# PTCB TM1 2A F2 NO P - Thermal-magnetic device circuit breaker

1509520

https://www.phoenixcontact.com/us/products/1509520

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Thermal-magnetic device circuit breaker, 1-position, tripping characteristic: F2, mounting type: With base element on 35 mm DIN rail in accordance with EN 60715, rated current: 2 A

## Your advantages

- More space in the control cabinet: protection and signaling in an overall width of just 8 mm
- Easy to set up applications thanks to flexible use of connectors with fixed nominal currents
- Transparency of load and switching status thanks to integrated remote signaling
- Easy handling from commissioning right through to maintenance due to clear functionality and switching state at all times

ELEKTROGERÄTE RÜCKNAHME

## Commercial data

| | |
|---|---|
| Item number | 1509520 |
| Packing unit | 4 pc |
| Minimum order quantity | 4 pc |
| Sales key | CL10 |
| Weight per piece (excluding packing) | 20 g |
| Customs tariff number | 85362010 |
| Country of origin | DE |

## Technical data

### Product properties

| | |
|---|---|
| Product type | Thermomagnetic device circuit breakers |
| Product family | PTCB TM |
| Number of positions | 1 |
| No. of channels | 1 |
| Mechanical service life | 25 insertion cycles |

#### Insulation characteristics

| | |
|---|---|
| Protection class | II (according to EN 61140 for the actuation area) |
| Overvoltage category | II (250 V AC / IEC 60934) |
| | III (UL 1077) |
| | III (80 V DC / IEC 60934) |
| Pollution degree | 2 (250 V AC / IEC 60934) |
| | 3 (UL 1077) |
| | 2 (80 V DC / IEC 60934) |

### Electrical properties

#### General

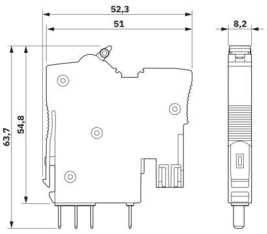
| | |
|---|---|
| Operating voltage | 10 V AC ... 277 V AC (UL 1077) |
| | 10 V AC ... 240 V AC (IEC 60934) |
| | 10 V DC ... 56 V DC |
| Rated voltage | 240 V AC (IEC 60934) |
| | 277 V AC (UL 1077) |
| | 56 V DC (IEC 60934) |
| | 56 V DC (UL 1077) |
| Rated insulation voltage $U_i$ | 250 V AC (IEC 60934) |
| | 80 V DC (IEC 60934) |
| | 277 V AC (UL 1077) |
| Rated current $I_N$ | 2 A |
| Rated surge voltage | 2.5 kV (IEC 60934, reinforced insulation between load/auxiliary circuit and in the actuation area) |
| Insulation resistance $R_{iso}$ | > 100 MΩ (500 V DC) |
| Type of actuation | S type |
| Tripping method | TM (thermal-magnetic) |
| Tripping level | Trip-free mechanism (positive) |
| Device resistance | 236 mΩ |
| Required backup fuse | 16 A (I > Icn, RK5 (UL 1077), type gG (IEC 60934)) |
| Rated short-circuit switching capacity $I_{cn}$ | 300 A (240 V AC / IEC 60934) |
| | 600 A (56 V DC/IEC 60934) |
| Short-circuit switching capacity | 1000 A (277 V AC C1 / UL 1077) |

| | |
|---|---|
| | 1000 A (56 V DC C1 / UL 1077) |
| Dielectric strength | 3000 V AC (Actuation area) |
| | 3000 V AC (between load and auxiliary circuits in accordance with IEC 60934) |
| | 1554 V AC (between open contacts in accordance with UL 1077) |
| Switching cycles, max. | 6000 (low-induction, UL 1077) |
| | 3000 (IEC 60934, 240 V AC/56 V DC, inductive, -5°C … +60°C) |
| | 1000 (IEC 60934, 240 V AC/56 V DC, inductive, -30°C … +60°C) |
| Fuse | F2 |
| Power dissipation | 0 W (No-load operation) |
| | 1 W (Nominal operation) |
| Voltage drop | 0.51 V (at 1 x $I_n$) |

Indicator/remote signaling

| | |
|---|---|
| Connection name | Connection 3 / 4 |
| Switching function | N/O contact |
| Operating voltage | 10 V AC ... 277 V AC |
| | 10 V DC ... 56 V DC |
| Operating current | 10 mA AC ... 200 mA AC |
| | 10 mA DC ... 200 mA DC |

## Dimensions

| | |
|---|---|
| Dimensional drawing |  |
| Width | 8.2 mm |
| Height | 52.3 mm |
| Depth | 63.7 mm |

