

CAPAROC E2 12-24DC/1-4A EX - Electronic circuit breaker



1344361

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2-channel electronic circuit breaker module for protecting 12 V DC and 24 V DC loads against overload and short circuit. Nominal current adjustable from 1 A to 4 A via step switch. EX e approval for zone 2. For DIN rail installation via the CAPAROC current rails.

Your advantages

- The customizable standard, thanks to individual combinations of the future-proof modular system
- Easy operation for everyone through tool-free assembly, uninterrupted installation, and transparent operating state
- Strikingly simple design-in with extensive support from the selection up to digital services

Commercial data

| | |
|--------------------------------------|---------------|
| Item number | 1344361 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | CL11 |
| Product key | CLA233 |
| GTIN | 4063151658113 |
| Weight per piece (including packing) | 96.4 g |
| Weight per piece (excluding packing) | 89.55 g |
| Customs tariff number | 85363010 |
| Country of origin | DE |

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Technical data

Notes

General

| | |
|------|---|
| Note | LABS release – in accordance with test specification VW PV 3. 10.7:2005-0 |
| | When connecting the conductor, make sure that the CAPAROC modules are not pulled apart due to tensile force. Gaps must not be created between the modules. |
| | Observe the specified conditions for use in potentially explosive areas. Install the device in a suitable approved housing with at least IP54 degree of protection that meets the requirements of IEC/EN 60079-0. Also observe the requirements of IEC/EN 60079-14. |

Product properties

| | |
|---------------------|-------------------------|
| Product type | Device circuit breakers |
| Product family | CAPAROC |
| Number of positions | 1 |
| No. of channels | 2 |
| Number of slots | 2 |

Insulation characteristics

| | |
|------------------|-----|
| Protection class | III |
| Pollution degree | 2 |

Electrical properties

| | |
|-----------------|---|
| No. of channels | 2 |
|-----------------|---|

General

| | |
|----------------------------------|---|
| Operating voltage | 10 V DC ... 30 V DC |
| Rated voltage | 12 V DC |
| | 24 V DC |
| Rated current I_N | 4 A DC (per channel) |
| Rated current I_N | 1 / 2 / 3 / 4 A DC (Adjustable via rotary coding switches) |
| | 1 / 2 / 3 / 4 A DC (can be set, in RC mode via power module with communication interface) |
| Rated current (pre-adjusted) | 1 A |
| Rated surge voltage | 0.5 kV |
| Tripping method | E (electronic) |
| Feedback resistance | max. 35 V DC |
| Switch-on delay | 50 ms (each channel preset by default) |
| | can be adapted with CAPAROC PM IOL and CAPAROC PM PN power modules |
| Required backup fuse | Only required if I_{max} of the power supply > the short-circuit switching capacity. Integrated failsafe element. |
| Short-circuit switching capacity | 300 A |

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| | |
|------------------------------|---|
| Dielectric strength | 35 V DC (Load circuit) |
| Active current limitation | typ. $2.0 \times I_N$ at $I_N \leq 3 \text{ A}$ |
| | typically $1.5 \times I_N$ at $I_N = 4 \text{ A}$ |
| Fuse | electronic |
| Efficiency | > 99 % |
| Closed circuit current I_0 | typ. 25 mA (no load at 24 V) |
| Power dissipation | typ. 0.6 W (no load at 24 V) |
| | < 1.1 W (in nominal operation at 24 V and 4 A) |
| Measuring tolerance I | $\pm 10 \%$ (typ.) |
| MTBF (IEC 61709, SN 29500) | 11364927 h (at 25 °C with 21 % load) |
| | 5271554 h (at 40°C with 34.25% load) |
| | 640731 h (at 65°C with 100% load) |
| Voltage drop | 0.06 V (at 4 A) |
| Fail-safe element | 5 A DC (per output channel) |

