

# 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

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 1509520       |
| Packing unit                         | 4 pc          |
| Minimum order quantity               | 4 pc          |
| Sales key                            | CL10          |
| Product key                          | CLA127        |
| GTIN                                 | 4063151970444 |
| Weight per piece (including packing) | 27.075 g      |
| Weight per piece (excluding packing) | 21.6 g        |
| Customs tariff number                | 85362010      |
| Country of origin                    | DE            |

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## 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 M $\Omega$ (500 V DC)  |
| Type of actuation                               | S type   |
| Tripping method                                 | TM (thermal-magnetic)  |
| Tripping level                                  | Trip-free mechanism (positive)   |
| Device resistance                               | 236 m $\Omega$   |
| Required backup fuse                            | 16 A ( $I > I_{cn}$ , 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)   |

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|                        |  |
|------------------------|--|
|                        | 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 <sub>n</sub> )  |

## 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

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

## Environmental and real-life conditions

### Ambient conditions

|   |  |
|---|--|
| Degree of protection                    | IP20 (Connection area)<br>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)<br>Category 1, Class B (DIN EN 61373)  |
| Vibration (operation)                   | 10 Hz ... 150 Hz, 20 cycles (IEC 60068-2-6, Test Fc)<br>10 Hz ... 75 Hz (Amplitude ±0.35 mm; in accordance with IEC 60068-2-6, Test Fc)<br>75 Hz ... 150 Hz (8g)<br>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                            |

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

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## Drawings



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Dimensional drawing



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

Application drawing



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Connection diagram



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Schematic diagram



Actuation area A

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Diagram



Tripping characteristic in the AC range

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Diagram



Trigger characteristic in the DC range

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Diagram



Operating current correction factor

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Circuit diagram



Graphic symbol

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Circuit diagram



Graphic symbol

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## Approvals

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**IECEE CB Scheme**  
Approval ID: DE1-69241



**cULus Recognized**  
Approval ID: E140459



**CSA**  
Approval ID: 80247832



**VDE Zeichengenehmigung**  
Approval ID: 40060968

**CCA**

Approval ID: CCA/DE1 35015

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## Classifications

### ECLASS

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

### ETIM

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

### UNSPSC

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

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## 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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