

# Electronic device circuit breaker - CBM E4 24DC/0.5-10A NO-R - 2905743

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Multi-channel, electronic device circuit breaker with active current limitation for protecting four loads at 24 V DC in the event of overload and short circuit. With nominal current assistant and electronic locking of the set nominal currents. For installation on DIN rails.

## Your advantages

- ✓ For protection against voltage dips caused by overload and short circuit
- ✓ Precise nominal current levels of 0.5 to 10 A
- ✓ Integrated dynamic current limitation
- ✓ Electronic locking mechanism to increase system safety
- ✓ Early warning when exceeding 80% of the set nominal current per channel
- ✓ Supply up to 40 A possible
- ✓ Sophisticated remote signaling concept enables monitoring from any location
- ✓ Slim design



## Key Commercial Data

Packing unit	1 pc
GTIN	 4 046356 992350
GTIN	4046356992350

## Technical data

### Dimensions

Height	130 mm
Width	41 mm
Depth	121 mm

### Ambient conditions

Ambient temperature (operation)	-25 °C ... 70 °C (Startup at -40 C type-tested)
	-25 °C ... 65 °C (for UL 2367)
Ambient temperature (storage/transport)	-40 °C ... 80 °C

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## Technical data

### Ambient conditions

Humidity test	240 h, 95 % RH, 40 °C
Altitude	≤ 6000 m (amsl (above mean sea level))
Shock (operation)	30g (IEC 60068-2-27, Test Ea)
Vibration (operation)	5 Hz ... 24.9 Hz (Amplitude ±1.6 mm; in accordance with IEC 60068-2-6, Test Fc)
	24.9 Hz ... 150 Hz (Acceleration 4g; in accordance with IEC 60068-2-6, Test Fc with additional resonance frequency testing in accordance with DNV GL)
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
	0.5 / 1 / 2 / 4 / 6 / 10 A DC (adjustable per output channel)
Measuring tolerance I	typ. 40 % (0.5 A ... 1 A)
	typ. 10 % (2 - 10 A)
Feedback resistance	max. 35 V DC
Fail-safe element	15 A DC (per output channel)
Active current limitation	typ. 2.0 x $I_N$ (0.5 - 1 A)
	typ. 1.5 x $I_N$ (2 - 10 A)
Efficiency	> 99 %
Closed circuit current $I_0$	typ. 42 mA
Power dissipation	1 W (No-load operation)
	9 W (Nominal operation)
Module initialization time	3.3 s
Waiting time after switch off of a channel	10 s (at overload / short circuit)
Temperature derating	40 A DC (at 70°C (65°C for UL 2367))
Tripping method	E (electronic)
Required backup fuse	not required, integrated failsafe element
Dielectric strength	max. 30 V DC (Load circuit)

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## Technical data

### Electrical data

MTBF (IEC 61709, SN 29500)	2001962 h (at 25 °C)
	1292135 h (at 40 °C)
	653352 h (at 60 °C)
Shutdown time load circuit	0.02 s ( $> 1.3 \times I_N$ )
	30 s ( $1.1 \dots 1.3 \times I_N$ )
Undervoltage shutdown load circuit	$\leq 17.8$ V DC (active)
	$\geq 19$ V DC (inactive)
Surge voltage shutdown load circuit	$\geq 30.5$ V DC (active)
	$\leq 29.5$ V DC (inactive)
Max. capacitive load load circuit	75000 $\mu$ F (per channel at 24 V DC)
Output voltage status output	24 V DC
Output current status output	max. 20 mA (when $I > 80\%$ at at least one channel)
Input voltage reset input	7 V DC ... 30 V DC (Reset with falling edge)
Current consumption reset input	typ. 0.4 mA (at 24 V DC)

### Remote indication contact

Connection name	Remote indication circuit
Switching function	N/O contact
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	1.5 mm <sup>2</sup> ... 0.25 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>
DC operating voltage	0 V DC ... 30 V DC
DC operating current	1 mA DC ... 100 mA DC

### Signaling

Channel LED off	off (Channel switched off)
Channel LED green	lit (Channel switched on)
	flashing (Channel switched on, programming mode active)
Channel LED yellow	lit (Channel switched on, channel load $> 80\%$ )
Channel LED yellow-green	flashing (Channel switched on, nominal current assistant active)
Channel LED red	lit (Channel switched off, over- or undervoltage active)
	ON temporarily (Channel switched off, 10 s cool-down phase, overload or short-circuit release)
	flashing (Channel switched off, ready to be switched back on, overload or short-circuit release)
Channel LED red-yellow	flashing (Channel switched on, overload mode, capacity approximately 110 ... 130% , shutdown after 30 s)
Channel LED red-green	flashing (Channel switched off, programming mode active, current adjustment after overload or short-circuit release)
DC OK LED off	off (No supply voltage)

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## Technical data

### Signaling

DC OK LED green	lit (Operating voltage in nominal range 18 ... 30 V)
DC OK LED yellow	lit (Undervoltage active, voltage $\leq 17.8$ V, active channels switched off and channel LEDs are lit red)
	flashing (Undervoltage shutdown inactive, device was in undervoltage shutdown)
DC OK LED red	lit (Overvoltage shutdown active, voltage $\geq 30.5$ V, channels switched off and channel LEDs are lit red)
	flashing (Overvoltage shutdown inactive, device was in overvoltage shutdown)