## Material specifications

| | |
|---|---|
| Color | light gray (RAL 7035) |
| Material | PA |
| Flammability rating according to UL 94 | V-0 |
| Insulating material group | I |
| Fire protection for rail vehicles (DIN EN 45545-2) R22 | HL 1 - HL 3 |
| Fire protection for rail vehicles (DIN EN 45545-2) R23 | HL 1 - HL 3 |

## Mechanical properties

Mechanical data

| | |
|---|---|
| Open side panel | No |

## Environmental and real-life conditions

### Ambient conditions

| | |
|---|---|
| Degree of protection | IP20 (Connection area) |
| | IP30 (Actuation area) |
| Ambient temperature (operation) | -30 °C ... 60 °C |
| Ambient temperature (storage/transport) | -40 °C ... 80 °C |
| Altitude | ≤ 2000 m (250 V AC / IEC 60934) |
| Humidity test | 96 h, 95 % RH, 40 °C |
| Shock (operation) | 30g (IEC 60068-2-27, Test Ea) |
| | Category 1, Class B (DIN EN 61373) |
| Vibration (operation) | 10 Hz ... 150 Hz, 20 cycles (IEC 60068-2-6, Test Fc) |
| | 10 Hz ... 75 Hz (Amplitude ±0.35 mm; in accordance with IEC 60068-2-6, Test Fc) |
| | 75 Hz ... 150 Hz (8g) |
| | Category 1, Class B (DIN EN 61373) |

## Approvals

### UL approval

| | |
|---|---|
| Identification | UL Recognized UL 1077 |

### CSA, Canada

| | |
|---|---|
| Identification | CSA C22.2 No. 235-04 |

## Standards and regulations

| | |
|---|---|
| Standards/specifications | IEC 60934 |
| Note | 2019 |
| Standards/specifications | UL 1077 |
| Note | Additional protective devices for use in electrical equipment |
| Standards/specifications | CSA C22.2 No. 235-04 |
| Note | 2017 |
| Standards/specifications | IEC 60068-2-6 |
| Note | Environmental influences – Vibrations (sinusoidal) |
| Standards/specifications | IEC 60068-2-11 |
| Note | Environmental influences - corrosion resistance/salt spray, test Ka |
| Standards/specifications | EN 60068-2-27 |
| Note | Environmental influences – Shocks |
| Standards/specifications | EN 60068-2-78 |
| Note | Environmental influences – Moisture and heat, constant |
| Standards/specifications | DIN EN 50274 |
| Note | Touch protection and back-of-hand safety |

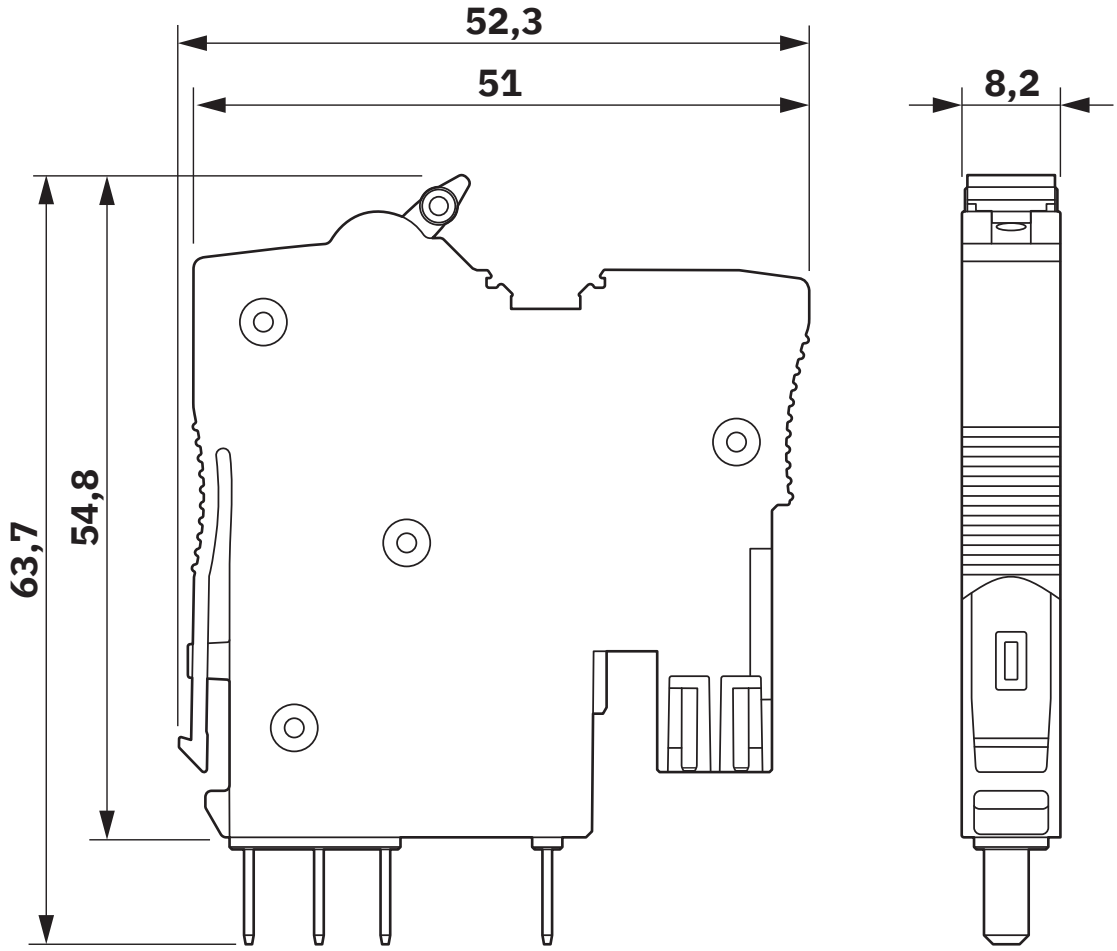
| | |
|---|---|
| Standards/specifications | IEC 60529 |
| Note | 2019 |
| Standards/specifications | EN 61373 |
| Note | Railway applications - Rolling stock equipment - Shock and vibration tests |
| Standards/specifications | EN 45545-2 |
| Note | Railway applications - Fire protection on railway vehicles - Part 2: Requirements for fire behavior of materials and components |

