

Order numbering code

Type No.

3120 thermal rocker-actuated circuit breaker

Mounting method

F flange mounting snap-in frame

Size of frame

- 3** standard, to fit mounting cut-out 50.5 x 21.5 mm
- 5** standard, to fit mounting cut-out 44.5 x 22 mm
- 7** special style, to fit mounting cut-out 44.5 x 22 mm

Number of poles

- 1** 1-pole, thermally protected
- 2** 2-pole, thermally protected
- 5** 2-pole, 1-pole thermally protected

Mounting frame design (F3 & F5)

- 1** collar height 1 mm
- 3** collar height 9 mm
- 4** collar height 2 mm with water splash protection (IP54)

Mounting frame design (F7)

- R** black
- T** black with snap-on water splash cover

Terminal configuration

- PT** push-in terminals
- P7** blade terminals
- H7** as P7, terminals 11 and 21 with flat head screws M3.5 - standard for units with undervoltage release module
- N7** as P7, with additional shunt terminals 12(i) and 22(i)
- G7** as N7, terminals 11 and 21 with flat head screws M3.5

Characteristic curve

T1 thermal trip

Actuator style

- W** rocker for frame size F3 & F5
- A** rocker for frame size F7

Colour and illumination

- 01.** rocker black opaque
- 02.** rocker white opaque
- 04.** rocker red opaque
- 14. R** rocker red translucent with LED illumination
- 15. Y** rocker orange translucent with LED illumination
- 19. G** rocker green translucent with LED illumination

Marking for rocker style W



Marking for rocker style A

»|« and »0« moulded in

Illumination voltage range

(= operating voltage)

- 1** DC 12 V
- 2** DC 24 V
- 3** AC 115 V
- 4** AC 230 V
- 5** DC 48 V

3120 - F 7 2 R - P7 T1 - A 14 QR 4

Current ratings

0.1...20 A

3120 - F 7 2 R - P7 T1 - A 14 QR 4 - 10 A ordering example

Order numbering code

Type No.

3120 thermal circuit breaker with push button actuation

Mounting

F flange mounting snap-in frame

Size

- 2** special frame for fitting splash cover
- 3** mounting cut-out 50.5 x 21.5 mm (panel thickness 1-6.35 mm)

Number of poles

- 1** 1-pole, thermally protected
- 2** 2-pole, thermally protected
- 5** 2-pole, 1-pole thermally protected

Style

- F** frame with 2 push buttons
- G** frame with one push button (reset only)

Terminal configuration

- PT** push-in terminals
- P7** blade terminals
- H7** as P7, terminals 11 and 21 with flat head screws M3.5 - standard for units with undervoltage release module
- N7** as P7, with additional shunt terminals 12(i) and 22(i)
- G7** as N7, terminals 11 and 21 with flat head screws M3.5

Characteristic curve

T1 thermal trip

Actuators / colour / illumination

- D01X** 1 push button* black opaque
- D02X** 1 push button* white opaque
- D04X** 1 push button* red opaque
- D19XG** 1 push button* green translucent with LED illumination

SGRX 2 push buttons green/red opaque without illumination

SGRXG 2 push buttons green/red translucent with LED illumination

Illumination voltage range

(= operating voltage)

- 1** DC 12 V
- 2** DC 24 V
- 3** AC 115 V
- 4** AC 230 V
- 5** DC 48 V

Current ratings

0.1...20 A

3120 - F 3 2 F - P7 T1 - S GRXG 4-10 A ordering example

*reset only

Packaging unit:

20, 25, 35, 50 or 60 pcs, depending on the version

Preferred types

| preferred type F7 2-pole protected | preferred ratings (A) | | | | | | | | | | | | | | | |
|---------------------------------------|-----------------------|---|-----|---|---|---|---|---|----|----|----|----|----|----|---|--|
| | 0.5 | 1 | 1.5 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 15 | 16 | 20 | | |
| 3120-F72R-P7T1-A14QR4- | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | |
| preferred type F3 1-pole protected | 0.5 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 15 | 16 | 20 | | | |
| 3120-F311-P7T1-W02D- | | x | | | x | x | x | x | x | | x | | x | | | |
| preferred type F3 2-pole protected | 0.5 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 15 | 16 | 20 | | | |
| 3120-F321-P7T1-W01D- | x | x | x | x | x | x | x | x | x | x | x | x | x | | | |
| preferred type F5 2-pole protected | 0.5 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 15 | 16 | 20 | | | |
| 3120-F521-P7T1-W01D- | | x | x | x | x | x | x | x | x | x | x | x | x | | | |

