

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



2905743

<https://www.phoenixcontact.com/us/products/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

## Commercial data

Item number	2905743
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	CL13
Product key	CLA151
Catalog page	Page 372 (C-4-2019)
GTIN	4046356992350
Weight per piece (including packing)	283.33 g
Weight per piece (excluding packing)	234.6 g
Customs tariff number	85362010
Country of origin	DE

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## Technical data

### Product properties

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

### Data management status

Article revision	25
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### 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. 40 A DC
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. $2.0 \times I_N$ (0.5 - 1 A) typ. $1.5 \times I_N$ (2 - 10 A)
Fuse	electronic
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)
Measuring tolerance I	typ. 40 % (0.5 A ... 1 A) typ. 10 % (2 A ... 10 A)
Temperature derating	40 A DC (at 70 °C (65 °C for UL 2367))
MTBF (IEC 61709, SN 29500)	2001962 h (at 25 °C) 1292135 h (at 40 °C)

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	653352 h (at 60 °C)
Fail-safe element	15 A DC (per output channel)

## Load circuit

Shutdown time	0.02 s ( $> 1.3 \times I_N$ )
	30 s ( $1.1 \dots 1.3 \times I_N$ )
Undervoltage switch-off	$\leq 17.8$ V DC (active)
	$\geq 19$ V DC (inactive)
Overvoltage switch-off	$\geq 30.5$ V DC (active)
	$\leq 29.5$ V DC (inactive)
Max. capacitive load	75000 $\mu$ F (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	$\geq 50$ ms (High signal)
	$\geq 50$ 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 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>

### Main circuit IN-

Connection method	Push-in connection
Stripping length	10 mm
Conductor cross section rigid	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross section AWG	24 ... 12

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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>

## Main circuit OUT

Connection method	Push-in connection
Stripping length	10 mm
Conductor cross section rigid	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>

## Remote indication circuit

Connection method	Push-in connection
Stripping length	10 mm
Conductor cross section rigid	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>

## Signaling

DC OK LED off	off (No supply voltage)
DC OK LED yellow	lit (Undervoltage active, voltage ≤ 17.8 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 18 ... 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)

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## 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)
	-25 °C ... 65 °C (for UL 2367)
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

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Identification	DNV GL
Corrosive gas test	
Identification	ISA S71.04.2013 G3 Harsh Group A
DNV GL 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 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 60068-2-1
Note	Environmental influences – Part 2-1: Tests – Test A: Cold
Standards/specifications	EN 60068-2-2
Note	Environmental influences – Part 2-2: Tests – Test B: Dry heat
Standards/specifications	EN 60068-2-78
Note	Environmental influences – Moisture and heat, constant

## Mounting

Mounting type	DIN rail: 35 mm
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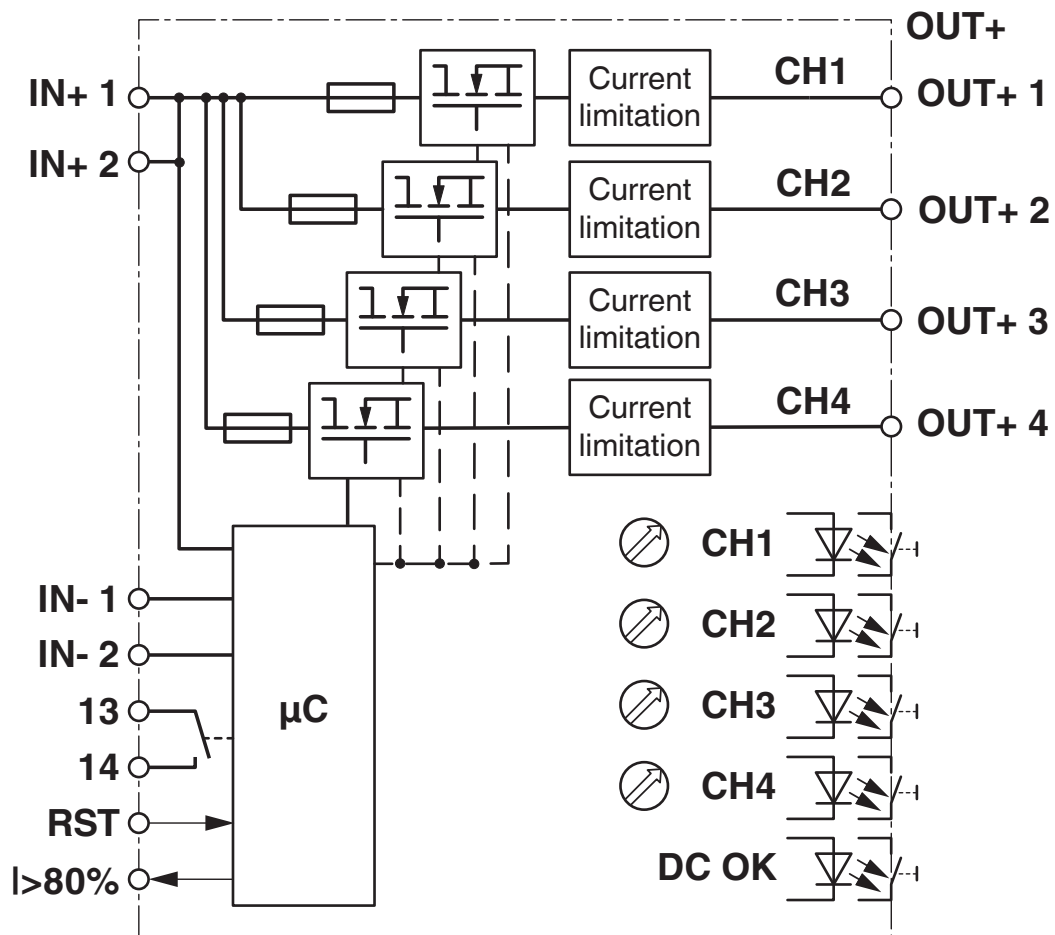
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## Drawings

