# Electronic device circuit breaker - CBMC E4 24DC/1-10A IOL - 2910411

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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

- Circuits can be adjusted without any tools by means of one single pushable LED button
- 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

## Key Commercial Data

| | |
|---|---|
| Packing unit | 1 pc |
| GTIN | 4 055626 448572 |
| GTIN | 4055626448572 |

## Technical data

### Dimensions

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

### Ambient conditions

| | |
|---|---|
| Ambient temperature (operation) | -25 °C ... 60 °C |
| Ambient temperature (storage/transport) | -40 °C ... 70 °C |
| Humidity test | 96 h, 95 % RH, 40 °C |
| Altitude | ≤ 3000 m up to 52 °C (amsl (above mean sea level)) |
| | ≤ 4000 m up to 46 °C (amsl (above mean sea level)) |

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## Technical data

### Ambient conditions

| | |
|---|---|
| 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) |
| Degree of protection | IP20 |

### General

| | |
|---|---|
| Flammability rating according to UL 94 | V-0 |
| Mounting type | DIN rail: 35 mm |
| Color | light grey RAL 7035 |
| Number of positions | 4 |
| Protection class | III |
| Type | DIN rail module, one-piece |

### Electrical data

| | |
|---|---|
| Fuse type | electronic |
| Rated surge voltage | 0.5 kV |
| Operating voltage | 18 V DC ... 30 V DC |
| Rated voltage | 24 V DC |
| Rated current $I_N$ | max. 40 A DC (IN+) |
| | max. 40 A DC (per terminal position when bridging additional devices via IN+) |
| Measuring tolerance I | ± 15 % |
| Feedback resistance | max. 35 V DC |
| Fail-safe element | 15 A DC (per output channel) |
| Efficiency | > 99 % |
| Closed circuit current $I_0$ | typ. 33 mA |
| Power dissipation | typ. 0.8 W (No-load operation) |
| | < 9 W (Nominal operation) |
| Module initialization time | 1.6 s |
| Waiting time after switch off of a channel | 5 s (at overload / short circuit) |
| Temperature derating | 24 A DC (at 60 °C) |
| | 28 A DC (at 54°C) |
| | 32 A DC (at 47°C) |
| | 36 A DC (at 41 °C) |
| | 40 A DC (at 35 °C) |
| Tripping method | E (electronic) |
| Required backup fuse | not required, integrated failsafe element |
| Dielectric strength | max. 35 V DC (Load circuit) |
| 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) |

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### Electrical data

| | |
|---|---|
| Shutdown time load circuit | ≤ 10 ms (for short circuit > 2.0 x $I_N$) |
| | 1 s (1.2 ... 2.0 x $I_N$) |
| Undervoltage shutdown load circuit | ≤ 17.8 V DC (active) |
| | ≥ 18.8 V DC (inactive) |
| Surge voltage shutdown load circuit | ≥ 30.5 V DC (active) |
| | ≤ 29.5 V DC (inactive) |
| Max. capacitive load load circuit | 40000 µF (Depending on the current setting and the short-circuit current available) |

### Interface

| | |
|---|---|
| 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 | $393504_{dec}$, 06 01 $20_{hex}$ |

### Signaling

| | |
|---|---|
| Channel LED off | off (Channel switched off) |
| Channel LED green | lit (Channel switched on) |
| Channel LED yellow | lit (Channel switched on, channel load > 80% ) |
| | flashing (Programming mode active) |
| 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) |
| IO-Link LED off | off (No communication) |
| IO-Link LED green | flashing (IO-Link connection exists) |

### Connection data

| | |
|---|---|
| Connection name | Main circuit IN+ |
| Connection method | Push-in connection |
| Stripping length | 15 mm |
| Conductor cross section solid | 0.2 mm² ... 10 mm² |
| Conductor cross section AWG | 24 ... 8 |

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## Technical data

### Connection data

| | |
|---|---|
| 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 |
| Connection name | Main circuit IN- |
| Connection method | Push-in connection |
| Stripping length | 10 mm |
| Conductor cross section solid | 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 |
| Connection name | Main circuit OUT |
| Connection method | Push-in connection |
| Stripping length | 10 mm |
| Conductor cross section solid | 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 |

### Standards and Regulations

| | |
|---|---|
| Standards/specifications | EN 61000-6-2 |
| | EN 61000-6-3 |
| | EN 60068-2-6 |
| | EN 60068-2-27 |
| | EN 60068-2-78 |
| | EN 50178 |

### Environmental Product Compliance

| | |
|---|---|
| REACh SVHC | Lead 7439-92-1 |
| China RoHS | Environmentally Friendly Use Period = 50 |
| | For details about hazardous substances go to tab “Downloads”, Category “Manufacturer's declaration” |

