

CAPAROC E1 12-24DC/4A - Electronic circuit breaker



1157285

<https://www.phoenixcontact.com/de/produkte/1157285>

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1-channel electronic circuit breaker module for protecting 12 and 24 V DC loads against overload and short circuit. With fixed nominal current. For DIN rail installation via the CAPAROC current rails.

Your advantages

- The benchmark that you can tailor with channel-precise design with integrated potential distribution
- Easy operation for everyone through tool-free assembly, uninterrupted installation, and transparent operating state
- Exceptionally easy design-in with the narrowest of space requirements and four protected outputs

Commercial data

| | |
|--------------------------------------|---------------------|
| Item number | 1157285 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | L1 - Schutzschalter |
| Product key | CLA232 |
| GTIN | 4063151161804 |
| Weight per piece (including packing) | 77,46 g |
| Weight per piece (excluding packing) | 94,8 g |
| Customs tariff number | 85363010 |
| Country of origin | DE |

Technical data

Notes

General

| | |
|------|---|
| Note | LABS release – in accordance with test specification VW PV 3. 10.7:2005-0 |
|------|---|

Product properties

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

Data management status

| | |
|------------------|----|
| Article revision | 03 |
|------------------|----|

Insulation characteristics

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

Electrical properties

General

| | |
|----------------------------------|---|
| Operating voltage | 10 V DC ... 30 V DC |
| Rated voltage | 12 V DC |
| | 24 V DC |
| Rated current I_N | 4 A DC |
| Rated current (pre-adjusted) | 4 A |
| Rated surge voltage | 0.5 kV |
| Tripping method | E (electronic) |
| 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 |
| Dielectric strength | 35 V DC (Load circuit) |
| Fuse | electronic |
| Efficiency | > 99 % |
| Closed circuit current I_0 | typ. 8.5 mA (no load at 24 V) |
| Power dissipation | typ. 0.2 W (no load at 24 V) |
| | < 0.57 W (in nominal operation at 24 V and 4 A) |
| Measuring tolerance I | ± 15 % (typ.) |
| MTBF (IEC 61709, SN 29500) | 21274544 h (at 25 °C with 21 % load) |
| | 9809987 h (at 40°C with 34.25% load) |
| | 1482752 h (at 40°C with 100% load) |
| Voltage drop | 0.09 V (at 4 A) |

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| | |
|-------------------------|---|
| Fail-safe element | 5 A DC (per output channel) |
| Load circuit | |
| Shutdown time | 4 s (with overload 1.1...1.5 x I _N) |
| | 1 s (with overload 1.5...2.0 x I _N) |
| | 0.1 s (with overload 2.0...3.0 x I _N) |
| | typ. 10 ms (For short circuit > 3.0 x I _N) |
| Undervoltage switch-off | ≤ 8.5 V DC (active) |
| | ≥ 9.2 V DC (inactive) |
| Overvoltage switch-off | ≥ 32.5 V DC (active) |
| | ≤ 30.5 V DC (inactive) |
| Max. capacitive load | ≤ 20000 µF (Depending on the current setting and the short-circuit current available) |
| Switch-on delay | 50 ms (can be adapted with CAPAROC PM IOL and CAPAROC PM PN power modules) |

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%) |
| | flashing (Programming mode active) |
| | two flashes (Check the installation, no communication to power module) |
| Channel LED green | lit (Channel switched on) |
| 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) |

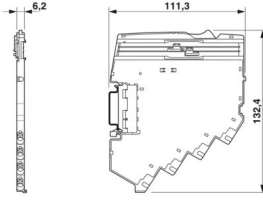
Dimensions

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| | |
|---------------------|--|
| Dimensional drawing |  |
| Width | 6.2 mm |
| Height | 132.4 mm |
| Depth | 111.3 mm (incl. DIN rail 7.5 mm) |

Material specifications

| | |
|--|-----------------------|
| Color | light gray (RAL 7035) |
| 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) |
| | 15g (6 ms duration, half-sine shock pulse in accordance with IEC 60068-2-27, continuous shock. If more than six CAPAROC E1 modules are used in the system.) |
| Vibration (operation) | 5g (10 ... 150 Hz / 10 cycles / axis / X, Y, Z) |

Approvals

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 |

Corrosive gas test

| | |
|----------------|----------------------------------|
| Identification | ISA S71.04.2013 G3 Harsh Group A |
|----------------|----------------------------------|

