

2905744  
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Multi-channel, electronic circuit breaker with active current limitation for protecting eight 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                          | 2905744             |
| Packing unit                         | 1 pc                |
| Minimum order quantity               | 1 pc                |
| Sales key                            | CLA151              |
| Product key                          | CLA151              |
| Catalog page                         | Page 372 (C-4-2019) |
| GTIN                                 | 4046356992367       |
| Weight per piece (including packing) | 306.05 g            |
| Weight per piece (excluding packing) | 303.8 g             |
| Customs tariff number                | 85362010            |
| Country of origin                    | DE                  |

# CBM E8 24DC/0.5-10A NO-R - Electronic circuit breaker



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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     | 8                          |

### 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. 80 A DC (for double supply IN+ with at least 2 x 6 mm <sup>2</sup> )<br>max. 70 A DC (for UL 2367)             |
| 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)<br>typ. 1.5 x $I_N$ (2 - 10 A)   |
| Fuse                                       | electronic  |
| Efficiency                                 | > 99 %  |
| Closed circuit current $I_0$               | typ. 50 mA  |
| Power dissipation                          | 1.2 W (No-load operation)<br>17.2 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)<br>typ. 10 % (2 A ... 10 A)   |
| Temperature derating                       | 40 A DC (at 70 °C (65 °C for UL 2367))<br>50 A DC (at 60 °C)<br>60 A DC (at 50 °C)<br>70 A DC (at 40 °C)            |

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|                            |                                |
|----------------------------|--------------------------------|
| MTBF (IEC 61709, SN 29500) | 80 A DC (at 40 °C)             |
|                            | 70 A DC (at 40 °C for UL 2367) |
|                            | 1304293 h (at 25 °C)           |
|                            | 858501 h (at 40 °C)            |
| Fail-safe element          | 440048 h (at 60 °C)            |
|                            | 15 A DC (per output channel)   |
| Contact switching type     | without electrical isolation   |

## 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                       |
| 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> |

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## 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

|   |                      |
|---|----------------------|
| 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 $\leq 17.8$ 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 $\geq 30.5$ 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)               |

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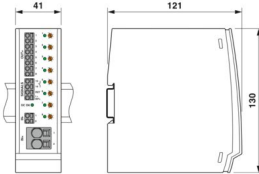


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|                        |  |
|------------------------|--|
| Channel LED red-yellow | flashing (Channel switched on, overload mode, capacity approximately 110 ... 130% , shutdown after 30 s)             |
| Channel LED red-green  | flashing (Channel 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)   |
|   | -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 |

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|  |  |
|--|--|
|  | 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 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 |
|---------------|-----------------|

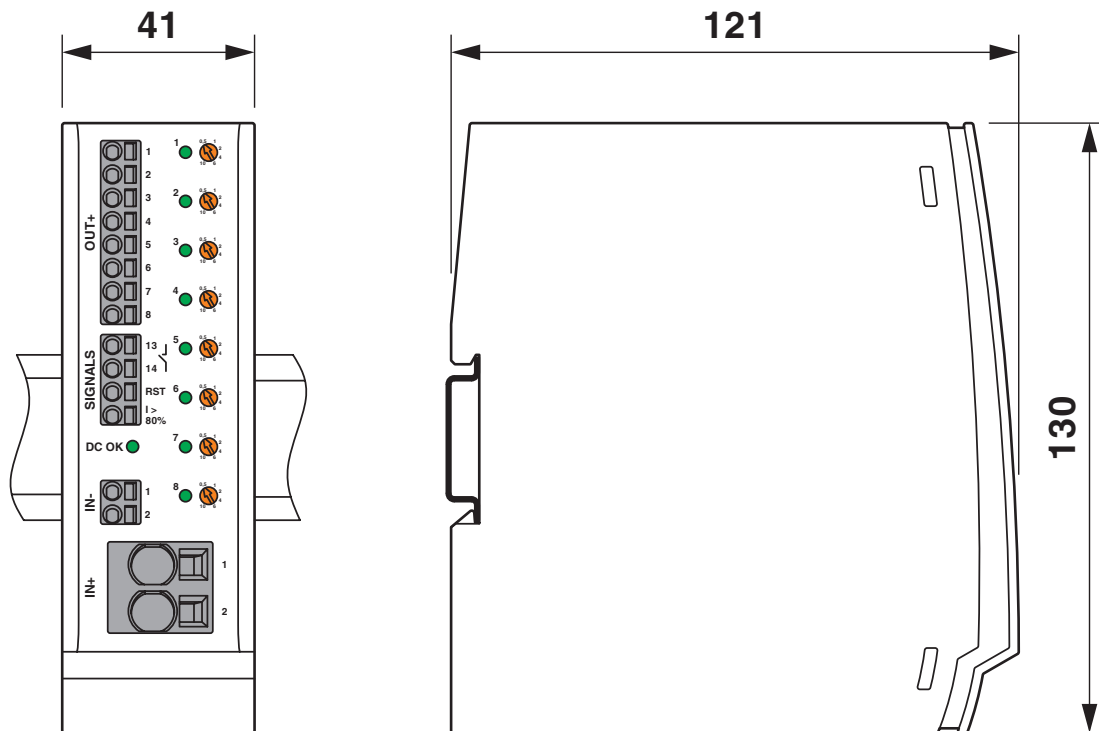
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## Drawings

