# CBMC E4 24DC/1-4A+ IOL - Electronic circuit breaker

2910410

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CRA-READY



Multi-channel electronic circuit breaker with IO-Link interface for protecting four loads at 24 V DC in the event of overload and short circuit. With electronic locking of the set nominal currents. For installation on DIN rails.

## Your advantages

- System transparency, thanks to comprehensive diagnostics capabilities
- Worldwide access to the device, thanks to integration into your IO-Link infrastructure
- Secure locking, thanks to interlock
- Plan service calls more efficiently since regular service interval calls can be performed conveniently via the interface.
- Convenient error diagnostics, thanks to precise error categorization and recording
- Autonomous operation since the device is fully functional even without the IO-Link interface connection

ELEKTROGERÄTE RÜCKNAHME

## Commercial data

| | |
|---|---|
| Item number | 2910410 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | CLA152 |
| Product key | CLA152 |

| | |
|---|---|
| GTIN | 4055626448558 |
| Weight per piece (including packing) | 130 g |
| Weight per piece (excluding packing) | 128 g |
| Customs tariff number | 85362010 |
| Country of origin | DE |

# Technical data

## Notes

| | |
|---|---|
| Note on application | As things stand now, we are preparing the product so that, as of December 11, 2027, it will comply with the requirements of the EU Cyber Resilience Act (CRA) based on the information currently available regarding the CRA. |

### General

| | |
|---|---|
| Note | Repeated hard short circuits can reduce the melting integral of the integrated backup fuse. |
| | Always connect the negative pole to terminal IN- to ensure the internal power supply. Return currents from the loads must not be fed back to the power supply via IN- of the circuit breaker. |

## Product properties

| | |
|---|---|
| Product type | Device circuit breakers |
| Product family | CBMC |
| Type | DIN rail module, one-piece |
| Number of positions | 1 |
| No. of channels | 4 |

### Insulation characteristics

| | |
|---|---|
| Protection class | III |
| Pollution degree | 2 |

## Electrical properties

### General

| | |
|---|---|
| Operating voltage | 18 V DC ... 30 V DC |
| Rated voltage | 24 V DC |
| Rated current $I_N$ | max. 16 A (IN+) |
| | max. 40 A (per terminal position when bridging additional devices via IN+) |
| Rated current $I_N$ | 1 / 2 / 3 / 4 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 |
| 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 | max. 35 V DC (Load circuit) |
| Fuse | electronic |
| Efficiency | > 99 % |
| Closed circuit current $I_0$ | typ. 25 mA |
| Power dissipation | typ. 0.6 W (No-load operation) |

| | |
|---|---|
| | < 4 W (Nominal operation) |
| Module initialization time | 1.6 s |
| Waiting time after switch off of a channel | 5 s (at overload / short circuit) |
| Measuring tolerance I | ± 15 % |
| MTBF (IEC 61709, SN 29500) | 6896552 h (at 25 °C with 21 % load) |
| | 2597403 h (at 40°C with 34.25% load) |
| | 443066 h (at 35 °C with 100 % load) |
| Fail-safe element | 15 A DC (per output channel) |
| Contact switching type | without electrical isolation |

Load circuit

| | |
|---|---|
| Shutdown time | ≤ 10 ms (for short circuit > 2.0 x $I_N$) |
| | 1 s (1.2 ... 2.0 x $I_N$) |
| Undervoltage switch-off | ≤ 17.8 V DC (active) |
| | ≥ 18.8 V DC (inactive) |
| Overvoltage switch-off | ≥ 30.5 V DC (active) |
| | ≤ 29.5 V DC (inactive) |
| Max. capacitive load | 30000 µF (Depending on the current setting and the short-circuit current available) |
| Switch-on delay | 0.1 s (per output channel) |

## Connection data

Main circuit IN+

| | |
|---|---|
| Connection method | Push-in connection |
| Stripping length | 15 mm |
| Conductor cross-section flexible | 0.2 mm² ... 6 mm² |
| Conductor cross-section rigid | 0.2 mm² ... 10 mm² |
| Conductor cross-section AWG | 24 ... 8 |
| 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 ... 6 mm² |

Main circuit IN-

| | |
|---|---|
| Connection method | Push-in connection |
| Stripping length | 10 mm |
| Conductor cross-section rigid | 0.2 mm² ... 2.5 mm² |
| Conductor cross-section AWG | 24 ... 12 |
| Conductor cross-section, flexible, with ferrule, with plastic sleeve | 0.25 mm² ... 1.5 mm² |
| Conductor cross-section, flexible, with ferrule, without plastic sleeve | 0.25 mm² ... 2.5 mm² |

