

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



1115655

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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 1 A to 4 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	1115655
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	CL11
Product key	CLA233
GTIN	4063151040567
Weight per piece (including packing)	94.5 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.

### Product properties

Product type	Device circuit breakers
Product family	CAPAROC
Type	Plug-in module
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 (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)
Active current limitation	typ. $2.0 \times I_N$ at $I_N \leq 3$ A typ. $1.5 \times I_N$ at $I_N = 4$ A
Fuse	electronic

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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	± 10 % (2 A ... 4 A) ± 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)
Contact switching type	without electrical isolation

## Load circuit

Shutdown time	5 s (with overload 1.1...1.3 x $I_N$ at $I_N \geq 4$ A)
	5 s (for overload 1.1...1.7 x $I_N$ at $I_N < 4$ A)
	≤ 400 ms (max. 450 ms for high starting currents)
	typ. 20 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	≥ 32.5 V DC (active)
	≤ 30.5 V DC (inactive)
Max. capacitive load	≤ 60000 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 <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 equal to set value)
	lit (Channel switched off, over- or undervoltage active)

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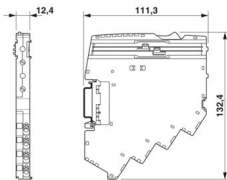


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Channel LED red	ON temporarily (Channel switched off, 5 s cool-down phase, overload or short-circuit release)
	flashing (Channel switched off, ready to be switched back on, overload or short-circuit release)
	two flashes (Channel switched off, system 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 Hz ... 150 Hz / 10 cycles / axis / X, Y, Z)

## Approvals

UL approval

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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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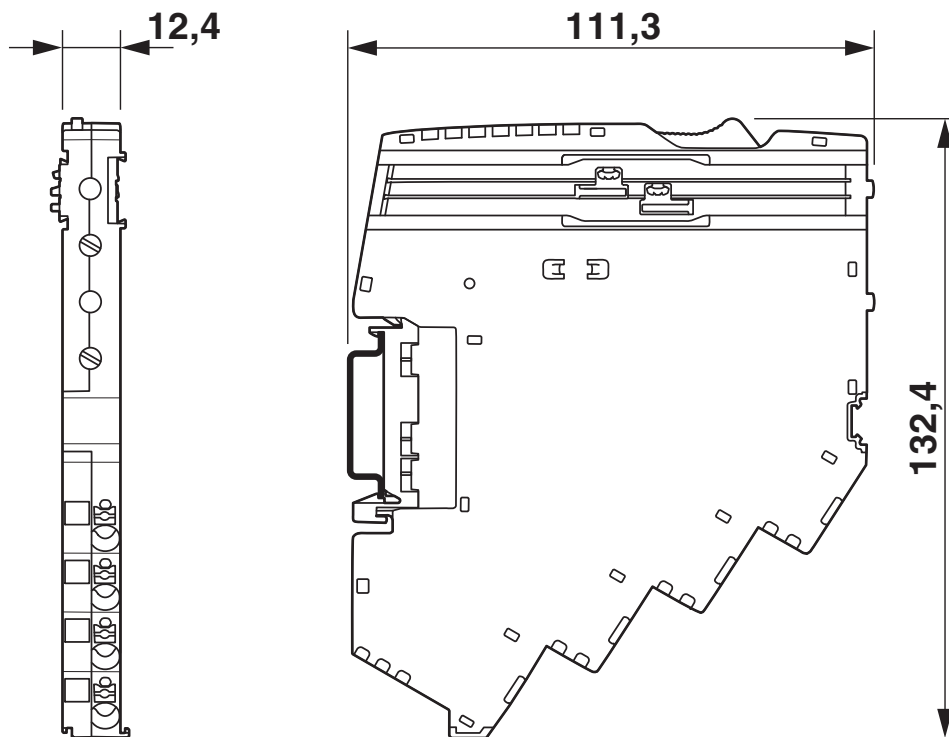