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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 |

Mounting

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

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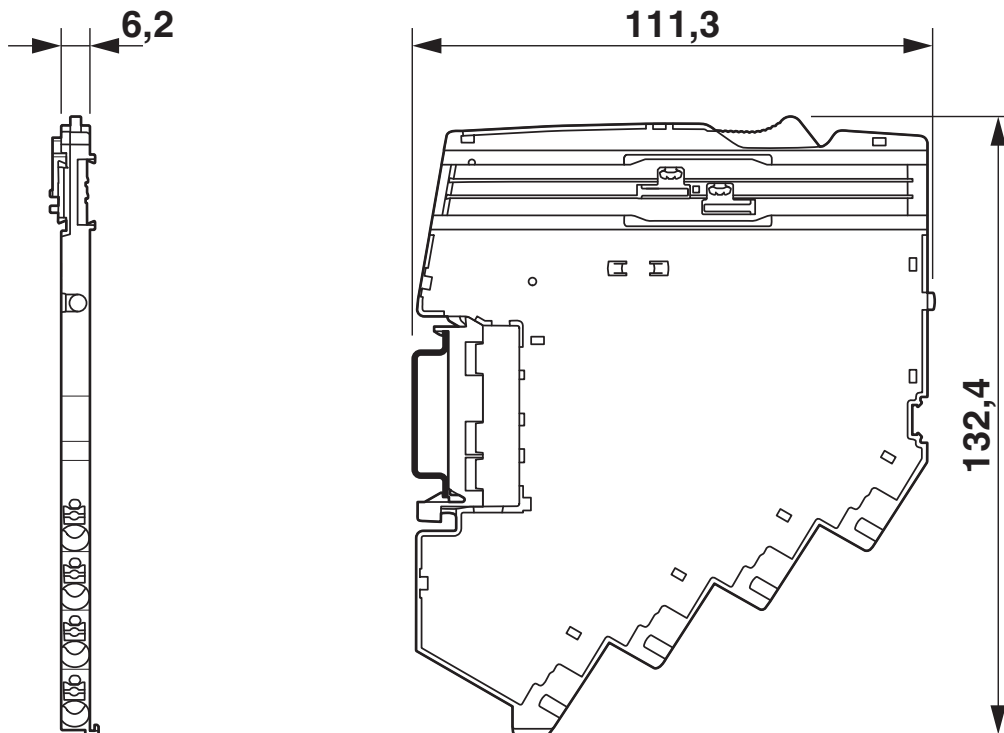


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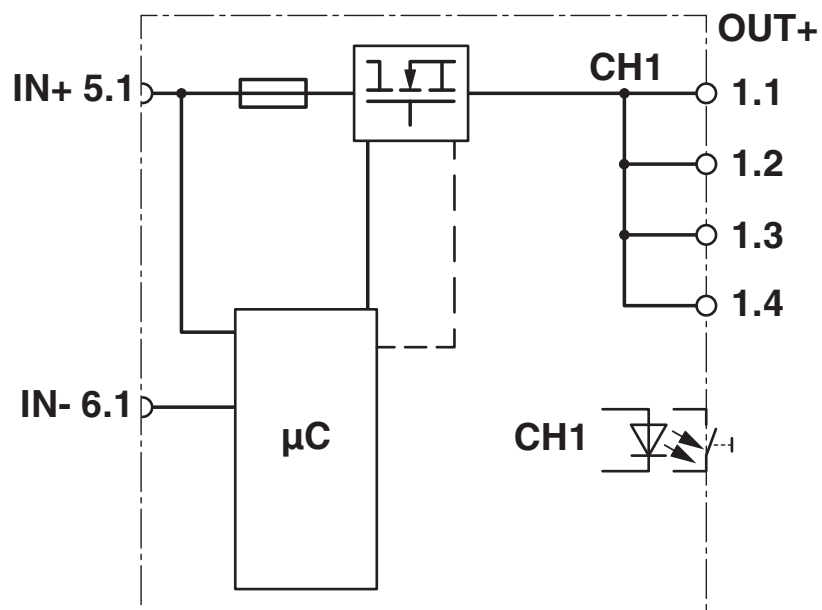
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Drawings