## Drawings

# Electronic device circuit breaker - CBMC E4 24DC/1-10A IOL - 2910411

Product drawing

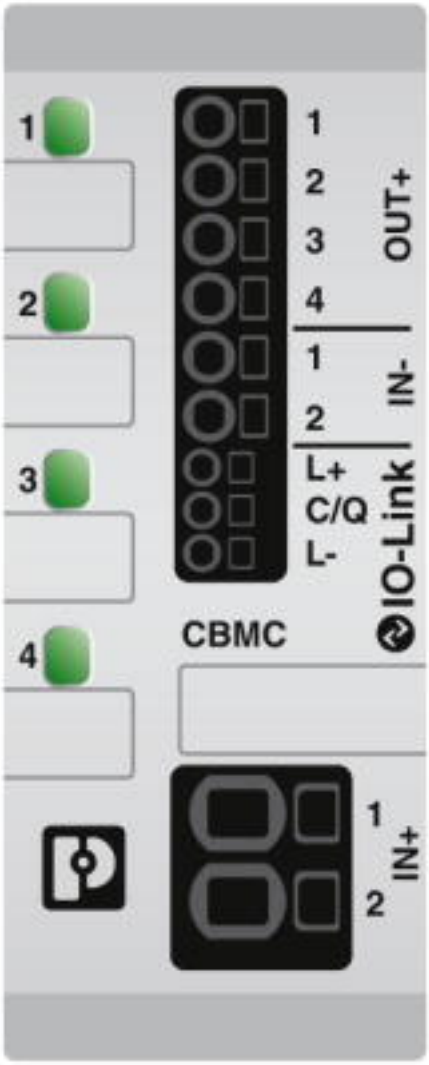

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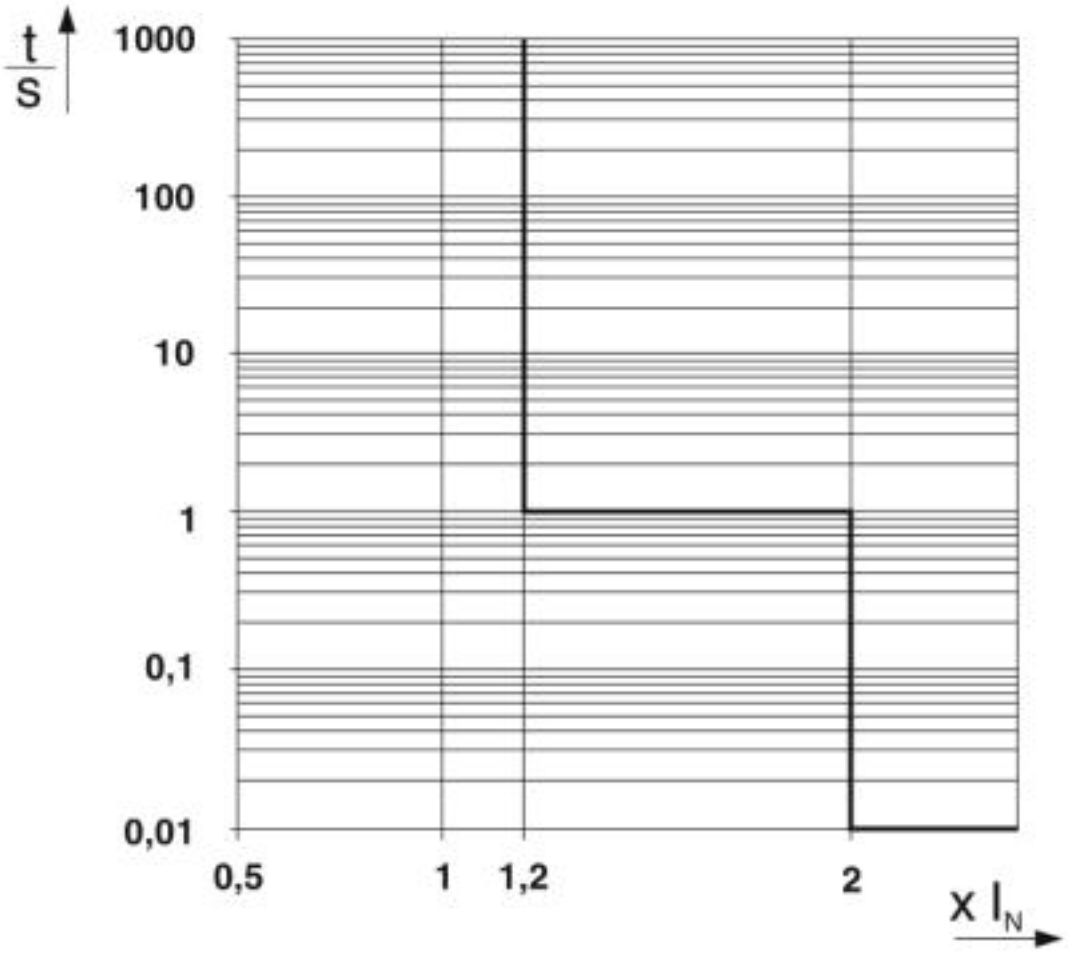
Diagram




