

CAPAROC E2 12-24DC/2-10A - Electronic circuit breaker



1110984

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2-channel electronic circuit breaker module for protecting loads at 12 and 24 V DC against overload and short circuit with current limit. Nominal current adjustable from 2 A to 10 A using step switch. For DIN rail installation via the CAPAROC current rails.

Your advantages

- The benchmark that you can customize with convenient nominal current level setting on the module
- Easy operation for everyone through tool-free assembly, uninterrupted installation, and transparent operating state
- Exceptionally easy design-in allows the nominal current to be extended beyond the specified levels via PROFINET

Commercial data

Item number	1110984
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	CL11
Product key	CLA233
GTIN	4063151028831
Weight per piece (including packing)	94 g
Weight per piece (excluding packing)	94 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.

Product properties

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

Data management status

Article revision	09
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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	10 A DC (per channel)
Rated current I_N	2 / 4 / 6 / 8 / 10 A DC (Adjustable via rotary coding switches)
	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10 A DC (can be set, in RC mode via power module with communication interface)
Rated current (pre-adjusted)	2 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)
Active current limitation	typ. $2.0 \times I_N$ at $I_N \leq 3$ A

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	typ. $1.5 \times I_N$ at $I_N \geq 4$ 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) < 3.3 W (in nominal operation at 24 V and 10 A)
Measuring tolerance I	± 10 % (typ.)
Temperature derating	20 A (Total current at 40°C) 10 A (Total current at 65 °C)
MTBF (IEC 61709, SN 29500)	11140621 h (at 25 °C with 21 % load) 4699883 h (at 40°C with 34.25% load) 534110 h (at 40°C with 100% load)
Voltage drop	0.14 V (at 10 A)
Fail-safe element	15 A DC (per output channel)
Contact switching type	without electrical isolation

Load circuit

Shutdown time	5 s (for overload $1.1 \dots 1.3 \times I_N$ at $I_N \geq 4$ A)
	5 s (for overload $1.1 \dots 1.7 \times I_N$ at $I_N < 4$ A)
	typ. 400 ms (max. 450 ms for high starting currents)
	typ. 20 ms (for short circuit $> 1,5 \times I_N$)
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	≤ 75000 μ 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)

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	flashing (Channel switched on, coding switch position is not 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

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)
Vibration (operation)	5g (10 ... 150 Hz / 10 cycles / axis / X, Y, Z)

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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

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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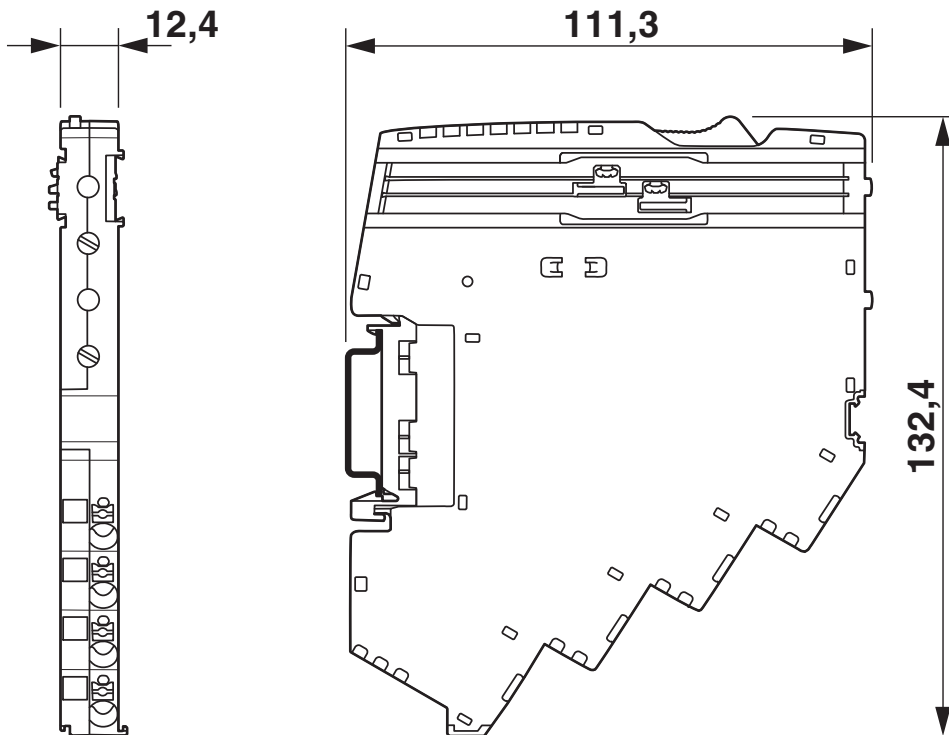