Load circuit

| | |
|-------------------------|---|
| Shutdown time | 5 s (with overload $1.1 \dots 1.3 \times I_N$ at $I_N \geq 4 \text{ A}$) |
| | 5 s (for overload $1.1 \dots 1.7 \times I_N$ at $I_N < 4 \text{ A}$) |
| | $\leq 400 \text{ ms}$ (max. 450 ms for high starting currents) |
| | typ. 20 ms (for short circuit $> 1.5 \times I_N$) |
| Undervoltage switch-off | $\leq 8.5 \text{ V DC}$ (active) |
| | $\geq 9.2 \text{ V DC}$ (inactive) |
| Overvoltage switch-off | $\geq 32.5 \text{ V DC}$ (active) |
| | $\leq 30.5 \text{ V DC}$ (inactive) |
| Max. capacitive load | $\leq 60000 \mu\text{F}$ (Depending on the current setting and the short-circuit current available) |

Connection data

Fuse-protected output

| | |
|---|--|
| Connection method | Push-in connection |
| Stripping length | 10 mm |
| Conductor cross section flexible | 0.2 mm ² ... 4 mm ² |
| Conductor cross section rigid | 0.2 mm ² ... 4 mm ² |
| Conductor cross section AWG | 24 ... 12 |
| Conductor cross section, flexible, with ferrule, with plastic sleeve | 0.25 mm ² ... 4 mm ² |
| Conductor cross section flexible, with ferrule without plastic sleeve | 0.25 mm ² ... 4 mm ² |

Signaling

| | |
|--------------------|--|
| Channel LED off | off (Channel switched off) |
| Channel LED yellow | lit (Channel switched on, channel load > 80%) |
| | two flashes (Check the installation, no communication to power module) |
| Channel LED green | lit (Channel switched on) |
| | flashing (Channel switched on, coding switch position is not |

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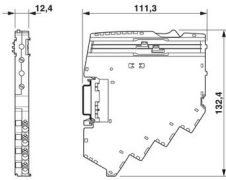


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| | |
|------------------------|--|
| | equal to set value) |
| Channel LED red | lit (Channel switched off, over- or undervoltage active) |
| | ON temporarily (Channel switched off, 5 s cool-down phase, overload or short-circuit release) |
| | flashing (Channel switched off, ready to be switched back on, overload or short-circuit release) |
| | two flashes (Channel switched off, system total current limit exceeded) |
| Channel LED red-yellow | flashing (Channel is overloaded and is switched off) |
| Channel LED red-green | flashing (Channel switched off, programming mode active, current adjustment after overload or short-circuit release) |

Dimensions

| | |
|---------------------|---|
| Dimensional drawing |  |
| Width | 12.4 mm |
| Height | 132.4 mm |
| Depth | 111.3 mm (incl. DIN rail 7.5 mm) |

Material specifications

| | |
|--|------|
| Material | PA 6 |
| | PA 6 |
| | PA 6 |
| | PC |
| Flammability rating according to UL 94 | V-0 |

Environmental and real-life conditions

Ambient conditions

| | |
|---|--|
| Degree of protection | IP20 |
| Ambient temperature (operation) | -30 °C ... 65 °C (The temperature range of the power module must be taken into consideration) |
| Ambient temperature (storage/transport) | -40 °C ... 70 °C |
| Altitude | ≤ 4000 m (amsl) |
| Humidity test | 96 h, 95 % RH, 40 °C |
| Shock (operation) | 30g (11 ms period, half-sine shock pulse, according to IEC 60068-2-27) |
| | 25g (6 ms duration, half-sine shock pulse in accordance with IEC 60068-2-27, continuous shock) |
| Vibration (operation) | 5g (10 ... 150 Hz / 10 cycles / axis / X, Y, Z) |

Approvals

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UL approval

| | |
|----------------|---|
| Identification | UL/C-UL Listed UL 508 |
| | UL Recognized UL 2367 |
| | UL 121201 Class I, Division 2, Groups A, B, C, D, T4A |
| | NEC Class 2 according to UL 1310 |

