

CAPAROC E1 12-24DC/12-20A - Electronic circuit breaker



1115663

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1-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 12 A to 20 A using step switch. 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
- Protection and supply of particularly large loads, thanks to the extended nominal current range up to 20 A

Commercial data

Item number	1115663
Packing unit	1 pc
Minimum order quantity	1 pc
Product key	CLA232
GTIN	4063151040574
Weight per piece (including packing)	97 g
Weight per piece (excluding packing)	89.1 g
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
Type	Plug-in module
Number of positions	1
No. of channels	1
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	20 A DC (per channel)
	adjustable from 2 A to 20 A in 1 A increments, in RC mode via power module with communication interface
Rated current I_N	12 / 14 / 16 / 18 / 20 A DC (Adjustable via rotary coding switches)
Rated current (pre-adjusted)	12 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. $1.7 \times I_N$
	Dynamic range of $1.4 \dots 1.7 \times I_N$ in case of a weak power supply unit

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Fuse	electronic
Efficiency	> 99 %
Closed circuit current I_0	typ. 11 mA (no load at 24 V)
Power dissipation	typ. 280 mW (no load at 24 V) < 2.8 W (In nominal operation at 24 V and 20 A)
Measuring tolerance I	± 10 % (typ.)
Temperature derating	20 A (Total current at 40°C) 12 A (Total current at 65 °C)
MTBF (IEC 61709, SN 29500)	9874919 h (at 25 °C with 21 % load) 4130456 h (at 40°C with 34.25% load) 476899 h (at 40°C with 100% load)
Voltage drop	< 0.16 V (at 20 A)
Fail-safe element	30 A DC (2 x 15 A parallel per output channel)
Contact switching type	without electrical isolation

Load circuit

Shutdown time	5 s (with overload 1.1...1.5 x I_N) typ. 100 ms (1 s, maximum, for high startup currents) typ. 7 ms (for short circuit > 1,5 x I_N)
Undervoltage switch-off	≤ 8.5 V DC (active) ≥ 9.2 V DC (inactive)
Overvoltage switch-off	≥ 31.5 V DC (active) ≤ 30.5 V DC (inactive)
Max. capacitive load	75000 µF (Depending on the current setting, the system voltage, and the available short-circuit current)

Connection data

Fuse-protected output

Connection method	Push-in connection
Stripping length	10 mm
Conductor cross section flexible	0.2 mm² ... 4 mm²
Conductor cross section rigid	0.2 mm² ... 4 mm²
Conductor cross section AWG	24 ... 12
Conductor cross section, flexible, with ferrule, with plastic sleeve	0.25 mm² ... 4 mm²
Conductor cross section flexible, with ferrule without plastic sleeve	0.25 mm² ... 4 mm²

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 yellow-green	flashing (Nominal current assistant)
Channel LED green	lit (Channel switched on) flashing (Channel switched on, rotary switch position does not

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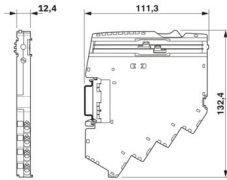


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	correspond to the set value)
Channel LED red	lit (Channel switched off, over- or undervoltage active)
	ON temporarily (Channel switched off, 5 s cool-down phase, overload or short-circuit release)
	flashing (Channel switched off, ready to be switched back on, overload or short-circuit release)
	two flashes (Channel switched off, system total current limit exceeded, weak power supply unit detected)
Channel LED red-yellow	flashing (Channel is overloaded and is switched off)
Channel LED red-green	flashing (Channel switched off, rotary switch position does not correspond to the set value after overload or short-circuit tripping)

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 and the maximum current depending on the ambient temperature 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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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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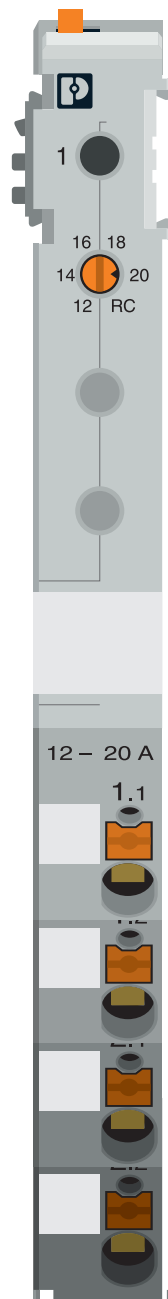


