| 2 m  | 1408360 |
| 5 m  | 1418879 |
| 10 m | 1408367 |

M12 plug,  
SPEEDCON



MSX SCO

Ordering data

Order No.

|          |         |
|----------|---------|
| 1 m      | 1407467 |
| 2 m      | 1407468 |
| 5 m      | 1407469 |
| 10 m     | 1407470 |
| Variable | 1408648 |

|          |         |
|----------|---------|
| 1 m      | 1407471 |
| 2 m      | 1407472 |
| 5 m      | 1407473 |
| 10 m     | 1407474 |
| Variable | 1408647 |

|          |         |
|----------|---------|
| 1 m      | 1407475 |
| 2 m      | 1407476 |
| 5 m      | 1407477 |
| 10 m     | 1407478 |
| Variable | 1408646 |

|          |         |
|----------|---------|
| 1 m      | 1407479 |
| 2 m      | 1407480 |
| 5 m      | 1407481 |
| 10 m     | 1407482 |
| Variable | 1408645 |

|          |         |
|----------|---------|
| 1 m      | 1407483 |
| 2 m      | 1407484 |
| 5 m      | 1407485 |
| 10 m     | 1407486 |
| Variable | 1408644 |

### Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the **94F** cable type and are available from stock.

### Ordering data for cables with variable cable lengths:

For a network cable, type **94F**, fitted with a **straight M12 plug** at one end and an **RJ45 plug with IP20 protection** at the other end, and **4.5 m in length**, the ordering data is as follows:

| Order No.                                           | Cable type | Length [m]<br>Max. 100 m |
|-----------------------------------------------------|------------|--------------------------|
| 1408647                                             | 94F        | 4.5                      |
| Minimum order amount = 25                           |            |                          |
| Increments:<br>0.2 ... 3 m = 0.1 m<br>> 3 m = 0.5 m |            |                          |

| Cable description                             |  | Cable type |  | Pin | Wire color |      | Signal |
|-----------------------------------------------|--|------------|--|-----|------------|------|--------|
|                                               |  |            |  | M12 | RJ45       |      |        |
| PUR stranded - blue, 4 x 2, CAT6 <sub>A</sub> |  | 94F        |  | 1   | 1          | WHOG | D1+    |
|                                               |  |            |  | 2   | 2          | OG   | D1-    |
|                                               |  |            |  | 7   | 5          | WHBU | D3+    |
|                                               |  |            |  | 8   | 4          | BU   | D3-    |
|                                               |  |            |  | 3   | 3          | WHGN | D2+    |
|                                               |  |            |  | 4   | 6          | GN   | D2-    |
|                                               |  |            |  | 5   | 7          | WHBN | D4+    |
|                                               |  |            |  | 6   | 8          | BN   | D4-    |



|                                         | Technical data                                                                      |
|-----------------------------------------|-------------------------------------------------------------------------------------|
|                                         | Ethernet [94F]                                                                      |
| Transmission characteristics (category) | CAT6 <sub>A</sub>                                                                   |
| Cable structure                         | 4x2xAWG26/7; S/FTP                                                                  |
| Conductor cross section                 | 4x 2x 0.14 mm <sup>2</sup>                                                          |
| Conductor structure for signal          | 7x 0.16 mm                                                                          |
| AWG signal line                         | 26                                                                                  |
| Cable diameter                          | 6.4 mm                                                                              |
| Conductor resistance                    | ≤ 290 Ω/km (at 20 °C)                                                               |
| Type of shield                          | Tin-plated copper<br>braided shield                                                 |
| Type of pair shielding                  | Aluminum-lined foil                                                                 |
| Conductor material                      | Bare Cu litz wires                                                                  |
| Outer sheath material                   | PUR                                                                                 |
| Color of outer sheath                   | water blue RAL 5021                                                                 |
| Color, single wire                      | white/blue-blue,<br>white/orange-orange,<br>white/green-green,<br>white/brown-brown |
| Ambient temperature                     |                                                                                     |
| Fixed installation                      | [°C] -20 ... 80                                                                     |
| Flexible installation                   | [°C] -20 ... 80                                                                     |

# Data plug-in connectors

## Network components - assembled cables

### Assembled cables, Ethernet hybrid, 4+4-pos., shielded



#### Ethernet



#### M12 plug, SPEEDCON



#### MSY SCO

#### Ordering data

#### Order No.

#### Open cable end



#### OE

#### M12 plug, SPEEDCON



#### MSY SCO

1 m 1407487

2 m 1407488

5 m 1407489

10 m 1407490

Variable 1408642

1 m 1407491

2 m 1407492

5 m 1407493

10 m 1407494

Variable 1408641

### Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the **94H** cable type and are available from stock.

### Ordering data for cables with variable cable lengths:

For a network cable, type **94H**, fitted with a **straight M12 plug** at one end and an **RJ45 plug with IP20 protection** at the other end, and **4.5 m** in length, the ordering data is as follows:

| Order No.                                           | Cable type | Length [m]<br>Max. 100 m |
|-----------------------------------------------------|------------|--------------------------|
| 1408717                                             | 94H        | 4.5                      |
| Minimum order amount = 25                           |            |                          |
| Increments:<br>0.2 ... 3 m = 0.1 m<br>> 3 m = 0.5 m |            |                          |

| Pin<br>M12 | Wire color | Signal |
|------------|------------|--------|
| 1          | WHOG       | TD+    |
| 2          | OG         | TD-    |
| 3          | WHGN       | RD+    |
| 4          | GN         | RD-    |
| 5          | BU         |        |
| 6          | WH         |        |
| 7          | BN         |        |
| 8          | BK         |        |

#### Transmission characteristics (category)

Cable structure  
Conductor cross section for signal  
Conductor structure for signal  
AWG signal line  
Conductor cross section for power  
Conductor structure for power  
AWG power supply  
Cable diameter  
Type of shield

Conductor material  
Outer sheath material  
Color of outer sheath  
Color, single wire

#### Ambient temperature

Fixed installation

Flexible installation

| Technical data                                                          |       |
|-------------------------------------------------------------------------|-------|
| Ethernet hybrid [94H]                                                   |       |
| CAT5 (IEC 11801:2002),<br>CAT5e (TIA 568B:2001)                         |       |
| 1x4xAWG26+1x4xAWG20                                                     |       |
| 0.15                                                                    | [mm²] |
| 19x 0.10 mm                                                             |       |
| 26                                                                      |       |
| 0.6                                                                     | [mm²] |
| 19x 0.20 mm                                                             |       |
| 20                                                                      |       |
| 7.6 mm                                                                  |       |
| Tin-plated copper                                                       |       |
| braided shield                                                          |       |
| Bare Cu litz wires                                                      |       |
| PUR                                                                     |       |
| Black RAL 9005                                                          |       |
| White/orange-orange,<br>white/green-green, white, blue,<br>brown, black |       |
| -40 ... 90                                                              | [°C]  |
| -30 ... 70                                                              | [°C]  |

**Network cables,  
sold by the meter,  
PROFINET, shielded**



4-wire, star quad

| Ordering data                                                                             |                    |           |             |
|-------------------------------------------------------------------------------------------|--------------------|-----------|-------------|
| Description                                                                               | Type               | Order No. | Pcs. / Pkt. |
| <b>PVC solid - green</b> , 1 x 4 x 22 AWG, CAT5e, SF/TQ, type A                           |                    |           |             |
| 100 m cable ring                                                                          | VS-OE-OE-93A-100,0 | 1416392   | 1           |
| Variable cable length                                                                     | VS-93A/...         | 1416486   | 1           |
| <b>PVC stranded - green</b> , 1 x 4 x 22 AWG, CAT5e, SF/TQ, type B                        |                    |           |             |
| 100 m cable ring                                                                          | VS-OE-OE-93B-100,0 | 1416389   | 1           |
| Variable cable length                                                                     | VS-OE-OE-93B/...   | 1417362   | 1           |
| <b>PUR suitable for use with drag chain</b> - green, 1 x 4 x 22 AWG, CAT5e, SF/TQ, type C |                    |           |             |
| 100 m cable ring                                                                          | VS-OE-OE-93C-100,0 | 1416376   | 1           |
| Variable cable length                                                                     | VS-OE-OE-93C/...   | 1417491   | 1           |
| <b>PUR suitable for use with robots</b> - green, 1 x 4 x 22 AWG, CAT5e, S/TQ              |                    |           |             |
| 100 m cable ring                                                                          | VS-OE-OE-93R-100,0 | 1416363   | 1           |
| Variable cable length                                                                     | VS-OE-OE-93R/...   | 1417388   | 1           |
| <b>RADOX® for railway applications</b> - black, 1 x 4 x 22 AWG, CAT5e, SF/TQ              |                    |           |             |
| Variable cable length                                                                     | VS-OE-OE-937/...   | 1402687   | 1           |

### Ordering example for cables with variable cable lengths:

For a network cable type **93A** with a cable length of 34.0 m,  
the ordering data is as follows:

| Order No. | Length [m]<br>Max. 100 m              |
|-----------|---------------------------------------|
| 1416486   | 34.0                                  |
|           | Increment:<br>1.0 m ... 100 m = 1.0 m |

# Data plug-in connectors

## Network components - assembled cables

### Assembled cables, PROFINET, 4-pos., shielded



**PROFI  
NET**

Open cable end



OE

RJ45 plug, IP20



R4AC

RJ45 plug, IP20



R4ACR

RJ45 plug, version 14, metal



R4RC

RJ45 plug, version 14, plastic



R4QC

M12 plug, SPEEDCON



MSD SCO

M12 plug, SPEEDCON



MRD SCO

RJ45 plug, IP20



R4AC

Ordering data

Order No.

RJ45 plug, IP20



R4ACR

Ordering data

Order No.

RJ45 plug, version 14, metal



R4RC

Ordering data

Order No.

5 m 1416162

1 m 1408968  
2 m 1408969  
5 m 1408970  
10 m 1408971

1 m 1418248  
2 m 1418277

5 m 1416138

1 m 1409002  
2 m 1409003  
5 m 1409004  
10 m 1409005

1 m 1408974  
2 m 1408975  
5 m 1408972  
10 m 1408976

### Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the **93B** cable type and are available from stock.

### Ordering data for cables with variable cable lengths:

For a network cable, type **93C**, fitted with a **straight M12 plug** at one end and an **RJ45 plug with IP20 protection** at the other end, and **4.5 m in length**, the ordering data is as follows:

| Order No.                 | Cable type | Length [m]<br>Max. 100 m                            |
|---------------------------|------------|-----------------------------------------------------|
| 1408639                   | 93C        | 4.5                                                 |
| Minimum order amount = 25 |            | Increments:<br>0.2 ... 3 m = 0.1 m<br>> 3 m = 0.5 m |

| Cable description                                          |  | Cable type |  | Pin |      | Wire color |  | Signal |
|------------------------------------------------------------|--|------------|--|-----|------|------------|--|--------|
|                                                            |  |            |  | M12 | RJ45 |            |  |        |
| PVC stranded - green, 1 x 4, CAT5e                         |  | 93B        |  | 1   | 1    | YE         |  | TD+    |
| PUR suitable for use with drag chain - green, 1 x 4, CAT5e |  | 93C        |  | 3   | 2    | OG         |  | TD-    |
| PUR for robot applications - green, 1 x 4, CAT5e           |  | 93R        |  | 2   | 3    | WH         |  | RD+    |
| RADOX® for railway applications - black, 1 x 4, CAT5e      |  | 937        |  | 4   | 6    | BU         |  | RD-    |
| PUR stranded - green, 1 x 4, CAT5e                         |  | 93M        |  |     |      |            |  |        |

| RJ45 plug,<br>version 14,<br>plastic                                              |         | M12 plug,<br>SPEEDCON                                                             |         | M12 plug,<br>SPEEDCON                                                             |         | M12 socket,<br>SPEEDCON                                                           |         | M12 socket,<br>SPEEDCON                                                             |         | M12 flush-type socket,<br>rear mounting                                             |         |
|-----------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------|---------|
|  |         |  |         |  |         |  |         |  |         |  |         |
| R4QC                                                                              |         | MSD SCO                                                                           |         | MRD SCO                                                                           |         | FSD SCO                                                                           |         | FRD SCO                                                                             |         | FSDBP                                                                               |         |
| Ordering data                                                                     |         | Ordering data                                                                     |         | Ordering data                                                                     |         | Ordering data                                                                     |         | Ordering data                                                                       |         | Ordering data                                                                       |         |
| Order No.                                                                         |         | Order No.                                                                         |         | Order No.                                                                         |         | Order No.                                                                         |         | Order no.                                                                           |         | Order No.                                                                           |         |
| 5 m                                                                               | 1416168 | 1 m                                                                               | 1407495 | Variable                                                                          | 1408633 | 1 m                                                                               | 1407528 | Variable                                                                            | 1408615 | 1 m                                                                                 | 1437779 |
|                                                                                   |         | 2 m                                                                               | 1407496 |                                                                                   |         | 2 m                                                                               | 1407529 |                                                                                     |         | 2 m                                                                                 | 1437782 |
|                                                                                   |         | 5 m                                                                               | 1407497 |                                                                                   |         | 5 m                                                                               | 1407530 |                                                                                     |         | 5 m                                                                                 | 1437795 |
|                                                                                   |         | 10 m                                                                              | 1407498 |                                                                                   |         | 10 m                                                                              | 1407531 |                                                                                     |         |                                                                                     |         |
|                                                                                   |         | Variable                                                                          | 1408640 |                                                                                   |         | Variable                                                                          | 1408623 |                                                                                     |         |                                                                                     |         |
| 5 m                                                                               | 1416141 | 1 m                                                                               | 1407499 | Variable                                                                          | 1408632 | 1 m                                                                               | 1407532 | Variable                                                                            | 1408613 |                                                                                     |         |
|                                                                                   |         | 2 m                                                                               | 1407500 |                                                                                   |         | 2 m                                                                               | 1407533 |                                                                                     |         |                                                                                     |         |
|                                                                                   |         | 5 m                                                                               | 1407501 |                                                                                   |         | 5 m                                                                               | 1407534 |                                                                                     |         |                                                                                     |         |
|                                                                                   |         | 10 m                                                                              | 1407502 |                                                                                   |         | 10 m                                                                              | 1407535 |                                                                                     |         |                                                                                     |         |
|                                                                                   |         | Variable                                                                          | 1408639 |                                                                                   |         | Variable                                                                          | 1408622 |                                                                                     |         |                                                                                     |         |
|                                                                                   |         | 1 m                                                                               | 1407508 | Variable                                                                          | 1408631 | 1 m                                                                               | 1407536 | Variable                                                                            | 1408612 |                                                                                     |         |
|                                                                                   |         | 2 m                                                                               | 1407509 |                                                                                   |         | 2 m                                                                               | 1407537 |                                                                                     |         |                                                                                     |         |
|                                                                                   |         | 5 m                                                                               | 1407510 |                                                                                   |         | 5 m                                                                               | 1407538 |                                                                                     |         |                                                                                     |         |
|                                                                                   |         | 10 m                                                                              | 1407511 |                                                                                   |         | 10 m                                                                              | 1407539 |                                                                                     |         |                                                                                     |         |
|                                                                                   |         | Variable                                                                          | 1408638 |                                                                                   |         | Variable                                                                          | 1408621 |                                                                                     |         |                                                                                     |         |
|                                                                                   |         | 1 m                                                                               | 1407516 | Variable                                                                          | 1408628 | 1 m                                                                               | 1407544 | Variable                                                                            | 1408610 |                                                                                     |         |
|                                                                                   |         | 2 m                                                                               | 1407517 |                                                                                   |         | 2 m                                                                               | 1407545 |                                                                                     |         |                                                                                     |         |
|                                                                                   |         | 5 m                                                                               | 1407518 |                                                                                   |         | 5 m                                                                               | 1407546 |                                                                                     |         |                                                                                     |         |
|                                                                                   |         | 10 m                                                                              | 1407519 |                                                                                   |         | 10 m                                                                              | 1407547 |                                                                                     |         |                                                                                     |         |
|                                                                                   |         | Variable                                                                          | 1408636 |                                                                                   |         | Variable                                                                          | 1408619 |                                                                                     |         |                                                                                     |         |
| 1 m                                                                               | 1408978 | 1 m                                                                               | 1407520 | Variable                                                                          | 1408626 | 1 m                                                                               | 1407548 | Variable                                                                            | 1408609 |                                                                                     |         |
| 2 m                                                                               | 1408979 | 2 m                                                                               | 1407521 |                                                                                   |         | 2 m                                                                               | 1407549 |                                                                                     |         |                                                                                     |         |
| 5 m                                                                               | 1408977 | 5 m                                                                               | 1407522 |                                                                                   |         | 5 m                                                                               | 1407551 |                                                                                     |         |                                                                                     |         |
| 10 m                                                                              | 1408980 | 10 m                                                                              | 1407523 |                                                                                   |         | 10 m                                                                              | 1407552 |                                                                                     |         |                                                                                     |         |
|                                                                                   |         | Variable                                                                          | 1408635 |                                                                                   |         | Variable                                                                          | 1408618 |                                                                                     |         |                                                                                     |         |
|                                                                                   |         | 1 m                                                                               | 1407524 | Variable                                                                          | 1408625 | 1 m                                                                               | 1407553 | Variable                                                                            | 1408608 |                                                                                     |         |
|                                                                                   |         | 2 m                                                                               | 1407525 |                                                                                   |         | 2 m                                                                               | 1407554 |                                                                                     |         |                                                                                     |         |
|                                                                                   |         | 5 m                                                                               | 1407526 |                                                                                   |         | 5 m                                                                               | 1407555 |                                                                                     |         |                                                                                     |         |
|                                                                                   |         | 10 m                                                                              | 1407527 |                                                                                   |         | 10 m                                                                              | 1407556 |                                                                                     |         |                                                                                     |         |
|                                                                                   |         | Variable                                                                          | 1408634 |                                                                                   |         | Variable                                                                          | 1408617 |                                                                                     |         |                                                                                     |         |
|                                                                                   |         |                                                                                   |         | Variable                                                                          | 1408624 |                                                                                   |         | Variable                                                                            | 1408616 |                                                                                     |         |
|                                                                                   |         |                                                                                   |         |                                                                                   |         |                                                                                   |         | Variable                                                                            | 1408607 |                                                                                     |         |

|                                         | Technical data                                         |  | Technical data                                         |  | Technical data                               |  | Technical data                                                 |  |
|-----------------------------------------|--------------------------------------------------------|--|--------------------------------------------------------|--|----------------------------------------------|--|----------------------------------------------------------------|--|
|                                         | PROFINET [93B]                                         |  | PROFINET [93C]                                         |  | PROFINET [93R]                               |  | PROFINET [937]                                                 |  |
| Transmission characteristics (category) | CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)           |  | CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)           |  | CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001) |  | CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)                   |  |
| Cable structure                         | 1x4AWG22/7; SF/TQ                                      |  | 1x4AWG22/7; SF/TQ                                      |  | 1x4AWG22/19; S/TQ                            |  | 1x4AWG22/7; SF/TQ                                              |  |
| Conductor cross section                 | 4x 0.34 mm <sup>2</sup>                                |  | 4x 0.34 mm <sup>2</sup>                                |  | 4x 0.38 mm <sup>2</sup>                      |  | 4x 0.34 mm <sup>2</sup>                                        |  |
| Conductor structure for signal          | 7x 0.25 mm                                             |  | 7x 0.25 mm                                             |  | 19x 0.16 mm                                  |  | 7x 0.25 mm                                                     |  |
| AWG signal line                         | 22                                                     |  | 22                                                     |  | 22                                           |  | 22                                                             |  |
| Cable diameter                          | 6.5 mm                                                 |  | 6.5 mm                                                 |  | 6.5 mm                                       |  | 6.6 mm                                                         |  |
| Conductor resistance                    | ≤ 120 Ω/km                                             |  | ≤ 120 Ω/km                                             |  | ≤ 120 Ω/km                                   |  | ≤ 54 Ω/km                                                      |  |
| Type of shield                          | Aluminum-coated foil, tin-plated copper braided shield |  | Aluminum-coated foil, tin-plated copper braided shield |  | Tin-plated copper braided shield             |  | Plastic-coated aluminum foil, tin-plated copper braided shield |  |
| Conductor material                      | Tin-plated Cu litz wires                               |  | Tin-plated Cu litz wires                               |  | Tin-plated Cu litz wires                     |  | Silver-plated Cu litz wires                                    |  |
| Outer sheath material                   | PVC                                                    |  | PUR                                                    |  | PUR                                          |  | RADOX® GWK S                                                   |  |
| Color of outer sheath                   | Green RAL 6018                                         |  | Green RAL 6018                                         |  | Green RAL 6018                               |  | Black RAL 9005                                                 |  |
| Color, single wire                      | White, yellow, blue, orange                            |  | White, yellow, blue, orange                            |  | White, yellow, blue, orange                  |  | White, yellow, blue, orange                                    |  |
| Ambient temperature                     |                                                        |  |                                                        |  |                                              |  |                                                                |  |
| Fixed installation                      | [°C]                                                   |  | -40 ... 70                                             |  | -40 ... 80                                   |  | -40 ... 90                                                     |  |
| Flexible installation                   | [°C]                                                   |  | -40 ... 70                                             |  | -40 ... 80                                   |  | -25 ... 90                                                     |  |

# Data plug-in connectors

## Network components - assembled cables

### Assembled cables, EtherCAT, 4-pos., shielded



Open cable end



OE

RJ45 plug, IP20



R4AC

RJ45 plug, IP20



R4ACR

M12 plug, SPEEDCON



MSD SCO

M12 plug, SPEEDCON



MRD SCO

RJ45 socket, Freenet



F4AC

RJ45 plug, IP20



R4AC

Ordering data

Order No.

1 m 1408981  
2 m 1408982  
5 m 1408983  
10 m 1408984

RJ45 plug, IP20



R4ACR

Ordering data

Order No.

1 m 1402505  
2 m 1402508  
  
1 m 1409006  
2 m 1409007  
5 m 1409014  
10 m 1409015

M12 plug,  
SPEEDCON



MSD SCO

Ordering data

Order No.

1 m 1407557  
2 m 1407558  
5 m 1407559  
10 m 1407560  
Variable 1408600

1 m 1407561  
2 m 1407562  
5 m 1407563  
10 m 1407564  
Variable 1408599

1 m 1407565  
2 m 1407566  
5 m 1407567  
10 m 1407568  
Variable 1408598

1 m 1407569  
2 m 1407570  
5 m 1407571  
10 m 1407572  
Variable 1408597

2 m 1419142

### Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the **93G** cable type and are available from stock.

### Ordering data for cables with variable cable lengths:

For a network cable, type **93H**, fitted with a **straight M12 plug** at one end and an **RJ45 plug with IP20 protection** at the other end, and **4.5 m** in length, the ordering data is as follows:

| Order No.                 | Cable type | Length [m]<br>Max. 100 m                            |
|---------------------------|------------|-----------------------------------------------------|
| 1408599                   | 93H        | 4.5                                                 |
| Minimum order amount = 25 |            | Increments:<br>0.2 ... 3 m = 0.1 m<br>> 3 m = 0.5 m |

| Cable description                                          |  | Cable type |  | Pin |      | Wire color |  | Signal |
|------------------------------------------------------------|--|------------|--|-----|------|------------|--|--------|
|                                                            |  |            |  | M12 | RJ45 |            |  |        |
| PVC stranded - green, 1 x 4, CAT5e                         |  | 93G        |  | 1   | 1    | YE         |  | TD+    |
|                                                            |  |            |  | 3   | 2    | OG         |  | TD-    |
| PUR suitable for use with drag chain - green, 1 x 4, CAT5e |  | 93H        |  | 2   | 3    | WH         |  | RD+    |
|                                                            |  |            |  | 4   | 6    | BU         |  | RD-    |

| M12 plug,<br>SPEEDCON                                                             | M12 socket,<br>SPEEDCON                                                           | M12 socket,<br>SPEEDCON                                                           | M12 flush-type socket,<br>rear mounting                                           |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  |  |  |  |
| MRD SCO                                                                           | FSD SCO                                                                           | FRD SCO                                                                           | FSDBP                                                                             |
| Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                     |
| Order No.                                                                         | Order No.                                                                         | Order No.                                                                         | Order No.                                                                         |
|                                                                                   |                                                                                   |                                                                                   | 1 m 1419135                                                                       |
|                                                                                   |                                                                                   |                                                                                   | 2 m 1419136                                                                       |
|                                                                                   |                                                                                   |                                                                                   | 5 m 1419137                                                                       |
| Variable 1408596                                                                  | Variable 1408590                                                                  | Variable 1408584                                                                  |                                                                                   |
|                                                                                   |                                                                                   |                                                                                   | 2 m 1419146                                                                       |
| Variable 1408595                                                                  | Variable 1408589                                                                  | Variable 1408583                                                                  |                                                                                   |
| Variable 1408594                                                                  | Variable 1408587                                                                  | Variable 1408582                                                                  |                                                                                   |
| Variable 1408593                                                                  | Variable 1408586                                                                  | Variable 1408581                                                                  |                                                                                   |
| Variable 1408592                                                                  | Variable 1408585                                                                  | Variable 1408580                                                                  |                                                                                   |

|                                         | Technical data                                            | Technical data                                            |
|-----------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|
|                                         | EtherCAT [93G]                                            | EtherCAT [93H]                                            |
| Transmission characteristics (category) | CAT5 (IEC 11801:2002),<br>CAT5e (TIA 568B:2001)           | CAT5 (IEC 11801:2002),<br>CAT5e (TIA 568B:2001)           |
| Cable structure                         | 1x4xAWG22/7; SF/TQ                                        | 1x4xAWG22/7; SF/TQ                                        |
| Conductor cross section                 | 4x 0.34 mm <sup>2</sup>                                   | 4x 0.34 mm <sup>2</sup>                                   |
| Conductor structure for signal          | 7x 0.25 mm                                                | 7x 0.25 mm                                                |
| AWG signal line                         | 22                                                        | 22                                                        |
| Cable diameter                          | 6.5 mm                                                    | 6.5 mm                                                    |
| Conductor resistance                    | ≤ 120 Ω/km                                                | ≤ 120 Ω/km                                                |
| Type of shield                          | Aluminum-coated foil, tin-plated<br>copper braided shield | Aluminum-coated foil, tin-plated<br>copper braided shield |
| Conductor material                      | Tin-plated Cu litz wires                                  | Tin-plated Cu litz wires                                  |
| Outer sheath material                   | PVC                                                       | PUR                                                       |
| Color of outer sheath                   | Green RAL 6018                                            | Green RAL 6018                                            |
| Color, single wire                      | White, yellow, blue, orange                               | White, yellow, blue, orange                               |
| Ambient temperature                     |                                                           |                                                           |
| Fixed installation                      | [-40 ... 70 °C]                                           | -40 ... 70                                                |
| Flexible installation                   | [-40 ... 70 °C]                                           | -40 ... 70                                                |



### Ethernet RJ45, patch cables

#### Ethernet



**Notes:**  
For information about the cable qualities, see page 200

RJ45 plug, IP20, straight



RJ45 plug, IP20, angled



RJ45 plug, IP20, straight



RJ45 plug, IP20, angled



#### Ordering data

##### Order No.

|       |         |
|-------|---------|
| 0.3 m | 1417993 |
| 0.5 m | 1418028 |
| 1 m   | 1418057 |
| 2 m   | 1418109 |
| 5 m   | 1418141 |

#### Ordering data

##### Order No.

|       |         |
|-------|---------|
| 0.3 m | 1418002 |
| 0.5 m | 1418031 |
| 1 m   | 1418070 |
| 2 m   | 1418125 |
| 5 m   | 1418154 |

|       |         |
|-------|---------|
| 0.3 m | 1418015 |
| 0.5 m | 1418044 |
| 1 m   | 1418099 |
| 2 m   | 1418138 |
| 5 m   | 1418167 |

| Pin                | Wire color         | Signal |
|--------------------|--------------------|--------|
| RJ45 <sup>*)</sup> | RJ45 <sup>*)</sup> |        |
| 1                  | WHOG               | D1+    |
| 2                  | OG                 | D1-    |
| 5                  | WHBU               | D3+    |
| 4                  | BU                 | D3-    |
| 3                  | WHGN               | D2+    |
| 6                  | GN                 | D2-    |
| 7                  | WHBN               | D4+    |
| 8                  | BN                 | D4-    |

<sup>\*)</sup> RJ45 assignment according to TIA568B

Transmission characteristics (category)  
Cable structure  
Conductor cross section  
Conductor structure for signal  
AWG signal line  
Cable diameter  
Conductor resistance

Type of shield

Conductor material  
Outer sheath material  
Color of outer sheath  
Color, single wire

Ambient temperature

Fixed installation

Flexible installation

#### Technical data

##### Ethernet cable

CAT6<sub>A</sub>  
4x2xAWG26/7; S/FTP  
4x 2x 0.14 mm<sup>2</sup>  
7x 0.16 mm  
26  
6.4 mm  
≤ 290 Ω/km (at 20 °C)

Tin-plated copper  
braided shield  
Bare Cu litz wires  
PUR  
water blue RAL 5021  
white/blue-blue,  
white/orange-orange,  
white/green-green,  
white/brown-brown

-40 ... 70

-10 ... 50

## RJ45 patch cables

## Ethernet



## RJ45 patch cables for IP20 applications

|                                             |  | Technical data          |                         |             |    |
|---------------------------------------------|--|-------------------------|-------------------------|-------------|----|
|                                             |  | FL CAT5 PATCH 0,3       | FL CAT6 PATCH 0,3       |             |    |
| Cable, properties                           |  |                         |                         |             |    |
| External diameter                           |  | 5.5 mm                  | 5.5 mm                  |             |    |
| Single wire, material                       |  | Cu litz wire            | Cu litz wire            |             |    |
| Individual wires per module                 |  | 8                       | 8                       |             |    |
| Single wire, cross section                  |  | 0.14 mm <sup>2</sup>    | 0.14 mm <sup>2</sup>    |             |    |
| Outer sheath, material                      |  | LSFROH                  | LSFROH                  |             |    |
| Smallest bending radius, fixed installation |  | 30 mm                   | 30 mm                   |             |    |
| Shielding                                   |  | SF/UTP                  | S/FTP                   |             |    |
| Connector                                   |  |                         |                         |             |    |
| Volume resistance                           |  | ≤ 0.003 Ω (IEC 60603-7) | ≤ 0.003 Ω (IEC 60603-7) |             |    |
| General data                                |  |                         |                         |             |    |
| Ambient temperature (operation)             |  | -10 °C ... 60 °C        | -10 °C ... 60 °C        |             |    |
|                                             |  |                         |                         |             |    |
| Ordering data                               |  |                         |                         |             |    |
| Description                                 |  | Type                    | Order No.               | Pcs. / Pkt. |    |
| Patch cable, CAT5, pre-assembled            |  | 0.3 m                   | FL CAT5 PATCH 0,3       | 2832250     | 10 |
|                                             |  | 0.5 m                   | FL CAT5 PATCH 0,5       | 2832263     | 10 |
|                                             |  | 1 m                     | FL CAT5 PATCH 1,0       | 2832276     | 10 |
|                                             |  | 1.5 m                   | FL CAT5 PATCH 1,5       | 2832221     | 10 |
|                                             |  | 2 m                     | FL CAT5 PATCH 2,0       | 2832289     | 10 |
|                                             |  | 3 m                     | FL CAT5 PATCH 3,0       | 2832292     | 10 |
|                                             |  | 5 m                     | FL CAT5 PATCH 5,0       | 2832580     | 10 |
|                                             |  | 7.5 m                   | FL CAT5 PATCH 7,5       | 2832616     | 10 |
|                                             |  | 10 m                    | FL CAT5 PATCH 10,0      | 2832629     | 10 |
| Patch cable, CAT6, pre-assembled            |  | 0.3 m                   | FL CAT6 PATCH 0,3       | 2891181     | 10 |
|                                             |  | 0.5 m                   | FL CAT6 PATCH 0,5       | 2891288     | 10 |
|                                             |  | 1 m                     | FL CAT6 PATCH 1,0       | 2891385     | 10 |
|                                             |  | 1.5 m                   | FL CAT6 PATCH 1,5       | 2891482     | 10 |
|                                             |  | 2 m                     | FL CAT6 PATCH 2,0       | 2891589     | 10 |
|                                             |  | 3 m                     | FL CAT6 PATCH 3,0       | 2891686     | 10 |
|                                             |  | 5 m                     | FL CAT6 PATCH 5,0       | 2891783     | 10 |
|                                             |  | 7.5 m                   | FL CAT6 PATCH 7,5       | 2891880     | 10 |
|                                             |  | 10 m                    | FL CAT6 PATCH 10        | 2891877     | 10 |
|                                             |  | 12.5 m                  | FL CAT6 PATCH 12,5      | 2891369     | 5  |
|                                             |  | 15 m                    | FL CAT6 PATCH 15,0      | 2891372     | 5  |
|                                             |  | 20 m                    | FL CAT6 PATCH 20,0      | 2891576     | 5  |



Dust protection  
for SFN switches and patch fields



Security lock  
for SFN switches and patch fields

| Description                                                                          | Ordering data  |           |             | Ordering data     |           |             |
|--------------------------------------------------------------------------------------|----------------|-----------|-------------|-------------------|-----------|-------------|
|                                                                                      | Type           | Order No. | Pcs. / Pkt. | Type              | Order No. | Pcs. / Pkt. |
| <b>Dust protection with color coding</b> , for SFN switch and angled patch connector |                |           |             |                   |           |             |
| - Black                                                                              | FL DUST CVR BK | 2891107   | 10          |                   |           |             |
| - Blue                                                                               | FL DUST CVR BU | 2891204   | 10          |                   |           |             |
| - Brown                                                                              | FL DUST CVR BN | 2891301   | 10          |                   |           |             |
| - Yellow                                                                             | FL DUST CVR YE | 2891408   | 10          |                   |           |             |
| - Gray                                                                               | FL DUST CVR GY | 2891505   | 10          |                   |           |             |
| - Green                                                                              | FL DUST CVR GN | 2891602   | 10          |                   |           |             |
| - Red                                                                                | FL DUST CVR RD | 2891709   | 10          |                   |           |             |
| - Violet                                                                             | FL DUST CVR VT | 2891806   | 10          |                   |           |             |
| - White                                                                              | FL DUST CVR WH | 2891903   | 10          |                   |           |             |
| <b>Security frame</b> for SFN switch and patch fields                                |                |           |             |                   |           |             |
| - Green                                                                              |                |           |             | FL PLUG GUARD GN  | 2891615   | 20          |
| - Red                                                                                |                |           |             | FL PLUG GUARD RD  | 2891712   | 20          |
| - White                                                                              |                |           |             | FL PLUG GUARD WH  | 2891819   | 20          |
| <b>Locking element</b> for security frame FL PLUG GUARD...                           |                |           |             |                   |           |             |
| - Locking element                                                                    |                |           |             | FL PORT GUARD     | 2891220   | 20          |
| - Key                                                                                |                |           |             | FL PLUG GUARD KEY | 2891327   | 1           |
| <b>Color coding</b> for FL CAT ...PATCH...                                           |                |           |             |                   |           |             |
| - Black                                                                              |                |           |             |                   |           |             |
| - Blue                                                                               |                |           |             |                   |           |             |
| - Brown                                                                              |                |           |             |                   |           |             |
| - Yellow                                                                             |                |           |             |                   |           |             |
| - Gray                                                                               |                |           |             |                   |           |             |
| - Green                                                                              |                |           |             |                   |           |             |
| - Red                                                                                |                |           |             |                   |           |             |
| - Violet                                                                             |                |           |             |                   |           |             |
| <b>Security element</b> for FL CAT ...PATCH...                                       |                |           |             |                   |           |             |
| - Security element                                                                   |                |           |             |                   |           |             |
| <b>Lockable security element</b> for FL PATCH...                                     |                |           |             |                   |           |             |
| - Security element, lockable                                                         |                |           |             |                   |           |             |
| - Key                                                                                |                |           |             |                   |           |             |





**Color coding  
for RJ45 FL patch cables**



**Security element  
for RJ45 FL patch cables**



**Lockable security element  
for RJ45 FL patch cables**

| Ordering data     |           |             |
|-------------------|-----------|-------------|
| Type              | Order No. | Pcs. / Pkt. |
|                   |           |             |
|                   |           |             |
|                   |           |             |
| FL PATCH CCODE BK | 2891194   | 20          |
| FL PATCH CCODE BU | 2891291   | 20          |
| FL PATCH CCODE BN | 2891495   | 20          |
| FL PATCH CCODE YE | 2891592   | 20          |
| FL PATCH CCODE GY | 2891699   | 20          |
| FL PATCH CCODE GN | 2891796   | 20          |
| FL PATCH CCODE RD | 2891893   | 20          |
| FL PATCH CCODE VT | 2891990   | 20          |
|                   |           |             |

| Ordering data      |           |             |
|--------------------|-----------|-------------|
| Type               | Order No. | Pcs. / Pkt. |
|                    |           |             |
|                    |           |             |
|                    |           |             |
|                    |           |             |
| FL PATCH SAFE CLIP | 2891246   | 20          |
|                    |           |             |

| Ordering data      |           |             |
|--------------------|-----------|-------------|
| Type               | Order No. | Pcs. / Pkt. |
|                    |           |             |
|                    |           |             |
|                    |           |             |
|                    |           |             |
| FL PATCH GUARD     | 2891424   | 20          |
| FL PATCH GUARD KEY | 2891521   | 1           |



# Data plug-in connectors

## Network components - patch panels, terminal outlets, couplings

### Modular distribution panel



19" mounting frame



Assembled modules  
for 19" mounting frames

|                                                                                                        | Technical data        |           |             | Technical data                 |           |             |
|--------------------------------------------------------------------------------------------------------|-----------------------|-----------|-------------|--------------------------------|-----------|-------------|
|                                                                                                        | CUC-PP-FRAME-19       |           |             | CUC-PP-MODUL-RJ45:6-RJ45:6/... |           |             |
| Electrical data                                                                                        |                       |           |             |                                |           |             |
| Transmission characteristics (category)                                                                | -                     |           |             | CAT6 <sub>A</sub>              |           |             |
| Material data                                                                                          |                       |           |             |                                |           |             |
| Housing material                                                                                       | Steel, powder-coated  |           |             | Stainless steel                |           |             |
| Inflammability class according to UL 94                                                                | V0                    |           |             | V0                             |           |             |
| Connection data                                                                                        |                       |           |             |                                |           |             |
| Connection method                                                                                      | -                     |           |             | -                              |           |             |
| Connection cross section AWG                                                                           | -                     |           |             | -                              |           |             |
| External cable diameter                                                                                | -                     |           |             | 18 mm                          |           |             |
| Insertion/withdrawal cycles                                                                            | -                     |           |             | ≥ 750                          |           |             |
| Temperature data                                                                                       |                       |           |             |                                |           |             |
| Ambient temperature (operation)                                                                        | -20 °C ... 60 °C      |           |             | -20 °C ... 60 °C               |           |             |
|                                                                                                        | Ordering data         |           |             | Ordering data                  |           |             |
|                                                                                                        | Type                  | Order No. | Pcs. / Pkt. | Type                           | Order No. | Pcs. / Pkt. |
| Description                                                                                            |                       |           |             |                                |           |             |
| 19" frame, empty, for using 8 modules (RJ45)                                                           | CUC-PP-FRAME-19       | 1407986   | 1           |                                |           |             |
| Jumpering panel                                                                                        | CUC-PP-PATCHBAY       | 1407994   | 1           |                                |           |             |
| RJ45 module, 6 x RJ45 to 6 x RJ45, CAT6 <sub>A</sub> , can be unlocked from the front, variable length |                       |           |             | CUC-PP-MODUL-RJ45:6-RJ45:6/... | 1407995   | 1           |
| Dummy frame, size of one module, for use in the frame                                                  |                       |           |             | CUC-PP-MODUL-COVER             | 1407988   | 1           |
|                                                                                                        | Accessories           |           |             | Accessories                    |           |             |
|                                                                                                        |                       |           |             |                                |           |             |
| Screw set, fixing material for the frame                                                               | CUC-PP-FRAME-SCREWSET | 1407989   | 1           |                                |           |             |
| Cable binder, fixing material for module cable routing                                                 |                       |           |             | CUC-PP-MODUL-CABLEFIXSET       | 1407991   | 1           |

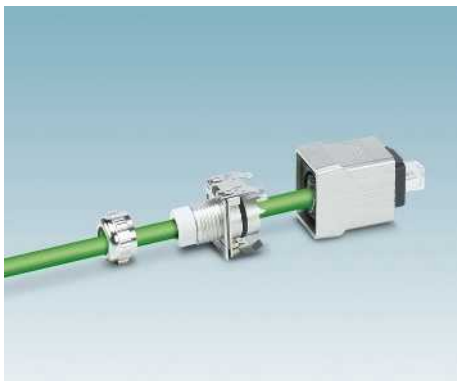
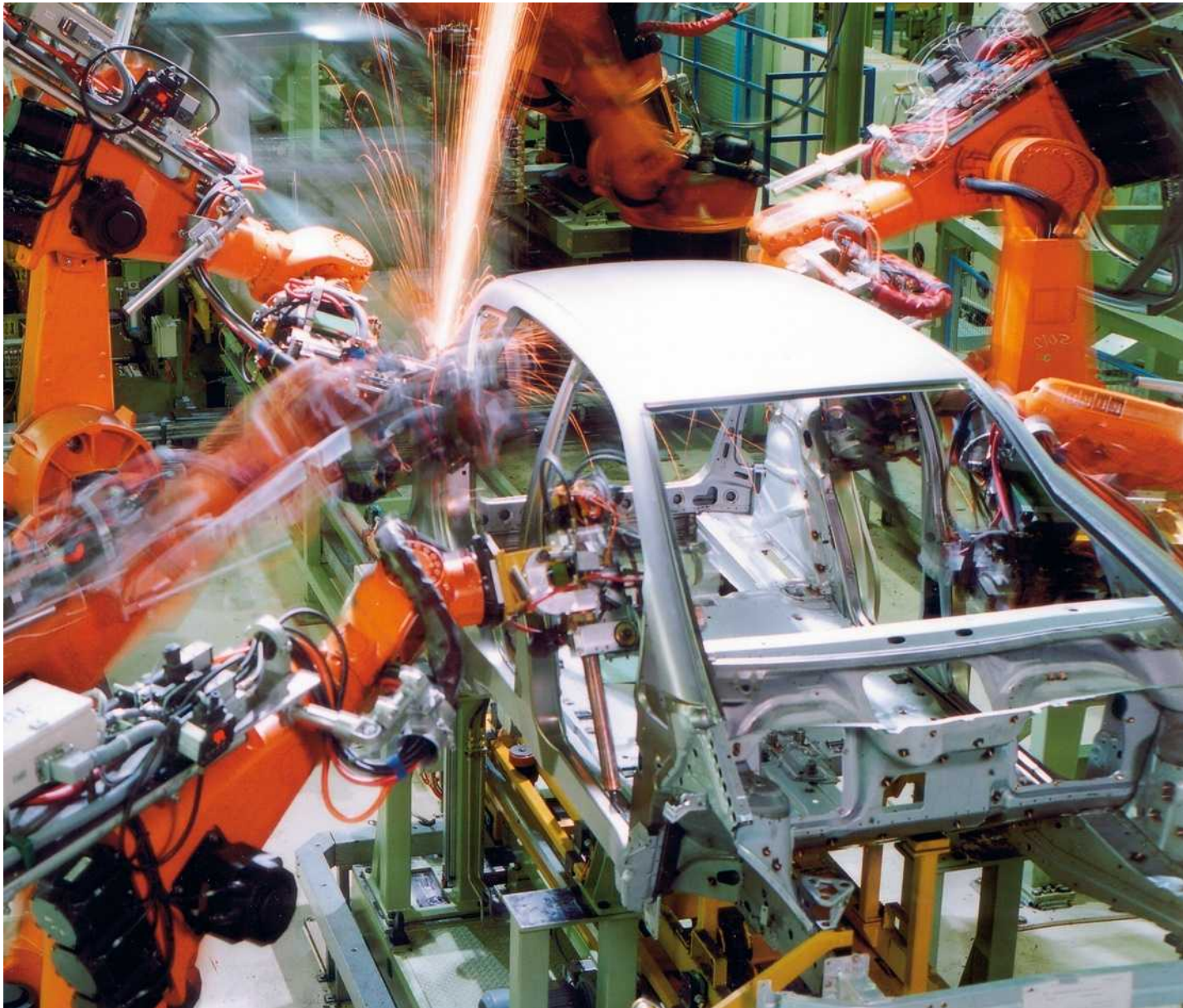
### Ordering example for modules of variable length:

For an RJ45 module with a cable length of 25.0 m, the ordering data is as follows:

| Order No.                            | Length [m]<br>Max. 80 m |
|--------------------------------------|-------------------------|
| 1407995                              | 25                      |
| Increment:<br>1.0 m ... 80 m = 0.5 m |                         |







The EMC-protected installation concept facilitates easy and EMC-safe cabling with hose packs from the control cabinet to the robot head based on the cabling guidelines for PROFINET.



The integrated installation system significantly reduces assembly effort and consists of cascable individual components that are coordinated with one another for flexible connection of the hose packs.



Particularly in the field of welding robots or conveyor systems, it is important to use a consistent shielding concept for installation in order to prevent interference on the data cables.



## Copper-based, EMC-safe installation systems

**PROFI  
NET**


Push/pull robot interface,  
with RJ45 and power inserts

**PROFI  
NET**


Push/pull robot interface,  
with RJ45 inserts

|                                         |
|-----------------------------------------|
| Electrical data                         |
| Transmission characteristics (category) |
| Material data                           |
| Housing material                        |
| Connection data                         |
| Connection method                       |
| Connection cross section AWG            |
| Cable cross section                     |
| Insertion/withdrawal cycles             |
| Temperature data                        |
| Ambient temperature (operation)         |

VS-MP-PPC/CG-PO/10G

CAT6<sub>A</sub>

Aluminum alloy

-

-

5 mm ... 8 mm (Data cable gland)

&gt; 1000 (Data)

-40 °C ... 70 °C

### Technical data

### Ordering data

|                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------|
| Description                                                                                                                 |
| <b>Multi-port connection</b> , for passive PROFINET cabling to robots, including mounting foot, for <b>cable diameter</b> : |
| 5 mm ... 8 mm                                                                                                               |
| 7 mm ... 10.5 mm                                                                                                            |
| <b>Multi-port power connection</b> : push/pull power, for passive PROFINET cabling to robots, including mounting foot       |
| <b>Multi-port power coupling</b> : for passive PROFINET cabling to robots, including mounting foot                          |
| <b>Multi-port data coupling</b> : for passive PROFINET cabling to robots, including mounting foot                           |
| Metal housing                                                                                                               |

| Type                   | Order No. | Pcs. / Pkt. |
|------------------------|-----------|-------------|
| VS-MP-PPC/CG-PO/10G    | 1403682   | 1           |
| VS-MP-PPC/CG-XL-PO/10G | 1403688   | 1           |
| VS-MP-PPC/CG-PO        | 1403681   | 1           |
| VS-MP-PPC/PPC-PO       | 1403684   | 1           |

### Accessories

|                                                                                 |
|---------------------------------------------------------------------------------|
| Protective cover                                                                |
| For data port                                                                   |
| For power port                                                                  |
| <b>Stripping tool</b> , for multiple-stage repositioning of shielded conductors |

|                      |         |   |
|----------------------|---------|---|
| VS-PPC-C1-PC-ROBK-L  | 1405293 | 1 |
| VS-PPC-C2-PC-ROBK-L  | 1405303 | 1 |
| VS-CABLE-STRIP-VARIO | 1657407 | 1 |

### Technical data

VS-MP-PPC/CG-10G

CAT6<sub>A</sub>

Aluminum alloy

-

-

5 mm ... 8 mm (Data cable gland)

&gt; 1000 (Data)

-40 °C ... 70 °C

### Ordering data

| Type                | Order No. | Pcs. / Pkt. |
|---------------------|-----------|-------------|
| VS-MP-PPC/CG-10G    | 1403678   | 1           |
| VS-MP-PPC/CG-XL-10G | 1403686   | 1           |
| VS-MP-PPC/PPC-1G    | 1403685   | 1           |

### Accessories

|                      |         |   |
|----------------------|---------|---|
| VS-PPC-C1-PC-ROBK-L  | 1405293 | 1 |
| VS-PPC-C2-PC-ROBK-L  | 1405303 | 1 |
| VS-CABLE-STRIP-VARIO | 1657407 | 1 |

### RJ45 terminal outlets, IP65/IP67

Ethernet

**PROFI**  
**NET**

**sercos**  
the automation bus



Terminal outlet  
with RJ45 slots

Ethernet

**PROFI**  
**NET**

**sercos**  
the automation bus



Terminal outlet  
with M12 slots

#### Technical data

VS-TO-RO-MCBK-F141...

CAT6

Aluminum cast alloy, powder-coated

black

IP65/67

#### Ordering data

| Type                     | Order No. | Pcs. / Pkt. |
|--------------------------|-----------|-------------|
| VS-TO-RO-MCBK-F1411/1411 | 1404281   | 1           |
| VS-TO-RO-MCBK-F1418/1418 | 1404278   | 1           |
| VS-TO-RO-MCBK-F1411/1413 | 1404333   | 1           |

#### Technical data

VS-TO-RO-MCBK-F142...

CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)

Aluminum cast alloy, powder-coated

black

IP65/67

#### Ordering data

| Type                     | Order No. | Pcs. / Pkt. |
|--------------------------|-----------|-------------|
| VS-TO-RO-MCBK-F1422/1422 | 1404304   | 1           |
| VS-TO-RO-MCBK-F1421/1421 | 1404294   | 1           |

|                                         |
|-----------------------------------------|
| Electrical data                         |
| Transmission characteristics (category) |
| Material data                           |
| Housing material                        |
| Mechanical data                         |
| Color                                   |
| Degree of protection                    |

|                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description                                                                                                                                                               |
| <b>Terminal outlet, IP65/IP67, 2 slots, version 14,</b><br>with protective plugs, 2 cable entries<br>Push/pull with 2 x RJ45                                              |
| <b>Terminal outlet, RJ45, IP65/67, 2 slots version 6,</b><br>with protective plugs, 2 cable entries<br>2 x RJ45                                                           |
| <b>Terminal outlet, IP65/IP67, 2 slots, version 14,</b><br>with protective plugs, 2 cable entries<br>Push/pull with 1 x power and 1 x RJ45                                |
| <b>Terminal outlet, M12, IP65/67, 2 slots,</b><br>with protective plugs, 2 cable entries<br>M12 with 2 x sockets, 8-pos., A-coded<br>M12 with 2 x socket, 4-pos., D-coded |

## RJ45 couplings, IP65/IP67

## Ethernet

RJ45 coupling, version 6,  
with protective cover
**PROFI**  
**NET**
RJ45 push/pull coupling, version 14,  
with protective cover

|                                         |
|-----------------------------------------|
| Electrical data                         |
| Rated voltage                           |
| Rated current                           |
| Transmission characteristics (category) |
| Material data                           |
| Housing material                        |
| Contact material                        |
| Inflammability class according to UL 94 |
| Mechanical data                         |
| No. of pos.                             |
| Degree of protection                    |
| Temperature data                        |
| Ambient temperature (operation)         |

## Technical data

|                                              |
|----------------------------------------------|
| VS-08-KU-IP67                                |
| 50 V                                         |
| 1 A                                          |
| CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001) |
| PBT                                          |
| Copper alloy                                 |
| V0                                           |
| 8                                            |
| IP67                                         |
| -10 °C ... 60 °C                             |

## Ordering data

|                                                                                                   |
|---------------------------------------------------------------------------------------------------|
| Description                                                                                       |
| <b>RJ45 coupling</b> , IP67, CAT5e, with protective cover                                         |
| Military gray RAL 7042                                                                            |
| Deep black RAL 9005                                                                               |
| <b>Multi-port data coupling</b> ; for passive PROFINET cabling to robots, including mounting foot |
| Metal housing                                                                                     |

| Type             | Order No. | Pcs. / Pkt. |
|------------------|-----------|-------------|
| VS-08-KU-IP67    | 1689268   | 1           |
| VS-08-KU-IP67-BK | 1658684   | 1           |

## Technical data

|                      |
|----------------------|
| VS-PPC-J-1-RJ45-MNBK |
| -                    |
| -                    |
| CAT5                 |
| Aluminum alloy       |
| -                    |
| -                    |
| IP65                 |
| -                    |

## Ordering data

| Type             | Order No. | Pcs. / Pkt. |
|------------------|-----------|-------------|
| VS-MP-PPC/PPC-1G | 1403685   | 1           |

### Patch panel with IDC fast connection

| Technical data                                                                                        |           |             |
|-------------------------------------------------------------------------------------------------------|-----------|-------------|
| VS-PP-F-RJ45-CAT6                                                                                     |           |             |
| 50 V<br>1 A<br>CAT6                                                                                   |           |             |
| PC-GF<br>Copper alloy<br>V0                                                                           |           |             |
| 8<br>gray<br>IP20<br>IDC fast connection<br>0.2 mm <sup>2</sup> ... 0.32 mm <sup>2</sup><br>24 ... 22 |           |             |
| -10 °C ... 60 °C                                                                                      |           |             |
| Ordering data                                                                                         |           |             |
| Type                                                                                                  | Order No. | Pcs. / Pkt. |
|                                                                                                       |           |             |
|                                                                                                       |           |             |
|                                                                                                       |           |             |
| VS-PP-F-RJ45-CAT6                                                                                     | 1658118   | 1           |

## Patch fields

## Ethernet




**Patch fields  
with Freenet RJ45 sockets**

## Ethernet interface

|                                 |
|---------------------------------|
| Interface                       |
| Number of ports                 |
| Weight                          |
| Width                           |
| Height                          |
| Depth                           |
| Degree of protection            |
| Ambient temperature (operation) |
| Housing material                |

## Technical data

FL PF 2TX CAT5E

FL PF 8TX CAT5E

Ethernet (RJ45)

|                                  |        |
|----------------------------------|--------|
| 2                                | 8      |
| 125 g                            | 260 g  |
| 38 mm                            | 124 mm |
| 112 mm                           | 135 mm |
| 88 mm                            | 140 mm |
| IP20                             |        |
| 0 °C ... 55 °C (no condensation) |        |
| Metal                            |        |

## Ordering data

## Description

|                                                |
|------------------------------------------------|
| <b>Patch field, 2 RJ45 network connections</b> |
| - CAT5e                                        |
| - CAT6                                         |
| <b>Patch field, 8 RJ45 network connections</b> |
| - CAT5e                                        |
| - CAT6                                         |

| Type            | Order No. | Pcs. / Pkt. |
|-----------------|-----------|-------------|
| FL PF 2TX CAT5E | 2891165   | 1           |
| FL PF 2TX CAT 6 | 2891068   | 1           |
| FL PF 8TX CAT5E | 2891178   | 1           |
| FL PF 8TX CAT 6 | 2891071   | 1           |

# Data plug-in connectors

## Network components - patch panels, terminal outlets, couplings

### RJ45 patch panel and terminal outlet, IP20

EtherCAT  
the automation bus

SERCOS  
the automation bus

PROFIBUS  
NET

Ethernet



**RJ45 patch panel for 19" rack and matching socket inserts**

EtherCAT  
the automation bus

SERCOS  
the automation bus

PROFIBUS  
NET

Ethernet



**IP20 terminal outlets for surface and flush-type mounting, plus corresponding RJ45 socket inserts**

|                                         | Technical data    |                                                      |
|-----------------------------------------|-------------------|------------------------------------------------------|
| Electrical data                         | VS-PP-19-1HE-16-F | VS-08-BU-RJ45-5-F/PK                                 |
| Rated voltage                           | -                 | 50 V                                                 |
| Rated current                           | -                 | 1 A                                                  |
| Transmission characteristics (category) | -                 | CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)         |
| Material data                           | PC-GF             | -                                                    |
| Housing material                        | -                 | Copper alloy                                         |
| Contact material                        | V0                | V0                                                   |
| Inflammability class according to UL 94 |                   |                                                      |
| Mechanical data                         |                   |                                                      |
| No. of pos.                             | -                 | 8                                                    |
| Color                                   | gray              | -                                                    |
| Degree of protection                    | IP20              | IP20                                                 |
| Connection method                       | -                 | IDC                                                  |
| Conductor cross section                 | -                 | 0.2 mm <sup>2</sup> ... 0.32 mm <sup>2</sup> (solid) |
| Connection cross section AWG            | -                 | 24 ... 22 (solid)                                    |
| Temperature data                        |                   |                                                      |
| Ambient temperature (operation)         | 5 °C ... 55 °C    | -20 °C ... 70 °C                                     |

|                                                                               | Ordering data        |           |             |
|-------------------------------------------------------------------------------|----------------------|-----------|-------------|
| Description                                                                   | Type                 | Order No. | Pcs. / Pkt. |
| <b>Patch panel</b> , 19" mounting, IP20, 16 slots for Freenet contact inserts | VS-PP-19-1HE-16-F    | 1652994   | 1           |
| <b>Terminal outlet</b> , IP20, with slots for Freenet contact inserts         |                      |           |             |
| Flush-type socket, two slots                                                  |                      |           |             |
| Surface-mounted socket, two slots                                             |                      |           |             |
| <b>RJ45 Freenet socket insert</b> , 8-pos., shielded, socket to socket        |                      |           |             |
| 1 Gbps, CAT5                                                                  | VS-08-BU/BU-RJ45-F   | 1405617   | 1           |
| <b>RJ45 Freenet socket insert</b> , 8-pos., shielded, with cable connection   |                      |           |             |
| 1 Gbps, CAT5                                                                  | VS-08-BU-RJ45-5-F/PK | 1652936   | 1           |
| 10 Gbps, CAT6 <sub>A</sub>                                                    | VS-08-BU-RJ45/10G-F  | 1424009   | 1           |

|                                         | Technical data      |                                               |
|-----------------------------------------|---------------------|-----------------------------------------------|
| Electrical data                         | VS-TO-OW-2-F-9010   | VS-08-BU-RJ45-6-F/PK                          |
| Rated voltage                           | -                   | 50 V                                          |
| Rated current                           | -                   | 1 A                                           |
| Transmission characteristics (category) | -                   | CAT6                                          |
| Material data                           | PC+ABS              | -                                             |
| Housing material                        | -                   | Copper alloy                                  |
| Contact material                        | HB                  | V0                                            |
| Inflammability class according to UL 94 |                     |                                               |
| Mechanical data                         |                     |                                               |
| No. of pos.                             | -                   | 8                                             |
| Color                                   | Pure white RAL 9010 | -                                             |
| Degree of protection                    | IP20                | IP20                                          |
| Connection method                       | -                   | IDC                                           |
| Conductor cross section                 | -                   | 0.14 mm <sup>2</sup> ... 0.35 mm <sup>2</sup> |
| Connection cross section AWG            | -                   | 26 ... 22 (7-wire)                            |
| Temperature data                        |                     |                                               |
| Ambient temperature (operation)         | 5 °C ... 55 °C      | -20 °C ... 70 °C                              |

|                                                                             | Ordering data        |           |             |
|-----------------------------------------------------------------------------|----------------------|-----------|-------------|
| Description                                                                 | Type                 | Order No. | Pcs. / Pkt. |
| <b>Terminal outlet</b> , IP20, with slots for Freenet contact inserts       |                      |           |             |
| Flush-type socket, two slots                                                | VS-TO-IW-2-F-9010    | 1653016   | 1           |
| Surface-mounted socket, two slots                                           | VS-TO-OW-2-F-9010    | 1653003   | 1           |
| <b>RJ45 Freenet socket insert</b> , 8-pos., shielded, socket to socket      |                      |           |             |
| 1 Gbps, CAT5                                                                | VS-08-BU-RJ45-5-F/PK | 1652936   | 1           |
| <b>RJ45 Freenet socket insert</b> , 8-pos., shielded, with cable connection | VS-08-BU-RJ45/10G-F  | 1424009   | 1           |





# Data plug-in connectors

## Network components - power plug-in connectors and cables

### Power plug-in connectors and panel mounting frames, IP65/IP67



Push/pull plug-in connector, version 14, IP65/67, with spring-cage fast connection technology



Socket inserts and push/pull panel mounting frames, for PCB connection

| Electrical data                         |
|-----------------------------------------|
| Rated current                           |
| Material data                           |
| Housing material                        |
| Inflammability class according to UL 94 |
| Conductor cross section                 |
| Connection cross section AWG            |
| Insertion/withdrawal cycles             |
| Temperature data                        |
| Ambient temperature (operation)         |

| Technical data                               |  |  |
|----------------------------------------------|--|--|
| VS-PPC-C2-MSTB-MNNA...                       |  |  |
| 16 A                                         |  |  |
| Zinc die-cast                                |  |  |
| V0                                           |  |  |
| 0.75 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |  |  |
| 18 ... 13                                    |  |  |
| ≤ 100                                        |  |  |
| -40 °C ... 70 °C                             |  |  |

| Ordering data                 |           |             |
|-------------------------------|-----------|-------------|
| Type                          | Order No. | Pcs. / Pkt. |
| VS-PPC-C2-MSTB-MNNA-P13-A5-SP | 1608074   | 1           |
| VS-PPC-C2-MSTB-POBK-P13-A5-SP | 1657892   | 1           |
| VS-PPC-C2-MSTB-POBK-P13-B5-SP | 1608236   | 1           |

| Description                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MSTB plug-in connector, IP67</b> , with push/pull interlocking, 5-pos., with a spring-cage connection, for cable diameter 9.0 mm ... 13.0 mm                                                                               |
| Metal housing, 24 V                                                                                                                                                                                                           |
| Plastic housing, 24 V                                                                                                                                                                                                         |
| Plastic housing, 400 V                                                                                                                                                                                                        |
| <b>MSTB contact insert</b> , for PCB mounting, 24 V, 5-pos., RAL 9005 (black), for panel mounting frame VS-PPC-F2-MSTB-...-1R-P                                                                                               |
| Angled solder pins                                                                                                                                                                                                            |
| Straight solder pins                                                                                                                                                                                                          |
| <b>MSTB contact insert</b> , for PCB mounting, 400 V, 5-pos., RAL 3000 (red), for panel mounting frame VS-PPC-F2-MSTB-...-1R-P                                                                                                |
| Angled solder pins                                                                                                                                                                                                            |
| Straight solder pins                                                                                                                                                                                                          |
| <b>MSTB panel mounting frame, IP67</b> , for push/pull interlocking, for PCB connection, for rectangular assembly opening, with gasket, without mounting screws                                                               |
| Metal housing                                                                                                                                                                                                                 |
| Plastic housings                                                                                                                                                                                                              |
| <b>MSTB panel mounting frame, IP67</b> , for push/pull interlocking, with an integrated contact insert for conductor connection, spring-cage connection, for rectangular mounting cutout, with seal, without mounting screws  |
| 24 V, plastic                                                                                                                                                                                                                 |
| 400 V, plastic                                                                                                                                                                                                                |
| 24 V, metal                                                                                                                                                                                                                   |
| 400 V, metal                                                                                                                                                                                                                  |
| <b>MSTB panel mounting frame, IP67</b> , for push/pull interlocking, metal, with an integrated contact insert for conductor connection, spring-cage connection, for round mounting cutout, with seal, without mounting screws |
| 24 V                                                                                                                                                                                                                          |
| 400 V                                                                                                                                                                                                                         |
| <b>Protective cover, IP67</b> , to cover the contact insert in the push-pull panel mounting frame for power                                                                                                                   |
| Metal housing                                                                                                                                                                                                                 |
| <b>Protective cover</b> for push/pull panel mounting frame                                                                                                                                                                    |
| <b>Protective cover</b>                                                                                                                                                                                                       |
| For power port                                                                                                                                                                                                                |
| <b>Protective cap, IP65</b> , with push/pull Interlocking for covering the contact insert in the push/pull connector for power, plastic                                                                                       |

| Technical data   |                        |  |
|------------------|------------------------|--|
| VS-MSTBA...-BK-A | VS-PPC-F2-MSTB-MNNA... |  |
| 16 A             | -                      |  |
| -                | Zinc die-cast          |  |
| V0               | V0                     |  |
| -                | -                      |  |
| -                | -                      |  |
| ≥ 100            | ≥ 500                  |  |
| -40 °C ... 70 °C | -40 °C ... 80 °C       |  |

| Ordering data                 |           |             |
|-------------------------------|-----------|-------------|
| Type                          | Order No. | Pcs. / Pkt. |
| VS-MSTBAH 2,5/ 5-GB-5,08-BK-A | 1657915   | 50          |
| VS-MSTBVA 2,5/ 5-GB-5,08-BK-A | 1609565   | 50          |
| VS-MSTBAH 2,5/ 5-GB-5,08-RD-B | 1609549   | 50          |
| VS-MSTBVA 2,5/ 5-GB-5,08-RD-B | 1609581   | 50          |
| VS-PPC-F2-MSTB-MNNA-1R-P      | 1608087   | 1           |
| VS-PPC-F2-MSTB-POBK-1R-P      | 1608281   | 1           |
| VS-PPC-F2-MSTB-POBK-1R-SPSA5  | 1608294   | 1           |
| VS-PPC-F2-MSTB-POBK-1R-SPSB5  | 1608304   | 1           |
| VS-PPC-F2-MSTB-MNNA-1R-SPSA5  | 1608249   | 1           |
| VS-PPC-F2-MSTB-MNNA-1R-SPSB5  | 1608252   | 1           |
| VS-PPC-F2-MSTB-MNNA-1C-SPSA5  | 1405248   | 1           |
| VS-PPC-F2-MSTB-MNNA-1C-SPSB5  | 1405167   | 1           |
| VS-PPC-C2-PC67-MNNA           | 1404045   | 1           |
| VS-PPC-C2-PC-ROBK             | 1405125   | 1           |
| VS-PPC-C2-PC-ROBK-L           | 1405303   | 1           |
| VS-PPC-F2-PC-POBK             | 1405329   | 1           |

## POWER distributors, IP67



Push/pull Y-distributor



Power H-distributor

|                                 |
|---------------------------------|
| Electrical data                 |
| Rated voltage                   |
| Rated current                   |
| Material data                   |
| Housing material                |
| Mechanical data                 |
| No. of pos.                     |
| Degree of protection            |
| Temperature data                |
| Ambient temperature (operation) |

| Technical data                  |                                              |  |
|---------------------------------|----------------------------------------------|--|
| VS-PPC-J-1220-1227-1020-0,2     |                                              |  |
| Rated voltage                   | 24 V                                         |  |
| Rated current                   | 16 A                                         |  |
| Material data                   | Aluminum, die-cast                           |  |
| Housing material                | Aluminum, die-cast                           |  |
| Mechanical data                 | 5                                            |  |
| No. of pos.                     | IP65/67                                      |  |
| Degree of protection            | IP65/67                                      |  |
| Temperature data                | -40 °C ... 70 °C (cable, fixed installation) |  |
| Ambient temperature (operation) | -40 °C ... 70 °C (cable, fixed installation) |  |

|                                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description                                                                                                                                                              |
| <b>PROFINET Y-distributor</b> with assembled power cable, 5-pos., IP65/IP67, <b>MSTB connector</b> with metal housing to 2 x sockets in metal housing, conductor length: |
| 0.2 m                                                                                                                                                                    |
| Variable                                                                                                                                                                 |
| <b>PROFINET Y-distributor</b> with assembled power cable, 5-pos., IP65/IP67, <b>7/8" connector</b> with metal housing to 2 x sockets in metal housing, conductor length: |
| 0.2 m                                                                                                                                                                    |
| Variable                                                                                                                                                                 |
| <b>Power H-distributor</b> , 4 x MSTB contact inserts, metal housing, without mounting screws                                                                            |

| Ordering data               |           |             |
|-----------------------------|-----------|-------------|
| Type                        | Order No. | Pcs. / Pkt. |
| VS-PPC-J-1220-1227-1020-0,2 | 1404799   | 1           |
| VS-PPC-J-1220-1227-1020-... | 1405484   | 1           |
| VS-PPC-J-1226-1227-1021-0,2 | 1404812   | 1           |
| VS-PPC-J-1226-1227-1021-... | 1405497   | 1           |

|                                               |
|-----------------------------------------------|
| Mounting foot for power distributors, plastic |
|-----------------------------------------------|

| Accessories |         |   |
|-------------|---------|---|
| VS-PPC-J-M  | 1405390 | 1 |

| Technical data                  |                  |  |
|---------------------------------|------------------|--|
| VS-PPC-J-4X-1227                |                  |  |
| Rated voltage                   | 24 V             |  |
| Rated current                   | 16 A             |  |
| Material data                   | Zinc die-cast    |  |
| Housing material                | Zinc die-cast    |  |
| Mechanical data                 | 5                |  |
| No. of pos.                     | IP65/67          |  |
| Degree of protection            | IP65/67          |  |
| Temperature data                | -40 °C ... 70 °C |  |
| Ambient temperature (operation) | -40 °C ... 70 °C |  |

| Ordering data    |           |             |
|------------------|-----------|-------------|
| Type             | Order No. | Pcs. / Pkt. |
| VS-PPC-J-4X-1227 | 1405387   | 1           |

| Accessories |         |   |
|-------------|---------|---|
| VS-PPC-J-M  | 1405390 | 1 |

## Ordering example for products with variable cable:

For a distributor with a cable length of 34.5 m, the order data is as follows:

| Order No. | Length [m]           |
|-----------|----------------------|
| 1405484   | 34.5                 |
|           | Increment: 0.5 m;    |
|           | Maximum length: 50 m |

# Data plug-in connectors

## Network components - fiber optic Plug-in connectors

**Fiber optic plug-in connectors, cables, and panel feed-throughs for POF, HCS, and GOF, IP65/IP67**

### Ethernet



M12 optic plug-in connectors



M12 transceiver

| Technical data                                                                                                       |  |                               |           | Technical data |                     |                  |           |             |
|----------------------------------------------------------------------------------------------------------------------|--|-------------------------------|-----------|----------------|---------------------|------------------|-----------|-------------|
|                                                                                                                      |  |                               |           |                |                     |                  |           |             |
| Material data                                                                                                        |  |                               |           |                |                     |                  |           |             |
| Ferrule material                                                                                                     |  | Copper alloy                  |           |                |                     | -                |           |             |
| Inflammability class according to UL 94                                                                              |  | V0                            |           |                |                     | V0               |           |             |
| Degree of protection                                                                                                 |  | IP65/67                       |           |                |                     | IP65/67          |           |             |
| External cable diameter                                                                                              |  | -                             |           |                |                     | -                |           |             |
| Temperature data                                                                                                     |  |                               |           |                |                     |                  |           |             |
| Ambient temperature (operation)                                                                                      |  | -20 °C ... 70 °C              |           |                |                     | -20 °C ... 70 °C |           |             |
|                                                                                                                      |  |                               |           |                |                     |                  |           |             |
| Ordering data                                                                                                        |  |                               |           | Ordering data  |                     |                  |           |             |
| Description                                                                                                          |  | Type                          | Order No. | Pcs. / Pkt.    | Type                |                  | Order No. | Pcs. / Pkt. |
| <b>Assembled fiber optic cable</b> , round cable, M12 FO to M12 FO, for installation inside buildings, length: 5 m   |  |                               |           |                |                     |                  |           |             |
| For 980/1000 µm POF fiber                                                                                            |  | FOC-PN-B-1000/M12-C/M12-C/5   | 1416680   | 1              |                     |                  |           |             |
| For 200/230 µm HCS fiber                                                                                             |  | FOC-HCS-GI-1005/M12-C/M12-C/5 | 1416693   | 1              |                     |                  |           |             |
| <b>Assembled fiber optic cable</b> , round cable, M12 FO to SCRJ/IP20, for installation inside housing, length: 5 m  |  |                               |           |                |                     |                  |           |             |
| For 980/1000 µm POF fiber                                                                                            |  | FOC-PN-B-1000/M12-C/SCRJ/5    | 1416648   | 1              |                     |                  |           |             |
| For 200/230 µm HCS fiber                                                                                             |  | FOC-HCS-GI-1005/M12-C/SCRJ/5  | 1416651   | 1              |                     |                  |           |             |
| <b>M12 fiber optic transceiver</b> , duplex, for POF fiber, for PCB mounting, M16 fastening thread, with sealing cap |  |                               |           |                |                     |                  |           |             |
| Wavelength: 650 nm                                                                                                   |  |                               |           |                | FOC-M12-MNNA-TC-650 |                  | 1416716   | 1           |
| <b>M12 fiber optic coupling</b> , duplex, suitable for all fibers, with wall bracket, IP65 protection                |  |                               |           |                | FOC-M12-BU/BU       |                  | 1416677   | 1           |
| <b>Repair set</b> , 10 replacement ferrules for M12 fiber optic plug-in connectors in plastic box                    |  |                               |           |                |                     |                  |           |             |
| For 980/1000 µm POF fiber                                                                                            |  | FOC-M12-RS-POF                | 1406421   | 1              |                     |                  |           |             |
| For 200/230 µm HCS fiber                                                                                             |  | FOC-M12-RS-HCS                | 1406422   | 1              |                     |                  |           |             |

## Fiber optic plug-in connectors, panel mounting frames, and couplings for POF, IP20 and IP65/IP67

### Ethernet



SCRJ plug-in connector, version 6, for 980/1000 µm polymer fibers

### Ethernet



SCRJ panel mounting side, version 6, for 980/1000 µm polymer fibers

|                                                                                                                                                                                                                                    | Technical data         |                  |             | Technical data    |           |             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------|-------------|-------------------|-----------|-------------|
| Material data                                                                                                                                                                                                                      | VS-SCRJ-...-IP20       | VS-SCRJ-...-IP67 |             | VS-SCRJ-GOF-BU/BU |           |             |
| Housing material                                                                                                                                                                                                                   | PBT                    | PA               |             | PBT               |           |             |
| Ferrule material                                                                                                                                                                                                                   | Copper alloy           | Copper alloy     |             | Zirconia ceramics |           |             |
| Inflammability class according to UL 94                                                                                                                                                                                            | V0                     | V0               |             | V0                |           |             |
| Color                                                                                                                                                                                                                              | black                  | gray             |             | -                 |           |             |
| Degree of protection                                                                                                                                                                                                               | IP20                   | IP67             |             | IP20              |           |             |
| Insertion/withdrawal cycles                                                                                                                                                                                                        | ≥ 1000                 | ≥ 1000           |             | ≥ 500             |           |             |
| Temperature data                                                                                                                                                                                                                   |                        |                  |             |                   |           |             |
| Ambient temperature (operation)                                                                                                                                                                                                    | -20 °C ... 70 °C       | -20 °C ... 70 °C |             | -25 °C ... 70 °C  |           |             |
| Ordering data                                                                                                                                                                                                                      |                        |                  |             |                   |           |             |
| Description                                                                                                                                                                                                                        | Type                   | Order No.        | Pcs. / Pkt. | Type              | Order No. | Pcs. / Pkt. |
| SCRJ fiber optic plug-in connector, duplex, with fast connection                                                                                                                                                                   | VS-SCRJ-POF-FA-IP20    | 1654879          | 1           |                   |           |             |
|                                                                                                                                                                                                                                    | VS-SCRJ-POF-FA-IP67    | 1657009          | 1           |                   |           |             |
| Connector set for polymer fibers (diameter of the individual elements: 2.2 mm), for self-assembly, with bend protection                                                                                                            |                        |                  |             |                   |           |             |
| - F-SMA set, 4 connectors                                                                                                                                                                                                          | PSM-SET-FSMA/4-KT      | 2799720          | 1           |                   |           |             |
| - SCRJ set, 2 duplex connectors                                                                                                                                                                                                    | PSM-SET-SCRJ-DUP/2-POF | 2708656          | 1           |                   |           |             |
| SCRJ socket insert, duplex, for panel mounting frame VARIOSUB IP67, can be used for glass, multi-mode, HCS and polymer                                                                                                             |                        |                  |             |                   |           |             |
| - 1x SCRJ/SCRJ (duplex)                                                                                                                                                                                                            |                        |                  |             | VS-SCRJ-GOF-BU/BU | 1652978   | 1           |
| VS-SCRJ panel mounting frame, for use with an AVAGO transceiver, type: AFBR 5978Z                                                                                                                                                  |                        |                  |             | VS-SCRJ-A-TC-IP67 | 1658545   | 1           |
| Freenet panel mounting frame, version 6, for round mounting cutout, with seal, without mounting screws                                                                                                                             |                        |                  |             |                   |           |             |
| Military gray RAL 7042                                                                                                                                                                                                             |                        |                  |             | VS-A-F-IP67       | 1653744   | 5           |
| Deep black RAL 9005                                                                                                                                                                                                                |                        |                  |             | VS-A-F-IP67-BK    | 1658668   | 5           |
| Accessories                                                                                                                                                                                                                        |                        |                  |             |                   |           |             |
| Protective cover for version 6 panel mounting frame                                                                                                                                                                                |                        |                  |             |                   |           |             |
| Military gray RAL 7042                                                                                                                                                                                                             |                        |                  |             | VS-08-SD-F        | 1652606   | 5           |
| Deep black RAL 9005                                                                                                                                                                                                                |                        |                  |             | VS-08-SD-F-BK     | 1658066   | 5           |
| SCRJ cutting tool set, for polymer fiber, for field assembly of SCRJ/IP20 and SCRJ/IP67 push/pull plug-in connectors with fast connection technology, consisting of stripping tool, aramid scissors, SCRJ cutting tool, microscope | TF-SCRJ-POF KONF SET   | 1405246          | 1           |                   |           |             |
| Protective cover SCRJ/IP67, for covering the SCRJ pin insert on the SCRJ/IP67 sleeve housing                                                                                                                                       | VS-SCRJ-PC             | 1653757          | 5           |                   |           |             |

### Fiber optic connectors, panel mounting frames and couplings for POF, push/pull

#### Ethernet



SCRJ plug-in connector, version 14, for 980/1000 µm polymer fibers

#### Ethernet



SCRJ panel mounting side, version 14, for 980/1000 µm polymer fibers

| Material data                           |
|-----------------------------------------|
| Housing material                        |
| Ferrule material                        |
| Inflammability class according to UL 94 |
| Color                                   |
| Degree of protection                    |
| Insertion/withdrawal cycles             |
| Temperature data                        |
| Ambient temperature (operation)         |

| Technical data   |                  |
|------------------|------------------|
| Metal housing    | Plastic housing  |
| Zinc die-cast    | PA-GF            |
| Copper alloy     | Copper alloy     |
| V0               | V0               |
| silver           | black            |
| IP65/67          | IP65/67          |
| ≥ 500            | ≥ 500            |
| -40 °C ... 70 °C | -20 °C ... 70 °C |

| Technical data   |                  |
|------------------|------------------|
| Metal housing    | Plastic housing  |
| Zinc die-cast    | PA-GF            |
| -                | -                |
| V0               | V0               |
| silver           | black            |
| IP65/67          | IP65/67          |
| ≥ 500            | ≥ 500            |
| -40 °C ... 80 °C | -40 °C ... 80 °C |

| Description                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SCRJ fiber OPTIC plug-in connector</b> , IP67, with push/pull interlocking, duplex, with fast connection technology                                                                                  |
| Metal housing                                                                                                                                                                                           |
| Plastic housings                                                                                                                                                                                        |
| <b>SCRJ panel mounting frame</b> , IP67, for push/pull interlocking, for rectangular mounting cutout, for <b>AVAGO transceiver</b> (type: <b>AFBR5978Z</b> ) on PCB, with seal, without mounting screws |
| Metal housing                                                                                                                                                                                           |
| Plastic housings                                                                                                                                                                                        |
| <b>SCRJ panel mounting frame</b> , IP67, for push/pull interlocking, with Freenet system, for rectangular mounting cutout, with seal, without mounting screws                                           |
| Metal housing                                                                                                                                                                                           |
| Plastic housings                                                                                                                                                                                        |
| <b>SCRJ panel mounting frame</b> , IP67, for push/pull Interlocking, metal, with Freenet system, for round mounting cutout, with seal                                                                   |

| Ordering data                 |           |             |
|-------------------------------|-----------|-------------|
| Type                          | Order No. | Pcs. / Pkt. |
| VS-PPC-C1-SCRJ-MNNA-PG9-A4D-C | 1608032   | 1           |
| VS-PPC-C1-SCRJ-POBK-PG9-A4D-C | 1657850   | 1           |
|                               |           |             |
|                               |           |             |
|                               |           |             |
|                               |           |             |
|                               |           |             |
|                               |           |             |

| Ordering data            |           |             |
|--------------------------|-----------|-------------|
| Type                     | Order No. | Pcs. / Pkt. |
|                          |           |             |
|                          |           |             |
| VS-PPC-F1-SCRJ-MNNA-1RP  | 1608061   | 1           |
| VS-PPC-F1-SCRJ-POBK-1RP  | 1657889   | 1           |
|                          |           |             |
|                          |           |             |
| VS-PPC-F1-SCRJ-MNNA-1RF  | 1405374   | 1           |
| VS-PPC-F1-SCRJ-POBK-1RF  | 1608210   | 1           |
|                          |           |             |
| VS-PPC-F1-SCRJ-MNNA-1C-F | 1405235   | 1           |

| Protective cover                                                                                                                                                                                                                           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| For data port                                                                                                                                                                                                                              |
| <b>SCRJ cutting tool set</b> , for polymer fiber, for field assembly of SCRJ/IP20 and SCRJ/IP67 push/pull plug-in connectors with fast connection technology, consisting of stripping tool, aramid scissors, SCRJ cutting tool, microscope |
| <b>Scrj polishing tool SET</b> , for polymer fiber, for field assembly of scrj/ip20 and SCRJ/IP67 plug-in connectors with fast connection system                                                                                           |
| <b>Protective cover</b> , IP65, with push/pull interlocking, for covering the contact insert in the push/pull connector for RJ45 and SCRJ, plastic                                                                                         |

| Accessories                 |         |   |
|-----------------------------|---------|---|
|                             |         |   |
| TF-SCRJ-POF KONF SET        | 1405246 | 1 |
|                             |         |   |
| VS-SCRJ-POF-KONFTOOL-POLISH | 1658820 | 1 |
|                             |         |   |
| VS-PPC-F1-PC-POBK           | 1405316 | 1 |

| Accessories         |         |   |
|---------------------|---------|---|
|                     |         |   |
| VS-PPC-C1-PC-ROBK-L | 1405293 | 1 |
|                     |         |   |
|                     |         |   |

## Fiber optic plug-in connectors and panel feed-throughs, version 1, for POF, IP67



SCRJ plug-in connector, version 1



Fiber optic panel mounting frame, version 1

|                                 |
|---------------------------------|
| Material data                   |
| Housing material                |
| Color                           |
| Degree of protection            |
| Insertion/withdrawal cycles     |
| Temperature data                |
| Ambient temperature (operation) |

| Technical data    |  |  |
|-------------------|--|--|
| VS-V1-C-...-A4A-G |  |  |
| Zinc die-cast     |  |  |
| silver            |  |  |
| IP67              |  |  |
| 500               |  |  |
| -40 °C ... 70 °C  |  |  |

|                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description                                                                                                                                                                   |
| <b>SCRJ fiber optic plug-in connector</b> , IP67, with bayonet locking, metal housing, duplex, with adhesive connection technology, for 5.0 mm ... 8.0 mm cable diameter      |
| For POF fiber                                                                                                                                                                 |
| <b>SCRJ panel mounting frame</b> , IP67, for bayonet locking, metal, SCRJ to 2 x SC, for round mounting cutout, with seal, without mounting screws, <b>with coupling for:</b> |
| Multi-mode, PCF, and POF                                                                                                                                                      |

| Ordering data               |           |             |
|-----------------------------|-----------|-------------|
| Type                        | Order No. | Pcs. / Pkt. |
| VS-V1-C-SCRJ-MNNA-PG9-A4A-G | 1419189   | 1           |

|                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------|
| <b>Protective cover</b> , IP67, plastic, for covering the contact insert in the RJ45, LC, and SCRJ connector                   |
| <b>Protective cover</b> , IP67, plastic, for covering the contact insert in the RJ45, LC, and SCRJ <b>panel mounting frame</b> |

| Accessories     |         |   |
|-----------------|---------|---|
| VS-V1-C-PC-POBK | 1419183 | 1 |

| Technical data     |  |  |
|--------------------|--|--|
| VS-V1-F-...-C-S-A1 |  |  |
| Zinc die-cast      |  |  |
| -                  |  |  |
| IP67               |  |  |
| 500                |  |  |
| -40 °C ... 70 °C   |  |  |

| Ordering data                |           |             |
|------------------------------|-----------|-------------|
| Type                         | Order No. | Pcs. / Pkt. |
| VS-V1-F-SCRJ-MNNA-PG9-C-S-A1 | 1420197   | 1           |

| Accessories     |         |   |
|-----------------|---------|---|
| VS-V1-F-PC-POBK | 1419186 | 1 |

## Ethernet



**SCRJ panel mounting side, version 6,  
for 200/230  $\mu\text{m}$  HCS fibers**



## Fiber optic plug-in connectors, panel mounting frames, and couplings for HCS, IP20 and IP65/IP67

### Ethernet



SCRJ plug-in connector, version 14,  
for 200/230 µm HCS fibers

### Ethernet



SCRJ plug-in connector, version 14,  
for 200/230 µm HCS fibers

| Material data                           |
|-----------------------------------------|
| Housing material                        |
| Ferrule material                        |
| Inflammability class according to UL 94 |
| Color                                   |
| Degree of protection                    |
| Insertion/withdrawal cycles             |
| Temperature data                        |
| Ambient temperature (operation)         |

| Technical data   |                  |
|------------------|------------------|
| Metal housing    | Plastic housing  |
| Zinc die-cast    | PA-GF            |
| Copper alloy     | Copper alloy     |
| V0               | V0               |
| silver           | black            |
| IP65/67          | IP65/67          |
| ≥ 500            | ≥ 500            |
| -40 °C ... 70 °C | -20 °C ... 70 °C |

| Description                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SCRJ fiber optic plug-in connector, IP67</b> , with push/pull interlocking, duplex, with fast connection technology                                                                          |
| Metal housing                                                                                                                                                                                   |
| Plastic housings                                                                                                                                                                                |
| <b>SCRJ fiber optic plug-in connector, IP20</b> , duplex, with fast connection technology, for 200/230 µm HCS fiber                                                                             |
| For single wire diameter: 2.2 mm                                                                                                                                                                |
| <b>Connector set for PROFINET HCS fibers</b> (diameter of the individual elements: 2.2 mm), for self-assembly, with bend protection                                                             |
| - SC duplex set, 2 duplex connectors                                                                                                                                                            |
| - B-FOC (ST®) set, 4 connectors                                                                                                                                                                 |
| - SCRJ set, 2 duplex connectors                                                                                                                                                                 |
| <b>SCRJ panel mounting frame, IP67</b> , for push/pull interlocking, for rectangular mounting cutout, for <b>AVAGO transceiver (type: AFBR5978Z)</b> on PCB, with seal, without mounting screws |
| Metal housing                                                                                                                                                                                   |
| Plastic housings                                                                                                                                                                                |
| <b>SCRJ panel mounting frame, IP67</b> , for push/pull Interlocking, with Freenet system, for rectangular mounting cutout, with seal, without mounting screws                                   |
| Metal housing                                                                                                                                                                                   |
| Plastic housings                                                                                                                                                                                |
| <b>SCRJ panel mounting frame, IP67</b> , for push/pull Interlocking, metal, with Freenet system, for round mounting cutout, with seal                                                           |

| Ordering data                 |           |             |
|-------------------------------|-----------|-------------|
| Type                          | Order No. | Pcs. / Pkt. |
| VS-PPC-C1-SCRJ-MNNA-PG9-A3C-C | 1608045   | 1           |
| VS-PPC-C1-SCRJ-POBK-PG9-A3C-C | 1657863   | 1           |
| VS-SCRJ-HCS-FA-IP20-PN        | 1404087   | 1           |
| PSM-SET-SC-DUPLEX/2-HCS/PN    | 2313779   | 1           |
| PSM-SET-B-FOC/4-HCS/PN        | 2313782   | 1           |
| PSM-SET-SCRJ-DUP/2-HCS/PN     | 2313546   | 1           |
| VS-PPC-F1-SCRJ-MNNA-1RP       | 1608061   | 1           |
| VS-PPC-F1-SCRJ-POBK-1RP       | 1657889   | 1           |
| VS-PPC-F1-SCRJ-MNNA-1RF       | 1405374   | 1           |
| VS-PPC-F1-SCRJ-POBK-1RF       | 1608210   | 1           |
| VS-PPC-F1-SCRJ-MNNA-1C-F      | 1405235   | 1           |

| Protective cover                                                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| For data port                                                                                                                                                                           |
| <b>Protective cover, IP65</b> , with push/pull interlocking, for covering the contact insert in the push/pull connector for RJ45 and SCRJ, plastic                                      |
| <b>HCS (GI) DIY case</b> for SCRJ and SC duplex quick mounting connectors, stripping blade, stripping pliers, aramid yarn scissors, fiber stripper, fiber cleaving tool, and microscope |

| Accessories            |         |   |
|------------------------|---------|---|
| VS-PPC-F1-PC-POBK      | 1405316 | 1 |
| PSM-HCS-KONFTOOL/SC-RJ | 2708876 | 1 |

| Technical data           |           |                  |
|--------------------------|-----------|------------------|
| Metal housing            |           | Plastic housing  |
| Zinc die-cast            | PA-GF     |                  |
| -                        | -         |                  |
| V0                       | V0        |                  |
| silver                   | black     |                  |
| IP65/67                  | IP65/67   |                  |
| ≥ 500                    | ≥ 500     |                  |
| -40 °C ... 80 °C         |           | -40 °C ... 80 °C |
| Ordering data            |           |                  |
| Type                     | Order No. | Pcs. / Pkt.      |
|                          |           |                  |
|                          |           |                  |
|                          |           |                  |
|                          |           |                  |
| VS-PPC-F1-SCRJ-MNNA-1RP  | 1608061   | 1                |
| VS-PPC-F1-SCRJ-POBK-1RP  | 1657889   | 1                |
|                          |           |                  |
| VS-PPC-F1-SCRJ-MNNA-1RF  | 1405374   | 1                |
| VS-PPC-F1-SCRJ-POBK-1RF  | 1608210   | 1                |
|                          |           |                  |
| VS-PPC-F1-SCRJ-MNNA-1C-F | 1405235   | 1                |
| Accessories              |           |                  |
| VS-PPC-C1-PC-ROBK-L      | 1405293   | 1                |
|                          |           |                  |

# Data plug-in connectors

## Network components - fiber optic plug-in connectors

### Fiber optic plug-in connectors, panel mounting frames, and couplings for GOF, IP20 and IP65/IP67

#### Ethernet



SCRJ plug-in connector, version 6, for 50/125 µm multi-mode fiberglass

#### Ethernet



SCRJ panel mounting side, version 6, for 50/125 µm multi-mode fiberglass

#### Material data

|                                         |
|-----------------------------------------|
| Housing material                        |
| Ferrule material                        |
| Inflammability class according to UL 94 |
| Color                                   |
| Degree of protection                    |
| Insertion/withdrawal cycles             |
| Temperature data                        |
| Ambient temperature (operation)         |

| Technical data    |                   |
|-------------------|-------------------|
| VS-SCRJ-...-IP20  | VS-SCRJ-...-IP67  |
| PBT               | PA                |
| Zirconia ceramics | Zirconia ceramics |
| V0                | V0                |
| black             | gray              |
| IP20              | IP67              |
| ≥ 1000            | ≥ 1000            |
| -20 °C ... 70 °C  | -20 °C ... 70 °C  |

| Technical data    |  |
|-------------------|--|
| VS-SCRJ-GOF-BU/BU |  |
| PBT               |  |
| Zirconia ceramics |  |
| V0                |  |
| -                 |  |
| IP20              |  |
| ≥ 500             |  |
| -25 °C ... 70 °C  |  |

#### Description

**SCRJ fiber optic plug-in connector**, duplex, with fast connection technology, for fiberglass multi-mode 50/125 µm, for individual wire diameter 2.9 mm

IP20  
IP67

**SC duplex fiber optic plug-in connector**, IP20, with fast connection technology

**SCRJ socket insert**, duplex, for panel mounting frame VARIOSUB IP67, can be used for glass, multi-mode, HCS and polymer

- 1x SCRJ/SCRJ (duplex)

**VS-SCRJ panel mounting frame**, for use with an AVAGO transceiver, type: AFB 5978Z

**Freenet panel mounting frame**, version 6, for round mounting cutout, with seal, without mounting screws

Military gray RAL 7042  
Deep black RAL 9005

| Ordering data       |           |             |
|---------------------|-----------|-------------|
| Type                | Order No. | Pcs. / Pkt. |
| VS-SCRJ-GOF-FA-IP20 | 1657070   | 1           |
| VS-SCRJ-GOF-FA-IP67 | 1657083   | 1           |
| VS-SCDU-GOF-FA-IP20 | 1658529   | 1           |
|                     |           |             |
|                     |           |             |
|                     |           |             |

| Ordering data     |           |             |
|-------------------|-----------|-------------|
| Type              | Order No. | Pcs. / Pkt. |
| VS-SCRJ-GOF-BU/BU | 1652978   | 1           |
| VS-SCRJ-A-TC-IP67 | 1658545   | 1           |
|                   |           |             |
| VS-A-F-IP67       | 1653744   | 5           |
| VS-A-F-IP67-BK    | 1658668   | 5           |

**Assembly tool set for fiberglass**, for field assembly of SCRJ and SC duplex plug-in connectors, with fast connection technology

EU version  
US version

**Protective cover** for version 6 panel mounting frame

Military gray RAL 7042  
Deep black RAL 9005

**Protective cover SCRJ/IP67**, for covering the SCRJ pin insert on the SCRJ/IP67 sleeve housing

| Accessories           |         |   |
|-----------------------|---------|---|
| VS-GOF-FA-KONFTOOL-EU | 1658228 | 1 |
| VS-GOF-FA-KONFTOOL-US | 1658231 | 1 |
|                       |         |   |
| VS-SCRJ-PC            | 1653757 | 5 |

| Accessories   |         |   |
|---------------|---------|---|
|               |         |   |
| VS-08-SD-F    | 1652606 | 5 |
| VS-08-SD-F-BK | 1658066 | 5 |

## Fiber optic plug-in connectors and panel mounting frames, version 1, for GOF, IP65/IP67



Fiber optic plug-in connector, version 1



Fiber optic panel mounting frame, version 1

|                                         |
|-----------------------------------------|
| Material data                           |
| Housing material                        |
| Inflammability class according to UL 94 |
| Color                                   |
| Degree of protection                    |
| Insertion/withdrawal cycles             |
| Temperature data                        |
| Ambient temperature (operation)         |

| Technical data           |  |  |
|--------------------------|--|--|
| VS-V1-C-SCRJ-MNNA-PG9... |  |  |
| Zinc die-cast            |  |  |
| V0                       |  |  |
| silver                   |  |  |
| IP67                     |  |  |
| 500                      |  |  |
| -40 °C ... 70 °C         |  |  |

|                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description                                                                                                                                                                   |
| <b>SCRJ fiber optic plug-in connector</b> , IP67, with bayonet locking, metal housing, duplex, with adhesive connection technology, for 5.0 mm ... 8.0 mm cable diameter      |
| For multi-mode fiber                                                                                                                                                          |
| For single mode fiber                                                                                                                                                         |
| <b>LC fiber optic connector</b> , IP67, with bayonet locking, metal housing, duplex, with adhesive connection technology, for 5.0 mm ... 8.0 mm cable diameter                |
| For multi-mode fiber                                                                                                                                                          |
| For single mode fiber                                                                                                                                                         |
| <b>SCRJ panel mounting frame</b> , IP67, for bayonet locking, metal, SCRJ to 2 x SC, for round mounting cutout, with seal, without mounting screws, <b>with coupling for:</b> |
| Multi-mode, PCF, and POF                                                                                                                                                      |
| Single mode                                                                                                                                                                   |
| <b>LC panel mounting frame</b> , IP67, for bayonet locking, metal, for round mounting cutout, with seal, without mounting screws, <b>with coupling for:</b>                   |
| Multi-mode                                                                                                                                                                    |
| Single mode                                                                                                                                                                   |

| Ordering data              |           |             |
|----------------------------|-----------|-------------|
| Type                       | Order No. | Pcs. / Pkt. |
| VS-V1-C-SCRJ-MNNA-PG9-A1-G | 1419187   | 1           |
| VS-V1-C-SCRJ-MNNA-PG9-B1-G | 1419188   | 1           |
| VS-V1-C-LC-MNNA-PG9-A1-G   | 1419190   | 1           |
| VS-V1-C-LC-MNNA-PG9-B1-G   | 1419191   | 1           |

| Accessories     |         |   |
|-----------------|---------|---|
| VS-V1-C-PC-POBK | 1419183 | 1 |

|                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------|
| <b>Protective cover</b> , IP67, plastic, for covering the contact insert in the RJ45, LC, and SCRJ connector                   |
| <b>Protective cover</b> , IP67, plastic, for covering the contact insert in the RJ45, LC, and SCRJ <b>panel mounting frame</b> |

| Technical data               |  |  |
|------------------------------|--|--|
| VS-V1-F-SCRJ-MNNA-PG9-C-S... |  |  |
| Zinc die-cast                |  |  |
| V0                           |  |  |
| -                            |  |  |
| IP67                         |  |  |
| 500                          |  |  |
| -40 °C ... 70 °C             |  |  |

| Ordering data                |           |             |
|------------------------------|-----------|-------------|
| Type                         | Order No. | Pcs. / Pkt. |
| VS-V1-F-SCRJ-MNNA-PG9-C-S-A1 | 1420197   | 1           |
| VS-V1-F-SCRJ-MNNA-PG9-C-S-B1 | 1420207   | 1           |
| VS-V1-F-LC-MNNA-PG9-C-S-A1   | 1420210   | 1           |
| VS-V1-F-LC-MNNA-PG9-C-S-B1   | 1420223   | 1           |

| Accessories     |         |   |
|-----------------|---------|---|
| VS-V1-F-PC-POBK | 1419186 | 1 |

### Fiber optic patch panel



Patch panel, SCRJ, socket/socket, for polymer fibers, HCS fibers, and multi-mode fiberglass



Patch panel for 19" rack and matching socket inserts

#### Ordering data

| Description                                                                   |
|-------------------------------------------------------------------------------|
| <b>SCRJ patch panel</b> , DIN rail mounting, IP20, 1 slot                     |
| <b>Patch panel</b> , 19" mounting, IP20, 16 slots for Freenet contact inserts |

| Type         | Order No. | Pcs. / Pkt. |
|--------------|-----------|-------------|
| VS-PP-F-SCRJ | 1658121   | 1           |
|              |           |             |

#### Ordering data

| Type              | Order No. | Pcs. / Pkt. |
|-------------------|-----------|-------------|
| VS-PP-19-1HE-16-F | 1652994   | 1           |
|                   |           |             |

### Fiber optic terminal outlet



IP20 outlet boxes



IP65/IP67 terminal outlet, with SCRJ and power slots

#### Ordering data

| Description                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------|
| <b>Terminal outlet</b> , IP20, with slots for Freenet contact inserts                                               |
| Surface-mounted socket, two slots                                                                                   |
| Flush-type socket, two slots                                                                                        |
| Surface-mounted socket, six slots                                                                                   |
| <b>Terminal outlet, SCRJ/power</b> , IP65/67, push/pull, 2 slots version 14, with protective plugs, 2 cable entries |
| <b>Terminal outlet, SCRJ</b> , IP65/67, push/pull, 2 slots version 14, with protective plugs, 2 cable entries       |

| Type              | Order No. | Pcs. / Pkt. |
|-------------------|-----------|-------------|
| VS-TO-OW-2-F-9010 | 1653003   | 1           |
| VS-TO-IW-2-F-9010 | 1653016   | 1           |
| VS-TO-OW-6-F-9010 | 1653029   | 1           |
|                   |           |             |
|                   |           |             |

#### Ordering data

| Type                     | Order No. | Pcs. / Pkt. |
|--------------------------|-----------|-------------|
| VS-TO-RO-MCBK-F1417/1413 | 1404346   | 1           |
| VS-TO-RO-MCBK-F1417/1417 | 1404320   | 1           |
|                          |           |             |

## Installation system for fiber optics, IP56/IP67




Push/pull robot interface,  
with SCRJ and power inserts




Push/pull robot interface,  
with SCRJ inserts

|                                 |
|---------------------------------|
| Material data                   |
| Housing material                |
| Connection data                 |
| Connection profile              |
| Insertion/withdrawal cycles     |
| Temperature data                |
| Ambient temperature (operation) |

|                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------|
| Description                                                                                                                 |
| <b>Multi-port connection</b> , for passive PROFINET cabling to robots, including mounting foot, for <b>cable diameter</b> : |
| 5 mm ... 8 mm                                                                                                               |
| 7 mm ... 10.5 mm                                                                                                            |
| <b>Multi-port power connection</b> : push/pull power, for passive PROFINET cabling to robots, including mounting foot       |
| <b>Multi-port power coupling</b> : for passive PROFINET cabling to robots, including mounting foot                          |

|                                                                                 |
|---------------------------------------------------------------------------------|
| <b>Protective cover</b>                                                         |
| For data port                                                                   |
| For power port                                                                  |
| <b>Stripping tool</b> , for multiple-stage repositioning of shielded conductors |

| Technical data                                           |                                |
|----------------------------------------------------------|--------------------------------|
| VS-MP-PPC/CG-PO/FO                                       | VS-MP-PPC/CG-PO                |
| Aluminum alloy                                           | Aluminum alloy                 |
| Data/power: SCRJ/5-pos.<br>≥ 500 (Data) // ≤ 100 (Power) | Power: 5-pos.<br>≤ 100 (Power) |
| -40 °C ... 70 °C                                         | -40 °C ... 70 °C               |

| Ordering data         |           |             |
|-----------------------|-----------|-------------|
| Type                  | Order No. | Pcs. / Pkt. |
| VS-MP-PPC/CG-PO/FO    | 1404321   | 1           |
| VS-MP-PPC/CG-XL-PO/FO | 1404325   | 1           |
| VS-MP-PPC/CG-PO       | 1403681   | 1           |
| VS-MP-PPC/PPC-PO      | 1403684   | 1           |

| Accessories          |         |   |
|----------------------|---------|---|
| VS-PPC-C1-PC-ROBK-L  | 1405293 | 1 |
| VS-PPC-C2-PC-ROBK-L  | 1405303 | 1 |
| VS-CABLE-STRIP-VARIO | 1657407 | 1 |

| Technical data             |  |
|----------------------------|--|
| VS-MP-PPC/CG-FO            |  |
| Aluminum alloy             |  |
| Data: SCRJ<br>≥ 500 (Data) |  |
| -40 °C ... 70 °C           |  |

| Ordering data      |           |             |
|--------------------|-----------|-------------|
| Type               | Order No. | Pcs. / Pkt. |
| VS-MP-PPC/CG-FO    | 1404319   | 1           |
| VS-MP-PPC/CG-XL-FO | 1404324   | 1           |

| Accessories          |         |   |
|----------------------|---------|---|
| VS-CABLE-STRIP-VARIO | 1657407 | 1 |

## Data plug-in connectors

### Network components - fiber optic plug-in connectors

#### Fiber optic couplings

##### Ethernet



SCRJ coupling



Couplings for connecting FO cables

##### Ordering data

| Description | Type           | Order No. | Pcs. / Pkt. |
|-------------|----------------|-----------|-------------|
|             | VS-SCRJ-GOF-KU | 1654358   | 1           |

**Coupling**; set, consisting of:

- 2 x F-SMA/F-SMA
- 2 x B-FOC (ST®)/B-FOC (ST®)
- 1 x SCRJ/SCRJ (duplex)
- 1 x LC/LC (duplex, multi-mode fiber)
- 1 x LC/LC (duplex, single mode fiber)
- 1 x SC duplex/SC duplex

##### Ordering data

| Type                      | Order No. | Pcs. / Pkt. |
|---------------------------|-----------|-------------|
| PSM-SET-FSMA-LINK/2       | 2799416   | 1           |
| PSM-SET-BFOC-LINK/2       | 2799429   | 1           |
| VS-SCRJ-GOF-BU/BU         | 1652978   | 1           |
| FL MM PATCH COUPLER LC-LC | 2700312   | 1           |
| FL SM PATCH COUPLER LC-LC | 2700313   | 1           |
| FL COUPLER SC-DUPLEX      | 2901788   | 1           |

#### Coupling, version 14, IP65/IP67

##### Ethernet



##### Ordering data

| Description                                                                               | Type                 | Order No. | Pcs. / Pkt. |
|-------------------------------------------------------------------------------------------|----------------------|-----------|-------------|
| <b>SCRJ push/pull coupling</b> , IP67, metal, with protective cover, color: nickel-plated | VS-PPC-J-1-SCRJ-MNBK | 1405206   | 1           |

## Fiber optic outdoor cables, sold by the meter

- Robust round cable for outdoor installation
- Ozone and UV resistant
- Watertight lengthwise
- Integrated vapor barrier and rodent-proof scrim



GOF fiber type



PCF fiber type

|                                                                          | Technical data                                   |                                                  | Technical data                                   |                                              |           |             |
|--------------------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|----------------------------------------------|-----------|-------------|
|                                                                          | FOC-OE-OE-GB01/...                               | FOC-OE-OE-GB02/...                               | FOC-OE-OE-GB03/...                               | FOC-OE-OE-HB01/...                           |           |             |
| Cable data                                                               |                                                  |                                                  |                                                  |                                              |           |             |
| Cable abbreviation in accordance with IEC 61977:2010                     | 02-G50/FJ(ZNG)H-...22                            | 02-G50/FJ(ZN)Z-...22                             | 04-G50/FJ(ZNG)H-...22                            | 02-H200/VJ(ZNG)H-...22                       |           |             |
| Fibers                                                                   | 50/125 µm OM2                                    | 50/125 µm OM2                                    | 50/125 µm OM2                                    | 200/230 µm                                   |           |             |
| Attenuation, typical                                                     | 2.7 dB/km (at 850 nm);<br>0.8 dB/km (at 1300 nm) | 2.7 dB/km (at 850 nm);<br>0.8 dB/km (at 1300 nm) | 2.7 dB/km (at 850 nm);<br>0.8 dB/km (at 1300 nm) | 10 dB/km (at 660 nm),<br>8 dB/km (at 850 nm) |           |             |
| Outer sheath                                                             |                                                  |                                                  |                                                  |                                              |           |             |
| Material                                                                 | PE                                               | PUR                                              | PE                                               | PE                                           |           |             |
| Color                                                                    | black                                            | black                                            | black                                            | black                                        |           |             |
| Strain relief elements                                                   | Aramid/glass fibers                              | Non-metallic, aramid fiber                       | Aramid/glass fibers                              | Aramid/glass fibers                          |           |             |
| Diameter                                                                 | 7.5 mm                                           | 7.5 - 8 mm                                       | 9 mm                                             | 7.5 mm                                       |           |             |
| Individual wire                                                          |                                                  |                                                  |                                                  |                                              |           |             |
| Color                                                                    | Black/orange                                     | Black/orange                                     | Black/orange                                     | Black/orange                                 |           |             |
| Diameter                                                                 | 2.2 mm                                           | 2.2 mm                                           | 2.15 mm                                          | 2.2 mm                                       |           |             |
| Strain relief elements                                                   | Non-metallic, aramid fibers                      | Non-metallic, aramid fibers                      | Non-metallic, aramid fibers                      | Non-metallic, aramid fibers                  |           |             |
| General data                                                             |                                                  |                                                  |                                                  |                                              |           |             |
| Weight                                                                   | 59.00 kg/km                                      | 46.00 kg/km                                      | 90.00 kg/km                                      | 67.00 kg/km                                  |           |             |
| Ambient temperature (operation)                                          | -40 °C ... 70 °C                                 | -40 °C ... 85 °C                                 | -40 °C ... 70 °C                                 | -20 °C ... 70 °C                             |           |             |
| Ambient temperature (storage/transport)                                  | -45 °C ... 70 °C                                 | -45 °C ... 85 °C                                 | -40 °C ... 70 °C                                 | -25 °C ... 70 °C                             |           |             |
| Ambient temperature (installation)                                       | -20 °C ... 60 °C                                 | -20 °C ... 60 °C                                 | -20 °C ... 60 °C                                 | -10 °C ... 60 °C                             |           |             |
| Halogen-free as per:                                                     | According to IEC 60754-1/2                       | According to IEC 60754-1/2                       | According to IEC 60754-1/2                       | According to IEC 60754-1/2                   |           |             |
|                                                                          | Ordering data                                    |                                                  |                                                  | Ordering data                                |           |             |
| Description                                                              | Type                                             | Order No.                                        | Pcs. / Pkt.                                      | Type                                         | Order No. | Pcs. / Pkt. |
| GOF outdoor cable, 2-wire, full breakout cable for fixed installation    | FOC-OE-OE-GB01/...                               | 1406429                                          | 1                                                |                                              |           |             |
| GOF outdoor cable, 2-wire, full breakout cable for flexible installation | FOC-OE-OE-GB02/...                               | 1406430                                          | 1                                                |                                              |           |             |
| GOF outdoor cable, 4-wire, full breakout cable for fixed installation    | FOC-OE-OE-GB03/...                               | 1406431                                          | 1                                                |                                              |           |             |
| PCF outdoor cable, 2-wire, full breakout cable for fixed installation    |                                                  |                                                  |                                                  | FOC-OE-OE-HB01/...                           | 1406432   | 1           |

## Ordering example for cables with variable cable lengths:

For fiber optic outdoor cable type **GB02** with a cable length of 34.0 m, the ordering data is as follows:

| Order No. | Length [m]<br>Max. 1000 m              |
|-----------|----------------------------------------|
| 1406430   | 34.0                                   |
|           | Increment:<br>1.0 m ... 1000 m = 1.0 m |





## Network components - assembled fiber optic cables

| B-FOC (ST®) plug,<br>IP20                                                         | SCRJ plug,<br>IP67                                                                | Push/pull SCRJ,<br>plastic                                                        | Push/pull SCRJ,<br>metal                                                          |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  |  |  |  |
| <b>BFOC</b>                                                                       | <b>IP67</b>                                                                       | <b>PPCPL</b>                                                                      | <b>PPCME</b>                                                                      |
| Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                     |
| Order No.                                                                         | Order No.                                                                         | Order no.                                                                         | Order No.                                                                         |

|                         |                         |                         |                         |
|-------------------------|-------------------------|-------------------------|-------------------------|
| Variable <b>2901553</b> | Variable <b>1402188</b> | Variable <b>1402188</b> | Variable <b>1402188</b> |
| Variable <b>2901553</b> | Variable <b>1402188</b> | Variable <b>1402188</b> | Variable <b>1402188</b> |

|                         |                         |                         |                         |
|-------------------------|-------------------------|-------------------------|-------------------------|
| Variable <b>2901553</b> | Variable <b>1402188</b> | Variable <b>1402188</b> | Variable <b>1402188</b> |
| Variable <b>2901553</b> | Variable <b>1402188</b> | Variable <b>1402188</b> | Variable <b>1402188</b> |

|                         |                         |                         |                         |
|-------------------------|-------------------------|-------------------------|-------------------------|
| Variable <b>1402188</b> | Variable <b>1402188</b> | Variable <b>1402188</b> | Variable <b>1402188</b> |
| Variable <b>1402188</b> | Variable <b>1402188</b> | Variable <b>1402188</b> | Variable <b>1402188</b> |

|                         |                         |                         |                         |
|-------------------------|-------------------------|-------------------------|-------------------------|
| Variable <b>1402188</b> | Variable <b>1402188</b> | Variable <b>1402188</b> | Variable <b>1402188</b> |
|-------------------------|-------------------------|-------------------------|-------------------------|

| Cable data                                           | Technical data                  |
|------------------------------------------------------|---------------------------------|
| Cable abbreviation in accordance with IEC 61977:2010 | J-V11Y 4Y2P 980/1000 160A<br>10 |
| Fibers                                               | Polymer fiber, 980/1000 µm      |
| Attenuation, typical                                 | 230 dB/km (at 660 nm)           |
| Outer sheath                                         |                                 |
| Material                                             | PUR                             |
| Color                                                | red                             |
| Diameter                                             | 5.5 - 6.5 mm                    |
| Strain relief elements                               | Non-metallic,<br>aramid fiber   |
| Individual wire                                      |                                 |
| Material                                             | PA                              |
| Color                                                | black/orange                    |
| Diameter                                             | 2.2 mm ±0.07 mm                 |
| General data                                         |                                 |
| Weight                                               | 33 kg/km                        |
| Ambient temperature (operation)                      | -20 °C ... 70 °C                |
| Ambient temperature (storage/transport)              | -40 °C ... 80 °C                |
| Ambient temperature (installation)                   | -5 °C ... 50 °C                 |
| Halogen-free as per:                                 | According to IEC 60754-2        |

- Robust installation cable for fixed installation indoors
- Dimensioned for higher requirements in respect of tensile load and lateral pressure
- 2.2 mm individual wires made from extremely hard-wearing polyamide chloride (PA)
- Halogen-free, ozone and UV resistant
- Reinforced polyurethane (PUR) outer cable sheath

|                         | Free end      | FSMA plug,<br>IP20 | SCRJ plug,<br>IP20 |
|-------------------------|---------------|--------------------|--------------------|
|                         |               |                    |                    |
|                         | OE            | FSMA               | SCRJ               |
|                         | Ordering data | Ordering data      | Ordering data      |
|                         | Order No.     | Order No.          | Order No.          |
| Free end                |               |                    |                    |
|                         | OE            |                    |                    |
| FSMA plug, IP20         |               |                    |                    |
|                         | FSMA          |                    |                    |
| SCRJ plug, IP20         |               |                    |                    |
|                         | SCRJ          |                    |                    |
| B-FOC (ST®) plug, IP20  |               |                    |                    |
|                         | BFOC          |                    |                    |
| SCRJ plug, IP67         |               |                    |                    |
|                         | IP67          |                    |                    |
| Push/pull SCRJ, plastic |               |                    |                    |
|                         | PPCPL         |                    |                    |
| Push/pull SCRJ, metal   |               |                    |                    |
|                         | PPCME         |                    |                    |

For a **POF cable**, fitted with an **SCRJ plug** at one end and a **plastic SCRJ push/pull plug-in connector** at the other end, and **15 m** in length, the ordering data is as follows:

| Order No.  | Plug 1 | Plug 2                                                | Length [m] |
|------------|--------|-------------------------------------------------------|------------|
| 1402185    | SCRJ   | PPCPL                                                 | 15         |
| Length:    |        | Min. 0.5 m<br>Max. 100 m                              |            |
| Increment: |        | 0.25 m      1 m ... 5 m<br>1 m          5 m ... 100 m |            |

For a **POF cable 70 m in length**, the ordering data is as follows:

|           |            |
|-----------|------------|
| Order No. | Length [m] |
| 2744322   | / 70       |

|            |                                     |                              |
|------------|-------------------------------------|------------------------------|
| Length:    | Min. 0.5 m<br>Max. 500 m/cable drum |                              |
| Increment: | 0.25 m<br>1 m                       | 1 m ... 5 m<br>5 m ... 500 m |

## Network components - assembled fiber optic cables

| B-FOC (ST®) plug,<br>IP20                                                         | SCRJ plug,<br>IP67                                                                | Push/pull SCRJ,<br>plastic                                                        | Push/pull SCRJ,<br>metal                                                          |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  |  |  |  |
| <b>BFOC</b>                                                                       | <b>IP67</b>                                                                       | <b>PPCPL</b>                                                                      | <b>PPCME</b>                                                                      |
| Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                     |
| Order No.                                                                         | Order No.                                                                         | Order No.                                                                         | Order No.                                                                         |

|                         |                         |                         |                         |
|-------------------------|-------------------------|-------------------------|-------------------------|
| Variable <b>2901548</b> | Variable <b>1402185</b> | Variable <b>1402185</b> | Variable <b>1402185</b> |
| Variable <b>2901548</b> | Variable <b>1402185</b> | Variable <b>1402185</b> | Variable <b>1402185</b> |

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|-------------------------|-------------------------|-------------------------|-------------------------|
| Variable <b>2901548</b> | Variable <b>1402185</b> | Variable <b>1402185</b> | Variable <b>1402185</b> |
| Variable <b>2901548</b> | Variable <b>1402185</b> | Variable <b>1402185</b> | Variable <b>1402185</b> |

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|-------------------------|-------------------------|-------------------------|-------------------------|
| Variable <b>1402185</b> | Variable <b>1402185</b> | Variable <b>1402185</b> | Variable <b>1402185</b> |
| Variable <b>1402185</b> | Variable <b>1402185</b> | Variable <b>1402185</b> | Variable <b>1402185</b> |

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|-------------------------|-------------------------|-------------------------|-------------------------|
| Variable <b>1402185</b> | Variable <b>1402185</b> | Variable <b>1402185</b> | Variable <b>1402185</b> |
|-------------------------|-------------------------|-------------------------|-------------------------|

| Cable data                                           | Technical data                   |
|------------------------------------------------------|----------------------------------|
| Cable abbreviation in accordance with IEC 61977:2010 | J-V11Y 4Y2P 980/1000 160A        |
| Fibers                                               | 10<br>Polymer fiber, 980/1000 µm |
| Attenuation, typical                                 | 230 dB/km (at 660 nm)            |
| Outer sheath                                         |                                  |
| Material                                             | PUR                              |
| Color                                                | red                              |
| Diameter                                             | 7.5 - 8.5 mm                     |
| Strain relief elements                               | Non-metallic,<br>aramid fiber    |
| Individual wire                                      |                                  |
| Material                                             | PA                               |
| Color                                                | black/orange                     |
| Diameter                                             | 2.2 mm ±0.07 mm                  |
| General data                                         |                                  |
| Weight                                               | 54 kg/km                         |
| Ambient temperature (operation)                      | -20 °C ... 70 °C                 |
| Ambient temperature (storage/transport)              | -40 °C ... 80 °C                 |
| Ambient temperature (installation)                   | -5 °C ... 50 °C                  |
| Halogen-free as per:                                 | According to IEC 60754-2         |

# Data plug-in connectors

## Network components - assembled fiber optic cables

### Highly flexible POF cable for free assembly, type RUGGED-FLEX-1013



- Highly flexible round cable for use in trailing cables or drag chains
- Dimensioned for an alternating bending frequency of up to 5,000,000 cycles
- 2.2 mm individual wires made from extremely hard-wearing polyamide chloride (PA)
- Halogen-free, ozone and UV resistant
- Robust Polyurethane (PUR) outer cable sheath

|                         | Free end      | FSMA plug, IP20 | SCRJ plug, IP20 |         |
|-------------------------|---------------|-----------------|-----------------|---------|
|                         |               |                 |                 |         |
|                         | OE            | FSMA            | SCRJ            |         |
|                         | Ordering data | Ordering data   | Ordering data   |         |
|                         | Order No.     | Order No.       | Order No.       |         |
| Free end                |               |                 |                 |         |
|                         | OE            |                 |                 |         |
| FSMA plug, IP20         |               |                 |                 |         |
|                         | FSMA          |                 |                 |         |
| SCRJ plug, IP20         |               |                 |                 |         |
|                         | SCRJ          |                 |                 |         |
| B-FOC (ST®) plug, IP20  |               |                 |                 |         |
|                         | BFOC          |                 |                 |         |
| SCRJ plug, IP67         |               |                 |                 |         |
|                         | IP67          |                 |                 |         |
| Push/pull SCRJ, plastic |               |                 |                 |         |
|                         | PPCPL         |                 |                 |         |
| Push/pull SCRJ, metal   |               |                 |                 |         |
|                         | PPCME         |                 |                 |         |
|                         | By the meter  | 2744335         |                 |         |
|                         | Variable      | 2901549         | Variable        | 2901549 |
|                         | Variable      | 2901549         | Variable        | 2901549 |
|                         | Variable      | 2901549         | Variable        | 2901549 |
|                         | Variable      | 2901549         | Variable        | 2901549 |
|                         | Variable      | 2901549         | Variable        | 2901549 |
|                         | Variable      | 2901549         | Variable        | 2901549 |
|                         | Variable      | 1402187         | Variable        | 1402187 |
|                         | Variable      | 1402187         | Variable        | 1402187 |
|                         | Variable      | 1402187         | Variable        | 1402187 |
|                         | Variable      | 1402187         | Variable        | 1402187 |

### Ordering example for configured cable:

For a POF cable, fitted with an SCRJ plug at one end and a plastic SCRJ push/pull plug-in connector at the other end, and 15 m in length, the ordering data is as follows:

| Order No.                               | Plug 1 | Plug 2 | Length [m] |
|-----------------------------------------|--------|--------|------------|
| 1402187                                 | SCRJ   | PPCPL  | 15         |
| Length: Min. 0.5 m Max. 100 m           |        |        |            |
| Increment: 0.25 m 1 m 1 m 5 m ... 100 m |        |        |            |

### Ordering example for cable sold by the meter:

For a POF cable 70 m in length, the ordering data is as follows:

| Order No.                                | Length [m] |
|------------------------------------------|------------|
| 2744335                                  | 70         |
| Length: Min. 0.5 m Max. 500 m/cable drum |            |
| Increment: 0.25 m 1 m 1 m 5 m ... 500 m  |            |

## Network components - assembled fiber optic cables

| B-FOC (ST®) plug,<br>IP20                                                         | SCRJ plug,<br>IP67                                                                | Push/pull SCRJ,<br>plastic                                                        | Push/pull SCRJ,<br>metal                                                          |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  |  |  |  |
| <b>BFOC</b>                                                                       | <b>IP67</b>                                                                       | <b>PPCPL</b>                                                                      | <b>PPCME</b>                                                                      |
| Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                     |
| Order No.                                                                         | Order No.                                                                         | Order No.                                                                         | Order No.                                                                         |

|                         |                         |                         |                         |
|-------------------------|-------------------------|-------------------------|-------------------------|
| Variable <b>2901549</b> | Variable <b>1402187</b> | Variable <b>1402187</b> | Variable <b>1402187</b> |
| Variable <b>2901549</b> | Variable <b>1402187</b> | Variable <b>1402187</b> | Variable <b>1402187</b> |

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|-------------------------|-------------------------|-------------------------|-------------------------|
| Variable <b>2901549</b> | Variable <b>1402187</b> | Variable <b>1402187</b> | Variable <b>1402187</b> |
| Variable <b>2901549</b> | Variable <b>1402187</b> | Variable <b>1402187</b> | Variable <b>1402187</b> |

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|-------------------------|-------------------------|-------------------------|-------------------------|
| Variable <b>1402187</b> | Variable <b>1402187</b> | Variable <b>1402187</b> | Variable <b>1402187</b> |
| Variable <b>1402187</b> | Variable <b>1402187</b> | Variable <b>1402187</b> | Variable <b>1402187</b> |

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|-------------------------|-------------------------|-------------------------|-------------------------|
| Variable <b>1402187</b> | Variable <b>1402187</b> | Variable <b>1402187</b> | Variable <b>1402187</b> |
|-------------------------|-------------------------|-------------------------|-------------------------|

| Cable data                                           | Technical data                   |
|------------------------------------------------------|----------------------------------|
| Cable abbreviation in accordance with IEC 61977:2010 | J-V11Y 4Y2P 980/1000 180A        |
| Fibers                                               | 10<br>Polymer fiber, 980/1000 µm |
| Attenuation, typical                                 | 275 dB/km (at 660 nm)            |
| Outer sheath                                         |                                  |
| Material                                             | PUR                              |
| Color                                                | red                              |
| Diameter                                             | 7.5 - 8.5 mm                     |
| Strain relief elements                               | Non-metallic,<br>aramid fiber    |
| Individual wire                                      |                                  |
| Material                                             | PA                               |
| Color                                                | black/orange                     |
| Diameter                                             | 2.2 mm ±0.07 mm                  |
| General data                                         |                                  |
| Weight                                               | 54 kg/km                         |
| Ambient temperature (operation)                      | -20 °C ... 70 °C                 |
| Ambient temperature (storage/transport)              | -40 °C ... 80 °C                 |
| Ambient temperature (installation)                   | -5 °C ... 50 °C                  |
| Halogen-free as per:                                 | According to IEC 60754-2         |

# Data plug-in connectors

## Network components - assembled fiber optic cables

### PROFINET B POF cable for free assembly, type PN-B-1000



- Universal installation cable for fixed installation indoors
- 2.2 mm individual wires made from extremely hard-wearing polyamide chloride (PA)
- Halogen-free, ozone and UV resistant
- Robust polyurethane (PUR) outer cable sheath
- PROFINET type B

### Ethernet



Free end



FSMA plug, IP20



SCRJ plug, IP20



B-FOC (ST®) plug, IP20



Push/pull SCRJ, plastic



Push/pull SCRJ, metal



| Free end             | FSMA plug, IP20  | SCRJ plug, IP20  |
|----------------------|------------------|------------------|
|                      |                  |                  |
| OE                   | FSMA             | SCRJ             |
| Ordering data        | Ordering data    | Ordering data    |
| Order No.            | Order No.        | Order No.        |
| By the meter 2313397 | Variable 2901551 | Variable 2901551 |
| Variable 2901551     | Variable 2901551 | Variable 2901551 |
| Variable 2901551     | Variable 2901551 | Variable 2901551 |
| Variable 2901551     | Variable 2901551 | Variable 2901551 |
| Variable 2901551     | Variable 2901551 | Variable 2901551 |
| Variable 1402172     | Variable 1402172 | Variable 1402172 |
| Variable 1402172     | Variable 1402172 | Variable 1402172 |
| Variable 1402172     | Variable 1402172 | Variable 1402172 |

### Ordering example for configured cable:

For a POF cable, fitted with an SCRJ plug at one end and a plastic SCRJ push/pull plug-in connector at the other end, and 15 m in length, the ordering data is as follows:

| Order No.                                           | Plug 1 | Plug 2 | Length [m] |
|-----------------------------------------------------|--------|--------|------------|
| 1402172                                             | SCRJ   | PPCPL  | 15         |
| Length: Min. 0.5 m Max. 100 m                       |        |        |            |
| Increment: 0.25 m 1 m 1 m 5 m ... 5 m 5 m ... 100 m |        |        |            |

### Ordering example for cable sold by the meter:

For a POF cable 70 m in length, the ordering data is as follows:

| Order No.                                           | Length [m] |
|-----------------------------------------------------|------------|
| 2313397                                             | 70         |
| Length: Min. 0.5 m Max. 500 m/cable drum            |            |
| Increment: 0.25 m 1 m 1 m 5 m ... 5 m 5 m ... 500 m |            |



| B-FOC (ST®) plug,<br>IP20                                                         | Push/pull SCRJ,<br>plastic                                                        | Push/pull SCRJ,<br>metal                                                          |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  |  |  |
| <b>BFOC</b>                                                                       | <b>PPCPL</b>                                                                      | <b>PPCME</b>                                                                      |
| Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                     |
| Order No.                                                                         | Order No.                                                                         | Order No.                                                                         |

|          |                |          |                |          |                |
|----------|----------------|----------|----------------|----------|----------------|
| Variable | <b>2901551</b> | Variable | <b>1402172</b> | Variable | <b>1402172</b> |
| Variable | <b>2901551</b> | Variable | <b>1402172</b> | Variable | <b>1402172</b> |

|          |                |          |                |          |                |
|----------|----------------|----------|----------------|----------|----------------|
| Variable | <b>2901551</b> | Variable | <b>1402172</b> | Variable | <b>1402172</b> |
| Variable | <b>2901551</b> | Variable | <b>1402172</b> | Variable | <b>1402172</b> |

|          |                |          |                |          |                |
|----------|----------------|----------|----------------|----------|----------------|
| Variable | <b>1402172</b> | Variable | <b>1402172</b> | Variable | <b>1402172</b> |
| Variable | <b>1402172</b> | Variable | <b>1402172</b> | Variable | <b>1402172</b> |

| Cable data                                           | Technical data                          |
|------------------------------------------------------|-----------------------------------------|
| Cable abbreviation in accordance with IEC 61977:2010 | J-V11Y 4Y2P 980/1000 160A<br>10         |
| Fibers                                               | Polymer fiber, 980/1000 µm              |
| Attenuation, typical                                 | 230 dB/km (at 660 nm)                   |
| Outer sheath                                         |                                         |
| Material                                             | PUR                                     |
| Color                                                | Green                                   |
| Diameter                                             | 7.5 - 8.5 mm                            |
| Strain relief elements                               | Non-metallic,<br>aramid fiber           |
| Individual wire                                      |                                         |
| Material                                             | PA                                      |
| Color                                                | Black and orange<br>with arrow labeling |
| Diameter                                             | 2.2 mm ±0.07 mm                         |
| General data                                         |                                         |
| Weight                                               | 49 kg/km                                |
| Ambient temperature (operation)                      | -20 °C ... 70 °C                        |
| Ambient temperature (storage/transport)              | -40 °C ... 80 °C                        |
| Ambient temperature (installation)                   | 5 °C ... 50 °C                          |
| Halogen-free as per:                                 | According to IEC 60754-2                |



|                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <b>B-FOC (ST®) plug,<br/>IP20</b>                                                 | <b>Push/pull SCRJ,<br/>plastic</b>                                                | <b>Push/pull SCRJ,<br/>metal</b>                                                  |
|  |  |  |
| <b>BFOC</b>                                                                       | <b>PPCPL</b>                                                                      | <b>PPCME</b>                                                                      |
| <b>Ordering data</b>                                                              | <b>Ordering data</b>                                                              | <b>Ordering data</b>                                                              |
| <b>Order No.</b>                                                                  | <b>Order No.</b>                                                                  | <b>Order No.</b>                                                                  |

|                         |                         |                         |
|-------------------------|-------------------------|-------------------------|
| Variable <b>2901552</b> | Variable <b>1402175</b> | Variable <b>1402175</b> |
| Variable <b>2901552</b> | Variable <b>1402175</b> | Variable <b>1402175</b> |

|                         |                         |                         |
|-------------------------|-------------------------|-------------------------|
| Variable <b>2901552</b> | Variable <b>1402175</b> | Variable <b>1402175</b> |
| Variable <b>2901552</b> | Variable <b>1402175</b> | Variable <b>1402175</b> |

|                         |                         |                         |
|-------------------------|-------------------------|-------------------------|
| Variable <b>1402175</b> | Variable <b>1402175</b> | Variable <b>1402175</b> |
| Variable <b>1402175</b> |                         | Variable <b>1402175</b> |

| Cable data                                           |  | Technical data                          |
|------------------------------------------------------|--|-----------------------------------------|
| Cable abbreviation in accordance with IEC 61977:2010 |  | J-V11Y 4Y2P 980/1000 180A               |
| Fibers                                               |  | 10<br>Polymer fiber, 980/1000 µm        |
| Attenuation, typical                                 |  | 275 dB/km (at 660 nm)                   |
| Outer sheath                                         |  |                                         |
| Material                                             |  | PUR                                     |
| Color                                                |  | Green                                   |
| Diameter                                             |  | 7.5 - 8.5 mm                            |
| Strain relief elements                               |  | Non-metallic,<br>aramid fiber           |
| Individual wire                                      |  |                                         |
| Material                                             |  | PA                                      |
| Color                                                |  | Black and orange<br>with arrow labeling |
| Diameter                                             |  | 2.2 mm ±0.07 mm                         |
| General data                                         |  |                                         |
| Weight                                               |  | 51 kg/km                                |
| Ambient temperature (operation)                      |  | -20 °C ... 70 °C                        |
| Ambient temperature (storage/transport)              |  | -40 °C ... 80 °C                        |
| Ambient temperature (installation)                   |  | 5 °C ... 50 °C                          |
| Halogen-free as per:                                 |  | According to IEC 60754-2                |

Network components - assembled fiber optic cables

Universal PROFINET B HCS cables for assembly



- Universal installation cable for fixed installation indoors
- 2.2 mm individual wires made from extremely hard-wearing polyvinyl chloride (PVC)
- Halogen-free, ozone and UV resistant
- PVC outer cable sheath
- PROFINET type B

| Free end                |  | SCRJ plug, IP20 |  | SC duplex plug, IP20 |  |
|-------------------------|--|-----------------|--|----------------------|--|
|                         |  |                 |  |                      |  |
| OE                      |  | SCRJ            |  | SCDUP                |  |
| Ordering data           |  | Ordering data   |  | Ordering data        |  |
| Order No.               |  | Order No.       |  | Order No.            |  |
| Free end                |  | Variable        |  | Variable             |  |
|                         |  | 1408459         |  | 1408460              |  |
| SCRJ plug, IP20         |  | 1408458         |  | 1408461              |  |
|                         |  |                 |  |                      |  |
| SC duplex plug, IP20    |  | Variable        |  | Variable             |  |
|                         |  | 1408466         |  | 1408467              |  |
| B-FOC (ST®) plug, IP20  |  |                 |  | Variable             |  |
|                         |  |                 |  | 1408471              |  |
| Push/pull SCRJ, plastic |  |                 |  |                      |  |
|                         |  |                 |  |                      |  |
| Push/pull SCRJ, metal   |  |                 |  |                      |  |
|                         |  |                 |  |                      |  |

Ordering example:  
For an HCS cable with two SCRJ plugs with IP20 protection and 70 m in length, the ordering data is as follows:

| Order No. | Length [m] |
|-----------|------------|
| 1408466   | 70         |

|            |          |                        |
|------------|----------|------------------------|
| Length:    | Min. 1 m | Max. 2000 m/cable drum |
| Increment: | 0.25 m   | 1 m ... 5 m            |
|            | 1 m      | 5 m ... 2000 m         |

|                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <b>B-FOC (ST®) plug,<br/>IP20</b>                                                 | <b>Push/pull SCRJ,<br/>plastic</b>                                                | <b>Push/pull SCRJ,<br/>metal</b>                                                  |
|  |  |  |
| <b>BFOC</b>                                                                       | <b>PPCPL</b>                                                                      | <b>PPCME</b>                                                                      |
| <b>Ordering data</b>                                                              | <b>Ordering data</b>                                                              | <b>Ordering data</b>                                                              |
| <b>Order No.</b>                                                                  | <b>Order No.</b>                                                                  | <b>Order No.</b>                                                                  |

|                         |                         |                         |
|-------------------------|-------------------------|-------------------------|
| Variable <b>1408462</b> | Variable <b>1408463</b> | Variable <b>1408464</b> |
| Variable <b>1408468</b> | Variable <b>1408469</b> | Variable <b>1408470</b> |

|                         |                         |                         |
|-------------------------|-------------------------|-------------------------|
| Variable <b>1408472</b> | Variable <b>1408473</b> | Variable <b>1408474</b> |
| Variable <b>1408475</b> | Variable <b>1408476</b> | Variable <b>1408480</b> |

|                         |                         |
|-------------------------|-------------------------|
| Variable <b>1408477</b> | Variable <b>1408479</b> |
|-------------------------|-------------------------|

| <b>Cable data</b>                                    | <b>Technical data</b>                        |
|------------------------------------------------------|----------------------------------------------|
| Cable abbreviation in accordance with IEC 61977:2010 | AT-V(ZN)YY 2K200/230 HCS                     |
| Fibers                                               | HCS, 200/230 µm                              |
| Attenuation, typical                                 | 10 dB/km (at 660 nm),<br>8 dB/km (at 850 nm) |
| Outer sheath                                         |                                              |
| Material                                             | PVC                                          |
| Color                                                | Green                                        |
| Diameter                                             | 6.7 - 7.7 mm                                 |
| Strain relief elements                               | Non-metallic,<br>aramid fiber                |
| Individual wire                                      |                                              |
| Material                                             | PVC                                          |
| Color                                                | Black and orange<br>with arrow labeling      |
| Diameter                                             | 2.2 mm ±0.1 mm                               |
| Strain relief elements                               | Non-metallic,<br>aramid fibers               |
| General data                                         |                                              |
| Weight                                               | 45 kg/km                                     |
| Ambient temperature (operation)                      | -40 °C ... 90 °C                             |
| Ambient temperature (storage/transport)              | -40 °C ... 90 °C                             |
| Ambient temperature (installation)                   | -5 °C ... 50 °C                              |
| Halogen-free as per:                                 | -                                            |

# Data plug-in connectors

## Network components - assembled fiber optic cables

### PROFINET C HCS broadband cable (GI) for free assembly, type PN-C-HCS-GI-1005



- Highly flexible round cable for use in trailing cables or drag chains
- Robust installation cable for indoor use
- Gradient index fiber for maximum power requirements in respect of transmission bandwidth
- Can be used in 10/100/1000 Mbps Ethernet systems
- 2.2 mm individual wires made from polyvinyl chloride (PVC)
- Halogen-free, ozone and UV resistant
- Robust polyurethane (PUR) outer cable sheath
- Highly tear-resistant aramid strain relief elements
- PROFINET type C

### Ethernet



Free end



OE

FSMA plug, IP20



FSMA

SCRJ plug, IP20



SCRJ

SC duplex plug, IP20



SCDUP

B-FOC (ST®) plug, IP20



BFOC

LC plug



LC

Push/pull SCRJ, plastic



PPCPL

Push/pull SCRJ, metal



PPCME

### Ordering example for configured cable:

For an HCS cable fitted with an SCRJ plug at one end and an SCRJ push/pull plastic plug-in connector at the other end, and 15 m in length, the ordering data is as follows

| Order No. | Connector 1 | Connector 2 | Length [m] |
|-----------|-------------|-------------|------------|
| 1402189   | SCRJ        | PPCPL       | 15         |

|            |          |                |
|------------|----------|----------------|
| Length:    | Min. 1 m | Max. 2000 m    |
| Increment: | 0.25 m   | 1 m ... 5 m    |
|            | 1 m      | 5 m ... 2000 m |

### Ordering example for cable sold by the meter:

For an HCS cable 70 m in length, the ordering data is as follows:

| Order No. | Length [m] |
|-----------|------------|
| 2313410   | 70         |

|            |          |                        |
|------------|----------|------------------------|
| Length:    | Min. 1 m | Max. 2000 m/cable drum |
| Increment: | 0.25 m   | 1 m ... 5 m            |
|            | 1 m      | 5 m ... 2000 m         |

## Network components - assembled fiber optic cables

| SC duplex plug,<br>IP20                                                           | B-FOC (ST®) plug,<br>IP20                                                         | LC plug                                                                           | Push/pull SCRJ,<br>plastic                                                        | Push/pull SCRJ,<br>metal                                                            |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |
| <b>SCDUP</b>                                                                      | <b>BFOC</b>                                                                       | <b>LC</b>                                                                         | <b>PPCPL</b>                                                                      | <b>PPCME</b>                                                                        |
| Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                       |
| Order No.                                                                         | Order No.                                                                         | Order No.                                                                         | Order No.                                                                         | Order No.                                                                           |

|          |         |          |         |          |         |          |         |          |         |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| Variable | 2901554 | Variable | 2901554 | Variable | 2901554 | Variable | 1402189 | Variable | 1402189 |
| Variable | 2901554 | Variable | 2901554 | Variable | 2901554 | Variable | 1402189 | Variable | 1402189 |

|          |         |          |         |          |         |          |         |          |         |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| Variable | 2901554 | Variable | 2901554 | Variable | 2901554 | Variable | 1402189 | Variable | 1402189 |
| Variable | 2901554 | Variable | 2901554 | Variable | 2901554 | Variable | 1402189 | Variable | 1402189 |

|          |         |          |         |          |         |          |         |          |         |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| Variable | 2901554 | Variable | 2901554 | Variable | 2901554 | Variable | 1402189 | Variable | 1402189 |
| Variable | 2901554 | Variable | 2901554 | Variable | 2901554 | Variable | 1402189 | Variable | 1402189 |

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|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| Variable | 1402189 | Variable | 1402189 | Variable | 1402189 | Variable | 1402189 | Variable | 1402189 |
| Variable | 1402189 | Variable | 1402189 | Variable | 1402189 | Variable | 1402189 | Variable | 1402189 |

| Technical data                                       |                                                                             |
|------------------------------------------------------|-----------------------------------------------------------------------------|
| <b>Cable data</b>                                    |                                                                             |
| Cable abbreviation in accordance with IEC 61977:2010 | J-V(ZN)12Y(ZN)11Y<br>2GK200/230 GI-HCS<br>HCS gradient index,<br>200/230 µm |
| Fibers                                               | 18 dB/km (at 660 nm),<br>12 dB/km (at 850 nm)                               |
| Attenuation, typical                                 |                                                                             |
| <b>Outer sheath</b>                                  |                                                                             |
| Material                                             | PUR                                                                         |
| Color                                                | Green                                                                       |
| Diameter                                             | 7.5 - 8.5 mm                                                                |
| Strain relief elements                               | Non-metallic,<br>aramid fiber                                               |
| <b>Individual wire</b>                               |                                                                             |
| Material                                             | PVC                                                                         |
| Color                                                | Black and orange<br>with arrow labeling                                     |
| Diameter                                             | 2.2 mm ±0.1 mm                                                              |
| Strain relief elements                               | Non-metallic,<br>aramid fibers                                              |
| <b>General data</b>                                  |                                                                             |
| Weight                                               | 52 kg/km                                                                    |
| Ambient temperature (operation)                      | -20 °C ... 70 °C                                                            |
| Ambient temperature (storage/transport)              | -40 °C ... 70 °C                                                            |
| Ambient temperature (installation)                   | -5 °C ... 50 °C                                                             |
| Halogen-free as per:                                 | According to IEC 60754-2                                                    |





## Network components - assembled fiber optic cables

| SC duplex plug,<br>IP20                                                           | B-FOC (ST®) plug,<br>IP20                                                         | LC plug                                                                           | Push/pull SCRJ,<br>plastic                                                        | Push/pull SCRJ,<br>metal                                                            | SCRJ plug,<br>IP67                                                                  |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |  |
| SCDUP                                                                             | BFOC                                                                              | LC                                                                                | PPCPL                                                                             | PPCME                                                                               | IP67                                                                                |
| Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                       | Ordering data                                                                       |
| Order No.                                                                         | Order No.                                                                         | Order No.                                                                         | Order no.                                                                         | Order No.                                                                           | Order No.                                                                           |

|                  |                  |                  |                  |                  |                  |
|------------------|------------------|------------------|------------------|------------------|------------------|
| Variable 2901555 | Variable 2901555 | Variable 2901555 | Variable 1402191 | Variable 1402191 | Variable 1402191 |
| Variable 2901555 | Variable 2901555 | Variable 2901555 | Variable 1402191 | Variable 1402191 | Variable 1402191 |

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|------------------|------------------|------------------|------------------|------------------|------------------|
| Variable 2901555 | Variable 2901555 | Variable 2901555 | Variable 1402191 | Variable 1402191 | Variable 1402191 |
| Variable 2901555 | Variable 2901555 | Variable 2901555 | Variable 1402191 | Variable 1402191 | Variable 1402191 |

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|------------------|------------------|------------------|------------------|------------------|------------------|
| Variable 2901555 | Variable 2901555 | Variable 2901555 | Variable 1402191 | Variable 1402191 | Variable 1402191 |
| Variable 2901555 | Variable 2901555 | Variable 2901555 | Variable 1402191 | Variable 1402191 | Variable 1402191 |

|                  |                  |                  |                  |                  |                  |
|------------------|------------------|------------------|------------------|------------------|------------------|
| Variable 1402191 | Variable 1402191 | Variable 1402191 | Variable 1402191 | Variable 1402191 | Variable 1402191 |
| Variable 1402191 | Variable 1402191 | Variable 1402191 | Variable 1402191 | Variable 1402191 | Variable 1402191 |

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|------------------|------------------|------------------|------------------|------------------|------------------|
| Variable 1402191 | Variable 1402191 | Variable 1402191 | Variable 1402191 | Variable 1402191 | Variable 1402191 |
|------------------|------------------|------------------|------------------|------------------|------------------|

| Technical data                                       |                                              |
|------------------------------------------------------|----------------------------------------------|
| <b>Cable data</b>                                    |                                              |
| Cable abbreviation in accordance with IEC 61977:2010 | I-VH11Y 2K200/230 HCS                        |
| Fibers                                               | HCS, 200/230 µm                              |
| Attenuation, typical                                 | 10 dB/km (at 660 nm),<br>8 dB/km (at 850 nm) |
| <b>Outer sheath</b>                                  |                                              |
| Material                                             | PUR                                          |
| Color                                                | orange                                       |
| Diameter                                             | 7.5 - 8.5 mm                                 |
| <b>Individual wire</b>                               |                                              |
| Material                                             | FRNC material                                |
| Color                                                | Red/green                                    |
| Diameter                                             | 2.9 mm ±0.1 mm                               |
| Strain relief elements                               | Non-metallic,<br>aramid fibers               |
| <b>General data</b>                                  |                                              |
| Weight                                               | 54 kg/km                                     |
| Ambient temperature (operation)                      | -40 °C ... 70 °C                             |
| Ambient temperature (storage/transport)              | -40 °C ... 70 °C                             |
| Ambient temperature (installation)                   | -20 °C ... 60 °C                             |



| SC duplex plug,<br>IP20                                                           | B-FOC (ST®) plug,<br>IP20                                                         | LC plug                                                                           |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  |  |  |
| SCDUP                                                                             | BFOC                                                                              | LC                                                                                |
| Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                     |
| Order No.                                                                         | Order No.                                                                         | Order No.                                                                         |

|          |         |          |         |          |         |
|----------|---------|----------|---------|----------|---------|
| Variable | 2901557 | Variable | 2901557 | Variable | 2901557 |
| Variable | 2901557 | Variable | 2901557 | Variable | 2901557 |

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| Variable | 2901557 | Variable | 2901557 | Variable | 2901557 |
| Variable | 2901557 | Variable | 2901557 | Variable | 2901557 |

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|----------|---------|----------|---------|----------|---------|
| Variable | 2901557 | Variable | 2901557 | Variable | 2901557 |
| Variable | 2901557 | Variable | 2901557 | Variable | 2901557 |

| Cable data                                           |  | Technical data                               |
|------------------------------------------------------|--|----------------------------------------------|
| Cable abbreviation in accordance with IEC 61977:2010 |  | AT-VQHB2Y 2K200/230<br>10A17+8B20            |
| Fibers                                               |  | HCS, 200/230 µm                              |
| Attenuation, typical                                 |  | 10 dB/km (at 660 nm),<br>8 dB/km (at 850 nm) |
| Outer sheath                                         |  | PE                                           |
| Material                                             |  | black                                        |
| Color                                                |  | 10 - 11 mm                                   |
| Diameter                                             |  | Non-metallic,<br>aramid fiber                |
| Strain relief elements                               |  | Glass fibers                                 |
| Rodent protection                                    |  | IEC 60794-1-2                                |
| Lengthwise waterproofing                             |  |                                              |
| Individual wire                                      |  | FRNC material                                |
| Material                                             |  | Red/green                                    |
| Color                                                |  | 2.9 mm ±0.1 mm                               |
| Diameter                                             |  | Non-metallic,<br>aramid fibers               |
| Strain relief elements                               |  |                                              |
| General data                                         |  |                                              |
| Weight                                               |  | 97 kg/km                                     |
| Ambient temperature (operation)                      |  | -20 °C ... 70 °C                             |
| Ambient temperature (storage/transport)              |  | -25 °C ... 70 °C                             |
| Ambient temperature (installation)                   |  | -5 °C ... 50 °C                              |
| Halogen-free as per:                                 |  | According to IEC 60754-2                     |



## Network components - assembled fiber optic cables

| SC duplex plug,<br>IP20                                                           | B-FOC (ST®) plug,<br>IP20                                                         | LC plug                                                                           | Push/pull SCRJ,<br>plastic                                                        | Push/pull SCRJ,<br>metal                                                            | SCRJ plug,<br>IP67                                                                  |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |  |
| SCDUP                                                                             | BFOC                                                                              | LC                                                                                | PPCPL                                                                             | PPCME                                                                               | IP67                                                                                |
| Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                       | Ordering data                                                                       |
| Order No.                                                                         | Order No.                                                                         | Order No.                                                                         | Order No.                                                                         | Order No.                                                                           | Order No.                                                                           |

|          |         |          |         |          |         |          |         |          |         |          |         |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| Variable | 2901558 | Variable | 2901558 | Variable | 2901558 | Variable | 1402193 | Variable | 1402193 | Variable | 1402193 |
| Variable | 2901558 | Variable | 2901558 | Variable | 2901558 | Variable | 1402193 | Variable | 1402193 | Variable | 1402193 |

|          |         |          |         |          |         |          |         |          |         |          |         |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| Variable | 2901558 | Variable | 2901558 | Variable | 2901558 | Variable | 1402193 | Variable | 1402193 | Variable | 1402193 |
| Variable | 2901558 | Variable | 2901558 | Variable | 2901558 | Variable | 1402193 | Variable | 1402193 | Variable | 1402193 |

|          |         |          |         |          |         |          |         |          |         |          |         |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| Variable | 2901558 | Variable | 2901558 | Variable | 2901558 | Variable | 1402193 | Variable | 1402193 | Variable | 1402193 |
| Variable | 2901558 | Variable | 2901558 | Variable | 2901558 | Variable | 1402193 | Variable | 1402193 | Variable | 1402193 |

|          |         |          |         |          |         |          |         |          |         |          |         |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| Variable | 1402193 | Variable | 1402193 | Variable | 1402193 | Variable | 1402193 | Variable | 1402193 | Variable | 1402193 |
| Variable | 1402193 | Variable | 1402193 | Variable | 1402193 | Variable | 1402193 | Variable | 1402193 | Variable | 1402193 |

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|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| Variable | 1402193 | Variable | 1402193 | Variable | 1402193 | Variable | 1402193 | Variable | 1402193 | Variable | 1402193 |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|

| Cable data                                           |  | Technical data                                   |
|------------------------------------------------------|--|--------------------------------------------------|
| Cable abbreviation in accordance with IEC 61977:2010 |  | I-V(ZN)H11Y 2G50/125<br>2,5B600+0,7F1200         |
| Fibers                                               |  | Fiberglass, 50/125 µm                            |
| Attenuation, typical                                 |  | 2.5 dB/km (at 850 nm),<br>0.7 dB/km (at 1300 nm) |
| Outer sheath                                         |  | PUR                                              |
| Material                                             |  | orange                                           |
| Color                                                |  | 7.5 - 8.5 mm                                     |
| Diameter                                             |  |                                                  |
| Individual wire                                      |  | FRNC material                                    |
| Material                                             |  | Red/green                                        |
| Color                                                |  | 2.9 mm ±0.1 mm                                   |
| Diameter                                             |  |                                                  |
| General data                                         |  | 50 kg/km                                         |
| Weight                                               |  | -20 °C ... 70 °C                                 |
| Ambient temperature (operation)                      |  | -25 °C ... 70 °C                                 |
| Ambient temperature (storage/transport)              |  | -5 °C ... 50 °C                                  |
| Ambient temperature (installation)                   |  | According to IEC 60754-2                         |
| Halogen-free as per:                                 |  |                                                  |

- Robust round cable for laying outdoors
- Longitudinally water-tight
- Integrated vapor barrier and rodent-proof scrim
- 2.9 mm individual wires made from highly flexible FRNC material
- Ozone and UV resistant
- Extremely robust polyethylene outer cable sheath



FSMA plug, IP20



SCRJ plug, IP20



SC duplex plug. IP20



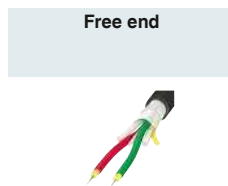
B-FOC (ST®) plug. IP20



LC plug



LC



OE

## Ordering data

Order No.



## Ordering data

Order No.



SCRJ

## Ordering data

Order No.