Dimensional drawing

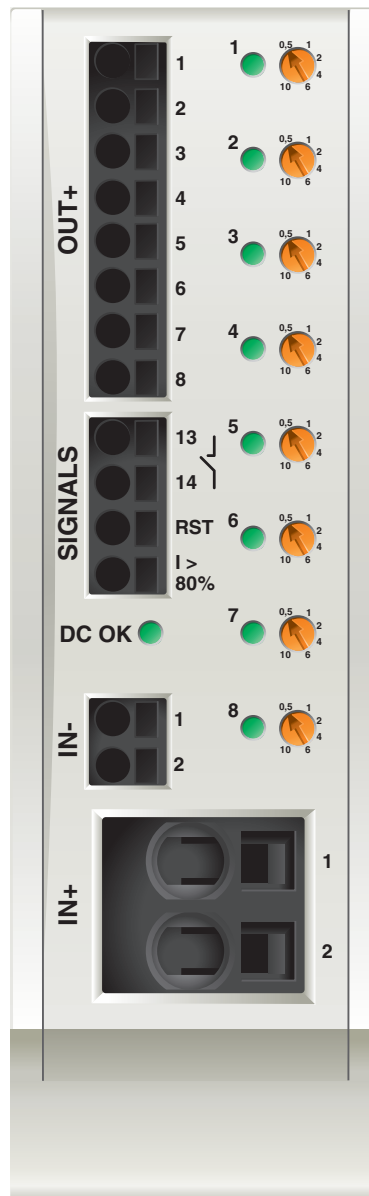


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Product drawing



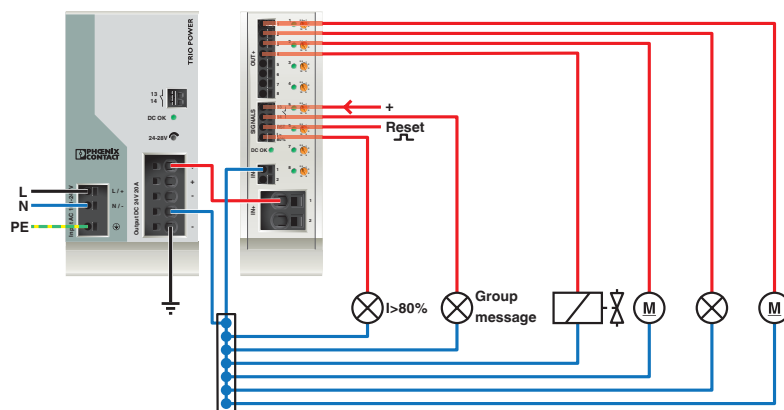