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## Drawings

Dimensional drawing



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Diagram



Tripping characteristic < 4 A

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Diagram



Tripping characteristic 4 A

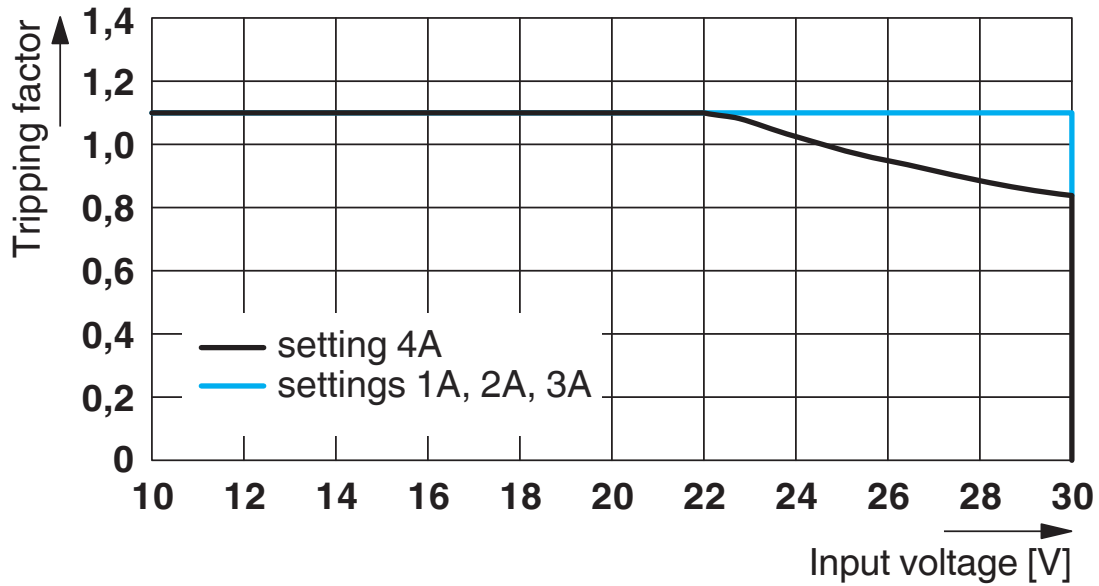
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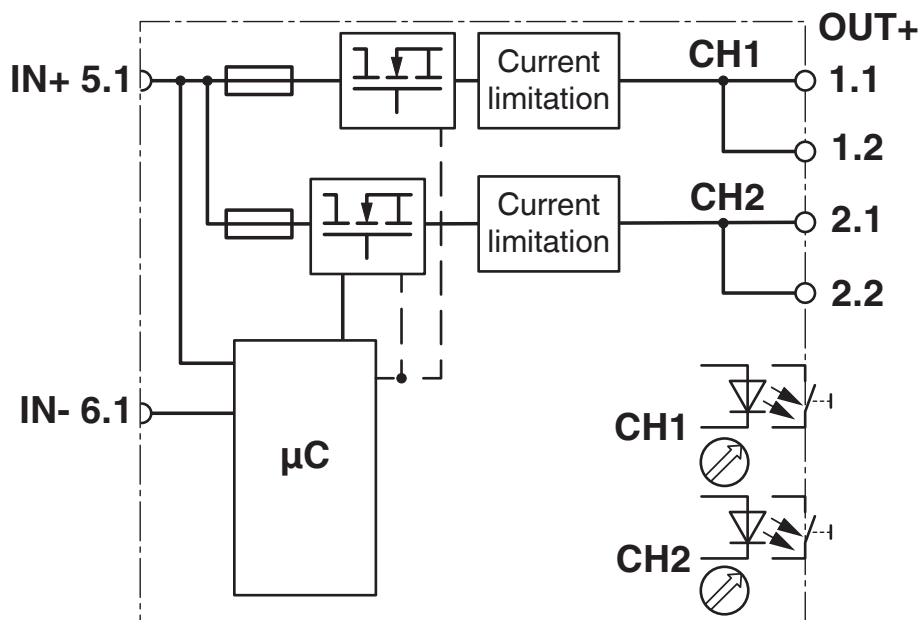
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Diagram



Tripping characteristic according to the input voltage

Block diagram



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## Approvals

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**UL Recognized**

Approval ID: FILE E 317172



**UL Listed**

Approval ID: E123528



**cUL Listed**

Approval ID: E123528



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**cUL Listed**

Approval ID: E123528



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**UL Recognized**

Approval ID: FILE E 324415



**cUL Listed**

Approval ID: FILE E 483407



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Approval ID: FILE E 324415

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## Classifications

### ECLASS

ECLASS-13.0	27140401
ECLASS-15.0	27140401

### ETIM

ETIM 10.0	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	7057c826-c2e5-4ee0-8439-e9c27cbe8471

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