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

2905743

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Multi-channel, electronic 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

- Easy to configure, thanks to the nominal current assistant
- Active current limitation to improve the capacity of the upstream power supply
- Adjustable in increments per channel:
  from 0.5 A to 10 A
- Easy system monitoring with early signaling and direct pickup of information at the product
- Increased system availability with intelligent detection of under- and overvoltage

ELEKTROGERÄTE RÜCKNAHME

Commercial data

Item number	2905743
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	CL13
Product key	CLA151
GTIN	4046356992350
Weight per piece (including packing)	265 g
Weight per piece (excluding packing)	234.6 g
Customs tariff number	85362010
Country of origin	DE

Technical data

Notes

General

Note	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	CBM
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	16.5 V DC ... 30 V DC
Rated voltage	24 V DC
Rated current I_N	max. 40 A
Rated current I_N	0.5 / 1 / 2 / 4 / 6 / 10 A DC (adjustable per output channel)
Rated current (pre-adjusted)	0.5 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. 30 V DC (Load circuit)
Active current limitation	typ. 2.0 x I_N (0.5 - 1 A)
	typ. 1.5 x I_N (2 - 10 A)
Fuse	electronic
Efficiency	> 99 %
Closed circuit current I_0	typ. 42 mA
Power dissipation	0.5 W (No-load operation)
	7 W (Nominal operation)
Module initialization time	1.6 s
Waiting time after switch off of a channel	10 s (at overload / short circuit)
Measuring tolerance I	typ. 40 % (0.5 A ... 1 A)
	typ. 10 % (2 A ... 10 A)

Temperature derating	40 A DC (at 70 °C)
MTBF (IEC 61709, SN 29500)	4611597 h (at 25 °C with 21 % load)
	2198893 h (at 40°C with 34.25% load)
	313752 h (at 70°C with 100% load)
Fail-safe element	15 A DC (per output channel)
Contact switching type	without electrical isolation

Load circuit

Shutdown time	typ. 0.02 s (0.005 s … 0.05 s at > 1.3 x I_N)
	typ. 30 s (29.5 s … 30.5 s at 1.1 ... 1.3 x I_N)
Undervoltage switch-off	≤ 15.8 V DC (active)
	≥ 16.5 V DC (inactive)
Overvoltage switch-off	≥ 30.5 V DC (active)
	≤ 29.5 V DC (inactive)
Max. capacitive load	75000 µF (per channel at 24 V DC)
Switch-on delay	0.1 s (per output channel)

Reset

Input voltage range	7 V DC ... 30 V DC (Reset with falling edge)
Current consumption	typ. 0.4 mA (at 24 V DC)
Pulse length	≥ 50 ms (High signal)
	≥ 50 ms (Low signal)
Voltage	< 5 V DC (Low signal)
	> 8 V DC (High signal)

Status output

Output voltage	24 V DC
Output current	max. 20 mA (when I > 80% at at least one channel)

Indicator/remote signaling

Connection name	Remote indication circuit
Switching function	N/O contact
Operating voltage	0 V DC ... 30 V DC
Operating current	1 mA DC ... 100 mA DC

Connection data

Main circuit IN+

Connection method	Push-in connection
Stripping length	18 mm
Conductor cross-section rigid	0.75 mm² ... 16 mm²
Conductor cross-section AWG	20 ... 4
Conductor cross-section, flexible, with ferrule, with plastic sleeve	0.75 mm² ... 10 mm²
Conductor cross-section, flexible, with ferrule, without plastic sleeve	0.75 mm² ... 16 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

Remote indication circuit

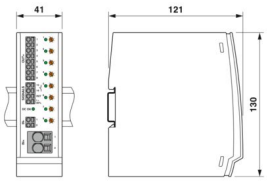
Connection method	Push-in connection
Stripping length	10 mm
Conductor cross-section rigid	0.2 mm² ... 2.5 mm²
Conductor cross-section AWG	24 ... 12
Conductor cross-section, flexible, with ferrule, with plastic sleeve	0.25 mm² ... 1.5 mm²
Conductor cross-section, flexible, with ferrule, without plastic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