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Drawings

Dimensional drawing



Product drawing

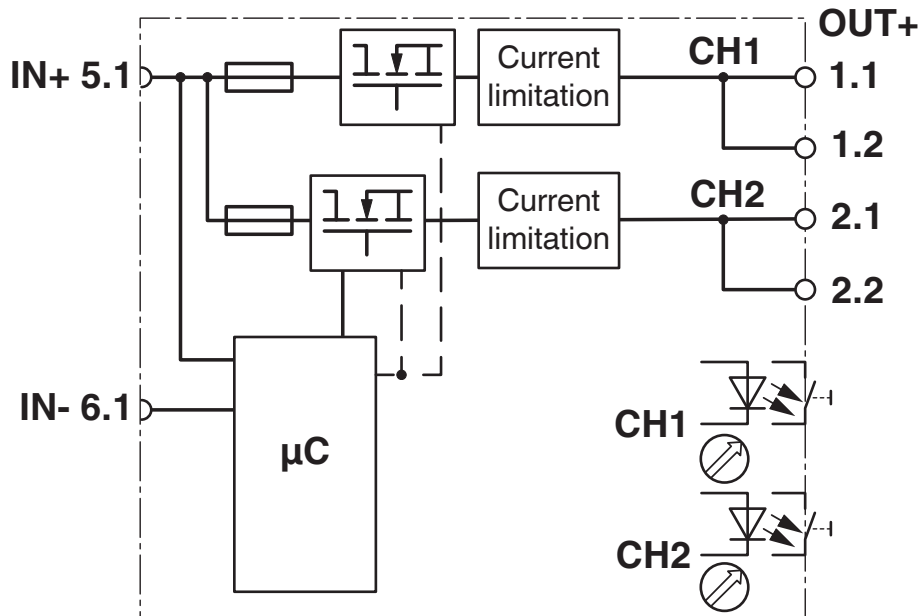


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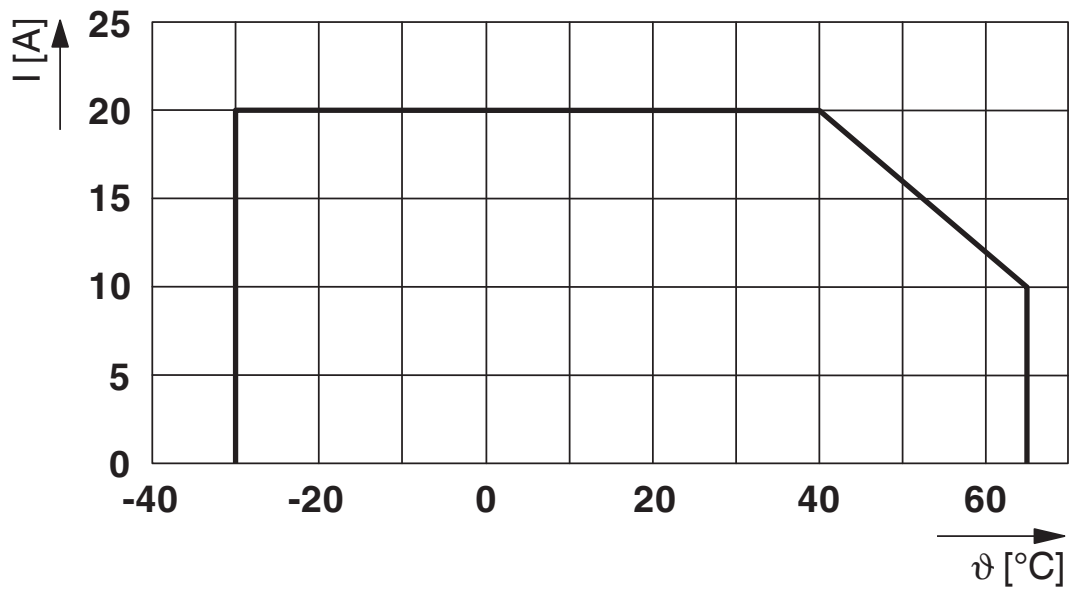
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Block diagram



Diagram



Max. permissible current in relation to the ambient temperature

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Diagram



Tripping characteristic ≥ 4 A

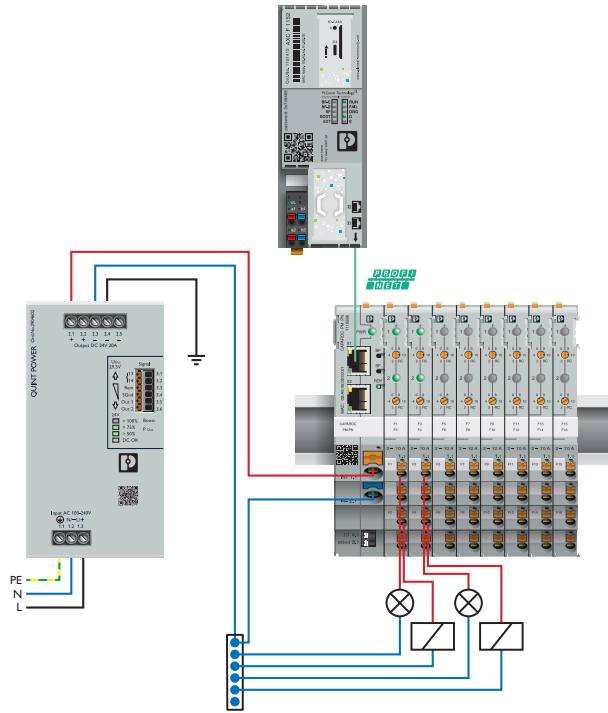
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Application drawing