Dimensional drawing



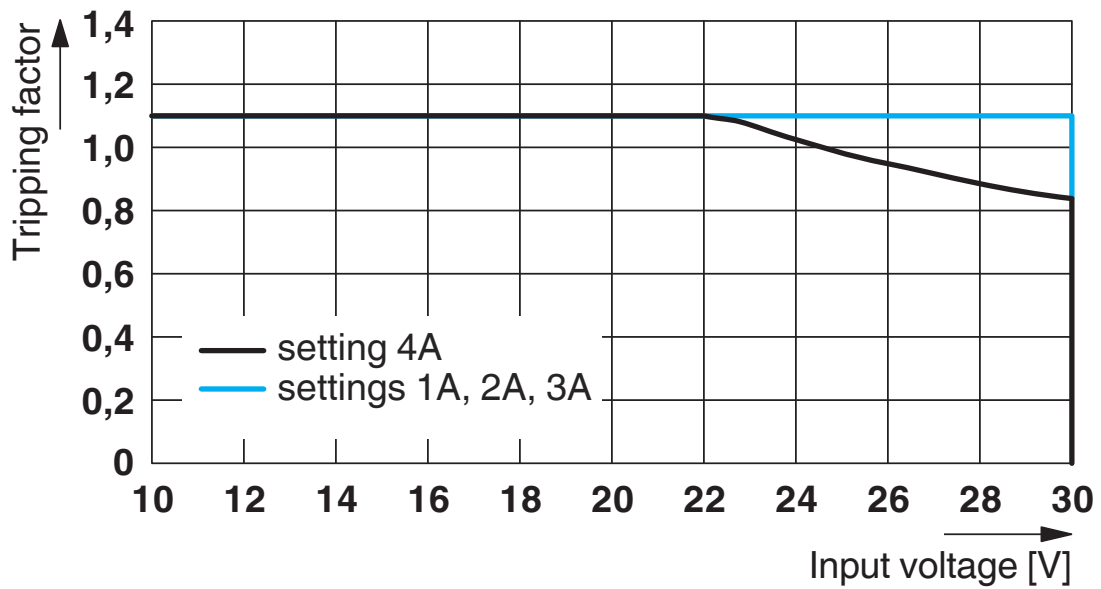
Block diagram



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Diagram

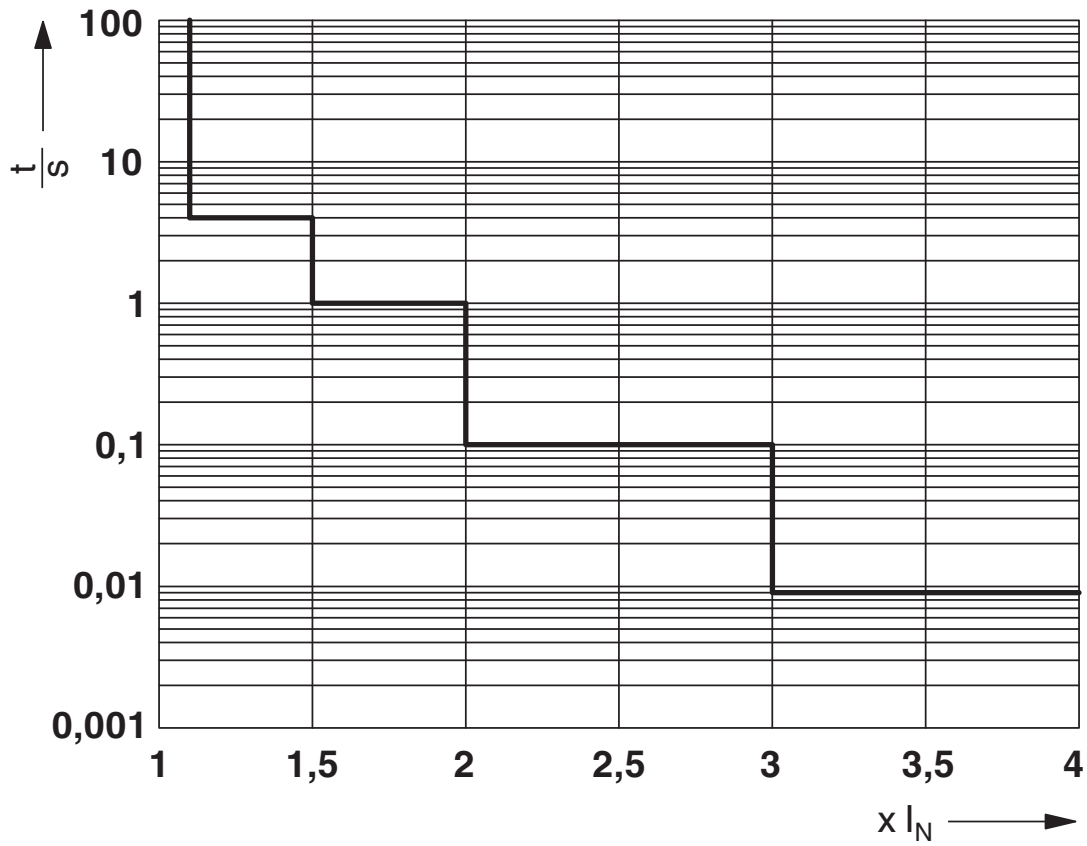


Tripping characteristic according to the input voltage

Product drawing

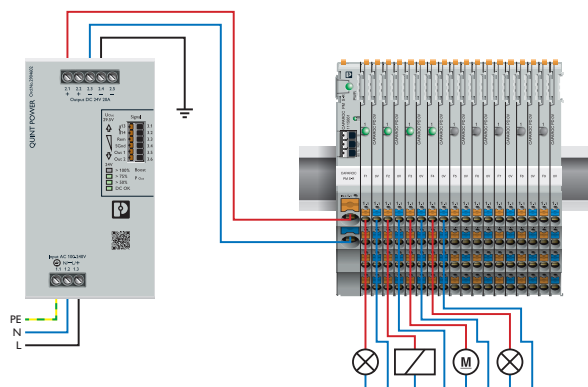


Diagram



Trigger characteristic

Application drawing



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Approvals

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UL Recognized

Approval ID: FILE E 317172



UL Listed

Approval ID: E123528



cUL Listed

Approval ID: E123528



UL Recognized

Approval ID: FILE E 324415



cUL Listed

Approval ID: FILE E 483407



UL Listed

Approval ID: FILE E 483407

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Classifications

ECLASS

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

ETIM

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

UNSPSC

| | |
|-------------|----------|
| UNSPSC 21.0 | 39121400 |
|-------------|----------|

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Environmental product compliance

EU RoHS

| | |
|---|--------------|
| Fulfills EU RoHS substance requirements | Yes |
| Exemption | 7(a), 7(c)-I |

China RoHS

| | |
|--|---|
| Environment friendly use period (EFUP) | EFUP-50 |
| | An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required. |

EU REACH SVHC

| | |
|-------------------------------------|--------------------------------------|
| REACH candidate substance (CAS No.) | Lead(CAS: 7439-92-1) |
| SCIP | 337dc387-b238-4b4f-9035-9daf2082d1df |

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Mandatory accessories

CAPAROC CR 20 - Busbar

1110989

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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 - Power module

1115661

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

CAPAROC PM PN - Power module

1110986

<https://www.phoenixcontact.com/de/produkte/1110986>



Power module with PROFINET interface for supplying the CAPAROC circuit breaker system with 12 or 24 V DC. Additional system interface for communication with the power supply. For DIN rail installation via the CAPAROC current rails.