## Mounting

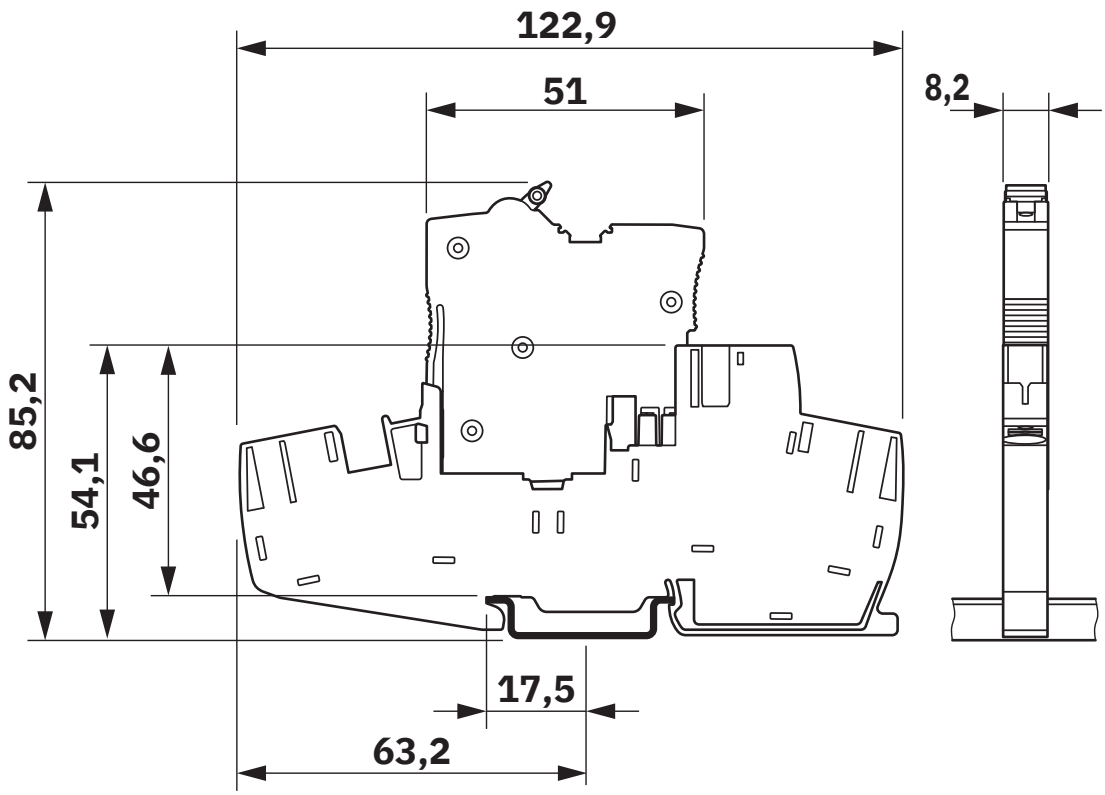
| | |
|---|---|
| Mounting type | With base element on 35 mm DIN rail in accordance with EN 60715 |