Approvals

| Approval authority | Standard | Rated voltage | Current rating range |
|--------------------|--------------|---|--|
| VDE | IEC/EN 60934 | AC 240 V DC 50 V DC 50 V DC 28 V | 0,1 A...20 A 0,1...20A (2-pole) 0,1...4 A (1-pole) 0,1 A...20 A |
| UL | UL 1077 | AC 250 V DC 50 V AC 250 V | 0,1 A...20 A 0,1 A...20 A 30 A (2 poles in parallel) |
| CSA | C22.2 No 235 | AC 250 V DC 50 V AC 250 V | 0,1 A...20 A 0,1 A...20 A 30 A (2 poles in parallel) |
| CQC | GB 17701 | AC 240 V DC 50 V | 0,1 A...20 A 0,1 A...20 A |

Schematic diagrams

2-pole, thermally protected on both poles **2-pole, thermally protected on one pole only**



1-pole, thermally protected



Time/current characteristics

single or double pole load

0.1...2 A



2.5...20 A



The time/current characteristic depends on the ambient temperature. In order to eliminate nuisance tripping, please multiply the current rating by a derating factor (see chapter Technical Information)

| ambient temperature [°C] | -30 | -20 | -10 | 0 | 23 | 40 | 50 | 60 |
|--------------------------|-----|------|------|------|----|------|------|------|
| Temperature factor | 0.8 | 0.84 | 0.88 | 0.92 | 1 | 1.08 | 1.14 | 1.23 |

Dimensions

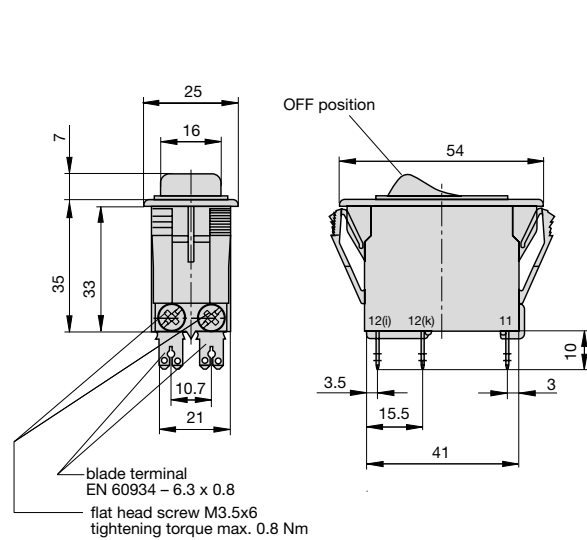
3120-F2.F-...



3120-F2.F-PT...



3120-F3.1



3120-F3.1-PT



3120-F 3.3
collar height 9 mm



3120-F 3.4
with water splash protection (IP54)



Dimensions

3120-F3.F-...-S...



3120-F3.G-...-D...



3120-F 5.1



3120-F5.1-PT



3120-F5.3



3120-F5.4



1

Dimensions

Style F7.R



3120-F7.R-PT



Style F7.T



Cut-out dimensions

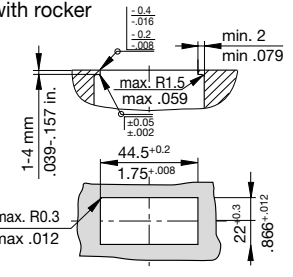
3120-F2...