ATEX

| | |
|----------------|-----------------------|
| Identification | TÜV 22 ATEX 8874 X |
| | II 3G Ex ec IIC T4 Gc |

IECEX

| | |
|----------------|-----------------------|
| Identification | IECEX TUR 22.0049X |
| | II 3G Ex ec IIC T4 Gc |

UKCA Ex (UKEX)

| | |
|----------------|-----------------------|
| Identification | TÜV 22 UKEX 7109 X |
| | II 3G Ex ec IIC T4 Gc |

Standards and regulations

| | |
|--------------------------|---|
| Standards/specifications | EN 61000-6-2 |
| Note | EMC – Immunity for industrial areas |
| Standards/specifications | EN 61000-6-3 |
| Note | EMC – Emission for residential, business and commercial properties and small operations |
| Standards/specifications | EN 60068-2-78 |
| Note | Environmental influences – Moisture and heat, constant |
| Standards/specifications | EN 50178 |
| Note | Equipping power installations with electronic equipment |
| Standards/specifications | EN 60068-2-6 |
| Note | Environmental influences – Vibrations (sinusoidal) |
| Standards/specifications | EN 60068-2-27 |
| Note | Environmental influences – Shocks |
| Standards/specifications | IEC 60079-7 |
| Note | Explosive atmospheres – Part 7: Equipment protection by increased safety “e” |
| Standards/specifications | IEC 60079-0 |
| Note | Explosive atmospheres – Part 0: Equipment – General requirements |

Mounting

| | |
|---------------|---|
| Mounting type | pluggable onto CAPAROC CR... current rail |
|---------------|---|

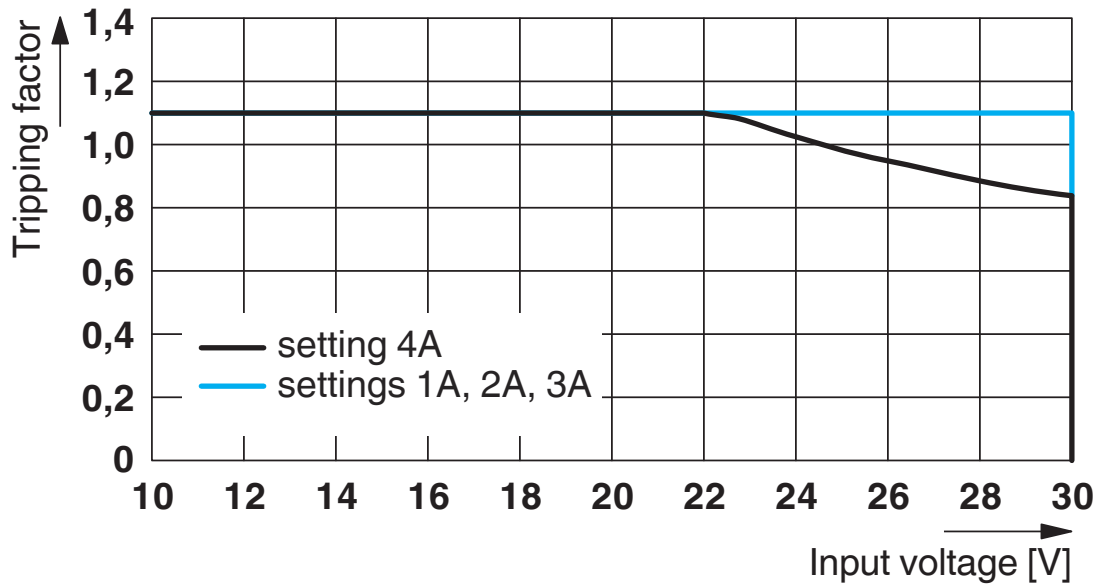
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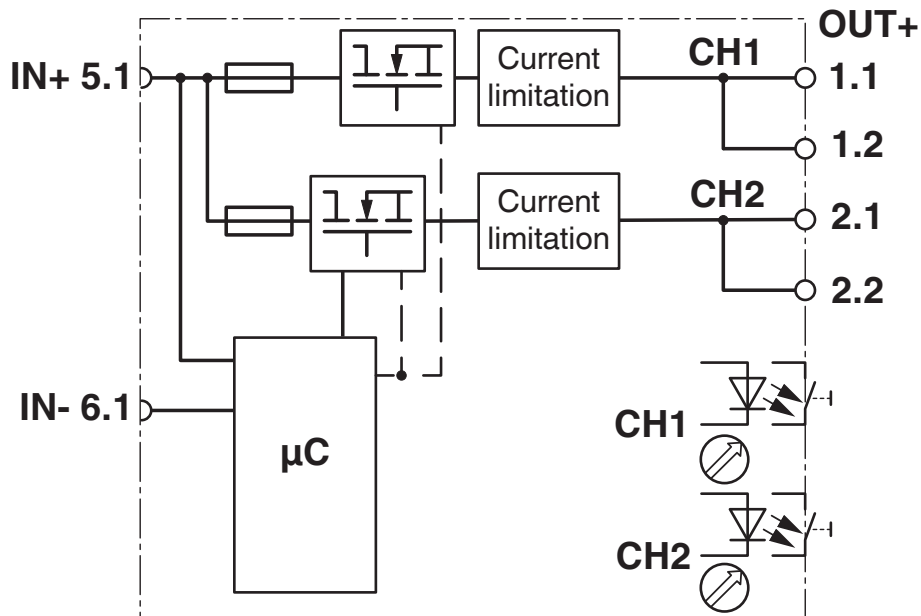
Drawings