Trigger characteristic in the DC range

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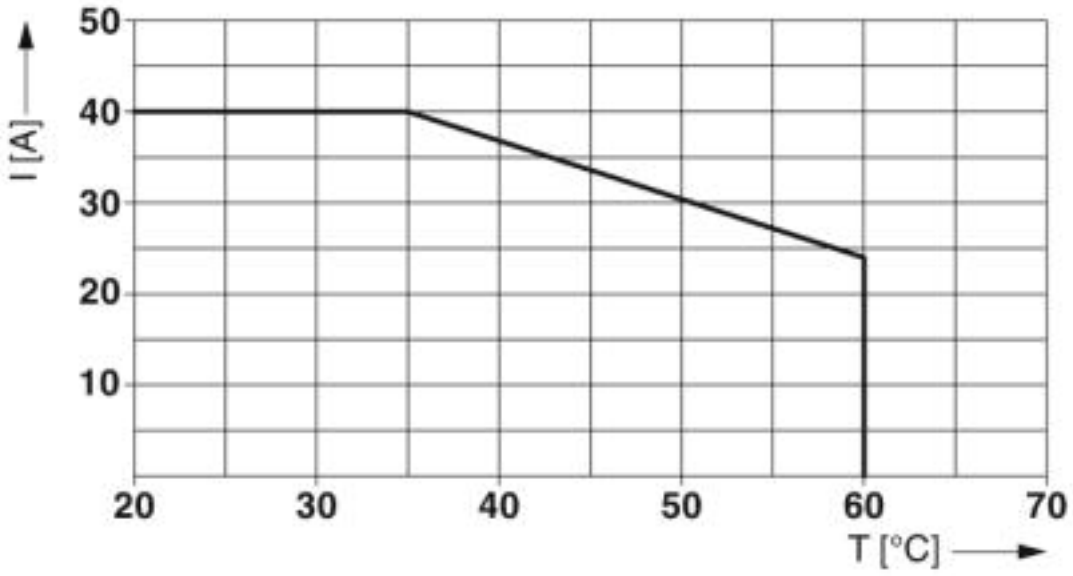
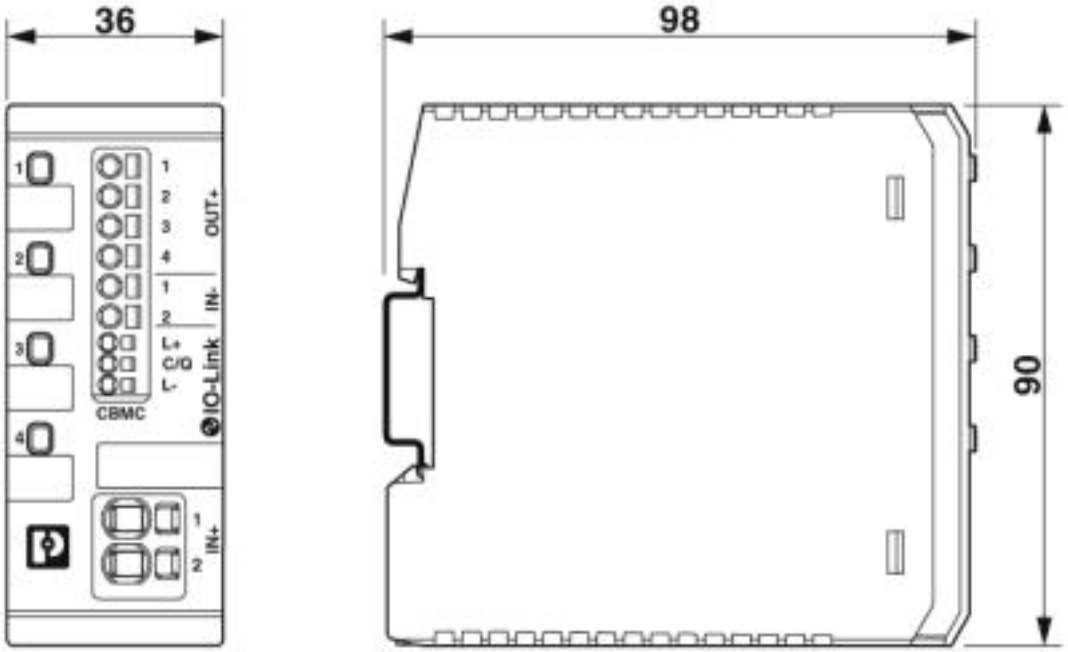
Diagram