Block diagram



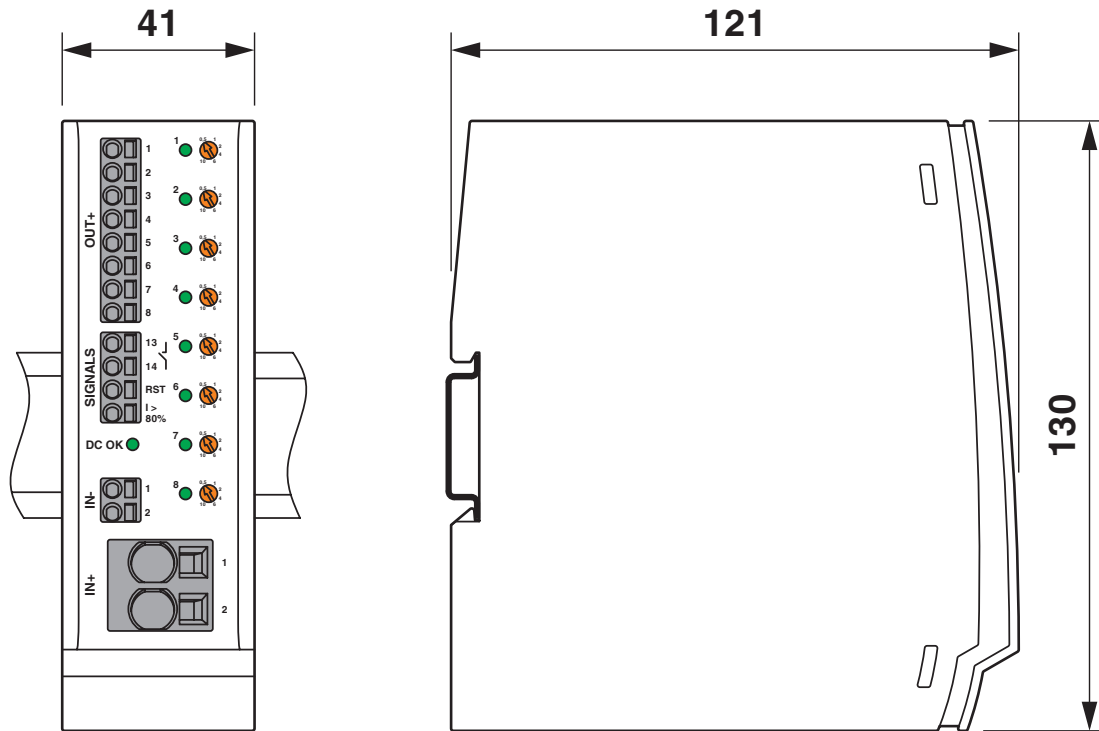
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Dimensional drawing



