

# CAPAROC E4 12-24DC/1-10A - Electronic circuit breaker



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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 10 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	1115658
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	CL11
Product key	CLA234
GTIN	4063151040192
Weight per piece (including packing)	94.2 g
Weight per piece (excluding packing)	86.4 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 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
Type	Plug-in module
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 $I_N$	10 A DC (per channel)
Rated current $I_N$	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10 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)

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	< 6 W (in nominal operation at 24 V and 10 A)
Waiting time after switch off of a channel	5 s (at overload / short circuit)
Measuring tolerance I	± 10 % (typ.)
Temperature derating	16 A (Total current at 65 °C) 40 A (Total current at 25 °C)
MTBF (IEC 61709, SN 29500)	6325945.91 h (at 25 °C with 21 % load) 1812525.02 h (at 40 °C with 34.25% load) 365459.81 h (at 25 °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	4 s (with overload 1.1...1.5 x I <sub>N</sub> ) 1 s (with overload 1.5...2.0 x I <sub>N</sub> ) 0.1 s (with overload 2.0...3.0 x I <sub>N</sub> ) ≤ 10 ms (For short circuit > 3.0 x I <sub>N</sub> )
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	≤ 25000 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 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% ) 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)

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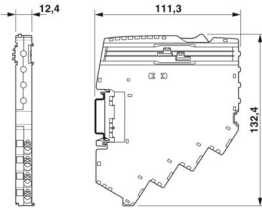


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	flashing (Channel switched off, ready to be switched back on, overload or short-circuit release)
	two flashes (Channel switched off, system total current limit exceeded)
Channel LED red-yellow	flashing (Channel switched on, overload mode, capacity 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 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

Identification	UL/C-UL Listed UL 508
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	UL Recognized UL 2367
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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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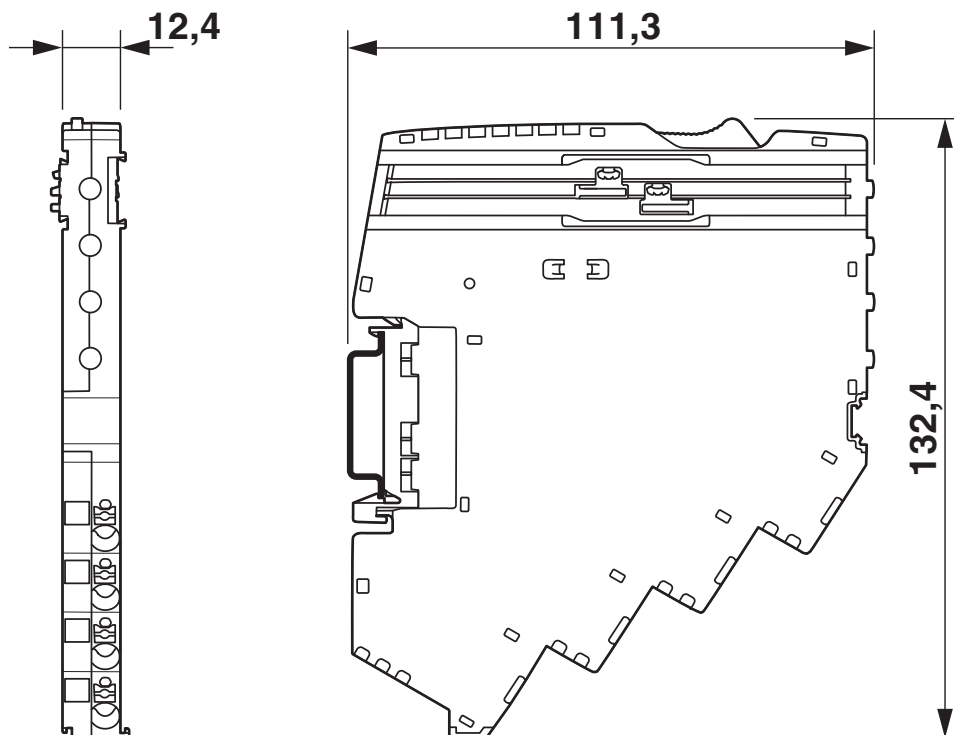