Max. permissible current in relation to the ambient temperature

Dimensional drawing



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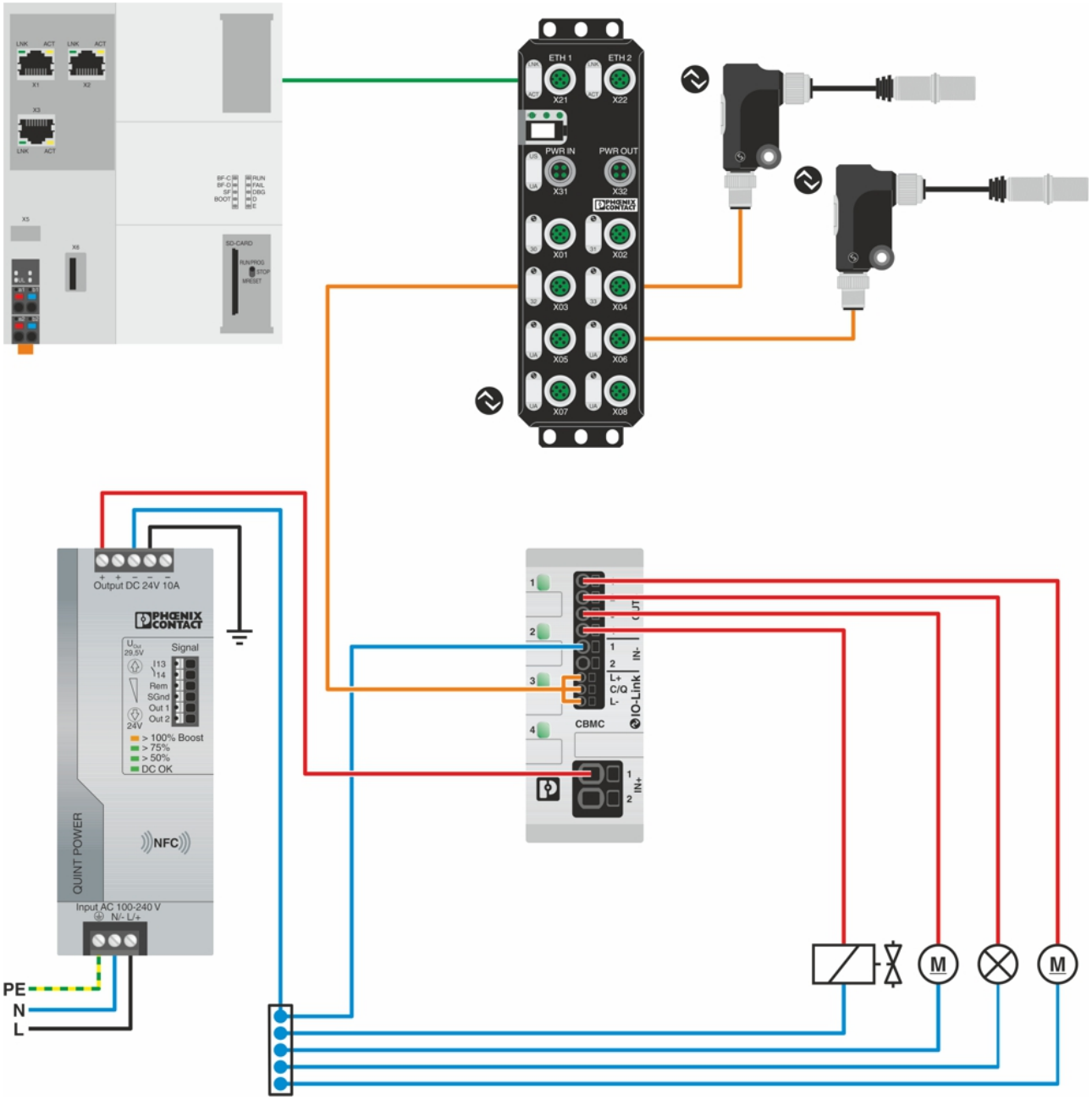
Application drawing



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## Approvals

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Approvals

UL Listed / UL Recognized / cUL Listed / cULus Listed

Ex Approvals

### Approval details

| | | |
|---|---|---|
| UL Listed | http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm | FILE E 123528 |
| UL Recognized | http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm | FILE E 317172 |
| cUL Listed | http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm | FILE E 123528 |
| cULus Listed | | |



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