

# 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)	87.6 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

#### 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
Dielectric strength	35 V DC (Load circuit)

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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	$\pm 10 \%$ (2 A ... 4 A)
	$\pm 20 \%$ (1 A)
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 <sup>2</sup> ... 4 mm <sup>2</sup>
Conductor cross section rigid	0.2 mm <sup>2</sup> ... 4 mm <sup>2</sup>
Conductor cross section AWG	24 ... 12
Conductor cross section, flexible, with ferrule, with plastic sleeve	0.25 mm <sup>2</sup> ... 4 mm <sup>2</sup>
Conductor cross section flexible, with ferrule without plastic sleeve	0.25 mm <sup>2</sup> ... 4 mm <sup>2</sup>

## 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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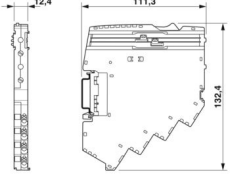


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	equal to set value)
Channel LED red	lit (Channel switched off, over- or undervoltage active)
	ON temporarily (Channel switched off, 5 s cool-down phase, overload or short-circuit release)
	flashing (Channel switched off, ready to be switched back 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

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

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



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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

## 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
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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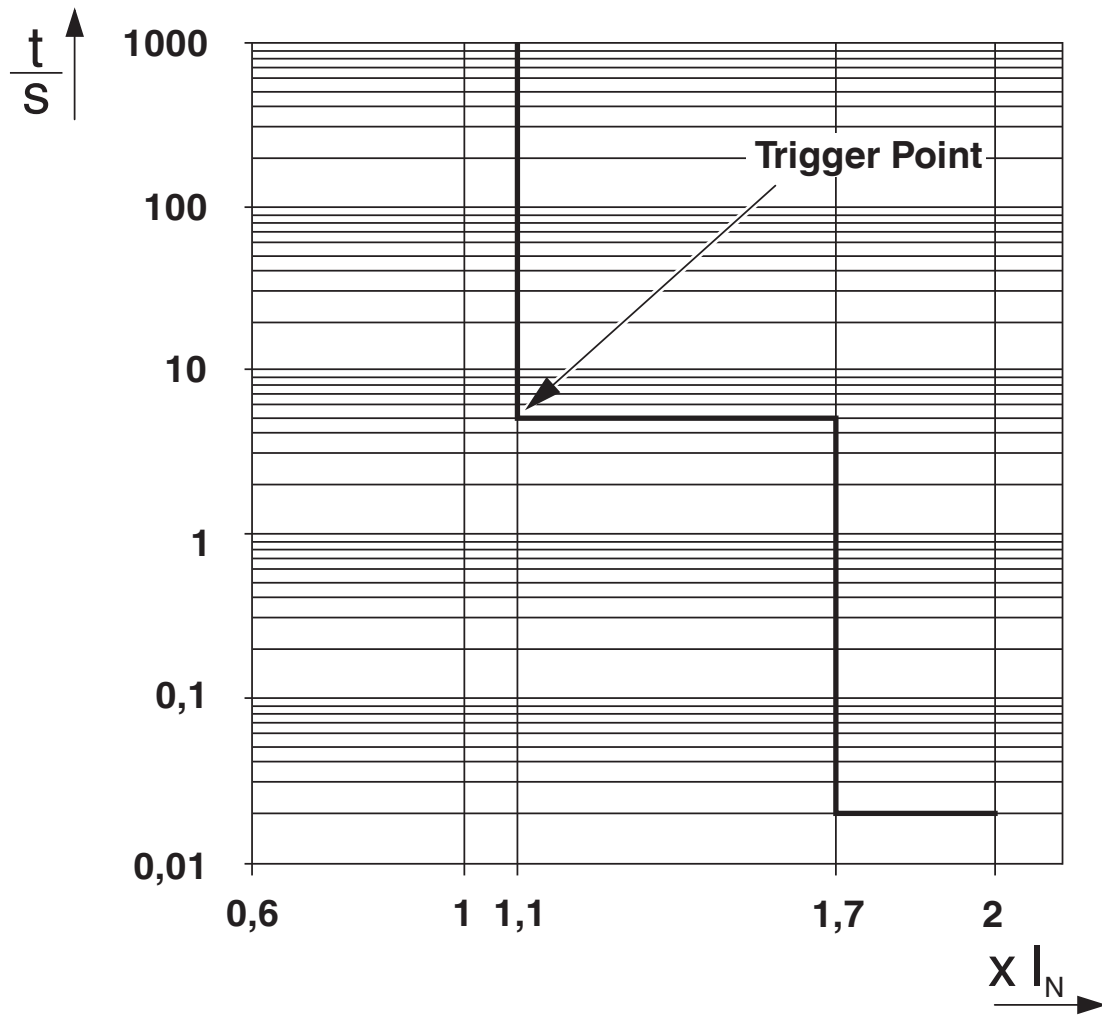