For a **fiberglass cable** fitted with an SCRJ plug at one end and an IP20 B-FOC(ST®) plug at the other end, and **15 m in length**, the ordering data is as follows:

|            |                                         |
|------------|-----------------------------------------|
| Length:    | Min. 1 m<br>Max. 1000 m                 |
| Increment: | 1 m                      1 m ... 1000 m |

For a **fiberglass cable 70 m in length**, the ordering data is as follows:

|            |                                    |                |
|------------|------------------------------------|----------------|
| Length:    | Min. 1 m<br>Max. 1000 m/cable drum |                |
| Increment: | 1 m                                | 1 m ... 1000 m |



| SC duplex plug,<br>IP20                                                           | B-FOC (ST®) plug,<br>IP20                                                         | LC plug                                                                           |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  |  |  |
| <b>SCDUP</b>                                                                      | <b>BFOC</b>                                                                       | <b>LC</b>                                                                         |
| Ordering data                                                                     | Ordering data                                                                     | Ordering data                                                                     |
| Order No.                                                                         | Order No.                                                                         | Order No.                                                                         |

|          |         |          |         |          |         |
|----------|---------|----------|---------|----------|---------|
| Variable | 2901559 | Variable | 2901559 | Variable | 2901559 |
| Variable | 2901559 | Variable | 2901559 | Variable | 2901559 |

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| Variable | 2901559 | Variable | 2901559 | Variable | 2901559 |
| Variable | 2901559 | Variable | 2901559 | Variable | 2901559 |

|          |         |          |         |          |         |
|----------|---------|----------|---------|----------|---------|
| Variable | 2901559 | Variable | 2901559 | Variable | 2901559 |
| Variable | 2901559 | Variable | 2901559 | Variable | 2901559 |

| Cable data                                           |  | Technical data                                   |
|------------------------------------------------------|--|--------------------------------------------------|
| Cable abbreviation in accordance with IEC 61977:2010 |  | AT-VQH(BN)2Y 2G50/125<br>2,5B600+0,7F1200        |
| Fibers                                               |  | Fiberglass, 50/125 µm                            |
| Attenuation, typical                                 |  | 2.5 dB/km (at 850 nm),<br>0.7 dB/km (at 1300 nm) |
| Outer sheath                                         |  | PE                                               |
| Material                                             |  | black                                            |
| Color                                                |  | 10 - 11 mm                                       |
| Diameter                                             |  | Non-metallic,<br>aramid fiber                    |
| Strain relief elements                               |  | Glass fibers                                     |
| Rodent protection                                    |  | IEC 60794-1-2                                    |
| Lengthwise waterproofing                             |  |                                                  |
| Individual wire                                      |  | FRNC material                                    |
| Material                                             |  | Red/green                                        |
| Color                                                |  | 2.9 mm ±0.1 mm                                   |
| Diameter                                             |  | Non-metallic,<br>aramid fibers                   |
| Strain relief elements                               |  |                                                  |
| General data                                         |  |                                                  |
| Weight                                               |  | 97 kg/km                                         |
| Ambient temperature (operation)                      |  | -25 °C ... 70 °C                                 |
| Ambient temperature (storage/transport)              |  | -30 °C ... 70 °C                                 |
| Ambient temperature (installation)                   |  | -5 °C ... 50 °C                                  |
| Halogen-free as per:                                 |  | According to IEC 60754-2                         |

Zip cord fiberglass cable for assembly, OM2

- Fiber optic cable for indoor installation
- Ideal for use in distributor systems and for connecting termination devices
- 2.8 mm single elements made from halogen-free and flame-retardant material
- UL approval type OFNR (riser) for USA and Canada

|                                                                                         | SCRJ plug, IP20                                                                   | SC duplex plug, IP20                                                                | B-FOC (ST®) plug, IP20                                                              |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                                                                         |  |  |  |
|                                                                                         | SCRJ                                                                              | SCDUP                                                                               | BFOC                                                                                |
|                                                                                         | Ordering data                                                                     | Ordering data                                                                       | Ordering data                                                                       |
|                                                                                         | Order No.                                                                         | Order no.                                                                           | Order No.                                                                           |
| SCRJ plug, IP20                                                                         | 2 m1400697                                                                        | 2 m1400690                                                                          | 2 m1400706                                                                          |
|  SCRJ  | Variable1405703                                                                   | Variable1405700                                                                     | Variable1405710                                                                     |
| SC duplex plug, IP20                                                                    |                                                                                   | 2 m1400685                                                                          | 2 m1400703                                                                          |
|  SCDUP |                                                                                   | Variable1405697                                                                     | Variable1405708                                                                     |
| B-FOC (ST®) plug, IP20                                                                  |                                                                                   |                                                                                     | 2 m1404768                                                                          |
|  BFOC  |                                                                                   |                                                                                     | Variable1405712                                                                     |
| LC plug                                                                                 |                                                                                   | 2 m1400639                                                                          | 2 m1400701                                                                          |
|  LC    |                                                                                   | Variable1405691                                                                     | Variable1405706                                                                     |

Ordering example for configured cable:

For a zip cord fiberglass cable, fitted with an IP20 SC duplex plug at one end and an SCRJ plug at the other end, and 15 m in length, the ordering data is as follows:

|           |            |
|-----------|------------|
| Order No. | Length [m] |
| 1405700   | 15         |

|            |                         |
|------------|-------------------------|
| Length:    | Min. 1 m<br>Max. 1000 m |
| Increment: | 1 m1 m ... 1000 m       |

## LC plug



LC

## Ordering data

## Order No.

2 m 1400682

Variable 1405694

2 m 1400604

Variable 1405688

## Technical data

## Cable data

Cable abbreviation in accordance with IEC 61977:2010

Fibers

Attenuation, typical

I-V(ZN)H

50/125 µm OM2

2.7 dB/km (at 850 nm);  
0.8 dB/km (at 1300 nm)

## Outer sheath

Material

Color

Diameter

Strain relief elements

## Individual wire

Material

Color

Diameter

## General data

Weight

Ambient temperature (operation)

Ambient temperature (storage/transport)

Ambient temperature (installation)

Halogen-free as per:

-

orange

2.8 - 5.7 mm

-

-

-

900 µm

15.80 kg/km

-10 °C ... 70 °C

-25 °C ... 70 °C

-5 °C ... 50 °C

According to IEC 60754-1/2

Zip cord fiberglass cable  
for assembly, OM3

- Fiber optic cable for indoor installation
- Ideal for use in distributor systems and for connecting termination devices
- 2.8 mm single elements made from halogen-free and flame-retardant material
- UL approval type OFNR (riser) for USA and Canada
- Low-bend fiber
- Data rate: up to 10 Gbps up to 300 m

| SCRJ plug,<br>IP20                                                                |         | SC duplex plug,<br>IP20                                                             |         | B-FOC (ST®) plug,<br>IP20                                                           |         |
|-----------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------|---------|
|  |         |  |         |  |         |
| SCRJ                                                                              |         | SCDUP                                                                               |         | BFOC                                                                                |         |
| Ordering data                                                                     |         | Ordering data                                                                       |         | Ordering data                                                                       |         |
| Order No.                                                                         |         | Order No.                                                                           |         | Order No.                                                                           |         |
| 2 m                                                                               | 1400699 | 2 m                                                                                 | 1400691 | 2 m                                                                                 | 1400711 |
| Variable                                                                          | 1405704 | Variable                                                                            | 1405701 | Variable                                                                            | 1405711 |
| SCRJ plug, IP20                                                                   |         | 2 m                                                                                 | 1400688 | 2 m                                                                                 | 1400705 |
|  |         | Variable                                                                            | 1405698 | Variable                                                                            | 1405709 |
| SC duplex plug, IP20                                                              |         | 2 m                                                                                 | 1400673 | 2 m                                                                                 | 1400702 |
|  |         | Variable                                                                            | 1405692 | Variable                                                                            | 1405707 |
| SC duplex plug, IP20                                                              |         |                                                                                     |         |                                                                                     |         |
|  |         |                                                                                     |         |                                                                                     |         |
| LC                                                                                |         |                                                                                     |         |                                                                                     |         |

Ordering example for configured cable:

For a zip cord fiberglass cable, fitted with an IP20 SC duplex plug at one end and an SCRJ plug at the other end, and 15 m in length, the ordering data is as follows:

| Order No. | Length [m] |
|-----------|------------|
| 1405701   | 15         |

|            |                         |
|------------|-------------------------|
| Length:    | Min. 1 m<br>Max. 1000 m |
| Increment: | 1 m      1 m ... 1000 m |

## LC plug



## LC

## Ordering data

## Order No.

|     |         |
|-----|---------|
| 2 m | 1400683 |
|-----|---------|

|          |         |
|----------|---------|
| Variable | 1405695 |
|----------|---------|

|     |         |
|-----|---------|
| 2 m | 1400621 |
|-----|---------|

|          |         |
|----------|---------|
| Variable | 1405695 |
|----------|---------|

## Technical data

## Cable data

Cable abbreviation in accordance with IEC 61977:2010

Fibers

Attenuation, typical

I-V(ZN)H

Fiberglass, 50/125 µm

2.5 dB/km (at 850 nm),  
0.7 dB/km (at 1300 nm)

## Outer sheath

Material

Color

Diameter

Strain relief elements

Individual wire

Material

Color

Diameter

## General data

Weight

Ambient temperature (operation)

Ambient temperature (storage/transport)

Ambient temperature (installation)

Halogen-free as per:

-

Aqua

2.8 - 5.7 mm

-

-

-

900 µm

15.80 kg/km

-10 °C ... 70 °C

-25 °C ... 70 °C

-5 °C ... 50 °C

According to IEC 60754-1/2

# Data plug-in connectors

## Network components - assembled fiber optic cables

### Zip cord fiberglass cable for assembly, OM4

- Fiber optic cable for indoor installation
- Ideal for use in distributor systems and for connecting termination devices
- 2.8 mm single elements made from halogen-free and flame-retardant material
- UL approval type OFNR (riser) for USA and Canada
- Low-bend fiber
- Data rate: up to 10 Gbps up to 550 m

| SCRJ plug, IP20                                                                   |         | SC duplex plug, IP20                                                                |         | LC plug                                                                             |         |
|-----------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------|---------|
|  |         |  |         |  |         |
| SCRJ                                                                              |         | SCDUP                                                                               |         | LC                                                                                  |         |
| Ordering data                                                                     |         | Ordering data                                                                       |         | Ordering data                                                                       |         |
| Order No.                                                                         |         | Order No.                                                                           |         | Order No.                                                                           |         |
| 2 m                                                                               | 1400700 | 2 m                                                                                 | 1400695 | 2 m                                                                                 | 1400684 |
| Variable                                                                          | 1405705 | Variable                                                                            | 1405702 | Variable                                                                            | 1405696 |
|                                                                                   |         | 2 m                                                                                 | 1400689 |                                                                                     |         |
|                                                                                   |         | Variable                                                                            | 1405699 |                                                                                     |         |
|                                                                                   |         | 2 m                                                                                 | 1400681 | 2 m                                                                                 | 1400622 |
|                                                                                   |         | Variable                                                                            | 1405693 | Variable                                                                            | 1405690 |

SCRJ plug, IP20



SCRJ

SC duplex plug, IP20



SCDUP

LC plug



LC

### Ordering example for configured cable:

For a zip cord fiberglass cable, fitted with an IP20 SC duplex plug at one end and an SCRJ plug at the other end, and 15 m in length, the ordering data is as follows:

| Order No. | Length [m] |
|-----------|------------|
| 1405702   | 15         |

|            |                         |
|------------|-------------------------|
| Length:    | Min. 1 m<br>Max. 1000 m |
| Increment: | 1 m      1 m ... 1000 m |

#### Cable data

Cable abbreviation in accordance with IEC 61977:2010  
Fibers  
Attenuation, typical

#### Outer sheath

Material  
Color  
Diameter

Strain relief elements  
Individual wire

Material  
Color  
Diameter

#### General data

Weight  
Ambient temperature (operation)  
Ambient temperature (storage/transport)  
Ambient temperature (installation)  
Halogen-free as per:

#### Technical data

I-V(ZN)H  
Fiberglass, 50/125 µm  
2.5 dB/km (at 850 nm),  
0.7 dB/km (at 1300 nm)

-  
Violet  
2.8 - 5.7 mm

-

-  
900 µm

15.80 kg/km  
-10 °C ... 70 °C  
-25 °C ... 70 °C  
-5 °C ... 50 °C  
According to IEC 60754-1/2

## Zip cord fiberglass cable for assembly, OM1

- Fiber optic cable for indoor installation
- Ideal for use in distributor systems and for connecting termination devices
- 2.8 mm single elements made from halogen-free and flame-retardant material
- UL approval type OFNR (riser) for USA and Canada

|                                                                                   |                  |
|-----------------------------------------------------------------------------------|------------------|
| FSMA plug, IP20                                                                   |                  |
|  |                  |
| FSMA                                                                              |                  |
| Ordering data                                                                     |                  |
| Order No.                                                                         |                  |
| FSMA plug, IP20                                                                   |                  |
|  | Variable 1406532 |
| FSMA                                                                              |                  |
| SC duplex plug, IP20                                                              |                  |
|  | Variable 1406536 |
| SCDUP                                                                             |                  |
| B-FOC (ST®) plug, IP20                                                            |                  |
|  | Variable 1406535 |
| BFOC                                                                              |                  |

## Ordering example for configured cable:

For a zip cord fiberglass cable, fitted with an IP20 FSMA plug at one end and an IP20 SC duplex plug at the other end, and 15 m in length, the ordering data is as follows:

| Order No. | Length [m] |
|-----------|------------|
| 1406536   | 15         |

|            |                         |
|------------|-------------------------|
| Length:    | Min. 1 m<br>Max. 1000 m |
| Increment: | 1 m      1 m ... 1000 m |

| Technical data                                       |                                                  |
|------------------------------------------------------|--------------------------------------------------|
| Cable data                                           |                                                  |
| Cable abbreviation in accordance with IEC 61977:2010 | I-V(ZN)H                                         |
| Fibers                                               | 62.5/125 µm                                      |
| Attenuation, typical                                 | 3.2 dB/km (at 850 nm);<br>0.9 dB/km (at 1300 nm) |
| Outer sheath                                         |                                                  |
| Material                                             | -                                                |
| Color                                                | orange                                           |
| Diameter                                             | 2.8 - 5.7 mm                                     |
| Strain relief elements                               | -                                                |
| Individual wire                                      |                                                  |
| Material                                             | -                                                |
| Color                                                | -                                                |
| Diameter                                             | 900 µm                                           |
| General data                                         |                                                  |
| Weight                                               | 15.80 kg/km                                      |
| Ambient temperature (operation)                      | -10 °C ... 70 °C                                 |
| Ambient temperature (storage/transport)              | -25 °C ... 70 °C                                 |
| Ambient temperature (installation)                   | -5 °C ... 50 °C                                  |
| Halogen-free as per:                                 | A0 according to IEC 60754-1/2                    |



### Fiber optics patch cables

#### Plugs:

- LC
- SC duplex
- SCRJ
- B-FOC (ST®)

#### Fixed lengths:

- 1 m
- 2 m
- 5 m

#### Fiber types:

- Multi-mode fiberglass (MM)
- Single-mode fiberglass (SM)

#### Sheath colors:

- Multi-mode: orange
- Single mode: yellow

#### Technical data:

- Halogen-free
- Flame-retardant
- No corrosive or toxic fumes
- External dimensions: 2.8 mm x 5.7 mm



LC plug

#### Cable, properties

Individual wire diameter  
Outer sheath, material  
Outer sheath, strain relief elements  
Lateral pressure, long-term  
Tensile strength short-term/long-term  
Halogen-free

2.8 mm  
FRNC  
Non-metallic, aramid fiber  
60 N/cm  
600 N  
According to IEC 60754-2

#### General data

Ambient temperature (storage/transport)  
Ambient temperature (installation)  
Ambient temperature (operation)

-25 °C ... 70 °C  
-5 °C ... 50 °C  
-5 °C ... 70 °C

#### Technical data

#### Ordering data

| Description                                              | Length of cable | Type                  | Order No. | Pcs. / Pkt. |
|----------------------------------------------------------|-----------------|-----------------------|-----------|-------------|
| FO patch cable with <b>multi-mode fiberglass (OM2)</b>   |                 |                       |           |             |
| - <b>LC plug</b> to LC, SC duplex, B-FOC or SCRJ plug    |                 |                       |           |             |
|                                                          | 1 m             | FL MM PATCH 1,0 LC-LC | 2989158   | 1           |
|                                                          | 2 m             | FL MM PATCH 2,0 LC-LC | 2989255   | 1           |
|                                                          | 5 m             | FL MM PATCH 5,0 LC-LC | 2901799   | 1           |
| FO patch cable with <b>multi-mode fiberglass (OM2)</b>   |                 |                       |           |             |
| - <b>SC duplex plug</b> to SC duplex, B-FOC or SCRJ plug |                 |                       |           |             |
|                                                          | 1 m             |                       |           |             |
|                                                          | 2 m             |                       |           |             |
|                                                          | 5 m             |                       |           |             |
| FO patch cable with <b>multi-mode fiberglass (OM2)</b>   |                 |                       |           |             |
| - <b>B-FOC plug</b> to B-FOC or SCRJ plug                |                 |                       |           |             |
|                                                          | 1 m             |                       |           |             |
|                                                          | 2 m             |                       |           |             |
|                                                          | 5 m             |                       |           |             |
| FO patch cable with <b>multi-mode fiberglass (OM2)</b>   |                 |                       |           |             |
| - <b>SCRJ plug</b> to SCRJ plug                          |                 |                       |           |             |
|                                                          | 1 m             |                       |           |             |
|                                                          | 2 m             |                       |           |             |
|                                                          | 5 m             |                       |           |             |
| FO patch cable with <b>single-mode fiberglass (OS1)</b>  |                 |                       |           |             |
| - <b>LC plug</b> to LC, SC duplex or B-FOC plug          |                 |                       |           |             |
|                                                          | 1 m             | FL SM PATCH 1,0 LC-LC | 2989187   | 1           |
|                                                          | 2 m             | FL SM PATCH 2,0 LC-LC | 2989284   | 1           |
|                                                          | 5 m             | FL SM PATCH 5,0 LC-LC | 2901826   | 1           |
| FO patch cable with <b>single-mode fiberglass (OS1)</b>  |                 |                       |           |             |
| - <b>SC duplex plug</b> to SC duplex or B-FOC plug       |                 |                       |           |             |
|                                                          | 1 m             |                       |           |             |
|                                                          | 2 m             |                       |           |             |
|                                                          | 5 m             |                       |           |             |
| FO patch cable with <b>single-mode fiberglass (OS1)</b>  |                 |                       |           |             |
| - <b>B-FOC plug</b> to B-FOC plug                        |                 |                       |           |             |
|                                                          | 1 m             |                       |           |             |
|                                                          | 2 m             |                       |           |             |
|                                                          | 5 m             |                       |           |             |



SC duplex plug



B-FOC plug



SCRJ plug

| Technical data             |
|----------------------------|
| 2.8 mm                     |
| FRNC                       |
| Non-metallic, aramid fiber |
| 60 N/cm                    |
| 600 N                      |
| According to IEC 60754-2   |
| -25 °C ... 70 °C           |
| -5 °C ... 50 °C            |
| -5 °C ... 70 °C            |

| Technical data             |
|----------------------------|
| 2.8 mm                     |
| FRNC                       |
| Non-metallic, aramid fiber |
| 60 N/cm                    |
| 600 N                      |
| According to IEC 60754-2   |
| -25 °C ... 70 °C           |
| -5 °C ... 50 °C            |
| -5 °C ... 70 °C            |

| Technical data              |
|-----------------------------|
| 2.8 mm                      |
| FRNC                        |
| Non-metallic, a7ramid fiber |
| 60 N/cm                     |
| 600 N                       |
| According to IEC 60754-2    |
| -25 °C ... 70 °C            |
| -5 °C ... 50 °C             |
| -5 °C ... 70 °C             |

| Ordering data         |           |             |
|-----------------------|-----------|-------------|
| Type                  | Order No. | Pcs. / Pkt. |
| FL MM PATCH 1,0 LC-SC | 2989161   | 1           |
| FL MM PATCH 2,0 LC-SC | 2989268   | 1           |
| FL MM PATCH 5,0 LC-SC | 2901800   | 1           |
| FL MM PATCH 1,0 SC-SC | 2901805   | 1           |
| FL MM PATCH 2,0 SC-SC | 2901807   | 1           |
| FL MM PATCH 5,0 SC-SC | 2901808   | 1           |
| FL SM PATCH 1,0 LC-SC | 2989190   | 1           |
| FL SM PATCH 2,0 LC-SC | 2989297   | 1           |
| FL SM PATCH 5,0 LC-SC | 2901827   | 1           |
| FL SM PATCH 1,0 SC-SC | 2901829   | 1           |
| FL SM PATCH 2,0 SC-SC | 2901830   | 1           |
| FL SM PATCH 5,0 SC-SC | 2901831   | 1           |

| Ordering data         |           |             |
|-----------------------|-----------|-------------|
| Type                  | Order No. | Pcs. / Pkt. |
| FL MM PATCH 1,0 LC-ST | 2989174   | 1           |
| FL MM PATCH 2,0 LC-ST | 2989271   | 1           |
| FL MM PATCH 5,0 LC-ST | 2901801   | 1           |
| FL MM PATCH 1,0 SC-ST | 2901809   | 1           |
| FL MM PATCH 2,0 SC-ST | 2901810   | 1           |
| FL MM PATCH 5,0 SC-ST | 2901811   | 1           |
| FL MM PATCH 1,0 ST-ST | 2901815   | 1           |
| FL MM PATCH 2,0 ST-ST | 2901816   | 1           |
| FL MM PATCH 5,0 ST-ST | 2901817   | 1           |
| FL SM PATCH 1,0 LC-ST | 2989242   | 1           |
| FL SM PATCH 2,0 LC-ST | 2989349   | 1           |
| FL SM PATCH 5,0 LC-ST | 2901828   | 1           |
| FL SM PATCH 1,0 SC-ST | 2901832   | 1           |
| FL SM PATCH 2,0 SC-ST | 2901833   | 1           |
| FL SM PATCH 5,0 SC-ST | 2901834   | 1           |
| FL SM PATCH 1,0 ST-ST | 2901836   | 1           |
| FL SM PATCH 2,0 ST-ST | 2901837   | 1           |
| FL SM PATCH 5,0 ST-ST | 2901838   | 1           |

| Ordering data             |           |             |
|---------------------------|-----------|-------------|
| Type                      | Order No. | Pcs. / Pkt. |
| FL MM PATCH 1,0 LC-SCRJ   | 2901802   | 1           |
| FL MM PATCH 2,0 LC-SCRJ   | 2901803   | 1           |
| FL MM PATCH 5,0 LC-SCRJ   | 2901804   | 1           |
| FL MM PATCH 1,0 SC-SCRJ   | 2901812   | 1           |
| FL MM PATCH 2,0 SC-SCRJ   | 2901813   | 1           |
| FL MM PATCH 5,0 SC-SCRJ   | 2901814   | 1           |
| FL MM PATCH 1,0 ST-SCRJ   | 2901820   | 1           |
| FL MM PATCH 2,0 ST-SCRJ   | 2901821   | 1           |
| FL MM PATCH 5,0 ST-SCRJ   | 2901822   | 1           |
| FL MM PATCH 1,0 SCRJ-SCRJ | 2901823   | 1           |
| FL MM PATCH 2,0 SCRJ-SCRJ | 2901824   | 1           |
| FL MM PATCH 5,0 SCRJ-SCRJ | 2901825   | 1           |

## Data plug-in connectors

### Network components - accessories

#### Accessories for processing fiber optics



| Description                                                | Ordering data          |           |             | Type | Ordering data      |           |             |
|------------------------------------------------------------|------------------------|-----------|-------------|------|--------------------|-----------|-------------|
|                                                            | Type                   | Order No. | Pcs. / Pkt. |      | Type               | Order No. | Pcs. / Pkt. |
| <b>Ceramic blade</b>                                       | FOC-TOOL-CERAMIC-BLADE | 1407019   | 1           |      |                    |           |             |
| <b>Solvent dispenser</b> , 100 ml, lockable pump dispenser |                        |           |             |      | FOC-TOOL-DISPENSER | 1406995   | 1           |

#### Polishing fiber optic plug-in connectors



| Description                                                   | Ordering data             |           |             | Type | Ordering data          |           |             |
|---------------------------------------------------------------|---------------------------|-----------|-------------|------|------------------------|-----------|-------------|
|                                                               | Type                      | Order No. | Pcs. / Pkt. |      | Type                   | Order No. | Pcs. / Pkt. |
| <b>Polishing film</b> , silicon carbide<br>15 µm              | FOC-POLISHINGFILM-SK-15.0 | 1407034   | 1           |      |                        |           |             |
| <b>Polishing film</b> , AlO <sub>2</sub> <sup>2</sup><br>1 µm | FOC-POLISHINGFILM-AO-01.0 | 1407037   | 1           |      |                        |           |             |
| 3 µm                                                          | FOC-POLISHINGFILM-AO-03.0 | 1407039   | 1           |      |                        |           |             |
| <b>Polishing film</b> , diamond<br>0.1 µm                     | FOC-POLISHINGFILM-D-00.1  | 1407046   | 1           |      |                        |           |             |
| 1 µm                                                          | FOC-POLISHINGFILM-D-01.0  | 1407042   | 1           |      |                        |           |             |
| 9 µm                                                          | FOC-POLISHINGFILM-D-09.0  | 1407044   | 1           |      |                        |           |             |
| <b>Polishing disc</b><br>1.25 mm, for LC                      |                           |           |             |      | FOC-POLISHINGDISC-1.25 | 1407024   | 1           |
| 2.50 mm, for ST, SC, FC                                       |                           |           |             |      | FOC-POLISHINGDISC-2.50 | 1407021   | 1           |

## Cleaning tools for fiber optic connection technology



| Description                                           | Ordering data                |           |             | Type | Ordering data              |           |             |
|-------------------------------------------------------|------------------------------|-----------|-------------|------|----------------------------|-----------|-------------|
|                                                       | Type                         | Order No. | Pcs. / Pkt. |      | Type                       | Order No. | Pcs. / Pkt. |
| <b>Ferrule cleaner</b> , approx. 500 cleaning cycles  |                              |           |             |      |                            |           |             |
| 1.25 mm, for LC                                       | FOC-TOOL-FERRULECLEANER-1.25 | 1407032   | 1           |      |                            |           |             |
| 2.50 mm, for ST, SC, FC                               | FOC-TOOL-FERRULECLEANER-2.50 | 1407029   | 1           |      |                            |           |             |
| <b>Stick cleaner</b> for couplings and plug end faces |                              |           |             |      |                            |           |             |
| 1.25 mm, for LC                                       |                              |           |             |      | FOC-TOOL-STICKCLEANER-1.25 | 1407000   | 1           |
| 2.50 mm, for ST, SC, FC                               |                              |           |             |      | FOC-TOOL-STICKCLEANER-2.50 | 1407002   | 1           |

## Data plug-in connectors

### Network components - accessories

#### Tool for processing fiber optics



#### Ordering data

| Type                         | Order No. | Pcs. / Pkt. |
|------------------------------|-----------|-------------|
| FOC-TOOL-STRIPPING-1HOLE-250 | 1407004   | 1           |
| FOC-TOOL-STRIPPING-2HOLE-250 | 1407008   | 1           |

#### Accessories

|           |         |   |
|-----------|---------|---|
| CUTFOX-ES | 1212621 | 1 |
|-----------|---------|---|

#### Ordering data

| Type                   | Order No. | Pcs. / Pkt. |
|------------------------|-----------|-------------|
| FOC-TOOL-STRIPPING-T-1 | 1407016   | 1           |
| FOC-TOOL-STRIPPING-T-2 | 1407014   | 1           |

#### Accessories

|           |         |   |
|-----------|---------|---|
| CUTFOX-ES | 1212621 | 1 |
|-----------|---------|---|

#### Description

**Fiber stripper**, for stripping the coating from 250 µm to 125 µm

For 1 fiber  
For 2 fibers

#### T-stripper

18 ... 10 AWG/1.0 mm ... 2.6 mm  
30 ... 22 AWG/0.25 mm ... 0.64 mm

**Electrician's scissors**, high cutting performance thanks to micro-serrated cutting area, suitable for copper, aluminum, Kevlar fibers, and plastic, two-component non-slip soft-grip handles, ergonomic design, adjustable screw joint

#### Tools for FO cabling, POF

#### Ethernet

**PROFI  
NET**



#### Ethernet

**PROFI  
NET**



#### Ordering data

| Type                        | Order No. | Pcs. / Pkt. |
|-----------------------------|-----------|-------------|
| VS-SCRJ-POF-KONFTOOL-POLISH | 1658820   | 1           |
| VS-SCRJ-POF-POLISH          | 1656673   | 1           |

#### Ordering data

| Type                 | Order No. | Pcs. / Pkt. |
|----------------------|-----------|-------------|
| TF-SCRJ-POF KONF SET | 1405246   | 1           |
| CUTFOX-SCRJ-POF      | 1405247   | 1           |
| WIREFOX-PN POF       | 1405249   | 1           |

#### Description

**Scrj polishing tool set, for polymer fiber**, for field assembly of scrj/ip20 and SCRJ/IP67 plug-in connectors7 with fast connection system

**Refill set for VS-SCRJ-POF-KONFTOOL-POLISH**, consisting of two polishers and a polishing disc

- For SCRJ connectors

**SCRJ cutting tool set**, for polymer fiber, for field assembly of SCRJ/IP20 and SCRJ/IP67 push/pull plug-in connectors with fast connection technology, consisting of stripping tool, aramid scissors, SCRJ cutting tool, microscope

**Cutting tool, SCRJ**, for polymer fiber

**Sheath stripping tool**, for polymer fiber

## Tools for FO cabling, HCS



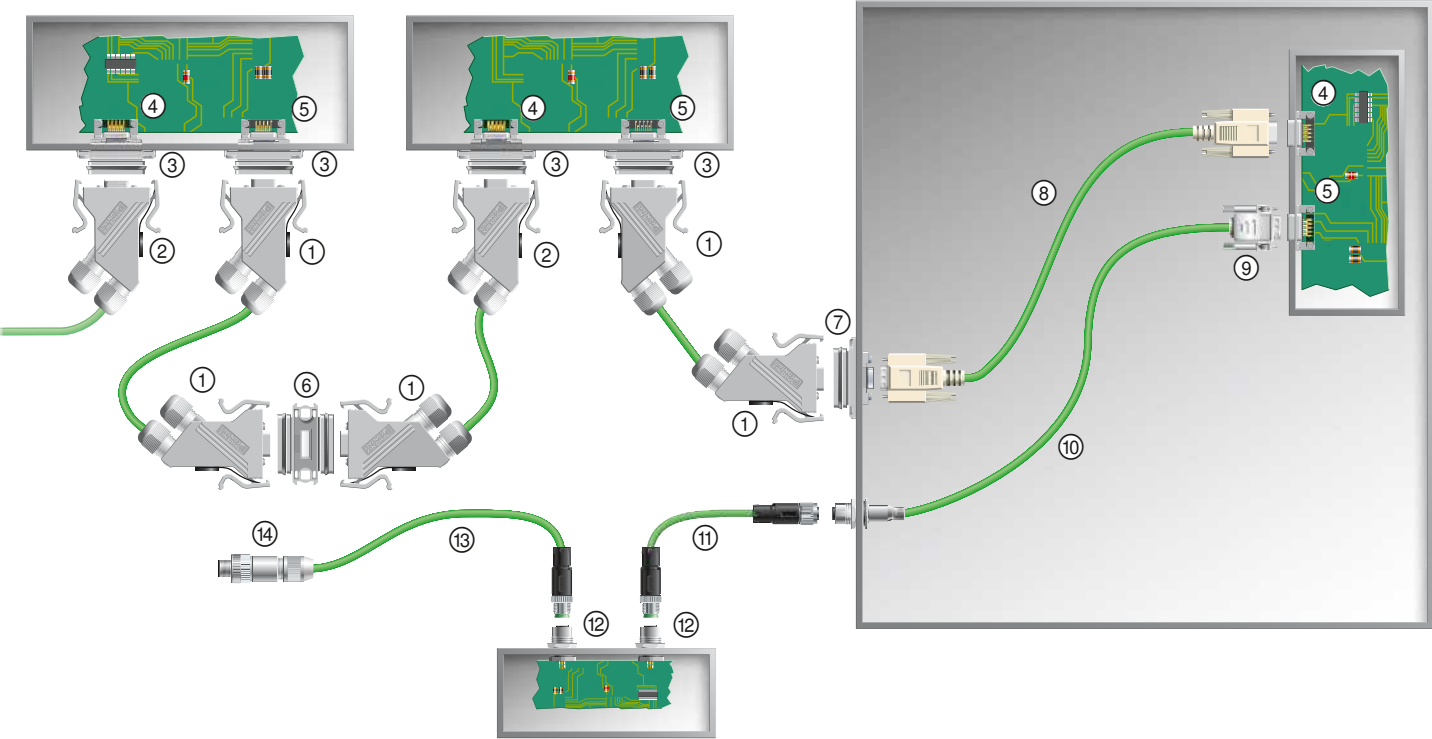
Assembly tool for fiber optics

| Description                                                                                                                                                                             | Ordering data          |           |             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------|-------------|
|                                                                                                                                                                                         | Type                   | Order No. | Pcs. / Pkt. |
| <b>HCS (GI) DIY case</b> for SCRJ and SC duplex quick mounting connectors, stripping blade, stripping pliers, aramid yarn scissors, fiber stripper, fiber cleaving tool, and microscope |                        |           |             |
| - For SCRJ/SC duplex connectors                                                                                                                                                         | PSM-HCS-KONFTOOL/SC-RJ | 2708876   | 1           |
| <b>HCS (GI) DIY case</b> for B-FOC (ST®) quick mounting connectors, stripping blade, stripping pliers, aramid yarn scissors, fiber stripper, fiber cleaving tool, and microscope        |                        |           |             |
| - For B-FOC (ST®) connectors                                                                                                                                                            | PSM-HCS-KONFTOOL/B-FOC | 2708465   | 1           |
| <b>HCS DIY case</b> for F-SMA quick mounting connectors, comprising stripping blade, stripping pliers, aramid yarn scissors, fiber stripper, fiber cleaving tool, and microscope        |                        |           |             |
| - For F-SMA connectors                                                                                                                                                                  | PSM-HCS-KONFTOOL       | 2799526   | 1           |

## Tools for FO cabling, GOF

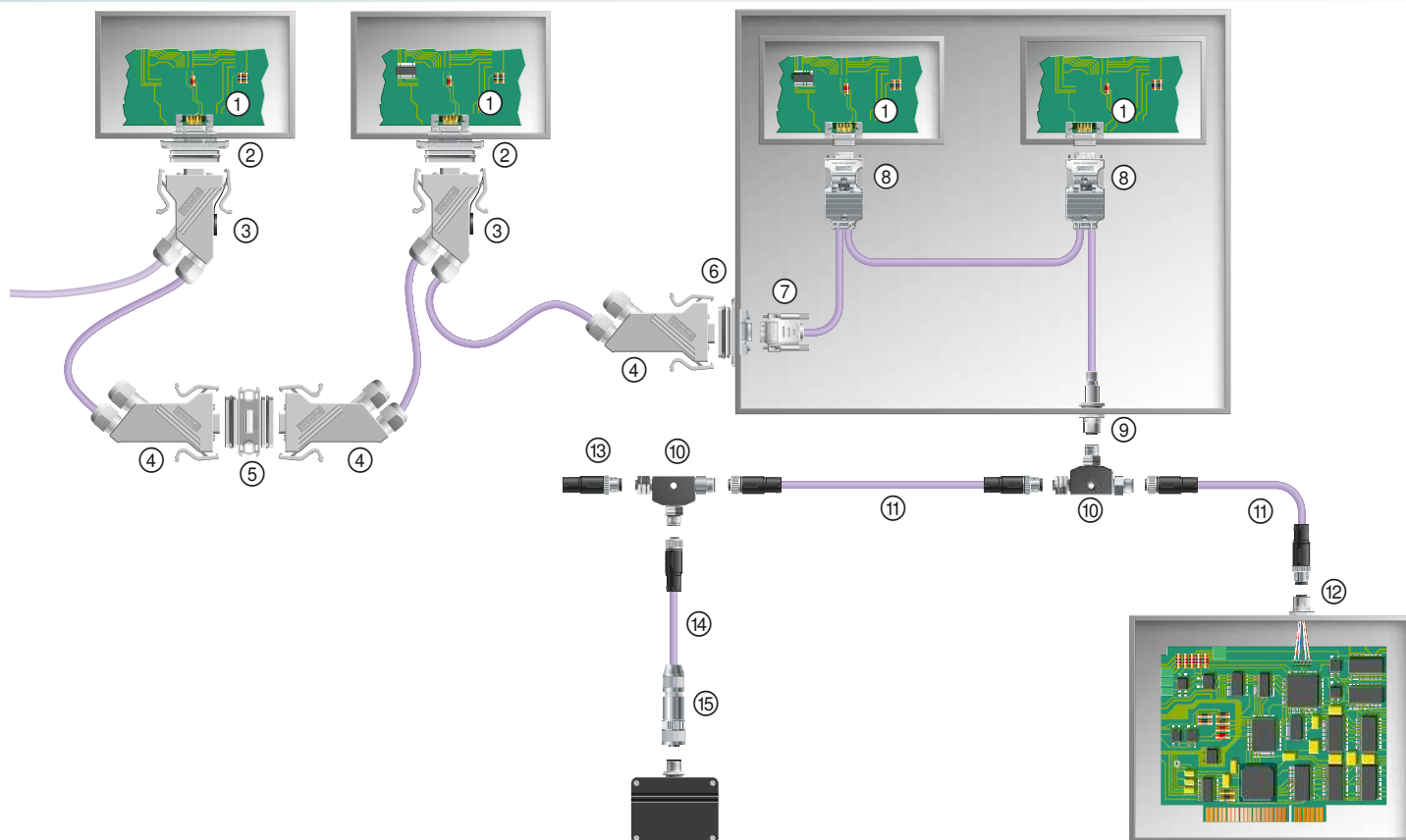


| Description                                                                                                                              | Ordering data               |           |             |
|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------|-------------|
|                                                                                                                                          | Type                        | Order No. | Pcs. / Pkt. |
| <b>Assembly tool set for fiberglass</b> , for the field assembly of the SCRJ and SC-Duplex connectors, with a fast connection technology |                             |           |             |
| EU version                                                                                                                               | VS-GOF-FA-KONFTOOL-EU       | 1658228   | 1           |
| US version                                                                                                                               | VS-GOF-FA-KONFTOOL-US       | 1658231   | 1           |
| <b>Consumables</b> for VS-GOF-FA-KONFTOOL-...                                                                                            |                             |           |             |
| Glue cartridge                                                                                                                           | VS-GOF-FA-KONFTOOL-ADHESIVE | 1658244   | 1           |

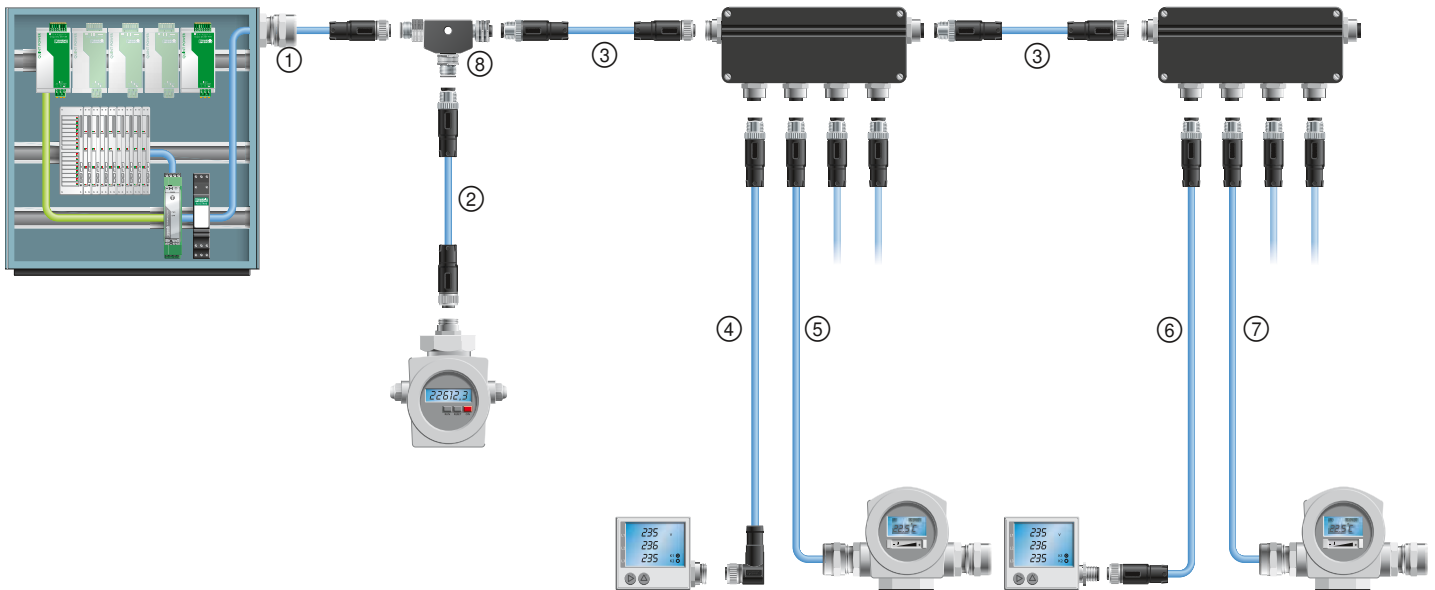




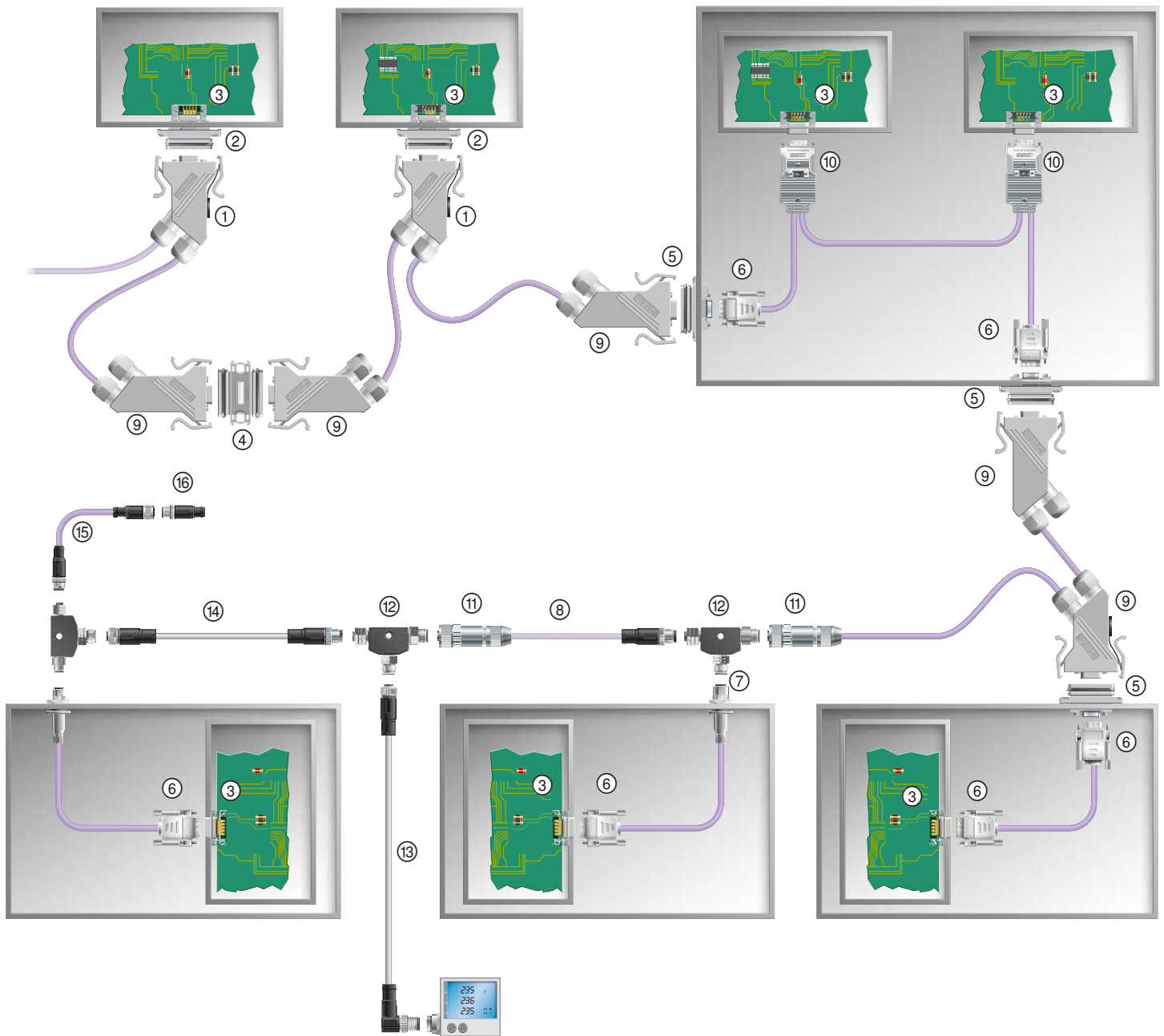
| No. | Designation                                                                          | Page          |
|-----|--------------------------------------------------------------------------------------|---------------|
| ①   | IP67 D-SUB complete plug-in connectors, pin                                          | 184           |
| ②   | IP67 D-SUB complete plug-in connectors, socket                                       | 184           |
| ③   | IP67 D-SUB panel mounting frames for D-SUB contact inserts                           | 206           |
| ④   | D-SUB contact inserts, pin                                                           | 206           |
| ⑤   | D-SUB contact inserts, socket                                                        | 206           |
| ⑥   | IP67 D-SUB coupling, socket/socket                                                   | 185           |
| ⑦   | IP67 D-SUB panel mounting frames with integrated D-SUB gender changer, socket/socket | 185           |
| ⑧   | Assembled D-SUB cable with D-SUB plug-in connectors, IP20                            | 218           |
| ⑨   | IP20 D-SUB sleeve housing and D-SUB contact insert, pin                              | 219           |
| ⑩   | M12 panel feed-through with INTERBUS cable and free cable end                        | 190           |
| ⑪   | Assembled INTERBUS cable with M12 plug-in connectors                                 | See Catalog 4 |
| ⑫   | M12 panel feed-through with solder connection                                        | 188           |
| ⑬   | Assembled INTERBUS cable with M12 plug-in connector and free cable end               | See Catalog 4 |
| ⑭   | M12 plug-in connector for free assembly                                              | 186           |



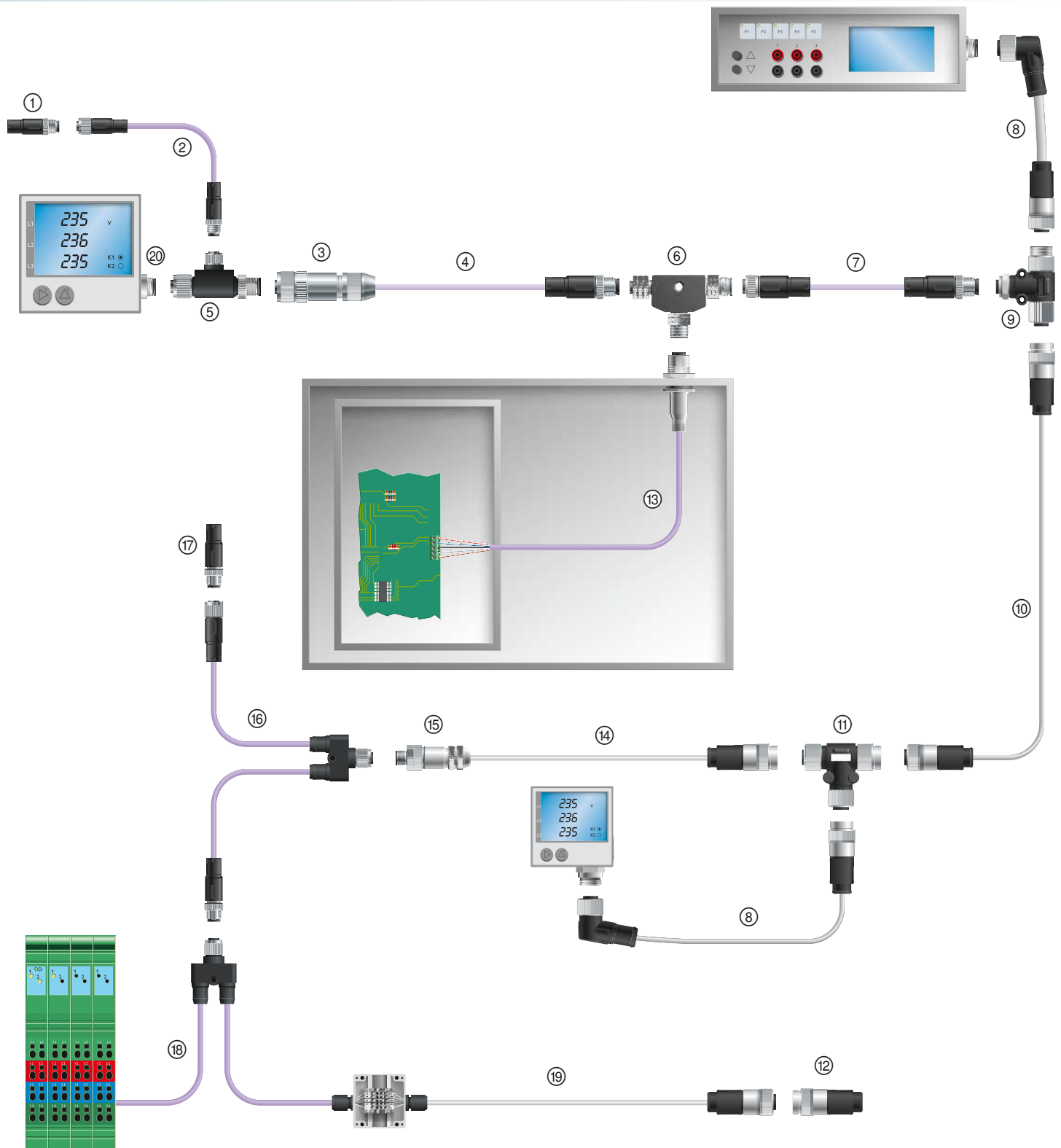
| No. | Designation                                                                          | Page          |
|-----|--------------------------------------------------------------------------------------|---------------|
| ①   | D-SUB contact inserts                                                                | 206           |
| ②   | IP67 D-SUB panel mounting frames for D-SUB contact inserts                           | 206           |
| ③   | IP67 D-SUB complete plug-in connectors                                               | 184           |
| ④   | IP67 D-SUB sleeve housing with accessories and D-SUB contact insert                  | 206           |
| ⑤   | IP67 D-SUB coupling                                                                  | 185           |
| ⑥   | IP67 D-SUB panel mounting frames with integrated D-SUB gender changer                | 185           |
| ⑦   | IP20 D-SUB sleeve housing and D-SUB contact insert                                   | 219           |
| ⑧   | IP20 D-SUB complete plug-in connectors                                               | 219           |
| ⑨   | M12 panel feed-through with fieldbus cable and free cable end                        | 191           |
| ⑩   | M12 T-piece                                                                          | See Catalog 4 |
| ⑪   | Assembled fieldbus cable with straight M12 plug-in connector and straight M12 socket | See Catalog 4 |
| ⑫   | Flush-type plug-in connector                                                         | 189           |
| ⑬   | PROFIBUS M12 termination resistor                                                    | See Catalog 4 |
| ⑭   | Assembled fieldbus cable with straight M12 socket and free cable end                 | See Catalog 4 |
| ⑮   | M12 plug-in connector, for free assembly                                             | 186           |



| No. | Designation                                                         | Page          |
|-----|---------------------------------------------------------------------|---------------|
| ①   | Assembled cable with straight M12 socket and free cable end, 2 m    | See Catalog 4 |
| ②   | Assembled cable with straight M12 socket and straight M12 plug, 1 m | See Catalog 4 |
| ③   | Assembled cable with straight M12 socket and straight M12 plug, 5 m | See Catalog 4 |
| ④   | Assembled cable with straight M12 plug and angled M12 socket, 5 m   | See Catalog 4 |
| ⑤   | Assembled cable with straight M12 plug and free cable end, 5 m      | See Catalog 4 |
| ⑥   | Assembled cable with straight M12 socket and straight M12 plug, 2 m | See Catalog 4 |
| ⑦   | Assembled cable with straight M12 plug and free cable end, 20 m     | See Catalog 4 |
| ⑧   | M12 T-distributor                                                   | See Catalog 4 |

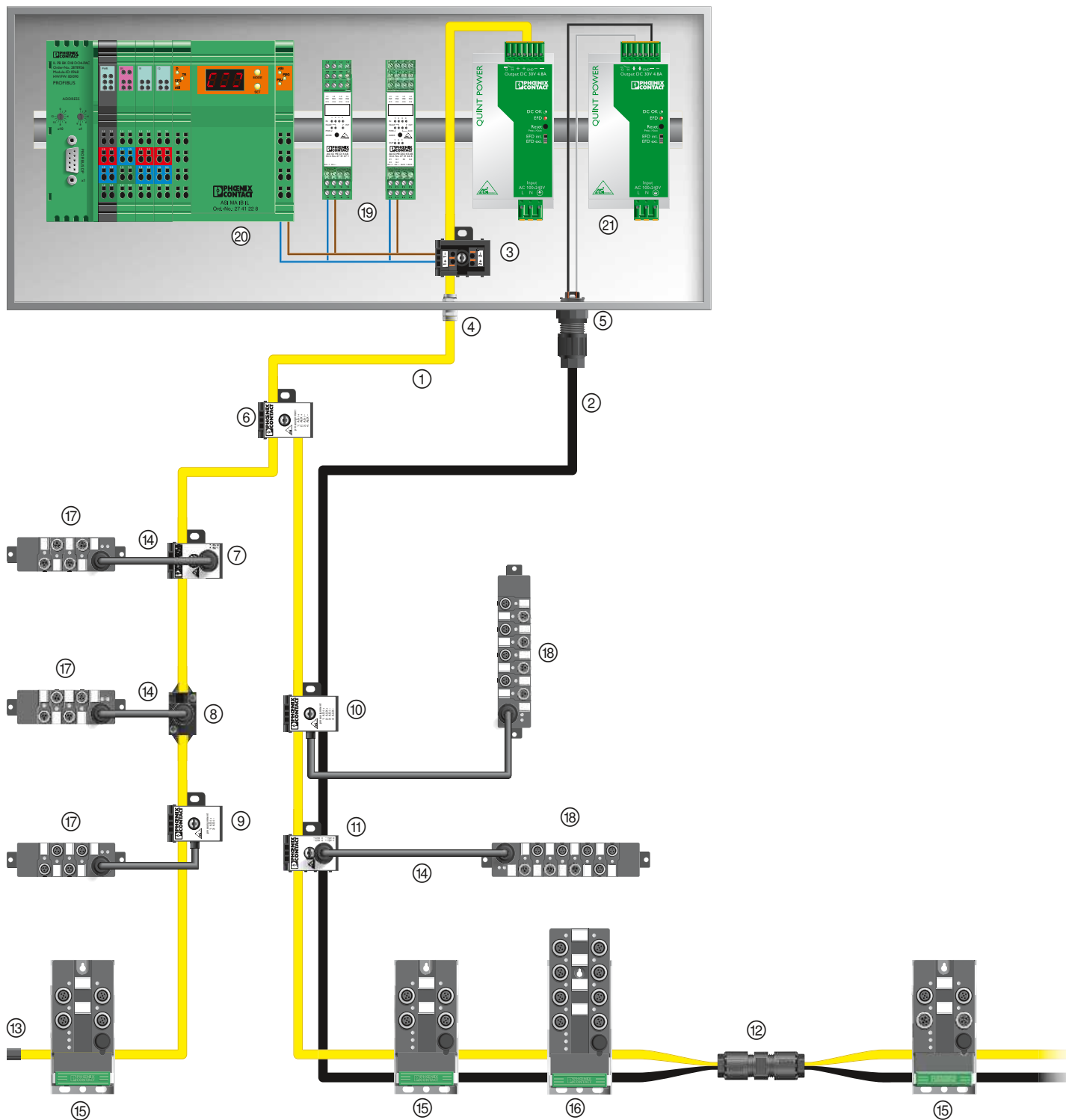


| No. | Designation                                                                     | Page          |
|-----|---------------------------------------------------------------------------------|---------------|
| ①   | IP67 D-SUB complete plug-in connectors                                          | 184           |
| ②   | IP67 D-SUB panel mounting frames for D-SUB contact inserts                      | 206           |
| ③   | D-SUB contact inserts                                                           | 206           |
| ④   | IP67 D-SUB coupling                                                             | 185           |
| ⑤   | IP67 D-SUB panel mounting frames with integrated D-SUB gender changer           | 185           |
| ⑥   | IP20 D-SUB sleeve housing and D-SUB contact insert                              | 219           |
| ⑦   | M12 panel feed-through with fieldbus cable and free cable end                   | 192           |
| ⑧   | Assembled fieldbus cable with M12 plug-in connector and free cable end          | See Catalog 4 |
| ⑨   | IP67 D-SUB sleeve housing with accessories and D-SUB contact insert             | 206           |
| ⑩   | IP20 D-SUB complete plug-in connectors                                          | 219           |
| ⑪   | M12 plug-in connectors, for assembly                                            | 187           |
| ⑫   | M12 T-piece                                                                     | See Catalog 4 |
| ⑬   | Assembled cable with angled M12 plug-in connector to straight M12 socket, 5 m   | See Catalog 4 |
| ⑭   | Assembled cable with straight M12 plug-in connector to straight M12 socket, 2 m | See Catalog 4 |
| ⑮   | Termination resistor                                                            | See Catalog 4 |
| ⑯   | Assembled fieldbus cable with M8 plug-in connector and M8 socket                | See Catalog 4 |



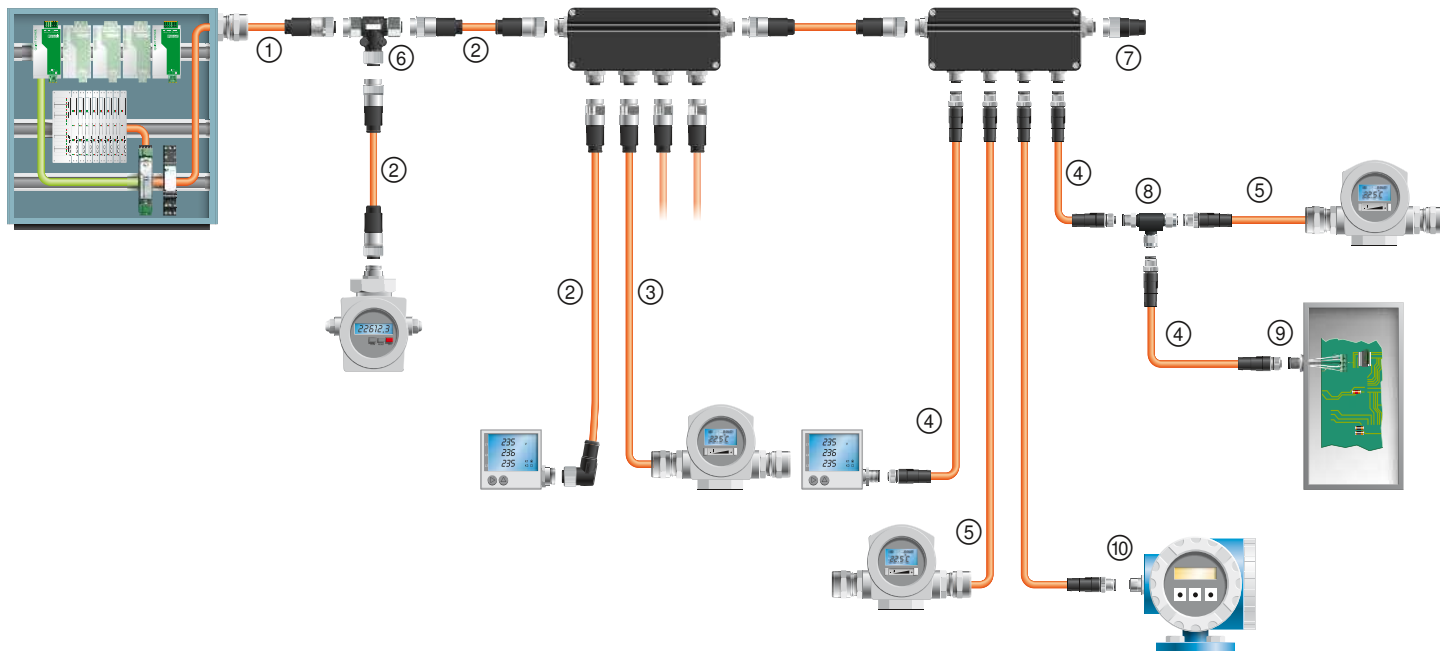
| No. | Designation                                                                                                                  | Page          |
|-----|------------------------------------------------------------------------------------------------------------------------------|---------------|
| ①   | M8 termination resistor                                                                                                      | See Catalog 4 |
| ②   | Assembled fieldbus cable with straight M8 plug to straight M8 socket                                                         | See Catalog 4 |
| ③   | M12 plug-in connector for free assembly, socket                                                                              | 186           |
| ④   | Assembled fieldbus cable with M12 plug and free cable end                                                                    | See Catalog 4 |
| ⑤   | Bus system T-distributor, M8 socket to M12 plug and M12 socket                                                               | See Catalog 4 |
| ⑥   | Bus system T-distributor, M12 socket to M12 plug and M12 socket                                                              | See Catalog 4 |
| ⑦   | Assembled fieldbus cable with straight M12-SPEEDCON plug to straight M12-SPEEDCON socket                                     | See Catalog 4 |
| ⑧   | Assembled trunk cable with angled 7/8" plug to straight 7/8" socket                                                          | See Catalog 4 |
| ⑨   | Bus system T-distributor, 5-pos., M12 socket to 7/8" socket and 7/8" plug, 7/8", stainless steel knurl                       | See Catalog 4 |
| ⑩   | Assembled trunk cable with straight 7/8" plug to straight 7/8" socket                                                        | See Catalog 4 |
| ⑪   | Bus system T-distributor, 5-pos., 7/8" socket to 7/8" socket and 7/8" plug, stainless steel knurl                            | See Catalog 4 |
| ⑫   | Termination resistor, 7/8" plug                                                                                              | See Catalog 4 |
| ⑬   | M12 flush-type plug-in connector                                                                                             | 190           |
| ⑭   | Assembled trunk cable with straight 7/8" plug and free cable end                                                             | See Catalog 4 |
| ⑮   | M12 plug-in connector for free assembly, plug                                                                                | 186           |
| ⑯   | Y-distributor, bus system cable, straight M12-SPEEDCON socket to straight M12-SPEEDCON plug and straight M12-SPEEDCON socket | See Catalog 4 |
| ⑰   | M12 termination resistor                                                                                                     | See Catalog 4 |
| ⑱   | Y-distributor, bus system cable, straight M12-SPEEDCON socket and 2 free cable ends                                          | See Catalog 4 |
| ⑲   | 7/8" assembled drop cable, straight 7/8" socket and free cable end                                                           | See Catalog 4 |
| ⑳   | M12 panel feed-through with solder connection                                                                                | 188           |





| No. | Designation                                                                                                                | Page          |
|-----|----------------------------------------------------------------------------------------------------------------------------|---------------|
| ①   | AS-Interface flat-ribbon conductor, yellow                                                                                 | See Catalog 4 |
| ②   | AS-Interface flat-ribbon conductor, black                                                                                  | See Catalog 4 |
| ③   | AS-Interface distributor, 4-pos., with spring-cage terminal blocks up to 1.5 mm <sup>2</sup>                               | See Catalog 4 |
| ④   | Metal screw connection for an AS-Interface flat-ribbon conductor                                                           | See Catalog 4 |
| ⑤   | Panel feed-through with QUICKON fast connection technology for accommodating up to two AS-Interface flat-ribbon conductors | See Catalog 4 |
| ⑥   | AS-Interface H-distributor for the distribution of AS-Interface flat-ribbon conductors                                     | See Catalog 4 |
| ⑦   | AS-Interface distributor, 2-pos., with straight, A-coded M12 socket                                                        | See Catalog 4 |
| ⑧   | AS-Interface distributor, 2-pos., with straight, A-coded M12 socket                                                        | See Catalog 4 |
| ⑨   | AS-Interface distributor, 2-pos., with round cable and molded, A-coded M12 socket                                          | See Catalog 4 |
| ⑩   | AS-Interface distributor, 4-pos., with round cable and molded, A-coded M12 socket                                          | See Catalog 4 |
| ⑪   | AS-Interface distributor, 4-pos., with straight, A-coded M12 socket                                                        | See Catalog 4 |
| ⑫   | Cable connector with QUICKON fast connection technology for connecting up to four AS-Interface flat-ribbon conductors      | See Catalog 4 |
| ⑬   | End clip for AS-Interface flat-ribbon conductor                                                                            | See Catalog 4 |
| ⑭   | Assembled round cable with M12 plug-in connectors                                                                          | See Catalog 4 |
| ⑮   | AS-Interface digital M12 I/O devices, 4 slots, IP65/IP67                                                                   | See Catalog 4 |
| ⑯   | AS-Interface digital M12 I/O devices, 8 slots, IP65/IP67                                                                   | See Catalog 4 |
| ⑰   | AS-Interface digital M8 input devices, 4 slots, IP65/IP67                                                                  | See Catalog 4 |
| ⑱   | AS-Interface digital M8 I/O devices, 8 slots, IP65/IP67                                                                    | See Catalog 4 |
| ⑲   | AS-Interface digital I/O devices, ME-Line, IP20                                                                            | .             |
| ⑳   | AS-Interface gateway for Inline Modular, IP20                                                                              | .             |
| ㉑   | Power supply unit, primary-switched                                                                                        | .             |

\*) Further AS-Interface components for the control cabinet can be found in Catalog 8.



| No. | Designation                                                             | Page          |
|-----|-------------------------------------------------------------------------|---------------|
| ①   | Assembled FOUNDATION Fieldbus cable with 7/8" socket and free cable end | See Catalog 4 |
| ②   | Assembled FOUNDATION Fieldbus cable with 7/8" plug and 7/8" socket      | See Catalog 4 |
| ③   | Assembled FOUNDATION Fieldbus cable with 7/8" plug and free cable end   | See Catalog 4 |
| ④   | Assembled FOUNDATION Fieldbus cable with M12 plug and M12 socket        | See Catalog 4 |
| ⑤   | Assembled FOUNDATION Fieldbus cable with M12 plug and free cable end    | See Catalog 4 |
| ⑥   | FOUNDATION Fieldbus 7/8" T-distributor                                  | See Catalog 4 |
| ⑦   | FOUNDATION Fieldbus 7/8" termination resistor                           | See Catalog 4 |
| ⑧   | FOUNDATION Fieldbus M12 distributor                                     | See Catalog 4 |
| ⑨   | FOUNDATION Fieldbus M12 system flush-type plug-in connector             | 193           |
| ⑩   | FOUNDATION Fieldbus M12 flush-type plug                                 | 193           |

# Data plug-in connectors

## Fieldbus components - D-SUB plug-in connectors

### D-SUB plug-in connectors, IP67



D-SUB complete plug-in connector for INTERBUS with IP67 protection



D-SUB plug-in connector set, IP67, consisting of: sleeve housing, panel mounting frame, and accessories, shielded design

|                                                                                                          | Technical data                               |                  | Technical data |
|----------------------------------------------------------------------------------------------------------|----------------------------------------------|------------------|----------------|
| Electrical data                                                                                          |                                              |                  |                |
| Rated voltage                                                                                            | 63 V                                         | -                |                |
| Rated current                                                                                            | 1 A                                          | -                |                |
| Surge voltage category                                                                                   | II                                           | -                |                |
| Material data                                                                                            |                                              |                  |                |
| Housing material                                                                                         | PA                                           | PA               |                |
| Contact material                                                                                         | Copper alloy                                 | -                |                |
| Contact surface material                                                                                 | Gold over nickel                             | -                |                |
| Contact carrier material                                                                                 | PBTP                                         | -                |                |
| Inflammability class according to UL 94                                                                  | V0                                           | V0               |                |
| Mechanical data                                                                                          |                                              |                  |                |
| No. of pos.                                                                                              | 9                                            | 9                |                |
| Color                                                                                                    | gray                                         | gray             |                |
| Pollution degree                                                                                         | 2                                            | 2                |                |
| Degree of protection                                                                                     | IP67                                         | IP67             |                |
| Connection method                                                                                        | Screw connection                             | -                |                |
| Conductor cross section                                                                                  | 0.14 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> | -                |                |
| Connection cross section AWG                                                                             | 26 ... 20                                    | -                |                |
| Insertion/withdrawal cycles                                                                              | ≥ 200                                        | ≥ 1000           |                |
| Temperature data                                                                                         |                                              |                  |                |
| Ambient temperature (operation)                                                                          | -20 °C ... 70 °C                             | -40 °C ... 80 °C |                |
|                                                                                                          | Ordering data                                |                  | Ordering data  |
| Description                                                                                              | Type                                         | Order No.        | Pcs. / Pkt.    |
| <b>D-SUB complete plug-in connector</b> , for INTERBUS, shell size 1, screw connection, shielded         |                                              |                  |                |
| Plug                                                                                                     | VS-09-IBS-ST                                 | 1689271          | 1              |
| Socket                                                                                                   | VS-09-IBS-BU                                 | 1689284          | 1              |
| <b>D-SUB complete plug-in connector</b> , for PROFIBUS, shell size 1, plug, shielded                     |                                              |                  |                |
| Screw connection                                                                                         | VS-09-PROFIBUS-SC                            | 1654549          | 1              |
| Spring-cage connection                                                                                   | VS-09-PROFIBUS-SP                            | 1654345          | 1              |
| <b>D-SUB complete plug-in connector</b> , for CANopen®, shell size 1, socket, screw connection, shielded |                                              |                  |                |
| Socket                                                                                                   | VS-09-CAN                                    | 1689307          | 1              |
| <b>D-SUB panel mounting frame</b> , for accommodating D-SUB contact inserts                              |                                              |                  |                |
| D-SUB 09                                                                                                 |                                              |                  |                |
| <b>D-SUB EMC shroud</b> , for the IP67 panel mounting frame, for shield contacting to the housing panel  |                                              |                  |                |
| D-SUB 09                                                                                                 |                                              |                  |                |
| <b>D-SUB plug-in connector set</b>                                                                       |                                              |                  |                |
| D-SUB 09                                                                                                 |                                              |                  |                |
|                                                                                                          | Type                                         | Order No.        | Pcs. / Pkt.    |
|                                                                                                          | VS-09-A                                      | 1688366          | 5              |
|                                                                                                          | VS-09-A-EMV-S                                | 1688463          | 5              |
|                                                                                                          | VS-09-SET-EMV                                | 1689158          | 1              |



**Screw connection**  
Fixing: 2.5 mm hole



**D-SUB panel mounting frame IP67,**  
with integrated gender changer

|                                                                      | Technical data           |           |             | Technical data               |                              |             |
|----------------------------------------------------------------------|--------------------------|-----------|-------------|------------------------------|------------------------------|-------------|
| Electrical data                                                      |                          |           |             |                              |                              |             |
| Rated voltage                                                        | 60 V                     |           |             | 125 V                        | 125 V                        |             |
| Rated current                                                        | 5 A                      |           |             | 5 A                          | 5 A                          |             |
| Surge voltage category                                               | III                      |           |             | III                          | III                          |             |
| Material data                                                        |                          |           |             |                              |                              |             |
| Housing material                                                     | -                        |           |             | PA                           | PA                           |             |
| Contact material                                                     | Copper alloy             |           |             | Copper alloy                 | Copper alloy                 |             |
| Contact surface material                                             | Gold over nickel         |           |             | Hard gold-plated over nickel | Hard gold-plated over nickel |             |
| Contact carrier material                                             | PBTP                     |           |             | Polyester GF                 | Polyester GF                 |             |
| Inflammability class according to UL 94                              | V0                       |           |             | V0                           | V0                           |             |
| Mechanical data                                                      |                          |           |             |                              |                              |             |
| No. of pos.                                                          | 9                        |           |             | 9                            | 9                            |             |
| Color                                                                | -                        |           |             | gray                         | gray                         |             |
| Pollution degree                                                     | 2                        |           |             | 2                            | 2                            |             |
| Degree of protection                                                 | IP20                     |           |             | IP67                         | IP67                         |             |
| Connection method                                                    | Screw connection         |           |             | -                            | -                            |             |
| Conductor cross section                                              | 0.14 mm² ... 0.5 mm²     |           |             | -                            | -                            |             |
| Connection cross section AWG                                         | 26 ... 20                |           |             | -                            | -                            |             |
| Insertion/withdrawal cycles                                          | ≥ 200                    |           |             | ≥ 200                        | ≥ 200                        |             |
| Temperature data                                                     |                          |           |             |                              |                              |             |
| Ambient temperature (operation)                                      | -20 °C ... 80 °C         |           |             | -40 °C ... 80 °C             | -40 °C ... 80 °C             |             |
|                                                                      | Ordering data            |           |             | Ordering data                |                              |             |
| Description                                                          | Type                     | Order No. | Pcs. / Pkt. | Type                         | Order No.                    | Pcs. / Pkt. |
| D-SUB contact insert                                                 |                          |           |             |                              |                              |             |
| Plug                                                                 | VS-09-ST-DSUB/10-MPT-0,5 | 1688379   | 10          |                              |                              |             |
| Socket                                                               | VS-09-BU-DSUB/9-MPT-0,5  | 1688395   | 10          |                              |                              |             |
| D-SUB panel mounting frame, with integrated gender changer, shielded |                          |           |             |                              |                              |             |
| D-SUB 09, pin/pin                                                    |                          |           |             | VS-09-A-GC-ST/ST             | 1689705                      | 5           |
| D-SUB 09, socket/socket                                              |                          |           |             | VS-09-A-GC-BU/BU             | 1689695                      | 5           |
| D-SUB coupling, with integrated gender changer, shielded             |                          |           |             |                              |                              |             |
| D-SUB 09, pin/pin                                                    |                          |           |             | VS-09-KU-ST/ST               | 1689640                      | 5           |
| D-SUB 09, socket/socket                                              |                          |           |             | VS-09-KU-BU/BU               | 1689637                      | 5           |

# Data plug-in connectors

## Fieldbus components - M12 plug-in connectors

### M12 plug-in connector, shielded



M12 plug-in connectors  
that can be assembled for INTERBUS



M12 plug-in connectors  
that can be assembled for PROFIBUS

M12 circular plug-in connector according to:

Pollution degree  
Degree of protection  
Connection method

#### Electrical data

Rated voltage  
Rated current  
Volume resistance  
Insulation resistance

#### Material data

Contact material  
Contact surface material  
Contact carrier material  
Inflammability class according to UL 94

Coding

No. of pos.

Temperature data

Plug / socket

[°C]

#### Technical data

##### Spring-cage connection

IEC 61076-2-101

3

IP67

Spring-cage conn.

##### Screw connection

IEC 61076-2-101

3

IP67

Screw connection

#### Technical data

##### Spring-cage connection

IEC 61076-2-101

3

IP67

Spring-cage conn.

##### Screw connection

IEC 61076-2-101

3

IP67

Screw connection

60 V

4 A

≤ 8 mΩ

≥ 100 MΩ

CuSn

Ni/Au

TPU

V0

B - inverse

2

-40 ... 85

60 V

4 A

≤ 3 mΩ

≥ 100 MΩ

CuSn

Au

PA 66

HB

B - inverse

5

-40 ... 85

60 V

4 A

≤ 3 mΩ

≥ 100 MΩ

CuSn

Au

PA 66

HB

B - inverse

5

-40 ... 85

#### Ordering data

Order No. Pcs. / Pkt.

Order No. Pcs. / Pkt.

##### Spring-cage connection

##### Screw connection

1432826 1

1507777 1

1432800 1

1507764 1

1432839 1

1432813 1

#### Ordering data

Order No. Pcs. / Pkt.

Order No. Pcs. / Pkt.

##### Spring-cage connection

##### Screw connection

1432868 1

1507777 1

1432842 1

1507764 1

1432871 1

1432855 1

#### Plug-in connector

Socket, straight

Plug, straight

Socket, angled

Plug, angled

## M12 plug-in connector, shielded



M12 plug-in connectors  
that can be assembled for DeviceNet™



M12 plug-in connectors  
that can be assembled for CC-Link



| Technical data         |  |                  |  |
|------------------------|--|------------------|--|
| Spring-cage connection |  | Screw connection |  |
| IEC 61076-2-101        |  | IEC 61076-2-101  |  |
| 3                      |  | 3                |  |
| IP67                   |  | IP67             |  |
| Spring-cage conn.      |  | Screw connection |  |
| 60 V                   |  | 60 V             |  |
| 4 A                    |  | 4 A              |  |
| ≤ 8 mΩ                 |  | ≤ 3 mΩ           |  |
| ≥ 100 MΩ               |  | ≥ 100 MΩ         |  |
| CuSn                   |  | CuSn             |  |
| Ni/Au                  |  | Au               |  |
| TPU                    |  | PA 66            |  |
| V0                     |  | HB               |  |
| A - standard           |  | A - standard     |  |
| -40 ... 85             |  | -40 ... 85       |  |

| Ordering data          |             |                  |             |
|------------------------|-------------|------------------|-------------|
| Order No.              | Pcs. / Pkt. | Order No.        | Pcs. / Pkt. |
| Spring-cage connection |             | Screw connection |             |
| 1432787                | 1           | 1508365          | 1           |
| 1432761                | 1           | 1508352          | 1           |
| 1432790                | 1           |                  |             |
| 1432774                | 1           |                  |             |



| Technical data         |  |  |  |
|------------------------|--|--|--|
| Spring-cage connection |  |  |  |
| IEC 61076-2-101        |  |  |  |
| 3                      |  |  |  |
| IP67                   |  |  |  |
| Spring-cage conn.      |  |  |  |
| 60 V                   |  |  |  |
| 4 A                    |  |  |  |
| ≤ 8 mΩ                 |  |  |  |
| ≥ 100 MΩ               |  |  |  |
| CuSn                   |  |  |  |
| Ni/Au                  |  |  |  |
| PA 66                  |  |  |  |
| V0                     |  |  |  |
| A - standard           |  |  |  |
| -40 ... 85             |  |  |  |

| Ordering data          |             |           |             |
|------------------------|-------------|-----------|-------------|
| Order No.              | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| Spring-cage connection |             |           |             |
| 1559770                | 1           |           |             |
| 1559767                | 1           |           |             |

M12 circular plug-in connector according to:

Pollution degree  
Degree of protection  
Connection method

## Electrical data

Rated voltage  
Rated current  
Volume resistance  
Insulation resistance

## Material data

Contact material  
Contact surface material  
Contact carrier material  
Inflammability class according to UL 94  
Coding

## Temperature data

Plug / socket

[°C]

## Description

## Plug-in connector

Socket, straight  
Plug, straight  
Socket, angled  
Plug, angled



# Data plug-in connectors

## Fieldbus components - M12 flush-type plug-in connectors

### Flush-type plug-in connector, one-piece, rear mounting



M12 flush-type plug-in connector with solder connection



M12 flush-type plug-in connector with solder connection

M12 circular plug-in connector according to:

Pollution degree  
Degree of protection  
Connection method

Electrical data

Rated voltage

Rated current

Volume resistance

Insulation resistance

Material data

Material contact / contact surface

Contact carrier material

Inflammability class according to UL 94

Coding

Temperature data

Plug / socket

[°C]

#### Technical data

Without shield contact

IEC 61076-2-101

3

IP67

Solder pins

With shield contact

IEC 61076-2-101

3

IP67

Solder pins

60 V

4 A

≤ 3 mΩ

≥ 100 MΩ

CuZn / Au

PA 66

V0

B - inverse

-25 ... 85

#### Technical data

Without shield contact

IEC 61076-2-101

3

IP67

Solder pins

With shield contact

IEC 61076-2-101

3

IP67

Solder pins

60 V

4 A

≤ 3 mΩ

≥ 100 MΩ

CuZn / Au

PA 66

V0

A - standard

-25 ... 85

#### Ordering data

Description

Flush-type plug-in connector, Pg9 fastening thread

Socket

Plug

Flush-type plug-in connector, M12 fastening thread

Plug

EMC hexagonal nuts with fine toothing, for all flush-type plug-in connectors with:

Pg9 fastening thread

M12 fastening thread

Order No.

Pcs. / Pkt.

Order No.

Pcs. / Pkt.

Without shield contact

With shield contact

1543647

20

1553022

20

1553051

20

1551846

20

1552971

20

1440177

10

1440177

10

1440151

10

1440151

10

#### Ordering data

Order No.

Pcs. / Pkt.

Order No.

Pcs. / Pkt.

Without shield contact

With shield contact

1542761

20

1553019

20

1542745

20

1553048

20

1551833

20

1552968

20

1440177

10

1440177

10

1440151

10

1440151

10

## Flush-type plug-in connector, two-piece, rear mounting



M12 flush-type plug-in connector  
with solder connection



M12 flush-type plug-in connector  
with solder connection



### Technical data

M12 circular plug-in connector according to:

Pollution degree  
Degree of protection  
Connection method

#### Electrical data

Rated voltage  
Rated current  
Volume resistance  
Insulation resistance

#### Material data

Material contact / contact surface  
Contact carrier material  
Inflammability class according to UL 94

#### Temperature data

Plug / socket [°C]

#### Wave soldering

IEC 61076-2-101  
3  
IP67  
Solder pins

#### THR process

IEC 61076-2-101  
3  
IP67  
THR solder connection

60 V

4 A

≤ 3 mΩ

≥ 100 MΩ

CuZn / Ni/Au

PA 66

HB

-25 ... 85

60 V

4 A

≤ 3 mΩ

≥ 100 MΩ

CuZn / Au

PPA

V0

-25 ... 85

### Ordering data

#### Order No.

Pcs. / Pkt.

#### Order No.

Pcs. / Pkt.

#### Wave soldering

#### THR process

Flush-type plug-in connector, M12 fixing, straight contacts

Socket

Plug

Flush-type plug-in connector, M12 fixing, angled contacts

Socket

Plug

1437180

10

1542635

60

1437203

10

1552188

60

1436576

10

1436615

10

### Technical data

#### Wave soldering

IEC 61076-2-101  
3  
IP67  
Solder pins

#### THR process

IEC 61076-2-101  
3  
IP67  
THR solder connection

60 V

4 A

≤ 3 mΩ

≥ 100 MΩ

CuZn / Au

PA 66

HB

-25 ... 85

60 V

4 A

≤ 3 mΩ

≥ 100 MΩ

CuZn / Au

PPA

V0

-25 ... 85

### Ordering data

#### Order No.

Pcs. / Pkt.

#### Order No.

Pcs. / Pkt.

#### Wave soldering

#### THR process

1694237

10

1434879

60

1694211

10

1439968

60

1438024

10

1438037

10

# Data plug-in connectors

## Fieldbus components - M12 flush-type plug-in connectors

### Flush-type plug-in connector, with pre-assembled cable, type 900



Rear mounting



Front mounting, can be positioned



| Technical data       |                      |
|----------------------|----------------------|
| M16 fastening thread | Pg9 fastening thread |
| IEC 61076-2-101      | IEC 61076-2-101      |
| 3                    | 3                    |
| IP67                 | IP67                 |
| 60 V                 | 60 V                 |
| 4 A                  | 4 A                  |
| ≤ 3 mΩ               | ≤ 3 mΩ               |
| ≥ 100 MΩ             | ≥ 100 MΩ             |
| CuZn / Ni/Au         | CuZn / Ni/Au         |
| PA 66                | PA 66                |
| V0                   | V0                   |
| -25 ... 85           | -25 ... 85           |

| Ordering data        |                      |
|----------------------|----------------------|
| Order No.            | Pcs. / Pkt.          |
| M16 fastening thread | Pg9 fastening thread |
| 1534546              | 1437601              |
| 1534504              | 1437643              |
| 1534559              | 1437614              |
| 1534517              | 1437656              |
| 1534562              | 1437627              |
| 1534520              | 1437669              |
| 1534575              | 1437630              |
| 1534533              | 1437672              |
| 1440164              | 1440177              |



| Technical data       |             |
|----------------------|-------------|
| M16 fastening thread |             |
| IEC 61076-2-101      | -           |
| 3                    | -           |
| IP67                 | -           |
| 60 V                 | -           |
| 4 A                  | -           |
| ≤ 3 mΩ               | -           |
| ≥ 100 MΩ             | -           |
| CuZn / Ni/Au         | - / -       |
| PA 66                | -           |
| V0                   | -           |
| -25 ... 85           | -           |
| Ordering data        |             |
| Order No.            | Pcs. / Pkt. |
| M16 fastening thread |             |
| 1529742              | 1           |
| 1529629              | 1           |
| 1529755              | 1           |
| 1530223              | 1           |
| 1529768              | 1           |
| 1529726              | 1           |
| 1529771              | 1           |
| 1529739              | 1           |

M12 circular plug-in connector according to:

Pollution degree

Degree of protection

Electrical data

Rated voltage

Rated current

Volume resistance

Insulation resistance

Material data

Material contact / contact surface

Contact carrier material

Inflammability class according to UL 94

Temperature data

Plug / socket [°C]

Description

Cable length

**Flush-type plug-in connector**, B-coded, with bus system cable, 6-wire, shielded, PUR halogen-free, green outer cable sheath, 3 x 2 x 0.25 mm<sup>2</sup>

|        |       |
|--------|-------|
| Socket | 0.5 m |
| Plug   | 0.5 m |
| Socket | 1 m   |
| Plug   | 1 m   |
| Socket | 2 m   |
| Plug   | 2 m   |
| Socket | 5 m   |
| Plug   | 5 m   |

**EMC hexagonal nuts** with fine toothing, for all flush-type plug-in connectors with:

**M16** fastening thread

**Pg9** fastening thread

# Flush-type plug-in connector, with pre-assembled cable, type 910

PROFI  
BUS



Rear mounting

PROFI  
BUS



Front mounting,  
can be positioned



## Technical data

| M16 fastening thread | Pg9 fastening thread |
|----------------------|----------------------|
| IEC 61076-2-101      | IEC 61076-2-101      |
| 3                    | 3                    |
| IP67                 | IP67                 |
| 60 V                 | 60 V                 |
| 4 A                  | 4 A                  |
| ≤ 3 mΩ               | ≤ 3 mΩ               |
| ≥ 100 MΩ             | ≥ 100 MΩ             |
| CuZn / Ni/Au         | CuZn / Ni/Au         |
| PA 66                | PA 66                |
| V0                   | V0                   |
| -25 ... 85           | -25 ... 85           |

## Ordering data

| Order No.            | Pcs. / Pkt. | Order No.            | Pcs. / Pkt. |
|----------------------|-------------|----------------------|-------------|
| M16 fastening thread |             | Pg9 fastening thread |             |
| 1534384              | 1           | 1437449              | 1           |
| 1534342              | 1           | 1437481              | 1           |
| 1534397              | 1           | 1437452              | 1           |
| 1534355              | 1           | 1437494              | 1           |
| 1534407              | 1           | 1437465              | 1           |
| 1534368              | 1           | 1437504              | 1           |
| 1534410              | 1           | 1437478              | 1           |
| 1534371              | 1           | 1437517              | 1           |
| 1440164              | 10          | 1440177              | 10          |



## Technical data

| M16 fastening thread |       |
|----------------------|-------|
| IEC 61076-2-101      | -     |
| 3                    | -     |
| IP67                 | -     |
| 60 V                 | -     |
| 4 A                  | -     |
| ≤ 3 mΩ               | -     |
| ≥ 100 MΩ             | -     |
| CuZn / Ni/Au         | - / - |
| PA 66                | -     |
| V0                   | -     |
| -25 ... 85           | -     |

## Ordering data

| Order No.            | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|----------------------|-------------|-----------|-------------|
| M16 fastening thread |             |           |             |
| 1525597              | 1           |           |             |
| 1525555              | 1           |           |             |
| 1525607              | 1           |           |             |
| 1525568              | 1           |           |             |
| 1519574              | 1           |           |             |
| 1519561              | 1           |           |             |
| 1525610              | 1           |           |             |
| 1525571              | 1           |           |             |

M12 circular plug-in connector according to:

Pollution degree

Degree of protection

Electrical data

Rated voltage

Rated current

Volume resistance

Insulation resistance

Material data

Material contact / contact surface

Contact carrier material

Inflammability class according to UL 94

Temperature data

Plug / socket

[°C]

Description

Cable length

**Flush-type plug-in connector**, B-coded, with bus system cable,  
2-wire, shielded, PUR halogen-free, violet outer cable sheath,  
1 x 2 x 0.25 mm<sup>2</sup>

|        |       |
|--------|-------|
| Socket | 0.5 m |
| Plug   | 0.5 m |
| Socket | 1 m   |
| Plug   | 1 m   |
| Socket | 2 m   |
| Plug   | 2 m   |
| Socket | 5 m   |
| Plug   | 5 m   |

**EMC hexagonal nuts** with fine toothing, for all flush-type plug-in  
connectors with:

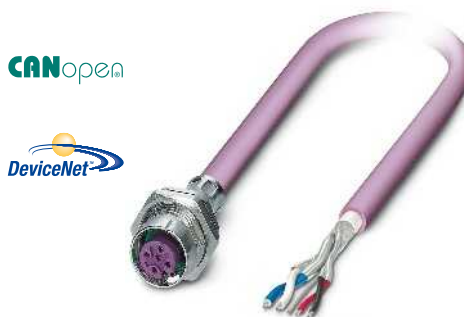
**M16** fastening thread

**Pg9** fastening thread

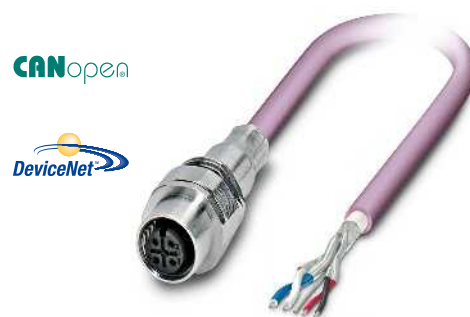
# Data plug-in connectors

## Fieldbus components - M12 flush-type plug-in connectors

### Flush-type plug-in connector, with pre-assembled cable, type 920



Rear mounting



Front mounting, can be positioned

M12 circular plug-in connector according to:

Pollution degree

Degree of protection

Electrical data

Rated voltage

Rated current

Volume resistance

Insulation resistance

Material data

Material contact / contact surface

Contact carrier material

Inflammability class according to UL 94

Temperature data

Plug / socket [°C]



| Technical data       |                      |
|----------------------|----------------------|
| M16 fastening thread | Pg9 fastening thread |
| IEC 61076-2-101      | IEC 61076-2-101      |
| 3                    | 3                    |
| IP67                 | IP67                 |
| 60 V                 | 60 V                 |
| 4 A                  | 4 A                  |
| ≤ 3 mΩ               | ≤ 3 mΩ               |
| ≥ 100 MΩ             | ≥ 100 MΩ             |
| CuZn / Ni/Au         | CuZn / Ni/Au         |
| PA 66                | PA 66                |
| V0                   | V0                   |
| -25 ... 85           | -25 ... 85           |



| Technical data       |       |
|----------------------|-------|
| M16 fastening thread |       |
| IEC 61076-2-101      | -     |
| 3                    | -     |
| IP67                 | -     |
| 60 V                 | -     |
| 4 A                  | -     |
| ≤ 3 mΩ               | -     |
| ≥ 100 MΩ             | -     |
| CuZn / Ni/Au         | - / - |
| PA 66                | -     |
| V0                   | -     |
| -25 ... 85           | -     |

| Ordering data        |             |                      |             |
|----------------------|-------------|----------------------|-------------|
| Order No.            | Pcs. / Pkt. | Order No.            | Pcs. / Pkt. |
| M16 fastening thread |             | Pg9 fastening thread |             |

| Ordering data        |             |           |             |
|----------------------|-------------|-----------|-------------|
| Order No.            | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| M16 fastening thread |             |           |             |

**Flush-type plug-in connector**, A-coded, with bus system cable, 4-wire, shielded, PUR halogen-free, violet outer cable sheath, 2 x 0.34 mm<sup>2</sup>; 2 x 0.25 mm<sup>2</sup>

|        |       |
|--------|-------|
| Socket | 0.5 m |
| Plug   | 0.5 m |
| Socket | 1 m   |
| Plug   | 1 m   |
| Socket | 2 m   |
| Plug   | 2 m   |
| Socket | 5 m   |
| Plug   | 5 m   |

|         |   |         |   |
|---------|---|---------|---|
| 1534465 | 1 | 1437520 | 1 |
| 1534423 | 1 | 1437562 | 1 |
| 1534478 | 1 | 1437533 | 1 |
| 1534436 | 1 | 1437575 | 1 |
| 1534481 | 1 | 1437546 | 1 |
| 1534449 | 1 | 1437588 | 1 |
| 1534494 | 1 | 1437559 | 1 |
| 1534452 | 1 | 1437591 | 1 |

|         |   |
|---------|---|
| 1525678 | 1 |
| 1525623 | 1 |
| 1525681 | 1 |
| 1525636 | 1 |
| 1525694 | 1 |
| 1525649 | 1 |
| 1525704 | 1 |
| 1525652 | 1 |

**EMC hexagonal nuts** with fine toothing, for all flush-type plug-in connectors with:

**M16 fastening thread**

**Pg9 fastening thread**

|         |    |         |    |
|---------|----|---------|----|
| 1440164 | 10 | 1440177 | 10 |
|---------|----|---------|----|

**M12 flush-type plug-in connector, shielded**

With 0.5 m long litz wires,  
front mounting



With solder pins,  
rear mounting

**Technical data**

|                                              |                  |
|----------------------------------------------|------------------|
| M12 circular plug-in connector according to: | IEC 61076-2-101  |
| Pollution degree                             | 3                |
| Degree of protection                         | IP67             |
| Connection method                            | Individual wires |
| Electrical data                              |                  |
| Rated voltage                                | 250 V            |
| Rated current                                | 4 A              |
| Volume resistance                            | ≤ 3 mΩ           |
| Insulation resistance                        | ≥ 100 MΩ         |
| Material data                                |                  |
| Material contact / contact surface           | CuZn / Ni/Au     |
| Contact carrier material                     | PA66 GF          |
| Inflammability class according to UL 94      | V0               |
| Temperature data                             |                  |
| Plug / socket                                | -25 ... 85 [°C]  |

**Ordering data**

| Description                      | Coding       |
|----------------------------------|--------------|
| <b>Device plug-in connectors</b> |              |
| Socket                           | A - standard |
| Plug                             | A - standard |

| Type                           | Order No. | Pcs. / Pkt. |
|--------------------------------|-----------|-------------|
| SACC-E-M12FS-4CON-PG9/0,5 FFVA | 1431429   | 1           |
| SACC-E-M12MS-4CON-PG9/0,5 FFVA | 1431432   | 1           |

**Technical data**

|                 |
|-----------------|
| IEC 61076-2-101 |
| 3               |
| IP67/IP69K      |
| Solder pins     |
| 60 V            |
| 4 A             |
| ≤ 3 mΩ          |
| ≥ 100 MΩ        |
| CuZn / Au       |
| PA 66           |
| V0              |
| -25 ... 85      |

**Ordering data**

| Type                        | Order No. | Pcs. / Pkt. |
|-----------------------------|-----------|-------------|
| SACC-DSI-M12FS-5CON-L180 VA | 1554733   | 20          |
| SACC-DSI-M12MS-5CON-L180 VA | 1554746   | 20          |

# Data plug-in connectors

## Cable range

### Symbol key



With UL Style



Suitable for use with drag chain



Resistant to welding sparks



UV resistant



Extremely flame-retardant



High temperature resistance



Good oil resistance



Good resistance to chemicals



Suitable for torsional stress



Halogen-free



Transmission properties

### INTERBUS cable – type 900



INTERBUS cable for highly flexible use in dry and humid areas and harsh industrial environments. The remote bus cable is certified in accordance with the requirements of the INTERBUS Club under No. 117.

The cable is halogen-free and flame-retardant according to VDE 0482, Part 265-2-1/ IEC 332-1. The wire insulation of the inner conductor is made from polyethylene.

**Outer sheath material** PVC

**Minimum bending radius** 7.5 x D  
**Tested at** 20 ... 25°C

| Type                | No. of positions | Use | Structure                                   | Cross section | Wire colors                                   | Wire insulation | Temperature range | Page |
|---------------------|------------------|-----|---------------------------------------------|---------------|-----------------------------------------------|-----------------|-------------------|------|
| 900<br>PVC<br>Green | 6-pos.           | M12 | 3 x 2 x 0.25 mm <sup>2</sup><br>32 x 0.1 mm |               | Yellow, green,<br>white, brown,<br>pink, gray | PE              | -30°C ... 70°C    | 190  |

### PROFIBUS cable – type 910



PROFIBUS cable, suitable for use in drag chains in harsh industrial environments. The cable is also oil resistant.

**Outer sheath material** PUR

**Number of bending cycles** 5 million  
**Minimum bending radius** 10 x D  
**Traverse path** 10 m  
**Acceleration** 7 m/s<sup>2</sup>  
**Speed** 180 m/min.  
**Tested at** 20 ... 25°C

| Type                 | No. of positions | Use | Structure                      | Cross section | Wire colors | Wire insulation | Temperature range | Page |
|----------------------|------------------|-----|--------------------------------|---------------|-------------|-----------------|-------------------|------|
| 910<br>PUR<br>Violet | 2-pos.           | M12 | 1 x 2 x 24 AWG<br>19 x 0.15 mm |               | Green, red  | PE              | -40°C ... 80°C    | 191  |

## DeviceNet™/CANopen® cable – type 920



DeviceNet™/CANopen® cable for flexible installation. The cable is suitable for use with drag chain and in harsh industrial environments. The cable is also oil resistant.

|                                 |                          |
|---------------------------------|--------------------------|
| <b>Outer sheath material</b>    | <b>PUR</b>               |
| <b>Number of bending cycles</b> | <b>5 million</b>         |
| <b>Minimum bending radius</b>   | <b>10 x D</b>            |
| <b>Traverse path</b>            | <b>10 m</b>              |
| <b>Acceleration</b>             | <b>7 m/s<sup>2</sup></b> |
| <b>Speed</b>                    | <b>180 m/min.</b>        |
| <b>Tested at</b>                | <b>20 ... 25°C</b>       |

| Type                 | No. of positions | Use        | Structure                                                             | Cross section | Wire colors                | Wire insulation | Temperature range | Page |
|----------------------|------------------|------------|-----------------------------------------------------------------------|---------------|----------------------------|-----------------|-------------------|------|
| 920<br>PUR<br>Violet | 4-pos.           | M12,<br>M8 | 1 x 2 x 22 AWG<br>19 x 0.15 mm<br>+<br>1 x 2 x 24 AWG<br>19 x 0.15 mm |               | Red, black,<br>blue, white | PO, PE          | -40°C ... 80°C    | 192  |

## DeviceNet™/CANopen® cable - type 923



DeviceNet™/CANopen® cable for flexible installation. The cable is suitable for use with drag chain and in harsh industrial environments. The cable is also oil resistant.

|                                 |                          |
|---------------------------------|--------------------------|
| <b>Outer sheath material</b>    | <b>PUR</b>               |
| <b>Number of bending cycles</b> | <b>5 million</b>         |
| <b>Minimum bending radius</b>   | <b>10 x D</b>            |
| <b>Traverse path</b>            | <b>10 m</b>              |
| <b>Acceleration</b>             | <b>7 m/s<sup>2</sup></b> |
| <b>Speed</b>                    | <b>180 m/min.</b>        |
| <b>Tested at</b>                | <b>20 ... 25°C</b>       |

| Type               | No. of positions | Use          | Structure                                                             | Cross section | Wire colors                | Wire insulation | Temperature range | Page          |
|--------------------|------------------|--------------|-----------------------------------------------------------------------|---------------|----------------------------|-----------------|-------------------|---------------|
| 923<br>PUR<br>Gray | 4-pos.           | M12,<br>7/8" | 1 x 2 x 22 AWG<br>19 x 0.15 mm<br>+<br>1 x 2 x 24 AWG<br>19 x 0.15 mm |               | Red, black,<br>blue, white | PO, PE          | -40°C ... 80°C    | See Catalog 4 |

## DeviceNet™ cable - type 928



DeviceNet™/CANopen® cable for fixed installation. The cable is suitable for use in harsh industrial environments. The cable is also oil resistant.

|                               |               |
|-------------------------------|---------------|
| <b>Outer sheath material</b>  | <b>PVC</b>    |
| <b>Minimum bending radius</b> | <b>10 x D</b> |

| Type               | No. of positions | Use  | Structure                                                             | Cross section | Wire colors                | Wire insulation | Temperature range        | Page          |
|--------------------|------------------|------|-----------------------------------------------------------------------|---------------|----------------------------|-----------------|--------------------------|---------------|
| 928<br>PVC<br>Gray | 4-pos.           | 7/8" | 1 x 2 x 18 AWG<br>19 x 0.26 mm<br>+<br>1 x 2 x 15 AWG<br>19 x 0.34 mm |               | Red, black,<br>blue, white | PVC             | Fixed:<br>-40°C ... 80°C | See Catalog 4 |



# Data plug-in connectors

## Cable range

### FOUNDATION Fieldbus cable – type 960

### FOUNDATION Fieldbus/PROFIBUS PA cable – type 961



FOUNDATION Fieldbus cable for fixed installation. The cable is UV resistant and flame-retardant according to UL 1685. This makes it suitable for use both outdoors and indoors.

Cable type 961 is available in a blue version designed specifically for use in the Ex area.

**Outer sheath material** PVC

**Minimum bending radius** 10 x D

| Type                 | No. of positions | Use          | Structure                | Cross section | Wire colors  | Wire insulation | Temperature range | Page          |
|----------------------|------------------|--------------|--------------------------|---------------|--------------|-----------------|-------------------|---------------|
| 960<br>PVC<br>Orange | 2-pos.           | 7/8",<br>M12 | 2 x 20 AWG<br>7 x 0.3 mm |               | Blue, orange | PO              | -30°C ... 105°C   | See Catalog 4 |
| 961<br>PVC<br>Blue   | 2-pos.           | 7/8",<br>M12 | 2 x 20 AWG<br>7 x 0.3 mm |               | Blue, orange | PO              | -30°C ... 105°C   | See Catalog 4 |

### CC-Link cable – type 990



CC-Link cable for fixed indoor installation. The cable is flame-retardant according to UL 1685.

**Outer sheath material** PVC

| Type              | No. of positions | Use | Structure                 | Cross section | Wire colors            | Wire insulation | Temperature range | Page                                        |
|-------------------|------------------|-----|---------------------------|---------------|------------------------|-----------------|-------------------|---------------------------------------------|
| 990<br>PVC<br>Red | 3-pos.           | M12 | 3 x 22 AWG<br>7 x 0.28 mm |               | White, blue,<br>yellow | Foam PE         | -30°C ... 60°C    | See:<br>phoenix<br>contact.net/<br>products |

### PROFINET cable – type 93A



PROFINET cable for fixed installation. The cable is flame-retardant and its transmission properties meet CAT5e.

**Outer sheath material** PVC

**Minimum bending radius** 7.5 x D

| Type                | No. of positions | Use          | Structure                   | Cross section | Wire colors                    | Wire insulation | Temperature range | Page |
|---------------------|------------------|--------------|-----------------------------|---------------|--------------------------------|-----------------|-------------------|------|
| 93A<br>PVC<br>Green | 4-pos.           | M12,<br>RJ45 | 4 x 22 AWG<br>single-strand |               | White, yellow,<br>blue, orange | PE              | -25°C ... 80°C    | 105  |

**PROFINET cable – type 93B**

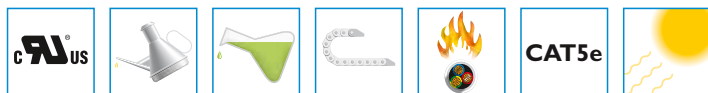
PROFINET cable for flexible installation. The cable is oil resistant. It is UV resistant according to UL 1581 Sec. 1200 and therefore also suitable for outdoor use.

The cable's transmission properties meet CAT5e.

**Outer sheath material** PVC

**Minimum bending radius** 7 x D  
**Tested at** 20 ... 25°C

| Type                | No. of positions | Use          | Structure                 | Cross section | Wire colors                    | Wire insulation | Temperature range | Page             |
|---------------------|------------------|--------------|---------------------------|---------------|--------------------------------|-----------------|-------------------|------------------|
| 93B<br>PVC<br>Green | 4-pos.           | M12,<br>RJ45 | 4 x 22 AWG<br>7 x 0.25 mm |               | White, yellow,<br>blue, orange | PE              | -40°C ... 70°C    | 97<br>105<br>106 |

**PROFINET cable – type 93C**

PROFINET cable for use in drag chains. The cable is halogen-free and oil resistant. It is UV resistant and therefore also suitable for outdoor use. The cable's transmission properties meet CAT5e.

**Outer sheath material** PUR

**Number of bending cycles** 3 million  
**Minimum bending radius** 7.5 x D  
**Traverse path** 10 m  
**Acceleration** 4 m/s<sup>2</sup>  
**Speed** 4 m/s  
**Tested at** 20 ... 25°C

| Type                | No. of positions | Use          | Structure                 | Cross section | Wire colors                    | Wire insulation | Temperature range | Page       |
|---------------------|------------------|--------------|---------------------------|---------------|--------------------------------|-----------------|-------------------|------------|
| 93C<br>PUR<br>Green | 4-pos.           | M12,<br>RJ45 | 4 x 22 AWG<br>7 x 0.25 mm |               | White, yellow,<br>blue, orange | PE              | -40°C ... 70°C    | 105<br>106 |

**PROFINET cable – type 93R**

PROFINET cable for robot applications. The cable is oil resistant. It is UV resistant according to UL 1581 Sec. 1200 and therefore also suitable for outdoor use.

The cable's transmission properties meet CAT5e.

**Outer sheath material** PUR

**Torsion angle** ±180°  
**Torsion cycles** 1 million

| Type                | No. of positions | Use          | Structure                  | Cross section | Wire colors                    | Wire insulation | Temperature range | Page       |
|---------------------|------------------|--------------|----------------------------|---------------|--------------------------------|-----------------|-------------------|------------|
| 93R<br>PUR<br>Green | 4-pos.           | M12,<br>RJ45 | 4 x 22 AWG<br>19 x 0.15 mm |               | White, yellow,<br>blue, orange | PE              | -40°C ... 80°C    | 105<br>106 |

# Data plug-in connectors

## Cable range

### PROFINET cable – type 937



PROFINET cable for railway applications. The cable is oil resistant. It meets fire safety standard BS6853.

The cable's transmission properties meet CAT5e.

**Outer sheath material** RADOX® GKW S

**Minimum bending radius** 6 x D

| Type                   | No. of positions | Use          | Structure                 | Cross section                                                                     | Wire colors                    | Wire insulation | Temperature range | Page       |
|------------------------|------------------|--------------|---------------------------|-----------------------------------------------------------------------------------|--------------------------------|-----------------|-------------------|------------|
| 937<br>RADOX®<br>Black | 4-pos.           | M12,<br>RJ45 | 4 x 22 AWG<br>7 x 0.25 mm |  | White, yellow,<br>blue, orange | RADOX®          | -40°C ... 90°C    | 105<br>106 |

### EtherCAT cable - type 93G



EtherCAT cable for flexible installation. The cable is oil resistant. It is UV resistant according to UL 1581 Sec. 1200 and is therefore also suitable for use in harsh industrial environments.

The cable's transmission properties meet CAT5e.

**Outer sheath material** PVC

**Minimum bending radius** 7 x D  
**Tested at** 20 ... 25°C

| Type                | No. of positions | Use                 | Structure                 | Cross section                                                                       | Wire colors                    | Wire insulation | Temperature range | Page |
|---------------------|------------------|---------------------|---------------------------|-------------------------------------------------------------------------------------|--------------------------------|-----------------|-------------------|------|
| 93G<br>PVC<br>Green | 4-pos.           | M12,<br>PP,<br>RJ45 | 4 x 22 AWG<br>7 x 0.25 mm |  | White, yellow,<br>blue, orange | PE              | -40°C ... 70°C    | 108  |

### sercos III cable - type 93K



sercos III cable for flexible installation. The cable is oil resistant. It is UV resistant according to UL 1581 Sec. 1200 and is therefore also suitable for use in harsh industrial environments.

The cable's transmission properties meet CAT5e.

**Outer sheath material** PVC

**Minimum bending radius** 7 x D  
**Tested at** 20 ... 25°C

| Type              | No. of positions | Use                 | Structure                 | Cross section                                                                       | Wire colors                    | Wire insulation | Temperature range | Page                                        |
|-------------------|------------------|---------------------|---------------------------|-------------------------------------------------------------------------------------|--------------------------------|-----------------|-------------------|---------------------------------------------|
| 93K<br>PVC<br>Red | 4-pos.           | M12,<br>PP,<br>RJ45 | 4 x 22 AWG<br>7 x 0.25 mm |  | White, yellow,<br>blue, orange | PE              | -40°C ... 70°C    | See:<br>phoenix<br>contact.net/<br>products |

## Ethernet cable – type 93E



Ethernet cable for flexible use. The cable is halogen-free and oil resistant. Its transmission properties meet CAT5e.

**Outer sheath material** PUR

**Minimum bending radius** 5 x D

| Type               | No. of positions | Use          | Structure                     | Cross section | Wire colors                               | Wire insulation | Temperature range | Page     |
|--------------------|------------------|--------------|-------------------------------|---------------|-------------------------------------------|-----------------|-------------------|----------|
| 93E<br>PUR<br>Blue | 4-pos.           | M12,<br>RJ45 | 2 x 2 x 26 AWG<br>7 x 0.25 mm |               | White/orange-orange,<br>white/green-green | PE              | -20°C ... 80°C    | 96<br>98 |

## Ethernet cable – type 94A



Ethernet cable for fixed installation. The cable's transmission properties meet CAT5e.

**Outer sheath material** PUR

**Minimum bending radius** 7 x D  
**Tested at** 20 ... 25°C

| Type               | No. of positions | Use                 | Structure                                       | Cross section | Wire colors                                                                         | Wire insulation | Temperature range | Page |
|--------------------|------------------|---------------------|-------------------------------------------------|---------------|-------------------------------------------------------------------------------------|-----------------|-------------------|------|
| 94A<br>PUR<br>Blue | 8-pos.           | M12,<br>PP,<br>RJ45 | 4 x 2 x 24 AWG<br>single-strand<br>Twisted pair |               | White/blue-blue,<br>white/orange-orange,<br>white/green-green,<br>white/brown-brown | PE              | -20°C ... 70°C    | 96   |

## Ethernet cable – type 94B



Ethernet cable for flexible installation. The cable is resistant to oil and chemicals and is flame-retardant. The cable's transmission properties meet CAT5e.

**Outer sheath material** PUR

**Minimum bending radius** 5 x D

| Type               | No. of positions | Use          | Structure                     | Cross section | Wire colors                                                                         | Wire insulation | Temperature range | Page      |
|--------------------|------------------|--------------|-------------------------------|---------------|-------------------------------------------------------------------------------------|-----------------|-------------------|-----------|
| 94B<br>PUR<br>Blue | 8-pos.           | M12,<br>RJ45 | 4 x 2 x 26 AWG<br>7 x 0.25 mm |               | White/blue-blue,<br>white/orange-orange,<br>white/green-green,<br>white/brown-brown | PE              | -40°C ... 80°C    | 96<br>100 |

# Data plug-in connectors

## Cable range

### Ethernet cable – type 94P



Ethernet cable for flexible installation. The cable is flame-retardant and halogen-free. The cable's transmission properties meet CAT5e.

**Outer sheath material** PUR

**Minimum bending radius** 90 mm (mobile)  
50 mm (fixed installation)

| Type               | No. of positions | Use          | Structure                     | Cross section | Wire colors                                                                             | Wire insulation | Temperature range | Page |
|--------------------|------------------|--------------|-------------------------------|---------------|-----------------------------------------------------------------------------------------|-----------------|-------------------|------|
| 94P<br>PUR<br>Blue | 8-pos.           | M12,<br>RJ45 | 4 x 2 x 26 AWG<br>7 x 0.16 mm |               | White-blue, blue,<br>white-orange, orange,<br>white-green, green,<br>white-brown, brown | PE              | -20°C ... 70°C    | 110  |

### Ethernet cable – type 94C



Ethernet cable for universal use in drag chains. The cable is resistant to oil and chemicals and is flame-retardant. The cable's transmission properties meet CAT5e.

**Outer sheath material** PUR

**Minimum bending radius** 5 x D

| Type               | No. of positions | Use          | Structure                      | Cross section | Wire colors                                                                             | Wire insulation | Temperature range | Page      |
|--------------------|------------------|--------------|--------------------------------|---------------|-----------------------------------------------------------------------------------------|-----------------|-------------------|-----------|
| 94C<br>PUR<br>Blue | 8-pos.           | M12,<br>RJ45 | 4 x 2 x 26 AWG<br>19 x 0.10 mm |               | White-blue, blue,<br>white-orange, orange,<br>white-green, green,<br>white-brown, brown | PP              | -20°C ... 80°C    | 96<br>100 |

### Ethernet cable – type 94D



Ethernet cable for flexible installation. The cable is oil resistant. It is UV resistant according to UL 1581 Sec. 1200 and therefore also suitable for outdoor use. The cable's transmission properties meet CAT5e.

**Outer sheath material** PVC

| Type                | No. of positions | Use                 | Structure                                     | Cross section | Wire colors                                                                             | Wire insulation | Temperature range | Page |
|---------------------|------------------|---------------------|-----------------------------------------------|---------------|-----------------------------------------------------------------------------------------|-----------------|-------------------|------|
| 94D<br>PVC<br>Black | 8-pos.           | M12,<br>PP,<br>RJ45 | 4 x 2 x 26 AWG<br>7 x 0.16 mm<br>Twisted pair |               | White-blue, blue,<br>white-orange, orange,<br>white-green, green,<br>white-brown, brown | PP              | -40°C ... 80°C    | 96   |

## Ethernet cable – type 94E



Ethernet cable for fixed installation. The cable is resistant to oil and chemicals and is flame-retardant. It is also halogen-free and its transmission properties meet CAT6<sub>A</sub>.

Outer sheath material **PUR**

| Type                             | No. of positions | Use                 | Structure                                       | Cross section | Wire colors                                                                             | Wire insulation | Temperature range | Page |
|----------------------------------|------------------|---------------------|-------------------------------------------------|---------------|-----------------------------------------------------------------------------------------|-----------------|-------------------|------|
| <b>94E</b><br><b>PUR</b><br>Blue | 8-pos.           | M12,<br>PP,<br>RJ45 | 4 x 2 x 23 AWG<br>single-strand<br>Twisted pair |               | White-blue, blue,<br>white-orange, orange,<br>white-green, green,<br>white-brown, brown | PE              | -20°C ... 80°C    | 96   |

## Ethernet cable – type 94F



Ethernet cable for flexible installation. The cable is resistant to oil and chemicals and is flame-retardant. It is also halogen-free and its transmission properties meet CAT6<sub>A</sub>.

Outer sheath material **PUR**

Minimum bending radius **10 x D**

| Type                             | No. of positions | Use                 | Structure                                     | Cross section | Wire colors                                                                             | Wire insulation | Temperature range | Page |
|----------------------------------|------------------|---------------------|-----------------------------------------------|---------------|-----------------------------------------------------------------------------------------|-----------------|-------------------|------|
| <b>94F</b><br><b>PUR</b><br>Blue | 8-pos.           | M12,<br>PP,<br>RJ45 | 4 x 2 x 26 AWG<br>7 x 0.16 mm<br>Twisted pair |               | White-blue, blue,<br>white-orange, orange,<br>white-green, green,<br>white-brown, brown | PE              | -20°C ... 80°C    | 102  |

## Ethernet hybrid cable – type 94H



Ethernet hybrid cable for use in drag chains. The cable has four wires for data transmission and four wires for power supply. It is oil resistant and flame-retardant. It is also halogen-free and its transmission properties meet CAT5e.

Outer sheath material **PUR**

Number of bending cycles **2 million**

Minimum bending radius **10 x D**

Traverse path **4.5 m**

Acceleration **3 m/s<sup>2</sup>**

Speed **3 m/s**

| Type                              | No. of positions | Use | Structure                                                       | Cross section | Wire colors                                                               | Wire insulation | Temperature range | Page |
|-----------------------------------|------------------|-----|-----------------------------------------------------------------|---------------|---------------------------------------------------------------------------|-----------------|-------------------|------|
| <b>94H</b><br><b>PUR</b><br>Black | 8-pos.           | M12 | 1 x 4 x 26 AWG<br>19 x 0.15 mm<br>1 x 4 x 20 AWG<br>19 x 0.6 mm |               | White-orange, orange,<br>white-green, green,<br>white, blue, brown, black | PP              | -40°C ... 90°C    | 104  |

# Data plug-in connectors

## Cable range

### VARAN cable – type 970



VARAN cable for flexible installation. The cable is resistant to oil and chemicals and is flame-retardant. The cable's transmission properties meet CAT5e.

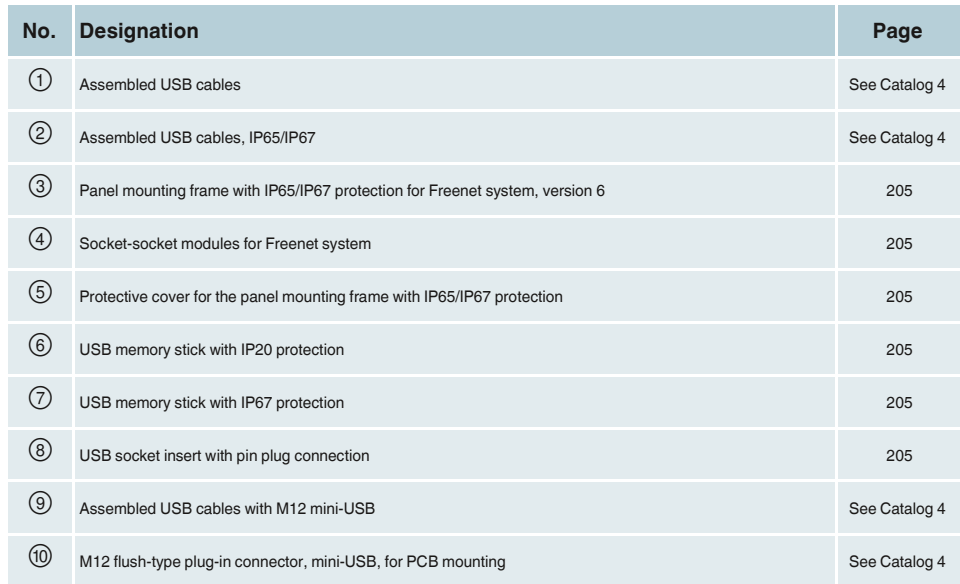
**Outer sheath material** Santoprene

**Minimum bending radius** 7.5 x D  
**Tested at** 20 ... 25°C

| Type                       | No. of positions | Use                 | Structure                                                           | Cross section                                                                     | Wire colors                                                    | Wire insulation | Temperature range | Page                                        |
|----------------------------|------------------|---------------------|---------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------|-----------------|-------------------|---------------------------------------------|
| 970<br>Santoprene<br>Black | 6-pos.           | M12,<br>PP,<br>RJ45 | 1 x 2 x 22 AWG<br>19 x 0.1 mm<br>+<br>2 x 2 x 26 AWG<br>19 x 0.1 mm |  | Brown, blue<br><br>White-orange, orange,<br>white-green, green | PE              | -40°C ... 80°C    | See:<br>phoenix<br>contact.net/<br>products |









# Data plug-in connectors

## D-SUB-based plug-in connectors

| Shell size 1 to 3                                                                   |                           |         |                      |                                                                                                                                               |         |         |                                                                                                                              |         |         |                                                                                                                                     |         |         |                  |     |        |
|-------------------------------------------------------------------------------------|---------------------------|---------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|------------------------------------------------------------------------------------------------------------------------------|---------|---------|-------------------------------------------------------------------------------------------------------------------------------------|---------|---------|------------------|-----|--------|
|                                                                                     |                           |         |                      | Screw connection                                                                                                                              |         |         | Solder connection                                                                                                            |         |         |                                                                                                                                     |         |         |                  |     |        |
|                                                                                     |                           |         |                      |                                                                                                                                               |         |         | Straight solder cups                                                                                                         |         |         |                                                                                                                                     |         |         |                  |     |        |
|                                                                                     |                           |         |                      | <br>VS-...-ST-DSUB/...-MPT-0,5<br>VS-...-BU-DSUB/...-MPT-0,5 |         |         | <br>VS-...-ST-DSUB-EG<br>VS-...-BU-DSUB-EG |         |         | <br>VS-...-ST-DSUB-HD-EG<br>VS-...-BU-DSUB-HD-EG |         |         |                  |     |        |
|                                                                                     |                           |         |                      | D-SUB contact insert<br>Fixing: 2.5 mm hole                                                                                                   |         |         | D-SUB contact insert<br>Fixing: 3 mm hole                                                                                    |         |         | D-SUB contact insert,<br>high-position<br>Fixing: 3 mm hole                                                                         |         |         |                  |     |        |
| Type                                                                                | Order No.                 |         |                      | No. of positions                                                                                                                              | Pin     | Socket  | No. of positions                                                                                                             | Pin     | Socket  | No. of positions                                                                                                                    | Pin     | Socket  | No. of positions | Pin | Socket |
|    | IP67 panel mounting frame |         |                      |                                                                                                                                               |         |         |                                                                                                                              |         |         |                                                                                                                                     |         |         |                  |     |        |
|                                                                                     | VS-09-A                   | 1688366 |                      | 9                                                                                                                                             | 1688379 | 1688395 | 9                                                                                                                            | 1688793 | 1688803 | 15                                                                                                                                  | 1655111 | 1655108 |                  |     |        |
|                                                                                     | VS-15-A                   | 1688036 |                      | 15                                                                                                                                            | 1688078 | 1688094 | 15                                                                                                                           | 1688874 | 1688887 | 26                                                                                                                                  | 1655179 | 1655166 |                  |     |        |
|                                                                                     | VS-25-A                   | 1689750 |                      | 25                                                                                                                                            | 1689789 | 1689776 | 25                                                                                                                           | 1689899 | 1689909 | 44                                                                                                                                  | 1655234 | 1655221 |                  |     |        |
|    | IP20 sleeve housing       |         |                      |                                                                                                                                               |         |         |                                                                                                                              |         |         |                                                                                                                                     |         |         |                  |     |        |
|                                                                                     | VS-09-T-20-1-S-A          | 1655661 |                      | 9                                                                                                                                             | -       | -       | 9                                                                                                                            | 1688793 | 1688803 | 15                                                                                                                                  | 1655111 | 1655108 |                  |     |        |
|                                                                                     | VS-15-T-20-1-S-A          | 1655687 |                      | 15                                                                                                                                            | -       | -       | 15                                                                                                                           | 1688874 | 1688887 | 26                                                                                                                                  | 1655179 | 1655166 |                  |     |        |
|                                                                                     | VS-25-T-20-1-S-A          | 1655700 |                      | 25                                                                                                                                            | -       | -       | 25                                                                                                                           | 1689899 | 1689909 | 44                                                                                                                                  | 1655234 | 1655221 |                  |     |        |
|   | VS-09-T-20-1-S-S          | 1655658 |                      | 9                                                                                                                                             | -       | -       | 9                                                                                                                            | 1688793 | 1688803 | 15                                                                                                                                  | 1655111 | 1655108 |                  |     |        |
|                                                                                     | VS-15-T-20-1-S-S          | 1655674 |                      | 15                                                                                                                                            | -       | -       | 15                                                                                                                           | 1688874 | 1688887 | 26                                                                                                                                  | 1655179 | 1655166 |                  |     |        |
|                                                                                     | VS-25-T-20-1-S-S          | 1655690 |                      | 25                                                                                                                                            | -       | -       | 25                                                                                                                           | 1689899 | 1689909 | 44                                                                                                                                  | 1655234 | 1655221 |                  |     |        |
|                                                                                     | IP67 sleeve housing       |         |                      |                                                                                                                                               |         |         |                                                                                                                              |         |         |                                                                                                                                     |         |         |                  |     |        |
|  | VS-09-T-2M16              | 1688353 |                      | 9                                                                                                                                             | 1688379 | 1688395 | 9                                                                                                                            | 1688793 | 1688803 | 15                                                                                                                                  | 1655111 | 1655108 |                  |     |        |
|                                                                                     | VS-15-T-2PG11             | 1688052 |                      | 15                                                                                                                                            | 1688078 | 1688094 | 15                                                                                                                           | 1688874 | 1688887 | 26                                                                                                                                  | 1655179 | 1655166 |                  |     |        |
|                                                                                     | VS-25-T-2M20              | 1689792 |                      | 25                                                                                                                                            | 1689789 | 1689776 | 25                                                                                                                           | 1689899 | 1689909 | 44                                                                                                                                  | 1655234 | 1655221 |                  |     |        |
|                                                                                     |                           |         |                      |                                                                                                                                               |         |         |                                                                                                                              |         |         |                                                                                                                                     |         |         |                  |     |        |
|  | VS-09-SET-STD             | 1689145 | Panel mounting frame | 9                                                                                                                                             | 1688379 | 1688395 | 9                                                                                                                            | 1688793 | 1688803 | 15                                                                                                                                  | 1655111 | 1655108 |                  |     |        |
|                                                                                     |                           |         | Sleeve housing       | 9                                                                                                                                             | 1688379 | 1688395 | 9                                                                                                                            | 1688793 | 1688803 | 15                                                                                                                                  | 1655111 | 1655108 |                  |     |        |
|                                                                                     | VS-15-SET-STD             | 1689129 | Panel mounting frame | 15                                                                                                                                            | 1688078 | 1688094 | 15                                                                                                                           | 1688874 | 1688887 | 26                                                                                                                                  | 1655179 | 1655166 |                  |     |        |
|                                                                                     |                           |         | Sleeve housing       | 15                                                                                                                                            | 1688078 | 1688094 | 15                                                                                                                           | 1688874 | 1688887 | 26                                                                                                                                  | 1655179 | 1655166 |                  |     |        |
|                                                                                     | VS-25-SET-STD             | 1652198 | Panel mounting frame | 25                                                                                                                                            | 1689789 | 1689776 | 25                                                                                                                           | 1689899 | 1689909 | 44                                                                                                                                  | 1655234 | 1655221 |                  |     |        |
|                                                                                     |                           |         | Sleeve housing       | 25                                                                                                                                            | 1689789 | 1689776 | 25                                                                                                                           | 1689899 | 1689909 | 44                                                                                                                                  | 1655234 | 1655221 |                  |     |        |
|                                                                                     | VS-09-SET-EMV             | 1689158 | Panel mounting frame | 9                                                                                                                                             | 1688379 | 1688395 | 9                                                                                                                            | 1688793 | 1688803 | 15                                                                                                                                  | 1655111 | 1655108 |                  |     |        |
|                                                                                     |                           |         | Sleeve housing       | 9                                                                                                                                             | 1688379 | 1688395 | 9                                                                                                                            | 1688793 | 1688803 | 15                                                                                                                                  | 1655111 | 1655108 |                  |     |        |
|  | VS-15-SET-EMV             | 1689132 | Panel mounting frame | 15                                                                                                                                            | 1688078 | 1688094 | 15                                                                                                                           | 1688874 | 1688887 | 26                                                                                                                                  | 1655179 | 1655166 |                  |     |        |
|                                                                                     |                           |         | Sleeve housing       | 15                                                                                                                                            | 1688078 | 1688094 | 15                                                                                                                           | 1688874 | 1688887 | 26                                                                                                                                  | 1655179 | 1655166 |                  |     |        |
|                                                                                     | VS-25-SET-EMV             | 1652208 | Panel mounting frame | 25                                                                                                                                            | 1689789 | 1689776 | 25                                                                                                                           | 1689899 | 1689909 | 44                                                                                                                                  | 1655234 | 1655221 |                  |     |        |
|                                                                                     |                           |         | Sleeve housing       | 25                                                                                                                                            | 1689789 | 1689776 | 25                                                                                                                           | 1689899 | 1689909 | 44                                                                                                                                  | 1655234 | 1655221 |                  |     |        |

Note:  
The EMC inner sleeve of the IP67 sleeve housing cannot be used on the panel mounting side.

| Signal transmission                                                              |         |         |                                                                                    |         |         |                                                                                   |         |         |                                                                                    |         |         |                                                                                     |         |         |                                                                                     |         |         |
|----------------------------------------------------------------------------------|---------|---------|------------------------------------------------------------------------------------|---------|---------|-----------------------------------------------------------------------------------|---------|---------|------------------------------------------------------------------------------------|---------|---------|-------------------------------------------------------------------------------------|---------|---------|-------------------------------------------------------------------------------------|---------|---------|
| Solder connection                                                                |         |         |                                                                                    |         |         |                                                                                   |         |         | Crimp connection                                                                   |         |         |                                                                                     |         |         |                                                                                     |         |         |
| Angled solder pins                                                               |         |         |                                                                                    |         |         |                                                                                   |         |         | Contact carriers for crimp contacts                                                |         |         |                                                                                     |         |         |                                                                                     |         |         |
|  |         |         |   |         |         |  |         |         |  |         |         |  |         |         |  |         |         |
| VS-...-ST-DSUB-ER<br>VS-...-BU-DSUB-ER                                           |         |         | VS-...-ST-DSUB-HD-ER<br>VS-...-BU-DSUB-HD-ER                                       |         |         | VS-...-ST-DSUB-LH-B<br>VS-...-BU-DSUB-LH-B                                        |         |         | VS-...-ST-DSUB-CD-...G<br>VS-...-BU-DSUB-CD-...G                                   |         |         | VS-...-ST-DSUB-CD-...<br>VS-...-BU-DSUB-CD-...                                      |         |         | VS-...-ST-DSUB-HD-CD-B<br>VS-...-BU-DSUB-HD-CD-B                                    |         |         |
| D-SUB contact insert<br>Fixing:<br>4-40 UNC thread and solder pins               |         |         | D-SUB contact insert,<br>high-position. Fixing:<br>4-40 UNC thread and solder pins |         |         | D-SUB contact insert<br>Fixing:<br>2.5 mm hole and solder metal plate             |         |         | D-SUB contact carrier<br>Fixing:<br>4-40 UNC thread                                |         |         | D-SUB contact carrier<br>Fixing: 3 mm hole                                          |         |         | D-SUB contact carrier,<br>high-position<br>Fixing: 3 mm hole                        |         |         |
| No. of positions                                                                 | Pin     | Socket  | No. of positions                                                                   | Pin     | Socket  | No. of positions                                                                  | Pin     | Socket  | No. of positions                                                                   | Pin     | Socket  | No. of positions                                                                    | Pin     | Socket  | No. of positions                                                                    | Pin     | Socket  |
| 9                                                                                | 1688382 | 1688405 | 15                                                                                 | 1655098 | 1656136 | 9                                                                                 | 1654785 | 1654798 | 9                                                                                  | 1688832 | 1688845 | 9                                                                                   | 1688858 | 1688861 | 15                                                                                  | 1655137 | 1655124 |
| 15                                                                               | 1688081 | 1688120 | 26                                                                                 | 1655153 | 1655140 | 15                                                                                | 1654808 | 1654811 | 15                                                                                 | 1688913 | 1688926 | 15                                                                                  | 1688939 | 1688942 | 26                                                                                  | 1655195 | 1655182 |
| 25                                                                               | 1689873 | 1689886 | 44                                                                                 | 1655218 | 1655205 | 25                                                                                | 1654824 | 1654837 | 25                                                                                 | 1689938 | 1689941 | 25                                                                                  | 1689954 | 1689967 | 44                                                                                  | 1655250 | 1655247 |
| 9                                                                                | -       | -       | 15                                                                                 | -       | -       | 9                                                                                 | 1654785 | 1654798 | 9                                                                                  | -       | -       | 9                                                                                   | 1688858 | 1688861 | 15                                                                                  | 1655137 | 1655124 |
| 15                                                                               | -       | -       | 26                                                                                 | -       | -       | 15                                                                                | 1654808 | 1654811 | 15                                                                                 | -       | -       | 15                                                                                  | 1688939 | 1688942 | 26                                                                                  | 1655195 | 1655182 |
| 25                                                                               | -       | -       | 44                                                                                 | -       | -       | 25                                                                                | 1654824 | 1654837 | 25                                                                                 | -       | -       | 25                                                                                  | 1689954 | 1689967 | 44                                                                                  | 1655250 | 1655247 |
| 9                                                                                | -       | -       | 15                                                                                 | -       | -       | 9                                                                                 | 1654785 | 1654798 | 9                                                                                  | -       | -       | 9                                                                                   | 1688858 | 1688861 | 15                                                                                  | 1655137 | 1655124 |
| 15                                                                               | -       | -       | 26                                                                                 | -       | -       | 15                                                                                | 1654808 | 1654811 | 15                                                                                 | -       | -       | 15                                                                                  | 1688939 | 1688942 | 26                                                                                  | 1655195 | 1655182 |
| 25                                                                               | -       | -       | 44                                                                                 | -       | -       | 25                                                                                | 1654824 | 1654837 | 25                                                                                 | -       | -       | 25                                                                                  | 1689954 | 1689967 | 44                                                                                  | 1655250 | 1655247 |
| 9                                                                                | -       | -       | 15                                                                                 | -       | -       | 9                                                                                 | 1654785 | 1654798 | 9                                                                                  | -       | -       | 9                                                                                   | 1688858 | 1688861 | 15                                                                                  | 1655137 | 1655124 |
| 15                                                                               | -       | -       | 26                                                                                 | -       | -       | 15                                                                                | 1654808 | 1654811 | 15                                                                                 | -       | -       | 15                                                                                  | 1688939 | 1688942 | 26                                                                                  | 1655195 | 1655182 |
| 25                                                                               | -       | -       | 44                                                                                 | -       | -       | 25                                                                                | 1654824 | 1654837 | 25                                                                                 | -       | -       | 25                                                                                  | 1689954 | 1689967 | 44                                                                                  | 1655250 | 1655247 |
| 9                                                                                | -       | -       | 15                                                                                 | -       | -       | 9                                                                                 | 1654785 | 1654798 | 9                                                                                  | -       | -       | 9                                                                                   | 1688858 | 1688861 | 15                                                                                  | 1655137 | 1655124 |
| 15                                                                               | -       | -       | 26                                                                                 | -       | -       | 15                                                                                | 1654808 | 1654811 | 15                                                                                 | -       | -       | 15                                                                                  | 1688939 | 1688942 | 26                                                                                  | 1655195 | 1655182 |
| 25                                                                               | -       | -       | 44                                                                                 | -       | -       | 25                                                                                | 1654824 | 1654837 | 25                                                                                 | -       | -       | 25                                                                                  | 1689954 | 1689967 | 44                                                                                  | 1655250 | 1655247 |
| 9                                                                                | 1688382 | 1688405 | 15                                                                                 | 1655098 | 1656136 | 9                                                                                 | 1654785 | 1654798 | 9                                                                                  | 1688832 | 1688845 | 9                                                                                   | 1688858 | 1688861 | 15                                                                                  | 1655137 | 1655124 |
| 9                                                                                | -       | -       | 15                                                                                 | -       | -       | 9                                                                                 | 1654785 | 1654798 | 9                                                                                  | -       | -       | 9                                                                                   | 1688858 | 1688861 | 15                                                                                  | 1655137 | 1655124 |
| 15                                                                               | 1688081 | 1688120 | 26                                                                                 | 1655153 | 1655140 | 15                                                                                | 1654808 | 1654811 | 15                                                                                 | 1688913 | 1688926 | 15                                                                                  | 1688939 | 1688942 | 26                                                                                  | 1655195 | 1655182 |
| 15                                                                               | -       | -       | 26                                                                                 | -       | -       | 15                                                                                | 1654808 | 1654811 | 15                                                                                 | -       | -       | 15                                                                                  | 1688939 | 1688942 | 26                                                                                  | 1655195 | 1655182 |
| 25                                                                               | 1689873 | 1689886 | 44                                                                                 | 1655218 | 1655205 | 25                                                                                | 1654824 | 1654837 | 25                                                                                 | 1689938 | 1689941 | 25                                                                                  | 1689954 | 1689967 | 44                                                                                  | 1655250 | 1655247 |
| 25                                                                               | -       | -       | 44                                                                                 | -       | -       | 25                                                                                | 1654824 | 1654837 | 25                                                                                 | -       | -       | 25                                                                                  | 1689954 | 1689967 | 44                                                                                  | 1655250 | 1655247 |
| 9                                                                                | 1688382 | 1688405 | 15                                                                                 | 1655098 | 1656136 | 9                                                                                 | 1654785 | 1654798 | 9                                                                                  | 1688832 | 1688845 | 9                                                                                   | 1688858 | 1688861 | 15                                                                                  | 1655137 | 1655124 |
| 9                                                                                | -       | -       | 15                                                                                 | -       | -       | 9                                                                                 | 1654785 | 1654798 | 9                                                                                  | -       | -       | 9                                                                                   | 1688858 | 1688861 | 15                                                                                  | 1655137 | 1655124 |
| 15                                                                               | 1688081 | 1688120 | 26                                                                                 | 1655153 | 1655140 | 15                                                                                | 1654808 | 1654811 | 15                                                                                 | 1688913 | 1688926 | 15                                                                                  | 1688939 | 1688942 | 26                                                                                  | 1655195 | 1655182 |
| 15                                                                               | -       | -       | 26                                                                                 | -       | -       | 15                                                                                | 1654808 | 1654811 | 15                                                                                 | -       | -       | 15                                                                                  | 1688939 | 1688942 | 26                                                                                  | 1655195 | 1655182 |
| 25                                                                               | 1689873 | 1689886 | 44                                                                                 | 1655218 | 1655205 | 25                                                                                | 1654824 | 1654837 | 25                                                                                 | 1689938 | 1689941 | 25                                                                                  | 1689954 | 1689967 | 44                                                                                  | 1655250 | 1655247 |
| 25                                                                               | -       | -       | 44                                                                                 | -       | -       | 25                                                                                | 1654824 | 1654837 | 25                                                                                 | -       | -       | 25                                                                                  | 1689954 | 1689967 | 44                                                                                  | 1655250 | 1655247 |

Note:

For crimp contacts, see page 216.

# Data plug-in connectors

## D-SUB-based plug-in connectors

|                                                                                     |                           |         |                      | Signal transmission                                                               |         |         |                                                                                    |         |         |                                                                                     |         |         |  |
|-------------------------------------------------------------------------------------|---------------------------|---------|----------------------|-----------------------------------------------------------------------------------|---------|---------|------------------------------------------------------------------------------------|---------|---------|-------------------------------------------------------------------------------------|---------|---------|--|
|                                                                                     |                           |         |                      | Flat-ribbon cable connection                                                      |         |         | Gender changer                                                                     |         |         |                                                                                     |         |         |  |
|                                                                                     |                           |         |                      |  |         |         |  |         |         |  |         |         |  |
|                                                                                     |                           |         |                      | VS-...-ST-DSUB-FK<br>VS-...-BU-DSUB-FK                                            |         |         | VS-...-GC-ST/ST<br>VS-...-GC-BU/BU                                                 |         |         | No. of positions<br>2PK/3PK/5PK                                                     |         |         |  |
| Shell size 1 to 3                                                                   |                           |         |                      | D-SUB contact insert<br>Fixing: 3 mm hole                                         |         |         | D-SUB contact insert<br>Fixing:<br>4-40 UNC thread                                 |         |         | D-SUB contact carrier<br>Fixing: 3 mm hole                                          |         |         |  |
| Type                                                                                | Order No.                 |         |                      | No. of positions                                                                  | Pin     | Socket  | No. of positions                                                                   | Pin     | Socket  | No. of positions                                                                    | Pin     | Socket  |  |
|    | IP67 panel mounting frame |         |                      |                                                                                   |         |         |                                                                                    |         |         |                                                                                     |         |         |  |
|                                                                                     | VS-09-A                   | 1688366 |                      | 9                                                                                 | 1688816 | 1688829 | 9                                                                                  | 1652651 | 1688722 | 2PK                                                                                 | 1688418 | 1688421 |  |
|                                                                                     | VS-15-A                   | 1688036 |                      | 15                                                                                | 1688890 | 1688900 | 15                                                                                 | 1652677 | 1652664 | 3PK                                                                                 | 1688201 | 1688214 |  |
|                                                                                     | VS-25-A                   | 1689750 |                      | 25                                                                                | 1689912 | 1689925 | 25                                                                                 | 1652693 | 1652680 | 5PK                                                                                 | 1689970 | 1689983 |  |
|                                                                                     | VS-25-A                   | 1689750 |                      |                                                                                   |         |         |                                                                                    |         |         |                                                                                     |         |         |  |
|    | IP20 sleeve housing       |         |                      |                                                                                   |         |         |                                                                                    |         |         |                                                                                     |         |         |  |
|                                                                                     | VS-09-T-20-1-S-A          | 1655661 |                      | 9                                                                                 | -       | -       | 9                                                                                  | -       | -       | 2PK                                                                                 | -       | -       |  |
|                                                                                     | VS-15-T-20-1-S-A          | 1655687 |                      | 15                                                                                | -       | -       | 15                                                                                 | -       | -       | 3PK                                                                                 | -       | -       |  |
|                                                                                     | VS-25-T-20-1-S-A          | 1655700 |                      | 25                                                                                | -       | -       | 25                                                                                 | -       | -       | 5PK                                                                                 | -       | -       |  |
|                                                                                     | VS-25-T-20-1-S-A          | 1655700 |                      |                                                                                   |         |         |                                                                                    |         |         |                                                                                     |         |         |  |
|  | VS-09-T-20-1-S-S          | 1655658 |                      | 9                                                                                 | -       | -       | 9                                                                                  | -       | -       | 2PK                                                                                 | -       | -       |  |
|                                                                                     | VS-15-T-20-1-S-S          | 1655674 |                      | 15                                                                                | -       | -       | 15                                                                                 | -       | -       | 3PK                                                                                 | -       | -       |  |
|                                                                                     | VS-25-T-20-1-S-S          | 1655690 |                      | 25                                                                                | -       | -       | 25                                                                                 | -       | -       | 5PK                                                                                 | -       | -       |  |
|                                                                                     | VS-25-T-20-1-S-S          | 1655690 |                      |                                                                                   |         |         |                                                                                    |         |         |                                                                                     |         |         |  |
|                                                                                     | VS-25-T-20-1-S-S          | 1655690 |                      |                                                                                   |         |         |                                                                                    |         |         |                                                                                     |         |         |  |
|  | IP67 sleeve housing       |         |                      |                                                                                   |         |         |                                                                                    |         |         |                                                                                     |         |         |  |
|                                                                                     | VS-09-T-2M16              | 1688353 |                      | 9                                                                                 | -       | -       | 9                                                                                  | -       | -       | 2PK                                                                                 | 1688418 | 1688421 |  |
|                                                                                     | VS-15-T-2PG11             | 1688052 |                      | 15                                                                                | -       | -       | 15                                                                                 | -       | -       | 3PK                                                                                 | 1688201 | 1688214 |  |
|                                                                                     | VS-25-T-2M20              | 1689792 |                      | 25                                                                                | -       | -       | 25                                                                                 | -       | -       | 5PK                                                                                 | 1689970 | 1689983 |  |
|                                                                                     | VS-25-T-2M20              | 1689792 |                      |                                                                                   |         |         |                                                                                    |         |         |                                                                                     |         |         |  |
|  | VS-09-SET-STD             | 1689145 | Panel mounting frame | 9                                                                                 | 1688816 | 1688829 | 9                                                                                  | 1652651 | 1688722 | 2PK                                                                                 | 1688418 | 1688421 |  |
|                                                                                     |                           |         | Sleeve housing       | 9                                                                                 | -       | -       | 9                                                                                  | -       | -       | 2PK                                                                                 | 1688418 | 1688421 |  |
|                                                                                     | VS-15-SET-STD             | 1689129 | Panel mounting frame | 15                                                                                | 1688890 | 1688900 | 15                                                                                 | 1652677 | 1652664 | 3PK                                                                                 | 1688201 | 1688214 |  |
|                                                                                     |                           |         | Sleeve housing       | 15                                                                                | -       | -       | 15                                                                                 | -       | -       | 3PK                                                                                 | 1688201 | 1688214 |  |
|                                                                                     | VS-25-SET-STD             | 1652198 | Panel mounting frame | 25                                                                                | 1689912 | 1689925 | 25                                                                                 | 1652693 | 1652680 | 5PK                                                                                 | 1689970 | 1689983 |  |
|                                                                                     |                           |         | Sleeve housing       | 25                                                                                | -       | -       | 25                                                                                 | -       | -       | 5PK                                                                                 | 1689970 | 1689983 |  |
|                                                                                     | VS-25-SET-STD             | 1652198 | Panel mounting frame |                                                                                   |         |         |                                                                                    |         |         |                                                                                     |         |         |  |
|                                                                                     |                           |         | Sleeve housing       |                                                                                   |         |         |                                                                                    |         |         |                                                                                     |         |         |  |
|                                                                                     | VS-09-SET-EMV             | 1689158 | Panel mounting frame | 9                                                                                 | 1688816 | 1688829 | 9                                                                                  | 1652651 | 1688722 | 2PK                                                                                 | 1688418 | 1688421 |  |
|                                                                                     |                           |         | Sleeve housing       | 9                                                                                 | -       | -       | 9                                                                                  | -       | -       | 2PK                                                                                 | -       | -       |  |
|  | VS-15-SET-EMV             | 1689132 | Panel mounting frame | 15                                                                                | 1688890 | 1688900 | 15                                                                                 | 1652677 | 1652664 | 3PK                                                                                 | 1688201 | 1688214 |  |
|                                                                                     |                           |         | Sleeve housing       | 15                                                                                | -       | -       | 15                                                                                 | -       | -       | 3PK                                                                                 | -       | -       |  |
|                                                                                     | VS-25-SET-EMV             | 1652208 | Panel mounting frame | 25                                                                                | 1689912 | 1689925 | 25                                                                                 | 1652693 | 1652680 | 5PK                                                                                 | 1689970 | 1689983 |  |
|                                                                                     |                           |         | Sleeve housing       | 25                                                                                | -       | -       | 25                                                                                 | -       | -       | 5PK                                                                                 | -       | -       |  |
|                                                                                     | VS-25-SET-EMV             | 1652208 | Panel mounting frame |                                                                                   |         |         |                                                                                    |         |         |                                                                                     |         |         |  |
|                                                                                     |                           |         | Sleeve housing       |                                                                                   |         |         |                                                                                    |         |         |                                                                                     |         |         |  |

Note:  
The EMC inner sleeve of the IP67 sleeve housing cannot be used on the panel mounting side.

