

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



1115658

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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

**Push-in Technology**   
Designed by Phoenix Contact

**COMPLETE line**  


## 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) | 93.4 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 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 (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)   |
|                                  | < 6 W (in nominal operation at 24 V and 10 A)   |

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|  |   |
|--|---|
| 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 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% )   |
|                    | 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)    |
|                    | flashing (Channel switched off, ready to be switched back on, overload or short-circuit release) |

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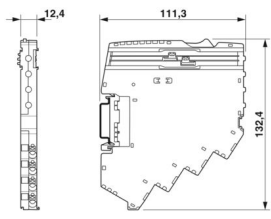


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|                        |  |
|------------------------|--|
|                        | two flashes (Channel switched off, system total current limit exceeded)  |
| Channel LED red-yellow | flashing (Channel switched on, overload mode, capacity approximately 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 |
|                | UL Recognized UL 2367 |

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## Corrosive gas test

|                |                                  |
|----------------|----------------------------------|
| Identification | ISA S71.04.2013 G3 Harsh Group A |
|----------------|----------------------------------|

## 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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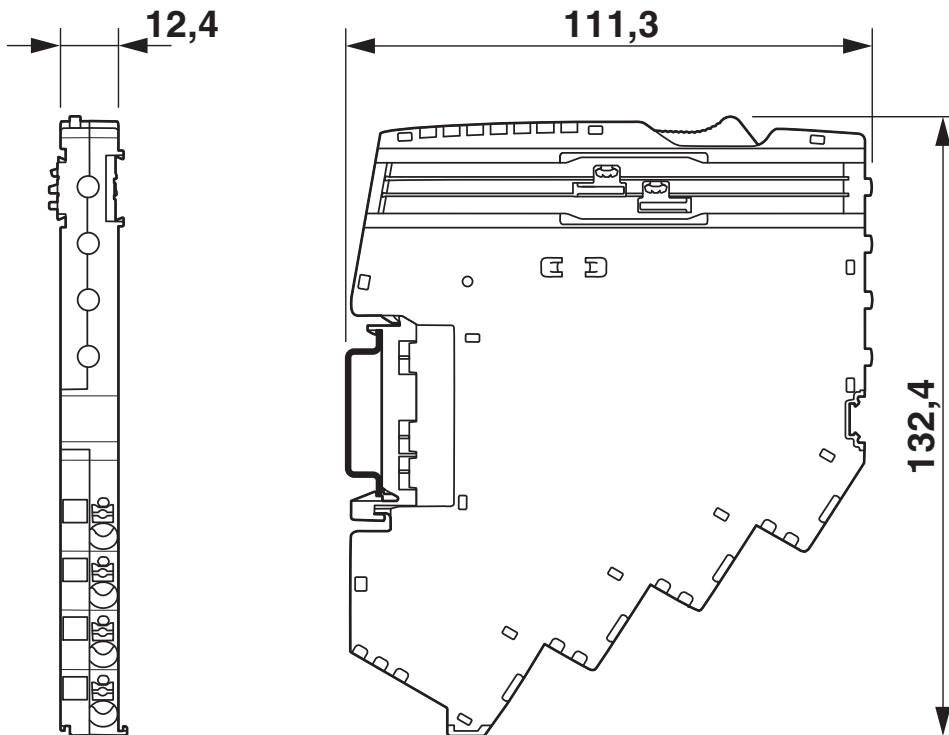


