

CAPAROC E4 12-24DC/1-4A - Electronic circuit breaker



1115657

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Four-channel electronic circuit breaker module for protecting 12 and 24 V DC loads against overload and short circuit. Nominal current adjustable from 1 A to 4 A via LED button. For DIN rail installation via the CAPAROC current rails.

Your advantages

- The benchmark that you can tailor with the individual combination of multi-channel protective modules
- Easy operation for everyone through tool-free assembly, uninterrupted installation, and transparent operating state
- Exceptionally easy design-in with four separately fused channels with the narrowest of space requirements of just 3 mm per channel

Commercial data

Item number	1115657
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	CL11
Product key	CLA234
GTIN	4063151040185
Weight per piece (including packing)	94.9 g
Weight per piece (excluding packing)	86.4 g
Customs tariff number	85363010
Country of origin	DE

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1115657

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Technical data

Notes

General

Note	LABS release – in accordance with test specification VW PV 3. 10.7:2005-0
	When using CAPAROC E1... modules, for continuous shock in accordance with IEC 60068-2-27 the 6 ms / 15g degree of severity applies

Product properties

Product type	Device circuit breakers
Product family	CAPAROC
Number of positions	1
No. of channels	4
Number of slots	2

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 (per channel)
Rated current I_N	1 / 2 / 3 / 4 A DC (adjustable per output channel)
Rated current (pre-adjusted)	4 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
Dielectric strength	35 V DC (Load circuit)
Fuse	electronic
Efficiency	> 99 %
Closed circuit current I_0	typ. 20 mA (no load at 24 V)
Power dissipation	typ. 0.48 W (no load at 24 V) < 2.2 W (in nominal operation at 24 V and 4 A)

CAPAROC E4 12-24DC/1-4A - Electronic circuit breaker



1115657

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Waiting time after switch off of a channel	5 s (at overload / short circuit)
Measuring tolerance I	± 10 % (typ.)
Temperature derating	12 A (Total current at 65 °C)
	16 A (Total current at 55°C)
MTBF (IEC 61709, SN 29500)	12874678.91 h (at 25 °C with 21 % load)
	4942154.06 h (at 40°C with 34.25% load)
	620311.92 h (at 55°C with 100% load)
Voltage drop	0.1 V (at 4 A)
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)
	≤ 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)

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)
	two flashes (Channel switched off, system total current limit)

CAPAROC E4 12-24DC/1-4A - Electronic circuit breaker



1115657

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	exceeded)
Channel LED red-yellow	flashing (Channel switched on, overload mode, capacity approximately 110 ... 150%, shutdown after 5 s)
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

Color	light grey (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)
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
	NEC Class 2 according to UL 1310

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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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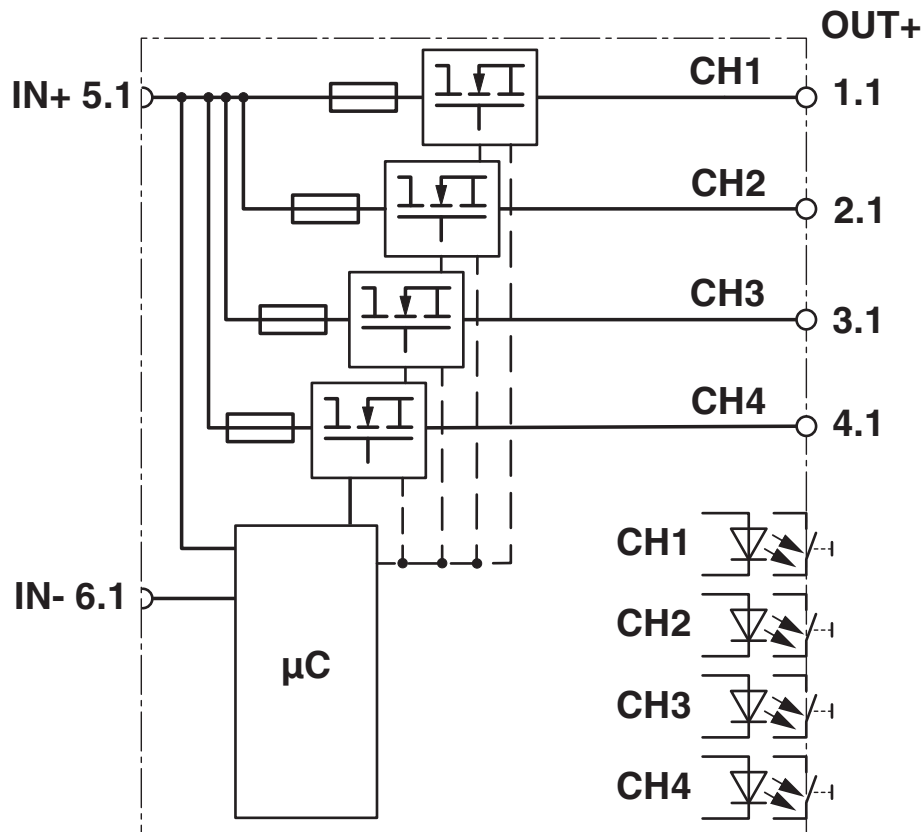