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## Drawings

Diagram



Tripping characteristic < 4 A

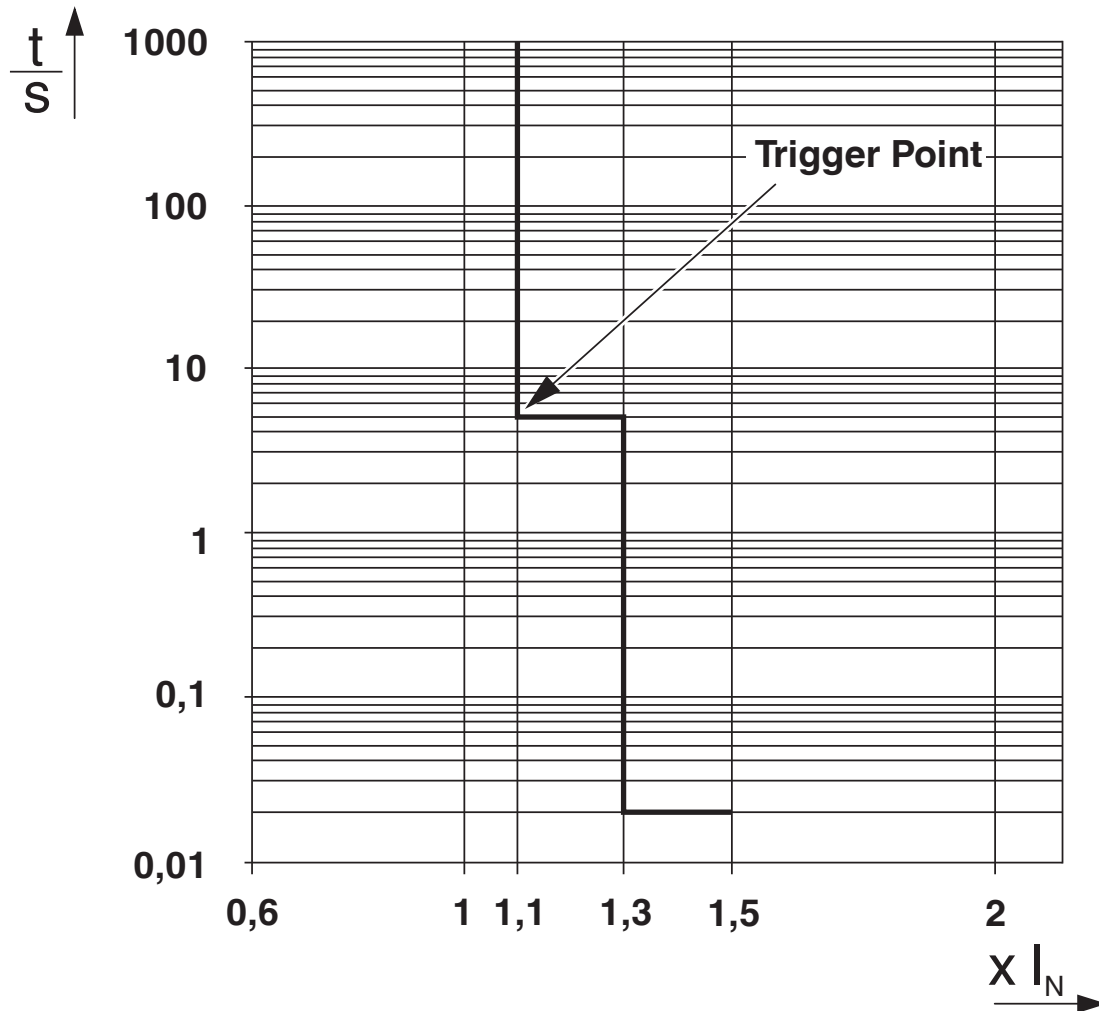
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Diagram