Note:  
When installing the gender changer in the front plate of the VARIOSUB service interface, VS-SI-SCREW-GC screws (1656961) should be used.

| Power and signal transmission |                                                                                  |         |         |                                                                                   |         |         |                                                                                   |         | Power   |                                                                                     |         |             |                                                                                     |         |  |
|-------------------------------|----------------------------------------------------------------------------------|---------|---------|-----------------------------------------------------------------------------------|---------|---------|-----------------------------------------------------------------------------------|---------|---------|-------------------------------------------------------------------------------------|---------|-------------|-------------------------------------------------------------------------------------|---------|--|
|                               | Angled solder pins                                                               |         |         |                                                                                   |         |         | Angled solder pins                                                                |         |         | Angled solder pins                                                                  |         |             | Screw connection                                                                    |         |  |
|                               |  |         |         |  |         |         |  |         |         |  |         |             |  |         |  |
|                               | No. of positions<br>2PK/3PK/5PK                                                  |         |         | No. of positions 1PK-4S/2PK-5S/4PK-5S/3PK-10S                                     |         |         |                                                                                   |         |         | No. of positions 3/5                                                                |         |             |                                                                                     |         |  |
|                               | VS-...-ST-DSUB-...P-LH<br>VS-...-BU-DSUB-...P-LH                                 |         |         | VS-...-ST-DSUB-...P-...S<br>VS-...-BU-DSUB-...P-...S                              |         |         | VS-...-ST-DSUB-...P-...S-LH<br>VS-...-BU-DSUB-...P-...S-LH                        |         |         | VS-PSC 1,5/...-M PE<br>VS-PSC 1,5/...-M                                             |         |             | PSC 1,5/...-F                                                                       |         |  |
|                               | D-SUB contact carrier<br>Fixing:<br>4-40 UNC thread and solder pins              |         |         | D-SUB contact insert<br>Fixing: 3 mm hole                                         |         |         | D-SUB contact insert<br>Fixing:<br>4-40 UNC thread and solder pins                |         |         | D-SUB contact insert<br>Fixing:<br>M3 thread and solder pins                        |         |             | D-SUB contact insert<br>Fixing:<br>3 mm hole                                        |         |  |
|                               | No. of positions                                                                 | Pin     | Socket  | No. of positions                                                                  | Pin     | Socket  | No. of positions                                                                  | Pin     | Socket  | No. of positions                                                                    | Pin     | Pin with PE | No. of positions                                                                    | Socket  |  |
|                               |                                                                                  |         |         |                                                                                   |         |         |                                                                                   |         |         |                                                                                     |         |             |                                                                                     |         |  |
|                               | 2PK                                                                              | 1655292 | 1655289 | 1PK-4S                                                                            | 1689006 | 1689019 | 1PK-4S                                                                            | 1655315 | 1655302 | 3                                                                                   | 1689310 | 1689336     | 3                                                                                   | -       |  |
|                               | 3PK                                                                              | 1655331 | 1655328 | 2PK-5S                                                                            | 1688227 | 1688230 | 2PK-5S                                                                            | 1655360 | 1655344 | 5                                                                                   | 1688825 | 1689323     | 5                                                                                   | -       |  |
|                               | 5PK                                                                              | 1655441 | 1655438 | 3PK-10S                                                                           | 1689996 | 1690008 | 3PK-10S                                                                           | 1655425 | 1655412 |                                                                                     |         |             |                                                                                     |         |  |
|                               |                                                                                  |         |         | 4PK-5S                                                                            | 1655386 | 1655373 | 4PK-5S                                                                            | 1655409 | 1655399 |                                                                                     |         |             |                                                                                     |         |  |
|                               |                                                                                  |         |         |                                                                                   |         |         |                                                                                   |         |         |                                                                                     |         |             |                                                                                     |         |  |
|                               | 2PK                                                                              | -       | -       | 1PK - 4S                                                                          | -       | -       | 1PK - 4S                                                                          | -       | -       | 3                                                                                   | -       | -           | 3                                                                                   | 1841909 |  |
|                               | 3PK                                                                              | -       | -       | 2PK - 5S                                                                          | -       | -       | 2PK - 5S                                                                          | -       | -       | 5                                                                                   | -       | -           | 5                                                                                   | 1841912 |  |
|                               | 5PK                                                                              | -       | -       | 3PK - 10S                                                                         | -       | -       | 3PK - 10S                                                                         | -       | -       |                                                                                     |         |             |                                                                                     |         |  |
|                               |                                                                                  |         |         | 4PK - 5S                                                                          | -       | -       | 4PK - 5S                                                                          | -       | -       |                                                                                     |         |             |                                                                                     |         |  |
|                               | 2PK                                                                              | -       | -       | 1PK - 4S                                                                          | -       | -       | 1PK - 4S                                                                          | -       | -       | 3                                                                                   | -       | -           | 3                                                                                   | 1841909 |  |
|                               | 3PK                                                                              | -       | -       | 2PK - 5S                                                                          | -       | -       | 2PK - 5S                                                                          | -       | -       | 5                                                                                   | -       | -           | 5                                                                                   | 1841912 |  |
|                               | 5PK                                                                              | -       | -       | 3PK - 10S                                                                         | -       | -       | 3PK - 10S                                                                         | -       | -       |                                                                                     |         |             |                                                                                     |         |  |
|                               |                                                                                  |         |         | 4PK - 5S                                                                          | -       | -       | 4PK - 5S                                                                          | -       | -       |                                                                                     |         |             |                                                                                     |         |  |
|                               |                                                                                  |         |         |                                                                                   |         |         |                                                                                   |         |         |                                                                                     |         |             |                                                                                     |         |  |
|                               | 2PK                                                                              | -       | -       | 1PK - 4S                                                                          | 1689006 | 1689019 | 1PK - 4S                                                                          | -       | -       | 3                                                                                   | -       | -           | 3                                                                                   | 1841909 |  |
|                               | 3PK                                                                              | -       | -       | 2PK - 5S                                                                          | 1688227 | 1688230 | 2PK - 5S                                                                          | -       | -       | 5                                                                                   | -       | -           | 5                                                                                   | 1841912 |  |
|                               | 5PK                                                                              | -       | -       | 3PK - 10S                                                                         | 1689996 | 1690008 | 3PK - 10S                                                                         | -       | -       |                                                                                     |         |             |                                                                                     |         |  |
|                               |                                                                                  |         |         | 4PK - 5S                                                                          | 1655386 | 1655373 | 4PK - 5S                                                                          | -       | -       |                                                                                     |         |             |                                                                                     |         |  |
|                               | 2PK                                                                              | 1655292 | 1655289 | 1PK - 4S                                                                          | 1689006 | 1689019 | 1PK - 4S                                                                          | 1655315 | 1655302 | 3                                                                                   | 1689310 | 1689336     | 3                                                                                   | -       |  |
|                               | 2PK                                                                              | -       | -       | 1PK - 4S                                                                          | 1689006 | 1689019 | 1PK - 4S                                                                          | -       | -       | 3                                                                                   | -       | -           | 3                                                                                   | 1841909 |  |
|                               | 3PK                                                                              | 1655331 | 1655328 | 2PK - 5S                                                                          | 1688227 | 1688230 | 2PK - 5S                                                                          | 1655360 | 1655344 | 5                                                                                   | 1688825 | 1689323     | 5                                                                                   | -       |  |
|                               | 3PK                                                                              |         | -       | 2PK - 5S                                                                          | 1688227 | 1688230 | 2PK - 5S                                                                          | -       | -       | 5                                                                                   | -       | -           | 5                                                                                   | 1841912 |  |
|                               | 5PK                                                                              | 1655441 | 1655438 | 3PK - 10S                                                                         | 1689996 | 1690008 | 3PK - 10S                                                                         | 1655425 | 1655412 |                                                                                     |         |             |                                                                                     |         |  |
|                               | 5PK                                                                              | -       | -       | 3PK - 10S                                                                         | 1689996 | 1690008 | 3PK - 10S                                                                         | -       | -       |                                                                                     |         |             |                                                                                     |         |  |
|                               |                                                                                  |         |         | 4PK - 5S                                                                          | 1655386 | 1655373 | 4PK - 5S                                                                          | 1655409 | 1655399 |                                                                                     |         |             |                                                                                     |         |  |
|                               |                                                                                  |         |         | 4PK - 5S                                                                          | 1655386 | 1655373 | 4PK - 5S                                                                          | -       | -       |                                                                                     |         |             |                                                                                     |         |  |
|                               | 2PK                                                                              | 1655292 | 1655289 | 1PK - 4S                                                                          | 1689006 | 1689019 | 1PK - 4S                                                                          | 1655315 | 1655302 | 3                                                                                   | 1689310 | 1689336     | 3                                                                                   | -       |  |
|                               | 2PK                                                                              | -       | -       | 1PK - 4S                                                                          | -       | -       | 1PK - 4S                                                                          | -       | -       | 3                                                                                   | -       | -           | 3                                                                                   | 1841909 |  |
|                               | 3PK                                                                              | 1655331 | 1655328 | 2PK - 5S                                                                          | 1688227 | 1688230 | 2PK - 5S                                                                          | 1655360 | 1655344 | 5                                                                                   | 1688825 | 1689323     | 5                                                                                   | -       |  |
|                               | 3PK                                                                              |         | -       | 2PK - 5S                                                                          | -       | -       | 2PK - 5S                                                                          | -       | -       | 5                                                                                   | -       | -           | 5                                                                                   | 1841912 |  |
|                               | 5PK                                                                              | 1655441 | 1655438 | 3PK - 10S                                                                         | 1689996 | 1690008 | 3PK - 10S                                                                         | 1655425 | 1655412 |                                                                                     |         |             |                                                                                     |         |  |
|                               | 5PK                                                                              | -       | -       | 3PK - 10S                                                                         | -       | -       | 3PK - 10S                                                                         | -       | -       |                                                                                     |         |             |                                                                                     |         |  |
|                               |                                                                                  |         |         | 4PK - 5S                                                                          | 1655386 | 1655373 | 4PK - 5S                                                                          | 1655409 | 1655399 |                                                                                     |         |             |                                                                                     |         |  |
|                               |                                                                                  |         |         | 4PK - 5S                                                                          | -       | -       | 4PK - 5S                                                                          | -       | -       |                                                                                     |         |             |                                                                                     |         |  |

# Data plug-in connectors

## D-SUB-based plug-in connectors

### Contact inserts



**Screw connection**  
Fixing: 2.5 mm hole



**Straight solder cups**  
Fixing: 3 mm hole

|                                         |  |  | Technical data       |             |                          | Technical data               |             |                              |
|-----------------------------------------|--|--|----------------------|-------------|--------------------------|------------------------------|-------------|------------------------------|
|                                         |  |  | VS-...-MPT-0,5       |             |                          | VS-...EG                     |             | VS-...-HD-EG                 |
| Electrical data                         |  |  |                      |             |                          |                              |             |                              |
| Rated voltage                           |  |  | 60 V                 |             |                          | 125 V                        |             | 60 V                         |
| Rated current                           |  |  | 5 A                  |             |                          | 5 A                          |             | 3 A                          |
| Surge voltage category                  |  |  | III                  |             |                          | III                          |             | III                          |
| Material data                           |  |  |                      |             |                          |                              |             |                              |
| Contact material                        |  |  | Copper alloy         |             |                          | Copper alloy                 |             | Copper alloy                 |
| Contact surface material                |  |  | Gold over nickel     |             |                          | Hard gold-plated over nickel |             | Hard gold-plated over nickel |
| Contact carrier material                |  |  | PBTP                 |             |                          | Polyester GF                 |             | Polyester GF                 |
| Inflammability class according to UL 94 |  |  | V0                   |             |                          | V0                           |             | V0                           |
| Mechanical data                         |  |  |                      |             |                          |                              |             |                              |
| Pollution degree                        |  |  | 2                    |             |                          | 2                            |             | 2                            |
| Conductor cross section                 |  |  | 0.14 mm² ... 0.5 mm² |             |                          | 0.5 mm²                      |             | 0.34 mm²                     |
| Connection cross section AWG            |  |  | 26 ... 20            |             |                          | 20                           |             | 22                           |
| Insertion/withdrawal cycles             |  |  | ≥ 200                |             |                          | ≥ 200                        |             | ≥ 200                        |
| Connection method                       |  |  | Screw connection     |             |                          | Solder cup                   |             | Solder cup                   |
| Temperature data                        |  |  |                      |             |                          |                              |             |                              |
| Ambient temperature (operation)         |  |  | -20 °C ... 80 °C     |             |                          | -55 °C ... 125 °C            |             | -55 °C ... 125 °C            |
| Ordering data                           |  |  |                      |             |                          |                              |             |                              |
| Description                             |  |  | Design               | No. of pos. | Type                     | Order No.                    | Pcs. / Pkt. |                              |
| D-SUB contact insert                    |  |  |                      |             |                          |                              |             |                              |
| Plug                                    |  |  | 09                   | 9           | VS-09-ST-DSUB/10-MPT-0,5 | 1688379                      | 10          |                              |
| Socket                                  |  |  | 09                   | 9           | VS-09-BU-DSUB/9-MPT-0,5  | 1688395                      | 10          |                              |
| Plug                                    |  |  | 15                   | 15          | VS-15-ST-DSUB/16-MPT-0,5 | 1688078                      | 10          |                              |
| Socket                                  |  |  | 15                   | 15          | VS-15-BU-DSUB/16-MPT-0,5 | 1688094                      | 10          |                              |
| Plug                                    |  |  | 25                   | 25          | VS-25-ST-DSUB/25-MPT-0,5 | 1689789                      | 10          |                              |
| Socket                                  |  |  | 25                   | 25          | VS-25-BU-DSUB/25-MPT-0,5 | 1689776                      | 10          |                              |
| D-SUB contact insert                    |  |  |                      |             |                          |                              |             |                              |
| Plug                                    |  |  | 09                   | 9           |                          |                              |             | VS-09-ST-DSUB-EG             |
| Socket                                  |  |  | 09                   | 9           |                          |                              |             | VS-09-BU-DSUB-EG             |
| Plug                                    |  |  | 15                   | 15          |                          |                              |             | VS-15-ST-DSUB-EG             |
| Socket                                  |  |  | 15                   | 15          |                          |                              |             | VS-15-BU-DSUB-EG             |
| Plug                                    |  |  | 25                   | 25          |                          |                              |             | VS-25-ST-DSUB-EG             |
| Socket                                  |  |  | 25                   | 25          |                          |                              |             | VS-25-BU-DSUB-EG             |
| D-SUB contact insert, high density      |  |  |                      |             |                          |                              |             |                              |
| Plug                                    |  |  | 09                   | 15          |                          |                              |             | VS-09-ST-DSUB-HD-EG          |
| Socket                                  |  |  | 09                   | 15          |                          |                              |             | VS-09-BU-DSUB-HD-EG          |
| Plug                                    |  |  | 15                   | 26          |                          |                              |             | VS-15-ST-DSUB-HD-EG          |
| Socket                                  |  |  | 15                   | 26          |                          |                              |             | VS-15-BU-DSUB-HD-EG          |
| Plug                                    |  |  | 25                   | 44          |                          |                              |             | VS-25-ST-DSUB-HD-EG          |
| Socket                                  |  |  | 25                   | 44          |                          |                              |             | VS-25-BU-DSUB-HD-EG          |
| D-SUB contact insert                    |  |  |                      |             |                          |                              |             |                              |
| Plug                                    |  |  | 09                   | 9           |                          |                              |             |                              |
| Socket                                  |  |  | 09                   | 9           |                          |                              |             |                              |
| Plug                                    |  |  | 15                   | 15          |                          |                              |             |                              |
| Socket                                  |  |  | 15                   | 15          |                          |                              |             |                              |
| Plug                                    |  |  | 25                   | 25          |                          |                              |             |                              |
| Socket                                  |  |  | 25                   | 25          |                          |                              |             |                              |



**Angled solder pins**  
Fixing: 4-40 UNC threads  
and solder pins



**Angled solder pins**  
Fixing: 2.5 mm bore hole  
and solder metal plate

| Technical data               |                              |
|------------------------------|------------------------------|
| VS-...-ER                    | VS-...-HD-ER                 |
| 125 V                        | 60 V                         |
| 5 A                          | 3 A                          |
| III                          | III                          |
| Copper alloy                 | Copper alloy                 |
| Hard gold-plated over nickel | Hard gold-plated over nickel |
| Polyester GF                 | Polyester GF                 |
| V0                           | V0                           |
| 2                            | 2                            |
| -                            | -                            |
| -                            | -                            |
| ≥ 200                        | ≥ 200                        |
| Solder connection            | Solder connection            |
| -55 °C ... 125 °C            | -55 °C ... 125 °C            |

| Ordering data       |           |             |
|---------------------|-----------|-------------|
| Type                | Order No. | Pcs. / Pkt. |
| VS-09-ST-DSUB-ER    | 1688382   | 10          |
| VS-09-BU-DSUB-ER    | 1688405   | 10          |
| VS-15-ST-DSUB-ER    | 1688081   | 10          |
| VS-15-BU-DSUB-ER    | 1688120   | 10          |
| VS-25-ST-DSUB-ER    | 1689873   | 10          |
| VS-25-BU-DSUB-ER    | 1689886   | 10          |
| VS-09-ST-DSUB-HD-ER | 1655098   | 10          |
| VS-09-BU-DSUB-HD-ER | 1656136   | 10          |
| VS-15-ST-DSUB-HD-ER | 1655153   | 10          |
| VS-15-BU-DSUB-HD-ER | 1655140   | 10          |
| VS-25-ST-DSUB-HD-ER | 1655218   | 10          |
| VS-25-BU-DSUB-HD-ER | 1655205   | 10          |

| Technical data    |  |
|-------------------|--|
| VS-...-LH-...     |  |
| 125 V             |  |
| 5 A               |  |
| III               |  |
| Copper alloy      |  |
| Gold over nickel  |  |
| PBT-GF            |  |
| V0                |  |
| 2                 |  |
| -                 |  |
| -                 |  |
| ≥ 200             |  |
| Solder connection |  |
| -55 °C ... 125 °C |  |

| Ordering data      |           |             |
|--------------------|-----------|-------------|
| Type               | Order No. | Pcs. / Pkt. |
| VS-09-ST-DSUB-LH-B | 1654785   | 10          |
| VS-09-BU-DSUB-LH-B | 1654798   | 10          |
| VS-15-ST-DSUB-LH-B | 1654808   | 10          |
| VS-15-BU-DSUB-LH-B | 1654811   | 10          |
| VS-25-ST-DSUB-LH-B | 1654824   | 10          |
| VS-25-BU-DSUB-LH-B | 1654837   | 10          |



# Data plug-in connectors

## D-SUB-based plug-in connectors

### Contact carriers, inserts and gender changers



D-SUB crimp inserts,  
with thread



D-SUB crimp inserts,  
with bore hole

|                                            | Technical data    |    |        | Technical data                      |         |                              |                       |         |    |  |           |             |  |  |
|--------------------------------------------|-------------------|----|--------|-------------------------------------|---------|------------------------------|-----------------------|---------|----|--|-----------|-------------|--|--|
|                                            | VS-...-CD-...     |    |        | VS-...-CD-B VS-...-HD-CD-B          |         |                              |                       |         |    |  |           |             |  |  |
| Electrical data                            |                   |    |        |                                     |         |                              |                       |         |    |  |           |             |  |  |
| Rated voltage                              | 125 V             |    |        | 125 V 60 V                          |         |                              |                       |         |    |  |           |             |  |  |
| Rated current                              | 5 A               |    |        | 5 A 3 A                             |         |                              |                       |         |    |  |           |             |  |  |
| Surge voltage category                     | III               |    |        | III III                             |         |                              |                       |         |    |  |           |             |  |  |
| Material data                              |                   |    |        |                                     |         |                              |                       |         |    |  |           |             |  |  |
| Contact material                           | -                 |    |        | -                                   |         |                              |                       |         |    |  |           |             |  |  |
| Contact surface material                   | -                 |    |        | -                                   |         |                              |                       |         |    |  |           |             |  |  |
| Contact carrier material                   | Polyester GF      |    |        | Polyester GF Polyester GF           |         |                              |                       |         |    |  |           |             |  |  |
| Inflammability class according to UL 94    | V0                |    |        | V0 V0                               |         |                              |                       |         |    |  |           |             |  |  |
| Mechanical data                            |                   |    |        |                                     |         |                              |                       |         |    |  |           |             |  |  |
| Pollution degree                           | 2                 |    |        | 2 2                                 |         |                              |                       |         |    |  |           |             |  |  |
| Insertion/withdrawal cycles                | ≥ 500             |    |        | ≥ 500 ≥ 500                         |         |                              |                       |         |    |  |           |             |  |  |
| Connection method                          | Crimp connection  |    |        | Crimp connection Crimp connection   |         |                              |                       |         |    |  |           |             |  |  |
| Temperature data                           |                   |    |        |                                     |         |                              |                       |         |    |  |           |             |  |  |
| Ambient temperature (operation)            | -55 °C ... 125 °C |    |        | -55 °C ... 125 °C -55 °C ... 125 °C |         |                              |                       |         |    |  |           |             |  |  |
| Ordering data                              |                   |    |        |                                     |         | Ordering data                |                       |         |    |  |           |             |  |  |
| Description                                |                   |    | Design | No. of pos.                         | Type    | Order No.                    | Pcs. / Pkt.           | Type    |    |  | Order No. | Pcs. / Pkt. |  |  |
| <b>D-SUB contact support</b>               |                   |    |        |                                     |         |                              |                       |         |    |  |           |             |  |  |
| Plug                                       |                   | 09 | 9      | VS-09-ST-DSUB-CD-G                  | 1688832 | 10                           | VS-09-ST-DSUB-CD-B    | 1688858 | 10 |  |           |             |  |  |
| Socket                                     |                   | 09 | 9      | VS-09-BU-DSUB-CD-G                  | 1688845 | 10                           | VS-09-BU-DSUB-CD-B    | 1688861 | 10 |  |           |             |  |  |
| Plug                                       |                   | 15 | 15     | VS-15-ST-DSUB-CD-MG                 | 1688913 | 10                           | VS-15-ST-DSUB-CD-OG   | 1688939 | 10 |  |           |             |  |  |
| Socket                                     |                   | 15 | 15     | VS-15-BU-DSUB-CD-MG                 | 1688926 | 10                           | VS-15-BU-DSUB-CD-OG   | 1688942 | 10 |  |           |             |  |  |
| Plug                                       |                   | 25 | 25     | VS-25-ST-DSUB-CD-G                  | 1689938 | 10                           | VS-25-ST-DSUB-CD-B    | 1689954 | 10 |  |           |             |  |  |
| Socket                                     |                   | 25 | 25     | VS-25-BU-DSUB-CD-G                  | 1689941 | 10                           | VS-25-BU-DSUB-CD-B    | 1689967 | 10 |  |           |             |  |  |
| <b>D-SUB contact carrier, high density</b> |                   |    |        |                                     |         |                              |                       |         |    |  |           |             |  |  |
| Plug                                       |                   | 09 | 15     |                                     |         |                              | VS-09-ST-DSUB-HD-CD-B | 1655137 | 10 |  |           |             |  |  |
| Socket                                     |                   | 09 | 15     |                                     |         |                              | VS-09-BU-DSUB-HD-CD-B | 1655124 | 10 |  |           |             |  |  |
| Plug                                       |                   | 15 | 26     |                                     |         |                              | VS-15-ST-DSUB-HD-CD-B | 1655195 | 10 |  |           |             |  |  |
| Socket                                     |                   | 15 | 26     |                                     |         |                              | VS-15-BU-DSUB-HD-CD-B | 1655182 | 10 |  |           |             |  |  |
| Plug                                       |                   | 25 | 44     |                                     |         |                              | VS-25-ST-DSUB-HD-CD-B | 1655250 | 10 |  |           |             |  |  |
| Socket                                     |                   | 25 | 44     |                                     |         |                              | VS-25-BU-DSUB-HD-CD-B | 1655247 | 10 |  |           |             |  |  |
| <b>D-SUB contact insert</b>                |                   |    |        |                                     |         |                              |                       |         |    |  |           |             |  |  |
| Plug                                       |                   | 09 | 9      |                                     |         |                              |                       |         |    |  |           |             |  |  |
| Socket                                     |                   | 09 | 9      |                                     |         |                              |                       |         |    |  |           |             |  |  |
| Plug                                       |                   | 15 | 15     |                                     |         |                              |                       |         |    |  |           |             |  |  |
| Socket                                     |                   | 15 | 15     |                                     |         |                              |                       |         |    |  |           |             |  |  |
| Plug                                       |                   | 25 | 25     |                                     |         |                              |                       |         |    |  |           |             |  |  |
| Socket                                     |                   | 25 | 25     |                                     |         |                              |                       |         |    |  |           |             |  |  |
| <b>D-SUB gender changer</b>                |                   |    |        |                                     |         |                              |                       |         |    |  |           |             |  |  |
| Plug/plug                                  | D-SUB 9           |    | 9      |                                     |         |                              |                       |         |    |  |           |             |  |  |
| Socket / Socket                            | D-SUB 9           |    | 9      |                                     |         |                              |                       |         |    |  |           |             |  |  |
| Plug/plug                                  | D-SUB 15          |    | 15     |                                     |         |                              |                       |         |    |  |           |             |  |  |
| Socket / Socket                            | D-SUB 15          |    | 15     |                                     |         |                              |                       |         |    |  |           |             |  |  |
| Plug/plug                                  | D-SUB 25          |    | 25     |                                     |         |                              |                       |         |    |  |           |             |  |  |
| Socket / Socket                            | D-SUB 25          |    | 25     |                                     |         |                              |                       |         |    |  |           |             |  |  |
| Accessories                                |                   |    |        |                                     |         | Accessories                  |                       |         |    |  |           |             |  |  |
| <b>Crimp contacts</b>                      |                   |    |        |                                     |         | See page 216                 |                       |         |    |  |           |             |  |  |
| <b>Crimp contact, high-pos.</b>            |                   |    |        |                                     |         | See page 216<br>See page 216 |                       |         |    |  |           |             |  |  |



**D-SUB**  
with flat-ribbon cable connection



**Gender changer**

| Technical data               |
|------------------------------|
| VS-...-FK                    |
| 125 V                        |
| 5 A                          |
| III                          |
| Copper alloy                 |
| Hard gold-plated over nickel |
| Polyester GF                 |
| V0                           |
| 2                            |
| ≥ 200                        |
| Flat-ribbon cable connection |
| -55 °C ... 125 °C            |

| Ordering data    |           |             |
|------------------|-----------|-------------|
| Type             | Order No. | Pcs. / Pkt. |
| VS-09-ST-DSUB-FK | 1688816   | 10          |
| VS-09-BU-DSUB-FK | 1688829   | 10          |
| VS-15-ST-DSUB-FK | 1688890   | 10          |
| VS-15-BU-DSUB-FK | 1688900   | 10          |
| VS-25-ST-DSUB-FK | 1689912   | 10          |
| VS-25-BU-DSUB-FK | 1689925   | 10          |

| Accessories |
|-------------|
|             |

| Technical data               |
|------------------------------|
| VS-...-GC-...                |
| 125 V                        |
| 5 A                          |
| III                          |
| Copper alloy                 |
| Hard gold-plated over nickel |
| Polyester GF                 |
| V0                           |
| 2                            |
| ≥ 200                        |
| Gender changer               |
| -55 °C ... 125 °C            |

| Ordering data  |           |             |
|----------------|-----------|-------------|
| Type           | Order No. | Pcs. / Pkt. |
| VS-09-GC-ST/ST | 1652651   | 10          |
| VS-09-GC-BU/BU | 1688722   | 10          |
| VS-15-GC-ST/ST | 1652677   | 10          |
| VS-15-GC-BU/BU | 1652664   | 10          |
| VS-25-GC-ST/ST | 1652693   | 10          |
| VS-25-GC-BU/BU | 1652680   | 10          |

| Accessories |
|-------------|
|             |

# Data plug-in connectors

## D-SUB-based plug-in connectors

### Combination contact carriers and inserts



For power contacts,  
fixing: 3 mm hole



For power contacts,  
fixing: 4-40 UNC threads  
and solder pins

|                                         |          |             | Technical data                    |           |             | Technical data                    |           |             |
|-----------------------------------------|----------|-------------|-----------------------------------|-----------|-------------|-----------------------------------|-----------|-------------|
|                                         |          |             | VS-...-DSUB-...P                  |           |             | VS-...-DSUB-...P-LH               |           |             |
| Electrical data                         |          |             | -                                 |           |             | -                                 |           |             |
| Rated voltage                           |          |             | -                                 |           |             | -                                 |           |             |
| Rated current                           |          |             | -                                 |           |             | -                                 |           |             |
| Surge voltage category                  |          |             | -                                 |           |             | -                                 |           |             |
| Material data                           |          |             | -                                 |           |             | -                                 |           |             |
| Contact material                        |          |             | Gold over nickel                  |           |             | Gold over nickel                  |           |             |
| Contact surface material                |          |             | PBTP                              |           |             | PBTP                              |           |             |
| Contact carrier material                |          |             | V0                                |           |             | V0                                |           |             |
| Inflammability class according to UL 94 |          |             | -                                 |           |             | -                                 |           |             |
| Mechanical data                         |          |             | -                                 |           |             | -                                 |           |             |
| Pollution degree                        |          |             | ≥ 500                             |           |             | ≥ 500                             |           |             |
| Insertion/withdrawal cycles             |          |             | Accommodation of combined contact |           |             | Accommodation of combined contact |           |             |
| Connection method                       |          |             | -                                 |           |             | -                                 |           |             |
| Temperature data                        |          |             | -55 °C ... 125 °C                 |           |             | -55 °C ... 125 °C                 |           |             |
| Ambient temperature (operation)         |          |             |                                   |           |             |                                   |           |             |
|                                         |          |             | Ordering data                     |           |             | Ordering data                     |           |             |
| Description                             | Design   | No. of pos. | Type                              | Order No. | Pcs. / Pkt. | Type                              | Order No. | Pcs. / Pkt. |
| <b>D-SUB contact support</b>            |          |             |                                   |           |             |                                   |           |             |
| Plug                                    | 09       | 2 PK        | VS-09-ST-DSUB-2P                  | 1688418   | 10          | VS-09-ST-DSUB-2P-LH               | 1655292   | 10          |
| Socket                                  | 09       | 2 PK        | VS-09-BU-DSUB-2P                  | 1688421   | 10          | VS-09-BU-DSUB-2P-LH               | 1655289   | 10          |
| Plug                                    | 15       | 3 PK        | VS-15-ST-DSUB-3P                  | 1688201   | 10          | VS-15-ST-DSUB-3P-LH               | 1655331   | 10          |
| Socket                                  | 15       | 3 PK        | VS-15-BU-DSUB-3P                  | 1688214   | 10          | VS-15-BU-DSUB-3P-LH               | 1655328   | 10          |
| Plug                                    | D-SUB 25 | 5 PK        | VS-25-ST-DSUB-5P                  | 1689970   | 10          | VS-25-ST-DSUB-5P-LH               | 1655441   | 10          |
| Socket                                  | D-SUB 25 | 5 PK        | VS-25-BU-DSUB-5P                  | 1689983   | 10          | VS-25-BU-DSUB-5P-LH               | 1655438   | 10          |
| <b>D-SUB contact insert</b>             |          |             |                                   |           |             |                                   |           |             |
| Plug                                    | 09       | 1 PK 4 S    |                                   |           |             |                                   |           |             |
| Socket                                  | 09       | 1 PK 4 S    |                                   |           |             |                                   |           |             |
| Plug                                    | 15       | 2 PK 5 S    |                                   |           |             |                                   |           |             |
| Socket                                  | 15       | 2 PK 5 S    |                                   |           |             |                                   |           |             |
| Plug                                    | 25       | 3 PK 10 S   |                                   |           |             |                                   |           |             |
| Socket                                  | 25       | 3 PK 10 S   |                                   |           |             |                                   |           |             |
| Plug                                    | 25       | 4 PK 5 S    |                                   |           |             |                                   |           |             |
| Socket                                  | 25       | 4 PK 5 S    |                                   |           |             |                                   |           |             |
| <b>D-SUB contact insert</b>             |          |             |                                   |           |             |                                   |           |             |
| Plug                                    | 09       | 3           |                                   |           |             |                                   |           |             |
| Pin with capacitive PE                  | 09       | 3           |                                   |           |             |                                   |           |             |
| Socket                                  | 09       | 3           |                                   |           |             |                                   |           |             |
| Plug                                    | 15       | 5           |                                   |           |             |                                   |           |             |
| Pin with capacitive PE                  | 15       | 5           |                                   |           |             |                                   |           |             |
| Socket                                  | 15       | 5           |                                   |           |             |                                   |           |             |
|                                         |          |             | Accessories                       |           |             | Accessories                       |           |             |
| Power contacts                          |          |             | See page 217                      |           |             | See page 217                      |           |             |



For power contacts,  
with signal contacts (solder cups),  
fixing: 3 mm hole



For power contacts,  
with signal contacts (angled solder pins),  
fixing: 4-40 UNC threads



Socket insert  
with angled solder connection,  
pin insert with screw connection

| Technical data        |  |  |
|-----------------------|--|--|
| VS-...-DSUB-...P-...S |  |  |
| 250 V                 |  |  |
| 5 A                   |  |  |
| III                   |  |  |
| Copper alloy          |  |  |
| Gold over nickel      |  |  |
| PBTP                  |  |  |
| V0                    |  |  |
| 2                     |  |  |
| ≥ 200                 |  |  |
| Solder cup            |  |  |
| -55 °C ... 125 °C     |  |  |

| Ordering data        |           |             |
|----------------------|-----------|-------------|
| Type                 | Order No. | Pcs. / Pkt. |
| VS-09-ST-DSUB-1P-4S  | 1689006   | 10          |
| VS-09-BU-DSUB-1P-4S  | 1689019   | 10          |
| VS-15-ST-DSUB-2P-5S  | 1688227   | 10          |
| VS-15-BU-DSUB-2P-5S  | 1688230   | 10          |
| VS-25-ST-DSUB-3P-10S | 1689996   | 10          |
| VS-25-BU-DSUB-3P-10S | 1690008   | 10          |
| VS-25-ST-DSUB-4P-5S  | 1655386   | 10          |
| VS-25-BU-DSUB-4P-5S  | 1655373   | 10          |

| Accessories  |  |  |
|--------------|--|--|
| See page 217 |  |  |

| Technical data           |  |  |
|--------------------------|--|--|
| VS-...-DSUB-...P-...S-LH |  |  |
| 250 V                    |  |  |
| 5 A                      |  |  |
| III                      |  |  |
| Copper alloy             |  |  |
| Gold over nickel         |  |  |
| PBTP                     |  |  |
| V0                       |  |  |
| 2                        |  |  |
| ≥ 200                    |  |  |
| Solder connection        |  |  |
| -55 °C ... 125 °C        |  |  |

| Ordering data           |           |             |
|-------------------------|-----------|-------------|
| Type                    | Order No. | Pcs. / Pkt. |
| VS-09-ST-DSUB-1P-4S-LH  | 1655315   | 10          |
| VS-09-BU-DSUB-1P-4S-LH  | 1655302   | 10          |
| VS-15-ST-DSUB-2P-5S-LH  | 1655360   | 10          |
| VS-15-BU-DSUB-2P-5S-LH  | 1655344   | 10          |
| VS-25-ST-DSUB-3P-10S-LH | 1655425   | 10          |
| VS-25-BU-DSUB-3P-10S-LH | 1655412   | 10          |
| VS-25-ST-DSUB-4P-5S-LH  | 1655409   | 10          |
| VS-25-BU-DSUB-4P-5S-LH  | 1655399   | 10          |

| Accessories  |  |  |
|--------------|--|--|
| See page 217 |  |  |

| Technical data   |  |  |
|------------------|--|--|
| VS-PSC 1,5/3-M   |  |  |
| 250 V            |  |  |
| 8 A              |  |  |
| III              |  |  |
| Copper alloy     |  |  |
| Tin-plated       |  |  |
| PA               |  |  |
| V0               |  |  |
| 3                |  |  |
| ≥ 100            |  |  |
| PCB connection   |  |  |
| -20 °C ... 80 °C |  |  |

| Ordering data     |           |             |
|-------------------|-----------|-------------|
| Type              | Order No. | Pcs. / Pkt. |
| VS-PSC 1,5/3-M    | 1689310   | 10          |
| VS-PSC 1,5/3-M PE | 1689336   | 10          |
| PSC 1,5/ 3-F      | 1841909   | 50          |
| VS-PSC 1,5/5-M    | 1688825   | 10          |
| VS-PSC 1,5/5-M PE | 1689323   | 10          |
| PSC 1,5/ 5-F      | 1841912   | 50          |

| Accessories |  |  |
|-------------|--|--|
|             |  |  |

# Data plug-in connectors

## D-SUB-based plug-in connectors

### Signal contacts



**Contacts**  
for standard D-SUB contact carriers



**Contacts**  
for high-density D-SUB contact carriers

| Electrical data                 |
|---------------------------------|
| Rated voltage                   |
| Rated current                   |
| Contact material                |
| Contact surface material        |
| Mechanical data                 |
| Connection method               |
| Conductor cross section         |
| Connection cross section AWG    |
| Insertion/withdrawal cycles     |
| Temperature data                |
| Ambient temperature (operation) |

| Technical data                               |                                             |
|----------------------------------------------|---------------------------------------------|
| AWG 28 ... 24                                | AWG 24 ... 20                               |
| 125 V                                        | 125 V                                       |
| 5 A                                          | 5 A                                         |
| Copper alloy                                 | Copper alloy                                |
| Hard gold-plated over nickel                 | Hard gold-plated over nickel                |
| Crimp connection                             | Crimp connection                            |
| 0.08 mm <sup>2</sup> ... 0.2 mm <sup>2</sup> | 0.2 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> |
| 28 ... 24                                    | 24 ... 20                                   |
| ≥ 200                                        | ≥ 200                                       |
| -55 °C ... 125 °C                            | -55 °C ... 125 °C                           |

| Technical data               |
|------------------------------|
| VS-...-CD-HD-1,0/13,5/0,37   |
| 60 V                         |
| 3 A                          |
| Copper alloy                 |
| Hard gold-plated over nickel |
| Crimp connection             |
| 0.34 mm <sup>2</sup>         |
| 22                           |
| ≥ 200                        |
| -55 °C ... 125 °C            |

| Description                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------|
| <b>Turned pin crimp contacts</b> , for D-SUB contact inserts with standard contact density, gold-plated surface |
| AWG 28 ... 24                                                                                                   |
| AWG 24 ... 20                                                                                                   |
| <b>Turned crimp contacts VS 1,0</b>                                                                             |
| Gold-plated                                                                                                     |
| <b>Turned crimp contacts</b> , for D-SUB contact inserts with high density, gold-plated surface                 |
| AWG 22, plug                                                                                                    |
| AWG 22, socket                                                                                                  |

| Ordering data         |           |             |
|-----------------------|-----------|-------------|
| Type                  | Order No. | Pcs. / Pkt. |
| VS-ST-CD-1,0/14,8/0,2 | 1688971   | 30          |
| VS-ST-CD-1,0/14,8/0,5 | 1688968   | 30          |
| VS-BU-CD-1,0/14,4/0,2 | 1688997   | 30          |
| VS-BU-CD-1,0/14,4/0,5 | 1688984   | 30          |

| Ordering data             |           |             |
|---------------------------|-----------|-------------|
| Type                      | Order No. | Pcs. / Pkt. |
| VS-ST-CD-HD-1,0/13,5/0,37 | 1655276   | 100         |
| VS-BU-CD-HD-1,0/13,5/0,37 | 1655263   | 100         |

| Crimping pliers                                                                                               |
|---------------------------------------------------------------------------------------------------------------|
| - For rolled D-SUB contacts, high-density, 0.08 mm <sup>2</sup> - 0.5 mm <sup>2</sup> , incl. contact locator |
| Insertion/extraction tool, for fitting and removing D-SUB standard signal contacts                            |
| Insertion/extraction tool, for fitting and removing D-SUB high-density signal contacts                        |

| Accessories            |         |   |
|------------------------|---------|---|
| CRIMPFOX-DSUB 5        | 1212111 | 1 |
| VS-IET-DSUB-SIGNAL-STD | 1658794 | 1 |

| Accessories           |         |   |
|-----------------------|---------|---|
| CRIMPFOX-DSUB 5       | 1212111 | 1 |
| VS-IET-DSUB-SIGNAL-HD | 1658503 | 1 |

## Power contacts

With straight solder cups  
or angled solder pins

With screw connection

|                                                                                                   | Technical data                                                                                              |                              | Technical data               |                |           |             |
|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|------------------------------|------------------------------|----------------|-----------|-------------|
|                                                                                                   | VS-.../2,6                                                                                                  | VS-.../4,6                   | VS-...SC-2,6                 |                |           |             |
| Electrical data                                                                                   |                                                                                                             |                              |                              |                |           |             |
| Rated voltage                                                                                     | -                                                                                                           | -                            | -                            |                |           |             |
| Rated current                                                                                     | 20 A                                                                                                        | 40 A                         | 40 A                         |                |           |             |
| Material data                                                                                     |                                                                                                             |                              |                              |                |           |             |
| Contact material                                                                                  | Copper alloy                                                                                                | Copper alloy                 | Copper alloy                 |                |           |             |
| Contact surface material                                                                          | Hard gold-plated over nickel                                                                                | Hard gold-plated over nickel | Hard gold-plated over nickel |                |           |             |
| Mechanical data                                                                                   |                                                                                                             |                              |                              |                |           |             |
| Connection method                                                                                 | Solder cup                                                                                                  | Solder cup                   | Screw connection             |                |           |             |
| Conductor cross section                                                                           | 2 mm² ... 3.5 mm²                                                                                           | 4.5 mm² ... 8.5 mm²          | 0.75 mm² ... 2 mm²           |                |           |             |
| Connection cross section AWG                                                                      | 14 ... 12                                                                                                   | 10 ... 8                     | 18 ... 14                    |                |           |             |
| Insertion/withdrawal cycles                                                                       | ≥ 500                                                                                                       | ≥ 500                        | ≥ 500                        |                |           |             |
| Temperature data                                                                                  |                                                                                                             |                              |                              |                |           |             |
| Ambient temperature (operation)                                                                   | -55 °C ... 155 °C                                                                                           | -55 °C ... 155 °C            | -55 °C ... 155 °C            |                |           |             |
|                                                                                                   |                                                                                                             |                              |                              |                |           |             |
| Ordering data                                                                                     |                                                                                                             |                              | Ordering data                |                |           |             |
| Description                                                                                       | Type                                                                                                        | Order No.                    | Pcs. / Pkt.                  | Type           | Order No. | Pcs. / Pkt. |
|                                                                                                   |                                                                                                             |                              |                              |                |           |             |
|                                                                                                   | Power contact, for D-SUB combination inserts, with straight solder cup, gold-plated surface                 |                              |                              |                |           |             |
|                                                                                                   | Up to 20 A, plug                                                                                            | VS-ST-LK-3,6/22,4/2,6        | 1688243                      | 30             |           |             |
|                                                                                                   | Up to 40 A, plug                                                                                            | VS-ST-LK-3,6/22,4/4,6        | 1688269                      | 30             |           |             |
|                                                                                                   | Up to 20 A, socket                                                                                          | VS-BU-LK-3,6/22,8/2,6        | 1688256                      | 30             |           |             |
|                                                                                                   | Up to 40 A, socket                                                                                          | VS-BU-LK-3,6/22,8/4,6        | 1688272                      | 30             |           |             |
|                                                                                                   | Power contact, for D-SUB combination inserts, with angled solder pins for PCB mounting, gold-plated surface |                              |                              |                |           |             |
|                                                                                                   | Up to 40 A, plug                                                                                            | VS-ST-LH-3,6/18/3,8          | 1655467                      | 30             |           |             |
|                                                                                                   | Up to 40 A, socket                                                                                          | VS-BU-LH-3,6/18/3,8          | 1655454                      | 30             |           |             |
|                                                                                                   |                                                                                                             |                              |                              |                |           |             |
|                                                                                                   |                                                                                                             |                              |                              |                |           |             |
| Power contact, for D-SUB combination inserts, with straight screw connection, gold-plated surface |                                                                                                             |                              |                              |                |           |             |
| Up to 40 A, plug                                                                                  |                                                                                                             |                              |                              | VS-ST-SC-2,6   | 1655483   | 30          |
| Up to 40 A, socket                                                                                |                                                                                                             |                              |                              | VS-BU-SC-2,6   | 1655470   | 30          |
|                                                                                                   |                                                                                                             |                              |                              |                |           |             |
| Accessories                                                                                       |                                                                                                             |                              | Accessories                  |                |           |             |
| Removal tool                                                                                      | HC-M4-KOAX-EWZ                                                                                              | 1676747                      | 1                            | HC-M4-KOAX-EWZ | 1676747   | 1           |

# Data plug-in connectors

## D-SUB-based plug-in connectors

### Assembled cables and housing with IP20 and IP67 protection



Assembled D-SUB cable, IP20,  
plug to socket



D-SUB sleeve housing, IP20,  
with 4-40 UNC knurl screws

|                                                                                                           |              |  | Technical data       |           |             | Technical data     |           |             |
|-----------------------------------------------------------------------------------------------------------|--------------|--|----------------------|-----------|-------------|--------------------|-----------|-------------|
|                                                                                                           |              |  | VS-...-DSUB-20-LI... |           |             | VS-...-T-20-1-S... |           |             |
| Electrical data                                                                                           |              |  | 125 V                |           |             | -                  |           |             |
| Rated voltage                                                                                             |              |  | 1 A                  |           |             | -                  |           |             |
| Rated current                                                                                             |              |  | PVC                  |           |             | ABS                |           |             |
| Material data                                                                                             |              |  | -                    |           |             | Metal-plated       |           |             |
| Housing material                                                                                          |              |  | Copper alloy         |           |             | -                  |           |             |
| Housing surface material                                                                                  |              |  | Gold-plated          |           |             | -                  |           |             |
| Contact material                                                                                          |              |  | -                    |           |             | V0                 |           |             |
| Contact surface material                                                                                  |              |  | -                    |           |             | Bare metallic      |           |             |
| Inflammability class according to UL 94                                                                   |              |  | -                    |           |             | IP20               |           |             |
| Mechanical data                                                                                           |              |  | -                    |           |             | 4 mm ... 8.5 mm    |           |             |
| Color                                                                                                     |              |  | IP20                 |           |             | -                  |           |             |
| Degree of protection                                                                                      |              |  | -                    |           |             | 0 °C ... 70 °C     |           |             |
| External cable diameter                                                                                   |              |  | ≥ 50                 |           |             |                    |           |             |
| Insertion/withdrawal cycles                                                                               |              |  | 0 °C ... 70 °C       |           |             |                    |           |             |
| Temperature data                                                                                          |              |  |                      |           |             |                    |           |             |
| Ambient temperature (operation)                                                                           |              |  |                      |           |             |                    |           |             |
|                                                                                                           |              |  | Ordering data        |           |             | Ordering data      |           |             |
| Description                                                                                               | Cable length |  | Type                 | Order No. | Pcs. / Pkt. | Type               | Order No. | Pcs. / Pkt. |
| <b>Assembled D-SUB cable, shielded, stranded (7-wire), plug to socket</b>                                 |              |  |                      |           |             |                    |           |             |
| D-SUB 09                                                                                                  | 1 m          |  | VS-09-DSUB-20-LI-1,0 | 1656233   | 1           |                    |           |             |
| D-SUB 09                                                                                                  | 2 m          |  | VS-09-DSUB-20-LI-2,0 | 1656246   | 1           |                    |           |             |
| D-SUB 09                                                                                                  | 5 m          |  | VS-09-DSUB-20-LI-5,0 | 1656259   | 1           |                    |           |             |
| D-SUB 15                                                                                                  | 1 m          |  | VS-15-DSUB-20-LI-1,0 | 1656262   | 1           |                    |           |             |
| D-SUB 15                                                                                                  | 2 m          |  | VS-15-DSUB-20-LI-2,0 | 1656275   | 1           |                    |           |             |
| D-SUB 15                                                                                                  | 5 m          |  | VS-15-DSUB-20-LI-5,0 | 1656288   | 1           |                    |           |             |
| D-SUB 25                                                                                                  | 1 m          |  | VS-25-DSUB-20-LI-1,0 | 1656291   | 1           |                    |           |             |
| D-SUB 25                                                                                                  | 2 m          |  | VS-25-DSUB-20-LI-2,0 | 1656301   | 1           |                    |           |             |
| D-SUB 25                                                                                                  | 5 m          |  | VS-25-DSUB-20-LI-5,0 | 1656314   | 1           |                    |           |             |
| <b>D-SUB sleeve housing, shielded</b>                                                                     |              |  |                      |           |             |                    |           |             |
| D-SUB 09, straight design                                                                                 |              |  |                      |           |             | VS-09-T-20-1-S-S   | 1655658   | 1           |
| D-SUB 09, angled design                                                                                   |              |  |                      |           |             | VS-09-T-20-1-S-A   | 1655661   | 1           |
| D-SUB 15, straight design                                                                                 |              |  |                      |           |             | VS-15-T-20-1-S-S   | 1655674   | 1           |
| D-SUB 15, angled design                                                                                   |              |  |                      |           |             | VS-15-T-20-1-S-A   | 1655687   | 1           |
| D-SUB 25, straight design                                                                                 |              |  |                      |           |             | VS-25-T-20-1-S-S   | 1655690   | 1           |
| D-SUB 25, angled design                                                                                   |              |  |                      |           |             | VS-25-T-20-1-S-A   | 1655700   | 1           |
| <b>D-SUB sleeve housing</b>                                                                               |              |  |                      |           |             |                    |           |             |
| D-SUB 09, M16 design                                                                                      |              |  |                      |           |             |                    |           |             |
| D-SUB 15, Pg11 design                                                                                     |              |  |                      |           |             |                    |           |             |
| D-SUB 25, M20 design                                                                                      |              |  |                      |           |             |                    |           |             |
| <b>D-SUB cap nut with line seal, for sleeve housing VARIOSUB IP67, design / line Ø:</b>                   |              |  |                      |           |             |                    |           |             |
| M16 / 3 mm ... 6 mm                                                                                       |              |  |                      |           |             |                    |           |             |
| M16 / 5 mm ... 9 mm                                                                                       |              |  |                      |           |             |                    |           |             |
| Pg11 / 3 mm ... 7 mm                                                                                      |              |  |                      |           |             |                    |           |             |
| Pg11 / 5 mm ... 10 mm                                                                                     |              |  |                      |           |             |                    |           |             |
| M20 / 5 mm ... 13 mm                                                                                      |              |  |                      |           |             |                    |           |             |
| <b>EMC inner sleeve, for shielding for sleeve housing VARIOSUB IP67</b>                                   |              |  |                      |           |             |                    |           |             |
| For D-SUB 09 sleeve housing                                                                               |              |  |                      |           |             |                    |           |             |
| For D-SUB 15 sleeve housing                                                                               |              |  |                      |           |             |                    |           |             |
| For D-SUB 25 sleeve housing                                                                               |              |  |                      |           |             |                    |           |             |
| <b>D-SUB protective cover, IP54 protection, for panel mounting frame and sleeve housing VARIOSUB IP67</b> |              |  |                      |           |             |                    |           |             |
| D-SUB 09                                                                                                  |              |  |                      |           |             |                    |           |             |
| D-SUB 15                                                                                                  |              |  |                      |           |             |                    |           |             |
| D-SUB 25                                                                                                  |              |  |                      |           |             |                    |           |             |



**IP67 D-SUB sleeve housing  
and IP54 protective cover**



### Accessories for IP67 D-SUB sleeve housing

| Technical data   |                  |
|------------------|------------------|
| VS-09-T-2M16     | VS-...-SD        |
| -                | -                |
| -                | -                |
| PA               | PA               |
| -                | -                |
| -                | -                |
| -                | -                |
| V0               | V0               |
| gray             | gray             |
| IP67             | IP54             |
| 3 mm ... 9 mm    | -                |
| ≥ 1000           | ≥ 1000           |
| -40 °C ... 80 °C | -40 °C ... 80 °C |

| Ordering data |           |                |
|---------------|-----------|----------------|
| Type          | Order No. | Pcs. /<br>Pkt. |

|  |  |  |
|--|--|--|
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|  |  |  |

|               |         |   |
|---------------|---------|---|
| VS-09-T-2M16  | 1688353 | 5 |
| VS-15-T-2PG11 | 1688052 | 5 |
| VS-25-T-2M20  | 1689792 | 5 |

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|          |         |   |
|----------|---------|---|
|          |         |   |
| VS-09-SD | 1887086 | 5 |
| VS-15-SD | 1887099 | 5 |
| VS-25-SD | 1652211 | 5 |

| Technical data   |                  |
|------------------|------------------|
| VS-M16(3-6)      | VS-...TI-...EMV  |
| -                | -                |
| -                | -                |
| PA               | Nickel silver    |
| -                | -                |
| -                | -                |
| -                | -                |
| V0               | -                |
| gray             | Bare metallic    |
| IP67             | -                |
| 3 mm ... 6 mm    | -                |
| -                | -                |
| -40 °C ... 80 °C | -40 °C ... 80 °C |

| Ordering data |           |             |
|---------------|-----------|-------------|
| Type          | Order No. | Pcs. / Pkt. |

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|----------------|---------|---|
|                |         |   |
|                |         |   |
| VS-M16 (3-6)   | 1688450 | 5 |
| VS-M16 (5-9)   | 1688447 | 5 |
| VS-PG11 (3- 7) | 1688117 | 5 |
| VS-PG11 (5-10) | 1688104 | 5 |
| VS-M20 (5-13)  | 1652127 | 5 |

|                |         |   |
|----------------|---------|---|
| VS-09-TI-2EMV  | 1688476 | 5 |
| VS-15-TI-2EMV  | 1688065 | 5 |
| VS-25-TI-2 EMV | 1689802 | 5 |

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# Data plug-in connectors

## D-SUB-based plug-in connectors

### IP67 housing sets, gender changer, and IP67 couplings



IP67 D-SUB panel mounting frame and EMC shroud



IP67 D-SUB connector set consisting of:  
sleeve housing, panel mounting frame, and  
accessories

|                                                                                                            | Technical data                         |           |             | Technical data                         |           |             |
|------------------------------------------------------------------------------------------------------------|----------------------------------------|-----------|-------------|----------------------------------------|-----------|-------------|
|                                                                                                            | VS-...A...                             |           |             | VS-09-SET-STD                          |           |             |
| Electrical data                                                                                            |                                        |           |             |                                        |           |             |
| Rated voltage                                                                                              | -                                      |           |             | -                                      |           |             |
| Rated current                                                                                              | -                                      |           |             | -                                      |           |             |
| Material data                                                                                              |                                        |           |             |                                        |           |             |
| Housing material                                                                                           | PA                                     |           |             | PA                                     |           |             |
| Contact material                                                                                           | -                                      |           |             | -                                      |           |             |
| Contact surface material                                                                                   | -                                      |           |             | -                                      |           |             |
| Seal material                                                                                              | Flat gasket: NBR; profile gasket: EPDM |           |             | Flat gasket: NBR; profile gasket: EPDM |           |             |
| Inflammability class according to UL 94                                                                    | V0                                     |           |             | V0                                     |           |             |
| Mechanical data                                                                                            |                                        |           |             |                                        |           |             |
| Color                                                                                                      | gray                                   |           |             | gray                                   |           |             |
| Degree of protection                                                                                       | IP67                                   |           |             | IP67                                   |           |             |
| External cable diameter                                                                                    | -                                      |           |             | 3 mm ... 9 mm                          |           |             |
| Temperature data                                                                                           |                                        |           |             |                                        |           |             |
| Ambient temperature (operation)                                                                            | -40 °C ... 80 °C                       |           |             | -40 °C ... 80 °C                       |           |             |
|                                                                                                            | Ordering data                          |           |             | Ordering data                          |           |             |
| Description                                                                                                | Type                                   | Order No. | Pcs. / Pkt. | Type                                   | Order No. | Pcs. / Pkt. |
| <b>D-SUB panel mounting frame</b> , for accommodating D-SUB contact inserts                                |                                        |           |             |                                        |           |             |
| D-SUB 09                                                                                                   | VS-09-A                                | 1688366   | 5           |                                        |           |             |
| D-SUB 15                                                                                                   | VS-15-A                                | 1688036   | 5           |                                        |           |             |
| D-SUB 25                                                                                                   | VS-25-A                                | 1689750   | 5           |                                        |           |             |
| <b>D-SUB EMC shroud</b> , for the IP67 panel mounting frame, for shield contacting to the housing panel    |                                        |           |             |                                        |           |             |
| D-SUB 09                                                                                                   | VS-09-A-EMV-S                          | 1688463   | 5           |                                        |           |             |
| D-SUB 15                                                                                                   | VS-15-A-EMV-S                          | 1688049   | 5           |                                        |           |             |
| D-SUB 25                                                                                                   | VS-25-A-EMV-S                          | 1689763   | 5           |                                        |           |             |
| <b>D-SUB connector set</b>                                                                                 |                                        |           |             |                                        |           |             |
| D-SUB 09                                                                                                   |                                        |           |             | VS-09-SET-STD                          | 1689145   | 1           |
| D-SUB 15                                                                                                   |                                        |           |             | VS-15-SET-STD                          | 1689129   | 1           |
| D-SUB 25                                                                                                   |                                        |           |             | VS-25-SET-STD                          | 1652198   | 1           |
| <b>D-SUB panel mounting frame</b> , with integrated gender changer, shielded                               |                                        |           |             |                                        |           |             |
| D-SUB 09, pin/pin                                                                                          |                                        |           |             |                                        |           |             |
| D-SUB 09, socket/socket                                                                                    |                                        |           |             |                                        |           |             |
| D-SUB 15, pin/pin                                                                                          |                                        |           |             |                                        |           |             |
| D-SUB 15, socket/socket                                                                                    |                                        |           |             |                                        |           |             |
| D-SUB 25, pin/pin                                                                                          |                                        |           |             |                                        |           |             |
| D-SUB 25, socket/socket                                                                                    |                                        |           |             |                                        |           |             |
| <b>D-SUB coupling</b> , with integrated gender changer, shielded                                           |                                        |           |             |                                        |           |             |
| D-SUB 09, pin/pin                                                                                          |                                        |           |             |                                        |           |             |
| D-SUB 09, socket/socket                                                                                    |                                        |           |             |                                        |           |             |
| D-SUB 15, pin/pin                                                                                          |                                        |           |             |                                        |           |             |
| D-SUB 15, socket/socket                                                                                    |                                        |           |             |                                        |           |             |
| D-SUB 25, pin/pin                                                                                          |                                        |           |             |                                        |           |             |
| D-SUB 25, socket/socket                                                                                    |                                        |           |             |                                        |           |             |
|                                                                                                            | Accessories                            |           |             | Accessories                            |           |             |
| <b>D-SUB protective cover</b> , IP54 protection, for panel mounting frame and sleeve housing VARIOSUB IP67 |                                        |           |             |                                        |           |             |
| D-SUB 09                                                                                                   | VS-09-SD                               | 1887086   | 5           | VS-09-SD                               | 1887086   | 5           |
| D-SUB 15                                                                                                   | VS-15-SD                               | 1887099   | 5           | VS-15-SD                               | 1887099   | 5           |
| D-SUB 25                                                                                                   | VS-25-SD                               | 1652211   | 5           | VS-25-SD                               | 1652211   | 5           |

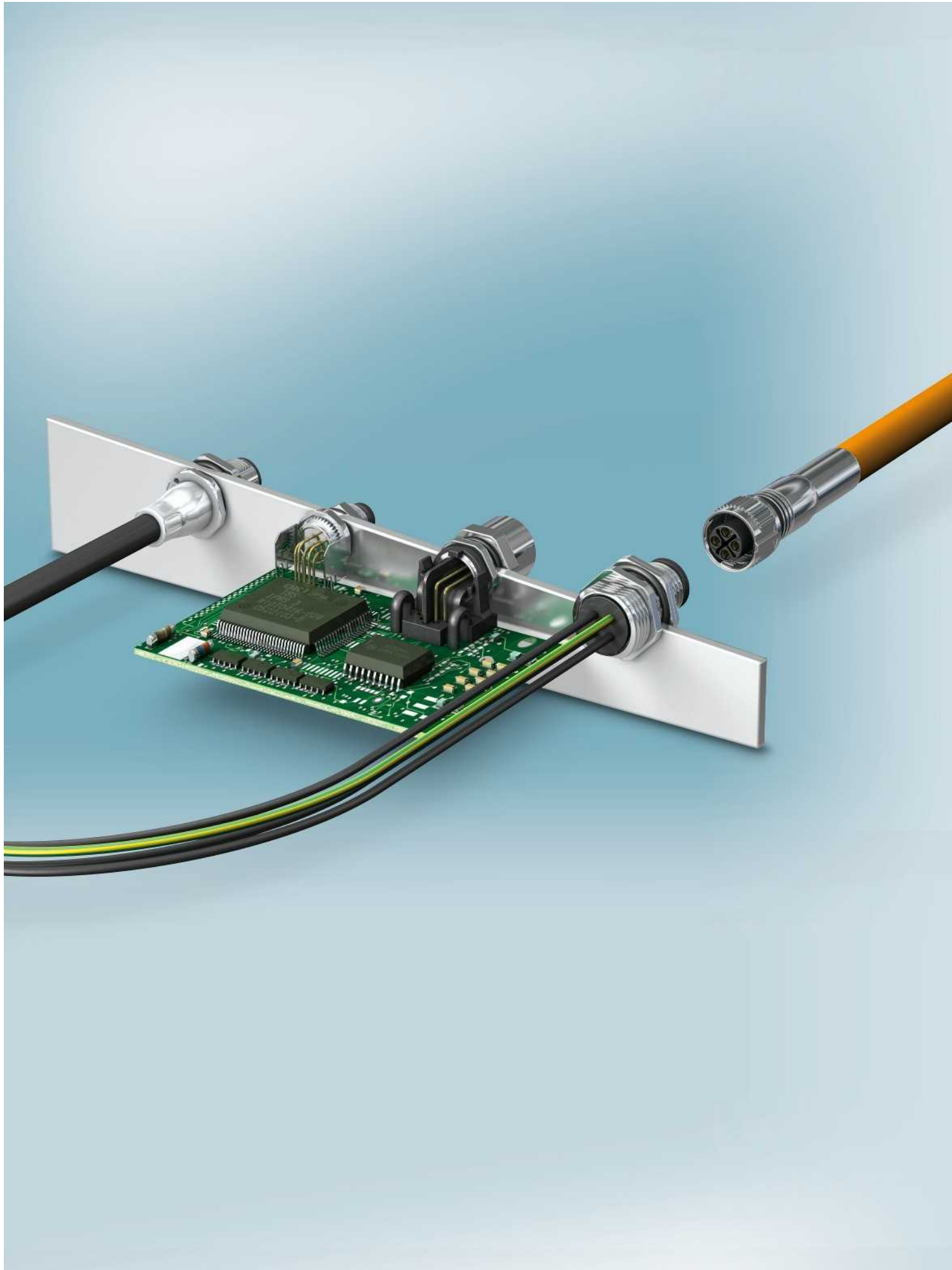


**IP67 D-SUB coupling  
with integrated gender changer**

| Technical data               |
|------------------------------|
| VS-...-KU-...                |
| 125 V                        |
| 5 A                          |
| PA                           |
| Copper alloy                 |
| Hard gold-plated over nickel |
| EPDM                         |
| V0                           |
| gray                         |
| IP67                         |
| -                            |
| -40 °C ... 80 °C             |

| Ordering data  |           |             |
|----------------|-----------|-------------|
| Type           | Order No. | Pcs. / Pkt. |
|                |           |             |
|                |           |             |
|                |           |             |
|                |           |             |
| VS-09-KU-ST/ST | 1689640   | 5           |
| VS-09-KU-BU/BU | 1689637   | 5           |
| VS-15-KU-ST/ST | 1689666   | 5           |
| VS-15-KU-BU/BU | 1689653   | 5           |
| VS-25-KU-ST/ST | 1689682   | 5           |
| VS-25-KU-BU/BU | 1689679   | 5           |

| Accessories |         |   |
|-------------|---------|---|
| VS-09-SD    | 1887086 | 5 |
| VS-15-SD    | 1887099 | 5 |
| VS-25-SD    | 1652211 | 5 |



# M5 to M12 circular plug-in connectors

## Sensor/actuator device plug-in connectors

A comprehensive range of M5, M8, and M12 flush-type plug-in connectors and panel feed-throughs has emerged as a result of the various requirements for sensor/actuator device connection technology in industrial environments. Customer-specific developments enable optimum adaptation to individual device concepts.

## Sensor/actuator plug-in connectors for assembly

Safe and efficient assembly is of utmost importance in field wiring. The 5 selection options of the connection technology enable precise adaptation to the respective application or requirements in the field. The plug-in connectors for assembly are available in various versions, unshielded and EMC-compliant.

## Sensor/actuator device plug-in connectors

|                                    |     |
|------------------------------------|-----|
| M5, front/rear mounting            | 224 |
| M8, front mounting                 | 225 |
| M8, rear mounting                  | 226 |
| M12, front mounting                | 232 |
| M12, rear mounting                 | 242 |
| M12, rear mounting, two-piece      | 252 |
| M12, for fieldbus systems          | 260 |
| M12, plastic                       | 263 |
| M12, control cabinet feed-throughs | 264 |
| M12, stainless steel               | 268 |
| 7/8", front mounting               | 265 |
| 7/8", rear mounting                | 266 |

## Sensor/actuator plug-in connectors for assembly

|                         |     |
|-------------------------|-----|
| M8 plug-in connectors   | 272 |
| M12 plug-in connectors  | 275 |
| 7/8" plug-in connectors | 285 |

## M12 power plug-in connectors

|                                                          |     |
|----------------------------------------------------------|-----|
| Device plug-in connectors with litz wires                | 286 |
| Two-piece device plug-in connectors for reflow processes | 288 |
| Plug-in connectors for assembly                          | 289 |
| SPEEDCON power cable                                     | 290 |

## Accessories

|                 |     |
|-----------------|-----|
| Pin assignments | 298 |
|-----------------|-----|

# M5 to M12 circular plug-in connectors

## M5/M8 sensor/actuator device plug-in connectors

### M5, front/rear mounting

#### Notes:

Flat nut recommended for housing wall thicknesses < 2.5 mm.



Front mounting,  
with 0.5 m long litz wires



Rear mounting, one-piece, straight,  
for wave soldering processes



#### Technical data

|                                             | 3-pos.           | 4-pos.           |
|---------------------------------------------|------------------|------------------|
| General data                                |                  |                  |
| M5 circular plug-in connector according to: | IEC 61076-2-105  | IEC 61076-2-105  |
| Pollution degree                            | 3                | 3                |
| Degree of protection                        | IP67             | IP67             |
| Connection method                           | Individual wires | Individual wires |
| Electrical data                             |                  |                  |
| Rated voltage                               | 60 V             | 60 V             |
| Rated current                               | 1 A              | 1 A              |
| Volume resistance                           | ≤ 3 mΩ           | ≤ 3 mΩ           |
| Material data                               |                  |                  |
| Material contact / contact surface          | CuSn / Au        | CuSn / Au        |
| Contact carrier material                    | PA 66            | PA 66            |
| Inflammability class according to UL 94     | HB               | HB               |
| Cable type                                  | TPE litz wire    | TPE litz wire    |
| Temperature data                            |                  |                  |
| Plug / socket                               | -25 ... 85       | -25 ... 85       |

#### Ordering data

| Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|-----------|-------------|-----------|-------------|
| 3-pos.    |             | 4-pos.    |             |
| 1530605   | 1           | 1530618   | 1           |
| 1530582   | 1           | 1530595   | 1           |

#### Accessories

|               |         |     |
|---------------|---------|-----|
| SACC-E-MU-M 5 | 1535901 | 100 |
|---------------|---------|-----|



#### Technical data

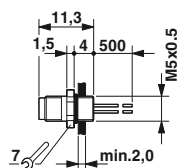
|                                             | 3-pos.          | 4-pos.          |
|---------------------------------------------|-----------------|-----------------|
| General data                                |                 |                 |
| M5 circular plug-in connector according to: | IEC 61076-2-105 | IEC 61076-2-105 |
| Pollution degree                            | 3               | 3               |
| Degree of protection                        | IP67            | IP67            |
| Connection method                           | Solder pins     | Solder pins     |
| Electrical data                             |                 |                 |
| Rated voltage                               | 60 V            | 60 V            |
| Rated current                               | 1 A             | 1 A             |
| Volume resistance                           | ≤ 3 mΩ          | ≤ 3 mΩ          |
| Material data                               |                 |                 |
| Material contact / contact surface          | CuSn / Au       | CuSn / Au       |
| Contact carrier material                    | PA 66           | PA 66           |
| Inflammability class according to UL 94     | HB              | HB              |
| Cable type                                  | -               | -               |
| Temperature data                            |                 |                 |
| Plug / socket                               | -25 ... 80      | -25 ... 85      |

#### Ordering data

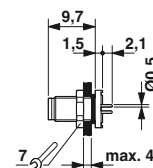
| Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|-----------|-------------|-----------|-------------|
| 3-pos.    |             | 4-pos.    |             |
| 1530647   | 20          | 1530650   | 20          |
| 1530621   | 20          | 1530634   | 20          |

#### Accessories

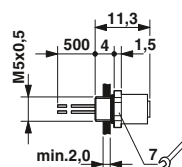
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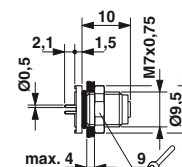
M5 flush-type plug



M5 flush-type plug, one-piece



M5 flush-type socket



M5 flush-type socket, one-piece

**M8, front mounting,  
with 0.5 m long litz wires**



**M8, 3, 4, 5-pos.**



**M8, 6, 8-pos.**



| Technical data                              |                  |                  |                  |
|---------------------------------------------|------------------|------------------|------------------|
| 3-pos.                                      | 4-pos.           | 5-pos.           |                  |
| General data                                |                  |                  |                  |
| M8 circular plug-in connector according to: | IEC 61076-2-104  | IEC 61076-2-104  | IEC 61076-2-104  |
| Pollution degree                            | 3                | 3                | 3                |
| Degree of protection                        | IP67             | IP67             | IP67             |
| Connection method                           | Individual wires | Individual wires | Individual wires |
| Electrical data                             |                  |                  |                  |
| Rated voltage                               | 60 V             | 30 V             | 30 V             |
| Rated current                               | 4 A              | 4 A              | 3 A              |
| Volume resistance                           | ≤ 3 mΩ           | ≤ 3 mΩ           | ≤ 3 mΩ           |
| Material data                               |                  |                  |                  |
| Material contact / contact surface          | Cu alloy / Au    | Cu alloy / Au    | Cu alloy / Au    |
| Contact carrier material                    | PA 66            | PA 66            | PA 66            |
| Inflammability class according to UL 94     | HB               | HB               | HB               |
| Cable type                                  | TPE litz wire    | TPE litz wire    | PVC litz wire    |
| Temperature data                            |                  |                  |                  |
| Plug / socket                               | -25 ... 85       | -25 ... 85       | -25 ... 85       |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 3-pos.        |             | 4-pos.    |             | 5-pos.    |             |
| 1500350       | 1           | 1500363   | 1           |           |             |
| 1500334       | 1           | 1500347   | 1           |           |             |
|               |             |           |             | 1424233   | 1           |
|               |             |           |             | 1424234   | 1           |

| Accessories   |         |     |
|---------------|---------|-----|
| SACC-E-MU-M 8 | 1504071 | 100 |



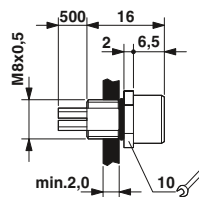
| Technical data                              |                  |                  |       |
|---------------------------------------------|------------------|------------------|-------|
| 6-pos.                                      | 8-pos.           |                  |       |
| General data                                |                  |                  |       |
| M8 circular plug-in connector according to: | IEC 61076-2-104  | IEC 61076-2-104  | -     |
| Pollution degree                            | 3                | 3                | -     |
| Degree of protection                        | IP67             | IP67             | -     |
| Connection method                           | Individual wires | Individual wires | -     |
| Electrical data                             |                  |                  |       |
| Rated voltage                               | 30 V             | 30 V             | -     |
| Rated current                               | 2 A              | 1.5 A            | -     |
| Volume resistance                           | ≤ 3 mΩ           | ≤ 3 mΩ           | -     |
| Material data                               |                  |                  |       |
| Material contact / contact surface          | Cu alloy / Au    | Cu alloy / Au    | - / - |
| Contact carrier material                    | PA 66            | PA 66            | -     |
| Inflammability class according to UL 94     | HB               | HB               | -     |
| Cable type                                  | TPE litz wire    | PVC litz wire    | -     |
| Temperature data                            |                  |                  |       |
| Plug / socket                               | -25 ... 85       | -25 ... 85       | -     |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 6-pos.        |             | 8-pos.    |             |           |             |
| 1542677       | 1           | 1424231   | 1           |           |             |
| 1542664       | 1           | 1424232   | 1           |           |             |

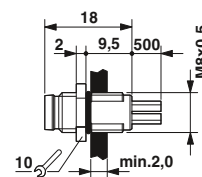
| Accessories   |         |     |
|---------------|---------|-----|
| SACC-E-MU-M 8 | 1504071 | 100 |

| Description                      | Coding       |
|----------------------------------|--------------|
| <b>Device plug-in connectors</b> |              |
| Socket                           | A - standard |
| Plug                             | A - standard |
| Socket                           | B - inverse  |
| Plug                             | B - inverse  |

|                        |
|------------------------|
| <b>Flat nut, with:</b> |
| M8 thread              |



**M8 flush-type socket**



**M8 flush-type plug**

## M5 to M12 circular plug-in connectors

### M5/M8 sensor/actuator device plug-in connectors

**M8, rear mounting, one-piece, straight, for wave soldering processes**



M8, 3, 4-pos.



M8, 6, 8-pos.



#### Technical data

| General data                                |                          |
|---------------------------------------------|--------------------------|
| M8 circular plug-in connector according to: |                          |
| Pollution degree                            | 3                        |
| Degree of protection                        | IP67                     |
| Connection method                           | Solder pins              |
| Electrical data                             |                          |
| Rated voltage                               | 60 V                     |
| Rated current                               | 4 A                      |
| Volume resistance                           | $\leq 3 \text{ m}\Omega$ |
| Material data                               |                          |
| Material contact / contact surface          | CuSn / Au                |
| Contact carrier material                    | PA 66                    |
| Inflammability class according to UL 94     | HB                       |
| Temperature data                            |                          |
| Plug / socket                               | [°C]                     |

| 3-pos.                   | 4-pos.                   |
|--------------------------|--------------------------|
| IEC 61076-2-104          | IEC 61076-2-104          |
| 3                        | 3                        |
| IP67                     | IP67                     |
| Solder pins              | Solder pins              |
| 60 V                     | 30 V                     |
| 4 A                      | 4 A                      |
| $\leq 3 \text{ m}\Omega$ | $\leq 3 \text{ m}\Omega$ |
| CuSn / Au                | CuSn / Au                |
| PA 66                    | PA 66                    |
| HB                       | HB                       |
| -25 ... 85               | -25 ... 85               |

#### Ordering data

| Description                      | Coding       |
|----------------------------------|--------------|
| <b>Device plug-in connectors</b> |              |
| Socket                           | A - standard |
| Plug                             | A - standard |

| Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|-----------|-------------|-----------|-------------|
| 3-pos.    |             | 4-pos.    |             |
| 1694363   | 20          | 1694376   | 20          |
| 1694334   | 20          | 1694347   | 20          |

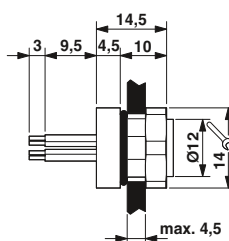


#### Technical data

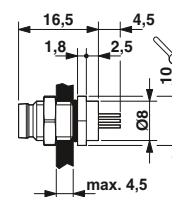
| 6-pos.                   | 8-pos.                   |
|--------------------------|--------------------------|
| IEC 61076-2-104          | IEC 61076-2-104          |
| 3                        | 3                        |
| IP67                     | IP67                     |
| Solder pins              | Solder pins              |
| 30 V                     | 30 V                     |
| 1.5 A                    | 1.5 A                    |
| $\leq 3 \text{ m}\Omega$ | $\leq 3 \text{ m}\Omega$ |
| CuSn / Au                | CuSn / Au                |
| PA 66                    | PA 66                    |
| HB                       | HB                       |
| -25 ... 85               | -25 ... 85               |

#### Ordering data

| Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|-----------|-------------|-----------|-------------|
| 6-pos.    |             | 8-pos.    |             |
| 1436534   | 20          | 1424237   | 20          |
| 1436521   | 20          | 1424238   | 20          |



M8 flush-type socket



M8 flush-type plug

**M8, rear mounting,  
with 0.5 m long litz wires**



3, 4-pos.



6, 8-pos.



| Technical data                              |                  |                  |
|---------------------------------------------|------------------|------------------|
|                                             | 3-pos.           | 4-pos.           |
| General data                                |                  |                  |
| M8 circular plug-in connector according to: | IEC 61076-2-104  | IEC 61076-2-104  |
| Pollution degree                            | 3                | 3                |
| Degree of protection                        | IP67             | IP67             |
| Connection method                           | Individual wires | Individual wires |
| Electrical data                             |                  |                  |
| Rated voltage                               | 60 V             | 30 V             |
| Rated current                               | 4 A              | 4 A              |
| Volume resistance                           | ≤ 3 mΩ           | ≤ 3 mΩ           |
| Material data                               |                  |                  |
| Material contact / contact surface          | Cu alloy / Au    | Cu alloy / Au    |
| Contact carrier material                    | PUR / PA66       | PUR / PA66       |
| Inflammability class according to UL 94     | HB               | HB               |
| Cable type                                  | TPE litz wire    | TPE litz wire    |
| Temperature data                            |                  |                  |
| Plug / socket                               | -25 ... 85       | -25 ... 85       |
| Cable, fixed installation                   | -25 ... 90       | -25 ... 90       |

| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 3-pos.        |             | 4-pos.    |             |
| 1453478       | 1           | 1453481   | 1           |
| 1456080       | 1           | 1456093   | 1           |
| 1453449       | 1           | 1453452   | 1           |

| Accessories   |         |     |
|---------------|---------|-----|
| SACC-E-MU-M 8 | 1504071 | 100 |

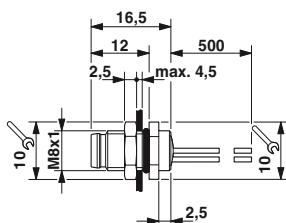


| Technical data                              |                  |                  |
|---------------------------------------------|------------------|------------------|
|                                             | 6-pos.           | 8-pos.           |
| General data                                |                  |                  |
| M8 circular plug-in connector according to: | IEC 61076-2-104  | IEC 61076-2-104  |
| Pollution degree                            | 3                | 3                |
| Degree of protection                        | IP67             | IP67             |
| Connection method                           | Individual wires | Individual wires |
| Electrical data                             |                  |                  |
| Rated voltage                               | 30 V             | 30 V             |
| Rated current                               | 2 A              | 1.5 A            |
| Volume resistance                           | ≤ 3 mΩ           | ≤ 3 mΩ           |
| Material data                               |                  |                  |
| Material contact / contact surface          | Cu alloy / Au    | Cu alloy / Au    |
| Contact carrier material                    | PUR / PA66       | PUR / PA66       |
| Inflammability class according to UL 94     | HB               | HB               |
| Cable type                                  | TPE litz wire    | PVC litz wire    |
| Temperature data                            |                  |                  |
| Plug / socket                               | -25 ... 85       | -25 ... 85       |
| Cable, fixed installation                   | -25 ... 90       | -25 ... 85       |

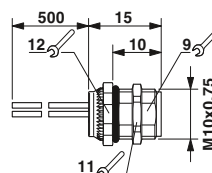
| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 6-pos.        |             | 8-pos.    |             |
| 1453494       | 1           | 1424230   | 1           |
| 1456103       | 1           | 1424229   | 1           |
| 1453465       | 1           |           |             |

| Accessories   |         |     |
|---------------|---------|-----|
| SACC-E-MU-M 8 | 1504071 | 100 |

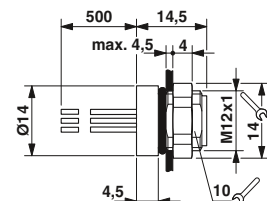
| Description                                        | Coding       |
|----------------------------------------------------|--------------|
| Flush-type plug-in connector, M8 fastening thread  |              |
| Plug                                               | A - standard |
| Flush-type plug-in connector, M10 fastening thread |              |
| Socket                                             | A - standard |
| Flush-type plug-in connector, M12 fastening thread |              |
| Socket                                             | A - standard |
| Flat nut, with:<br>M8 thread                       |              |



M8 flush-type plug, M8 fastening thread



M8 flush-type socket, M10 fastening thread



M8 flush-type socket, M12 fastening thread



## M5 to M12 circular plug-in connectors

### M5/M8 sensor/actuator device plug-in connectors

**M8, rear mounting, two-piece,  
for wave soldering processes, shielded**

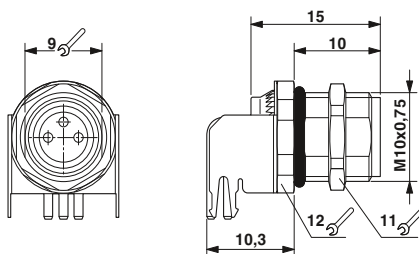


Angled, 3, 4-pos.

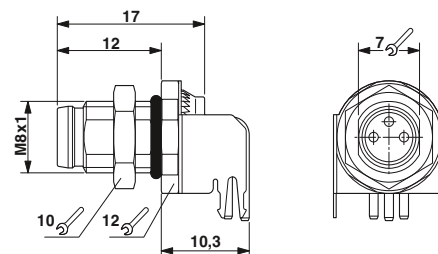


Angled, 5, 6-pos.

|                                             | Technical data           |                          | Technical data           |                          |
|---------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                                             | 3-pos.                   | 4-pos.                   | 5-pos.                   | 6-pos.                   |
| General data                                |                          |                          |                          |                          |
| M8 circular plug-in connector according to: | IEC 61076-2-104          | IEC 61076-2-104          | IEC 61076-2-104          | IEC 61076-2-104          |
| Pollution degree                            | 3                        | 3                        | 3                        | 3                        |
| Degree of protection                        | IP67                     | IP67                     | IP67                     | IP67                     |
| Connection method                           | Solder pins              | Solder pins              | Solder pins              | Solder pins              |
| Electrical data                             |                          |                          |                          |                          |
| Rated voltage                               | 30 V                     | 30 V                     | 30 V                     | 30 V                     |
| Rated current                               | 4 A                      | 4 A                      | 3 A                      | 1.5 A                    |
| Volume resistance                           | $\leq 3 \text{ m}\Omega$ | $\leq 3 \text{ m}\Omega$ | $\leq 3 \text{ m}\Omega$ | $\leq 3 \text{ m}\Omega$ |
| Material data                               |                          |                          |                          |                          |
| Material contact / contact surface          | Cu alloy / Au            | Cu alloy / Au            | Cu alloy / Au            | Cu alloy / Au            |
| Contact carrier material                    | PA 66                    | PA 66                    | PA 66                    | PA 66                    |
| Inflammability class according to UL 94     | HB                       | HB                       | HB                       | HB                       |
| Temperature data                            |                          |                          |                          |                          |
| Plug / socket                               | -25 ... 85               | -25 ... 85               | -25 ... 85               | -25 ... 85               |
|                                             | [°C]                     |                          |                          |                          |
|                                             | Ordering data            |                          | Ordering data            |                          |
|                                             | Order No.                | Pcs. / Pkt.              | Order No.                | Pcs. / Pkt.              |
|                                             | 3-pos.                   |                          | 4-pos.                   |                          |
| Device plug-in connectors                   |                          |                          |                          |                          |
| Socket                                      | A - standard             | 1456145 20               | 1456158 20               |                          |
| Plug                                        | A - standard             | 1456035 20               | 1456048 20               |                          |
| Socket                                      | B - inverse              |                          |                          | 1424243 20               |
| Plug                                        | B - inverse              |                          |                          | 1424244 20               |
|                                             |                          |                          | 1424239 20               |                          |
|                                             |                          |                          | 1424240 20               |                          |



M8 flush-type socket, angled



M8 flush-type plug, angled

**M8, rear mounting, two-piece,  
for wave soldering processes, shielded**



**Straight, 3, 4, 5-pos.**



**Straight, 6, 8-pos.**

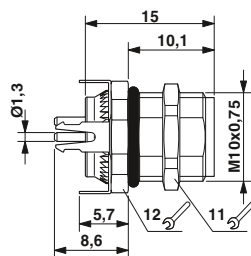


| Technical data  |                 |                 |
|-----------------|-----------------|-----------------|
| 3-pos.          | 4-pos.          | 5-pos.          |
| IEC 61076-2-104 | IEC 61076-2-104 | IEC 61076-2-104 |
| 3               | 3               | 3               |
| IP67            | IP67            | IP67            |
| Solder pins     | Solder pins     | Solder pins     |
| 60 V            | 30 V            | 30 V            |
| 4 A             | 4 A             | 3 A             |
| ≤ 3 mΩ          | ≤ 3 mΩ          | ≤ 3 mΩ          |
| Cu alloy / Au   | Cu alloy / Au   | Cu alloy / Au   |
| PA 66           | PA 66           | PA 66           |
| HB              | HB              | HB              |
| -25 ... 85      | -25 ... 85      | -25 ... 85      |

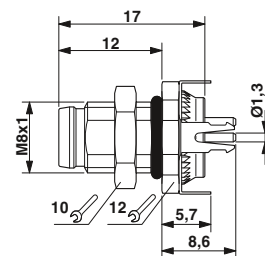
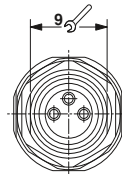
| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 3-pos.        |             | 4-pos.    |             | 5-pos.    |             |
| 1456116       | 20          | 1456129   | 20          |           |             |
| 1455997       | 20          | 1456019   | 20          |           |             |
|               |             |           |             | 1424241   | 20          |
|               |             |           |             | 1424242   | 20          |

| Technical data  |                 |       |
|-----------------|-----------------|-------|
| 6-pos.          | 8-pos.          |       |
| IEC 61076-2-104 | IEC 61076-2-104 | -     |
| 3               | 3               | -     |
| IP67            | IP67            | -     |
| Solder pins     | Solder pins     | -     |
| 30 V            | 30 V            | -     |
| 1.5 A           | 1.5 A           | -     |
| ≤ 3 mΩ          | ≤ 3 mΩ          | -     |
| Cu alloy / Au   | Cu alloy / Au   | - / - |
| PA 66           | PA 66           | -     |
| HB              | HB              | -     |
| -25 ... 85      | -25 ... 85      | -     |

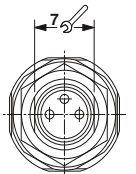
| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 6-pos.        |             | 8-pos.    |             |
| 1456132       | 20          | 1424235   | 20          |
| 1456022       | 20          | 1424236   | 20          |



**M8 flush-type socket, straight**



M8 flush-type plug, straight,



M5 to M12 circular plug-in connectors

M5/M8 sensor/actuator device plug-in connectors

M8, rear mounting, two-piece,  
for wave soldering processes,  
unshielded



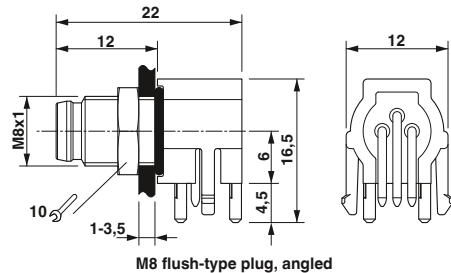
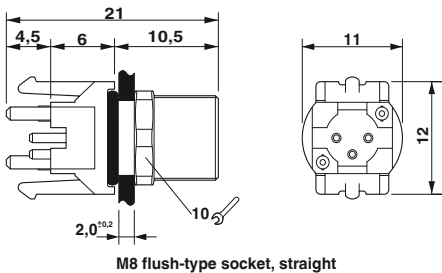
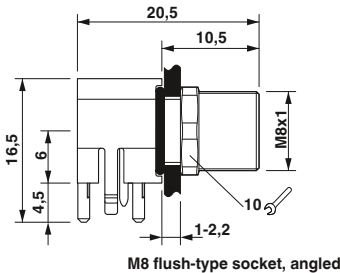
Angled, 3, 4-pos.



Straight, 3, 4-pos.



|                                             | Technical data  |                 | Technical data  |                 |
|---------------------------------------------|-----------------|-----------------|-----------------|-----------------|
|                                             | 3-pos.          | 4-pos.          | 3-pos.          | 4-pos.          |
| General data                                |                 |                 |                 |                 |
| M8 circular plug-in connector according to: | IEC 61076-2-104 | IEC 61076-2-104 | IEC 61076-2-104 | IEC 61076-2-104 |
| Pollution degree                            | 3               | 3               | 3               | 3               |
| Degree of protection                        | IP67            | IP67            | IP67            | IP67            |
| Connection method                           | Solder pins     | Solder pins     | Solder pins     | Solder pins     |
| Electrical data                             |                 |                 |                 |                 |
| Rated voltage                               | 60 V            | 30 V            | 60 V            | 30 V            |
| Rated current                               | 4 A             | 4 A             | 4 A             | 4 A             |
| Volume resistance                           | ≤ 3 mΩ          | ≤ 3 mΩ          | ≤ 3 mΩ          | ≤ 3 mΩ          |
| Material data                               |                 |                 |                 |                 |
| Material contact / contact surface          | CuSn / Au       | CuSn / Au       | CuSn / Au       | CuSn / Au       |
| Contact carrier material                    | PA 66           | PA 66           | PA 66           | PA 66           |
| Inflammability class according to UL 94     | HB              | HB              | HB              | HB              |
| Temperature data                            |                 |                 |                 |                 |
| Plug / socket                               | -25 ... 85      | -25 ... 85      | -25 ... 85      | -25 ... 85      |
|                                             | [°C]            |                 |                 |                 |
|                                             | Ordering data   |                 | Ordering data   |                 |
|                                             | Order No.       | Pcs. / Pkt.     | Order No.       | Pcs. / Pkt.     |
|                                             | 3-pos.          | 4-pos.          | 3-pos.          | 4-pos.          |
| Device plug-in connectors                   |                 |                 |                 |                 |
| Socket                                      | A - standard    | 1524788 20      | 1526169 20      | 1524776 20      |
| Plug                                        | A - standard    | 1440070 20      | 1440096 20      | 1524789 20      |





## M5 to M12 circular plug-in connectors

### M12 sensor/actuator device plug-in connectors, front mounting

**Pg9 fastening thread,  
with 0.5 m long litz wires**



4, 5, 8-pos.



Can be positioned, 4, 5, 8-pos.



| Technical data                               |                  |                  |                  |
|----------------------------------------------|------------------|------------------|------------------|
|                                              | 4-pos.           | 5-pos.           | 8-pos.           |
| General data                                 |                  |                  |                  |
| M12 circular plug-in connector according to: | IEC 61076-2-101  | IEC 61076-2-101  | IEC 61076-2-101  |
| Pollution degree                             | 3                | 3                | 3                |
| Degree of protection                         | IP67             | IP67             | IP67             |
| Connection method                            | Individual wires | Individual wires | Individual wires |
| Electrical data                              |                  |                  |                  |
| Rated voltage                                | 250 V            | 60 V             | 30 V             |
| Rated current                                | 4 A              | 4 A              | 2 A              |
| Volume resistance                            | ≤ 3 mΩ           | ≤ 3 mΩ           | ≤ 3 mΩ           |
| Material data                                |                  |                  |                  |
| Material contact / contact surface           | CuZn / Ni/Au     | CuZn / Ni/Au     | CuZn / Ni/Au     |
| Contact carrier material                     | PA66             | PA66             | PA66             |
| Inflammability class according to UL 94      | V0               | V0               | V0               |
| Cable type                                   | TPE litz wire    | TPE litz wire    | TPE litz wire    |
| Temperature data                             |                  |                  |                  |
| Plug / socket                                | -25 ... 85       | -25 ... 85       | -25 ... 85       |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|               |             |           |             |           |             |
| 4-pos.        | 5-pos.      | 8-pos.    | 4-pos.      | 5-pos.    | 8-pos.      |

| Description                      | Coding       |
|----------------------------------|--------------|
| <b>Device plug-in connectors</b> |              |
| Socket                           | A - standard |
| Plug                             | A - standard |
| Socket                           | B - inverse  |
| Plug                             | B - inverse  |

| Accessories   |         |     |  |
|---------------|---------|-----|--|
| SACC-E-MU-PG9 | 1504084 | 100 |  |

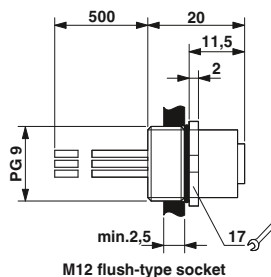


| Technical data                          |                  |                  |                  |
|-----------------------------------------|------------------|------------------|------------------|
|                                         | 4-pos.           | 5-pos.           | 8-pos.           |
| General data                            |                  |                  |                  |
| IEC 61076-2-101                         | IEC 61076-2-101  | IEC 61076-2-101  | IEC 61076-2-101  |
| Pollution degree                        | 3                | 3                | 3                |
| Degree of protection                    | IP67             | IP67             | IP67             |
| Connection method                       | Individual wires | Individual wires | Individual wires |
| Electrical data                         |                  |                  |                  |
| Rated voltage                           | 250 V            | 60 V             | 30 V             |
| Rated current                           | 4 A              | 4 A              | 2 A              |
| Volume resistance                       | ≤ 3 mΩ           | ≤ 3 mΩ           | ≤ 3 mΩ           |
| Material data                           |                  |                  |                  |
| Material contact / contact surface      | CuZn / Ni/Au     | CuZn / Ni/Au     | CuZn / Ni/Au     |
| Contact carrier material                | PA66             | PA66             | PA66             |
| Inflammability class according to UL 94 | V0               | V0               | V0               |
| Cable type                              | TPE litz wire    | TPE litz wire    | TPE litz wire    |
| Temperature data                        |                  |                  |                  |
| Plug / socket                           | -25 ... 85       | -25 ... 85       | -25 ... 85       |

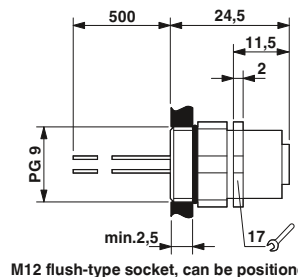
| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|               |             |           |             |           |             |
| 4-pos.        | 5-pos.      | 8-pos.    | 4-pos.      | 5-pos.    | 8-pos.      |

|         |   |         |   |         |   |
|---------|---|---------|---|---------|---|
| 1693788 | 1 | 1671098 | 1 | 1513758 | 1 |
| 1693762 | 1 | 1671111 | 1 | 1513774 | 1 |
| 1693791 | 1 | 1671108 | 1 | 1513761 | 1 |
| 1693775 | 1 | 1671124 | 1 | 1513787 | 1 |
|         |   | 1515044 | 1 |         |   |
|         |   | 1515057 | 1 |         |   |

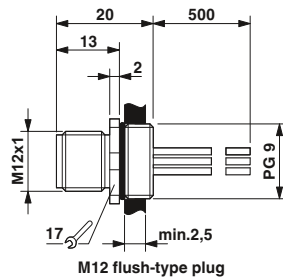
| Accessories |  |  |  |
|-------------|--|--|--|
|             |  |  |  |



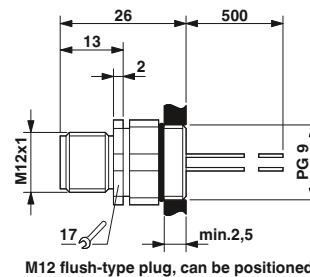
M12 flush-type socket



M12 flush-type socket, can be positioned



M12 flush-type plug



M12 flush-type plug, can be positioned

**M16 fastening thread,  
with 0.5 m long litz wires**



4, 5, 8-pos.



12, 17-pos.



| Technical data                               |                  |                  |                  |
|----------------------------------------------|------------------|------------------|------------------|
| 4-pos.                                       | 5-pos.           | 8-pos.           |                  |
| General data                                 |                  |                  |                  |
| M12 circular plug-in connector according to: | IEC 61076-2-101  | IEC 61076-2-101  | IEC 61076-2-101  |
| Pollution degree                             | 3                | 3                | 3                |
| Degree of protection                         | IP67             | IP67             | IP67             |
| Connection method                            | Individual wires | Individual wires | Individual wires |
| Electrical data                              |                  |                  |                  |
| Rated voltage                                | 250 V            | 60 V             | 30 V             |
| Rated current                                | 4 A              | 4 A              | 2 A              |
| Volume resistance                            | ≤ 3 mΩ           | ≤ 3 mΩ           | ≤ 3 mΩ           |
| Material data                                |                  |                  |                  |
| Material contact / contact surface           | CuZn / Ni/Au     | CuZn / Ni/Au     | CuZn / Ni/Au     |
| Contact carrier material                     | PA 66            | PA 66            | PA 66            |
| Inflammability class according to UL 94      | V0               | V0               | V0               |
| Cable type                                   | TPE litz wire    | TPE litz wire    | TPE litz wire    |
| Temperature data                             |                  |                  |                  |
| Plug / socket                                | -25 ... 85       | -25 ... 85       | -25 ... 85       |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 4-pos.        |             | 5-pos.    |             | 8-pos.    |             |
| 1523434       | 1           | 1520039   | 1           | 1523476   | 1           |
| 1523450       | 1           | 1520055   | 1           | 1523492   | 1           |
| 1535202       | 1           |           |             |           |             |
| 1551558       | 1           |           |             |           |             |
|               |             | 1520000   | 1           |           |             |
|               |             | 1520013   | 1           |           |             |

| Accessories   |         |     |
|---------------|---------|-----|
| SACC-E-MU-M16 | 1504097 | 100 |



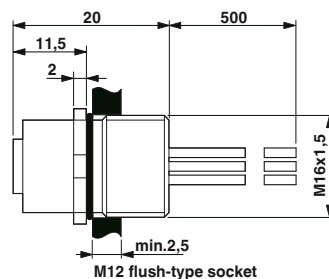
| Technical data   |                  |       |   |
|------------------|------------------|-------|---|
| 12-pos.          | 17-pos.          |       |   |
| General data     |                  |       |   |
| IEC 61076-2-101  | IEC 61076-2-101  | -     | - |
| 3                | 3                | -     | - |
| IP67             | IP67             | -     | - |
| Individual wires | Individual wires | -     | - |
| Electrical data  |                  |       |   |
| 30 V             | 30 V             | -     | - |
| 1.5 A            | 1.5 A            | -     | - |
| ≤ 3 mΩ           | ≤ 3 mΩ           | -     | - |
| Material data    |                  |       |   |
| CuZn / Ni/Au     | CuZn / Ni/Au     | - / - | - |
| PA 66            | PA 66            | -     | - |
| V0               | V0               | -     | - |
| TPE litz wire    | TPE litz wire    | -     | - |
| Temperature data |                  |       |   |
| -25 ... 85       | -25 ... 85       | -     | - |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 12-pos.       |             | 17-pos.   |             |           |             |
| 1556252       | 1           | 1556294   | 1           |           |             |
| 1556265       | 1           | 1556304   | 1           |           |             |

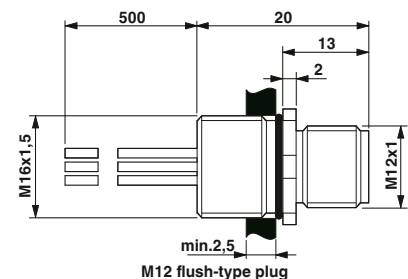
| Accessories   |         |     |
|---------------|---------|-----|
| SACC-E-MU-M16 | 1504097 | 100 |

| Description                      | Coding       |
|----------------------------------|--------------|
| <b>Device plug-in connectors</b> |              |
| Socket                           | A - standard |
| Plug                             | A - standard |
| Socket                           | D - data     |
| Plug                             | D - data     |
| Socket                           | B - inverse  |
| Plug                             | B - inverse  |

|                               |
|-------------------------------|
| Flat nut, with:<br>M16 thread |
|-------------------------------|



M12 flush-type socket



M12 flush-type plug

## M5 to M12 circular plug-in connectors

### M12 sensor/actuator device plug-in connectors, front mounting

**M16 fastening thread,**  
with 0.5 m long litz wires,  
can be positioned



Can be positioned, 4, 5-pos.



Can be positioned, 8-pos.



#### Technical data

| General data                                 |
|----------------------------------------------|
| M12 circular plug-in connector according to: |
| Pollution degree                             |
| Degree of protection                         |
| Connection method                            |
| Electrical data                              |
| Rated voltage                                |
| Rated current                                |
| Volume resistance                            |
| Material data                                |
| Material contact / contact surface           |
| Contact carrier material                     |
| Inflammability class according to UL 94      |
| Cable type                                   |
| Temperature data                             |
| Plug / socket                                |

| 4-pos.           | 5-pos.           |
|------------------|------------------|
| IEC 61076-2-101  | IEC 61076-2-101  |
| 3                | 3                |
| IP67             | IP67             |
| Individual wires | Individual wires |
| Electrical data  | Electrical data  |
| 250 V            | 60 V             |
| 4 A              | 4 A              |
| ≤ 3 mΩ           | ≤ 3 mΩ           |
| Material data    | Material data    |
| CuZn / Ni/Au     | CuZn / Ni/Au     |
| PA 66            | PA 66            |
| V0               | V0               |
| TPE litz wire    | TPE litz wire    |
| Temperature data | Temperature data |
| -25 ... 85       | -25 ... 85       |

#### Ordering data

| Description                      | Coding       |
|----------------------------------|--------------|
| <b>Device plug-in connectors</b> |              |
| Socket                           | A - standard |
| Plug                             | A - standard |
| Socket                           | D - data     |
| Plug                             | D - data     |
| Socket                           | B - inverse  |
| Plug                             | B - inverse  |

| Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|-----------|-------------|-----------|-------------|
| 4-pos.    | 4-pos.      | 5-pos.    | 5-pos.      |
| 1523447   | 1           | 1520042   | 1           |
| 1523463   | 1           | 1520068   | 1           |
| 1535215   | 1           |           |             |
| 1552256   | 1           |           |             |
|           |             | 1519998   | 1           |
|           |             | 1520026   | 1           |

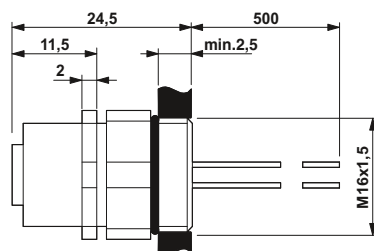


#### Technical data

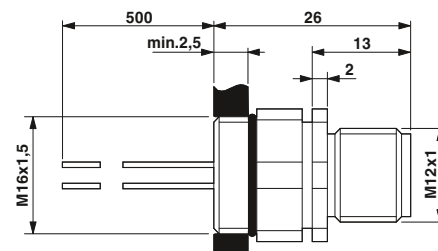
| 8-pos.           | 8-pos.           |
|------------------|------------------|
| IEC 61076-2-101  | -                |
| 3                | -                |
| IP67             | -                |
| Individual wires | -                |
| Electrical data  | Electrical data  |
| 30 V             | -                |
| 2 A              | -                |
| ≤ 3 mΩ           | -                |
| Material data    | Material data    |
| CuZn / Ni/Au     | - / -            |
| PA 66            | -                |
| V0               | -                |
| TPE litz wire    | -                |
| Temperature data | Temperature data |
| -25 ... 85       | -                |

#### Ordering data

| Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|-----------|-------------|-----------|-------------|
| 8-pos.    | 8-pos.      |           |             |
| 1523489   | 1           |           |             |
| 1523502   | 1           |           |             |



M12 flush-type socket, can be positioned



M12 flush-type plug, can be positioned

## M20 fastening thread, with 0.5 m long litz wires

– Housing material: brass, nickel-plated

N



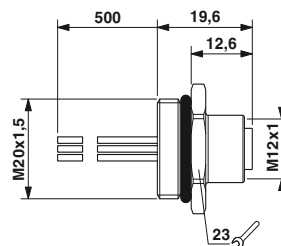
4, 5, 8-pos.

### Technical data

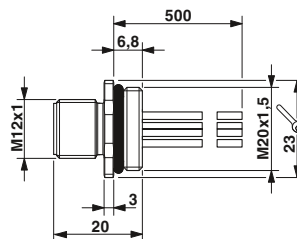
|                                              | 4-pos.                   | 5-pos.                   | 8-pos.                   |
|----------------------------------------------|--------------------------|--------------------------|--------------------------|
| General data                                 |                          |                          |                          |
| M12 circular plug-in connector according to: | IEC 61076-2-101          | IEC 61076-2-101          | IEC 61076-2-101          |
| Pollution degree                             | 3                        | 3                        | 3                        |
| Degree of protection                         | IP67/IP69K               | IP67/IP69K               | IP67/IP69K               |
| Connection method                            | Individual wires         | Individual wires         | Individual wires         |
| Electrical data                              |                          |                          |                          |
| Rated voltage                                | 250 V                    | 60 V                     | 30 V                     |
| Rated current                                | 4 A                      | 4 A                      | 2 A                      |
| Volume resistance                            | $\leq 3 \text{ m}\Omega$ | $\leq 3 \text{ m}\Omega$ | $\leq 3 \text{ m}\Omega$ |
| Material data                                |                          |                          |                          |
| Material contact / contact surface           | CuZn / Au                | CuZn / Au                | CuZn / Au                |
| Contact carrier material                     | PA 66                    | PA 66                    | PA 66                    |
| Inflammability class according to UL 94      | V0                       | V0                       | V0                       |
| Cable type                                   | TPE litz wire            | TPE litz wire            | TPE litz wire            |
| Temperature data                             |                          |                          |                          |
| Plug / socket                                | [°C]                     | [°C]                     | [°C]                     |
| Cable, fixed installation                    | -25 ... 85               | -25 ... 85               | -25 ... 85               |
|                                              | -25 ... 90               | -25 ... 90               | -25 ... 90               |

### Ordering data

| Description               | Coding       | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|---------------------------|--------------|-----------|-------------|-----------|-------------|-----------|-------------|
|                           |              | 4-pos.    |             | 5-pos.    |             | 8-pos.    |             |
| Device plug-in connectors |              |           |             |           |             |           |             |
| Socket                    | A - standard | 1408436   | 1           | 1408454   | 1           | 1408453   | 1           |
| Plug                      | A - standard | 1408451   | 1           | 1408446   | 1           | 1408442   | 1           |



M12 flush-type socket



M12 flush-type plug



## M5 to M12 circular plug-in connectors

### M12 sensor/actuator device plug-in connectors, front mounting

One-piece, 20 mm square flange,  
with 0.5 m long litz wires

- 4 x fixing hole, 3.2 mm
- With form seal for M3 screws



4, 5, 8-pos.



12, 17-pos.



| Technical data   |                  |                  |
|------------------|------------------|------------------|
| 4-pos.           | 5-pos.           | 8-pos.           |
| IEC 61076-2-101  | IEC 61076-2-101  | IEC 61076-2-101  |
| 3                | 3                | 3                |
| IP67             | IP67             | IP67             |
| Individual wires | Individual wires | Individual wires |
| 250 V            | 60 V             | 30 V             |
| 4 A              | 4 A              | 2 A              |
| ≤ 3 mΩ           | ≤ 3 mΩ           | ≤ 3 mΩ           |
| CuZn / Ni/Au     | CuZn / Ni/Au     | CuZn / Ni/Au     |
| PA 66            | PA 66            | PA 66            |
| V0               | V0               | V0               |
| TPE litz wire    | TPE litz wire    | TPE litz wire    |
| -25 ... 85       | -25 ... 85       | -25 ... 85       |

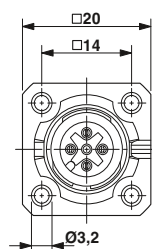
| Ordering data |             |           |
|---------------|-------------|-----------|
| Order No.     | Pcs. / Pkt. | Order No. |
| 4-pos.        | 5-pos.      | 8-pos.    |
| 1419797       | 1           | 1441655   |
| 1419784       | 1           | 1441642   |
| 1441639       | 1           | 1441697   |
| 1441626       | 1           | 1441684   |
|               |             | 1441671   |
|               |             | 1441668   |



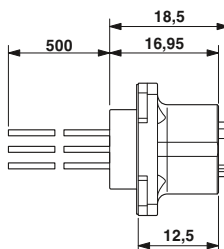
| Technical data   |                  |       |
|------------------|------------------|-------|
| 12-pos.          | 17-pos.          |       |
| IEC 61076-2-101  | IEC 61076-2-101  | -     |
| 3                | 3                | -     |
| IP67             | IP67             | -     |
| Individual wires | Individual wires | -     |
| 30 V             | 30 V             | -     |
| 1.5 A            | 1.5 A            | -     |
| ≤ 3 mΩ           | ≤ 3 mΩ           | -     |
| CuZn / Ni/Au     | CuZn / Ni/Au     | - / - |
| PA 66            | PA 66            | -     |
| V0               | V0               | -     |
| TPE litz wire    | TPE litz wire    | -     |
| -25 ... 85       | -25 ... 85       | -     |

| Ordering data |             |           |
|---------------|-------------|-----------|
| Order No.     | Pcs. / Pkt. | Order No. |
| 12-pos.       | 17-pos.     |           |
| 1441710       | 1           | 1441736   |
| 1441707       | 1           | 1441723   |

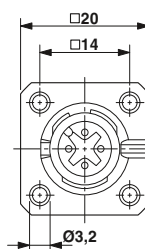
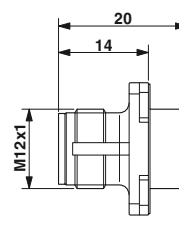
| Description                      | Coding       |
|----------------------------------|--------------|
| <b>Device plug-in connectors</b> |              |
| Socket                           | A - standard |
| Plug                             | A - standard |
| Socket                           | D - data     |
| Plug                             | D - data     |
| Socket                           | B - inverse  |
| Plug                             | B - inverse  |



M12 flush-type socket, square flange



M12 flush-type plug, square flange



One-piece, 25 mm square flange,  
with 0.5 m long litz wires

- 4 x fixing hole, 2.7 mm
- With form seal for M2.5 screws



4, 5, 8-pos.



12, 17-pos.



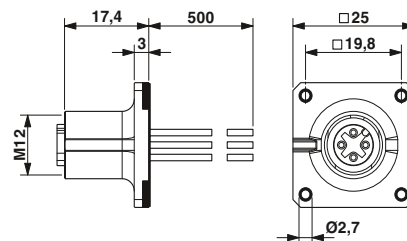
| Technical data                               |                  |                  |                  |
|----------------------------------------------|------------------|------------------|------------------|
| 4-pos.                                       | 5-pos.           | 8-pos.           |                  |
| General data                                 |                  |                  |                  |
| M12 circular plug-in connector according to: | IEC 61076-2-101  | IEC 61076-2-101  | IEC 61076-2-101  |
| Pollution degree                             | 3                | 3                | 3                |
| Degree of protection                         | IP67             | IP67             | IP67             |
| Connection method                            | Individual wires | Individual wires | Individual wires |
| Electrical data                              |                  |                  |                  |
| Rated voltage                                | 250 V            | 60 V             | 30 V             |
| Rated current                                | 4 A              | 4 A              | 2 A              |
| Volume resistance                            | ≤ 3 mΩ           | ≤ 3 mΩ           | ≤ 3 mΩ           |
| Material data                                |                  |                  |                  |
| Material contact / contact surface           | CuZn / Ni/Au     | CuZn / Ni/Au     | CuZn / Ni/Au     |
| Contact carrier material                     | PA 66            | PA 66            | PA 66            |
| Inflammability class according to UL 94      | V0               | V0               | V0               |
| Cable type                                   | TPE litz wire    | TPE litz wire    | TPE litz wire    |
| Temperature data                             |                  |                  |                  |
| Plug / socket                                | -25 ... 85       | -25 ... 85       | -25 ... 85       |

| Ordering data             |              |           |             |           |             |
|---------------------------|--------------|-----------|-------------|-----------|-------------|
| Description               | Coding       | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                           |              | 4-pos.    |             | 5-pos.    |             |
| Device plug-in connectors |              |           |             |           |             |
| Socket                    | A - standard | 1420003   | 1           | 1440986   | 1           |
| Plug                      | A - standard | 1419991   | 1           | 1440973   | 1           |
| Socket                    | D - data     | 1440960   | 1           |           |             |
| Plug                      | D - data     | 1440957   | 1           |           |             |
| Socket                    | B - inverse  |           |             | 1441558   | 1           |
| Plug                      | B - inverse  |           |             | 1440999   | 1           |

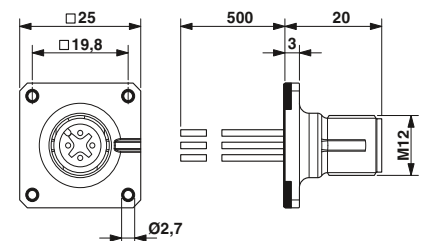


| Technical data                               |                  |                  |       |
|----------------------------------------------|------------------|------------------|-------|
| 12-pos.                                      | 17-pos.          |                  |       |
| General data                                 |                  |                  |       |
| M12 circular plug-in connector according to: | IEC 61076-2-101  | IEC 61076-2-101  | -     |
| Pollution degree                             | 3                | 3                | -     |
| Degree of protection                         | IP67             | IP67             | -     |
| Connection method                            | Individual wires | Individual wires | -     |
| Electrical data                              |                  |                  |       |
| Rated voltage                                | 30 V             | 30 V             | -     |
| Rated current                                | 1.5 A            | 1.5 A            | -     |
| Volume resistance                            | ≤ 3 mΩ           | ≤ 3 mΩ           | -     |
| Material data                                |                  |                  |       |
| Material contact / contact surface           | CuZn / Ni/Au     | CuZn / Ni/Au     | - / - |
| Contact carrier material                     | PA 66            | PA 66            | -     |
| Inflammability class according to UL 94      | V0               | V0               | -     |
| Cable type                                   | TPE litz wire    | TPE litz wire    | -     |
| Temperature data                             |                  |                  |       |
| Plug / socket                                | -25 ... 85       | -25 ... 85       | -     |

| Ordering data             |              |           |             |           |             |
|---------------------------|--------------|-----------|-------------|-----------|-------------|
| Description               | Coding       | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                           |              | 12-pos.   |             | 17-pos.   |             |
| Device plug-in connectors |              |           |             |           |             |
| Socket                    | A - standard | 1441590   | 1           | 1441613   | 1           |
| Plug                      | A - standard | 1441587   | 1           | 1441600   | 1           |



M12 flush-type socket, square flange



M12 flush-type plug, square flange

## M5 to M12 circular plug-in connectors

### M12 sensor/actuator device plug-in connectors, front mounting

**Modular, 25 mm square flange,  
pre-assembled**



**Flange housing,  
housing bore holes 3.2 mm**



#### Technical data

| General data                                 |                                 |       |       |
|----------------------------------------------|---------------------------------|-------|-------|
| M12 circular plug-in connector according to: | IEC 61076-2-101                 | -     | -     |
| Pollution degree                             | -                               | -     | -     |
| Degree of protection                         | -                               | -     | -     |
| Connection method                            | -                               | -     | -     |
| Electrical data                              |                                 |       |       |
| Rated voltage                                | -                               | -     | -     |
| Rated current                                | -                               | -     | -     |
| Volume resistance                            | -                               | -     | -     |
| Material data                                |                                 |       |       |
| Material contact / contact surface           | - / -                           | - / - | - / - |
| Contact carrier material                     | -                               | -     | -     |
| Cable gland material                         | Zinc die-cast,<br>nickel-plated | -     | -     |
| Inflammability class according to UL 94      | -                               | -     | -     |
| Cable type                                   | -                               | -     | -     |
| Temperature data                             |                                 |       |       |
| Plug / socket                                | [-25 ... 85                     | -     | -     |
| Cable, fixed installation                    | [-25 ... 85                     | -     | -     |

#### Ordering data

| Description                                                                                    | Coding       | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|------------------------------------------------------------------------------------------------|--------------|-----------|-------------|-----------|-------------|-----------|-------------|
| <b>Square flange housing, with O-ring</b>                                                      |              | 1419959   | 10          |           |             |           |             |
| <b>Assembled contact carrier and insulating body, with 0.5 m litz wires and crimp contacts</b> |              |           |             |           |             |           |             |
| Plug                                                                                           | A - standard |           |             |           |             |           |             |
| Plug                                                                                           | D - data     |           |             |           |             |           |             |
| Plug                                                                                           | B - inverse  |           |             |           |             |           |             |



**With 0.5 m long litz wires,  
assembled contact carrier  
and insulating body**

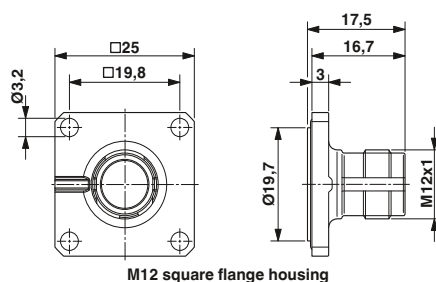


#### Technical data

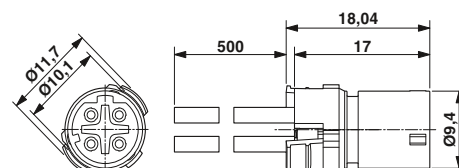
| 4-pos.          | 5-pos.          | 8-pos.          |
|-----------------|-----------------|-----------------|
| IEC 61076-2-101 | IEC 61076-2-101 | IEC 61076-2-101 |
| 3               | 3               | 3               |
| IP67            | IP67            | IP67            |
| Crimp contacts  | Crimp contacts  | Crimp contacts  |
| 250 V           | 60 V            | 30 V            |
| 4 A             | 4 A             | 2 A             |
| ≤ 3 mΩ          | ≤ 3 mΩ          | ≤ 3 mΩ          |
| CuZn / Au       | CuZn / Au       | CuZn / Au       |
| PA 66           | PA 66           | PA 66           |
| -               | -               | -               |
| V0              | V0              | V0              |
| TPE litz wire   | TPE litz wire   | TPE litz wire   |
| -25 ... 85      | -25 ... 85      | -25 ... 85      |
| -25 ... 85      | -25 ... 85      | -25 ... 85      |

#### Ordering data

| Order No.     | Pcs. / Pkt. | Order No.     | Pcs. / Pkt. | Order No.     | Pcs. / Pkt. |
|---------------|-------------|---------------|-------------|---------------|-------------|
| <b>4-pos.</b> |             | <b>5-pos.</b> |             | <b>8-pos.</b> |             |
| 1440805       | 1           | 1440818       | 1           | 1457827       | 1           |
| 1440821       | 1           | 1440759       | 1           |               |             |



**M12 square flange housing**



**M12 contact carrier, with litz wires**

Modular, 25 mm square flange,  
for free assembly



Flange housing,  
housing bore holes 3.2 mm



Contact carriers  
and insulating bodies for assembly



| Technical data                               |                              |   |   |
|----------------------------------------------|------------------------------|---|---|
| General data                                 |                              |   |   |
| M12 circular plug-in connector according to: | IEC 61076-2-101              | - | - |
| Pollution degree                             | -                            | - | - |
| Degree of protection                         | -                            | - | - |
| Connection method                            | -                            | - | - |
| Electrical data                              |                              |   |   |
| Rated voltage                                | -                            | - | - |
| Rated current                                | -                            | - | - |
| Volume resistance                            | -                            | - | - |
| Material data                                |                              |   |   |
| Contact carrier material                     | -                            | - | - |
| Cable gland material                         | Zinc die-cast, nickel-plated | - | - |
| Inflammability class according to UL 94      | -                            | - | - |
| Temperature data                             |                              |   |   |
| Plug / socket                                | -25 ... 85                   | - | - |

| Ordering data                          |              |           |             |           |             |
|----------------------------------------|--------------|-----------|-------------|-----------|-------------|
| Description                            | Coding       | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| Square flange housing, with O-ring     |              | 1419959   | 10          |           |             |
| Contact carriers and insulating bodies |              |           |             |           |             |
| Plug                                   | A - standard |           |             |           |             |
| Plug                                   | D - data     |           |             |           |             |
| Plug                                   | B - inverse  |           |             |           |             |

**Crimp contacts**, for 4 and 5-pos. contact carriers, contact material: CuZn, surface: gold-plated, connection cross section: 0.08 mm<sup>2</sup> ... 0.34 mm<sup>2</sup>

Contact Ø: 1.0 mm

**Crimp contacts**, for 8-pos. contact carriers, contact material: CuZn, surface: gold-plated, connection cross section: 0.08 mm<sup>2</sup> ... 0.34 mm<sup>2</sup>

Contact Ø: 0.8 mm

| Accessories     |  |  |
|-----------------|--|--|
| Crimping pliers |  |  |

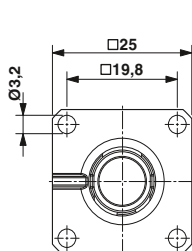


| Technical data  |                 |                 |  |
|-----------------|-----------------|-----------------|--|
| 4-pos.          | 5-pos.          | 8-pos.          |  |
| IEC 61076-2-101 | IEC 61076-2-101 | IEC 61076-2-101 |  |
| 3               | 3               | 3               |  |
| IP67            | IP67            | IP67            |  |
| Crimp contacts  | Crimp contacts  | Crimp contacts  |  |
| 250 V           | 60 V            | 30 V            |  |
| 4 A             | 4 A             | 2 A             |  |
| ≤ 3 mΩ          | ≤ 3 mΩ          | ≤ 3 mΩ          |  |
| PA 66           | PA 66           | PA 66           |  |
| -               | -               | -               |  |
| V0              | V0              | V0              |  |
| -25 ... 85      | -25 ... 85      | -25 ... 85      |  |

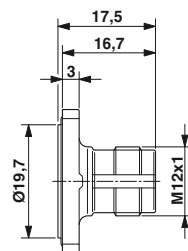
| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 4-pos.        |             | 5-pos.    |             | 8-pos.    |             |
| 1440931       | 10          | 1419988   | 10          | 1440928   | 10          |
| 1440944       | 10          | 1440915   | 10          |           |             |

|         |     |         |     |         |     |
|---------|-----|---------|-----|---------|-----|
| 1452356 | 100 | 1452356 | 100 |         |     |
|         |     |         |     | 1452372 | 100 |

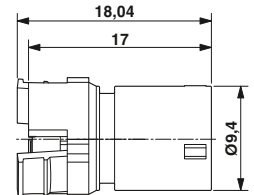
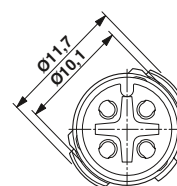
| Accessories    |         |   |
|----------------|---------|---|
| CRIMPFOX-TC MP | 1212510 | 1 |



M12 square flange housing



M12 contact carrier



## M5 to M12 circular plug-in connectors

### M12 sensor/actuator device plug-in connectors, front mounting

One-piece, 20 mm square flange,  
for wave soldering processes

- M12 PCB connector for direct soldering  
with integrated torsion protection and  
shield connection

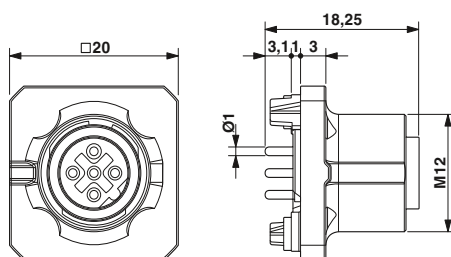


4, 5-pos.

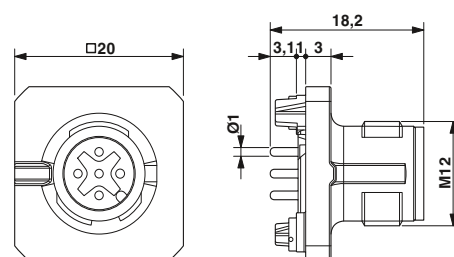


8-pos.

|                                              | Technical data  |                 | Technical data  |             |
|----------------------------------------------|-----------------|-----------------|-----------------|-------------|
|                                              | 4-pos.          | 5-pos.          | 8-pos.          |             |
| General data                                 |                 |                 |                 |             |
| M12 circular plug-in connector according to: | IEC 61076-2-101 | IEC 61076-2-101 | IEC 61076-2-101 | -           |
| Pollution degree                             | 3               | 3               | 3               | -           |
| Degree of protection                         | IP67            | IP67            | IP67            | -           |
| Connection method                            | Solder pins     | Solder pins     | Solder pins     | -           |
| Electrical data                              |                 |                 |                 |             |
| Rated voltage                                | 250 V           | 60 V            | 30 V            | -           |
| Rated current                                | 4 A             | 4 A             | 2 A             | -           |
| Volume resistance                            | ≤ 3 mΩ          | ≤ 3 mΩ          | ≤ 3 mΩ          | -           |
| Material data                                |                 |                 |                 |             |
| Material contact / contact surface           | CuZn / Au       | CuZn / Au       | CuZn / Au       | - / -       |
| Contact carrier material                     | PA 66           | PA 66           | PA 66           | -           |
| Inflammability class according to UL 94      | V0              | V0              | V0              | -           |
| Temperature data                             |                 |                 |                 |             |
| Plug / socket                                | -25 ... 85      | -25 ... 85      | -25 ... 85      | -           |
|                                              | [°C]            |                 |                 |             |
|                                              | Ordering data   |                 | Ordering data   |             |
|                                              | Order No.       | Pcs. / Pkt.     | Order No.       | Pcs. / Pkt. |
|                                              | 4-pos.          |                 | 5-pos.          |             |
| Description                                  | Coding          |                 |                 |             |
| Device plug-in connectors                    |                 |                 |                 |             |
| Socket                                       | A - standard    | 1456420 10      | 1456446 10      | 1408573 10  |
| Plug                                         | A - standard    | 1456417 10      | 1456433 10      | 1408574 10  |
| Socket                                       | D - data        | 1456404 10      |                 |             |
| Plug                                         | D - data        | 1456394 10      |                 |             |
| Socket                                       | B - inverse     |                 | 1456462 10      |             |
| Plug                                         | B - inverse     |                 | 1456459 10      |             |



M12 flush-type socket, square flange (4/5-pos. version)



M12 flush-type plug, square flange (4/5-pos. version)

Contact carrier, plastic,  
with solder cups or with litz wires



Solder connection, 5, 8-pos.



With 0.5 m long litz wires, 5, 8-pos.



| Technical data                               |                 |                 |
|----------------------------------------------|-----------------|-----------------|
|                                              | 5-pos.          | 8-pos.          |
| General data                                 |                 |                 |
| M12 circular plug-in connector according to: | IEC 61076-2-101 | IEC 61076-2-101 |
| Pollution degree                             | 3               | 3               |
| Degree of protection                         | IP67            | IP67            |
| Connection method                            | Solder cup      | Solder cup      |
| Electrical data                              |                 |                 |
| Rated voltage                                | 60 V            | 30 V            |
| Rated current                                | 4 A             | 2 A             |
| Volume resistance                            | ≤ 3 mΩ          | ≤ 3 mΩ          |
| Material data                                |                 |                 |
| Material contact / contact surface           | CuZn / Au       | CuZn / Au       |
| Contact carrier material                     | PA 66           | PA 66           |
| Inflammability class according to UL 94      | HB              | HB              |
| Cable type                                   | -               | -               |
| Temperature data                             |                 |                 |
| Plug / socket                                | [-25 ... 85 °C] | [-25 ... 85 °C] |
| Cable, fixed installation                    | [-25 ... 85 °C] | [-25 ... 85 °C] |

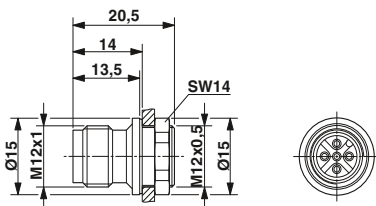
| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 5-pos.        |             | 8-pos.    |             |
| 1436398       | 20          | 1436408   | 20          |
| 1436437       | 20          | 1436440   | 20          |



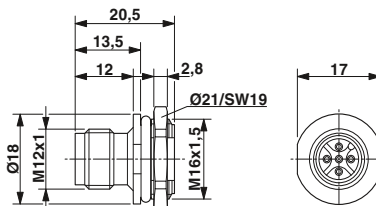
| Technical data                               |                  |                  |
|----------------------------------------------|------------------|------------------|
|                                              | 5-pos.           | 8-pos.           |
| General data                                 |                  |                  |
| M12 circular plug-in connector according to: | IEC 61076-2-101  | IEC 61076-2-101  |
| Pollution degree                             | 3                | 3                |
| Degree of protection                         | IP67             | IP67             |
| Connection method                            | Individual wires | Individual wires |
| Electrical data                              |                  |                  |
| Rated voltage                                | 60 V             | 30 V             |
| Rated current                                | 4 A              | 2 A              |
| Volume resistance                            | ≤ 3 mΩ           | ≤ 3 mΩ           |
| Material data                                |                  |                  |
| Material contact / contact surface           | CuZn / Au        | CuZn / Au        |
| Contact carrier material                     | PA 66            | PA 66            |
| Inflammability class according to UL 94      | HB               | HB               |
| Cable type                                   | TPE litz wire    | TPE litz wire    |
| Temperature data                             |                  |                  |
| Plug / socket                                | [-25 ... 85 °C]  | [-25 ... 85 °C]  |
| Cable, fixed installation                    | [-25 ... 90 °C]  | [-25 ... 90 °C]  |

| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 5-pos.        |             | 8-pos.    |             |
| 1436411       | 1           | 1436424   | 1           |

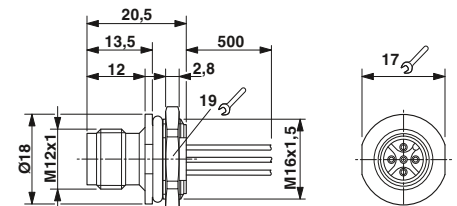
| Description                                        | Coding       |
|----------------------------------------------------|--------------|
| Flush-type plug-in connector, M16 fastening thread |              |
| Plug                                               | A - standard |
| Flush-type plug-in connector, M12 fastening thread |              |
| Plug                                               | A - standard |



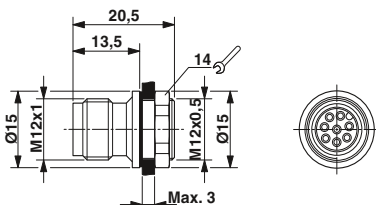
M12 pin, M12 fastening thread, solder cups



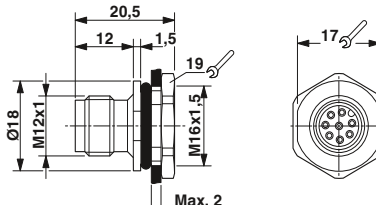
M12 pin, M16 fastening thread, solder cups



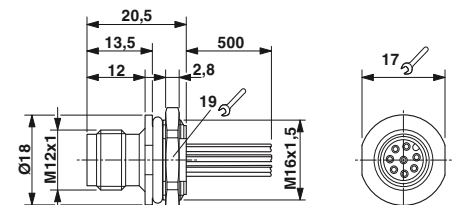
M12 pin, M16 fastening thread



M12 pin, M12 fastening thread, solder cups



M12 pin, M16 fastening thread, solder cups



M12 pin, M16 fastening thread

## M5 to M12 circular plug-in connectors

### M12 sensor/actuator device plug-in connectors, rear mounting

**Pg9 fastening thread,**  
with 0.5 m long litz wires



4, 5, 8-pos.



12, 17-pos.



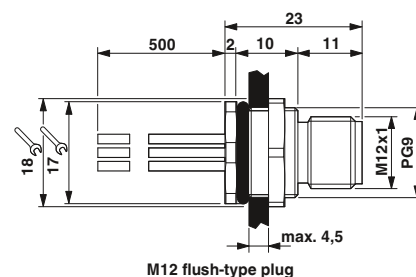
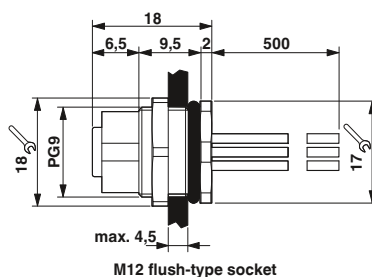
| Technical data                               |                  |                  |                  |
|----------------------------------------------|------------------|------------------|------------------|
|                                              | 4-pos.           | 5-pos.           | 8-pos.           |
| General data                                 |                  |                  |                  |
| M12 circular plug-in connector according to: | IEC 61076-2-101  | IEC 61076-2-101  | IEC 61076-2-101  |
| Pollution degree                             | 3                | 3                | 3                |
| Degree of protection                         | IP67             | IP67             | IP67             |
| Connection method                            | Individual wires | Individual wires | Individual wires |
| Electrical data                              |                  |                  |                  |
| Rated voltage                                | 250 V            | 60 V             | 30 V             |
| Rated current                                | 4 A              | 4 A              | 2 A              |
| Volume resistance                            | ≤ 3 mΩ           | ≤ 3 mΩ           | ≤ 3 mΩ           |
| Material data                                |                  |                  |                  |
| Material contact / contact surface           | CuZn / Au        | CuZn / Au        | CuZn / Au        |
| Contact carrier material                     | PA 66            | PA 66            | PA 66            |
| Inflammability class according to UL 94      | V0               | V0               | V0               |
| Cable type                                   | TPE litz wire    | TPE litz wire    | TPE litz wire    |
| Temperature data                             |                  |                  |                  |
| Plug / socket [°C]                           | -25 ... 85       | -25 ... 85       | -25 ... 85       |
| Cable, fixed installation [°C]               | -25 ... 85       | -25 ... 85       | -25 ... 85       |



| Technical data                               |                  |                  |       |
|----------------------------------------------|------------------|------------------|-------|
|                                              | 12-pos.          | 17-pos.          |       |
| General data                                 |                  |                  |       |
| M12 circular plug-in connector according to: | IEC 61076-2-101  | IEC 61076-2-101  | -     |
| Pollution degree                             | 3                | 3                | -     |
| Degree of protection                         | IP67             | IP67             | -     |
| Connection method                            | Individual wires | Individual wires | -     |
| Electrical data                              |                  |                  |       |
| Rated voltage                                | 30 V             | 30 V             | -     |
| Rated current                                | 1.5 A            | 1.5 A            | -     |
| Volume resistance                            | ≤ 3 mΩ           | ≤ 3 mΩ           | -     |
| Material data                                |                  |                  |       |
| Material contact / contact surface           | CuZn / Au        | CuZn / Au        | - / - |
| Contact carrier material                     | PA 66            | PA 66            | -     |
| Inflammability class according to UL 94      | V0               | V0               | -     |
| Cable type                                   | TPE litz wire    | TPE litz wire    | -     |
| Temperature data                             |                  |                  |       |
| Plug / socket [°C]                           | -25 ... 85       | -25 ... 85       | -     |
| Cable, fixed installation [°C]               | -25 ... 85       | -25 ... 85       | -     |

| Ordering data             |              |           |             |           |             |
|---------------------------|--------------|-----------|-------------|-----------|-------------|
| Description               | Coding       | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                           |              | 4-pos.    |             | 5-pos.    |             |
| Device plug-in connectors |              |           |             |           |             |
|                           | A - standard | 1556621   | 1           | 1542729   | 1           |
|                           | A - standard | 1556618   | 1           | 1542703   | 1           |
|                           | D - data     | 1551529   | 1           |           |             |
|                           | D - data     | 1551532   | 1           |           |             |
|                           | B - inverse  |           |             | 1543676   | 1           |
| Plug                      | B - inverse  |           |             | 1543663   | 1           |

| Ordering data             |              |           |             |           |             |
|---------------------------|--------------|-----------|-------------|-----------|-------------|
| Description               | Coding       | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                           |              | 12-pos.   |             | 17-pos.   |             |
| Device plug-in connectors |              |           |             |           |             |
|                           | A - standard | 1430446   | 1           | 1430462   | 1           |
|                           | A - standard | 1430459   | 1           | 1430475   | 1           |
|                           | D - data     |           |             |           |             |
|                           | D - data     |           |             |           |             |
|                           | B - inverse  |           |             |           |             |



**M12 fastening thread,  
with 0.5 m long litz wires**



4, 5, 8-pos.



12, 17-pos.



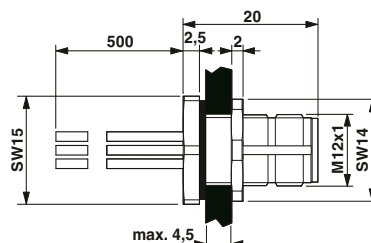
| Technical data                               |                  |                  |                  |
|----------------------------------------------|------------------|------------------|------------------|
| 4-pos.                                       | 5-pos.           | 8-pos.           |                  |
| General data                                 |                  |                  |                  |
| M12 circular plug-in connector according to: | IEC 61076-2-101  | IEC 61076-2-101  | IEC 61076-2-101  |
| Pollution degree                             | 3                | 3                | 3                |
| Degree of protection                         | IP67             | IP67             | IP67             |
| Connection method                            | Individual wires | Individual wires | Individual wires |
| Electrical data                              |                  |                  |                  |
| Rated voltage                                | 250 V            | 60 V             | 30 V             |
| Rated current                                | 4 A              | 4 A              | 2 A              |
| Volume resistance                            | ≤ 3 mΩ           | ≤ 3 mΩ           | ≤ 3 mΩ           |
| Material data                                |                  |                  |                  |
| Material contact / contact surface           | CuZn / Au        | CuZn / Au        | CuZn / Au        |
| Contact carrier material                     | PA 66            | PA 66            | PA 66            |
| Inflammability class according to UL 94      | V0               | V0               | V0               |
| Cable type                                   | TPE litz wire    | TPE litz wire    | TPE litz wire    |
| Temperature data                             |                  |                  |                  |
| Plug / socket                                | [-25 ... 85 °C]  | [-25 ... 85 °C]  | [-25 ... 85 °C]  |
| Cable, fixed installation                    | [-25 ... 85 °C]  | [-25 ... 85 °C]  | [-25 ... 85 °C]  |



| Technical data                               |                  |                  |       |
|----------------------------------------------|------------------|------------------|-------|
| 12-pos.                                      | 17-pos.          |                  |       |
| General data                                 |                  |                  |       |
| M12 circular plug-in connector according to: | IEC 61076-2-101  | IEC 61076-2-101  | -     |
| Pollution degree                             | 3                | 3                | -     |
| Degree of protection                         | IP67             | IP67             | -     |
| Connection method                            | Individual wires | Individual wires | -     |
| Electrical data                              |                  |                  |       |
| Rated voltage                                | 30 V             | 30 V             | -     |
| Rated current                                | 1.5 A            | 1.5 A            | -     |
| Volume resistance                            | ≤ 3 mΩ           | ≤ 3 mΩ           | -     |
| Material data                                |                  |                  |       |
| Material contact / contact surface           | CuZn / Au        | CuZn / Au        | - / - |
| Contact carrier material                     | PA 66            | PA 66            | -     |
| Inflammability class according to UL 94      | V0               | V0               | -     |
| Cable type                                   | TPE litz wire    | TPE litz wire    | -     |
| Temperature data                             |                  |                  |       |
| Plug / socket                                | [-25 ... 85 °C]  | [-25 ... 85 °C]  | -     |
| Cable, fixed installation                    | [-25 ... 85 °C]  | [-25 ... 85 °C]  | -     |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 4-pos.        |             | 5-pos.    |             | 8-pos.    |             |
| 1551875       | 1           | 1551888   | 1           | 1551914   | 1           |
| 1551901       | 1           |           |             |           |             |
|               |             | 1551891   | 1           |           |             |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 12-pos.       |             | 17-pos.   |             |           |             |
| 1437122       | 1           | 1437135   | 1           |           |             |



M12 flush-type plug, M12 fastening thread



## M5 to M12 circular plug-in connectors

### M12 sensor/actuator device plug-in connectors, rear mounting

#### M16 fastening thread, with 0.5 m long litz wires



4, 5, 8-pos.



12, 17-pos.



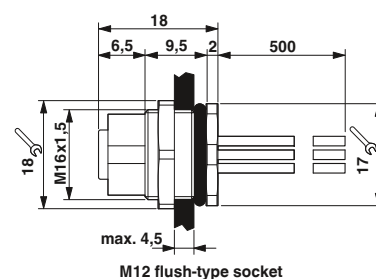
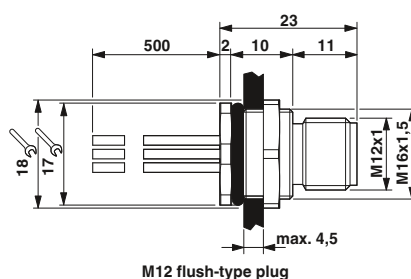
| Technical data                               |                  |                  |                  |
|----------------------------------------------|------------------|------------------|------------------|
|                                              | 4-pos.           | 5-pos.           | 8-pos.           |
| General data                                 |                  |                  |                  |
| M12 circular plug-in connector According to: | IEC 61076-2-101  | IEC 61076-2-101  | IEC 61076-2-101  |
| Pollution degree                             | 3                | 3                | 3                |
| Degree of protection                         | IP67             | IP67             | IP67             |
| Connection method                            | Individual wires | Individual wires | Individual wires |
| Electrical data                              |                  |                  |                  |
| Rated voltage                                | 250 V            | 60 V             | 30 V             |
| Rated current                                | 4 A              | 4 A              | 2 A              |
| Volume resistance                            | ≤ 3 mΩ           | ≤ 3 mΩ           | ≤ 3 mΩ           |
| Material data                                |                  |                  |                  |
| Material contact / contact surface           | CuZn / Au        | CuZn / Au        | CuZn / Au        |
| Contact carrier material                     | PA 66            | PA 66            | PA 66            |
| Inflammability class according to UL 94      | V0               | V0               | V0               |
| Cable type                                   | TPE litz wire    | TPE litz wire    | TPE litz wire    |
| Temperature data                             |                  |                  |                  |
| Plug / socket                                | -25 ... 85       | -25 ... 85       | -25 ... 85       |
| Cable, fixed installation                    | -25 ... 85       | -25 ... 85       | -25 ... 85       |



| Technical data                               |                  |                  |       |
|----------------------------------------------|------------------|------------------|-------|
|                                              | 12-pos.          | 17-pos.          |       |
| General data                                 |                  |                  |       |
| M12 circular plug-in connector According to: | IEC 61076-2-101  | IEC 61076-2-101  | -     |
| Pollution degree                             | 3                | 3                | -     |
| Degree of protection                         | IP67             | IP67             | -     |
| Connection method                            | Individual wires | Individual wires | -     |
| Electrical data                              |                  |                  |       |
| Rated voltage                                | 30 V             | 30 V             | -     |
| Rated current                                | 1.5 A            | 1.5 A            | -     |
| Volume resistance                            | ≤ 3 mΩ           | ≤ 3 mΩ           | -     |
| Material data                                |                  |                  |       |
| Material contact / contact surface           | CuZn / Au        | CuZn / Au        | - / - |
| Contact carrier material                     | PA 66            | PA 66            | -     |
| Inflammability class according to UL 94      | V0               | V0               | -     |
| Cable type                                   | TPE litz wire    | TPE litz wire    | -     |
| Temperature data                             |                  |                  |       |
| Plug / socket                                | -25 ... 85       | -25 ... 85       | -     |
| Cable, fixed installation                    | -25 ... 85       | -25 ... 85       | -     |

| Ordering data             |              |           |             |           |             |
|---------------------------|--------------|-----------|-------------|-----------|-------------|
| Description               | Coding       | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                           |              | 4-pos.    |             | 5-pos.    |             |
| Device plug-in connectors |              |           |             |           |             |
| Socket                    | A - standard | 1419632   | 1           | 1419658   | 1           |
| Plug                      | A - standard | 1419629   | 1           | 1419645   | 1           |
| Socket                    | D - data     | 1419616   | 1           | 1419687   | 1           |
| Plug                      | D - data     | 1419603   | 1           |           |             |
| Socket                    | B - inverse  |           |             | 1419674   | 1           |
| Plug                      | B - inverse  |           |             | 1419661   | 1           |

| Ordering data             |              |           |             |           |             |
|---------------------------|--------------|-----------|-------------|-----------|-------------|
| Description               | Coding       | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                           |              | 12-pos.   |             | 17-pos.   |             |
| Device plug-in connectors |              |           |             |           |             |
| Socket                    | A - standard | 1419713   | 1           | 1419739   | 1           |
| Plug                      | A - standard | 1419700   | 1           | 1419726   | 1           |







**Pg9 fastening thread, one-piece, for wave soldering processes, shielded**



**Ethernet**



**Straight, 4, 5, 8-pos.**



**Straight, 12, 17-pos.**



| Technical data  |                 |                 |
|-----------------|-----------------|-----------------|
| 4-pos.          | 5-pos.          | 8-pos.          |
| IEC 61076-2-101 | IEC 61076-2-101 | IEC 61076-2-101 |
| 3               | 3               | 3               |
| IP67            | IP67            | IP67            |
| Solder pins     | Solder pins     | Solder pins     |
| 250 V           | 60 V            | 30 V            |
| 4 A             | 4 A             | 2 A             |
| ≤ 3 mΩ          | ≤ 3 mΩ          | ≤ 3 mΩ          |
| CuZn / Au       | CuZn / Au       | CuZn / Au       |
| PA 66           | PA 66           | PA 66           |
| V0              | V0              | V0              |
| -25 ... 85      | -25 ... 85      | -25 ... 85      |

| Ordering data |             |           |
|---------------|-------------|-----------|
| Order No.     | Pcs. / Pkt. | Order No. |
| 4-pos.        | 5-pos.      | 8-pos.    |

|         |    |         |    |         |    |
|---------|----|---------|----|---------|----|
| 1556841 | 20 | 1553019 | 20 | 1553860 | 20 |
|         |    | 1553048 | 20 | 1553873 | 20 |
| 1553006 | 20 |         |    |         |    |
| 1553035 | 20 | 1553022 | 20 |         |    |
|         |    | 1553051 | 20 |         |    |

|         |    |         |    |         |    |
|---------|----|---------|----|---------|----|
| 1558522 | 20 | 1558548 | 20 | 1408771 | 20 |
| 1558535 | 20 | 1558551 | 20 |         |    |
| 1558506 | 20 |         |    |         |    |
| 1558519 | 20 |         |    |         |    |
|         |    | 1558564 | 20 |         |    |
|         |    | 1558577 | 20 |         |    |

| Accessories        |         |    |
|--------------------|---------|----|
| SACC-PG9-KD-NUT-SH | 1440177 | 10 |



| Technical data  |                 |       |
|-----------------|-----------------|-------|
| 12-pos.         | 17-pos.         |       |
| IEC 61076-2-101 | IEC 61076-2-101 | -     |
| 3               | 3               | -     |
| IP67            | IP67            | -     |
| Solder pins     | Solder pins     | -     |
| 30 V            | 30 V            | -     |
| 1.5 A           | 1.5 A           | -     |
| ≤ 3 mΩ          | ≤ 3 mΩ          | -     |
| CuZn / Au       | CuZn / Au       | - / - |
| PA 66           | PA 66           | -     |
| V0              | V0              | -     |
| -25 ... 85      | -25 ... 85      | -     |

| Ordering data |             |           |
|---------------|-------------|-----------|
| Order No.     | Pcs. / Pkt. | Order No. |
| 12-pos.       | 17-pos.     |           |

|         |    |         |    |
|---------|----|---------|----|
| 1436770 | 20 | 1436806 | 20 |
| 1436783 | 20 | 1436819 | 20 |

|  |  |  |  |
|--|--|--|--|
|  |  |  |  |
|--|--|--|--|

| Accessories        |         |    |
|--------------------|---------|----|
| SACC-PG9-KD-NUT-SH | 1440177 | 10 |

| General data                                 |      |
|----------------------------------------------|------|
| M12 circular plug-in connector according to: |      |
| Pollution degree                             |      |
| Degree of protection                         |      |
| Connection method                            |      |
| Electrical data                              |      |
| Rated voltage                                |      |
| Rated current                                |      |
| Volume resistance                            |      |
| Material data                                |      |
| Material contact / contact surface           |      |
| Contact carrier material                     |      |
| Inflammability class according to UL 94      |      |
| Temperature data                             |      |
| Plug / socket                                | [°C] |

| Description | Coding |
|-------------|--------|
|-------------|--------|

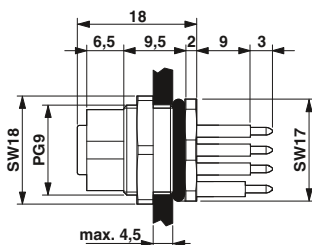
**Device plug-in connector, solder pin length: 6 mm**

|        |              |
|--------|--------------|
| Socket | A - standard |
| Plug   | A - standard |
| Socket | D - data     |
| Plug   | D - data     |
| Socket | B - inverse  |
| Plug   | B - inverse  |

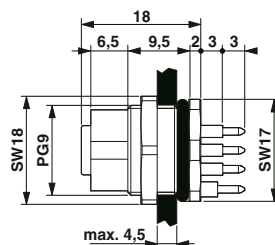
**Device plug-in connector, solder pin length: 12 mm**

|        |              |
|--------|--------------|
| Socket | A - standard |
| Plug   | A - standard |
| Socket | D - data     |
| Plug   | D - data     |
| Socket | B - inverse  |
| Plug   | B - inverse  |

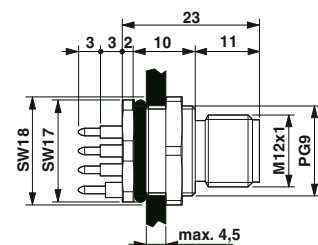
| EMC hexagonal nuts with fine toothing, for all flush-type plug-in connectors with: |  |
|------------------------------------------------------------------------------------|--|
| Pg9 fastening thread                                                               |  |



**M12 flush-type socket, contact length: 12 mm**



**M12 flush-type socket, contact length: 6 mm**



**M12 flush-type plug, contact length: 6 mm**

## M5 to M12 circular plug-in connectors

### M12 sensor/actuator device plug-in connectors, rear mounting

**M12 fastening thread, one-piece, for wave soldering processes**



Straight, 4, 5, 8-pos.



Straight, 12, 17-pos.



| Technical data           |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 4-pos.                   | 5-pos.                   | 8-pos.                   |
| IEC 61076-2-101          | IEC 61076-2-101          | IEC 61076-2-101          |
| 3                        | 3                        | 3                        |
| IP67                     | IP67                     | IP67                     |
| Solder pins              | Solder pins              | Solder pins              |
| 250 V                    | 60 V                     | 30 V                     |
| 4 A                      | 4 A                      | 2 A                      |
| $\leq 3 \text{ m}\Omega$ | $\leq 3 \text{ m}\Omega$ | $\leq 3 \text{ m}\Omega$ |
| CuZn / Au                | CuZn / Au                | CuZn / Au                |
| PA 66                    | PA 66                    | PA 66                    |
| V0                       | V0                       | V0                       |
| -25 ... 85               | -25 ... 85               | -25 ... 85               |

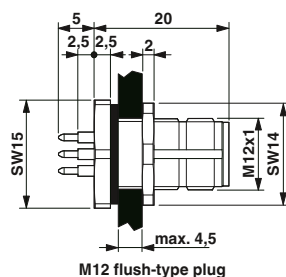
| Ordering data |             |           |
|---------------|-------------|-----------|
| Order No.     | Pcs. / Pkt. | Order No. |
| 4-pos.        | 5-pos.      | 8-pos.    |
| 1551820       | 1551833     | 1551862   |
| 1551859       | 1551846     |           |



| Technical data           |                          |       |
|--------------------------|--------------------------|-------|
| 12-pos.                  | 17-pos.                  |       |
| IEC 61076-2-101          | IEC 61076-2-101          | -     |
| 3                        | 3                        | -     |
| IP67                     | IP67                     | -     |
| Solder pins              | Solder pins              | -     |
| 30 V                     | 30 V                     | -     |
| 1.5 A                    | 1.5 A                    | -     |
| $\leq 3 \text{ m}\Omega$ | $\leq 3 \text{ m}\Omega$ | -     |
| CuZn / Au                | CuZn / Au                | - / - |
| PA 66                    | PA 66                    | -     |
| V0                       | V0                       | -     |
| -25 ... 85               | -25 ... 85               | -     |

| Ordering data |             |           |
|---------------|-------------|-----------|
| Order No.     | Pcs. / Pkt. | Order No. |
| 12-pos.       | 17-pos.     |           |
| 1559945       | 1559974     |           |

| Description               | Coding       |
|---------------------------|--------------|
| Device plug-in connectors |              |
| Plug                      | A - standard |
| Plug                      | D - data     |
| Plug                      | B - inverse  |



**M12 fastening thread, one-piece,  
for wave soldering processes, shielded**



Straight, 4, 5, 8-pos.



Straight, 12, 17-pos.



| Technical data  |                 |                 |  |
|-----------------|-----------------|-----------------|--|
| 4-pos.          | 5-pos.          | 8-pos.          |  |
| IEC 61076-2-101 | IEC 61076-2-101 | IEC 61076-2-101 |  |
| 3               | 3               | 3               |  |
| IP67            | IP67            | IP67            |  |
| Solder pins     | Solder pins     | Solder pins     |  |
| 250 V           | 60 V            | 30 V            |  |
| 4 A             | 4 A             | 2 A             |  |
| ≤ 3 mΩ          | ≤ 3 mΩ          | ≤ 3 mΩ          |  |
| CuZn / Au       | CuZn / Au       | CuZn / Au       |  |
| PA 66           | PA 66           | PA 66           |  |
| V0              | V0              | V0              |  |
| -25 ... 85      | -25 ... 85      | -25 ... 85      |  |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 4-pos.        |             | 5-pos.    |             | 8-pos.    |             |
| 1552955       | 20          | 1552968   | 20          | 1552997   | 20          |
| 1552984       | 20          |           |             |           |             |
|               |             | 1552971   | 20          |           |             |

| Accessories        |         |    |
|--------------------|---------|----|
| SACC-M12-KD-NUT-SH | 1440151 | 10 |



| Technical data  |                 |       |  |
|-----------------|-----------------|-------|--|
| 12-pos.         | 17-pos.         |       |  |
| IEC 61076-2-101 | IEC 61076-2-101 | -     |  |
| 3               | 3               | -     |  |
| IP67            | IP67            | -     |  |
| Solder pins     | Solder pins     | -     |  |
| 30 V            | 30 V            | -     |  |
| 1.5 A           | 1.5 A           | -     |  |
| ≤ 3 mΩ          | ≤ 3 mΩ          | -     |  |
| CuZn / Au       | CuZn / Au       | - / - |  |
| PA 66           | PA 66           | -     |  |
| V0              | V0              | -     |  |
| -25 ... 85      | -25 ... 85      | -     |  |

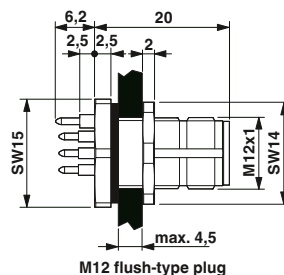
| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 12-pos.       |             | 17-pos.   |             |           |             |
| 1437106       | 20          | 1437119   | 20          |           |             |

| Accessories        |         |    |
|--------------------|---------|----|
| SACC-M12-KD-NUT-SH | 1440151 | 10 |

|                                              |      |
|----------------------------------------------|------|
| General data                                 |      |
| M12 circular plug-in connector according to: |      |
| Pollution degree                             |      |
| Degree of protection                         |      |
| Connection method                            |      |
| Electrical data                              |      |
| Rated voltage                                |      |
| Rated current                                |      |
| Volume resistance                            |      |
| Material data                                |      |
| Material contact / contact surface           |      |
| Contact carrier material                     |      |
| Inflammability class according to UL 94      |      |
| Temperature data                             |      |
| Plug / socket                                | [°C] |

| Description               | Coding       |
|---------------------------|--------------|
| Device plug-in connectors |              |
| Plug                      | A - standard |
| Plug                      | D - data     |
| Plug                      | B - inverse  |

|                                                                                    |
|------------------------------------------------------------------------------------|
| EMC hexagonal nuts with fine toothing, for all flush-type plug-in connectors with: |
| M12 fastening thread                                                               |



M12 flush-type plug

## M5 to M12 circular plug-in connectors

### M12 sensor/actuator device plug-in connectors, rear mounting

### M16 fastening thread, one-piece, for wave soldering processes



Straight, 4, 5, 8-pos.



Straight, 12, 17-pos.



| General data                                 |      |
|----------------------------------------------|------|
| M12 circular plug-in connector according to: |      |
| Pollution degree                             |      |
| Degree of protection                         |      |
| Connection method                            |      |
| Electrical data                              |      |
| Rated voltage                                |      |
| Rated current                                |      |
| Volume resistance                            |      |
| Material data                                |      |
| Material contact / contact surface           |      |
| Contact carrier material                     |      |
| Inflammability class according to UL 94      |      |
| Temperature data                             |      |
| Plug / socket                                | [°C] |

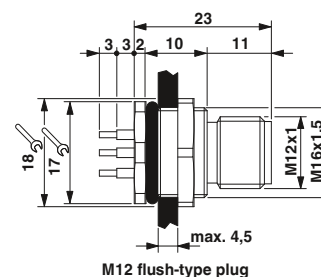
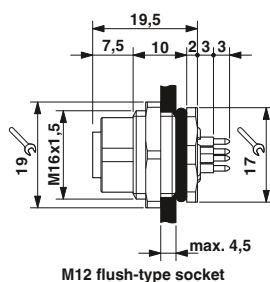
| Technical data  |                 |                 |
|-----------------|-----------------|-----------------|
| 4-pos.          | 5-pos.          | 8-pos.          |
| IEC 61076-2-101 | IEC 61076-2-101 | IEC 61076-2-101 |
| 3               | 3               | 3               |
| IP67            | IP67            | IP67            |
| Solder pins     | Solder pins     | Solder pins     |
| 250 V           | 60 V            | 30 V            |
| 4 A             | 4 A             | 2 A             |
| ≤ 3 mΩ          | ≤ 3 mΩ          | ≤ 3 mΩ          |
| CuZn / Au       | CuZn / Au       | CuZn / Au       |
| PA 66           | PA 66           | PA 66           |
| V0              | V0              | V0              |
| -25 ... 85      | -25 ... 85      | -25 ... 85      |

| Technical data  |                 |       |
|-----------------|-----------------|-------|
| 12-pos.         | 17-pos.         |       |
| IEC 61076-2-101 | IEC 61076-2-101 | -     |
| 3               | 3               | -     |
| IP67            | IP67            | -     |
| Solder pins     | Solder pins     | -     |
| 30 V            | 30 V            | -     |
| 1.5 A           | 1.5 A           | -     |
| ≤ 3 mΩ          | ≤ 3 mΩ          | -     |
| CuZn / Au       | CuZn / Au       | - / - |
| PA 66           | PA 66           | -     |
| V0              | V0              | -     |
| -25 ... 85      | -25 ... 85      | -     |

| Description                      | Coding       |
|----------------------------------|--------------|
| <b>Device plug-in connectors</b> |              |
| Socket                           | A - standard |
| Plug                             | A - standard |
| Socket                           | D - data     |
| Plug                             | D - data     |
| Socket                           | B - inverse  |
| Plug                             | B - inverse  |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 4-pos.        |             | 5-pos.    |             | 8-pos.    |             |
| 1419755       | 20          | 1441778   | 20          | 1441817   | 20          |
| 1419742       | 20          | 1441765   | 20          | 1441804   | 20          |
| 1441752       | 20          |           |             |           |             |
| 1441749       | 20          |           |             |           |             |
|               |             | 1441794   | 20          |           |             |
|               |             | 1441781   | 20          |           |             |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 12-pos.       |             | 17-pos.   |             |           |             |
| 1441833       | 20          | 1441859   | 20          |           |             |
| 1441820       | 20          | 1441846   | 20          |           |             |



**M16 fastening thread, one-piece, for wave soldering processes, shielded**



Straight, 4, 5, 8-pos.



Straight, 12, 17-pos.



| Technical data  |                 |                 |  |
|-----------------|-----------------|-----------------|--|
| 4-pos.          | 5-pos.          | 8-pos.          |  |
| IEC 61076-2-101 | IEC 61076-2-101 | IEC 61076-2-101 |  |
| 3               | 3               | 3               |  |
| IP67            | IP67            | IP67            |  |
| Solder pins     | Solder pins     | Solder pins     |  |
| 250 V           | 60 V            | 30 V            |  |
| 4 A             | 4 A             | 2 A             |  |
| ≤ 3 mΩ          | ≤ 3 mΩ          | ≤ 3 mΩ          |  |
| CuZn / Au       | CuZn / Au       | CuZn / Au       |  |
| PA 66           | PA 66           | PA 66           |  |
| V0              | V0              | V0              |  |
| -25 ... 85      | -25 ... 85      | -25 ... 85      |  |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 4-pos.        |             | 5-pos.    |             | 8-pos.    |             |
| 1419771       | 20          | 1441891   | 20          | 1441930   | 20          |
| 1419768       | 20          | 1441888   | 20          | 1441927   | 20          |
| 1441875       | 20          |           |             |           |             |
| 1441862       | 20          |           |             |           |             |
|               |             | 1441914   | 20          |           |             |
|               |             | 1441901   | 20          |           |             |

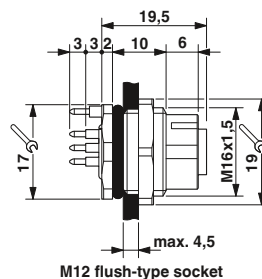
| Accessories        |         |    |
|--------------------|---------|----|
| SACC-M16-KD-NUT-SH | 1440164 | 10 |



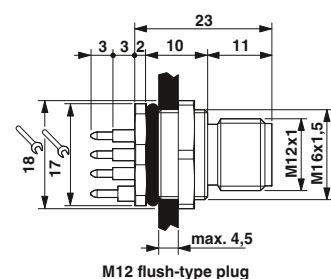
| Technical data  |                 |       |  |
|-----------------|-----------------|-------|--|
| 12-pos.         | 17-pos.         |       |  |
| IEC 61076-2-101 | IEC 61076-2-101 | -     |  |
| 3               | 3               | -     |  |
| IP67            | IP67            | -     |  |
| Solder pins     | Solder pins     | -     |  |
| 30 V            | 30 V            | -     |  |
| 1.5 A           | 1.5 A           | -     |  |
| ≤ 3 mΩ          | ≤ 3 mΩ          | -     |  |
| CuZn / Au       | CuZn / Au       | - / - |  |
| PA 66           | PA 66           | -     |  |
| V0              | V0              | -     |  |
| -25 ... 85      | -25 ... 85      | -     |  |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 12-pos.       |             | 17-pos.   |             |           |             |
| 1441956       | 20          | 1441972   | 20          |           |             |
| 1441943       | 20          | 1441969   | 20          |           |             |

| Accessories        |         |    |
|--------------------|---------|----|
| SACC-M16-KD-NUT-SH | 1440164 | 10 |



M12 flush-type socket



M12 flush-type plug



## M5 to M12 circular plug-in connectors

### M12 sensor/actuator device plug-in connectors, rear mounting

Contact carrier, two-piece, angled,  
for wave soldering processes



Angled, 4, 5, 8-pos.