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## Drawings

Dimensional drawing



Product drawing

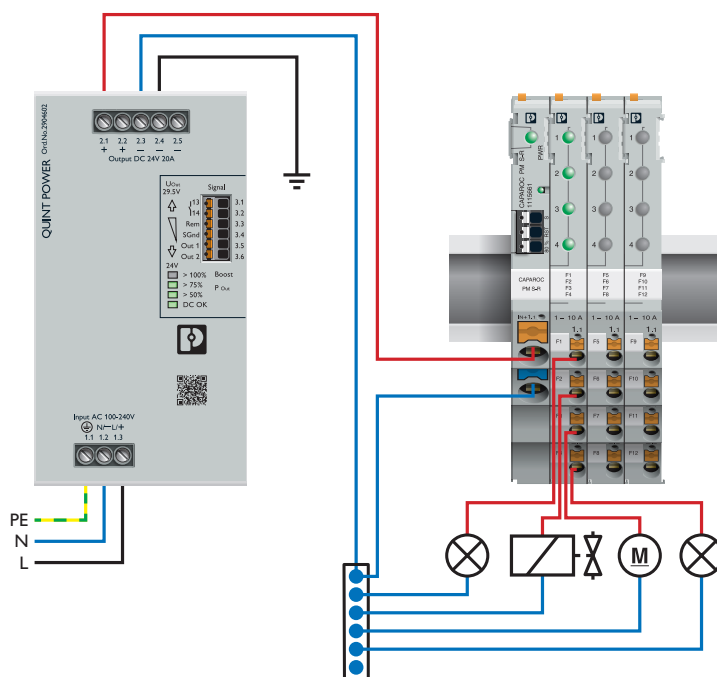


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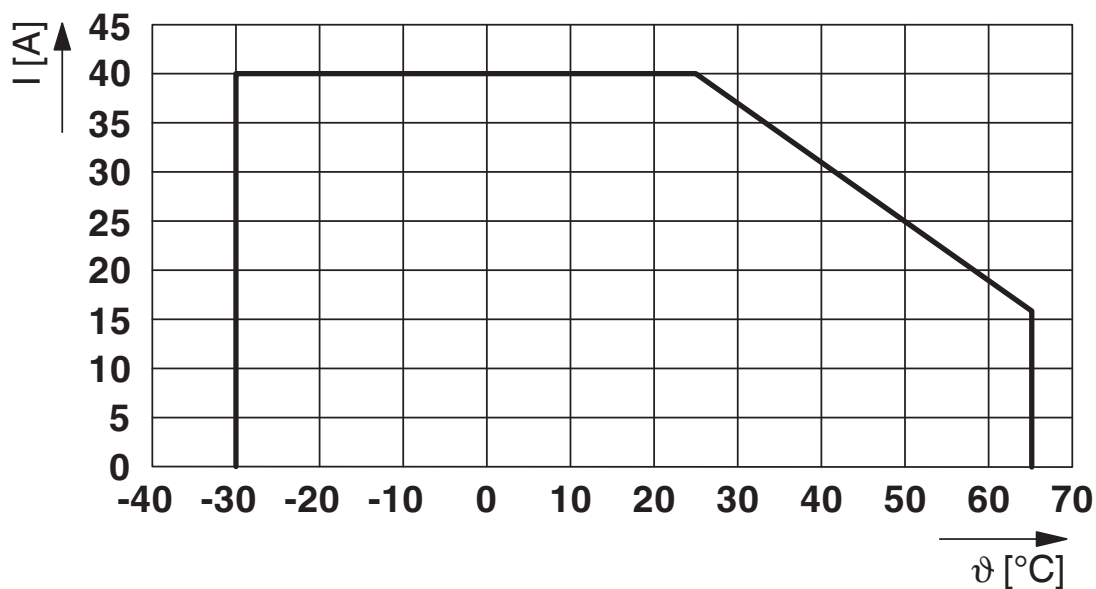
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Application drawing