Main circuit OUT

| | |
|---|---|
| Connection method | Push-in connection |
| Stripping length | 10 mm |
| Conductor cross-section rigid | 0.2 mm² ... 2.5 mm² |
| Conductor cross-section AWG | 24 ... 12 |

| | |
|---|---|
| Conductor cross-section, flexible, with ferrule, with plastic sleeve | 0.25 mm² ... 1.5 mm² |
| Conductor cross-section, flexible, with ferrule, without plastic sleeve | 0.25 mm² ... 2.5 mm² |

IO-Link

| | |
|---|---|
| Connection method | Push-in connection |
| Stripping length | 10 mm |
| Conductor cross-section rigid | 0.2 mm² ... 1.5 mm² |
| Conductor cross-section AWG | 24 ... 16 |
| Conductor cross-section, flexible, with ferrule, with plastic sleeve | 0.25 mm² ... 0.75 mm² |
| Conductor cross-section, flexible, with ferrule, without plastic sleeve | 0.25 mm² ... 1.5 mm² |

## Interfaces

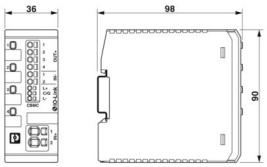
IO-Link

| | |
|---|---|
| Interface type | IO-Link |
| Specification | V1.1 |
| Reverse polarity protection | yes |
| Transmission speed | 230.4 kbps (COM3) |
| Cycle Time | min. 40 ms |
| Amount of process data | 8 Byte (Input data) |
| | 3 Byte (Output data) |
| Nominal voltage for I/O supply | 24 V DC |
| Current consumption | max. 30 mA (IO-Link L+) |
| IO-Link Vendor ID | $176_{dec}$, 00 $B0_{hex}$ |
| IO-Link Device ID | $393520_{dec}$, 06 01 $30_{hex}$ |

## Signaling

| | |
|---|---|
| IO-Link LED off | off (No communication) |
| IO-Link LED green | flashing (IO-Link connection exists) |
| Channel LED off | off (Channel switched off) |
| Channel LED yellow | lit (Channel switched on, channel load > 80% ) |
| | flashing (Programming mode active) |
| 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) |
| | two flashes (Channel switched off, device total current limit 40 A exceeded) |

## Dimensions

| | |
|---|---|
| Dimensional drawing |  |
| Width | 36 mm |
| Height | 90 mm |
| Depth | 98 mm (incl. DIN rail 7.5 mm) |

## Material specifications

| | |
|---|---|
| Color | light gray (RAL 7035) |
| Material | PC |
| | PA 6.6 |
| | PA 6.3T |
| | POM |
| Flammability rating according to UL 94 | V-0 |

## Environmental and real-life conditions

### Ambient conditions

| | |
|---|---|
| Degree of protection | IP20 |
| Ambient temperature (operation) | -25 °C ... 60 °C |
| Ambient temperature (storage/transport) | -40 °C ... 70 °C |
| Altitude | ≤ 3000 m up to 52 °C (amsl) |
| | ≤ 4000 m up to 46 °C (amsl) |
| Humidity test | 96 h, 95 % RH, 40 °C |
| Shock (operation) | 30g (IEC 60068-2-27, Test Ea) |
| Vibration (operation) | 10 Hz ... 57.6 Hz (Amplitude ±0.35 mm; in accordance with IEC 60068-2-6, Test Fc) |
| | 57.6 Hz ... 150 Hz (Acceleration 5g; in accordance with IEC 60068-2-6, Test Fc) |

## Approvals

### UL approval

| | |
|---|---|
| Identification | UL/C-UL Listed UL 508 |
| | UL Recognized UL 2367 |
| | NEC Class 2 according to UL 1310 |