Diagram



Tripping characteristic according to the input voltage

Block diagram



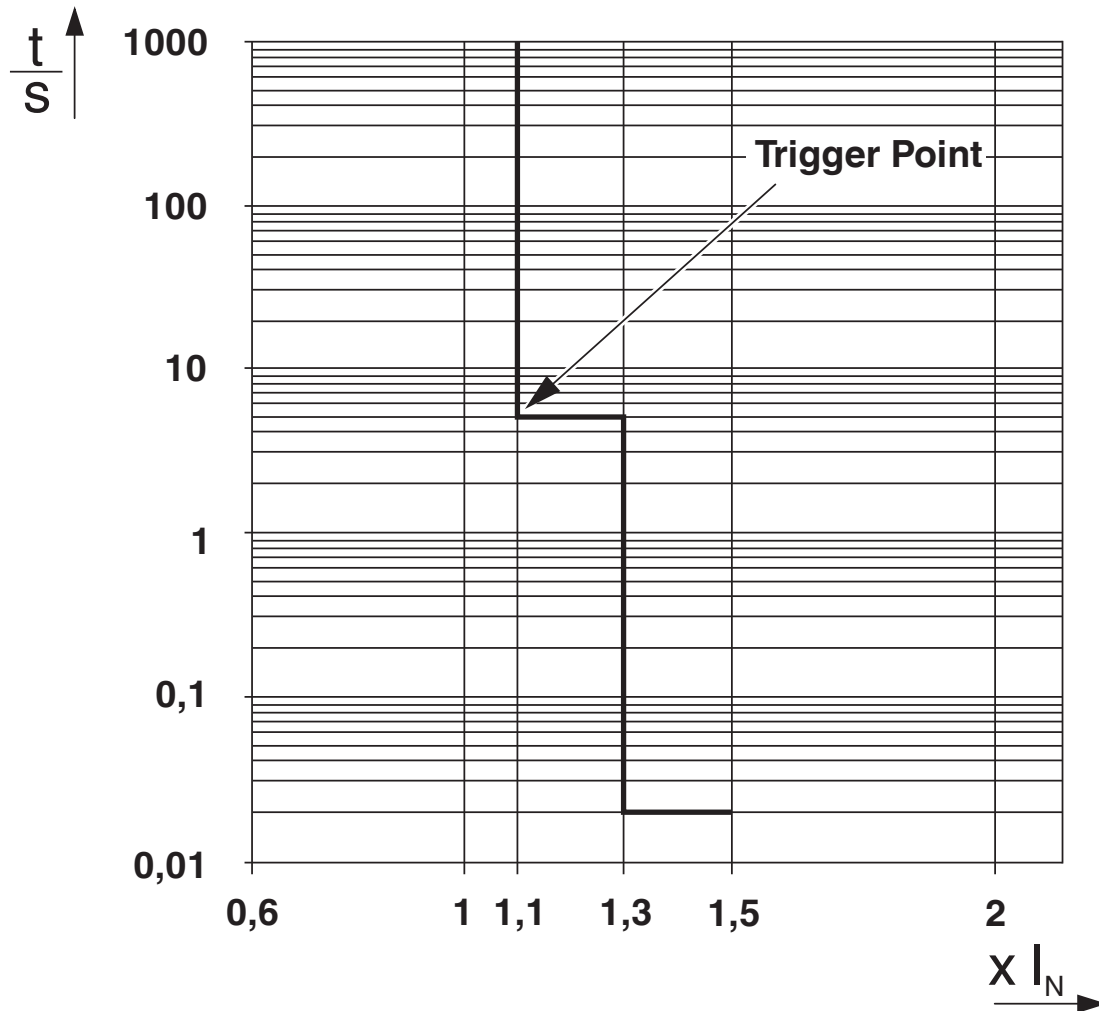
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Diagram