Signaling

DC OK LED off	off (No supply voltage)
DC OK LED yellow	lit (Undervoltage active, voltage ≤ 15.8 V, active channels switched off and channel LEDs are lit red)
	flashing (Undervoltage switch-off inactive, device was in undervoltage switch-off)
DC OK LED green	lit (Operating voltage in nominal range 16,5 ... 30 V)
DC OK LED red	lit (Overvoltage switch-off active, voltage ≥ 30.5 V, channels switched off and channel LEDs are lit red)
	flashing (Overvoltage switch-off inactive, device was in overvoltage shutdown)
Channel LED off	off (Channel switched off)
Channel LED yellow	lit (Channel switched on, channel load > 80%)
Channel LED yellow-green	flashing (Channel switched on, nominal current assistant active)
Channel LED green	lit (Channel switched on)
	flashing (Channel switched on, programming mode 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)

Dimensions

Dimensional drawing	
Width	41 mm
Height	130 mm
Depth	121 mm (incl. DIN rail 7.5 mm)

Material specifications

Color	light gray (RAL 7035)
	gray (RAL 7042)
Material	PC
	PA 6.6
	PC
	PBT-FR17
	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 ... 70 °C (Startup at -40 C type-tested)
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Altitude	≤ 6000 m (amsl)
Humidity test	240 h, 95 % RH, 40 °C
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)

Approvals

UL approval

Identification	UL/C-UL Listed UL 508
	UL Recognized UL 2367
	UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D

	(Hazardous Location)

Shipbuilding approval

Identification	DNV GL

Corrosive gas test

Identification	ISA S71.04.2013 G3 Harsh Group A

Shipbuilding data

Temperature	D
Humidity	B
Vibration	B
EMC	A
Enclosure	Required protection according to the Rules shall be provided upon installation on board

Standards and regulations

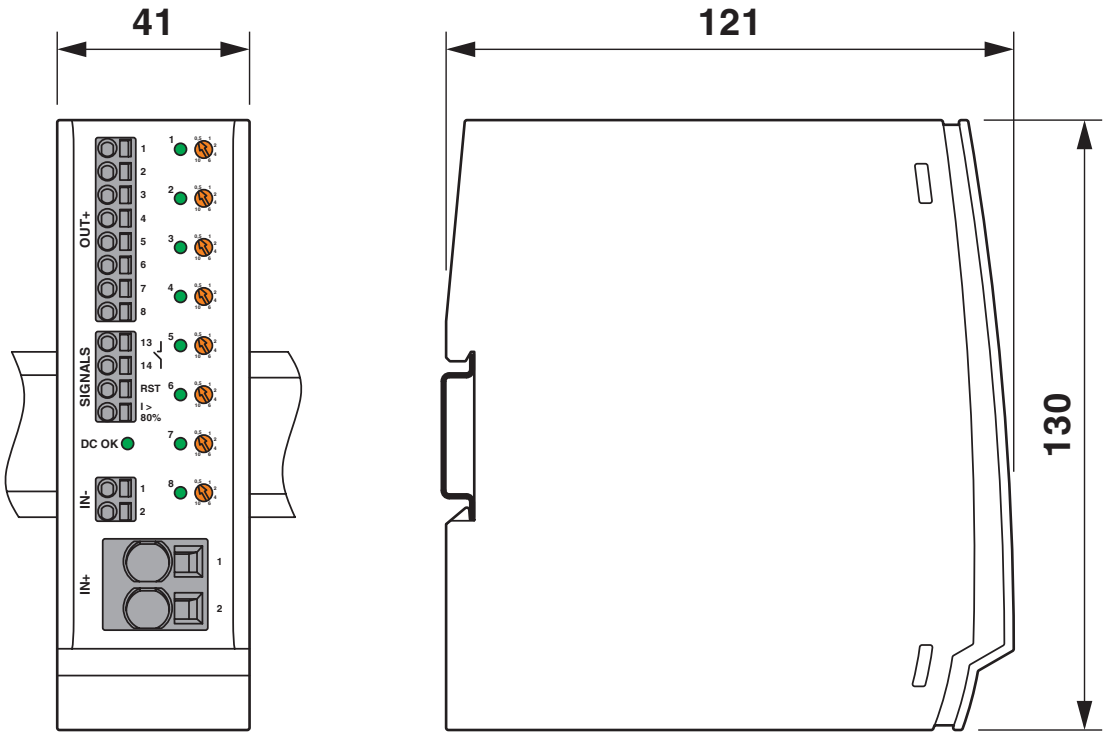
Standards/specifications	EN/IEC 61000-6-2
Note	EMC – Immunity for industrial areas
Standards/specifications	EN/IEC 61000-6-3
Note	EMC – Emission for residential, business and commercial properties and small operations
Standards/specifications	EN/IEC 61000-6-8
Note	EMC interference emission for professional devices that are used in business and commercial areas as well as in small businesses
Standards/specifications	IEC 60068-2-6
Note	Environmental influences – Vibrations (sinusoidal)
Standards/specifications	IEC 60068-2-1
Note	Environmental influences – Part 2-1: Tests – Test A: Cold
Standards/specifications	IEC 60068-2-2
Note	Environmental influences – Part 2-2: Tests – Test B: Dry heat
Standards/specifications	IEC 60068-2-78
Note	Environmental influences – Moisture and heat, constant
Standards/specifications	IEC 60068-2-30
Note	Environmental influences – Part 2–30: Tests – Test Db: Damp heat, cyclical