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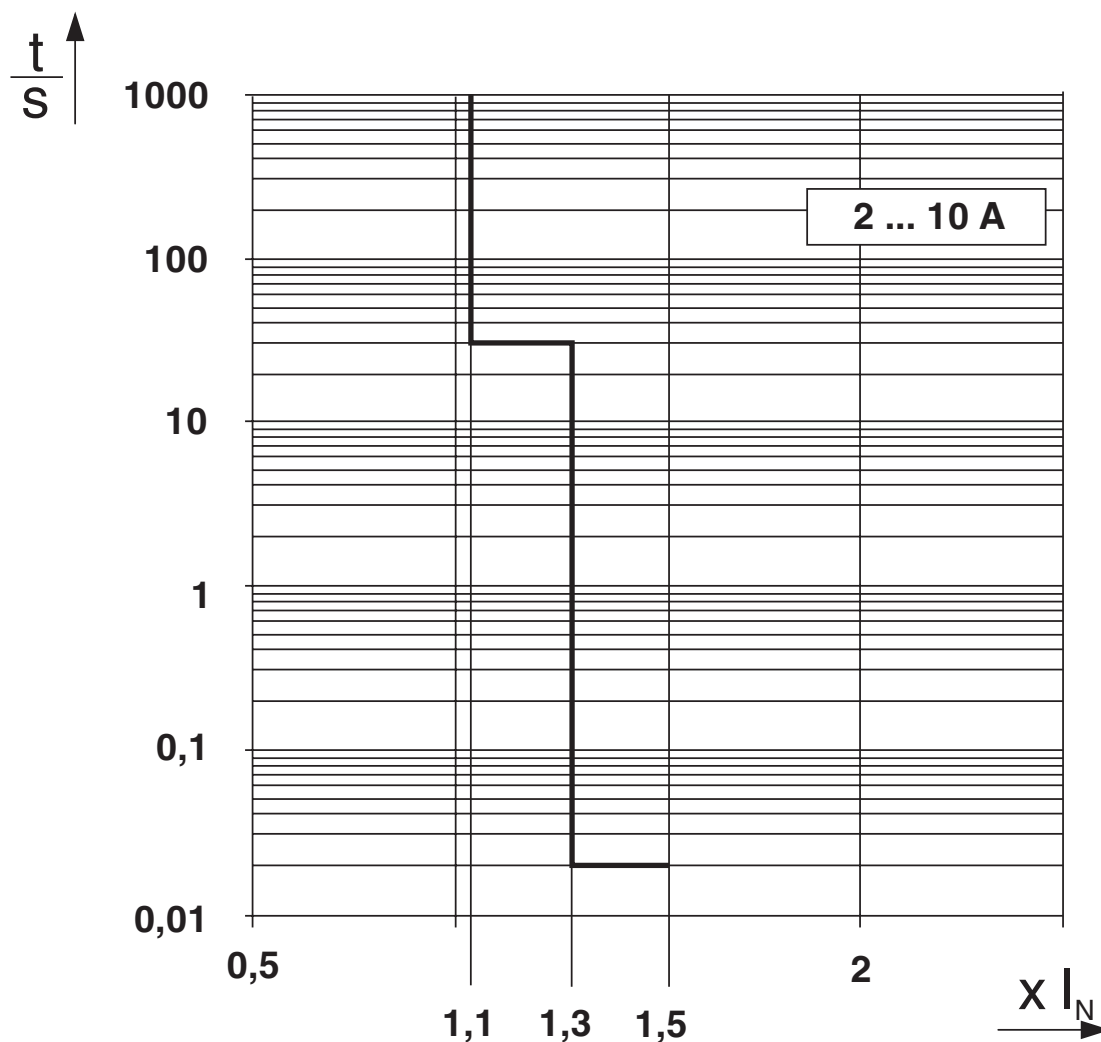
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Application drawing