Tripping characteristic 4 A

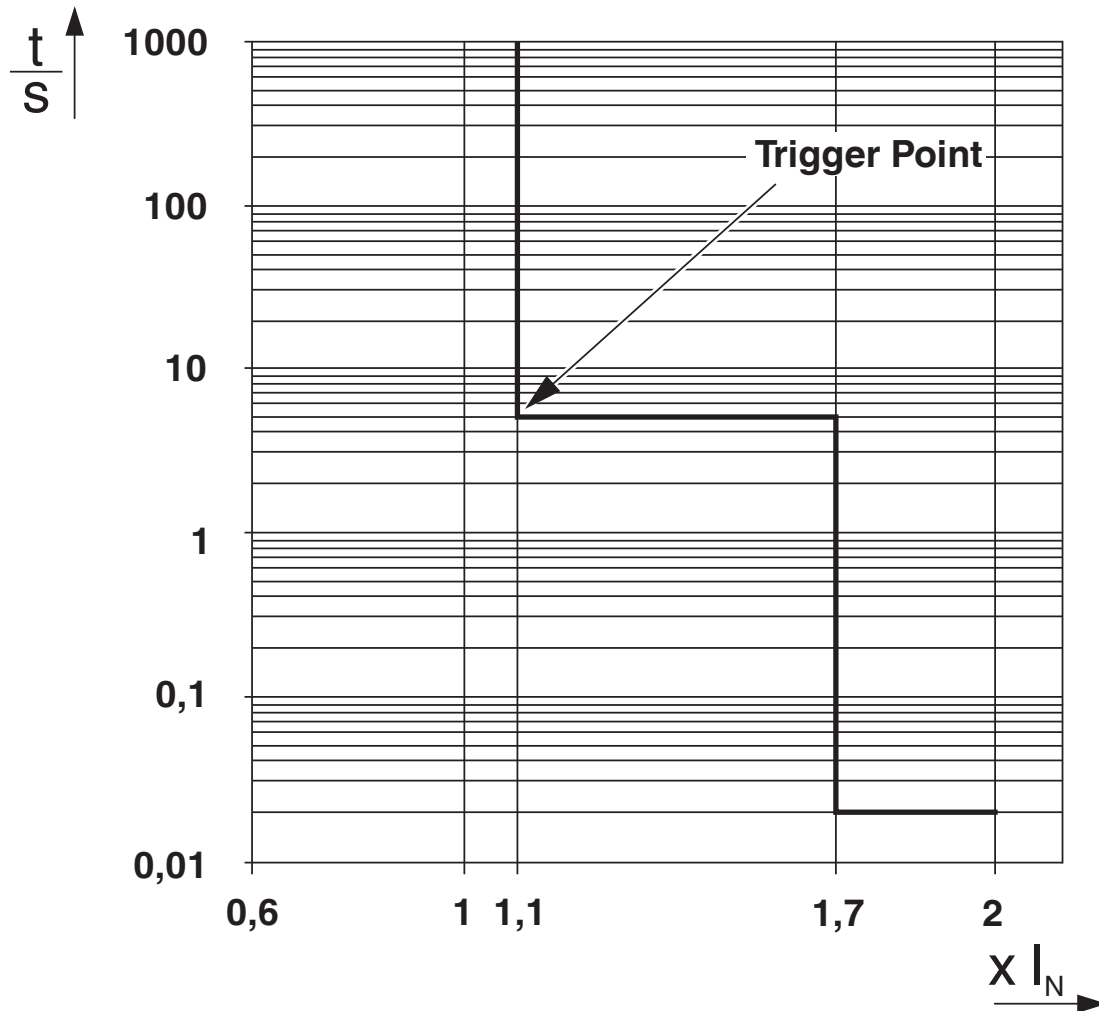
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Diagram