## Drawings

Dimensional drawing

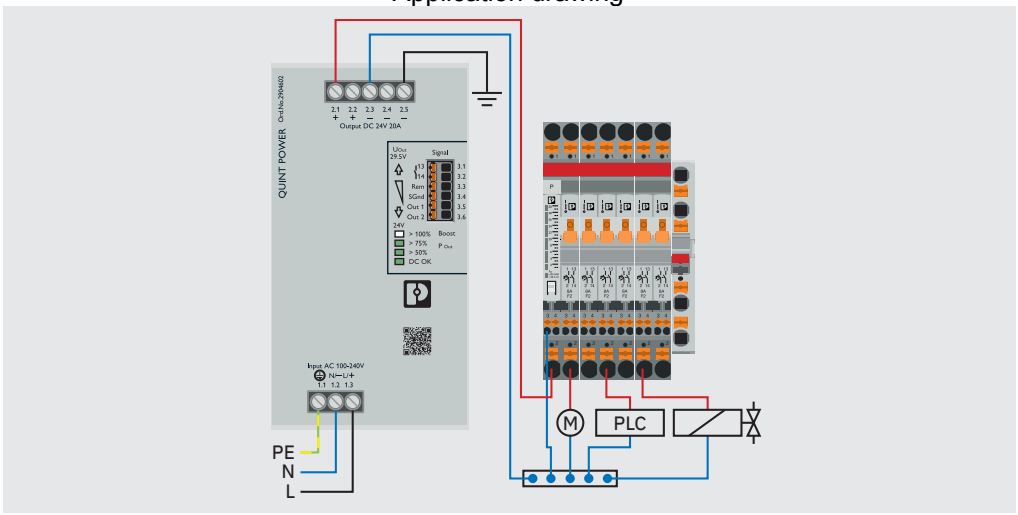


Dimensional drawing



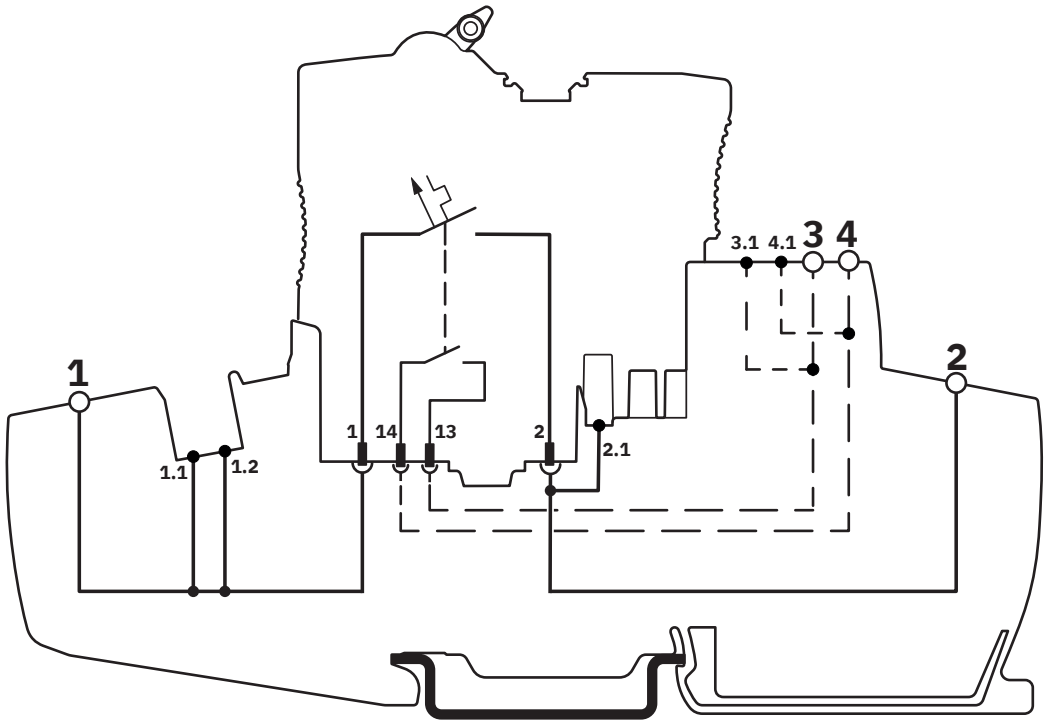

The figure shows the complete module consisting of a base element and connector

Application drawing

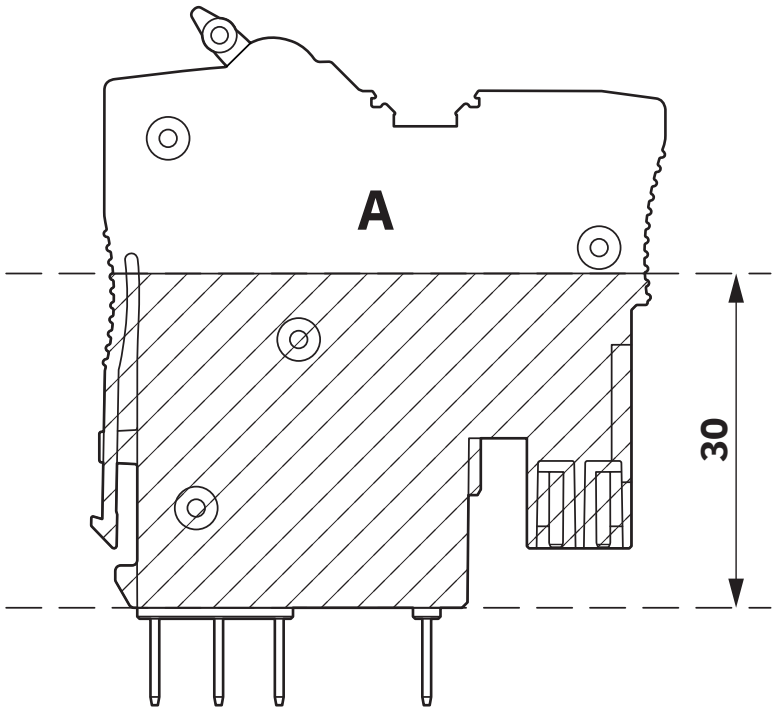