### Connection data

Connection name	Main circuit IN+
Connection method	Push-in connection
Stripping length	18 mm
Conductor cross section solid	0.75 mm <sup>2</sup> ... 16 mm <sup>2</sup>
Conductor cross section AWG	20 ... 4
Conductor cross section, flexible, with ferrule, with plastic sleeve	0.75 mm <sup>2</sup> ... 10 mm <sup>2</sup>
Conductor cross section flexible, with ferrule without plastic sleeve	0.75 mm <sup>2</sup> ... 16 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
	EN 61000-6-3
	EN 60068-2-6
	EN 60068-2-11
	EN 60068-2-78

### Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
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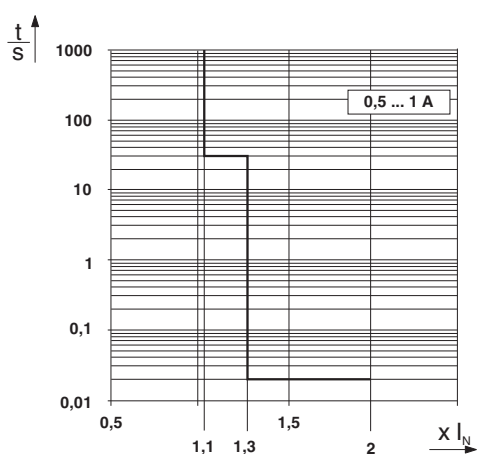
## Technical data

### Environmental Product Compliance

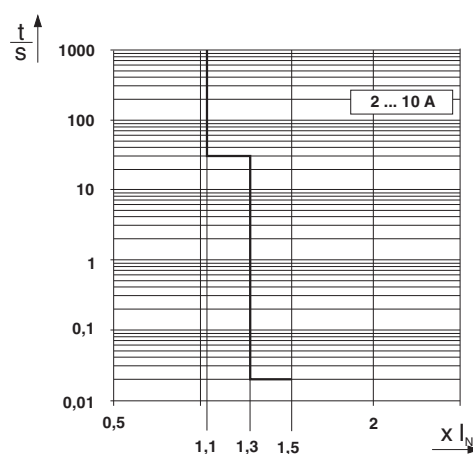
China RoHS	Environmentally friendly use period: unlimited = EFUP-e
	No hazardous substances above threshold values

## Drawings

Diagram



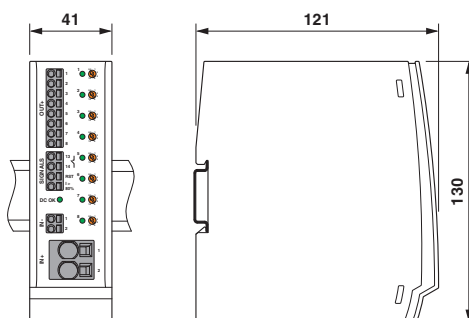
Diagram



Trigger characteristic in the DC range

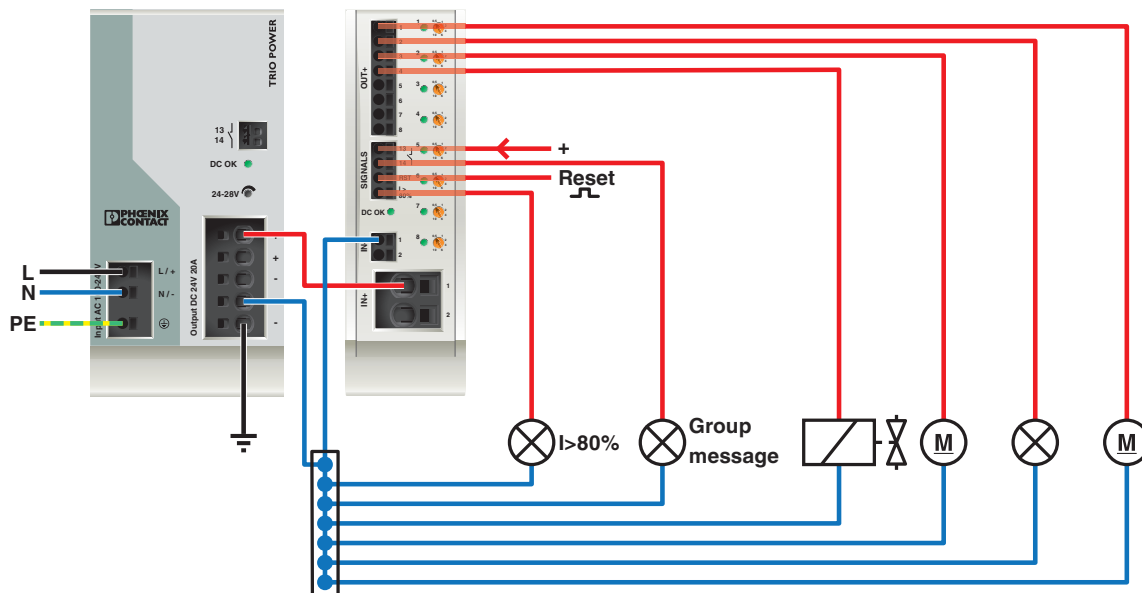
Trigger characteristic in the DC range

Dimensional drawing



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Application drawing



## Approvals

Approvals

Approvals

DNV GL / UL Listed / UL Recognized / cUL Listed / EAC / cULus Listed

Ex Approvals

UL Recognized / UL Listed / cUL Listed / cULus Listed


## Approval details


DNV GL		<a href="http://exchange.dnv.com/tari/">http://exchange.dnv.com/tari/</a>	TAA00000U2
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UL Listed		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 123528
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## Approvals

UL Recognized		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 317172
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cUL Listed		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 123528
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cULus Listed			
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