Angled, shielded, 4, 5, 8-pos.



| Technical data  |                 |                 |  |
|-----------------|-----------------|-----------------|--|
| 4-pos.          | 5-pos.          | 8-pos.          |  |
| IEC 61076-2-101 | IEC 61076-2-101 | IEC 61076-2-101 |  |
| 3               | 3               | 3               |  |
| IP67            | IP67            | IP67            |  |
| Solder pins     | Solder pins     | Solder pins     |  |
| 250 V           | 60 V            | 30 V            |  |
| 4 A             | 4 A             | 2 A             |  |
| ≤ 3 mΩ          | ≤ 3 mΩ          | ≤ 3 mΩ          |  |
| CuZn / Au       | CuZn / Au       | CuZn / Au       |  |
| PA 66           | PA 66           | PA 66           |  |
| V0              | V0              | V0              |  |
| -25 ... 85      | -25 ... 85      | -25 ... 85      |  |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 4-pos.        |             | 5-pos.    |             | 8-pos.    |             |

|                                              |
|----------------------------------------------|
| General data                                 |
| M12 circular plug-in connector according to: |
| Pollution degree                             |
| Degree of protection                         |
| Connection method                            |
| Electrical data                              |
| Rated voltage                                |
| Rated current                                |
| Volume resistance                            |
| Material data                                |
| Material contact / contact surface           |
| Contact carrier material                     |
| Inflammability class according to UL 94      |
| Temperature data                             |
| Plug / socket                                |

[°C]

| Description            | Coding       |
|------------------------|--------------|
| <b>Contact carrier</b> |              |
| Socket                 | A - standard |
| Plug                   | A - standard |
| Socket                 | D - data     |
| Plug                   | D - data     |
| Socket                 | B - inverse  |
| Plug                   | B - inverse  |

| Accessories          |  |
|----------------------|--|
| See page 258 onwards |  |

Housing screw connections, SPEEDCON screw versions and press-in versions, for all two-piece THR and wave soldering contact carriers

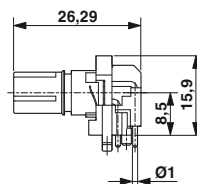


| Technical data  |                 |                 |  |
|-----------------|-----------------|-----------------|--|
| 4-pos.          | 5-pos.          | 8-pos.          |  |
| IEC 61076-2-101 | IEC 61076-2-101 | IEC 61076-2-101 |  |
| 3               | 3               | 3               |  |
| IP67            | IP67            | IP67            |  |
| Solder pins     | Solder pins     | Solder pins     |  |
| 250 V           | 60 V            | 30 V            |  |
| 4 A             | 4 A             | 2 A             |  |
| ≤ 3 mΩ          | ≤ 3 mΩ          | ≤ 3 mΩ          |  |
| CuZn / Au       | CuZn / Au       | CuZn / Au       |  |
| PA 66           | PA 66           | PA 66           |  |
| V0              | V0              | V0              |  |
| -25 ... 85      | -25 ... 85      | -25 ... 85      |  |

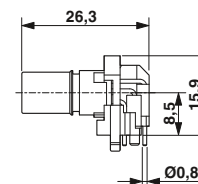
| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 4-pos.        |             | 5-pos.    |             | 8-pos.    |             |

|         |    |         |    |         |    |
|---------|----|---------|----|---------|----|
| 1432444 | 20 | 1432431 | 20 | 1437009 | 20 |
| 1439887 | 20 | 1439890 | 20 | 1437038 | 20 |
| 1432457 | 20 |         |    |         |    |
| 1436673 | 20 |         |    |         |    |
|         |    | 1432512 | 20 |         |    |
|         |    | 1436699 | 20 |         |    |

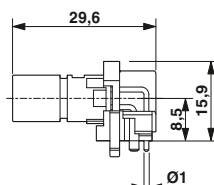
| Accessories          |  |
|----------------------|--|
| See page 258 onwards |  |



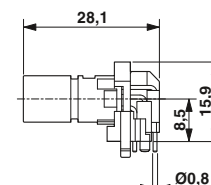
M12 socket contact carrier, angled, 4, 5-pos.



M12 socket contact carrier, angled, 8-pos.



M12 pin contact carrier, angled, 4, 5-pos.



M12 pin contact carrier, angled, 8-pos.

Contact carrier, two-piece, angled,  
for wave soldering processes

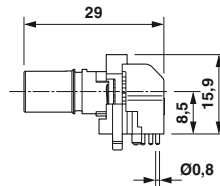


Angled, 12, 17-pos.

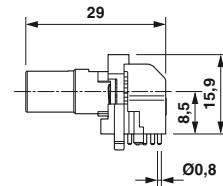


Angled, shielded, 12, 17-pos.

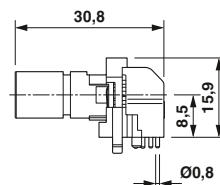
|                                                                                                                                     |  | Technical data       |                 |             | Technical data       |                 |           |             |
|-------------------------------------------------------------------------------------------------------------------------------------|--|----------------------|-----------------|-------------|----------------------|-----------------|-----------|-------------|
|                                                                                                                                     |  | 12-pos.              | 17-pos.         |             | 12-pos.              | 17-pos.         |           |             |
| General data                                                                                                                        |  |                      |                 |             |                      |                 |           |             |
| M12 circular plug-in connector according to:                                                                                        |  | IEC 61076-2-101      | IEC 61076-2-101 | -           | IEC 61076-2-101      | IEC 61076-2-101 | -         |             |
| Pollution degree                                                                                                                    |  | 3                    | 3               | -           | 3                    | 3               | -         |             |
| Degree of protection                                                                                                                |  | IP67                 | IP67            | -           | IP67                 | IP67            | -         |             |
| Connection method                                                                                                                   |  | Solder pins          | Solder pins     | -           | Solder pins          | Solder pins     | -         |             |
| Electrical data                                                                                                                     |  |                      |                 |             |                      |                 |           |             |
| Rated voltage                                                                                                                       |  | 30 V                 | 30 V            | -           | 30 V                 | 30 V            | -         |             |
| Rated current                                                                                                                       |  | 1.5 A                | 1.5 A           | -           | 1.5 A                | 1.5 A           | -         |             |
| Volume resistance                                                                                                                   |  | ≤ 3 mΩ               | ≤ 3 mΩ          | -           | ≤ 3 mΩ               | ≤ 3 mΩ          | -         |             |
| Material data                                                                                                                       |  |                      |                 |             |                      |                 |           |             |
| Material contact / contact surface                                                                                                  |  | CuZn / Au            | CuZn / Au       | - / -       | CuZn / Au            | CuZn / Au       | - / -     |             |
| Contact carrier material                                                                                                            |  | PA6T                 | PA6T            | -           | PA6T                 | PA6T            | -         |             |
| Inflammability class according to UL 94                                                                                             |  | V0                   | V0              | -           | V0                   | V0              | -         |             |
| Temperature data                                                                                                                    |  |                      |                 |             |                      |                 |           |             |
| Plug / socket                                                                                                                       |  | °C                   | -25 ... 85      | -           | -25 ... 85           | -25 ... 85      | -         |             |
|                                                                                                                                     |  | Ordering data        |                 |             | Ordering data        |                 |           |             |
| Description                                                                                                                         |  | Coding               | Order No.       | Pcs. / Pkt. | Order No.            | Pcs. / Pkt.     | Order No. | Pcs. / Pkt. |
|                                                                                                                                     |  |                      | 12-pos.         | 17-pos.     |                      | 12-pos.         | 17-pos.   |             |
| Device plug-in connectors                                                                                                           |  |                      |                 |             |                      |                 |           |             |
| Socket                                                                                                                              |  | A - standard         | 1424195         | 20          | 1424197              | 20              | 1424199   | 20          |
| Plug                                                                                                                                |  | A - standard         | 1424194         | 20          | 1424196              | 20              | 1424198   | 20          |
|                                                                                                                                     |  | Accessories          |                 |             | Accessories          |                 |           |             |
| Housing screw connections, SPEEDCON screw versions and press-in versions, for all two-piece THR and wave soldering contact carriers |  | See page 258 onwards |                 |             | See page 258 onwards |                 |           |             |



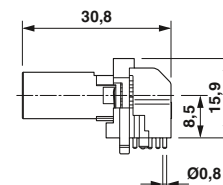
M12 socket contact carrier, angled, 12-pos.



M12 socket contact carrier, angled, 17-pos.



M12 pin contact carrier, angled, 12-pos.



M12 pin contact carrier, angled, 17-pos.

## M5 to M12 circular plug-in connectors

### M12 sensor/actuator device plug-in connectors, rear mounting

Contact carrier, two-piece,  
for wave soldering processes



Straight, 5-pos.



Straight, shielded, 4, 5-pos.



| Technical data                               |                 |       |       |
|----------------------------------------------|-----------------|-------|-------|
| 5-pos.                                       |                 |       |       |
| General data                                 |                 |       |       |
| M12 circular plug-in connector according to: | IEC 61076-2-101 | -     | -     |
| Pollution degree                             | 3               | -     | -     |
| Degree of protection                         | IP67            | -     | -     |
| Connection method                            | Solder pins     | -     | -     |
| Electrical data                              |                 |       |       |
| Rated voltage                                | 60 V            | -     | -     |
| Rated current                                | 4 A             | -     | -     |
| Volume resistance                            | ≤ 3 mΩ          | -     | -     |
| Material data                                |                 |       |       |
| Material contact / contact surface           | CuZn / Au       | - / - | - / - |
| Contact carrier material                     | PA 66           | -     | -     |
| Inflammability class according to UL 94      | V0              | -     | -     |
| Temperature data                             |                 |       |       |
| Plug / socket                                | -25 ... 85      | -     | -     |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 5-pos.        |             |           |             |           |             |
| 1551464       | 20          |           |             |           |             |

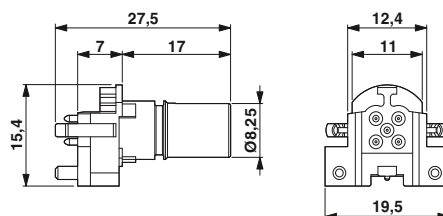
| Accessories          |  |
|----------------------|--|
| See page 258 onwards |  |



| Technical data                               |                 |                 |       |
|----------------------------------------------|-----------------|-----------------|-------|
| 4-pos.                                       |                 | 5-pos.          |       |
| General data                                 |                 |                 |       |
| M12 circular plug-in connector according to: | IEC 61076-2-101 | IEC 61076-2-101 | -     |
| Pollution degree                             | 3               | 3               | -     |
| Degree of protection                         | IP67            | IP67            | -     |
| Connection method                            | Solder pins     | Solder pins     | -     |
| Electrical data                              |                 |                 |       |
| Rated voltage                                | 250 V           | 60 V            | -     |
| Rated current                                | 4 A             | 4 A             | -     |
| Volume resistance                            | ≤ 3 mΩ          | ≤ 3 mΩ          | -     |
| Material data                                |                 |                 |       |
| Material contact / contact surface           | CuZn / Au       | CuZn / Au       | - / - |
| Contact carrier material                     | PA 66           | PA 66           | -     |
| Inflammability class according to UL 94      | V0              | V0              | -     |
| Temperature data                             |                 |                 |       |
| Plug / socket                                | -25 ... 85      | -25 ... 85      | -     |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 4-pos.        |             | 5-pos.    |             |           |             |
| 1551480       | 20          |           |             |           |             |
|               |             | 1551477   | 20          |           |             |

| Accessories          |  |
|----------------------|--|
| See page 258 onwards |  |



M12 socket contact carrier, straight, 4, 5-pos.



## M5 to M12 circular plug-in connectors

### M12 sensor/actuator device plug-in connectors, rear mounting

Two-piece, for reflow processes,  
tray packaging, tape-on-reel packing



Straight, 4, 5, 8-pos.



Straight, 12, 17-pos.



| Technical data        |                       |                       |
|-----------------------|-----------------------|-----------------------|
| 4-pos.                | 5-pos.                | 8-pos.                |
| IEC 61076-2-101       | IEC 61076-2-101       | IEC 61076-2-101       |
| 3                     | 3                     | 3                     |
| IP67                  | IP67                  | IP67                  |
| THR solder connection | THR solder connection | THR solder connection |
| 250 V                 | 60 V                  | 30 V                  |
| 4 A                   | 4 A                   | 2 A                   |
| ≤ 3 mΩ                | ≤ 3 mΩ                | ≤ 3 mΩ                |
| CuZn / Au             | CuZn / Au             | CuZn / Au             |
| PPA                   | PPA                   | PPA                   |
| V0                    | V0                    | V0                    |
| -25 ... 85            | -25 ... 85            | -25 ... 85            |

| Ordering data |             |           |
|---------------|-------------|-----------|
| Order No.     | Pcs. / Pkt. | Order No. |
| 4-pos.        | 5-pos.      | 8-pos.    |
| 1439942       | 60          | 1551448   |
| 1437164       | 60          | 1552227   |
| 1457610       | 100         | 1457649   |
| 1457490       | 100         | 1457526   |

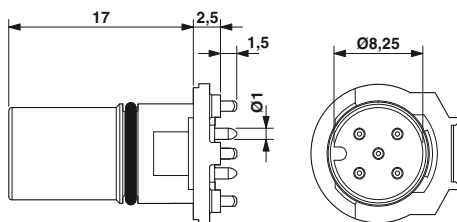
| Accessories          |  |  |
|----------------------|--|--|
| See page 258 onwards |  |  |



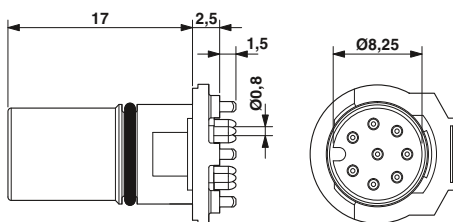
| Technical data        |                       |       |
|-----------------------|-----------------------|-------|
| 12-pos.               | 17-pos.               |       |
| IEC 61076-2-101       | IEC 61076-2-101       | -     |
| 3                     | 3                     | -     |
| IP67                  | IP67                  | -     |
| THR solder connection | THR solder connection | -     |
| 30 V                  | 30 V                  | -     |
| 1.5 A                 | 1.5 A                 | -     |
| ≤ 3 mΩ                | ≤ 3 mΩ                | -     |
| CuZn / Au             | CuZn / Au             | - / - |
| PPA                   | PPA                   | -     |
| V0                    | V0                    | -     |
| -25 ... 85            | -25 ... 85            | -     |

| Ordering data |             |           |
|---------------|-------------|-----------|
| Order No.     | Pcs. / Pkt. | Order No. |
| 12-pos.       | 17-pos.     |           |
| 1441970       | 60          | 1441998   |
| 1441985       | 60          | 1442007   |
| 1457694       | 100         | 1457717   |
| 1457571       | 100         | 1457597   |

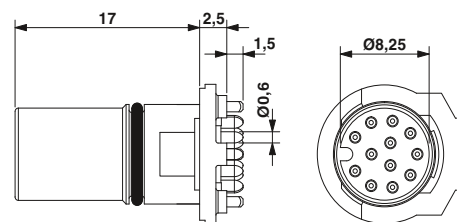
| Accessories          |  |  |
|----------------------|--|--|
| See page 258 onwards |  |  |



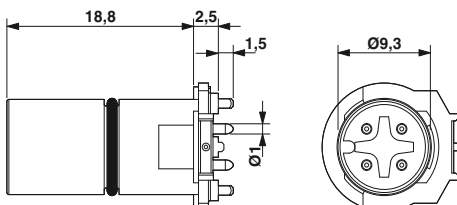
M12 socket contact carrier, straight, 4, 5-pos.



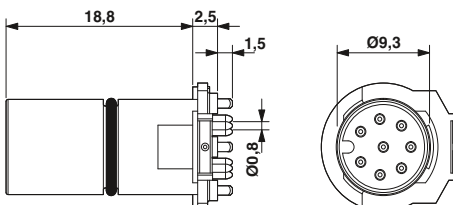
M12 socket contact carrier, straight, 8-pos.



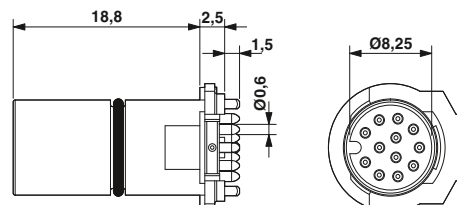
M12 socket contact carrier, straight, 12, 17-pos.



M12 plug contact carrier, straight, 4, 5-pos.



M12 plug contact carrier, straight, 8-pos.



M12 plug contact carrier, straight, 12, 17-pos.



**Straight, 4, 5, 8-pos.**



**Straight, 12, 17-pos.**

|  |                                                       |                                                       |  |                                                       |                  |
|-----------------------------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------|------------------|
| Technical data                                                                    |                                                       |                                                       | Technical data                                                                      |                                                       |                  |
| 4-pos.                                                                            | 5-pos.                                                | 8-pos.                                                | 12-pos.                                                                             | 17-pos.                                               |                  |
| IEC 61076-2-101<br>3<br>IP67<br>THR solder connection                             | IEC 61076-2-101<br>3<br>IP67<br>THR solder connection | IEC 61076-2-101<br>3<br>IP67<br>THR solder connection | IEC 61076-2-101<br>3<br>IP67<br>THR solder connection                               | IEC 61076-2-101<br>3<br>IP67<br>THR solder connection | -<br>-<br>-<br>- |
| 250 V<br>4 A<br>≤ 3 mΩ                                                            | 60 V<br>4 A<br>≤ 3 mΩ                                 | 30 V<br>2 A<br>≤ 3 mΩ                                 | 30 V<br>1.5 A<br>≤ 3 mΩ                                                             | 30 V<br>1.5 A<br>≤ 3 mΩ                               | -<br>-<br>-      |
| CuZn / Au<br>PPA<br>V0                                                            | CuZn / Au<br>PPA<br>V0                                | CuZn / Au<br>PPA<br>V0                                | CuZn / Au<br>PPA<br>V0                                                              | CuZn / Au<br>PPA<br>V0                                | - / -<br>-<br>-  |
| -25 ... 85                                                                        | -25 ... 85                                            | -25 ... 85                                            | -25 ... 85                                                                          | -25 ... 85                                            | -                |
| Ordering data                                                                     |                                                       |                                                       | Ordering data                                                                       |                                                       |                  |
| Order No.                                                                         | Pcs. / Pkt.                                           | Order No.                                             | Pcs. / Pkt.                                                                         | Order No.                                             | Pcs. / Pkt.      |
| 4-pos.                                                                            |                                                       | 5-pos.                                                |                                                                                     | 12-pos.                                               | 17-pos.          |
| 1439955                                                                           | 60                                                    | 1432363                                               | 60                                                                                  | 1442052                                               | 60               |
| 1439939                                                                           | 60                                                    | 1432350                                               | 60                                                                                  | 1442065                                               | 60               |
| 1551451                                                                           | 60                                                    |                                                       |                                                                                     | 1442078                                               | 60               |
| 1552214                                                                           | 60                                                    | 1551435                                               | 60                                                                                  | 1442081                                               | 60               |
|                                                                                   |                                                       | 1552230                                               | 60                                                                                  |                                                       |                  |
| 1457623                                                                           | 100                                                   | 1457652                                               | 100                                                                                 | 1457704                                               | 100              |
| 1457500                                                                           | 100                                                   | 1457539                                               | 100                                                                                 | 1457584                                               | 100              |
| 1457636                                                                           | 100                                                   |                                                       |                                                                                     | 1457720                                               | 100              |
| 1457513                                                                           | 100                                                   | 1457681                                               | 100                                                                                 | 1457607                                               | 100              |
|                                                                                   |                                                       | 1457568                                               | 100                                                                                 |                                                       |                  |
|                                                                                   |                                                       | 1457665                                               | 100                                                                                 |                                                       |                  |
|                                                                                   |                                                       | 1457542                                               | 100                                                                                 |                                                       |                  |
| Accessories                                                                       |                                                       |                                                       | Accessories                                                                         |                                                       |                  |
| See page 258 onwards                                                              |                                                       |                                                       | See page 258 onwards                                                                |                                                       |                  |

## M5 to M12 circular plug-in connectors

### M12 sensor/actuator device plug-in connectors, rear mounting

#### Housing screw connections, screw versions

- For two-piece M12 device plug-in connectors



With O-ring



With flat gasket

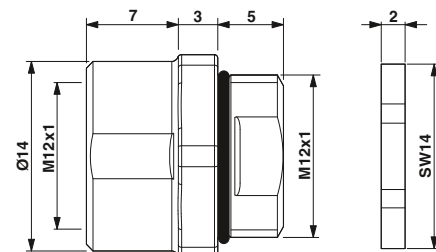


| Technical data                |           |             |
|-------------------------------|-----------|-------------|
| Zinc die-cast (nickel-plated) |           |             |
| -25 °C ... 85 °C              |           |             |
| Ordering data                 |           |             |
| Type                          | Order No. | Pcs. / Pkt. |
| SACC-M12-SCO NUT              | 1552243   | 60          |
| SACC-M12-SCO PLUG             | 1551493   | 60          |

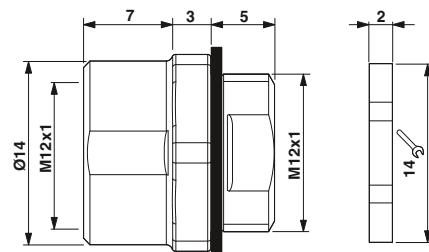


| Technical data                |           |             |
|-------------------------------|-----------|-------------|
| Zinc die-cast (nickel-plated) |           |             |
| -25 °C ... 85 °C              |           |             |
| Ordering data                 |           |             |
| Type                          | Order No. | Pcs. / Pkt. |
| SACC-M12-SCO NUT L 90         | 1432460   | 10          |
| SACC-M12-SCO PLUG L90         | 1436709   | 10          |

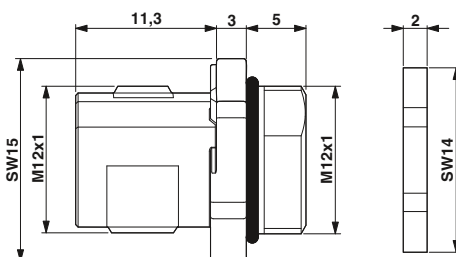
|                                                                                                                     |                               |
|---------------------------------------------------------------------------------------------------------------------|-------------------------------|
| Material data                                                                                                       |                               |
| Material                                                                                                            | Zinc die-cast (nickel-plated) |
| Temperature data                                                                                                    |                               |
| Ambient temperature (operation)                                                                                     | -25 °C ... 85 °C              |
| Description                                                                                                         |                               |
| <b>Housing screw connections, SPEEDCON screw versions for all two-piece THR and wave soldering contact carriers</b> |                               |
| Socket                                                                                                              |                               |
| Plug                                                                                                                |                               |



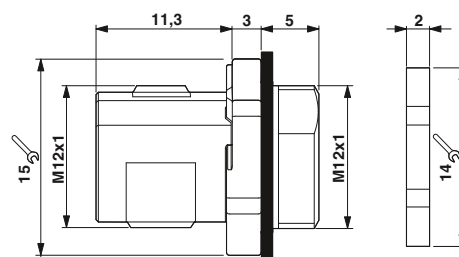
Socket housing screw connection, with O-ring



Socket housing screw connection, with flat gasket



Pin housing screw connection, with O-ring



Pin housing screw connection, with flat gasket

## Housing screw connections, press-in versions

- For two-piece M12 device plug-in connectors



M12 socket



M12 pin



### Technical data

|                                 |                      |
|---------------------------------|----------------------|
| Material data                   |                      |
| Material                        | CuZn (nickel-plated) |
| Temperature data                |                      |
| Ambient temperature (operation) | -25 °C ... 85 °C     |

### Ordering data

| Description                                                                                 | Type               | Order No. | Pcs. / Pkt. |
|---------------------------------------------------------------------------------------------|--------------------|-----------|-------------|
| <b>Housing screw connection</b> , for all two-piece THR and wave soldering contact carriers |                    |           |             |
| Socket                                                                                      | SACC-M12 NUT PRESS | 1437889   | 10          |
| Plug                                                                                        |                    |           |             |

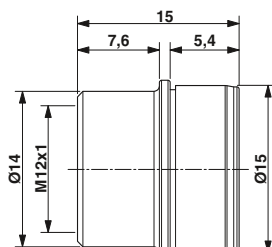


### Technical data

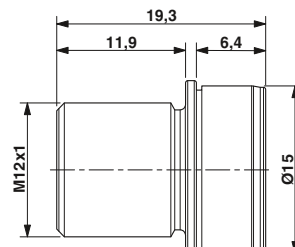
|                                 |                      |
|---------------------------------|----------------------|
| Material data                   |                      |
| Material                        | CuZn (nickel-plated) |
| Temperature data                |                      |
| Ambient temperature (operation) | -25 °C ... 85 °C     |

### Ordering data

| Type                       | Order No. | Pcs. / Pkt. |
|----------------------------|-----------|-------------|
| <b>SACC-M12 PLUG PRESS</b> | 1437892   | 10          |



Socket housing screw connection



Pin housing screw connection



## M12 sensor/actuator device plug-in connectors, rear mounting

**EtherCAT** 

**Sercos**  
the automation bus



## Ethernet

**CAT6<sub>A</sub>, X-coded**

**CAT5/CAT5e**

260 | PHOENIX CONTACT

## M12 flush-type plug-in connector, solder connection

CAT6<sub>A</sub>, X-coded

## Ethernet



CAT5e, Y-coded

| Technical data                                                                                                                                                                                       |                                |           |             | Technical data                               |           |             |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------|-------------|----------------------------------------------|-----------|-------------|--|
| SACC-DSI-FSX-8CON...                                                                                                                                                                                 |                                |           |             | VS-08-DSIV-L180-HYB SCO                      |           |             |  |
| Electrical data                                                                                                                                                                                      |                                |           |             |                                              |           |             |  |
| Nominal voltage U <sub>N</sub>                                                                                                                                                                       | 48 V                           |           |             | 30 V (Data)                                  |           |             |  |
| Rated current                                                                                                                                                                                        | 0.5 A                          |           |             | 0.5 A (Data) / 6 A (Power)                   |           |             |  |
| Transmission characteristics (category)                                                                                                                                                              | CAT6 <sub>A</sub>              |           |             | CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001) |           |             |  |
| Contact material                                                                                                                                                                                     | CuZn                           |           |             | CuZn                                         |           |             |  |
| Material of grip body                                                                                                                                                                                | Zinc die-cast, nickel-plated   |           |             | Zinc die-cast, nickel-plated                 |           |             |  |
| Inflammability class according to UL 94                                                                                                                                                              | V0                             |           |             | V0                                           |           |             |  |
| No. of pos.                                                                                                                                                                                          | 8                              |           |             | 8                                            |           |             |  |
| Insertion/withdrawal cycles                                                                                                                                                                          | ≥ 100                          |           |             | ≥ 100                                        |           |             |  |
| Temperature data                                                                                                                                                                                     |                                |           |             |                                              |           |             |  |
| Plug / socket                                                                                                                                                                                        | -40 ... 85                     |           |             | -40 ... 85                                   |           |             |  |
| Ordering data                                                                                                                                                                                        |                                |           |             | Ordering data                                |           |             |  |
| Description                                                                                                                                                                                          | Type                           | Order No. | Pcs. / Pkt. | Type                                         | Order No. | Pcs. / Pkt. |  |
| <b>Flush-type socket</b> , CAT6 <sub>A</sub> , Ethernet, one-piece, 8-pos., M12 SPEEDCON, with straight solder connection, rear/screw mounting with:<br>M16 fastening thread<br>Pg9 fastening thread | SACC-DSI-FSX-8CON-M16-L180 SCO | 1424177   | 20          |                                              |           |             |  |
|                                                                                                                                                                                                      | SACC-DSI-FSX-8CON-PG9-L180 SCO | 1404741   | 20          |                                              |           |             |  |
| <b>Hybrid flush-type plug-in connector for the reflow soldering process</b> , with straight solder connection, 4 x power contacts, 4 x signal contacts, rear mounting, SPEEDCON                      |                                |           |             |                                              |           |             |  |
| Socket                                                                                                                                                                                               |                                |           |             | VS-08-DSIV-L180-HYB SCO                      | 1456666   | 20          |  |
| <b>Hybrid flush-type plug-in connector for the wave soldering process</b> , with straight solder connection, 4 x power contacts, 4 x signal contacts, rear mounting, SPEEDCON                        |                                |           |             |                                              |           |             |  |
| Socket                                                                                                                                                                                               |                                |           |             | SACC-DSI-FSY-8CON-M16-L180 SCO               | 1407503   | 20          |  |
| <b>Contact carrier, two-piece</b> , CAT6 <sub>A</sub> , Ethernet, 8-pos., rear mounting, with angled solder connection                                                                               |                                |           |             |                                              |           |             |  |
|                                                                                                                                                                                                      | SACC-CI-M12FSX-8CON-L90        | 1424180   | 20          |                                              |           |             |  |
| <b>Hybrid contact carrier, two-piece</b> , Ethernet, 8-pos., rear/screw mounting, with angled solder connection                                                                                      |                                |           |             |                                              |           |             |  |
|                                                                                                                                                                                                      |                                |           |             | SACC-CI-M12FSY-8CON-L90                      | 1424193   | 20          |  |
| Accessories                                                                                                                                                                                          |                                |           |             | Accessories                                  |           |             |  |
| <b>Housing screw connection</b> , SPEEDCON, for all two-piece THR and wave soldering contact carriers                                                                                                | See page 258 onwards           |           |             | See page 258 onwards                         |           |             |  |

## M5 to M12 circular plug-in connectors

### M12 sensor/actuator device plug-in connectors, rear mounting

**M12, two-piece,  
for wave soldering processes**

#### Ethernet

**PROFI  
NET**



Straight, 4, 5, 8-pos.



Straight, shielded, 5-pos.



#### Technical data

| General data                                 |                   |
|----------------------------------------------|-------------------|
| M12 circular plug-in connector according to: | IEC 61076-2-101   |
| Pollution degree                             | 3                 |
| Degree of protection                         | IP67              |
| Connection method                            | Solder pins       |
| Electrical data                              |                   |
| Rated voltage                                | 250 V             |
| Rated current                                | 4 A               |
| Volume resistance                            | ≤ 3 mΩ            |
| Material data                                |                   |
| Material contact / contact surface           | CuZn / Au         |
| Contact carrier material                     | PA 66             |
| Inflammability class according to UL 94      | HB                |
| Temperature data                             |                   |
| Plug / socket                                | [-25 ... 85] [°C] |

| 4-pos.          | 5-pos.          | 8-pos.          |
|-----------------|-----------------|-----------------|
| IEC 61076-2-101 | IEC 61076-2-101 | IEC 61076-2-101 |
| 3               | 3               | 3               |
| IP67            | IP67            | IP67            |
| Solder pins     | Solder pins     | Solder pins     |
| 250 V           | 60 V            | 30 V            |
| 4 A             | 4 A             | 2 A             |
| ≤ 3 mΩ          | ≤ 3 mΩ          | ≤ 3 mΩ          |
| CuZn / Au       | CuZn / Au       | CuZn / Au       |
| PA 66           | PA 66           | PA 66           |
| HB              | HB              | HB              |
| -25 ... 85      | -25 ... 85      | -25 ... 85      |

#### Ordering data

| Description                            | Coding       |
|----------------------------------------|--------------|
| Flush-type plug-in connector, straight |              |
| Socket                                 | A - standard |
| Plug                                   | A - standard |
| Socket                                 | D - data     |
| Socket                                 | B - inverse  |
| Plug                                   | B - inverse  |

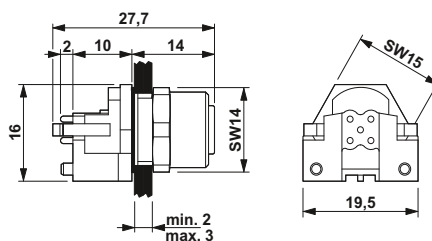
| Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|-----------|-------------|-----------|-------------|-----------|-------------|
| 4-pos.    |             | 5-pos.    |             | 8-pos.    |             |
|           |             | 1694237   | 10          | 1556854   | 10          |
|           |             | 1694211   | 10          |           |             |
| 1534627   | 10          | 1515934   | 10          |           |             |
|           |             | 1514883   | 10          |           |             |



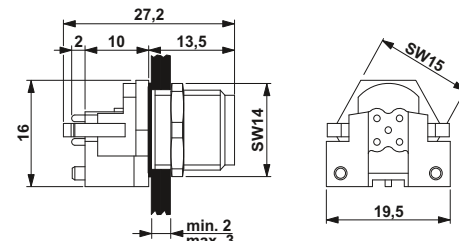
#### Technical data

| General data                                 |                   |
|----------------------------------------------|-------------------|
| M12 circular plug-in connector according to: | IEC 61076-2-101   |
| Pollution degree                             | 3                 |
| Degree of protection                         | IP67              |
| Connection method                            | Solder pins       |
| Electrical data                              |                   |
| Rated voltage                                | 60 V              |
| Rated current                                | 4 A               |
| Volume resistance                            | ≤ 3 mΩ            |
| Material data                                |                   |
| Material contact / contact surface           | CuZn / Au         |
| Contact carrier material                     | PA 66             |
| Inflammability class according to UL 94      | HB                |
| Temperature data                             |                   |
| Plug / socket                                | [-25 ... 85] [°C] |

| Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|-----------|-------------|-----------|-------------|-----------|-------------|
| 5-pos.    |             |           |             |           |             |
| 1437193   | 10          |           |             |           |             |
| 1437180   | 10          |           |             |           |             |
| 1437203   | 10          |           |             |           |             |



M12 flush-type socket, straight,



M12 flush-type plug, straight,

# Pg9 fastening thread, plastic



Solder connection, 5, 8-pos.



With 0.5 m long litz wires, 5, 8-pos.



| Technical data                               |                 |                 |
|----------------------------------------------|-----------------|-----------------|
|                                              | 5-pos.          | 8-pos.          |
| General data                                 |                 |                 |
| M12 circular plug-in connector according to: | IEC 61076-2-101 | IEC 61076-2-101 |
| Pollution degree                             | 3               | 3               |
| Degree of protection                         | IP67            | IP67            |
| Electrical data                              |                 |                 |
| Rated voltage                                | 60 V            | 30 V            |
| Rated current                                | 4 A             | 2 A             |
| Volume resistance                            | ≤ 3 mΩ          | ≤ 3 mΩ          |
| Material data                                |                 |                 |
| Material contact / contact surface           | CuZn / Au       | CuZn / Au       |
| Contact carrier material                     | PA 66           | PA 66           |
| Inflammability class according to UL 94      | HB              | HB              |
| Temperature data                             |                 |                 |
| Plug / socket                                | [-25 ... 85 °C] | [-25 ... 85 °C] |
| Cable, fixed installation                    | [-25 ... 85 °C] | [-25 ... 85 °C] |

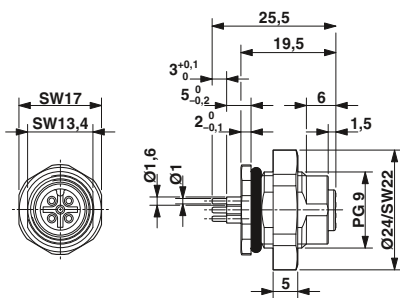
| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 5-pos.        |             | 8-pos.    |             |
| 1436330       | 20          | 1436343   | 20          |
| 1436314       | 20          | 1436327   | 20          |



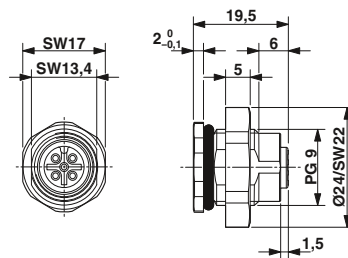
| Technical data                               |                 |                 |
|----------------------------------------------|-----------------|-----------------|
|                                              | 5-pos.          | 8-pos.          |
| General data                                 |                 |                 |
| M12 circular plug-in connector according to: | IEC 61076-2-101 | IEC 61076-2-101 |
| Pollution degree                             | 3               | 3               |
| Degree of protection                         | IP67            | IP67            |
| Electrical data                              |                 |                 |
| Rated voltage                                | 60 V            | 30 V            |
| Rated current                                | 4 A             | 2 A             |
| Volume resistance                            | ≤ 3 mΩ          | ≤ 3 mΩ          |
| Material data                                |                 |                 |
| Material contact / contact surface           | CuZn / Au       | CuZn / Au       |
| Contact carrier material                     | PA 66           | PA 66           |
| Inflammability class according to UL 94      | HB              | HB              |
| Temperature data                             |                 |                 |
| Plug / socket                                | [-25 ... 85 °C] | [-25 ... 85 °C] |
| Cable, fixed installation                    | [-25 ... 85 °C] | [-25 ... 85 °C] |

| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 5-pos.        |             | 8-pos.    |             |
| 1436356       | 1           | 1436369   | 1           |

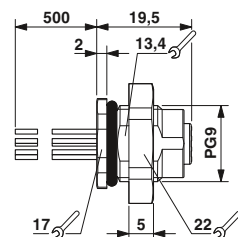
| Description                                    | Coding       |
|------------------------------------------------|--------------|
| Flush-type plug-in connector, with solder pins |              |
| Socket                                         | A - standard |
| Flush-type plug-in connector, with solder cups |              |
| Socket                                         | A - standard |
| Flush-type plug-in connector, with litz wires  |              |
| Socket                                         | A - standard |



M12, Pg9 fastening thread, solder pins



M12 socket, Pg9 fastening thread, solder cups



M12 socket, Pg9 fastening thread, with litz wires

M5 to M12 circular plug-in connectors

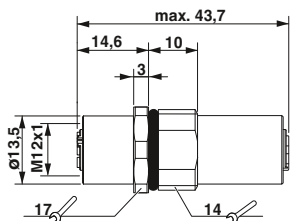
M12 sensor/actuator device plug-in connectors, rear mounting

Control cabinet feed-through

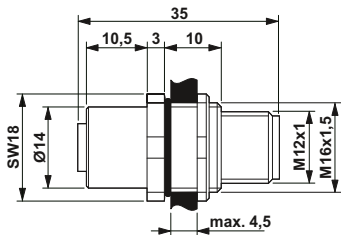


4, 5, 8-pos.

|                                                    |  | Technical data  |  |                 |  |                 |  |
|----------------------------------------------------|--|-----------------|--|-----------------|--|-----------------|--|
|                                                    |  | 4-pos.          |  | 5-pos.          |  | 8-pos.          |  |
| General data                                       |  |                 |  |                 |  |                 |  |
| M12 circular plug-in connector according to:       |  | IEC 61076-2-101 |  | IEC 61076-2-101 |  | IEC 61076-2-101 |  |
| Pollution degree                                   |  | 3               |  | 3               |  | 3               |  |
| Degree of protection                               |  | IP67            |  | IP67            |  | IP67            |  |
| Electrical data                                    |  |                 |  |                 |  |                 |  |
| Rated voltage                                      |  | 60 V            |  | 24 V            |  | 24 V            |  |
| Rated current                                      |  | 4 A             |  | 4 A             |  | 1.5 A           |  |
| Volume resistance                                  |  | ≤ 3 mΩ          |  | ≤ 3 mΩ          |  | ≤ 3 mΩ          |  |
| Material data                                      |  |                 |  |                 |  |                 |  |
| Contact material                                   |  | CuZn            |  | CuZn            |  | CuZn            |  |
| Contact surface material                           |  | Au              |  | Au              |  | Au              |  |
| Contact carrier material                           |  | PA 66           |  | PA 66           |  | PA 66           |  |
| Inflammability class according to UL 94            |  | HB              |  | HB              |  | HB              |  |
| Temperature data                                   |  |                 |  |                 |  |                 |  |
| Plug / socket                                      |  | [-25 ... 85     |  | -25 ... 85      |  | -25 ... 85      |  |
| [°C]                                               |  |                 |  |                 |  |                 |  |
| Ordering data                                      |  |                 |  |                 |  |                 |  |
| Description                                        |  | Coding          |  | Order No.       |  | Pcs. / Pkt.     |  |
|                                                    |  |                 |  | 4-pos.          |  | 5-pos.          |  |
|                                                    |  |                 |  | 8-pos.          |  |                 |  |
| Control cabinet feed-through, M16 fastening thread |  |                 |  |                 |  |                 |  |
| Plug on socket                                     |  | A - standard    |  | 1551671         |  | 1               |  |
| Plug on socket                                     |  | B - inverse     |  | 1551684         |  | 1               |  |
| Socket to socket                                   |  | D - data        |  | 1424326         |  | 1               |  |



Control cabinet feed-through, socket to socket on both sides



Control cabinet feed-through, socket to pin on both sides

**Front mounting,  
Pg13.5 fastening thread,  
with 0.5 m long litz wires**

**Notes:**

Flat nut recommended for housing wall thicknesses < 2.5 mm.



3, 4-pos.



5-pos.



**Technical data**

| General data                            |                  |
|-----------------------------------------|------------------|
| Pollution degree                        | 3                |
| Degree of protection                    | IP67             |
| Connection method                       | Individual wires |
| Electrical data                         |                  |
| Rated voltage                           | 250 V            |
| Rated current                           | 12 A             |
| Volume resistance                       | ≤ 5 mΩ           |
| Surge voltage category                  | II               |
| Material data                           |                  |
| Material contact / contact surface      | CuZn / Au        |
| Contact carrier material                | PUR              |
| Inflammability class according to UL 94 | HB               |
| Cable type                              | PVC litz wire    |
| Temperature data                        |                  |
| Plug / socket                           | [°C]             |
| Cable, fixed installation               | [°C]             |

**3-pos.**

**4-pos.**

3

3

IP67

IP67

Individual wires

Individual wires

250 V

250 V

12 A

9 A

≤ 5 mΩ

≤ 5 mΩ

II

II

CuZn / Au

CuZn / Au

PUR

PUR

HB

HB

PVC litz wire

PVC litz wire

-40 ... 85

-40 ... 85

-40 ... 85

-40 ... 85

**Ordering data**

| Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|-----------|-------------|-----------|-------------|
| 3-pos.    |             | 4-pos.    |             |

1521407

1

1521423

1

1521410

1

1521436

1

**Accessories**

|                  |         |     |
|------------------|---------|-----|
| SACC-E-MU-PG13,5 | 1539143 | 100 |
|------------------|---------|-----|



**Technical data**

| General data                            |                  |
|-----------------------------------------|------------------|
| Pollution degree                        | 3                |
| Degree of protection                    | IP67             |
| Connection method                       | Individual wires |
| Electrical data                         |                  |
| Rated voltage                           | 250 V            |
| Rated current                           | 9 A              |
| Volume resistance                       | ≤ 5 mΩ           |
| Surge voltage category                  | II               |
| Material data                           |                  |
| Material contact / contact surface      | CuZn / Au        |
| Contact carrier material                | PUR              |
| Inflammability class according to UL 94 | HB               |
| Cable type                              | PVC litz wire    |
| Temperature data                        |                  |
| Plug / socket                           | [°C]             |
| Cable, fixed installation               | [°C]             |

**5-pos.**

3

IP67

Individual wires

250 V

9 A

≤ 5 mΩ

II

CuZn / Au

PUR

HB

PVC litz wire

-40 ... 85

-40 ... 85

**Ordering data**

| Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|-----------|-------------|-----------|-------------|
| 5-pos.    |             |           |             |

1521449

1

1521452

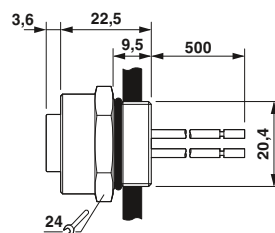
1

**Accessories**

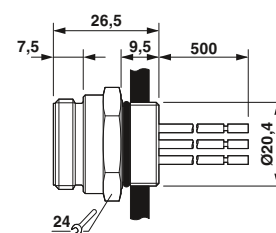
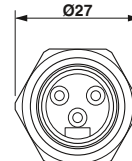
|                  |         |     |
|------------------|---------|-----|
| SACC-E-MU-PG13,5 | 1539143 | 100 |
|------------------|---------|-----|

| Description                      | Coding       |
|----------------------------------|--------------|
| <b>Device plug-in connectors</b> |              |
| Socket                           | A - standard |
| Plug                             | A - standard |

**Flat nut, with:**  
Pg13.5 thread



7/8" flush-type socket



7/8" flush-type plug

M5 to M12 circular plug-in connectors

7/8" sensor/actuator device plug-in connectors, rear mounting

7/8", with 1.0 m long litz wires



3, 4, 5-pos.



3, 4, 5-pos.



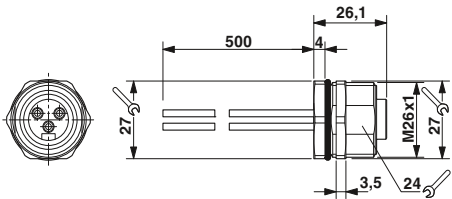
|                                         | Technical data   |                  |                  |
|-----------------------------------------|------------------|------------------|------------------|
|                                         | 3-pos.           | 4-pos.           | 5-pos.           |
| General data                            |                  |                  |                  |
| Pollution degree                        | 3                | 3                | 3                |
| Degree of protection                    | IP67             | IP67             | IP67             |
| Connection method                       | Individual wires | Individual wires | Individual wires |
| Electrical data                         |                  |                  |                  |
| Rated voltage                           | 250 V            | 250 V            | 250 V            |
| Rated current                           | 12 A             | 9 A              | 9 A              |
| Volume resistance                       | ≤ 5 mΩ           | ≤ 5 mΩ           | ≤ 5 mΩ           |
| Surge voltage category                  | II               | II               | II               |
| Material data                           |                  |                  |                  |
| Contact material                        | CuZn             | CuZn             | CuZn             |
| Contact surface material                | Au               | Au               | Au               |
| Contact carrier material                | PUR              | PUR              | PUR              |
| Inflammability class according to UL 94 | HB               | HB               | HB               |
| Temperature data                        |                  |                  |                  |
| Plug / socket                           | [°C]             | [°C]             | [°C]             |
| Cable, fixed installation               | -40 ... 85       | -40 ... 85       | -40 ... 85       |

| Description                                         | Ordering data |             |           |             |           |             |
|-----------------------------------------------------|---------------|-------------|-----------|-------------|-----------|-------------|
|                                                     | Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                                                     | 3-pos.        |             | 4-pos.    |             | 5-pos.    |             |
| Flush-type plug-in connector, M26 fastening thread  |               |             |           |             |           |             |
| Socket                                              | 1453782       | 1           | 1453795   | 1           | 1453805   | 1           |
| Flush-type plug-in connector, 7/8" fastening thread |               |             |           |             |           |             |
| Plug                                                |               |             |           |             |           |             |

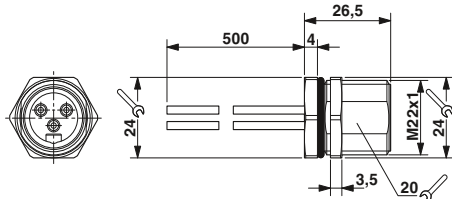


|                                         | Technical data   |                  |                  |
|-----------------------------------------|------------------|------------------|------------------|
|                                         | 3-pos.           | 4-pos.           | 5-pos.           |
| General data                            |                  |                  |                  |
| Pollution degree                        | 3                | 3                | 3                |
| Degree of protection                    | IP67             | IP67             | IP67             |
| Connection method                       | Individual wires | Individual wires | Individual wires |
| Electrical data                         |                  |                  |                  |
| Rated voltage                           | 250 V            | 250 V            | 250 V            |
| Rated current                           | 12 A             | 9 A              | 9 A              |
| Volume resistance                       | ≤ 5 mΩ           | ≤ 5 mΩ           | ≤ 5 mΩ           |
| Surge voltage category                  | II               | II               | II               |
| Material data                           |                  |                  |                  |
| Contact material                        | CuZn             | CuZn             | CuZn             |
| Contact surface material                | Au               | Au               | Au               |
| Contact carrier material                | PUR              | PUR              | PUR              |
| Inflammability class according to UL 94 | HB               | HB               | HB               |
| Temperature data                        |                  |                  |                  |
| Plug / socket                           | [°C]             | [°C]             | [°C]             |
| Cable, fixed installation               | -40 ... 85       | -40 ... 85       | -40 ... 85       |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 3-pos.        |             | 4-pos.    |             | 5-pos.    |             |
|               |             |           |             |           |             |
| 1453753       | 1           | 1453766   | 1           | 1453799   | 1           |



7/8" flush-type socket



7/8" flush-type plug

7/8" rear mounting,  
for wave soldering processes



3, 4, 5-pos.



3, 4, 5-pos.



| Technical data                          |             |             |             |
|-----------------------------------------|-------------|-------------|-------------|
|                                         | 3-pos.      | 4-pos.      | 5-pos.      |
| General data                            |             |             |             |
| Pollution degree                        | 3           | 3           | 3           |
| Degree of protection                    | IP67        | IP67        | IP67        |
| Connection method                       | Solder pins | Solder pins | Solder pins |
| Electrical data                         |             |             |             |
| Rated voltage                           | 250 V       | 250 V       | 250 V       |
| Rated current                           | 12 A        | 9 A         | 9 A         |
| Volume resistance                       | ≤ 5 mΩ      | ≤ 5 mΩ      | ≤ 5 mΩ      |
| Surge voltage category                  | II          | II          | II          |
| Material data                           |             |             |             |
| Contact material                        | CuZn        | CuZn        | CuZn        |
| Contact surface material                | Au          | Au          | Au          |
| Contact carrier material                | PUR         | PUR         | PUR         |
| Inflammability class according to UL 94 | HB          | HB          | HB          |
| Temperature data                        |             |             |             |
| Plug / socket                           | -40 ... 85  | -40 ... 85  | -40 ... 85  |

| Ordering data |  |             |  |           |  |
|---------------|--|-------------|--|-----------|--|
| Order No.     |  | Pcs. / Pkt. |  | Order No. |  |
| 3-pos.        |  | 4-pos.      |  | 5-pos.    |  |

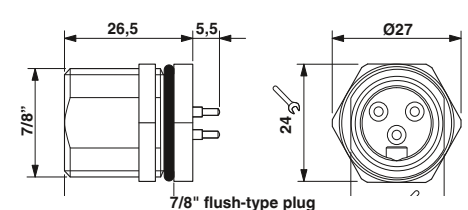
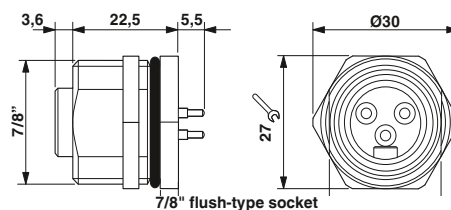
|                                                     |  |              |  |           |  |
|-----------------------------------------------------|--|--------------|--|-----------|--|
| Description                                         |  | Coding       |  | Order No. |  |
| Flush-type plug-in connector, M26 fastening thread  |  | A - standard |  | 1457830   |  |
| Socket                                              |  | A - standard |  | 1457843   |  |
| Flush-type plug-in connector, 7/8" fastening thread |  | A - standard |  | 1457775   |  |
| Plug                                                |  | A - standard |  | 1455007   |  |



| Technical data                          |             |             |             |
|-----------------------------------------|-------------|-------------|-------------|
|                                         | 3-pos.      | 4-pos.      | 5-pos.      |
| General data                            |             |             |             |
| Pollution degree                        | 3           | 3           | 3           |
| Degree of protection                    | IP67        | IP67        | IP67        |
| Connection method                       | Solder pins | Solder pins | Solder pins |
| Electrical data                         |             |             |             |
| Rated voltage                           | 250 V       | 250 V       | 250 V       |
| Rated current                           | 12 A        | 9 A         | 9 A         |
| Volume resistance                       | ≤ 5 mΩ      | ≤ 5 mΩ      | ≤ 5 mΩ      |
| Surge voltage category                  | II          | II          | II          |
| Material data                           |             |             |             |
| Contact material                        | CuZn        | CuZn        | CuZn        |
| Contact surface material                | Au          | Au          | Au          |
| Contact carrier material                | PUR         | PUR         | PUR         |
| Inflammability class according to UL 94 | HB          | HB          | HB          |
| Temperature data                        |             |             |             |
| Plug / socket                           | -40 ... 85  | -40 ... 85  | -40 ... 85  |

| Ordering data |  |             |  |           |  |
|---------------|--|-------------|--|-----------|--|
| Order No.     |  | Pcs. / Pkt. |  | Order No. |  |
| 3-pos.        |  | 4-pos.      |  | 5-pos.    |  |

|                                                     |  |              |  |           |  |
|-----------------------------------------------------|--|--------------|--|-----------|--|
| Description                                         |  | Coding       |  | Order No. |  |
| Flush-type plug-in connector, M26 fastening thread  |  | A - standard |  | 1457830   |  |
| Socket                                              |  | A - standard |  | 1457843   |  |
| Flush-type plug-in connector, 7/8" fastening thread |  | A - standard |  | 1457775   |  |
| Plug                                                |  | A - standard |  | 1455007   |  |





## M5 to M12 circular plug-in connectors

### M12 sensor/actuator device plug-in connectors, stainless steel versions

**Front mounting,  
Pg9/M16 fastening thread,  
with 0.5 m long litz wires**

– Housing material, stainless steel 1.4404



4, 5, 8-pos.



Can be positioned, 4, 5, 8-pos.



| Technical data                               |                  |                  |                  |
|----------------------------------------------|------------------|------------------|------------------|
|                                              | 4-pos.           | 5-pos.           | 8-pos.           |
| General data                                 |                  |                  |                  |
| M12 circular plug-in connector according to: | IEC 61076-2-101  | IEC 61076-2-101  | IEC 61076-2-101  |
| Pollution degree                             | 3                | 3                | 3                |
| Degree of protection                         | IP67/IP69K       | IP67/IP69K       | IP67/IP69K       |
| Connection method                            | Individual wires | Individual wires | Individual wires |
| Electrical data                              |                  |                  |                  |
| Rated voltage                                | 250 V            | 60 V             | 30 V             |
| Rated current                                | 4 A              | 4 A              | 2 A              |
| Volume resistance                            | ≤ 3 mΩ           | ≤ 3 mΩ           | ≤ 3 mΩ           |
| Material data                                |                  |                  |                  |
| Material contact / contact surface           | CuZn / Au        | CuZn / Au        | CuZn / Au        |
| Contact carrier material                     | PA66 GF          | PA66 GF          | PA66 GF          |
| Inflammability class according to UL 94      | V0               | V0               | V0               |
| Cable type                                   | TPE litz wire    | TPE litz wire    | TPE litz wire    |
| Temperature data                             |                  |                  |                  |
| Plug / socket                                | -25 ... 85       | -25 ... 85       | -25 ... 85       |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 4-pos.        |             | 5-pos.    |             | 8-pos.    |             |

**Device plug-in connector, Pg9 fastening thread**

|        |              |
|--------|--------------|
| Socket | A - standard |
| Plug   | A - standard |

|         |   |         |   |         |   |
|---------|---|---------|---|---------|---|
| 1555448 | 1 | 1699863 | 1 | 1554607 | 1 |
| 1554555 | 1 | 1554568 | 1 | 1554571 | 1 |

**Device plug-in connector, M16 fastening thread**

|        |              |
|--------|--------------|
| Socket | A - standard |
| Plug   | A - standard |

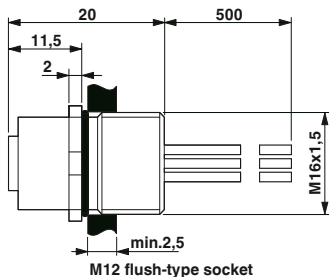
|         |   |         |   |         |   |
|---------|---|---------|---|---------|---|
| 1458855 | 1 | 1458871 | 1 | 1458842 | 1 |
| 1405233 | 1 | 1458868 | 1 | 1405221 | 1 |



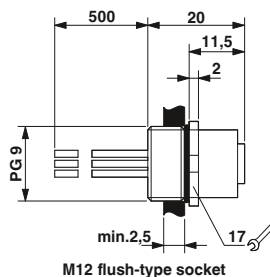
| Technical data                               |                  |                  |                  |
|----------------------------------------------|------------------|------------------|------------------|
|                                              | 4-pos.           | 5-pos.           | 8-pos.           |
| General data                                 |                  |                  |                  |
| M12 circular plug-in connector according to: | IEC 61076-2-101  | IEC 61076-2-101  | IEC 61076-2-101  |
| Pollution degree                             | 3                | 3                | 3                |
| Degree of protection                         | IP67/IP69K       | IP67/IP69K       | IP67/IP69K       |
| Connection method                            | Individual wires | Individual wires | Individual wires |
| Electrical data                              |                  |                  |                  |
| Rated voltage                                | 250 V            | 60 V             | 30 V             |
| Rated current                                | 4 A              | 4 A              | 2 A              |
| Volume resistance                            | ≤ 3 mΩ           | ≤ 3 mΩ           | ≤ 3 mΩ           |
| Material data                                |                  |                  |                  |
| Material contact / contact surface           | CuZn / Au        | CuZn / Au        | CuZn / Au        |
| Contact carrier material                     | PA66 GF          | PA66 GF          | PA66 GF          |
| Inflammability class according to UL 94      | V0               | V0               | V0               |
| Cable type                                   | TPE litz wire    | TPE litz wire    | TPE litz wire    |
| Temperature data                             |                  |                  |                  |
| Plug / socket                                | -25 ... 85       | -25 ... 85       | -25 ... 85       |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 4-pos.        |             | 5-pos.    |             | 8-pos.    |             |

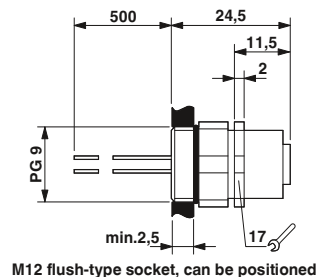
|         |   |         |   |         |   |
|---------|---|---------|---|---------|---|
| 1554649 | 1 | 1554652 | 1 | 1554665 | 1 |
| 1554610 | 1 | 1554623 | 1 | 1554636 | 1 |



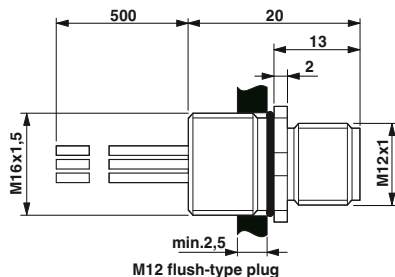
M12 flush-type socket



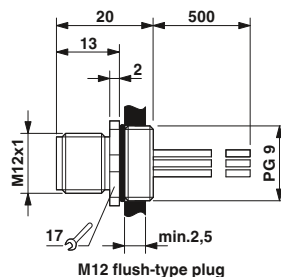
M12 flush-type socket



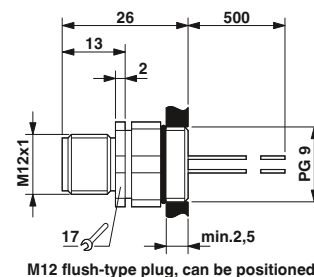
M12 flush-type socket, can be positioned



M12 flush-type plug



M12 flush-type plug



M12 flush-type plug, can be positioned

**Front mounting,  
M20 fastening thread,  
with 0.5 m long litz wires**

– Housing material, stainless steel 1.4404



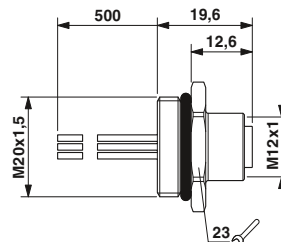
4, 5, 8-pos.

#### Technical data

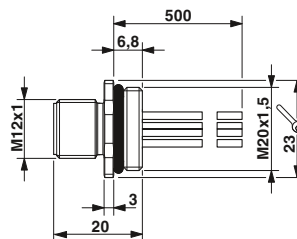
|                                              | 4-pos.                   | 5-pos.                   | 8-pos.                   |
|----------------------------------------------|--------------------------|--------------------------|--------------------------|
| General data                                 |                          |                          |                          |
| M12 circular plug-in connector according to: | IEC 61076-2-101          | IEC 61076-2-101          | IEC 61076-2-101          |
| Pollution degree                             | 3                        | 3                        | 3                        |
| Degree of protection                         | IP67/IP69K               | IP67/IP69K               | IP67/IP69K               |
| Connection method                            | Individual wires         | Individual wires         | Individual wires         |
| Electrical data                              |                          |                          |                          |
| Rated voltage                                | 250 V                    | 60 V                     | 30 V                     |
| Rated current                                | 4 A                      | 4 A                      | 2 A                      |
| Volume resistance                            | $\leq 3 \text{ m}\Omega$ | $\leq 3 \text{ m}\Omega$ | $\leq 3 \text{ m}\Omega$ |
| Material data                                |                          |                          |                          |
| Material contact / contact surface           | CuZn / Au                | CuZn / Au                | CuZn / Au                |
| Contact carrier material                     | PA 66                    | PA 66                    | PA 66                    |
| Inflammability class according to UL 94      | V0                       | V0                       | V0                       |
| Cable type                                   | TPE litz wire            | TPE litz wire            | TPE litz wire            |
| Temperature data                             |                          |                          |                          |
| Plug / socket                                | -25 ... 85               | -25 ... 85               | -25 ... 85               |

#### Ordering data

| Description                      | Coding       | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|----------------------------------|--------------|-----------|-------------|-----------|-------------|-----------|-------------|
|                                  |              | 4-pos.    |             | 5-pos.    |             | 8-pos.    |             |
| <b>Device plug-in connectors</b> |              |           |             |           |             |           |             |
| Socket                           | A - standard | 1408416   | 1           | 1452071   | 1           | 1452110   | 1           |
| Plug                             | A - standard | 1408415   | 1           | 1452068   | 1           | 1452107   | 1           |
| Socket                           | B - inverse  |           |             | 1452097   | 1           |           |             |
| Plug                             | B - inverse  |           |             | 1452084   | 1           |           |             |



M12 flush-type socket



M12 flush-type plug

## M5 to M12 circular plug-in connectors

### M12 sensor/actuator device plug-in connectors, stainless steel versions

#### Device plug-in connector, rear mounting

– Housing material, stainless steel 1.4404



With 0.5 m long litz wires, 4, 5, 8-pos.



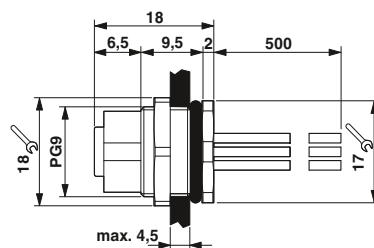
For wave soldering processes, 4, 5, 8-pos.



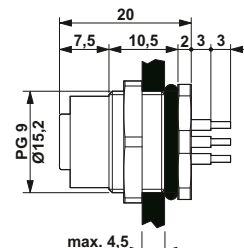
| Technical data       |                |                      |                |                      |                |
|----------------------|----------------|----------------------|----------------|----------------------|----------------|
| 4-pos.               |                | 5-pos.               |                | 8-pos.               |                |
| IEC 61076-2-101<br>3 |                | IEC 61076-2-101<br>3 |                | IEC 61076-2-101<br>3 |                |
| IP67/IP69K           |                | IP67/IP69K           |                | IP67/IP69K           |                |
| Individual wires     |                | Individual wires     |                | Individual wires     |                |
| 250 V                |                | 60 V                 |                | 30 V                 |                |
| 4 A                  |                | 4 A                  |                | 2 A                  |                |
| ≤ 3 mΩ               |                | ≤ 3 mΩ               |                | ≤ 3 mΩ               |                |
| CuZn / Au            |                | CuZn / Au            |                | CuZn / Au            |                |
| PA 66                |                | PA 66                |                | PA 66                |                |
| V0                   |                | V0                   |                | V0                   |                |
| TPE litz wire        |                | TPE litz wire        |                | TPE litz wire        |                |
| -25 ... 85           |                | -25 ... 85           |                | -25 ... 85           |                |
| Ordering data        |                |                      |                |                      |                |
| Order No.            | Pcs. /<br>Pkt. | Order No.            | Pcs. /<br>Pkt. | Order No.            | Pcs. /<br>Pkt. |
| 4-pos.               |                | 5-pos.               |                | 8-pos.               |                |
| 1405240              | 1              | 1554717              | 1              | 1554720              | 1              |
| 1405239              | 1              | 1554681              | 1              | 1554694              | 1              |



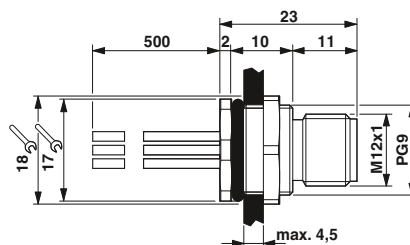
| Technical data                                    |             |                                                   |             |                                                   |             |
|---------------------------------------------------|-------------|---------------------------------------------------|-------------|---------------------------------------------------|-------------|
| 4-pos.                                            |             | 5-pos.                                            |             | 8-pos.                                            |             |
| IEC 61076-2-101<br>3<br>IP67/IP69K<br>Solder pins |             | IEC 61076-2-101<br>3<br>IP67/IP69K<br>Solder pins |             | IEC 61076-2-101<br>3<br>IP67/IP69K<br>Solder pins |             |
| 250 V<br>4 A<br>≤ 3 mΩ                            |             | 60 V<br>4 A<br>≤ 3 mΩ                             |             | 30 V<br>2 A<br>≤ 3 mΩ                             |             |
| CuZn / Au<br>PA 66<br>V0<br>-                     |             | CuZn / Au<br>PA 66<br>V0<br>-                     |             | CuZn / Au<br>PA 66<br>V0<br>-                     |             |
| -25 ... 85                                        |             | -25 ... 85                                        |             | -25 ... 85                                        |             |
| Ordering data                                     |             |                                                   |             |                                                   |             |
| Order No.                                         | Pcs. / Pkt. | Order No.                                         | Pcs. / Pkt. | Order No.                                         | Pcs. / Pkt. |
| 4-pos.                                            |             | 5-pos.                                            |             | 8-pos.                                            |             |
| 1404974                                           | 20          | 1554733                                           | 20          | 1529797                                           | 20          |
| 1404979                                           | 20          | 1554746                                           | 20          | 1529807                                           | 20          |



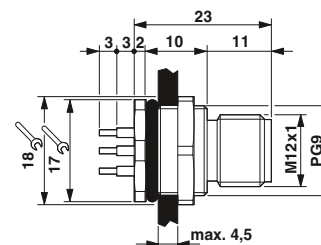
M12 flush-type socket



M12 flush-type socket



M12 flush-type plug



M12 flush-type plug



## M5 to M12 circular plug-in connectors

### Sensor/actuator plug-in connectors for assembly

#### M8, insulation displacement connection



0.08 mm² - 0.25 mm², 3, 4-pos.



0.25 mm² - 0.5 mm², 3, 4-pos.



#### Technical data

|                                             |      |
|---------------------------------------------|------|
| General data                                |      |
| M8 circular plug-in connector according to: |      |
| Pollution degree                            |      |
| Degree of protection                        |      |
| Connection method                           |      |
| Cable diameter                              |      |
| Electrical data                             |      |
| Rated voltage                               |      |
| Rated current                               |      |
| Volume resistance                           |      |
| Insulation resistance                       |      |
| Material data                               |      |
| Material contact / contact surface          |      |
| Contact carrier material                    |      |
| Inflammability class according to UL 94     |      |
| Temperature data                            |      |
| Plug / socket                               | [°C] |

| 3-pos.                             | 4-pos.   |
|------------------------------------|----------|
| IEC 61076-2-104                    |          |
| 3                                  |          |
| IP65/67                            |          |
| Insulation displacement connection |          |
| 2.5 mm ... 5 mm ± 0.2 mm           |          |
| 60 V                               | 30 V     |
|                                    | 4 A      |
|                                    | ≤ 5 mΩ   |
|                                    | ≥ 100 MΩ |
| CuSn / Ni/Au                       |          |
| TPU GF                             |          |
| HB                                 |          |
|                                    |          |
| -25 ... 80                         |          |

#### Ordering data

|                          |
|--------------------------|
| Description              |
| <b>Plug-in connector</b> |
| Socket, straight         |
| Plug, straight           |

| Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|-----------|-------------|-----------|-------------|
| 3-pos.    |             | 4-pos.    |             |
| 1441040   | 1           | 1441053   | 1           |
| 1441008   | 1           | 1441011   | 1           |



#### Technical data

| 3-pos.                             | 4-pos.   |
|------------------------------------|----------|
| IEC 61076-2-104                    |          |
| 3                                  |          |
| IP65/67                            |          |
| Insulation displacement connection |          |
| 2.5 mm ... 5 mm ± 0.2 mm           |          |
| 60 V                               | 30 V     |
|                                    | 4 A      |
|                                    | ≤ 5 mΩ   |
|                                    | ≥ 100 MΩ |
| CuSn / Ni/Au                       |          |
| TPU GF                             |          |
| HB                                 |          |
|                                    |          |
| -25 ... 80                         |          |

#### Ordering data

| Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|-----------|-------------|-----------|-------------|
| 3-pos.    |             | 4-pos.    |             |
| 1441066   | 1           | 1441079   | 1           |
| 1441024   | 1           | 1441037   | 1           |

**M8, screw connections**



**Unshielded, 3, 4-pos.**



**Shielded, 3, 4-pos.**



| Technical data                               |        |
|----------------------------------------------|--------|
| 3-pos.                                       | 4-pos. |
| IEC 61076-2-104                              |        |
| 3                                            |        |
| IP67                                         |        |
| Screw connection                             |        |
| 3.5 mm ... 5 mm                              |        |
| 0.14 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> |        |
| 60 V                                         | 30 V   |
| 4 A                                          |        |
| ≤ 3 mΩ                                       |        |
| ≥ 100 MΩ                                     |        |
| CuZn / Au                                    |        |
| PA                                           |        |
| HB                                           |        |
| -40 ... 85                                   |        |

| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 3-pos.        |             | 4-pos.    |             |
| 1506888       | 1           | 1506891   | 1           |
| 1501252       | 1           | 1501265   | 1           |
| 1407582       | 1           | 1407584   | 1           |
| 1407583       | 1           | 1407585   | 1           |

| Accessories                                   |                      |         |   |
|-----------------------------------------------|----------------------|---------|---|
| Pressure screw and seal, for cable diameters: |                      |         |   |
| 2.5 mm ... 3.5 mm                             | SACC-M 8-SET/2,2-3,5 | 1436945 | 5 |



| Technical data                               |        |
|----------------------------------------------|--------|
| 3-pos.                                       | 4-pos. |
| IEC 61076-2-104                              |        |
| 3                                            |        |
| IP67                                         |        |
| Screw connection                             |        |
| 3.5 mm ... 5.5 mm                            |        |
| 0.14 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> |        |
| 60 V                                         | 30 V   |
| 4 A                                          |        |
| ≤ 3 mΩ                                       |        |
| ≥ 100 MΩ                                     |        |
| CuSn / Au                                    |        |
| PUR / PA66                                   |        |
| HB                                           |        |
| -40 ... 85                                   |        |

| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 3-pos.        |             | 4-pos.    |             |
| 1542907       | 1           | 1542910   | 1           |
| 1542884       | 1           | 1542897   | 1           |

| Accessories                                   |  |  |  |
|-----------------------------------------------|--|--|--|
| Pressure screw and seal, for cable diameters: |  |  |  |
| 2.5 mm ... 3.5 mm                             |  |  |  |

# M5 to M12 circular plug-in connectors

## Sensor/actuator plug-in connectors for assembly

### M8, solder connection



Unshielded, 3, 4-pos.



Shielded, 3, 4-pos.



#### Technical data

|                                             |  | 3-pos.                | 4-pos. |
|---------------------------------------------|--|-----------------------|--------|
| General data                                |  |                       |        |
| M8 circular plug-in connector according to: |  | IEC 61076-2-104       |        |
| Pollution degree                            |  | 3                     |        |
| Degree of protection                        |  | IP67                  |        |
| Connection method                           |  | Solder connection     |        |
| Cable diameter                              |  | 3.5 mm ... 5 mm       |        |
| Connection cross section [mm²]              |  | 0.08 mm² ... 0.25 mm² |        |
| Electrical data                             |  |                       |        |
| Rated voltage                               |  | 60 V                  | 30 V   |
| Rated current                               |  | 4 A                   |        |
| Volume resistance                           |  | ≤ 3 mΩ                |        |
| Insulation resistance                       |  | ≥ 100 MΩ              |        |
| Material data                               |  |                       |        |
| Material contact / contact surface          |  | CuSn / Au             |        |
| Contact carrier material                    |  | PUR / PA66            |        |
| Inflammability class according to UL 94     |  | V0                    |        |
| Temperature data                            |  |                       |        |
| Plug / socket                               |  | -40 ... 85            |        |

[°C]

#### Ordering data

| Description              | 3-pos.    |             | 4-pos.    |             |
|--------------------------|-----------|-------------|-----------|-------------|
|                          | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| <b>Plug-in connector</b> |           |             |           |             |
| Socket, angled           | 1529399   | 1           | 1513444   | 1           |
| Plug, angled             | 1699902   | 1           | 1554209   | 1           |
| Socket, straight         | 1681172   | 1           | 1681185   | 1           |
| Plug, straight           | 1681156   | 1           | 1681169   | 1           |

#### Accessories

|                                                      |                      |
|------------------------------------------------------|----------------------|
| <b>Pressure screw and seal, for cable diameters:</b> |                      |
| 2.5 mm ... 3.5 mm                                    | SACC-M 8-SET/2,2-3,5 |

|  |         |   |
|--|---------|---|
|  | 1436945 | 5 |
|--|---------|---|



#### Technical data

|                                             |  | 3-pos.                | 4-pos. |
|---------------------------------------------|--|-----------------------|--------|
| General data                                |  |                       |        |
| M8 circular plug-in connector according to: |  | IEC 61076-2-104       |        |
| Pollution degree                            |  | 3                     |        |
| Degree of protection                        |  | IP67                  |        |
| Connection method                           |  | Solder connection     |        |
| Cable diameter                              |  | 3.5 mm ... 5 mm       |        |
| Connection cross section [mm²]              |  | 0.08 mm² ... 0.25 mm² |        |
| Electrical data                             |  |                       |        |
| Rated voltage                               |  | 60 V                  | 30 V   |
| Rated current                               |  | 4 A                   |        |
| Volume resistance                           |  | ≤ 3 mΩ                |        |
| Insulation resistance                       |  | ≥ 100 MΩ              |        |
| Material data                               |  |                       |        |
| Material contact / contact surface          |  | CuSn / Au             |        |
| Contact carrier material                    |  | PUR / PA66            |        |
| Inflammability class according to UL 94     |  | HB                    |        |
| Temperature data                            |  |                       |        |
| Plug / socket                               |  | -40 ... 85            |        |

#### Ordering data

| Description              | 3-pos.    |             | 4-pos.    |             |
|--------------------------|-----------|-------------|-----------|-------------|
|                          | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| <b>Plug-in connector</b> |           |             |           |             |
| Socket, angled           | 1436479   | 1           | 1436482   | 1           |
| Plug, angled             | 1436453   | 1           | 1436466   | 1           |
| Socket, straight         | 1506927   | 1           | 1506930   | 1           |
| Plug, straight           | 1506901   | 1           | 1506914   | 1           |

#### Accessories

|  |  |  |
|--|--|--|
|  |  |  |
|--|--|--|

**M12, solder and Piercecon® connection**



**Solder connection, 12-pos.**



**Piercecon® connection, 12, 17-pos.**



|                                              |              | Technical data    |             |           |             | Technical data             |             |           |             |
|----------------------------------------------|--------------|-------------------|-------------|-----------|-------------|----------------------------|-------------|-----------|-------------|
|                                              |              | Unshielded        |             | Shielded  |             | 12-pos.                    |             | 17-pos.   |             |
| General data                                 |              |                   |             |           |             |                            |             |           |             |
| M12 circular plug-in connector according to: |              | IEC 61076-2-101   |             |           |             | IEC 61076-2-101            |             |           |             |
| Pollution degree                             |              | 3                 |             |           |             | 3                          |             |           |             |
| Degree of protection                         |              | IP67              |             |           |             | IP67                       |             |           |             |
| Connection method                            |              | Solder connection |             |           |             | Piercecon® fast connection |             |           |             |
| Cable diameter                               |              | 6 mm ... 8 mm     |             |           |             | 5.4 mm ... 8.2 mm          |             |           |             |
| Electrical data                              |              |                   |             |           |             |                            |             |           |             |
| Rated voltage                                |              | 30 V              |             |           |             | 30 V                       |             |           |             |
| Rated current                                |              | 1 A               |             |           |             | 1.5 A                      |             |           |             |
| Volume resistance                            |              | ≤ 3 mΩ            |             |           |             | ≤ 5 mΩ                     |             |           |             |
| Insulation resistance                        |              | > 10 GΩ           |             |           |             | ≥ 100 MΩ                   |             |           |             |
| Material data                                |              |                   |             |           |             |                            |             |           |             |
| Material contact / contact surface           |              | CuSn / Au         |             |           |             | CuZn / Ni/Au               |             |           |             |
| Contact carrier material                     |              | PA                |             |           |             | PA                         |             |           |             |
| Inflammability class according to UL 94      |              | -                 |             |           |             | V0                         |             |           |             |
| Temperature data                             |              |                   |             |           |             |                            |             |           |             |
| Plug / socket                                |              | -25 ... 85        |             |           |             | -25 ... 85                 |             |           |             |
|                                              |              |                   |             |           |             |                            |             |           |             |
|                                              |              | Ordering data     |             |           |             | Ordering data              |             |           |             |
| Description                                  | Coding       | Order No.         | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No.                  | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                                              |              | Unshielded        |             | Shielded  |             | 12-pos.                    |             | 17-pos.   |             |
| Plug-in connector                            |              |                   |             |           |             |                            |             |           |             |
| Socket, straight                             | A - standard | 1404420           | 1           | 1404411   | 1           | 1559631                    | 1           | 1559644   | 1           |
| Plug, straight                               | A - standard | 1404419           | 1           | 1404410   | 1           | 1559592                    | 1           | 1559602   | 1           |
| Socket, angled                               | A - standard | 1404423           | 1           | 1404413   | 1           |                            |             |           |             |
| Plug, angled                                 | A - standard | 1404421           | 1           | 1404412   | 1           |                            |             |           |             |



# M5 to M12 circular plug-in connectors

## Sensor/actuator plug-in connectors for assembly

### M12 plug-in connector, for assembly

#### Ethernet



M12 plug-in connector, 10 Gbps, Piercecon® connection

#### Ethernet



M12 plug-in connector, 100 Mbps, screw connection



#### Technical data

VS-08-M12...-10G-P SCO

#### Electrical data

Nominal voltage  $U_N$   
Rated current  
Transmission characteristics (category)  
Material contact / contact surface  
Material of grip body  
Inflammability class according to UL 94  
No. of pos.  
Connection method  
Connection cross section AWG  
Insertion/withdrawal cycles  
Temperature data  
Ambient temperature (operation)

48 V  
0.5 A  
CAT6<sub>A</sub>  
CuSn / Ni/Au  
Zinc die-cast, nickel-plated  
V0  
8  
Piercecon®  
26  
≥ 100  
-40 °C ... 85 °C

#### Ordering data

| Type                  | Order No. | Pcs. / Pkt. |
|-----------------------|-----------|-------------|
| VS-08-M12MS-10G-P SCO | 1417430   | 1           |
| VS-08-M12MR-10G-P SCO | 1417443   | 1           |

#### Accessories

|                      |         |   |
|----------------------|---------|---|
| VS-CABLE-STRIP-VARIO | 1657407 | 1 |
|----------------------|---------|---|

#### Technical data

SACC-M12MSD-4CON-...-SH

60 V  
4 A  
CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)  
CuZn / Au  
Zinc die-cast, nickel-plated  
HB  
4  
Screw connection  
24 ... 18  
≥ 100  
-40 °C ... 85 °C

#### Ordering data

| Type                     | Order No. | Pcs. / Pkt. |
|--------------------------|-----------|-------------|
| SACC-M12MSD-4CON-PG 7-SH | 1521258   | 1           |
| SACC-M12MSD-4CON-PG 9-SH | 1521261   | 1           |

#### Accessories

|                      |         |   |
|----------------------|---------|---|
| VS-CABLE-STRIP-VARIO | 1657407 | 1 |
|----------------------|---------|---|

#### Description

**Plug-in connector**, CAT6<sub>A</sub>, plug, 8-pos., shielded, X-coded, **cable diameter: 4 mm ... 8 mm**

Straight  
Angled

**Plug-in connector**, Pg7 screw connection, 4-pos., D-coded, **cable diameter: 4 mm ... 6 mm**  
Plug, straight

**Plug-in connector**, Pg9 screw connection, 4-pos., D-coded, **cable diameter: 4 mm ... 8 mm**  
Plug, straight

**Stripping tool**, for multiple-stage repositioning of shielded conductors



## M5 to M12 circular plug-in connectors

### Sensor/actuator plug-in connectors for assembly

#### M12, insulation displacement connection



0.14 mm² ... 0.34 mm²



0.34 mm² ... 0.75 mm²



#### Technical data

|                                    |
|------------------------------------|
| <b>4-pos.</b>                      |
| IEC 61076-2-101                    |
| 3                                  |
| IP65/67                            |
| Insulation displacement connection |
| 3.5 mm ... 6 mm                    |
| 125 V                              |
| 4 A                                |
| ≤ 5 mΩ                             |
| ≥ 100 MΩ                           |

|                                              |
|----------------------------------------------|
| General data                                 |
| M12 circular plug-in connector according to: |
| Pollution degree                             |
| Degree of protection                         |
| Connection method                            |
| Cable diameter                               |
| Electrical data                              |
| Rated voltage                                |
| Rated current                                |
| Volume resistance                            |
| Insulation resistance                        |
| Material data                                |
| Material contact / contact surface           |
| Contact carrier material                     |
| Inflammability class according to UL 94      |
| Temperature data                             |
| Plug / socket                                |

[°C]

#### Ordering data

| Description                                           | Coding       | Type                   | Order No. | Pcs. / Pkt. |
|-------------------------------------------------------|--------------|------------------------|-----------|-------------|
| <b>Plug-in connector</b> , with plastic knurl         |              |                        |           |             |
| Socket, straight                                      | A - standard | SACC-M12FS-4QO-0,34    | 1641701   | 1           |
| Plug, straight                                        | A - standard | SACC-M12MS-4QO-0,34    | 1641714   | 1           |
| <b>Plug-in connector</b> , with metal knurl, SPEEDCON |              |                        |           |             |
| Socket, straight                                      | A - standard | SACC-FS-4QO-0,34-M SCO | 1521588   | 1           |
| Plug, straight                                        | A - standard | SACC-MS-4QO-0,34-M SCO | 1521575   | 1           |
| <b>Plug-in connector</b> , with metal knurl           |              |                        |           |             |
| Socket, straight                                      | A - standard | SACC-M12FS-4QO-0,34-M  | 1641688   | 1           |
| Plug, straight                                        | A - standard | SACC-M12MS-4QO-0,34-M  | 1641691   | 1           |
| <b>Plug-in connector</b> , with stainless steel knurl |              |                        |           |             |
| Socket, straight                                      | A - standard | SACC-M12FS-4QO-0,34-VA | 1440766   | 1           |
| Plug, straight                                        | A - standard | SACC-M12MS-4QO-0,34-VA | 1440753   | 1           |



#### Technical data

|                                    |
|------------------------------------|
| <b>4-pos.</b>                      |
| IEC 61076-2-101                    |
| 3                                  |
| IP65/67                            |
| Insulation displacement connection |
| 4 mm ... 8 mm                      |
| 250 V                              |
| 4 A                                |
| ≤ 5 mΩ                             |
| ≥ 100 MΩ                           |

|              |
|--------------|
| CuSn / Ni/Au |
| TPU          |
| V0           |

-25 ... 80

#### Ordering data

| Type                          | Order No.      | Pcs. / Pkt. |
|-------------------------------|----------------|-------------|
| <b>SACC-M12FS-4QO-0,75</b>    | <b>1641756</b> | <b>1</b>    |
| <b>SACC-M12MS-4QO-0,75</b>    | <b>1641769</b> | <b>1</b>    |
| <b>SACC-FS-4QO-0,75-M SCO</b> | <b>1521601</b> | <b>1</b>    |
| <b>SACC-MS-4QO-0,75-M SCO</b> | <b>1521591</b> | <b>1</b>    |
| <b>SACC-M12FS-4QO-0,75-M</b>  | <b>1641772</b> | <b>1</b>    |
| <b>SACC-M12MS-4QO-0,75-M</b>  | <b>1641785</b> | <b>1</b>    |
| <b>SACC-M12FS-4QO-0,75-VA</b> | <b>1440782</b> | <b>1</b>    |
| <b>SACC-M12MS-4QO-0,75-VA</b> | <b>1440779</b> | <b>1</b>    |

**M12, spring-cage connections**



**Unshielded, 4, 5-pos.**



**Shielded, 4, 5-pos.**



| Technical data                               |        |
|----------------------------------------------|--------|
| 4-pos.                                       | 5-pos. |
| General data                                 |        |
| M12 circular plug-in connector according to: |        |
| IEC 61076-2-101                              |        |
| 3                                            |        |
| IP67                                         |        |
| Spring-cage conn.                            |        |
| 4 mm ... 8 mm                                |        |
| 0.14 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> |        |
| Electrical data                              |        |
| 250 V                                        |        |
| 60 V                                         |        |
| 4 A                                          |        |
| ≤ 8 mΩ                                       |        |
| ≥ 100 MΩ                                     |        |
| Material data                                |        |
| CuSn / Ni/Au                                 |        |
| TPU                                          |        |
| V0                                           |        |
| Temperature data                             |        |
| -40 ... 85                                   |        |

| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 4-pos.        |             | 5-pos.    |             |
| 1432622       | 1           | 1432596   | 1           |
| 1432606       | 1           | 1432570   | 1           |
| 1432619       | 1           | 1432583   | 1           |
| 1432635       | 1           | 1432567   | 1           |



| Technical data                               |        |
|----------------------------------------------|--------|
| 4-pos.                                       | 5-pos. |
| General data                                 |        |
| M12 circular plug-in connector according to: |        |
| IEC 61076-2-101                              |        |
| 3                                            |        |
| IP67                                         |        |
| Spring-cage conn.                            |        |
| 4 mm ... 8 mm                                |        |
| 0.14 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> |        |
| Electrical data                              |        |
| 60 V                                         |        |
| 4 A                                          |        |
| ≤ 8 mΩ                                       |        |
| ≥ 100 MΩ                                     |        |
| Material data                                |        |
| CuSn / Ni/Au                                 |        |
| TPU                                          |        |
| V0                                           |        |
| Temperature data                             |        |
| -40 ... 85                                   |        |

| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 4-pos.        |             | 5-pos.    |             |
| 1432758       | 1           | 1432677   | 1           |
| 1432732       | 1           | 1432651   | 1           |
| 1432745       | 1           | 1432664   | 1           |
| 1432729       | 1           | 1432648   | 1           |

| Description                                                                      | Coding       |
|----------------------------------------------------------------------------------|--------------|
| <b>Plug-in connector</b> , terminal marking: standard color coding and numbering |              |
| Socket, angled                                                                   | A - standard |
| Plug, angled                                                                     | A - standard |
| Socket, straight                                                                 | A - standard |
| Plug, straight                                                                   | A - standard |

# M5 to M12 circular plug-in connectors

## Sensor/actuator plug-in connectors for assembly

### M12, screw connections



Plastic knurl, 4, 5-pos.



Metal knurl, SPEEDCON, 4, 5-pos.



|                                              | Technical data        |        |   |
|----------------------------------------------|-----------------------|--------|---|
|                                              | 4-pos.                | 5-pos. |   |
| General data                                 |                       |        |   |
| M12 circular plug-in connector according to: | IEC 61076-2-101       |        |   |
| Pollution degree                             | 3                     |        |   |
| Degree of protection                         | IP67                  |        |   |
| Connection method                            | Screw connection      |        |   |
| Connection cross section [mm²]               | 0.25 mm² ... 0.75 mm² |        |   |
| Electrical data                              |                       |        |   |
| Rated voltage                                | 250 V                 | 60 V   | - |
| Rated current                                | 4 A                   |        |   |
| Volume resistance                            | ≤ 8 mΩ                |        |   |
| Insulation resistance                        | ≥ 100 MΩ              |        |   |
| Material data                                |                       |        |   |
| Material contact / contact surface           | CuZn / CuSnZn         |        |   |
| Contact carrier material                     | PA 66                 |        |   |
| Inflammability class according to UL 94      | HB                    |        |   |
| Temperature data                             |                       |        |   |
| Plug / socket                                | -40 ... 85            |        |   |



| Description                                                                                                                                                            |  | Coding       | Ordering data |             |           |             |           |             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------|---------------|-------------|-----------|-------------|-----------|-------------|
|                                                                                                                                                                        |  |              | Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                                                                                                                                                                        |  |              | 4-pos.        |             | 5-pos.    |             |           |             |
| <b>Plug-in connector, with Pg7 screw connection, cable diameter: 4 mm ... 6 mm</b>                                                                                     |  |              |               |             |           |             |           |             |
| Socket, angled                                                                                                                                                         |  | A - standard | 1681130       | 1           | 1662308   | 1           |           |             |
| Plug, angled                                                                                                                                                           |  | A - standard | 1681091       | 1           | 1662269   | 1           |           |             |
| Socket, straight                                                                                                                                                       |  | A - standard | 1681114       | 1           | 1662298   | 1           |           |             |
| Plug, straight                                                                                                                                                         |  | A - standard | 1681088       | 1           | 1662256   | 1           |           |             |
| <b>Plug-in connector, with Pg9 screw connection, cable diameter: 6 mm ... 8 mm</b>                                                                                     |  |              |               |             |           |             |           |             |
| Socket, angled                                                                                                                                                         |  | A - standard |               |             | 1500790   | 1           |           |             |
| Plug, angled                                                                                                                                                           |  | A - standard |               |             | 1513431   | 1           |           |             |
| Socket, straight                                                                                                                                                       |  | A - standard |               |             | 1500787   | 1           |           |             |
| Plug, straight                                                                                                                                                         |  | A - standard |               |             | 1500774   | 1           |           |             |
| <b>Power plug-in connector, with Pg11 screw connection, cable diameter: 8 mm ... 10 mm, rated current: up to 8 A (5th pos. max. 2 A) with 1.5 mm² wires/litz wires</b> |  |              |               |             |           |             |           |             |
| Socket, straight                                                                                                                                                       |  | A - standard |               |             |           |             |           |             |
| Plug, straight                                                                                                                                                         |  | A - standard |               |             |           |             |           |             |



|                                              | Technical data        |        |   |
|----------------------------------------------|-----------------------|--------|---|
|                                              | 4-pos.                | 5-pos. |   |
| General data                                 |                       |        |   |
| M12 circular plug-in connector according to: | IEC 61076-2-101       |        |   |
| Pollution degree                             | 3                     |        |   |
| Degree of protection                         | IP67                  |        |   |
| Connection method                            | Screw connection      |        |   |
| Connection cross section [mm²]               | 0.25 mm² ... 0.75 mm² |        |   |
| Electrical data                              |                       |        |   |
| Rated voltage                                | 250 V                 | 60 V   | - |
| Rated current                                | 4 A                   |        |   |
| Volume resistance                            | ≤ 8 mΩ                |        |   |
| Insulation resistance                        | ≥ 100 MΩ              |        |   |
| Material data                                |                       |        |   |
| Material contact / contact surface           | CuZn / CuSnZn         |        |   |
| Contact carrier material                     | PA 66                 |        |   |
| Inflammability class according to UL 94      | HB                    |        |   |
| Temperature data                             |                       |        |   |
| Plug / socket                                | -40 ... 85            |        |   |



| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 4-pos.        |             | 5-pos.    |             |           |             |
| 1543058       | 1           | 1543061   | 1           |           |             |
| 1542981       | 1           | 1542994   | 1           |           |             |
| 1543029       | 1           | 1543032   | 1           |           |             |
| 1542952       | 1           | 1542965   | 1           |           |             |
|               |             | 1543414   | 1           |           |             |
|               |             | 1543003   | 1           |           |             |
|               |             | 1543045   | 1           |           |             |
|               |             | 1542978   | 1           |           |             |



| Accessories                                   |                      |         |
|-----------------------------------------------|----------------------|---------|
| Pressure screw and seal, for cable diameters: |                      |         |
| 2.5 mm ... 3.5 mm                             | SACC-M12-SET/2,5-3,5 | 1436505 |



| Accessories                                   |                      |         |
|-----------------------------------------------|----------------------|---------|
| Pressure screw and seal, for cable diameters: |                      |         |
| 2.5 mm ... 3.5 mm                             | SACC-M12-SET/2,5-3,5 | 1436505 |





**Metal knurl, 4, 5, 8-pos.**



**Metal knurl, 4, 5-pos., with SKINTOP® screw connection**



**Stainless steel knurl, 4, 5-pos.**



| Technical data                                |                                              |           |
|-----------------------------------------------|----------------------------------------------|-----------|
| 4-pos.                                        | 5-pos.                                       | 8-pos.    |
| IEC 61076-2-101                               |                                              |           |
| 3                                             |                                              |           |
| IP67                                          |                                              |           |
| Screw connection                              |                                              |           |
| 0.25 mm <sup>2</sup> ... 0.75 mm <sup>2</sup> | 0.25 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> |           |
| 250 V                                         | 60 V                                         | 30 V      |
| 4 A                                           |                                              | 2 A       |
| ≤ 8 mΩ                                        |                                              | ≤ 3 mΩ    |
|                                               | ≥ 100 MΩ                                     |           |
| CuZn / CuSnZn                                 |                                              | CuZn / Au |
| PA 66                                         |                                              |           |
| HB                                            |                                              |           |
| -40 ... 85                                    |                                              |           |

| Technical data                                |         |       |
|-----------------------------------------------|---------|-------|
| 4-pos.                                        | 5-pos.  |       |
| IEC 61076-2-101                               |         |       |
| 3                                             |         |       |
| IP67                                          |         |       |
| Screw connection                              |         |       |
| 0.25 mm <sup>2</sup> ... 0.75 mm <sup>2</sup> | - ... - |       |
| 250 V                                         | 125 V   | -     |
| 4 A                                           |         | -     |
| ≤ 8 mΩ                                        |         | -     |
| ≥ 100 MΩ                                      |         | -     |
| CuZn / CuSnZn                                 |         | - / - |
| PA 66                                         |         | -     |
| HB                                            |         | -     |
| -20 ... 80                                    |         |       |

| Technical data                                |         |       |
|-----------------------------------------------|---------|-------|
| 4-pos.                                        | 5-pos.  |       |
| IEC 61076-2-101                               |         |       |
| 3                                             |         |       |
| IP67/IP69K                                    |         |       |
| Screw connection                              |         |       |
| 0.25 mm <sup>2</sup> ... 0.75 mm <sup>2</sup> | - ... - |       |
| 250 V                                         | 60 V    | -     |
| 4 A                                           |         | -     |
| ≤ 3 mΩ                                        |         | -     |
| ≥ 100 MΩ                                      |         | -     |
| CuZn / Au                                     |         | - / - |
| PA 66                                         |         | -     |
| V0                                            |         | -     |
| -40 ... 85                                    |         |       |

| Ordering data |             |           |
|---------------|-------------|-----------|
| Order No.     | Pcs. / Pkt. | Order No. |
| 4-pos.        | 5-pos.      | 8-pos.    |
| 1681143       | 1           | 1662984   |
| 1681101       | 1           | 1663129   |
| 1681127       | 1           | 1662968   |
| 1662528       | 1           | 1663116   |
|               | 1681499     | 1         |
|               | 1681473     | 1         |
|               | 1681486     | 1         |
|               | 1681460     | 1         |
|               |             | 1513347   |
|               |             | 1513334   |

| Ordering data |             |           |
|---------------|-------------|-----------|
| Order No.     | Pcs. / Pkt. | Order No. |
| 4-pos.        | 5-pos.      |           |
| 1430381       | 1           | 1559000   |
| 1556870       | 1           | 1456466   |
|               | 1556812     | 1         |
|               | 1561742     | 1         |
|               | 1556838     | 1         |
|               | 1556825     | 1         |

| Ordering data |             |           |
|---------------|-------------|-----------|
| Order No.     | Pcs. / Pkt. | Order No. |
| 4-pos.        | 5-pos.      |           |
| 1553284       | 1           | 1553297   |
| 1553200       | 1           | 1553213   |
| 1553242       | 1           | 1553255   |
| 1553161       | 1           | 1553187   |
|               | 1553307     | 1         |
| 1553226       | 1           | 1553239   |
| 1553268       | 1           | 1553271   |
| 1553174       | 1           | 1553190   |

|         |   |         |   |
|---------|---|---------|---|
| 1404416 | 1 | 1404418 | 1 |
| 1404415 | 1 | 1404417 | 1 |

| Accessories          |         |   |
|----------------------|---------|---|
| SACC-M12-SET/2,5-3,5 | 1436505 | 5 |

| Accessories |  |  |
|-------------|--|--|
|             |  |  |

| Accessories |  |  |
|-------------|--|--|
|             |  |  |

### M12, screw connection, shielded



**Stainless steel housing, 5-pos.**



**M12, power plug-in connector,  
screw connection**



**Metal knurl, 3-pos. + PE, S-coded**



**Metal knurl, 4-pos., T-coded**

|                                                                               | Technical data            |           |             | Technical data            |           |             |
|-------------------------------------------------------------------------------|---------------------------|-----------|-------------|---------------------------|-----------|-------------|
|                                                                               | 3-pos. + PE               |           |             | 4-pos.                    |           |             |
| General data                                                                  |                           |           |             |                           |           |             |
| Pollution degree                                                              | 3                         |           |             | 3                         |           |             |
| Degree of protection                                                          | IP67                      |           |             | IP67                      |           |             |
| Connection method                                                             | Screw connection          |           |             | Screw connection          |           |             |
| Connection cross section [mm²]                                                | 0.75 mm² ... 1.5 mm²      |           |             | 0.75 mm² ... 1.5 mm²      |           |             |
| Electrical data                                                               |                           |           |             |                           |           |             |
| Rated voltage                                                                 | 630 V                     |           |             | 60 V                      |           |             |
| Rated current                                                                 | 12 A                      |           |             | 12 A                      |           |             |
| Volume resistance                                                             | ≤ 3 mΩ                    |           |             | ≤ 3 mΩ                    |           |             |
| Insulation resistance                                                         | > 10 GΩ                   |           |             | > 10 GΩ                   |           |             |
| Material data                                                                 |                           |           |             |                           |           |             |
| Material contact / contact surface                                            | CuZn / Au                 |           |             | CuZn / Au                 |           |             |
| Contact carrier material                                                      | PA 46                     |           |             | PA 46                     |           |             |
| Inflammability class according to UL 94                                       | V0                        |           |             | V0                        |           |             |
| Temperature data                                                              |                           |           |             |                           |           |             |
| Plug / socket                                                                 | [°C]<br>-40 ... 85        |           |             | -40 ... 85                |           |             |
|                                                                               |                           |           |             |                           |           |             |
|                                                                               | Ordering data             |           |             | Ordering data             |           |             |
| Description                                                                   | Type                      | Order No. | Pcs. / Pkt. | Type                      | Order No. | Pcs. / Pkt. |
|                                                                               |                           |           |             |                           |           |             |
|                                                                               | SACC-M12FSS-3PECON-PG11-M | 1404642   | 1           | SACC-M12FST-3PECON-PG11-M | 1404644   | 1           |
|                                                                               | SACC-M12MSS-3PECON-PG11-M | 1404641   | 1           | SACC-M12MST-3PECON-PG11-M | 1404643   | 1           |
|                                                                               |                           |           |             |                           |           |             |
| Plug-in connector, with Pg11 screw connection, cable diameter: 8 mm ... 10 mm |                           |           |             |                           |           |             |
| Socket, straight                                                              |                           |           |             |                           |           |             |
| Plug, straight                                                                |                           |           |             |                           |           |             |



## M5 to M12 circular plug-in connectors

### Sensor/actuator plug-in connectors for assembly

#### M12, DUO plug-in connector, screw connection

##### Notes:

SPEEDCON and plastic knurls without key areas.



Metal knurl, 4, 5-pos.



SPEEDCON metal knurl/plastic knurl, 5 pos.



##### Technical data

4-pos.

5-pos.

|                                              |                       |
|----------------------------------------------|-----------------------|
| General data                                 |                       |
| M12 circular plug-in connector according to: | IEC 61076-2-101       |
| Pollution degree                             | 3                     |
| Degree of protection                         | IP67                  |
| Connection method                            | Screw connection      |
| Connection cross section [mm²]               | 0.25 mm² ... 0.75 mm² |
| Electrical data                              |                       |
| Rated voltage                                | 250 V                 |
| Rated current                                | 4 A                   |
| Volume resistance                            | ≤ 8 mΩ                |
| Insulation resistance                        | ≥ 100 MΩ              |
| Material data                                |                       |
| Material contact / contact surface           | CuZn / CuSnZn         |
| Contact carrier material                     | PA 66                 |
| Inflammability class according to UL 94      | V0                    |
| Temperature data                             |                       |
| Plug / socket                                | -40 ... 85            |

[°C]

##### Ordering data

| Description                                                                                   | Coding       |
|-----------------------------------------------------------------------------------------------|--------------|
| <b>Plug-in connector, with Pg11 DUO screw connection, cable diameter: 2 x 3 mm ... 5.2 mm</b> |              |
| Socket, straight                                                                              | A - standard |
| Plug, straight                                                                                | A - standard |
| Plug, angled                                                                                  | A - standard |

| Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|-----------|-------------|-----------|-------------|
| 4-pos.    |             | 5-pos.    |             |
| 1507052   | 1           | 1662748   | 1           |



##### Technical data

Metal knurl, SPEEDCON, 5-pos.

Plastic knurl, 5-pos.

|                                              |                       |
|----------------------------------------------|-----------------------|
| General data                                 |                       |
| M12 circular plug-in connector according to: | IEC 61076-2-101       |
| Pollution degree                             | 3                     |
| Degree of protection                         | IP67                  |
| Connection method                            | Screw connection      |
| Connection cross section [mm²]               | 0.25 mm² ... 0.75 mm² |
| Electrical data                              |                       |
| Rated voltage                                | 60 V                  |
| Rated current                                | 4 A                   |
| Volume resistance                            | ≤ 8 mΩ                |
| Insulation resistance                        | ≥ 100 MΩ              |
| Material data                                |                       |
| Material contact / contact surface           | CuZn / CuSnZn         |
| Contact carrier material                     | PA 66                 |
| Inflammability class according to UL 94      | V0                    |
| Temperature data                             |                       |
| Plug / socket                                | -40 ... 85            |

-40 ... 85

-25 ... 85

##### Ordering data

| Order No.                     | Pcs. / Pkt. | Order No.             | Pcs. / Pkt. |
|-------------------------------|-------------|-----------------------|-------------|
| Metal knurl, SPEEDCON, 5-pos. |             | Plastic knurl, 5-pos. |             |
| 1543016                       | 1           | 1694596               | 1           |
|                               |             | 1662285               | 1           |
|                               |             | 1531044               | 1           |

**7/8", screw connection**



**Connection cross section:**  
1.5 mm<sup>2</sup>, 3, 4, 5-pos.



**Connection cross section:**  
**2.5 mm<sup>2</sup>, 5-pos.**



| Technical data |                                              |        |
|----------------|----------------------------------------------|--------|
| 3-pos.         | 4-pos.                                       | 5-pos. |
|                | 3                                            |        |
|                | IP67                                         |        |
|                | Screw connection                             |        |
|                | 0.34 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> |        |
|                | 22 ... 16                                    |        |
|                | 250 V                                        |        |
| 12 A           |                                              | 9 A    |
|                | ≤ 5 mΩ                                       |        |
|                | ≥ 100 MΩ                                     |        |
|                | CuZn / Au                                    |        |
|                | PUR / PA66                                   |        |
|                | HB                                           |        |
|                | -25 ... 85                                   |        |

| Technical data                               |         |       |
|----------------------------------------------|---------|-------|
| 5-pos.                                       |         |       |
| 3                                            |         | -     |
| IP67                                         |         | -     |
| Screw connection                             |         | -     |
| 0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> | - ... - | -     |
| 22 ... 14                                    | - ... - | -     |
| 250 V                                        |         | -     |
| 9 A                                          |         | -     |
| ≤ 5 mΩ                                       |         | -     |
| ≥ 100 MΩ                                     |         | -     |
| CuZn / Au                                    |         | - / - |
| PUR / PA66                                   |         | -     |
| HB                                           |         | -     |
| -25 ... 85                                   |         | -     |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 3-pos.        |             | 4-pos.    |             | 5-pos.    |             |
| 1521478       | 1           | 1521494   | 1           | 1521517   | 1           |
| 1521465       | 1           | 1521481   | 1           | 1521504   | 1           |
| 1521300       | 1           | 1521342   | 1           | 1521384   | 1           |
| 1521287       | 1           | 1521326   | 1           | 1521668   | 1           |
|               |             |           |             | 1456297   | 1           |
|               |             |           |             | 1456242   | 1           |
|               |             |           |             | 1456271   | 1           |
|               |             |           |             | 1456226   | 1           |
| 1521313       | 1           | 1521355   | 1           | 1521397   | 1           |
| 1521290       | 1           | 1521339   | 1           | 1521371   | 1           |
|               |             |           |             | 1559071   | 1           |
|               |             |           |             | 1559039   | 1           |

| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 5-pos.        |             |           |             |
|               |             |           |             |
|               |             |           |             |
| 1456307       | 1           |           |             |
| 1456255       | 1           |           |             |
| 1456284       | 1           |           |             |
| 1456213       | 1           |           |             |
|               |             |           |             |
| 1456268       | 1           |           |             |
| 1456239       | 1           |           |             |

## M5 to M12 circular plug-in connectors

### M12 power plug-in connectors

#### M12 power flush-type plug-in connectors, with 0.5 m long litz wires



S-coded, 3-pos. + PE



T-coded, 4-pos.

|                                                    | Technical data   |             |                  |             |  | Technical data   |             |                  |             |
|----------------------------------------------------|------------------|-------------|------------------|-------------|--|------------------|-------------|------------------|-------------|
|                                                    | Front mounting   |             | Rear mounting    |             |  | Front mounting   |             | Rear mounting    |             |
| General data                                       |                  |             |                  |             |  |                  |             |                  |             |
| Pollution degree                                   | 3                |             | 3                |             |  | 3                |             | 3                |             |
| Degree of protection                               | IP67             |             | IP67             |             |  | IP67             |             | IP67             |             |
| Connection method                                  | Individual wires |             | Individual wires |             |  | Individual wires |             | Individual wires |             |
| Electrical data                                    |                  |             |                  |             |  |                  |             |                  |             |
| Rated voltage                                      | 630 V            |             | 630 V            |             |  | 60 V             |             | 60 V             |             |
| Rated current                                      | 12 A             |             | 12 A             |             |  | 12 A             |             | 12 A             |             |
| Volume resistance                                  | ≤ 3 mΩ           |             | ≤ 3 mΩ           |             |  | ≤ 3 mΩ           |             | ≤ 3 mΩ           |             |
| Insulation resistance                              | ≥ 100 MΩ         |             | ≥ 100 MΩ         |             |  | ≥ 100 MΩ         |             | ≥ 100 MΩ         |             |
| Surge voltage category                             | III              |             | III              |             |  | III              |             | III              |             |
| Material data                                      |                  |             |                  |             |  |                  |             |                  |             |
| Material contact / contact surface                 | CuZn / Au        |             | CuZn / Au        |             |  | CuZn / Au        |             | CuZn / Au        |             |
| Contact carrier material                           | PA6              |             | PA6              |             |  | PA6              |             | PA6              |             |
| Cable type                                         | PP litz wire     |             | PP litz wire     |             |  | PP litz wire     |             | PP litz wire     |             |
| Temperature data                                   |                  |             |                  |             |  |                  |             |                  |             |
| Plug / socket                                      | [°C]             |             | -25 ... 85       |             |  | -25 ... 85       |             | -25 ... 85       |             |
| Cable, fixed installation                          | [°C]             |             | -40 ... 90       |             |  | -40 ... 90       |             | -40 ... 90       |             |
|                                                    | Ordering data    |             |                  |             |  | Ordering data    |             |                  |             |
| Description                                        | Order No.        | Pcs. / Pkt. | Order No.        | Pcs. / Pkt. |  | Order No.        | Pcs. / Pkt. | Order No.        | Pcs. / Pkt. |
|                                                    | Front mounting   |             | Rear mounting    |             |  | Front mounting   |             | Rear mounting    |             |
| Flush-type plug-in connector, M16 fastening thread |                  |             |                  |             |  |                  |             |                  |             |
| Socket                                             | 1424137          | 1           | 1424133          | 1           |  | 1424138          | 1           | 1424134          | 1           |
| Plug                                               | 1424139          | 1           | 1424132          | 1           |  | 1424140          | 1           | 1424136          | 1           |
|                                                    | Accessories      |             |                  |             |  | Accessories      |             |                  |             |
| Flat nut, with:<br>M16 thread                      | SACC-E-MU-M16    |             | 1504097          | 100         |  | SACC-E-MU-M16    |             | 1504097          | 100         |

**M12 power flush-type plug-in connectors,  
modular, 25 mm square flange,  
pre-assembled**



Flange housing, 2.7 mm housing bore holes



Pre-assembled contact carrier and insulating body with 0.5 m long litz wires

|                                                                                         | Technical data               |             |                 |             | Technical data       |             |                  |             |
|-----------------------------------------------------------------------------------------|------------------------------|-------------|-----------------|-------------|----------------------|-------------|------------------|-------------|
|                                                                                         |                              |             |                 |             | S-coded, 3-pos. + PE |             | T-coded, 4-pos.  |             |
| General data                                                                            |                              |             |                 |             |                      |             |                  |             |
| Pollution degree                                                                        | -                            |             | -               |             | 3                    |             | 3                |             |
| Degree of protection                                                                    | -                            |             | -               |             | IP67                 |             | IP67             |             |
| Connection method                                                                       | -                            |             | -               |             | Individual wires     |             | Individual wires |             |
| Electrical data                                                                         |                              |             |                 |             |                      |             |                  |             |
| Rated voltage                                                                           | -                            |             | -               |             | 630 V                |             | 60 V             |             |
| Rated current                                                                           | -                            |             | -               |             | 12 A                 |             | 12 A             |             |
| Volume resistance                                                                       | -                            |             | -               |             | ≤ 3 mΩ               |             | ≤ 3 mΩ           |             |
| Surge voltage category                                                                  | -                            |             | -               |             | III                  |             | III              |             |
| Material data                                                                           |                              |             |                 |             |                      |             |                  |             |
| Material contact / contact surface                                                      | - / -                        |             | - / -           |             | CuZn / Au            |             | CuZn / Au        |             |
| Contact carrier material                                                                | -                            |             | -               |             | PA6                  |             | PA6              |             |
| Cable gland material                                                                    | Zinc die-cast, nickel-plated |             | -               |             | -                    |             | -                |             |
| Cable type                                                                              | -                            |             | -               |             | PP litz wire         |             | PP litz wire     |             |
| Temperature data                                                                        |                              |             |                 |             |                      |             |                  |             |
| Plug / socket                                                                           | [°C]                         | -40 ... 85  | -               |             | -25 ... 85           |             | -25 ... 85       |             |
| Cable, fixed installation                                                               | [°C]                         | -           | -               |             | -40 ... 90           |             | -40 ... 90       |             |
|                                                                                         | Ordering data                |             |                 |             | Ordering data        |             |                  |             |
| Description                                                                             | Order No.                    | Pcs. / Pkt. | Order No.       | Pcs. / Pkt. | Order No.            | Pcs. / Pkt. | Order No.        | Pcs. / Pkt. |
|                                                                                         | S-coded, 3-pos. + PE         |             | T-coded, 4-pos. |             |                      |             |                  |             |
| Square flange housing, with flat gasket                                                 | 1424131                      | 10          |                 |             |                      |             |                  |             |
| Assembled contact carrier and insulating body, with 0.5 m litz wires and crimp contacts |                              |             |                 |             |                      |             |                  |             |
| Plug                                                                                    |                              |             |                 |             | 1424129              | 1           | 1424130          | 1           |

## M5 to M12 circular plug-in connectors

### M12 power plug-in connectors

**M12, power device plug-in connector, two-piece, for reflow processes, rear mounting**

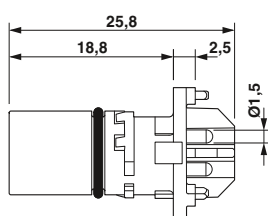


S-coded, 3-pos. + PE

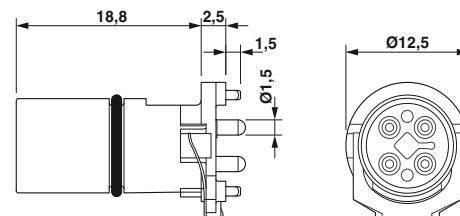


T-coded, 4-pos.

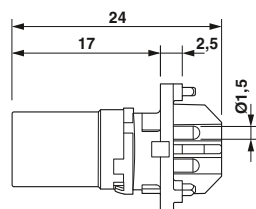
|                                                                                                                                     | Technical data        |                       |  | Technical data        |                       |
|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|--|-----------------------|-----------------------|
|                                                                                                                                     | Plug                  | Socket                |  | Plug                  | Socket                |
| General data                                                                                                                        |                       |                       |  |                       |                       |
| Pollution degree                                                                                                                    | 3                     | 3                     |  | 3                     | 3                     |
| Degree of protection                                                                                                                | IP67                  | IP67                  |  | IP67                  | IP67                  |
| Connection method                                                                                                                   | THR solder connection | THR solder connection |  | THR solder connection | THR solder connection |
| Electrical data                                                                                                                     |                       |                       |  |                       |                       |
| Rated voltage                                                                                                                       | 630 V                 | 630 V                 |  | 60 V                  | 60 V                  |
| Rated current                                                                                                                       | 12 A                  | 12 A                  |  | 12 A                  | 12 A                  |
| Volume resistance                                                                                                                   | ≤ 3 mΩ                | ≤ 3 mΩ                |  | ≤ 3 mΩ                | ≤ 3 mΩ                |
| Surge voltage category                                                                                                              | III                   | III                   |  | III                   | III                   |
| Material data                                                                                                                       |                       |                       |  |                       |                       |
| Material contact / contact surface                                                                                                  | CuZn / Au             | CuZn / Au             |  | CuZn / Au             | CuZn / Au             |
| Contact carrier material                                                                                                            | PA4T                  | PA4T                  |  | PA4T                  | PA4T                  |
| Inflammability class according to UL 94                                                                                             | V0                    | V0                    |  | V0                    | V0                    |
| Temperature data                                                                                                                    |                       |                       |  |                       |                       |
| Plug / socket                                                                                                                       | -40 ... 85            | -40 ... 85            |  | -40 ... 85            | -40 ... 85            |
|                                                                                                                                     | [°C]                  |                       |  |                       |                       |
|                                                                                                                                     | Ordering data         |                       |  | Ordering data         |                       |
| Description                                                                                                                         | Order No.             | Pcs. / Pkt.           |  | Order No.             | Pcs. / Pkt.           |
|                                                                                                                                     | Plug                  | Socket                |  | Plug                  | Socket                |
| Contact carrier, for reflow processes                                                                                               | 1406410               | 20                    |  | 1406396               | 60                    |
| Contact carrier, shielded, for reflow processes                                                                                     |                       |                       |  | 1406411               | 60                    |
|                                                                                                                                     |                       |                       |  | 1406397               | 60                    |
|                                                                                                                                     |                       |                       |  | 1406412               | 60                    |
|                                                                                                                                     | Accessories           |                       |  | Accessories           |                       |
| Housing screw connections, SPEEDCON screw versions and press-in versions, for all two-piece THR and wave soldering contact carriers | See page 258 onwards  |                       |  | See page 258 onwards  |                       |



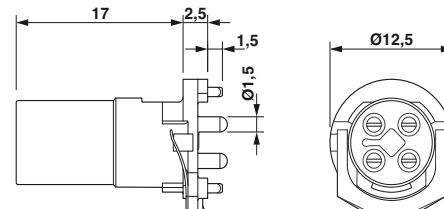
M12 flush-type plug



M12 flush-type plug



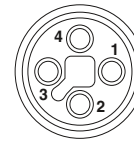
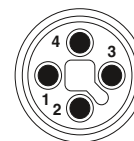
M12 flush-type socket



M12 flush-type socket

**M12, power plug-in connector,  
screw connection****S-coded, 3-pos. + PE****T-coded, 4-pos.**

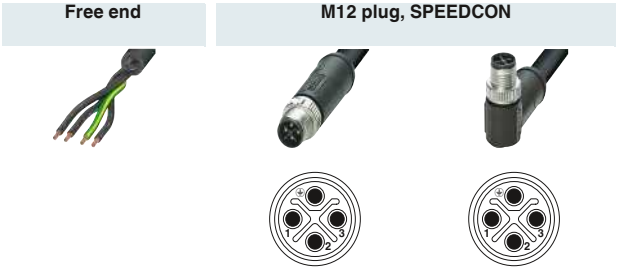
|                                                                                      | Technical data                               |           |             | Technical data                               |           |             |
|--------------------------------------------------------------------------------------|----------------------------------------------|-----------|-------------|----------------------------------------------|-----------|-------------|
| General data                                                                         |                                              |           |             |                                              |           |             |
| Pollution degree                                                                     | 3                                            |           |             | 3                                            |           |             |
| Degree of protection                                                                 | IP67                                         |           |             | IP67                                         |           |             |
| Connection method                                                                    | Screw connection                             |           |             | Screw connection                             |           |             |
| Cable diameter                                                                       | 8 mm ... 10 mm                               |           |             | 8 mm ... 10 mm                               |           |             |
| Connection cross section [mm <sup>2</sup> ]                                          | 0.75 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> |           |             | 0.75 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> |           |             |
| Electrical data                                                                      |                                              |           |             |                                              |           |             |
| Rated voltage                                                                        | 630 V                                        |           |             | 60 V                                         |           |             |
| Rated current                                                                        | 12 A                                         |           |             | 12 A                                         |           |             |
| Volume resistance                                                                    | ≤ 3 mΩ                                       |           |             | ≤ 3 mΩ                                       |           |             |
| Surge voltage category                                                               | III                                          |           |             | III                                          |           |             |
| Material data                                                                        |                                              |           |             |                                              |           |             |
| Material contact / contact surface                                                   | CuZn / Au                                    |           |             | CuZn / Au                                    |           |             |
| Contact carrier material                                                             | PA 46                                        |           |             | PA 46                                        |           |             |
| Temperature data                                                                     |                                              |           |             |                                              |           |             |
| Plug / socket                                                                        | [-40 ... 85                                  |           |             | [-40 ... 85                                  |           |             |
|                                                                                      | Ordering data                                |           |             | Ordering data                                |           |             |
| Description                                                                          | Type                                         | Order No. | Pcs. / Pkt. | Type                                         | Order No. | Pcs. / Pkt. |
| <b>Plug-in connector, with Pg11 screw connection, cable diameter: 8 mm ... 10 mm</b> |                                              |           |             |                                              |           |             |
| Socket, straight                                                                     | SACC-M12FSS-3PECON-PG11-M                    | 1404642   | 1           | SACC-M12FST-3PECON-PG11-M                    | 1404644   | 1           |
| Plug, straight                                                                       | SACC-M12MSS-3PECON-PG11-M                    | 1404641   | 1           | SACC-M12MST-3PECON-PG11-M                    | 1404643   | 1           |

**Pin assignment of M12 socket, 4-pos., S-coded,  
view of socket side****Pin assignment of M12 socket, 4-pos., T-coded,  
view of socket side****Pin assignment of M12 plug, 4-pos., S-coded,  
view of plug side****Pin assignment of M12 plug, 4-pos., T-coded,  
view of plug side**

M5 to M12 circular plug-in connectors

M12 power plug-in connectors

M12-SPEEDCON power cable,  
3-pos.+PE, S-coded,  
unshielded



| Ordering data                  |           | Ordering data |           | Ordering data |           |
|--------------------------------|-----------|---------------|-----------|---------------|-----------|
| Free end                       | Order No. | Order No.     | Order No. | Order No.     | Order No. |
|                                |           | 1 m           | 1408835   | 1 m           | 1408839   |
|                                |           | 2 m           | 1408836   | 2 m           | 1408840   |
|                                |           | 5 m           | 1408837   | 5 m           | 1408841   |
|                                |           | 10 m          | 1408838   | 10 m          | 1408842   |
| M12 socket, SPEEDCON, straight |           |               |           |               |           |
|                                | 1 m       | 1408843       |           |               |           |
|                                | 2 m       | 1408844       |           |               |           |
|                                | 5 m       | 1408845       |           |               |           |
|                                | 10 m      | 1408846       |           |               |           |
| M12 socket, SPEEDCON, angled   |           |               |           |               |           |
|                                | 1 m       | 1408848       |           |               |           |
|                                | 2 m       | 1408852       |           |               |           |
|                                | 5 m       | 1408853       |           |               |           |
|                                | 10 m      | 1408854       |           |               |           |

| Cable description         | Cable type | Color coding |   | Pin assignment |
|---------------------------|------------|--------------|---|----------------|
| PUR, halogen-free - black | PUR        | BK1          | 1 | 1              |
|                           |            | BK2          | 2 | 2              |
|                           |            | BK3          | 3 | 3              |
|                           |            | GNYE         |   | PE             |

|                              |      | Technical data                                 |
|------------------------------|------|------------------------------------------------|
|                              |      | M12                                            |
| Rated voltage                | [V]  | 630                                            |
| Rated current                | [A]  | 12                                             |
| Volume resistance            |      | ≤ 3 mΩ                                         |
| Material contact M12         |      | CuZn                                           |
| Material contact surface M12 |      | Au                                             |
| Material handle M12          |      | TPU, hardly inflammable,<br>self-extinguishing |
| Material, knurls             |      | Zinc die-cast, nickel-plated                   |
| Degree of protection         |      | IP65 / IP67                                    |
| Temperature data             |      |                                                |
| Plug / socket                | [°C] | -25 ... 85                                     |

**M12-SPEEDCON power cable,  
3-pos.+PE, S-coded,  
shielded**

Free end

M12 plug, SPEEDCON,  
360° shielded

Ordering data

Ordering data

Ordering data

Free end

Order No.

Order No.

Order No.



1.5 m

1424104

1.5 m

1424108

3 m

1424105

3 m

1424109

5 m

1424245

5 m

1424110

10 m

1424107

10 m

1424111

M12 socket, SPEEDCON, straight, 360° shielded



1.5 m

1424096

3 m

1424097

5 m

1424098

10 m

1424099

M12 socket, SPEEDCON, angled, 360° shielded



1.5 m

1424100

3 m

1424101

5 m

1424102

10 m

1424103

Cable description

Cable type

Color coding

Pin assignment

PUR, halogen-free - orange

PUR

BK1

1

1

BK2

2

2

BK3

3

3

GNYE

PE

Technical data

Rated voltage

[V]

630

Rated current

[A]

12

Volume resistance

≤ 3 mΩ

Material contact M12

CuZn

Material contact surface M12

Au

Material handle M12

TPU, hardly inflammable,  
self-extinguishing

Material, knurls

Zinc die-cast, nickel-plated

Degree of protection

IP65 / IP67

Temperature data

Plug / socket

[°C]

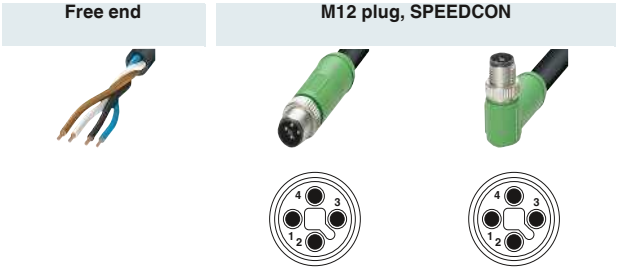
-25 ... 85



M5 to M12 circular plug-in connectors

M12 power plug-in connectors

M12-SPEEDCON power cable, 4-pos., T-coded, unshielded



| Ordering data                  |           | Ordering data |           | Ordering data |           |
|--------------------------------|-----------|---------------|-----------|---------------|-----------|
| Free end                       | Order No. | Order No.     | Order No. | Order No.     | Order No. |
|                                |           | 1 m           | 1408812   | 1 m           | 1408816   |
|                                |           | 2 m           | 1408813   | 2 m           | 1408819   |
|                                |           | 5 m           | 1408814   | 5 m           | 1408820   |
|                                |           | 10 m          | 1408815   | 10 m          | 1408822   |
| M12 socket, SPEEDCON, straight |           |               |           |               |           |
|                                | 1 m       | 1408823       | 1 m       | 1408808       |           |
|                                | 2 m       | 1408824       | 2 m       | 1408809       |           |
|                                | 5 m       | 1408825       | 5 m       | 1408810       |           |
|                                | 10 m      | 1408826       | 10 m      | 1408811       |           |
| M12 socket, SPEEDCON, angled   |           |               |           |               |           |
|                                | 1 m       | 1408827       |           |               |           |
|                                | 2 m       | 1408828       |           |               |           |
|                                | 5 m       | 1408829       |           |               |           |
|                                | 10 m      | 1408830       |           |               |           |

| Cable description         | Cable type | Color coding | Pin assignment |
|---------------------------|------------|--------------|----------------|
| PUR, halogen-free - black | PUR        | BN           | 1              |
|                           |            | WH           | 2              |
|                           |            | BK           | 4              |
|                           |            | BU           | 3              |

| Technical data               |                                             |
|------------------------------|---------------------------------------------|
| M12                          |                                             |
| Rated voltage                | [V] 60                                      |
| Rated current                | [A] 12                                      |
| Volume resistance            | ≤ 3 mΩ                                      |
| Material contact M12         | CuZn                                        |
| Material contact surface M12 | Au                                          |
| Material handle M12          | TPU, hardly inflammable, self-extinguishing |
| Material, knurls             | Zinc die-cast, nickel-plated                |
| Degree of protection         | IP65 / IP67                                 |
| Temperature data             |                                             |
| Plug / socket                | [°C] -25 ... 85                             |

**M12-SPEEDCON power cable,  
4-pos., T-coded, shielded**

Free end

M12 plug, SPEEDCON  
360° shielded

Ordering data

Ordering data

Ordering data

| Free end                                             | Order No. | Order No. | Order No.     |
|------------------------------------------------------|-----------|-----------|---------------|
|                                                      | 1.5 m     | 1424120   | 1.5 m 1424124 |
|                                                      | 3 m       | 1424121   | 3 m 1424125   |
|                                                      | 5 m       | 1424122   | 5 m 1424126   |
|                                                      | 10 m      | 1424123   | 10 m 1424127  |
| <b>M12 socket, SPEEDCON, straight, 360° shielded</b> |           |           |               |
| <br>                                                 | 1.5 m     | 1424112   |               |
|                                                      | 3 m       | 1424113   |               |
|                                                      | 5 m       | 1424114   |               |
|                                                      | 10 m      | 1424115   |               |
| <b>M12 socket, SPEEDCON, angled, 360° shielded</b>   |           |           |               |
| <br>                                                 | 1.5 m     | 1424116   |               |
|                                                      | 3 m       | 1424117   |               |
|                                                      | 5 m       | 1424118   |               |
|                                                      | 10 m      | 1424128   |               |

**Cable description****Cable type****Color coding****Pin assignment**

PUR, halogen-free - black

PUR

BN

WH

BK

BU

1

2

4

3

**Technical data**

|                              |      | M12                                            |
|------------------------------|------|------------------------------------------------|
| Rated voltage                | [V]  | 60                                             |
| Rated current                | [A]  | 12                                             |
| Volume resistance            |      | ≤ 3 mΩ                                         |
| Material contact M12         |      | CuZn                                           |
| Material contact surface M12 |      | Au                                             |
| Material handle M12          |      | TPU, hardly inflammable,<br>self-extinguishing |
| Material, knurls             |      | Zinc die-cast, nickel-plated                   |
| Degree of protection         |      | IP65 / IP67                                    |
| Temperature data             |      |                                                |
| Plug / socket                | [°C] | -25 ... 85                                     |

### Sealing elements

During transport or in the field, unoccupied plug-in connections must be protected or closed. The screw plugs, sealing caps and closing caps made of plastic or metal are suitable for this purpose. IP65/IP67 protection as well as IP69K protection is thereby achieved.



| Description                                                                                                                                                              | Ordering data                    |                |             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|----------------|-------------|
|                                                                                                                                                                          | Type                             | Order No.      | Pcs. / Pkt. |
| <b>M5 screw plug</b> ①<br>For unoccupied M5 sockets of the sensor/actuator cables, boxes and flush-type plug-in connectors                                               | <b>PROT-M5</b>                   | <b>1533288</b> | 10          |
| <b>M8 screw plug</b> ②<br>For unoccupied M8 sockets of the sensor/actuator cables, boxes and flush-type plug-in connectors                                               | <b>PROT-M8</b>                   | <b>1682540</b> | 5           |
| <b>M12 screw plug</b> ③<br>For the unused M12 sockets of the sensor/actuator cables, boxes and flush-type plug-in connectors                                             | <b>PROT-M12</b>                  | <b>1680539</b> | 5           |
| <b>M12 screw plug with SPEEDCON quick locking</b> ④<br>For unoccupied M12 sockets of the sensor/actuator cables, boxes and flush-type plug-in connectors                 | <b>PROT-MS SCO</b>               | <b>1553129</b> | 5           |
| <b>M12 sealing cap</b> ⑤<br>For unoccupied M12 plugs of the sensor/actuator cables, flush-type plug-in connectors and I/O devices in the field                           | <b>PROT-M12 FS</b>               | <b>1560251</b> | 5           |
| <b>M12 screw plug, metal</b> ⑥<br>For unoccupied M12 sockets of the shielded sensor/actuator cables, boxes and flush-type plug-in connectors                             | <b>PROT-M12 SH</b>               | <b>1503302</b> | 5           |
| <b>M12 sealing cap, metal</b> ⑦<br>For unoccupied M12 plugs of the sensor/actuator cables, flush-type plug-in connectors and I/O devices in the field                    | <b>PROT-M12 FS-M</b>             | <b>1430488</b> | 10          |
| <b>M12 screw plug, stainless steel</b> ⑧<br>For unused M12 sockets of the sensor/actuator cables, boxes, and flush-type plug-in connectors in the food and outdoor range | <b>PROT-M12 FB</b>               | <b>1555538</b> | 5           |
| <b>Closing cap</b> ⑨<br>For Pg9/ Pg11, to close unoccupied connections                                                                                                   | <b>Q-PROT 9/11</b>               | <b>1670235</b> | 10          |
| <b>M16 locking screw</b> ⑩<br>With flat nut for oval housing cutouts                                                                                                     | <b>SACC-M16-SEALING PLUG SET</b> | <b>1453368</b> | 10          |

## Sealing elements with holding band or fixing chain

All IP67 interfaces can be closed tightly using the screw plugs and sealing caps in sizes M8, M12 and 7/8". The holding bands are fastened on the cable or the housing and are thus held captive.

The M12 metal protective cap with fixing chain is suitable for all pin versions. It is used in harsh industrial environments or for EMC applications.



| Description                                                                                          | Ordering data                 |           |             |
|------------------------------------------------------------------------------------------------------|-------------------------------|-----------|-------------|
|                                                                                                      | Type                          | Order No. | Pcs. / Pkt. |
| <b>Screw plug</b> made from <b>plastic</b> with retaining strap, for sealing unused <b>sockets</b> ① |                               |           |             |
| M8 for SAC cables                                                                                    | PROT-M 8 MS-PA-CHAIN          | 1430860   | 10          |
| M8 with 3 mm fastening eye                                                                           | PROT-M 8 MS-PA-CHAIN-EYE-DM3  | 1441105   | 10          |
| M8 with 12 mm fastening eye                                                                          | PROT-M 8 MS-PA-CHAIN-EYE      | 1441095   | 10          |
| M12 for SAC cables                                                                                   | PROT-M12 MS-PA-CHAIN          | 1430899   | 5           |
| M12 with 15 mm fastening eye                                                                         | PROT-M12 MS-PA-CHAIN-EYE-DM14 | 1456200   | 5           |
| 7/8" for SAC cables                                                                                  | PROT-MINMS-PA-CHAIN           | 1430925   | 10          |
| <b>Plastic sealing cap</b> with holding band, for closing unoccupied <b>connectors</b> ②             |                               |           |             |
| M8 for SAC cables                                                                                    | PROT-M 8 FS-PA-CHAIN          | 1430857   | 10          |
| M8 with 8 mm fastening eye                                                                           | PROT-M 8 FS-PA-CHAIN-EYE      | 1441082   | 10          |
| M12 for SAC cables                                                                                   | PROT-M12 FS-PA-CHAIN          | 1430873   | 5           |
| M12 with 12 mm fastening eye                                                                         | PROT-M12 FS-PA-CHAIN-EYE-DM12 | 1456187   | 5           |
| M12 with 15 mm fastening eye                                                                         | PROT-M12 FS-PA-CHAIN-EYE-DM14 | 1456190   | 5           |
| 7/8" for SAC cables                                                                                  | PROT-MINFS-PA-CHAIN           | 1430912   | 10          |
| <b>Metal sealing cap</b> with fixing chain, for closing unoccupied <b>connectors</b> ③               |                               |           |             |
| M12 with 16 mm fastening eye                                                                         | PROT-M12 FS-M-CHAIN           | 1430491   | 10          |

Accessories

Accessories for flush-type plug-in connectors

Special fixing nuts are available for EMC-compliant installation of M12 flush-type plug-in connectors on coated or varnished housing surfaces. When tightened, these cut through the surface coating, thus establishing contact between the housing and the connector.

Alternatively, flat gaskets can be used as the seal between the housing panel and the device plug. Flat gaskets are recommended for thin panels, as the housing cutouts do not have to be chamfered.



| Ordering data                                                                       |  |                    |                       |
|-------------------------------------------------------------------------------------|--|--------------------|-----------------------|
| Description                                                                         |  | Type               | Order No. Pcs. / Pkt. |
| EMC hexagonal nuts with fine tothing, for all flush-type plug-in connectors with: ① |  |                    |                       |
| M12 fastening thread                                                                |  | SACC-M12-KD-NUT-SH | 1440151 10            |
| EMC hexagonal nuts with fine tothing, for all flush-type plug-in connectors with: ② |  |                    |                       |
| M16 fastening thread                                                                |  | SACC-M16-KD-NUT-SH | 1440164 10            |
| Pg9 fastening thread                                                                |  | SACC-PG9-KD-NUT-SH | 1440177 10            |
| Flat gasket for all flush-type plug-in connectors with: ③                           |  |                    |                       |
| M16 fastening thread                                                                |  | SACC-M16-SEAL CLM  | 1430394 10            |
| Pg9 fastening thread                                                                |  | SACC-PG9-SEAL CLM  | 1556320 10            |

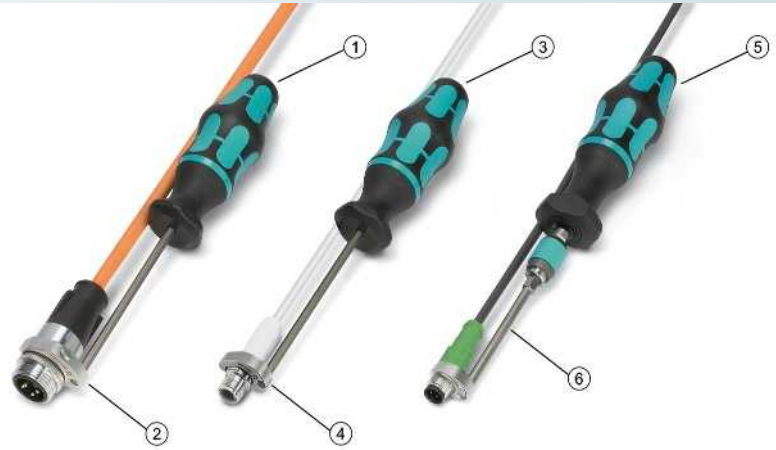
## Assembly tools for sensor/actuator cables

To achieve tight plug-in connections, we recommend using assembly tools. M12 and 7/8" circular plug-in connectors can be assembled using a torque screwdriver and plug attachment.

The benefits of the plug attachment become particularly clear when connecting the connectors to the distributor boxes. Thanks to the open design, it enables quick adjustment and installation even when space is at a premium.

The version for M12 connectors with hexagonal stainless steel knurl is also made from stainless steel. This prevents the connector knurls from being contaminated by corrosive materials.

For greater flexibility, screwdrivers with adjustable torque are also available. When used in conjunction with the adapter insert, they can also be used to accommodate the available plug attachments.



| Description                                                                                                                                                        |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>Torque screwdriver</b> ①<br>With a preset torque of 0.8 Nm and a 4 mm hexagonal drive                                                                           |  |
| <b>Nut</b> ②<br>For assembling 7/8" plug-in connectors, with 4 mm hexagonal drive                                                                                  |  |
| <b>Torque screwdriver</b> ③<br>With preset torque of 0.4 Nm and 4 mm hexagonal drive                                                                               |  |
| <b>Nut</b> ④<br>For mounting M12 plug-in connectors with hexagonal stainless steel knurl, wrench size 14, with 4 mm hexagonal drive                                |  |
| <b>Torque screwdriver</b> , accuracy according to standard EN ISO 6789 ⑤<br>Adjustable from 0.3 - 1.2 Nm<br>Adjustable from 1.2 - 3 Nm<br>Adjustable from 3 - 6 Nm |  |
| <b>Adapter insert</b> ⑥<br>For torque screwdrivers with adjustable torque, for accommodating plug attachments with 4 mm hexagonal drive                            |  |

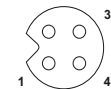
| Ordering data                |           |             |
|------------------------------|-----------|-------------|
| Type                         | Order No. | Pcs. / Pkt. |
| <b>TSD 08 SAC</b>            | 1212597   | 1           |
| <b>SAC BIT MIN-D25</b>       | 1212512   | 1           |
| <b>TSD 04 SAC</b>            | 1208429   | 1           |
| <b>SAC BIT M12-W14</b>       | 1212513   | 1           |
| <b>TSD-M 1,2NM</b>           | 1212224   | 1           |
| <b>TSD-M 3NM</b>             | 1212225   | 1           |
| <b>TSD-M 6NM</b>             | 1212226   | 1           |
| <b>TSD-M SAC-BIT ADAPTER</b> | 1212600   | 1           |

M5 to M12 circular plug-in connectors

Pin assignments

M5 flush-type plug-in connectors

Pin assignments



Socket, 3-pos.



Plug, 3-pos.



Socket, 4-pos.



Plug, 4-pos.

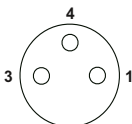
Litz wire colors

| Pin | Wire color |  |        |  |
|-----|------------|--|--------|--|
|     | 3-pos.     |  | 4-pos. |  |
| 1   | BN         |  | BN     |  |
| 2   | –          |  | WH     |  |
| 3   | BU         |  | BU     |  |
| 4   | BK         |  | BK     |  |

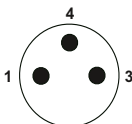
Assignment: M5 flush-type plugs/sockets

M8 flush-type plug-in connectors

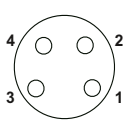
Pin assignments



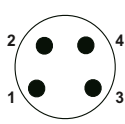
Socket, 3-pos.



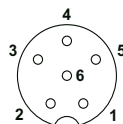
Plug, 3-pos.



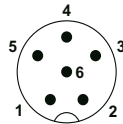
Socket, 4-pos.



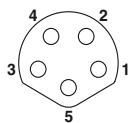
Plug, 4-pos.



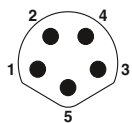
Socket, 6-pos.



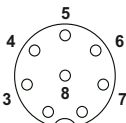
Plug, 6-pos.



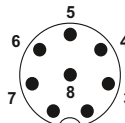
Socket, 5-pos.,  
DeviceNet™, B-coded



Plug, 5-pos.,  
DeviceNet™, B-coded



Socket, 8-pos.



Plug, 8-pos.

Litz wire colors

| Pin | Wire color |  |        |  |        |  |        |  |
|-----|------------|--|--------|--|--------|--|--------|--|
|     | 3-pos.     |  | 4-pos. |  | 6-pos. |  | 8-pos. |  |
| 1   | BN         |  | BN     |  | BN     |  | WH     |  |
| 2   | –          |  | WH     |  | WH     |  | BN     |  |
| 3   | BU         |  | BU     |  | BU     |  | GN     |  |
| 4   | BK         |  | BK     |  | BK     |  | YE     |  |
| 5   | –          |  | –      |  | GY     |  | GY     |  |
| 6   | –          |  | –      |  | PK     |  | PK     |  |
| 7   | –          |  | –      |  | –      |  | BU     |  |
| 8   | –          |  | –      |  | –      |  | RD     |  |

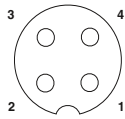
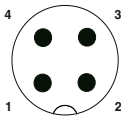
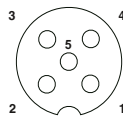
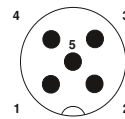
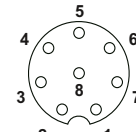
Assignment: M8 flush-type plugs/sockets

| Pin | Wire color |  | Signal<br>DeviceNet™ |
|-----|------------|--|----------------------|
| 1   | Shield     |  | Drain                |
| 2   | RD         |  | V+                   |
| 4   | BK         |  | V–                   |
| 3   | WH         |  | CAN_H                |
| 5   | BU         |  | CAN_L                |

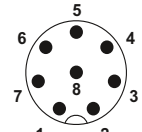
Assignment: CANopen®/DeviceNet™

## M12 flush-type plug-in connectors

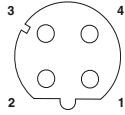
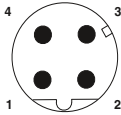
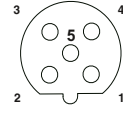
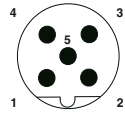
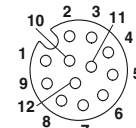
## Pin assignments

Socket, 4-pos.,  
A-codedPlug, 4-pos.,  
A-codedSocket, 5-pos.,  
A-codedPlug, 5-pos.,  
A-coded

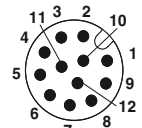
Socket, 8-pos.



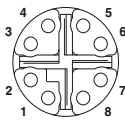
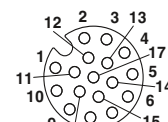
Plug, 8-pos.

Socket, 4-pos.,  
D-codedPlug, 4-pos.,  
D-codedSocket, 5-pos.,  
B-codedPlug, 5-pos.,  
B-coded

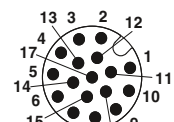
Socket, 12-pos.



Plug, 12-pos.

Socket, 8-pos.,  
X-codedSocket, 8-pos.,  
Y-coded

Socket, 17-pos.



Plug, 17-pos.

## Litz wire colors

| Pin | 4-pos.,<br>A-coded | 4-pos.,<br>D-coded |
|-----|--------------------|--------------------|
| 1   | BN                 | YE                 |
| 2   | WH                 | WH                 |
| 3   | BU                 | OG                 |
| 4   | BK                 | BU                 |
| -   | -                  | -                  |

Assignment: M12 flush-type plugs/sockets

| Pin | 5-pos.,<br>A-coded | 5-pos.,<br>B-coded |
|-----|--------------------|--------------------|
| 1   | BN                 | BN                 |
| 2   | WH                 | WH                 |
| 3   | BU                 | BU                 |
| 4   | BK                 | BK                 |
| 5   | GY                 | GY                 |

Assignment: M12 flush-type plugs/sockets

| Pin | 8-pos. | 12-pos. |
|-----|--------|---------|
| 1   | WH     | BN      |
| 2   | BN     | BU      |
| 3   | GN     | WH      |
| 4   | YE     | GN      |
| 5   | GY     | PK      |
| 6   | PK     | YE      |
| 7   | BU     | BK      |
| 8   | RD     | GY      |
| 9   | -      | RD      |
| 10  | -      | VT      |
| 11  | -      | GYPK    |
| 12  | -      | RDBU    |

Assignment: M12 flush-type plugs/sockets

| Pin | Wire color       | Signal<br>PROFIBUS |
|-----|------------------|--------------------|
| 1   | -                | -                  |
| 2   | GN               | A cable            |
| 3   | -                | -                  |
| 4   | RD               | B cable            |
| 5   | Filler litz wire | -                  |

Shield on housing

Assignment: PROFIBUS

| Pin | Wire color | Signal<br>CANopen® |
|-----|------------|--------------------|
| 1   | Shield     | -                  |
| 2   | RD         | -                  |
| 3   | BK         | CAN_GND            |
| 4   | WH         | CAN_H              |
| 5   | BU         | CAN_L              |

Shield on housing

Assignment: CANopen®

| Pin | Wire color | Signal<br>DeviceNet™ |
|-----|------------|----------------------|
| 1   | Shield     | Drain                |
| 2   | RD         | V+                   |
| 3   | BK         | V-                   |
| 4   | WH         | CAN_H                |
| 5   | BU         | CAN_L                |

Shield on housing

Assignment: DeviceNet™

| Pin | Wire color | Signal<br>Ethernet |
|-----|------------|--------------------|
| 1   | WHOG       | TD+                |
| 2   | WHGN       | RD+                |
| 3   | OG         | TD-                |
| 4   | GN         | RD-                |

Shield on housing

Assignment: Ethernet

| Pin | Wire color | Signal<br>INTERBUS |
|-----|------------|--------------------|
| 1   | YE         | DO                 |
| 2   | GN         | DI                 |
| 3   | GY         | DI                 |
| 4   | PK         | DI                 |
| 5   | BN         | COM                |
| -   | WH         | NC                 |

Shield on housing

Assignment: INTERBUS

| Pin | Wire color | Signal<br>Ethernet |
|-----|------------|--------------------|
| 1   | WH         | D1+                |
| 2   | OG         | D1-                |
| 3   | WH         | D2+                |
| 4   | GN         | D2-                |
| 5   | WH         | D4+                |
| 6   | BN         | D4-                |
| 7   | WH         | D3-                |
| 8   | BU         | D3+                |

Assignment: Ethernet CAT6<sub>A</sub>

| Pin | 17-pos. |
|-----|---------|
| 1   | BN      |
| 2   | BU      |
| 3   | WH      |
| 4   | GN      |
| 5   | PK      |
| 6   | YE      |
| 7   | BK      |
| 8   | GY      |
| 9   | RD      |
| 10  | VT      |
| 11  | GYPK    |
| 12  | RDBU    |
| 13  | WHGN    |
| 14  | BNGN    |
| 15  | WHYE    |
| 16  | YEBN    |
| 17  | WHGY    |

Assignment: M12 flush-type plugs/sockets



M5 to M12 circular plug-in connectors

Pin assignments

M12 power flush-type plug-in connectors

Pin assignments



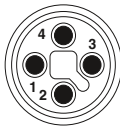
Socket, S-coded, 3+PE



Plug, A-coded, 3+PE



Socket, T-coded, 4-pos.



Plug, T-coded, 4-pos.

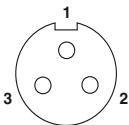
Litz wire colors

| Pin | 3+PE, S-cod. | Pin | 4-pos, T-cod. |
|-----|--------------|-----|---------------|
| 1   | BK1          | 1   | BN            |
| 2   | BK2          | 2   | WH            |
| 3   | BK3          | 3   | BU            |
| PE  | GNYE         | 4   | BK            |

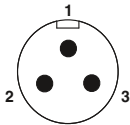
Assignment: M12 flush-type plugs/sockets

7/8" flush-type plug-in connectors

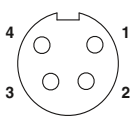
Pin assignments



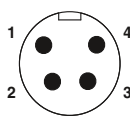
Socket, 3-pos.



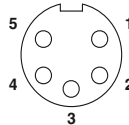
Plug, 3-pos.



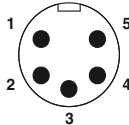
Socket, 4-pos.



Plug, 4-pos.



Socket, 5-pos.



Plug, 5-pos.

Litz wire colors

| Pin | 3-pos. | 4-pos. | 5-pos. |
|-----|--------|--------|--------|
| 1   | BK     | BK     | BK     |
| 2   | BN     | BU     | BU     |
| 3   | BU     | BN     | GNYE   |
| 4   | -      | WH     | BN     |
| 5   | -      | -      | WH     |

Assignment: 7/8" flush-type plugs/sockets

THR processing notes

| Information for THR processing |                                |
|--------------------------------|--------------------------------|
| PCB thickness                  | Max. 1.6 mm                    |
| Residual ring                  | Recommended: 0.5 mm            |
| Overprinting on soldering mold | Residual ring diameter: 0.2 mm |
| Soldering mold thickness       | 150 µm                         |
| Soldering profile              | IEC 61760-3                    |

| Further information |          |
|---------------------|----------|
| RoHS conformance    | Attained |





# M17 to M58 circular plug-in connectors

PLUSCON circular is the complete range of electrical circular plug-in connectors designed for use in industrial automation. The wide range of available versions covers sizes M17 to M23, M40, and M58 locking threads.

The product portfolio covers all common applications in industrial environments for signal and power plug-in connectors up to 630 V/150 A. This also includes requirements relating to tightness, vibration resistance, and EMC shielding. These solid metal plugs are particularly suitable for harsh ambient conditions. The circular plug-in connector range is rounded off with a complete portfolio of plastic molded cable plug-in connectors.

Among the numerous applications, the area of electrical drives is worth highlighting. Here, the entire range covers all the power ranges and designs required for wiring from the drive to the control cabinet.

## M17 - signal plug-in connectors

|                                |     |
|--------------------------------|-----|
| Technical data/pin assignments | 304 |
| Selection guide                | 306 |
| Plug-in connectors             | 308 |
| Crimp contacts                 | 318 |

## M23 - signal plug-in connectors

|                                |     |
|--------------------------------|-----|
| Technical data/pin assignments | 320 |
| Selection guide                | 322 |
| Plug-in connectors             | 324 |
| Crimp contacts                 | 334 |

## M23 - feedback plug-in connectors

|                                |     |
|--------------------------------|-----|
| Technical data/pin assignments | 336 |
| Selection guide                | 338 |
| Plug-in connectors             | 340 |
| Crimp contacts                 | 346 |

## M17 - power plug-in connectors

|                                |     |
|--------------------------------|-----|
| Technical data/pin assignments | 348 |
| Selection guide                | 350 |
| Plug-in connectors             | 352 |
| Crimp contacts                 | 362 |

## M23 - power plug-in connectors

|                                |     |
|--------------------------------|-----|
| Technical data/pin assignments | 364 |
| Selection guide                | 366 |
| Plug-in connectors             | 368 |
| Crimp contacts                 | 374 |

## M40 - power plug-in connectors

|                                |     |
|--------------------------------|-----|
| Technical data/pin assignments | 376 |
| Selection guide                | 378 |
| Plug-in connectors             | 380 |
| Crimp contacts                 | 385 |

## M58 - power plug-in connectors

|                                |     |
|--------------------------------|-----|
| Technical data/pin assignments | 386 |
| Selection guide                | 388 |
| Plug-in connectors             | 390 |
| Crimp contacts                 | 392 |

|                                                 |     |
|-------------------------------------------------|-----|
| Signal/power plug-in connectors, plastic molded | 394 |
|-------------------------------------------------|-----|

|                       |     |
|-----------------------|-----|
| Tools and accessories | 404 |
|-----------------------|-----|

# M17 to M58 circular plug-in connectors

## M17 - signal plug-in connectors

### Mechanical and electrical data

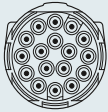
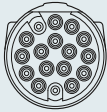
| Mechanical data                         |                                                                                                                                       |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Housing material:                       | Copper zinc alloy (CuZn), die-cast zinc (GD-Zn)                                                                                       |
| Housing surface:                        | Nickel-plated/thick layer passivated (can be coated)                                                                                  |
| Insulating body:                        | Polyamide (PA 66)                                                                                                                     |
| Contact material:                       | Copper zinc alloy (CuZn)                                                                                                              |
| Contact surface:                        | Nickel-plated (Ni) with gold coating (Au)                                                                                             |
| Contact connection method:              | Crimp version                                                                                                                         |
| Sealing and O-ring:                     | Fluorocarbon rubber (FKM)                                                                                                             |
| Ambient temperature:                    | -40°C ... 125°C                                                                                                                       |
| Cable entry:                            | Cable and coupler plug-in connectors for cable outside diameter of 3.5 - 11 mm, shielded (M17 Compact)<br>5 - 12.5 mm, shielded (M17) |
| Type of locking:                        | M17 SPEEDCON rapid interlock system, cable plug-in connector<br>Optionally with M17 x 1 coarse-pitch thread                           |
| Mechanical insertion/withdrawal cycles: | Standard: 100, punched-rolled C-HC crimp contacts: up to 500                                                                          |
| Protection class:                       | IP67 in the locked state                                                                                                              |

| Electrical data                                                   |               |              |
|-------------------------------------------------------------------|---------------|--------------|
| Number of positions                                               | 8             | 17           |
| Contacts                                                          | 8             | 17           |
| Contact Ø [mm]                                                    | 1             | 0.6          |
| Litz wire cross section, crimp contacts Turned [mm²]              | 0.06 ... 1.0  | 0.06 ... 0.5 |
| Litz wire cross section, C-HC crimp contacts Punched-rolled [mm²] | 0.06 ... 0.56 | –            |
| Nominal current per contact at 25°C <sup>1)</sup>                 | 3.6           | 3.6          |
| Specifications according to DIN EN 61984:2009                     |               |              |
| Rated voltage [V AC/DC]                                           | 60            | 60           |
| Test/surge voltage [kV AC]                                        | 1.5           | 1.5          |
| Surge voltage category                                            | III           | III          |
| Pollution degree <sup>2)</sup>                                    | 3             | 3            |
| Installation height [m]                                           | Up to 3000    | Up to 3000   |
| Cable clamping area <sup>3)</sup> max. Ø [mm]                     | 12.5          | 12.5         |

<sup>1)</sup> The effective current carrying capacity must be determined via a derating curve, if necessary, according to the application.