Diagram



Max. permissible current in relation to the ambient temperature

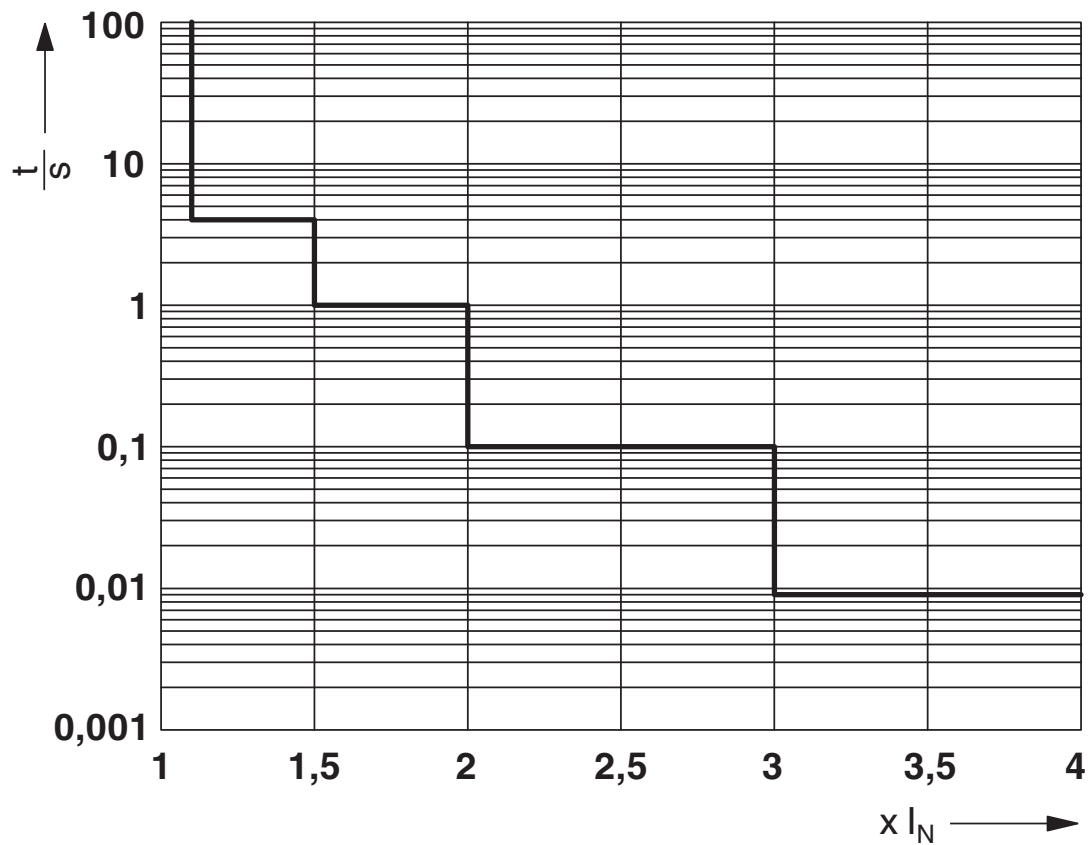
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Diagram



Trigger characteristic



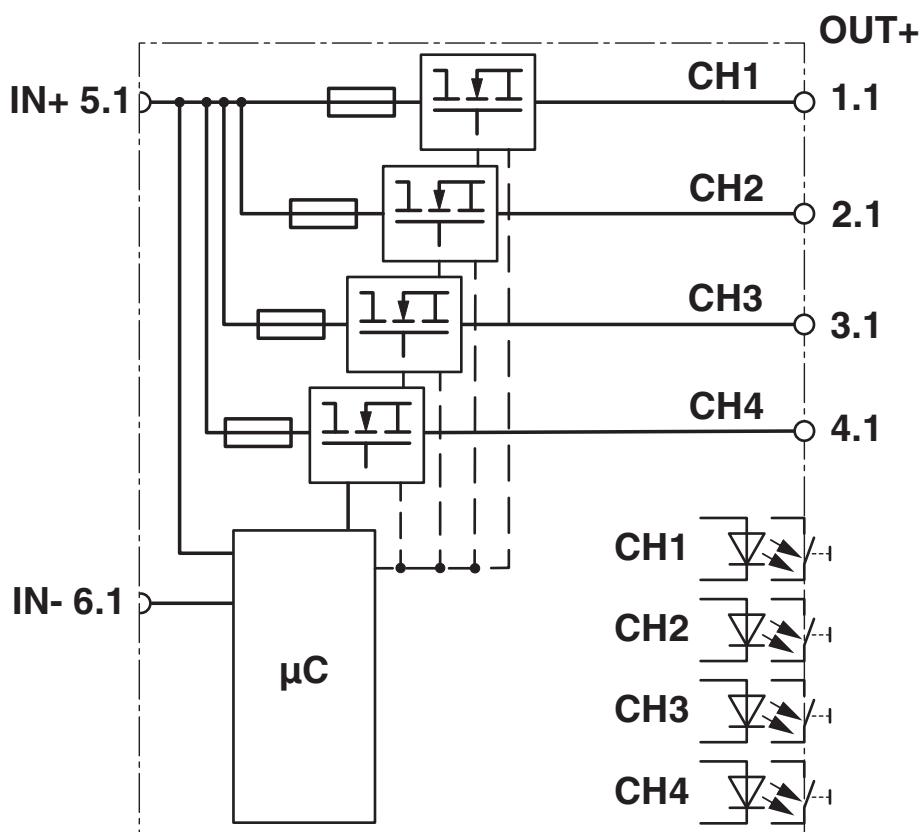
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Block diagram



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1115658>



**UL Recognized**

Approval ID: FILE E 317172



**UL Listed**

Approval ID: E123528



**cUL Listed**

Approval ID: E123528

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## Classifications

### ECLASS

ECLASS-13.0	27140401
ECLASS-15.0	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)
	2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol(CAS: 79-94-7)
SCIP	93998b27-cb53-4fbc-98ab-c831cf83cb3d

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