Diagram



Trigger characteristic in the DC range

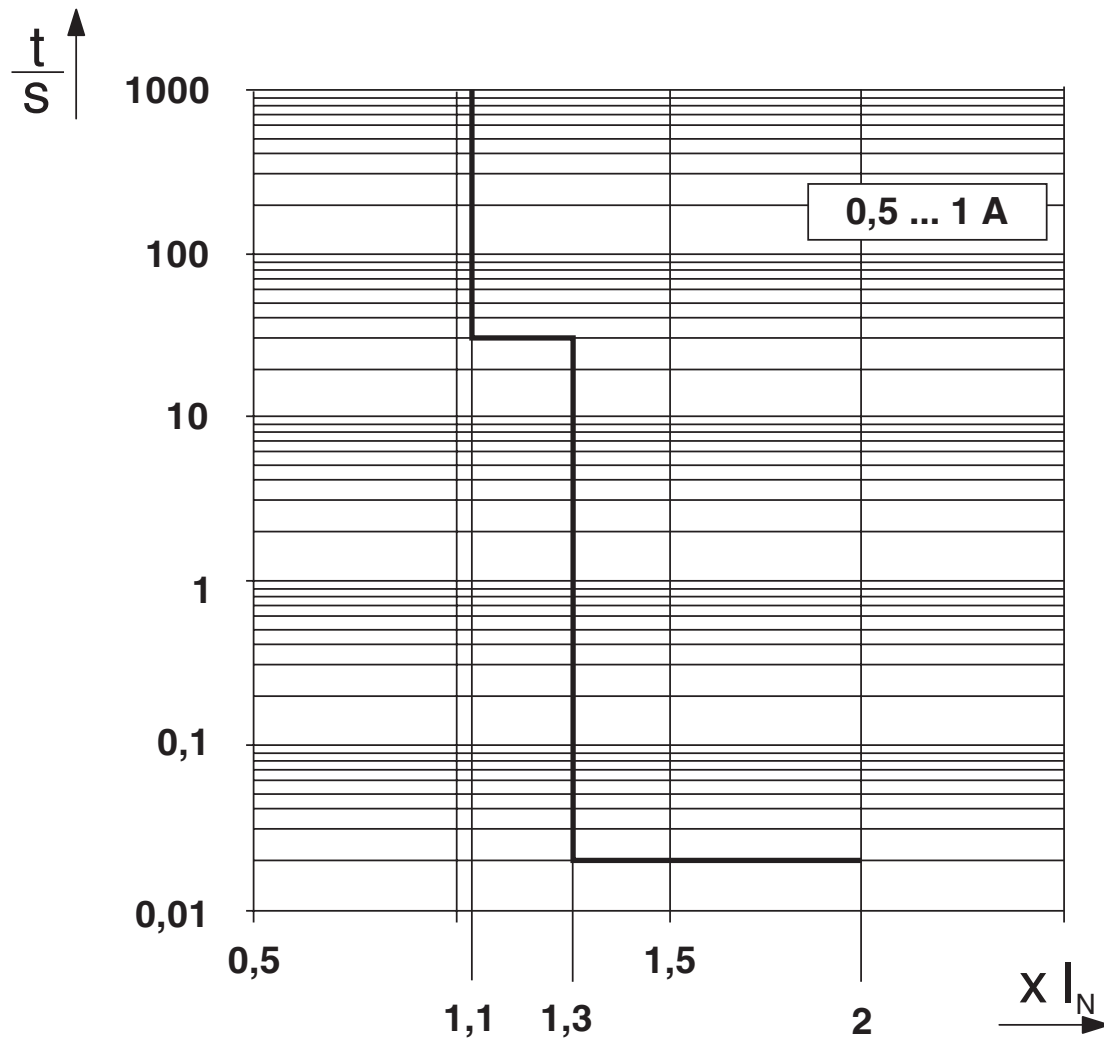
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Diagram