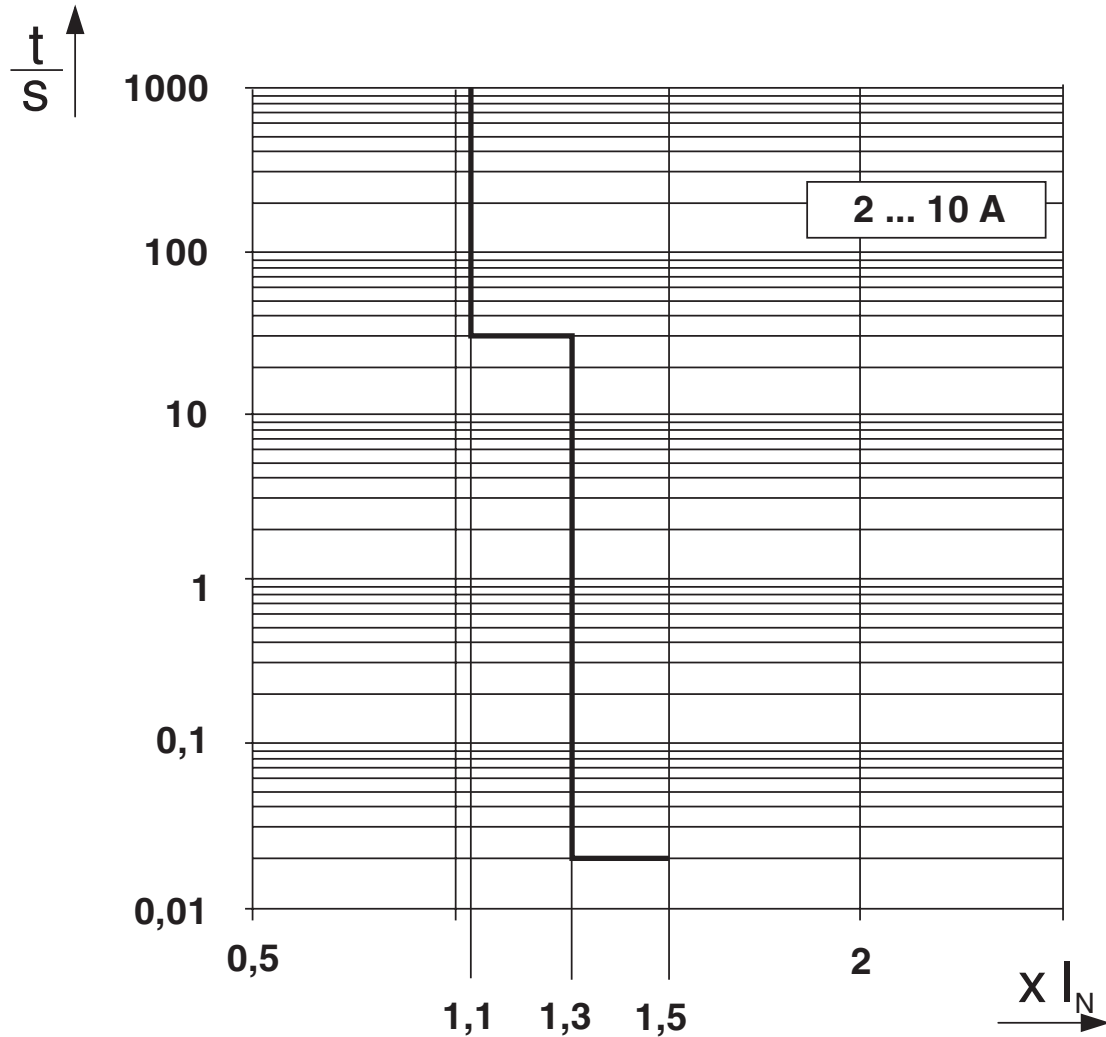


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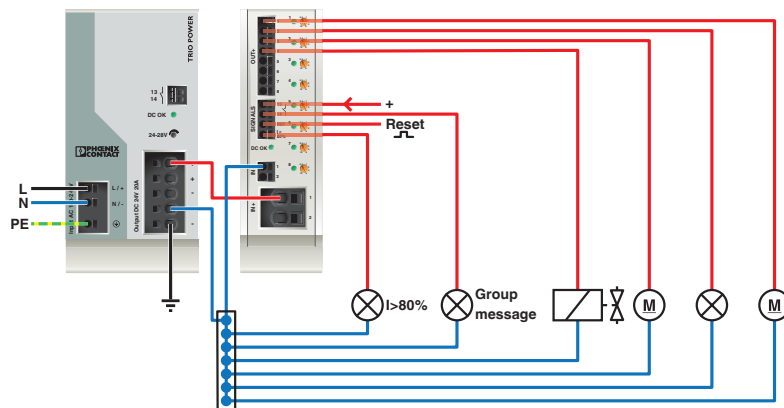
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Diagram