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Drawings

Block diagram



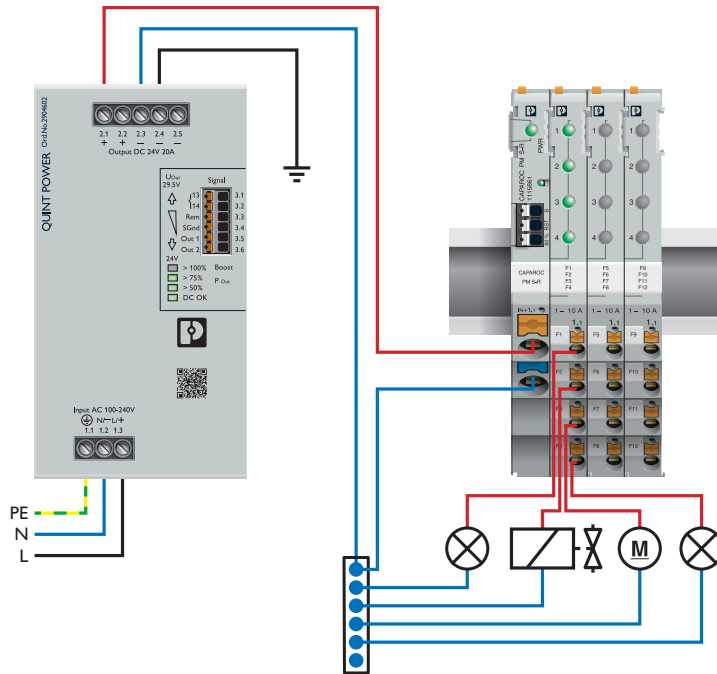
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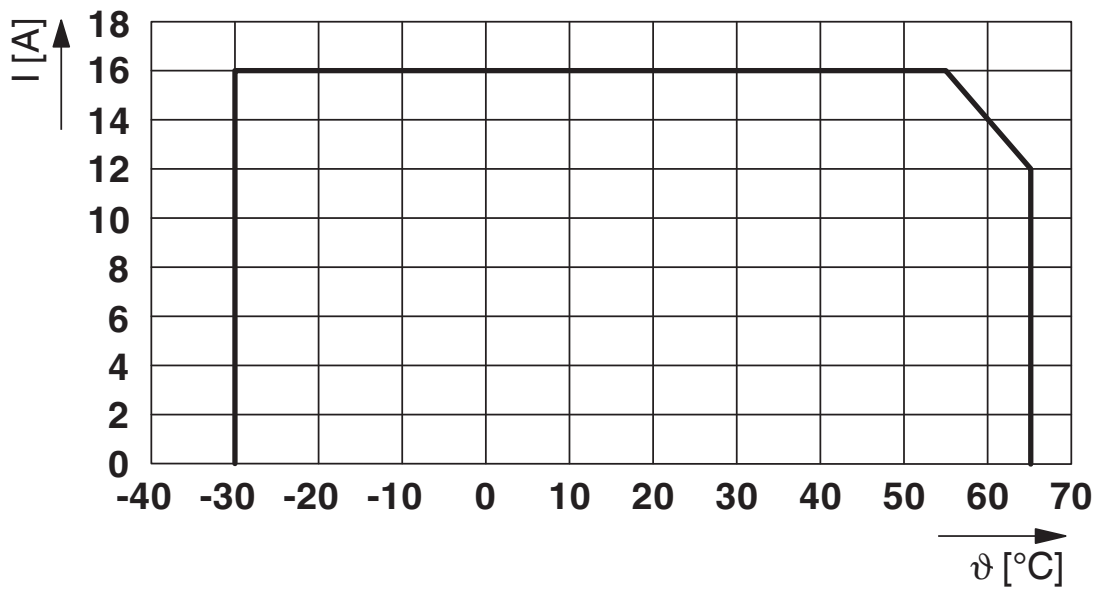
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Application drawing