Tripping characteristic 4 A

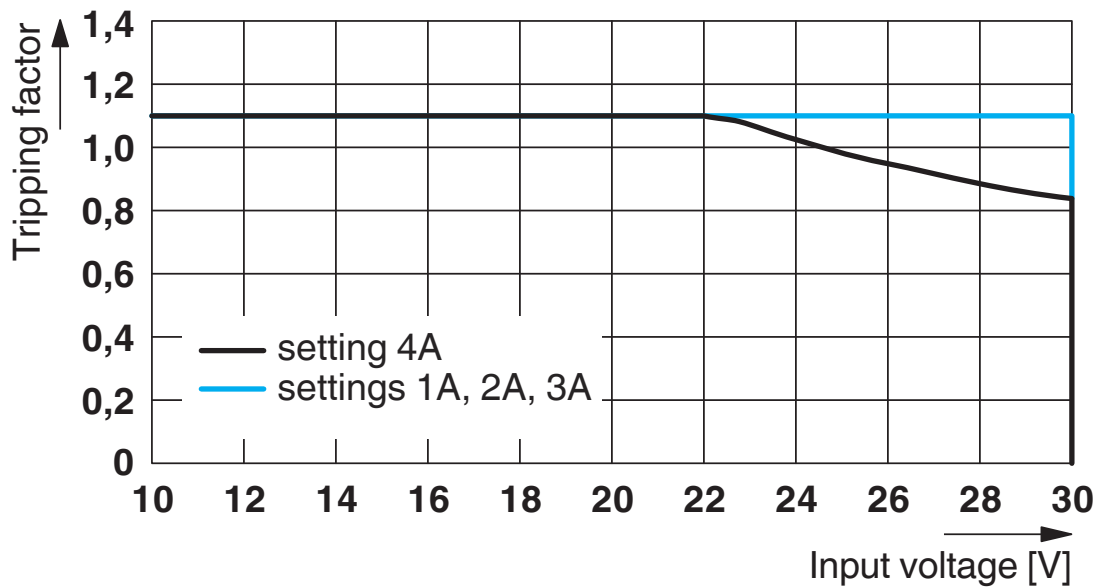
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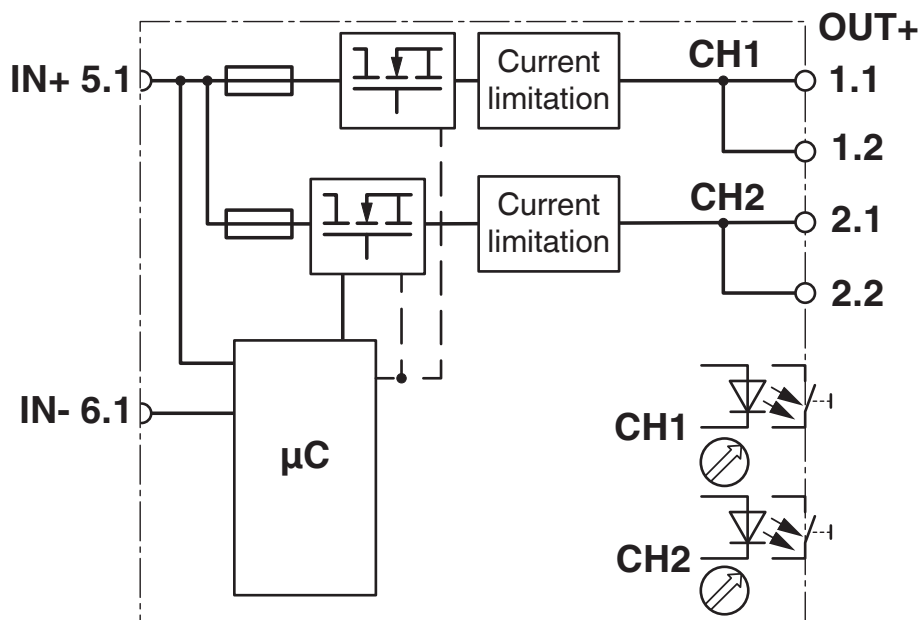
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Diagram