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CAPAROC PM IOL - Power module

1115670

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Power module with IO-Link interface for supplying the CAPAROC circuit breaker system with 12 or 24 V DC for up to 20 channels. For DIN rail installation via the CAPAROC current rails.

CAPAROC PM EIP - Power module

1393553

<https://www.phoenixcontact.com/de/produkte/1393553>



Power module with EtherNet/IP™ interface for supplying the CAPAROC circuit breaker system with 12 V DC or 24 V DC. Additional system interface for communication with the power supply. For DIN rail installation via the CAPAROC current rails.

Accessories

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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.

UC-TMF 6 - Marker for terminal blocks

0818140

<https://www.phoenixcontact.com/de/produkte/0818140>



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

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UC-TM 6 - Marker for terminal blocks

0818085

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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 10.5 mm, Number of individual labels: 80

UCT-TM 6 - Marker for terminal blocks

0828736

<https://www.phoenixcontact.com/de/produkte/0828736>



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: 5.6 x 10.5 mm, Number of individual labels: 60

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UCT-TMF 6 - Marker for terminal blocks

0828746

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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

CAPAROC CR EXT20 - Busbar

1115674

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

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CAPAROC CR EXT8 - Busbar

1110990

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

CAPAROC CR EXT4 - Busbar

1110991

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

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CAPAROC CR CON - Metal part

1270955

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Metal extension rails from connecting CAPAROC initial busbars.

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