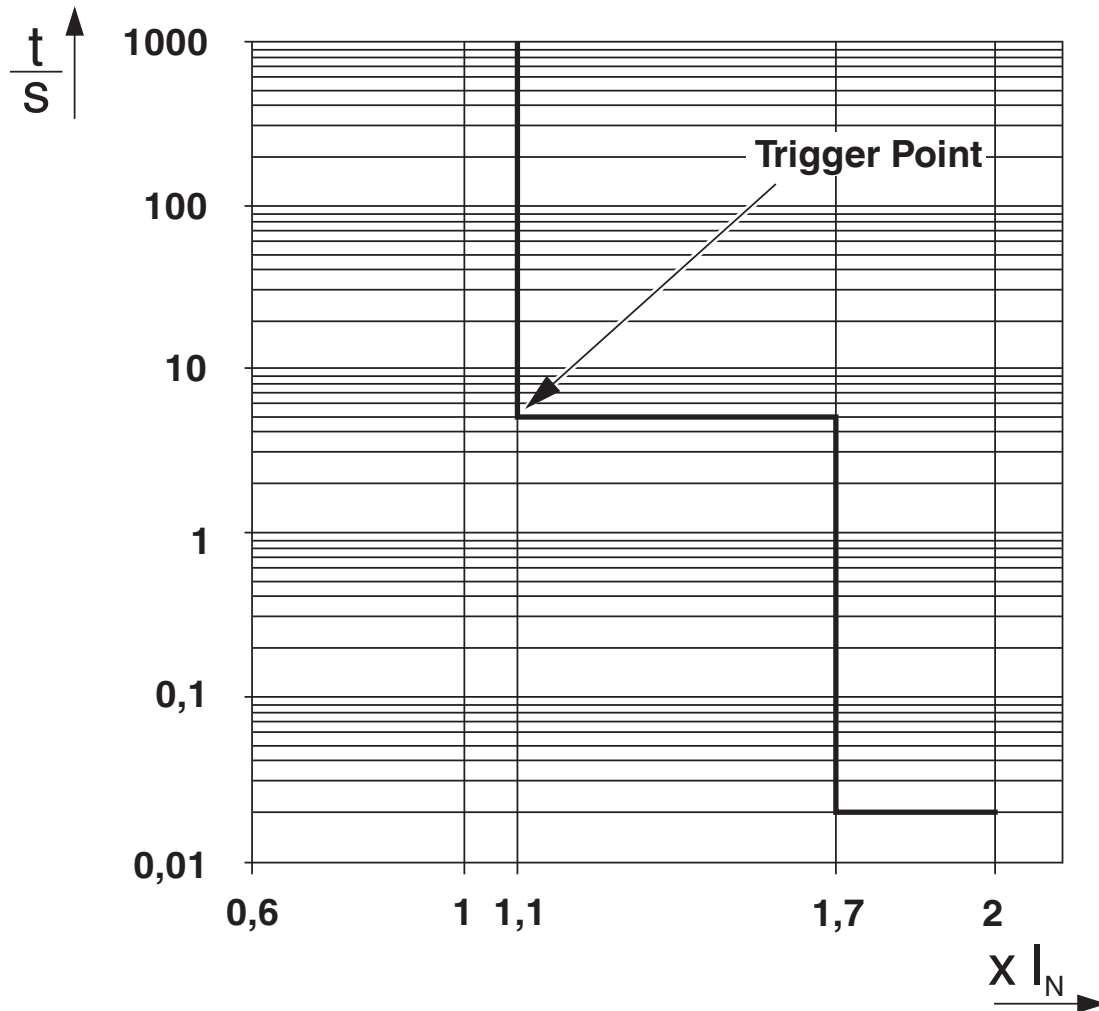
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Diagram



Tripping characteristic < 4 A

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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



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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	50eb8a01-eed3-4436-8128-f47929b7fe53

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Mandatory accessories

CAPAROC CR 20 - Busbar

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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

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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

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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: latching, for terminal block width: 6.2 mm, Number of individual labels: 80, text field height: 5.1 mm, text field width: 5.6 mm

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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: latching, for terminal block width: 6.2 mm, Number of individual labels: 60, text field height: 4.7 mm, text field width: 5.4 mm

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: latching, for terminal block width: 12 mm, Number of individual labels: 40, text field height: 10.5 mm, text field width: 11.45 mm

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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: latching, for terminal block width: 12 mm, Number of individual labels: 30, text field height: 9.6 mm, text field width: 10.8 mm

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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