<sup>2)</sup> The values specified assume that the plug-in connector pair is correctly locked and is only disconnected for testing and maintenance purposes. If the plug-in connector is unlocked and exposed to ambient conditions, and if there is a danger of contamination, the plug-in connector must be sealed using a protective cap ≥ IP54.

<sup>3)</sup> The cable clamping areas specified on the following pages may vary depending on the cable material/structure. Selection and testing is the responsibility of the user.

| Contact chamber numbering<br>(view of plug-in side) |                                                                                   |                                                                                   |
|-----------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Number of positions                                 | Pin                                                                               | Socket                                                                            |
| 8-pos.<br>Crimp                                     |  |  |
| 17-pos.<br>Crimp                                    |  |  |

**Note:**  
The plug-in connectors can be equipped with pin or socket contacts according to the application.

For reasons of safety, only socket contacts may be used in the live part of the plug.

# M17 to M58 circular plug-in connectors

## M17 - signal plug-in connectors

### Selection guide

M17 signal plug-in connectors, 8 and 17-pos., crimp ranges: 0.06 mm<sup>2</sup> to 1.0 mm<sup>2</sup>

- Cable plug-in connectors
- Coupler plug-in connectors
- Device plug-in connectors (device flanges)

The plug-in connectors are supplied fully pre-assembled and are complemented by the respective crimp contacts.

Plug-in connectors with knurled nuts can be optionally equipped with SPEEDCON rapid interlock system or with M17 x 1 coarse-pitch thread. The plug-in connectors with external thread are fully compatible with standard threads and the SPEEDCON rapid interlock system.

The product chart provides an overview of the available components.

### Plug-in connector type

#### Cable plug-in connector

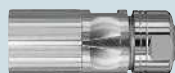
SPEEDCON rapid interlock system, M17 Compact, see page 308.



M17, see page 312.



M17 x 1 standard interlocking, M17, see page 313.



Square mounting flange for M17 cable and coupler plug-in connectors for wall mounting, see page 410.



Shielded

#### Coupler plug-in connector/panel feed-through

Coupler plug-in connector M17 Compact, see page 309.



Panel feed-through M17 Compact, see page 310.



M17, see page 314.



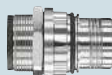
Shielded

#### Device plug-in connector

Straight, M17 Compact, see page 311.



Straight, with central fastening thread, front mounting, M17, see page 317.



Angled, rotatable, M17, see page 316.



Straight, M17, see page 315.



Straight, with central fastening thread, rear mounting, M17, see page 317.



Shielded

**Crimp contacts****Socket contacts**

Turned, see page 319.



Punched-rolled, taped, see page 318.

**Pin contacts**

Turned, see page 319.



Punched-rolled, taped, see page 318.

**Note:**

For reasons of safety, only socket contacts may be used in the live part of the plug.

**Tools/accessories****Crimping tools**

Crimping pliers for punched-rolled C-HC crimp contacts, see page 406.



Crimping pliers with digital display for turned crimp contacts, see page 407.

**Tools/accessories**

Contact removal tool for device plug-in connectors with contact carriers for snapping in from the device side, see page 410.



Color rings for individually marking the plug-in connectors, see page 412.



All housing can be fitted with pin or socket crimp contacts



M17 to M58 circular plug-in connectors

M17 - signal plug-in connectors

M17 Compact cable plug-in connector

- High packing density in a compact product
- Individual marking of plug-in connectors with color rings



Cable plug-in connector, socket assembly



Cable plug-in connector, pin assembly

|                                                                 |                     | Ordering data                             |             |           |             | Ordering data                          |             |           |             |
|-----------------------------------------------------------------|---------------------|-------------------------------------------|-------------|-----------|-------------|----------------------------------------|-------------|-----------|-------------|
| Description                                                     | Cable clamping area | Order No.                                 | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No.                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                                                                 |                     | 8-pos.                                    |             | 17-pos.   |             | 8-pos.                                 |             | 17-pos.   |             |
| Cable plug-in connector, with contact carrier, without contacts | 3.5 mm ... 5.5 mm   | 1613370                                   | 1           | 1613288   | 1           | 1618641                                | 1           | 1618682   | 1           |
|                                                                 | 5 mm ... 9 mm       | 1613371                                   | 1           | 1613324   | 1           | 1618648                                | 1           | 1618683   | 1           |
|                                                                 | 9 mm ... 11 mm      | 1613372                                   | 1           | 1613325   | 1           | 1618649                                | 1           | 1618684   | 1           |
|                                                                 |                     |                                           |             |           |             |                                        |             |           |             |
|                                                                 |                     | Accessories                               |             |           |             | Accessories                            |             |           |             |
| Crimp contacts                                                  |                     | For socket contacts, see page 318 onwards |             |           |             | For pin contacts, see page 318 onwards |             |           |             |
| Color rings, 50 pcs. in set (to be ordered separately)          |                     | See page 412                              |             |           |             | See page 412                           |             |           |             |



M17 Compact coupler plug-in connector

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Individual marking of plug-in connectors with color rings

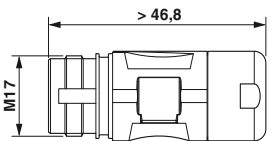


Coupler plug-in connector, socket assembly



Coupler plug-in connector, pin assembly

|                                                                   |                     | Ordering data                             |             |           |             | Ordering data                          |             |           |             |
|-------------------------------------------------------------------|---------------------|-------------------------------------------|-------------|-----------|-------------|----------------------------------------|-------------|-----------|-------------|
| Description                                                       | Cable clamping area | Order No.                                 | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No.                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                                                                   |                     | 8-pos.                                    |             | 17-pos.   |             | 8-pos.                                 |             | 17-pos.   |             |
| Coupler plug-in connector, with contact carrier, without contacts | 3.5 mm ... 5.5 mm   | 1618724                                   | 1           | 1618756   | 1           | 1617799                                | 1           | 1613497   | 1           |
|                                                                   | 5 mm ... 9 mm       | 1618725                                   | 1           | 1618757   | 1           | 1617813                                | 1           | 1613896   | 1           |
|                                                                   | 9 mm ... 11 mm      | 1618726                                   | 1           | 1618758   | 1           | 1617830                                | 1           | 1614532   | 1           |
|                                                                   |                     | Accessories                               |             |           |             | Accessories                            |             |           |             |
| Crimp contacts                                                    |                     | For socket contacts, see page 318 onwards |             |           |             | For pin contacts, see page 318 onwards |             |           |             |
| Color rings, 50 pcs. in set (to be ordered separately)            |                     | See page 412                              |             |           |             | See page 412                           |             |           |             |



M17 to M58 circular plug-in connectors

M17 - signal plug-in connectors

M17 Compact panel feed-through

- Panel feed-throughs suitable for front and rear mounting
- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Individual marking of plug-in connectors with color rings
- **Flange dimensions**  
25.7 mm x 25.7 mm

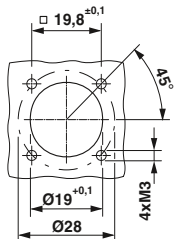
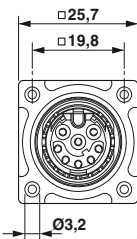
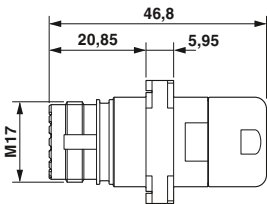


Panel feed-through, socket assembly



Panel feed-through, pin assembly

|                                                            |                     | Ordering data                             |             |           |             | Ordering data                          |             |           |             |
|------------------------------------------------------------|---------------------|-------------------------------------------|-------------|-----------|-------------|----------------------------------------|-------------|-----------|-------------|
| Description                                                | Cable clamping area | Order No.                                 | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No.                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                                                            |                     | 8-pos.                                    |             | 17-pos.   |             | 8-pos.                                 |             | 17-pos.   |             |
| Panel feed-through, with contact carrier, without contacts | 3.5 mm ... 5.5 mm   | 1618801                                   | 1           | 1618834   | 1           | 1617925                                | 1           | 1617863   | 1           |
|                                                            | 5 mm ... 9 mm       | 1618802                                   | 1           | 1618835   | 1           | 1617929                                | 1           | 1617872   | 1           |
|                                                            | 9 mm ... 11 mm      | 1618805                                   | 1           | 1618836   | 1           | 1617932                                | 1           | 1617873   | 1           |
|                                                            |                     |                                           |             |           |             |                                        |             |           |             |
|                                                            |                     | Accessories                               |             |           |             | Accessories                            |             |           |             |
| Crimp contacts                                             |                     | For socket contacts, see page 318 onwards |             |           |             | For pin contacts, see page 318 onwards |             |           |             |
| Color rings, 50 pcs. in set (to be ordered separately)     |                     | See page 412                              |             |           |             | See page 412                           |             |           |             |



Installation dimensions

### M17 Compact device plug-in connectors, front mounting

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Individual marking of plug-in connectors with color rings
- **Flange dimensions**  
**21.6 mm x 21.6 mm**

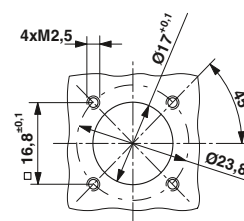
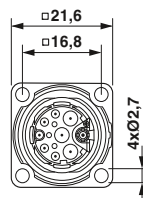
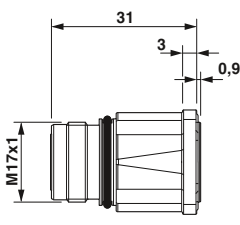


Device plug-in connector, straight, socket assembly



Device plug-in connector, straight, pin assembly

| Description                                                                                                | Ordering data                                                            |             |           |             | Ordering data                                             |             |           |             |
|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------|-----------|-------------|-----------------------------------------------------------|-------------|-----------|-------------|
|                                                                                                            | Order No.                                                                | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No.                                                 | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| Device plug-in connector, with contact carrier, without contacts, contact insert can be snapped in         | 8-pos.                                                                   |             | 17-pos.   |             | 8-pos.                                                    |             | 17-pos.   |             |
|                                                                                                            | 1619039                                                                  | 1           | 1607654   | 1           | 1613286                                                   | 1           | 1607636   | 1           |
| Device plug-in connector, with contact carrier, without contacts, contact insert for support on the device |                                                                          |             |           |             |                                                           |             |           |             |
|                                                                                                            | 1619038                                                                  | 1           | 1607653   | 1           | 1619037                                                   | 1           | 1607634   | 1           |
|                                                                                                            | Accessories                                                              |             |           |             | Accessories                                               |             |           |             |
|                                                                                                            | Crimp contacts<br>Color rings, 50 pcs. in set (to be ordered separately) |             |           |             | For socket contacts, see page 318 onwards<br>See page 412 |             |           |             |
|                                                                                                            |                                                                          |             |           |             | For pin contacts, see page 318 onwards<br>See page 412    |             |           |             |



Installation dimensions

M17 to M58 circular plug-in connectors

M17 - signal plug-in connectors

Cable plug-in connector,  
SPEEDCON rapid interlock system

- Individual marking of plug-in connectors with color rings

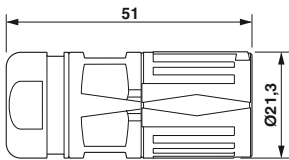


Cable plug-in connector,  
socket assembly



Cable plug-in connector,  
pin assembly

|                                                                    |                     | Ordering data                             |             |           |             | Ordering data                          |             |           |             |
|--------------------------------------------------------------------|---------------------|-------------------------------------------|-------------|-----------|-------------|----------------------------------------|-------------|-----------|-------------|
| Description                                                        | Cable clamping area | Order No.                                 | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No.                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                                                                    |                     | 8-pos.                                    |             | 17-pos.   |             | 8-pos.                                 |             | 17-pos.   |             |
| Cable plug-in connector, with contact carrier,<br>without contacts | 5 mm ... 8 mm       | 1619007                                   | 1           | 1607642   | 1           | 1618999                                | 1           | 1607625   | 1           |
|                                                                    | 8 mm ... 10 mm      | 1619008                                   | 1           | 1607644   | 1           | 1619000                                | 1           | 1607627   | 1           |
|                                                                    | 10 mm ... 12.5 mm   | 1619009                                   | 1           | 1624532   | 1           | 1619001                                | 1           | 1624529   | 1           |
|                                                                    |                     |                                           |             |           |             |                                        |             |           |             |
|                                                                    |                     | Accessories                               |             |           |             | Accessories                            |             |           |             |
| Crimp contacts                                                     |                     | For socket contacts, see page 318 onwards |             |           |             | For pin contacts, see page 318 onwards |             |           |             |
| Color rings, 50 pcs. in set (to be ordered separately)             |                     | See page 412                              |             |           |             | See page 412                           |             |           |             |



Cable plug-in connector,  
M17 standard interlocking

- Standard knurled nuts compatible with mating plugs with SPEEDCON or M17 standard external thread
- Individual marking of plug-in connectors with color rings

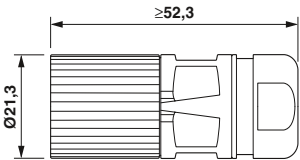


Cable plug-in connector,  
socket assembly



Cable plug-in connector,  
pin assembly

|                                                                    |                     | Ordering data                             |             |           |             | Ordering data                          |             |           |             |
|--------------------------------------------------------------------|---------------------|-------------------------------------------|-------------|-----------|-------------|----------------------------------------|-------------|-----------|-------------|
| Description                                                        | Cable clamping area | Order No.                                 | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No.                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                                                                    |                     | 8-pos.                                    |             | 17-pos.   |             | 8-pos.                                 |             | 17-pos.   |             |
| Cable plug-in connector, with contact carrier,<br>without contacts | 5 mm ... 8 mm       | 1619003                                   | 1           | 1607641   | 1           | 1618995                                | 1           | 1607624   | 1           |
|                                                                    | 8 mm ... 10 mm      | 1619004                                   | 1           | 1607643   | 1           | 1618996                                | 1           | 1607626   | 1           |
|                                                                    | 10 mm ... 12.5 mm   | 1619005                                   | 1           | 1624531   | 1           | 1618997                                | 1           | 1624528   | 1           |
|                                                                    |                     |                                           |             |           |             |                                        |             |           |             |
|                                                                    |                     | Accessories                               |             |           |             | Accessories                            |             |           |             |
| Crimp contacts                                                     |                     | For socket contacts, see page 318 onwards |             |           |             | For pin contacts, see page 318 onwards |             |           |             |
| Color rings, 50 pcs. in set (to be ordered separately)             |                     | See page 412                              |             |           |             | See page 412                           |             |           |             |



M17 to M58 circular plug-in connectors

M17 - signal plug-in connectors

Coupler plug-in connector

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Individual marking of plug-in connectors with color rings

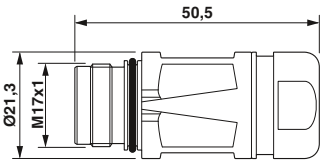


Coupler plug-in connector, socket assembly



Coupler plug-in connector, pin assembly

|                                                                   |                     | Ordering data                             |             |           |             | Ordering data                          |             |           |             |
|-------------------------------------------------------------------|---------------------|-------------------------------------------|-------------|-----------|-------------|----------------------------------------|-------------|-----------|-------------|
| Description                                                       | Cable clamping area | Order No.                                 | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No.                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                                                                   |                     | 8-pos.                                    |             | 17-pos.   |             | 8-pos.                                 |             | 17-pos.   |             |
| Coupler plug-in connector, with contact carrier, without contacts | 5 mm ... 8 mm       | 1619015                                   | 1           | 1607647   | 1           | 1619011                                | 1           | 1607630   | 1           |
|                                                                   | 8 mm ... 10 mm      | 1619016                                   | 1           | 1607649   | 1           | 1619012                                | 1           | 1607631   | 1           |
|                                                                   | 10 mm ... 12.5 mm   | 1619017                                   | 1           | 1624533   | 1           | 1619013                                | 1           | 1624530   | 1           |
|                                                                   |                     |                                           |             |           |             |                                        |             |           |             |
|                                                                   |                     | Accessories                               |             |           |             | Accessories                            |             |           |             |
| Crimp contacts                                                    |                     | For socket contacts, see page 318 onwards |             |           |             | For pin contacts, see page 318 onwards |             |           |             |
| Color rings, 50 pcs. in set (to be ordered separately)            |                     | See page 412                              |             |           |             | See page 412                           |             |           |             |



### Device plug-in connector, straight, front mounting

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Contact insert for support on the device or can be snapped in
- Individual marking of plug-in connectors with color rings

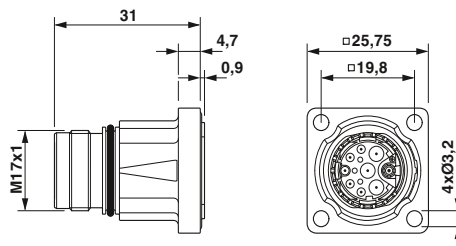


Device plug-in connector, straight, socket assembly

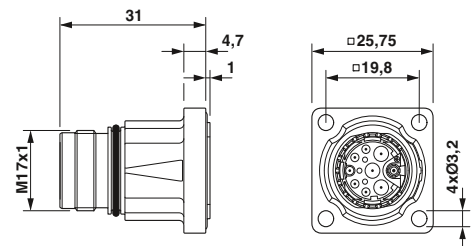


Device plug-in connector, straight, pin assembly

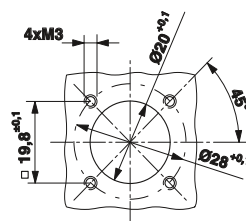
| Description                                                                                                                                                                                                                                                                                                                                          | Ordering data                                                                           |             |                |             | Ordering data                                             |             |                |             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------|----------------|-------------|-----------------------------------------------------------|-------------|----------------|-------------|
|                                                                                                                                                                                                                                                                                                                                                      | Order No.                                                                               | Pcs. / Pkt. | Order No.      | Pcs. / Pkt. | Order No.                                                 | Pcs. / Pkt. | Order No.      | Pcs. / Pkt. |
| <b>Device plug-in connector</b> , with contact carrier, <b>without</b> contacts, contact insert <b>for support</b> on the device<br><br>Flange dimensions: 25.75 mm x 25.75 mm<br><b>Device plug-in connector</b> , with contact carrier, <b>without</b> contacts, contact insert <b>can be snapped in</b><br>Flange dimensions: 25.75 mm x 25.75 mm | <b>8-pos.</b>                                                                           |             | <b>17-pos.</b> |             | <b>8-pos.</b>                                             |             | <b>17-pos.</b> |             |
|                                                                                                                                                                                                                                                                                                                                                      | 1619197                                                                                 | 1           | 1619206        | 1           | 1619196                                                   | 1           | 1619202        | 1           |
|                                                                                                                                                                                                                                                                                                                                                      | 1619220                                                                                 | 1           | 1619226        | 1           | 1619219                                                   | 1           | 1619225        | 1           |
|                                                                                                                                                                                                                                                                                                                                                      | <b>Accessories</b>                                                                      |             |                |             | <b>Accessories</b>                                        |             |                |             |
|                                                                                                                                                                                                                                                                                                                                                      | <b>Crimp contacts</b><br><b>Color rings</b> , 50 pcs. in set (to be ordered separately) |             |                |             | For socket contacts, see page 318 onwards<br>See page 412 |             |                |             |
|                                                                                                                                                                                                                                                                                                                                                      |                                                                                         |             |                |             | For pin contacts, see page 318 onwards<br>See page 412    |             |                |             |



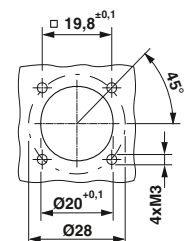
Contact insert for support on the device



Contact insert can be snapped in



Installation dimensions



Installation dimensions



# M17 to M58 circular plug-in connectors

## M17 - signal plug-in connectors

### Device plug-in connector, angled, rotatable, front mounting

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Housing can be freely rotated up to 308°
- Individual marking of plug-in connectors with color rings
- Flange versions for M2.5/M3 attachment

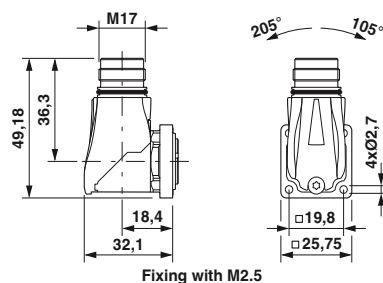


Device plug-in connector, angled, rotatable, for socket contacts

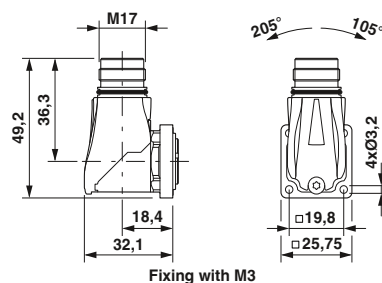


Device plug-in connector, angled, rotatable, for pin contacts

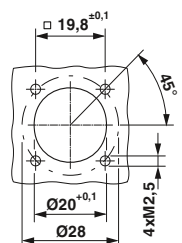
| Description                                                                                             | Ordering data                                                            |             |           |             | Ordering data                                             |             |           |             |
|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------|-----------|-------------|-----------------------------------------------------------|-------------|-----------|-------------|
|                                                                                                         | Order No.                                                                | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No.                                                 | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                                                                                                         | 8-pos.                                                                   |             | 17-pos.   |             | 8-pos.                                                    |             | 17-pos.   |             |
| Device plug-in connector, angled, rotatable, with contact carrier, without contacts<br>Fixing with M2.5 | 1620440                                                                  | 1           | 1620442   | 1           | 1620439                                                   | 1           | 1620441   | 1           |
| Device plug-in connector, angled, rotatable, with contact carrier, without contacts<br>Fixing with M3   | 1620455                                                                  | 1           | 1620457   | 1           | 1620456                                                   | 1           | 1620458   | 1           |
| Accessories                                                                                             | Accessories                                                              |             |           |             | Accessories                                               |             |           |             |
|                                                                                                         | Crimp contacts<br>Color rings, 50 pcs. in set (to be ordered separately) |             |           |             | For socket contacts, see page 318 onwards<br>See page 412 |             |           |             |
|                                                                                                         |                                                                          |             |           |             | For pin contacts, see page 318 onwards<br>See page 412    |             |           |             |



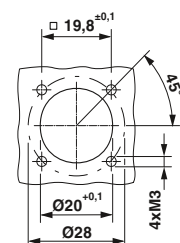
Fixing with M2.5



Fixing with M3



Installation dimensions



Installation dimensions

### Device plug-in connector, central fastening thread, front/rear mounting

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Contact carrier snapped in from the device side
- Individual marking of plug-in connectors with color rings



Device plug-in connector, central fixing,  
socket assembly



Device plug-in connector, central fixing,  
pin assembly

| Description                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------|
| Device plug-in connector, <b>front mounting</b> , M18 x 0.75 fastening thread, with contact carrier, without contacts |
| Device plug-in connector, <b>rear mounting</b> , M20 x 1.5 fastening thread, with contact carrier, without contacts   |

| Description                                                               |
|---------------------------------------------------------------------------|
| <b>Locking nut</b> , for mounting bore holes and anti-rotation protection |
| M18 x 0.75                                                                |
| M20 x 1.5                                                                 |
| <b>Crimp contacts</b>                                                     |
| <b>Color rings</b> , 50 pcs. in set (to be ordered separately)            |

| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 8-pos.        |             | 17-pos.   |             |

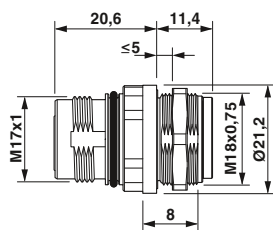
|         |   |         |   |
|---------|---|---------|---|
| 1619036 | 1 | 1613542 | 1 |
| 1619035 | 1 | 1613543 | 1 |

| Accessories                                               |           |             |  |
|-----------------------------------------------------------|-----------|-------------|--|
| Type                                                      | Order No. | Pcs. / Pkt. |  |
| ST-E2015151                                               | 1613831   | 10          |  |
| RC-13041                                                  | 1600417   | 10          |  |
| For socket contacts, see page 318 onwards<br>See page 412 |           |             |  |

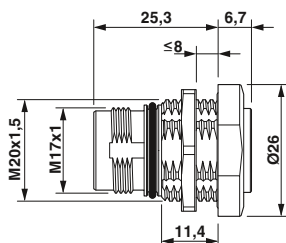
| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 8-pos.        |             | 17-pos.   |             |

|         |   |         |   |
|---------|---|---------|---|
| 1618584 | 1 | 1613540 | 1 |
| 1619034 | 1 | 1613541 | 1 |

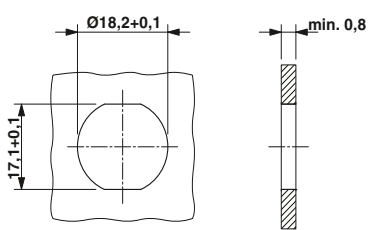
| Accessories                                            |           |             |  |
|--------------------------------------------------------|-----------|-------------|--|
| Type                                                   | Order No. | Pcs. / Pkt. |  |
| ST-E2015151                                            | 1613831   | 10          |  |
| RC-13041                                               | 1600417   | 10          |  |
| For pin contacts, see page 318 onwards<br>See page 412 |           |             |  |



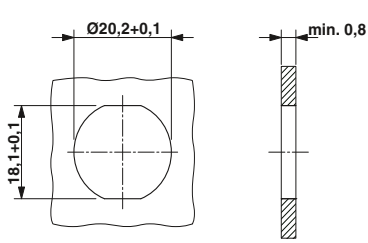
Front mounting, M18 x 0.75,  
order locking nut separately



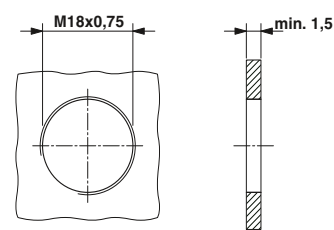
Rear mounting, M20 x 1.5,  
order locking nut separately



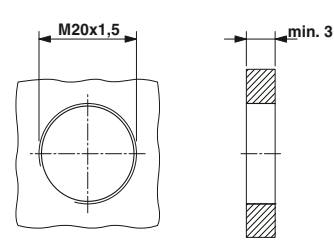
Installation dimensions: mounting  
with anti-rotation protection and locking nut



Installation dimensions: mounting  
with anti-rotation protection and locking nut



Installation dimensions: mounting with thread



Installation dimensions: mounting with thread

## M17 to M58 circular plug-in connectors

### M17 - signal plug-in connectors

#### Crimp contacts, punched-rolled

C-HC® are punched-rolled contacts. They are designed for high insertion/withdrawal cycles.

The contacts are available taped on rolls for manual or automatic processing.

**Note:** depending on the litz wire used, the connection cross sections (crimp ranges) may deviate from the listed values. For reasons of safety, only socket contacts may be used in the live part of the plug.



C-HC socket contacts



C-HC pin contacts

| Description                                                           | Connection cross section [mm²] |
|-----------------------------------------------------------------------|--------------------------------|
| <b>Crimp contacts</b> , C-HC punched-rolled, Ø 1.0 mm, 2500 pcs./roll |                                |
|                                                                       | 0.06 mm² ... 0.25 mm²          |
|                                                                       | 0.2 mm² ... 0.56 mm²           |
| <b>Crimp contact</b> C-HC punched-rolled, Ø 1.0 mm, 10,000 pcs./roll  |                                |
|                                                                       | 0.06 mm² ... 0.25 mm²          |
|                                                                       | 0.2 mm² ... 0.56 mm²           |

Crimping tools

| Ordering data |           |             |
|---------------|-----------|-------------|
| Type          | Order No. | Pcs. / Pkt. |
| SF-10KS320    | 1607031   | 1           |
| SF-10KS350    | 1607032   | 1           |
| SF-10KS330    | 1607358   | 1           |
| SF-10KS360    | 1607361   | 1           |

| Accessories                    |  |
|--------------------------------|--|
| Order separately, see page 406 |  |

| Ordering data |           |             |
|---------------|-----------|-------------|
| Type          | Order No. | Pcs. / Pkt. |
| SF-10KP320    | 1615961   | 1           |
| SF-10KP350    | 1615963   | 1           |
| SF-10KP330    | 1615962   | 1           |
| SF-10KP360    | 1615964   | 1           |

| Accessories                    |  |
|--------------------------------|--|
| Order separately, see page 406 |  |

## Crimp contacts, turned

M17 signal plug-in connectors are fitted with contacts with Ø 1.0 mm or Ø 0.6 mm depending on the number of positions.

- 8-pos. versions: contacts with Ø 1.0 mm
- 17-pos. versions: contacts with Ø 0.6 mm

**Note:**

Depending on the litz wire used, the connection cross sections (crimp ranges) may deviate from the values listed below.



Crimp contacts, socket



Crimp contacts, pin

|                         |                                | Ordering data                  |           |             | Ordering data                  |           |             |
|-------------------------|--------------------------------|--------------------------------|-----------|-------------|--------------------------------|-----------|-------------|
| Description             | Connection cross section [mm²] | Type                           | Order No. | Pcs. / Pkt. | Type                           | Order No. | Pcs. / Pkt. |
| Contact socket Ø 0.6 mm | 0.06 mm² ... 0.25 mm²          | ST-06KS010                     | 1607580   | 100         |                                |           |             |
|                         | 0.14 mm² ... 0.34 mm²          | ST-06KS020                     | 1607581   | 100         |                                |           |             |
|                         | 0.34 mm² ... 0.50 mm²          | ST-06KS030                     | 1607582   | 100         |                                |           |             |
| Contact socket Ø 1.0 mm | 0.06 mm² ... 0.25 mm²          | ST-10KS010                     | 1618239   | 100         |                                |           |             |
|                         | 0.34 mm² ... 0.5 mm²           | ST-10KS020                     | 1618251   | 100         |                                |           |             |
|                         | 0.5 mm² ... 1.0 mm²            | ST-10KS030                     | 1618254   | 100         |                                |           |             |
| Contact pin Ø 0.6 mm    | 0.06 mm² ... 0.25 mm²          |                                |           |             | ST-06KP010                     | 1607577   | 100         |
|                         | 0.14 mm² ... 0.34 mm²          |                                |           |             | ST-06KP020                     | 1607578   | 100         |
|                         | 0.34 mm² ... 0.50 mm²          |                                |           |             | ST-06KP030                     | 1607579   | 100         |
| Contact pin Ø 1.0 mm    | 0.06 mm² ... 0.25 mm²          |                                |           |             | ST-10KP010                     | 1618255   | 100         |
|                         | 0.34 mm² ... 0.5 mm²           |                                |           |             | ST-10KP020                     | 1618256   | 100         |
|                         | 0.5 mm² ... 1.0 mm²            |                                |           |             | ST-10KP030                     | 1618261   | 100         |
|                         |                                | Accessories                    |           |             | Accessories                    |           |             |
| Crimping tools          |                                | Order separately, see page 407 |           |             | Order separately, see page 407 |           |             |

**Notes:**

Every plug-in connector housing type can be fitted with pin or socket contacts.

For reasons of safety, only socket contacts may be used in the live part of the plug.

# M17 to M58 circular plug-in connectors

## M23 - signal plug-in connectors

### Mechanical and electrical data

| Mechanical data                         |                                                                                                             |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------|
| Housing material:                       | Copper zinc alloy (CuZn), die-cast zinc (GD-Zn)                                                             |
| Housing surface:                        | Nickel-plated/thick layer passivated (can be coated)                                                        |
| Insulating body:                        | Thermoplastic polyester (PBT), polyamide (PA 66)                                                            |
| Contact material:                       | Copper zinc alloy (CuZn)                                                                                    |
| Contact surface:                        | Nickel-plated (Ni) with gold coating (Au)                                                                   |
| Contact connection method:              | Solder cup, crimp, solder-in pin                                                                            |
| Sealing and O-ring:                     | NBR                                                                                                         |
| Flat gasket:                            | NBR, fiber reinforced NBR                                                                                   |
| Temperature range:                      | -40°C ... +125°C                                                                                            |
| Cable entry:                            | cable and coupler plug-in connectors for cable outside diameter of 3 - 14.5 mm, shielded                    |
| Type of locking:                        | M23 SPEEDCON rapid interlock system,<br>Cable plug-in connector optionally with M23 x 1 coarse-pitch thread |
| Mechanical insertion/withdrawal cycles: | Standard: 100, punched-rolled C-HC crimp contacts: up to 500                                                |
| Protection class:                       | IP67 in the locked state                                                                                    |

| Electrical data                                   |            |            |            |   |            |            |            |                    |
|---------------------------------------------------|------------|------------|------------|---|------------|------------|------------|--------------------|
| Number of positions                               | 6          | 7          | 9 (8+1)    |   | 12         | 17         | 19 (16+3)  |                    |
| Contacts                                          | 6          | 7          | 8          | + | 1          | 12         | 17         | 16 + 3             |
| Contact Ø [mm]                                    | 2          | 2          | 1          |   | 2          | 1          | 1          | 1.5                |
| Litz wire cross section                           |            |            |            |   |            |            |            |                    |
| Solder connection: contacts x [mm²] maximum       | 6 x 2.5    | 7 x 2.5    | 8 x 1.0    | + | 1 x 2.5    | 12 x 1.0   | 17 x 1.0   | 16 x 1.0 + 3 x 1.0 |
| Crimp connection: contacts x [mm²] maximum        | 6 x 2.5    | 7 x 2.5    | 8 x 0.56   | + | 1 x 2.5    | 12 x 0.56  | 17 x 0.56  | 16 x 1.0 + 3 x 1.0 |
| Nominal current per contact at 25°C <sup>1)</sup> | 20         | 20         | 8          |   | 20         | 8          | 8          | 10                 |
| Specifications according to DIN EN 61984:2009     |            |            |            |   |            |            |            |                    |
| Rated voltage [V AC/DC]                           | 300        | 300        | 300        |   | 150        | 150        | 150        |                    |
| Test/surge voltage [kV AC]                        | 2.5        | 2.5        | 2.5        |   | 1.5        | 1.5        | 1.5        |                    |
| Surge voltage category                            | II         | II         | II         |   | II         | II         | II         |                    |
| Pollution degree <sup>2)</sup>                    | 3          | 3          | 3          |   | 3          | 3          | 3          |                    |
| Installation height [m]                           | Up to 2000 | Up to 2000 | Up to 2000 |   | Up to 2000 | Up to 2000 | Up to 2000 |                    |
| Cable clamping area <sup>3)</sup> max. Ø [mm]     | 14.5       | 14.5       | 14.5       |   | 14.5       | 14.5       | 14.5       |                    |

<sup>1)</sup> The effective current carrying capacity must be determined via a derating curve, if necessary, according to the application.

<sup>2)</sup> The values specified assume that the plug-in connector pair is correctly locked and is only disconnected for testing and maintenance purposes. If the plug-in connector is unlocked and exposed to ambient conditions, and if there is a danger of contamination, the plug-in connector must be sealed using a protective cap ≥ IP54.

<sup>3)</sup> The cable clamping areas specified on the following pages may vary depending on the cable material/structure. Selection and testing is the responsibility of the user.

#### Note:

Unlike plug-in equipment, plug-in connectors must not be plugged or unplugged under load.

| Contact chamber numbering<br>(view of plug-in side)                              |                      |                              |
|----------------------------------------------------------------------------------|----------------------|------------------------------|
| Direction of rotation for<br>contact chamber numbering<br>(view of plug-in side) |                      |                              |
|                                                                                  | Clockwise (standard) | Counter-clockwise (standard) |
| Number of positions                                                              | Pin                  | Socket                       |
| <b>6-pos.</b><br>Solder/crimp/solder-in                                          |                      |                              |
| <b>7-pos.</b><br>Solder/crimp/solder-in                                          |                      |                              |
| <b>9-pos. (8+1)</b><br>Solder/crimp/solder-in                                    |                      |                              |
| <b>12-pos.</b><br>Solder/crimp/solder-in                                         |                      |                              |
| <b>17-pos.</b><br>Solder/crimp/solder-in                                         |                      |                              |
| <b>19-pos. (16+3)</b><br>Solder/crimp                                            |                      |                              |

**Note:**

The plug-in connectors can be equipped with pin or socket contacts according to the application.

For reasons of safety, only socket contacts may be used in the live part of the plug.

# M17 to M58 circular plug-in connectors

## M23 - signal plug-in connectors

### Selection guide

M23 signal plug-in connector, 6 to 19-pos., up to 20 A/300 V, solder, crimp, and solder-in connection.

- Cable plug-in connectors
- Coupler plug-in connectors
- Device plug-in connectors (device flanges)

In the case of crimp connection, the respective crimp contacts must be added according to the connection cross section.

Each housing type can be equipped with pin or socket contacts. The product chart provides an overview of the available components.

### Plug-in connector type

#### Cable plug-in connectors

SPEEDCON rapid interlock system, see page 324.

M23 x 1 standard interlocking, see page 325.



Shielded

#### Coupler plug-in connectors

See page 326.



Shielded

#### Device plug-in connectors

Front mounting, Pg13.5 fastening thread, see page 327.

Front mounting, M20 fastening thread, see page 328.



Front mounting, flange dimensions 25 mm x 25 mm, see page 329.

Front mounting, solder-in connection flange dimensions 25 mm x 25 mm, see page 330.



Rear mounting, central fastening nut, see page 332.



Shielded

**For crimp connection:****Socket contacts**

Turned, see page 334.



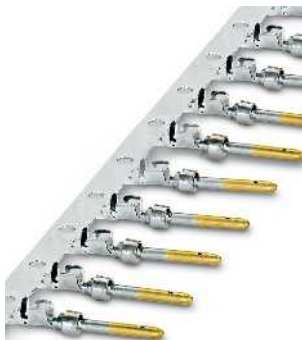
Rolled, taped,  
see page 334.

**Pin contacts**

Turned, see page 334.



Rolled, taped,  
see page 334.



All housing can be fitted with pin or socket crimp contacts

**Tools/accessories****Crimping tools**

Crimping pliers for rolled  
crimp contacts,  
see page 404.



Crimping pliers with digital display for turned  
crimp contacts,  
see page 404.

**Tools/accessories**

Contact removal tool for device plug-in connec-  
tors for releasing the contact carriers from the  
plug-in side,  
see page 410.



Color rings for individually marking the plug-in  
connectors,  
see page 412.

**Note:**

For reasons of safety, only socket  
contacts may be used in the live part  
of the plug.



# M17 to M58 circular plug-in connectors

## M23 - signal plug-in connectors

### Cable plug-in connector, SPEEDCON rapid interlock system

- 6 to 19-pos. versions, solder/crimp connection
- Individual marking of plug-in connectors with color rings



6, 7, 8+1-pos.

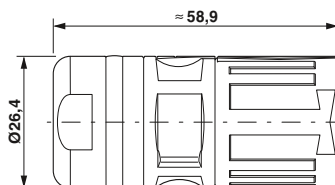
N



12, 17, 16+3-pos.

N

|                                                                                                               |                     | Ordering data                          |             |           | Ordering data                          |           |             |
|---------------------------------------------------------------------------------------------------------------|---------------------|----------------------------------------|-------------|-----------|----------------------------------------|-----------|-------------|
| Description                                                                                                   | Cable clamping area | Order No.                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt.                            | Order No. | Pcs. / Pkt. |
|                                                                                                               |                     | 6-pos.                                 |             | 7-pos.    |                                        | 8+1-pos.  |             |
| <b>Cable plug-in connector, with contact carrier, with socket contacts, solder connection</b>                 |                     |                                        |             |           |                                        |           |             |
| Universal gasket                                                                                              | 3 mm ... 14.5 mm    | 1619605                                | 1           | 1619601   | 1                                      | 1619597   | 1           |
|                                                                                                               | 4 mm ... 6 mm       | 1619579                                | 1           | 1619575   | 1                                      | 1619571   | 1           |
|                                                                                                               | 6 mm ... 10 mm      | 1619534                                | 1           | 1619530   | 1                                      | 1619526   | 1           |
|                                                                                                               | 10 mm ... 14.5 mm   | 1619508                                | 1           | 1619504   | 1                                      | 1619500   | 1           |
| <b>Cable plug-in connector, with contact carrier, with pin contacts, solder connection</b>                    |                     |                                        |             |           |                                        |           |             |
| Universal gasket                                                                                              | 3 mm ... 14.5 mm    | 1619604                                | 1           | 1619600   | 1                                      | 1619596   | 1           |
|                                                                                                               | 4 mm ... 6 mm       | 1619578                                | 1           | 1619574   | 1                                      | 1619570   | 1           |
|                                                                                                               | 6 mm ... 10 mm      | 1619533                                | 1           | 1619529   | 1                                      | 1619525   | 1           |
|                                                                                                               | 10 mm ... 14.5 mm   | 1619507                                | 1           | 1619503   | 1                                      | 1619499   | 1           |
| <b>Cable plug-in connector, with contact carrier, without contacts, for socket assembly, crimp connection</b> |                     |                                        |             |           |                                        |           |             |
| Universal gasket                                                                                              | 3 mm ... 14.5 mm    | 1619603                                | 1           | 1619599   | 1                                      | 1619595   | 1           |
|                                                                                                               | 4 mm ... 6 mm       | 1619577                                | 1           | 1619573   | 1                                      | 1619569   | 1           |
|                                                                                                               | 6 mm ... 10 mm      | 1619532                                | 1           | 1619528   | 1                                      | 1619524   | 1           |
|                                                                                                               | 10 mm ... 14.5 mm   | 1619506                                | 1           | 1619502   | 1                                      | 1619498   | 1           |
| <b>Cable plug-in connector, with contact carrier, without contacts, for pin assembly, crimp connection</b>    |                     |                                        |             |           |                                        |           |             |
| Universal gasket                                                                                              | 3 mm ... 14.5 mm    | 1619602                                | 1           | 1619598   | 1                                      | 1619594   | 1           |
|                                                                                                               | 4 mm ... 6 mm       | 1619576                                | 1           | 1619572   | 1                                      | 1619568   | 1           |
|                                                                                                               | 6 mm ... 10 mm      | 1619531                                | 1           | 1619527   | 1                                      | 1619523   | 1           |
|                                                                                                               | 10 mm ... 14.5 mm   | 1619505                                | 1           | 1619501   | 1                                      | 1619497   | 1           |
|                                                                                                               |                     | Accessories                            |             |           | Accessories                            |           |             |
| For crimp connection: crimp contacts                                                                          |                     | Order separately, see page 334 onwards |             |           | Order separately, see page 334 onwards |           |             |
| Color rings, 50 pcs. in set (to be ordered separately)                                                        |                     | See page 412                           |             |           | See page 412                           |           |             |



### Cable plug-in connector, M23 standard interlocking

- Standard knurled nuts compatible with mating plugs with SPEEDCON or M23 standard external thread
- 6 to 19-pos. versions, solder/crimp connection
- Individual marking of plug-in connectors with color rings

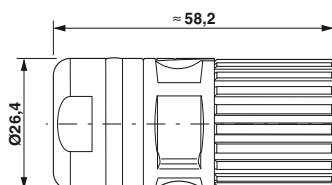


6, 7, 8+1-pos.



12, 17, 16+3-pos.

|                                                                                                               |                     | Ordering data                          |             |           | Ordering data                          |           |             |
|---------------------------------------------------------------------------------------------------------------|---------------------|----------------------------------------|-------------|-----------|----------------------------------------|-----------|-------------|
| Description                                                                                                   | Cable clamping area | Order No.                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt.                            | Order No. | Pcs. / Pkt. |
|                                                                                                               |                     | 6-pos.                                 |             | 7-pos.    |                                        | 8+1-pos.  |             |
| <b>Cable plug-in connector, with contact carrier, with socket contacts, solder connection</b>                 |                     |                                        |             |           |                                        |           |             |
| Universal gasket                                                                                              | 3 mm ... 14.5 mm    | 1619776                                | 1           | 1619772   | 1                                      | 1619768   | 1           |
|                                                                                                               | 4 mm ... 6 mm       | 1619750                                | 1           | 1619746   | 1                                      | 1619742   | 1           |
|                                                                                                               | 6 mm ... 10 mm      | 1619724                                | 1           | 1619720   | 1                                      | 1619716   | 1           |
|                                                                                                               | 10 mm ... 14.5 mm   | 1619659                                | 1           | 1619655   | 1                                      | 1619651   | 1           |
| <b>Cable plug-in connector, with contact carrier, with pin contacts, solder connection</b>                    |                     |                                        |             |           |                                        |           |             |
| Universal gasket                                                                                              | 3 mm ... 14.5 mm    | 1619775                                | 1           | 1619771   | 1                                      | 1619767   | 1           |
|                                                                                                               | 4 mm ... 6 mm       | 1619749                                | 1           | 1619745   | 1                                      | 1619741   | 1           |
|                                                                                                               | 6 mm ... 10 mm      | 1619723                                | 1           | 1619719   | 1                                      | 1619715   | 1           |
|                                                                                                               | 10 mm ... 14.5 mm   | 1619658                                | 1           | 1619654   | 1                                      | 1619650   | 1           |
| <b>Cable plug-in connector, with contact carrier, without contacts, for socket assembly, crimp connection</b> |                     |                                        |             |           |                                        |           |             |
| Universal gasket                                                                                              | 3 mm ... 14.5 mm    | 1619774                                | 1           | 1619770   | 1                                      | 1619766   | 1           |
|                                                                                                               | 4 mm ... 6 mm       | 1619748                                | 1           | 1619744   | 1                                      | 1619740   | 1           |
|                                                                                                               | 6 mm ... 10 mm      | 1619722                                | 1           | 1619718   | 1                                      | 1619714   | 1           |
|                                                                                                               | 10 mm ... 14.5 mm   | 1619657                                | 1           | 1619653   | 1                                      | 1619649   | 1           |
| <b>Cable plug-in connector, with contact carrier, without contacts, for pin assembly, crimp connection</b>    |                     |                                        |             |           |                                        |           |             |
| Universal gasket                                                                                              | 3 mm ... 14.5 mm    | 1619773                                | 1           | 1619769   | 1                                      | 1619765   | 1           |
|                                                                                                               | 4 mm ... 6 mm       | 1619747                                | 1           | 1619743   | 1                                      | 1619739   | 1           |
|                                                                                                               | 6 mm ... 10 mm      | 1619721                                | 1           | 1619717   | 1                                      | 1619711   | 1           |
|                                                                                                               | 10 mm ... 14.5 mm   | 1619656                                | 1           | 1619652   | 1                                      | 1619648   | 1           |
|                                                                                                               |                     | Accessories                            |             |           | Accessories                            |           |             |
| For crimp connection: crimp contacts                                                                          |                     | Order separately, see page 334 onwards |             |           | Order separately, see page 334 onwards |           |             |
| Color rings, 50 pcs. in set (to be ordered separately)                                                        |                     | See page 412                           |             |           | See page 412                           |           |             |



# M17 to M58 circular plug-in connectors

## M23 - signal plug-in connectors

### Coupler plug-in connector

- Compatible with mating plugs with SPEEDCON or M23 standard knurled nuts
- 6 to 19-pos. versions, solder/crimp connection
- Individual marking of plug-in connectors with color rings

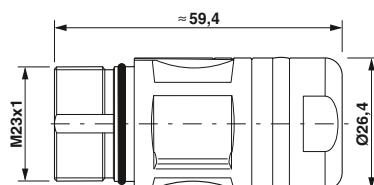


6, 7, 8+1-pos.



12, 17, 16+3-pos.

|                                                                                                                 |                     | Ordering data                                          |             |           | Ordering data                                          |           |             |
|-----------------------------------------------------------------------------------------------------------------|---------------------|--------------------------------------------------------|-------------|-----------|--------------------------------------------------------|-----------|-------------|
| Description                                                                                                     | Cable clamping area | Order No.                                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt.                                            | Order No. | Pcs. / Pkt. |
|                                                                                                                 |                     | 6-pos.                                                 |             | 7-pos.    |                                                        | 8+1-pos.  |             |
| <b>Coupler plug-in connector, with contact carrier, with socket contacts, solder connection</b>                 |                     |                                                        |             |           |                                                        |           |             |
| Universal gasket                                                                                                | 3 mm ... 14.5 mm    | 1620172                                                | 1           | 1620168   | 1                                                      | 1620164   | 1           |
|                                                                                                                 | 4 mm ... 6 mm       | 1620145                                                | 1           | 1620141   | 1                                                      | 1620137   | 1           |
|                                                                                                                 | 6 mm ... 10 mm      | 1620119                                                | 1           | 1620115   | 1                                                      | 1620079   | 1           |
|                                                                                                                 | 10 mm ... 14.5 mm   | 1620046                                                | 1           | 1620042   | 1                                                      | 1620036   | 1           |
| <b>Coupler plug-in connector, with contact carrier, with pin contacts, solder connection</b>                    |                     |                                                        |             |           |                                                        |           |             |
| Universal gasket                                                                                                | 3 mm ... 14.5 mm    | 1620171                                                | 1           | 1620167   | 1                                                      | 1620163   | 1           |
|                                                                                                                 | 4 mm ... 6 mm       | 1620144                                                | 1           | 1620140   | 1                                                      | 1620136   | 1           |
|                                                                                                                 | 6 mm ... 10 mm      | 1620118                                                | 1           | 1620114   | 1                                                      | 1620078   | 1           |
|                                                                                                                 | 10 mm ... 14.5 mm   | 1620045                                                | 1           | 1620041   | 1                                                      | 1620035   | 1           |
| <b>Coupler plug-in connector, with contact carrier, without contacts, for socket assembly, crimp connection</b> |                     |                                                        |             |           |                                                        |           |             |
| Universal gasket                                                                                                | 3 mm ... 14.5 mm    | 1620170                                                | 1           | 1620166   | 1                                                      | 1620162   | 1           |
|                                                                                                                 | 4 mm ... 6 mm       | 1620143                                                | 1           | 1620139   | 1                                                      | 1620135   | 1           |
|                                                                                                                 | 6 mm ... 10 mm      | 1620117                                                | 1           | 1620081   | 1                                                      | 1620077   | 1           |
|                                                                                                                 | 10 mm ... 14.5 mm   | 1620044                                                | 1           | 1620038   | 1                                                      | 1620034   | 1           |
| <b>Coupler plug-in connector, with contact carrier, without contacts, for pin assembly, crimp connection</b>    |                     |                                                        |             |           |                                                        |           |             |
| Universal gasket                                                                                                | 3 mm ... 14.5 mm    | 1620169                                                | 1           | 1620165   | 1                                                      | 1620161   | 1           |
|                                                                                                                 | 4 mm ... 6 mm       | 1620142                                                | 1           | 1620138   | 1                                                      | 1620134   | 1           |
|                                                                                                                 | 6 mm ... 10 mm      | 1620116                                                | 1           | 1620080   | 1                                                      | 1620076   | 1           |
|                                                                                                                 | 10 mm ... 14.5 mm   | 1620043                                                | 1           | 1620037   | 1                                                      | 1620033   | 1           |
|                                                                                                                 |                     | Accessories                                            |             |           | Accessories                                            |           |             |
| For crimp connection: crimp contacts<br><b>Color rings</b> , 50 pcs. in set (to be ordered separately)          |                     | Order separately, see page 334 onwards<br>See page 412 |             |           | Order separately, see page 334 onwards<br>See page 412 |           |             |



## Device plug-in connectors, front mounting

N

N

### – Pg13.5 fastening thread

- Compatible with mating plugs with SPEEDCON or M23 standard knurled nuts
- 6 to 19-pos. versions, solder/crimp connection
- Individual marking of plug-in connectors with color rings



6, 7, 8+1-pos.



12, 17, 16+3-pos.

| Description                                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Device plug-in connector, with contact carrier, with <b>socket contacts</b> , <b>solder connection</b> , <b>Pg13.5 central fastening thread</b> , axial seal                         |
| Device plug-in connector, with contact carrier, with <b>pin contacts</b> , <b>solder connection</b> , <b>Pg13.5 central fastening thread</b> , axial seal                            |
| Device plug-in connector, with contact carrier, <b>without contacts</b> , for <b>socket assembly</b> , <b>crimp connection</b> , <b>Pg13.5 central fastening thread</b> , axial seal |
| Device plug-in connector, with contact carrier, <b>without contacts</b> , for <b>pin assembly</b> , <b>crimp connection</b> , <b>Pg13.5 central fastening thread</b> , axial seal    |

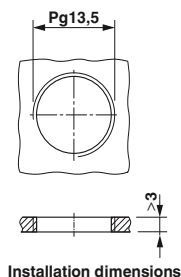
| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 6-pos.        |             | 7-pos.    |             | 8+1-pos.  |             |
| 1619903       | 1           | 1619899   | 1           | 1619895   | 1           |
| 1619902       | 1           | 1619898   | 1           | 1619894   | 1           |
| 1619901       | 1           | 1619897   | 1           | 1619893   | 1           |
| 1619900       | 1           | 1619896   | 1           | 1619892   | 1           |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 12-pos.       |             | 17-pos.   |             | 16+3-pos. |             |
| 1619891       | 1           | 1619883   | 1           | 1619879   | 1           |
| 1619890       | 1           | 1619882   | 1           | 1619878   | 1           |
| 1619889       | 1           | 1619881   | 1           |           |             |
| 1619888       | 1           | 1619880   | 1           |           |             |

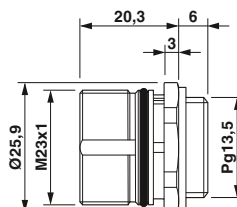
| Accessories                                            |  |  |  |  |  |
|--------------------------------------------------------|--|--|--|--|--|
| Order separately, see page 334 onwards<br>See page 412 |  |  |  |  |  |

| Accessories                                            |  |  |  |  |  |
|--------------------------------------------------------|--|--|--|--|--|
| Order separately, see page 334 onwards<br>See page 412 |  |  |  |  |  |

For crimp connection: crimp contacts  
Color rings, 50 pcs. in set (to be ordered separately)



Installation dimensions



# M17 to M58 circular plug-in connectors

## M23 - signal plug-in connectors

### Device plug-in connectors, front mounting

#### – M20 fastening thread

- Compatible with mating plugs with SPEEDCON or M23 standard knurled nuts
- 6 to 19-pos. versions, solder/crimp connection
- Individual marking of plug-in connectors with color rings



6, 7, 8+1-pos.



12, 17, 16+3-pos.

| Description                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Device plug-in connector, with contact carrier, with socket contacts, solder connection, M20 central fastening thread, axial seal</b>                 |
| <b>Device plug-in connector, with contact carrier, with pin contacts, solder connection, M20 central fastening thread, axial seal</b>                    |
| <b>Device plug-in connector, with contact carrier, without contacts, for socket assembly, crimp connection, M20 central fastening thread, axial seal</b> |
| <b>Device plug-in connector, with contact carrier, without contacts, for pin assembly, crimp connection, M20 central fastening thread, axial seal</b>    |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 6-pos.        |             | 7-pos.    |             | 8+1-pos.  |             |

|         |   |         |   |         |   |
|---------|---|---------|---|---------|---|
| 1619877 | 1 | 1619873 | 1 | 1619869 | 1 |
| 1619876 | 1 | 1619872 | 1 | 1619868 | 1 |

|         |   |         |   |         |   |
|---------|---|---------|---|---------|---|
| 1619875 | 1 | 1619871 | 1 | 1619867 | 1 |
| 1619874 | 1 | 1619870 | 1 | 1619866 | 1 |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 12-pos.       |             | 17-pos.   |             | 16+3-pos. |             |

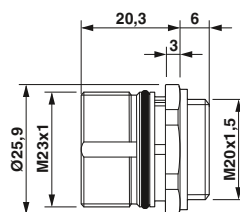
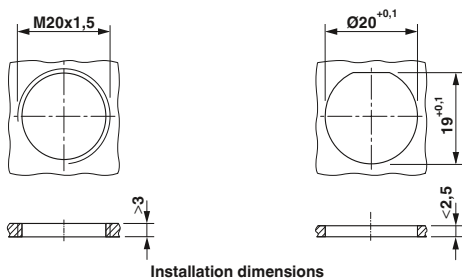
|         |   |         |   |         |   |
|---------|---|---------|---|---------|---|
| 1619865 | 1 | 1619857 | 1 | 1619853 | 1 |
| 1619864 | 1 | 1619856 | 1 | 1619852 | 1 |

|         |   |         |   |  |  |
|---------|---|---------|---|--|--|
| 1619863 | 1 | 1619855 | 1 |  |  |
| 1619862 | 1 | 1619854 | 1 |  |  |

| Description                                                              |
|--------------------------------------------------------------------------|
| <b>Locking nut, for mounting bore holes and anti-rotation protection</b> |
| M20 x 1.5                                                                |
| For crimp connection: crimp contacts                                     |
| <b>Color rings, 50 pcs. in set (to be ordered separately)</b>            |

| Accessories                                            |           |             |  |
|--------------------------------------------------------|-----------|-------------|--|
| Type                                                   | Order No. | Pcs. / Pkt. |  |
| RC-13041                                               | 1600417   | 10          |  |
| Order separately, see page 334 onwards<br>See page 412 |           |             |  |

| Accessories                                            |           |             |  |
|--------------------------------------------------------|-----------|-------------|--|
| Type                                                   | Order No. | Pcs. / Pkt. |  |
| RC-13041                                               | 1600417   | 10          |  |
| Order separately, see page 334 onwards<br>See page 412 |           |             |  |



## Device plug-in connectors, front mounting

- Flange dimensions 25 mm x 25 mm
- Compatible with mating plugs with SPEEDCON or M23 standard knurled nuts
- 6 to 19-pos. versions, solder/crimp connection
- Individual marking of plug-in connectors with color rings



6, 7, 8+1-pos.

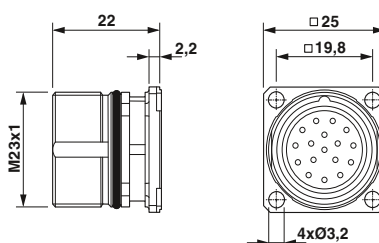
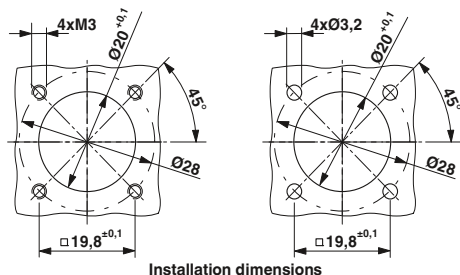


12, 17, 16+3-pos.

| Description                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------|
| Device plug-in connector, with contact carrier, with <b>socket contacts</b> , solder connection, flat gasket                        |
| Device plug-in connector, with contact carrier, with <b>pin contacts</b> , solder connection, flat gasket                           |
| Device plug-in connector, with contact carrier, <b>without</b> contacts, for <b>socket assembly</b> , crimp connection, flat gasket |
| Device plug-in connector, with contact carrier, <b>without</b> contacts, for <b>pin assembly</b> , crimp connection, flat gasket    |
| For crimp connection: crimp contacts<br><b>Color rings</b> , 50 pcs. in set (to be ordered separately)                              |

| Ordering data                                          |             |           |             |           |             |
|--------------------------------------------------------|-------------|-----------|-------------|-----------|-------------|
| Order No.                                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 6-pos.                                                 |             | 7-pos.    |             | 8+1-pos.  |             |
| 1619993                                                | 1           | 1619989   | 1           | 1619973   | 1           |
| 1619992                                                | 1           | 1619988   | 1           | 1619972   | 1           |
| 1619991                                                | 1           | 1619987   | 1           | 1619971   | 1           |
| 1619990                                                | 1           | 1619986   | 1           | 1619970   | 1           |
| Accessories                                            |             |           |             |           |             |
| Order separately, see page 334 onwards<br>See page 412 |             |           |             |           |             |

| Ordering data                                          |             |           |             |           |             |
|--------------------------------------------------------|-------------|-----------|-------------|-----------|-------------|
| Order No.                                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 12-pos.                                                |             | 17-pos.   |             | 16+3-pos. |             |
| 1619969                                                | 1           | 1619961   | 1           | 1619957   | 1           |
| 1619968                                                | 1           | 1619960   | 1           | 1619956   | 1           |
| 1619967                                                | 1           | 1619959   | 1           |           |             |
| 1619966                                                | 1           | 1619958   | 1           |           |             |
| Accessories                                            |             |           |             |           |             |
| Order separately, see page 334 onwards<br>See page 412 |             |           |             |           |             |



# M17 to M58 circular plug-in connectors

## M23 - signal plug-in connectors

### Device plug-in connectors, front mounting

- Flange dimensions 25 mm x 25 mm
- Compatible with mating plugs with SPEEDCON or M23 standard knurled nuts
- 6 to 17-pos., **solder-in connection**
- Individual marking of plug-in connectors with color rings



6, 7, 8+1-pos.

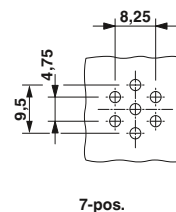
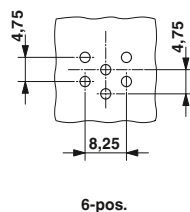
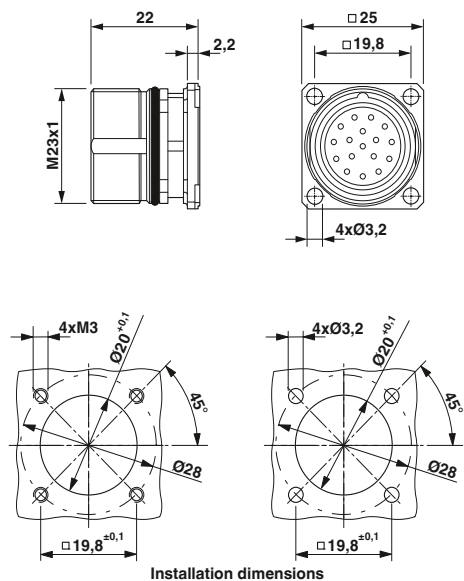


12, 17-pos.

| Description                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Device plug-in connector</b> , with contact carrier, with contacts, solder-in connection, <b>free solder pin length of 3.5 mm</b> , flat gasket  |
| Socket                                                                                                                                              |
| Plug                                                                                                                                                |
| <b>Device plug-in connector</b> , with contact carrier, with contacts, solder-in connection, <b>free solder pin length of 10.0 mm</b> , flat gasket |
| Socket                                                                                                                                              |
| Plug                                                                                                                                                |
| <b>Device plug-in connector</b> , with contact carrier, with contacts, solder-in connection, <b>free solder pin length of 17.5 mm</b> , flat gasket |
| Socket                                                                                                                                              |
| Plug                                                                                                                                                |
| <b>Color rings</b> , 50 pcs. in set (to be ordered separately)                                                                                      |

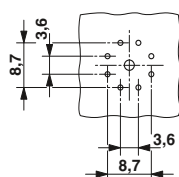
| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 6-pos.        |             | 7-pos.    |             | 8+1-pos.  |             |
| 1619955       | 1           | 1619953   | 1           | 1619951   | 1           |
| 1619954       | 1           | 1619952   | 1           | 1619950   | 1           |
| 1619931       | 1           | 1619929   | 1           | 1619927   | 1           |
| 1619930       | 1           | 1619928   | 1           | 1619926   | 1           |
| 1619916       | 1           | 1619914   | 1           | 1619912   | 1           |
| 1619915       | 1           | 1619913   | 1           | 1619911   | 1           |
| Accessories   |             |           |             |           |             |
| See page 412  |             |           |             |           |             |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 12-pos.       |             | 17-pos.   |             |           |             |
| 1619949       | 1           | 1619933   | 1           |           |             |
| 1619948       | 1           | 1619932   | 1           |           |             |
| 1619925       | 1           | 1619918   | 1           |           |             |
| 1619924       | 1           | 1619917   | 1           |           |             |
| 1619910       | 1           | 1619905   | 1           |           |             |
| 1619909       | 1           | 1619904   | 1           |           |             |
| Accessories   |             |           |             |           |             |
| See page 412  |             |           |             |           |             |

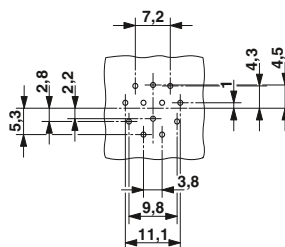


### Device plug-in connectors, front mounting, PCB hole patterns

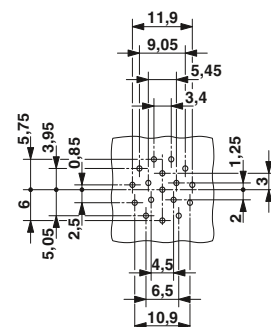
The free solder pin length is the distance between the mounting flange of the device connector and end of the soldered-in pin. In this measurement, the housing wall thickness and distance to the PCB are included.



8+1-pos.



12-pos.



17-pos.



# M17 to M58 circular plug-in connectors

## M23 - signal plug-in connectors

### Device plug-in connector, rear mounting

- Compatible with mating plugs with SPEEDCON or M23 standard knurled nuts
- 6 to 19-pos. versions, solder/crimp connection
- Individual marking of plug-in connectors with color rings

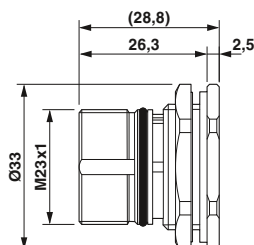
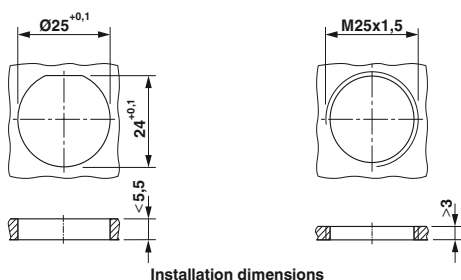


6, 7, 8+1-pos.



12, 17, 16+3-pos.

| Description                                                                                                                                             | Ordering data |             |                                                        | Ordering data |           |                                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|--------------------------------------------------------|---------------|-----------|--------------------------------------------------------|
|                                                                                                                                                         | Order No.     | Pcs. / Pkt. | Order No.                                              | Pcs. / Pkt.   | Order No. | Pcs. / Pkt.                                            |
|                                                                                                                                                         | 6-pos.        |             | 7-pos.                                                 |               | 8+1-pos.  |                                                        |
| Device plug-in connector, with contact carrier, with <b>socket contacts</b> , solder connection, central fixing nut, axial seal                         | 1619851       | 1           | 1619847                                                | 1             | 1619843   | 1                                                      |
| Device plug-in connector, with contact carrier, with <b>pin contacts</b> , solder connection, central fixing nut, axial seal                            | 1619850       | 1           | 1619846                                                | 1             | 1619842   | 1                                                      |
| Device plug-in connector, with contact carrier, <b>without contacts</b> , for <b>socket assembly</b> , crimp connection, central fixing nut, axial seal | 1619849       | 1           | 1619845                                                | 1             | 1619841   | 1                                                      |
| Device plug-in connector, with contact carrier, <b>without contacts</b> , for <b>pin assembly</b> , crimp connection, central fixing nut, axial seal    | 1619848       | 1           | 1619844                                                | 1             | 1619791   | 1                                                      |
| For crimp connection: crimp contacts<br><b>Color rings</b> , 50 pcs. in set (to be ordered separately)                                                  |               |             | Order separately, see page 334 onwards<br>See page 412 |               |           | Order separately, see page 334 onwards<br>See page 412 |





# M17 to M58 circular plug-in connectors

## M23 - signal plug-in connectors

### Crimp contacts

Pin and socket crimp contacts with various connection cross sections can be ordered for each crimp contact carrier.



Rolled crimp contacts



Turned crimp contacts

|                                                                                      |  |                                           | Ordering data            |                    |             |                          |  |                    | Ordering data |            |  |
|--------------------------------------------------------------------------------------|--|-------------------------------------------|--------------------------|--------------------|-------------|--------------------------|--|--------------------|---------------|------------|--|
| Description                                                                          |  | Contacts / connection cross section [mm²] | Type                     | Order No.          | Pcs. / Pkt. | Type                     |  | Order No.          | Pcs. / Pkt.   |            |  |
| <b>Crimp contacts for contact carriers, 6-pos., 6 x Ø 2.0 mm</b>                     |  |                                           |                          |                    |             | RC-5CP2000               |  | 1603513            | 50            |            |  |
|                                                                                      |  |                                           |                          |                    |             | RC-5CS2000               |  | 1603517            | 50            |            |  |
|                                                                                      |  |                                           |                          |                    |             | RC-5AP2000               |  | 1603505            | 50            |            |  |
|                                                                                      |  |                                           |                          |                    |             | RC-5AS2000               |  | 1603509            | 50            |            |  |
| <b>Crimp contacts for contact carriers, 7-pos., 7 x Ø 2.0 mm</b>                     |  |                                           |                          |                    |             | RC-5CP2000               |  | 1603513            | 50            |            |  |
|                                                                                      |  |                                           |                          |                    |             | RC-5CS2000               |  | 1603517            | 50            |            |  |
|                                                                                      |  |                                           |                          |                    |             | RC-5AP2000               |  | 1603505            | 50            |            |  |
|                                                                                      |  |                                           |                          |                    |             | RC-5AS2000               |  | 1603509            | 50            |            |  |
| <b>Crimp contacts for contact carriers, 9-pos. (8+1), 8 x Ø 1.0 mm, 1 x Ø 2.0 mm</b> |  |                                           |                          |                    |             | RC-12P2000               |  | 1597862            | 100           |            |  |
|                                                                                      |  |                                           |                          |                    |             | RC-12S2000               |  | 1599600            | 100           |            |  |
|                                                                                      |  |                                           |                          |                    |             | RC-5AP2000               |  | 1603505            | 50            |            |  |
|                                                                                      |  |                                           |                          |                    |             | RC-5AS2000               |  | 1603509            | 50            |            |  |
|                                                                                      |  |                                           |                          |                    |             | RC-5CP2000               |  | 1603513            | 50            |            |  |
|                                                                                      |  |                                           |                          |                    |             | RC-5CS2000               |  | 1603517            | 50            |            |  |
| <b>Crimp contacts for contact carriers, 12-pos., 12 x Ø 1.0 mm</b>                   |  |                                           | RC-22P2000<br>RC-22S2000 | 1603321<br>1603327 | 100<br>100  | RC-12P2000<br>RC-12S2000 |  | 1597862<br>1599600 |               | 100<br>100 |  |
|                                                                                      |  |                                           |                          |                    |             |                          |  |                    |               |            |  |
|                                                                                      |  |                                           |                          |                    |             |                          |  |                    |               |            |  |
|                                                                                      |  |                                           |                          |                    |             |                          |  |                    |               |            |  |
| <b>Crimp contacts for contact carriers, 16-pos., 16 x Ø 1.0 mm</b>                   |  |                                           | RC-22P2000<br>RC-22S2000 | 1603321<br>1603327 | 100<br>100  | RC-12P2000<br>RC-12S2000 |  | 1597862<br>1599600 |               | 100<br>100 |  |
|                                                                                      |  |                                           |                          |                    |             |                          |  |                    |               |            |  |
|                                                                                      |  |                                           |                          |                    |             |                          |  |                    |               |            |  |
|                                                                                      |  |                                           |                          |                    |             |                          |  |                    |               |            |  |
|                                                                                      |  |                                           | Accessories              |                    |             |                          |  |                    | Accessories   |            |  |
| Crimping tools                                                                       |  |                                           | See page 404             |                    |             |                          |  |                    | See page 404  |            |  |



# M17 to M58 circular plug-in connectors

## M23 - feedback plug-in connectors

### Mechanical and electrical data

| Mechanical data                         |                                                                                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------------------|
| Housing material:                       | Copper zinc alloy (CuZn), die-cast zinc (GD-Zn)                                                 |
| Housing surface:                        | Nickel-plated/thick layer passivated (can be coated)                                            |
| Insulating body:                        | Polyamide (PA 66)                                                                               |
| Contact material:                       | Copper zinc alloy (CuZn)                                                                        |
| Contact surface:                        | Nickel-plated (Ni) with gold coating (Au)                                                       |
| Contact connection method:              | Crimp version                                                                                   |
| Sealing and O-ring:                     | Fluorocarbon rubber (FKM)                                                                       |
| Ambient temperature:                    | -40°C ... 125°C                                                                                 |
| Cable entry:                            | Cable and coupler plug-in connectors for cable outside diameter of 3 ... 14.5 mm, shielded      |
| Type of locking:                        | M23 SPEEDCON screw locking, cable plug-in connector optionally with M23 x 1 coarse-pitch thread |
| Mechanical insertion/withdrawal cycles: | Standard: 100, punched-rolled C-HC crimp contacts: up to 500                                    |
| Protection class:                       | IP67 in the locked state                                                                        |

| Electrical data                                             |                    |               |               |
|-------------------------------------------------------------|--------------------|---------------|---------------|
| Number of positions                                         |                    | 12            | 17            |
| Contacts                                                    |                    | 12            | 17            |
| Contact Ø                                                   | [mm]               | 1             | 1             |
| Litz wire cross section, crimp contacts turned              | [mm <sup>2</sup> ] | 0.08 ... 1.0  | 0.08 ... 1.0  |
| Litz wire cross section, C-HC crimp contacts punched-rolled | [mm <sup>2</sup> ] | 0.06 ... 0.56 | 0.06 ... 0.56 |
| Cable clamping area                                         | max. Ø [mm]        | 14.5          | 14.5          |
| Nominal current per contact at 25°C <sup>1)</sup>           | [A]                | 8             | 8             |
| Specifications according to DIN EN 61984:2009               |                    |               |               |
| Rated voltage                                               | [V AC/DC]          | 150           | 100           |
| Test/surge voltage                                          | [kV]               | 2.5           | 1.5           |
| Surge voltage category                                      |                    | III           | III           |
| Pollution degree <sup>2)</sup>                              |                    | 3             | 3             |
| Installation height                                         | [m]                | Up to 3000    | Up to 3000    |
| Cable clamping area <sup>3)</sup>                           | max. Ø [mm]        | 14.5          | 14.5          |

<sup>1)</sup> The effective current carrying capacity must be determined via a derating curve, if necessary, according to the application.

<sup>2)</sup> The values specified assume that the plug-in connector pair is correctly locked and is only disconnected for testing and maintenance purposes. If the plug-in connector is unlocked and exposed to ambient conditions, and if there is a danger of contamination, the plug-in connector must be sealed using a protective cap ≥ IP54.

<sup>3)</sup> The cable clamping areas specified on the following pages may vary depending on the cable material/structure. Selection and testing is the responsibility of the user.

#### Note:

Unlike plug-in equipment, plug-in connectors must not be plugged or unplugged under load.

Pin assignments and coding

| Contact chamber numbering<br>(view of plug-in side)                              |                                  |                                          |                                         |                                 |
|----------------------------------------------------------------------------------|----------------------------------|------------------------------------------|-----------------------------------------|---------------------------------|
| Direction of rotation for<br>contact chamber numbering<br>(view of plug-in side) |                                  |                                          |                                         |                                 |
|                                                                                  | Clockwise (standard)<br>R marked | Counter-clockwise (standard)<br>L marked | Counter-clockwise (reverse)<br>L marked | Clockwise (reverse)<br>R marked |
| Number of positions                                                              | Pin                              | Socket                                   | Pin                                     | Socket                          |
| 12-pos.<br>N-coding<br>Crimp                                                     |                                  |                                          |                                         |                                 |
|                                                                                  |                                  |                                          |                                         |                                 |
| 17-pos.<br>N-coding<br>Crimp                                                     |                                  |                                          |                                         |                                 |
|                                                                                  |                                  |                                          |                                         |                                 |

**Note:**  
Standard coding is "N". Other coding types and numbers of positions available on request

The plug-in connectors can be equipped with pin or socket contacts according to the application.

For reasons of safety, only socket contacts may be used in the live part of the plug.

## M17 to M58 circular plug-in connectors

### M23 - feedback plug-in connectors

#### Selection guide

M23 signal plug-in connector,  
12/17-pos., N-coding, up to 8 A/150 V,  
crimp ranges up to 1 mm<sup>2</sup>

- Cable plug-in connectors
- Coupler plug-in connectors
- Device plug-in connectors  
(device flanges)

Crimp contacts must be ordered separately depending on the connection cross section.

Each housing type can be equipped with pin or socket contacts.

The plug-in connectors can be supplied with clockwise or counter-clockwise contact chamber numbering.

N (0°) and S (20°, on request) coding positions are possible.

The product chart provides an overview of the available components.

#### Plug-in connector type

##### Cable plug-in connectors

SPEEDCON rapid interlock system, M23 x 1 standard interlocking, see page 340.

M23 x 1 standard interlocking, see page 341.



Square mounting flange for cable and coupler plug-in connectors for wall mounting, see page 410.

Shielded

##### Coupler plug-in connectors

see page 342.



Square mounting flange for cable and coupler plug-in connectors for wall mounting, see page 410.

Shielded

##### Device plug-in connectors

Straight, 4-hole mounting  
Ø 3.2,  
see page 344.



Contact carriers for snapping in from the device side,  
straight, 4-hole mounting  
Ø 3.2, see page 344.



Angled, rotatable,  
flange dimensions 26 mm x 26 mm,  
see page 345.



Angled, rotatable,  
Flange dimensions 28 mm x 28 mm,  
see page 345.



Shielded

**Crimp contacts****Socket contacts**

Turned, see page 347.



Punched-rolled, taped, see page 346.

**Pin contacts**

Turned, see page 347.



Punched-rolled, taped, see page 346.

**Note:**

For reasons of safety, only socket contacts may be used in the live part of the plug.

**Tools/accessories****Crimping tools**

Crimping pliers for punched-rolled C-HC crimp contacts, see page 406.



Crimping pliers with digital display for turned crimp contacts, see page 407.

**Tools/accessories**

Contact removal tool for device plug-in connectors with contact carriers for snapping in from the device side, see page 410.



Color rings for individually marking the plug-in connectors, see page 412.



All housing can be fitted with pin or socket crimp contacts



M17 to M58 circular plug-in connectors

M23 - feedback plug-in connectors

Cable plug-in connector,  
SPEEDCON rapid interlock system

- 12 or 17-pos. versions
- Individual marking of plug-in connectors with color rings



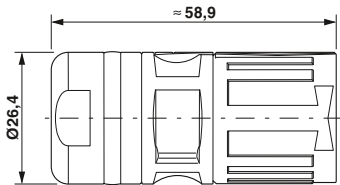
Cable plug-in connector,  
socket assembly



Cable plug-in connector,  
pin assembly



|                                                                                                                          |                     | Ordering data                             |             |           |             | Ordering data                          |             |           |             |
|--------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------------------------|-------------|-----------|-------------|----------------------------------------|-------------|-----------|-------------|
| Description                                                                                                              | Cable clamping area | Order No.                                 | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No.                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                                                                                                                          |                     | 12-pos.                                   |             | 17-pos.   |             | 12-pos.                                |             | 17-pos.   |             |
| <b>Cable plug-in connector</b> , with contact carrier,<br><b>without</b> contacts, <b>standard</b> direction of rotation |                     |                                           |             |           |             |                                        |             |           |             |
| Universal gasket                                                                                                         | 3 mm ... 14.5 mm    | 1619472                                   | 1           | 1619470   | 1           | 1619471                                | 1           | 1619469   | 1           |
|                                                                                                                          | 4 mm ... 6 mm       | 1619466                                   | 1           | 1619464   | 1           | 1619465                                | 1           | 1619463   | 1           |
|                                                                                                                          | 6 mm ... 10 mm      | 1619460                                   | 1           | 1619458   | 1           | 1619459                                | 1           | 1619457   | 1           |
|                                                                                                                          | 10 mm ... 14.5 mm   | 1619454                                   | 1           | 1619452   | 1           | 1619453                                | 1           | 1619451   | 1           |
| <b>Cable plug-in connector</b> , with contact carrier,<br><b>without</b> contacts, <b>reverse</b> direction of rotation  |                     |                                           |             |           |             |                                        |             |           |             |
| Universal gasket                                                                                                         | 3 mm ... 14.5 mm    | 1619474                                   | 1           |           |             | 1619473                                | 1           |           |             |
|                                                                                                                          | 4 mm ... 6 mm       | 1619468                                   | 1           |           |             | 1619467                                | 1           |           |             |
|                                                                                                                          | 6 mm ... 10 mm      | 1619462                                   | 1           |           |             | 1619461                                | 1           |           |             |
|                                                                                                                          | 10 mm ... 14.5 mm   | 1619456                                   | 1           |           |             | 1619455                                | 1           |           |             |
|                                                                                                                          |                     | Accessories                               |             |           |             | Accessories                            |             |           |             |
| <b>Crimp contacts</b>                                                                                                    |                     | For socket contacts, see page 346 onwards |             |           |             | For pin contacts, see page 346 onwards |             |           |             |
| <b>Color rings</b> , 50 pcs. in set (to be ordered separately)                                                           |                     | See page 412                              |             |           |             | See page 412                           |             |           |             |



### Cable plug-in connector, M23 standard interlocking

- M23 standard knurled nut
- 12 or 17-pos. versions
- Individual marking of plug-in connectors with color rings

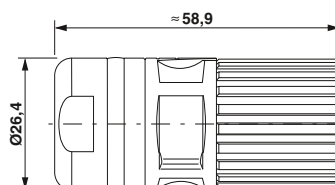


Cable plug-in connector,  
socket assembly



Cable plug-in connector,  
pin assembly

|                                                                                                                                  |                     | Ordering data                             |             |           |             | Ordering data                          |             |           |             |
|----------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------------------------|-------------|-----------|-------------|----------------------------------------|-------------|-----------|-------------|
| Description                                                                                                                      | Cable clamping area | Order No.                                 | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No.                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                                                                                                                                  |                     | 12-pos.                                   |             | 17-pos.   |             | 12-pos.                                |             | 17-pos.   |             |
| <b>Cable plug-in connector housing</b> , with contact carrier,<br><b>without</b> contacts, <b>standard</b> direction of rotation |                     |                                           |             |           |             |                                        |             |           |             |
| Universal gasket                                                                                                                 | 3 mm ... 14.5 mm    | 1619631                                   | 1           | 1619629   | 1           | 1619630                                | 1           | 1619628   | 1           |
|                                                                                                                                  | 4 mm ... 6 mm       | 1619625                                   | 1           | 1619623   | 1           | 1619624                                | 1           | 1619619   | 1           |
|                                                                                                                                  | 6 mm ... 10 mm      | 1619616                                   | 1           | 1619614   | 1           | 1619615                                | 1           | 1619613   | 1           |
|                                                                                                                                  | 10 mm ... 14.5 mm   | 1619610                                   | 1           | 1619608   | 1           | 1619609                                | 1           | 1619607   | 1           |
| <b>Cable plug-in connector housing</b> , with contact carrier,<br><b>without</b> contacts, <b>reverse</b> direction of rotation  |                     |                                           |             |           |             |                                        |             |           |             |
| Universal gasket                                                                                                                 | 3 mm ... 14.5 mm    | 1619633                                   | 1           |           |             | 1619632                                | 1           |           |             |
|                                                                                                                                  | 4 mm ... 6 mm       | 1619627                                   | 1           |           |             | 1619626                                | 1           |           |             |
|                                                                                                                                  | 6 mm ... 10 mm      | 1619618                                   | 1           |           |             | 1619617                                | 1           |           |             |
|                                                                                                                                  | 10 mm ... 14.5 mm   | 1619612                                   | 1           |           |             | 1619611                                | 1           |           |             |
|                                                                                                                                  |                     | Accessories                               |             |           |             | Accessories                            |             |           |             |
| <b>Crimp contacts</b>                                                                                                            |                     | For socket contacts, see page 346 onwards |             |           |             | For pin contacts, see page 346 onwards |             |           |             |
| <b>Color rings</b> , 50 pcs. in set (to be ordered separately)                                                                   |                     | See page 412                              |             |           |             | See page 412                           |             |           |             |



M17 to M58 circular plug-in connectors

M23 - feedback plug-in connectors

Coupler plug-in connector

- Compatible with mating plugs with SPEEDCON or M23 standard knurled nuts
- 12 or 17-pos. versions
- Individual marking of plug-in connectors with color rings

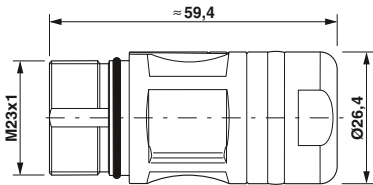


Coupler plug-in connector, socket assembly



Coupler plug-in connector, pin assembly

|                                                                                                                                    |                     | Ordering data                             |             |           |             | Ordering data                          |             |           |             |
|------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------------------------|-------------|-----------|-------------|----------------------------------------|-------------|-----------|-------------|
| Description                                                                                                                        | Cable clamping area | Order No.                                 | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No.                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                                                                                                                                    |                     | 12-pos.                                   |             | 17-pos.   |             | 12-pos.                                |             | 17-pos.   |             |
| <b>Coupler plug-in connector housing</b> , with contact carrier,<br><b>without</b> contacts, <b>standard</b> direction of rotation |                     |                                           |             |           |             |                                        |             |           |             |
| Universal gasket                                                                                                                   | 3 mm ... 14.5 mm    | 1620016                                   | 1           | 1620014   | 1           | 1620015                                | 1           | 1620013   | 1           |
|                                                                                                                                    | 4 mm ... 6 mm       | 1620009                                   | 1           | 1620007   | 1           | 1620008                                | 1           | 1620006   | 1           |
|                                                                                                                                    | 6 mm ... 10 mm      | 1620003                                   | 1           | 1620001   | 1           | 1620002                                | 1           | 1620000   | 1           |
|                                                                                                                                    | 10 mm ... 14.5 mm   | 1619997                                   | 1           | 1619995   | 1           | 1619996                                | 1           | 1619994   | 1           |
| <b>Coupler plug-in connector housing</b> , with contact carrier,<br><b>without</b> contacts, <b>reverse</b> direction of rotation  |                     |                                           |             |           |             |                                        |             |           |             |
| Universal gasket                                                                                                                   | 3 mm ... 14.5 mm    | 1620018                                   | 1           |           |             | 1620017                                | 1           |           |             |
|                                                                                                                                    | 4 mm ... 6 mm       | 1620011                                   | 1           |           |             | 1620010                                | 1           |           |             |
|                                                                                                                                    | 6 mm ... 10 mm      | 1620005                                   | 1           |           |             | 1620004                                | 1           |           |             |
|                                                                                                                                    | 10 mm ... 14.5 mm   | 1619999                                   | 1           |           |             | 1619998                                | 1           |           |             |
|                                                                                                                                    |                     | Accessories                               |             |           |             | Accessories                            |             |           |             |
| <b>Crimp contacts</b>                                                                                                              |                     | For socket contacts, see page 346 onwards |             |           |             | For pin contacts, see page 346 onwards |             |           |             |
| <b>Color rings</b> , 50 pcs. in set (to be ordered separately)                                                                     |                     | See page 412                              |             |           |             | See page 412                           |             |           |             |





M17 to M58 circular plug-in connectors

M23 - feedback plug-in connectors

Device plug-in connectors,  
straight, front mounting

- Compatible with mating plugs with SPEEDCON or M23 standard knurled nuts
- Contact insert for support on the device or can be snapped in

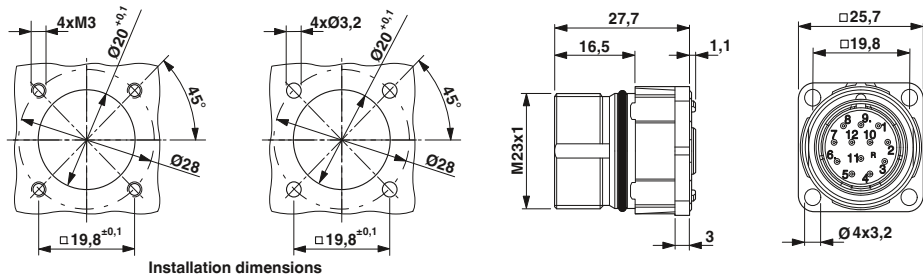


Device plug-in connector,  
straight, socket assembly



Device plug-in connector,  
straight, pin assembly

| Description                                                                                                                                          | Ordering data                                             |             |           |             | Ordering data                                          |             |           |             |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|-------------|-----------|-------------|--------------------------------------------------------|-------------|-----------|-------------|
|                                                                                                                                                      | Order No.                                                 | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No.                                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                                                                                                                                                      | 12-pos.                                                   |             | 17-pos.   |             | 12-pos.                                                |             | 17-pos.   |             |
| <b>Device plug-in connector, straight</b> , with contact carrier, without contacts, 4-hole fastening with Ø 3.2 mm                                   |                                                           |             |           |             |                                                        |             |           |             |
| Standard direction of rotation                                                                                                                       | 1607283                                                   | 1           | 1607892   | 1           | 1607236                                                | 1           | 1607860   | 1           |
| Reverse direction of rotation                                                                                                                        | 1607307                                                   | 1           |           |             | 1607260                                                | 1           |           |             |
| <b>Device plug-in connector, straight</b> , with contact carrier, without contacts, 4-hole fastening with Ø 3.2 mm, contact insert can be snapped in |                                                           |             |           |             |                                                        |             |           |             |
| Standard direction of rotation                                                                                                                       | 1607830                                                   | 1           | 1607893   | 1           | 1607804                                                | 1           | 1607863   | 1           |
| Reverse direction of rotation                                                                                                                        | 1607844                                                   | 1           |           |             | 1607817                                                | 1           |           |             |
| Accessories                                                                                                                                          |                                                           |             |           |             |                                                        |             |           |             |
| <b>Crimp contacts</b><br>Color rings, 50 pcs. in set (to be ordered separately)                                                                      | For socket contacts, see page 346 onwards<br>See page 412 |             |           |             | For pin contacts, see page 346 onwards<br>See page 412 |             |           |             |



## Device plug-in connectors, angled, rotatable, front mounting

- Compatible with mating plugs with SPEEDCON or M23 standard knurled nuts
- Flange dimensions 26 mm x 26 mm or 28 mm x 28 mm

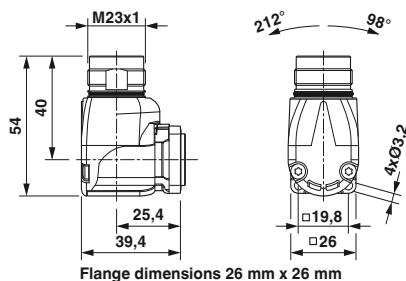


Device plug-in connector, angled, rotatable, for socket contacts

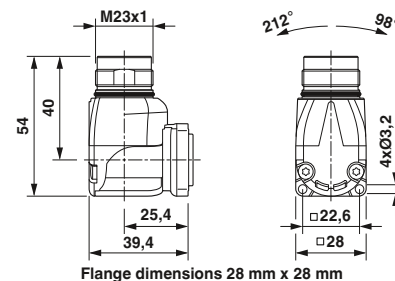


Device plug-in connector, angled, rotatable, for pin contacts

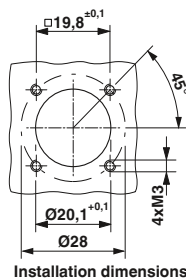
|                                                                                                                       | Ordering data                             |             |           |             | Ordering data                          |             |           |             |
|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------|-----------|-------------|----------------------------------------|-------------|-----------|-------------|
| Description                                                                                                           | Order No.                                 | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No.                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                                                                                                                       | 12-pos.                                   |             | 17-pos.   |             | 12-pos.                                |             | 17-pos.   |             |
| Device plug-in connector, angled, rotatable, with contact carrier, without contacts, flange dimensions: 26 mm x 26 mm |                                           |             |           |             |                                        |             |           |             |
| Standard direction of rotation                                                                                        | 1607280                                   | 1           | 1607345   | 1           | 1607233                                | 1           | 1607328   | 1           |
| Reverse direction of rotation                                                                                         | 1607304                                   | 1           |           |             | 1607257                                | 1           |           |             |
| Device plug-in connector, angled, rotatable, with contact carrier, without contacts, flange dimensions: 28 mm x 28 mm |                                           |             |           |             |                                        |             |           |             |
| Standard direction of rotation                                                                                        | 1607827                                   | 1           | 1607887   | 1           | 1607802                                | 1           | 1607852   | 1           |
| Reverse direction of rotation                                                                                         | 1607842                                   | 1           |           |             | 1607814                                | 1           |           |             |
|                                                                                                                       | Accessories                               |             |           |             | Accessories                            |             |           |             |
| Crimp contacts                                                                                                        | For socket contacts, see page 346 onwards |             |           |             | For pin contacts, see page 346 onwards |             |           |             |
| Color rings, 50 pcs. in set (to be ordered separately)                                                                | See page 412                              |             |           |             | See page 412                           |             |           |             |



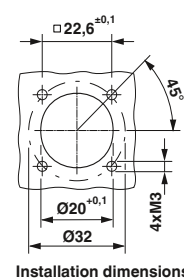
Flange dimensions 26 mm x 26 mm



Flange dimensions 28 mm x 28 mm



Installation dimensions



Installation dimensions

Crimp contacts, punched-rolled

C-HC® are punched-rolled contacts. They are designed for high insertion/withdrawal cycles.

The contacts are available taped on rolls for manual or automatic processing.

**Note:** depending on the litz wire used, the connection cross sections (crimp ranges) may deviate from the listed values. For reasons of safety, only socket contacts may be used in the live part of the plug.



C-HC socket contacts



C-HC pin contacts

| Description                                                          | Connection cross section [mm²] |
|----------------------------------------------------------------------|--------------------------------|
| <b>Crimp contacts, C-HC punched-rolled, Ø 1.0 mm, 2500 pcs./roll</b> |                                |
|                                                                      | 0.06 mm² ... 0.25 mm²          |
|                                                                      | 0.2 mm² ... 0.56 mm²           |
| <b>Crimp contact C-HC punched-rolled, Ø 1.0 mm, 10,000 pcs./roll</b> |                                |
|                                                                      | 0.06 mm² ... 0.25 mm²          |
|                                                                      | 0.2 mm² ... 0.56 mm²           |

Crimping tools

| Ordering data |           |             |
|---------------|-----------|-------------|
| Type          | Order No. | Pcs. / Pkt. |
| SF-10KS320    | 1607031   | 1           |
| SF-10KS350    | 1607032   | 1           |
| SF-10KS330    | 1607358   | 1           |
| SF-10KS360    | 1607361   | 1           |

| Accessories                            |  |
|----------------------------------------|--|
| Order separately, see page 406 onwards |  |

| Ordering data |           |             |
|---------------|-----------|-------------|
| Type          | Order No. | Pcs. / Pkt. |
| SF-10KP320    | 1615961   | 1           |
| SF-10KP350    | 1615963   | 1           |
| SF-10KP330    | 1615962   | 1           |
| SF-10KP360    | 1615964   | 1           |

| Accessories                            |  |
|----------------------------------------|--|
| Order separately, see page 406 onwards |  |





# M17 to M58 circular plug-in connectors

## M17 - power plug-in connectors

### Mechanical and electrical data

| Mechanical data                         |                                                                                                                                       |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Housing material:                       | Copper zinc alloy (CuZn), die-cast zinc (GD-Zn)                                                                                       |
| Housing surface:                        | Nickel-plated/thick layer passivated (can be coated)                                                                                  |
| Insulating body:                        | Polyamide (PA 66)                                                                                                                     |
| Contact material:                       | Copper zinc alloy (CuZn)                                                                                                              |
| Contact surface:                        | Nickel-plated (Ni) with gold coating (Au)                                                                                             |
| Contact connection method:              | Crimp version                                                                                                                         |
| Sealing and O-ring:                     | Fluorocarbon rubber (FKM)                                                                                                             |
| Ambient temperature:                    | -40°C ... 125°C                                                                                                                       |
| Cable entry:                            | Cable and coupler plug-in connectors for cable outside diameter of 3.5 - 11 mm, shielded (M17 Compact)<br>5 - 12.5 mm, shielded (M17) |
| Type of locking:                        | M17 SPEEDCON rapid interlock system, cable plug-in connector<br>Optionally with M17 x 1 coarse-pitch thread                           |
| Mechanical insertion/withdrawal cycles: | Standard: 100, punched-rolled C-HC crimp contacts: up to 500                                                                          |
| Protection class:                       | IP67 in the locked state                                                                                                              |

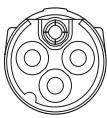
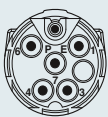
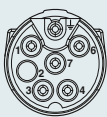
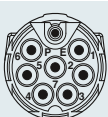
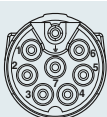
| Electrical data                                   |             |                       |               |               |               |              |   |              |
|---------------------------------------------------|-------------|-----------------------|---------------|---------------|---------------|--------------|---|--------------|
| Number of positions                               |             | 4 (3+PE)              | 6 (5+PE)      | 7 (6+PE)      | 8 (7+PE)      | 9 (5+3+PE)   |   |              |
| Contacts                                          |             | 3 + PE                | 5 + PE        | 6 + PE        | 7 + PE        | 5            | + | 3 + PE       |
| Contact Ø                                         | [mm]        | 2                     | 1             | 1             | 1             | 0.6          |   | 1            |
| Litz wire cross section, crimp contacts           | [mm²]       | 0.25 ... 2.5          | 0.06 ... 1.0  | 0.06 ... 1.0  | 0.06 ... 1.0  | 0.06 ... 0.5 |   | 0.06 ... 1.0 |
| Turned                                            |             |                       |               |               |               |              |   |              |
| Litz wire cross section, C-HC crimp contacts      | [mm²]       | –                     | 0.08 ... 0.56 | 0.06 ... 0.56 | 0.06 ... 0.56 | –            |   | –            |
| Punched-rolled                                    |             |                       |               |               |               |              |   |              |
| Nominal current per contact at 25°C <sup>1)</sup> |             | 20 (25) <sup>2)</sup> | 14            | 14            | 14            | 3.6          |   | 14           |
| Specifications according to DIN EN 61984:2009     |             |                       |               |               |               |              |   | –            |
| Rated voltage                                     | [V AC/DC]   | 630                   | 630           | 630           | 630           | 60           |   | 630          |
| Test/surge voltage                                | [kV AC]     | 6                     | 6             | 6             | 6             | 1.5          |   | 6            |
| Surge voltage category                            |             | III                   | III           | III           | III           |              |   | III          |
| Pollution degree <sup>3)</sup>                    |             | 3                     | 3             | 3             | 3             |              |   | 3            |
| Installation height                               | [m]         | Up to 3000            | Up to 3000    | Up to 3000    | Up to 3000    |              |   | Up to 3000   |
| Cable clamping area <sup>4)</sup>                 | max. Ø [mm] | 12.5                  | 12.5          | 12.5          | 12.5          |              |   | 12.5         |

<sup>1)</sup> The effective current carrying capacity must be determined via a derating curve, if necessary, according to the application.

<sup>2)</sup> 25 A in the case of assignment with 3 x 2.5 mm²

<sup>3)</sup> The values specified assume that the plug-in connector pair is correctly locked and is only disconnected for testing and maintenance purposes. If the plug-in connector is unlocked and exposed to ambient conditions, and if there is a danger of contamination, the plug-in connector must be sealed using a protective cap ≥ IP54.

<sup>4)</sup> The cable clamping areas specified on the following pages may vary depending on the cable material/structure. Selection and testing is the responsibility of the user.

| Contact chamber numbering<br>(view of plug-in side)     |                                                                                   |                                                                                   |
|---------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Number of positions                                     | Pin                                                                               | Socket                                                                            |
| 4-pos. (3+PE)<br>Crimp                                  |  |  |
| 6-pos. (5+PE)<br>(Contact chambers 2+5 closed)<br>Crimp |  |  |
| 7-pos. (6+PE)<br>Crimp                                  |  |  |
| 8-pos. (7+PE)<br>Crimp                                  |  |  |
| 9-pos. (5+3+PE)<br>Crimp                                |  |  |
| * with grounding spring<br>PE leading                   |                                                                                   | * with grounding spring<br>PE leading                                             |

**Note:**  
The plug-in connectors can be equipped with pin or socket contacts according to the application.

For reasons of safety, only socket contacts may be used in the live part of the plug.

# M17 to M58 circular plug-in connectors

## M17 - power plug-in connectors

### Selection guide

M17 power plug-in connectors, 4/6/7/8/9-pos., up to 20 A/630 V, crimp ranges: 0.06 mm<sup>2</sup> to 2.5 mm<sup>2</sup>

- Cable plug-in connectors
- Coupler plug-in connectors
- Device plug-in connectors (device flanges)

The plug-in connectors are supplied fully pre-assembled and are complemented by the respective crimp contacts.

Each housing type can be equipped with pin or socket contacts. Cable plug-in connectors can be optionally equipped with SPEEDCON rapid interlock system or with M17 x 1 coarse-pitch thread. The plug-in connectors with external thread are fully compatible with standard threads and the SPEEDCON rapid interlock system.

The product chart provides an overview of the available components.

### Plug-in connector type

#### Cable plug-in connector

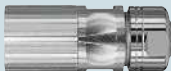
SPEEDCON rapid interlock system, M17 Compact, see page 352.



M17, see page 356.



M17 x 1 standard interlocking, M17, see page 357.



Square mounting flange for cable and coupler plug-in connectors for wall mounting, see page 410.



Shielded

#### Coupler plug-in connector/panel feed-through

Coupler plug-in connector M17 Compact, see page 353.



M17, see page 358.



Panel feed-through M17 Compact, see page 354.



Shielded

#### Device plug-in connector

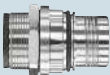
Straight, M17 Compact, see page 355.



Straight, M17, see page 359.



Straight, with central fastening thread, front mounting, M17, see page 361.



Straight, with central fastening thread, rear mounting, M17, see page 361.



Angled, rotatable, M17, see page 360.



Shielded

**Crimp contacts****Socket contacts**

Turned, see page 363.



Punched-rolled, taped, see page 362.

**Pin contacts**

Turned, see page 363.



Punched-rolled, taped, see page 362.



All housing can be fitted with pin or socket crimp contacts

**Note:**

For reasons of safety, only socket contacts may be used in the live part of the plug.

**Tools/accessories****Crimping tools**

Crimping pliers for punched-rolled C-HC crimp contacts, see page 406.



Crimping pliers with digital display for turned crimp contacts, see page 407.

**Tools/accessories**

Contact removal tool for device plug-in connectors with contact carriers for snapping in from the device side, see page 410.



Color rings for individually marking the plug-in connectors, see page 412.



M17 to M58 circular plug-in connectors

M17 - power plug-in connectors

M17 Compact cable plug-in connector

- High packing density in a compact product
- Individual marking of plug-in connectors with color rings



3+PE, 5+PE, 6+PE-pos.



7+PE, 5+3+PE-pos.

|                                                                                      |                     | Ordering data                          |             |           |             |           |             | Ordering data                          |             |             |             |           |             |
|--------------------------------------------------------------------------------------|---------------------|----------------------------------------|-------------|-----------|-------------|-----------|-------------|----------------------------------------|-------------|-------------|-------------|-----------|-------------|
| Description                                                                          | Cable clamping area | Order No.                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No.                              | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                                                                                      |                     | 3+PE-pos.                              |             | 5+PE-pos. |             | 6+PE-pos. |             | 7+PE-pos.                              |             | 5+3+PE-pos. |             |           |             |
| Cable plug-in connector, with contact carrier, without contacts, for socket assembly | 3.5 mm ... 5.5 mm   | 1618312                                | 1           | 1618621   | 1           | 1618632   | 1           | 1618633                                | 1           | 1618674     | 1           |           |             |
|                                                                                      | 5 mm ... 9 mm       | 1618408                                | 1           | 1618620   | 1           | 1618631   | 1           | 1618634                                | 1           | 1618675     | 1           |           |             |
|                                                                                      | 9 mm ... 11 mm      | 1618603                                | 1           | 1618619   | 1           | 1618630   | 1           | 1618635                                | 1           | 1618676     | 1           |           |             |
| Cable plug-in connector, with contact carrier, without contacts, for pin assembly    | 3.5 mm ... 5.5 mm   | 1618602                                | 1           | 1618614   | 1           | 1618622   | 1           | 1618640                                | 1           | 1618681     | 1           |           |             |
|                                                                                      | 5 mm ... 9 mm       | 1618574                                | 1           | 1618615   | 1           | 1618623   | 1           | 1618639                                | 1           | 1618680     | 1           |           |             |
|                                                                                      | 9 mm ... 11 mm      | 1618575                                | 1           | 1618616   | 1           | 1618624   | 1           | 1618638                                | 1           | 1618679     | 1           |           |             |
|                                                                                      |                     | Accessories                            |             |           |             |           |             | Accessories                            |             |             |             |           |             |
| Crimp contacts                                                                       |                     | Order separately, see page 362 onwards |             |           |             |           |             | Order separately, see page 362 onwards |             |             |             |           |             |
| Color rings, 50 pcs. in set (to be ordered separately)                               |                     | See page 412                           |             |           |             |           |             | See page 412                           |             |             |             |           |             |



### M17 Compact coupler plug-in connector

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Individual marking of plug-in connectors with color rings



3+PE, 5+PE, 6+PE-pos.



7+PE, 5+3+PE-pos.

|                                                                                                       |                     | Ordering data                          |             |           |             |           |             | Ordering data                          |             |             |             |           |             |
|-------------------------------------------------------------------------------------------------------|---------------------|----------------------------------------|-------------|-----------|-------------|-----------|-------------|----------------------------------------|-------------|-------------|-------------|-----------|-------------|
| Description                                                                                           | Cable clamping area | Order No.                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No.                              | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                                                                                                       |                     | 3+PE-pos.                              |             | 5+PE-pos. |             | 6+PE-pos. |             | 7+PE-pos.                              |             | 5+3+PE-pos. |             |           |             |
| <b>Coupler plug-in connector</b> , with contact carrier, without contacts, for <b>socket assembly</b> | 3.5 mm ... 5.5 mm   | 1618695                                | 1           | 1618696   | 1           | 1618708   | 1           | 1618716                                | 1           | 1618748     | 1           |           |             |
|                                                                                                       | 5 mm ... 9 mm       | 1618694                                | 1           | 1618697   | 1           | 1618709   | 1           | 1618717                                | 1           | 1618749     | 1           |           |             |
|                                                                                                       | 9 mm ... 11 mm      | 1618693                                | 1           | 1618698   | 1           | 1618710   | 1           | 1618718                                | 1           | 1618750     | 1           |           |             |
| <b>Coupler plug-in connector</b> , with contact carrier, without contacts, for <b>pin assembly</b>    | 3.5 mm ... 5.5 mm   | 1620614                                | 1           | 1618703   | 1           | 1618704   | 1           | 1618712                                | 1           | 1618740     | 1           |           |             |
|                                                                                                       | 5 mm ... 9 mm       | 1618406                                | 1           | 1618702   | 1           | 1618705   | 1           | 1618713                                | 1           | 1618741     | 1           |           |             |
|                                                                                                       | 9 mm ... 11 mm      | 1618690                                | 1           | 1618701   | 1           | 1618706   | 1           | 1618714                                | 1           | 1618742     | 1           |           |             |
|                                                                                                       |                     | Accessories                            |             |           |             |           |             | Accessories                            |             |             |             |           |             |
| <b>Crimp contacts</b>                                                                                 |                     | Order separately, see page 362 onwards |             |           |             |           |             | Order separately, see page 362 onwards |             |             |             |           |             |
| <b>Color rings</b> , 50 pcs. in set (to be ordered separately)                                        |                     | See page 412                           |             |           |             |           |             | See page 412                           |             |             |             |           |             |



# M17 to M58 circular plug-in connectors

## M17 - power plug-in connectors

### M17 Compact panel feed-through

- Panel feed-throughs suitable for front and rear mounting
- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Individual marking of plug-in connectors with color rings
- **Flange dimensions**  
**25.7 mm x 25.7 mm**



3+PE, 5+PE, 6+PE-pos.



7+PE, 5+3+PE-pos.

|             |                     | Ordering data |             |           | Ordering data |           |             |
|-------------|---------------------|---------------|-------------|-----------|---------------|-----------|-------------|
| Description | Cable clamping area | Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt.   | Order No. | Pcs. / Pkt. |
|             |                     | 3+PE-pos.     |             |           | 7+PE-pos.     |           |             |
|             |                     | 5+PE-pos.     |             |           | 5+3+PE-pos.   |           |             |
|             |                     | 6+PE-pos.     |             |           |               |           |             |
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### M17 Compact device plug-in connectors, front mounting

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Individual marking of plug-in connectors with color rings
- **Flange dimensions**  
21.6 mm x 21.6 mm

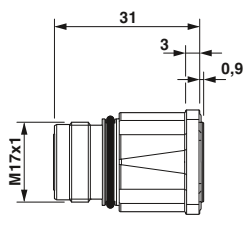


3+PE, 5+PE, 6+PE-pos.

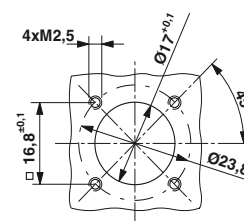


7+PE, 5+3+PE-pos.

| Description                                                                           | Ordering data                          |             |           |             |           |             | Ordering data                          |             |             |             |           |             |
|---------------------------------------------------------------------------------------|----------------------------------------|-------------|-----------|-------------|-----------|-------------|----------------------------------------|-------------|-------------|-------------|-----------|-------------|
|                                                                                       | Order No.                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No.                              | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                                                                                       | 3+PE-pos.                              |             | 5+PE-pos. |             | 6+PE-pos. |             | 7+PE-pos.                              |             | 5+3+PE-pos. |             |           |             |
| Device plug-in connector, with contact carrier, without contacts, for socket assembly | 1607694                                | 1           | 1607728   | 1           | 1613589   | 1           | 1607769                                | 1           | 1613631     | 1           |           |             |
| Contact insert for support on the device                                              |                                        |             |           |             |           |             |                                        |             |             |             |           |             |
| Device plug-in connector, with contact carrier, without contacts, for pin assembly    | 1607675                                | 1           | 1607711   | 1           | 1613570   | 1           | 1607747                                | 1           | 1613612     | 1           |           |             |
| Contact insert for support on the device                                              |                                        |             |           |             |           |             |                                        |             |             |             |           |             |
| Device plug-in connector, with contact carrier, without contacts, for socket assembly | 1607692                                | 1           | 1607727   | 1           | 1613588   | 1           | 1607768                                | 1           | 1613630     | 1           |           |             |
| Contact insert can be snapped in                                                      |                                        |             |           |             |           |             |                                        |             |             |             |           |             |
| Device plug-in connector, with contact carrier, without contacts, for pin assembly    | 1607674                                | 1           | 1607710   | 1           | 1613569   | 1           | 1607746                                | 1           | 1613611     | 1           |           |             |
| Contact insert can be snapped in                                                      |                                        |             |           |             |           |             |                                        |             |             |             |           |             |
| Accessories                                                                           |                                        |             |           |             |           |             |                                        |             |             |             |           |             |
| Crimp contacts                                                                        | Order separately, see page 362 onwards |             |           |             |           |             | Order separately, see page 362 onwards |             |             |             |           |             |
| Color rings, 50 pcs. in set (to be ordered separately)                                | See page 412                           |             |           |             |           |             | See page 412                           |             |             |             |           |             |



Flange dimensions 21.6 mm x 21.6 mm



Installation dimensions



M17 to M58 circular plug-in connectors

M17 - power plug-in connectors

Cable plug-in connector,  
SPEEDCON rapid interlock system

- SPEEDCON rapid interlock system or M17 standard interlocking
- Standard knurled nuts compatible with mating plugs with SPEEDCON or M17 standard external thread
- Individual marking of plug-in connectors with color rings

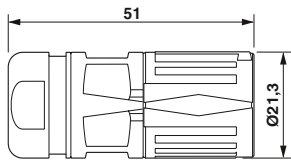


3+PE, 5+PE, 6+PE-pos.



7+PE, 5+3+PE-pos.

|                                                                                      |                     | Ordering data                          |             |           |             |           |             | Ordering data                          |             |             |             |           |             |
|--------------------------------------------------------------------------------------|---------------------|----------------------------------------|-------------|-----------|-------------|-----------|-------------|----------------------------------------|-------------|-------------|-------------|-----------|-------------|
| Description                                                                          | Cable clamping area | Order No.                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No.                              | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                                                                                      |                     | 3+PE-pos.                              |             | 5+PE-pos. |             | 6+PE-pos. |             | 7+PE-pos.                              |             | 5+3+PE-pos. |             |           |             |
| Cable plug-in connector, with contact carrier, without contacts, for socket assembly | 5 mm ... 8 mm       | 1607683                                | 1           | 1607718   | 1           | 1613578   | 1           | 1607756                                | 1           | 1613620     | 1           |           |             |
|                                                                                      | 8 mm ... 10 mm      | 1607685                                | 1           | 1607720   | 1           | 1613580   | 1           | 1607759                                | 1           | 1613622     | 1           |           |             |
|                                                                                      | 10 mm ... 12.5 mm   | 1624538                                | 1           | 1624544   | 1           | 1624550   | 1           | 1624556                                | 1           | 1624639     | 1           |           |             |
| Cable plug-in connector, with contact carrier, without contacts, for pin assembly    | 5 mm ... 8 mm       | 1607665                                | 1           | 1607700   | 1           | 1613559   | 1           | 1607736                                | 1           | 1613601     | 1           |           |             |
|                                                                                      | 8 mm ... 10 mm      | 1607667                                | 1           | 1607702   | 1           | 1613561   | 1           | 1607738                                | 1           | 1613603     | 1           |           |             |
|                                                                                      | 10 mm ... 12.5 mm   | 1624535                                | 1           | 1624541   | 1           | 1624547   | 1           | 1624553                                | 1           | 1624637     | 1           |           |             |
|                                                                                      |                     | Accessories                            |             |           |             |           |             | Accessories                            |             |             |             |           |             |
| Crimp contacts                                                                       |                     | Order separately, see page 362 onwards |             |           |             |           |             | Order separately, see page 362 onwards |             |             |             |           |             |
| Color rings, 50 pcs. in set (to be ordered separately)                               |                     | See page 412                           |             |           |             |           |             | See page 412                           |             |             |             |           |             |



### Cable plug-in connector, M17 standard interlocking

- Standard knurled nuts compatible with mating plugs with SPEEDCON or M17 standard external thread
- Individual marking of plug-in connectors with color rings

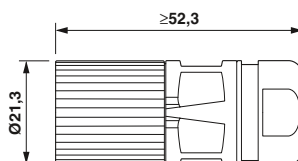


3+PE, 5+PE, 6+PE-pos.



7+PE, 5+3+PE-pos.

|                                                                                      |                     | Ordering data                          |             |           |             |           |             | Ordering data                          |             |             |             |           |             |
|--------------------------------------------------------------------------------------|---------------------|----------------------------------------|-------------|-----------|-------------|-----------|-------------|----------------------------------------|-------------|-------------|-------------|-----------|-------------|
| Description                                                                          | Cable clamping area | Order No.                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No.                              | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                                                                                      |                     | 3+PE-pos.                              |             | 5+PE-pos. |             | 6+PE-pos. |             | 7+PE-pos.                              |             | 5+3+PE-pos. |             |           |             |
| Cable plug-in connector, with contact carrier, without contacts, for socket assembly | 5 mm ... 8 mm       | 1607682                                | 1           | 1607717   | 1           | 1613577   | 1           | 1607755                                | 1           | 1613619     | 1           |           |             |
|                                                                                      | 8 mm ... 10 mm      | 1607684                                | 1           | 1607719   | 1           | 1613579   | 1           | 1607758                                | 1           | 1613621     | 1           |           |             |
|                                                                                      | 10 mm ... 12.5 mm   | 1624537                                | 1           | 1624534   | 1           | 1624549   | 1           | 1624555                                | 1           | 1624638     | 1           |           |             |
| Cable plug-in connector, with contact carrier, without contacts, for pin assembly    | 5 mm ... 8 mm       | 1607663                                | 1           | 1607699   | 1           | 1613558   | 1           | 1607735                                | 1           | 1613600     | 1           |           |             |
|                                                                                      | 8 mm ... 10 mm      | 1607666                                | 1           | 1607701   | 1           | 1613560   | 1           | 1607737                                | 1           | 1613602     | 1           |           |             |
|                                                                                      | 10 mm ... 12.5 mm   | 1624534                                | 1           | 1624540   | 1           | 1624546   | 1           | 1624552                                | 1           | 1624636     | 1           |           |             |
|                                                                                      |                     | Accessories                            |             |           |             |           |             | Accessories                            |             |             |             |           |             |
| Crimp contacts                                                                       |                     | Order separately, see page 362 onwards |             |           |             |           |             | Order separately, see page 362 onwards |             |             |             |           |             |
| Color rings, 50 pcs. in set (to be ordered separately)                               |                     | See page 412                           |             |           |             |           |             | See page 412                           |             |             |             |           |             |



M17 to M58 circular plug-in connectors

M17 - power plug-in connectors

Coupler plug-in connector

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Individual marking of plug-in connectors with color rings

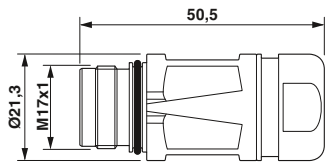


3+PE, 5+PE, 6+PE-pos.



7+PE, 5+3+PE-pos.

|                                                                                                       |                     | Ordering data                          |             |           |             | Ordering data                          |             |           |             |
|-------------------------------------------------------------------------------------------------------|---------------------|----------------------------------------|-------------|-----------|-------------|----------------------------------------|-------------|-----------|-------------|
| Description                                                                                           | Cable clamping area | Order No.                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No.                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                                                                                                       |                     | 3+PE-pos.                              |             | 5+PE-pos. |             | 6+PE-pos.                              |             | 7+PE-pos. |             |
| <b>Coupler plug-in connector</b> , with contact carrier, without contacts, for <b>socket assembly</b> |                     |                                        |             |           |             |                                        |             |           |             |
|                                                                                                       | 5 mm ... 8 mm       | 1607688                                | 1           | 1607723   | 1           | 1613583                                | 1           | 1607764   | 1           |
|                                                                                                       | 8 mm ... 10 mm      | 1607689                                | 1           | 1607724   | 1           | 1613584                                | 1           | 1607765   | 1           |
|                                                                                                       | 10 mm ... 12.5 mm   | 1624539                                | 1           | 1624545   | 1           | 1624551                                | 1           | 1624557   | 1           |
| <b>Coupler plug-in connector</b> , with contact carrier, without contacts, for <b>pin assembly</b>    |                     |                                        |             |           |             |                                        |             |           |             |
|                                                                                                       | 5 mm ... 8 mm       | 1607670                                | 1           | 1607706   | 1           | 1613564                                | 1           | 1607741   | 1           |
|                                                                                                       | 8 mm ... 10 mm      | 1607671                                | 1           | 1607707   | 1           | 1613565                                | 1           | 1607742   | 1           |
|                                                                                                       | 10 mm ... 12.5 mm   | 1624536                                | 1           | 1624542   | 1           | 1624548                                | 1           | 1624554   | 1           |
|                                                                                                       |                     | Accessories                            |             |           |             | Accessories                            |             |           |             |
| <b>Crimp contacts</b>                                                                                 |                     | Order separately, see page 362 onwards |             |           |             | Order separately, see page 362 onwards |             |           |             |
| <b>Color rings</b> , 50 pcs. in set (to be ordered separately)                                        |                     | See page 412                           |             |           |             | See page 412                           |             |           |             |



### Device plug-in connector, straight, front mounting

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Contact insert for support on the device or can be snapped in
- Individual marking of plug-in connectors with color rings
- **Flange dimensions**  
25.7 mm x 25.7 mm

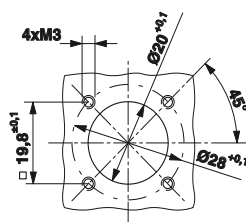


3+PE, 5+PE, 6+PE-pos.

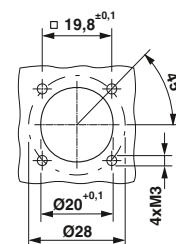


7+PE, 5+3+PE-pos.

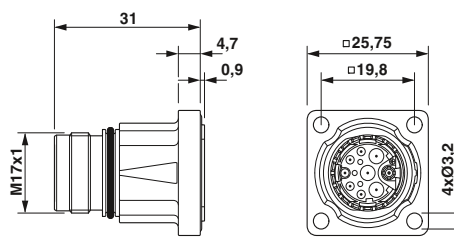
| Description                                                                                                                                             | Ordering data                                          |             |           |             |           |             | Ordering data                                          |             |             |             |           |             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|-------------|-----------|-------------|-----------|-------------|--------------------------------------------------------|-------------|-------------|-------------|-----------|-------------|
|                                                                                                                                                         | Order No.                                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No.                                              | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                                                                                                                                                         | 3+PE-pos.                                              |             | 5+PE-pos. |             | 6+PE-pos. |             | 7+PE-pos.                                              |             | 5+3+PE-pos. |             |           |             |
| <b>Device plug-in connector</b> , with contact carrier, <b>without</b> contacts, for <b>socket assembly</b><br>Contact insert for support on the device | 1619189                                                | 1           | 1619191   | 1           | 1619193   | 1           | 1619195                                                | 1           | 1620459     | 1           |           |             |
| <b>Device plug-in connector</b> , with contact carrier, <b>without</b> contacts, for <b>pin assembly</b><br>Contact insert for support on the device    | 1619186                                                | 1           | 1619190   | 1           | 1619192   | 1           | 1619194                                                | 1           | 1620460     | 1           |           |             |
| <b>Device plug-in connector</b> , with contact carrier, <b>without</b> contacts, for <b>socket assembly</b><br>Contact insert can be snapped in         | 1619212                                                | 1           | 1619214   | 1           | 1619216   | 1           | 1619218                                                | 1           | 1620461     | 1           |           |             |
| <b>Device plug-in connector</b> , with contact carrier, <b>without</b> contacts, for <b>pin assembly</b><br>Contact insert can be snapped in            | 1619209                                                | 1           | 1619213   | 1           | 1619215   | 1           | 1619217                                                | 1           | 1620462     | 1           |           |             |
|                                                                                                                                                         | Accessories                                            |             |           |             |           |             | Accessories                                            |             |             |             |           |             |
| <b>Crimp contacts</b><br><b>Color rings</b> , 50 pcs. in set (to be ordered separately)                                                                 | Order separately, see page 362 onwards<br>See page 412 |             |           |             |           |             | Order separately, see page 362 onwards<br>See page 412 |             |             |             |           |             |



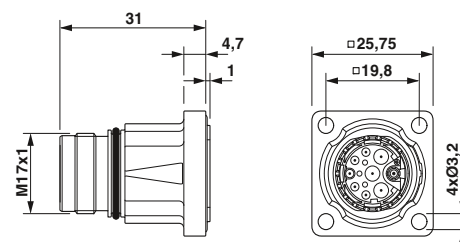
Installation dimensions



Installation dimensions



Contact insert for support on the device



Contact insert can be snapped in

# M17 to M58 circular plug-in connectors

## M17 - power plug-in connectors

### Device plug-in connector, angled, rotatable, front mounting

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Housing can be freely rotated up to 308°
- Individual marking of plug-in connectors with color rings
- Flange versions for M2.5/M3 attachment
- **Flange dimensions**  
**25.7 mm x 25.7 mm**



3+PE, 5+PE, 6+PE-pos.

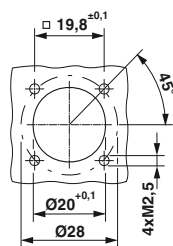


7+PE, 5+3+PE-pos.

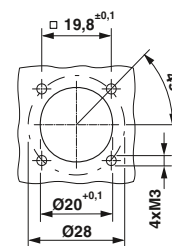
| Description                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------|
| Device plug-in connector, angled, rotatable, with contact carrier, <b>without</b> contacts, for <b>socket contacts</b>                     |
| Fixing with M2.5<br>Device plug-in connector, angled, rotatable, with contact carrier, <b>without</b> contacts, for <b>pin contacts</b>    |
| Fixing with M2.5<br>Device plug-in connector, angled, rotatable, with contact carrier, <b>without</b> contacts, for <b>socket contacts</b> |
| Fixing with M3<br>Device plug-in connector, angled, rotatable, with contact carrier, <b>without</b> contacts, for <b>pin contacts</b>      |
| Fixing with M3                                                                                                                             |
| Crimp contacts<br>Color rings, 50 pcs. in set (to be ordered separately)                                                                   |

| Ordering data                                          |             |           |             |           |             |
|--------------------------------------------------------|-------------|-----------|-------------|-----------|-------------|
| Order No.                                              | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 3+PE-pos.                                              |             | 5+PE-pos. |             | 6+PE-pos. |             |
| 1620428                                                | 1           | 1620432   | 1           | 1620434   | 1           |
| 1620427                                                | 1           | 1620431   | 1           | 1620433   | 1           |
| 1620443                                                | 1           | 1620447   | 1           | 1620449   | 1           |
| 1620444                                                | 1           | 1620448   | 1           | 1620450   | 1           |
| Accessories                                            |             |           |             |           |             |
| Order separately, see page 362 onwards<br>See page 412 |             |           |             |           |             |

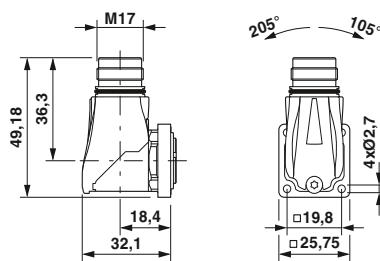
| Ordering data                                          |             |             |             |           |             |
|--------------------------------------------------------|-------------|-------------|-------------|-----------|-------------|
| Order No.                                              | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 7+PE-pos.                                              |             | 5+3+PE-pos. |             |           |             |
| 1620436                                                | 1           | 1620438     | 1           |           |             |
| 1620435                                                | 1           | 1620437     | 1           |           |             |
| 1620451                                                | 1           | 1620453     | 1           |           |             |
| 1620452                                                | 1           | 1620454     | 1           |           |             |
| Accessories                                            |             |             |             |           |             |
| Order separately, see page 362 onwards<br>See page 412 |             |             |             |           |             |



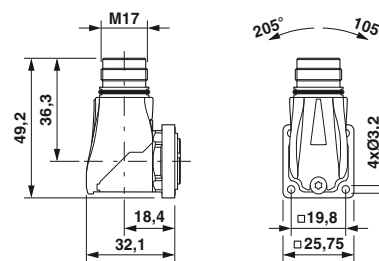
Installation dimensions



Installation dimensions



Fixing with M2.5



Fixing with M3

### Device plug-in connector, central fastening thread, front/rear mounting

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Contact carrier snapped in from the device side
- Individual marking of plug-in connectors with color rings



3+PE, 5+PE, 6+PE-pos.



7+PE, 5+3+PE-pos.

| Description                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Device plug-in connector, <b>front mounting</b> , M18 x 0.75 fastening thread, with contact carrier, without contacts, <b>for socket assembly</b> |
| Device plug-in connector, <b>front mounting</b> , M18 x 0.75 fastening thread, with contact carrier, without contacts, <b>for pin contacts</b>    |
| Device plug-in connector, <b>rear mounting</b> , M20 x 1.5 fastening thread, with contact carrier, without contacts, <b>for socket contacts</b>   |
| Device plug-in connector, <b>rear mounting</b> , M20 x 1.5 fastening thread, with contact carrier, without contacts, <b>for pin contacts</b>      |

| Ordering data |             |           |             |           |             |
|---------------|-------------|-----------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 3+PE-pos.     |             | 5+PE-pos. |             | 6+PE-pos. |             |

|         |   |         |   |         |   |
|---------|---|---------|---|---------|---|
| 1613546 | 1 | 1613550 | 1 | 1613572 | 1 |
| 1613544 | 1 | 1613548 | 1 | 1613553 | 1 |
| 1613547 | 1 | 1613551 | 1 | 1613587 | 1 |
| 1613545 | 1 | 1613549 | 1 | 1613568 | 1 |

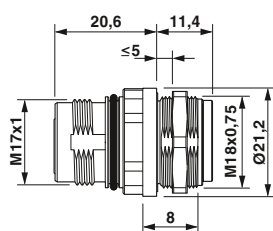
| Ordering data |             |             |             |           |             |
|---------------|-------------|-------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 7+PE-pos.     |             | 5+3+PE-pos. |             |           |             |

|         |   |         |   |  |  |
|---------|---|---------|---|--|--|
| 1613592 | 1 | 1613614 | 1 |  |  |
| 1613590 | 1 | 1613595 | 1 |  |  |
| 1613593 | 1 | 1613629 | 1 |  |  |
| 1613591 | 1 | 1613610 | 1 |  |  |

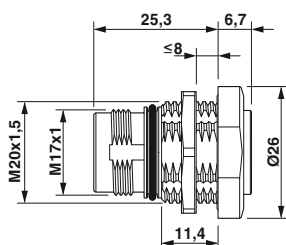
| Description                                                                             |
|-----------------------------------------------------------------------------------------|
| <b>Locking nut</b> , for mounting bore holes and anti-rotation protection               |
| M18 x 0.75<br>M20 x 1.5                                                                 |
| <b>Crimp contacts</b><br><b>Color rings</b> , 50 pcs. in set (to be ordered separately) |

| Accessories                                            |           |             |  |
|--------------------------------------------------------|-----------|-------------|--|
| Type                                                   | Order No. | Pcs. / Pkt. |  |
| ST-E2015151                                            | 1613831   | 10          |  |
| RC-13041                                               | 1600417   | 10          |  |
| Order separately, see page 362 onwards<br>See page 412 |           |             |  |

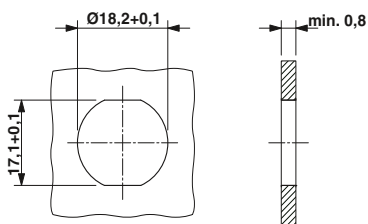
| Accessories                                            |           |             |  |
|--------------------------------------------------------|-----------|-------------|--|
| Type                                                   | Order No. | Pcs. / Pkt. |  |
| ST-E2015151                                            | 1613831   | 10          |  |
| RC-13041                                               | 1600417   | 10          |  |
| Order separately, see page 362 onwards<br>See page 412 |           |             |  |



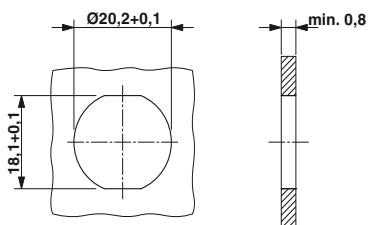
Front mounting, M18 x 0.75, order locking nut separately



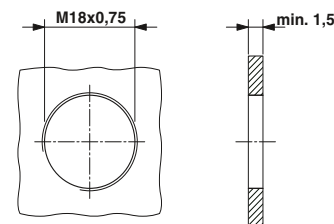
Rear mounting, M20 x 1.5, order locking nut separately



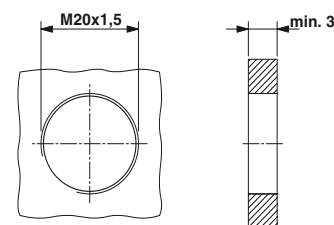
Installation dimensions: mounting with anti-rotation protection and locking nut



Installation dimensions: mounting with anti-rotation protection and locking nut



Installation dimensions: mounting with thread



Installation dimensions: mounting with thread

# M17 to M58 circular plug-in connectors

## M17 - power plug-in connectors

### Crimp contacts, punched-rolled

C-HC® are punched-rolled contacts. They are designed for high insertion/withdrawal cycles.

The contacts are available taped on rolls for manual or automatic processing.

**Note:** depending on the litz wire used, the connection cross sections (crimp ranges) may deviate from the listed values. For reasons of safety, only socket contacts may be used in the live part of the plug.



C-HC socket contacts



C-HC pin contacts

| Description                                                          | Connection cross section [mm²] |
|----------------------------------------------------------------------|--------------------------------|
| <b>Crimp contacts, C-HC punched-rolled, Ø 1.0 mm, 2500 pcs./roll</b> |                                |
|                                                                      | 0.06 mm² ... 0.25 mm²          |
|                                                                      | 0.2 mm² ... 0.56 mm²           |
| <b>Crimp contact C-HC punched-rolled, Ø 1.0 mm, 10,000 pcs./roll</b> |                                |
|                                                                      | 0.06 mm² ... 0.25 mm²          |
|                                                                      | 0.2 mm² ... 0.56 mm²           |

**Crimping tools**

| Ordering data |           |             |
|---------------|-----------|-------------|
| Type          | Order No. | Pcs. / Pkt. |
| SF-10KS320    | 1607031   | 1           |
| SF-10KS350    | 1607032   | 1           |
| SF-10KS330    | 1607358   | 1           |
| SF-10KS360    | 1607361   | 1           |

| Accessories                            |  |
|----------------------------------------|--|
| Order separately, see page 406 onwards |  |

| Ordering data |           |             |
|---------------|-----------|-------------|
| Type          | Order No. | Pcs. / Pkt. |
| SF-10KP320    | 1615961   | 1           |
| SF-10KP350    | 1615963   | 1           |
| SF-10KP330    | 1615962   | 1           |
| SF-10KP360    | 1615964   | 1           |

| Accessories                            |  |
|----------------------------------------|--|
| Order separately, see page 406 onwards |  |

#### Contact diameter

| Number of positions | Number of contacts | Contact Ø [mm] |
|---------------------|--------------------|----------------|
| 4(3+PE)             | 4                  | 2              |
| 6(5+PE)             | 6                  | 1              |
| 7(6+PE)             | 7                  | 1              |
| 8(7+PE)             | 8                  | 1              |
| 9(5+3+PE)           | 5+3+PE             | 0.6+1+1        |
| 17                  | 17                 | 0.6            |

## Crimp contacts, turned

M17 power plug-in connectors are fitted with contacts with Ø 2 mm, Ø 1 mm or Ø 0.6 mm depending on the number of positions (see table below).

**Note:** depending on the litz wire used, the connection cross sections (crimp ranges) may deviate from the listed values. For reasons of safety, only socket contacts may be used in the live part of the plug.



Crimp contacts socket



Crimp contacts pin

|                         |                                | Ordering data                  |           |             | Ordering data                  |           |             |
|-------------------------|--------------------------------|--------------------------------|-----------|-------------|--------------------------------|-----------|-------------|
| Description             | Connection cross section [mm²] | Type                           | Order No. | Pcs. / Pkt. | Type                           | Order No. | Pcs. / Pkt. |
| Contact socket Ø 2.0 mm | 0.25 ... 1.0                   | ST-20KS010                     | 1607657   | 50          |                                |           |             |
|                         | 1.0 ... 2.5                    | ST-20KS020                     | 1607658   | 50          |                                |           |             |
| Contact socket Ø 1.0 mm | 0.06 mm² ... 0.25 mm²          | ST-10KS010                     | 1618239   | 100         |                                |           |             |
|                         | 0.34 mm² ... 0.5 mm²           | ST-10KS020                     | 1618251   | 100         |                                |           |             |
|                         | 0.5 mm² ... 1.0 mm²            | ST-10KS030                     | 1618254   | 100         |                                |           |             |
| Contact socket Ø 0.6 mm | 0.06 mm² ... 0.25 mm²          | ST-06KS010                     | 1607580   | 100         |                                |           |             |
|                         | 0.14 mm² ... 0.34 mm²          | ST-06KS020                     | 1607581   | 100         |                                |           |             |
|                         | 0.34 mm² ... 0.50 mm²          | ST-06KS030                     | 1607582   | 100         |                                |           |             |
| Contact pin Ø 2.0 mm    | 0.25 ... 1.0                   |                                |           |             | ST-20KP010                     | 1607655   | 50          |
|                         | 1.0 ... 2.5                    |                                |           |             | ST-20KP020                     | 1607656   | 50          |
| Contact pin Ø 1.0 mm    | 0.06 mm² ... 0.25 mm²          |                                |           |             | ST-10KP010                     | 1618255   | 100         |
|                         | 0.34 mm² ... 0.5 mm²           |                                |           |             | ST-10KP020                     | 1618256   | 100         |
|                         | 0.5 mm² ... 1.0 mm²            |                                |           |             | ST-10KP030                     | 1618261   | 100         |
| Contact pin Ø 0.6 mm    | 0.06 mm² ... 0.25 mm²          |                                |           |             | ST-06KP010                     | 1607577   | 100         |
|                         | 0.14 mm² ... 0.34 mm²          |                                |           |             | ST-06KP020                     | 1607578   | 100         |
|                         | 0.34 mm² ... 0.50 mm²          |                                |           |             | ST-06KP030                     | 1607579   | 100         |
|                         |                                | Accessories                    |           |             | Accessories                    |           |             |
| Crimping tools          |                                | Order separately, see page 407 |           |             | Order separately, see page 407 |           |             |

## Contact diameter

| Number of positions | Number of contacts | Contact Ø [mm] |
|---------------------|--------------------|----------------|
| 4(3+PE)             | 4                  | 2              |
| 6(5+PE)             | 6                  | 1              |
| 7(6+PE)             | 7                  | 1              |
| 8(7+PE)             | 8                  | 1              |
| 9(5+3+PE)           | 5+3+PE             | 0.6+1+1        |
| 17                  | 17                 | 0.6            |



# M17 to M58 circular plug-in connectors

## M23 - power plug-in connectors

### Mechanical and electrical data

#### Mechanical data

|                                         |                                                                                             |
|-----------------------------------------|---------------------------------------------------------------------------------------------|
| Housing material:                       | Copper zinc alloy (CuZn), die-cast zinc (GD-Zn)                                             |
| Housing surface:                        | Nickel-plated/thick layer passivated (can be coated)                                        |
| Insulating body:                        | Polyamide (PA 66)                                                                           |
| Contact material:                       | Copper zinc alloy (CuZn)                                                                    |
| Contact surface:                        | Nickel-plated (Ni) with gold coating (Au)                                                   |
| Contact connection method:              | Crimp version                                                                               |
| Sealing and O-ring:                     | Fluorocarbon rubber (FKM)                                                                   |
| Ambient temperature:                    | -40°C ... 125°C                                                                             |
| Cable entry:                            | Cable and coupler plug-in connectors for cable outside diameter of 7.5 - 18 mm, shielded    |
| Type of locking:                        | M23 SPEEDCON screw locking, cable plug-in connector<br>optional M23 x 1 coarse-pitch thread |
| Mechanical insertion/withdrawal cycles: | Standard: 100                                                                               |
| Protection class:                       | IP67 in the locked state                                                                    |

#### Electrical data

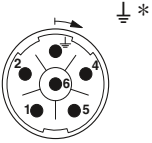
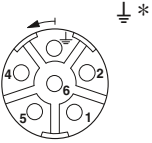
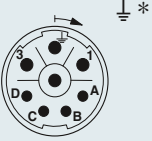
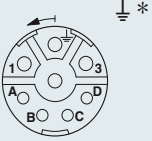
| Number of positions                                  |             | 6 (5+PE)          | 8 (4+3+PE)   |   |                   |   |              |
|------------------------------------------------------|-------------|-------------------|--------------|---|-------------------|---|--------------|
| Contacts                                             |             | 5 + PE            | 4            | + | 3                 | + | PE           |
| Contact Ø                                            | [mm]        | 2                 | 1            |   | 2                 |   | 2            |
| Litz wire cross sections                             |             |                   |              |   |                   |   |              |
| Short version, cable Ø max. 14 mm                    | [mm²]       | 0.25 ... 2.5      | 0.06 ... 1.0 |   | 0.25 ... 2.5      |   | 0.25 ... 2.5 |
| Long version, cable Ø max. 18 mm                     | [mm²]       | 0.25 ... 4.0      | 0.06 ... 1.0 |   | 0.25 ... 4.0      |   | 0.25 ... 4.0 |
| Device plug-in connectors                            | [mm²]       | 0.25 ... 4.0      | 0.06 ... 1.0 |   | 0.25 ... 4.0      |   | 0.25 ... 4.0 |
| Nominal current per contact at 25°C <sup>1)</sup>    |             | 30                | 9            |   | 30                |   | –            |
| <b>Specifications according to DIN EN 61984:2009</b> |             |                   |              |   |                   |   | –            |
| Rated voltage                                        | [V AC/DC]   | 630 <sup>2)</sup> | 250          |   | 630 <sup>2)</sup> |   | –            |
| Test/surge voltage                                   | [kV AC]     | 6                 | 4            |   | 6                 |   | –            |
| Surge voltage category                               |             | III               |              |   | III               |   |              |
| Pollution degree <sup>3)</sup>                       |             | 3                 |              |   | 3                 |   |              |
| Installation height                                  | [m]         | Up to 3000        |              |   | Up to 3000        |   |              |
| Cable clamping area 4)                               | max. Ø [mm] | 18                |              |   | 18                |   |              |

<sup>1)</sup> The effective current carrying capacity must be determined via a derating curve, if necessary, according to the application.

<sup>2)</sup> 400 V when equipped with punched-rolled C-HC contacts

<sup>3)</sup> The values specified assume that the plug-in connector pair is correctly locked and is only disconnected for testing and maintenance purposes. If the plug-in connector is unlocked and exposed to ambient conditions, and if there is a danger of contamination, the plug-in connector must be sealed using a protective cap ≥ IP54.

<sup>4)</sup> The cable clamping areas specified on the following pages may vary depending on the cable material/structure. Selection and testing is the responsibility of the user.

| Contact chamber numbering<br>(view of plug-in side) |                                                                                   |                                                   |                                                                                     |                                                   |
|-----------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------|
| Number of positions                                 | Pin                                                                               |                                                   | Socket                                                                              |                                                   |
| 6-pos.<br>(5 + PE)<br>Crimp                         |  | * with grounding spring,<br><b>Pos. 3 leading</b> |  | * with grounding spring,<br><b>Pos. 3</b>         |
| 8-pos.<br>(4 + 3 + PE)<br>Crimp                     |  | * with grounding spring,<br><b>Pos. 2</b>         |  | * with grounding spring,<br><b>Pos. 2 leading</b> |

# M17 to M58 circular plug-in connectors

## M23 - power plug-in connectors

### Selection guide

M23 power plug-in connector up to 30 A/630 V, crimp ranges up to 4 mm<sup>2</sup>

- Cable plug-in connectors
- Coupler plug-in connectors
- Device plug-in connectors (device flanges)
- Feed-throughs/panel feed-throughs

The plug-in connectors are supplied fully pre-assembled and are complemented by the respective crimp contacts.

The product chart provides an overview of the available components.

### Plug-in connector type

#### Cable plug-in connectors

Short, SPEEDCON rapid interlock system, see page 368.

M23 x 1 standard interlocking, see page 368.



Long, SPEEDCON rapid interlock system, see page 368.

M23 x 1 standard interlocking, see page 368.



#### Device plug-in connectors with knurled nut

Straight, see page 371.



Angled, see page 371.



#### Coupler plug-in connectors

Short, see page 369.



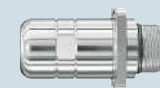
Long, see page 369.



With mounting flange  
Short, see page 372.



With mounting flange  
Long, see page 372.



#### Device plug-in connectors

Straight, see page 370.



Angled, rotatable, flange dimensions 26 mm x 26 mm, see page 370.



Angled, rotatable, flange dimensions 28 mm x 28 mm, see page 370.



#### Panel feed-through

External socket - internal pin, see page 373.



Panel feed-throughs are fully wired at the time of delivery

**Crimp contacts****Tools/accessories**

Socket contacts

**Socket contacts**

Turned, see page 374.



Crimping pliers with digital display for turned crimp contacts, see page 407.



Pin contacts

**Pin contacts**

Turned, see page 374.

**Accessories**

Color rings for individually marking the plug-in connectors, see page 412.



Pin contacts

**Note:**

For reasons of safety, only socket contacts may be used in the live part of the plug.

# M17 to M58 circular plug-in connectors

## M23 - power plug-in connectors

### Cable plug-in connectors, long and short design

- SPEEDCON rapid interlock system or M23 standard interlocking
- Standard knurled nuts compatible with mating plugs with SPEEDCON or M23 standard external thread
- Individual marking of plug-in connectors with color rings



Cable plug-in connector, SPEEDCON

N



Cable plug-in connector, M23 standard interlocking

#### Ordering data

| Description | Cable clamping area |
|-------------|---------------------|
|-------------|---------------------|

|                                                                                                                                                               |                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Cable plug-in connector, short, with contact carrier, without contacts, for cable Ø 7.5 mm to 14 mm, connection cross section up to 2.5 mm<sup>2</sup></b> |                  |
| Universal gasket                                                                                                                                              | 7.5 mm ... 14 mm |
|                                                                                                                                                               | 7.5 mm ... 9 mm  |
|                                                                                                                                                               | 9 mm ... 11 mm   |
|                                                                                                                                                               | 11 mm ... 14 mm  |

|                                                                                                                                                            |                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Cable plug-in connector, long, with contact carrier, without contacts, for cable Ø 7.5 mm to 18 mm, connection cross section up to 4 mm<sup>2</sup></b> |                  |
| Universal gasket                                                                                                                                           | 7.5 mm ... 18 mm |
|                                                                                                                                                            | 7.5 mm ... 9 mm  |
|                                                                                                                                                            | 9 mm ... 12 mm   |
|                                                                                                                                                            | 12 mm ... 15 mm  |
|                                                                                                                                                            | 15 mm ... 18 mm  |

| Order No. | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. |
|-----------|-------------|-------------|-------------|
| 5+PE-pos. |             | 4+3+PE-pos. |             |

|         |   |         |   |
|---------|---|---------|---|
| 1618197 | 1 | 1618207 | 1 |
| 1618194 | 1 | 1618204 | 1 |
| 1618195 | 1 | 1618205 | 1 |
| 1618196 | 1 | 1618206 | 1 |

|         |   |         |   |
|---------|---|---------|---|
| 1618202 | 1 | 1618212 | 1 |
| 1618201 | 1 | 1618211 | 1 |
| 1618200 | 1 | 1618210 | 1 |
| 1618199 | 1 | 1618209 | 1 |
| 1618198 | 1 | 1618208 | 1 |

#### Ordering data

| Order No. | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. |
|-----------|-------------|-------------|-------------|
| 5+PE-pos. |             | 4+3+PE-pos. |             |

|         |   |         |   |
|---------|---|---------|---|
| 1605532 | 1 | 1605602 | 1 |
| 1605524 | 1 | 1605595 | 1 |
| 1605526 | 1 | 1605596 | 1 |
| 1605529 | 1 | 1605597 | 1 |

|         |   |         |   |
|---------|---|---------|---|
| 1605549 | 1 | 1605617 | 1 |
| 1605548 | 1 | 1605614 | 1 |
| 1605546 | 1 | 1605610 | 1 |
| 1605545 | 1 | 1605607 | 1 |
| 1605543 | 1 | 1605605 | 1 |

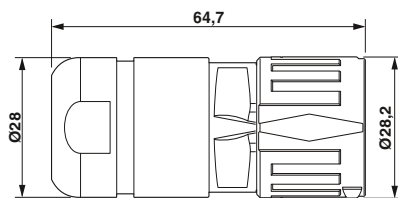
#### Accessories

|                                                                |
|----------------------------------------------------------------|
| <b>Crimp contacts</b>                                          |
| <b>Color rings</b> , 50 pcs. in set (to be ordered separately) |

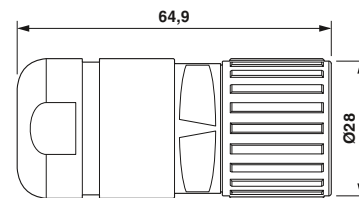
For socket contacts, see page 374  
See page 412

#### Accessories

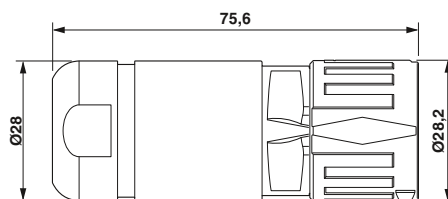
For socket contacts, see page 374  
See page 412



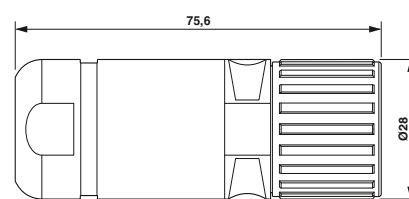
Short design



Short design



Long design



Long design

### Coupler plug-in connectors, long and short design

- Compatible with mating plugs with SPEEDCON or M23 standard knurled nuts
- Individual marking of plug-in connectors with color rings

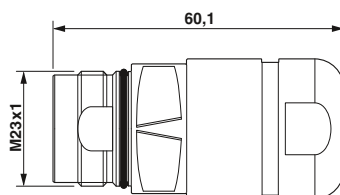


Coupler plug-in connector,  
short

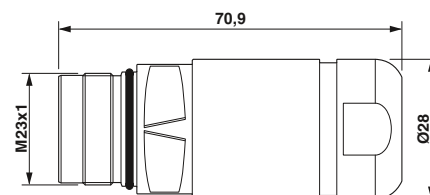


Coupler plug-in connector,  
long

|                                                                                                                                                                            |                     | Ordering data                  |             |             |             | Ordering data                  |             |             |             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------------------|-------------|-------------|-------------|--------------------------------|-------------|-------------|-------------|
| Description                                                                                                                                                                | Cable clamping area | Order No.                      | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. | Order No.                      | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. |
|                                                                                                                                                                            |                     | 5+PE-pos.                      |             | 4+3+PE-pos. |             | 5+PE-pos.                      |             | 4+3+PE-pos. |             |
| <b>Coupler plug-in connector, short</b> , with contact carrier,<br><b>without</b> contacts, <b>for cable Ø 7.5 mm to 14 mm</b> ,<br>connection cross section up to 2.5 mm² |                     |                                |             |             |             |                                |             |             |             |
| Universal gasket                                                                                                                                                           | 7.5 mm ... 14 mm    | 1605499                        | 1           | 1605575     | 1           |                                |             |             |             |
|                                                                                                                                                                            | 7.5 mm ... 9 mm     | 1605494                        | 1           | 1605568     | 1           |                                |             |             |             |
|                                                                                                                                                                            | 9 mm ... 11 mm      | 1605496                        | 1           | 1605570     | 1           |                                |             |             |             |
|                                                                                                                                                                            | 11 mm ... 14 mm     | 1605498                        | 1           | 1605571     | 1           |                                |             |             |             |
| <b>Coupler plug-in connector, long</b> , with contact carrier,<br><b>without</b> contacts, <b>for cable Ø 7.5 mm to 18 mm</b> ,<br>connection cross section up to 4 mm²    |                     |                                |             |             |             |                                |             |             |             |
| Universal gasket                                                                                                                                                           | 7.5 mm ... 18 mm    |                                |             |             |             | 1605510                        | 1           | 1605583     | 1           |
|                                                                                                                                                                            | 7.5 mm ... 9 mm     |                                |             |             |             | 1605509                        | 1           | 1605582     | 1           |
|                                                                                                                                                                            | 9 mm ... 12 mm      |                                |             |             |             | 1605508                        | 1           | 1605581     | 1           |
|                                                                                                                                                                            | 12 mm ... 15 mm     |                                |             |             |             | 1605507                        | 1           | 1605580     | 1           |
|                                                                                                                                                                            | 15 mm ... 18 mm     |                                |             |             |             | 1605505                        | 1           | 1605578     | 1           |
|                                                                                                                                                                            |                     | Accessories                    |             |             |             | Accessories                    |             |             |             |
| <b>Crimp contacts</b>                                                                                                                                                      |                     | For pin contacts, see page 374 |             |             |             | For pin contacts, see page 374 |             |             |             |
| <b>Color rings</b> , 50 pcs. in set (to be ordered separately)                                                                                                             |                     | See page 412                   |             |             |             | See page 412                   |             |             |             |



Short design



Long design

# M17 to M58 circular plug-in connectors

## M23 - power plug-in connectors

### Device plug-in connector, straight and angled, rotatable

- Compatible with mating plugs with SPEEDCON or M23 standard knurled nuts



Device plug-in connector, straight



Device plug-in connector, angled rotatable

#### Ordering data

| Order No. | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. |
|-----------|-------------|-------------|-------------|
| 5+PE-pos. |             | 4+3+PE-pos. |             |
| 1605520   | 1           | 1605589     | 1           |
| 1620619   | 1           | 1620620     | 1           |

#### Ordering data

| Order No. | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. |
|-----------|-------------|-------------|-------------|
| 5+PE-pos. |             | 4+3+PE-pos. |             |
| 1620657   | 1           | 1620660     | 1           |
| 1620661   | 1           | 1620662     | 1           |

#### Description

Device plug-in connector with contact carrier without contacts

Flange dimensions: 26 mm x 26 mm

Device plug-in connector, with reinforced contact carrier (black) for angled mating plugs, without contacts

Flange dimensions: 26 mm x 26 mm

Device plug-in connector with contact carrier without contacts

Flange dimensions: 28 mm x 28 mm

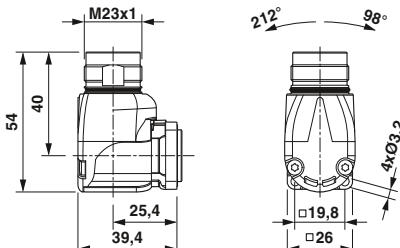
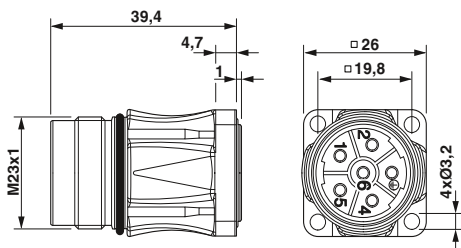
#### Accessories

##### Crimp contacts

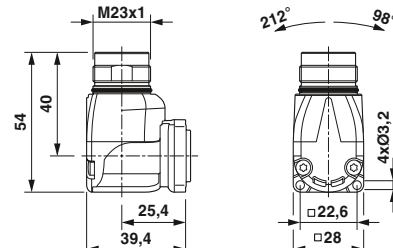
Color rings, 50 pcs. in set (to be ordered separately)

For pin contacts, see page 374  
See page 412

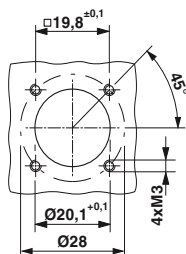
For pin contacts, see page 374  
See page 412



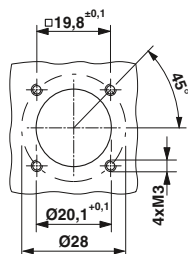
Flange dimensions 26 mm x 26 mm



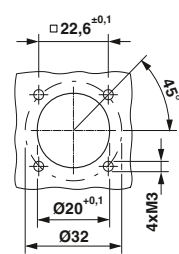
Flange dimensions 28 mm x 28 mm



Installation dimensions



Installation dimensions



Installation dimensions

## Device plug-in connector with knurled nut

Device plug-in connectors with knurled nuts must be equipped with socket contacts.