## 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 |

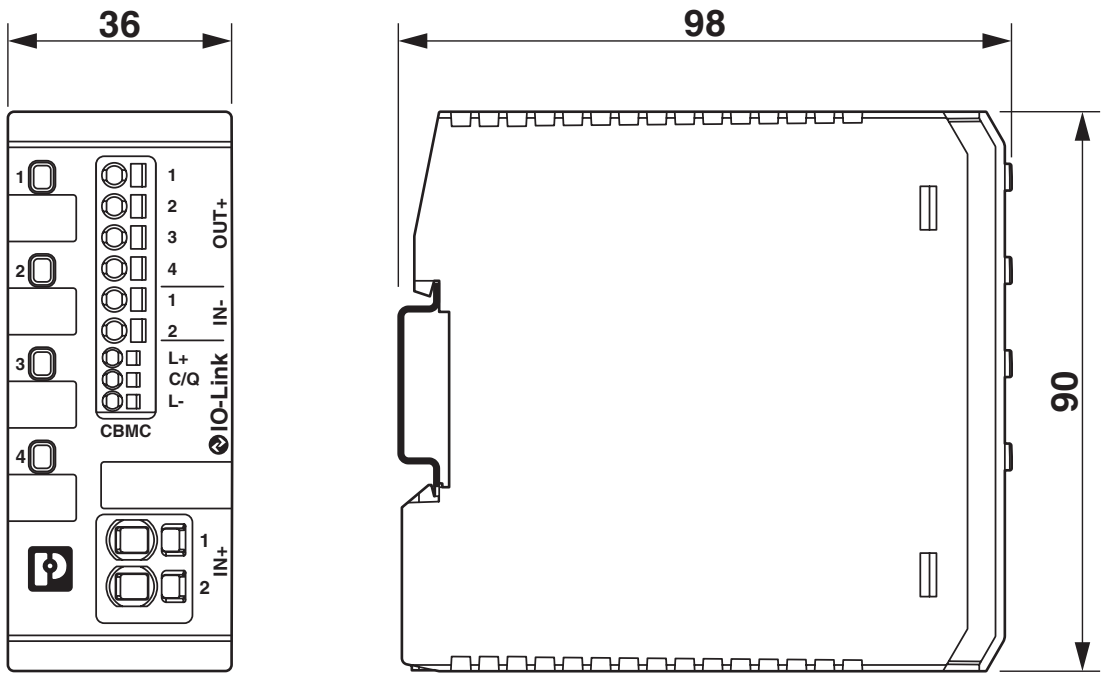
| | |
|---|---|
| Standards/specifications | EN 60068-2-6 |
| Note | Environmental influences – Vibrations (sinusoidal) |
| Standards/specifications | EN 60068-2-27 |
| Note | Environmental influences – Shocks |
| Standards/specifications | EN 60068-2-78 |
| Note | Environmental influences – Moisture and heat, constant |
| Standards/specifications | EN 50178 |
| Note | Equipping power installations with electronic equipment |

## Mounting

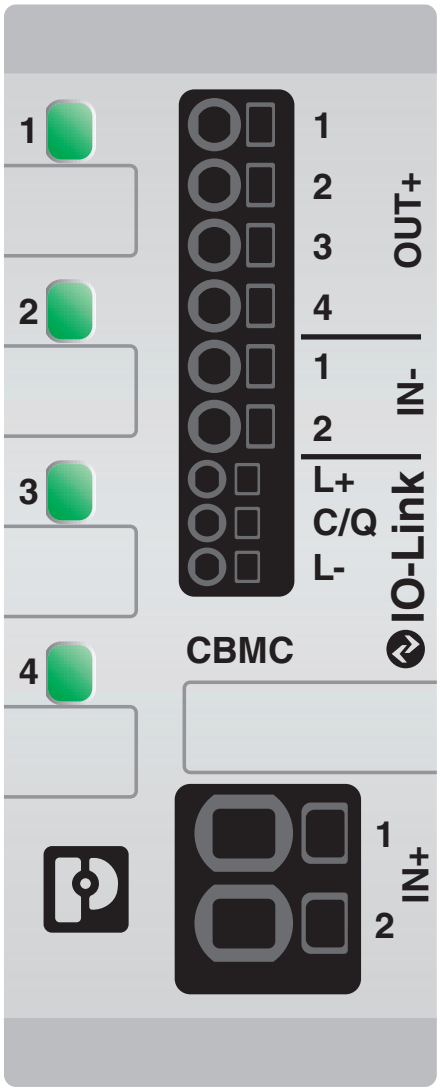
| | |
|---|---|
| Mounting type | DIN rail: 35 mm |