Tripping characteristic according to the input voltage

Block diagram





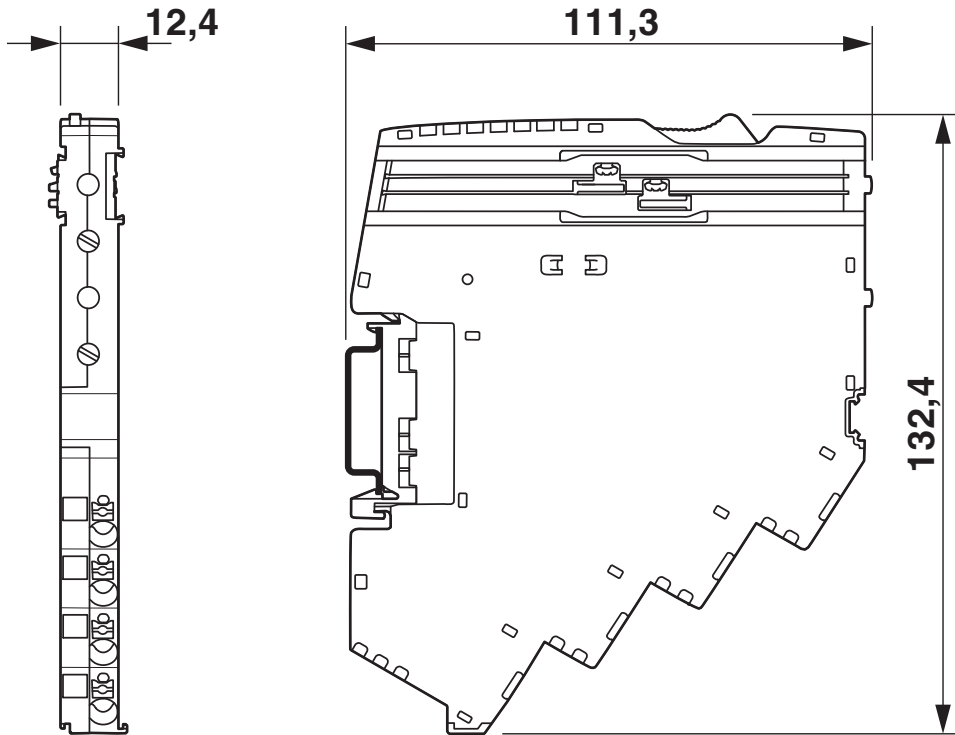
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Dimensional drawing



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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

### 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

1110989

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

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



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### CAPAROC CR 8 - Busbar

1115672

<https://www.phoenixcontact.com/us/products/1115672>

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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<https://www.phoenixcontact.com/us/products/1344363>



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.

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## Accessories

### CAPAROC PD 0V - Potential distributors

1110987

<https://www.phoenixcontact.com/us/products/1110987>



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

<https://www.phoenixcontact.com/us/products/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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## 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

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## 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.



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## 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.

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## 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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