Tripping characteristic $< 4 A$

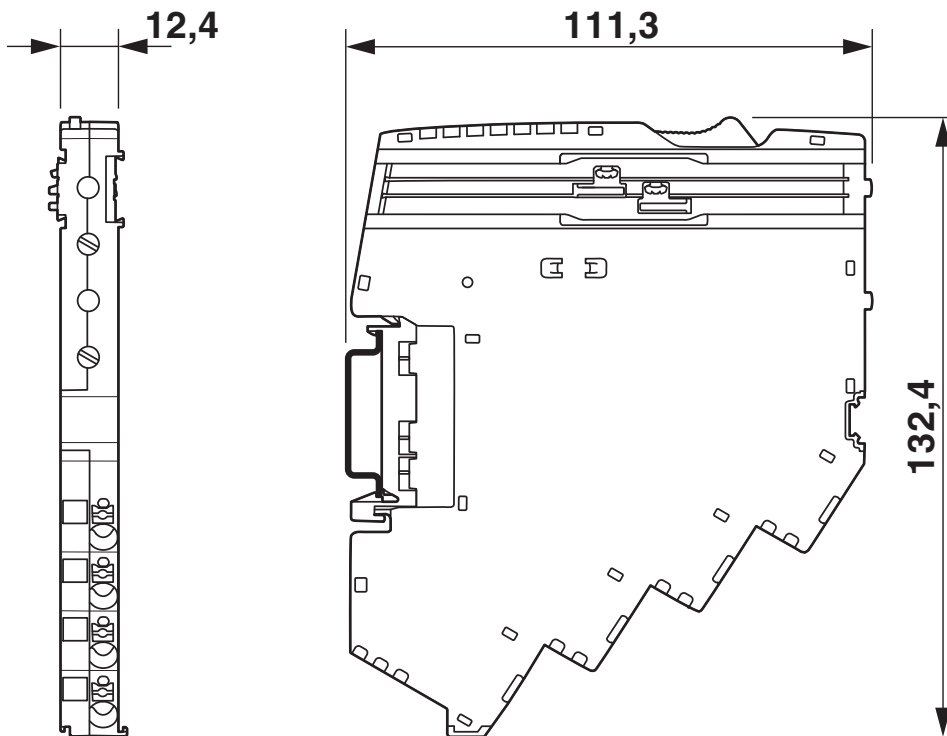
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Dimensional drawing