System and energy monitoring

Connection diagram

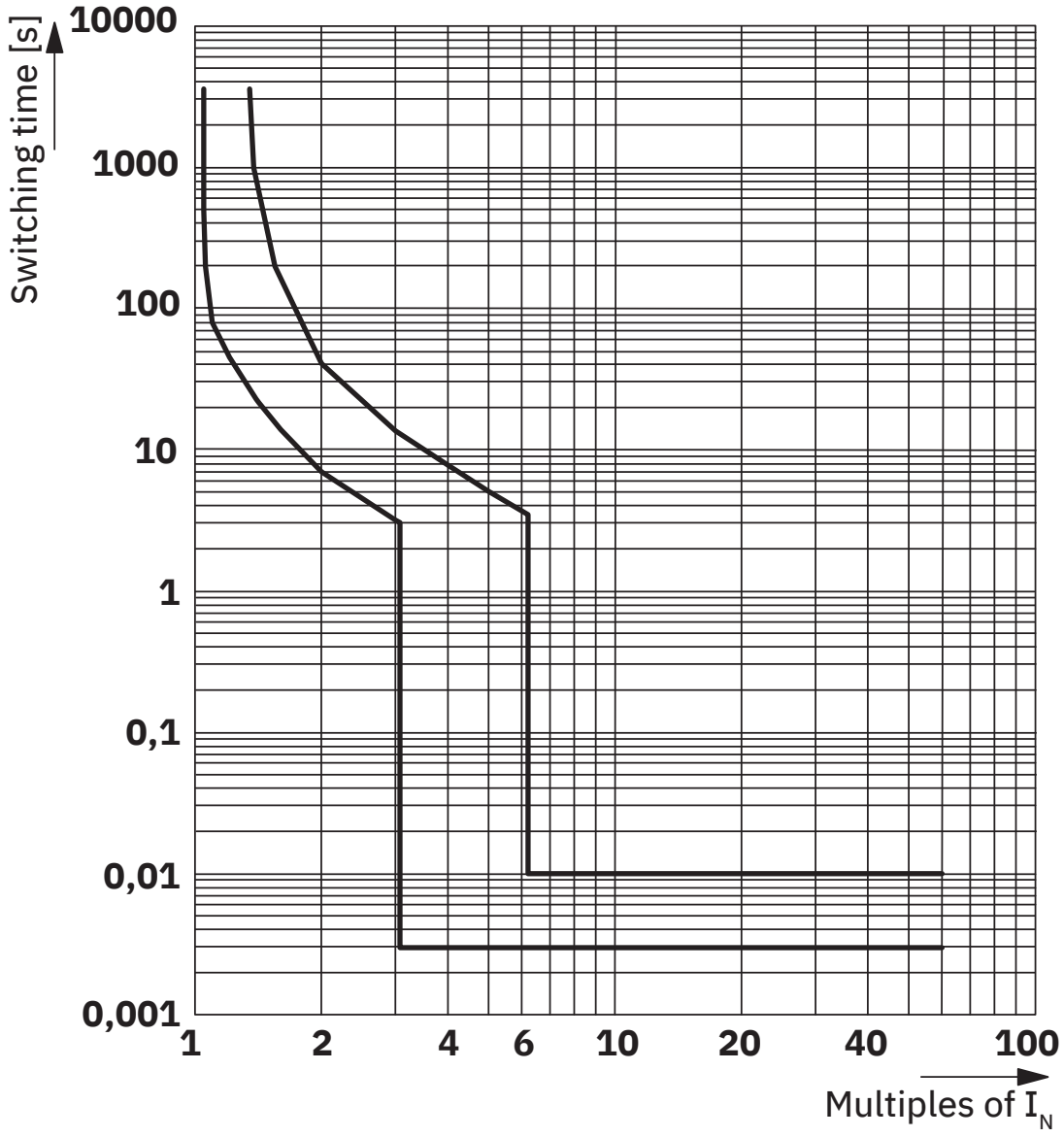


Schematic diagram



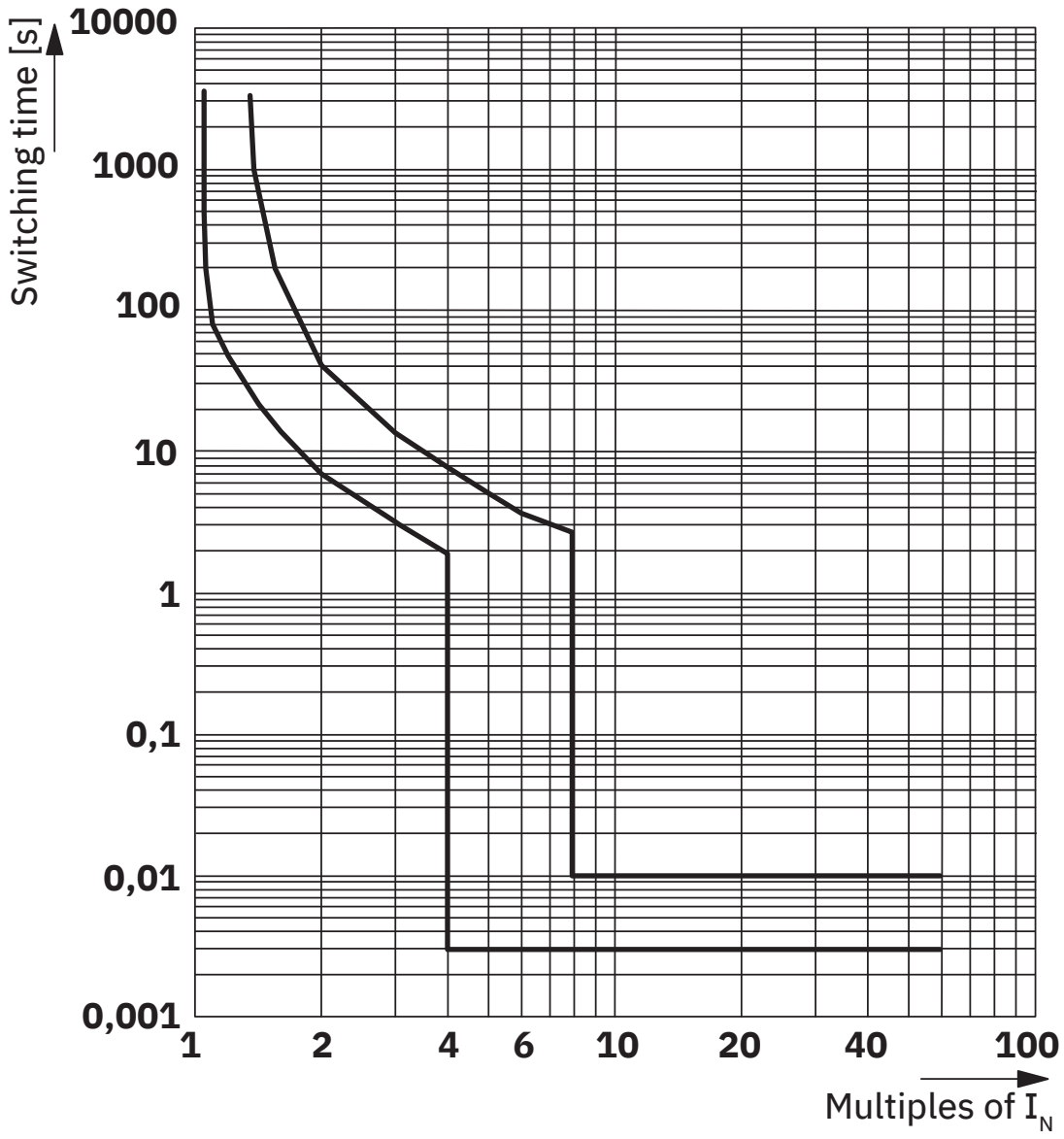

Actuation area A

Diagram



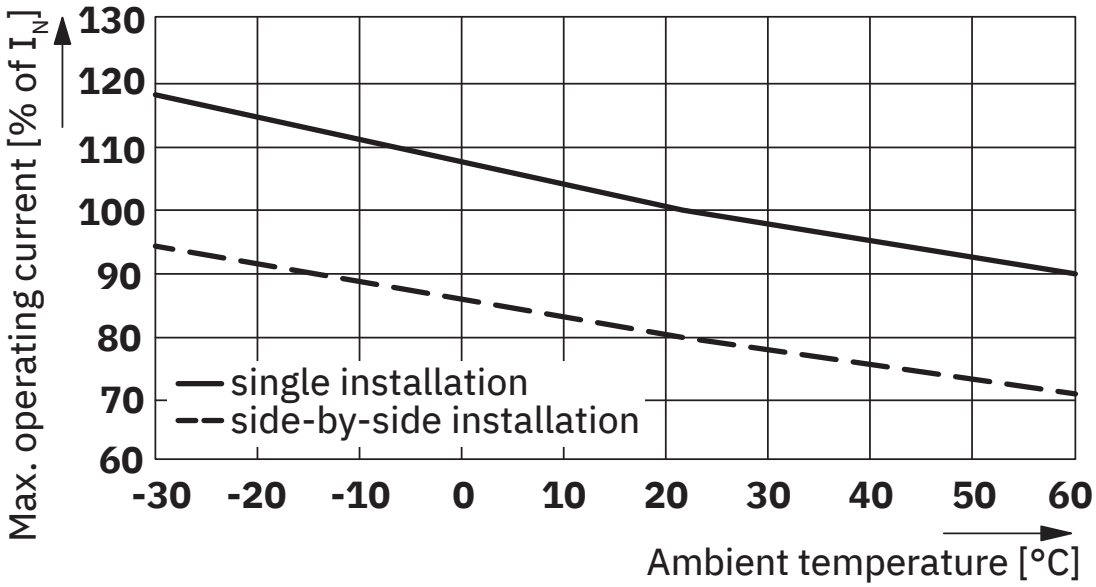

Tripping characteristic in the AC range

Diagram



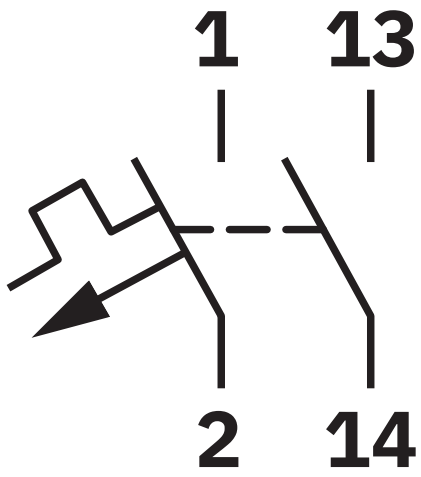