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## Drawings

Dimensional drawing



Product drawing



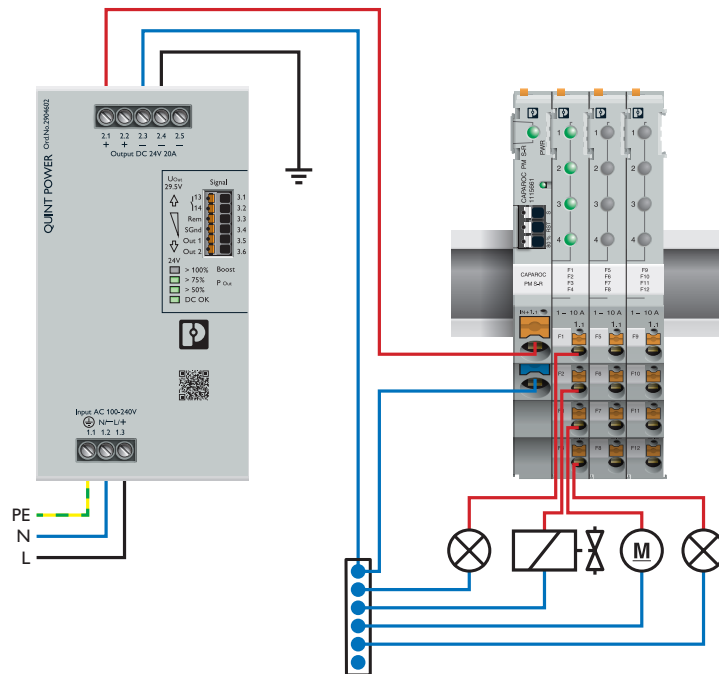
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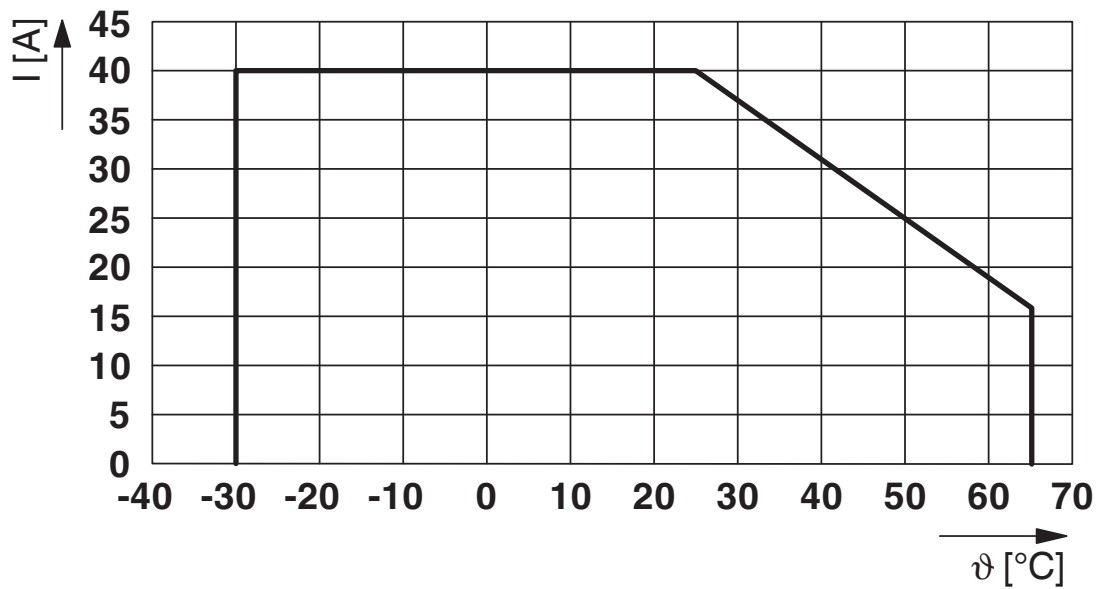
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Application drawing