Cut-out for mounting style -F3 with rocker and push button



Cut-out for mounting style -F5/-F7 with rocker



Cable cross sections PT terminals

| cable | cross section with direct push-in wiring |
|--|--|
| rigid | 1...4 mm ² (stripping length: 10 mm) |
| flexible with wire end ferrule (with or without plastic sleeve) | 0.5...2.5 mm ² |
| cable | cross section when opening the push-in terminals |
| rigid | 0.5...4 mm ² (stripping length: 10 mm) |
| flexible without wire end ferrule | 0.5...2.5 mm ² |

Installation drawing

3120 with blade terminals



3120 with push-in terminals



Terminal types

3120-F521-G7



3120-F551-G7



3120-F521-N7



3120-F551-N7



3120-F521-H7



3120-F551-H7



3120-F521-P7



3120-F551-P7

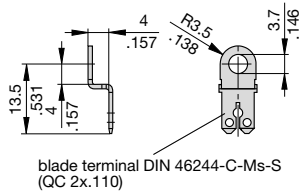


Accessories

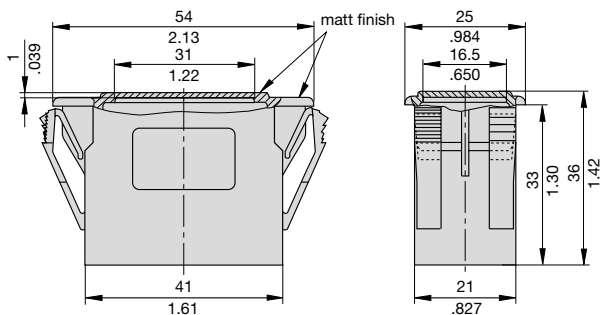
Insulated cover
Y 303 068 01



Terminal adapter
Y 303 862 01



Blanking piece in -F3 frame
Y 303 885 31



Rear terminal shroud black (IP64)
Y 304 275 01



Water splash cover, transparent (IP66) for mounting style -F2..
X 221 619 01



Mounting of
X221 619 01

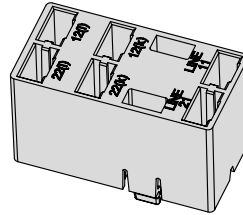


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Accessories

**Plug-in connector
Y 31214001**

Connecting cables can be pre-wired. Two retaining clips ensure a tight fit.



Benefits:

- Reduced installation time and costs for final assembly
- Quick replacement of devices

Note:

Delivery without receptacles.

Dimensions of receptacles (width 6.3 mm) are in accordance with DIN 46340 part 3, shape A.

Examples of suitable receptacles: Stocko RSB 7916 F6,3-1 / Klaucke type 2730 / Vogt type 3832d.67 / TE FASTON Terminals 250 Series / Delphi Packard 58 Series

Plug-in connector mounted on circuit breaker:



Description - Appliance inlet module X3120-A/-B

The appliance inlet module X3120 with circuit breaker type 3120-F5/-F7/-F8 combines up to four functions within a single component: A C14/C20 appliance inlet, a rocker-actuated or push button switch and resettable overcurrent protection and a filter. Screw-type mounting from the front or from the rear.

Typical applications

Electrical medical apparatus, laboratory equipment, professional audio equipment and office machines.

Approvals

X3120-A – C14 inlet

| Authority | Standard | Voltage ratings | Max. current |
|-----------|----------------|-----------------|--------------|
| ENEC | IEC/EN 60320-1 | AC 240 V | 10 A |
| UL/CSA | UL 498 | AC 250 V | 15 A |
| CQC | CCC | AC 250 V | 10 A |

Approvals X3120-A – filter

Design corresponding to UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939

X3120-B – C20 inlet

| Authority | Standard | Voltage ratings | Max. current |
|-----------|----------------|-----------------|--------------|
| ENEC | IEC/EN 60320-1 | AC 240 V | 16 A |
| UL/CSA | UL 498 | AC 240 V | 20 A |

Selection current rating of the filter

| Current rating circuit breaker | Minimum current rating of the filter |
|--------------------------------|--------------------------------------|
| 0,1...1 A | 1 A |
| 1,2...3 A | 3 A |
| 3,5...6 A | 6 A |
| 7...8A | 8 A |
| 9...10 A | 10 A |
| 12 A | 12 A |
| 14...15 A | 15 A |

Circuit breaker type 3120 with thermal release protects the filter in case of overloads.

For the protection of the filter in the event of higher overcurrents we recommend circuit breaker type 3120 with thermal-magnetic release (3120...M1...).

Further technical information upon request.