Trigger characteristic in the DC range

Diagram



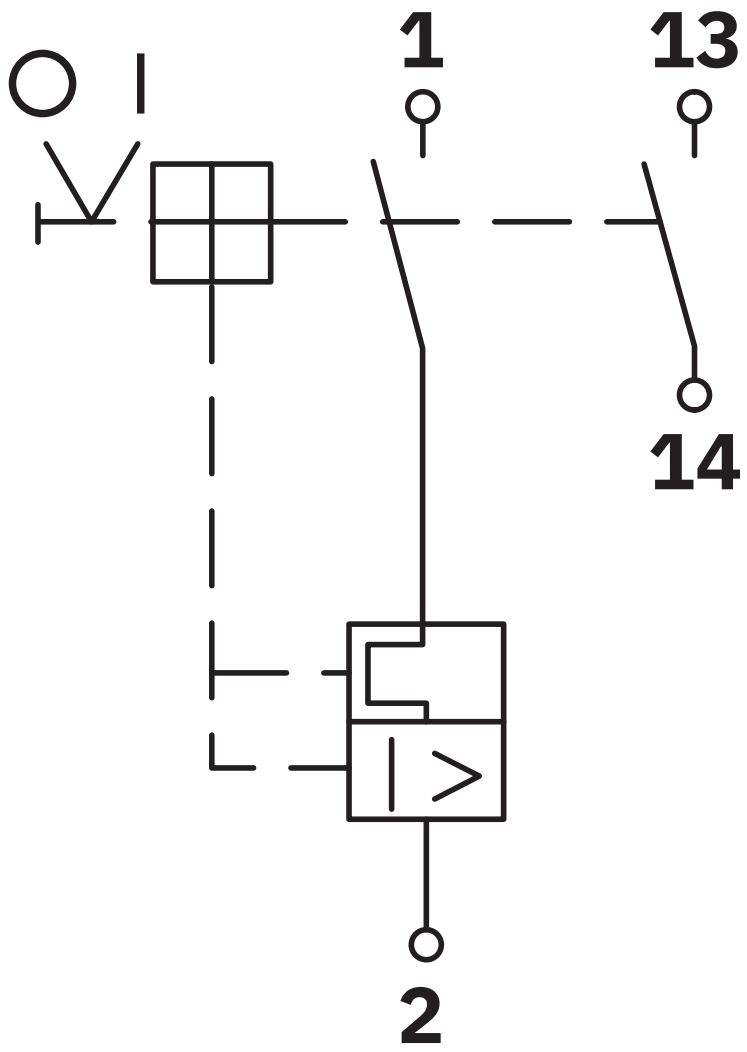

Operating current correction factor

Circuit diagram



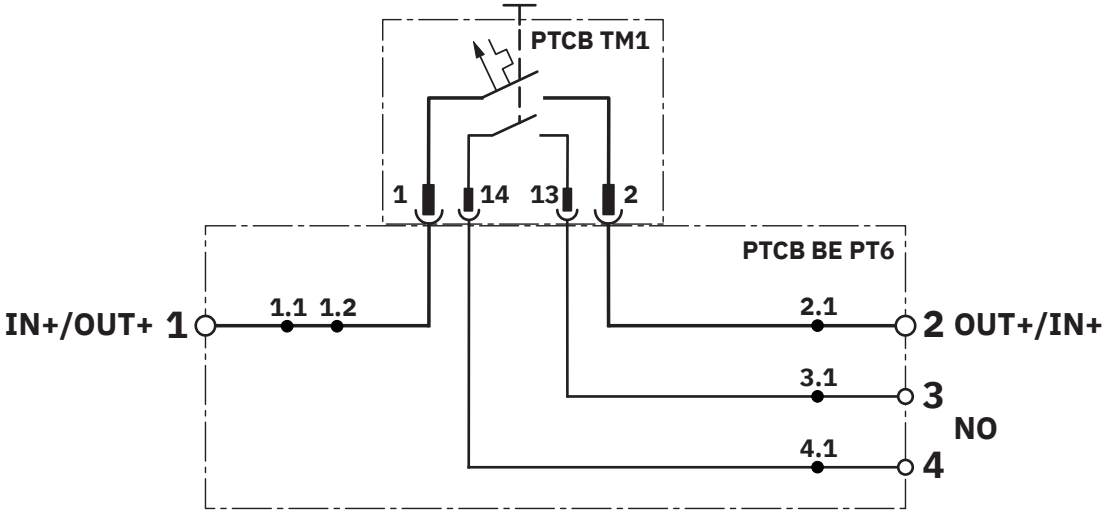

Graphic symbol

Circuit diagram




Graphic symbol

Block diagram



## Classifications

### ECLASS

| | |
|---|---|
| ECLASS-13.0 | 27140401 |
| ECLASS-15.0 | 27140401 |

### ETIM

| | |
|---|---|
| ETIM 10.0 | EC003538 |

### UNSPSC

| | |
|---|---|
| UNSPSC 21.0 | 39121410 |

## Environmental product compliance

EU RoHS

| | |
|---|---|
| Fulfills EU RoHS substance requirements | Yes, No exemptions |

China RoHS

| | |
|---|---|
| Environment friendly use period (EFUP) | EFUP-E |
| | No hazardous substances above the limits |

EU REACH SVHC

| | |
|---|---|
| REACH candidate substance (CAS No.) | No substance above 0.1 wt% |


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