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Drawings

Product drawing

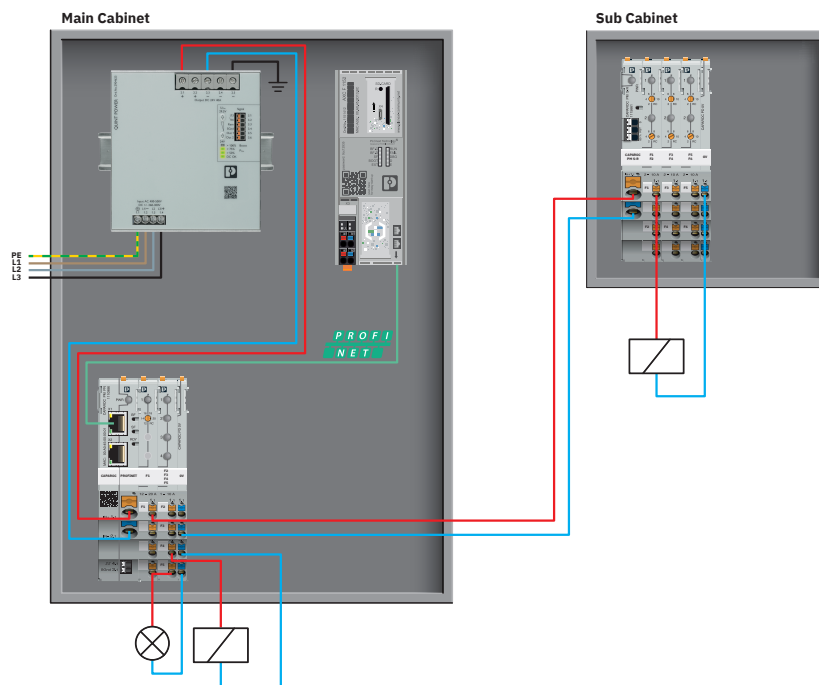


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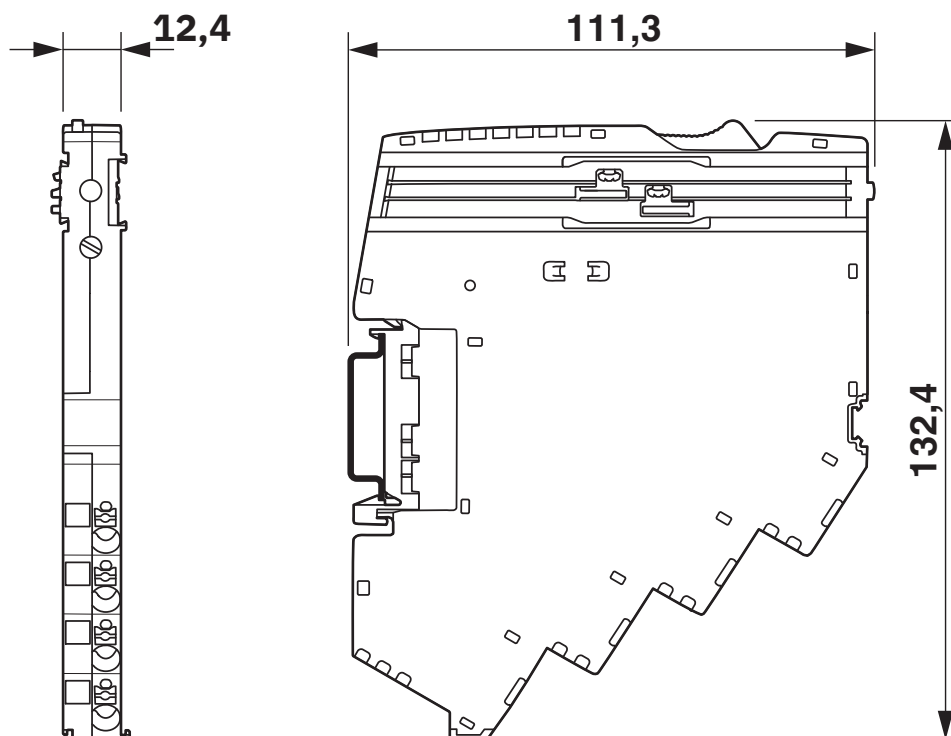
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Application drawing