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Order numbering code

Type No.

X3120 Appliance inlet module for circuit breaker type 3120

Module

A appliance inlet C14 (with filter)

B appliance inlet C20 (without filter)

Mounting

04 screw-type mounting

Filter

00 without filter

01 general performance IEC inlet filter

03 general performance IEC inlet filter, medical version

06 high performance IEC inlet filter, medical version

Filter current rating

00 without filter

01 1 A

03 3 A

06 6 A

08 8 A

10 10 A

12 12 A

15 15 A

Version

01 not wired; mounting position 3120:

OFF position to connector

11 wired; mounting position 3120:

OFF position to connector

Assembly status

M module supplied with circuit breaker 3120 and filter (module A) fitted

X3120- B 04 00 00 01 M ordering example

Technical Data (type X3120-B, without filter)

| | |
|------------------------|---|
| Rated voltage | AC 240 V |
| Current rating (inlet) | 16 A (IEC) 20 A (UL/CSA) |
| Ambient temperature | -25°C ...+60°C |
| Number of poles | L, N + earth |
| Protection class: | I |
| Mounting method: | screw-type mounting (front or rear) |
| Connection: | blade terminals DIN 46244 6.3 mm x 0.8 mm |
| Housing material: | thermoplastics, black UL94V-0 |
| Appliance inlet: | C20 according to IEC/EN 60320-1, UL498 |
| Mains switch: | Circuit breaker 3120-F5/-F7/-F8 (3120-F8 with push button actuation: technical data upon request) |

Technical Data (type X3120-A with filter)

| | |
|-------------------------|---|
| Rated voltage | AC 250 V |
| Current rating (inlet) | 10 A (IEC) 15 A (UL/CSA) |
| Current rating (filter) | 1 A, 3 A, 6 A, 8 A, 10 A, 12 A, 15 A |
| Ambient temperature | -25°C ...+60°C |
| Number of poles | L, N + earth |
| Protection class: | I |
| Mounting method: | screw-type mounting (front or rear) |
| Connection: | blade terminals DIN 46244 6.3 mm x 0.8 mm |
| Housing material: | thermoplastics, black UL94V-0 |
| Appliance inlet: | C14 according to IEC/EN 60320-1, UL498 |
| Mains switch: | Circuit breaker 3120-F5/-F7/-F8 (3120-F8 with push button actuation: technical data upon request) |

Dimensions (type X3120-B)



Dimensions (type X3120-A)



Cut-out dimensions (type X3120-B)



Cut-out dimensions (type X3120-A)



Electrical schematics X3120-A

X3120-A0401

General performance filter



X3120-A0403 und X3120-A0406

Medical version



X3120-A0401 and X3120-A0403 - General performance filter

Typical filter attenuation: Per CISPR 17

A = 50 Ω / 50 Ω sym; B = 50 Ω / 50 Ω asym; C = 0.1 Ω / 100 Ω sym; D = 100 Ω / 0.1 Ω sym

1 and 3 A types

6 to 10 A types

12 and 15 A types



X3120-A0406 - High performance filter

Typical filter attenuation: Per CISPR 17

A = 50 Ω / 50 Ω sym; B = 50 Ω / 50 Ω asym; C = 0.1 Ω / 100 Ω sym; D = 100 Ω / 0.1 Ω sym