Diagram



Max. permissible current in relation to the ambient temperature

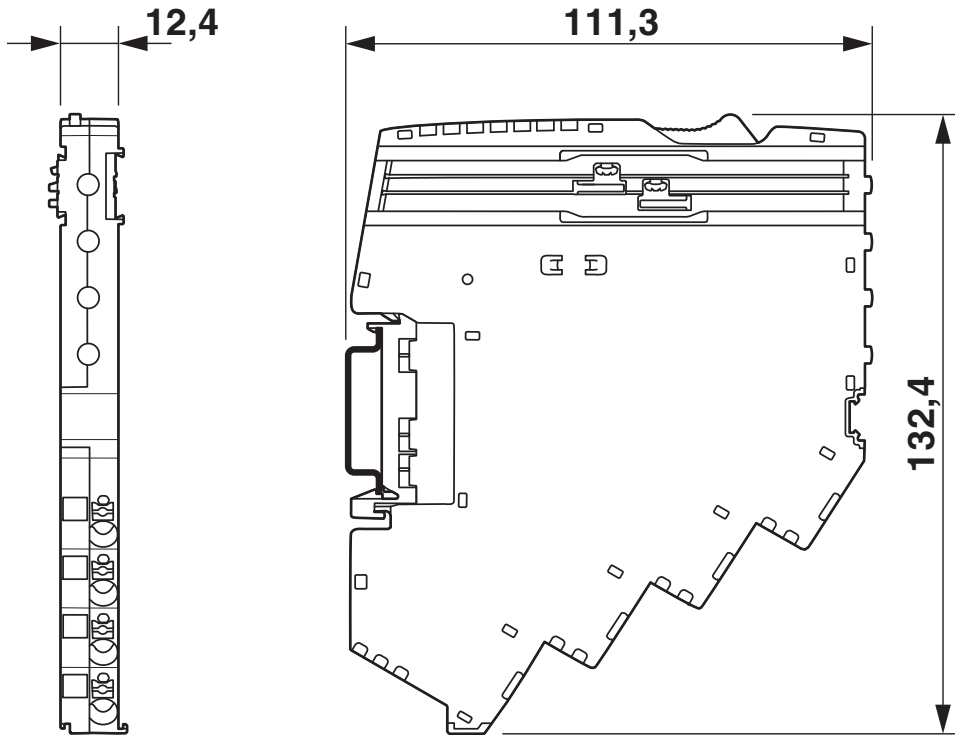
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Dimensional drawing