- Standard knurled nuts compatible with mating plugs with SPEEDCON or M23 standard external thread

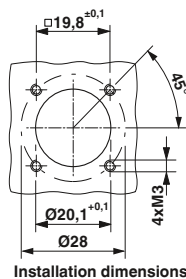
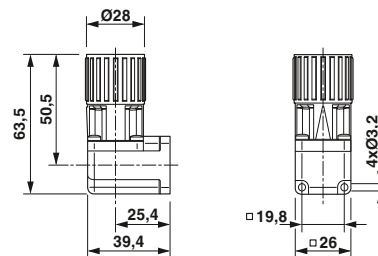
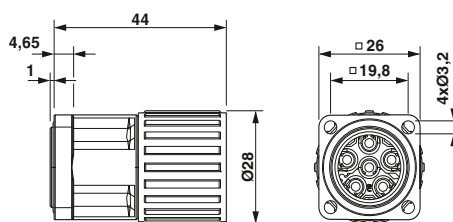


Device plug-in connector with knurled nut, straight

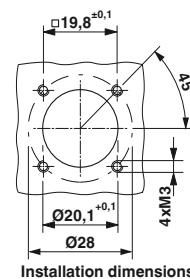


Device plug-in connector with knurled nut, angled, fixed

| Description                                                                                              | Ordering data                     |             |             |             | Ordering data                     |             |             |             |
|----------------------------------------------------------------------------------------------------------|-----------------------------------|-------------|-------------|-------------|-----------------------------------|-------------|-------------|-------------|
|                                                                                                          | Order No.                         | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. | Order No.                         | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. |
|                                                                                                          | 5+PE-pos.                         |             | 4+3+PE-pos. |             | 5+PE-pos.                         |             | 4+3+PE-pos. |             |
|                                                                                                          | 1607082                           |             | 1           |             | 1605622                           |             | 1           |             |
| Device plug-in connector with knurled nut, <b>straight</b> , with contact carrier, without contacts      |                                   |             |             |             |                                   |             |             |             |
| Device plug-in connector with knurled nut, <b>angled, fixed</b> , with contact carrier, without contacts |                                   |             |             |             | 1607405                           |             | 1           |             |
|                                                                                                          |                                   |             |             |             | 1607429                           |             | 1           |             |
|                                                                                                          | Accessories                       |             |             |             | Accessories                       |             |             |             |
| Crimp contacts                                                                                           | For socket contacts, see page 374 |             |             |             | For socket contacts, see page 374 |             |             |             |



Installation dimensions



Installation dimensions



# M17 to M58 circular plug-in connectors

## M23 - power plug-in connectors

### Panel feed-through, long and short design

- Rear mounting
- Compatible with mating plugs with M23 standard knurled nuts



Panel feed-through,  
short



Panel feed-through,  
long

#### Ordering data

| Description | Cable clamping area |
|-------------|---------------------|
|-------------|---------------------|

**Panel feed-through, short** with contact carrier, without contacts, for cable Ø 7.5 to 14 mm, connection cross section up to 2.5 mm<sup>2</sup>

|                  |                  |
|------------------|------------------|
| Universal gasket | 7.5 mm ... 14 mm |
|                  | 7.5 mm ... 9 mm  |
|                  | 9 mm ... 11 mm   |
|                  | 11 mm ... 14 mm  |

**Panel feed-through, long** with contact carrier, without contacts, for cable Ø 7.5 to 18 mm, connection cross section up to 4 mm<sup>2</sup>

|                  |                  |
|------------------|------------------|
| Universal gasket | 7.5 mm ... 18 mm |
|                  | 7.5 mm ... 9 mm  |
|                  | 9 mm ... 12 mm   |
|                  | 12 mm ... 15 mm  |
|                  | 15 mm ... 18 mm  |

| Order No.        | Pcs. / Pkt. | Order No.          | Pcs. / Pkt. |
|------------------|-------------|--------------------|-------------|
| <b>5+PE-pos.</b> |             | <b>4+3+PE-pos.</b> |             |

|                |   |                |   |
|----------------|---|----------------|---|
| <b>1605517</b> | 1 | <b>1607051</b> | 1 |
| <b>1605516</b> | 1 | <b>1607048</b> | 1 |
| <b>1607037</b> | 1 | <b>1607049</b> | 1 |
| <b>1607038</b> | 1 | <b>1607050</b> | 1 |

#### Ordering data

| Order No.        | Pcs. / Pkt. | Order No.          | Pcs. / Pkt. |
|------------------|-------------|--------------------|-------------|
| <b>5+PE-pos.</b> |             | <b>4+3+PE-pos.</b> |             |

|                |   |                |   |
|----------------|---|----------------|---|
| <b>1605518</b> | 1 | <b>1607056</b> | 1 |
| <b>1607042</b> | 1 | <b>1607055</b> | 1 |
| <b>1607041</b> | 1 | <b>1607054</b> | 1 |
| <b>1607040</b> | 1 | <b>1607053</b> | 1 |
| <b>1607039</b> | 1 | <b>1607052</b> | 1 |

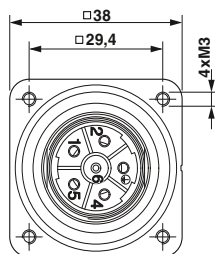
#### Accessories

**Crimp contacts**  
**Color rings**, 50 pcs. in set (to be ordered separately)

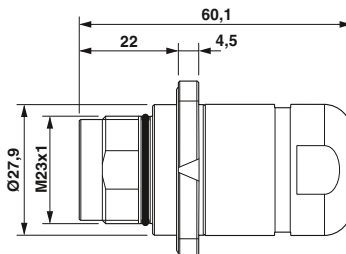
For pin contacts, see page 374  
See page 412

#### Accessories

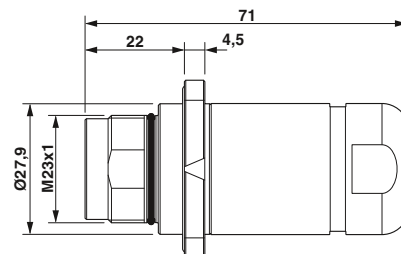
For pin contacts, see page 374  
See page 412



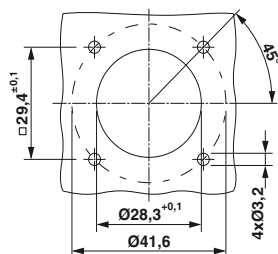
Flange dimensions for short and long design



Short design



Long design



Installation dimensions for short and long design

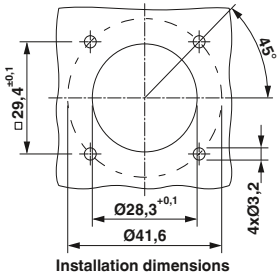
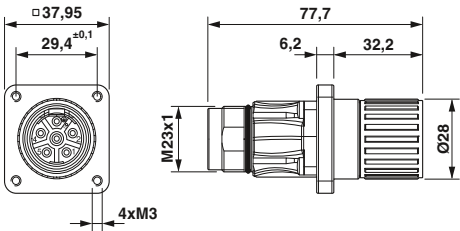
Panel feed-through, fully wired

- Front mounting
- Internally fully wired and fitted with contacts
- Compatible with mating plugs with M23 standard knurled nuts



Panel feed-through,  
pin/socket

| Description                                                  | Ordering data |             |             |             |
|--------------------------------------------------------------|---------------|-------------|-------------|-------------|
|                                                              | Order No.     | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. |
|                                                              | 5+PE-pos.     |             | 4+3+PE-pos. |             |
| Panel feed-through, pin inside - socket outside, fully wired | 1605492       | 1           | 1605567     | 1           |



# M17 to M58 circular plug-in connectors

## M23 - power plug-in connectors

### Crimp contacts, turned

The 6-pos. (5+PE) versions are assembled with 2 mm Ø contacts. The 8-pos. (4+3+PE) versions are equipped with four 1 mm Ø signal contacts and four 2 mm Ø contacts.

**Note:** observe the crimp ranges for cable and coupler plug-in connectors.

- Short version: connection cross sections up to 2.5 mm², max. cable diameter of 14 mm
- Long version: connection cross sections up to 4 mm², max. cable diameter of 18 mm



Crimp contacts, socket



Crimp contacts, pin

| Ordering data                                                                                              |                                |            | Ordering data |             |            |
|------------------------------------------------------------------------------------------------------------|--------------------------------|------------|---------------|-------------|------------|
| Description                                                                                                | Connection cross section [mm²] | Type       | Order No.     | Pcs. / Pkt. | Type       |
| Contacts, socket Ø 2.0 mm for cable and device plug-in connectors with knurled nuts, power and PE contacts | 0.25 ... 1.0                   | SF-7PS2000 | 1605636       | 50          |            |
|                                                                                                            | 0.75 ... 1.5                   | SF-7NS2000 | 1605631       | 50          |            |
|                                                                                                            | 1.0 ... 2.5                    | SF-7QS2000 | 1605643       | 50          |            |
|                                                                                                            | 4.0                            | SF-7MS2000 | 1605628       | 50          |            |
| Contacts, socket Ø 1.0 mm for cable and device plug-in connectors with knurled nuts, signal contacts       | 0.06 ... 0.2                   | SF-6CS2000 | 1605562       | 100         |            |
|                                                                                                            | 0.14 ... 0.5                   | SF-10KS004 | 1607356       | 100         |            |
|                                                                                                            | 0.5 ... 1.0                    | SF-6AS2000 | 1605557       | 100         |            |
| Contacts, pin Ø 2.0 mm for coupler plug-in connectors, power and PE contacts                               | 0.14 ... 0.25                  |            |               |             | SF-7RP2000 |
|                                                                                                            | 0.25 ... 1.0                   |            |               |             | 1605646    |
|                                                                                                            | 0.75 ... 1.5                   |            |               |             | 1605634    |
|                                                                                                            | 1.0 ... 2.5                    |            |               |             | 1607376    |
| Contacts, pin Ø 1.0 mm for coupler plug-in connectors, signal contacts                                     | 0.06 ... 0.2                   |            |               |             | 1605639    |
|                                                                                                            | 0.14 ... 0.5                   |            |               |             | 1605626    |
|                                                                                                            | 0.5 ... 1.0                    |            |               |             |            |
| Contacts, pin Ø 2.0 mm for device plug-in connectors, power and PE contacts                                | 0.14 ... 0.25                  |            |               |             | SF-6CP2000 |
|                                                                                                            | 0.25 ... 1.0                   |            |               |             | 1605559    |
|                                                                                                            | 0.75 ... 1.5                   |            |               |             | 1607355    |
|                                                                                                            | 1.0 ... 2.5                    |            |               |             | 1605554    |
| Contacts, pin Ø 1.0 mm for device plug-in connectors, signal contacts                                      | 0.06 ... 0.2                   |            |               |             | SF-7RP2000 |
|                                                                                                            | 0.14 ... 0.5                   |            |               |             | 1605646    |
|                                                                                                            | 0.5 ... 1.0                    |            |               |             | 1605634    |
|                                                                                                            |                                |            |               |             | 1607376    |
|                                                                                                            |                                |            |               |             | 1605639    |
|                                                                                                            |                                |            |               |             | 1605626    |
|                                                                                                            |                                |            |               |             |            |
|                                                                                                            |                                |            |               |             | SF-6CP2000 |
|                                                                                                            |                                |            |               |             | 1605559    |
|                                                                                                            |                                |            |               |             | 1607355    |
|                                                                                                            |                                |            |               |             | 1605554    |

#### Crimping tools

Order separately, see page 407 onwards

Order separately, see page 407 onwards

#### Contact diameter

| Number of positions | Number of contacts | Contact Ø [mm] |
|---------------------|--------------------|----------------|
| 6(5+PE)             | 5+PE               | 2+2            |
| 8(4+3+PE)           | 4+3+PE             | 1+2+2          |



# M17 to M58 circular plug-in connectors

## M40 - power plug-in connectors

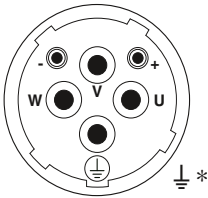
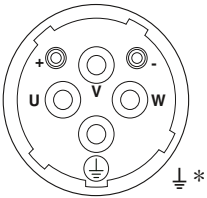
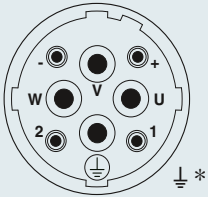
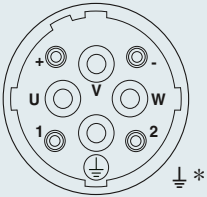
### Mechanical and electrical data

| Mechanical data                         |                                                                                                            |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------|
| Housing material:                       | Copper zinc alloy (CuZn), die-cast zinc (GD-Zn)                                                            |
| Housing surface:                        | Nickel-plated/thick layer passivated (can be coated)                                                       |
| Insulating body:                        | Polyamide (PA 66)                                                                                          |
| Contact material:                       | Copper zinc alloy (CuZn)                                                                                   |
| Contact surface:                        | Nickel-plated (Ni) with gold coating (Au)                                                                  |
| Contact connection method:              | Crimp version                                                                                              |
| Sealing and O-ring:                     | Fluorocarbon rubber (FKM)                                                                                  |
| Ambient temperature:                    | -40°C ... 125°C                                                                                            |
| Cable entry:                            | Cable outside diameter 9.0 - 26.5 mm, shielded                                                             |
| Type of locking:                        | M40 SPEEDCON rapid interlock system, cable plug-in connector optionally with M40 x 1.5 coarse-pitch thread |
| Mechanical insertion/withdrawal cycles: | Standard: 50                                                                                               |
| Protection class                        | IP67 in the locked state                                                                                   |

| Electrical data                                   |           |              |    |             |    |             |              |   |             |   |             |
|---------------------------------------------------|-----------|--------------|----|-------------|----|-------------|--------------|---|-------------|---|-------------|
| Number of positions                               |           | 6 (2+3+PE)   |    |             |    |             | 8 (4+3+PE)   |   |             |   |             |
| Contacts                                          |           | 2            | +  | 3           | +  | PE          | 4            | + | 3           | + | PE          |
| Contact Ø                                         | [mm]      | 2.0          |    | 3.6         |    | 3.6         | 2.0          |   | 3.6         |   | 3.6         |
| Litz wire cross sections                          |           |              |    |             |    |             |              |   |             |   |             |
| Cable and coupler plug-in connectors              | [mm²]     | 0.14 ... 4.0 |    | 0.75 ... 16 |    | 0.75 ... 16 | 0.14 ... 4.0 |   | 0.75 ... 16 |   | 0.75 ... 16 |
| Device plug-in connectors                         | [mm²]     | 0.14 ... 4.0 |    | 0.75 ... 10 |    | 0.75 ... 10 | 0.14 ... 4.0 |   | 0.75 ... 10 |   | 0.75 ... 10 |
| Nominal current per contact at 25°C <sup>1)</sup> |           | [A]          | 30 |             | 70 | –           | 30           |   | 70          |   | –           |
| Specifications according to DIN EN 61984:2009     |           |              |    |             |    |             |              |   |             |   |             |
| Rated voltage                                     | [V AC/DC] | 250          |    | 630         |    | –           | 250          |   | 630         |   | –           |
| Test/surge voltage                                | [kV]      | 4            |    | 6           |    | –           | 4            |   | 6           |   | –           |
| Surge voltage category                            |           |              |    | III         |    |             |              |   | III         |   |             |
| Pollution degree                                  |           |              |    | 3           |    |             |              |   | 3           |   |             |
| Installation height                               |           | [m]          |    | Up to 3000  |    |             |              |   | Up to 3000  |   |             |
| Cable clamping area <sup>2)</sup>                 |           | max. Ø [mm]  |    | 26.5        |    |             |              |   | 26.5        |   |             |

<sup>1)</sup> The effective current carrying capacity must be determined via a derating curve, if necessary, according to the application.

<sup>2)</sup> The cable clamping areas specified on the following pages may vary depending on the cable material/structure. Selecting and testing is the responsibility of the user.

| Contact chamber numbering<br>(view of plug-in side) |                                                                                   |                                                                                   |
|-----------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Number of positions                                 | Pin                                                                               | Socket                                                                            |
| 6-pos.<br>(2 + 3 + PE)<br>Crimp                     |  |  |
| 8-pos.<br>(4 + 3 + PE)<br>Crimp                     |  |  |

\* with grounding spring

## M17 to M58 circular plug-in connectors

### M40 - power plug-in connectors

#### Selection guide

M40 power plug-in connectors up to 70 A/630 V, crimp ranges up to 16 mm<sup>2</sup>

- Cable plug-in connectors
- Coupler plug-in connectors
- Device plug-in connectors (device flanges)
- Feed-throughs/panel feed-throughs

The plug-in connectors are supplied fully pre-assembled and are complemented by the respective crimp contacts.

In order to specify an M40 power plug-in connector for the cable and device plug-in connector side, the fully pre-assembled plug housing is supplemented by the corresponding crimp contacts. M40 plug-in connectors with knurled nuts can be optionally supplied with SPEEDCON rapid interlock system or with M40 x 1.5 coarse-pitch thread.

The product chart provides an overview of the available components.

#### Plug-in connector type

##### Cable plug-in connectors

SPEEDCON rapid interlock system, see page 380.



Mounting flange for wall mounting, see page 410.



M40 x 1.5 standard interlocking, see page 380.



Shielded

##### Device plug-in connectors with knurled nut

Straight, see page 382.



Angled, see page 383.



Shielded

##### Coupler plug-in connectors

See page 380.



Shielded

##### Device plug-in connectors

Angled, rotatable, M17, see page 384.



Straight, see page 381.



Socket contacts

Pin contacts

**Crimp contacts****Socket contacts**

Turned, see page 385.

**Pin contacts**

Turned, see page 385.

**Tools/accessories****Crimping tools**

Crimping pliers, see page 407.



Crimping pliers with digital display for turned crimp contacts, see page 407.

**Accessories**

Color rings for individually marking the plug-in connectors, see page 412.

**Note:**

For reasons of safety, only socket contacts may be used in the live part of the plug.



M17 to M58 circular plug-in connectors

M40 - power plug-in connectors

Cable plug-in connector

- SPEEDCON rapid interlock system or M40 standard interlocking
- Standard knurled nuts compatible with mating plugs with SPEEDCON or M40 standard external thread
- Individual marking of plug-in connectors with color rings



Cable plug-in connector, SPEEDCON



Cable plug-in connector

|                                                                                                                                              |                     | Ordering data                     |             |                |             | Ordering data                     |             |                |             |
|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------------------------|-------------|----------------|-------------|-----------------------------------|-------------|----------------|-------------|
| Description                                                                                                                                  | Cable clamping area | Order No.                         | Pcs. / Pkt. | Order No.      | Pcs. / Pkt. | Order No.                         | Pcs. / Pkt. | Order No.      | Pcs. / Pkt. |
|                                                                                                                                              |                     | 2+3+PE-pos.                       |             | 4+3+PE-pos.    |             | 2+3+PE-pos.                       |             | 4+3+PE-pos.    |             |
| <b>Cable plug-in connector housing</b> , with contact carrier,<br><b>without</b> contacts, connection cross section up to 16 mm <sup>2</sup> |                     |                                   |             |                |             |                                   |             |                |             |
|                                                                                                                                              | 9 mm ... 14 mm      | <b>1613428</b>                    | 1           | <b>1613434</b> | 1           | <b>1613518</b>                    | 1           | <b>1613528</b> | 1           |
|                                                                                                                                              | 14 mm ... 20.5 mm   | <b>1613429</b>                    | 1           | <b>1613435</b> | 1           | <b>1613519</b>                    | 1           | <b>1613529</b> | 1           |
|                                                                                                                                              | 20.5 mm ... 26.5 mm | <b>1613430</b>                    | 1           | <b>1613436</b> | 1           | <b>1613520</b>                    | 1           | <b>1613530</b> | 1           |
|                                                                                                                                              |                     | <b>Accessories</b>                |             |                |             | <b>Accessories</b>                |             |                |             |
| <b>Crimp contacts</b>                                                                                                                        |                     | For socket contacts, see page 385 |             |                |             | For socket contacts, see page 385 |             |                |             |
| <b>Color rings</b> , 50 pcs. in set (to be ordered separately)                                                                               |                     | See page 412                      |             |                |             | See page 412                      |             |                |             |



### Coupler and device plug-in connectors

- Compatible with mating plugs with SPEEDCON or M40 standard knurled nuts
- Individual marking of plug-in connectors with color rings

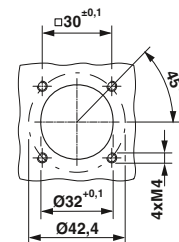
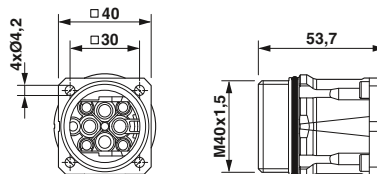
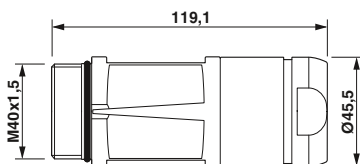


Coupler plug-in connector



Device plug-in connector, straight

|                                                                                                                                        |                     | Ordering data                  |             |             |             | Ordering data                  |             |             |             |
|----------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------------------|-------------|-------------|-------------|--------------------------------|-------------|-------------|-------------|
| Description                                                                                                                            | Cable clamping area | Order No.                      | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. | Order No.                      | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. |
|                                                                                                                                        |                     | 2+3+PE-pos.                    |             | 4+3+PE-pos. |             | 2+3+PE-pos.                    |             | 4+3+PE-pos. |             |
| <b>Coupler plug-in connector</b> , with contact carrier,<br><b>without</b> contacts, connection cross section up to 16 mm <sup>2</sup> |                     |                                |             |             |             |                                |             |             |             |
|                                                                                                                                        | 9 mm ... 14 mm      | 1613425                        | 1           | 1613431     | 1           |                                |             |             |             |
|                                                                                                                                        | 14 mm ... 20.5 mm   | 1613426                        | 1           | 1613432     | 1           |                                |             |             |             |
|                                                                                                                                        | 20.5 mm ... 26.5 mm | 1613427                        | 1           | 1613433     | 1           |                                |             |             |             |
| <b>Device plug-in connector, straight</b> , with contact carrier,<br><b>without</b> contacts                                           |                     |                                |             |             |             |                                |             |             |             |
| Connection cross section up to 10 mm <sup>2</sup>                                                                                      |                     |                                |             |             |             | 1613517                        | 1           | 1613527     | 1           |
|                                                                                                                                        |                     |                                |             |             |             |                                |             |             |             |
|                                                                                                                                        |                     | Accessories                    |             |             |             | Accessories                    |             |             |             |
| <b>Crimp contacts</b>                                                                                                                  |                     | For pin contacts, see page 385 |             |             |             | For pin contacts, see page 385 |             |             |             |
| <b>Color rings</b> , 50 pcs. in set (to be ordered separately)                                                                         |                     | See page 412                   |             |             |             | See page 412                   |             |             |             |



Installation dimensions

M17 to M58 circular plug-in connectors

M40 - power plug-in connectors

Device plug-in connector with knurled nut

- SPEEDCON rapid interlock system or M40 standard interlocking
- Standard knurled nuts compatible with mating plugs with SPEEDCON or M40 standard external thread
- Device plug-in connectors with knurled nuts must be fitted with socket contacts

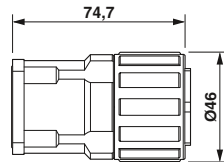
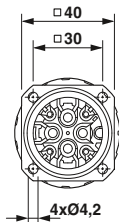
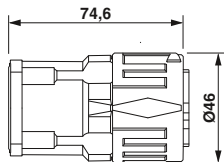
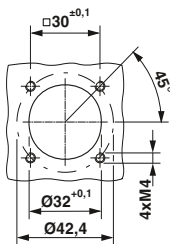


Device plug-in connector with knurled nut, straight, SPEEDCON



Device plug-in connector with knurled nut, straight

| Description                                                                                                                                                                     | Ordering data                                     |             |             |             | Ordering data                                     |             |             |             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-------------|-------------|-------------|---------------------------------------------------|-------------|-------------|-------------|
|                                                                                                                                                                                 | Order No.                                         | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. | Order No.                                         | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. |
|                                                                                                                                                                                 | 2+3+PE-pos.                                       |             | 4+3+PE-pos. |             | 2+3+PE-pos.                                       |             | 4+3+PE-pos. |             |
| <b>Device plug-in connector</b> with SPEEDCON knurled nut, <b>straight</b> , with contact carrier, <b>without</b> contacts<br>Connection cross section up to 16 mm <sup>2</sup> | 1613524                                           | 1           | 1613534     | 1           |                                                   |             |             |             |
| <b>Device plug-in connector</b> with standard knurled nut, <b>straight</b> , with contact carrier, <b>without</b> contacts<br>Connection cross section up to 16 mm <sup>2</sup> |                                                   |             |             |             | 1605823                                           | 1           | 1605865     | 1           |
| Accessories                                                                                                                                                                     |                                                   |             |             | Accessories |                                                   |             |             |             |
| <b>Crimp contacts</b><br><b>Color rings</b> , 50 pcs. in set (to be ordered separately)                                                                                         | For socket contacts, see page 385<br>See page 412 |             |             |             | For socket contacts, see page 385<br>See page 412 |             |             |             |



Installation dimensions

## Device plug-in connector with knurled nut

Device plug-in connectors with knurled nuts must be equipped with socket contacts.



Device plug-in connector with knurled nut, angled, SPEEDCON



Device plug-in connector with knurled nut, angled

### Ordering data

| Description                                                                                               |
|-----------------------------------------------------------------------------------------------------------|
| Device plug-in connector with SPEEDCON knurled nut, angled, with contact carrier, <b>without</b> contacts |
| Connection cross section up to 16 mm <sup>2</sup>                                                         |
| Device plug-in connector with knurled nut, angled, with contact carrier, <b>without</b> contacts          |
| Connection cross section up to 16 mm <sup>2</sup>                                                         |

| Order No.   | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. |
|-------------|-------------|-------------|-------------|
| 2+3+PE-pos. |             | 4+3+PE-pos. |             |

|         |   |         |   |
|---------|---|---------|---|
| 1613525 | 1 | 1613535 | 1 |
|---------|---|---------|---|

### Accessories

**Crimp contacts**  
Color rings, 50 pcs. in set (to be ordered separately)

For socket contacts, see page 385  
See page 412

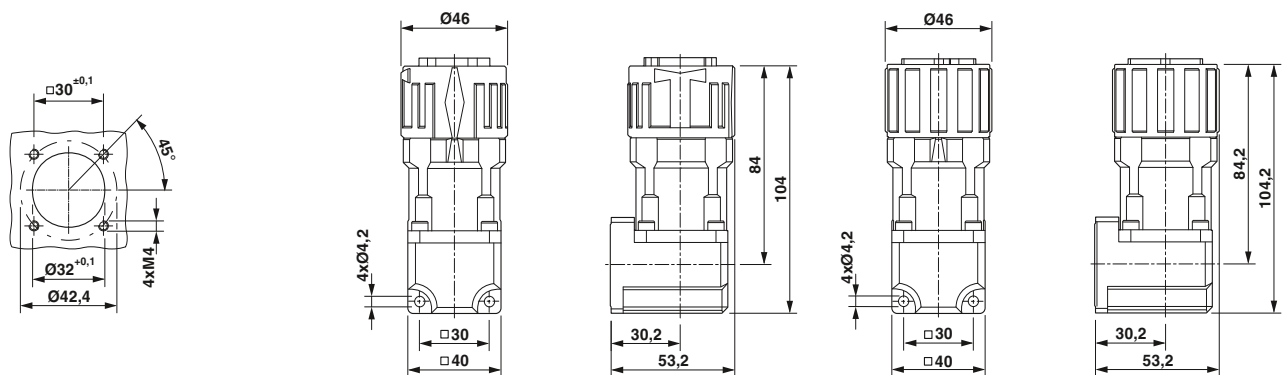
### Ordering data

| Order No.   | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. |
|-------------|-------------|-------------|-------------|
| 2+3+PE-pos. |             | 4+3+PE-pos. |             |

|         |   |         |   |
|---------|---|---------|---|
| 1607532 | 1 | 1607543 | 1 |
|---------|---|---------|---|

### Accessories

For socket contacts, see page 385  
See page 412



Installation dimensions

M17 to M58 circular plug-in connectors

M40 - power plug-in connectors

Device plug-in connector,  
angled, rotatable

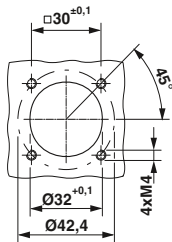
- Compatible with mating plugs with SPEEDCON or M40 standard knurled nuts
- The rotatable angled housing can be rotated freely through 310°
- Individual marking of plug-in connectors with color rings



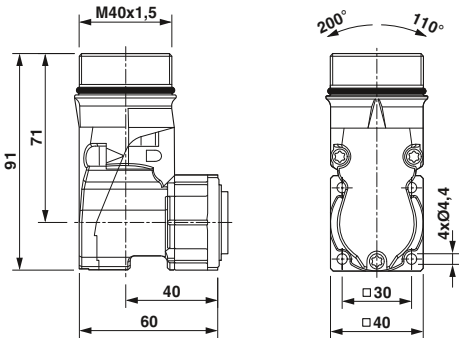
Device plug-in connector,  
angled rotatable

|                                                                                            |
|--------------------------------------------------------------------------------------------|
| Description                                                                                |
| Device plug-in connector, angled, rotatable, with contact carrier, <b>without</b> contacts |
| Connection cross section up to 10 mm²                                                      |
| Crimp contacts                                                                             |
| Color rings, 50 pcs. in set (to be ordered separately)                                     |

| Ordering data                  |             |             |             |
|--------------------------------|-------------|-------------|-------------|
| Order No.                      | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. |
| 2+3+PE-pos.                    |             | 4+3+PE-pos. |             |
| 1620663                        | 1           | 1620664     | 1           |
| Accessories                    |             |             |             |
| For pin contacts, see page 385 |             |             |             |
| See page 412                   |             |             |             |



Installation dimensions



## Crimp contacts, turned

The 6-pos. (2+3+PE) versions are equipped with two Ø 2 mm signal contacts and four 3.6 mm contacts (three power, 1 PE contact).

The 8-pos. (4+3+PE) versions are equipped with four 2 mm signal contacts and four 3.6 mm contacts (three power, 1 PE contact).

**Note:** depending on the litz wire used, the connection cross sections (crimp ranges) can differ from the values mentioned below.



Crimp contacts, socket



Crimp contacts, pin

| Ordering data                                                                                               |                                   |                                |           | Ordering data                  |            |           |                |
|-------------------------------------------------------------------------------------------------------------|-----------------------------------|--------------------------------|-----------|--------------------------------|------------|-----------|----------------|
| Description                                                                                                 | Connection cross section<br>[mm²] | Type                           | Order No. | Pcs. /<br>Pkt.                 | Type       | Order No. | Pcs. /<br>Pkt. |
| Contacts, socket Ø 3.6 mm, for cable and device plug-in connectors with knurled nuts, power and PE contacts | 1.0 ... 2.5                       | SM-36KS001                     | 1605756   | 20                             |            |           |                |
|                                                                                                             | 2.5 ... 4.0                       | SM-36KS002                     | 1605758   | 20                             |            |           |                |
|                                                                                                             | 4.0 ... 6.0                       | SM-36KS003                     | 1605760   | 20                             |            |           |                |
|                                                                                                             | 6.0 ... 10.0 (16.0)               | SM-36KS004                     | 1605762   | 20                             |            |           |                |
| Contacts, socket Ø 2.0 mm, for cable and device plug-in connectors with knurled nuts, signal contacts       | 0.25 ... 1.0                      | SF-7PS2000                     | 1605636   | 50                             |            |           |                |
|                                                                                                             | 0.75 ... 1.5                      | SF-7NS2000                     | 1605631   | 50                             |            |           |                |
|                                                                                                             | 1.0 ... 2.5                       | SF-7QS2000                     | 1605643   | 50                             |            |           |                |
|                                                                                                             | 4.0                               | SF-7MS2000                     | 1605628   | 50                             |            |           |                |
| Contacts, pin Ø 3.6 mm, for coupler plug-in connectors, power and PE contacts                               | 1.0 ... 2.5                       |                                |           |                                | SM-36KP005 | 1605749   | 20             |
|                                                                                                             | 2.5 ... 4.0                       |                                |           |                                | SM-36KP006 | 1605750   | 20             |
|                                                                                                             | 4.0 ... 6.0                       |                                |           |                                | SM-36KP008 | 1605754   | 20             |
|                                                                                                             | 6.0 ... 10.0 (16.0)               |                                |           |                                | SM-36KP007 | 1605752   | 20             |
| Contacts, pin Ø 2.0 mm, for coupler plug-in connectors, signal contacts                                     | 0.25 ... 1.0                      |                                |           |                                | SM-20KP006 | 1605738   | 50             |
|                                                                                                             | 0.75 ... 1.5                      |                                |           |                                | SM-20KP005 | 1605736   | 50             |
|                                                                                                             | 1.0 ... 2.5                       |                                |           |                                | SM-20KP007 | 1605739   | 50             |
|                                                                                                             | 4.0                               |                                |           |                                | SM-20KP008 | 1605741   | 50             |
| Contacts, pin Ø 3.6 mm, for device plug-in connectors, power and PE contacts                                | 0.75 ... 1.5                      |                                |           |                                | SM-36KP001 | 1605743   | 20             |
|                                                                                                             | 1.0 ... 2.5                       |                                |           |                                | SM-36KP009 | 1607057   | 20             |
|                                                                                                             | 1.0 ... 4.0                       |                                |           |                                | SM-36KP002 | 1605744   | 20             |
|                                                                                                             | 4.0 ... 6.0                       |                                |           |                                | SM-36KP003 | 1605745   | 20             |
| Contacts, pin Ø 2.0 mm, for device plug-in connectors, signal contacts                                      | 6.0 ... 10.0                      |                                |           |                                | SM-36KP004 | 1605747   | 20             |
|                                                                                                             | 0.14 ... 0.25                     |                                |           |                                | SF-7RP2000 | 1605646   | 50             |
|                                                                                                             | 0.25 ... 1.0                      |                                |           |                                | SF-7PP2000 | 1605634   | 50             |
|                                                                                                             | 0.75 ... 1.5                      |                                |           |                                | SF-20KP004 | 1607376   | 50             |
|                                                                                                             | 1.0 ... 2.5                       |                                |           |                                | SF-7QP2000 | 1605639   | 50             |
|                                                                                                             | 4.0                               |                                |           |                                | SF-7MP2000 | 1605626   | 50             |
| Accessories                                                                                                 |                                   |                                |           | Accessories                    |            |           |                |
| Crimping tools                                                                                              |                                   | Order separately, see page 407 |           | Order separately, see page 407 |            |           |                |

| Number of positions | Number of contacts | Contact Ø [mm] |
|---------------------|--------------------|----------------|
| 6(2+3+PE)           | 2+3+PE             | 2+3,6+3,6      |
| 8(4+3+PE)           | 4+3+PE             | 2+3,6+3,6      |

# M17 to M58 circular plug-in connectors

## M58 - power plug-in connectors

### Mechanical and electrical data

#### Mechanical data

|                                         |                                                                                         |
|-----------------------------------------|-----------------------------------------------------------------------------------------|
| Housing material:                       | Aluminum                                                                                |
| Housing surface:                        | Aluminum, anodized                                                                      |
| Insulating body:                        | Polyamide (PA 66)                                                                       |
| Contact surface:                        | Power and PE contacts: silver-plated (Ag), signal contacts: gold-plated (Au)            |
| Contact connection method:              | Crimp version                                                                           |
| Sealing and O-ring:                     | Fluorocarbon rubber (FPM)                                                               |
| Ambient temperature:                    | -40°C ... 120°C                                                                         |
| Cable entry:                            | Cable and coupler plug-in connectors for cable outside diameter of 17 - 36 mm, shielded |
| Type of locking:                        | M58 x 2 screw locking                                                                   |
| Mechanical insertion/withdrawal cycles: | Standard: 100                                                                           |
| Protection class:                       | IP67 in the locked state                                                                |

#### Electrical data

| Number of positions                                   | 6 (2+3+PE)   |   |           |   |           |  | 8 (4+3+PE)   |   |           |   |           |  |
|-------------------------------------------------------|--------------|---|-----------|---|-----------|--|--------------|---|-----------|---|-----------|--|
| Contacts                                              | 2            | + | 3         | + | PE        |  | 4            | + | 3         | + | PE        |  |
| Contact Ø [mm]                                        | 1.6          |   | 10        |   | 10        |  | 1.6          |   | 10        |   | 10        |  |
| Litz wire cross section                               |              |   |           |   |           |  |              |   |           |   |           |  |
| Crimp contacts, turned [mm²]                          | 0.75 ... 1.5 |   | 10 ... 50 |   | 10 ... 50 |  | 0.75 ... 1.5 |   | 10 ... 50 |   | 10 ... 50 |  |
| Nominal current per contact at 25°C <sup>1)</sup> [A] | 12           |   | 150       |   | –         |  | 12           |   | 150       |   | –         |  |
| <b>Specifications according to DIN EN 61984:2009</b>  |              |   |           |   |           |  |              |   |           |   |           |  |
| Rated voltage [V AC/DC]                               | 250          |   | 630       |   | –         |  | 250          |   | 630       |   | –         |  |
| Test/surge voltage [kV AC]                            | 4            |   | 6         |   | –         |  | 4            |   | 6         |   | –         |  |
| Surge voltage category                                | III          |   |           |   |           |  | III          |   |           |   |           |  |
| Pollution degree                                      | 3            |   |           |   |           |  | 3            |   |           |   |           |  |
| Installation height [m]                               | Up to 2000   |   |           |   |           |  | Up to 2000   |   |           |   |           |  |
| Cable clamping area <sup>2)</sup> max. Ø [mm]         | 36           |   |           |   |           |  | 36           |   |           |   |           |  |

<sup>1)</sup> The effective current carrying capacity must be determined via a derating curve, if necessary, according to the application.

<sup>2)</sup> The cable clamping areas specified on the following pages may vary depending on the cable material/structure. Selecting and testing is the responsibility of the user.

#### Note:

Unlike plug-in equipment, plug-in connectors must not be plugged or unplugged under load.

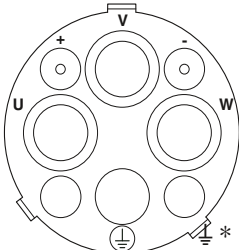
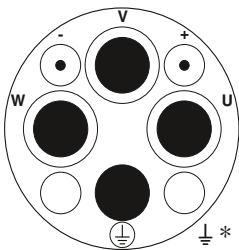
Contact chamber numbering  
(view of plug-in side)

Number of positions

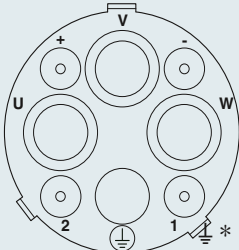
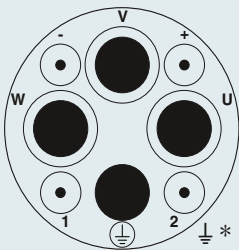
Pin

Socket

6-pos.  
(2 + 3 + PE)  
Crimp



8-pos.  
(4 + 3 + PE)  
Crimp



\* with grounding spring,  
PE leading



## M17 to M58 circular plug-in connectors

### M58 - power plug-in connectors

#### Selection guide

M58 power plug-in connectors up to  
150 A/630 V, crimp ranges  
up to 50 mm<sup>2</sup>

- Cable plug-in connectors
- Coupler plug-in connectors
- Device plug-in connectors, straight

The power plug-in connectors are supplied fully pre-assembled and are complemented by the respective crimp contacts.

The product chart provides an overview of the available components.

#### Plug-in connector type

##### Cable plug-in connectors

Shielded



See page 390.

##### Coupler plug-in connectors

Shielded



See page 390.

##### Device plug-in connectors

Shielded



See page 391.

**Crimp contacts****Tools/accessories**

Socket contacts

**Socket contacts**

Turned, see page 392.

**Crimping tools**

Crimping device for power and PE contacts  
 Ø 10 mm,  
 see page 408.



Crimping pliers, for signal contacts Ø 1.6 mm,  
 see page 408.



Pin contacts

**Pin contacts**

Turned, see page 392.



Pin contacts

**Note:**

For reasons of safety, only socket contacts may be used in the live part of the plug.

M17 to M58 circular plug-in connectors

M58 - power plug-in connectors

Cable and coupler plug-in connectors

- High transmission capacities of up to 630 V and 150 A
- Connection cross sections up to 50 mm²
- Cable clamping area from 17 mm to 36 mm

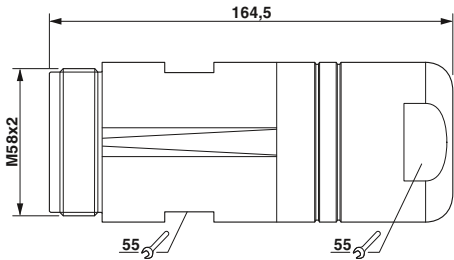
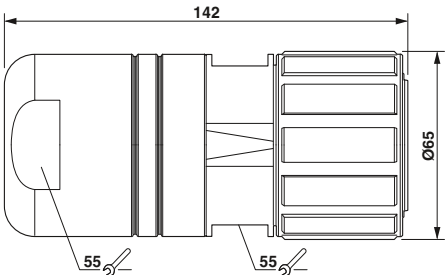


Cable plug-in connector



Coupler plug-in connector

|                                                                                        |                     | Ordering data                     |             |             |             | Ordering data                  |             |             |             |
|----------------------------------------------------------------------------------------|---------------------|-----------------------------------|-------------|-------------|-------------|--------------------------------|-------------|-------------|-------------|
| Description                                                                            | Cable clamping area | Order No.                         | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. | Order No.                      | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. |
|                                                                                        |                     | 2+3+PE-pos.                       |             | 4+3+PE-pos. |             | 2+3+PE-pos.                    |             | 4+3+PE-pos. |             |
| Plug-in connector housing, with contact carrier, without contacts, for cable diameter: | 17 mm ... 25 mm     | 1607503                           | 1           | 1607508     | 1           | 1607500                        | 1           | 1607506     | 1           |
|                                                                                        | 25 mm ... 36 mm     | 1607501                           | 1           | 1607507     | 1           | 1607499                        | 1           | 1607505     | 1           |
|                                                                                        |                     | Accessories                       |             |             |             | Accessories                    |             |             |             |
| Crimp contacts                                                                         |                     | For socket contacts, see page 392 |             |             |             | For pin contacts, see page 392 |             |             |             |



Device plug-in connector  
for front mounting

Coupler and device plug-in connectors must be fitted with pin contacts, cable plug-in connectors must be fitted with socket contacts.

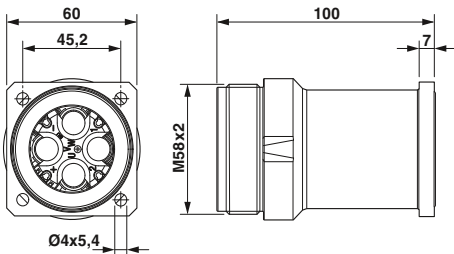
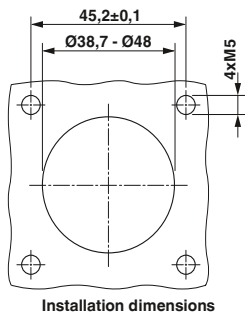


Device plug-in connector, straight

| Description                                                                |
|----------------------------------------------------------------------------|
| Device plug-in connector, straight, with contact carrier, without contacts |

|                |
|----------------|
| Crimp contacts |
|----------------|

| Ordering data                  |             |             |             |
|--------------------------------|-------------|-------------|-------------|
| Order No.                      | Pcs. / Pkt. | Order No.   | Pcs. / Pkt. |
| 2+3+PE-pos.                    |             | 4+3+PE-pos. |             |
| 1615686                        | 1           | 1615687     | 1           |
| Accessories                    |             |             |             |
| For pin contacts, see page 392 |             |             |             |



# M17 to M58 circular plug-in connectors

## M58 - power plug-in connectors

### Crimp contacts, turned

The 6-pos. (2+3+PE) versions are equipped with two Ø 1.6 mm signal contacts and four 10 mm contacts (three power, 1 PE contact).

The 8-pos. (4+3+PE) versions are equipped with four 1.6 mm signal contacts and four 10 mm contacts (three power, 1 PE contact).

**Note:** depending on the litz wire used, the connection cross sections (crimp ranges) can differ from the values mentioned below.



Crimp contacts, socket



Crimp contacts, pin

| Ordering data                                                                            |                                |            | Ordering data                          |             |            |
|------------------------------------------------------------------------------------------|--------------------------------|------------|----------------------------------------|-------------|------------|
| Description                                                                              | Connection cross section [mm²] | Type       | Order No.                              | Pcs. / Pkt. | Type       |
| Contacts, socket Ø 10.0 mm for cable plug-in connectors, power and PE contacts           | 10.0                           | SL-1CKS010 | 1607916                                | 4           |            |
|                                                                                          | 16.0                           | SL-1CKS020 | 1607917                                | 4           |            |
|                                                                                          | 25.0                           | SL-1CKS030 | 1607918                                | 4           |            |
|                                                                                          | 35.0                           | SL-1CKS040 | 1607919                                | 4           |            |
|                                                                                          | 50.0                           | SL-1CKS050 | 1607920                                | 4           |            |
| Contacts, socket Ø 1.6 mm for cable plug-in connectors, signal contacts                  | 0.75 ... 1.5                   | SL-16KS010 | 1607956                                | 4           |            |
| Contacts, pin Ø 10.0 mm for coupler and device plug-in connectors, power and PE contacts | 10.0                           |            |                                        |             | SL-1CKP010 |
|                                                                                          | 16.0                           |            |                                        |             | SL-1CKP020 |
|                                                                                          | 25.0                           |            |                                        |             | SL-1CKP030 |
|                                                                                          | 35.0                           |            |                                        |             | SL-1CKP040 |
|                                                                                          | 50.0                           |            |                                        |             | SL-1CKP050 |
| Contacts, pin Ø 1.6 mm for coupler and device plug-in connectors, signal contacts        | 0.75 ... 1.5                   |            |                                        |             | SL-16KP010 |
| Accessories                                                                              |                                |            | Accessories                            |             |            |
| Crimping tools                                                                           |                                |            | Order separately, see page 408 onwards |             |            |

| Number of positions | Number of contacts | Contact Ø [mm] |
|---------------------|--------------------|----------------|
| 6(2+3+PE)           | 2+3+PE             | 1,6+10+10      |
| 8(4+3+PE)           | 4+3+PE             | 1,6+10+10      |



# M17 to M58 circular plug-in connectors

## Signal/power plug-in connectors, plastic molded

### M17 and M23 plastic molded signal plug-in connectors

- Feedback plug-in connectors
- Contact resistance  $\leq 0.3$  ohms
- Contact material gold-plated CuZn
- Flame-retardant TPU handle material
- Knurl CuZn/Gd-Zn, nickel-plated
- IP67 protection
- Plug head temperature range -40 to +105°C
- Standard and counter direction contact numbering
- M17 and M23 standard thread - SPEEDCON rapid interlock system on request
- Angled versions rotatable

|                   | M17, 17-pos., socket, standard, 60 V, 9 A                                          | M23, 12-pos., socket, reverse, 150 V, 9 A                                           | M23, 12-pos., socket, reverse, 150 V, 9 A                                           |
|-------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                   |   |  |  |
|                   | <b>E01</b>                                                                         | <b>E00</b>                                                                          | <b>E00</b>                                                                          |
|                   | Ordering data                                                                      | Ordering data                                                                       | Ordering data                                                                       |
|                   | Order no.                                                                          | Order no.                                                                           | Order no.                                                                           |
|                   | 2 m 1624780                                                                        | 2 m 1619247                                                                         | 2 m 1619280                                                                         |
|                   | 5 m 1624781                                                                        | 5 m 1619248                                                                         | 5 m 1619281                                                                         |
|                   | 10 m 1624782                                                                       | 10 m 1619249                                                                        | 10 m 1619282                                                                        |
| Free end          |   |                                                                                     |                                                                                     |
| M17, 17-pos., pin |   |                                                                                     |                                                                                     |
|                   | 2 m 1624778                                                                        |                                                                                     |                                                                                     |
|                   | 5 m 1624783                                                                        |                                                                                     |                                                                                     |
|                   | 10 m 1624784                                                                       |                                                                                     |                                                                                     |
| M23, 12-pos., pin |   | 2 m 1619289                                                                         |                                                                                     |
|                   |                                                                                    | 5 m 1619290                                                                         |                                                                                     |
|                   |                                                                                    | 10 m 1619291                                                                        |                                                                                     |
| M23, 12-pos., pin |   |                                                                                     |                                                                                     |
| M23, 17-pos., pin |  |                                                                                     |                                                                                     |

## Cable information:

| Type/application    | Color  | Structure                                              | Sheath/core material | Assignment                                                                                                                                                                                                                                                                                                                                       | Temperature range                                               |
|---------------------|--------|--------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| <b>E00 Feedback</b> | Orange | Shielded, 4 x 2 x 0.25 + 2 x 0.5                       | TPU/PP               | 1 - pink<br>2 - red<br>3 - black<br>4 - blue<br>5 - brown<br>6 - green<br>7 - violet<br>8 - gray<br>9 - exterior shield<br>10 - white<br>11 - n.c.<br>12 - brown                                                                                                                                                                                 | <b>Flexible:</b> -20°C ... 60°C<br><b>Fixed:</b> -40°C ... 80°C |
| <b>E01 Feedback</b> | Green  | Shielded, 3 x 2 x 0.14 + 2 x 0.5 + 4 x 0.14 + 4 x 0.22 | TPU/TPM              | 1 - yellow<br>2 - green<br>3 - red<br>4 - n.c.<br>5 - blue<br>6 - n.c.<br>7 - brown-blue (encoder)<br>8 - green-black (+temp.)<br>9 - green-red (-temp.)<br>10 - brown-red (P encoder)<br>11 - black<br>12 - brown<br>13 - orange<br>14 - white-black<br>15 - brown-gray (OV sense)<br>16 - brown-yellow (sense)<br>17 - interior shields 1 - 3" | <b>Flexible:</b> -30°C ... 60°C<br><b>Fixed:</b> -30°C ... 80°C |

|                                                                                   |         |                                                                                   |         |                                                                                   |         |                                                                                   |         |
|-----------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------|---------|
| M23, 12-pos., socket,<br>standard, 150 V, 9 A                                     |         | M23, 12-pos., socket,<br>standard, 150 V, 9 A                                     |         | M23, 17-pos., socket,<br>standard, 100 V, 9 A                                     |         | M23, 17-pos., socket,<br>standard, 100 V, 9 A                                     |         |
|  |         |  |         |  |         |  |         |
| E00                                                                               |         | E00                                                                               |         | E01                                                                               |         | E01                                                                               |         |
| Ordering data                                                                     |         | Ordering data                                                                     |         | Ordering data                                                                     |         | Ordering data                                                                     |         |
| Order no.                                                                         |         | Order no.                                                                         |         | Order no.                                                                         |         | Order no.                                                                         |         |
| 2 m                                                                               | 1619250 | 2 m                                                                               | 1619285 | 2 m                                                                               | 1619277 | 2 m                                                                               | 1619286 |
| 5 m                                                                               | 1619273 | 5 m                                                                               | 1619283 | 5 m                                                                               | 1619278 | 5 m                                                                               | 1619287 |
| 10 m                                                                              | 1619274 | 10 m                                                                              | 1619284 | 10 m                                                                              | 1619279 | 10 m                                                                              | 1619288 |
|                                                                                   |         |                                                                                   |         |                                                                                   |         |                                                                                   |         |
|                                                                                   |         |                                                                                   |         |                                                                                   |         |                                                                                   |         |
|                                                                                   |         |                                                                                   |         |                                                                                   |         |                                                                                   |         |
|                                                                                   |         |                                                                                   |         |                                                                                   |         |                                                                                   |         |
|                                                                                   |         |                                                                                   |         |                                                                                   |         |                                                                                   |         |
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# M17 to M58 circular plug-in connectors

## Signal/power plug-in connectors, plastic molded

### M17 plastic molded power plug-in connectors

- Contact resistance  $\leq 0.3$  ohms
- Contact material gold-plated CuZn
- Flame-retardant TPU handle material
- Knurl CuZn/Gd-Zn, nickel-plated
- IP67 protection
- Plug head temperature range -40 to +105°C
- Standard contact numbering
- M17 standard thread - SPEEDCON rapid interlock system on request

|                                                                                                          | M17, 3+PE-position,<br>Socket, 630 V, 18 A                                        | M17, 3+PE-position,<br>Socket, 630 V, 26 A                                          | M17, 5+PE-position,<br>Socket, 630 V, 12 A                                          |
|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                                                                                          |  |  |  |
|                                                                                                          | <b>B00</b>                                                                        | <b>B01</b>                                                                          | <b>C00</b>                                                                          |
|                                                                                                          | Ordering data                                                                     | Ordering data                                                                       | Ordering data                                                                       |
|                                                                                                          | Order no.                                                                         | Order no.                                                                           | Order no.                                                                           |
|                                                                                                          | 2 m 1619298                                                                       | 2 m 1619301                                                                         | 2 m 1619307                                                                         |
|                                                                                                          | 5 m 1619299                                                                       | 5 m 1619302                                                                         | 5 m 1619308                                                                         |
|                                                                                                          | 10 m 1619300                                                                      | 10 m 1619303                                                                        | 10 m 1619309                                                                        |
| Free end<br>            |                                                                                   |                                                                                     |                                                                                     |
| M17, 3+PE-pos., pin<br> | 2 m 1619304<br>5 m 1619305<br>10 m 1619306                                        | 2 m 1619326<br>5 m 1619327<br>10 m 1619328                                          |                                                                                     |
| M17, 5+PE-pos., pin<br> |                                                                                   |                                                                                     | 2 m 1619316<br>5 m 1619317<br>10 m 1619318                                          |
| M17, 7+PE-pos., pin<br> |                                                                                   |                                                                                     |                                                                                     |

## Cable information:

| Type                 | Color  | Structure                            | Sheath/core material | Assignment                                                                                               | Temperature range                                               |
|----------------------|--------|--------------------------------------|----------------------|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| <b>B00<br/>Servo</b> | Orange | Shielded,<br>4 x 1.50                | PUR/TPM              | 1 - black U<br>2 - black V<br>3 - black W<br>PE - green/yellow"                                          | <b>Flexible:</b> -20°C ... 60°C<br><b>Fixed:</b> -40°C ... 80°C |
| <b>B01<br/>Servo</b> | Orange | Shielded,<br>4 x 2.50                | TPU/TPM              |                                                                                                          | <b>Flexible:</b> -20°C ... 70°C<br><b>Fixed:</b> -50°C ... 80°C |
| <b>C00<br/>Servo</b> | Orange | Shielded,<br>4 x 0.75 + 2 x 0.5      | PUR/TPM              | 1 - black U<br>6 - black V<br>7 - black W<br>PE - green/yellow                                           | <b>Flexible:</b> -30°C ... 70°C<br><b>Fixed:</b> -40°C ... 80°C |
| <b>C01<br/>Servo</b> | Orange | Shielded,<br>4G1 + 2 x 0.5           | PUR/TPE              |                                                                                                          | <b>Flexible:</b> -5°C ... 70°C<br><b>Fixed:</b> -30°C ... 70°C  |
| <b>D00<br/>Servo</b> | Orange | Shielded,<br>4 x 0.75 + 2 x 2 x 0.34 | PUR/TPM              | 1 - black U<br>2 - black V<br>3 - black W<br>PE - green/yellow                                           | <b>Flexible:</b> -30°C ... 90°C<br><b>Fixed:</b> -40°C ... 90°C |
| <b>D01<br/>Servo</b> | Orange | Shielded,<br>4 x 1.0 + 2 x 2 x 0.75  | PUR/TPM              | A - black 5 (brake)<br>B - black 6 (brake)<br>C - black 7 (motor temp. +)<br>D - black 8 (motor temp. -) | <b>Flexible:</b> -20°C ... 60°C<br><b>Fixed:</b> -40°C ... 80°C |

|                                                                                   |         |                                                                                   |         |                                                                                   |         |
|-----------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------|---------|
| M17, 5+PE-position,<br>Socket, 630 V, 15 A                                        |         | M17, 7+PE-position,<br>Socket, 630 V, 12 A                                        |         | M17, 7+PE-position,<br>Socket, 630 V, 15 A                                        |         |
|  |         |  |         |  |         |
| C01                                                                               |         | D00                                                                               |         | D01                                                                               |         |
| Ordering data                                                                     |         | Ordering data                                                                     |         | Ordering data                                                                     |         |
| Order no.                                                                         |         | Order no.                                                                         |         | Order no.                                                                         |         |
| 2 m                                                                               | 1619310 | 2 m                                                                               | 1624785 | 2 m                                                                               | 1619313 |
| 5 m                                                                               | 1619311 | 5 m                                                                               | 1624786 | 5 m                                                                               | 1619314 |
| 10 m                                                                              | 1619312 | 10 m                                                                              | 1624792 | 10 m                                                                              | 1619315 |
|                                                                                   |         |                                                                                   |         |                                                                                   |         |
| 2 m                                                                               | 1619319 |                                                                                   |         |                                                                                   |         |
| 5 m                                                                               | 1619321 |                                                                                   |         |                                                                                   |         |
| 10 m                                                                              | 1619322 |                                                                                   |         |                                                                                   |         |
|                                                                                   |         |                                                                                   |         |                                                                                   |         |
|                                                                                   |         | 2 m                                                                               | 1624787 | 2 m                                                                               | 1619323 |
|                                                                                   |         | 5 m                                                                               | 1624788 | 5 m                                                                               | 1619324 |
|                                                                                   |         | 10 m                                                                              | 1624789 | 10 m                                                                              | 1619325 |

# M17 to M58 circular plug-in connectors

## Signal/power plug-in connectors, plastic molded

### M23 plastic molded power plug-in connectors

- Contact resistance  $\leq 0.3$  ohms
- Contact material gold-plated CuZn
- Flame-retardant TPU handle material
- Knurl CuZn/Gd-Zn, nickel-plated
- IP67 protection
- Plug head temperature range -40 to +105°C
- Standard contact numbering
- M23 standard thread - SPEEDCON rapid interlock system on request
- Angled version rotatable (only with reinforced device plug-in connector 1620619)

|                                                                                                          | M23, 3+PE-position,<br>Socket, 630 V, 34 A                                        | M23, 4+PE-position,<br>Socket, 630 V, 34 A                                          | M23, 5+PE-position,<br>Socket, 630 V, 18 A                                          |
|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                                                                                          |  |  |  |
|                                                                                                          | <b>A00</b>                                                                        | <b>A01</b>                                                                          | <b>C02</b>                                                                          |
|                                                                                                          | Ordering data                                                                     | Ordering data                                                                       | Ordering data                                                                       |
|                                                                                                          | Order no.                                                                         | Order no.                                                                           | Order no.                                                                           |
|                                                                                                          | 2 m 1624771<br>5 m 1619622<br>10 m 1624772                                        | 2 m 1625776<br>5 m 1625777<br>10 m 1625775                                          | 2 m 1618957<br>5 m 1618958<br>10 m 1618959                                          |
| Free end<br>            |                                                                                   |                                                                                     |                                                                                     |
| M23, 3+PE-pos., pin<br> | 2 m 1624773<br>5 m 1619606<br>10 m 1624774                                        |                                                                                     |                                                                                     |
| M23, 4+PE-pos., pin<br> |                                                                                   | 2 m 1625779<br>5 m 1625781<br>10 m 1625780                                          |                                                                                     |
| M23, 5+PE-pos., pin<br> |                                                                                   |                                                                                     | 2 m 1618964<br>5 m 1618965<br>10 m 1618966                                          |

## Cable information:

| Type                  | Color  | Structure                       | Sheath/core material | Assignment                                                                                    | Temperature range                                               |
|-----------------------|--------|---------------------------------|----------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| <b>A00<br/>Energy</b> | Gray   | Shielded,<br>4 x 4.0            | PVC/PVC              | 1 - nc<br>2 - black 3<br>PE - green/yellow<br>4 - black 1<br>5 - black 2<br>6 - nc            | <b>Fixed:</b> -40°C ... 90°C                                    |
| <b>A01<br/>energy</b> | Gray   | 5 x 4.0                         | PVC/PVC              | 1 - black 4<br>2 - black 3<br>PE - green/yellow<br>4 - black 1<br>5 - black 2<br>6 - nc       | <b>Fixed:</b> -40°C ... 90°C                                    |
| <b>C02<br/>servo</b>  | Orange | Shielded,<br>4 x 1.50 + 2 x 1.5 | PUR/TPM              | 1 - black U<br>2 - black V<br>6 - black W<br>4 - black, (BR1 brake)<br>5 - white, (BR2 brake) | <b>Flexible:</b> -20°C ... 60°C<br><b>Fixed:</b> -40°C ... 80°C |
| <b>C03<br/>servo</b>  | Orange | Shielded,<br>4 x 2.50 + 2 x 1.5 | TPU/TPM              | PE - green/yellow                                                                             | <b>Flexible:</b> -20°C ... 70°C<br><b>Fixed:</b> -50°C ... 80°C |

M23, 5+PE-position,  
Socket, 630 V, 18 A



C02

M23, 5+PE-position,  
Socket, 630 V, 26 A



C03

M23, 5+PE-position,  
Socket, 630 V, 26 A



C03

| Ordering data |         | Ordering data |         | Ordering data |         |
|---------------|---------|---------------|---------|---------------|---------|
| Order no.     |         | Order no.     |         | Order no.     |         |
| 2 m           | 1620415 | 2 m           | 1620396 | 2 m           | 1620418 |
| 5 m           | 1620416 | 5 m           | 1620397 | 5 m           | 1620419 |
| 10 m          | 1620417 | 10 m          | 1620398 | 10 m          | 1620420 |

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|--|--------------------------------------------|--|
|  | 2 m 1620406<br>5 m 1620407<br>10 m 1620408 |  |
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# M17 to M58 circular plug-in connectors

## Signal/power plug-in connectors, plastic molded

### M23 plastic molded power plug-in connectors

- Contact resistance  $\leq 0.3$  ohms
- Contact material gold-plated CuZn
- Flame-retardant TPU handle material
- Knurl CuZn/Gd-Zn, nickel-plated
- IP67 protection
- Plug head temperature range -40 to +105°C
- Standard contact numbering
- M23 standard thread - SPEEDCON rapid interlock system on request
- Angled version rotatable (only with reinforced device plug-in connector 1620620)

Free end



M23, 4+3+PE-pos., pin



M23, 4+3+PE-pos., socket, 250 V/630 V, 18 A



D02

Ordering data

Order no.

|      |         |
|------|---------|
| 2 m  | 1620399 |
| 5 m  | 1620400 |
| 10 m | 1620401 |

M23, 4+3+PE-pos., socket, 250 V/630 V, 18 A



D02

Ordering data

Order no.

|      |         |
|------|---------|
| 2 m  | 1620421 |
| 5 m  | 1620422 |
| 10 m | 1620423 |

M23, 4+3+PE-pos., socket, 250 V/630 V, 26 A



D03

Ordering data

Order no.

|      |         |
|------|---------|
| 2 m  | 1620402 |
| 5 m  | 1620404 |
| 10 m | 1620405 |

|      |         |
|------|---------|
| 2 m  | 1620409 |
| 5 m  | 1620410 |
| 10 m | 1620411 |

|      |         |
|------|---------|
| 2 m  | 1620412 |
| 5 m  | 1620413 |
| 10 m | 1620414 |

## Cable information:

| Type      | Color  | Structure                        | Sheath/core material | Assignment                                                     |                                                                                                          | Temperature range                                 |
|-----------|--------|----------------------------------|----------------------|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| D02 servo | Orange | Shielded, 4 x 1.5 + 2 x 2 x 0.75 | PUR/TPM              | 1 - black U<br>3 - black V<br>4 - black W<br>PE - green/yellow | A - black 5 (brake)<br>B - black 6 (brake)<br>C - black 7 (motor temp. +)<br>D - black 8 (motor temp. -) | Flexible: -20°C ... 60°C<br>Fixed: -40°C ... 80°C |
| D03 servo | Orange | Shielded, 4 x 2.5 + 2 x 2 x 0.75 | PUR/TPM              |                                                                |                                                                                                          | Flexible: -20°C ... 60°C<br>Fixed: -40°C ... 80°C |

M23, 4+3+PE-pos., socket,  
250 V/630 V, 26 A



D03

#### Ordering data

##### Order no.

|      |         |
|------|---------|
| 2 m  | 1620424 |
| 5 m  | 1620425 |
| 10 m | 1620426 |

# M17 to M58 circular plug-in connectors

## Signal/power plug-in connectors, plastic molded

### M40 plastic molded power plug-in connectors

- Contact resistance  $\leq 0.3$  ohms
- Contact material gold-plated CuZn
- Flame-retardant TPU handle material
- Knurl CuZn/Gd-Zn, nickel-plated
- IP67 protection
- Plug head temperature range -40 to +105°C
- Standard contact numbering
- M40 standard thread - SPEEDCON rapid interlock system on request

|                       | M40, 2+3+PE-pos., socket, 250 V/630 V, 26 A                                       | M40, 2+3+PE-pos., socket, 250 V/630 V, 34 A                                         | M40, 2+3+PE-pos., socket, 250 V/630 V, 44 A                                         |
|-----------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                       |  |  |  |
|                       | <b>C03</b>                                                                        | <b>C04</b>                                                                          | <b>C05</b>                                                                          |
|                       | Ordering data                                                                     | Ordering data                                                                       | Ordering data                                                                       |
|                       | Order no.                                                                         | Order no.                                                                           | Order no.                                                                           |
|                       | 2 m 1619329                                                                       | 2 m 1620311                                                                         | 2 m 1620316                                                                         |
|                       | 5 m 1620309                                                                       | 5 m 1620313                                                                         | 5 m 1620317                                                                         |
|                       | 10 m 1620310                                                                      | 10 m 1620314                                                                        | 10 m 1620318                                                                        |
| Free end              |  |                                                                                     |                                                                                     |
| M40, 2+3+PE-pos., pin |  |                                                                                     |                                                                                     |
|                       | 2 m 1620345                                                                       | 2 m 1620348                                                                         | 2 m 1620376                                                                         |
|                       | 5 m 1620346                                                                       | 5 m 1620349                                                                         | 5 m 1620377                                                                         |
|                       | 10 m 1620347                                                                      | 10 m 1620375                                                                        | 10 m 1620378                                                                        |
| M40, 4+3+PE-pos., pin |  |                                                                                     |                                                                                     |

## Cable information:

| Type      | Color  | Structure                                | Sheath/core material | Assignment                                                     |                                                                                                          | Temperature range                                               |
|-----------|--------|------------------------------------------|----------------------|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| C03 Servo | Orange | Shielded,<br>4 x 2.50 + 2 x 1.5          | TPU/TPM              | 1 - black U<br>2 - black V<br>6 - black W<br>PE - green/yellow | 4 - black, (BR1 brake)<br>5 - white, (BR2 brake)                                                         | <b>Flexible:</b> -20°C ... 70°C<br><b>Fixed:</b> -50°C ... 80°C |
| C04 Servo | Orange | Shielded,<br>4 x 4.00 + 2 x 1.5          | TPU/TPM              |                                                                |                                                                                                          | <b>Flexible:</b> -20°C ... 70°C<br><b>Fixed:</b> -50°C ... 80°C |
| C05 Servo | Orange | Shielded,<br>4 x 6.00 + 2 x 1.5          | PUR/TPE              |                                                                |                                                                                                          | <b>Flexible:</b> -40°C ... 80°C<br><b>Fixed:</b> -50°C ... 90°C |
| C06 Servo | Orange | Shielded,<br>4 x 10.0 + 2 x 1.5          | TPU/TPM              |                                                                |                                                                                                          | <b>Flexible:</b> -20°C ... 70°C<br><b>Fixed:</b> -50°C ... 80°C |
| D03 Servo | Orange | Shielded,<br>4 x 2.5 + 2 x 2 x 0.75      | PUR/TPM              | 1 - black U<br>3 - black V<br>4 - black W<br>PE - green/yellow | A - black 5 (brake)<br>B - black 6 (brake)<br>C - black 7 (motor temp. +)<br>D - black 8 (motor temp. -) | <b>Flexible:</b> -20°C ... 60°C<br><b>Fixed:</b> -40°C ... 80°C |
| D04 Servo | Orange | Shielded,<br>4 x 4.0 + 2 x 1.5 + 2 x 1.0 | PUR/TPM              |                                                                |                                                                                                          | <b>Flexible:</b> -30°C ... 80°C<br><b>Fixed:</b> -45°C ... 80°C |
| D05 Servo | Orange | Shielded,<br>4 x 6.0 + 2 x 1.5 + 2 x 1.0 | PUR/TPM              |                                                                |                                                                                                          | <b>Flexible:</b> -30°C ... 60°C<br><b>Fixed:</b> -30°C ... 80°C |
| D06 Servo | Orange | Shielded,<br>4 x 10 + 2 x 1.5 + 2 x 1.0  | PUR/TPM              |                                                                |                                                                                                          | <b>Flexible:</b> -20°C ... 60°C<br><b>Fixed:</b> -40°C ... 80°C |

M40, 2+3+PE-pos., socket,  
250 V/630 V, 61 A



M40, 4+3+PE-pos., socket,  
250 V/630 V, 26 A



M40, 4+3+PE-pos., socket,  
250 V/630 V, 34 A



M40, 4+3+PE-pos., socket,  
250 V/630 V, 44 A



M40, 4+3+PE-pos., socket,  
250 V/630 V, 61 A



C06

D03

D04

D05

D06

Ordering data

Ordering data

Ordering data

Ordering data

Ordering data

Order no.

Order no.

Order no.

Order no.

Order no.

2 m 1620319  
5 m 1620320  
10 m 1620321

2 m 1620322  
5 m 1620323  
10 m 1620324

2 m 1620325  
5 m 1620337  
10 m 1620338

2 m 1620339  
5 m 1620340  
10 m 1620341

2 m 1620342  
5 m 1620343  
10 m 1620344

2 m 1620379  
5 m 1620380  
10 m 1620381

2 m 1620382  
5 m 1620383  
10 m 1620384

2 m 1620385  
5 m 1620386  
10 m 1620387

2 m 1620390  
5 m 1620391  
10 m 1620392

2 m 1620393  
5 m 1620394  
10 m 1620395



M17 to M58 circular plug-in connectors

Tools and accessories

Tools and accessories  
for M23 signal plug-in connectors

For RC crimp contacts, RC-Z2130 and RC-Z2514 crimping pliers are used for rolled or turned crimp contacts.

RC-Z2514 crimping pliers with 4-arbor pressing are suitable for crimping turned RC contacts. Detailed operating instructions are included in the packaging.



Crimping tools for rolled/turned contacts



Contact insertion/contact removal tool

|                                                                            | Ordering data |           |             | Ordering data |           |             |
|----------------------------------------------------------------------------|---------------|-----------|-------------|---------------|-----------|-------------|
| Description                                                                | Type          | Order No. | Pcs. / Pkt. | Type          | Order No. | Pcs. / Pkt. |
| Crimping pliers for rolled RC crimp contacts Ø 1 mm                        |               |           |             |               |           |             |
| Litz wire cross section of 0.08 ... 0.56 mm²                               | RC-Z2130      | 1604267   | 1           |               |           |             |
| Crimping pliers for turned RC crimp contacts<br>Ø 1 mm / Ø 1.5 mm / Ø 2 mm |               |           |             |               |           |             |
| Litz wire cross section of 0.08 ... 2.5 mm²                                | RC-Z2514      | 1614590   | 1           |               |           |             |
| Insertion and contact removal tool for RC crimp contacts                   |               |           |             |               |           |             |
| Socket/plug Ø 1 mm                                                         |               |           |             | RC-Z2494      | 1614123   | 1           |
| Socket/plug Ø 1.5 mm                                                       |               |           |             | RC-Z2274      | 1604409   | 1           |
| Socket/plug Ø 2 mm                                                         |               |           |             | RC-Z2490      | 1611803   | 1           |



# M17 to M58 circular plug-in connectors

## Tools and accessories

### Crimping tools for punched-rolled C-HC crimp contacts

The manual crimping pliers are suitable for single processing. For processing taped products, a bench-mounted electric crimping device with integrated feed mechanism is available.

- The SF-Z0041 adapter enables tools for the manual crimping pliers for single processing to be used with the electric crimping device.



Manual crimping tools  
for punched-rolled C-HC crimp contacts



Electrical crimping device  
for punched-rolled C-HC crimp contacts

|                                                                                                                      | Ordering data |           |             | Ordering data |           |             |
|----------------------------------------------------------------------------------------------------------------------|---------------|-----------|-------------|---------------|-----------|-------------|
| Description                                                                                                          | Type          | Order No. | Pcs. / Pkt. | Type          | Order No. | Pcs. / Pkt. |
| <b>Manual crimping pliers</b> , basic tool for individual processing                                                 |               |           |             |               |           |             |
| for C-HC crimp contacts                                                                                              | SF-Z0029      | 1607458   | 1           |               |           |             |
| <b>Tool head for crimping pliers SF-Z0029</b> ,<br>for C-HC crimp contacts                                           |               |           |             |               |           |             |
| Contacts Ø 2 mm                                                                                                      | SF-Z0030      | 1607459   | 1           |               |           |             |
| Contacts Ø 1 mm                                                                                                      | SF-Z0031      | 1607461   | 1           |               |           |             |
| <b>Electric crimping device</b> , for processing taped products                                                      |               |           |             |               |           |             |
| for C-HC crimp contacts                                                                                              |               |           |             | SF-Z0032      | 1607462   | 1           |
| <b>Tool head for electrical crimping device SF-Z0032</b> ,<br>for C-HC crimp contacts, processing for taped products |               |           |             |               |           |             |
| Contacts Ø 2.0 mm / connection 1.0 mm²                                                                               |               |           |             | SF-Z0033      | 1607463   | 1           |
| Contacts Ø 2.0 mm / connection 1.5 mm²                                                                               |               |           |             | SF-Z0047      | 1614689   | 1           |
| Contacts Ø 2.0 mm / connection 2.5 mm²                                                                               |               |           |             | SF-Z0035      | 1607465   | 1           |
| Contacts Ø 1.0 mm / connection 0.08 ... 0.2 mm²                                                                      |               |           |             | SF-Z0039      | 1607470   | 1           |
| Contacts Ø 1.0 mm / connection 0.2 ... 0.56 mm²                                                                      |               |           |             | SF-Z0040      | 1607471   | 1           |
| <b>Media hub for electrical crimping device SF-Z0032</b><br>for accommodating rolls up to Ø 60 cm                    |               |           |             |               |           |             |
|                                                                                                                      |               |           |             | SF-Z0052      | 1615413   | 1           |
| <b>Adapter for electrical crimping device SF-Z0032</b> ,<br>for accommodating tool heads for single processing       |               |           |             |               |           |             |
|                                                                                                                      |               |           |             | SF-Z0041      | 1607472   | 1           |



# M17 to M58 circular plug-in connectors

## Tools and accessories

### Crimping tools for turned contacts for M58 power plug-in connectors

For turned crimp contacts with Ø 1.6 mm for M58 power plug-in connectors, SF-Z0025 manual crimping pliers are used. For user-friendly crimping of contacts with Ø 10 mm, the SL-Z0007 electric crimping tool is available.

Crimping stamps for processing contacts with Ø 10 mm are used in pairs. The stamps are tailored to the connection cross sections and marked.



Electro-hydraulic crimping device



Manual crimping pliers

|                                                                                                                                                                |                                           | Ordering data |           |                | Ordering data |           |                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|---------------|-----------|----------------|---------------|-----------|----------------|
| Description                                                                                                                                                    | Connection cross section<br>[mm²]         | Type          | Order No. | Pcs. /<br>Pkt. | Type          | Order No. | Pcs. /<br>Pkt. |
| <b>Electro-hydraulic crimping device incl. charger and rechargeable battery</b> , for Litz wire cross section of 10 ... 50 mm² (power and PE contacts Ø 10 mm) |                                           | SL-Z0007      | 1613484   | 1              |               |           |                |
| <b>Crimping stamp</b> for crimping device SL-Z0007                                                                                                             | 10                                        | SL-Z0011      | 1613488   | 1              |               |           |                |
| <b>Crimping stamp</b> for crimping device SL-Z0007                                                                                                             | 16                                        | SL-Z0012      | 1613489   | 1              |               |           |                |
| <b>Crimping stamp</b> for crimping device SL-Z0007                                                                                                             | 25                                        | SL-Z0013      | 1613490   | 1              |               |           |                |
| <b>Crimping stamp</b> for crimping device SL-Z0007                                                                                                             | 35                                        | SL-Z0014      | 1613491   | 1              |               |           |                |
| <b>Crimping stamp</b> for crimping device SL-Z0007                                                                                                             | 50                                        | SL-Z0015      | 1613492   | 1              |               |           |                |
| <b>Crimping tool with digital display</b>                                                                                                                      | 0.06 ... 6                                |               |           |                | SF-Z0025      | 1607452   | 1              |
|                                                                                                                                                                |                                           |               |           |                |               |           |                |
| <b>Accessories for electro-hydraulic crimping device SL-Z0007</b>                                                                                              |                                           |               |           |                |               |           |                |
|                                                                                                                                                                | Replacement battery                       | SL-Z0008      | 1613485   | 1              |               |           |                |
|                                                                                                                                                                | Table bracket incl. foot actuation switch | SL-Z0010      | 1613487   | 1              |               |           |                |

#### Notes:

The manual crimping pliers SF-Z0025 with digital display are also suitable for crimping turned crimp contacts ST / SF / SM.

## Special wrench

The torque screwdriver is specially adapted to the M23 circular plug-in connectors and simplifies the process of tightening and loosening the knurled nut safely even in places where space is restricted.

The tool consists of a hook wrench as well as a torque screwdriver with a fixed torque of 2.5 Nm.



**Torque screwdriver for M23 plug-in connectors with knurled nuts**



**Special wrench for screwing the adapter**

|                                                                                                                                                |                  | Ordering data   |                |             | Ordering data   |                |             |
|------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|----------------|-------------|-----------------|----------------|-------------|
| Description                                                                                                                                    | Wrench size [mm] | Type            | Order No.      | Pcs. / Pkt. | Type            | Order No.      | Pcs. / Pkt. |
| <b>Torque screwdriver</b> incl. hook wrench                                                                                                    |                  |                 |                |             |                 |                |             |
| For M23 plug-in connectors with knurled nuts                                                                                                   |                  | <b>SF-Z0028</b> | <b>1607456</b> | <b>1</b>    |                 |                |             |
| <b>Replacement hook wrench</b> for torque screwdriver                                                                                          |                  | <b>SF-Z0027</b> | <b>1607455</b> | <b>1</b>    |                 |                |             |
| <b>Special wrench</b> for cable/coupler plug-in connectors for screwing the adapter. Connection dimensions for torque wrench: 8.9 mm x 11.9 mm |                  |                 |                |             |                 |                |             |
| For M17 plug-in connectors, WAF 19                                                                                                             |                  |                 |                |             | <b>ST-Z0012</b> | <b>1613667</b> | <b>1</b>    |
| For M23 plug-in connectors, WAF 24                                                                                                             |                  |                 |                |             | <b>RF-Z0007</b> | <b>1614347</b> | <b>1</b>    |
| For M40 plug-in connectors, WAF 41                                                                                                             |                  |                 |                |             | <b>SM-Z0012</b> | <b>1614349</b> | <b>1</b>    |
| For M58 plug-in connectors, WAF 55                                                                                                             |                  |                 |                |             | <b>SL-Z0016</b> | <b>1614348</b> | <b>1</b>    |

# M17 to M58 circular plug-in connectors

## Tools and accessories

### Contact removal tools, square mounting flange

The removal tool is used for contact carriers which are snapped into the housing without rear support. They are removed from the plug-in side using the removal tool.

The square mounting flange is used for cable and coupler plug-in connectors. In this way, the product range is easily extended to include plug-in connectors as panel feed-throughs.



Contact removal tool  
for snap-in contact carriers



Square mounting flange for cable/coupler  
plug-in connector for wall mounting

|                                                                                                                                                                                                    |               |                 | Ordering data  |             |                 | Ordering data  |             |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------------|----------------|-------------|-----------------|----------------|-------------|--|
| Description                                                                                                                                                                                        | Wall mounting | Type            | Order No.      | Pcs. / Pkt. | Type            | Order No.      | Pcs. / Pkt. |  |
| <b>Contact removal tool</b> for contact carriers, device plug-in connectors<br>For M17 signal/power plug-in connectors<br>For M23 feedback plug-in connectors<br>For M23 signal plug-in connectors |               | <b>ST-Z0001</b> | <b>1607770</b> | 1           |                 |                |             |  |
|                                                                                                                                                                                                    |               | <b>RF-Z0001</b> | <b>1607904</b> | 1           |                 |                |             |  |
|                                                                                                                                                                                                    |               | <b>CA-Z0001</b> | <b>1620699</b> | 1           |                 |                |             |  |
|                                                                                                                                                                                                    |               |                 |                |             |                 |                |             |  |
| <b>Square mounting flange, metal, with O-ring seal</b> , for M17 (excl. M17 Compact) cable and coupler plug-in connectors for wall mounting<br><br>4 x Ø 2.7 mm<br>4 x M3                          |               |                 |                |             | <b>ST-Z0002</b> | <b>1607771</b> | 1           |  |
|                                                                                                                                                                                                    |               |                 |                |             | <b>ST-Z0003</b> | <b>1607772</b> | 1           |  |
| <b>Square mounting flange, metal, without seal</b> , for M17 (excl. M17 Compact) cable and coupler plug-in connectors for wall mounting<br><br>4 x Ø 2.7 mm<br>4 x M3                              |               |                 |                |             | <b>ST-Z0004</b> | <b>1607773</b> | 1           |  |
|                                                                                                                                                                                                    |               |                 |                |             | <b>ST-Z0005</b> | <b>1607775</b> | 1           |  |
| <b>Square mounting flange, metal, with O-ring seal</b> , for M23 feedback, cable, and coupler plug-in connectors for wall mounting<br><br>4 x M3                                                   |               |                 |                |             |                 |                |             |  |
|                                                                                                                                                                                                    |               |                 |                |             | <b>RF-Z0003</b> | <b>1607905</b> | 1           |  |
| <b>Square mounting flange, metal, with O-ring seal</b> , for M58 cable and coupler plug-in connectors for wall mounting<br><br>4 x Ø 4.3 mm                                                        |               |                 |                |             | <b>SM-Z0003</b> | <b>1607935</b> | 1           |  |
|                                                                                                                                                                                                    |               |                 |                |             |                 |                |             |  |
| <b>Square mounting flange, metal, without seal</b> , for M58 cable and coupler plug-in connectors for wall mounting<br><br>4 x Ø 4.3 mm                                                            |               |                 |                |             | <b>SM-Z0004</b> | <b>1607937</b> | 1           |  |
|                                                                                                                                                                                                    |               |                 |                |             |                 |                |             |  |

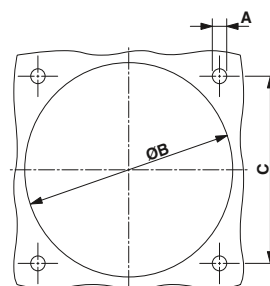
## Installation dimensions for square mounting flanges

| Type                                         | Installation dimensions |                |                | Flange dimensions |                |                    |      |                |     |
|----------------------------------------------|-------------------------|----------------|----------------|-------------------|----------------|--------------------|------|----------------|-----|
|                                              | A                       | B              | C              | D                 | E              | F                  | G    | H              | J   |
| ST-Z0002<br>ST-Z0003<br>ST-Z0004<br>ST-Z0005 | 4 x<br>M2.5/∅<br>3.2    | ∅ 22.9<br>+0.2 | □ 22.6<br>±0.1 | ∅ 21.6            | □ 22.6<br>±0.1 | 4 x<br>M3/∅<br>2.7 | M2.5 | □ 28.0<br>±0.1 | 5   |
| RF-Z0003                                     | 4 x ∅ 3.2               | ∅ 27.9<br>±0.1 | □ 28.3<br>±0.1 | ∅ 26.2            | □ 28.3<br>±0.1 | 4 x M3             | M3   | □ 35.0         | 6   |
| SM-Z0003<br>SM-Z0004                         | 4 x M4/∅<br>4.2         | ∅ 46.1<br>±0.1 | □ 42.4<br>±0.1 | ∅ 45.0            | □ 42.4<br>±0.1 | 4 x ∅<br>4.3       | M3   | □ 55.0<br>±0.1 | 5.5 |

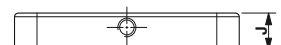
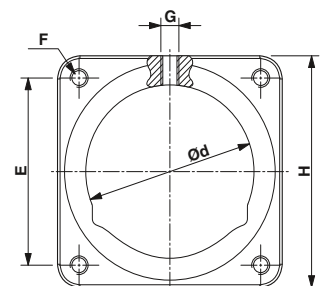
**Note:**

For insulating wall mounting, plastic mounting flanges are available on request.

Installation dimensions



Flange dimensions





# M17 to M58 circular plug-in connectors

## Tools and accessories

### Color rings

The color rings are used for individually marking the plug-in connectors



Color rings for marking plug-in connectors with cable entry



Color rings for marking device plug-in connectors

|                                                                                                                                                               |        | Ordering data |           |             | Ordering data |           |             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------|-----------|-------------|---------------|-----------|-------------|
| Description                                                                                                                                                   | Color  | Type          | Order No. | Pcs. / Pkt. | Type          | Order No. | Pcs. / Pkt. |
| Color rings for M17 plug-in connectors, 50 pcs. in set                                                                                                        |        |               |           |             |               |           |             |
|                                                                                                                                                               | Green  | ST-Z0016      | 1617993   | 50          | ST-Z0019      | 1620621   | 50          |
|                                                                                                                                                               | Orange | ST-Z0017      | 1618049   | 50          | ST-Z0020      | 1620622   | 50          |
|                                                                                                                                                               | Black  | ST-Z0018      | 1618050   | 50          | ST-Z0021      | 1620623   | 50          |
| Color rings for M23 signal plug-in connectors, 50 pcs. in set                                                                                                 |        |               |           |             |               |           |             |
|                                                                                                                                                               | Green  | RF-Z0014      | 1620588   | 50          |               |           |             |
|                                                                                                                                                               | Orange | RF-Z0015      | 1620592   | 50          |               |           |             |
|                                                                                                                                                               | Black  | RF-Z0016      | 1620593   | 50          |               |           |             |
| Color rings for M23 signal device plug-in connectors, front mounting, Pg13.5 and M20 fastening thread/rear mounting, central fastening thread, 50 pcs. in set |        |               |           |             |               |           |             |
|                                                                                                                                                               | Green  |               |           |             | CA-Z0110      | 1620700   | 50          |
|                                                                                                                                                               | Orange |               |           |             | CA-Z0111      | 1620701   | 50          |
|                                                                                                                                                               | Black  |               |           |             | CA-Z0112      | 1620702   | 50          |
| Color rings for M23 signal device plug-in connectors, front mounting, flange dimensions: 25 mm x 25 mm, 50 pcs. in set                                        |        |               |           |             |               |           |             |
|                                                                                                                                                               | Green  |               |           |             | CA-Z0120      | 1620704   | 50          |
|                                                                                                                                                               | Orange |               |           |             | CA-Z0121      | 1620705   | 50          |
|                                                                                                                                                               | Black  |               |           |             | CA-Z0122      | 1620706   | 50          |
| Color rings for M23 feedback plug-in connectors, 50 pcs. in set                                                                                               |        |               |           |             |               |           |             |
|                                                                                                                                                               | Green  | RF-Z0014      | 1620588   | 50          | RF-Z0017      | 1620624   | 50          |
|                                                                                                                                                               | Orange | RF-Z0015      | 1620592   | 50          | RF-Z0018      | 1620625   | 50          |
|                                                                                                                                                               | Black  | RF-Z0016      | 1620593   | 50          | RF-Z0019      | 1620626   | 50          |
| Color rings for M23 power plug-in connectors, 50 pcs. in set                                                                                                  |        |               |           |             |               |           |             |
|                                                                                                                                                               | Green  | SF-Z0064      | 1620585   | 50          | RF-Z0017      | 1620624   | 50          |
|                                                                                                                                                               | Orange | SF-Z0065      | 1620586   | 50          | RF-Z0018      | 1620625   | 50          |
|                                                                                                                                                               | Black  | SF-Z0066      | 1620587   | 50          | RF-Z0019      | 1620626   | 50          |
| Color rings for M40 plug-in connectors, 50 pcs. in set                                                                                                        |        |               |           |             |               |           |             |
|                                                                                                                                                               | Green  | SM-Z0025      | 1620558   | 50          | SM-Z0028      | 1620627   | 50          |
|                                                                                                                                                               | Orange | SM-Z0026      | 1620559   | 50          | SM-Z0029      | 1620628   | 50          |
|                                                                                                                                                               | Black  | SM-Z0027      | 1620560   | 50          | SM-Z0030      | 1620629   | 50          |



Dust protection caps, plastic

A range of protective caps is available for signal and power plug-in connectors to protect the contact elements in the case of a separate plug connection.

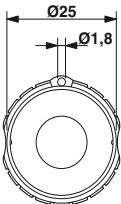
These prevent penetration of dust and humidity.

Plastic protective caps enable IP40 protection to be achieved when locked.



Plastic dust protection caps

|                                                                                                                |                                  | Ordering data |           |             |
|----------------------------------------------------------------------------------------------------------------|----------------------------------|---------------|-----------|-------------|
| Description                                                                                                    | Degree of protection when locked | Type          | Order No. | Pcs. / Pkt. |
| Plastic dust protection cap, for signal/power plug-in connectors, with M17 external thread                     | IP40                             | ST-Z0006      | 1607776   | 25          |
| Plastic dust protection cap, for signal/power plug-in connectors, with M17 knurled nut (SPEEDCON and standard) | IP40                             | ST-Z0007      | 1607777   | 25          |
| Plastic dust protection cap with lug for signal/power plug-in connectors with M23 external thread              | IP40                             | SF-Z0019      | 1607449   | 25          |
| Plastic dust protection cap, for signal/power plug-in connectors, with M23 knurled nut                         | IP40                             | RC-Z2058      | 1604223   | 25          |
| Plastic dust protection cap, for signal/power plug-in connectors, with M23 external thread                     | IP40                             | RC-Z2059      | 1604225   | 25          |
| Plastic dust protection cap, anti-static, black, for signal/power plug-in connectors, with M23 knurled nut     | IP40                             | RC-Z2468      | 1611796   | 25          |
| Plastic dust protection cap, anti-static, black, for signal/power plug-in connectors with M23 external thread  | IP40                             | RC-Z2469      | 1611797   | 25          |
| Plastic dust protection cap for power plug-in connectors with M40 external thread                              | IP40                             | SM-Z0001      | 1605866   | 25          |
| Plastic dust protection cap for power plug-in connectors with M58 external thread                              | IP40                             | SL-Z0005      | 1607926   | 25          |



SF-Z0019, eye for fixing rope

## Dust protection caps, metal

Metal protective caps are available for applications that require a higher degree of protection. These enable IP67 protection to be achieved when locked.

The wire is fixed to the housing panel and prevents the metal protective caps from being lost.



Metal dust protection caps

|                                                                                                           |                                  | Ordering data   |                |             |
|-----------------------------------------------------------------------------------------------------------|----------------------------------|-----------------|----------------|-------------|
| Description                                                                                               | Degree of protection when locked | Type            | Order No.      | Pcs. / Pkt. |
| <b>Metal dust protection cap</b> , for power plug-in connectors with M23 external thread                  | IP67                             | <b>SC-Z2319</b> | <b>1605456</b> | 10          |
| <b>Metal dust protection cap with steel wire</b> , for power plug-in connectors with M23 external thread  | IP67                             | <b>SC-Z2320</b> | <b>1605457</b> | 10          |
| <b>Metal dust protection cap with steel wire</b> , for power plug-in connectors with M23 knurled nut      | IP67                             | <b>SC-Z2322</b> | <b>1605459</b> | 10          |
| <b>Metal dust protection cap</b> , for signal plug-in connectors, with M23 external thread                | IP67                             | <b>RC-Z2104</b> | <b>1604260</b> | 10          |
| <b>Metal dust protection cap with steel wire</b> , for signal plug-in connectors with M23 external thread | IP67                             | <b>RC-Z2068</b> | <b>1604236</b> | 10          |
| <b>Metal dust protection cap with steel wire</b> , for signal plug-in connectors, with M23 knurled nut    | IP67                             | <b>RC-Z2062</b> | <b>1604228</b> | 10          |



# Photovoltaic plug-in connectors

## **SUNCLIX – the unique connection system for photovoltaics**

Are you looking for innovative and reliable connection technology for your PV modules, inverters or for cabling complete PV systems?

We have the right connection solution for you – from connection technology for junction boxes through DC plug-in connectors for field cabling to device connection for power. The tailored, high-quality components contribute to the long-term and increased availability of your system.

## **SUNCLIX – DC plug-in connectors with fast connection**

The one-piece DC plug-in connectors can be connected quickly and easily by means of spring technology without using special tools. The unique spring technology ensures reliable and long-term stable contacting of the conductors.

## **Miniature plug-in system for building-integrated photovoltaics - BIPV**

Absorb solar energy not only from the roof of a building, but from its entire surface.

Phoenix Contact has developed a new DC plug-in system in miniature format for this new trend in energy production using photovoltaics. In this way, the facade of a building is efficiently used to produce energy.

|                                                             |            |
|-------------------------------------------------------------|------------|
| <b>Product range overview</b>                               | <b>418</b> |
| <b>Device plug-in connectors</b>                            | <b>420</b> |
| <b>DC plug-in connectors</b>                                | <b>422</b> |
| <b>Y plug-in connectors</b>                                 | <b>424</b> |
| <b>Cables</b>                                               | <b>425</b> |
| <b>Building-integrated photovoltaic applications (BIPV)</b> | <b>426</b> |
| <b>PCB connection for PV applications</b>                   | <b>428</b> |

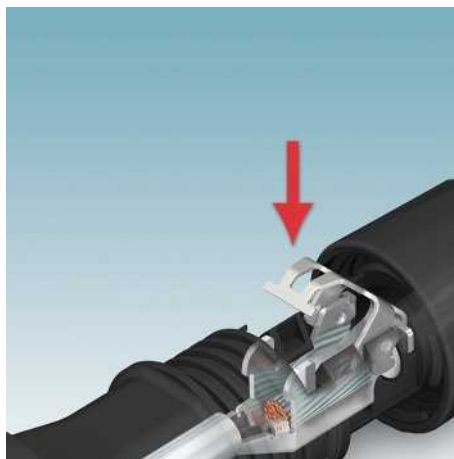




### Assembly



– Insert the stripped PV conductor



– Press down on the spring and snap in



– Tighten the screw connection  
- and you're done!



SUNCLIX DC device plug-in connectors  
– see page 420



SUNCLIX DC plug-in connectors,  
2.5 mm<sup>2</sup> to 16 mm<sup>2</sup>, can be assembled  
– see page 422



SUNCLIX Y-distributors  
– see page 424



Photovoltaic cables  
– see page 425



PCB connection  
– see page 428



SUNCLIX building-integrated  
photovoltaic applications  
– see page 426

### Release



– Can only be released using a screwdriver



# Photovoltaic plug-in connectors

## Device plug-in connectors

### SUNCLIX DC device plug-in connectors

- With connected cable as standard
- IP65 when not plugged in
- Anti-rotation protection with coding
- For voltage up to 1500 V

#### Notes:

Further cable types and lengths are available on request



With 0.13 m litz wire

#### Technical data

|                                 |
|---------------------------------|
| General data                    |
| Degree of protection            |
| Electrical data                 |
| Rated voltage                   |
| Nominal current $I_N$           |
| Conductor cross section         |
| Temperature data                |
| Ambient temperature (operation) |

|                               |  |                   |  |                   |  |
|-------------------------------|--|-------------------|--|-------------------|--|
| IP65 / IP66 / IP68 (2m / 24h) |  |                   |  |                   |  |
| 1500 V                        |  |                   |  |                   |  |
| 27 A                          |  | 40 A              |  |                   |  |
| 2.5 mm <sup>2</sup>           |  | 4 mm <sup>2</sup> |  | 6 mm <sup>2</sup> |  |
| -40 °C ... 85 °C              |  |                   |  |                   |  |

#### Ordering data

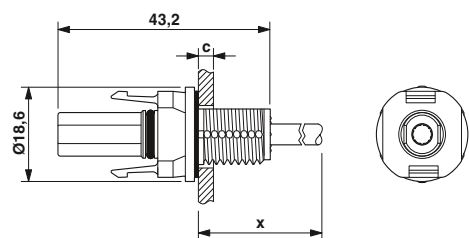
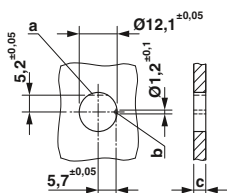
|                                    |
|------------------------------------|
| Description                        |
| <b>DC device plug-in connector</b> |
| Socket (+)                         |
| Plug (-)                           |

| Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|-----------|-------------|-----------|-------------|-----------|-------------|
| 1805135   | 50          | 1805151   | 50          | 1805177   | 50          |
| 1805148   | 50          | 1805164   | 50          | 1805180   | 50          |

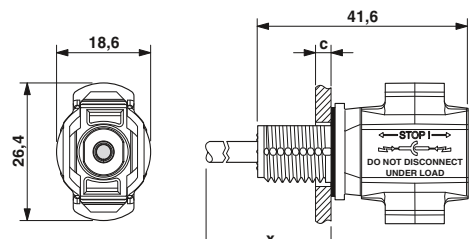
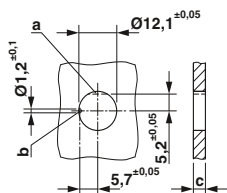
#### Accessories

|                                                                                              |
|----------------------------------------------------------------------------------------------|
| <b>Nut</b> for attaching SUNCLIX device plug-in connectors                                   |
| <b>Protective cap</b> for SUNCLIX photovoltaic plug-in connector; degree of protection: IP67 |
| <b>Flat gasket</b> for photovoltaic plug-in connector                                        |

|                            |         |      |
|----------------------------|---------|------|
| <b>PV-FT-C NUT BK</b>      | 1775880 | 100  |
| <b>PV-C PROTECTION CAP</b> | 1785430 | 100  |
| <b>PV-FT-FLAT GASKET</b>   | 1705561 | 1000 |



Dimension: socket (+),  
dimension x = cable length



Dimension: pin (-),  
dimension x = cable length

## SUNCLIX DC device plug-in connectors for self-assembly

### Plastic housing

- Anti-rotation protection with coding
- For voltage up to 1500 V

### Contacts for crimp connection

- Contacts on roll



|                                                                                       | Technical data      |             |           |             | Technical data         |             |                  |             |
|---------------------------------------------------------------------------------------|---------------------|-------------|-----------|-------------|------------------------|-------------|------------------|-------------|
| General data                                                                          |                     |             |           |             |                        |             |                  |             |
| Degree of protection (when plugged in)                                                |                     |             | -         |             | IP66 / IP68 (2m / 24h) |             |                  |             |
| Electrical data                                                                       |                     |             |           |             |                        |             |                  |             |
| Rated voltage                                                                         | 1500 V              |             | -         |             | 1500 V                 |             |                  |             |
| Rated current                                                                         |                     |             | -         |             | 40 A (for 4 mm²)       |             | 40 A (for 6 mm²) |             |
| Connection capacity                                                                   |                     |             | -         |             | 2.5 mm² ... 4 mm²      |             | 6 mm²            |             |
| Temperature data                                                                      |                     |             |           |             |                        |             |                  |             |
| Ambient temperature (operation)                                                       | -40 °C ... 85 °C    |             | -         |             | -40 °C ... 85 °C       |             |                  |             |
|                                                                                       | Ordering data       |             |           |             | Ordering data          |             |                  |             |
| Description                                                                           | Order No.           | Pcs. / Pkt. | Order No. | Pcs. / Pkt. | Order No.              | Pcs. / Pkt. | Order No.        | Pcs. / Pkt. |
| Plastic housing                                                                       |                     |             |           |             |                        |             |                  |             |
| Socket (+)                                                                            | 1704926             | 50          |           |             |                        |             |                  |             |
| Plug (-)                                                                              | 1704925             | 50          |           |             |                        |             |                  |             |
| Metal contact                                                                         |                     |             |           |             |                        |             |                  |             |
| Socket (+)                                                                            |                     |             |           |             | 1704930                | 1000        | 1704931          | 1000        |
| Plug (-)                                                                              |                     |             |           |             | 1704927                | 1000        | 1704928          | 1000        |
|                                                                                       | Accessories         |             |           |             | Accessories            |             |                  |             |
| Nut for attaching SUNCLIX device plug-in connectors                                   | PV-FT-C NUT BK      |             | 1775880   | 100         |                        |             |                  |             |
| Protective cap for SUNCLIX photovoltaic plug-in connector; degree of protection: IP67 | PV-C PROTECTION CAP |             | 1785430   | 100         |                        |             |                  |             |
| Flat gasket for photovoltaic plug-in connector                                        | PV-FT-FLAT GASKET   |             | 1705561   | 1000        |                        |             |                  |             |
| Test pin for SUNCLIX device plug-in connectors for free assembly                      | PV-FT-TEST PIN      |             | 1705589   | 1           |                        |             |                  |             |

# Photovoltaic plug-in connectors

## DC plug-in connectors

### SUNCLIX DC plug-in connectors

- Quick and easy connection without special tools
- Reliable and long-term stable contacting of the conductors, thanks to proven spring technology



**SUNCLIX,**  
1100 V, 2.5 to 6 mm<sup>2</sup>



**SUNCLIX,**  
1500 V, 2.5 to 6 mm<sup>2</sup>



#### Technical data

|                                 |                                                                 |
|---------------------------------|-----------------------------------------------------------------|
| General data                    |                                                                 |
| Degree of protection            | IP66 / IP68 (2m / 24h)                                          |
| Connection method               | Spring-cage                                                     |
| Electrical data                 |                                                                 |
| Rated voltage                   | 1100 V                                                          |
| Nominal current I <sub>N</sub>  | 40 A (from 4 mm <sup>2</sup> ; 27.5 A for 2.5 mm <sup>2</sup> ) |
| Connection capacity             | 2.5 mm <sup>2</sup> ... 6 mm <sup>2</sup>                       |
| Temperature data                |                                                                 |
| Ambient temperature (operation) | -40 °C ... 85 °C                                                |

#### Ordering data

| Description                  | Type              | Order No. | Pcs. / Pkt. |
|------------------------------|-------------------|-----------|-------------|
| <b>DC plug-in connectors</b> |                   |           |             |
| Socket (+)                   | PV-CF-S 2,5-6 (+) | 1774674   | 50          |
| Plug (-)                     | PV-CM-S 2,5-6 (-) | 1774687   | 50          |

#### Accessories

|                                                                                                                                       |                            |         |     |
|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|-----|
| <b>Protective cap</b> for SUNCLIX photovoltaic plug-in connector; degree of protection: IP67                                          | <b>PV-C PROTECTION CAP</b> | 1785430 | 100 |
| <b>Filler plug</b> for protection against dust and humidity                                                                           | <b>PV-C PLUG</b>           | 1775631 | 200 |
| <b>Screwdriver</b>                                                                                                                    | <b>SZF 1-0,6X3,5</b>       | 1204517 | 10  |
| <b>Stripping tool</b> , for standard 2.5, 4, and 6 mm <sup>2</sup> solar cables, with 15 mm length stop, for SUNCLIX field connectors | <b>WIREFOX-D SR 6-1</b>    | 1212511 | 1   |



#### Technical data

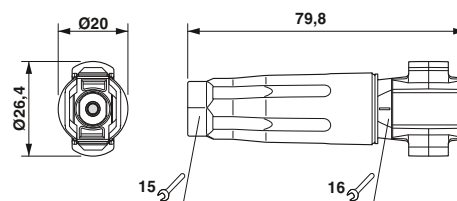
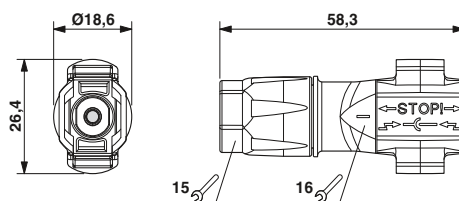
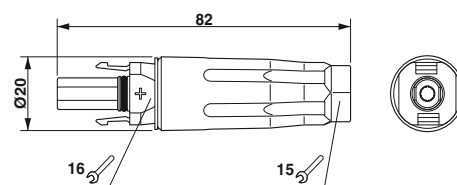
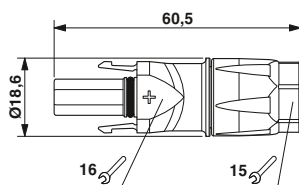
|                                 |                                                                 |
|---------------------------------|-----------------------------------------------------------------|
| General data                    |                                                                 |
| Degree of protection            | IP66 / IP68 (2m / 24h)                                          |
| Connection method               | Spring-cage                                                     |
| Electrical data                 |                                                                 |
| Rated voltage                   | 1500 V                                                          |
| Nominal current I <sub>N</sub>  | 40 A (from 4 mm <sup>2</sup> ; 27.5 A for 2.5 mm <sup>2</sup> ) |
| Connection capacity             | 2.5 mm <sup>2</sup> ... 6 mm <sup>2</sup>                       |
| Temperature data                |                                                                 |
| Ambient temperature (operation) | -40 °C ... 85 °C                                                |

#### Ordering data

| Description                  | Type               | Order No. | Pcs. / Pkt. |
|------------------------------|--------------------|-----------|-------------|
| <b>DC plug-in connectors</b> |                    |           |             |
| Socket (+)                   | PV-C1F-S 2,5-6 (+) | 1789821   | 50          |
| Plug (-)                     | PV-C1M-S 2,5-6 (-) | 1789834   | 50          |

#### Accessories

|                                                                                                                                       |                            |         |     |
|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|-----|
| <b>Protective cap</b> for SUNCLIX photovoltaic plug-in connector; degree of protection: IP67                                          | <b>PV-C PROTECTION CAP</b> | 1785430 | 100 |
| <b>Filler plug</b> for protection against dust and humidity                                                                           | <b>PV-C PLUG</b>           | 1775631 | 200 |
| <b>Screwdriver</b>                                                                                                                    | <b>SZF 1-0,6X3,5</b>       | 1204517 | 10  |
| <b>Stripping tool</b> , for standard 2.5, 4, and 6 mm <sup>2</sup> solar cables, with 15 mm length stop, for SUNCLIX field connectors | <b>WIREFOX-D SR 6-1</b>    | 1212511 | 1   |

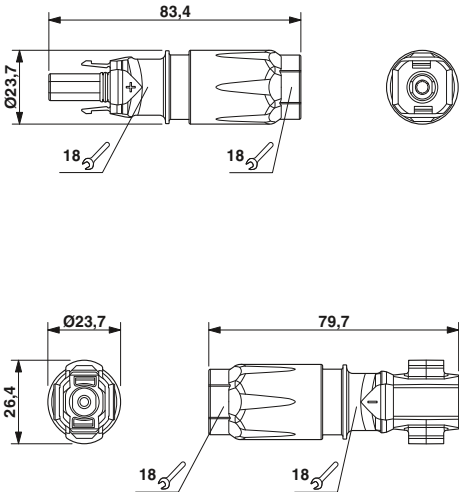




SUNCLIX,  
1500 V, 6 to 16 mm<sup>2</sup>



| Technical data                                                                                   |           |             |
|--------------------------------------------------------------------------------------------------|-----------|-------------|
| IP66 / IP68 (2m / 24h)<br>Spring-cage                                                            |           |             |
| 1500 V<br>65 A (at 16 mm <sup>2</sup> ; 40 A at 6 mm <sup>2</sup> ; 50 A at 10 mm <sup>2</sup> ) |           |             |
| 6 mm <sup>2</sup> ... 16 mm <sup>2</sup>                                                         |           |             |
| -40 °C ... 85 °C                                                                                 |           |             |
| Ordering data                                                                                    |           |             |
| Type                                                                                             | Order No. | Pcs. / Pkt. |
| PV-CF-S 6-16 (+)                                                                                 | 1790784   | 25          |
| PV-CM-S 6-16 (-)                                                                                 | 1790797   | 25          |
| Accessories                                                                                      |           |             |
| PV-C PROTECTION CAP                                                                              | 1785430   | 100         |
| PV-C PLUG                                                                                        | 1775631   | 200         |
| SZF 1-0,6X3,5                                                                                    | 1204517   | 10          |



# Photovoltaic plug-in connectors

## Y-distributors and cables

### SUNCLIX DC accessories

#### Y-distributors

- Flexible and compact configuration
- Customer-specific configurations on request
- Variable cable lengths, number of branches, cable cross section, and processing of free cable ends

#### DC test plugs

- Can be released without tools
- For test applications with high insertion/withdrawal cycles



Y-distributor



DC test plug

|                                 |
|---------------------------------|
| General data                    |
| Degree of protection            |
| Electrical data                 |
| Rated voltage                   |
| Nominal current I <sub>N</sub>  |
| Conductor cross section         |
| Insertion/withdrawal cycles     |
| Temperature data                |
| Ambient temperature (operation) |

| Technical data          |                   |
|-------------------------|-------------------|
| 4 mm <sup>2</sup>       | 6 mm <sup>2</sup> |
| IP66 / IP68 (2m / 24h)  |                   |
| 1100 V                  |                   |
| 40 A (observe derating) |                   |
| 4 mm <sup>2</sup>       | 6 mm <sup>2</sup> |
| -                       |                   |
| -40 °C ... 85 °C        |                   |

|             |
|-------------|
| Description |
|-------------|

**Y-distributor**, length of each individual cable: 0.12 m

Plug (-) to 2 x socket (+)

Socket (+) to 2 x plug (-)

**DC test plug**, can be released without tools, for test applications with high insertion/withdrawal cycles

| Ordering data     |             |                   |             |
|-------------------|-------------|-------------------|-------------|
| Order No.         | Pcs. / Pkt. | Order No.         | Pcs. / Pkt. |
| 4 mm <sup>2</sup> |             | 6 mm <sup>2</sup> |             |

|         |    |         |    |
|---------|----|---------|----|
| 1795019 | 10 | 1787726 | 10 |
| 1795022 | 10 | 1787739 | 10 |

#### Accessories

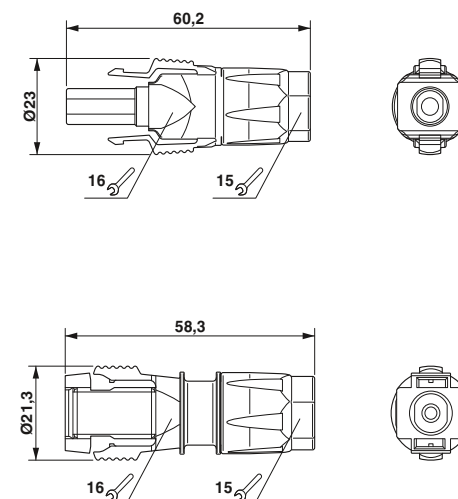
For dimensional drawings, see [www.phoenixcontact.net/products](http://www.phoenixcontact.net/products)

| Technical data     |         |
|--------------------|---------|
| Socket (+)         | Pin (-) |
| IP20               |         |
| 1100 V             |         |
| 40 A               |         |
| 10 mm <sup>2</sup> |         |
| ≥ 4000             |         |
| -20 °C ... 55 °C   |         |

| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| Socket (+)    |             | Pin (-)   |             |

|         |    |         |    |
|---------|----|---------|----|
| 1780451 | 50 | 1780464 | 50 |
|---------|----|---------|----|

#### Accessories



## Solar cables

- Suitable for fixed and flexible routing
- Insulating and sheath material offers excellent resistance to weather, UV, and wear
- PV1-F cable certified by TÜV and VDE



| Technical data                                                                |  |                       |           |             |
|-------------------------------------------------------------------------------|--|-----------------------|-----------|-------------|
| Temperature data                                                              |  |                       |           |             |
| Ambient temperature (operation)                                               |  | -40 °C ... 90 °C      |           |             |
| Ordering data                                                                 |  |                       |           |             |
| Description                                                                   |  | Type                  | Order No. | Pcs. / Pkt. |
| <b>Solar cable, tin-plated single litz wires, 100 m ring, cross section:</b>  |  |                       |           |             |
| 2.5 mm <sup>2</sup>                                                           |  | PV-1P-100,0/S01-2,5   | 1459509   | 1           |
| 4 mm <sup>2</sup>                                                             |  | PV-1P-100,0/S02-4,0   | 1459511   | 1           |
| 6 mm <sup>2</sup>                                                             |  | PV-1P-100,0/S03-6,0   | 1459524   | 1           |
| 10 mm <sup>2</sup>                                                            |  | PV-1P-100,0/S04-10,0  | 1459537   | 1           |
| <b>Solar cable, tin-plated single litz wires, 500 m drum, cross section:</b>  |  |                       |           |             |
| 2.5 mm <sup>2</sup>                                                           |  | PV-1P-500,0/S01-2,5   | 1459540   | 1           |
| 4 mm <sup>2</sup>                                                             |  | PV-1P-500,0/S02-4,0   | 1787700   | 1           |
| 6 mm <sup>2</sup>                                                             |  | PV-1P-500,0/S03-6,0   | 1787713   | 1           |
| 10 mm <sup>2</sup>                                                            |  | PV-1P-500,0/S04-10,0  | 1459553   | 1           |
| <b>Solar cable, tin-plated single litz wires, 1000 m drum, cross section:</b> |  |                       |           |             |
| 2.5 mm <sup>2</sup>                                                           |  | PV-1P-1000,0/S01-2,5  | 1459566   | 1           |
| 4 mm <sup>2</sup>                                                             |  | PV-1P-1000,0/S02-4,0  | 1459579   | 1           |
| 6 mm <sup>2</sup>                                                             |  | PV-1P-1000,0/S03-6,0  | 1459582   | 1           |
| 10 mm <sup>2</sup>                                                            |  | PV-1P-1000,0/S04-10,0 | 1459595   | 1           |

Photovoltaic plug-in connectors

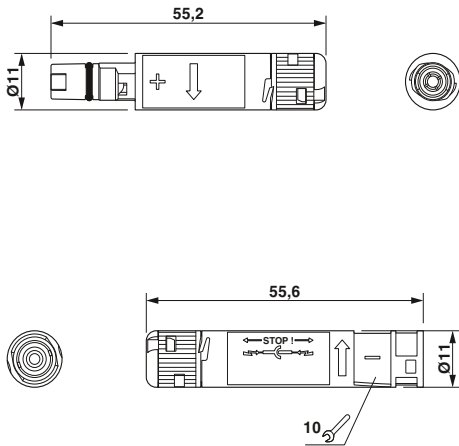
Building-integrated photovoltaic applications (BIPV)

SUNCLIX mini DC plug-in connector

- For building-integrated photovoltaic applications (BIPV)
- Narrow design, just 11 mm in diameter
- Easy to hide in the facade structure
- Quick and easy connection without special tools



| Technical data                  |                     |           |             |
|---------------------------------|---------------------|-----------|-------------|
| General data                    |                     |           |             |
| Degree of protection            | IP67                |           |             |
| Connection method               | Pierce connection   |           |             |
| Electrical data                 |                     |           |             |
| Rated voltage                   | 1000 V              |           |             |
| Nominal current I <sub>N</sub>  | 15 A                |           |             |
| Connection capacity             | 2.5 mm <sup>2</sup> |           |             |
| Temperature data                |                     |           |             |
| Ambient temperature (operation) | -40 °C ... 85 °C    |           |             |
| Ordering data                   |                     |           |             |
| Description                     | Type                | Order No. | Pcs. / Pkt. |
| DC plug-in connectors           |                     |           |             |
| Socket (+)                      | PV-CF-P 2,5(+)      | 1795323   | 50          |
| Plug (-)                        | PV-CM-P 2,5(-)      | 1795336   | 50          |



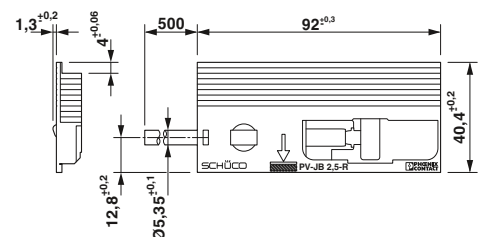
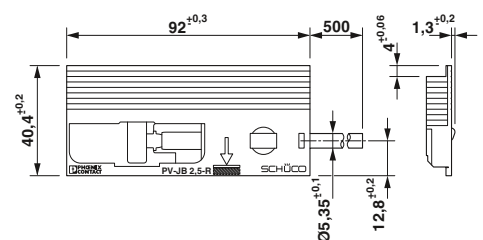
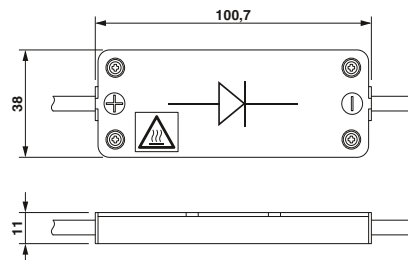
- For building-integrated photovoltaic applications (BIPV)
- Compact design
- Easy to hide in the facade structure
- High density due to molding compound

- Optimum heat management

- Ribbon contacting with spring connection



|                                 |              | Technical data       |           |             | Technical data                            |           |             |
|---------------------------------|--------------|----------------------|-----------|-------------|-------------------------------------------|-----------|-------------|
| General data                    |              |                      |           |             |                                           |           |             |
| Degree of protection            |              | IP67                 |           |             | -                                         |           |             |
| Connection method               |              | Open cable end       |           |             | Spring-cage                               |           |             |
| Electrical data                 |              |                      |           |             |                                           |           |             |
| Rated voltage                   |              | 1000 V               |           |             | 1000 V                                    |           |             |
| Reverse voltage                 |              | 2200 V               |           |             | -                                         |           |             |
| Nominal current I <sub>N</sub>  |              | 5 A                  |           |             | 15 A                                      |           |             |
| Conductor cross section         |              | 2.5 mm <sup>2</sup>  |           |             | 2.5 mm <sup>2</sup>                       |           |             |
| Ribbon connection capacity      |              | -                    |           |             | Width: ≤ 5 mm; thickness: 0.05 ... 0.2 mm |           |             |
| Temperature data                |              |                      |           |             |                                           |           |             |
| Ambient temperature (operation) |              | -40 °C ... 85 °C     |           |             | -40 °C ... 85 °C                          |           |             |
|                                 |              | Ordering data        |           |             | Ordering data                             |           |             |
| Description                     | Cable length | Type                 | Order No. | Pcs. / Pkt. | Type                                      | Order No. | Pcs. / Pkt. |
| <b>DC string diode</b>          |              |                      |           |             |                                           |           |             |
| Free cable end                  | 0.8 m        | PV-DB S20-2,5/0,8-2D | 1811239   | 10          |                                           |           |             |
| Pre-assembled with SUNCLIX mini | 0.8 m        | PV-DB S20-2,5/0,8-CA | 1463065   | 10          |                                           |           |             |
| <b>Module junction box</b>      |              |                      |           |             |                                           |           |             |
| Cable outlet right              | 0.5 m        |                      |           |             | PV-JB 2,5/ 1-R 50 PXC                     | 1705131   | 25          |
| Cable outlet left               | 0.5 m        |                      |           |             | PV-JB 2,5/ 1-L 50 PXC                     | 1705132   | 25          |





PCB terminal blocks  
for PV applications

- PTSPL 6 push-lock spring-cage PCB terminal block without insulating body for conductor cross sections up to 6 mm<sup>2</sup> and a current carrying capacity of up to 41 A for use in SMT reflow processes
- Connection direction of the conductor horizontal to the PCB
- Low actuation forces
- Delivery form: tape-on-reel packing according to IEC 60286-3 for automated assembly
- PTSPL spring closed for assembly using vacuum pipette
- PTSPLO spring opened for assembly using mechanical gripper
- Standard pin lengths of 2.1 mm and 2.9 mm

Notes:

Pick and place pads for taped THR articles usually protrude beyond the components. The PCB layout must ensure that collisions are avoided when components are assembled. Dimensional drawings of tape reels and place pads can be found online at [www.phoenixcontact.net/products](http://www.phoenixcontact.net/products).

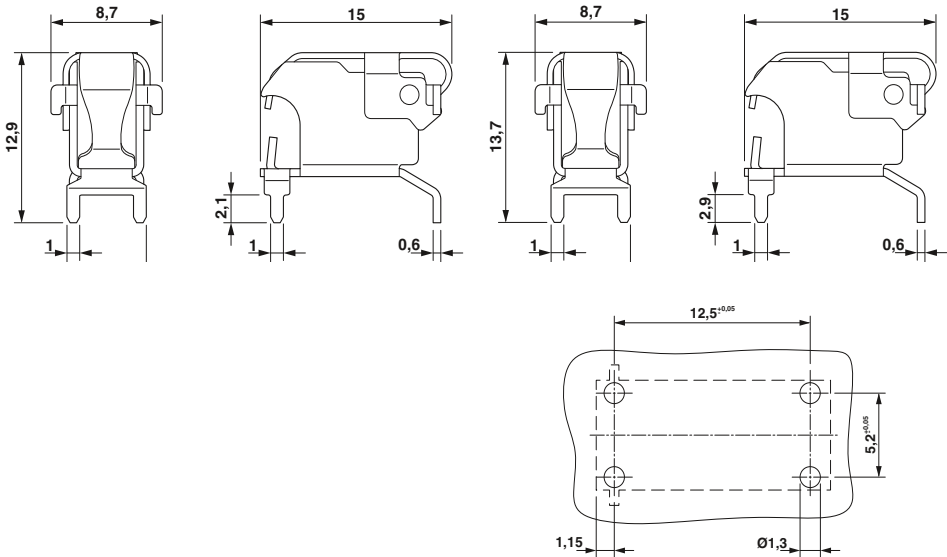


| Electrical data                |
|--------------------------------|
| Nominal current I <sub>N</sub> |
| Connection capacity            |

| Technical data                            |
|-------------------------------------------|
| 41 A                                      |
| 2.5 mm <sup>2</sup> ... 6 mm <sup>2</sup> |

| Description                      |
|----------------------------------|
| <b>PCB terminal block closed</b> |
| Solder pin length: 2.1 mm        |
| Solder pin length: 2.9 mm        |
| <b>PCB terminal block open</b>   |
| Solder pin length: 2.1 mm        |
| Solder pin length: 2.9 mm        |

| Ordering data          |           |             |
|------------------------|-----------|-------------|
| Type                   | Order No. | Pcs. / Pkt. |
| PTSPL-6/1-2X2 2,1 R32  | 1704836   | 240         |
| PTSPL-6/1-2X2 2,9 R32  | 1704837   | 240         |
| PTSPLO-6/1-2X2 2,1 R32 | 1705081   | 220         |
| PTSPLO-6/1-2X2 2,9 R32 | 1705085   | 220         |

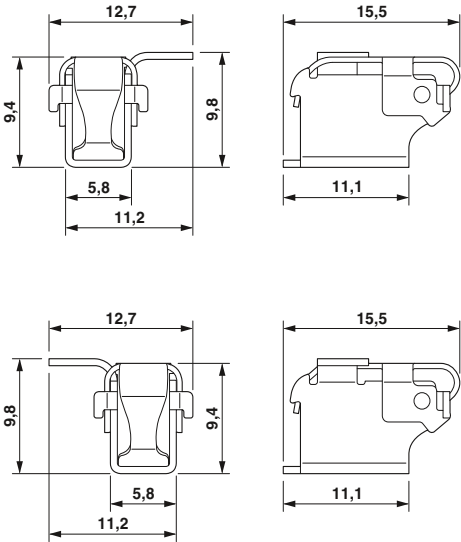


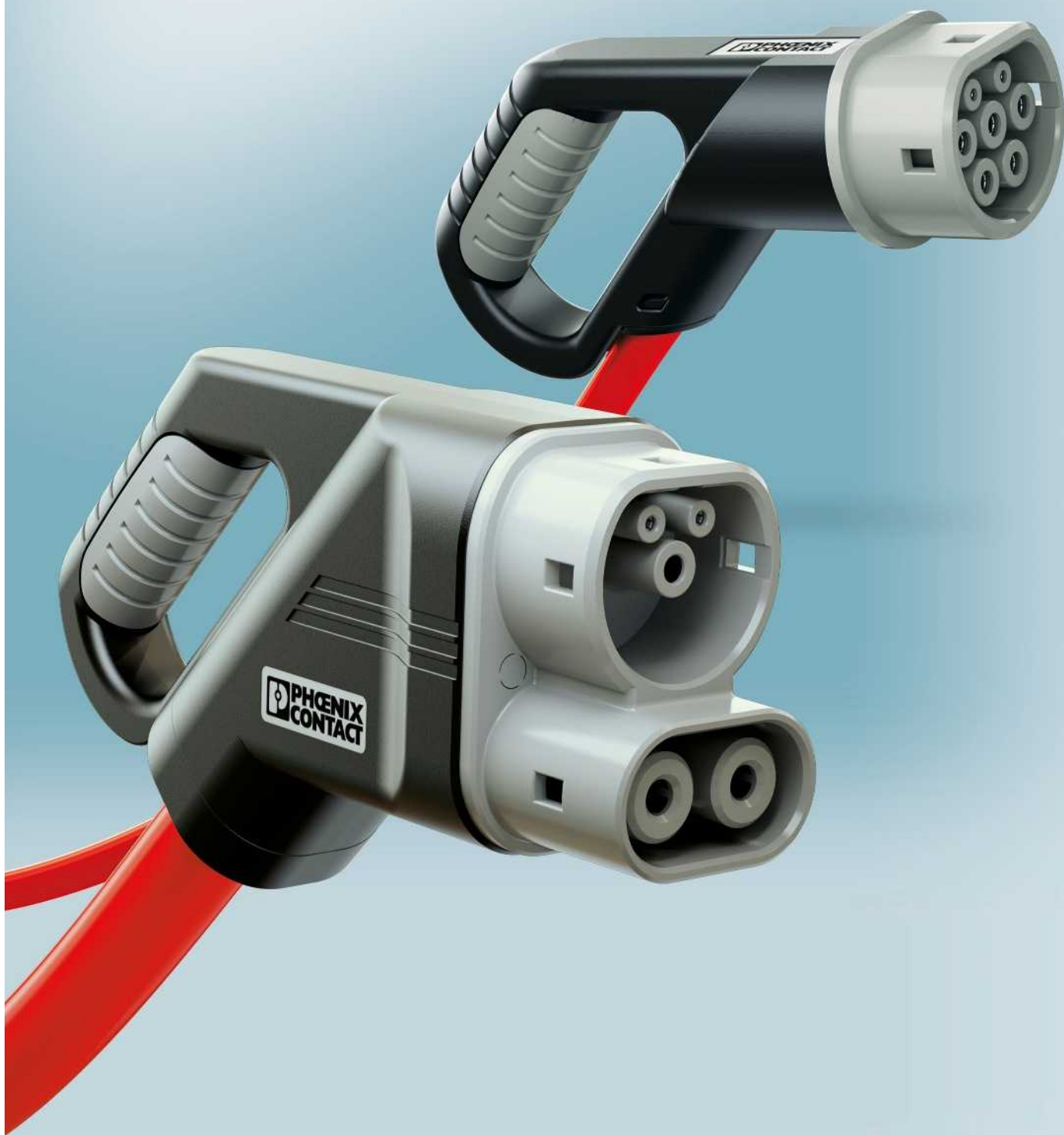
Flush-type spring-cage terminal blocks with welded bracket

- Suitable for applications with leadframe
- Push-lock spring-cage terminal block with welded bracket
- Reliable contacting of conductors, thanks to spring technology, proven a million times over
- Available with welded bracket left or right



|                                |  | Technical data    |           |             |
|--------------------------------|--|-------------------|-----------|-------------|
| Electrical data                |  |                   |           |             |
| Nominal current I <sub>N</sub> |  | 41 A              |           |             |
| Connection capacity            |  | 2.5 mm² ... 6 mm² |           |             |
|                                |  | Ordering data     |           |             |
| Description                    |  | Type              | Order No. | Pcs. / Pkt. |
| Spring-cage terminal block     |  |                   |           |             |
| Welded bracket right           |  | PV-PTSPL-W/1R     | 1705624   | 250         |
| Welded bracket left            |  | PV-PTSPL-W/1L     | 1705625   | 250         |





# Plug-in charging systems for electromobility

PLUSCON power offers a product and technology portfolio that enables the flexible, modular, and efficient implementation of various concepts for your charging infrastructure for different business models. Whether charging on an AC network or fast DC charging – the AC and DC plug-in charging systems from Phoenix Contact are safe, reliable, and user friendly.

## Product range overview

|                                                         |            |
|---------------------------------------------------------|------------|
| <b>Type 2 combined AC/DC charging system (Europe)</b>   | <b>435</b> |
| <b>Type 2 AC charging cables (Europe)</b>               | <b>436</b> |
| <b>Type 2 (Europe) and GB (China) AC socket outlets</b> | <b>438</b> |
| <b>GB AC charging cables (China)</b>                    | <b>440</b> |



The development of a widespread charging infrastructure in conjunction with renewable energy is an important step toward a mobile future. Special charging plugs are used to establish an electrical connection between the electric vehicle and the infrastructure (e.g., a charging station). Internationally standardized charging interfaces ensure uniform connection for charging stations and vehicles.

The PLUSCON power product range from Phoenix Contact offers reliable standard-compliant solutions for a consistent charging interface for all applications.

The matrix below provides an overview of the various plug-in charging systems and standards with the respective pin connector patterns of the vehicle inlet.

### Overview of plug-in charging systems

|                                | Type 1/USA                                                                                                  | Type 2/Europe                                                                                      | GB/China                                                                                                     |
|--------------------------------|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Alternating current AC         | <br>SAE J1772/IEC 62196-2  | <br>IEC 62196-2   | <br>GB part 2             |
| Direct current DC              | <br>IEC 62196-3            | <br>IEC 62196-3   | <br>GB part 3/IEC 62196-3 |
| Combined AC/DC charging system | <br>SAE J1772/IEC 62196-3 | <br>IEC 62196-3 |                                                                                                              |



In addition to the type 2 combined AC/DC charging system, the PLUSCON power product range also features plug-in charging systems for AC charging. This includes AC charging cables and the corresponding type 2 and GB socket outlets. The compact design and ergonomic handle design of the charging plug enable convenient and optimal handling during the charging process.

The following charging infrastructure components can be found in Catalog 7 (interface technology and switching devices):

- EV Charge Control charging controller for charging electric vehicles on the AC power grid according to IEC 61851-1
- Optional EV Charge Lock Release add-on module for plug release in the event of mains failure

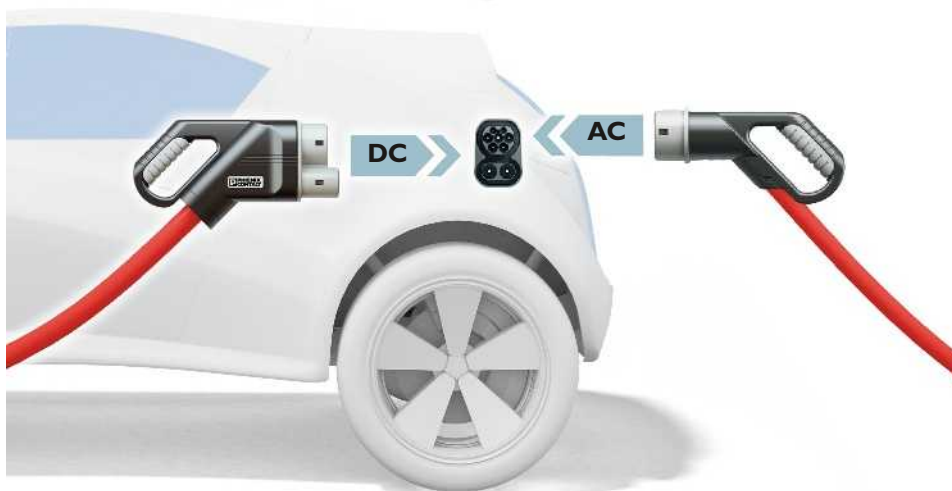
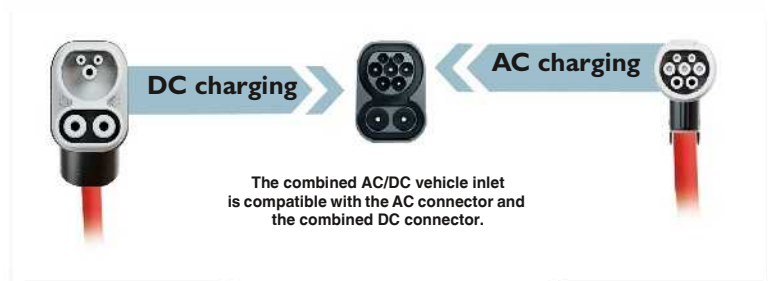
In addition to the standardized plug-in charging systems, Phoenix Contact also offers high-performance plug-in connectors for DC charging of large battery units. The DC replacement battery concept is particularly suitable for utility vehicles used in local and municipal authorities as well as for fork-lift trucks, transport vehicles, and passenger transport vehicles.



### Type 2 combined AC/DC charging system (Europe)

#### DC charging process

#### AC charging process



The most important requirement for setting up a modern charging infrastructure is a reliable and uniform connection between electric vehicles and charging stations. The electrical energy must be supplied in the form of DC voltage or AC voltage for recharging the batteries.

The type 2 combined AC/DC charging system from Phoenix Contact supports conductive charging of electric vehicles with both DC and AC. It was developed in conjunction with leading automobile manufacturers and represents the ideal charging interface for future electromobility due to its varied charging options. Only one vehicle inlet is required for each charging process in all applications thanks to the universal pin connector pattern.

If AC is used for charging, the energy can be supplied directly from the existing low-voltage network to the integrated AC/DC converter in the vehicle with the type 2 AC connector, see page 436.

In the case of DC charging with the type 2 combined DC connector, the AC/DC converter is located within the charging sta-

tion and reduces the load on the vehicle. Due to the high current carrying capacity, the battery is charged in a matter of minutes.

Both AC and DC charging processes are supported by control and signal contacts.

The handle's ergonomic design and the low insertion and withdrawal forces mean that the combined DC connector ensures fast, convenient, and easy handling.



### Type 2 combined AC/DC charging system (Europe)

- Supports fast DC charging
- Safe and secure, thanks to the electromechanical lock between connector and vehicle
- Robust, thanks to the use of high-quality materials

#### Notes:

Cable length and housing color versions on request.



N

125 A type 2 combined DC connector

#### Technical data

|                                            |                                                                            |
|--------------------------------------------|----------------------------------------------------------------------------|
| Nominal current                            | 125 A                                                                      |
| Nominal voltage                            | 850 V DC                                                                   |
| Standards                                  | IEC 62196-3 (type 2)                                                       |
| Charging mode                              | Mode 4                                                                     |
| Resistor coding                            | 1500 Ω                                                                     |
| Temperature sensor                         | Pt1000                                                                     |
| Ambient temperature (operation)            | -30 °C ... 50 °C                                                           |
| Number of power contacts                   | 3                                                                          |
| Insertion/withdrawal cycles                | > 10000                                                                    |
| Insertion/withdrawal force                 | < 100 N                                                                    |
| Type of protection (when plugged in)       | IP44                                                                       |
| Degree of protection (when not plugged in) | IP20                                                                       |
| Cable data                                 |                                                                            |
| Cable type                                 | Straight                                                                   |
| Cable length                               | 5 m                                                                        |
| Cable diameter                             | 28 mm                                                                      |
| Cable structure                            | 2 x 50 mm <sup>2</sup> + 1 x 25 mm <sup>2</sup> + 3 x 0.75 mm <sup>2</sup> |

#### Ordering data

| Description                                                           | Type                                  | Order No.      | Pcs. / Pkt. |
|-----------------------------------------------------------------------|---------------------------------------|----------------|-------------|
| <b>Type 2 combined DC charging cable</b><br>Outer sheath color: black | <b>EV-T2M4CC-DC125A-5,0M50ESBK001</b> | <b>1409060</b> | <b>1</b>    |



# Plug-in charging systems for electromobility

## Charging plug-in connectors

### Type 2 AC charging cables (Europe)

- Convenient handling, thanks to the ergonomic handle design
- Safe and secure, thanks to the electromechanical lock on the charging station and vehicle
- Robust, thanks to the use of high-quality materials

|                                                                       |
|-----------------------------------------------------------------------|
| <b>Notes:</b>                                                         |
| Cable length and housing color versions on request.                   |
| All connectors and plugs are provided together with a protective cap. |



**20 A type 2 AC connector, with open cable end**



**32 A type 2 AC connector, with open cable end**

Nominal current  
Nominal voltage  
Standards  
Charging mode  
Resistor coding  
Ambient temperature (operation)  
Number of power contacts  
Insertion/withdrawal cycles  
Insertion/withdrawal force  
Type of protection (when plugged in)  
Degree of protection (with protective cap)  
Degree of protection (when not plugged in)

|                   |
|-------------------|
| <b>Cable data</b> |
| Cable type        |
| Cable length      |
| Cable diameter    |
| Cable structure   |

| Technical data                                    |                                                   |
|---------------------------------------------------|---------------------------------------------------|
| 1-phase                                           | 3-phase                                           |
| 20 A                                              | 20 A                                              |
| 250 V AC                                          | 480 V AC                                          |
| IEC 62196-2 (type 2)                              | IEC 62196-2 (type 2)                              |
| Mode 3                                            | Mode 3                                            |
| 680 Ω                                             | 680 Ω                                             |
| -30 °C ... 50 °C                                  | -30 °C ... 50 °C                                  |
| 3 (L1, N, PE)                                     | 5 (L1, L2, L3, N, PE)                             |
| > 10000                                           | > 10000                                           |
| < 100 N                                           | < 100 N                                           |
| IP44                                              | IP44                                              |
| IP24                                              | IP24                                              |
| IP20                                              | IP20                                              |
| Spiraled                                          | Spiraled                                          |
| 4 m                                               | 4 m                                               |
| 10.5 mm ±0.5                                      | 13 mm ±0.5                                        |
| 3 x 2.5 mm <sup>2</sup> + 1 x 0.5 mm <sup>2</sup> | 5 x 2.5 mm <sup>2</sup> + 1 x 0.5 mm <sup>2</sup> |

| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 1-phase       |             | 3-phase   |             |
| 1405194       | 1           | 1405197   | 1           |
| 1405195       | 1           |           |             |

| Technical data                                  |                                                 |
|-------------------------------------------------|-------------------------------------------------|
| 1-phase                                         | 3-phase                                         |
| 32 A                                            | 32 A                                            |
| 250 V AC                                        | 480 V AC                                        |
| IEC 62196-2 (type 2)                            | IEC 62196-2 (type 2)                            |
| Mode 3                                          | Mode 3                                          |
| 220 Ω                                           | 220 Ω                                           |
| -30 °C ... 50 °C                                | -30 °C ... 50 °C                                |
| 3 (L1, N, PE)                                   | 5 (L1, L2, L3, N, PE)                           |
| > 10000                                         | > 10000                                         |
| < 100 N                                         | < 100 N                                         |
| IP44                                            | IP44                                            |
| IP24                                            | IP24                                            |
| IP20                                            | IP20                                            |
| Straight                                        | Straight                                        |
| 4 m                                             | 4 m                                             |
| 13.9 mm ±0.5                                    | 17 mm ±0.5                                      |
| 3 x 6 mm <sup>2</sup> + 1 x 0.5 mm <sup>2</sup> | 5 x 6 mm <sup>2</sup> + 1 x 0.5 mm <sup>2</sup> |

| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 1-phase       |             | 3-phase   |             |
| 1405198       | 1           | 1405199   | 1           |

|                                 |
|---------------------------------|
| <b>Description</b>              |
| <b>Type 2 AC charging cable</b> |
| Outer sheath color: red         |
| Outer sheath color: black       |



20 A type 2 AC connector and plug



20 A type 2 AC connector and plug



32 A type 2 AC connector and plug

| Technical data                                    |                                                   |
|---------------------------------------------------|---------------------------------------------------|
| 1-phase                                           | 3-phase                                           |
| 20 A                                              | 20 A                                              |
| 250 V AC                                          | 480 V AC                                          |
| IEC 62196-2 (type 2)                              | IEC 62196-2 (type 2)                              |
| Mode 3                                            | Mode 3                                            |
| 680 Ω                                             | 680 Ω                                             |
| -30 °C ... 50 °C                                  | -30 °C ... 50 °C                                  |
| 3 (L1, N, PE)                                     | 5 (L1, L2, L3, N, PE)                             |
| > 10000                                           | > 10000                                           |
| < 100 N                                           | < 100 N                                           |
| IP44                                              | IP44                                              |
| IP24                                              | IP24                                              |
| IP20                                              | IP20                                              |
| Straight                                          | Straight                                          |
| 4 m                                               | 4 m                                               |
| 10.5 mm ±0.5                                      | 13 mm ±0.5                                        |
| 3 x 2.5 mm <sup>2</sup> + 1 x 0.5 mm <sup>2</sup> | 5 x 2.5 mm <sup>2</sup> + 1 x 0.5 mm <sup>2</sup> |

| Technical data                                    |                                                   |
|---------------------------------------------------|---------------------------------------------------|
| 1-phase                                           | 3-phase                                           |
| 20 A                                              | 20 A                                              |
| 250 V AC                                          | 480 V AC                                          |
| IEC 62196-2 (type 2)                              | IEC 62196-2 (type 2)                              |
| Mode 3                                            | Mode 3                                            |
| 680 Ω                                             | 680 Ω                                             |
| -30 °C ... 50 °C                                  | -30 °C ... 50 °C                                  |
| 3 (L1, N, PE)                                     | 5 (L1, L2, L3, N, PE)                             |
| > 10000                                           | > 10000                                           |
| < 100 N                                           | < 100 N                                           |
| IP44                                              | IP44                                              |
| IP24                                              | IP24                                              |
| IP20                                              | IP20                                              |
| Spiraled                                          | Spiraled                                          |
| 4 m                                               | 4 m                                               |
| 10.5 mm ±0.5                                      | 13 mm ±0.5                                        |
| 3 x 2.5 mm <sup>2</sup> + 1 x 0.5 mm <sup>2</sup> | 5 x 2.5 mm <sup>2</sup> + 1 x 0.5 mm <sup>2</sup> |

| Technical data                                  |                                                 |
|-------------------------------------------------|-------------------------------------------------|
| 1-phase                                         | 3-phase                                         |
| 32 A                                            | 32 A                                            |
| 250 V AC                                        | 480 V AC                                        |
| IEC 62196-2 (type 2)                            | IEC 62196-2 (type 2)                            |
| Mode 3                                          | Mode 3                                          |
| 220 Ω                                           | 220 Ω                                           |
| -30 °C ... 50 °C                                | -30 °C ... 50 °C                                |
| 3 (L1, N, PE)                                   | 5 (L1, L2, L3, N, PE)                           |
| > 10000                                         | > 10000                                         |
| < 100 N                                         | < 100 N                                         |
| IP44                                            | IP44                                            |
| IP24                                            | IP24                                            |
| IP20                                            | IP20                                            |
| Straight                                        | Straight                                        |
| 4 m                                             | 4 m                                             |
| 13.9 mm ±0.5                                    | 17 mm ±0.5                                      |
| 3 x 6 mm <sup>2</sup> + 1 x 0.5 mm <sup>2</sup> | 5 x 6 mm <sup>2</sup> + 1 x 0.5 mm <sup>2</sup> |

| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 1-phase       |             | 3-phase   |             |
| 1404876       | 1           |           |             |
| 1405193       | 1           | 1404877   | 1           |

| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 1-phase       |             | 3-phase   |             |
| 1404563       | 1           |           |             |
| 1405192       | 1           | 1404567   | 1           |

| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 1-phase       |             | 3-phase   |             |
| 1404568       | 1           |           |             |
|               |             | 1404569   | 1           |

# Plug-in charging systems for electromobility

## Charging plug-in connectors

### Type 2 (Europe) and GB (China) AC socket outlets

- Space-saving design
- Secure, thanks to lock actuator
- Querying function for the locking status
- Robust, thanks to the use of high-quality materials

#### Notes:

All socket outlet versions can be mounted on the housing panel from both the front and the rear (see below).

As an option, the type 2 AC socket outlet can be secured with a hinged cover or a panel mounting frame for both front or rear panel mounting.



Type 2 AC socket outlet with actuator



Hinged cover for type 2 AC socket outlet

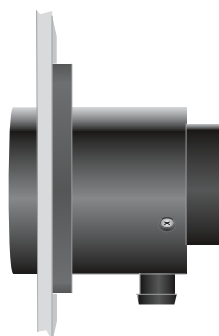
|                                            |
|--------------------------------------------|
| Nominal current                            |
| Nominal voltage                            |
| Standards                                  |
| Charging mode                              |
| Ambient temperature (operation)            |
| Number of power contacts                   |
| Insertion/withdrawal cycles                |
| Type of protection (when plugged in)       |
| Degree of protection (when not plugged in) |
| Cable data                                 |
| Cable type                                 |
| Cable length                               |
| Cable structure                            |
| Actuator data                              |
| Mechanical emergency release               |
| Lock recognition                           |

| Technical data                                    |                                                   |
|---------------------------------------------------|---------------------------------------------------|
| 3-phase                                           | 3-phase                                           |
| 20 A                                              | 32 A                                              |
| 480 V AC                                          | 480 V AC                                          |
| IEC 62196-2 (type 2)                              | IEC 62196-2 (type 2)                              |
| Mode 3                                            | Mode 3                                            |
| -30 °C ... 50 °C                                  | -30 °C ... 50 °C                                  |
| 5 (L1, L2, L3, N, PE)                             | 5 (L1, L2, L3, N, PE)                             |
| > 10000                                           | > 10000                                           |
| IP44                                              | IP44                                              |
| IP20                                              | IP20                                              |
| Single wires                                      | Single wires                                      |
| 0.70 m                                            | 0.70 m                                            |
| 5 x 2.5 mm <sup>2</sup> + 1 x 0.5 mm <sup>2</sup> | 5 x 6.0 mm <sup>2</sup> + 1 x 0.5 mm <sup>2</sup> |
| Available                                         | Available                                         |
| Available                                         | Available                                         |

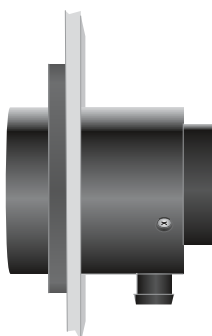
| Technical data   |   |
|------------------|---|
| -                | - |
| -                | - |
| -                | - |
| -                | - |
| -30 °C ... 50 °C | - |
| -                | - |
| -                | - |
| IP44             | - |
| IP24             | - |
| -                | - |
| -                | - |
| -                | - |
| -                | - |
| -                | - |
| -                | - |

| Description                            | Ordering data |             |           |             |
|----------------------------------------|---------------|-------------|-----------|-------------|
|                                        | Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|                                        | 3-phase       |             | 3-phase   |             |
| AC socket outlet                       |               |             |           |             |
| With actuator (12 V operating voltage) | 1405213       | 1           | 1405214   | 1           |
| With actuator (24 V operating voltage) | 1405215       | 1           | 1405216   | 1           |
| Without actuator                       |               |             |           |             |
| AC socket outlet accessories           |               |             |           |             |

| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 1405217       | 1           |           |             |



Rear panel mounting



Front mounting

N



Panel mounting frame  
for type 2 AC socket outlet

N



GB AC socket outlet  
with actuator

N



GB AC socket outlet  
without actuator

| Technical data   |   |
|------------------|---|
| -                | - |
| -                | - |
| -                | - |
| -30 °C ... 50 °C | - |
| -                | - |
| -                | - |
| IP44             | - |
| IP20             | - |

|   |   |
|---|---|
| - | - |
| - | - |

| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |

|         |   |  |  |
|---------|---|--|--|
| 1405218 | 1 |  |  |
|---------|---|--|--|

| Technical data                                    |                                                   |
|---------------------------------------------------|---------------------------------------------------|
| 1-phase                                           | 3-phase                                           |
| 32 A                                              | 32 A                                              |
| 250 V AC                                          | 440 V AC                                          |
| GB/T Part 2                                       | GB/T Part 2                                       |
| Mode 3                                            | Mode 3                                            |
| -30 °C ... 50 °C                                  | -30 °C ... 50 °C                                  |
| 3 (L1, N, PE)                                     | 5 (L1, L2, L3, N, PE)                             |
| > 10000                                           | > 10000                                           |
| IP44                                              | IP44                                              |
| IP20                                              | IP20                                              |
| Single wires                                      | Single wires                                      |
| 0.70 m                                            | 0.70 m                                            |
| 3 x 6.0 mm <sup>2</sup> + 1 x 0.5 mm <sup>2</sup> | 5 x 6.0 mm <sup>2</sup> + 1 x 0.5 mm <sup>2</sup> |

|           |           |
|-----------|-----------|
| Available | Available |
| Available | Available |

| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 1-phase       |             | 3-phase   |             |

|         |   |         |   |
|---------|---|---------|---|
| 1408171 | 1 | 1408172 | 1 |
|---------|---|---------|---|

| Technical data                                    |                                                   |
|---------------------------------------------------|---------------------------------------------------|
| 1-phase                                           | 3-phase                                           |
| 32 A                                              | 32 A                                              |
| 250 V AC                                          | 440 V AC                                          |
| GB/T Part 2                                       | GB/T Part 2                                       |
| Mode 3                                            | Mode 3                                            |
| -30 °C ... 50 °C                                  | -30 °C ... 50 °C                                  |
| 3 (L1, N, PE)                                     | 5 (L1, L2, L3, N, PE)                             |
| > 10000                                           | > 10000                                           |
| IP44                                              | IP44                                              |
| IP20                                              | IP20                                              |
| Single wires                                      | Single wires                                      |
| 0.70 m                                            | 0.70 m                                            |
| 3 x 6.0 mm <sup>2</sup> + 1 x 0.5 mm <sup>2</sup> | 5 x 6.0 mm <sup>2</sup> + 1 x 0.5 mm <sup>2</sup> |

|           |           |
|-----------|-----------|
| Available | Available |
| Available | Available |

| Ordering data |             |           |             |
|---------------|-------------|-----------|-------------|
| Order No.     | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
| 1-phase       |             | 3-phase   |             |

|         |   |         |   |
|---------|---|---------|---|
| 1408169 | 1 | 1408170 | 1 |
|---------|---|---------|---|

## Charging plug-in connectors

### GB AC charging cables (China)

N

N

- Convenient handling, thanks to the ergonomic handle design
- Safe and secure, thanks to the lever-type lock and electric locking bolt on the charging station and vehicle
- Robust, thanks to the use of high-quality materials

#### Notes:

Cable length versions on request



16 A GB AC connector,  
with open cable end



32 A GB AC connector,  
with open cable end

Nominal current  
Nominal voltage  
Standards  
Charging mode  
Resistor coding  
Ambient temperature  
(operation)  
Number of power contacts  
Insertion/withdrawal cycles  
Insertion/withdrawal force  
Type of protection (when plugged in)  
Degree of protection (when not plugged in)

#### Cable data

Cable type  
Cable length  
Cable diameter  
Cable structure

#### Technical data

##### 1-phase

|                  |   |
|------------------|---|
| 16 A             | - |
| 250 V            | - |
| GB/T Part 2      | - |
| Mode 3           | - |
| 680 Ω            | - |
| -30 °C ... 50 °C | - |
| 3 (L1, N, PE)    | - |
| > 10000          | - |
| < 100 N          | - |
| IP44             | - |
| IP20             | - |

|                                                   |   |
|---------------------------------------------------|---|
| Straight                                          | - |
| 5 m                                               | - |
| 10.5 mm                                           | - |
| 3 x 2.5 mm <sup>2</sup> + 1 x 0.5 mm <sup>2</sup> | - |

#### Technical data

##### 1-phase

|                  |   |
|------------------|---|
| 32 A             | - |
| 250 V            | - |
| GB/T Part 2      | - |
| Mode 3           | - |
| 220 Ω            | - |
| -30 °C ... 50 °C | - |
| 3 (L1, N, PE)    | - |
| > 10000          | - |
| < 100 N          | - |
| IP44             | - |
| IP20             | - |

|                                                   |   |
|---------------------------------------------------|---|
| Straight                                          | - |
| 5 m                                               | - |
| 13.9 mm                                           | - |
| 3 x 6.0 mm <sup>2</sup> + 1 x 0.5 mm <sup>2</sup> | - |

##### 3-phase

|                       |   |
|-----------------------|---|
| 32 A                  | - |
| 440 V                 | - |
| GB/T Part 2           | - |
| Mode 3                | - |
| 220 Ω                 | - |
| -30 °C ... 50 °C      | - |
| 5 (L1, L2, L3, N, PE) | - |
| > 10000               | - |
| < 100 N               | - |
| IP44                  | - |
| IP20                  | - |

|                                                   |   |
|---------------------------------------------------|---|
| Straight                                          | - |
| 5 m                                               | - |
| 17.1 mm                                           | - |
| 5 x 6.0 mm <sup>2</sup> + 1 x 0.5 mm <sup>2</sup> | - |

#### Ordering data

| Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|-----------|-------------|-----------|-------------|
| 1-phase   |             | 3-phase   |             |
| 1408166   | 1           |           |             |

#### Ordering data

| Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|-----------|-------------|-----------|-------------|
| 1-phase   |             | 3-phase   |             |
| 1408167   | 1           | 1408168   | 1           |

Description

#### GB AC charging cable

Outer sheath color: orange

N



16 A GB AC connector and plug



32 A GB AC connector and plug

### Technical data

| 1-phase                                           |   |
|---------------------------------------------------|---|
| 16 A                                              | - |
| 250 V                                             | - |
| GB/T Part 2                                       | - |
| Mode 3                                            | - |
| 680 Ω                                             | - |
| -30 °C ... 50 °C                                  | - |
| 3 (L1, N, PE)                                     | - |
| > 10000                                           | - |
| < 100 N                                           | - |
| IP44                                              | - |
| IP20                                              | - |
| Straight                                          | - |
| 5 m                                               | - |
| 10.5 mm                                           | - |
| 3 x 2.5 mm <sup>2</sup> + 1 x 0.5 mm <sup>2</sup> | - |

### Ordering data

| Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|-----------|-------------|-----------|-------------|
| 1-phase   |             |           |             |
| 1408161   | 1           |           |             |

### Technical data

| 1-phase                                           | 3-phase                                           |
|---------------------------------------------------|---------------------------------------------------|
| 32 A                                              | 32 A                                              |
| 250 V                                             | 440 V                                             |
| GB/T Part 2                                       | GB/T Part 2                                       |
| Mode 3                                            | Mode 3                                            |
| 220 Ω                                             | 220 Ω                                             |
| -30 °C ... 50 °C                                  | -30 °C ... 50 °C                                  |
| 3 (L1, N, PE)                                     | 5 (L1, L2, L3, N, PE)                             |
| > 10000                                           | > 10000                                           |
| < 100 N                                           | < 100 N                                           |
| IP44                                              | IP44                                              |
| IP20                                              | IP20                                              |
| Straight                                          | Straight                                          |
| 5 m                                               | 5 m                                               |
| 13.9 mm                                           | 17.1 mm                                           |
| 3 x 6.0 mm <sup>2</sup> + 1 x 0.5 mm <sup>2</sup> | 5 x 6.0 mm <sup>2</sup> + 1 x 0.5 mm <sup>2</sup> |

### Ordering data

| Order No. | Pcs. / Pkt. | Order No. | Pcs. / Pkt. |
|-----------|-------------|-----------|-------------|
| 1-phase   |             | 3-phase   |             |
| 1408163   | 1           | 1408165   | 1           |

### Quality in quantity



#### Integrated management system

The aim of the Phoenix Contact integrated management system is to coordinate all the requirements regarding products, processes, and organization.