1 and 3 A types

6 to 10 A types

12 and 15 A types



Filter selection table

| Filter | Rated current 50°C (25°C) A | Leakage current 250VAC/50 Hz µA | Inductance L mH | Capacitance Cx µF | Capacitance Cy nF | Resistance R kΩ |
|------------------|-----------------------------------|---------------------------------------|--------------------|----------------------|----------------------|--------------------|
| X3120-A040101..M | 1 (1.2) | 373 | 12 | 0.1 | 2.2 | |
| X3120-A040103..M | 3 (3.5) | 373 | 2.5 | 0.1 | 2.2 | |
| X3120-A040106..M | 6 (7.2) | 373 | 0.78 | 0.1 | 2.2 | |
| X3120-A040108..M | 8 (10.6) | 373 | 0.5 | 0.1 | 2.2 | |
| X3120-A040110..M | 10 (11.6) | 373 | 0.225 | 0.1 | 2.2 | |
| X3120-A040112..M | 12 (12) | 373 | 0.11 | 0.1 | 2.2 | |
| X3120-A040115..M | 15 (15) | 373 | 0.075 | 0.1 | 2.2 | |
| | | | | | | |
| X3120-A040301..M | 1 (1.2) | 2 | 12 | 0.1 | | 1000 |
| X3120-A040303..M | 3 (3.5) | 2 | 2.5 | 0.1 | | 1000 |
| X3120-A040306..M | 6 (7.2) | 2 | 0.78 | 0.1 | | 1000 |
| X3120-A040308..M | 8 (10.6) | 2 | 0.5 | 0.1 | | 1000 |
| X3120-A040310..M | 10 (11.6) | 2 | 0.225 | 0.1 | | 1000 |
| X3120-A040312..M | 12 (12) | 2 | 0.11 | 0.1 | | 1000 |
| X3120-A040315..M | 15 (15) | 2 | 0.075 | 0.1 | | 1000 |
| | | | | | | |
| X3120-A040601..M | 1 (1.2) | 2 | 59.53 | 0.1 | | 1000 |
| X3120-A040603..M | 3 (3.5) | 2 | 13.45 | 0.1 | | 1000 |
| X3120-A040606..M | 6 (7.2) | 2 | 4.1 | 0.1 | | 1000 |
| X3120-A040608..M | 8 (10.6) | 2 | 2.3 | 0.1 | | 1000 |
| X3120-A040610..M | 10 (11.6) | 2 | 1.02 | 0.1 | | 1000 |
| X3120-A040612..M | 12 (12) | 2 | 0.58 | 0.1 | | 1000 |
| X3120-A040615..M | 15 (15) | 2 | 0.4 | 0.1 | | 1000 |

Description undervoltage release module X3120-U

Add-on module for circuit breaker type 3120. The undervoltage release module trips the 3120 circuit breaker/switch combination in the event of a voltage drop or power failure. When the voltage is restored, the 3120 must be reset to reconnect the load, thereby avoiding the safety hazards associated with automatic re-start of machinery.

Note: Basic unit 3120-...-H7 or -G7 requires screw terminals. Not possible in combination with PT terminals.

Typical applications

All machines and devices where automatic re-start after restoration of power could be dangerous, e.g. drilling machines, electric saws, sausage slicers etc.

Order numbering code

Type No.

X3120 module for type 3120

Module

U undervoltage release module

Design

00 standard (without separate connections)

01 1 blade terminals 2.8x0.8

02 2 blade terminals 2.8x0.8

Rated voltage

00 AC 230/240 V 50/60 Hz

01 AC 120 V 50/60 Hz

Assembly status

M module mounted to circuit breaker 3120

X3120-U 00 00 M ordering example

Dimensions



Schematic diagrams



Technical data

| | |
|---------------------|---|
| Voltage ratings | AC 100 V; 120 V; 230/240 V (50/60 Hz); DC 24 V |
| Voltage tolerances | + 10 % / - 15 % |
| Typical life | 20,000 cycles |
| Current consumption | approx. 2.5 mA |
| Release values | $0.2 \times U_N < U < 0.7 \times U_N$ (at a rated voltage of AC 100 V the device can trip at 70 V and must trip at 20 V) |
| Release delay | < 20 ms |
| Latch-in values | $\geq 85 \% U_N$ |
| Ambient temperature | -30 ... 60 °C |
| Vibration | 8 g (57-500 Hz), ± 0.61 mm (10-57 Hz) test to IEC 60068-2-6, test Fc 10 frequency cycles/axis |
| Shock | 30 g (11 ms) test to IEC 60068-2-27, test Ea |
| Corrosion | 48 hours at 5 % salt mist, test to IEC 60068-2-11, test Ka |
| Humidity | 240 hrs in 95 % RH test to IEC 60068-2-78, test Cab |
| Mass | approx. 53 g (including base unit) |

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Description auxiliary contact module X3120-S

Add-on module for circuit breaker type 3120-F. The auxiliary contact module has a change-over contact as signal contact and is operated with actuation of the CBE. Not possible in combination with PT terminals.