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Approvals

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UL Recognized

Approval ID: FILE E 317172



UL Listed

Approval ID: FILE E 123528



cUL Listed

Approval ID: FILE E 123528



IECEx

Approval ID: IECEx TUR 22.0049X



UL Recognized

Approval ID: FILE E 324415



cUL Listed

Approval ID: FILE E 483407



UL Listed

Approval ID: FILE E 483407



ATEX

Approval ID: TÜV 22 ATEX 8874 X



UKCA-EX

Approval ID: TÜV 22 UKEX 7109 X

cULus Listed

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Classifications

ECLASS

| | |
|-------------|----------|
| ECLASS-11.0 | 27140401 |
| ECLASS-12.0 | 27140401 |
| ECLASS-13.0 | 27140401 |

ETIM

| | |
|----------|----------|
| ETIM 9.0 | EC003538 |
|----------|----------|

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Environmental product compliance

REACH SVHC

Lead 7439-92-1

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Mandatory accessories

CAPAROC CR 20 - Busbar

1110989

<https://www.phoenixcontact.com/us/products/1110989>

Busbar for CAPAROC system with 20 slots. For installation on a DIN rail.



CAPAROC CR 8 - Busbar

1115672

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Busbar for the CAPAROC system with 8 slots. For installation on a DIN rail.



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CAPAROC PM S-R EX - Power module

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Power module with status output and reset input for supplying the CAPAROC circuit breaker system with 12 V DC or 24 V DC. EX e approval for zone 2. For DIN rail installation via the CAPAROC current rails.

Accessories

CAPAROC PD 0V - Potential distributors

1110987

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Potential distributor with Push-in connections for directly connecting the 0 V return conductor in the CAPAROC system. For DIN rail installation via the CAPAROC current rails.

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UC-TMF 6 - Marker for terminal blocks

0818140

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Marker for terminal blocks, Sheet, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: snapped, for terminal block width: 6.2 mm, lettering field size: 5.6 x 5.1 mm, Number of individual labels: 80

UCT-TMF 6 - Marker for terminal blocks

0828746

<https://www.phoenixcontact.com/us/products/0828746>



Marker for terminal blocks, Sheet, white, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: snapped, for terminal block width: 6.2 mm, lettering field size: 5.4 x 4.7 mm, Number of individual labels: 60

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UC-TM 12 - Marker for terminal blocks

0819194

<https://www.phoenixcontact.com/us/products/0819194>



Marker for terminal blocks, Sheet, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: snapped, for terminal block width: 12 mm, lettering field size: 11.45 x 10.5 mm, Number of individual labels: 40

UCT-TM 12 - Marker for terminal blocks

0829144

<https://www.phoenixcontact.com/us/products/0829144>



Marker for terminal blocks, Sheet, white, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: snapped, for terminal block width: 12 mm, lettering field size: 10.8 x 9.6 mm, Number of individual labels: 30

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CAPAROC CR EXT20 - Busbar

1115674

<https://www.phoenixcontact.com/us/products/1115674>

Extension busbar with 20 slots for the CAPAROC system. For installation on a DIN rail.



CAPAROC CR EXT8 - Busbar

1110990

<https://www.phoenixcontact.com/us/products/1110990>

Extension busbar with 8 slots for CAPAROC system. For installation on a DIN rail.



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CAPAROC CR EXT4 - Busbar

1110991

<https://www.phoenixcontact.com/us/products/1110991>



Extension busbar with 4 slots for the CAPAROC system. For installation on a DIN rail.

CAPAROC CR CON - Metal part

1270955

<https://www.phoenixcontact.com/us/products/1270955>



Metal extension rails from connecting CAPAROC initial busbars.

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