

# Electronic 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

- ✔ 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 0 5 5 6 2 6 4 4 8 5 7 2
GTIN	4055626448572
Weight per Piece (excluding packing)	125.000 g
Custom tariff number	85363030
Country of origin	Germany
Sales Key	CLA152

## 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

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### Ambient conditions

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))
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	1
Protection class	III
Degree of pollution	2
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 <sub>N</sub>	max. 40 A DC (IN+)
	max. 40 A DC (per terminal position when bridging additional devices via IN+)
	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10 A DC (adjustable per output channel)
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 <sub>0</sub>	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)

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### Electrical data

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)
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)
Shutdown time load circuit	$\leq 10$ ms (for short circuit > $2.0 \times I_N$ )
	1 s ( $1.2 \dots 2.0 \times I_N$ )
Undervoltage switch-off load circuit	$\leq 17.8$ V DC (active)
	$\geq 18.8$ V DC (inactive)
Overvoltage switch-off shutdown load circuit	$\geq 30.5$ V DC (active)
	$\leq 29.5$ V DC (inactive)
Max. capacitive load load circuit	40000 $\mu$ F (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 <sub>dec</sub> , 00 B0 <sub>hex</sub>
IO-Link Device ID	393504 <sub>dec</sub> , 06 01 20 <sub>hex</sub>

### 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)

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## Technical data

### Connection data

Connection name	Main circuit IN+
Connection method	Push-in connection
Stripping length	15 mm
Conductor cross section solid	0.2 mm <sup>2</sup> ... 10 mm <sup>2</sup>
Conductor cross section AWG	24 ... 8
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> ... 6 mm <sup>2</sup>
Connection name	Main circuit IN-
Connection method	Push-in connection
Stripping length	10 mm
Conductor cross section solid	0.2 mm <sup>2</sup> ... 2.5 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> ... 1.5 mm <sup>2</sup>
Conductor cross section flexible, with ferrule without plastic sleeve	0.25 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Connection name	Main circuit OUT
Connection method	Push-in connection
Stripping length	10 mm
Conductor cross section solid	0.2 mm <sup>2</sup> ... 2.5 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> ... 1.5 mm <sup>2</sup>
Conductor cross section flexible, with ferrule without plastic sleeve	0.25 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>

### Standards and Regulations

Standards/specifications	EN 61000-6-2 EMC – Immunity for industrial areas
	EN 61000-6-3 EMC – Emission for residential, business and commercial properties and small operations
	EN 60068-2-6 Environmental influences – Vibrations (sinusoidal)
	EN 60068-2-27 Environmental influences – Shocks
	EN 60068-2-78 Environmental influences – Moisture and heat, constant
	EN 50178 Equipping power installations with electronic equipment

### Conformance/approvals

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

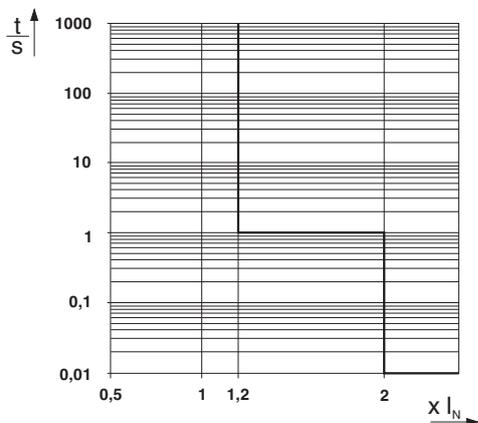
### Environmental Product Compliance

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

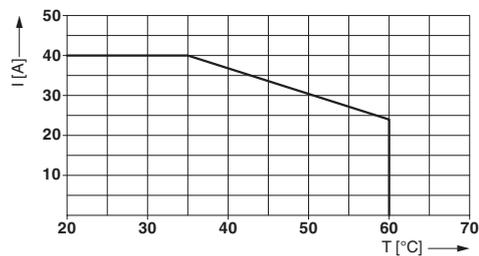
## Drawings

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Diagram



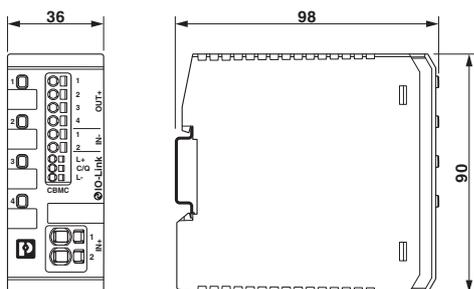
Diagram



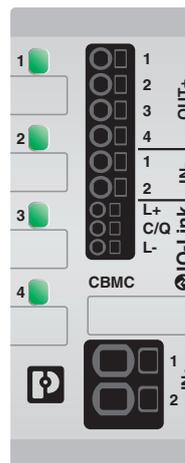
Max. permissible current in relation to the ambient temperature

Trigger characteristic in the DC range

Dimensional drawing



Product drawing



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Application drawing