Typical applications

Status monitoring of CBE and/or the connected loads.

Order numbering code

Type No.

X3120 module for types 3120 and 3140

Module

S auxiliary contact module

Contact configuration

0 change-over contact

Terminal design

1 blade terminals 2.8 x 0.5 (QC .110), silver-plated

Contact rating

| AC voltage | | DC voltage | |
|-----------------------|---------------|---------------|---------------|
| rated voltage | rated current | rated voltage | rated current |
| A 10 V - 250 V | 0.1...4 A | 12 V | 0.1...4 A |
| | | 24 V | 0.1...4 A |
| | | 60 V | 0.1...1 A |
| | | 110 V | 0.1...0.5 A |
| B 5 V - 250 V | 5 ...100 mA | 220 V | 0.1...0.25 A |
| | | 5 V - 250 V | 5...100 mA |

Assembly status

M module mounted to circuit breaker 3120

X3120-S 0 1 A M ordering example

* without approval mark

Dimensions



Schematic diagram



Technical data

| | |
|------------------------------------|--|
| Rated voltage | AC 250 V, DC 220 V |
| Current ratings | 0.1...4 A / 5...100 mA |
| Typical life | 50,000 cycles |
| Ambient temperature | -30...60 °C |
| Dielectric strength | |
| between main and auxiliary circuit | test voltage AC 3,000 V |
| Insulation resistance | > 100 MOhm (DC 500 V) |
| Vibration | 6 g (57-500 Hz), ± 0.46 mm (10-57 Hz) test to IEC 60068-2-6, test Fc 10 frequency cycles/axis |
| Shock | 15 g (11 ms) test to IEC 60068-2-27, test Ea |
| Corrosion | 96 hours at 5 % salt mist, test to IEC 60068-2-11, test Ka |
| Humidity | 240 hrs in 95 % RH test to IEC 60068-2-78, test Cab |
| Mass | approx. 38 g (including base unit) |

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Description remote trip module X3120-M

A module which adds remote trip capability to all versions of type 3120-F. A voltage applied across the coil, by means of an external sensor for example, will cause disconnection of the main switch/circuit breaker mechanism.

Not possible in combination with PT terminals.

Typical applications

Electrical remote trip of safety systems.

Order numbering code

| | |
|---|---|
| Type No. | X3120 module for type 3120 |
| Module | M magnetic relay trip module |
| Style | 2 magnetic remote trip coil |
| Terminal design | P7 blade terminals DIN 46244-A6.3-0.8 |
| Assembly status | M module mounted to circuit breaker 3120 |
| Rated voltage | AC 120, 230 V |
| | DC 12, 24 V |
| X3120- M 2 P7 M -12 V ordering example | |

Standard voltage ratings and typical internal resistance values

| voltage rating | internal internal resistance (Ω) | voltage rating | internal internal resistance (Ω) |
|----------------|----------------------------------|----------------|----------------------------------|
| DC 12 V | 0.78 | AC 120 V | 71.0 |
| DC 24 V | 3.3 | AC 230 V | 312 |

Dimensions



Schematic diagram



Technical data

| | |
|---------------------------------------|---|
| Voltage ratings | AC 120...230 V; DC 12...24 V |
| Power consumption | approx. 200 Watt |
| Pulse operation | 20 ms < t _{ON} < 100 ms / t _{OFF} > 10 sec |
| Trip time | < 20 ms |
| Typical life | 50,000 operations at U _N |
| Ambient temperature | -30...60 °C |
| Dielectric strength | |
| between main and trip current circuit | test voltage AC 3,000 V |
| Insulation resistance | > 100 MOhm (DC 500 V) |
| Vibration | 8 g (57-500 Hz), ± 0.61 mm (10-57 Hz) test to IEC 60068-2-6, test Fc 10 frequency cycles/axis |
| Shock | 30 g (11 ms) test to IEC 60068-2-27, test Ea |
| Corrosion | 96 hours at 5 % salt mist, test to IEC 60068-2-11, test Ka |
| Humidity | 240 hrs in 95 % RH test to IEC 60068-2-78, test Cab |
| Mass | approx. 53 g (including base unit) |

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Наши преимущества:

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- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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