Statutory and regulatory requirements, as well as those of international standards and our customers, are met and, in some cases, even exceeded in all phases of the product life-cycle.

The Phoenix Contact management system is monitored by internationally recognized independent bodies each year to ensure that quality, environmental protection, and safety at the workplace have been integrated in conformity with the relevant requirements. Certification in accordance with international standards ISO 9001, ISO 14001, and BS OHSAS 18001 is the result of our corporate philosophy of meeting the needs of our customers, staff, and environment as fully as possible. They serve as the basis for innovative products with the familiar high Phoenix quality standard, actively practiced environmental protection, and responsibility in the field of occupational health and safety. Of course, we integrate all further requirements of standards, international approvals or special customer requirements into company processes.

This system provides a building block for the success of the Phoenix Contact Group and its products and services.

#### CE marking

The CE marking was introduced as an important instrument for the free movement of goods and services within the single European market. By attaching the mark to a product, the manufacturer confirms that it complies with all applicable European Union (EU) directives. EC directives describe the product properties with regard to device safety and avoiding danger. These are legally binding regulations of the European Union (EU). In other words, compliance with the requirements is a

#### statutory condition for marketing the product within the EU.

Where applicable, the products that our company currently manufactures fall within the scope of the following directives:

- 2006/95/EC  
Electrical equipment designed for use within certain voltage limits (Low-Voltage Directive)
- 2004/108/EC  
Electromagnetic compatibility (EMC Directive)
- 2006/42/EC  
Safety of machinery (Machinery Directive)
- 94/9/EC  
Equipment and protective systems intended for use in potentially explosive areas (ATEX Directive 100a)
- 1999/5/EC  
Radio and telecommunications terminal equipment (R&TTE)

The standards upon which the specified directives are based, have been part of our standard of development for a long time. This guarantees conformance with European directives. The numbers of the directives indicate their version at the time of publication. In the event of changes to directives and/or standards, our products will undergo conformity assessment again in good time and a new declaration of conformity will be issued promptly. The current declarations for each product can also be found in our Download Center.

The EMC Directive occupies a special place among the European directives listed. It defines electromagnetic compatibility as a fundamental property of devices based on mandatory guidelines. European Law therefore acknowledges the electromagnetic compatibility of devices and systems as an important condition for error-free operation of machinery and systems. Phoenix Contact is one of the leading international companies in surge protection, and therefore possesses broad expertise in EMC. This expertise and the experience gained over years of developing and applying industrial interface and communication technology have resulted in our products having an extremely high standard of quality with regard to electromagnetic compatibility. It was with a view to providing other companies with this expertise that our associate company, Phoenix Testlab, was founded. Phoenix Testlab GmbH is an independent, accredited service provider offering EMC testing that conforms to European standards. At Phoenix Testlab, devices are also tested with regard to their electrical safety, mechanical influences, and their behavior in relation to environmental influences. Furthermore, Phoenix Testlab is a "Notified Body" in accordance with EMC Di-

rective 2004/108/EC and according to R&TTE Directive 1999/5/EC for radio and telecommunications terminal equipment. As a "Telecom Certification Body" (TCB), Phoenix Testlab may also approve these products for markets in the USA, Canada, and Japan.

#### Standards and regulations

All relevant standards and regulations are used as the basis for the development and maintenance of our products.

International standards are subject to continuous changes as a result of harmonization and new developments. In line with this process, the current version of all standards that are relevant to our products is documented in the product area on our website at [www.phoenixcontact.net/products](http://www.phoenixcontact.net/products).

#### Online product information service on the web

Phoenix Contact's product range is growing constantly.

Due to our commitment to product monitoring, all products are subject to improvement.

The Internet is an ideal platform to quickly communicate new product developments and improvements to the market.

You can quickly access the relevant Phoenix Contact website for your region via [www.phoenixcontact.com](http://www.phoenixcontact.com). Here, you will always find the latest overview of products, solutions, and services from Phoenix Contact. This includes technical documents, such as data sheets and user manuals, the latest driver and demo software, plus a means of contacting the appropriate contact person directly.

#### Note:

Subject to changes that serve the purpose of technical progress.

## Connection cross section

The rated cross sections of modular terminal blocks must be specified by the manufacturer in accordance with IEC 60947-7-1. This refers to the conductor cross section that can be connected in single, multi or fine-strand versions. Specific thermal, mechanical, and electrical requirements relate to this cross section.

The manufacturer must also specify the **rated connection capacity**, i.e., the area of the conductor that can be connected, as well as the number of conductors that can be connected simultaneously and the necessary preparation of the conductor ends. The conductors can be **solid (single or**

**multi-strand) or stranded (fine-strand).**

These values can be found in the product-specific technical data.

The rated connection capacity of Phoenix Contact modular terminal blocks usually exceeds standard requirements, which specify that it must only be possible to connect one conductor with one of the two next smallest cross sections, excluding the rated cross section, (standardized for the cross-section range from 0.2 to 35 mm<sup>2</sup>).

In addition, conductors with a rated cross section can usually be wired with ferrules with plastic sleeve.

Phoenix Contact modular terminal blocks are designed to allow copper cables to be connected to them untreated. "Special treatment" or the use of ferrules – both permitted according to IEC 60947-7-1 – is not required. If ferrules are nevertheless used to protect stranded conductors against splicing, the connection capacity of the stranded conductor is generally reduced by one level.

### Structure and dimensions of connecting cables

| Cross section<br><br>[mm²] | Single-strand                   |                    | Multi-strand                    |                                           | Fine-strand                     |                                        | Gauge No.<br><br>AWG | American Wire Gauge [AWG] |                             |           |            |                                   |           |
|----------------------------|---------------------------------|--------------------|---------------------------------|-------------------------------------------|---------------------------------|----------------------------------------|----------------------|---------------------------|-----------------------------|-----------|------------|-----------------------------------|-----------|
|                            | Diameter<br>Max. dimen-<br>sion | Number of<br>wires | Diameter<br>Max. dimen-<br>sion | Number of<br>wires<br>(minimum<br>number) | Diameter<br>Max. dimen-<br>sion | Number of<br>wires<br>(guide<br>value) |                      | <br>[Ø mm]                | Solid wires<br>[circ. mils] | <br>[mm²] | <br>[Ø mm] | Stranded<br>wires<br>[circ. mils] | <br>[mm²] |
| 0.2                        | 0.5                             | 1                  | -                               | -                                         | -                               | -                                      | 24                   | 0.51                      | 404                         | 0.21      | -          | -                                 | -         |
| 0.5                        | 0.9                             | 1                  | 1.1                             | 7                                         | 1.1                             | 16                                     | 20                   | 0.81                      | 1022                        | 0.52      | 0.97       | 1111                              | 0.56      |
| 0.75                       | 1.0                             | 1                  | 1.2                             | 7                                         | 1.3                             | 24                                     | 18                   | 1.02                      | 1620                        | 0.82      | 1.16       | 1600                              | 0.82      |
| 1                          | 1.2                             | 1                  | 1.4                             | 7                                         | 1.5                             | 32                                     | (17)                 | 1.15                      | 2050                        | 1.04      |            |                                   |           |
| -                          | -                               | -                  | -                               | -                                         | -                               | -                                      | 16                   | 1.29                      | 2580                        | 1.31      | 1.50       | 2580                              | 1.32      |
| 1.5                        | 1.5                             | 1                  | 1.7                             | 7                                         | 1.8                             | 30                                     | (15)                 | 1.45                      | 3260                        | 1.65      |            |                                   |           |
| -                          | -                               | -                  | -                               | -                                         | -                               | -                                      | 14                   | 1.63                      | 4110                        | 2.08      | 1.85       | 4100                              | 2.09      |
| 2.5                        | 1.9                             | 1                  | 2.2                             | 7                                         | 2.3                             | 50                                     | (13)                 | 1.83                      | 5180                        | 2.63      |            |                                   |           |
| -                          | -                               | -                  | -                               | -                                         | -                               | -                                      | 12                   | 2.05                      | 6530                        | 3.31      | 2.41       | 6500                              | 3.32      |
| 4                          | 2.4                             | 1                  | 2.7                             | 7                                         | 2.9                             | 56                                     | (11)                 | 2.30                      | 8230                        | 4.17      |            |                                   |           |
| -                          | -                               | -                  | -                               | -                                         | -                               | -                                      | 10                   | 2.59                      | 10380                       | 5.26      | 2.95       | 10530                             | 5.37      |
| 6                          | 2.9                             | 1                  | 3.3                             | 7                                         | 3.9                             | 84                                     | (9)                  | 2.91                      | 13100                       | 6.63      |            |                                   |           |
| -                          | -                               | -                  | -                               | -                                         | -                               | -                                      | 8                    | 3.26                      | 16510                       | 8.37      | 3.73       | 16625                             | 8.48      |
| 10                         | 3.7                             | 1                  | 4.2                             | 7                                         | 5.1                             | 80                                     | (7)                  | 3.67                      | 20800                       | 10.56     | 4.15       | 20820                             | 10.55     |
| -                          | -                               | -                  | -                               | -                                         | -                               | -                                      | 6                    | 4.12                      | 26240                       | 13.30     | 4.67       | 26250                             | 13.39     |
| 16                         | 4.6                             | 1                  | 5.3                             | 7                                         | 6.3                             | 126                                    | (5)                  | 4.62                      | 33100                       | 16.77     | 5.24       | 33100                             | 16.77     |
| -                          | -                               | -                  | -                               | -                                         | -                               | -                                      | 4                    | 5.19                      | 41740                       | 21.15     | 5.90       | 41650                             | 21.24     |
| 25                         | -                               | -                  | 6.6                             | 7                                         | 7.8                             | 196                                    | 3                    | 5.83                      | 52600                       | 26.67     | 6.61       | 52630                             | 26.67     |
| 35                         | -                               | -                  | 7.9                             | 7                                         | 9.2                             | 276                                    | 2                    | 6.54                      | 66360                       | 33.62     | 7.42       | 66150                             | 33.74     |
| -                          | -                               | -                  | -                               | -                                         | -                               | -                                      | 1                    | 7.35                      | 83690                       | 42.41     | 8.33       | 83706                             | 42.69     |
| 50                         | -                               | -                  | 9.1                             | 19                                        | 11                              | 396                                    | 0                    | 8.25                      | 105600                      | 53.51     | 9.35       | 104640                            | 53.36     |
| 70                         | -                               | -                  | 11                              | 19                                        | 13.1                            | 360                                    | 00                   | 9.27                      | 133100                      | 67.44     | 10.52      | 132300                            | 67.47     |

## Tightening torque of terminal block screws

IEC 60947-1/EN 60947-1, modified, Table 4 specifies tightening torques for screw connections based on the type and size of screw for electrical and mechanical type tests. Tightening Phoenix Contact terminal blocks to this torque guarantees the reliable connection of the connected conductors. Other than this value, the technical product data in this catalog provides a practical range for the tightening torque, ensuring gas-tight and long-term reliable electrical contacts.

### Extract from IEC 60947-1/EN 60947, Table 4

The torque according to IEC/EN and the recommended tightening torque for Phoenix Contact terminal blocks are specified.

#### Head screw with slot

| Thread      | Torque<br>[Nm] | Recommended tightening torque |                     |
|-------------|----------------|-------------------------------|---------------------|
|             |                | CuZn or CuSn screw<br>[Nm]    | Steel screw<br>[Nm] |
| M2.5 (M2.6) | 0.4            | 0.6                           | 0.8                 |
| M3          | 0.5            | 0.8                           | 1.0                 |
| M3.5        | 0.8            | 1.2                           | –                   |
| M4          | 1.2            | 1.8                           | 2.0                 |
| M5          | 2.0            | 3                             | 4.5                 |
| M6          | 2.5            | 4                             | 8                   |

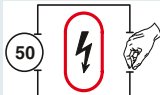


### Degrees of protection according to DIN EN 60529

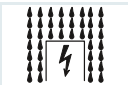
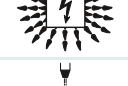
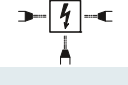
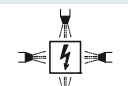
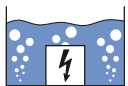
#### Definition:

IP (Ingress Protection) protection according to DIN EN 60529 is defined by two digits (e.g., IP54), the meaning of which is explained in the following tables.

### Degree of protection against access to dangerous parts and against solid foreign objects

| First digit | Short description                                                          | Example                                                                            | Definition                                                                                                                                                                                                                 |
|-------------|----------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0           | Not protected                                                              |                                                                                    |                                                                                                                                                                                                                            |
| 1           | Protected against solid foreign objects                                    |  | Protected against touching dangerous parts with the back of the hand. Protection against ingress of solid foreign objects with $\varnothing > 50$ mm.                                                                      |
| 2           | Protected against solid foreign objects with $\varnothing 12.5$ mm or more |  | Protected against touching dangerous parts with a finger. Protection against ingress of solid foreign objects with $\varnothing > 12.5$ mm.                                                                                |
| 3           | Protected against solid foreign objects with $\varnothing 2.5$ mm or more  |                                                                                    | Protected against touching dangerous parts with a tool. Protection against ingress of solid foreign objects with $\varnothing > 2.5$ mm.                                                                                   |
| 4           | Protected against solid foreign objects with $\varnothing 1$ mm or more    |                                                                                    | Protected against touching dangerous parts with a wire. Protection against ingress of solid foreign objects with $\varnothing > 1$ mm.                                                                                     |
| 5           | Protected against dust                                                     |                                                                                    | Protected against touching dangerous parts with a wire. The ingress of dust is not completely prevented, but dust may not enter in such an amount that the satisfactory operation of the device or its safety is impaired. |
| 6           | Dust-proof                                                                 |                                                                                    | Protected against touching dangerous parts with a wire. No ingress of dust.                                                                                                                                                |

### Degree of protection against water

| Second digit | Short description                                                                    | Example                                                                              | Definition                                                                                                                                                                 |
|--------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0            | Not protected                                                                        |                                                                                      |                                                                                                                                                                            |
| 1            | Protected against dripping water                                                     |  | Vertically falling drops shall have no effect.                                                                                                                             |
| 2            | Protected against dripping water if the housing is inclined at an angle of up to 15° |  | Vertically falling drops shall have no effect if the housing is inclined at an angle of up to 15° either side of the perpendicular.                                        |
| 3            | Protected against spray water                                                        |  | Water that is sprayed at an angle of up to 60° either side of the perpendicular shall have no harmful effect.                                                              |
| 4            | Protected against splash water                                                       |  | Water that splashes against the housing from any direction shall have no harmful effect.                                                                                   |
| 5            | Protected against jet water                                                          |  | Water that is directed as a jet against the housing from every direction shall have no harmful effect.                                                                     |
| 6            | Protected against powerful jet water                                                 |  | Water that is directed as a strong jet against the housing from every direction shall have no harmful effect.                                                              |
| 7            | Protected against the effect of temporary submersion in water                        |  | Water may not penetrate in a harmful quantity when the housing is temporarily submerged in water under standard pressure and time conditions.                              |
| 8            | Protected against the effect of continuous submersion in water                       |  | Water may not penetrate in a harmful quantity when the housing is submerged in water continuously under conditions to be agreed between the manufacturer and user.         |
| 9K           | Protected against water during high-pressure and jet-stream cleaning                 |                                                                                      | Water that is directed against the housing under extremely high pressure from every direction shall have no harmful effect. (Example: IP69K according to DIN 40050 Part 9) |

For safety reasons, electrical equipment must be protected against external influences. This is the job of the housing, which protects electrical equipment against contact, ingress of solid objects, dust, and moisture.

The following table contains possible combinations of degrees of protection according to DIN EN 60529 which can be practically applied to housing.

|                                                                |                                                                 | Protection against water | No protection | Protection against vertically falling dripping water | Protection against dripping water if the housing is inclined at an angle of up to 15° | Protection against spray water from all directions, even when inclined at an angle of up to 60° | Protection against splash water from all directions | Protection against jet water from all directions | Protection against powerful jet water from all directions | Protection against temporary submersion | Protection against the effects of continuous submersion in water | Protected against water during high-pressure and jet-stream cleaning (DIN 40050-9) |
|----------------------------------------------------------------|-----------------------------------------------------------------|--------------------------|---------------|------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------|-----------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Shock protection                                               | Foreign object protection                                       |                          | IPx0          | IPx1                                                 | IPx2                                                                                  | IPx3                                                                                            | IPx4                                                | IPx5                                             | IPx6                                                      | IPx7                                    | IPx8                                                             | IPx9K                                                                              |
| No shock protection                                            | No protection against solid foreign objects                     | IP0x                     | IP00          |                                                      |                                                                                       |                                                                                                 |                                                     |                                                  |                                                           |                                         |                                                                  |                                                                                    |
| Back of hand safe                                              | Protection against solid foreign objects > 50 mm Ø              | IP1x                     | IP10          | IP11                                                 | IP12                                                                                  |                                                                                                 |                                                     |                                                  |                                                           |                                         |                                                                  |                                                                                    |
| Touch proof                                                    | Protection against solid foreign objects > 12.5 mm Ø            | IP2x                     | IP20          | IP21                                                 | IP22                                                                                  | IP23                                                                                            |                                                     |                                                  |                                                           |                                         |                                                                  |                                                                                    |
| Protection against touching with tools, wires, etc. > 2.5 mm Ø | Protection against solid foreign objects > 2.5 mm Ø             | IP3x                     | IP30          | IP31                                                 | IP32                                                                                  | IP33                                                                                            |                                                     |                                                  |                                                           |                                         |                                                                  |                                                                                    |
| Protection against touching with tools, wires, etc. > 1 mm Ø   | Protection against solid foreign objects > 1.5 mm Ø             | IP4x                     | IP40          | IP41                                                 | IP42                                                                                  | IP43                                                                                            | IP44                                                |                                                  |                                                           |                                         |                                                                  |                                                                                    |
| Protection against touching with tools, wires, etc. > 1 mm Ø   | Protection against harmful dust accumulations inside the device | IP5x                     | IP50          |                                                      |                                                                                       |                                                                                                 | IP54                                                | IP55                                             |                                                           |                                         |                                                                  |                                                                                    |
| Protection against touching with tools, wires, etc. > 1 mm Ø   | No ingress of dust                                              | IP6x                     | IP60          |                                                      |                                                                                       |                                                                                                 |                                                     | IP65                                             | IP66                                                      | IP67                                    | IP68                                                             | IP69K                                                                              |

### Example: DUPLICON power distribution with IP67 protection according to DIN EN 60529

Dust-proof  
(IP6x)

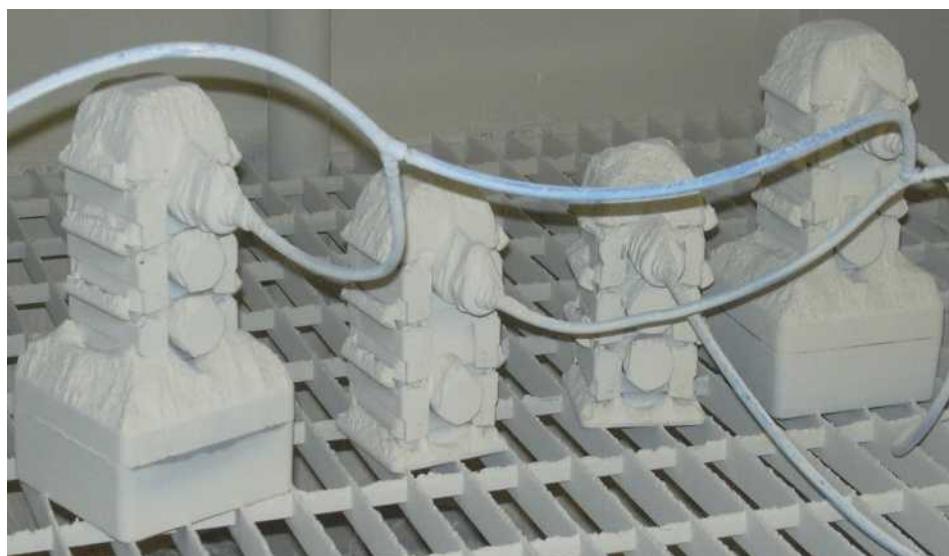


Photo shows DUPLICON test sample during the IP6x dust test

Protected against temporary submersion  
(IPx7)



## Information

Our insulation housing is made from various thermoplastic materials. Depending on the application, the best-suited material is selected based on its electrical and mechanical properties.

All plastics used by Phoenix Contact are RoHS-compliant.

All plastics used at Phoenix Contact have been listed with UL (Underwriters Laboratories Inc.) in the USA.

### Behavior of plastics under the influence of temperature (operating temperatures)

All plastics undergo thermal aging when they are subjected to heat over long periods. This process causes changes in the mechanical and electrical properties of the material. External influences, e.g., radiation, additional mechanical, chemical or electrical stresses, amplify this effect. All characteristic data included in the table has been determined using samples and thus provides a good means of drawing comparisons between different plastics. However, applying these characteristics to an evaluation of molded plastic parts is only possible to a limited extent, and can only give the designer a rough guide when it comes to selecting a plastic material. This catalog uses RTI Elec. according to UL746B as an assessment criterion for temperature resistance.

## Insulation materials

### Polyamide: PA and PA-GF

Polyamide has excellent electrical, mechanical, and chemical properties even at high operating temperatures. Brief peak temperatures of up to approximately 200°C are permitted as a result of heat aging stabilization. The absorption of water makes the plastic flexible and resistant to breakage, even at low temperatures.

Fiber-reinforced polyamides feature greater rigidity and hardness as well as operating temperatures higher than those of non-reinforced materials.

### Polyamide for high-temperature applications: PA HT and PA-GF HT

Special high-temperature-resistant types of polyamide are used in non-reinforced or glass-fiber-reinforced versions for reflow ap-

plications. These high-temperature polyamides combine the excellent electrical properties of polyamide and the requirements of the reflow soldering process for temperature resistance.

### Liquid crystal polymers: LCP GF

LCP combines high temperature stability with excellent dimensional stability and creeping resistance for products used in reflow processes. LCP has exceptional mechanical properties across a wide temperature range and a very low thermal expansion.

### Polyester: PBT and PBT-GF

We use thermoplastic polyester in non-reinforced and glass-fiber-reinforced versions for special applications which require increased dimensional and form stability.

In addition to the high operating temperature, the material is characterized by excellent mechanical stability, hardness, and excellent notched impact strength. PBT does not absorb moisture from its surroundings. PBT is therefore particularly suitable for strips, for example, which are soldered onto PCBs.

### Polycarbonate: PC

Polycarbonate combines many advantages such as rigidity, impact strength, transparency, dimensional stability, good insulation properties, and resistance to heat.

The amorphous material only absorbs moisture to a very limited degree, and is used for items such as large, rigid electronic component housing.

In its transparent form, polycarbonate is particularly suitable for use as a material for cover profiles or marking materials.

### Acrylonitrile butadiene styrene: ABS

We use ABS for products which must have good impact and notched impact properties in addition to high mechanical stability and rigidity. The products are also characterized by their special surface quality and hardness.

ABS is suitable for coating metal surfaces, e.g., nickel.

### Polyvinyl chloride: PVC

While most thermoplastic materials are processed with injection molding using ready-to-use molding and extrusion material, PVC is processed as a powder in the extruder. This is why it is used in our profile products. PVC is also self-extinguishing without flame protection and has high mechanical strength but is notch-sensitive.

### Polyoxymethylene: POM

Polyoxymethylene is a technical material that combines high rigidity with mechanical stability, excellent elastic properties, high tenacity, dimensional accuracy, and exceptional sliding friction behavior.

### Polyethylene: PE

Polyethylene is characterized by excellent chemical resistance and electrical insulation properties. PE is thermoplastic and can thus be processed using almost all procedures. Furthermore, PE has excellent tenacity even at low temperatures and a good elongation at break.

### Polypropylene: PP

PP has higher rigidity, hardness, and stability and is more heat-resistant than PE. PP is not as tough at low temperatures, however.

### Thermoplastic polyurethane: TPU and TPU-GF

TPU is characterized by excellent electrical properties, a good surface feel, a high degree of flexibility over a wide temperature range, and high resistance to wear. Thermoplastic polyurethanes are also elastic and low-temperature impact resistant.

In contrast to non-reinforced materials, glass-fiber-reinforced TPU is characterized by high rigidity and hardness.

### Cross-linked ethylene-propylene-diene polymer/polypropylene: EPDM-PP

EPDM-PP is a polymer blend of PP and cross-linked EPDM. EPDM-PP is a rubber-like material which can be processed using thermoplastic procedures. EPDM-PP combines high temperature resistance, a low compression set, and excellent resistance to abrasion and chemicals.

### Acrylonitrile butadiene styrene rubber: NBR

NBR is a rubber with excellent resistance to aging. It also features excellent resistance to abrasion and low plastic flow. Its elasticity is lower than other rubbers.

### Fluorinated rubber: FPM

FPM rubbers are characterized by very high temperature resistance, but behave less favorably at low temperatures than other rubbers.

### Chlorine-butadiene rubber: CR

CR rubber stands out against other rubbers with its excellent resistance to weather and ozone.

| Properties                                            | Standard                    | Unit    | PA     | PA GF  | PA HT | PA GF HT | PBT   | PBT GF | LCP GF | PC     | ABS  | PVC  | POM   | PP   | PE   |
|-------------------------------------------------------|-----------------------------|---------|--------|--------|-------|----------|-------|--------|--------|--------|------|------|-------|------|------|
| RTI Elec.                                             | UL 746B                     | °C      | ≥ 105  | ≥ 105  | ≥ 105 | ≥ 105    | ≥ 105 | ≥ 105  | ≥ 130  | ≥ 105  | ≥ 80 | ≥ 50 | ≥ 105 | 65   | 50   |
| Minimum temperature for use (without mechanical load) |                             | °C      | - 40   | - 40   | - 40  | - 40     | - 40  | - 40   | - 40   | - 40   | - 40 | - 15 | - 40  | - 40 | - 40 |
| Dielectric strength                                   | IEC 60243-1/DIN VDE 0303-21 | kV/cm   | 600    | 400    |       | > 200    | 400   | 400    |        | > 300  | 850  |      | 850   |      |      |
| Creep resistance CTI...                               | IEC 60112/DIN VDE 0303-1    |         | 600    | 400    | ≥ 250 | 225      | 600   | 225    | 175    | 175    | 600  | 600  | 600   |      |      |
| Creep resistance CTI...M                              | IEC 60112/DIN VDE 0303-1    |         | 550    | 250    |       |          | 600   | 225    |        | 175    | 600  | 600  | 600   |      |      |
| Inflammability class                                  | UL 94                       | HB – V0 | V2, V0 | HB, V0 | V0    | V0       | V0    | V0     | V0     | V2, V0 |      | V0   | HB    | HB   | HB   |
| Tropical and termite resistance                       |                             |         | Good   | Good   |       |          | Good  |        |        | Good   |      |      |       |      |      |

| Properties                                            | Standard                      | Unit    | TPU  | TPU GF | EPDM/PP |
|-------------------------------------------------------|-------------------------------|---------|------|--------|---------|
| RTI Elec.                                             | UL 746B                       | °C      | 50   | 50     | 100     |
| Minimum temperature for use (without mechanical load) |                               | °C      | - 40 | - 40   | - 40    |
| Dielectric strength                                   | IEC 60243-1/DIN VDE 0303-21   | kV/cm   | 35   | 35     |         |
| Creep resistance CTI...                               | IEC 60112/DIN VDE 0303-1      |         | 600  | 600    | 600     |
| Creep resistance CTI...M                              | IEC 60112/DIN VDE 0303-1      |         | 600  |        |         |
| Inflammability class                                  | UL 94                         | HB – V0 | V2   | HB     | HB      |
| Chemical resistance                                   | See chemical resistance table |         |      |        |         |

| Properties                                            | Standard                    | Unit    | NBR                                         | FPM   | CR    |
|-------------------------------------------------------|-----------------------------|---------|---------------------------------------------|-------|-------|
| Operating temperature                                 |                             | °C      | ≤ 100                                       | ≤ 200 | ≤ 100 |
| Minimum temperature for use (without mechanical load) |                             | °C      | - 40                                        | - 25  | - 40  |
| Dielectric strength                                   | IEC 60243-1/DIN VDE 0303-21 | kV/cm   | Not relevant as these are sealing materials |       |       |
| Creep resistance CTI...                               | IEC 60112/DIN VDE 0303-1    |         |                                             |       |       |
| Creep resistance CTI...M                              | IEC 60112/DIN VDE 0303-1    |         |                                             |       |       |
| Inflammability class                                  | UL 94                       | HB – V0 |                                             |       |       |

|                                                |                       | Plastics             |            |          |          |       |     |     |    |      |     |     |                 |              |       |     |             |               |
|------------------------------------------------|-----------------------|----------------------|------------|----------|----------|-------|-----|-----|----|------|-----|-----|-----------------|--------------|-------|-----|-------------|---------------|
| Chemicals                                      | Concentration<br>In % | Temperature<br>In °C | PA 66/PA 6 | PA 66 GF | PA 46 GF | PC GF | POM | NBR | PP | EPDM | PBT | PUR | PUR irradiated* | PVC-P (soft) | PE-LD | TPU | FPM (Viton) | CR (neoprene) |
| Acetaldehyde                                   |                       |                      | 0          | 0        | 0        | -     | 0   | -   | -  | 0    |     | +   | +               | +            | 0     | 0   | -           | 0             |
| Acetone                                        |                       | 20                   | +          |          |          |       | +   | -   | +  |      | 0   | 0   | 0               | -            | -     | -   | -           | 0             |
| Acetate                                        |                       |                      | +          | +        | +        | 0     | 0   | -   | +  | 0    | 0   | +   | +               | -            | -     | -   | -           | -             |
| Acetophenone                                   |                       |                      | +          | +        | +        | 0     | 0   | -   | +  | 0    | 0   | +   | +               | -            | -     | -   | -           | -             |
| Aldehyde                                       |                       |                      | 0          | 0        | 0        | -     | 0   | -   | -  | 0    |     | +   | +               | +            | 0     | -   | 0           | 0             |
| Formic acid                                    |                       |                      | -          | -        | 0        | 0     | +   | -   | +  | +    | +   | 0   | 0               | -            | +     | 0   | 0           | +             |
| Amines                                         |                       |                      | +          | +        | +        | -     | 0   | -   | -  | 0    | +   | +   | +               | +            | 0     | -   | -           | -             |
| Alcohols                                       |                       |                      | 0          | 0        | 0        | 0     | +   | 0   | +  | +    | +   | +   | +               | -            | +     | +   | 0           | +             |
| Ammonia                                        | 10                    | 20                   | +          |          |          |       | +   | 0   | +  | +    | +   | +   | +               | 0            | +     | 0   | -           | +             |
| Benzaldehyde                                   |                       |                      | 0          | 0        | 0        | -     | 0   | -   | -  | 0    |     | +   | +               | +            | 0     | 0   | -           | 0             |
| Gasoline                                       |                       | 20                   | +          | +        | +        | 0     | +   | 0   | 0  | -    | +   | +   | +               | -            | -     | -   | +           | -             |
| Benzol                                         |                       | 50                   | +          | +        | +        | +     | 0   | -   | 0  | -    | +   | 0   | 0               | -            | 0     | -   | 0           | -             |
| Benzophenone                                   |                       | 20                   | +          | +        | +        | 0     | 0   | -   | +  | 0    | 0   | +   | +               | -            | -     | -   | +           | -             |
| Boracic acid                                   | 100                   | 20                   | 0          |          |          |       | 0   | +   |    | +    | +   | 0   | 0               | 0            | +     | +   | +           | +             |
| Brake fluid                                    |                       | 100                  | +          |          |          |       | +   | -   |    | +    | +   | -   | -               | 0            | +     | -   | -           | -             |
| Butyric acid                                   |                       |                      | -          | -        | 0        | 0     | +   | 0   | +  | +    | +   | 0   | 0               | +            | +     | -   | 0           | 0             |
| Cyclohexanone                                  |                       |                      | +          | +        | +        | 0     | 0   | -   | +  | 0    | 0   | +   | +               | -            | -     | -   | -           | -             |
| Diesel oil                                     |                       |                      | +          |          |          |       | +   | +   | +  | -    | +   | +   | +               | -            | +     | -   | +           | -             |
| Diethylamine                                   |                       |                      | +          | +        | +        | -     | 0   | -   | -  | 0    | +   | +   | +               | +            | -     | -   | -           | -             |
| Dimethylamine                                  |                       |                      | +          | +        | +        | -     | 0   | -   | -  | 0    | +   | +   | +               | +            | 0     | -   | -           | -             |
| Glacial acetic acid                            |                       | 50                   | -          | -        | -        | -     | -   | -   | 0  | +    | -   | -   | -               | -            | +     | -   | -           | -             |
| Acetic acid                                    | 20                    |                      | -          | -        | 0        | 0     | +   | -   | +  | +    | +   | 0   | 0               | 0            | +     | -   | -           | 0             |
| Ester                                          |                       |                      | +          | +        | +        | 0     | -   | -   | -  | 0    | +   |     |                 | -            | +     | -   | -           | -             |
| Ethanol                                        |                       |                      | 0          | 0        | 0        | 0     | +   | 0   | +  | +    | +   | +   | +               | -            | +     | +   | +           | +             |
| Ether                                          |                       |                      | +          | +        | +        | -     | 0   | -   | 0  | 0    | +   | +   | +               | -            | 0     | +   | -           | -             |
| Greases                                        |                       |                      | +          | +        | +        | +     | +   | +   | 0  | 0    |     |     |                 | 0            | +     | -   | +           | 0             |
| Formaldehyde                                   |                       |                      | 0          | 0        | 0        | -     | 0   | -   | -  | 0    |     | +   | +               | +            | 0     | 0   | +           | 0             |
| Gear oil                                       |                       | 100                  | +          |          |          |       | +   | +   |    | -    | +   | +   | +               | +            | +     | -   | +           | -             |
| Halogens (fluorine, chlorine, bromine, iodine) |                       |                      | -          | -        | -        | +     | -   | -   | -  | -    | -   | -   | -               | -            | -     | -   | +           | -             |
| Hydraulic oil                                  |                       | 20                   | +          |          |          |       | 0   | +   |    | -    | +   | +   | +               | -            | +     | -   | +           | -             |
| Potassium hydroxide solution                   |                       |                      | +          | +        | +        | -     | +   | 0   | +  |      | -   | +   | +               | +            | +     | 0   | +           | -             |
| Kerosene                                       |                       | 20                   | +          |          |          |       | +   |     |    |      | +   | +   | +               | -            | 0     | -   | +           | -             |
| Ketones                                        |                       |                      | +          | +        | +        | 0     | 0   | -   | +  | 0    | 0   | +   | +               | -            | -     | -   | -           | -             |
| Hydrocarbons, aliphatic                        |                       |                      | +          | +        | +        | +     | +   | +   | 0  | 0    | +   | +   | +               | -            | +     | +   | +           | -             |
| Hydrocarbons, aromatic                         |                       |                      | +          | +        | +        | -     | 0   | -   | 0  | 0    | 0   | +   | +               | -            | -     | -   | +           | -             |
| Hydrocarbons, chlorinated                      |                       |                      | 0          | 0        | 0        | -     | +   | -   | -  | -    | 0   | -   | -               | -            | -     | -   | +           | -             |
| Hydrocarbons, unsaturated chlorinated          |                       |                      | 0          | 0        | 0        | -     | +   | -   | -  | -    | 0   | 0   | 0               | -            | -     | -   | +           | -             |
| Fuels                                          |                       |                      | +          | +        | +        | 0     | +   | 0   | 0  | -    | +   | +   | +               | -            | -     | -   | +           | -             |
| Alkalis, weak                                  |                       |                      | +          | +        | +        | -     | +   | 0   | +  | +    | +   | +   | +               | +            | +     | 0   | +           | 0             |
| Alkalis, strong                                |                       |                      | 0          | -        | -        | -     | +   | -   | +  |      | +   | -   | -               | +            | 0     | 0   | -           | -             |
| Inorganic salt solutions                       |                       |                      | +          | +        | +        | -     | +   | +   | +  | +    | +   | +   | +               | +            | +     | +   | +           | +             |
| Machine oil                                    |                       |                      | +          |          |          |       | +   |     |    |      | +   | +   | +               | 0            | +     | -   | +           | -             |
| Metal chloride                                 |                       |                      | +          | +        | +        | -     | +   | +   | +  | +    | +   | +   | +               | +            | +     | +   | +           | +             |
| Metal sulfate                                  |                       |                      | +          | +        | +        | -     | +   | +   | +  | +    | +   | +   | +               | +            | +     | +   | +           | +             |
| Metal nitrate                                  |                       |                      | +          | +        | +        | -     | +   | +   | +  | +    | +   | +   | +               | +            | +     | +   | +           | +             |
| Methanol                                       |                       |                      | 0          | 0        | 0        | 0     | +   | 0   | +  | +    | +   | +   | +               | -            | +     | +   | -           | +             |
| Methylamine                                    |                       |                      | +          | +        | +        | -     | 0   | -   | -  | 0    | +   | +   | +               | +            | +     | 0   | 0           | -             |
| Lactic acid                                    | 10                    | 20                   | +          |          |          |       | +   | +   | +  | +    | +   | +   | +               | -            | +     | +   | +           | +             |
| Mineral oil                                    |                       |                      | +          | +        | +        |       | +   | +   | +  | -    | +   | +   | +               | -            | +     | -   | +           | -             |
| Motor oil                                      |                       | 120                  | +          | +        | +        | 0     | +   | +   | +  | -    | +   | +   | +               | -            | +     | -   | +           | -             |
| Sodium hydroxide solution                      | 50                    | 50                   | 0          | 0        | +        | -     | +   | +   | +  | +    | -   | +   | +               | +            | +     | 0   | 0           | 0             |
| Nitrobenzene                                   |                       |                      | 0          |          |          |       | 0   | -   |    | 0    | +   | -   | -               | -            | 0     | +   | 0           | -             |
| Ozone                                          |                       |                      | 0          | 0        | 0        | -     | 0   | -   | +  | +    | +   | 0   | 0               | +            | +     | 0   | +           | -             |
| Propyl alcohol                                 |                       |                      | 0          | 0        | 0        | 0     | +   | 0   | +  | +    | +   | +   | +               | -            | +     | +   | +           | +             |
| Nitric acid                                    | 30                    | 20                   | -          | 0        | -        | 0     | -   | -   | +  | 0    | 0   | 0   | 0               | -            | +     | -   | +           | -             |
| Hydrochloric acid                              |                       | 20                   | -          |          |          |       | -   | 0   | +  | 0    | 0   | -   | -               | -            | +     | 0   | +           | 0             |
| Sulfuric acid                                  | 50                    | 50                   | -          | 0        | -        | 0     | -   | -   | +  | +    | -   | 0   | 0               | +            | +     | 0   | +           | -             |
| Seawater                                       |                       | 20                   | +          | +        | +        | +     | +   | +   | +  | +    | +   | +   | +               | +            | +     | +   | +           | +             |
| Turpentine                                     |                       |                      | 0          | 0        | 0        | +     | -   | +   | -  | -    | +   | 0   | 0               | -            | -     | -   | +           | -             |
| UV resistance                                  |                       |                      | +          | +        | +        | 0     | 0   | -   | -  |      | +   | +   | +               | 0            | 0     | +   | +           | +             |
| Detergent alkalis                              | 2                     | 100                  | 0          |          |          |       | +   | +   |    | +    | +   | +   | +               | -            | +     | +   | +           | 0             |
| Water (dist.)                                  |                       | 20                   |            |          |          |       |     |     |    |      |     |     |                 | +            |       |     |             |               |
| Water, cold                                    |                       |                      | +          | +        | +        | +     | +   | +   | +  | +    | +   | +   | +               | +            | +     | +   | +           | +             |
| Water, hot                                     |                       |                      | -          | -        | -        | -     | +   | +   | +  | +    | -   | +   | +               | +            | +     | 0   | +           | 0             |
| Citric acid                                    | 10                    |                      | +          |          |          |       | +   | +   | +  | +    | +   |     |                 | +            | +     | +   | +           | +             |

- Not resistant  
0 Moderately resistant  
+ Resistant

\* The irradiated PUR type is generally more resistant than the non-irradiated type. This cannot be quantified and must be checked in individual cases.

The information in the table has been gathered from the recommendations of our plastic suppliers.

Since individual operating conditions can also affect the usability of each product, this information should be used as a guide only.

In cases where there has been no previous experience of using the products, we recommend that the user undertakes preliminary tests in order to minimize risks.

## Insulation coordination for electrical equipment in low-voltage systems

Dimensioning of air and creepage distances according to DIN EN 60664-1/VDE 0110-1.

This part of the standard, based on IEC 60664, contains specifications for the insulation coordination of items of equipment in low-voltage systems. This part is applicable for items to be used at a height of up to 2000 m above sea level. This basic safety standard is primarily aimed at technical committees, and if suitable product directives are not available for an item, it can be used at one's own responsibility. International and European product standards cited in this catalog contain specifications for insulation coordination in accordance with DIN EN 60664/VDE 0110-1.

### Insulation coordination

Insulation coordination includes the selection of electrical insulation properties for items as regards intended applications and ambient conditions. Separate requirements must be applied for air and creepage distances and for rigid insulation. The surge voltages to be expected, characteristics of surge protective devices, and pollution at the intended site must be considered when dimensioning clearances. Clearances are then dimensioned according to the external or internal surge voltages to be expected. Different surge voltages, grouped into categories, i.e., a value that determines an impulse withstand voltage, determine the required clearance directly. These surge voltage categories (I to IV) are mainly based on a statistical study, and are used for the items that are directly supplied by low-voltage networks. Definitions of the individual categories are provided below as an extract of DIN EN 60664/VDE 0110-1.

The clearances can be calculated according to Table 2 (minimum clearances) depending on the homogeneity level of the field between the electrodes (case A – non-homogeneous field, case B – homogeneous field).

Clearances according to case A are capable of withstanding the assigned surge voltages under all conditions. Items that are dimensioned according to case A can therefore be used without any further testing. Clearance values according to case B are based on ideal conditions. Clearance values which fall between case A and case B must be proven by means of a surge voltage test.

The voltages present, the properties of insulation materials, the pollution to be expected, and safety measures against pollution are considered when dimensioning creepage distances.

The effect of pollution is considered when determining the air and creepage distances according to three intensity levels (pollution degree 1 to 3).

The creepage distance is based on the rated voltage that is derived from the working voltage or nominal mains voltage. The minimum creepage distances are assigned to the rated voltages according to the pollution degree in Table 4.

If the respective product descriptions do not contain any additional specifications, the products presented in this catalog are dimensioned for surge voltage category III and pollution degree 3 according to this regulation (DIN EN 60664-1/VDE 0110-1).

### Surge voltage categories I to IV

– Items in **surge voltage category IV** can be used at the terminal point of the installation.

**Note:** examples of such items include electricity meters and primary devices for overcurrent protection.

– Items in **surge voltage category III** can be used in fixed installations and are intended for such cases where there are special requirements for the reliability and availability of the items.

**Note:** examples of such items include switches in fixed installations and items for industrial use with permanent connection to the fixed installation.

– Items in **surge voltage category II** are power-consuming items that are supplied by the fixed installation.

**Note:** examples of such items include household appliances, portable tools, other domestic appliances, and similar devices.

– Items in **surge voltage category I** can be connected to circuits where measures have been taken to limit the surge voltages to a suitable lower value.

### Pollution degrees 1 to 4

The following four pollution degrees have been defined for the micro-environment in order to determine air and creepage distances:

#### – Pollution degree 1

No contamination or only dry, non-conductive contamination is present. The contamination has no influence.

#### – Pollution degree 2

Only non-conductive contamination is present. Temporary conductivity due to condensation must occasionally be taken into consideration, however.

#### – Pollution degree 3

Conductive contamination or dry, non-conductive contamination is present which becomes conductive, since condensation is expected.

#### – Pollution degree 4

Permanent conductivity is present, caused by conductive dust, rain or moisture.

### Insulation material

DIN EN 60664/VDE 0110-1 classifies insulation materials into four groups depending on their CTI values that were obtained using solution A in accordance with IEC 60112. These are:

Insulation material group I:  $600 \leq \text{CTI}$

Insulation material group II:  $400 \leq \text{CTI} < 600$

Insulation material group IIIa

$175 \leq \text{CTI} < 400$

Insulation material group IIIb:

$100 \leq \text{CTI} < 175$

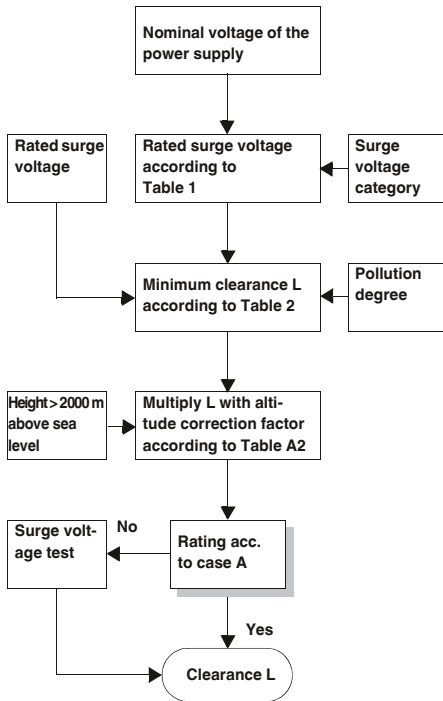
The comparative tracking index of the creepage distance must have been determined based on suitable samples using test solution A as specified in DIN IEC 60112.

The proof tracking index of the creepage distance (PTI) is used as proof of the creepage current properties of insulation materials.



### Dimensioning of clearances

### Schematic for determining clearances



#### Altitude correction factors (extract from Table A.2)

| Height in m | Normal air pressure in kPa | Multiplication factor for gaps |
|-------------|----------------------------|--------------------------------|
| 2000        | 80.0                       | 1.00                           |
| 3000        | 70.0                       | 1.14                           |
| 4000        | 62.0                       | 1.29                           |
| 5000        | 54.0                       | 1.48                           |
| 6000        | 47.0                       | 1.70                           |
| 7000        | 41.0                       | 1.95                           |
| 8000        | 35.5                       | 2.25                           |
| 9000        | 30.5                       | 2.62                           |
| 10000       | 26.5                       | 3.02                           |
| 15000       | 12.0                       | 6.67                           |
| 20000       | 5.5                        | 14.50                          |

### Rated surge voltages for items that are directly supplied by the low-voltage network (extract from Table 1)

| Nominal voltage of the power supply system <sup>1)</sup> (mains) acc. to IEC 60038 <sup>3)</sup> [V] |              | Conductor-neutral conductor voltage derived from the total nominal AC voltage or nominal DC voltage | Rated surge voltage <sup>2)</sup> [V]<br>Surge voltage category <sup>4)</sup> |      |      |       |
|------------------------------------------------------------------------------------------------------|--------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|------|------|-------|
| Three-phase                                                                                          | Single-phase |                                                                                                     | I                                                                             | II   | III  | IV    |
|                                                                                                      | 120 to 240   | 50                                                                                                  | 330                                                                           | 500  | 800  | 1500  |
|                                                                                                      |              | 100                                                                                                 | 500                                                                           | 800  | 1500 | 2500  |
|                                                                                                      |              | 150                                                                                                 | 800                                                                           | 1500 | 2500 | 4000  |
| 230/400 277/480                                                                                      |              | 300                                                                                                 | 1500                                                                          | 2500 | 4000 | 6000  |
| 400/690                                                                                              |              | 600                                                                                                 | 2500                                                                          | 4000 | 6000 | 8000  |
| 1000                                                                                                 |              | 1000                                                                                                | 4000                                                                          | 6000 | 8000 | 12000 |

<sup>1)</sup> Refer to Appendix B for application in existing deviating low-voltage networks and their nominal voltages.

<sup>2)</sup> Items with this rated surge voltage may be used in systems in accordance with IEC 60364-4-443.

<sup>3)</sup> The slash, i.e., /, indicates a three-phase 4-conductor system. The lower value is the conductor-to-neutral conductor voltage, whereas the higher value is the conductor-to-conductor voltage. When only one value is specified, it refers to a three-phase 3-conductor system, and indicates the conductor-to-conductor voltage.

<sup>4)</sup> Refer to 2.2.2.1.1 for an explanation of surge voltage categories.

### Minimum clearances for surge voltages (extract from Table 2)

| Required impulse withstand voltage <sup>1)</sup> <sup>5)</sup> | Condition A<br>Non-homogeneous field (refer to 1.3.15) |                      |                   | Condition B<br>Homogeneous field (refer to 1.3.14) |                      |                   |
|----------------------------------------------------------------|--------------------------------------------------------|----------------------|-------------------|----------------------------------------------------|----------------------|-------------------|
|                                                                | Pollution degree <sup>6)</sup>                         |                      |                   | Pollution degree <sup>6)</sup>                     |                      |                   |
|                                                                | 1 [mm]                                                 | 2 [mm]               | 3 [mm]            | 1 [mm]                                             | 2 [mm]               | 3 [mm]            |
| 0.33 <sup>2)</sup>                                             | 0.01                                                   | 0.2 <sup>3) 4)</sup> | 0.8 <sup>4)</sup> | 0.01                                               | 0.2 <sup>3) 4)</sup> | 0.8 <sup>4)</sup> |
| 0.40                                                           | 0.02                                                   |                      |                   | 0.02                                               |                      |                   |
| 0.5 <sup>2)</sup>                                              | 0.04                                                   |                      |                   | 0.04                                               |                      |                   |
| 0.60                                                           | 0.06                                                   |                      |                   | 0.06                                               |                      |                   |
| 0.80 <sup>2)</sup>                                             | 0.10                                                   |                      |                   | 0.10                                               |                      |                   |
| 1.0                                                            | 0.15                                                   |                      |                   | 0.15                                               |                      |                   |
| 1.2                                                            | 0.25                                                   | 0.25                 | 1.0               | 0.2                                                | 0.3                  | 1.2               |
| 1.5 <sup>2)</sup>                                              | 0.5                                                    | 0.5                  |                   | 0.3                                                |                      |                   |
| 2.0                                                            | 1.0                                                    | 1.0                  |                   | 0.45                                               | 0.45                 |                   |
| 2.5 <sup>2)</sup>                                              | 1.5                                                    | 1.5                  | 1.5               | 0.6                                                | 0.6                  | 1.5               |
| 3.0                                                            | 2.0                                                    | 2.0                  | 2.0               | 0.8                                                | 0.8                  |                   |
| 4.0 <sup>2)</sup>                                              | 3                                                      | 3                    | 3                 | 1.2                                                | 1.2                  |                   |
| 5.0                                                            | 4                                                      | 4                    | 4                 | 1.5                                                | 1.5                  | 1.5               |
| 6.0 <sup>2)</sup>                                              | 5.5                                                    | 5.5                  | 5.5               | 2                                                  | 2                    | 2                 |
| 8.0 <sup>2)</sup>                                              | 8                                                      | 8                    | 8                 | 3                                                  | 3                    | 3                 |
| 10                                                             | 11                                                     | 11                   | 11                | 3.5                                                | 3.5                  | 3.5               |
| 12 <sup>2)</sup>                                               | 14                                                     | 14                   | 14                | 4.5                                                | 4.5                  | 4.5               |
| 15                                                             | 18                                                     | 18                   | 18                | 5.5                                                | 5.5                  | 5.5               |
| 20                                                             | 25                                                     | 25                   | 25                | 8                                                  | 8                    | 8                 |
| 25                                                             | 33                                                     | 33                   | 33                | 10                                                 | 10                   | 10                |
| 30                                                             | 40                                                     | 40                   | 40                | 12.5                                               | 12.5                 | 12.5              |
| 40                                                             | 60                                                     | 60                   | 60                | 17                                                 | 17                   | 17                |
| 50                                                             | 75                                                     | 75                   | 75                | 22                                                 | 22                   | 22                |
| 60                                                             | 90                                                     | 90                   | 90                | 27                                                 | 27                   | 27                |
| 80                                                             | 130                                                    | 130                  | 130               | 35                                                 | 35                   | 35                |
| 100                                                            | 170                                                    | 170                  | 170               | 45                                                 | 45                   | 45                |

<sup>1)</sup> This voltage is:

- For function insulation: the highest surge voltage expected for the clearance
- For basic insulation, if influenced directly or considerably by surge voltages from the low-voltage network: the item's rated surge voltage
- For a different basic insulation: the highest surge voltage possible in the circuit

<sup>2)</sup> Preferred values

<sup>3)</sup> For PCBs, the values of pollution degree 1 are applicable, except that no deviation below the value of 0.04 mm is permitted, as specified in Table 4.

<sup>4)</sup> Minimum clearances for pollution degrees 2 and 3 are based on the corresponding creepage distances. This resistance is reduced due to the effects of humidity.

<sup>5)</sup> Values can be interpolated for parts or circuits within items that are subjected to surge voltages.

<sup>6)</sup> The distances for pollution degree 4 are equal to those for pollution degree 3, except that the minimum clearance is 1.6 mm.

### Current carrying capacity

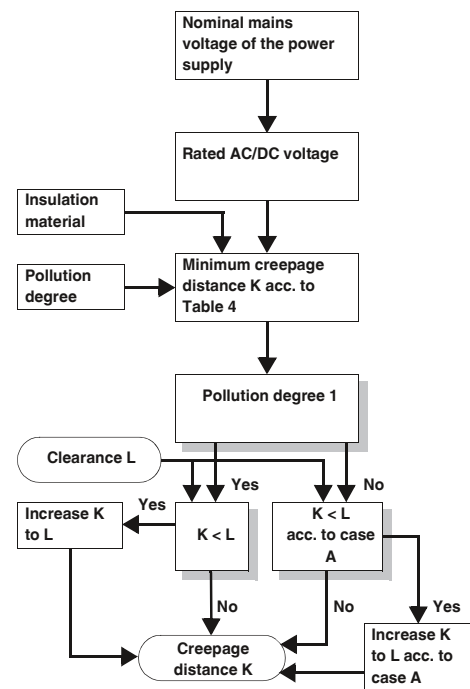
Standard IEC 60947-7-1/  
EN 60947-7-1/DIN VDE 0611-1 specifies the test currents for the individual conductor cross sections listed in the adjacent table. The corresponding currents are listed with the connection data for the individual terminal blocks. The type tests for modular terminal blocks are based on this data.

### Test currents according to IEC 60947-7-1/EN 60947-7-1, Table 5

| Rated cross section | [mm <sup>2</sup> ] | 0.2 | 0.5 | 0.75 | 1.0  | 1.5  | 2.5 | 4   | 6   | 10  | 16  |
|---------------------|--------------------|-----|-----|------|------|------|-----|-----|-----|-----|-----|
| Test current        | [A]                | 4   | 6   | 9    | 13.5 | 17.5 | 24  | 32  | 41  | 57  | 76  |
| Rated cross section | [mm <sup>2</sup> ] | 25  | 35  | 50   | 70   | 95   | 120 | 150 | 185 | 240 | 300 |
| Test current        | [A]                | 101 | 125 | 150  | 192  | 232  | 269 | 309 | 353 | 415 | 520 |

## Dimensioning of creepage distances

### Schematic for determining creepage distances



Single-phase 3 or 2-conductor AC or DC voltage systems (extract from Table 3a)

| Nominal voltage of the power supply system (mains) *) | Voltages for Table 4                  |                                       |
|-------------------------------------------------------|---------------------------------------|---------------------------------------|
|                                                       | for conductor-conductor insulation 1) | for conductor-ground insulation 1)    |
|                                                       | All systems                           | 3-cond. systems center point grounded |
| [V]                                                   | [V]                                   | [V]                                   |
| 12.5                                                  | 12.5                                  | –                                     |
| 24                                                    | 25                                    | –                                     |
| 25                                                    |                                       |                                       |
| 30                                                    | 32                                    | –                                     |
| 42                                                    |                                       |                                       |
| 48                                                    | 50                                    | –                                     |
| 50 **)                                                |                                       |                                       |
| 60                                                    | 63                                    | –                                     |
| 30 - 60                                               | 63                                    | 32                                    |
| 100 **)                                               | 100                                   | –                                     |
| 110                                                   | 125                                   | –                                     |
| 120                                                   |                                       |                                       |
| 150 **)                                               | 160                                   | –                                     |
| 220                                                   | 250                                   | –                                     |
| 110 - 220                                             | 250                                   | 125                                   |
| 220 - 240                                             |                                       |                                       |
| 300 **)                                               | 320                                   | –                                     |
| 220 - 440                                             | 500                                   | 250                                   |
| 600 **)                                               | 630                                   | –                                     |
| 480 - 960                                             | 1000                                  | 500                                   |
| 1000 **)                                              | 1000                                  | –                                     |

1) Conductor-ground insulation levels for non-grounded systems or those grounded through impedance correspond to conductor-conductor insulation levels as the operating voltage of every conductor to ground can, in practice, reach the conductor-conductor voltage. This is due to the fact that the actual voltage to ground is determined by the insulation resistance and the capacitive reactance of each conductor to ground. A low (but permissible) insulation resistance of one conductor can thereby practically ground it and increase the other two to conductor-conductor voltage to ground.

\*) Refer to 2.2.1 for correlation with the rated voltage.

\*\*) These values correspond to the values in Table 1.

Three-phase 4 or 3-conductor AC voltage systems (extract from Table 3b)

| Nominal voltage of the power supply system (mains) *) | Voltages for Table 4               |                                                                |                                                                   |
|-------------------------------------------------------|------------------------------------|----------------------------------------------------------------|-------------------------------------------------------------------|
|                                                       | for conductor-conductor insulation | Insulation for conductor-ground                                |                                                                   |
|                                                       | All systems                        | Three-phase 4-cond. systems with grounded neutral conductor 2) | Three-phase 3-cond. systems non-grounded 1) or conductor grounded |
| [V]                                                   | [V]                                | [V]                                                            | [V]                                                               |
| 60                                                    | 63                                 | 32                                                             | 63                                                                |
| 110/120/127                                           | 125                                | 80                                                             | 125                                                               |
| 150 **)                                               | 160                                | –                                                              | 160                                                               |
| 208                                                   | 200                                | 125                                                            | 200                                                               |
| 220/230/240                                           | 250                                | 160                                                            | 250                                                               |
| 300 **)                                               | 320                                | –                                                              | 320                                                               |
| 380/400/415                                           | 400                                | 250                                                            | 400                                                               |
| 440                                                   | 500                                | 250                                                            | 400                                                               |
| 480/500                                               | 500                                | 320                                                            | 500                                                               |
| 575                                                   | 630                                | 400                                                            | 630                                                               |
| 600 **)                                               | 630                                | –                                                              | 630                                                               |
| 660/690                                               | 630                                | 400                                                            | 630                                                               |
| 720/830                                               | 800                                | 500                                                            | 800                                                               |
| 960                                                   | 1000                               | 630                                                            | 1000                                                              |
| 1000 **)                                              | 1000                               | –                                                              | 1000                                                              |

1) Conductor-ground insulation levels for non-grounded systems or those grounded through impedance correspond to conductor-conductor insulation levels as the operating voltage of every conductor to ground can, in practice, reach the conductor-conductor voltage. This is due to the fact that the actual voltage to ground is determined by the insulation resistance and the capacitive reactance of each conductor to ground. A low (but permissible) insulation resistance of one conductor can thereby practically ground it and increase the other two to conductor-conductor voltage to ground.

2) For items designed for use in three-phase 4-conductor and three-phase 3-conductor systems, grounded as well as non-grounded, only the values for 3-conductor systems may be used.

\*) Refer to 2.2.1 for correlation with the rated voltage.

\*\*) These values correspond to the values in Table 1.

### Creepage distances to prevent failures occurring due to creepage (extract from Table 4)

| Voltage 1)<br>r.m.s. value | Minimum creepage distances     |                                           |                                |                           |         |          |                           |         |             |
|----------------------------|--------------------------------|-------------------------------------------|--------------------------------|---------------------------|---------|----------|---------------------------|---------|-------------|
|                            | Printed circuits               |                                           | Pollution degree               |                           |         |          |                           |         |             |
|                            | Pollution degree               |                                           |                                |                           |         |          |                           |         |             |
|                            | 1                              | 2                                         | 1                              | 2                         |         |          | 3                         |         |             |
|                            | All insulation material groups | All insulation material groups except IIb | All insulation material groups | Insulation material group |         |          | Insulation material group |         |             |
| [V]                        | [mm]                           | [mm]                                      | [mm]                           | I [mm]                    | II [mm] | III [mm] | I [mm]                    | II [mm] | III 2) [mm] |
| 10                         | 0.025                          | 0.04                                      | 0.08                           | 0.40                      | 0.40    | 0.40     | 1.00                      | 1.00    | 1.00        |
| 12.5                       | 0.025                          | 0.04                                      | 0.09                           | 0.42                      | 0.42    | 0.42     | 1.05                      | 1.05    | 1.05        |
| 16                         | 0.025                          | 0.04                                      | 0.10                           | 0.45                      | 0.45    | 0.45     | 1.10                      | 1.10    | 1.10        |
| 20                         | 0.025                          | 0.04                                      | 0.11                           | 0.48                      | 0.48    | 0.48     | 1.20                      | 1.20    | 1.20        |
| 25                         | 0.025                          | 0.04                                      | 0.125                          | 0.50                      | 0.50    | 0.50     | 1.25                      | 1.25    | 1.25        |
| 32                         | 0.025                          | 0.04                                      | 0.14                           | 0.53                      | 0.53    | 0.53     | 1.30                      | 1.30    | 1.30        |
| 40                         | 0.025                          | 0.04                                      | 0.16                           | 0.56                      | 0.80    | 1.10     | 1.4                       | 1.6     | 1.8         |
| 50                         | 0.025                          | 0.04                                      | 0.18                           | 0.60                      | 0.85    | 1.20     | 1.5                       | 1.7     | 1.9         |
| 63                         | 0.040                          | 0.63                                      | 0.20                           | 0.63                      | 0.90    | 1.25     | 1.6                       | 1.8     | 2.0         |
| 80                         | 0.063                          | 0.10                                      | 0.22                           | 0.67                      | 0.95    | 1.3      | 1.7                       | 1.9     | 2.1         |
| 100                        | 0.10                           | 0.16                                      | 0.25                           | 0.71                      | 1.00    | 1.4      | 1.8                       | 2.0     | 2.2         |
| 125                        | 0.16                           | 0.25                                      | 0.28                           | 0.75                      | 1.05    | 1.5      | 1.9                       | 2.1     | 2.4         |
| 160                        | 0.25                           | 0.40                                      | 0.32                           | 0.80                      | 1.1     | 1.6      | 2.0                       | 2.2     | 2.5         |
| 200                        | 0.40                           | 0.63                                      | 0.42                           | 1.00                      | 1.4     | 2.0      | 2.5                       | 2.8     | 3.2         |
| 250                        | 0.56                           | 1.00                                      | 0.56                           | 1.25                      | 1.8     | 2.5      | 3.2                       | 3.6     | 4.0         |
| 320                        | 0.75                           | 1.60                                      | 0.75                           | 1.60                      | 2.2     | 3.2      | 4.0                       | 4.5     | 5.0         |
| 400                        | 1.00                           | 2.00                                      | 1.00                           | 2.00                      | 2.8     | 4.0      | 5.0                       | 5.6     | 6.3         |
| 500                        | 1.30                           | 2.50                                      | 1.30                           | 2.50                      | 3.6     | 5.0      | 6.3                       | 7.1     | 8.0         |
| 630                        | 1.80                           | 3.20                                      | 1.8                            | 3.2                       | 4.5     | 6.3      | 8.0                       | 9       | 10.0        |
| 800                        | 2.40                           | 4.00                                      | 2.4                            | 4.0                       | 5.6     | 8.0      | 10.0                      | 11      | 12.5        |
| 1000                       | 3.20                           | 5.00                                      | 3.2                            | 5.0                       | 7.1     | 10       | 12.5                      | 14      | 16.0        |
| 1250                       |                                |                                           | 4.2                            | 6.3                       | 9       | 12.5     | 16                        | 18      | 20          |
| 1600                       |                                |                                           | 5.6                            | 8                         | 11      | 16       | 20                        | 22      | 25          |
| 2000                       |                                |                                           | 7.5                            | 10                        | 14      | 20       | 25                        | 28      | 32          |
| 2500                       |                                |                                           | 10                             | 12.5                      | 18      | 25       | 32                        | 36      | 40          |
| 3200                       |                                |                                           | 12.5                           | 16                        | 22      | 32       | 40                        | 45      | 50          |
| 4000                       |                                |                                           | 16                             | 20                        | 28      | 40       | 50                        | 56      | 63          |
| 5000                       |                                |                                           | 20                             | 25                        | 36      | 50       | 63                        | 71      | 80          |
| 6300                       |                                |                                           | 25                             | 32                        | 45      | 63       | 80                        | 90      | 100         |
| 8000                       |                                |                                           | 32                             | 40                        | 56      | 80       | 100                       | 110     | 125         |
| 10000                      |                                |                                           | 40                             | 50                        | 71      | 100      | 125                       | 140     | 160         |

1) This voltage is:

a) For function insulation: the working voltage

b) For basic and additional insulation of a circuit supplied directly by the low-voltage network: either the voltage selected from Table 3a or 3b on the basis of the rated voltage of the equipment or the rated insulation voltage

c) For basic and additional insulation of systems, equipment and internal circuits which are not supplied directly from the mains: the highest r.m.s. value of the voltage that, within the bounds of the rated data, can occur in the system, the equipment or the internal circuit, when supplied with rated voltage and in the case of the most unfavorable combination of operating conditions.

2) With pollution degree 3, insulation material group IIb is not recommended for use if voltages are greater than 630 V.



### Overview of approval bodies and safety marks

| Certification bodies and approvals                                                 |                                                                                                                 | Country code  | Explosion protection                                                                |                                            | Country code | Ship classification societies                                                         |                                       | Country code |
|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|--------------------------------------------|--------------|---------------------------------------------------------------------------------------|---------------------------------------|--------------|
|    | IECEE CB Scheme<br>(in combination with certifying body)                                                        | International |    | FM Approvals                               | US           |    | Bureau Veritas                        | FR           |
| CCA                                                                                | CENELEC Certification Agreement (CCA inspection report)<br>(in combination with certifying body)                | EU            |    | DEKRA Certification B.V.                   | NL           |    | Germanischer Lloyd AG                 | DE           |
|    | Canadian Standards Association (CSA)                                                                            | CA            |    | Physikalisch-Technische Bundesanstalt      | DE           |    | Lloyd's Register EMEA                 | GB           |
|    | Underwriters Laboratories Inc. (UL)                                                                             | US            |    | QS Schaffhausen                            | CH           |    | Nippon Kaiji Kyokai                   | JP           |
|    | Underwriters Laboratories Inc. (UL)<br>- UL approval for Canada -                                               | CA            |    | VTT Expert Services Oy                     | FI           |    | Det Norske Veritas                    | NO           |
|    | Underwriters Laboratories Inc. (UL) Combined logo<br>- UL approval for the USA and Canada -                     | US CA         |    | IBExU Institut für Sicherheitstechnik GmbH | DE           |    | Polski Rejestr Statków                | PL           |
|    | INSIEME PER LA QUALITA'E LA SICUREZZA                                                                           | IT            |    | TÜV Rheinland do Brasil                    | BR           |    | Russian Maritime Register of Shipping | RU           |
|    | Gosudarstvennaya Komitet Standartov (GOST)                                                                      | RU            |    | Underwriters Laboratories Inc. (UL)        | US           |    | Korean Register of Shipping           | KR           |
|  | DEKRA Certification B.V.                                                                                        | NL            |  | TÜV Nord                                   | DE           |  | American Bureau of Shipping           | US           |
|  | Österreichischer Verband für Elektrotechnik                                                                     | AT            |  | DEKRA EXAM GmbH                            | DE           |                                                                                       |                                       |              |
|  | South African Bureau of Standards                                                                               | ZA            |                                                                                     |                                            |              |                                                                                       |                                       |              |
|  | electrosuisse SEV Verband für Elektro-, Energie- und Informationstechnik                                        | CH            |                                                                                     |                                            |              |                                                                                       |                                       |              |
|  | Verband Deutscher Elektrotechniker e.V. (VDE)<br>- Approval of drawings<br>- Reports with production monitoring | DE            |                                                                                     |                                            |              |                                                                                       |                                       |              |
|  | Berufsgenossenschaft (BG)<br>GS - Geprüfte Sicherheit (tested safety)                                           | DE            |                                                                                     |                                            |              |                                                                                       |                                       |              |
|  | TÜV Rheinland Industrie Service GmbH                                                                            | DE            |                                                                                     |                                            |              |                                                                                       |                                       |              |

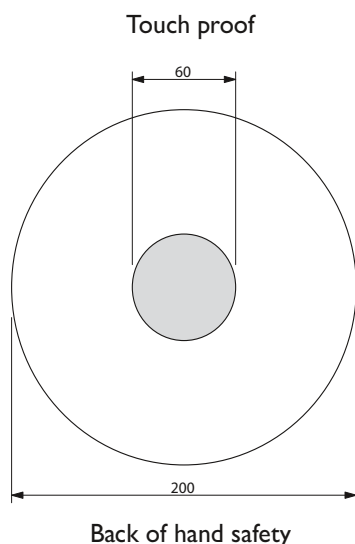
### Color designations

| Color     | Code |
|-----------|------|
| White     | WH   |
| Red       | RD   |
| Blue      | BU   |
| Green     | GN   |
| Yellow    | YE   |
| Gray      | GY   |
| Brown     | BN   |
| Orange    | OG   |
| Black     | BK   |
| Turquoise | TQ   |
| Ivory     | IV   |
| Beige     | BE   |
| Olive     | OL   |
| Violet    | VT   |
| Pink      | PK   |
| Gold      | GD   |
| Silver    | SR   |

### Note:

Subject to changes that serve the purpose of technical progress.

## Shock protection



### Example: pressure actuation

The accident prevention regulations BGV A 2 issued by the German employer's liability insurance association for precision mechanics and electrical engineering apply to the operators of electrical systems and are aimed at the prevention of electrical accidents by means of special safety requirements.

These regulations contain specifications regarding the safety distances for work, operation, and occasional handling in the proximity of "live parts" in low-voltage systems up to 1000 V ~ or 1500 V –.

Work with live parts is only permitted once they are in the de-energized state. Operational activities are only permitted in the vicinity of live parts if these parts are de-energized or are protected against direct contact (§ 6). The following safety measures apply when working in the vicinity of live parts:

- Ensure that the system remains de-energized for the duration of the work or
- Ensure shock protection is in place in the form of covers or barriers during the work, or
- Ensure that the minimum permissible clearances are observed (§ 7)

The term "occasional handling" has been introduced for the operation of elements such as pushbuttons, rocker arms or rotary buttons in the proximity of live parts.

In VDE 0105-1, this is called "operation with partial protection against direct contact".

Detailed specifications for "occasional handling" can be found in DIN EN 50274. This specifies to what degree live parts in the proximity of operating elements are to be protected against contact. The basis for this is the definition of a "protection area

for occasional handling"; this is the area into which the user must reach in order to handle the machine.

The most important thing is that an area formed by an even envelope curve 30 mm in radius must surround the live parts. This area must be **touch proof**, i.e., the live parts of the electrical device must not be within reach of the VDE test finger in accordance with IEC 60529/DIN VDE 0470-1 (test finger).

Back of hand safety is specified for the "rest of the area" up to 100 mm around the operating element. **Back of hand safety** means that when a force of 50 N is applied

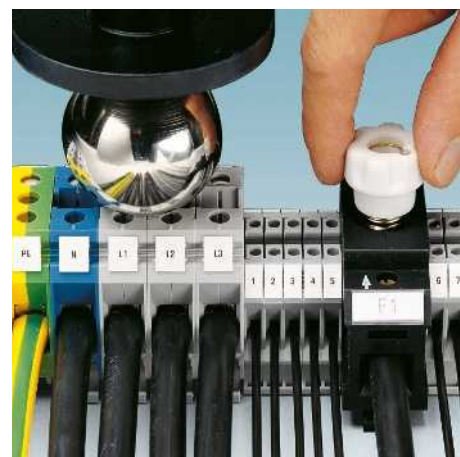


to a ball with a diameter of 50 mm, this does not come into contact with the live parts of the equipment. No special measures for ensuring contact safety are stipulated outside this area.

Note: systems and equipment that are operated with SELV up to 25 V ~ or 60 V – are considered to be protected against direct contact.

According to BGV A 2, the state of the system does not have to be tested prior to initial startup if the company has confirmation from the manufacturer or installer that the electrical systems and items meet BGV A 2 regulations. The confirmation required refers to the installed systems and items which are ready for operation and this can only be issued by the installer or installation company. The manufacturer of the electrical equipment can only issue a confirmation that products have been produced in accordance with the relevant electrotechnical regulations stipulated in BGV A 2. The installer must bear this in mind when selecting the equipment to be used.

In the field of connection technology, Phoenix Contact offers a wide range of products which are touch-proof or can be protected against contact by means of cov-



ers. Depending on the conditions, all of this must be taken into account when selecting the individual types of terminal block and accessories.

| Type | Order No.       | Page        | Type            | Order No. | Page | Type            | Order No. | Page | Type            | Order No. | Page |
|------|-----------------|-------------|-----------------|-----------|------|-----------------|-----------|------|-----------------|-----------|------|
| C    |                 |             | CA-07P1N128007S | 1619529   | 324  | CA-09P1N222S00  | 1619950   | 330  | CA-12M1N8A8503  | 1619615   | 341  |
|      |                 |             | CA-07P1N128008  | 1619654   | 325  | CA-09P1N8A2S00  | 1619970   | 329  | CA-12M1N8A8503S | 1619459   | 340  |
|      |                 |             | CA-07P1N128008S | 1619503   | 324  | CA-09P1N8A6Y00  | 1619866   | 328  | CA-12M1N8A8504  | 1619609   | 341  |
|      |                 |             | CA-07P1N1280DN  | 1619771   | 325  | CA-09P1N8A6Z00  | 1619892   | 327  | CA-12M1N8A8504S | 1619453   | 340  |
|      | CA-06P1N122S00  | 1619992 329 | CA-07P1N1280DNS | 1619600   | 324  | CA-09P1N8A8006  | 1619739   | 325  | CA-12M1N8A85DU  | 1619630   | 341  |
|      | CA-06P1N126Y00  | 1619876 328 | CA-07P1N129006  | 1620140   | 326  | CA-09P1N8A8006S | 1619568   | 324  | CA-12M1N8A85DUS | 1619471   | 340  |
|      | CA-06P1N126Z00  | 1619902 327 | CA-07P1N129007  | 1620114   | 326  | CA-09P1N8A8007  | 1619711   | 325  | CA-12M1N8A9502  | 1619608   | 342  |
|      | CA-06P1N128006  | 1619749 325 | CA-07P1N129008  | 1620041   | 326  | CA-09P1N8A8007S | 1619523   | 324  | CA-12M1N8A9503  | 1620002   | 342  |
|      | CA-06P1N128006S | 1619578 324 | CA-07P1N1290DN  | 1620167   | 326  | CA-09P1N8A8008  | 1619648   | 325  | CA-12M1N8A9504  | 1619996   | 342  |
|      | CA-06P1N128007  | 1619723 325 | CA-07P1N12HZ00  | 1619846   | 332  | CA-09P1N8A8008S | 1619497   | 324  | CA-12M1N8A95DU  | 1620015   | 342  |
|      | CA-06P1N128007S | 1619533 324 | CA-07P1N222S00  | 1619952   | 330  | CA-09P1N8A80DN  | 1619765   | 325  | CA-12M2N8A8502  | 1619626   | 341  |
|      | CA-06P1N128008  | 1619658 325 | CA-07P1N8A2S00  | 1619986   | 329  | CA-09P1N8A80DNS | 1619594   | 324  | CA-12M2N8A8502S | 1619467   | 340  |
|      | CA-06P1N128008S | 1619507 324 | CA-07P1N8A6Y00  | 1619870   | 328  | CA-09P1N8A9006  | 1620134   | 326  | CA-12M2N8A8503  | 1619617   | 341  |
|      | CA-06P1N1280DN  | 1619775 325 | CA-07P1N8A6Z00  | 1619896   | 327  | CA-09P1N8A9007  | 1620076   | 326  | CA-12M2N8A8503S | 1619461   | 340  |
|      | CA-06P1N1280DNS | 1619604 324 | CA-07P1N8A8006  | 1619743   | 325  | CA-09P1N8A9008  | 1620033   | 326  | CA-12M2N8A8504  | 1619611   | 341  |
|      | CA-06P1N129006  | 1620144 326 | CA-07P1N8A8006S | 1619572   | 324  | CA-09P1N8A90DN  | 1620161   | 326  | CA-12M2N8A8504S | 1619455   | 340  |
|      | CA-06P1N129007  | 1620118 326 | CA-07P1N8A8007  | 1619717   | 325  | CA-09P1N8AHZ00  | 1619791   | 332  | CA-12M2N8A85DU  | 1619632   | 341  |
|      | CA-06P1N129008  | 1620045 326 | CA-07P1N8A8007S | 1619527   | 324  | CA-09P1NA22S00  | 1619926   | 330  | CA-12M2N8A85DUS | 1619473   | 340  |
|      | CA-06P1N1290DN  | 1620171 326 | CA-07P1N8A8008  | 1619652   | 325  | CA-09P1NC22S00  | 1619911   | 330  | CA-12M2N8A9502  | 1620010   | 342  |
|      | CA-06P1N12HZ00  | 1619850 332 | CA-07P1N8A8008S | 1619501   | 324  | CA-09S1N122S00  | 1619973   | 329  | CA-12M2N8A9503  | 1620004   | 342  |
|      | CA-06P1N222S00  | 1619954 330 | CA-07P1N8A80DN  | 1619769   | 325  | CA-09S1N126Y00  | 1619869   | 328  | CA-12M2N8A9504  | 1619998   | 342  |
|      | CA-06P1N8A2S00  | 1619990 329 | CA-07P1N8A80DNS | 1619598   | 329  | CA-09S1N126Z00  | 1619895   | 327  | CA-12M2N8A95DU  | 1620017   | 342  |
|      | CA-06P1N8A6Y00  | 1619874 328 | CA-07P1N8A9006  | 1620138   | 326  | CA-09S1N128006  | 1619742   | 325  | CA-12P1N122S00  | 1619968   | 329  |
|      | CA-06P1N8A6Z00  | 1619900 327 | CA-07P1N8A9007  | 1620080   | 326  | CA-09S1N128006S | 1619571   | 324  | CA-12P1N126Y00  | 1619864   | 328  |
|      | CA-06P1N8A8006  | 1619747 325 | CA-07P1N8A9008  | 1620037   | 326  | CA-09S1N128007  | 1619716   | 325  | CA-12P1N126Z00  | 1619890   | 327  |
|      | CA-06P1N8A8006S | 1619576 324 | CA-07P1N8A90DN  | 1620165   | 326  | CA-09S1N128007S | 1619526   | 324  | CA-12P1N128006  | 1619737   | 325  |
|      | CA-06P1N8A8007  | 1619721 325 | CA-07P1N8AHZ00  | 1619844   | 332  | CA-09S1N128008  | 1619651   | 325  | CA-12P1N128006S | 1619548   | 324  |
|      | CA-06P1N8A8007S | 1619531 324 | CA-07P1NA22S00  | 1619928   | 330  | CA-09S1N128008S | 1619500   | 324  | CA-12P1N128007  | 1619709   | 325  |
|      | CA-06P1N8A8008  | 1619656 325 | CA-07P1NC22S00  | 1619913   | 330  | CA-09S1N1280DN  | 1619768   | 325  | CA-12P1N128007S | 1619521   | 324  |
|      | CA-06P1N8A8008S | 1619505 324 | CA-07S1N122S00  | 1619989   | 329  | CA-09S1N1280DNS | 1619597   | 324  | CA-12P1N128008  | 1619646   | 325  |
|      | CA-06P1N8A80DN  | 1619773 325 | CA-07S1N126Y00  | 1619873   | 328  | CA-09S1N129006  | 1620137   | 326  | CA-12P1N128008S | 1619495   | 324  |
|      | CA-06P1N8A80DNS | 1619602 324 | CA-07S1N126Z00  | 1619899   | 327  | CA-09S1N129007  | 1620079   | 326  | CA-12P1N1280DN  | 1619763   | 325  |
|      | CA-06P1N8A9006  | 1620142 326 | CA-07S1N128006  | 1619746   | 325  | CA-09S1N129008  | 1620036   | 326  | CA-12P1N1280DNS | 1619592   | 324  |
|      | CA-06P1N8A9007  | 1620116 326 | CA-07S1N128006S | 1619575   | 324  | CA-09S1N1290DN  | 1620164   | 326  | CA-12P1N129006  | 1620132   | 326  |
|      | CA-06P1N8A9008  | 1620043 326 | CA-07S1N128007  | 1619720   | 325  | CA-09S1N12HZ00  | 1619843   | 332  | CA-12P1N129007  | 1620074   | 326  |
|      | CA-06P1N8A90DN  | 1620169 326 | CA-07S1N128007S | 1619530   | 324  | CA-09S1N222S00  | 1619951   | 330  | CA-12P1N129008  | 1620031   | 326  |
|      | CA-06P1N8AHZ00  | 1619848 332 | CA-07S1N128008  | 1619655   | 325  | CA-09S1N8A2S00  | 1619971   | 329  | CA-12P1N1290DN  | 1620159   | 326  |
|      | CA-06P1NA22S00  | 1619930 330 | CA-07S1N128008S | 1619504   | 324  | CA-09S1N8A6Y00  | 1619867   | 328  | CA-12P1N12HZ00  | 1619789   | 332  |
|      | CA-06P1NC22S00  | 1619915 330 | CA-07S1N1280DN  | 1619772   | 325  | CA-09S1N8A6Z00  | 1619893   | 327  | CA-12P1N222S00  | 1619948   | 330  |
|      | CA-06S1N122S00  | 1619993 329 | CA-07S1N1280DNS | 1619601   | 324  | CA-09S1N8A8006  | 1619740   | 325  | CA-12P1N8A2S00  | 1619966   | 329  |
|      | CA-06S1N126Y00  | 1619877 328 | CA-07S1N129006  | 1620141   | 326  | CA-09S1N8A8006S | 1619569   | 324  | CA-12P1N8A6Y00  | 1619862   | 328  |
|      | CA-06S1N126Z00  | 1619903 327 | CA-07S1N129007  | 1620115   | 326  | CA-09S1N8A8007  | 1619714   | 325  | CA-12P1N8A6Z00  | 1619888   | 327  |
|      | CA-06S1N128006  | 1619750 325 | CA-07S1N129008  | 1620042   | 326  | CA-09S1N8A8007S | 1619524   | 324  | CA-12P1N8A8006  | 1619735   | 325  |
|      | CA-06S1N128006S | 1619579 324 | CA-07S1N1290DN  | 1620168   | 326  | CA-09S1N8A8008  | 1619649   | 325  | CA-12P1N8A8006S | 1619546   | 324  |
|      | CA-06S1N128007  | 1619724 325 | CA-07S1N12HZ00  | 1619847   | 332  | CA-09S1N8A8008S | 1619498   | 324  | CA-12P1N8A8007  | 1619707   | 325  |
|      | CA-06S1N128007S | 1619534 324 | CA-07S1N222S00  | 1619953   | 330  | CA-09S1N8A80DN  | 1619766   | 325  | CA-12P1N8A8007S | 1619519   | 324  |
|      | CA-06S1N128008  | 1619659 325 | CA-07S1N8A2S00  | 1619987   | 329  | CA-09S1N8A80DNS | 1619595   | 324  | CA-12P1N8A8008  | 1619644   | 325  |
|      | CA-06S1N128008S | 1619508 324 | CA-07S1N8A6Y00  | 1619871   | 328  | CA-09S1N8A9006  | 1620135   | 326  | CA-12P1N8A8008S | 1619488   | 324  |
|      | CA-06S1N1280DN  | 1619776 325 | CA-07S1N8A6Z00  | 1619897   | 327  | CA-09S1N8A9007  | 1620077   | 326  | CA-12P1N8A80DN  | 1619761   | 325  |
|      | CA-06S1N1280DNS | 1619605 324 | CA-07S1N8A8006  | 1619744   | 325  | CA-09S1N8A9008  | 1620034   | 326  | CA-12P1N8A80DNS | 1619590   | 324  |
|      | CA-06S1N129006  | 1620145 326 | CA-07S1N8A8006S | 1619573   | 324  | CA-09S1N8A90DN  | 1620162   | 326  | CA-12P1N8A9006  | 1620130   | 326  |
|      | CA-06S1N129007  | 1620119 326 | CA-07S1N8A8007  | 1619718   | 325  | CA-09S1N8AHZ00  | 1619841   | 332  | CA-12P1N8A9007  | 1620072   | 326  |
|      | CA-06S1N129008  | 1620046 326 | CA-07S1N8A8007S | 1619528   | 324  | CA-09S1NA22S00  | 1619927   | 330  | CA-12P1N8A9008  | 1620029   | 326  |
|      | CA-06S1N1290DN  | 1620172 326 | CA-07S1N8A8008  | 1619653   | 325  | CA-09S1NC22S00  | 1619912   | 330  | CA-12P1N8A90DN  | 1620157   | 326  |
|      | CA-06S1N12HZ00  | 1619851 332 | CA-07S1N8A8008S | 1619502   | 324  | CA-12F1N8A8502  | 1619625   | 341  | CA-12P1N8AHZ00  | 1619787   | 332  |
|      | CA-06S1N222S00  | 1619955 330 | CA-07S1N8A80DN  | 1619770   | 325  | CA-12F1N8A8502S | 1619466   | 340  | CA-12P1NA22S00  | 1619924   | 330  |
|      | CA-06S1N8A2S00  | 1619991 329 | CA-07S1N8A80DNS | 1619599   | 324  | CA-12F1N8A8503  | 1619616   | 341  | CA-12P1NC22S00  | 1619909   | 330  |
|      | CA-06S1N8A6Y00  | 1619875 328 | CA-07S1N8A9006  | 1620139   | 326  | CA-12F1N8A8503S | 1619460   | 340  | CA-12S1N122S00  | 1619969   | 329  |
|      | CA-06S1N8A6Z00  | 1619901 327 | CA-07S1N8A9007  | 1620081   | 326  | CA-12F1N8A8504  | 1619610   | 341  | CA-12S1N126Y00  | 1619865   | 328  |
|      | CA-06S1N8A8006  | 1619748 325 | CA-07S1N8A9008  | 1620038   | 326  | CA-12F1N8A8504S | 1619454   | 340  | CA-12S1N126Z00  | 1619891   | 327  |
|      | CA-06S1N8A8006S | 1619577 324 | CA-07S1N8A90DN  | 1620166   | 326  | CA-12F1N8A85DU  | 1619631   | 341  | CA-12S1N128006  | 1619738   | 325  |
|      | CA-06S1N8A8007  | 1619722 325 | CA-07S1N8AHZ00  | 1619845   | 332  | CA-12F1N8A85DUS | 1619472   | 340  | CA-12S1N128006S | 1619567   | 324  |
|      | CA-06S1N8A8007S | 1619532 324 | CA-07S1NA22S00  | 1619929   | 330  | CA-12F1N8A9502  | 1620009   | 342  | CA-12S1N128007  | 1619710   | 325  |
|      | CA-06S1N8A8008  | 1619657 325 | CA-07S1NC22S00  | 1619914   | 330  | CA-12F1N8A9503  | 1620003   | 342  | CA-12S1N128007S | 1619522   | 324  |
|      | CA-06S1N8A8008S | 1619506 324 | CA-09P1N122S00  | 1619972   | 329  | CA-12F1N8A9504  | 1619997   | 342  | CA-12S1N128008  | 1619647   | 325  |
|      | CA-06S1N8A80DN  | 1619774 325 | CA-09P1N126Y00  | 1619868   | 328  | CA-12F1N8A95DU  | 1620016   | 342  | CA-12S1N128008S | 1619496   | 324  |
|      | CA-06S1N8A80DNS | 1619603 324 | CA-09P1N126Z00  | 1619894   | 327  | CA-12F2N8A8502  | 1619627   | 341  | CA-12S1N1280DN  | 1619764   | 325  |
|      | CA-06S1N8A9006  | 1620143 326 | CA-09P1N128006  | 1619741   | 325  | CA-12F2N8A8502S | 1619468   | 340  | CA-12S1N1280DNS | 1619593   | 324  |
|      | CA-06S1N8A9007  | 1620117 326 | CA-09P1N128006S | 1619570   | 324  | CA-12F2N8A8503  | 1619618   | 341  | CA-12S1N129006  | 1620133   | 326  |
|      | CA-06S1N8A9008  | 1620044 326 | CA-09P1N128007  | 1619715   | 325  | CA-12F2N8A8503S | 1619462   | 340  | CA-12S1N129007  | 1620075   | 326  |
|      | CA-06S1N8A90DN  | 1620170 326 | CA-09P1N128007S | 1619525   | 324  | CA-12F2N8A8504  | 1619612   | 341  | CA-12S1N129008  | 1620032   | 326  |
|      | CA-06S1N8AHZ00  | 1619849 332 | CA-09P1N128008  | 1619650   | 325  | CA-12F2N8A8504S | 1619456   | 340  | CA-12S1N1290DN  | 1620160   | 326  |
|      | CA-06S1NA22S00  | 1619931 330 | CA-09P1N128008S | 1619499   | 324  | CA-12F2N8A85DU  | 1619633   | 341  | CA-12S1N12HZ00  | 1619790   | 332  |
|      | CA-06S1NC22S00  | 1619916 330 | CA-09P1N1280DN  | 1619767   | 325  | CA-12F2N8A85DUS | 1619474   | 340  | CA-12S1N222S00  | 1619499   | 330  |
|      | CA-07P1N122S00  | 1619988 329 | CA-09P1N1280DNS | 1619596   | 324  | CA-12F2N8A9502  | 1620011   | 342  | CA-12S1N8A2S00  | 1619967   | 329  |
|      | CA-07P1N126Y00  | 1619872 328 | CA-09P1N129006  | 1620136   | 326  | CA-12F2N8A9503  | 1620005   | 342  | CA-12S1N8A6Y00  | 1619863   | 328  |
|      | CA-07P1N126Z00  | 1619898 327 | CA-09P1N129007  | 1620078   | 326  | CA-12F2N8A9504  | 1619999   | 342  | CA-12S1N8A6Z00  | 1619889   | 327  |
|      | CA-07P1N128006  | 1619745 325 | CA-09P1N129008  | 1620035   | 326  | CA-12F2N8A95DU  | 1620018   | 342  | CA-12S1N8A8006  | 1619736   | 325  |
|      | CA-07P1N128006S | 1619574 324 | CA-09P1N1290DN  | 1620163   | 326  | CA-12M1N8A8502  | 1619624   | 341  | CA-12S1N8       |           |      |

| Type             | Order No. | Page | Type                         | Order No. | Page | Type                           | Order No. | Page | Type    | Order No. | Page |
|------------------|-----------|------|------------------------------|-----------|------|--------------------------------|-----------|------|---------|-----------|------|
| CA-12S1N8A8007S  | 1619520   | 324  | CA-17S1N1280DN               | 1619756   | 325  | CK1,6-ED-0,50ST AU             | 1672453   | 40   | EV-T2SC | 1405217   | 438  |
| CA-12S1N8A8008   | 1619645   | 325  | CA-17S1N1280DNS              | 1619585   | 324  | CK1,6-ED-0,75BU AG             | 1663417   | 40   | EV-T2SM | 1405218   | 439  |
| CA-12S1N8A8008S  | 1619489   | 324  | CA-17S1N129006               | 1620125   | 326  | CK1,6-ED-0,75BU AU             | 1672440   | 40   |         |           |      |
| CA-12S1N8A800DN  | 1619762   | 325  | CA-17S1N129007               | 1620052   | 326  | CK1,6-ED-0,75ST AG             | 1663352   | 40   |         |           |      |
| CA-12S1N8A800DNS | 1619591   | 324  | CA-17S1N129008               | 1620024   | 326  | CK1,6-ED-0,75ST AU             | 1674914   | 40   |         |           |      |
| CA-12S1N8A9006   | 1620131   | 326  | CA-17S1N1290DN               | 1620151   | 326  | CK1,6-ED-1,00BU AG             | 1663420   | 40   |         |           |      |
| CA-12S1N8A9007   | 1620073   | 326  | CA-17S1N12HZ00               | 1619782   | 332  | CK1,6-ED-1,00BU AU             | 1674943   | 40   |         |           |      |
| CA-12S1N8A9008   | 1620030   | 326  | CA-17S1N222S00               | 1619933   | 330  | CK1,6-ED-1,00ST AG             | 1663365   | 40   |         |           |      |
| CA-12S1N8A900DN  | 1620158   | 326  | CA-17S1N8A2S00               | 1619959   | 329  | CK1,6-ED-1,00ST AU             | 1674888   | 40   |         |           |      |
| CA-12S1N8AHZ00   | 1619788   | 332  | CA-17S1N8A6Y00               | 1619855   | 328  | CK1,6-ED-1,50BU AG             | 1663433   | 40   |         |           |      |
| CA-12S1NA22S00   | 1619925   | 330  | CA-17S1N8A6Z00               | 1619881   | 327  | CK1,6-ED-1,50BU AU             | 1674930   | 40   |         |           |      |
| CA-12S1NC22S00   | 1619910   | 330  | CA-17S1N8A8006               | 1619728   | 325  | CK1,6-ED-1,50ST AG             | 1663378   | 40   |         |           |      |
| CA-17F1N8A8502   | 1619623   | 341  | CA-17S1N8A8006S              | 1619539   | 324  | CK1,6-ED-1,50ST AU             | 1674875   | 40   |         |           |      |
| CA-17F1N8A8502S  | 1619464   | 340  | CA-17S1N8A8007               | 1619700   | 325  | CK1,6-ED-2,50BU AG             | 1663446   | 40   |         |           |      |
| CA-17F1N8A8503   | 1619614   | 341  | CA-17S1N8A8007S              | 1619512   | 324  | CK1,6-ED-2,50BU AU             | 1674985   | 40   |         |           |      |
| CA-17F1N8A8503S  | 1619458   | 340  | CA-17S1N8A8008               | 1619637   | 325  | CK1,6-ED-2,50ST AG             | 1663381   | 40   |         |           |      |
| CA-17F1N8A8504   | 1619608   | 341  | CA-17S1N8A8008S              | 1619481   | 324  | CK1,6-ED-2,50ST AU             | 1674927   | 40   |         |           |      |
| CA-17F1N8A8504S  | 1619452   | 340  | CA-17S1N8A800DN              | 1619754   | 325  | CK1,6-ED-BU-POF                | 1885004   | 41   |         |           |      |
| CA-17F1N8A850DU  | 1619629   | 341  | CA-17S1N8A800DNS             | 1619583   | 324  | CK1,6-ED-ST-POF                | 1884995   | 41   |         |           |      |
| CA-17F1N8A850DUS | 1619470   | 340  | CA-17S1N8A9006               | 1620123   | 326  | CK1,6-ER-0,50BU AG             | 1884128   | 41   |         |           |      |
| CA-17F1N8A9502   | 1620007   | 342  | CA-17S1N8A9007               | 1620050   | 326  | CK1,6-ER-0,50ST AG             | 1884092   | 41   |         |           |      |
| CA-17F1N8A9503   | 1620011   | 342  | CA-17S1N8A9008               | 1620022   | 326  | CK1,6-ER-1,50BU AG             | 1884115   | 41   |         |           |      |
| CA-17F1N8A9504   | 1619995   | 342  | CA-17S1N8A900DN              | 1620149   | 326  | CK1,6-ER-1,50ST AG             | 1884089   | 41   |         |           |      |
| CA-17F1N8A950DU  | 1620014   | 342  | CA-17S1N8AHZ00               | 1619780   | 332  | CK2,0-ED-1,0ST AU              | 1409118   | 53   |         |           |      |
| CA-17M1N8A8502   | 1619619   | 341  | CA-17S1NA22S00               | 1619918   | 330  | CK2,0-ED-2,5ST AU              | 1409095   | 53   |         |           |      |
| CA-17M1N8A8502S  | 1619463   | 340  | CA-17S1NC22S00               | 1619905   | 330  | CP-HCC 4                       | 1600027   | 50   |         |           |      |
| CA-17M1N8A8503   | 1619613   | 341  | CA-19P1N122S00               | 1619956   | 329  | CP-MSTB                        | 1734634   | 50   |         |           |      |
| CA-17M1N8A8503S  | 1619457   | 340  | CA-19P1N126Y00               | 1619852   | 328  | CRIMPF0X PCC 16 CS 10QMM       | 1743430   | 29   |         |           |      |
| CA-17M1N8A8504   | 1619607   | 341  | CA-19P1N126Z00               | 1619878   | 327  | CRIMPF0X PCC 16 CS 4QMM        | 1743427   | 29   |         |           |      |
| CA-17M1N8A8504S  | 1619451   | 340  | CA-19P1N128006               | 1619725   | 325  | CRIMPF0X-DSUB 5                | 1212111   | 216  |         |           |      |
| CA-17M1N8A850DU  | 1619628   | 341  | CA-19P1N128006S              | 1619536   | 324  | CRIMPF0X-TC MP                 | 1212510   | 239  |         |           |      |
| CA-17M1N8A850DUS | 1619469   | 340  | CA-19P1N128007               | 1619660   | 325  | CRIMPF0X-TC MP-1               | 1212620   | 53   |         |           |      |
| CA-17M1N8A9502   | 1620006   | 342  | CA-19P1N128007S              | 1619509   | 324  | CT-WZA                         | 2765505   | 79   |         |           |      |
| CA-17M1N8A9503   | 1620000   | 342  | CA-19P1N128008               | 1619634   | 325  | CUC-PP-FRAME-19                | 1407986   | 114  |         |           |      |
| CA-17M1N8A9504   | 1619994   | 342  | CA-19P1N128008S              | 1619478   | 324  | CUC-PP-FRAME-SCREWSET          | 1407989   | 114  |         |           |      |
| CA-17M1N8A950DU  | 1620013   | 342  | CA-19P1N12800DN              | 1619751   | 325  | CUC-PP-MODUL-CABLEFIXSET       | 1407991   | 114  |         |           |      |
| CA-17P1N122S00   | 1619960   | 329  | CA-19P1N1280DNS              | 1619580   | 324  | CUC-PP-MODUL-COVER             | 1407988   | 114  |         |           |      |
| CA-17P1N126Y00   | 1619856   | 328  | CA-19P1N129006               | 1620120   | 326  | CUC-PP-MODUL-RJ45-6-RJ45:6/... | 1407995   | 114  |         |           |      |
| CA-17P1N126Z00   | 1619882   | 327  | CA-19P1N129007               | 1620047   | 326  | CUC-PP-PATCHBAY                | 1407994   | 114  |         |           |      |
| CA-17P1N128006   | 1619729   | 325  | CA-19P1N129008               | 1620019   | 326  | CUC-V04-BU-180                 | 1407409   | 81   |         |           |      |
| CA-17P1N128006S  | 1619540   | 324  | CA-19P1N1290DN               | 1620146   | 326  | CUC-V04-BU-90                  | 1407408   | 81   |         |           |      |
| CA-17P1N128007   | 1619701   | 325  | CA-19P1N12HZ00               | 1619777   | 332  | CUC-V04-F-BU/BU-RJ45           | 1407412   | 81   |         |           |      |
| CA-17P1N128007S  | 1619513   | 324  | CA-19S1N122S00               | 1619957   | 329  | CUC-V04-F-POBK-180             | 1407410   | 81   |         |           |      |
| CA-17P1N128008   | 1619638   | 325  | CA-19S1N126Y00               | 1619853   | 328  | CUC-V04-F-POBK-90              | 1407411   | 81   |         |           |      |
| CA-17P1N128008S  | 1619482   | 324  | CA-19S1N126Z00               | 1619879   | 327  | CUC-V04-RJ45-POBK-8            | 1407413   | 81   |         |           |      |
| CA-17P1N12800DN  | 1619755   | 325  | CA-19S1N128006               | 1619726   | 325  | CUTFOX-ES                      | 1212621   | 170  |         |           |      |
| CA-17P1N12800DNS | 1619584   | 324  | CA-19S1N128006S              | 1619537   | 324  | CUTFOX-SCRJ-POF                | 1405247   | 170  |         |           |      |
| CA-17P1N129006   | 1620124   | 326  | CA-19S1N128007               | 1619661   | 325  |                                |           |      |         |           |      |
| CA-17P1N129007   | 1620051   | 326  | CA-19S1N128007S              | 1619510   | 324  |                                |           |      |         |           |      |
| CA-17P1N129008   | 1620023   | 326  | CA-19S1N128008               | 1619635   | 325  |                                |           |      |         |           |      |
| CA-17P1N12900DN  | 1620150   | 326  | CA-19S1N128008S              | 1619479   | 324  |                                |           |      |         |           |      |
| CA-17P1N12HZ00   | 1619781   | 332  | CA-19S1N1280DN               | 1619752   | 325  |                                |           |      |         |           |      |
| CA-17P1N222S00   | 1619932   | 330  | CA-19S1N1280DNS              | 1619581   | 324  |                                |           |      |         |           |      |
| CA-17P1N8A2S00   | 1619958   | 329  | CA-19S1N129006               | 1620121   | 326  |                                |           |      |         |           |      |
| CA-17P1N8A6Y00   | 1619854   | 328  | CA-19S1N129007               | 1620048   | 326  |                                |           |      |         |           |      |
| CA-17P1N8A6Z00   | 1619880   | 327  | CA-19S1N129008               | 1620020   | 326  |                                |           |      |         |           |      |
| CA-17P1N8A8006   | 1619727   | 325  | CA-19S1N1290DN               | 1620147   | 326  |                                |           |      |         |           |      |
| CA-17P1N8A8006S  | 1619538   | 324  | CA-19S1N12HZ00               | 1619778   | 332  |                                |           |      |         |           |      |
| CA-17P1N8A8007   | 1619699   | 325  | CA-Z0001                     | 1620699   | 410  |                                |           |      |         |           |      |
| CA-17P1N8A8007S  | 1619511   | 324  | CA-Z0110                     | 1620700   | 412  |                                |           |      |         |           |      |
| CA-17P1N8A8008   | 1619636   | 325  | CA-Z0111                     | 1620701   | 412  |                                |           |      |         |           |      |
| CA-17P1N8A8008S  | 1619480   | 324  | CA-Z0112                     | 1620702   | 412  |                                |           |      |         |           |      |
| CA-17P1N8A800DN  | 1619753   | 325  | CA-Z0120                     | 1620704   | 412  |                                |           |      |         |           |      |
| CA-17P1N8A800DNS | 1619582   | 324  | CA-Z0121                     | 1620705   | 412  |                                |           |      |         |           |      |
| CA-17P1N8A9006   | 1620122   | 326  | CA-Z0122                     | 1620706   | 412  |                                |           |      |         |           |      |
| CA-17P1N8A9007   | 1620049   | 326  | CC-0,8-ST-0,34-MS AU         | 1452372   | 239  |                                |           |      |         |           |      |
| CA-17P1N8A9008   | 1620021   | 326  | CK1,0-ED-0,5ST AU            | 1452356   | 239  |                                |           |      |         |           |      |
| CA-17P1N8A900DN  | 1620148   | 326  |                              | 1409121   | 53   |                                |           |      |         |           |      |
| CA-17P1N8AHZ00   | 1619779   | 332  | CK1,0-ED-1,0ST AU            | 1409082   | 53   |                                |           |      |         |           |      |
| CA-17P1NA22S00   | 1619917   | 330  | CK1,6-ED-0,50BU AG           | 1884186   | 40   |                                |           |      |         |           |      |
| CA-17P1NC22S00   | 1619904   | 330  | CK1,6-BR-0,50ST AG           | 1884157   | 40   |                                |           |      |         |           |      |
| CA-17S1N122S00   | 1619961   | 329  | CK1,6-BR-1,50BU AG           | 1884173   | 40   |                                |           |      |         |           |      |
| CA-17S1N126Y00   | 1619857   | 328  | CK1,6-BR-1,50ST AG           | 1884144   | 40   |                                |           |      |         |           |      |
| CA-17S1N126Z00   | 1619883   | 327  | CK1,6-ED-0,37BU AG           | 1663394   | 40   |                                |           |      |         |           |      |
| CA-17S1N128006   | 1619730   | 325  | CK1,6-ED-0,37BU AU           | 1674969   | 40   |                                |           |      |         |           |      |
| CA-17S1N128006S  | 1619541   | 324  | CK1,6-ED-0,37ST AG           | 1663336   | 40   |                                |           |      |         |           |      |
| CA-17S1N128007   | 1619702   | 325  | CK1,6-ED-0,37ST AU           | 1674901   | 40   |                                |           |      |         |           |      |
| CA-17S1N128007S  | 1619514   | 324  | CK1,6-ED-0,50BU AG           | 1663404   | 40   |                                |           |      |         |           |      |
| CA-17S1N128008   | 1619639   | 325  | CK1,6-ED-0,50BU AU           | 1674480   | 40   |                                |           |      |         |           |      |
| CA-17S1N128008S  | 1619483   | 324  | CK1,6-ED-0,50ST AG           | 1663349   | 40   |                                |           |      |         |           |      |
| EV-T2SC          | 1405217   | 438  | EV-T2PC-M3-1AC20A-4,0M2,5HSD | 1405213   | 438  | EV-T2M3SE12-3AC20A-0,7M2,5E110 | 1405214   | 438  |         |           |      |
| EV-T2SM          | 1405218   | 439  | EV-T2PC-M3-1AC20A-4,0M2,5HSD | 1405193   | 436  | EV-T2M3SE24-3AC20A-0,7M2,5E110 | 1405215   | 438  |         |           |      |
|                  |           |      | EV-T2PC-M3-1AC20A-4,0M2,5HSD | 1405194   | 436  | EV-T2M3SE24-3AC20A-0,7M2,5E110 | 1405216   | 438  |         |           |      |
|                  |           |      | EV-T2PC-M3-1AC20A-4,0M2,5HSD | 1405195   | 436  | EV-T2M3SE24-3AC20A-0,7M2,5E110 | 1405217   | 438  |         |           |      |
|                  |           |      | EV-T2PC-M3-1AC20A-4,0M2,5HSD | 1405196   | 436  | EV-T2M3SE24-3AC20A-0,7M2,5E110 | 1405218   | 438  |         |           |      |
|                  |           |      | EV-T2PC-M3-1AC20A-4,0M2,5HSD | 1405197   | 436  | EV-T2M3SE24-3AC20A-0,7M2,5E110 | 1405219   | 438  |         |           |      |
|                  |           |      | EV-T2PC-M3-1AC20A-4,0M2,5HSD | 1405198   | 436  | EV-T2M3SE24-3AC20A-0,7M2,5E110 | 1405220   | 438  |         |           |      |
|                  |           |      | EV-T2PC-M3-1AC20A-4,0M2,5HSD | 1405199   | 436  | EV-T2M3SE24-3AC20A-0,7M2,5E110 | 1405221   | 438  |         |           |      |
|                  |           |      | EV-T2PC-M3-1AC20A-4,0M2,5HSD | 1405200   | 436  | EV-T2M3SE24-3AC20A-0,7M2,5E110 | 1405222   | 438  |         |           |      |
|                  |           |      | EV-T2PC-M3-1AC20A-4,0M2,5HSD | 1405201   | 436  | EV-T2M3SE24-3AC20A-0,7M2,5E110 | 1405223   | 438  |         |           |      |
|                  |           |      | EV-T2PC-M3-1AC20A-4,0M2,5HSD | 1405202   | 436  | EV-T2M3SE24-3AC20A-0,7M2,5E110 | 1405224   | 438  |         |           |      |
|                  |           |      | EV-T2PC-M3-1AC20A-4,0M2,5HSD | 1405203   | 436  | EV-T2M3SE24-3AC20A-0,7M2,5E110 | 1405225   | 438  |         |           |      |
|                  |           |      | EV-T2PC-M3-1AC20A-4,0M2,5HSD | 1405204   | 436  | EV-T2M3SE24-3AC20A-0,7M2,5E110 | 1405226   | 438  |         |           |      |
|                  |           |      | EV-T2PC-M3-1AC20A-4,0M2,5HSD | 1405205   | 436  | EV-T2M3SE24-3AC20A-0,7M2,5E110 | 1405227   | 438  |         |           |      |
|                  |           |      | EV-T2PC-M3-1AC20A-4,0M2,5HSD | 1405206   | 436  | EV-T2M3SE24-3AC20A-0,7M2,5E110 | 1405228   | 438  |         |           |      |
|                  |           |      | EV-T2PC-M3-1AC20A-4,0M2,5HSD | 1405207   | 436  | EV-T2M3SE24-3AC20A-0,7M2,5E110 | 1405229   | 438  |         |           |      |
|                  |           |      | EV-T2PC-M3-1AC20A-4,0M2,5HSD | 1405208   | 436  | EV-T2M3SE24-3AC20A-0,7M2,5E110 | 1405230   | 438  |         |           |      |
|                  |           |      | EV-T2PC-M3-1AC20A-4,0M2,5HSD | 1405209   | 436  | EV-T2M3SE24-3AC20A-0,7M2,5E110 | 1405231   | 438  |         |           |      |
|                  |           |      | EV-T2PC-M3-1AC20A-4,0M2,5HSD | 1405210   | 436  | EV-T2M3SE24-3AC20A-0,7M2,5E110 | 1405232   | 438  |         |           |      |
|                  |           |      | EV-T2PC-M3-1AC20A-4,0M2,5HSD | 1405211   | 436  | EV-T2M3SE24-3AC20A-0,7M2,5E110 | 1405233   | 438  |         |           |      |
|                  |           |      | EV-T2PC-M3-1AC20A-4,0M2,5HSD | 1405212   | 436  | EV-T2M3                        |           |      |         |           |      |



Index

Alphabetical

| Type                          | Order No. | Page | Type                          | Order No. | Page | Type                        | Order No. | Page | Type                          | Order No. | Page |
|-------------------------------|-----------|------|-------------------------------|-----------|------|-----------------------------|-----------|------|-------------------------------|-----------|------|
| FL PATCH CCODE VT             | 2891990   | 113  | FOC-LC-A-SJ:A-GZ03/...        | 1405696   | 164  | G                           |           |      | K-12 - OE/5,0-E00/M23 F8      | 1619273   | 395  |
| FL PATCH CCODE YE             | 2891592   | 113  | FOC-LC-A-SJ:A-GZ03/2          | 1406084   | 164  |                             |           |      | K-12 - OE/5,0-E00/M23 F8-N2   | 1619248   | 394  |
| FL PATCH GUARD                | 2891424   | 113  | FOC-M12-BU/BU                 | 1416677   | 126  |                             |           |      | K-12 - OE/5,0-E00/M23 FK      | 1619283   | 395  |
| FL PATCH GUARD KEY            | 2891521   | 113  | FOC-M12-MNNA-TC-650           | 1416716   | 126  |                             |           |      | K-12 - OE/5,0-E00/M23 FK-N2   | 1619281   | 394  |
|                               |           |      |                               |           |      |                             |           |      |                               |           |      |
| FL PATCH SAFE CLIP            | 2891246   | 113  | FOC-M12-RS-HCS                | 1406422   | 126  | GPE 22X22 SR/R              | 0806628   | 50   | K-12-M23 M9/010-E00/M23 F8    | 1619294   | 395  |
| FL PF 2TX CAT 6               | 2891068   | 121  | FOC-M12-RS-POF                | 1406421   | 126  |                             |           |      | K-12-M23 M9/010-E00/M23 F8-N2 | 1619291   | 394  |
| FL PF 2TX CAT5E               | 2891165   | 121  | FOC-OE-OE-GB01/...            | 1406429   | 137  |                             |           |      | K-12-M23 M9/2,0-E00/M23 F8    | 1619292   | 395  |
| FL PF 8TX CAT 6               | 2891071   | 121  | FOC-OE-OE-GB02/...            | 1406430   | 137  |                             |           |      | K-12-M23 M9/2,0-E00/M23 F8-N2 | 1619289   | 394  |
|                               |           |      |                               |           |      |                             |           |      |                               |           |      |
| FL PF 8TX CAT5E               | 2891178   | 121  | FOC-OE-OE-GB03/...            | 1406431   | 137  | H                           |           |      | K-12-M23 M9/5,0-E00/M23 F8    | 1619293   | 395  |
| FL PLUG GUARD GN              | 2891615   | 112  | FOC-OE-OE-HB01/...            | 1406432   | 137  |                             |           |      | K-12-M23 M9/5,0-E00/M23 F8-N2 | 1619290   | 394  |
| FL PLUG GUARD KEY             | 2891327   | 112  | FOC-PN-B-1000/...             | 1402172   | 145  |                             |           |      | K-17 - OE/010-E01/M17 F8      | 1624782   | 394  |
| FL PLUG GUARD RD              | 2891712   | 112  | FOC-PN-B-1000/IP20/...        | 2901551   | 144  |                             |           |      | K-17 - OE/010-E01/M23 F8      | 1619279   | 395  |
|                               |           |      |                               |           |      |                             |           |      |                               |           |      |
| FL PLUG GUARD WH              | 2891819   | 112  | FOC-PN-B-1000/M12-C/M12-C/5   | 1416680   | 126  | HC-B 16-ADP-VC-1            | 1885758   | 49   | K-17 - OE/010-E01/M23 FK      | 1619288   | 395  |
| FL PORT GUARD                 | 2891220   | 112  | FOC-PN-B-1000/M12-C/SCRJ/5    | 1416648   | 126  | HC-B 16-ADP-VC-2            | 1885761   | 49   | K-17 - OE/2,0-E01/M17 F8      | 1624780   | 394  |
| FL SM PATCH 1,0 LC-LC         | 2989187   | 166  | FOC-PN-C-1003/...             | 1402175   | 147  | HC-B 16-ADP-VC-3            | 1885774   | 49   | K-17 - OE/2,0-E01/M23 F8      | 1619277   | 395  |
| FL SM PATCH 1,0 LC-SC         | 2989190   | 167  | FOC-PN-C-1003/IP20/...        | 2901552   | 146  | HC-B 16-ADP-VC-C1           | 1885787   | 49   | K-17 - OE/2,0-E01/M23 FK      | 1619286   | 395  |
|                               |           |      |                               |           |      |                             |           |      |                               |           |      |
| FL SM PATCH 1,0 LC-ST         | 2989242   | 167  | FOC-PN-HCS-GI-1005/...        | 1402189   | 151  | HC-B 16-ADP-VC-C2           | 1885790   | 49   | K-17 - OE/5,0-E01/M17 F8      | 1624781   | 394  |
| FL SM PATCH 1,0 SC-SC         | 2989297   | 167  | FOC-PN-HCS-GI-1005/IP20/...   | 2901554   | 150  | HC-B 16-ADP-VC-C3           | 1885800   | 49   | K-17-M17 M9/5,0-E01/M17 F8    | 1624780   | 394  |
| FL SM PATCH 1,0 SC-ST         | 2901832   | 167  | FOC-POLISHINGDISC-1.25        | 1407024   | 168  | HC-B 24-ADP-VC-1            | 1885813   | 49   | K-17 - OE/5,0-E01/M23 FK      | 1619287   | 395  |
| FL SM PATCH 1,0 ST-ST         | 2901836   | 167  | FOC-POLISHINGDISC-2.50        | 1407021   | 168  | HC-B 24-ADP-VC-2            | 1885826   | 49   | K-17-M17 M9/010-E01/M17 F8    | 1624784   | 394  |
|                               |           |      |                               |           |      |                             |           |      |                               |           |      |
| FL SM PATCH 2,0 LC-LC         | 2989284   | 166  | FOC-POLISHINGFILM-AO-01.0     | 1407037   | 168  | HC-B 24-ADP-VC-3            | 1885839   | 49   | K-17-M17 M9/2,0-E01/M17 F8    | 1624778   | 394  |
| FL SM PATCH 2,0 LC-SC         | 2989297   | 167  | FOC-POLISHINGFILM-AO-03.0     | 1407039   | 168  | HC-B 24-ADP-VC-4            | 1885842   | 49   | K-17-M17 M9/5,0-E01/M17 F8    | 1624783   | 394  |
| FL SM PATCH 2,0 LC-ST         | 2989349   | 167  | FOC-POLISHINGFILM-D-00.1      | 1407046   | 168  | HC-B 24-ADP-VC-C1           | 1885855   | 49   | K-17-M23 M9/010-E01/M23 F8    | 1619297   | 395  |
| FL SM PATCH 2,0 SC-SC         | 2901830   | 167  | FOC-POLISHINGFILM-D-01.0      | 1407042   | 168  | HC-B 24-ADP-VC-C2           | 1885868   | 49   | K-17-M23 M9/2,0-E01/M23 F8    | 1619295   | 395  |
|                               |           |      |                               |           |      |                             |           |      |                               |           |      |
| FL SM PATCH 2,0 SC-ST         | 2901833   | 167  | FOC-POLISHINGFILM-D-09.0      | 1407044   | 168  | HC-B 24-ADP-VC-C3           | 1885871   | 49   | K-17-M23 M9/5,0-E01/M23 F8    | 1619296   | 395  |
| FL SM PATCH 2,0 ST-ST         | 2901829   | 167  | FOC-POLISHINGFILM-SK-15.0     | 1407034   | 168  | HC-B 24-ADP-VC-C4           | 1885884   | 49   | K-3E - OE/010-B00/M17 F8      | 1619300   | 396  |
| FL SM PATCH 5,0 LC-LC         | 2901826   | 166  | FOC-RUGGED-1012/...           | 1402185   | 141  | HC-EMV-KV-M20(7-12,5)       | 1690503   | 43   | K-3E - OE/010-B01/M17 F8      | 1619303   | 396  |
| FL SM PATCH 5,0 LC-SC         | 2901827   | 167  | FOC-RUGGED-1012/IP20/...      | 2901548   | 140  | HC-EMV-KV-M25(9-16,5)       | 1690516   | 43   | K-3E - OE/2,0-B00/M17 F8      | 1619298   | 396  |
|                               |           |      |                               |           |      |                             |           |      |                               |           |      |
| FL SM PATCH 5,0 LC-ST         | 2901828   | 167  | FOC-RUGGED-FLEX-1013/...      | 1402187   | 143  | HC-EMV-KV-M32(11-21)        | 1690529   | 43   | K-3E - OE/2,0-B01/M17 F8      | 1619301   | 396  |
| FL SM PATCH 5,0 SC-SC         | 2901831   | 167  | FOC-RUGGED-FLEX-1013/IP20/... | 2901549   | 142  | HC-K-KV-M20(8-13)           | 1690626   | 42   | K-3E - OE/5,0-B00/M17 F8      | 1619299   | 396  |
| FL SM PATCH 5,0 SC-ST         | 2901834   | 167  | FOC-SC-A-LC-A-GZ01/...        | 1406591   | 160  | HC-K-KV-M25(11-17)          | 1690639   | 42   | K-3E - OE/5,0-B01/M17 F8      | 1619302   | 396  |
| FL SM PATCH 5,0 ST-ST         | 2901838   | 167  | FOC-SC-A-LC-A-GZ01/2          | 1400639   | 160  | HC-K-KV-M32(15-21)          | 1690642   | 42   | K-3E-M17 M9/010-B00/M17 F8    | 1619306   | 396  |
|                               |           |      |                               |           |      |                             |           |      |                               |           |      |
| FL SM PATCH COUPLER LC-LC     | 2700313   | 136  | FOC-SC-A-LC-A-GZ02/...        | 1405692   | 162  | HC-M-KV-M20(11-16)          | 1645998   | 43   | K-3E-M17 M9/010-B01/M17 F8    | 1619328   | 396  |
| FL-PP-RJ45-LSA                | 2901645   | 120  | FOC-SC-A-LC-A-GZ02/2          | 1400673   | 162  | HC-M-KV-M20(1AS1)           | 1584017   | 43   | K-3E-M17 M9/2,0-B00/M17 F8    | 1619304   | 396  |
| FL-PP-RJ45-SC                 | 2901643   | 120  | FOC-SC-A-LC-A-GZ03/...        | 1405693   | 164  | HC-M-KV-M20(9-13)           | 1690561   | 43   | K-3E-M17 M9/2,0-B01/M17 F8    | 1619326   | 396  |
| FL-PP-RJ45-SCC                | 2901642   | 120  | FOC-SC-A-LC-A-GZ03/2          | 1400681   | 164  | HC-M-KV-M25(11-16)          | 1690574   | 43   | K-3E-M17 M9/5,0-B00/M17 F8    | 1619305   | 396  |
|                               |           |      |                               |           |      |                             |           |      |                               |           |      |
| FL-PP-RJ45/RJ45               | 2901646   | 120  | FOC-SC-A-SC-A-GZ01/...        | 1405697   | 160  | HC-M-KV-M25(14-21)          | 1646007   | 43   | K-3E-M17 M9/5,0-B01/M17 F8    | 1619327   | 396  |
| FOC-FS-A-FS-A-GZ04/...        | 1406532   | 165  | FOC-SC-A-SC-A-GZ01/2          | 1400685   | 160  | HC-M-KV-M25(1AS1)           | 1584020   | 43   | K-4E - OE/010-A01/M23 F8      | 1625775   | 398  |
| FOC-FS-A-SC-A-GZ04/...        | 1406536   | 165  | FOC-SC-A-SC-A-GZ02/...        | 1405698   | 162  | HC-M-KV-M25(1X10/1X11)      | 1580228   | 43   | K-4E - OE/5,0-A01/M23 F8      | 1625777   | 398  |
| FOC-FS-A-ST-A-GZ04/...        | 1406535   | 165  | FOC-SC-A-SC-A-GZ02/2          | 1400688   | 162  | HC-M-KV-M32(14-21)          | 1690587   | 43   | K-4E-M23 M9/010-A01/M23 F8    | 1625780   | 398  |
|                               |           |      |                               |           |      |                             |           |      |                               |           |      |
| FOC-GDM-RUGGED-1016/...       | 1402193   | 157  | FOC-SC-A-SC-A-GZ03/...        | 1405699   | 164  | HC-M-KV-M32(19-27)          | 1646010   | 43   | K-4E-M23 M9/2,0-A01/M23 F8    | 1625779   | 398  |
| FOC-GDM-RUGGED-1016/IP20/...  | 2901558   | 156  | FOC-SC-A-SC-A-GZ03/2          | 1400689   | 164  | HC-M4-KOAX-EWZ              | 1676747   | 217  | K-4E-M23 M9/5,0-A01/M23 F8    | 1625781   | 398  |
| FOC-GDO-1017/IP20/...         | 2901559   | 158  | FOC-SC-A-SJ:A-GZ01/...        | 1405700   | 160  | HC-MOT-AFL-SET              | 1409053   | 53   | K-5E - OE/010-C00/M17 F8      | 1619309   | 396  |
| FOC-HCS-1018B/...             | 1408458   | 148  | FOC-SC-A-SJ:A-GZ01/2          | 1400690   | 160  | HC-MOT-SD-FLT-KU-IP54       | 1409134   | 53   | K-5E - OE/010-C01/M17 F8      | 1619312   | 397  |
|                               |           |      |                               |           |      |                             |           |      |                               |           |      |
| FOC-HCS-1018B/100             | 1408459   | 148  | FOC-SC-A-SJ:A-GZ02/...        | 1405701   | 162  | HC-MOT-SD-L-KU              | 1409147   | 53   | K-5E - OE/010-C02/M23 F8      | 1618959   | 398  |
| FOC-HCS-BFOC/1018B/BFOC/...   | 1408475   | 149  | FOC-SC-A-SJ:A-GZ02/2          | 1400691   | 162  | HC-MOT-ST/DR-BR             | 1409150   | 53   | K-5E - OE/010-C02/M23 FK      | 1620417   | 399  |
| FOC-HCS-BFOC/1018B/OE/...     | 1408462   | 149  | FOC-SC-A-SJ:A-GZ03/...        | 1405702   | 164  | HC-MOT-TML-SET              | 1409066   | 53   | K-5E - OE/2,0-C02/M23 F8      | 1620398   | 399  |
| FOC-HCS-BFOC/1018B/PPCME/...  | 1408480   | 149  | FOC-SC-A-SJ:A-GZ03/2          | 1400695   | 164  | HC-WRV-M25                  | 1644902   | 51   | K-5E - OE/010-C03/M23 FK      | 1620420   | 399  |
|                               |           |      |                               |           |      |                             |           |      |                               |           |      |
| FOC-HCS-BFOC/1018B/SCDUP/...  | 1408472   | 149  | FOC-SJ:A-SJ:A-GZ01/...        | 1405703   | 160  | HC-WRV-M32                  | 1644915   | 51   | K-5E - OE/010-C03/M40 F8      | 1620310   | 402  |
| FOC-HCS-BFOC/1018B/SCRJ/...   | 1408468   | 149  | FOC-SJ:A-SJ:A-GZ01/2          | 1400697   | 160  | HC-WRV-M40                  | 1644850   | 51   | K-5E - OE/010-C04/M40 F8      | 1620314   | 402  |
| FOC-HCS-GI-1005/M12-C/M12-C/5 | 1416693   | 126  | FOC-SJ:A-SJ:A-GZ02/...        | 1405704   | 162  | HC-WRV-PG16                 | 1666812   | 51   | K-5E - OE/010-C05/M40 F8      | 1620318   | 402  |
| FOC-HCS-GI-1005/M12-C/SCRJ/5  | 1416651   | 126  | FOC-SJ:A-SJ:A-GZ02/2          | 1400699   | 162  | HC-WRV-PG21                 | 1666825   | 51   | K-5E - OE/010-C06/M40 F8      | 1620321   | 403  |
|                               |           |      |                               |           |      |                             |           |      |                               |           |      |
| FOC-HCS-PPCME/1018B/OE/...    | 1408464   | 149  | FOC-SJ:A-SJ:A-GZ03/...        | 1405705   | 164  | HC-WRV-PG29                 | 1666838   | 51   | K-5E - OE/2,0-C00/M17 F8      | 1619307   | 396  |
| FOC-HCS-PPCME/1018B/PPCME/... | 1408479   | 149  | FOC-SJ:A-SJ:A-GZ03/2          | 1400700   | 164  |                             |           |      | K-5E - OE/2,0-C01/M17 F8      | 1619310   | 397  |
| FOC-HCS-PPCME/1018B/SCDUP/... | 1408474   | 149  | FOC-ST-A-LC-A-GZ01/...        | 1405706   | 160  |                             |           |      | K-5E - OE/2,0-C02/M23 F8      | 1618957   | 398  |
| FOC-HCS-PPCME/1018B/SCRJ/...  | 1408470   | 149  | FOC-ST-A-LC-A-GZ01/2          | 1400701   | 160  |                             |           |      | K-5E - OE/2,0-C02/M23 FK      | 1620415   | 399  |
|                               |           |      |                               |           |      |                             |           |      |                               |           |      |
| FOC-HCS-PPCPL/1018B/BFOC/...  | 1408476   | 149  | FOC-ST-A-LC-A-GZ02/...        | 1405707   | 162  | I                           |           |      | K-5E - OE/2,0-C03/M23 F8      | 1620396   | 399  |
| FOC-HCS-PPCPL/1018B/OE/...    | 1408463   | 149  | FOC-ST-A-LC-A-GZ02/2          | 1400702   | 162  |                             |           |      | K-5E - OE/2,0-C03/M23 FK      | 1620418   | 399  |
| FOC-HCS-PPCPL/1018B/PPCPL/... | 1408477   | 149  | FOC-ST-A-SC-A-GZ01/...        | 1405708   | 160  |                             |           |      | K-5E - OE/2,0-C03/M40 F8      | 1619329   | 402  |
| FOC-HCS-PPCPL/1018B/SCDUP/... | 1408473   | 149  | FOC-ST-A-SC-A-GZ01/2          | 1400703   | 160  |                             |           |      | K-5E - OE/2,0-C04/M40 F8      | 1620311   | 402  |
|                               |           |      |                               |           |      |                             |           |      |                               |           |      |
| FOC-HCS-PPCPL/1018B/SCRJ/...  | 1408469   | 149  | FOC-ST-A-SC-A-GZ02/...        | 1405709   | 162  | IPCC 16- 4-MT               | 1733385   | 29   | K-5E - OE/2,0-C05/M40 F8      | 1620316   | 402  |
| FOC-HCS-RUGGED-1014/...       | 1402191   | 153  | FOC-ST-A-SC-A-GZ02/2          | 1400705   | 162  | IPCC 16- 4-MT BAND          | 1761467   | 29   | K-5E - OE/2,0-C06/M40 F8      | 1620319   | 403  |
| FOC-HCS-RUGGED-1014/IP20/...  | 2901555   | 152  | FOC-ST-A-SJ:A-GZ01/...        | 1405710   | 160  | IPCC 16-10-MT               | 1733372   | 29   | K-5E - OE/5,0-C00/M17 F8      | 1619308   | 396  |
| FOC-HCS-SCDUP/1018B/OE/...    | 1408461   | 148  | FOC-ST-A-SJ:A-GZ01/2          | 1400706   | 160  | IPCC 16-10-MT BAND          | 1761470   | 29   | K-5E - OE/5,0-C01/M17 F8      | 1619311   | 397  |
|                               |           |      |                               |           |      |                             |           |      |                               |           |      |
| FOC-HCS-SCDUP/1018B/SCDUP/... | 1408471   | 148  | FOC-ST-A-SJ:A-GZ02/...        | 1405711   | 162  | K                           |           |      | K-5E - OE/5,0-C02/M23 F8      | 1618958   | 398  |
| FOC-HCS-SCDUP/1018B/SCRJ/...  | 1408467   | 148  | FOC-ST-A-SJ:A-GZ02/2          | 1400711   | 162  |                             |           |      | K-5E - OE/5,0-C02/M23 FK      | 1620416   | 399  |
| FOC-HCS-SCRJ/1018B/OE/...     | 1408460   | 148  | FOC-ST-A-ST-A-GZ01/...        | 1405712   | 160  |                             |           |      | K-5E - OE/5,0-C03/M23 F8      | 1620397   | 399  |
| FOC-HCS-SCRJ/1018B/SCRJ/...   | 1408466   | 148  | FOC-ST-A-ST-A-GZ01/2          | 1404768   | 160  |                             |           |      | K-5E - OE/5,0-C03/M23 FK      | 1620419   | 399  |
|                               |           |      |                               |           |      |                             |           |      |                               |           |      |
| FOC-HCSO-1015/IP20/...        | 2901557   | 154  | FOC-TOOL-CERAMIC-BLADE        | 1407019   | 168  | K                           |           |      | K-5E - OE/5,0-C03/M40 F8      | 1620309   | 402  |
| FOC-KDHEAVY-1011/...          | 1402188   | 139  | FOC-TOOL-DISPENSER            | 1406995   | 168  |                             |           |      | K-5E - OE/5,0-C04/M40 F8      | 1620313   | 402  |
| FOC-KDHEAVY-1011/IP20/...     | 2901553   | 138  | FOC-TOOL-FERRULECLEANER-1.25  | 1407032   | 169  |                             |           |      | K-5E - OE/5,0-C05/M40 F8      | 1620317   | 402  |
| FOC-LC-A-LC-A-GZ01/...        | 1405688   | 161  | FOC-TOOL-FERRULECLEANER-2.50  | 1407029   | 169  |                             |           |      | K-5E - OE/5,0-C06/M40 F8      | 1620320   | 403  |
|                               |           |      |                               |           |      |                             |           |      |                               |           |      |
| FOC-LC-A-LC-A-GZ01/2          | 1400604   | 161  | FOC-TOOL-STICKCLEANER-1.25    | 1407000   | 169  | K-12 - OE/010-E00/M23 F8    | 1619274   | 395  | K-5E-M17 M9/010-C00/M17 F8    | 1619318   | 396  |
| FOC-LC-A-LC-A-GZ02/2          | 1400621   | 163  | FOC-TOOL-STICKCLEANER-2.50    | 1407002   | 169  | K-12 - OE/010-E00/M23 F8-N2 | 1619249   | 394  | K-5E-M17 M9/010-C01/M17 F8    | 1619322   | 397  |
| FOC-LC-A-LC-A-GZ03/...        | 1405690   | 164  | FOC-TOOL-STRIPPING-1HOLE-250  | 14070     |      |                             |           |      |                               |           |      |

| Type                       | Order No. | Page | Type                         | Order No. | Page | Type                         | Order No. | Page | Type                         | Order No. | Page |
|----------------------------|-----------|------|------------------------------|-----------|------|------------------------------|-----------|------|------------------------------|-----------|------|
| K-5E-M23 M9/2,0-C02/M23 F8 | 1618964   | 398  | <b>M</b>                     |           |      | NBC-FSD/ 1,0-93E/R4AC SCO    | 1407384   | 99   | NBC-MS-MS SCO-IE/.../...     | 1408676   | 101  |
| K-5E-M23 M9/2,0-C03/M23 F8 | 1620406   | 399  |                              |           |      | NBC-FSD/ 1,0-93E/R4MC SCO    | 1407388   | 99   | NBC-MS-R4AC SCO-IE/.../...   | 1408681   | 101  |
| K-5E-M23 M9/5,0-C02/M23 F8 | 1618965   | 398  |                              |           |      | NBC-FSD/ 1,0-93E/R4QC SCO    | 1407396   | 99   | NBC-MS-R4MC SCO-IE/.../...   | 1408679   | 101  |
| K-5E-M23 M9/5,0-C03/M23 F8 | 1620407   | 399  |                              |           |      | NBC-FSD/ 1,0-93E/R4RC SCO    | 1407392   | 99   | NBC-MS-R4QC SCO-IE/.../...   | 1408677   | 101  |
| K-5E-M40 M9/010-C03/M40 F8 | 1620347   | 402  |                              |           |      | NBC-FSD/ 2,0-93B/R4AC SCO    | 1407533   | 107  | NBC-MS-R4RC SCO-IE/.../...   | 1408678   | 101  |
| K-5E-M40 M9/010-C04/M40 F8 | 1620375   | 402  | MICROFOX-SB                  | 1212489   | 50   | NBC-FSD/ 2,0-93B/R4ACR SCO   | 1407537   | 107  | NBC-MS/ 1,0-94B SCO          | 1407404   | 101  |
| K-5E-M40 M9/010-C05/M40 F8 | 1620378   | 402  | MICROFOX-SP-1                | 1212487   | 81   | NBC-FSD/ 2,0-93B/R4QC SCO    | 1407549   | 107  | NBC-MS/ 1,0-94B/FS SCO       | 1407463   | 101  |
| K-5E-M40 M9/010-C06/M40 F  | 1620381   | 403  |                              |           |      | NBC-FSD/ 2,0-93B/R4RC SCO    | 1407545   | 107  | NBC-MS/ 1,0-94B/MS SCO       | 1407434   | 101  |
| K-5E-M40 M9/2,0-C03/M40 F8 | 1620345   | 402  |                              |           |      | NBC-FSD/ 2,0-93E/R4AC SCO    | 1407385   | 99   | NBC-MS/ 1,0-94B/R4AC SCO     | 1407414   | 101  |
| K-5E-M40 M9/2,0-C04/M40 F8 | 1620348   | 402  |                              |           |      | NBC-FSD/ 2,0-93E/R4MC SCO    | 1407389   | 99   | NBC-MS/ 1,0-94B/R4MC SCO     | 1407422   | 101  |
| K-5E-M40 M9/2,0-C05/M40 F8 | 1620376   | 402  | <b>N</b>                     |           |      | NBC-FSD/ 2,0-93E/R4QC SCO    | 1407397   | 99   | NBC-MS/ 1,0-94B/R4QC SCO     | 1407430   | 101  |
| K-5E-M40 M9/2,0-C06/M40 F8 | 1620379   | 403  |                              |           |      | NBC-FSD/ 2,0-93E/R4RC SCO    | 1407393   | 99   | NBC-MS/ 1,0-94B/R4RC SCO     | 1407426   | 101  |
| K-5E-M40 M9/5,0-C03/M40 F8 | 1620346   | 402  |                              |           |      | NBC-FSD/ 5,0-93B/R4AC SCO    | 1407534   | 107  | NBC-MS/ 2,0-94B SCO          | 1407405   | 101  |
| K-5E-M40 M9/5,0-C04/M40 F8 | 1620349   | 402  |                              |           |      | NBC-FSD/ 5,0-93B/R4ACR SCO   | 1407538   | 107  | NBC-MS/ 2,0-94B/FS SCO       | 1407464   | 101  |
| K-5E-M40 M9/5,0-C05/M40 F8 | 1620377   | 402  |                              |           |      | NBC-FSD/ 5,0-93B/R4QC SCO    | 1407551   | 107  | NBC-MS/ 2,0-94B/MS SCO       | 1407435   | 101  |
| K-5E-M40 M9/5,0-C06/M40 F8 | 1620380   | 403  |                              |           |      | NBC-FSD/ 5,0-93B/R4RC SCO    | 1407546   | 107  | NBC-MS/ 2,0-94B/R4AC SCO     | 1407415   | 101  |
| K-7E - OE/010-D01/M17 F8   | 1619315   | 397  | NBC- 2,0-93E/FS SCO          | 1407381   | 99   | NBC-FSD/ 5,0-93E/R4AC SCO    | 1407386   | 99   | NBC-MS/ 2,0-94B/R4MC SCO     | 1407423   | 101  |
| K-7E - OE/010-D02/M40 F8   | 1620401   | 400  | NBC- 2,0-94B/FS SCO          | 1407380   | 99   | NBC-FSD/ 5,0-93E/R4MC SCO    | 1407390   | 99   | NBC-MS/ 2,0-94B/R4QC SCO     | 1407431   | 101  |
| K-7E - OE/010-D02/M23 FK   | 1620423   | 400  | NBC- 5,0-93B/FS SCO          | 1407439   | 101  | NBC-FSD/ 5,0-93E/R4QC SCO    | 1407398   | 99   | NBC-MS/ 2,0-94B/R4RC SCO     | 1407427   | 101  |
| K-7E - OE/010-D03/M23 F8   | 1620405   | 400  | NBC- 5,0-93E/FS SCO          | 1407382   | 99   | NBC-FSD/ 5,0-93E/R4RC SCO    | 1407394   | 99   | NBC-MS/ 5,0-94B SCO          | 1407406   | 101  |
| K-7E - OE/010-D03/M23 FK   | 1620426   | 401  | NBC- 5,0-94B/FS SCO          | 1407441   | 101  | NBC-FSD/10,0-93B/R4AC SCO    | 1407535   | 107  | NBC-MS/ 5,0-94B/FS SCO       | 1407465   | 101  |
| K-7E - OE/010-D03/M40 F8   | 1620348   | 402  | NBC-10,0-93B/FS SCO          | 1407531   | 107  | NBC-FSD/10,0-93B/R4ACR SCO   | 1407539   | 107  | NBC-MS/ 5,0-94B/MS SCO       | 1407464   | 101  |
| K-7E - OE/010-D04/M40 F8   | 1620338   | 403  | NBC-10,0-93E/FS SCO          | 1407383   | 99   | NBC-FSD/10,0-93B/R4QC SCO    | 1407552   | 107  | NBC-MS/ 5,0-94B/R4AC SCO     | 1407416   | 101  |
| K-7E - OE/010-D05/M40 F8   | 1620341   | 403  | NBC-10,0-94B/FS SCO          | 1407442   | 101  | NBC-FSD/10,0-93B/R4RC SCO    | 1407547   | 107  | NBC-MS/ 5,0-94B/R4MC SCO     | 1407424   | 101  |
| K-7E - OE/010-D06/M40 F8   | 1620344   | 403  | NBC-FR SCO-IE/.../...        | 1408657   | 101  | NBC-FSD/10,0-93E/R4AC SCO    | 1407387   | 99   | NBC-MS/ 5,0-94B/R4QC SCO     | 1407432   | 101  |
| K-7E - OE/2,0-D01/M17 F8   | 1619313   | 397  | NBC-FR-R4AC SCO-IE/.../...   | 1408655   | 101  | NBC-FSD/10,0-93E/R4MC SCO    | 1407391   | 99   | NBC-MS/ 5,0-94B/R4RC SCO     | 1407428   | 101  |
| K-7E - OE/2,0-D02/M23 F8   | 1620399   | 400  | NBC-FR-R4MC SCO-IE/.../...   | 1408653   | 101  | NBC-FSD/10,0-93E/R4QC SCO    | 1407399   | 99   | NBC-MS/10,0-94B SCO          | 1407407   | 101  |
| K-7E - OE/2,0-D02/M23 FK   | 1620421   | 400  | NBC-FR-R4QC SCO-IE/.../...   | 1408651   | 101  | NBC-FSD/10,0-93E/R4RC SCO    | 1407395   | 99   | NBC-MS/10,0-94B/FS SCO       | 1407466   | 101  |
| K-7E - OE/2,0-D03/M23 F8   | 1620402   | 400  | NBC-FR-R4RC SCO-IE/.../...   | 1408652   | 101  | NBC-M 8FS-R4AC/.../...       | 1408714   | 97   | NBC-MS/10,0-94B/MS SCO       | 1407438   | 101  |
| K-7E - OE/2,0-D03/M23 FK   | 1620424   | 401  | NBC-FRD SCO-EC/.../...       | 1408584   | 109  | NBC-M 8FS/.../...            | 1408716   | 97   | NBC-MS/10,0-94B/R4AC SCO     | 1407417   | 101  |
| K-7E - OE/2,0-D03/M40 F8   | 1620322   | 403  | NBC-FRD SCO-PN/.../...       | 1408615   | 107  | NBC-M 8MS-M 8FS/.../...      | 1408715   | 97   | NBC-MS/10,0-94B/R4MC SCO     | 1407425   | 101  |
| K-7E - OE/2,0-D04/M40 F8   | 1620325   | 403  | NBC-FRD SCO/.../...          | 1408690   | 99   | NBC-M 8MS-M 8MS/.../...      | 1408718   | 97   | NBC-MS/10,0-94B/R4QC SCO     | 1407433   | 101  |
| K-7E - OE/2,0-D05/M40 F8   | 1620339   | 403  | NBC-FRD-R4AC SCO-EC/.../...  | 1408583   | 109  | NBC-M 8MS-R4AC/.../...       | 1408717   | 97   | NBC-MS/10,0-94B/R4RC SCO     | 1407429   | 101  |
| K-7E - OE/2,0-D06/M40 F8   | 1620342   | 403  | NBC-FRD-R4AC SCO-PN/.../...  | 1408613   | 107  | NBC-M 8MS/ 1,0-93B           | 1407344   | 97   | NBC-MSD SCO-EC/.../...       | 1408600   | 108  |
| K-7E - OE/5,0-D01/M17 F8   | 1619314   | 397  | NBC-FRD-R4AC SCO/.../...     | 1408689   | 99   | NBC-M 8MS/ 1,0-93B/M 8MS     | 1407348   | 97   | NBC-MSD SCO-PN/.../...       | 1408640   | 107  |
| K-7E - OE/5,0-D02/M23 F8   | 1620400   | 400  | NBC-FRD-R4ACR SCO-EC/.../... | 1408582   | 109  | NBC-M 8MS/ 1,0-93B/R4AC      | 1407352   | 97   | NBC-MSD-FSD SCO-EC/.../...   | 1408713   | 99   |
| K-7E - OE/5,0-D02/M23 FK   | 1620422   | 400  | NBC-FRD-R4ACR SCO-PN/.../... | 1408612   | 107  | NBC-M 8MS/ 2,0-93B           | 1407345   | 97   | NBC-MSD-FRD SCO-EC/.../...   | 1408581   | 109  |
| K-7E - OE/5,0-D03/M23 F8   | 1620404   | 400  | NBC-FRD-R4MC SCO/.../...     | 1408688   | 99   | NBC-M 8MS/ 2,0-93B/M 8MS     | 1407349   | 97   | NBC-MSD-FRD SCO-PN/.../...   | 1408608   | 107  |
| K-7E - OE/5,0-D03/M23 FK   | 1620425   | 401  | NBC-FRD-R4QC SCO-PN/.../...  | 1408609   | 107  | NBC-M 8MS/ 2,0-93B/R4AC      | 1407353   | 97   | NBC-MSD-FRD SCO/.../...      | 1408684   | 99   |
| K-7E - OE/5,0-D04/M40 F8   | 1620323   | 403  | NBC-FRD-R4QC SCO/.../...     | 1408686   | 99   | NBC-M 8MS/ 5,0-93B           | 1407346   | 97   | NBC-MSD-FSD SCO-EC/.../...   | 1408586   | 109  |
| K-7E - OE/5,0-D04/M40 F8   | 1620337   | 403  | NBC-FRD-R4RC SCO-PN/.../...  | 1408610   | 107  | NBC-M 8MS/ 5,0-93B/M 8MS     | 1407350   | 97   | NBC-MSD-FSD SCO-PN/.../...   | 1408617   | 107  |
| K-7E - OE/5,0-D05/M40 F8   | 1620340   | 403  | NBC-FRD-R4RC SCO/.../...     | 1408687   | 99   | NBC-M 8MS/ 5,0-93B/R4AC      | 1407354   | 97   | NBC-MSD-FSD SCO/.../...      | 1408692   | 99   |
| K-7E - OE/5,0-D06/M40 F8   | 1620343   | 403  | NBC-FS SCO-IE/.../...        | 1408665   | 101  | NBC-M 8MS/.../...            | 1408719   | 97   | NBC-MSD-MRD SCO-EC/.../...   | 1408593   | 109  |
| K-7E-M17 M9/010-D01/M17 F8 | 1619325   | 397  | NBC-FS-R4AC SCO-IE/.../...   | 1408664   | 101  | NBC-M 8MS/10,0-93B           | 1407347   | 97   | NBC-MSD-MRD SCO-PN/.../...   | 1408625   | 107  |
| K-7E-M17 M9/2,0-D01/M17 F8 | 1619323   | 397  | NBC-FS-R4MC SCO-IE/.../...   | 1408662   | 101  | NBC-M 8MS/10,0-93B/M 8MS     | 1407351   | 97   | NBC-MSD-MRD SCO/.../...      | 1408700   | 99   |
| K-7E-M17 M9/5,0-D01/M17 F8 | 1619324   | 397  | NBC-FS-R4QC SCO-IE/.../...   | 1408660   | 101  | NBC-M 8MS/10,0-93B/R4AC      | 1407355   | 97   | NBC-MSD-MSD SCO-EC/.../...   | 1408597   | 108  |
| K-7E-M23 M9/010-D02/M23 F8 | 1620411   | 400  | NBC-FS-R4RC SCO-IE/.../...   | 1408661   | 101  | NBC-MR SCO-IE/.../...        | 1408675   | 101  | NBC-MSD-MSD SCO-PN/.../...   | 1408634   | 107  |
| K-7E-M23 M9/010-D03/M23 F8 | 1620414   | 400  | NBC-FS/ 1,0-94B/R4AC SCO     | 1407443   | 101  | NBC-MR-FR SCO-IE/.../...     | 1408649   | 101  | NBC-MSD-MSD SCO/.../...      | 1408706   | 99   |
| K-7E-M23 M9/2,0-D02/M23 F8 | 1620409   | 400  | NBC-FS/ 1,0-94B/R4MC SCO     | 1407451   | 101  | NBC-MR-FS SCO-IE/.../...     | 1408658   | 101  | NBC-MSD-R4AC SCO-EC/.../...  | 1408599   | 108  |
| K-7E-M23 M9/2,0-D03/M23 F8 | 1620412   | 400  | NBC-FS/ 1,0-94B/R4QC SCO     | 1407459   | 101  | NBC-MR-MR SCO-IE/.../...     | 1408666   | 101  | NBC-MSD-R4AC SCO-PN/.../...  | 1408639   | 107  |
| K-7E-M23 M9/5,0-D02/M23 F8 | 1620410   | 400  | NBC-FS/ 1,0-94B/R4RC SCO     | 1407455   | 101  | NBC-MR-R4AC SCO-IE/.../...   | 1408674   | 101  | NBC-MSD-R4AC SCO/.../...     | 1408712   | 99   |
| K-7E-M23 M9/5,0-D03/M23 F8 | 1620413   | 400  | NBC-FS/ 2,0-94B/R4AC SCO     | 1407444   | 101  | NBC-MR-R4MC SCO-IE/.../...   | 1408671   | 101  | NBC-MSD-R4ACR SCO-EC/.../... | 1408598   | 108  |
| K-7E-M40 M9/010-D03/M40 F8 | 1620384   | 403  | NBC-FS/ 2,0-94B/R4MC SCO     | 1407452   | 101  | NBC-MR-R4QC SCO-IE/.../...   | 1408668   | 101  | NBC-MSD-R4ACR SCO-PN/.../... | 1408638   | 107  |
| K-7E-M40 M9/010-D04/M40 F8 | 1620387   | 403  | NBC-FS/ 2,0-94B/R4QC SCO     | 1407460   | 101  | NBC-MR-R4RC SCO-IE/.../...   | 1408670   | 101  | NBC-MSD-R4MC SCO/.../...     | 1408710   | 99   |
| K-7E-M40 M9/010-D05/M40 F8 | 1620392   | 403  | NBC-FS/ 2,0-94B/R4RC SCO     | 1407456   | 101  | NBC-MRD SCO-EC/.../...       | 1408596   | 109  | NBC-MSD-R4QC SCO-PN/.../...  | 1408635   | 107  |
| K-7E-M40 M9/010-D06/M40 F8 | 1620395   | 403  | NBC-FS/ 5,0-94B/R4AC SCO     | 1407445   | 101  | NBC-MRD SCO-PN/.../...       | 1408633   | 107  | NBC-MSD-R4QC SCO/.../...     | 1408707   | 99   |
| K-7E-M40 M9/2,0-D03/M40 F8 | 1620382   | 403  | NBC-FS/ 5,0-94B/R4MC SCO     | 1407453   | 101  | NBC-MRD SCO/.../...          | 1408705   | 99   | NBC-MSD-R4RC SCO-PN/.../...  | 1408636   | 107  |
| K-7E-M40 M9/2,0-D04/M40 F8 | 1620385   | 403  | NBC-FS/ 5,0-94B/R4QC SCO     | 1407461   | 101  | NBC-MRD-FRD SCO-EC/.../...   | 1408580   | 109  | NBC-MSD-R4RC SCO/.../...     | 1408709   | 99   |
| K-7E-M40 M9/2,0-D05/M40 F8 | 1620390   | 403  | NBC-FS/ 5,0-94B/R4RC SCO     | 1407457   | 101  | NBC-MRD-FRD SCO-PN/.../...   | 1408607   | 107  | NBC-MSD/ 1,0-93B SCO         | 1407495   | 107  |
| K-7E-M40 M9/2,0-D06/M40 F8 | 1620393   | 403  | NBC-FS/10,0-94B/R4AC SCO     | 1407446   | 101  | NBC-MRD-FRD SCO/.../...      | 1408683   | 99   | NBC-MSD/ 1,0-93B/FS SCO      | 1407553   | 107  |
| K-7E-M40 M9/5,0-D03/M40 F8 | 1620383   | 403  | NBC-FS/10,0-94B/R4MC SCO     | 1407454   | 101  | NBC-MRD-FSD SCO-EC/.../...   | 1408585   | 109  | NBC-MSD/ 1,0-93B/MSD SCO     | 1407524   | 107  |
| K-7E-M40 M9/5,0-D04/M40 F8 | 1620386   | 403  | NBC-FS/10,0-94B/R4QC SCO     | 1407462   | 101  | NBC-MRD-FSD SCO-PN/.../...   | 1408616   | 107  | NBC-MSD/ 1,0-93B/R4AC SCO    | 1407499   | 107  |
| K-7E-M40 M9/5,0-D05/M40 F8 | 1620391   | 403  | NBC-FS/10,0-94B/R4RC SCO     | 1407458   | 101  | NBC-MRD-FSD SCO/.../...      | 1408691   | 99   | NBC-MSD/ 1,0-93B/R4ACR SCO   | 1407508   | 107  |
| K-7E-M40 M9/5,0-D06/M40 F8 | 1620394   | 403  | NBC-FSD SCO-EC/.../...       | 1408590   | 109  | NBC-MRD-MRD SCO-EC/.../...   | 1408592   | 109  | NBC-MSD/ 1,0-93B/R4QC SCO    | 1407520   | 107  |
| KSF3ESE8E07A010            | 1624772   | 398  | NBC-FSD SCO-PN/.../...       | 1408623   | 107  | NBC-MRD-MRD SCO-PN/.../...   | 1408624   | 107  | NBC-MSD/ 1,0-93B/R4RC SCO    | 1407516   | 107  |
| KSF3ESE8E07A2,0            | 1624771   | 398  | NBC-FSD SCO/.../...          | 1408697   | 99   | NBC-MRD-MRD SCO/.../...      | 1408699   | 99   | NBC-MSD/ 1,0-93E SCO         | 1407356   | 99   |
| KSF3ESE8E07A5,0            | 1619622   | 398  | NBC-FSD-R4AC SCO-EC/.../...  | 1408589   | 109  | NBC-MRD-R4AC SCO-EC/.../...  | 1408595   | 109  | NBC-MSD/ 1,0-93E/FS SCO      | 1407400   | 99   |
| KSF3ESP8905A010            | 1624774   | 398  | NBC-FSD-R4AC SCO-PN/.../...  | 1408622   | 107  | NBC-MRD-R4AC SCO-PN/.../...  | 1408632   | 107  | NBC-MSD/ 1,0-93E/MSD SCO     | 1407376   | 99   |
| KSF3ESP8905A2,0            | 1624773   | 398  | NBC-FSD-R4AC SCO/.../...     | 1408696   | 99   | NBC-MRD-R4AC SCO/.../...     | 1408704   | 99   | NBC-MSD/ 1,0-93E/R4AC SCO    | 1407360   | 99   |
| KSF3ESP8905A5,0            | 1619606   | 398  | NBC-FSD-R4ACR SCO-EC/.../... | 1408587   | 109  | NBC-MRD-R4ACR SCO-EC/.../... | 1408594   | 109  | NBC-MSD/ 1,0-93E/R4MC SCO    | 1407364   | 99   |
| KSF4ESE8E08A2,0            | 1625776   | 398  | NBC-FSD-R4ACR SCO-PN/.../... | 1408621   | 107  | NBC-MRD-R4ACR SCO-PN/.../... | 1408631   | 107  | NBC-MSD/ 1,0-93E/R4QC SCO    | 1407372   | 99   |
| KST7ESE8E02A010            | 1624792   | 397  | NBC-FSD-R4MC SCO/.../...     | 1408695   | 99   | NBC-MRD-R4MC SCO/.../...     | 1408703   | 99   | NBC-MSD/ 1,0-93E/R4RC SCO    | 1407368   | 99   |
| KST7ESE8E02A2,0            | 1624785   | 397  | NBC-FSD-R4QC SCO-PN/.../...  | 1408618   | 107  | NBC-MRD-R4QC SCO-PN/.../...  | 1408626   | 107  | NBC-MSD/ 1,0-93G SCO         | 1407557   | 108  |
| KST7ESE8E02A5,0            | 1624786   | 397  | NBC-FSD-R4QC SCO/.../...     | 1408693   | 99   | NBC-MRD-R4QC SCO/.../...     | 1408701   | 99   | NBC-MSD/ 1,0-93G/MSD SCO     | 1407569   | 108  |
| KST7ESP8905A010            | 1624789   | 397  | NBC-FSD-R4RC SCO-PN/.../...  | 1408619   | 107  | NBC-MRD-R4RC SCO-PN/.../...  | 1408628   | 107  | NBC-MSD/ 1,0-93G/R4AC SCO    | 1407561   | 108  |
| KST7ESP8905A2,0            | 1624787   | 397  | NBC-FSD-R4RC SCO/.../...     | 1408694   | 99   | NBC-MRD-R4RC SCO/.../...     | 1408702   | 99   | NBC-MSD/ 1,0-93G/R4ACR SCO   | 1407565   | 108  |
| KST7ESP8905A5,0            | 1624788   | 397  | NBC-FSD/ 1,0-93B/R4AC SCO    | 1407532   | 107  | NBC-MS SCO-IE/.../...        | 1408682   | 101  | NBC-MSD/ 2,0-93B SCO         | 1407496</ |      |

