

## Network cable - NBC-16,1-937/FSD SCO - 1423149

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Network cable, PROFINET CAT5 (100 Mbps), 4-position, PE-X halogen-free, black, shielded, free cable end, on Socket straight M12 SPEEDCON / IP65, coding: D, cable length: 16.1 m, Product tested according to customer specification/rail application



### Key Commercial Data

|              |                                                                                                       |
|--------------|-------------------------------------------------------------------------------------------------------|
| Packing unit | 1 pc                                                                                                  |
| GTIN         | <br>4 055626 326283 |
| GTIN         | 4055626326283                                                                                         |

### Technical data

#### Dimensions

|                 |        |
|-----------------|--------|
| Length of cable | 16.1 m |
|-----------------|--------|

#### General data

|                       |                                     |
|-----------------------|-------------------------------------|
| Rated current at 40°C | 4 A                                 |
| Rated voltage         | 48 V AC                             |
|                       | 60 V DC                             |
| Number of positions   | 4                                   |
| Signal type/category  | PROFINET CAT5 (IEC 11801), 100 Mbps |
| Standards/regulations | M12 connector IEC 61076-2-101       |
| Overvoltage category  | II                                  |
| Degree of pollution   | 3                                   |

#### Characteristics head 1

|           |                |
|-----------|----------------|
| Head type | free cable end |
| Weight    | 10 g ±5 g      |

#### Characteristics head 2

|                                          |                                     |
|------------------------------------------|-------------------------------------|
| Head type                                | Socket straight M12 SPEEDCON / IP65 |
| No. of positions (pin connector pattern) | 4                                   |
| Coding                                   | D (Data)                            |
| Color                                    | black                               |
| Material (component)                     | CuSn (Contact)                      |
|                                          | Ni/Au (Contact surface)             |

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#### Characteristics head 2

|                                 |                                                                  |
|---------------------------------|------------------------------------------------------------------|
|                                 | PA (Contact carriers)                                            |
|                                 | TPU, hardly inflammable, self-extinguishing (Grip)               |
|                                 | Zinc die-cast, nickel-plated (Screw connection)                  |
| Shielded                        | yes                                                              |
| Insulation resistance           | $\geq 100 \text{ M}\Omega$                                       |
| Insertion/withdrawal cycles     | $\geq 100$ (Quantity: 500 with Phoenix Contact mating connector) |
| Torque                          | 0.4 Nm                                                           |
| Ambient temperature (operation) | -40 °C ... 90 °C                                                 |
| Weight                          | 10 g $\pm$ 5 g                                                   |

#### Standards and Regulations

|                                        |                 |
|----------------------------------------|-----------------|
| Standard designation                   | M12 connector   |
| Standards/regulations                  | IEC 61076-2-101 |
| Flammability rating according to UL 94 | V0              |

#### Cable

|                                               |                                                             |
|-----------------------------------------------|-------------------------------------------------------------|
| Cable type                                    | PROFINET railway applications                               |
| Cable type (abbreviation)                     | 939                                                         |
| Signal type/category                          | PROFINET CAT5 (IEC 11801), 100 Mbps                         |
| Cable structure                               | 1x4xAWG22/7; SF/TQ                                          |
| Conductor cross section                       | 4x 0.34 mm <sup>2</sup>                                     |
| AWG signal line                               | 22                                                          |
| Conductor structure signal line               | 7x 0.25 mm                                                  |
| Core diameter including insulation            | 1.4 mm $\pm$ 0.1 mm                                         |
| Wire colors                                   | white-blue, orange-yellow                                   |
| Overall twist                                 | Star quad                                                   |
| Shielding                                     | Aluminum-lined polyester foil, tinned copper braided shield |
| External sheath, color                        | black                                                       |
| Outer sheath thickness                        | 1 mm                                                        |
| External cable diameter D                     | 6.6 mm $\pm$ 0.2 mm                                         |
| Minimum bending radius, fixed installation    | 5 x D                                                       |
| Minimum bending radius, flexible installation | 6 x D                                                       |
| Tensile strength GRP                          | $\leq 60 \text{ N}$ (temporary)                             |
|                                               | $\leq 15 \text{ N}$ (Permanent)                             |
| Cable weight                                  | 71 kg/km                                                    |
| Outer sheath, material                        | PE-X                                                        |
| Material conductor insulation                 | Cell PE                                                     |
| Conductor material                            | Tin-plated Cu litz wires                                    |
| Insulation resistance                         | $\geq 5 \text{ G}\Omega \cdot \text{km}$                    |
| Conductor resistance                          | $\leq 54.4 \text{ }\Omega/\text{km}$                        |
| Cable capacity                                | 44 nF/km (core-core)                                        |
| Wave impedance                                | 100 $\Omega \pm 5 \text{ }\Omega$ (f = 100 MHz)             |