Dimensional drawing



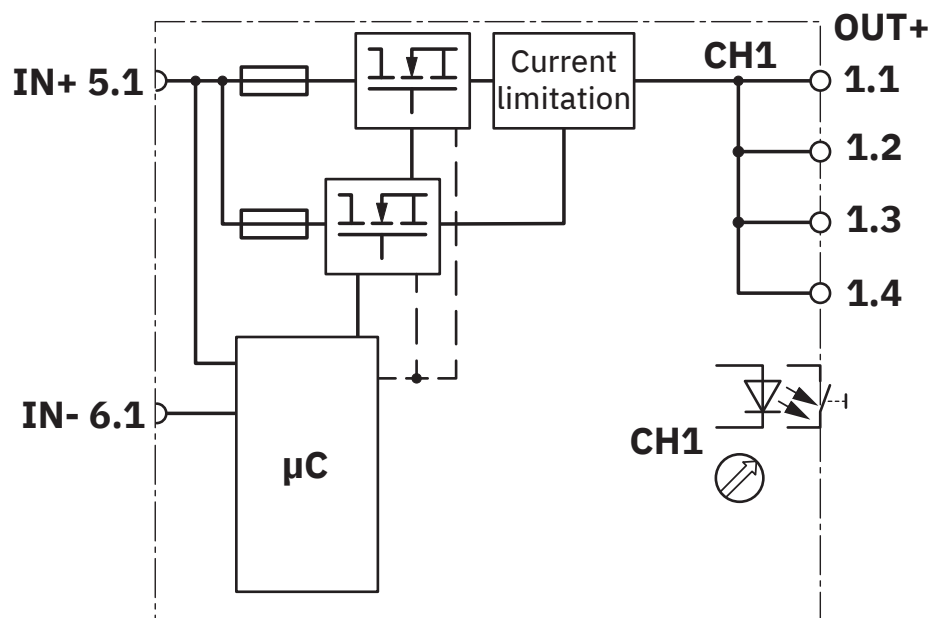
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Block diagram