Diagram



Max. permissible current in relation to the ambient temperature

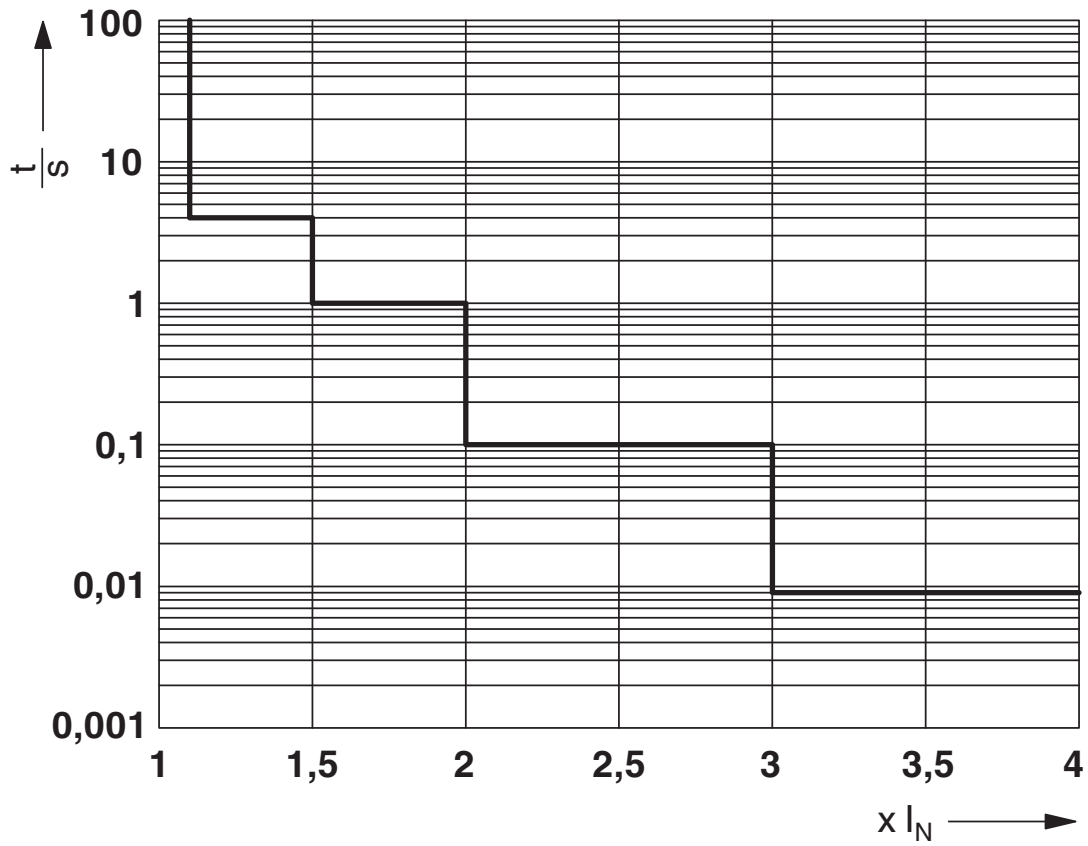
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Diagram



Trigger characteristic

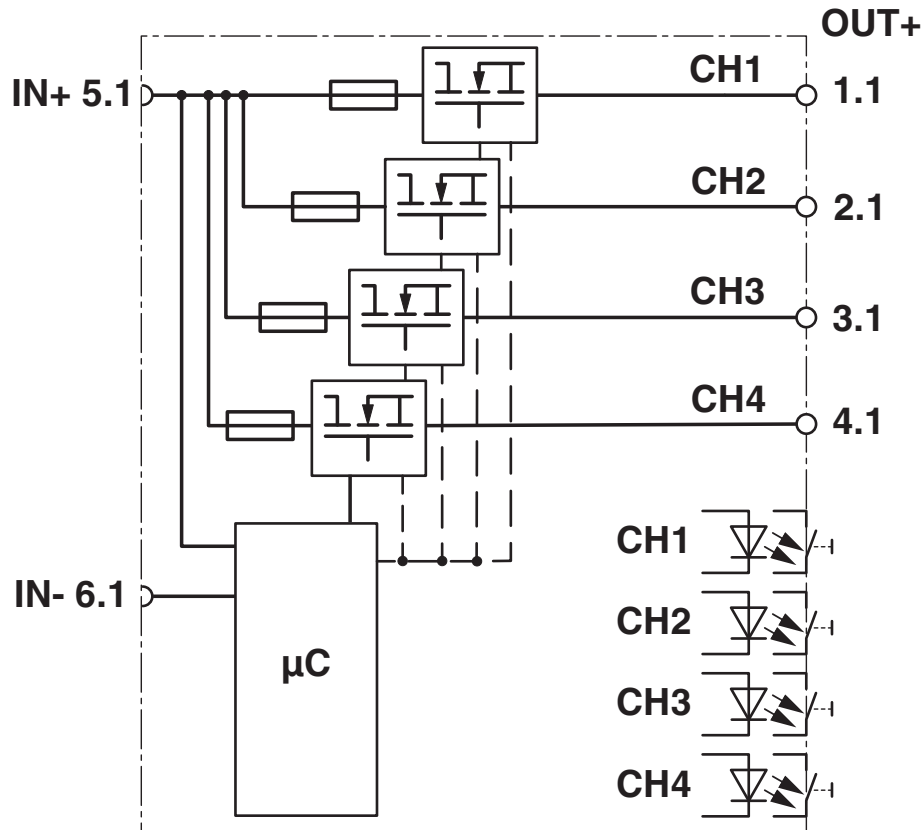
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Block diagram



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## Approvals

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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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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27140401 |
| ECLASS-15.0 | 27140401 |

### ETIM

|           |          |
|-----------|----------|
| ETIM 10.0 | EC003538 |
|-----------|----------|

### 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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