## Network cable - NBC-16,1-937/FSD SCO - 1423149

### Technical data

#### Cable

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Near end crosstalk attenuation (NEXT)                | 76 dB (with 1 MHz)       |
|                                                      | 71 dB (at 4 MHz)         |
|                                                      | 64 dB (at 10 MHz)        |
|                                                      | 60 dB (at 16 MHz)        |
|                                                      | 56 dB (at 31.25 MHz)     |
|                                                      | 52 dB (at 62.5 MHz)      |
|                                                      | 48 dB (at 100 MHz)       |
|                                                      | 45 dB (at 155 MHz)       |
|                                                      | 42 dB (at 200 MHz)       |
| Power-summed near end crosstalk attenuation (PSNEXT) | 73 dB (with 1 MHz)       |
|                                                      | 68 dB (at 4 MHz)         |
|                                                      | 61 dB (at 10 MHz)        |
|                                                      | 57 dB (at 16 MHz)        |
|                                                      | 53 dB (at 31.25 MHz)     |
|                                                      | 49 dB (at 62.5 MHz)      |
|                                                      | 45 dB (at 100 MHz)       |
|                                                      | 42 dB (at 155 MHz)       |
|                                                      | 39 dB (at 200 MHz)       |
| Attenuation                                          | 1.5 dB (with 1 MHz)      |
|                                                      | 3.3 dB (at 4 MHz)        |
|                                                      | 5.3 dB (at 10 MHz)       |
|                                                      | 6.9 dB (at 16 MHz)       |
|                                                      | 9.9 dB (at 31.25 MHz)    |
|                                                      | 14.5 dB (at 62.5 MHz)    |
|                                                      | 18.8 dB (at 100 MHz)     |
|                                                      | 23.6 dB (at 155 MHz)     |
|                                                      | 27.3 dB (at 200 MHz)     |
| Return loss (RL)                                     | 25 dB (with 1 MHz)       |
|                                                      | 25 dB (at 4 MHz)         |
|                                                      | 28 dB (at 10 MHz)        |
|                                                      | 28 dB (at 16 MHz)        |
|                                                      | 27 dB (at 31.25 MHz)     |
|                                                      | 26 dB (at 62.5 MHz)      |
|                                                      | 25 dB (at 100 MHz)       |
|                                                      | 25 dB (at 155 MHz)       |
|                                                      | 23 dB (at 200 MHz)       |
| Signal speed                                         | 0.75 c                   |
| Signal runtime                                       | 4.4 ns/m                 |
| Shield attenuation                                   | 60 dB (up to 1000 MHz)   |
| Coupling resistance                                  | < 13.00 mΩ/m (f = 1 MHz) |

## Network cable - NBC-16,1-937/FSD SCO - 1423149

### Technical data

#### Cable

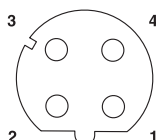
|                                  |                                                                                                                     |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------|
|                                  | < 8.00 mΩ/m (f = 10 MHz ... 100 MHz)                                                                                |
| Cable impedance                  | 100 Ω ±15 Ω (f = 0.5 MHz ... 3 MHz)                                                                                 |
| Nominal voltage, cable           | 125 V                                                                                                               |
| Test voltage Core/Core           | 1000 V AC (50 Hz, 1 min.)                                                                                           |
| Test voltage Core/Shield         | 1000 V AC (50 Hz, 1 min.)                                                                                           |
| Fire protection in rail vehicles | BS 6853 (Internal cable Ia, Ib, II/external cable Ia, Ib, II)                                                       |
|                                  | DIN 5510-2 (Fire protection level 1, 2, 3, 4)                                                                       |
|                                  | EN 45545-2 (Risk level HL1 - HL3)                                                                                   |
|                                  | EN 50306-4                                                                                                          |
|                                  | NF F16-101 (Classification C/F1)                                                                                    |
|                                  | NF F16-101 (Internal cable A1, A2, B/external cable A1, A2, B)                                                      |
|                                  | NFPA 130                                                                                                            |
|                                  | PN-K-02511                                                                                                          |
|                                  | UIC 564-2 (Class A)                                                                                                 |
| Flame resistance                 | according to EN 60332-1-2                                                                                           |
|                                  | according to EN 50266-2-5                                                                                           |
|                                  | according to ISO 14572 5.21 (UN ECE-R 118.01)                                                                       |
| Halogen-free                     | According to EN 50267-2-1                                                                                           |
|                                  | according to EN 60684-2                                                                                             |
| Resistance to oil                | according to EN 60684-2, 72 h at 100 °C, IRM 902                                                                    |
| Other resistance                 | Resistant to fuel according to EN 60684-2, 72 h at 100 °C, IRM 903                                                  |
|                                  | Resistant to ozone according to EN 50306-4, 72 h at 40 °C, procedure B, volume concentration 200 x 10 <sup>-6</sup> |
| Concentration of fumes           | EN 61034-2                                                                                                          |
| Ambient temperature (operation)  | -40 °C ... 85 °C (cable, fixed installation)                                                                        |
|                                  | -25 °C ... 70 °C (cable, flexible installation)                                                                     |

#### Environmental Product Compliance

|            |                                                         |
|------------|---------------------------------------------------------|
| China RoHS | Environmentally friendly use period: unlimited = EFUP-e |
|            | No hazardous substances above threshold values          |

### Drawings

Schematic diagram



Pin assignment M12 socket, 4-pos., D-coded, female side

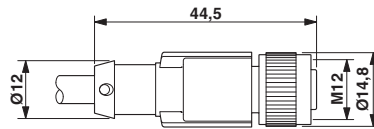
Cable cross section



PROFINET railway applications [939]

## Network cable - NBC-16,1-937/FSD SCO - 1423149

Dimensional drawing



Socket M12-SPEEDCON, straight, shielded

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- Защита от снятия компонента с производства.



#### Как с нами связаться

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