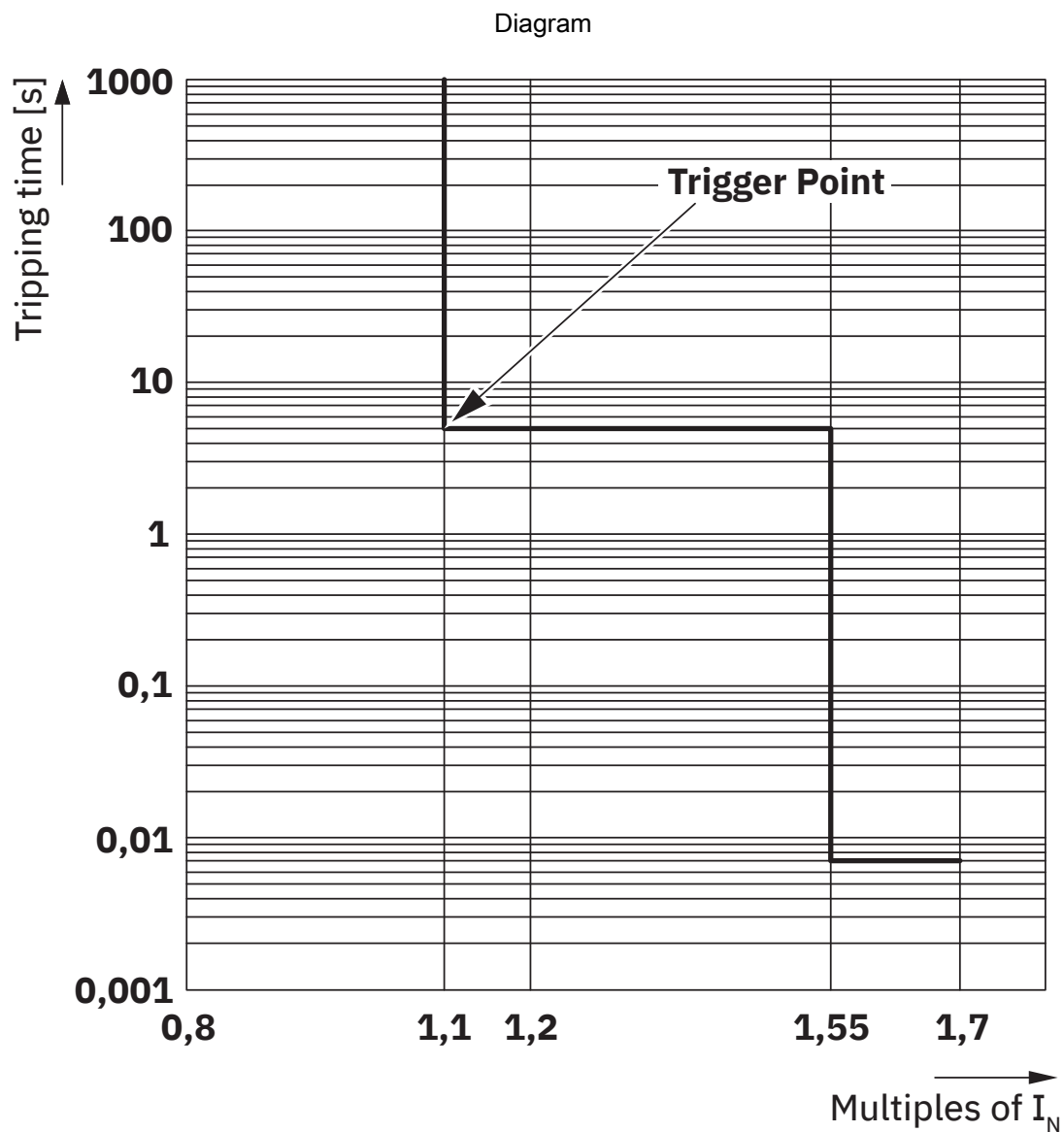


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Trigger characteristic

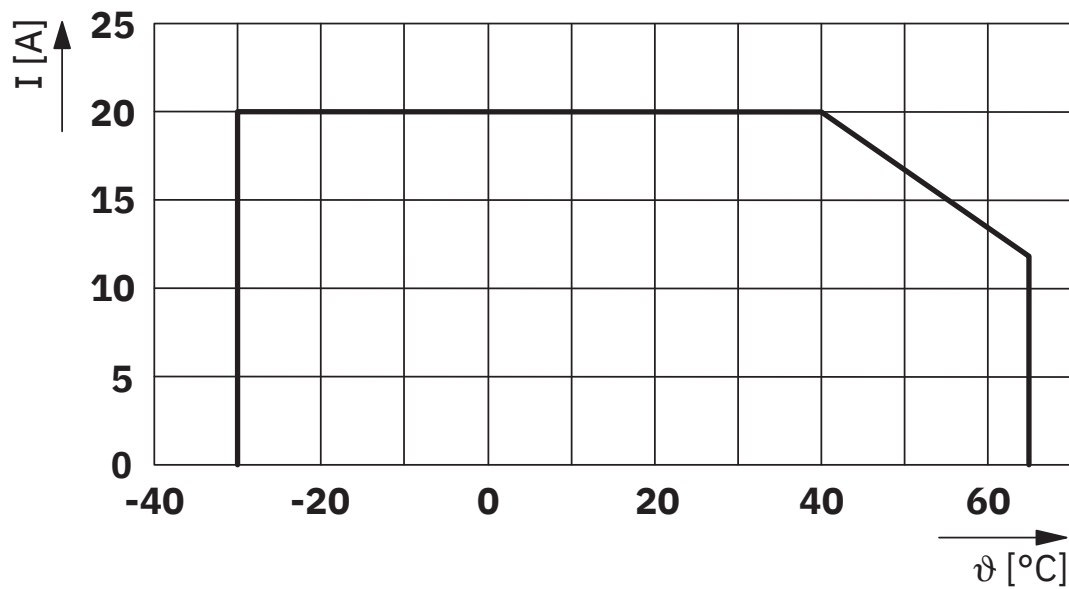
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Diagram



Max. permissible current in relation to the ambient temperature

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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

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)
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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 - Feed-in 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 - Feed-in 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 - Feed-in 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 - Feed-in 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

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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: 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

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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: 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

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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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