## Alphabetical

458 | PHOENIX CONTACT



| Type                          | Order No. | Page | Type                            | Order No. | Page | Type                            | Order No. | Page | Type                           | Order No. | Page |
|-------------------------------|-----------|------|---------------------------------|-----------|------|---------------------------------|-----------|------|--------------------------------|-----------|------|
| S                             |           |      | SACC-CI-M12FS-12CON-L180 THRS   | 1442052   | 257  | SACC-CI-M12MST-4CON-L180 THR    | 1406396   | 288  | SACC-DSI-M12FS-8CON-PG9/0,5 VA | 1554720   | 270  |
|                               |           |      | SACC-CI-M12FS-12CON-L90         | 1424195   | 253  | SACC-CI-M12MST-4CON-L180 THR SH | 1406397   | 288  | SACC-DSI-M12FSB-5CON-M16       | 1441794   | 250  |
|                               |           |      | SACC-CI-M12FS-12CON-L90 SH      | 1424199   | 253  | SACC-DSI-FS-12CON-L180 SCO      | 1559929   | 246  | SACC-DSI-M12FSB-5CON-M16 SH    | 1441914   | 251  |
|                               |           |      | SACC-CI-M12FS-12CON-SH TOR 32   | 1457704   | 257  | SACC-DSI-FS-12CON-L180 SCO SH   | 1436770   | 247  | SACC-DSI-M12FSB-5CON-M16/0,5   | 1419674   | 244  |
| SAC BIT M12-W14               | 1212513   | 297  | SACC-CI-M12FS-12CON-TOR 32      | 1457694   | 256  | SACC-DSI-FS-12CON-PG9/0,5 SCO   | 1430446   | 242  | SACC-DSI-M12FSD-4CON-M16       | 1441752   | 250  |
| SAC BIT MIN-D25               | 1212512   | 297  | SACC-CI-M12FS-17CON-L180 THR    | 1441998   | 256  | SACC-DSI-FS-17CON-L180 SCO      | 1559958   | 246  | SACC-DSI-M12FSD-4CON-M16 SH    | 1441875   | 251  |
| SAC-4P- 1,0-PUR/FRS PE SCO    | 1408848   | 290  | SACC-CI-M12FS-17CON-L180 THRS   | 1442078   | 257  | SACC-DSI-FS-17CON-L180 SCO SH   | 1436806   | 247  | SACC-DSI-M12FSD-4CON-M16/0,5   | 1419616   | 244  |
| SAC-4P- 1,0-PUR/FRT SCO       | 1408827   | 292  | SACC-CI-M12FS-17CON-L90         | 1424197   | 253  | SACC-DSI-FS-17CON-PG9/0,5 SCO   | 1430462   | 242  | SACC-DSI-M12FSS-4CON-M16/0,5PE | 1424133   | 286  |
| SAC-4P- 1,0-PUR/FSS PE SCO    | 1408843   | 290  | SACC-CI-M12FS-17CON-L90 SH      | 1424201   | 253  | SACC-DSI-FS-4CON-L180 SCO       | 1553462   | 246  | SACC-DSI-M12FST-4CON-M16/0,5   | 1424134   | 286  |
| SAC-4P- 1,0-PUR/FST SCO       | 1408823   | 292  | SACC-CI-M12FS-17CON-SH TOR 32   | 1457720   | 257  | SACC-DSI-FS-4CON-L180/12 SCOSH  | 1558522   | 247  | SACC-DSI-M12MS-12CON-M16       | 1441820   | 250  |
| SAC-4P- 2,0-PUR/FRS PE SCO    | 1408852   | 290  | SACC-CI-M12FS-17CON-TOR 32      | 1457717   | 256  | SACC-DSI-FS-4CON-L180/SCO SH    | 1556841   | 247  | SACC-DSI-M12MS-12CON-M16 SH    | 1441943   | 251  |
| SAC-4P- 2,0-PUR/FRT SCO       | 1408828   | 292  | SACC-CI-M12FS-4CON-L 90 SH SCO  | 1432444   | 252  | SACC-DSI-FS-4CON-PG9/0,5 SCO    | 1556621   | 242  | SACC-DSI-M12MS-12CON-M16/0,5   | 1419700   | 244  |
| SAC-4P- 2,0-PUR/FSS PE SCO    | 1408844   | 290  | SACC-CI-M12FS-4CON-L180 SH THR  | 1439955   | 257  | SACC-DSI-FS-5CON-L180 SCO       | 1542761   | 188  | SACC-DSI-M12MS-17CON-M16       | 1441846   | 250  |
| SAC-4P- 2,0-PUR/FST SCO       | 1408824   | 292  | SACC-CI-M12FS-4CON-L180 THR     | 1439942   | 256  | SACC-DSI-FS-5CON-L180/12 SCO    | 1552285   | 246  | SACC-DSI-M12MS-17CON-M16 SH    | 1441969   | 251  |
| SAC-4P- 5,0-PUR/FRS PE SCO    | 1408853   | 290  | SACC-CI-M12FS-4CON-L90 SCO      | 1436628   | 252  | SACC-DSI-FS-5CON-L180/12 SCOSH  | 1558548   | 247  | SACC-DSI-M12MS-17CON-M16/0,5   | 1419726   | 244  |
| SAC-4P- 5,0-PUR/FRT SCO       | 1408829   | 292  | SACC-CI-M12FS-4CON-SH TOR 32    | 1457623   | 257  | SACC-DSI-FS-5CON-L180/SCO SH    | 1553019   | 188  | SACC-DSI-M12MS-4CON-L180 VA    | 1404979   | 270  |
| SAC-4P- 5,0-PUR/FSS PE SCO    | 1408845   | 290  | SACC-CI-M12FS-4CON-TOR 32       | 1457610   | 256  | SACC-DSI-FS-5CON-PG 9/0,5 SCO   | 1542729   | 242  | SACC-DSI-M12MS-4CON-M16        | 1419742   | 250  |
| SAC-4P- 5,0-PUR/FST SCO       | 1408823   | 292  | SACC-CI-M12FS-5CON-L90 SCO      | 1457649   | 256  | SACC-DSI-FS-5CON-L180 SCO       | 1542774   | 246  | SACC-DSI-M12MS-4CON-M16 SH     | 1419768   | 251  |
| SAC-4P- 10,0-PUR/FRS PE SCO   | 1408854   | 290  | SACC-CI-M12FS-5CON-L180         | 1551464   | 254  | SACC-DSI-FS-8CON-L180/12 SCO    | 1408770   | 246  | SACC-DSI-M12MS-4CON-M16/0,5    | 1419629   | 244  |
| SAC-4P- 10,0-PUR/FRT SCO      | 1408830   | 292  | SACC-CI-M12FS-5CON-L180-THR     | 1551448   | 256  | SACC-DSI-FS-8CON-L180/12 SCOSH  | 1408771   | 247  | SACC-DSI-M12MS-4CON-PG9/0,5 VA | 1405239   | 270  |
| SAC-4P- 10,0-PUR/FSS PE SCO   | 1408846   | 290  | SACC-CI-M12FS-5CON-L180-THR SH  | 1432363   | 257  | SACC-DSI-FS-8CON-L180/SCO SH    | 1553860   | 247  | SACC-DSI-M12MS-5CON-L180 VA    | 1554746   | 193  |
| SAC-4P- 10,0-PUR/FST SCO      | 1408826   | 292  | SACC-CI-M12FS-5CON-L90 SCO      | 1436644   | 252  | SACC-DSI-FS-8CON-L180/SH TQ     | 1456543   | 90   | SACC-DSI-M12MS-5CON-M16        | 1441765   | 250  |
| SAC-4P-FRS/ 1,5-PUR PE SH SCO | 1424100   | 291  | SACC-CI-M12FS-5CON-SH TOR 32    | 1457652   | 257  | SACC-DSI-FS-8CON-PG 9/0,5 SCO   | 1542732   | 242  | SACC-DSI-M12MS-5CON-M16 SH     | 1441888   | 251  |
| SAC-4P-FRS/ 3,0-PUR PE SH SCO | 1424101   | 291  | SACC-CI-M12FS-8CON- TOR 32      | 1457678   | 256  | SACC-DSI-FSB-5CON-L180 SCO      | 1543650   | 246  | SACC-DSI-M12MS-5CON-M16/0,5    | 1419645   | 244  |
| SAC-4P-FRS/ 5,0-PUR PE SH SCO | 1424102   | 291  | SACC-CI-M12FS-8CON-L180-10G     | 1402457   | 90   | SACC-DSI-FSB-5CON-L180/12 SCO   | 1552298   | 246  | SACC-DSI-M12MS-5CON-PG9/0,5 VA | 1554681   | 270  |
| SAC-4P-FRS/10,0-PUR PE SH SCO | 1424103   | 291  | SACC-CI-M12FS-8CON-L180-THR     | 1557808   | 256  | SACC-DSI-FSB-5CON-L180/12SCOSH  | 1558564   | 247  | SACC-DSI-M12MS-8CON-L180 VA    | 1529807   | 270  |
| SAC-4P-FRT/ 1,5-PUR SH SCO    | 1424116   | 293  | SACC-CI-M12FS-8CON-L180-THR SH  | 1551422   | 257  | SACC-DSI-FSB-5CON-L180/SCO SH   | 1553022   | 188  | SACC-DSI-M12MS-8CON-M16        | 1441804   | 250  |
| SAC-4P-FRT/ 3,0-PUR SH SCO    | 1424117   | 293  | SACC-CI-M12FS-8CON-L90 SCO      | 1436990   | 252  | SACC-DSI-FSB-5CON-PG9/0,5 SCO   | 1543676   | 242  | SACC-DSI-M12MS-8CON-M16 SH     | 1441927   | 251  |
| SAC-4P-FRT/ 5,0-PUR SH SCO    | 1424118   | 293  | SACC-CI-M12FS-8CON-L90 SH SCO   | 1437009   | 252  | SACC-DSI-FSD-4CON-L180 SCO      | 1551503   | 246  | SACC-DSI-M12MS-8CON-M16/0,5    | 1419687   | 244  |
| SAC-4P-FRT/10,0-PUR SH SCO    | 1424128   | 293  | SACC-CI-M12FS-8CON-SH TOR 32    | 1457681   | 257  | SACC-DSI-FSD-4CON-L180/12 SCO   | 1552272   | 246  | SACC-DSI-M12MS-8CON-PG9/0,5 VA | 1554694   | 270  |
| SAC-4P-FSS/ 1,5-PUR PE SH SCO | 1424096   | 291  | SACC-CI-M12FSB-5CON-L180        | 1551477   | 254  | SACC-DSI-FSD-4CON-L180/12SCOSH  | 1558506   | 247  | SACC-DSI-M12MSB-5CON-M16       | 1441781   | 250  |
| SAC-4P-FSS/ 3,0-PUR PE SH SCO | 1424097   | 291  | SACC-CI-M12FSB-5CON-L180-THR    | 1551435   | 257  | SACC-DSI-FSD-4CON-L180/SCO SH   | 1553006   | 247  | SACC-DSI-M12MSB-5CON-M16 SH    | 1441901   | 251  |
| SAC-4P-FSS/ 5,0-PUR PE SH SCO | 1424098   | 291  | SACC-CI-M12FSB-5CON-L90 SH SCO  | 1432512   | 252  | SACC-DSI-FSD-4CON-L180/SH GN    | 1456569   | 90   | SACC-DSI-M12MSB-5CON-M16/0,5   | 1419661   | 244  |
| SAC-4P-FSS/10,0-PUR PE SH SCO | 1424099   | 291  | SACC-CI-M12FSB-5CON-SH TOR 32   | 1457665   | 257  | SACC-DSI-FSD-4CON-L180/SH TQ    | 1456527   | 90   | SACC-DSI-M12MSD-4CON-M16       | 1441749   | 250  |
| SAC-4P-FST/ 1,5-PUR SH SCO    | 1424112   | 293  | SACC-CI-M12FSD-4CON-L180        | 1551480   | 254  | SACC-DSI-FSD-4CON-PG9/0,5 SCO   | 1551529   | 92   | SACC-DSI-M12MSD-4CON-M16 SH    | 1441862   | 251  |
| SAC-4P-FST/ 3,0-PUR SH SCO    | 1424113   | 293  | SACC-CI-M12FSD-4CON-L180-THR    | 1551451   | 257  | SACC-DSI-FSX-8CON-M16-L180 SCO  | 1424177   | 91   | SACC-DSI-M12MSD-4CON-M16/0,5   | 1419603   | 244  |
| SAC-4P-FST/ 5,0-PUR SH SCO    | 1424114   | 293  | SACC-CI-M12FSD-4CON-L90 SCO     | 1432457   | 252  | SACC-DSI-FSX-8CON-PG9-L180 SCO  | 1404741   | 91   | SACC-DSI-M12MSS-4CON-M16/0,5PE | 1424132   | 286  |
| SAC-4P-FST/10,0-PUR SH SCO    | 1424115   | 293  | SACC-CI-M12FSD-4CON-SH TOR 32   | 1457636   | 257  | SACC-DSI-FSY-8CON-M16-L180 SCO  | 1407503   | 91   | SACC-DSI-M12MST-4CON-M16/0,5   | 1424136   | 286  |
| SAC-4P-MRS/ 1,0-PUR PE SCO    | 1408839   | 290  | SACC-CI-M12FSS-4CON-L180 THR PE | 1406409   | 288  | SACC-DSI-M 8FS-3CON-L180        | 1694363   | 226  | SACC-DSI-M5FS-3CON-L180        | 1530647   | 224  |
| SAC-4P-MRS/ 1,5-PUR PE SH SCO | 1424108   | 291  | SACC-CI-M12FST-4CON-L180 THR    | 1406411   | 288  | SACC-DSI-M 8FS-3CON-M12/0,5     | 1453449   | 227  | SACC-DSI-M5FS-4CON-L180        | 1530650   | 224  |
| SAC-4P-MRS/ 2,0-PUR PE SCO    | 1408840   | 290  | SACC-CI-M12FST-4CON-L180 THR SH | 1406412   | 288  | SACC-DSI-M 8FS-4CON-L180        | 1694376   | 226  | SACC-DSI-M5MS-3CON-L180        | 1530621   | 224  |
| SAC-4P-MRS/ 3,0-PUR PE SH SCO | 1424109   | 291  | SACC-CI-M12FSX-8CON-L90         | 1424180   | 91   | SACC-DSI-M 8FS-4CON-M12/0,5     | 1453452   | 227  | SACC-DSI-M5MS-4CON-L180        | 1530634   | 224  |
| SAC-4P-MRS/ 5,0-PUR PE SH SCO | 1408841   | 290  | SACC-CI-M12FSY-8CON-L90         | 1424193   | 91   | SACC-DSI-M 8FS-6CON-L180        | 1436534   | 226  | SACC-DSI-M8FS-3CON-M10-L180 SH | 1456116   | 229  |
| SAC-4P-MRS/ 5,0-PUR PE SH SCO | 1424110   | 291  | SACC-CI-M12MS- 12CON-TOR 32     | 1457571   | 256  | SACC-DSI-M 8FS-6CON-M12/0,5     | 1453465   | 227  | SACC-DSI-M8FS-3CON-M10-L90 SH  | 1456145   | 228  |
| SAC-4P-MRS/10,0-PUR PE SCO    | 1408842   | 290  | SACC-CI-M12MS- 4CON-SH TOR 32   | 1457500   | 257  | SACC-DSI-M 8MS-3CON-L180        | 1694334   | 226  | SACC-DSI-M8FS-3CON-M10/0,5     | 1456080   | 227  |
| SAC-4P-MRS/10,0-PUR PE SH SCO | 1424111   | 291  | SACC-CI-M12MS- 4CON-TOR 32      | 1457490   | 256  | SACC-DSI-M 8MS-3CON-L180 SH     | 1455997   | 229  | SACC-DSI-M8FS-4CON-M10-L180 SH | 1456129   | 229  |
| SAC-4P-MRT/ 1,0-PUR SCO       | 1408816   | 292  | SACC-CI-M12MS- 5CON-SH TOR 32   | 1457539   | 257  | SACC-DSI-M 8MS-3CON-L90 SH      | 1456035   | 228  | SACC-DSI-M8FS-5CON-M10-L90 SH  | 1456158   | 228  |
| SAC-4P-MRT/ 1,5-PUR SH SCO    | 1424124   | 293  | SACC-CI-M12MS- 5CON-TOR 32      | 1457526   | 256  | SACC-DSI-M 8MS-3CON-M 8/0,5     | 1453478   | 227  | SACC-DSI-M8FS-4CON-M10/0,5     | 1456093   | 227  |
| SAC-4P-MRT/ 2,0-PUR SCO       | 1408819   | 292  | SACC-CI-M12MS- 8CON-SH TOR 32   | 1457568   | 257  | SACC-DSI-M 8MS-4CON-L180        | 1694347   | 226  | SACC-DSI-M8FS-5CON-M10-L180 DN | 1424241   | 229  |
| SAC-4P-MRT/ 3,0-PUR SH SCO    | 1424125   | 293  | SACC-CI-M12MS- 8CON-TOR 32      | 1457555   | 256  | SACC-DSI-M 8MS-4CON-L180 SH     | 1456019   | 229  | SACC-DSI-M8FS-5CON-M10-L90 DN  | 1424239   | 228  |
| SAC-4P-MRT/ 5,0-PUR SCO       | 1408820   | 292  | SACC-CI-M12MS-12CON-L180 THR    | 1441985   | 256  | SACC-DSI-M 8MS-4CON-M 8/0,5     | 1453481   | 227  | SACC-DSI-M8FS-6CON-M10-L180 SH | 1456132   | 229  |
| SAC-4P-MRT/ 5,0-PUR SH SCO    | 1424126   | 293  | SACC-CI-M12MS-12CON-L180 THRS   | 1442065   | 257  | SACC-DSI-M 8MS-6CON-L180        | 1436521   | 226  | SACC-DSI-M8FS-6CON-M10-L90 SH  | 1424243   | 228  |
| SAC-4P-MRT/10,0-PUR SCO       | 1408822   | 292  | SACC-CI-M12MS-12CON-L90         | 1424194   | 253  | SACC-DSI-M 8MS-6CON-L180 SH     | 1456022   | 229  | SACC-DSI-M8FS-6CON-M10/0,5     | 1456103   | 227  |
| SAC-4P-MRT/10,0-PUR SH SCO    | 1424127   | 293  | SACC-CI-M12MS-12CON-L90 SH      | 1424198   | 253  | SACC-DSI-M 8MS-6CON-M 8/0,5     | 1453494   | 227  | SACC-DSI-M8FS-8CON-M10-L180    | 1424237   | 226  |
| SAC-4P-MSS/ 1,0-PUR PE SCO    | 1408835   | 290  | SACC-CI-M12MS-12CON-SH TOR 32   | 1457584   | 257  | SACC-DSI-M12FS-12CON-M16        | 1441833   | 250  | SACC-DSI-M8FS-8CON-M10-L180 SH | 1456132   | 229  |
| SAC-4P-MSS/ 1,5-PUR PE SH SCO | 1424104   | 291  | SACC-CI-M12MS-17CON- TOR 32     | 1457597   | 256  | SACC-DSI-M12FS-12CON-M16 SH     | 1441956   | 251  | SACC-DSI-M8FS-8CON-M10/0,5     | 1424229   | 227  |
| SAC-4P-MSS/ 2,0-PUR PE SCO    | 1408836   | 290  | SACC-CI-M12MS-17CON-L180 THR    | 1442007   | 256  | SACC-DSI-M12FS-12CON-M16/0,5    | 1419713   | 244  | SACC-DSI-M8MS-4CON-L90 SH      | 1456048   | 228  |
| SAC-4P-MSS/ 3,0-PUR PE SH SCO | 1424105   | 291  | SACC-CI-M12MS-17CON-L180 THRS   | 1442081   | 257  | SACC-DSI-M12FS-17CON-M16        | 1441859   | 250  | SACC-DSI-M8MS-5CON-M8-L180 DN  | 1424242   | 229  |
| SAC-4P-MSS/ 5,0-PUR PE SH SCO | 1408837   | 290  | SACC-CI-M12MS-17CON-L90         | 1424196   | 253  | SACC-DSI-M12FS-17CON-M16 SH     | 1441972   | 251  | SACC-DSI-M8MS-5CON-M8-L90 DN   | 1424240   | 228  |
| SAC-4P-MSS/ 5,0-PUR PE SH SCO | 1424245   | 291  | SACC-CI-M12MS-17CON-L90 SH      | 1424200   | 253  | SACC-DSI-M12FS-17CON-M16/0,     |           |      |                                |           |      |



# Index

## Alphabetical

| Type                            | Order No. | Page | Type                           | Order No. | Page | Type                           | Order No. | Page | Type                         | Order No. | Page |
|---------------------------------|-----------|------|--------------------------------|-----------|------|--------------------------------|-----------|------|------------------------------|-----------|------|
| SACC-DSI-MS-12CON-PG9/0,5 SCO   | 1430459   | 242  | SACC-E-FSD-4CON-M16/0,5 SCO    | 1535202   | 92   | SACC-EC-FSB-5CON-M16/0,5 SCO   | 1519998   | 234  | SACC-M 8MS-4QO-0,25-M        | 1441011   | 272  |
| SACC-DSI-MS-17CON-L180 SCO      | 1559961   | 246  | SACC-E-M 8FS-3CON-M8/0,5       | 1500350   | 225  | SACC-EC-FSD-4CON-M16/0,5 SCO   | 1535215   | 92   | SACC-M 8MS-4QO-0,5-M         | 1441037   | 272  |
| SACC-DSI-MS-17CON-L180 SCO SH   | 1436819   | 247  | SACC-E-M 8FS-4CON-M8/0,5       | 1500363   | 225  | SACC-EC-M12FS-4CON-PG 9/0,5 VA | 1554649   | 268  | SACC-M12 NUT PRESS           | 1437889   | 259  |
| SACC-DSI-MS-17CON-M12 SCO       | 1559974   | 248  | SACC-E-M 8FS-6CON-M 8/0,5      | 1542677   | 225  | SACC-EC-M12FS-4CON-PG9/0,5     | 1693791   | 232  | SACC-M12 PLUG PRESS          | 1437892   | 259  |
| SACC-DSI-MS-17CON-M12 SCO SH    | 1437119   | 249  | SACC-E-M 8MS-3CON-M8/0,5       | 1500334   | 225  | SACC-EC-M12FS-5CON-PG 9/0,5 VA | 1554652   | 268  | SACC-M12-KD-NUT-SH           | 1440151   | 188  |
| SACC-DSI-MS-17CON-M12/0,5 SCO   | 1437135   | 243  | SACC-E-M 8MS-4CON-M8/0,5       | 1500347   | 225  | SACC-EC-M12FS-5CON-PG9/0,5     | 1671108   | 232  | SACC-M12-SCO NUT             | 1552243   | 258  |
| SACC-DSI-MS-17CON-PG9/0,5 SCO   | 1430475   | 242  | SACC-E-M 8MS-6CON-M 8/0,5      | 1542664   | 225  | SACC-EC-M12FS-8CON-PG 9/0,5 VA | 1554665   | 268  | SACC-M12-SCO NUT L 90        | 1432460   | 90   |
| SACC-DSI-MS-4CON-L180 SCO       | 1553459   | 246  | SACC-E-M12FS-4CON-M16/0,5 VA   | 1458855   | 268  | SACC-EC-M12FS-8CON-PG9/0,5     | 1513761   | 232  | SACC-M12-SCO PLUG            | 1551493   | 258  |
| SACC-DSI-MS-4CON-L180/12 SCOSH  | 1558535   | 247  | SACC-E-M12FS-4CON-M20/0,5      | 1408436   | 235  | SACC-EC-M12FSB-5CON-PG9/0,5    | 1515044   | 232  | SACC-M12-SCO PLUG L90        | 1436709   | 258  |
| SACC-DSI-MS-4CON-M12 SCO        | 1551820   | 248  | SACC-E-M12FS-4CON-M20/0,5 VA   | 1408416   | 269  | SACC-EC-M12MS-4CON-PG 9/0,5 VA | 1554610   | 268  | SACC-M12-SET/2,5-3,5         | 1436505   | 280  |
| SACC-DSI-MS-4CON-M12-SCO SH     | 1552955   | 249  | SACC-E-M12FS-4CON-PG 9/0,5 VA  | 1555448   | 268  | SACC-EC-M12MS-4CON-PG9/0,5     | 1693775   | 232  | SACC-M12FR-12SOL-PG 9-M      | 1404423   | 275  |
| SACC-DSI-MS-4CON-M12/0,5 SCO    | 1551875   | 243  | SACC-E-M12FS-4CON-PG9/0,5      | 1693788   | 232  | SACC-EC-M12MS-5CON-PG 9/0,5 VA | 1554623   | 268  | SACC-M12FR-12SOL-PG 9-M SH   | 1404413   | 275  |
| SACC-DSI-MS-4CON-PG9/0,5 SCO    | 1556618   | 242  | SACC-E-M12FS-4CON-PG9/0,5 FFVA | 1431429   | 193  | SACC-EC-M12MS-5CON-PG9/0,5     | 1671124   | 232  | SACC-M12FR-4CON-PG 7-VA      | 1553284   | 281  |
| SACC-DSI-MS-5CON-L180 SCO       | 1542745   | 188  | SACC-E-M12FS-5CON-M16/0,5 VA   | 1458871   | 268  | SACC-EC-M12MS-8CON-PG 9/0,5 VA | 1554636   | 268  | SACC-M12FR-4CON-PG7-M        | 1681143   | 281  |
| SACC-DSI-MS-5CON-L180/12 SCO    | 1552311   | 246  | SACC-E-M12FS-5CON-M20/0,5      | 1408454   | 235  | SACC-EC-M12MS-8CON-PG9/0,5     | 1513787   | 232  | SACC-M12FR-5CON-PG 7         | 1662308   | 280  |
| SACC-DSI-MS-5CON-L180/12 SCOSH  | 1558551   | 247  | SACC-E-M12FS-5CON-M20/0,5 VA   | 1452071   | 269  | SACC-EC-M12MSB-5CON-PG9/0,5    | 1515057   | 232  |                              |           |      |
| SACC-DSI-MS-5CON-L180/SCO SH    | 1553048   | 188  | SACC-E-M12FS-5CON-PG9/0,5      | 1671098   | 232  | SACC-EC-MS-4CON-M16/0,5 SCO    | 1523463   | 234  | SACC-M12FR-5CON-PG 7-M       | 1662984   | 281  |
| SACC-DSI-MS-5CON-L180 SCO       | 1542758   | 188  | SACC-E-M12FS-5CON-PG9/0,5 V2A  | 1699863   | 268  | SACC-EC-MS-5CON-M16/0,5 SCO    | 1520068   | 234  | SACC-M12FR-5CON-PG7-VA       | 1553297   | 281  |
| SACC-DSI-MS-5CON-M12-SCO SH     | 1552968   | 188  | SACC-E-M12FS-8CON-M16/0,5 VA   | 1458842   | 268  | SACC-EC-MS-8CON-M16/0,5 SCO    | 1523502   | 234  | SACC-M12FR-5CON-PG 9-SH      | 1430433   | 282  |
| SACC-DSI-MS-5CON-M12/0,5 SCO    | 1551888   | 243  | SACC-E-M12FS-8CON-M20/0,5      | 1408453   | 235  | SACC-EC-MSB-5CON-M16/0,5 SCO   | 1520026   | 234  | SACC-M12FR-5CON-PG 9-VA      | 1553307   | 281  |
| SACC-DSI-MS-5CON-PG 9/0,5 SCO   | 1542703   | 242  | SACC-E-M12FS-8CON-M20/0,5 VA   | 1452110   | 269  | SACC-EC-MSD-4CON-M16/0,5 SCO   | 1552256   | 234  | SACC-M12FR-5CON-PG9          | 1500790   | 280  |
| SACC-DSI-MS-8CON-L180 SCO       | 1542758   | 246  | SACC-E-M12FS-8CON-PG 9/0,5 VA  | 1554607   | 268  | SACC-FR-4CON-PG 7-M SCO        | 1543058   | 280  | SACC-M12FR-5CON-PG9-M        | 1681490   | 281  |
| SACC-DSI-MS-8CON-L180/SCO SH    | 1553873   | 247  | SACC-E-M12FS-8CON-PG9/0,5      | 1513758   | 232  | SACC-FR-4SC M SCO              | 1432622   | 279  | SACC-M12FR-5CON-PG9-M SKIN   | 1556812   | 281  |
| SACC-DSI-MS-8CON-L180/SH TQ     | 1456530   | 90   | SACC-E-M12FSB-5CON-M20/0,5 VA  | 1452097   | 269  | SACC-FR-4SC SH SCO             | 1432758   | 279  | SACC-M12FR-6Q SH VARAN       | 1429169   | 89   |
| SACC-DSI-MS-8CON-M12 SCO        | 1551862   | 248  | SACC-E-M12FSS-4CON-M16/0,5 PE  | 1424137   | 286  | SACC-FR-5CON-PG 7-M SCO        | 1543061   | 280  | SACC-M12FR-8Q SH             | 1553666   | 89   |
| SACC-DSI-MS-8CON-M12-SCO SH     | 1552997   | 249  | SACC-E-M12FST-4CON-M16/0,5 VA  | 1424138   | 286  | SACC-FR-5CON-PG 9-M SCO        | 1543414   | 280  | SACC-M12FR-4Q SH             | 1553637   | 89   |
| SACC-DSI-MS-8CON-M12/0,5 SCO    | 1551914   | 243  | SACC-E-M12MS-4CON-M16/0,5 VA   | 1405233   | 268  | SACC-FR-5SC SH DN SCO          | 1432596   | 279  | SACC-M12FRD-4Q SH PN         | 1554542   | 89   |
| SACC-DSI-MS-8CON-PG 9/0,5 SCO   | 1542716   | 242  | SACC-E-M12MS-4CON-M20/0,5      | 1408451   | 235  |                                | 1432790   | 187  | SACC-M12FS-12SOL-PG 9-M      | 1404420   | 275  |
| SACC-DSI-MSB-5CON-L180 SCO      | 1543647   | 188  | SACC-E-M12MS-4CON-M20/0,5 VA   | 1408415   | 269  | SACC-FR-5SC SH SCO             | 1432677   | 279  | SACC-M12FS-12SOL-PG 9-M SH   | 1404411   | 275  |
| SACC-DSI-MSB-5CON-L180/12 SCO   | 1552324   | 246  | SACC-E-M12MS-4CON-PG 9/0,5 VA  | 1554555   | 268  | SACC-FRB-2SC SH PB SCO         | 1432871   | 186  | SACC-M12FS-4CON-PG 7-SH      | 1694295   | 282  |
| SACC-DSI-MSB-5CON-L180/12SCOSH  | 1558577   | 247  | SACC-E-M12MS-4CON-PG9/0,5      | 1693762   | 232  | SACC-FRB-5SC SH IB SCO         | 1432839   | 186  | SACC-M12FS-4CON-PG 7-VA      | 1553242   | 281  |
| SACC-DSI-MSB-5CON-L180/SCO SH   | 1553051   | 188  | SACC-E-M12MS-4CON-PG9/0,5 FFVA | 1431432   | 193  | SACC-FS-12PCON SCO             | 1559631   | 275  | SACC-M12FS-4CON-PG 9-SH      | 1551570   | 282  |
| SACC-DSI-MSB-5CON-M12 SCO       | 1551846   | 188  | SACC-E-M12MS-5CON-M12 PSCUP    | 1436437   | 241  | SACC-FS-17PCON SCO             | 1559644   | 275  | SACC-M12FS-4CON-PG 9-VA      | 1553268   | 281  |
| SACC-DSI-MSB-5CON-M12-SCO SH    | 1552971   | 188  | SACC-E-M12MS-5CON-M16 PSCUP    | 1436398   | 241  | SACC-FS-4CON-PG 7-M SCO        | 1543029   | 280  | SACC-M12FS-4CON-PG11-M PWR   | 1404416   | 281  |
| SACC-DSI-MSB-5CON-M12/0,5 SCO   | 1551891   | 243  | SACC-E-M12MS-5CON-M16/0,5 P    | 1436411   | 241  | SACC-FS-4QO-0,34-M SCO         | 1521588   | 278  | SACC-M12FS-4CON-PG7          | 1681114   | 280  |
| SACC-DSI-MSB-5CON-PG9/0,5 SCO   | 1543663   | 242  | SACC-E-M12MS-5CON-M16/0,5 VA   | 1458868   | 268  | SACC-FS-4QO-0,75-M SCO         | 1521601   | 278  | SACC-M12FS-4CON-PG7-M        | 1681127   | 281  |
| SACC-DSI-MSD-4CON-L180 SCO      | 1551516   | 246  | SACC-E-M12MS-5CON-M20/0,5      | 1408446   | 235  | SACC-FS-4SC M SCO              | 1432619   | 279  | SACC-M12FS-4CON-PG7-M SKIN   | 1430381   | 281  |
| SACC-DSI-MSD-4CON-L180/12 SCO   | 1552308   | 246  | SACC-E-M12MS-5CON-M20/0,5 VA   | 1452068   | 269  | SACC-FS-4SC SH SCO             | 1432745   | 279  | SACC-M12FS-4QO-0,34          | 1641701   | 278  |
| SACC-DSI-MSD-4CON-L180/12SCOSH  | 1558519   | 247  | SACC-E-M12MS-5CON-PG 9/0,5 VA  | 1554568   | 268  | SACC-FS-5CON-PG 7-M SCO        | 1543032   | 280  | SACC-M12FS-4QO-0,34-M        | 1641688   | 278  |
| SACC-DSI-MSD-4CON-L180/SCO SH   | 1553035   | 247  | SACC-E-M12MS-5CON-PG9/0,5      | 1671111   | 232  | SACC-FS-5CON-PG 9-M SCO        | 1543045   | 280  | SACC-M12FS-4QO-0,34-VA       | 1440766   | 278  |
| SACC-DSI-MSD-4CON-L180/SH GN    | 1456556   | 90   | SACC-E-M12MS-8CON-M12 PSCUP    | 1436440   | 241  | SACC-FS-5SC M SCO              | 1432583   | 279  | SACC-M12FS-4QO-0,75          | 1641756   | 278  |
| SACC-DSI-MSD-4CON-L180/SH TQ    | 1456514   | 90   | SACC-E-M12MS-8CON-M16 PSCUP    | 1436408   | 241  | SACC-FS-5SC SH DN SCO          | 1432787   | 187  | SACC-M12FS-4QO-0,75-M        | 1641772   | 278  |
| SACC-DSI-MSD-4CON-M12 SCO       | 1551859   | 248  | SACC-E-M12MS-8CON-M16/0,5 P    | 1436424   | 241  | SACC-FS-5SC SH SCO             | 1432664   | 279  | SACC-M12FS-4QO-0,75-VA       | 1440782   | 278  |
| SACC-DSI-MSD-4CON-M12-SCO SH    | 1552984   | 249  | SACC-E-M12MS-8CON-M16/0,5 VA   | 1405221   | 268  | SACC-FSB-2SC SH PB SCO         | 1432868   | 186  | SACC-M12FS-4SC SH CCL        | 1559770   | 187  |
| SACC-DSI-MSD-4CON-M12/0,5 SCO   | 1551901   | 243  | SACC-E-M12MS-8CON-M20/0,5      | 1408442   | 235  | SACC-FSB-5SC SH IB SCO         | 1432826   | 186  | SACC-M12FS-5CON-DM 3-5 SH VA | 1440038   | 282  |
| SACC-DSI-MSD-4CON-PG9/0,5 SCO   | 1551532   | 242  | SACC-E-M12MS-8CON-M20/0,5 VA   | 1452107   | 269  | SACC-M 8-SET/2,2-3,5           | 1436945   | 273  | SACC-M12FS-5CON-DM 5-8 SH VA | 1440041   | 282  |
| SACC-DSIV-FS-5CON-L180SCOTHRSH  | 1434879   | 189  | SACC-E-M12MS-8CON-PG 9/0,5 VA  | 1554571   | 268  | SACC-M 8FR-3CON-M              | 1529399   | 274  | SACC-M12FS-5CON-PG 7         | 1662296   | 280  |
| SACC-DSIV-FS-5CON-L90 SH SCO    | 1438024   | 189  | SACC-E-M12MS-8CON-PG9/0,5      | 1513774   | 232  | SACC-M 8FR-3CON-M-SW           | 1407582   | 273  | SACC-M12FS-5CON-PG 7-M       | 1662968   | 281  |
| SACC-DSIV-FS-8CON-L180-10G SCO  | 1440669   | 90   | SACC-E-M12MSB-5CON-M20/0,5 VA  | 1452084   | 269  | SACC-M 8FR-3CON-SH             | 1436479   | 274  | SACC-M12FS-5CON-PG 7-SH      | 1694305   | 282  |
| SACC-DSIV-FS-8CON-L180-THR SH   | 1557549   | 90   | SACC-E-M12MS-4CON-M16/0,5 PE   | 1424139   | 286  | SACC-M 8FR-4CON-M              | 1513444   | 274  | SACC-M12FS-5CON-PG 7-VA      | 1553255   | 281  |
| SACC-DSIV-FSB-5CON-L180 SCOTHR  | 1542635   | 189  | SACC-E-M12MST-4CON-M16/0,5     | 1407584   | 273  | SACC-M 8FR-4CON-M-SW           | 1407584   | 273  | SACC-M12FS-5CON-PG11-M PWR   | 1508365   | 187  |
| SACC-DSIV-FSB-5CON-L90 SCO      | 1436576   | 189  | SACC-E-M5FS-3CON-M5/0,5        | 1530605   | 224  | SACC-M 8FR-4CON-SH             | 1436482   | 274  | SACC-M12FS-5CON-PG 9-SH      | 1694318   | 282  |
| SACC-DSIV-FSD-4CON-L180 SCO     | 1542619   | 90   | SACC-E-M5FS-4CON-M5/0,5        | 1530618   | 224  | SACC-M 8FS-3CON-M              | 1681172   | 274  | SACC-M12FS-5CON-PG 9-VA      | 1553271   | 281  |
| SACC-DSIV-FSD-4CON-L180 SCOTHR  | 1542648   | 90   | SACC-E-M5MS-3CON-M5/0,5        | 1530582   | 224  | SACC-M 8FS-3CON-M-0,34-SH      | 1542907   | 273  | SACC-M12FS-5CON-PG11-DUO     | 1694596   | 284  |
| SACC-DSIV-FSD-4CON-L90 SCO      | 1436550   | 90   | SACC-E-M5MS-4CON-M5/0,5        | 1530595   | 224  | SACC-M 8FS-3CON-M-SH           | 1506927   | 274  | SACC-M12FS-5CON-PG11-M PWR   | 1404418   | 281  |
| SACC-DSIV-M 8FS-3CON-L 90       | 1524788   | 230  | SACC-E-M8FS-5CON-M10/0,5 DN    | 1424233   | 225  | SACC-M 8FS-3CON-M-SW           | 1506888   | 273  | SACC-M12FS-5CON-PG7-M SKIN   | 1559000   | 281  |
| SACC-DSIV-M 8FS-3CON-L180-06    | 1524776   | 230  | SACC-E-M8FS-8CON-M10/0,5       | 1424231   | 225  | SACC-M 8FS-3QO-0,25-M          | 1441040   | 272  | SACC-M12FS-5CON-PG9          | 1500787   | 280  |
| SACC-DSIV-M 8FS-4CON-L 90       | 1526169   | 230  | SACC-E-M8MS-5CON-M10/0,5 DN    | 1424234   | 225  | SACC-M 8FS-3QO-0,5-M           | 1441066   | 272  | SACC-M12FS-5CON-PG9-M        | 1681486   | 281  |
| SACC-DSIV-M 8FS-4CON-L180-06    | 1524789   | 230  | SACC-E-M8MS-8CON-M10/0,5       | 1424232   | 225  | SACC-M 8FS-4CON-M              | 1681185   | 274  | SACC-M12FS-5CON-PG9-M SKIN   | 1556836   | 281  |
| SACC-DSIV-M 8MS-3CON-L 90       | 1440070   | 230  | SACC-E-MINFS-3CON-PG13/0,5     | 1521407   | 265  | SACC-M 8FS-4CON-M-0,34-SH      | 1542910   | 273  | SACC-M12FS-6Q SH VARAN       | 1429143   | 89   |
| SACC-DSIV-M 8MS-4CON-L 90       | 1440096   | 230  | SACC-E-MINFS-4CON-PG13/0,5     | 1521423   | 265  | SACC-M 8FS-4CON-M-SH           | 1506930   | 274  | SACC-M12FS-8CON-PG 9-SH      | 1511860   | 282  |
| SACC-DSIV-M12FS-5CON-L180       | 1694237   | 189  | SACC-E-MINFS-5CON-PG13/0,5     | 1521449   | 265  | SACC-M 8MS-4CON-M-SW           | 1506891   | 273  | SACC-M12FS-8CON-PG9-M        | 1513347   | 281  |
| SACC-DSIV-M12FS-8CON-L180       | 1556854   | 262  | SACC-E-MINMS-3CON-PG13/0,5     | 1521410   | 265  | SACC-M 8FS-4QO-0,25-M          | 1441053   | 272  | SACC-M12FS-8Q SH             | 1553640   | 89   |
| SACC-DSIV-M12FSB-5CON-L180      | 1515934   | 262  | SACC-E-MINMS-4CON-PG13/0,5     | 1521436   | 265  | SACC-M 8FS-4QO-0,5-M           | 1441079   | 272  | SACC-M12FSB-5CON-PG9 SH AU   | 1507777   | 186  |
| SACC-DSIV-M12FSB-5CON-L180 SH   | 1437180   | 189  | SACC-E-MINMS-5CON-PG13/0,5     | 1521452   | 265  | SACC-M 8MR-3CON-M              | 1699902   | 274  | SACC-M12FSD-4Q SH            | 1553611   | 89   |
| SACC-DSIV-M12FSD-4CON-L180      | 1534627   | 262  | SACC-E-MS-12CON-M16/0,5 SCO    | 1556265   | 233  | SACC-M 8MR-3CON-M-SW           | 1407583   | 273  | SACC-M12FSD-4Q SH PN         | 1554526   | 89   |
| SACC-DSIV-M12MS-5CON-L180       | 1694211   | 189  | SACC-E-MS-17CON-M16/0,5 SCO    | 1556304   | 233  | SACC-M 8MR-3CON-SH             | 1436453   | 274  | SACC-M12FSS-3PECON-PG11-M    | 1404642   | 283  |
| SACC-DSIV-M12MS-5CON-L180 SH    | 1437193   | 262  | SACC-E-MS-4CON-M16/0,5 SCO     | 1523450   | 233  | SACC-M 8MR-4CON-M              | 1554209   | 274  | SACC-M12FST-3PECON-PG11-M    | 1404644   | 283  |
| SACC-DSIV-M12MSB-5CON-L180      | 1514883   | 262  | SACC-E-MS-5CON-M16/0,5 SCO     | 1520055   | 233  | SACC-M 8MR-4CON-M-SW           | 1407585   | 273  | SACC-M12MR-12SOL-PG 9-M      | 1404421   | 275  |
| SACC-DSIV-M12MSB-5CON-L180 SH   | 1542633   | 189  | SACC-E-MSB-8CON-M16/0,5 SCO    | 1523492   | 233  | SACC-M 8MR-4CON-SH             | 1436466   | 274  | SACC-M12MR-12SOL-PG 9-M SH   | 1404412   | 275  |
| SACC-DSIV-MS-5CON-L180SCOTHRSH  | 1439968   | 189  | SACC-E-MSB-5CON-M16/0,5 SCO    | 1520013   | 233  | SACC-M 8MS-3CON-M              | 1681156   | 274  | SACC-M12MR-4CON-PG 7-SH      | 1694279   | 282  |
| SACC-DSIV-MS-5CON-L90 SH SCO    | 1438037   | 189  | SACC-E-MSD-4CON-M16/0,5 SCO    | 1551558   | 233  | SACC-M 8MS-3CON-M-0,34-SH      | 1542884   | 273  | SACC-M12MR-4CON-PG 7-VA      | 1553200   | 281  |
| SACC-DSIV-MSB-5CON-L180 SCO THR | 1552188   | 189  | SACC-E-MU-M 5                  | 1535901   | 224  | SACC-M 8MS-3CON-M-SH           | 1506901   | 274  | SACC-M12MR-4CON-PG 9-VA      | 1553226   | 281  |
| SACC-DSIV-MSB-5CON-L90 SCO      | 1436615   | 189  | SACC-E-MU-M 8                  | 1504071   | 225  | SACC-M 8MS-3CON-M-SW           | 1501252   | 273  | SACC-M12MR-5CON-PG 7         | 1681091   | 280  |
| SACC-E-FS-12CON-M16/0,5 SCO     | 1556252   | 233  | SACC-E-MU-M16                  | 1504097   | 233  | SACC-M 8MS-3QO-0,25-M          | 1441008   | 272  | SACC-M12MR-4CON-PG7-M        |           |      |

| Type                           | Order No. | Page | Type                        | Order No. | Page | Type                           | Order No. | Page | Type                           | Order No. | Page |
|--------------------------------|-----------|------|-----------------------------|-----------|------|--------------------------------|-----------|------|--------------------------------|-----------|------|
| SACC-M12MR-5CON-PG 9-VA        | 1553239   | 281  | SACC-MINFS-5CON-PG13        | 1521397   | 285  | SACC-SQ-M12MSB-5CON-20-L180    | 1456459   | 240  | SACCEC-M12FS-5CON-M16/ 5,0-920 | 1525704   | 192  |
| SACC-M12MR-5CON-PG11-DUO       | 1531044   | 284  | SACC-MINFS-5CON-PG13/2,5    | 1456284   | 285  | SACC-SQ-M12MSB-5CON-20/0,5     | 1441668   | 236  | SACCEC-M12FSB-2CON-M16/0,5-910 | 1525597   | 191  |
| SACC-M12MR-5CON-PG9-M          | 1513431   | 280  | SACC-MINFS-5CON-PG16        | 1559071   | 285  | SACC-SQ-M12MSB-5CON-25F/0,5    | 1440999   | 237  | SACCEC-M12FSB-2CON-M16/1,0-910 | 1525607   | 191  |
|                                | 1681473   | 281  | SACC-MINFS-5CON-PG16/2,5    | 1456268   | 285  | SACC-SQ-M12MSD-4CON-20-L180    | 1456394   | 240  | SACCEC-M12FSB-2CON-M16/2,0-910 | 1519574   | 191  |
| SACC-M12MR-5CON-PG9-M SKINTOP  | 1561742   | 281  | SACC-MINMR-3CON-PG 9        | 1521465   | 285  | SACC-SQ-M12MSD-4CON-20/0,5     | 1441626   | 236  | SACCEC-M12FSB-2CON-M16/5,0-910 | 1525610   | 191  |
| SACC-M12MR-6Q SH VARAN         | 1429156   | 89   | SACC-MINMR-4CON-PG 9        | 1521481   | 285  | SACC-SQ-M12MSD-4CON-25F/0,5    | 1440957   | 237  | SACCEC-M12FSB-5CON-M16/0,5-900 | 1529742   | 190  |
| SACC-M12MR-8Q SH               | 1553653   | 89   | SACC-MINMR-5CON-PG 9        | 1521504   | 285  | SACCBP-FS-12CON-M16/1,0-PVCSCO | 1442188   | 245  | SACCEC-M12FSB-5CON-M16/1,0-900 | 1529755   | 190  |
| SACC-M12MRD-4Q SH              | 1553624   | 89   | SACC-MINMR-5CON-PG11/2,5    | 1456242   | 285  | SACCBP-FS-12CON-M16/2,0-PVCSCO | 1442191   | 245  | SACCEC-M12FSB-5CON-M16/2,0-900 | 1529768   | 190  |
| SACC-M12MRD-4Q SH PN           | 1554539   | 89   | SACC-MINMR-5CON-PG13/2,5    | 1456255   | 285  | SACCBP-FS-17CON-M16/1,0-PVCSCO | 1442269   | 245  | SACCEC-M12FSB-5CON-M16/5,0-900 | 1529771   | 190  |
| SACC-M12MS-12SOL-PG 9-M        | 1404419   | 275  | SACC-MINMS-3CON-PG 9        | 1521287   | 285  | SACCBP-FS-17CON-M16/2,0-PVCSCO | 1442272   | 245  | SACCEC-M12MS-5CON-M16/ 0,5-920 | 1525623   | 192  |
| SACC-M12MS-12SOL-PG 9-M SH     | 1404410   | 275  | SACC-MINMS-3CON-PG13        | 1521290   | 285  | SACCBP-FS-4CON-M16/1,0-PUR SCO | 1419302   | 245  | SACCEC-M12MS-5CON-M16/ 1,0-920 | 1525636   | 192  |
| SACC-M12MS-4CON-PG 7           | 1681088   | 280  | SACC-MINMS-4CON-PG 9        | 1521326   | 285  | SACCBP-FS-4CON-M16/2,0-PUR SCO | 1419315   | 245  | SACCEC-M12MS-5CON-M16/ 2,0-920 | 1525649   | 192  |
| SACC-M12MS-4CON-PG 7-M         | 1662528   | 281  | SACC-MINMS-4CON-PG13        | 1521339   | 285  | SACCBP-FS-5CON-M16/1,0-PUR SCO | 1419328   | 245  | SACCEC-M12MS-5CON-M16/ 5,0-910 | 1525652   | 192  |
| SACC-M12MS-4CON-PG 7-M SKIN    | 1556870   | 281  | SACC-MINMS-5CON-PG 9        | 1521668   | 285  | SACCBP-FS-5CON-M16/2,0-PUR SCO | 1419331   | 245  | SACCEC-M12MSB-2CON-M16/0,5-910 | 1525555   | 191  |
| SACC-M12MS-4CON-PG 7-SH        | 1693830   | 282  | SACC-MINMS-5CON-PG11/2,5    | 1456226   | 285  | SACCBP-FS-5CON-PG9/0,5-920SCO  | 1437520   | 192  | SACCEC-M12MSB-2CON-M16/1,0-910 | 1525568   | 191  |
| SACC-M12MS-4CON-PG 7-VA        | 1553161   | 281  | SACC-MINMS-5CON-PG13        | 1521371   | 285  | SACCBP-FS-5CON-PG9/1,0-920SCO  | 1437533   | 192  | SACCEC-M12MSB-2CON-M16/2,0-910 | 1519561   | 191  |
| SACC-M12MS-4CON-PG 9-SH        | 1501540   | 282  | SACC-MINMS-5CON-PG13/2,5    | 1456213   | 285  | SACCBP-FS-5CON-PG9/2,0-920SCO  | 1437546   | 192  | SACCEC-M12MSB-2CON-M16/5,0-910 | 1525571   | 191  |
| SACC-M12MS-4CON-PG 9-VA        | 1553174   | 281  | SACC-MINMS-5CON-PG16        | 1559039   | 285  | SACCBP-FS-5CON-PG9/5,0-920SCO  | 1437559   | 192  | SACCEC-M12MSB-5CON-M16/0,5-900 | 1529629   | 190  |
| SACC-M12MS-4CON-PG11-DUO-M     | 1507052   | 284  | SACC-MINMS-5CON-PG16/2,5    | 1456239   | 285  | SACCBP-FS-8CON-M16/1,0-PUR SCO | 1419357   | 245  | SACCEC-M12MSB-5CON-M16/1,0-900 | 1530223   | 190  |
| SACC-M12MS-4CON-PG11-M PWR     | 1404415   | 281  | SACC-MR-4CON-PG 7-M SCO     | 1542981   | 280  | SACCBP-FS-8CON-M16/2,0-PUR SCO | 1419344   | 245  | SACCEC-M12MSB-5CON-M16/2,0-900 | 1529726   | 190  |
| SACC-M12MS-4QO-0,34            | 1641714   | 278  | SACC-MR-4SC M SCO           | 1432606   | 279  | SACCBP-FSB-2CON-PG9/0,5-910SCO | 1437449   | 191  | SACCEC-M12MSB-5CON-M16/5,0-900 | 1529739   | 190  |
| SACC-M12MS-4QO-0,34-M          | 1641691   | 278  | SACC-MR-4SC SH SCO          | 1432732   | 279  | SC-Z2319                       | 1437452   | 191  | SC-Z2319                       | 1605456   | 415  |
| SACC-M12MS-4QO-0,34-VA         | 1440753   | 278  | SACC-MR-5CON-PG 7-M SCO     | 1542994   | 280  | SACCBP-FSB-2CON-PG9/2,0-910SCO | 1437465   | 191  | SC-Z2320                       | 1605457   | 415  |
| SACC-M12MS-4QO-0,75            | 1641769   | 278  | SACC-MR-5CON-PG 9-M SCO     | 1543003   | 280  | SACCBP-FSB-2CON-PG9/5,0-910SCO | 1437478   | 191  | SC-Z2322                       | 1605459   | 415  |
| SACC-M12MS-4QO-0,75-M          | 1641785   | 278  | SACC-MR-5SC M SCO           | 1432570   | 279  | SACCBP-FSB-5CON-PG9/0,5-900SCO | 1437601   | 190  | SEALING PLUG 12X22 RD          | 1400260   | 44   |
| SACC-M12MS-4QO-0,75-VA         | 1440779   | 278  | SACC-MR-5SC SH DN SCO       | 1432774   | 187  | SACCBP-FSB-5CON-PG9/1,0-900SCO | 1437614   | 190  | SEALING PLUG 13X22 RD          | 1400265   | 45   |
| SACC-M12MS-4SC SH CCL          | 1559767   | 187  | SACC-MR-5SC SH SCO          | 1432651   | 279  | SACCBP-FSB-5CON-PG9/2,0-900SCO | 1437627   | 190  | SEALING PLUG 3X12 RD           | 1400238   | 44   |
| SACC-M12MS-5CON-PG11 3-5 SH VA | 1440012   | 282  | SACC-MRB-2SC SH PB SCO      | 1432855   | 186  | SACCBP-FSB-5CON-PG9/5,0-900SCO | 1437630   | 190  | SEALING PLUG 5X12 RD           | 1400253   | 44   |
| SACC-M12MS-5CON-DM 5-8 SH VA   | 1440025   | 282  | SACC-MRB-5SC SH IB SCO      | 1432813   | 186  | SACCBP-FSD-4CON-PG9/1,0-933SCO | 1437779   | 107  | SEALING PLUG 6X16 RD           | 1400254   | 44   |
| SACC-M12MS-5CON-PG 7           | 1662256   | 280  | SACC-MS-12PCON SCO          | 1559592   | 275  | SACCBP-FSD-4CON-PG9/2,0-933SCO | 1437782   | 107  | SEALING PLUG 7X16 RD           | 1400255   | 44   |
| SACC-M12MS-5CON-PG 7-M         | 1663116   | 281  | SACC-MS-17PCON SCO          | 1559602   | 275  | SACCBP-FSD-4CON-PG9/5,0-933SCO | 1437795   | 107  | SEALING PLUG 8X16 RD           | 1400257   | 44   |
| SACC-M12MS-5CON-PG 7-SH        | 1693416   | 282  | SACC-MS-4CON-PG 7-M SCO     | 1542952   | 280  | SACCBP-M12FS-5CON-M16/0,5-920  | 1534465   | 192  | SF-10KP004                     | 1607355   | 347  |
| SACC-M12MS-5CON-PG 7-VA        | 1553187   | 281  | SACC-MS-4QO-0,34-M SCO      | 1521575   | 278  | SACCBP-M12FS-5CON-M16/1,0-920  | 1534478   | 192  | SF-10KP320                     | 1615961   | 318  |
| SACC-M12MS-5CON-PG 9           | 1500774   | 280  | SACC-MS-4QO-0,75-M SCO      | 1521591   | 278  | SACCBP-M12FS-5CON-M16/2,0-920  | 1534481   | 192  | SF-10KP330                     | 1615962   | 318  |
| SACC-M12MS-5CON-PG 9 SH AU     | 1508352   | 187  | SACC-MS-4SC M SCO           | 1432635   | 279  | SACCBP-M12FS-5CON-M16/5,0-920  | 1534494   | 192  | SF-10KP350                     | 1615963   | 318  |
| SACC-M12MS-5CON-PG 9-M         | 1681460   | 281  | SACC-MS-4SC SH SCO          | 1432729   | 279  | SACCBP-M12FSB-2CON-M16/0,5-910 | 1534384   | 191  | SF-10KP360                     | 1615964   | 318  |
| SACC-M12MS-5CON-PG 9-SH        | 1694266   | 282  | SACC-MS-5CON-PG 7-M SCO     | 1542965   | 280  | SACCBP-M12FSB-2CON-M16/1,0-910 | 1534397   | 191  | SF-10KS004                     | 1607356   | 347  |
| SACC-M12MS-5CON-PG 9-VA        | 1553190   | 281  | SACC-MS-5CON-PG 9-M SCO     | 1542978   | 280  | SACCBP-M12FSB-2CON-M16/2,0-910 | 1534407   | 191  | SF-10KS320                     | 1607301   | 318  |
| SACC-M12MS-5CON-PG11-DUO       | 1662285   | 284  | SACC-MS-5CON-PG11-DUO-M SCO | 1543016   | 284  | SACCBP-M12FSB-2CON-M16/5,0-910 | 1534410   | 191  | SF-10KS330                     | 1607358   | 318  |
| SACC-M12MS-5CON-PG11-DUO-M     | 1662748   | 284  | SACC-MS-5SC M SCO           | 1432567   | 279  | SACCBP-M12FSB-5CON-M16/0,5-900 | 1534546   | 190  | SF-10KS350                     | 1607302   | 318  |
| SACC-M12MS-5CON-PG11-M PWR     | 1404417   | 281  | SACC-MS-5SC SH DN SCO       | 1432761   | 187  | SACCBP-M12FSB-5CON-M16/1,0-900 | 1534559   | 190  | SF-10KS360                     | 1607361   | 318  |
| SACC-M12MS-5CON-PG7-M SKIN     | 1456466   | 281  | SACC-MS-5SC SH SCO          | 1432648   | 279  | SACCBP-M12FSB-5CON-M16/2,0-900 | 1534562   | 190  | SF-20KP004                     | 1607376   | 374  |
| SACC-M12MS-5CON-PG9-M SKIN     | 1556825   | 281  | SACC-MSB-2SC SH PB SCO      | 1432842   | 186  | SACCBP-M12FSB-5CON-M16/5,0-900 | 1534575   | 190  | SF-5EEN8A8000                  | 1605492   | 373  |
| SACC-M12MS-6Q SH VARAN         | 1429130   | 89   | SACC-MSB-5SC SH IB SCO      | 1432800   | 186  | SACCBP-M12MS-5CON-M16/0,5-920  | 1534423   | 192  | SF-5EP1N8A90A1                 | 1605494   | 369  |
| SACC-M12MS-8CON-PG 9-SH        | 1511857   | 282  | SACC-MSQ-M12MS-25-3,2 SCO   | 1419959   | 238  | SACCBP-M12MS-5CON-M16/1,0-920  | 1534436   | 192  | SF-5EP1N8A90A2                 | 1605496   | 369  |
| SACC-M12MS-8CON-PG9-M          | 1513334   | 281  | SACC-MSQ-P-M12MS-25-2,7 SCO | 1424131   | 287  | SACCBP-M12MS-5CON-M16/2,0-920  | 1534449   | 192  | SF-5EP1N8A90A3                 | 1605498   | 369  |
| SACC-M16-KD-NUT-SH             | 1543236   | 89   | SACC-PG9-KD-NUT-SH          | 1440177   | 188  | SACCBP-M12MS-5CON-M16/5,0-920  | 1534452   | 192  | SF-5EP1N8A90DU                 | 1605499   | 369  |
| SACC-M12MSB-5CON-PG9 SH AU     | 1507764   | 186  | SACC-PG9-SEAL CLM           | 1556320   | 296  | SACCBP-M12MSB-2CON-M16/0,5-910 | 1534342   | 191  | SF-5EP1N8A9LB1                 | 1605505   | 369  |
| SACC-M12MSD-4CON-PG 7-SH       | 1521258   | 88   | SACC-SQ-M12FS-12CON-20/0,5  | 1441710   | 236  | SACCBP-M12MSB-2CON-M16/1,0-910 | 1534355   | 191  | SF-5EP1N8A9LB2                 | 1605507   | 369  |
| SACC-M12MSD-4CON-PG 9-SH       | 1521261   | 88   | SACC-SQ-M12FS-12CON-25F/0,5 | 1441590   | 237  | SACCBP-M12MSB-2CON-M16/2,0-910 | 1534368   | 191  | SF-5EP1N8A9LB3                 | 1605508   | 369  |
| SACC-M12MSD-4Q SH              | 1543223   | 89   | SACC-SQ-M12FS-17CON-20/0,5  | 1441736   | 236  | SACCBP-M12MSB-5CON-M16/5,0-910 | 1534371   | 191  | SF-5EP1N8A9LB4                 | 1605509   | 369  |
| SACC-M12MSD-4Q SH PN           | 1554513   | 89   | SACC-SQ-M12FS-17CON-25F/0,5 | 1441613   | 237  | SACCBP-M12MSB-5CON-M16/0,5-900 | 1534504   | 190  | SF-5EP1N8A9LDL                 | 1605510   | 369  |
| SACC-M12MSS-3PECON-PG11-M      | 1404641   | 283  | SACC-SQ-M12FS-4CON-20-L180  | 1456420   | 240  | SACCBP-M12MSB-5CON-M16/1,0-900 | 1534517   | 190  | SF-5EP1N8AA500                 | 1620657   | 370  |
| SACC-M12MST-3PECON-PG11-M      | 1404643   | 283  | SACC-SQ-M12FS-4CON-20/0,5   | 1419797   | 236  | SACCBP-M12MSB-5CON-M16/2,0-900 | 1534520   | 190  | SF-5EP1N8AA600                 | 1620661   | 370  |
| SACC-M16-KD-NUT-SH             | 1404164   | 190  | SACC-SQ-M12FS-4CON-25F/0,5  | 1420003   | 237  | SACCBP-M12MSB-5CON-M16/5,0-900 | 1534533   | 190  | SF-5EP1N8AC0A1                 | 1605516   | 372  |
| SACC-M16-SEAL CLM              | 1430394   | 296  | SACC-SQ-M12FS-5CON-20-L180  | 1456446   | 240  | SACCBP-MS-12CON-M16/1,0-PVCSCO | 1442227   | 245  | SF-5EP1N8AC0A2                 | 1607037   | 372  |
| SACC-M16-SEALING PLUG SET      | 1453368   | 294  | SACC-SQ-M12FS-5CON-20/0,5   | 1441655   | 236  | SACCBP-MS-12CON-M16/2,0-PVCSCO | 1442230   | 245  | SF-5EP1N8AC0A3                 | 1607038   | 372  |
| SACC-MCI-M12MS-4CON            | 1440931   | 239  | SACC-SQ-M12FS-5CON-25F/0,5  | 1440986   | 237  | SACCBP-MS-17CON-M16/1,0-PVCSCO | 1442308   | 245  | SF-5EP1N8ACODU                 | 1605517   | 372  |
| SACC-MCI-M12MS-4CON/0,5        | 1440805   | 238  | SACC-SQ-M12FS-8CON-20-L180  | 1408573   | 240  | SACCBP-MS-17CON-M16/2,0-PVCSCO | 1442311   | 245  | SF-5EP1N8ACLB1                 | 1607039   | 372  |
| SACC-MCI-M12MS-5CON            | 1419988   | 239  | SACC-SQ-M12FS-8CON-20/0,5   | 1441697   | 236  | SACCBP-MS-4CON-M16/1,0-PUR SCO | 1419399   | 245  | SF-5EP1N8ACLB2                 | 1607040   | 372  |
| SACC-MCI-M12MS-5CON/0,5        | 1440818   | 238  | SACC-SQ-M12FS-8CON-25F/0,5  | 1441574   | 237  | SACCBP-MS-4CON-M16/2,0-PUR SCO | 1419386   | 245  | SF-5EP1N8ACLB3                 | 1607041   | 372  |
| SACC-MCI-M12MS-8CON            | 1440928   | 239  | SACC-SQ-M12FSB-5CON-20-L180 | 1456462   | 240  | SACCBP-MS-5CON-M16/1,0-PUR SCO | 1419409   | 245  | SF-5EP1N8ACLB4                 | 1607042   | 372  |
| SACC-MCI-M12MS-8CON/0,5        | 1457827   | 238  | SACC-SQ-M12FSB-5CON-20/0,5  | 1441671   | 236  | SACCBP-MS-5CON-M16/2,0-PUR SCO | 1419412   | 245  | SF-5EP1N8ACLDL                 | 1605518   | 372  |
| SACC-MCI-M12MSB-5CON           | 1440915   | 239  | SACC-SQ-M12FSB-5CON-25F/0,5 | 1441558   | 237  | SACCBP-MS-5CON-PG9/0,5-920SCO  | 1437562   | 192  | SF-5EP1N8AWA00                 | 1605520   | 370  |
| SACC-MCI-M12MSB-5CON/0,5       | 1440759   | 238  | SACC-SQ-M12FSD-4CON-20-L180 | 1456404   | 240  | SACCBP-MS-5CON-PG9/1,0-920SCO  | 1437575   | 192  | SF-5EP1S8AWA00                 | 1620619   | 370  |
| SACC-MCI-M12MSD-4CON           | 1440944   | 239  | SACC-SQ-M12FSD-4CON-20/0,5  | 1441639   | 236  | SACCBP-MS-5CON-PG9/2,0-920SCO  | 1437588   | 192  | SF-5EP1N8A80A1                 | 1605524   | 368  |
| SACC-MCI-M12MSD-4CON/0,5       | 1440821   | 238  | SACC-SQ-M12FSD-4CON-25F/0,5 | 1440960   | 237  | SACCBP-MS-5CON-PG9/5,0-920SCO  | 1437591   | 192  | SF-5EP1N8A80A1S                | 1618194   | 368  |
| SACC-MCI-MSS-4CON/0,5 PE SCO   | 1424129   | 287  | SACC-SQ-M12MS-12CON-20/0,5  | 1441707   | 236  | SACCBP-MS-8CON-M16/1,0-PUR SCO | 1419425   | 245  | SF-5EP1N8A80A2                 | 1605526   | 368  |
| SACC-MCI-MST-4CON/0,5 SCO      | 1424130   | 287  | SACC-SQ-M12MS-12CON-25F/0,5 | 1441587   | 237  | SACCBP-MS-8CON-M16/2,0-PUR SCO | 1419438   | 245  | SF-5EP1N8A80A2S                | 1618195   | 368  |
| SACC-MINFR-3CON-PG 9           | 1521478   | 285  | SACC-SQ-M12MS-17CON-20/0,5  | 1441723   | 236  | SACCBP-MSB-2CON-PG9/0,5-910SCO | 1437643   | 191  | SF-5EP1N8A8LB1                 | 1605529   | 368  |
| SACC-MINFR-4CON-PG 9           | 1521494   | 285  | SACC-SQ-M12MS-17CON-25F/0,5 | 1441600   | 237  | SACCBP-MSB-2CON-PG9/1,0-910SCO | 1437494   | 191  | SF-5EP1N8A80A3S                | 1618196   | 368  |
| SACC-MINFR-5CON-PG 9           | 1521517   | 285  | SACC-SQ-M12MS-4CON-20-L180  | 1456417   | 240  | SACCBP-MSB-2CON-PG9/2,0-910SCO | 1437504   | 191  | SF-5EP1N8A80DU                 | 1605532   | 368  |
| SACC-MINFR-5CON-PG11/2,5       | 1456297   | 285  | SACC-SQ-M12MS-4CON-20/0,5   | 1419784   | 236  | SACCBP-MSB-2CON-PG9/5,0-910SCO | 1437517   | 191  | SF-5EP1N8A80DUS                | 1618197   | 368  |
| SACC-MINFR-5CON-PG13/2,5       | 1456307   | 285  | SACC-SQ-M12MS-4CON-25F/0,5  | 1419991   | 237  | SACCBP-MSB-5CON-PG9/0,5-90     |           |      |                                |           |      |

# Index

## Alphabetical

| Type            | Order No. | Page | Type            | Order No. | Page | Type            | Order No. | Page | Type            | Order No. | Page |
|-----------------|-----------|------|-----------------|-----------|------|-----------------|-----------|------|-----------------|-----------|------|
| SF-5ES1N8A8LB4S | 1618201   | 368  | SF-Z0052        | 1615413   | 406  | SM-7ES1N8AY000  | 1605865   | 382  | ST-17P1N8A8003S | 1607625   | 312  |
| SF-5ES1N8A8LDL  | 1605549   | 368  | SF-Z0054        | 1615585   | 407  | SM-7ES1N8AY000S | 1613534   | 382  | ST-17P1N8A8004  | 1607626   | 313  |
| SF-5ES1N8A8LDLS | 1618202   | 368  | SF-Z0064        | 1620585   | 412  | SM-7ES1N8AYW00  | 1607543   | 383  | ST-17P1N8A8004S | 1607627   | 312  |
| SF-5ES1N8AY000  | 1607082   | 371  | SF-Z0065        | 1620586   | 412  | SM-7ES1N8AYW00S | 1613535   | 383  | ST-17P1N8A8005  | 1624528   | 313  |
| SF-5ES1N8AYW00  | 1607405   | 371  | SF-Z0066        | 1620587   | 412  | SM-Z0001        | 1605866   | 414  | ST-17P1N8A8005S | 1624529   | 312  |
| SF-6AP2000      | 1605554   | 347  | SL-16KP010      | 1607909   | 392  | SM-Z0003        | 1607935   | 410  | ST-17P1N8A8K02S | 1618682   | 308  |
| SF-6AS2000      | 1605557   | 347  | SL-16KS010      | 1607956   | 392  | SM-Z0004        | 1607937   | 410  | ST-17P1N8A8K03S | 1618683   | 308  |
| SF-6CP2000      | 1605559   | 347  | SL-1CKP010      | 1607911   | 392  | SM-Z0012        | 1614349   | 409  | ST-17P1N8A8K04S | 1618684   | 308  |
| SF-6CS2000      | 1605562   | 347  | SL-1CKP020      | 1607912   | 392  | SM-Z0025        | 1620558   | 412  | ST-17P1N8A9003S | 1607630   | 314  |
| SF-7EE1N8AS000  | 1605567   | 373  | SL-1CKP030      | 1607913   | 392  | SM-Z0026        | 1620559   | 412  | ST-17P1N8A9004S | 1607631   | 314  |
| SF-7EP1N8A90A1  | 1605568   | 369  | SL-1CKP040      | 1607914   | 392  | SM-Z0027        | 1620560   | 412  | ST-17P1N8A9005S | 1624530   | 314  |
| SF-7EP1N8A90A2  | 1605570   | 369  | SL-1CKP050      | 1607915   | 392  | SM-Z0028        | 1620627   | 412  | ST-17P1N8A9K02S | 1613497   | 309  |
| SF-7EP1N8A90A3  | 1605571   | 369  | SL-1CKS010      | 1607916   | 392  | SM-Z0029        | 1620628   | 412  | ST-17P1N8A9K03S | 1613896   | 309  |
| SF-7EP1N8A90D1U | 1605575   | 369  | SL-1CKS020      | 1607917   | 392  | SM-Z0030        | 1620629   | 412  | ST-17P1N8A9K04S | 1614532   | 309  |
| SF-7EP1N8A9LB1  | 1605578   | 369  | SL-1CKS030      | 1607918   | 392  | ST-06KP010      | 1607577   | 319  | ST-17P1N8AA400S | 1620441   | 316  |
| SF-7EP1N8A9LB2  | 1605580   | 369  | SL-1CKS040      | 1607919   | 392  | ST-06KP020      | 1607578   | 319  | ST-17P1N8AA500S | 1620458   | 316  |
| SF-7EP1N8A9LB3  | 1605581   | 369  | SL-1CKS050      | 1607920   | 392  | ST-06KP030      | 1607579   | 319  | ST-17P1N8ACK02S | 1617863   | 310  |
| SF-7EP1N8A9LB4  | 1605582   | 369  | SL-5EP1N8A9001  | 1607499   | 390  | ST-06KS010      | 1607580   | 319  | ST-17P1N8ACK03S | 1617872   | 310  |
| SF-7EP1N8A9LDL  | 1605583   | 369  | SL-5EP1N8A9002  | 1607500   | 390  | ST-06KS020      | 1607581   | 319  | ST-17P1N8ACK04S | 1617873   | 310  |
| SF-7EP1N8AA500  | 1620660   | 370  | SL-5EPWN8AWA00  | 1615686   | 391  | ST-06KS030      | 1607582   | 319  | ST-17P1N8AH100S | 1613541   | 317  |
| SF-7EP1N8AA600  | 1620662   | 370  | SL-5ES1N8A8001  | 1607501   | 390  | ST-08P1N8A6100S | 1618584   | 317  | ST-17P1N8AW400S | 1607634   | 311  |
| SF-7EP1N8AC0A1  | 1607048   | 372  | SL-5ES1N8A8002  | 1607503   | 390  | ST-08P1N8A8003  | 1618995   | 313  | ST-17P1N8AW500S | 1619225   | 315  |
| SF-7EP1N8AC0A2  | 1607049   | 372  | SL-7EP1N8A9001  | 1607505   | 390  | ST-08P1N8A8003S | 1618999   | 312  | ST-17P1N8AWK00S | 1619202   | 315  |
| SF-7EP1N8AC0A3  | 1607050   | 372  | SL-7EP1N8A9002  | 1607506   | 390  | ST-08P1N8A8004  | 1618996   | 313  | ST-17P1N8AWQ00S | 1607636   | 311  |
| SF-7EP1N8AC0DU  | 1607051   | 372  | SL-7EPWN8AWA00  | 1615687   | 391  | ST-08P1N8A8004S | 1619000   | 312  | ST-17S1N8A6100S | 1613542   | 317  |
| SF-7EP1N8ACLB1  | 1607052   | 372  | SL-7ES1N8A8001  | 1607507   | 390  | ST-08P1N8A8005  | 1618997   | 313  | ST-17S1N8A8003  | 1607641   | 313  |
| SF-7EP1N8ACLB2  | 1607053   | 372  | SL-7ES1N8A8002  | 1607508   | 390  | ST-08P1N8A8005S | 1619001   | 312  | ST-17S1N8A8003S | 1607642   | 312  |
| SF-7EP1N8ACLB3  | 1607054   | 372  | SL-Z0005        | 1607926   | 414  | ST-08P1N8A8K02S | 1618641   | 308  | ST-17S1N8A8004  | 1607643   | 313  |
| SF-7EP1N8ACLB4  | 1607055   | 372  | SL-Z0007        | 1613484   | 408  | ST-08P1N8A8K03S | 1618648   | 308  | ST-17S1N8A8004S | 1607644   | 312  |
| SF-7EP1N8ACLDL  | 1607056   | 372  | SL-Z0008        | 1613485   | 408  | ST-08P1N8A8K04S | 1618649   | 308  | ST-17S1N8A8005  | 1624531   | 313  |
| SF-7EP1N8AWA00  | 1605589   | 370  | SL-Z0010        | 1613487   | 408  | ST-08P1N8A9003S | 1619011   | 314  | ST-17S1N8A8005S | 1624532   | 312  |
| SF-7EP1S8AWA00  | 1620620   | 370  | SL-Z0011        | 1613488   | 408  | ST-08P1N8A9004S | 1619012   | 314  | ST-17S1N8A8K02S | 1613288   | 308  |
| SF-7ES1N8A80A1  | 1605595   | 368  | SL-Z0012        | 1613489   | 408  | ST-08P1N8A9005S | 1619013   | 314  | ST-17S1N8A8K03S | 1613324   | 308  |
| SF-7ES1N8A80A1S | 1618204   | 368  | SL-Z0013        | 1613490   | 408  | ST-08P1N8A9K02S | 1617799   | 309  | ST-17S1N8A8K04S | 1613325   | 308  |
| SF-7ES1N8A80A2  | 1605596   | 368  | SL-Z0014        | 1613491   | 408  | ST-08P1N8A9K03S | 1617813   | 309  | ST-17S1N8A9003S | 1607647   | 314  |
| SF-7ES1N8A80A2S | 1618205   | 368  | SL-Z0015        | 1613492   | 408  | ST-08P1N8A9K04S | 1617830   | 309  | ST-17S1N8A9004S | 1607649   | 314  |
| SF-7ES1N8A80A3  | 1605597   | 368  | SL-Z0016        | 1614348   | 409  | ST-08P1N8AA400S | 1620439   | 316  | ST-17S1N8A9005S | 1624533   | 314  |
| SF-7ES1N8A80A3S | 1618206   | 368  | SM-20KP005      | 1605736   | 385  | ST-08P1N8AA500S | 1620456   | 316  | ST-17S1N8A9K02S | 1618756   | 309  |
| SF-7ES1N8A80DU  | 1605602   | 368  | SM-20KP006      | 1605738   | 385  | ST-08P1N8ACK02S | 1617925   | 310  | ST-17S1N8A9K03S | 1618757   | 309  |
| SF-7ES1N8A80DUS | 1618207   | 368  | SM-20KP007      | 1605739   | 385  | ST-08P1N8ACK03S | 1617929   | 310  | ST-17S1N8A9K04S | 1618758   | 309  |
| SF-7ES1N8A8LB1  | 1605605   | 368  | SM-20KP008      | 1605741   | 385  | ST-08P1N8ACK04S | 1617932   | 310  | ST-17S1N8AA400S | 1620442   | 316  |
| SF-7ES1N8A8LB1S | 1618208   | 368  | SM-36KP001      | 1605743   | 385  | ST-08P1N8AH100S | 1619034   | 317  | ST-17S1N8AA500S | 1620457   | 316  |
| SF-7ES1N8A8LB2  | 1605607   | 368  | SM-36KP002      | 1605744   | 385  | ST-08P1N8AW400S | 1619037   | 311  | ST-17S1N8ACK02S | 1618834   | 310  |
| SF-7ES1N8A8LB2S | 1618209   | 368  | SM-36KP003      | 1605745   | 385  | ST-08P1N8AW500S | 1619219   | 315  | ST-17S1N8ACK03S | 1618835   | 310  |
| SF-7ES1N8A8LB3  | 1605610   | 368  | SM-36KP004      | 1605747   | 385  | ST-08P1N8AWK00S | 1619196   | 315  | ST-17S1N8ACK04S | 1618836   | 310  |
| SF-7ES1N8A8LB3S | 1618210   | 368  | SM-36KP005      | 1605749   | 385  | ST-08P1N8AWQ00S | 1613286   | 311  | ST-17S1N8AH100S | 1613543   | 317  |
| SF-7ES1N8A8LB4  | 1605614   | 368  | SM-36KP006      | 1605750   | 385  | ST-08S1N8A6100S | 1619036   | 317  | ST-17S1N8AW400S | 1607653   | 311  |
| SF-7ES1N8A8LB4S | 1618211   | 368  | SM-36KP007      | 1605752   | 385  | ST-08S1N8A8003  | 1619003   | 313  | ST-17S1N8AW500S | 1619226   | 315  |
| SF-7ES1N8A8LDL  | 1605617   | 368  | SM-36KP008      | 1605754   | 385  | ST-08S1N8A8003S | 1619007   | 312  | ST-17S1N8AWK00S | 1619206   | 315  |
| SF-7ES1N8A8LDLS | 1618212   | 368  | SM-36KP009      | 1607057   | 385  | ST-08S1N8A8004  | 1619004   | 313  | ST-17S1N8AWQ00S | 1607654   | 311  |
| SF-7ES1N8AY000  | 1605622   | 371  | SM-36KS001      | 1605756   | 385  | ST-08S1N8A8004S | 1619008   | 312  | ST-20KP010      | 1607655   | 363  |
| SF-7ES1N8AYW00  | 1607429   | 371  | SM-36KS002      | 1605758   | 385  | ST-08S1N8A8005  | 1619005   | 313  | ST-20KP020      | 1607656   | 363  |
| SF-7MP2000      | 1605626   | 374  | SM-36KS003      | 1605760   | 385  | ST-08S1N8A8005S | 1619009   | 312  | ST-20KS010      | 1607657   | 363  |
| SF-7MS2000      | 1605628   | 374  | SM-36KS004      | 1605762   | 385  | ST-08S1N8A8K02S | 1613370   | 308  | ST-20KS020      | 1607658   | 363  |
| SF-7NS2000      | 1605631   | 374  | SM-5EP1N8A9L32S | 1613425   | 381  | ST-08S1N8A8K03S | 1613371   | 308  | ST-3EP1N8A6100S | 1613544   | 361  |
| SF-7PP2000      | 1605634   | 374  | SM-5EP1N8A9L33S | 1613426   | 381  | ST-08S1N8A8K04S | 1613372   | 308  | ST-3EP1N8A8003  | 1607663   | 357  |
| SF-7PS2000      | 1605636   | 374  | SM-5EP1N8A9L34S | 1613427   | 381  | ST-08S1N8A9003S | 1619015   | 314  | ST-3EP1N8A8003S | 1607665   | 356  |
| SF-7QP2000      | 1605639   | 374  | SM-5EPWN8AA700  | 1620663   | 384  | ST-08S1N8A9004S | 1619016   | 314  | ST-3EP1N8A8004  | 1607666   | 357  |
| SF-7QS2000      | 1605643   | 374  | SM-5EPWN8AWT00  | 1613517   | 381  | ST-08S1N8A9005S | 1619017   | 314  | ST-3EP1N8A8004S | 1607667   | 356  |
| SF-7RP2000      | 1605646   | 374  | SM-5ES1N8A8L32S | 1613428   | 380  | ST-08S1N8A9K02S | 1618724   | 309  | ST-3EP1N8A8005  | 1624534   | 357  |
| SF-Z0003        | 1605657   | 407  | SM-5ES1N8A8L33S | 1613429   | 380  | ST-08S1N8A9K03S | 1618725   | 309  | ST-3EP1N8A8005S | 1624535   | 356  |
| SF-Z0011        | 1605675   | 407  | SM-5ES1N8A8L34S | 1613430   | 380  | ST-08S1N8A9K04S | 1618726   | 309  | ST-3EP1N8A8K02S | 1618602   | 352  |
| SF-Z0013        | 1605681   | 407  | SM-5ES1N8A8S22  | 1613518   | 380  | ST-08S1N8AA400S | 1620440   | 316  | ST-3EP1N8A8K03S | 1618574   | 352  |
| SF-Z0014        | 1607446   | 407  | SM-5ES1N8A8S23  | 1613519   | 380  | ST-08S1N8AA500S | 1620455   | 316  | ST-3EP1N8A8K04S | 1618575   | 352  |
| SF-Z0019        | 1607449   | 414  | SM-5ES1N8A8S24  | 1613520   | 380  | ST-08S1N8ACK02S | 1618801   | 310  | ST-3EP1N8A9003S | 1607670   | 358  |
| SF-Z0025        | 1607452   | 407  | SM-5ES1N8AY000  | 1605823   | 392  | ST-08S1N8ACK03S | 1618802   | 310  | ST-3EP1N8A9004S | 1607671   | 358  |
| SF-Z0026        | 1607454   | 407  | SM-5ES1N8AY000S | 1613524   | 392  | ST-08S1N8ACK04S | 1618805   | 310  | ST-3EP1N8A9005S | 1624536   | 358  |
| SF-Z0027        | 1607455   | 409  | SM-5ES1N8AYW00  | 1607532   | 383  | ST-08S1N8AH100S | 1619035   | 317  | ST-3EP1N8A9K02S | 1620614   | 353  |
| SF-Z0028        | 1607456   | 409  | SM-5ES1N8AYW00S | 1613525   | 383  | ST-08S1N8AW400S | 1619038   | 311  | ST-3EP1N8A9K03S | 1618406   | 353  |
| SF-Z0029        | 1607458   | 406  | SM-7EP1N8A9L32S | 1613431   | 381  | ST-08S1N8AW500S | 1619220   | 315  | ST-3EP1N8A9K04S | 1618690   | 353  |
| SF-Z0030        | 1607459   | 406  | SM-7EP1N8A9L33S | 1613432   | 381  | ST-08S1N8AWK00S | 1619197   | 315  | ST-3EP1N8AA400S | 1620427   | 360  |
| SF-Z0031        | 1607461   | 406  | SM-7EP1N8A9L34S | 1613433   | 381  | ST-08S1N8AWQ00S | 1619039   | 311  | ST-3EP1N8AA500S | 1620444   | 360  |
| SF-Z0032        | 1607462   | 406  | SM-7EPWN8AA700  | 1620664   | 384  | ST-10KP010      | 1618255   | 319  | ST-3EP1N8ACK02S | 1618402   | 354  |
| SF-Z0033        | 1607463   | 406  | SM-7EPWN8AWT00  | 1613527   | 381  | ST-10KP020      | 1618256   | 319  | ST-3EP1N8ACK03S | 1618407   | 354  |
| SF-Z0035        | 1607465   | 406  | SM-7ES1N8A8L32S | 1613434   | 380  | ST-10KP030      | 1618261   | 319  | ST-3EP1N8ACK04S | 1618760   | 354  |
| SF-Z0039        | 1607470   | 406  | SM-7ES1N8A8L33S | 1613435   | 380  | ST-10KS010      | 1618239   | 319  | ST-3EP1N8AH100S | 1613545   | 361  |
| SF-Z0040        | 1607471   | 406  | SM-7ES1N8A8L34S | 1613436   | 380  | ST-10KS020      | 1618251   | 319  | ST-3EP1N8AW400S | 1607674   | 355  |
| SF-Z0041        | 1607472   | 406  | SM-7ES1N8A8S22  | 1613528   | 380  | ST-10KS030      | 1618254   | 319  | ST-3EP1N8AW500S | 1619209   | 359  |
| SF-Z0042        | 1613666   | 407  | SM-7ES1N8A8S23  | 1613529   | 380  | ST-17P1N8A6100S | 1613540   | 317  | ST-3EP1N8AWK00S | 1619186   | 359  |
| SF-Z0047        | 1614689   | 406  | SM-7ES1N8A8S24  | 1613530   | 380  | ST-17P1N8A8003  | 1607624   | 313  | ST-3EP1N8AWQ00S | 1607675   | 355  |



| Type            | Order No. | Page | Type            | Order No. | Page | Type            | Order No. | Page | Type                  | Order No. | Page |
|-----------------|-----------|------|-----------------|-----------|------|-----------------|-----------|------|-----------------------|-----------|------|
| ST-3ES1N8A6100S | 1613546   | 361  | ST-6EP1N8A8004  | 1613560   | 357  | ST-7ES1N8A8005  | 1624555   | 357  | ST-Z0007              | 1607777   | 414  |
| ST-3ES1N8A8003  | 1607682   | 357  | ST-6EP1N8A8004S | 1613561   | 356  | ST-7ES1N8A8005S | 1624556   | 356  | ST-Z0012              | 1613667   | 409  |
| ST-3ES1N8A8003S | 1607683   | 356  | ST-6EP1N8A8005  | 1624546   | 357  | ST-7ES1N8A8002S | 1618633   | 352  | ST-Z0016              | 1617993   | 412  |
| ST-3ES1N8A8004  | 1607684   | 357  | ST-6EP1N8A8005S | 1624547   | 356  | ST-7ES1N8A8003S | 1618634   | 352  | ST-Z0017              | 1618049   | 412  |
| ST-3ES1N8A8004S | 1607685   | 356  | ST-6EP1N8A8K02S | 1618622   | 352  | ST-7ES1N8A8K04S | 1618635   | 352  | ST-Z0018              | 1618050   | 412  |
| ST-3ES1N8A8005  | 1624537   | 357  | ST-6EP1N8A8K03S | 1618623   | 352  | ST-7ES1N8A9003S | 1607764   | 358  | ST-Z0019              | 1620621   | 412  |
| ST-3ES1N8A8005S | 1624538   | 356  | ST-6EP1N8A8K04S | 1618624   | 352  | ST-7ES1N8A9004S | 1607765   | 358  | ST-Z0020              | 1620622   | 412  |
| ST-3ES1N8A8K02S | 1618312   | 352  | ST-6EP1N8A9003S | 1613564   | 358  | ST-7ES1N8A9005S | 1624557   | 358  | ST-Z0021              | 1620623   | 412  |
| ST-3ES1N8A8K03S | 1618408   | 352  | ST-6EP1N8A9004S | 1613565   | 358  | ST-7ES1N8A9K02S | 1618716   | 353  | SZF 1-0,6X3,5         | 1204517   | 422  |
| ST-3ES1N8A8K04S | 1618603   | 352  | ST-6EP1N8A9005S | 1624548   | 358  | ST-7ES1N8A9K03S | 1618717   | 353  |                       |           |      |
| ST-3ES1N8A9003S | 1607688   | 358  | ST-6EP1N8A9K02S | 1618704   | 353  | ST-7ES1N8A9K04S | 1618718   | 353  |                       |           |      |
| ST-3ES1N8A9004S | 1607689   | 358  | ST-6EP1N8A9K03S | 1618705   | 353  | ST-7ES1N8AA400S | 1620436   | 360  |                       |           |      |
| ST-3ES1N8A9005S | 1624539   | 358  | ST-6EP1N8A9K04S | 1618706   | 353  | ST-7ES1N8AA500S | 1620451   | 360  |                       |           |      |
| ST-3ES1N8A9K02S | 1618695   | 353  | ST-6EP1N8AA400S | 1620433   | 360  | ST-7ES1N8ACK02S | 1618787   | 354  |                       |           |      |
| ST-3ES1N8A9K03S | 1618694   | 353  | ST-6EP1N8AA500S | 1620450   | 360  | ST-7ES1N8ACK03S | 1618786   | 354  |                       |           |      |
| ST-3ES1N8A9K04S | 1618693   | 353  | ST-6EP1N8ACK02S | 1618776   | 354  | ST-7ES1N8ACK04S | 1618785   | 354  |                       |           |      |
| ST-3ES1N8AA400S | 1620428   | 360  | ST-6EP1N8ACK03S | 1618777   | 354  | ST-7ES1N8AH100S | 1613593   | 361  | TF-SCRJ-POF KONF SET  | 1405246   | 170  |
| ST-3ES1N8AA500S | 1620443   | 360  | ST-6EP1N8ACK04S | 1618778   | 354  | ST-7ES1N8AW400S | 1607768   | 355  | TSB 04 SAC            | 1208429   | 297  |
| ST-3ES1N8ACK02S | 1618762   | 354  | ST-6EP1N8AH100S | 1613568   | 361  | ST-7ES1N8AW500S | 1619218   | 359  | TSD 08 SAC            | 1212597   | 297  |
| ST-3ES1N8ACK03S | 1618763   | 354  | ST-6EP1N8AW400S | 1613569   | 355  | ST-7ES1N8AWK00S | 1619195   | 359  | TSD-M 1,2NM           | 1212224   | 297  |
| ST-3ES1N8ACK04S | 1618764   | 354  | ST-6EP1N8AW500S | 1619215   | 359  | ST-7ES1N8AWQ00S | 1607769   | 355  | TSD-M 3NM             | 1212225   | 297  |
| ST-3ES1N8AH100S | 1613547   | 361  | ST-6EP1N8AWK00S | 1619192   | 359  | ST-8EP1N8A6100S | 1613595   | 361  | TSD-M 6NM             | 1212226   | 297  |
| ST-3ES1N8AW400S | 1607692   | 355  | ST-6EP1N8AWQ00S | 1613570   | 355  | ST-8EP1N8A8003  | 1613600   | 357  | TSD-M SAC-BIT ADAPTER | 1212600   | 297  |
| ST-3ES1N8AW500S | 1619212   | 359  | ST-6ES1N8A6100S | 1613572   | 361  | ST-8EP1N8A8003S | 1613601   | 356  |                       |           |      |
| ST-3ES1N8AWK00S | 1619189   | 359  | ST-6ES1N8A8003  | 1613577   | 357  | ST-8EP1N8A8004  | 1613602   | 357  |                       |           |      |
| ST-3ES1N8AWK00S | 1607694   | 355  | ST-6ES1N8A8003S | 1613578   | 356  | ST-8EP1N8A8004S | 1613603   | 356  |                       |           |      |
| ST-5EP1N8A6100S | 1613548   | 361  | ST-6ES1N8A8004  | 1613579   | 357  | ST-8EP1N8A8005  | 1624636   | 357  |                       |           |      |
| ST-5EP1N8A8003  | 1607699   | 357  | ST-6ES1N8A8004S | 1613580   | 356  | ST-8EP1N8A8005S | 1624637   | 356  |                       |           |      |
| ST-5EP1N8A8003S | 1607700   | 356  | ST-6ES1N8A8005  | 1624549   | 357  | ST-8EP1N8A8K02S | 1618681   | 352  | VC-A 2-BM             | 1607815   | 50   |
| ST-5EP1N8A8004  | 1607701   | 357  | ST-6ES1N8A8005S | 1624550   | 356  | ST-8EP1N8A8K03S | 1618680   | 352  | VC-AF                 | 1852862   | 25   |
| ST-5EP1N8A8004S | 1607702   | 356  | ST-6ES1N8A8K02S | 1618632   | 352  | ST-8EP1N8A8K04S | 1618679   | 352  | VC-AFOS 2             | 1885240   | 37   |
| ST-5EP1N8A8005  | 1624540   | 357  | ST-6ES1N8A8K03S | 1618631   | 352  | ST-8EP1N8A9003S | 1613606   | 358  | VC-AL-T1-R-M20-S      | 1583610   | 34   |
| ST-5EP1N8A8005S | 1624541   | 356  | ST-6ES1N8A8K04S | 1618630   | 352  | ST-8EP1N8A9004S | 1613607   | 358  | VC-AL-T1-R-M25-S      | 1583623   | 34   |
| ST-5EP1N8A8K02S | 1618614   | 352  | ST-6ES1N8A9003S | 1613583   | 358  | ST-8EP1N8A9005S | 1624653   | 358  | VC-AL-T1-Z-M20-S      | 1583597   | 34   |
| ST-5EP1N8A8K03S | 1618615   | 352  | ST-6ES1N8A9004S | 1613584   | 358  | ST-8EP1N8A9K02S | 1618740   | 353  | VC-AL-T1-Z-M25-S      | 1583607   | 34   |
| ST-5EP1N8A8K04S | 1618616   | 352  | ST-6ES1N8A9005S | 1624551   | 358  | ST-8EP1N8A9K03S | 1618741   | 353  | VC-AL-T2-R-M20-S      | 1583610   | 34   |
| ST-5EP1N8A9003S | 1607706   | 358  | ST-6ES1N8A9K02S | 1618708   | 353  | ST-8EP1N8A9K04S | 1618742   | 353  | VC-AL-T2-R-M25-S      | 1583665   | 34   |
| ST-5EP1N8A9004S | 1607707   | 358  | ST-6ES1N8A9K03S | 1618709   | 353  | ST-8EP1N8AA400S | 1620437   | 360  | VC-AL-T2-Z-M20-S      | 1583636   | 34   |
| ST-5EP1N8A9005S | 1624542   | 358  | ST-6ES1N8A9K04S | 1618710   | 353  | ST-8EP1N8AA500S | 1620454   | 360  | VC-AL-T2-Z-M25-S      | 1583649   | 34   |
| ST-5EP1N8A9K02S | 1618703   | 353  | ST-6ES1N8AA400S | 1620434   | 360  | ST-8EP1N8ACK02S | 1618818   | 354  | VC-AL-T3-R-M25-S      | 1583704   | 34   |
| ST-5EP1N8A9K03S | 1618702   | 353  | ST-6ES1N8AA500S | 1620449   | 360  | ST-8EP1N8ACK03S | 1618819   | 354  | VC-AL-T3-R-M25/M20-S  | 1583717   | 34   |
| ST-5EP1N8A9K04S | 1618701   | 353  | ST-6ES1N8ACK02S | 1618780   | 354  | ST-8EP1N8ACK04S | 1618820   | 354  | VC-AL-T3-R-M32-S      | 1583720   | 34   |
| ST-5EP1N8AA400S | 1620431   | 360  | ST-6ES1N8ACK03S | 1618781   | 354  | ST-8EP1N8AH100S | 1613610   | 361  | VC-AL-T3-Z-M25-S      | 1583678   | 34   |
| ST-5EP1N8AA500S | 1620448   | 360  | ST-6ES1N8ACK04S | 1618782   | 354  | ST-8EP1N8AW400S | 1613611   | 355  | VC-AL-T3-Z-M25/M20-S  | 1583681   | 34   |
| ST-5EP1N8ACK02S | 1618767   | 354  | ST-6ES1N8AH100S | 1613587   | 361  | ST-8EP1N8AW500S | 1620462   | 359  | VC-AL-T3-Z-M32-S      | 1583694   | 34   |
| ST-5EP1N8ACK03S | 1618768   | 354  | ST-6ES1N8AW400S | 1613588   | 355  | ST-8EP1N8AWK00S | 1620460   | 359  | VC-AL-T4-R-M25-S      | 1583762   | 34   |
| ST-5EP1N8ACK04S | 1618769   | 354  | ST-6ES1N8AW500S | 1619216   | 359  | ST-8EP1N8AWQ00S | 1613612   | 355  | VC-AL-T4-R-M25/M20-S  | 1583775   | 34   |
| ST-5EP1N8AH100S | 1613549   | 361  | ST-6ES1N8AWK00S | 1619193   | 359  | ST-8ES1N8A6100S | 1613614   | 361  | VC-AL-T4-R-M32-S      | 1583788   | 34   |
| ST-5EP1N8AW400S | 1607710   | 355  | ST-6ES1N8AWQ00S | 1613589   | 355  | ST-8ES1N8A8003  | 1613619   | 357  | VC-AL-T4-Z-M25-S      | 1583733   | 34   |
| ST-5EP1N8AW500S | 1619213   | 359  | ST-7EP1N8A6100S | 1613590   | 361  | ST-8ES1N8A8003S | 1613620   | 356  | VC-AL-T4-Z-M25/M20-S  | 1583746   | 34   |
| ST-5EP1N8AWK00S | 1619190   | 359  | ST-7EP1N8A8003  | 1607735   | 357  | ST-8ES1N8A8004  | 1613621   | 357  | VC-AL-T4-Z-M32-S      | 1583759   | 34   |
| ST-5EP1N8AWQ00S | 1607711   | 355  | ST-7EP1N8A8003S | 1607736   | 356  | ST-8ES1N8A8004S | 1613622   | 356  | VC-AMC 4              | 1583877   | 28   |
| ST-5ES1N8A6100S | 1613550   | 361  | ST-7EP1N8A8004  | 1607737   | 357  | ST-8ES1N8A8005  | 1624638   | 357  | VC-AMC 5              | 1583878   | 28   |
| ST-5ES1N8A8003  | 1607717   | 357  | ST-7EP1N8A8004S | 1607738   | 356  | ST-8ES1N8A8005S | 1624639   | 356  | VC-AML 2              | 1852859   | 27   |
| ST-5ES1N8A8003S | 1607718   | 356  | ST-7EP1N8A8005  | 1624552   | 357  | ST-8ES1N8A8K02S | 1618674   | 352  | VC-AML 4              | 1607509   | 26   |
| ST-5ES1N8A8004  | 1607719   | 357  | ST-7EP1N8A8005S | 1624553   | 356  | ST-8ES1N8A8K03S | 1618675   | 352  | VC-AML 4-PEA          | 1607516   | 26   |
| ST-5ES1N8A8004S | 1607720   | 356  | ST-7EP1N8A8K02S | 1618640   | 352  | ST-8ES1N8A8K04S | 1618676   | 352  | VC-AML 5              | 1607523   | 26   |
| ST-5ES1N8A8005S | 1624544   | 356  | ST-7EP1N8A8K03S | 1618639   | 352  | ST-8ES1N8A9003S | 1613625   | 358  | VC-AML 5-PEA          | 1607530   | 26   |
| ST-5ES1N8A8K02S | 1618621   | 352  | ST-7EP1N8A8K04S | 1618638   | 352  | ST-8ES1N8A9004S | 1613626   | 358  | VC-AML 6              | 1853531   | 27   |
| ST-5ES1N8A8K03S | 1618620   | 352  | ST-7EP1N8A9003S | 1607741   | 358  | ST-8ES1N8A9005S | 1624654   | 358  | VC-AML 7              | 1607537   | 26   |
| ST-5ES1N8A8K04S | 1618619   | 352  | ST-7EP1N8A9004S | 1607742   | 358  | ST-8ES1N8A9K02S | 1618748   | 353  | VC-AML 7-PEA          | 1607544   | 26   |
| ST-5ES1N8A9003S | 1607723   | 358  | ST-7EP1N8A9005S | 1624554   | 358  | ST-8ES1N8A9K03S | 1618749   | 353  | VC-AML 8              | 1852833   | 27   |
| ST-5ES1N8A9004S | 1607724   | 358  | ST-7EP1N8A9K02S | 1618712   | 353  | ST-8ES1N8A9K04S | 1618750   | 353  | VC-AMLV 2             | 1884979   | 27   |
| ST-5ES1N8A9005S | 1624545   | 358  | ST-7EP1N8A9K03S | 1618713   | 353  | ST-8ES1N8AA400S | 1620438   | 360  | VC-AMLV 6             | 1884872   | 27   |
| ST-5ES1N8A9K02S | 1618696   | 353  | ST-7EP1N8A9K04S | 1618714   | 353  | ST-8ES1N8AA500S | 1620453   | 360  | VC-AMLV 8             | 1884885   | 27   |
| ST-5ES1N8A9K03S | 1618697   | 353  | ST-7EP1N8AA400S | 1620435   | 360  | ST-8ES1N8ACK02S | 1618825   | 354  | VC-AMS 2              | 1853528   | 25   |
| ST-5ES1N8A9K04S | 1618698   | 353  | ST-7EP1N8AA500S | 1620452   | 360  | ST-8ES1N8ACK03S | 1618824   | 354  | VC-AMS 2-PE           | 1583542   | 25   |
| ST-5ES1N8AA400S | 1620432   | 360  | ST-7EP1N8ACK02S | 1618788   | 354  | ST-8ES1N8ACK04S | 1618823   | 354  | VC-AMS 4              | 1607745   | 25   |
| ST-5ES1N8AA500S | 1620447   | 360  | ST-7EP1N8ACK03S | 1618790   | 354  | ST-8ES1N8AH100S | 1613629   | 361  | VC-AMS 5              | 1607748   | 25   |
| ST-5ES1N8ACK02S | 1618772   | 354  | ST-7EP1N8ACK04S | 1618791   | 354  | ST-8ES1N8AW400S | 1613630   | 355  | VC-AMS 6              | 1854019   | 25   |
| ST-5ES1N8ACK03S | 1618773   | 354  | ST-7EP1N8AH100S | 1613591   | 361  | ST-8ES1N8AW500S | 1620461   | 359  | VC-AMS 6-PE           | 1583555   | 25   |
| ST-5ES1N8ACK04S | 1618774   | 354  | ST-7EP1N8AW400S | 1607746   | 355  | ST-8ES1N8AWK00S | 1620459   | 359  | VC-AMS 7              | 1607751   | 25   |
| ST-5ES1N8AH100S | 1613551   | 361  | ST-7EP1N8AW500S | 1619217   | 359  | ST-8ES1N8AWQ00S | 1613631   | 355  | VC-AMS 8              | 1854022   | 25   |
| ST-5ES1N8AW400S | 1607727   | 355  | ST-7EP1N8AWK00S | 1619194   | 359  | ST-E2015151     | 1613831   | 317  | VC-AMS 8-PE           | 1583568   | 25   |
| ST-5ES1N8AW500S | 1619214   | 359  | ST-7EP1N8AWQ00S | 1607747   | 355  | ST-Z0001        | 1607770   | 410  | VC-AR-S               | 1607829   | 50   |
| ST-5ES1N8AWK00S | 1619191   | 359  | ST-7ES1N8A6100S | 1613592   | 361  | ST-Z0002        | 1607771   | 410  | VC-AR1-EMV            | 1853214   | 25   |
| ST-5ES1N8AWQ00S | 1607728   | 355  | ST-7ES1N8A8003  | 1607755   | 357  | ST-Z0003        | 1607772   | 410  | VC-AR1/2M             | 1852972   | 25   |
| ST-6EP1N8A6100S | 1613553   | 361  | ST-7ES1N8A8003S | 1607756   | 356  | ST-Z0004        | 1607773   | 410  | VC-AR1/2M-PEA         | 1607761   | 30   |
| ST-6EP1N8A8003  | 1613558   | 357  | ST-7ES1N8A8004  | 1607758   | 357  | ST-Z0005        | 1607775   | 410  | VC-AR1/2M-S22-SET     | 1607298   | 24   |
| ST-6EP1N8A8003S | 1613559   | 356  | ST-7ES1N8A8004S | 1607759   | 356  | ST-Z0006        | 1607776   | 414  | VC-AR1/2M-S66-SET     | 1607346   | 24   |

Index

Alphabetical

| Type                           | Order No. Page |    | Type                      | Order No. Page |    | Type                         | Order No. Page |     | Type                     | Order No. Page |     |
|--------------------------------|----------------|----|---------------------------|----------------|----|------------------------------|----------------|-----|--------------------------|----------------|-----|
| VC-AR1/2M-S88-SET              | 1607394        | 24 | VC-K-T2-R                 | 1855102        | 35 | VC-TFS 2-PE                  | 1583513        | 33  | VS-09-BU-DSUB-2P-LH      | 1655289        | 214 |
| VC-AR2-EMV                     | 1853227        | 25 | VC-K-T2-R-M25             | 1855107        | 35 | VC-TFS 4-PEA                 | 1607467        | 33  | VS-09-BU-DSUB-CD-B       | 1688861        | 212 |
| VC-AR2/3M                      | 1852985        | 25 | VC-K-T2-Z                 | 1852943        | 35 | VC-TFS 4/1M-PEA              | 1607488        | 33  | VS-09-BU-DSUB-CD-G       | 1688845        | 212 |
| VC-AR2/3M-PEA                  | 1607774        | 30 | VC-K-T2-Z-FK-6X20,5       | 1607703        | 35 | VC-TFS 4/2M-PEA              | 1607495        | 33  | VS-09-BU-DSUB-EG         | 1688803        | 210 |
| VC-AR2/3M-S222-SET             | 1607311        | 24 | VC-K-T2-Z-FK-6X24         | 1607677        | 35 | VC-TFS 5-PEA                 | 1607474        | 33  | VS-09-BU-DSUB-ER         | 1688405        | 211 |
| VC-AR2/3M-S666-SET             | 1607359        | 24 | VC-K-T2-Z-FK-7,5X29,5     | 1607680        | 35 | VC-TFS 5/1M-PEA              | 1607502        | 33  | VS-09-BU-DSUB-FK         | 1688829        | 213 |
| VC-AR2/3M-S888-SET             | 1607407        | 24 | VC-K-T2-Z-FK-9X35         | 1607693        | 35 | VC-TFS 6                     | 1853476        | 33  | VS-09-BU-DSUB-HD-CD-B    | 1655124        | 212 |
| VC-AR3-EMV                     | 1853230        | 25 | VC-K-T2-Z-M25             | 1852948        | 35 | VC-TFS 6-PE                  | 1583526        | 33  | VS-09-BU-DSUB-HD-EG      | 1655108        | 210 |
| VC-AR3/4M                      | 1852998        | 25 | VC-K-T3-IN (10-25)        | 1424368        | 35 | VC-TFS 7-PEA                 | 1607481        | 33  | VS-09-BU-DSUB-HD-ER      | 1656136        | 211 |
| VC-AR3/4M-PEA                  | 1607787        | 30 | VC-K-T3-R                 | 1855115        | 35 | VC-TFS 8                     | 1852820        | 33  | VS-09-BU-DSUB-LH-B       | 1654798        | 211 |
| VC-AR3/4M-S2222-SET            | 1607322        | 24 | VC-K-T3-R-M25             | 1855120        | 35 | VC-TFS 8-PE                  | 1583536        | 33  | VS-09-BU-DSUB/9-MPT-0,5  | 1688395        | 185 |
| VC-AR3/4M-S6666-SET            | 1607370        | 24 | VC-K-T3-Z                 | 1852956        | 35 | VC-TR-S                      | 1607826        | 50  | VS-09-CAN                | 1689307        | 184 |
| VC-AR3/4M-S8888-SET            | 1607418        | 24 | VC-K-T3-Z-M25             | 1852961        | 35 | VC-TR1/2M-PEA                | 1607059        | 33  | VS-09-DSUB-20-LI-1,0     | 1656233        | 218 |
| VC-AR4-EMV                     | 1853243        | 25 | VC-K-T4-R                 | 1855128        | 35 | VC-TR1/2M-PEA-S22-SET        | 1607143        | 32  | VS-09-DSUB-20-LI-2,0     | 1656246        | 218 |
| VC-AR4/5M                      | 1853007        | 25 | VC-K-T4-R-M25             | 1855133        | 35 | VC-TR1/2M-PEA-S66-SET        | 1607191        | 32  | VS-09-DSUB-20-LI-5,0     | 1656259        | 218 |
| VC-AR4/5M-PEA                  | 1607790        | 30 | VC-K-T4-Z                 | 1852969        | 35 | VC-TR1/2M-PEA-S88-SET        | 1607239        | 32  | VS-09-GC-BU/BU           | 1688722        | 213 |
| VC-AR4/5M-S22222-SET           | 1607335        | 24 | VC-K-T4-Z-M25             | 1852974        | 35 | VC-TR2/3M-PEA                | 1607062        | 33  | VS-09-GC-ST/ST           | 1652651        | 213 |
| VC-AR4/5M-S66666-SET           | 1607383        | 24 | VC-M-KV-PG16 1X3/1X8      | 1885457        | 46 | VC-TR2/3M-PEA-S222-SET       | 1607154        | 32  | VS-09-IBS-BU             | 1689284        | 184 |
| VC-AR4/5M-S88888-SET           | 1607431        | 24 | VC-M-KV-PG16 1X3/1X9      | 1885460        | 46 | VC-TR2/3M-PEA-S666-SET       | 1607202        | 32  | VS-09-IBS-ST             | 1689271        | 184 |
| VC-BZS WH                      | 1852875        | 50 | VC-M-KV-PG16 1X3/2X8      | 1885499        | 46 | VC-TR2/3M-PEA-S888-SET       | 1607250        | 32  | VS-09-KU-BU/BU           | 1689637        | 185 |
| VC-CB-A                        | 1607888        | 38 | VC-M-KV-PG16 1X5/1X9      | 1885486        | 46 | VC-TR3/4M-PEA                | 1607075        | 33  | VS-09-KU-ST/ST           | 1689640        | 185 |
| VC-CB-T                        | 1607884        | 38 | VC-M-KV-PG16 1X5/2X6      | 1885509        | 46 | VC-TR3/4M-PEA-S2222-SET      | 1607167        | 32  | VS-09-PROFIBUS-SC        | 1654549        | 184 |
| VC-D-AF                        | 1855319        | 38 | VC-M-KV-PG16 1X6/1X8      | 1885473        | 46 | VC-TR3/4M-PEA-S6666-SET      | 1607215        | 32  | VS-09-PROFIBUS-SP        | 1654345        | 184 |
| VC-D1-BU15-PE                  | 1855050        | 39 | VC-M-KV-PG16 2X6/1X7      | 1885512        | 44 | VC-TR3/4M-PEA-S8888-SET      | 1607263        | 32  | VS-09-SD                 | 1887086        | 219 |
| VC-D1-BU15-PE-R                | 1884801        | 39 | VC-M-KV-PG16 3X7          | 1885525        | 44 | VC-TR4/5M-PEA                | 1607088        | 33  | VS-09-SET-EMV            | 1689158        | 184 |
| VC-D1-ST15-PE                  | 1855018        | 38 | VC-M-KV-PG16( 4- 6,5)     | 1853942        | 44 | VC-TR4/5M-PEA-S22222-SET     | 1607178        | 32  | VS-09-SET-STD            | 1689145        | 220 |
| VC-D2-BU30-PE                  | 1855063        | 39 | VC-M-KV-PG16( 5- 8)       | 1853955        | 44 | VC-TR4/5M-PEA-S66666-SET     | 1607226        | 32  | VS-09-ST-DSUB-1P-4S      | 1689006        | 215 |
| VC-D2-BU30-PE-R                | 1884791        | 39 | VC-M-KV-PG16( 6,5- 9,5)   | 1853968        | 44 | VC-TR4/5M-PEA-S88888-SET     | 1607274        | 32  | VS-09-ST-DSUB-1P-4S-LH   | 1655315        | 215 |
| VC-D2-ST30-PE                  | 1855021        | 38 | VC-M-KV-PG16( 7-10,5)     | 1853971        | 44 | VS-04-BUA-BUB-F/IP67         | 1653838        | 205 | VS-09-ST-DSUB-2P         | 1688418        | 214 |
| VC-D3-BU50-PE                  | 1855076        | 39 | VC-M-KV-PG16( 9-13)       | 1853984        | 44 | VS-04-BUA-FK-F/IP67          | 1653854        | 205 | VS-09-ST-DSUB-2P-LH      | 1655292        | 214 |
| VC-D3-BU50-PE-R                | 1884788        | 39 | VC-M-KV-PG16(11,5-15,5)   | 1854857        | 44 | VS-04-BUB-FK-F/IP67          | 1653867        | 205 | VS-09-ST-DSUB-CD-B       | 1688858        | 212 |
| VC-D3-ST50-PE                  | 1855034        | 38 | VC-M-KV-PG16/M25 ST       | 1644407        | 44 | VS-04-C-SDA/PH/0,3           | 1405552        | 205 | VS-09-ST-DSUB-CD-G       | 1688832        | 212 |
| VC-D4-BU65-PE                  | 1855089        | 39 | VC-M-KV-PG21 1X6/2X9      | 1885619        | 47 | VS-04-C-SDA/SDB/1,8          | 1405578        | 205 | VS-09-ST-DSUB-EG         | 1688793        | 210 |
| VC-D4-BU65-PE-R                | 1884775        | 39 | VC-M-KV-PG21 2X6/2X8      | 1885635        | 47 | VS-04-C-SDB/PH/0,3           | 1405565        | 205 | VS-09-ST-DSUB-ER         | 1688382        | 211 |
| VC-D4-ST65-PE                  | 1855047        | 38 | VC-M-KV-PG21 2X7,2/1X10,5 | 1885648        | 47 | VS-04-MS-IP20                | 1402490        | 205 | VS-09-ST-DSUB-FK         | 1688816        | 213 |
| VC-EMV-KV-PG16( 6,5- 9,5/ 6,5) | 1854132        | 44 | VC-M-KV-PG21 3X7          | 1885651        | 47 | VS-04-MS-IP67                | 1402489        | 205 | VS-09-ST-DSUB-HD-CD-B    | 1655137        | 212 |
| VC-EMV-KV-PG16( 7-10,5/ 8,5)   | 1854161        | 44 | VC-M-KV-PG21 3X9          | 1885664        | 47 | VS-08-A-RJ45/LP-1-IP67       | 1689446        | 85  | VS-09-ST-DSUB-HD-EG      | 1655111        | 210 |
| VC-EMV-KV-PG16( 9-13/10,5)     | 1854174        | 44 | VC-M-KV-PG21 4X6,5        | 1885677        | 47 | VS-08-A-RJ45/LP-1-IP67-BK    | 1658655        | 85  | VS-09-ST-DSUB-HD-ER      | 1655098        | 211 |
| VC-EMV-KV-PG21( 9-13/ 9,5)     | 1854200        | 45 | VC-M-KV-PG21 4X8          | 1885680        | 47 | VS-08-A-RJ45/MOD-1-IP20      | 1689433        | 79  | VS-09-ST-DSUB-LH-B       | 1654785        | 211 |
| VC-EMV-KV-PG21( 9-13/12)       | 1854213        | 45 | VC-M-KV-PG21( 7-10,5)     | 1853997        | 45 | VS-08-A-RJ45/MOD-1-R-IP67    | 1689080        | 84  | VS-09-ST-DSUB/10-MPT-0,5 | 1688379        | 185 |
| VC-EMV-KV-PG21(11,5-15,5/13,5) | 1854242        | 45 | VC-M-KV-PG21( 9-13)       | 1854006        | 45 | VS-08-A-RJ45/MOD-1-IP67-BK   | 1658642        | 84  | VS-09-T-20-1-S-A         | 1655661        | 218 |
| VC-EMV-KV-PG21(14-18/14,5)     | 1854255        | 45 | VC-M-KV-PG21(11,5-15,5)   | 1854035        | 45 | VS-08-A-RJ45/MOD-1-R-IP67    | 1689844        | 84  | VS-09-T-20-1-S-S         | 1655658        | 218 |
| VC-FSMA-M-2 SET                | 1855432        | 37 | VC-M-KV-PG21(14-18)       | 1854048        | 45 | VS-08-A-RJ45/MOD-1-R-IP67 BK | 1658053        | 84  | VS-09-T-2M16             | 1688353        | 219 |
| VC-FSMA-M-KT-2 SET             | 1855703        | 37 | VC-M-KV-PG21(17-20,5)     | 1854051        | 45 | VS-08-BU-RJ45-10G/LH-1       | 1420401        | 85  | VS-09-TI-2EMV            | 1688476        | 219 |
| VC-K-KV-PG16 1X3/1X8           | 1885376        | 46 | VC-M-KV-PG21(20X 7)       | 1885305        | 45 | VS-08-BU-RJ45-5-F/PK         | 1652936        | 83  | VS-15-A                  | 1688036        | 220 |
| VC-K-KV-PG16 1X3/1X9           | 1885389        | 46 | VC-M-KV-PG21- 0           | 1854983        | 45 | VS-08-BU-RJ45-6-MOD/BU       | 1653155        | 84  | VS-15-A-EMV-S            | 1688049        | 220 |
| VC-K-KV-PG16 1X3/2X8           | 1885415        | 46 | VC-M-KV-PG21- 1X8,5/1X12  | 1854970        | 47 | VS-08-BU-RJ45-6/KA/LSA       | 1653168        | 79  | VS-15-A-GC-BU/BU         | 1689718        | 221 |
| VC-K-KV-PG16 1X5/1X9           | 1885402        | 46 | VC-M-KV-PG21/M32 ST       | 1644397        | 45 | VS-08-BU-RJ45-6/LH-1         | 1653087        | 85  | VS-15-A-GC-ST/ST         | 1689721        | 221 |
| VC-K-KV-PG16 1X5/2X6           | 1885428        | 46 | VC-MP-A1                  | 1884403        | 31 | VS-08-BU-RJ45-6/LV-1         | 1653090        | 85  | VS-15-BU-DSUB-2P-5S      | 1688230        | 215 |
| VC-K-KV-PG16 1X6/1X8           | 1885392        | 46 | VC-MP-A2                  | 1884416        | 31 | VS-08-BU-RJ45/10G-F          | 1424009        | 83  | VS-15-BU-DSUB-2P-5S-LH   | 1655344        | 215 |
| VC-K-KV-PG16 2X6/1X7           | 1885431        | 46 | VC-MP-A3                  | 1884429        | 31 | VS-08-BU-RJ45/BU             | 1689064        | 79  | VS-15-BU-DSUB-3P         | 1688214        | 214 |
| VC-K-KV-PG16 3X7               | 1885444        | 44 | VC-MP-A4                  | 1884432        | 31 | VS-08-BU-RJ45/LP-1           | 1688586        | 85  | VS-15-BU-DSUB-3P-LH      | 1655328        | 214 |
| VC-K-KV-PG16 7/14              | 1607664        | 44 | VC-MP-K1                  | 1884568        | 31 | VS-08-BU/BU-RJ45-F           | 1405617        | 83  | VS-15-BU-DSUB-CD-MG      | 1688926        | 212 |
| VC-K-KV-PG16( 4- 6,5)          | 1854459        | 44 | VC-MP-K2                  | 1884571        | 31 | VS-08-DSIV-L180-HYB SCO      | 1456666        | 91  | VS-15-BU-DSUB-CD-OG      | 1688942        | 212 |
| VC-K-KV-PG16( 5- 8)            | 1853735        | 44 | VC-MP-K3                  | 1884584        | 31 | VS-08-KS-H/GN                | 1654756        | 78  | VS-15-BU-DSUB-EG         | 1688887        | 210 |
| VC-K-KV-PG16( 6,5- 9,5)        | 1853748        | 44 | VC-MP-K4                  | 1884597        | 31 | VS-08-KS-H/GY                | 1654743        | 78  | VS-15-BU-DSUB-ER         | 1688120        | 211 |
| VC-K-KV-PG16( 7-10,5)          | 1853751        | 44 | VC-MP-S1                  | 1884720        | 31 | VS-08-KU-IP67                | 1689268        | 119 | VS-15-BU-DSUB-FK         | 1688900        | 213 |
| VC-K-KV-PG16( 9-13)            | 1853764        | 44 | VC-MP-S2                  | 1884733        | 31 | VS-08-KU-IP67-BK             | 1658684        | 119 | VS-15-BU-DSUB-HD-CD-B    | 1655182        | 212 |
| VC-K-KV-PG16(11,5-15,5)        | 1854844        | 44 | VC-MP-S3                  | 1884746        | 31 | VS-08-M12MR-10G-P SCO        | 1417443        | 88  | VS-15-BU-DSUB-HD-EG      | 1655166        | 210 |
| VC-K-KV-PG21 1X6/2X9           | 1885538        | 47 | VC-MP-S4                  | 1884759        | 31 | VS-08-M12MS-10G-P SCO        | 1417430        | 88  | VS-15-BU-DSUB-HD-ER      | 1655140        | 211 |
| VC-K-KV-PG21 2X6/2X8           | 1885554        | 47 | VC-POLISHER/M FSMA        | 1884982        | 50 | VS-08-RJ45-10G/C             | 1418853        | 78  | VS-15-BU-DSUB-LH-B       | 1654811        | 211 |
| VC-K-KV-PG21 2X7,2/1X10,5      | 1885567        | 47 | VC-SD-A1                  | 1886760        | 48 | VS-08-RJ45-10G/Q             | 1419001        | 78  | VS-15-BU-DSUB/16-MPT-0,5 | 1688094        | 210 |
| VC-K-KV-PG21 3X7               | 1885570        | 47 | VC-SD-A2                  | 1886773        | 48 | VS-08-RJ45-5-Q/IP67          | 1656990        | 82  | VS-15-DSUB-20-LI-1,0     | 1656262        | 218 |
| VC-K-KV-PG21 3X9               | 1885583        | 47 | VC-SD-A3                  | 1886786        | 48 | VS-08-RJ45-5-Q/IP67-BK       | 1658493        | 82  | VS-15-DSUB-20-LI-2,0     | 1656275        | 218 |
| VC-K-KV-PG21 4X6,5             | 1885596        | 47 | VC-SD-A4                  | 1886799        | 48 | VS-08-RJ45-FOLIEN-SET        | 1417184        | 78  | VS-15-DSUB-20-LI-5,0     | 1656288        | 218 |
| VC-K-KV-PG21 4X8               | 1885606        | 47 | VC-SD-T1                  | 1886728        | 48 | VS-08-RJ45-Q                 | 1402420        | 78  | VS-15-GC-BU/BU           | 1652664        | 213 |
| VC-K-KV-PG21( 7-10,5)          | 1853890        | 45 | VC-SD-T2                  | 1886731        | 48 | VS-08-SD-F                   | 1652606        | 205 | VS-15-GC-ST/ST           | 1652677        | 213 |
| VC-K-KV-PG21( 9-13)            | 1853900        | 45 | VC-SD-T3                  | 1886744        | 48 | VS-08-SD-F-BK                | 1658066        | 83  | VS-15-KU-BU/BU           | 1689653        | 221 |
| VC-K-KV-PG21(11,5-15,5)        | 1853913        | 45 | VC-SD-T4                  | 1886757        | 48 | VS-08-ST-H11-RJ45            | 1652716        | 78  | VS-15-KU-ST/ST           | 1689666        | 221 |
| VC-K-KV-PG21(14-18)            | 1853926        | 45 | VC-SD1                    | 1853670        | 48 | VS-08-ST-H21-RJ45            | 1652729        | 82  | VS-15-SD                 | 1887099        | 219 |
| VC-K-KV-PG21(17-20,5)          | 1853939        | 45 | VC-SD2                    | 1853683        | 48 | VS-08-ST-H21P-RJ45           | 1404388        | 82  | VS-15-SET-EMV            | 1689132        | 221 |
| VC-K-KV-PG21(20X7)             | 1885198        | 45 | VC-SD3                    | 1853696        | 48 | VS-08-T-H-RJ45/IP67          | 1652732        | 82  | VS-15-SET-STD            | 1689129        | 220 |
| VC-K-KV-PG21-1X8,5/1X12        | 1885279        | 47 | VC-SD4                    | 1853706        | 48 | VS-08-T-H-RJ45/IP67-BK       | 1658671        | 82  | VS-15-ST-DSUB-2P-5S      | 1688227        | 215 |
| VC-K-KV-PG21-2X4,5/1X13        | 1885282        | 47 | VC-T 2-BM                 | 1607813        | 50 | VS-09-A                      | 1688366        | 184 | VS-15-ST-DSUB-2P-5S-LH   | 1655360        | 215 |
| VC-K-KV-PG21-O                 | 1885363        | 45 | VC-T1-PR-D1               | 1607832        | 50 | VS-09-A-EMV-S                | 1688463        | 184 | VS-15-ST-DSUB-3P         | 1688201        | 214 |
| VC-K-T1-R                      | 1855092        | 35 | VC-T2-PR-D1               | 1607835        | 50 | VS-09-A-GC-BU/BU             | 1689695        | 185 | VS-15-ST-DSUB-3P-LH      | 1655331        | 214 |
| VC-K-T1-R-M20                  | 1855097        | 35 | VC-T3-PR-D1               | 1607838        | 50 | VS-09-A-GC-ST/ST             | 1689705        | 185 | VS-15-ST-DSUB-CD-MG      | 1688913        | 212 |
| VC-K-T1-Z                      | 1852930        | 35 | VC-T4-PR-D1               | 1607841        | 50 | VS-09-BU-DSUB-1P-4S          | 1689019        | 215 | VS-15-ST-DSUB-CD-OG      | 1688939        | 212 |
| VC-K-T1-Z-M20                  | 1852935        | 35 | VC-TFOS 2                 | 1855814        | 36 | VS-09-BU-DSUB-1P-4S-LH       | 1655302        | 215 | VS-15-ST-DSUB-EG         | 1688874        | 210 |
| VC-K-T2-IN (10-25) G           | 1583880        | 35 | VC-TFS 2                  | 1852846        | 33 | VS-09-BU-DSUB-2P             | 1688421        | 214 | VS-15-ST-DSUB-ER         | 1688081        | 211 |

| Type                      | Order No. | Page | Type                          | Order No. | Page | Type                          | Order No. | Page | Type                          | Order No. | Page |
|---------------------------|-----------|------|-------------------------------|-----------|------|-------------------------------|-----------|------|-------------------------------|-----------|------|
| VS-15-ST-DSUB-FK          | 1688890   | 213  | VS-CT-RJ45-H                  | 1653265   | 78   | VS-PNRJ45-PNRJ45R-93G-1,0     | 1402505   | 108  | VS-SCDU-GOF-FA-IP20           | 1658529   | 132  |
| VS-15-ST-DSUB-HD-CD-B     | 1655195   | 212  | VS-EC-MSDB SH SCO             | 1407011   | 205  | VS-PNRJ45-PNRJ45R-93G-2,0     | 1402508   | 108  | VS-SCRJ-A-T-IP67              | 1658545   | 127  |
| VS-15-ST-DSUB-HD-EG       | 1655179   | 210  | VS-FSBPXS-OE-94F/0,5          | 1424135   | 93   | VS-PP-19-1HE-16-F             | 1652994   | 122  | VS-SCRJ-GOF-BU/BU             | 1652978   | 127  |
| VS-15-ST-DSUB-HD-ER       | 1655153   | 211  | VS-FSBPXS-OE-94F/1,0          | 1424148   | 93   | VS-PP-F-RJ45-CAT6             | 1658118   | 120  | VS-SCRJ-GOF-FA-IP20           | 1657070   | 132  |
| VS-15-ST-DSUB-LH-B        | 1654808   | 211  | VS-FSBPXS-OE-94F/2,0          | 1424151   | 93   | VS-PP-F-SCRJ                  | 1658121   | 134  | VS-SCRJ-GOF-FA-IP67           | 1657083   | 132  |
| VS-15-ST-DSUB/16-MPT-0,5  | 1688078   | 210  | VS-FSBPXS-OE-94F/5,0          | 1424164   | 93   | VS-PPC-C1-MNNA-4Q5-EMC        | 1403366   | 80   | VS-SCRJ-GOF-KU                | 1654358   | 136  |
| VS-15-T-20-1-S-A          | 1655687   | 218  | VS-FSBPYS-OE-94I/0,5 SCO      | 1407504   | 93   | VS-PPC-C1-MNNA-8Q5-EMC        | 1403367   | 80   | VS-SCRJ-HCS-FA-IP20           | 1654866   | 130  |
| VS-15-T-20-1-S-S          | 1655674   | 218  | VS-FSBPYS-OE-94I/1,0 SCO      | 1407505   | 93   | VS-PPC-C1-PC-ROBK-L           | 1405293   | 83   | VS-SCRJ-HCS-FA-IP20-PN        | 1404087   | 131  |
| VS-15-T-2PG11             | 1688052   | 219  | VS-FSBPYS-OE-94I/2,0 SCO      | 1407506   | 93   | VS-PPC-C1-RJ45-MNNA-8I10G     | 1422108   | 80   | VS-SCRJ-HCS-FA-IP67           | 1657012   | 130  |
| VS-15-TI-2EMV             | 1688065   | 219  | VS-FSBPYS-OE-94I/5,0 SCO      | 1407507   | 93   | VS-PPC-C1-RJ45-MNNA-PG9-4Q5   | 1608100   | 80   | VS-SCRJ-PC                    | 1653757   | 127  |
| VS-25-A                   | 1689750   | 220  | VS-FSDBPS-IP20-93G-LI/2,0     | 1419146   | 109  | VS-PPC-C1-RJ45-MNNA-PG9-8Q5   | 1608016   | 80   | VS-SCRJ-POF-FA-IP20           | 1654879   | 127  |
| VS-25-A-EMV-S             | 1689763   | 220  | VS-FSDBPS-OE-93G-LI/1,0       | 1419135   | 109  | VS-PPC-C1-RJ45-POBK-8I10G     | 1422205   | 80   | VS-SCRJ-POF-FA-IP67           | 1657009   | 127  |
| VS-25-A-GC-BU/BU          | 1689734   | 221  | VS-FSDBPS-OE-93G-LI/2,0       | 1419136   | 109  | VS-PPC-C1-RJ45-POBK-PG9-4Q5   | 1608126   | 80   | VS-SCRJ-POF-KONFTOOL-POLISH   | 1658820   | 170  |
| VS-25-A-GC-ST/ST          | 1689747   | 221  | VS-FSDBPS-OE-93G-LI/5,0       | 1419137   | 109  | VS-PPC-C1-RJ45-POBK-PG9-8Q5   | 1657834   | 80   | VS-SCRJ-POF-POLISH            | 1653473   | 170  |
| VS-25-BU-DSUB-3P-10S      | 1690008   | 215  | VS-GOF-FA-KONFTOOL-ADHESIVE   | 1658244   | 171  | VS-PPC-C1-SCRJ-MNNA-PG9-A3C-C | 1608045   | 131  | VS-ST-CD-1,0/14,8/0,2         | 1688971   | 216  |
| VS-25-BU-DSUB-3P-10S-LH   | 1655412   | 215  | VS-GOF-FA-KONFTOOL-EU         | 1658228   | 171  | VS-PPC-C1-SCRJ-MNNA-PG9-A4D-C | 1608032   | 128  | VS-ST-CD-1,0/14,8/0,5         | 1688968   | 216  |
| VS-25-BU-DSUB-4P-5S       | 1655373   | 215  | VS-GOF-FA-KONFTOOL-US         | 1658231   | 171  | VS-PPC-C1-SCRJ-POBK-PG9-A3C-C | 1657863   | 131  | VS-ST-CD-HD-1,0/13,5/0,37     | 1655276   | 216  |
| VS-25-BU-DSUB-4P-5S-LH    | 1655399   | 215  | VS-IET-DSUB-SIGNAL-HD         | 1658503   | 216  | VS-PPC-C1-SCRJ-POBK-PG9-A4D-C | 1657850   | 128  | VS-ST-LH-3,6/18/3,8           | 1655467   | 217  |
| VS-25-BU-DSUB-5P          | 1689983   | 214  | VS-IET-DSUB-SIGNAL-STD        | 1658794   | 216  | VS-PPC-C2-MSTB-MNNA-P13-A5-SP | 1608074   | 124  | VS-ST-LK-3,6/22,4/2,6         | 1688243   | 217  |
| VS-25-BU-DSUB-5P-LH       | 1655438   | 214  | VS-IP20-FPN-93G-LI/2,0        | 1419142   | 108  | VS-PPC-C2-MSTB-POBK-P13-A5-SP | 1657892   | 124  | VS-ST-LK-3,6/22,4/4,6         | 1688269   | 217  |
| VS-25-BU-DSUB-CD-B        | 1689967   | 212  | VS-IP20-OE-93E-LI/1,0         | 1405633   | 98   | VS-PPC-C2-MSTB-POBK-P13-B5-SP | 1608236   | 124  | VS-ST-SC-2,6                  | 1655483   | 217  |
| VS-25-BU-DSUB-CD-G        | 1689941   | 212  | VS-IP20-OE-94B-LI/5,0         | 1407699   | 100  | VS-PPC-C2-PC-ROBK             | 1405125   | 124  | VS-ST-LW-6-F-9010             | 1653029   | 134  |
| VS-25-BU-DSUB-EG          | 1689909   | 210  | VS-IP20/10G-IP20/10G-94F/1    | 1418866   | 102  | VS-PPC-C2-PC-ROBK-L           | 1405303   | 124  | VS-TO-IW-2-F-9010             | 1653016   | 122  |
| VS-25-BU-DSUB-ER          | 1689886   | 211  | VS-IP20/10G-IP20/10G-94F/5    | 1418879   | 102  | VS-PPC-C2-PC67-MNNA           | 1404045   | 124  | VS-TO-OW-2-F-9010             | 1653003   | 122  |
| VS-25-BU-DSUB-FK          | 1689925   | 213  | VS-IP67-IP20-93E-LI/2,0       | 1405921   | 98   | VS-PPC-F1-PC-POBK             | 1405316   | 80   | VS-TO-RO-MCBK-F1411/1411      | 1404281   | 118  |
| VS-25-BU-DSUB-HD-CD-B     | 1655247   | 212  | VS-IP67-IP20-94B-LI/5,0       | 1407932   | 100  | VS-PPC-F1-RJ45-MNNA-1C-F      | 1405222   | 83   | VS-TO-RO-MCBK-F1411/1413      | 1404333   | 118  |
| VS-25-BU-DSUB-HD-EG       | 1655221   | 210  | VS-IP67-OE-93E-LI/2,0         | 1405675   | 98   | VS-PPC-F1-RJ45-MNNA-1R-F      | 1405358   | 83   | VS-TO-RO-MCBK-F1417/1413      | 1404346   | 134  |
| VS-25-BU-DSUB-HD-ER       | 1655205   | 211  | VS-IP67-OE-94B-LI/5,0         | 1407725   | 100  | VS-PPC-F1-RJ45-MNNA-1R-PHA    | 1608029   | 85   | VS-TO-RO-MCBK-F1417/1417      | 1404320   | 134  |
| VS-25-BU-DSUB-LH-B        | 1654837   | 211  | VS-M12FSBP-IP20-93E-LI/2,0    | 1406085   | 99   | VS-PPC-F1-RJ45-POBK-1R-PHA    | 1657847   | 85   | VS-TO-RO-MCBK-F1418/1418      | 1404278   | 118  |
| VS-25-BU-DSUB/25-MPT-0,5  | 1689776   | 210  | VS-M12FSBP-IP20-94B-LI/5,0    | 1412082   | 101  | VS-PPC-F1-RJ45-POBK-1R-F      | 1608197   | 83   | VS-TO-RO-MCBK-F1421/1421      | 1404294   | 118  |
| VS-25-DSUB-20-LI-1,0      | 1656291   | 218  | VS-M12FSBP-IP67-93E-LI/2,0    | 1406247   | 99   | VS-PPC-F1-SCRJ-MNNA-1C-F      | 1405235   | 128  | VS-TO-RO-MCBK-F1422/1422      | 1404304   | 118  |
| VS-25-DSUB-20-LI-2,0      | 1656301   | 218  | VS-M12FSBP-IP67-94B-LI/5,0    | 1412231   | 101  | VS-PPC-F1-SCRJ-MNNA-1R-F      | 1405374   | 128  | VS-V1-C-LC-MNNA-PG9-A1-G      | 1419190   | 133  |
| VS-25-DSUB-20-LI-5,0      | 1656314   | 218  | VS-M12FSBP-OE-93E-LI/2,0      | 1405866   | 99   | VS-PPC-F1-SCRJ-MNNA-1RP       | 1608061   | 128  | VS-V1-C-LC-MNNA-PG9-B1-G      | 1419191   | 133  |
| VS-25-GC-BU/BU            | 1652680   | 213  | VS-M12FSBP-OE-94B-LI/5,0      | 1407877   | 101  | VS-PPC-F1-SCRJ-POBK-1RF       | 1608210   | 128  | VS-V1-C-PC-POBK               | 1419183   | 82   |
| VS-25-GC-ST/ST            | 1652693   | 213  | VS-M12FSBP-PPC/ME-93E-LI/2,0  | 1406519   | 99   | VS-PPC-F1-SCRJ-POBK-1RP       | 1657889   | 128  | VS-V1-C-RJ45-MNNA-PG9-8-I-5-S | 1419182   | 82   |
| VS-25-KU-BU/BU            | 1689679   | 221  | VS-M12FSBP-PPC/ME-94B-LI/5,0  | 1412503   | 101  | VS-PPC-F2-MSTB-MNNA-1C-SPSA5  | 1405248   | 124  | VS-V1-C-SCRJ-MNNA-PG9-A1-G    | 1419187   | 133  |
| VS-25-KU-ST/ST            | 1689682   | 221  | VS-M12FSBP-PPC/PL-93E-LI/2,0  | 1406603   | 99   | VS-PPC-F2-MSTB-MNNA-1C-SPSB5  | 1405167   | 124  | VS-V1-C-SCRJ-MNNA-PG9-A4A-G   | 1419189   | 129  |
| VS-25-SD                  | 1652211   | 219  | VS-M12FSBP-PPC/PL-94B-LI/5,0  | 1412590   | 101  | VS-PPC-F2-MSTB-MNNA-1R-P      | 1608087   | 124  | VS-V1-C-SCRJ-MNNA-PG9-B1-G    | 1419188   | 133  |
| VS-25-SET-EMV             | 1652208   | 221  | VS-M16 (3-6)                  | 1688450   | 219  | VS-PPC-F2-MSTB-MNNA-1R-SPSA5  | 1608249   | 124  | VS-V1-F-LC-MNNA-PG9-C-S-A1    | 1420210   | 133  |
| VS-25-SET-STD             | 1652198   | 220  | VS-M16 (5-9)                  | 1688447   | 219  | VS-PPC-F2-MSTB-MNNA-1R-SPSB5  | 1608252   | 124  | VS-V1-F-LC-MNNA-PG9-C-S-B1    | 1420223   | 133  |
| VS-25-ST-DSUB-3P-10S      | 1689996   | 215  | VS-M20 (5-13)                 | 1652127   | 219  | VS-PPC-F2-MSTB-POBK-1R-P      | 1608281   | 124  | VS-V1-F-PC-POBK               | 1419186   | 86   |
| VS-25-ST-DSUB-3P-10S-LH   | 1655425   | 215  | VS-MP-PPC/CG-10G              | 1403678   | 117  | VS-PPC-F2-MSTB-POBK-1R-SPSA5  | 1608294   | 124  | VS-V1-F-RJ45-MNNA-1-C-S-JI-S  | 1419185   | 86   |
| VS-25-ST-DSUB-4P-5S       | 1655386   | 215  | VS-MP-PPC/CG-FO               | 1404319   | 135  | VS-PPC-F2-MSTB-POBK-1R-SPSB5  | 1608304   | 124  | VS-V1-F-RJ45-MNNA-1-C-S-JJ-S  | 1419184   | 86   |
| VS-25-ST-DSUB-4P-5S-LH    | 1655409   | 215  | VS-MP-PPC/CG-PO               | 1403681   | 117  | VS-PPC-F2-PC-POBK             | 1405329   | 124  | VS-V1-F-SCRJ-MNNA-PG9-C-S-A1  | 1420197   | 129  |
| VS-25-ST-DSUB-5P          | 1689970   | 214  | VS-MP-PPC/CG-PO/10G           | 1403682   | 117  | VS-PPC-J-1-SCRJ-MNBK          | 1405206   | 136  | VS-V1-F-SCRJ-MNNA-PG9-C-S-B1  | 1420207   | 133  |
| VS-25-ST-DSUB-5P-LH       | 1655441   | 214  | VS-MP-PPC/CG-PO/FO            | 1404321   | 135  | VS-PPC-J-1220-1227-1020-...   | 1405484   | 125  |                               |           |      |
| VS-25-ST-DSUB-CD-B        | 1689954   | 212  | VS-MP-PPC/CG-XL-10G           | 1403686   | 117  | VS-PPC-J-1220-1227-1020-0,2   | 1404799   | 125  |                               |           |      |
| VS-25-ST-DSUB-CD-G        | 1689938   | 212  | VS-MP-PPC/CG-XL-FO            | 1404324   | 135  | VS-PPC-J-1226-1227-1021-...   | 1405497   | 125  |                               |           |      |
| VS-25-ST-DSUB-EG          | 1689899   | 210  | VS-MP-PPC/CG-XL-PO/10G        | 1403688   | 117  | VS-PPC-J-1226-1227-1021-0,2   | 1404812   | 125  |                               |           |      |
| VS-25-ST-DSUB-ER          | 1689873   | 211  | VS-MP-PPC/CG-XL-PO/FO         | 1404325   | 135  | VS-PPC-J-4X-1227              | 1405387   | 125  |                               |           |      |
| VS-25-ST-DSUB-FK          | 1689912   | 213  | VS-MP-PPC/PPC-1G              | 1403685   | 117  | VS-PPC-J-M                    | 1405390   | 125  |                               |           |      |
| VS-25-ST-DSUB-HD-CD-B     | 1655250   | 212  | VS-MP-PPC/PPC-PO              | 1403684   | 117  | VS-PPC/ME-IP20-93B-LI/5,0     | 1416138   | 106  |                               |           |      |
| VS-25-ST-DSUB-HD-EG       | 1655234   | 210  | VS-MSTBAH 2,5/ 5-GB-5,08-BK-A | 1657915   | 124  | VS-PPC/ME-IP20-93E-LI/5,0     | 1405992   | 98   | WIREFOX-D SR 6-1              | 1212511   | 422  |
| VS-25-ST-DSUB-HD-ER       | 1655218   | 211  | VS-MSTBAH 2,5/ 5-GB-5,08-RD-B | 1609549   | 124  | VS-PPC/ME-IP20-94B-LI/5,0     | 1407990   | 100  | WIREFOX-PN POF                | 1405249   | 170  |
| VS-25-ST-DSUB-LH-B        | 1654824   | 211  | VS-MSTBVA 2,5/ 5-GB-5,08-BK-A | 1609565   | 124  | VS-PPC/ME-OE-93E-LI/5,0       | 1405743   | 98   | WR-DA-M32/PG29                | 1644847   | 51   |
| VS-25-ST-DSUB/25-MPT-0,5  | 1689789   | 210  | VS-MSTBVA 2,5/ 5-GB-5,08-RD-B | 1609581   | 124  | VS-PPC/ME-OE-94B-LI/5,0       | 1407783   | 100  | WR-DA-M40                     | 1644876   | 51   |
| VS-25-T-20-1-S-A          | 1655700   | 218  | VS-OE-OE-937/...              | 1402687   | 105  | VS-PPC/PL-IP20-93B-LI/5,0     | 1416141   | 107  | WR-DA-PG16                    | 1686685   | 51   |
| VS-25-T-20-1-S-S          | 1655690   | 218  | VS-OE-OE-93A-100,0            | 1416392   | 105  | VS-PPC/PL-IP20-93E-LI/5,0     | 1406030   | 99   | WR-DA-PG21                    | 1686698   | 51   |
| VS-25-T-2M20              | 1689792   | 219  | VS-OE-OE-93B-100,0            | 1416389   | 105  | VS-PPC/PL-IP20-94B-LI/5,0     | 1412024   | 101  | WR-OEF-M40                    | 1644892   | 51   |
| VS-25-TI-2 EMV            | 1689802   | 219  | VS-OE-OE-93B/...              | 1417362   | 105  | VS-PPC/PL-OE-93E-LI/5,0       | 1405772   | 99   | WR-OEF-PG16                   | 1853638   | 51   |
| VS-93A/...                | 1416486   | 105  | VS-OE-OE-93C-100,0            | 1416376   | 105  | VS-PPC/PL-OE-94B-LI/5,0       | 1407819   | 101  | WR-OEF-PG21                   | 1853612   | 51   |
| VS-94A/...                | 1416415   | 96   | VS-OE-OE-93C/...              | 1417491   | 105  | VS-PSC 1,5/3-M                | 1689310   | 215  | WR-OEF-PG29                   | 1853641   | 51   |
| VS-94D/...                | 1416444   | 96   | VS-OE-OE-93E-100,0            | 1416295   | 96   | VS-PSC 1,5/3-M PE             | 1689336   | 215  | WR/M40-25M                    | 1644889   | 51   |
| VS-94E/...                | 1416460   | 96   | VS-OE-OE-93E/...              | 1417320   | 96   | VS-PSC 1,5/5-M                | 1688825   | 215  | WR/PG16-50M                   | 1666841   | 51   |
| VS-A-F-IP67               | 1653744   | 83   | VS-OE-OE-93R-100,0            | 1416363   | 105  | VS-PSC 1,5/5-M PE             | 1689323   | 215  | WR/PG21-50M                   | 1666867   | 51   |
| VS-A-F-IP67-BK            | 1658668   | 83   | VS-OE-OE-93R/...              | 1417388   | 105  | VS-RJ45-RJ45-94P-0,3          | 1417993   | 110  | WR/PG29-25M                   | 1666854   | 51   |
| VS-BH-M12FS-8CON-RJ45/ 90 | 1405057   | 94   | VS-OE-OE-94A-100,0            | 1416305   | 96   | VS-RJ45-RJ45-94P-0,5          | 1418028   | 110  |                               |           |      |
| VS-BH-M12FS-8CON-RJ45/180 | 1405060   | 94   | VS-OE-OE-94B-100,0            | 1416567   | 96   | VS-RJ45-RJ45-94P-1,0          | 1418057   | 110  |                               |           |      |
| VS-BH-M12FSD-RJ45/180     | 1657494   | 94   | VS-OE-OE-94B/...              | 1417333   | 96   | VS-RJ45-RJ45-94P-2,0          | 1418109   | 110  |                               |           |      |
| VS-BH-M12FSD-RJ45/90      | 1657621   | 94   | VS-OE-OE-94C-100,0            | 1416318   | 96   | VS-RJ45-RJ45-94P-5,0          | 1418141   | 110  |                               |           |      |
| VS-BH-M12FSX-10G-RJ45/180 | 1404549   | 94   | VS-OE-OE-94C/...              | 1417346   | 96   | VS-RJ45-RJ45R-94P-0,3         | 1418002   | 110  |                               |           |      |
| VS-BH-M12FSX-10G-RJ45/90  | 1404548   | 94   | VS-OE-OE-94D-100,0            | 1416334   | 96   | VS-RJ45-RJ45R-94P-0,5         | 1418031   | 110  |                               |           |      |
| VS-BU-CD-1,0/14,4/0,2     | 1688997   | 216  | VS-OE-OE-94E-100,0            | 1416350   | 96   | VS-RJ45-RJ45R-94P-1,0         | 1418070   | 110  |                               |           |      |
| VS-BU-CD-1,0/14,4/0,5     | 1688984   | 216  | VS-OE-PPC/ME-93B-LI/5,0       | 1416162   | 106  | VS-RJ45-RJ45R-94P-2,0         | 1418125   | 110  |                               |           |      |
| VS-BU-CD-HD-1,0/13,5/0,37 | 1655263   | 216  | VS-OE-PPC/PL-93B-LI/5,0       | 1416168   | 107  | VS-RJ45-RJ45R-94P-5,0         | 1418154   | 110  |                               |           |      |
| VS-BU-LH-3,6/18/3,8       | 1655454   | 217  | VS-PG11 (3- 7)                | 1688117   | 219  | VS-RJ45R-RJ45R-94P-0,3        | 1418015   | 110  |                               |           |      |
| VS-BU-LK-3,6/22,8/2,6     | 1688256   | 217  | VS-PG11 (5-10)                | 1688104   | 219  | VS-RJ45R-RJ45R-94P-0,5        | 1418044   | 110  |                               |           |      |
| VS-BU-LK-3,6/22,8/4,6     | 1688272   | 217  | VS-PN-RJ45-5-Q/IP20           | 1658435   | 78   | VS-RJ45R-RJ45R-94P-1,0        | 1418099   | 110  |                               |           |      |
| VS-BU-SC-2,6              | 1655      |      |                               |           |      |                               |           |      |                               |           |      |





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#### Как с нами связаться

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