Mounting

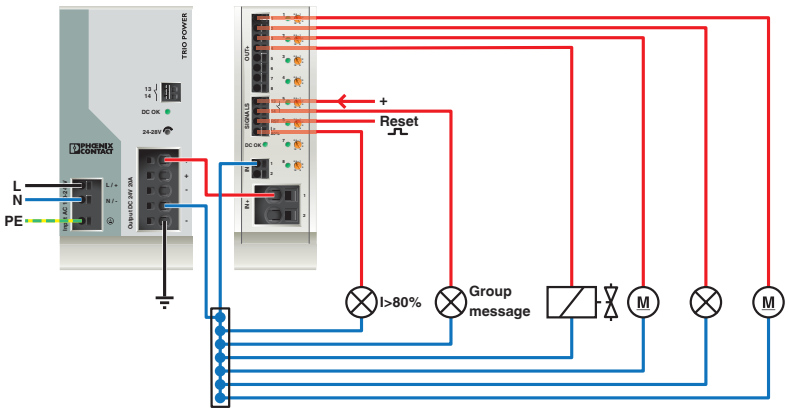
Mounting type	DIN rail: 35 mm

Drawings

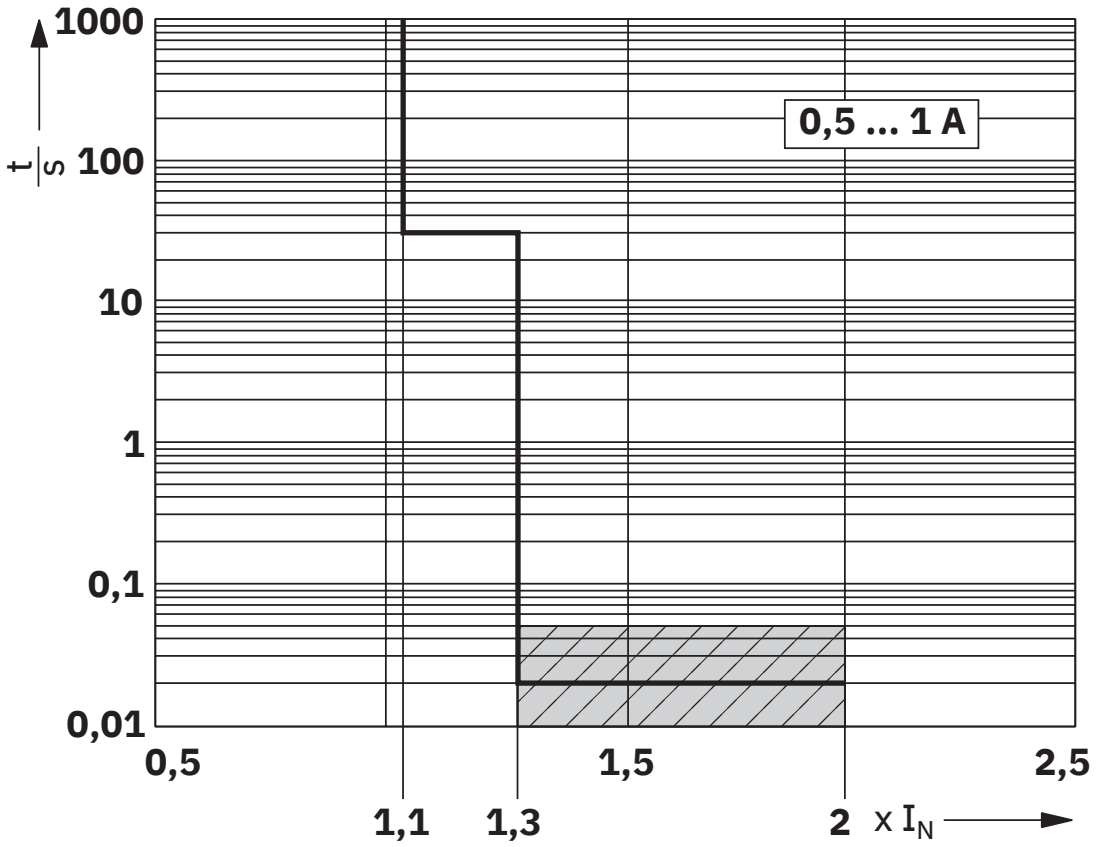
Dimensional drawing



Application drawing

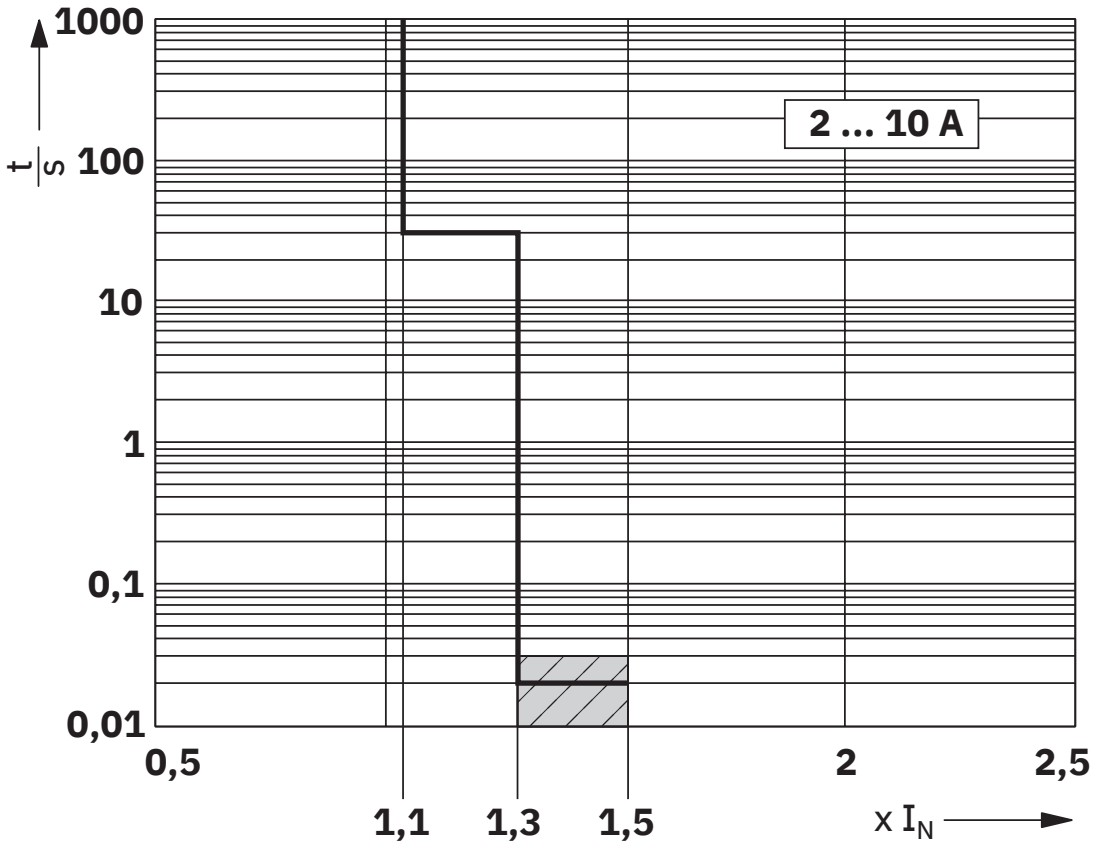


Diagram



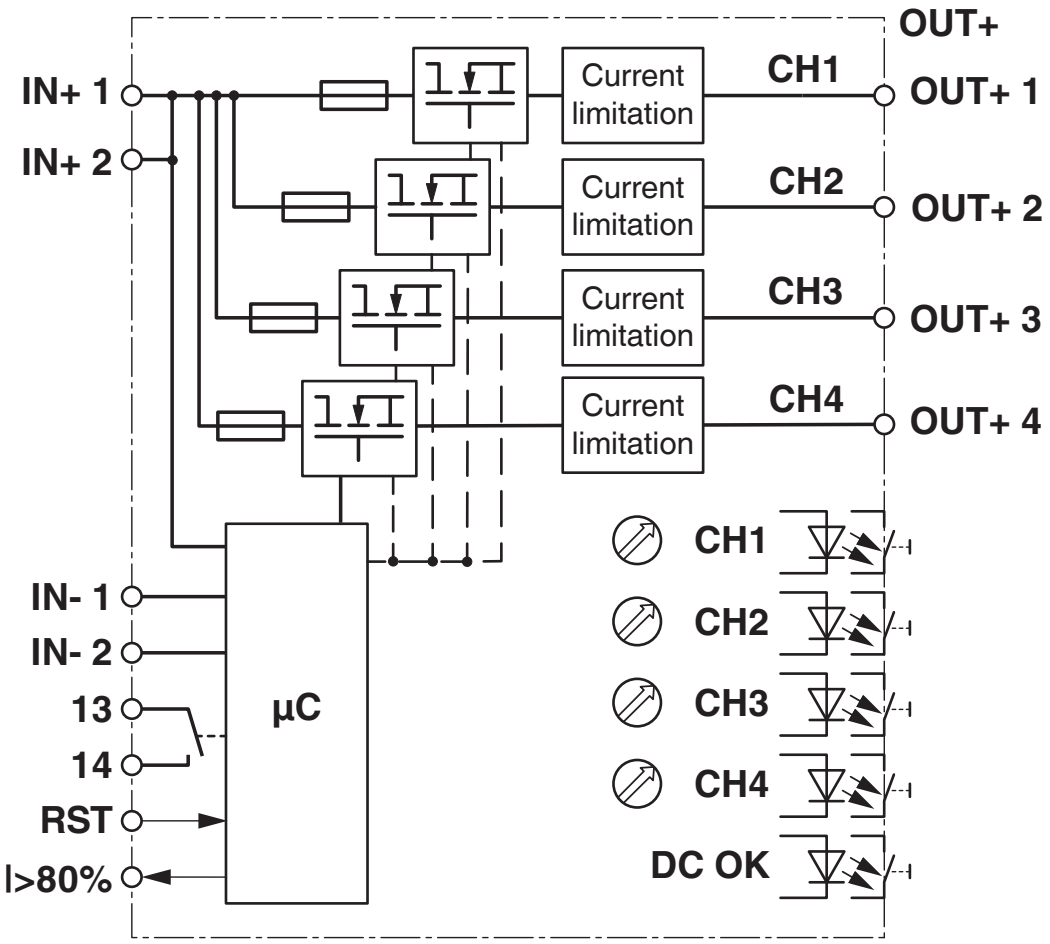
Trigger characteristic in the DC range

Diagram



Trigger characteristic in the DC range

Block diagram



Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/2905743

UL Recognized
Approval ID: E317172

DNV GL
Approval ID: TAA00000U2

UL Listed
Approval ID: E123528

cUL Listed
Approval ID: E123528

UL Recognized
Approval ID: E324415

cUL Listed
Approval ID: E483407

UL Listed
Approval ID: E483407

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	34, 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	e77053ee-d02d-4fa2-ae47-2334e6de1cd7

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