## Drawings

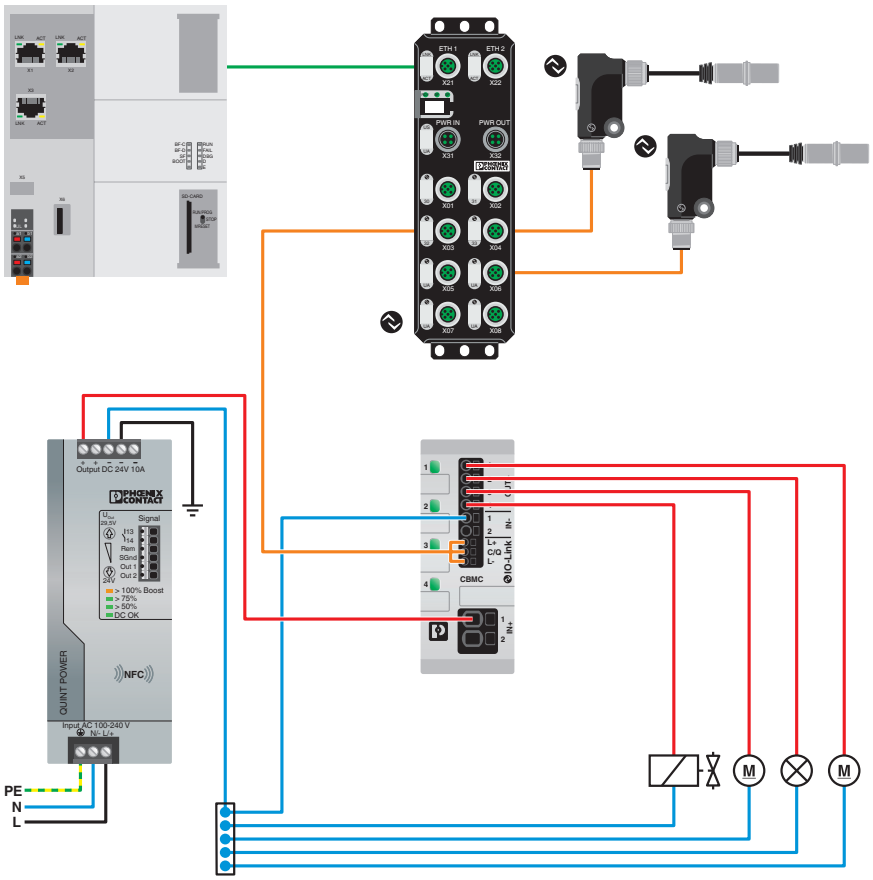
Dimensional drawing



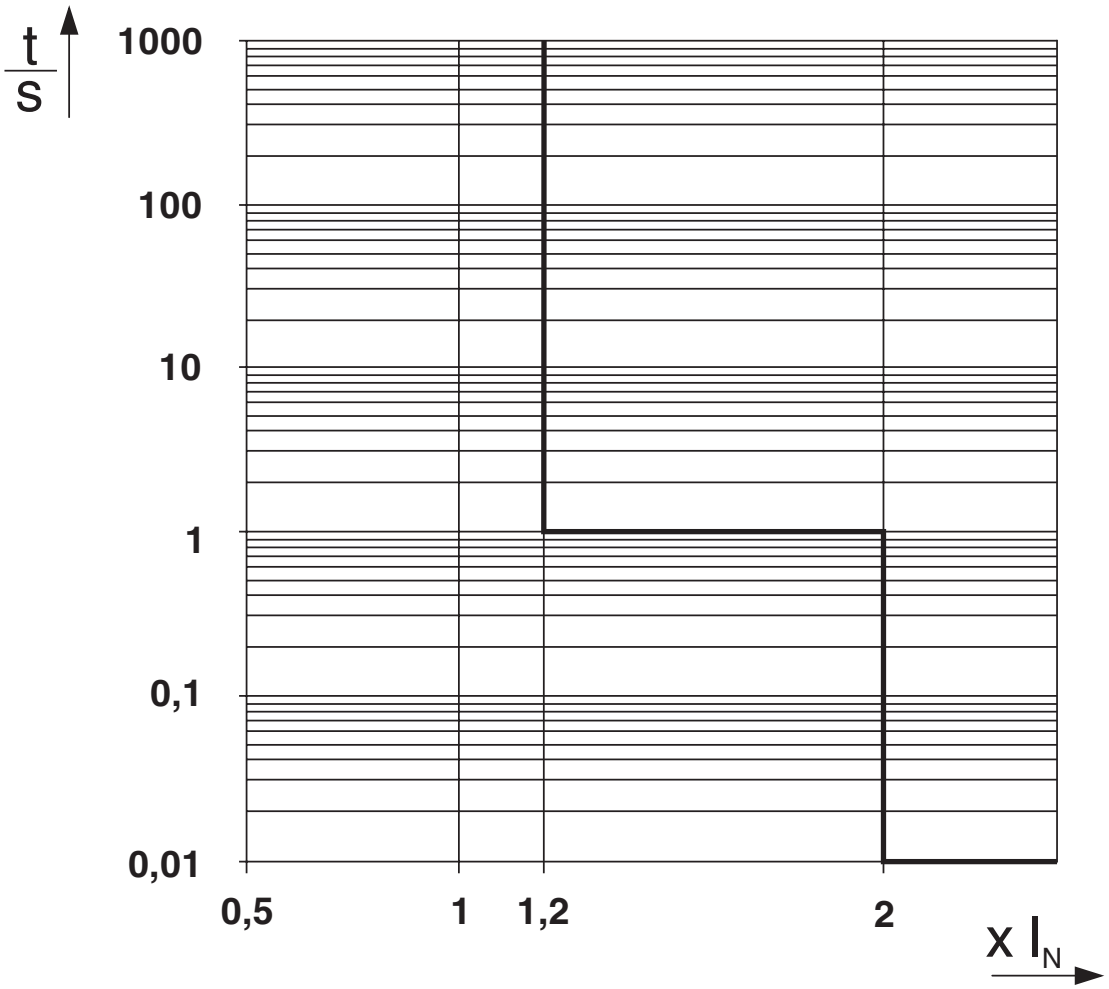
Product drawing



Application drawing

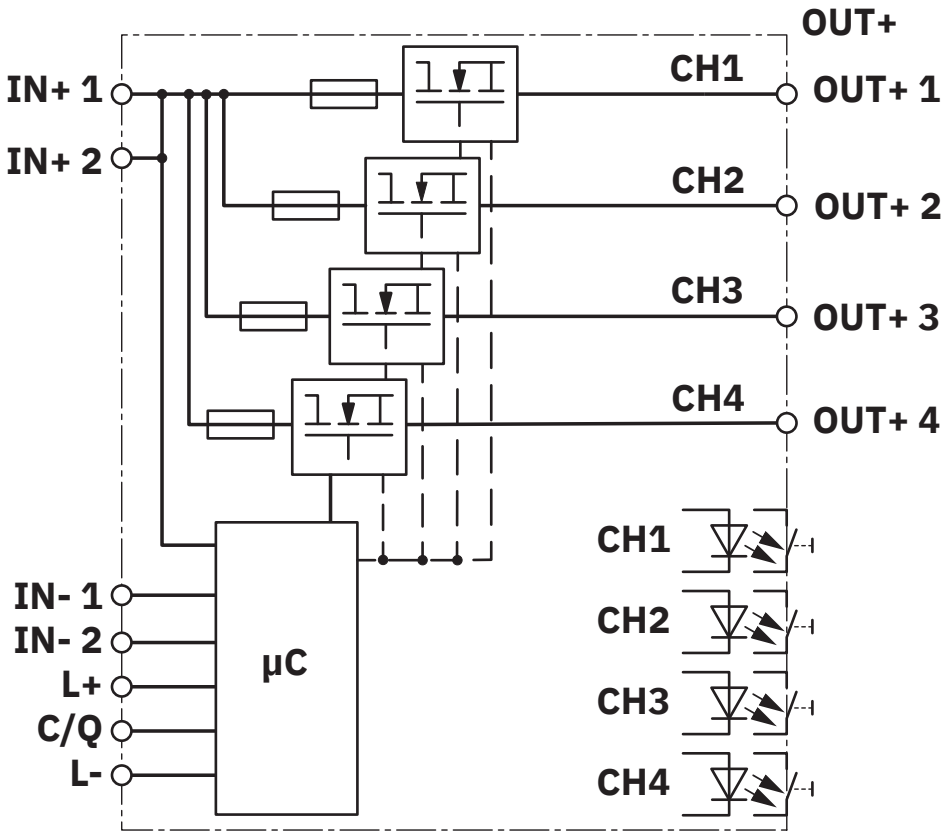


Diagram




Trigger characteristic in the DC range

Block diagram



## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/gb/products/2910410

**UL Recognized**
Approval ID: FILE E 317172

**UL Listed**
Approval ID: E123528

**cUL Listed**
Approval ID: E123528

## Classifications

### ECLASS

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

### ETIM

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

### UNSPSC

| | |
|---|---|
| UNSPSC 21.0 | 39121400 |

## 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) |
| | Perfluorobutane sulfonic acid (PFBS) and its salts(CAS: n/a) |
| SCIP | cf0e870d-4d39-4026-9a6e-21123e10589e |

EF3.1 Climate Change

| | |
|---|---|
| CO2e kg | 3.316 kg CO2e |


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