Trigger characteristic in the DC range

Application drawing

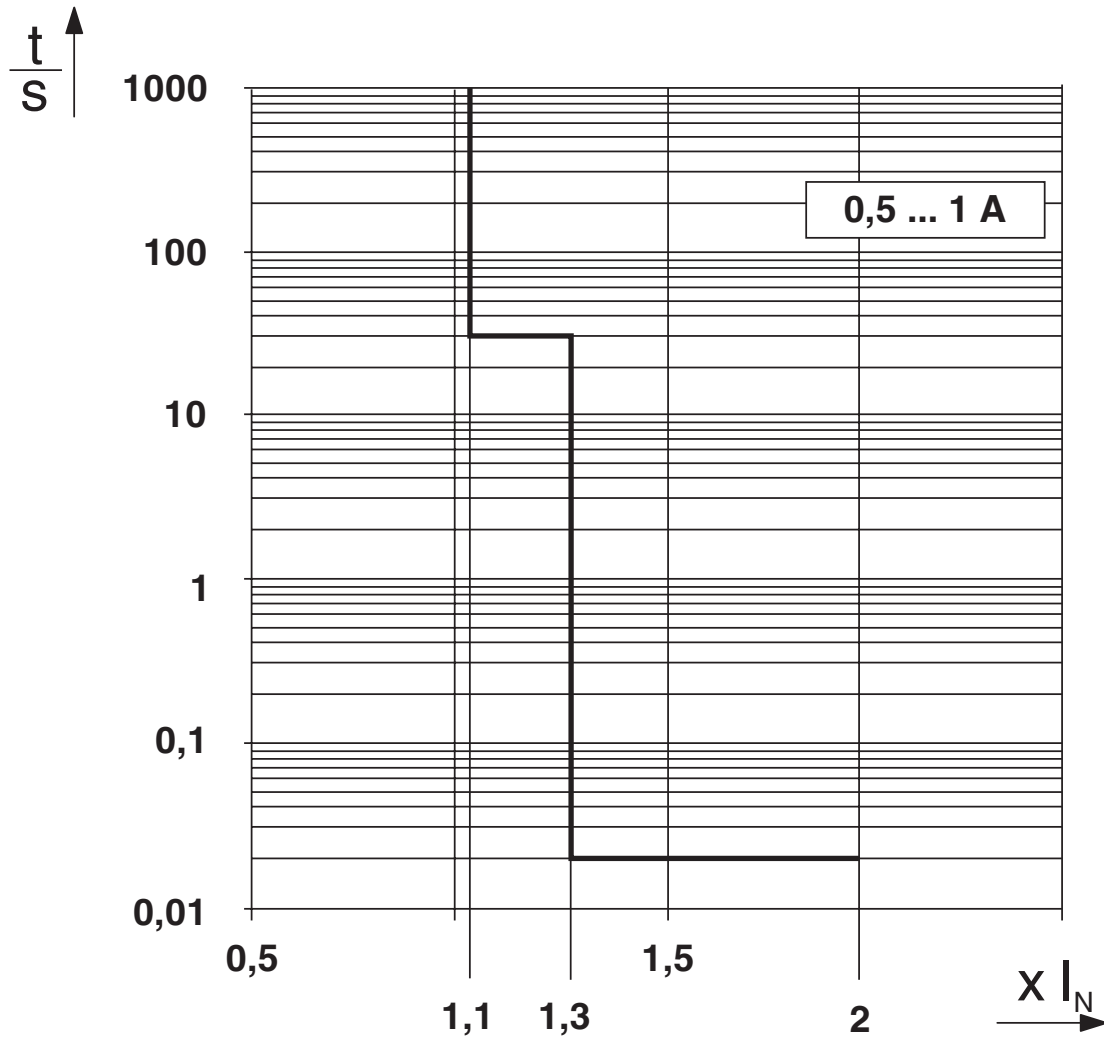


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Diagram



Trigger characteristic in the DC range

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## Approvals

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



**UL Recognized**

Approval ID: FILE E 317172



**DNV GL**

Approval ID: TAA00000U2



**UL Listed**

Approval ID: E123528



**cUL Listed**

Approval ID: E123528



**UL Recognized**

Approval ID: FILE E 324415



**cUL Listed**

Approval ID: FILE E 483407



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## Classifications

### ECLASS

ECLASS-11.0	27140401
ECLASS-13.0	27140401
ECLASS-12.0	27140401

### ETIM

ETIM 9.0	EC003538
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### UNSPSC

UNSPSC 21.0	39121400
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## 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

### EF3.0 Climate Change

CO2e kg	4.71 kg CO2e
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