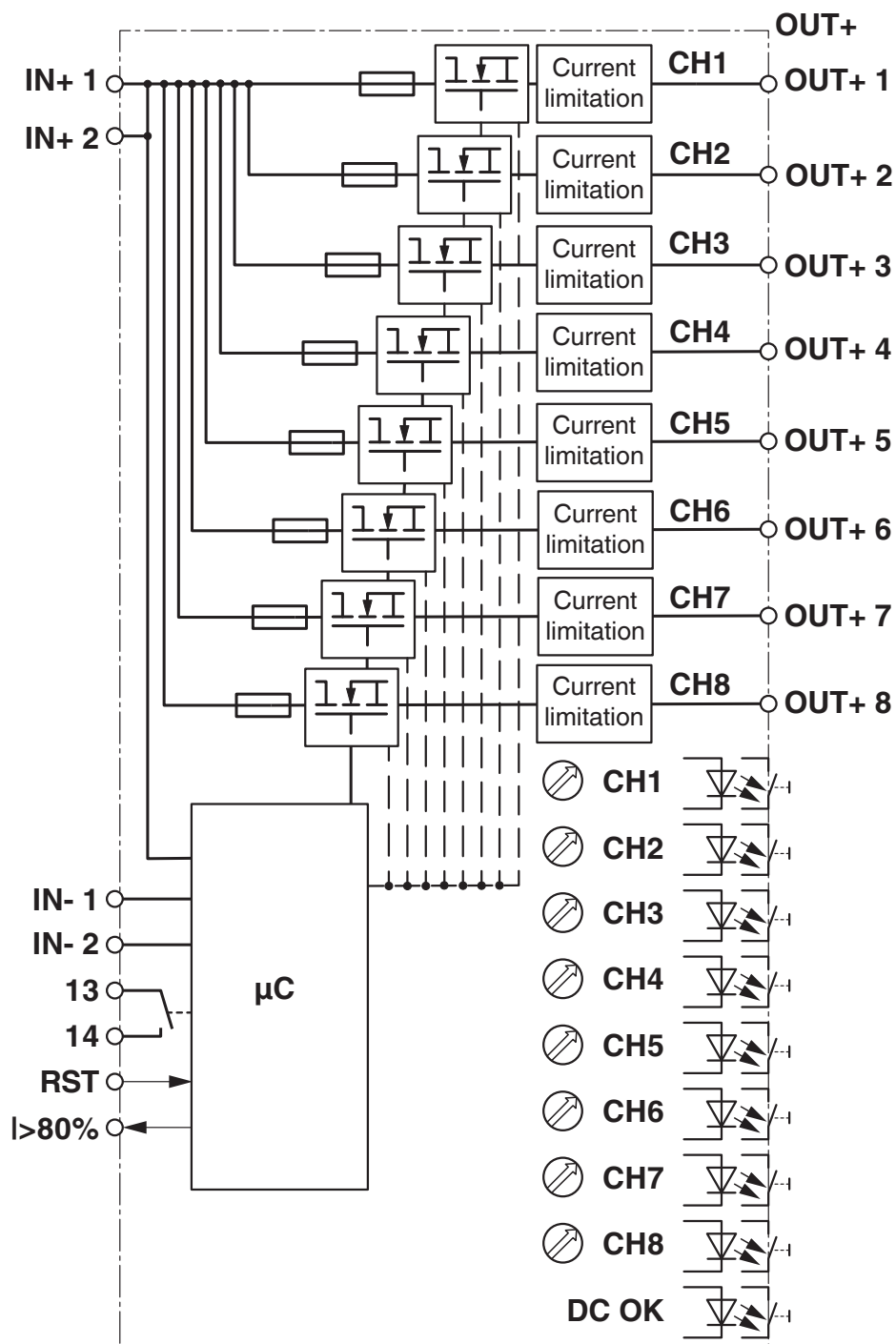
Trigger characteristic in the DC range

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Block diagram










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## Approvals

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|   |  |
|---|--|
|    | <b>UL Recognized</b><br>Approval ID: FILE E 317172 |
|    | <b>DNV GL</b><br>Approval ID: TAA00000U2           |
|    | <b>UL Listed</b><br>Approval ID: E123528           |
|    | <b>cUL Listed</b><br>Approval ID: E123528          |
|  | <b>UL Recognized</b><br>Approval ID: FILE E 324415 |
|  | <b>cUL Listed</b><br>Approval ID: FILE E 483407    |
|  | <b>UL Listed</b><br>Approval ID: FILE E 483407     |

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27140401 |
|-------------|----------|

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC003538 |
|----------|----------|

### 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                                | 3eb6a9fc-0de7-4d5f-af02-ec25c9a53840                         |

### EF3.0 Climate Change

|         |              |
|---------|--------------|
| CO2e kg | 6.17 kg CO2e |
|---------|--------------|

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