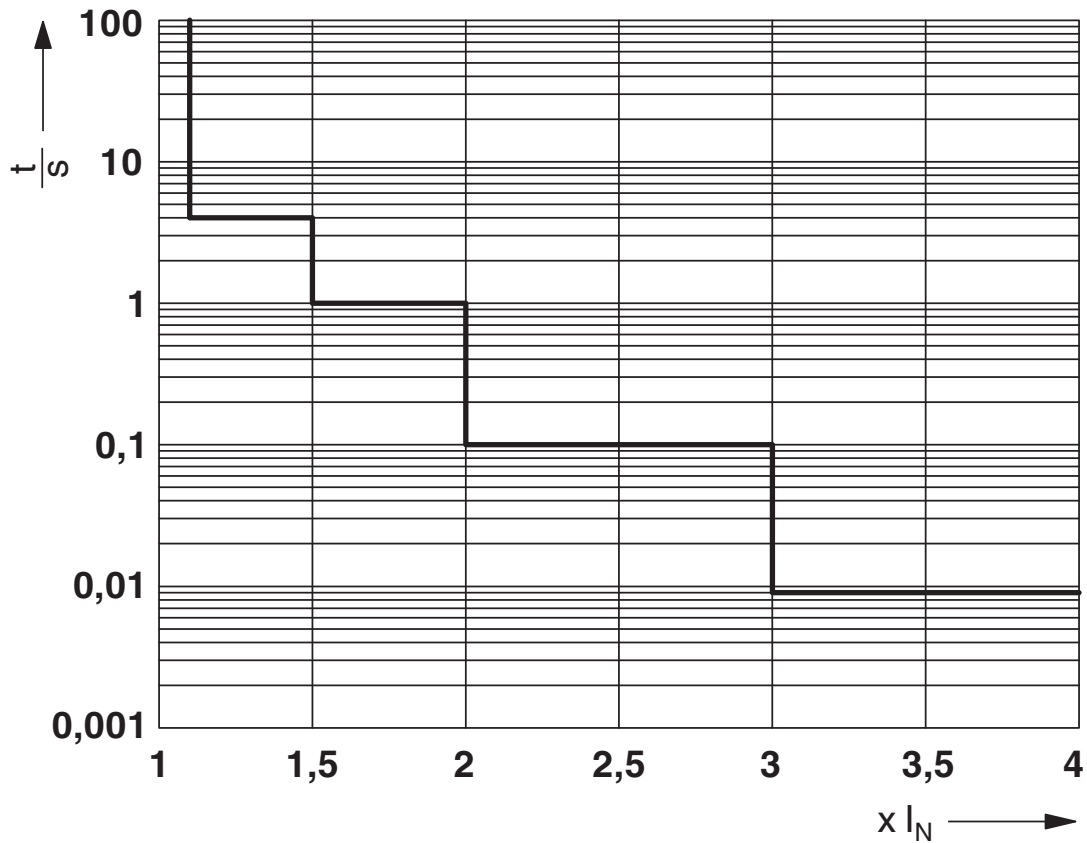
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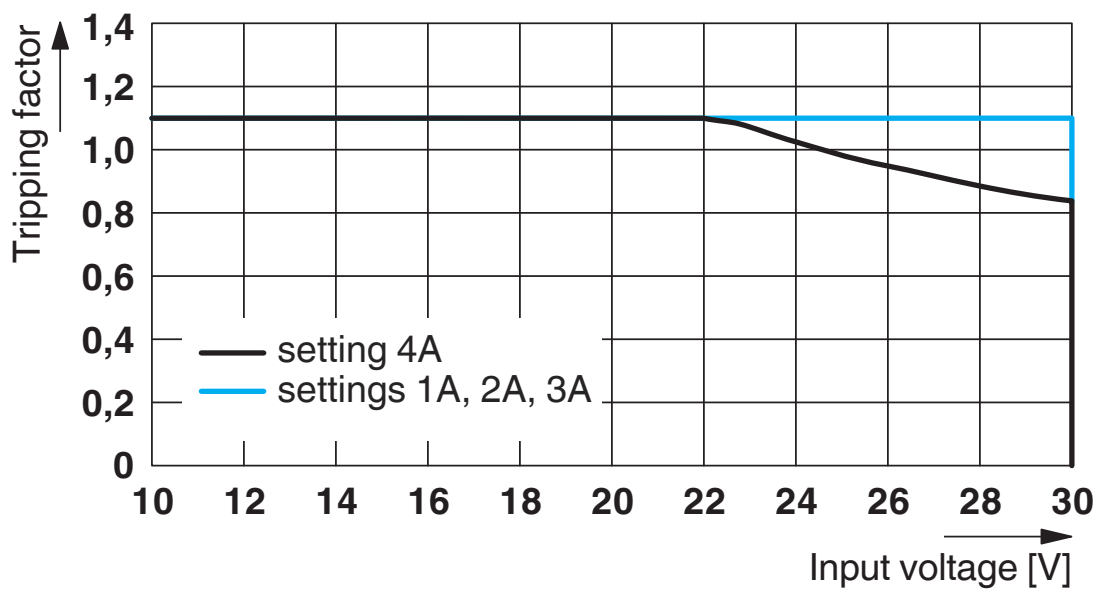
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Diagram



Trigger characteristic

Diagram



Tripping characteristic according to the input voltage

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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

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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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	1bd62200-d856-49a1-96fc-d7e5783c9839

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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

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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

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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

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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

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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

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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

UC-TM 12 - Marker for terminal blocks

0819194

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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: 12 mm, lettering field size: 11.45 x 10.5 mm, Number of individual labels: 40

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UCT-TM 12 - Marker for terminal blocks

0829144

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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: 12 mm, lettering field size: 10.8 x 9.6 mm, Number of individual labels: 30

CAPAROC CR EXT20 - Busbar

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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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