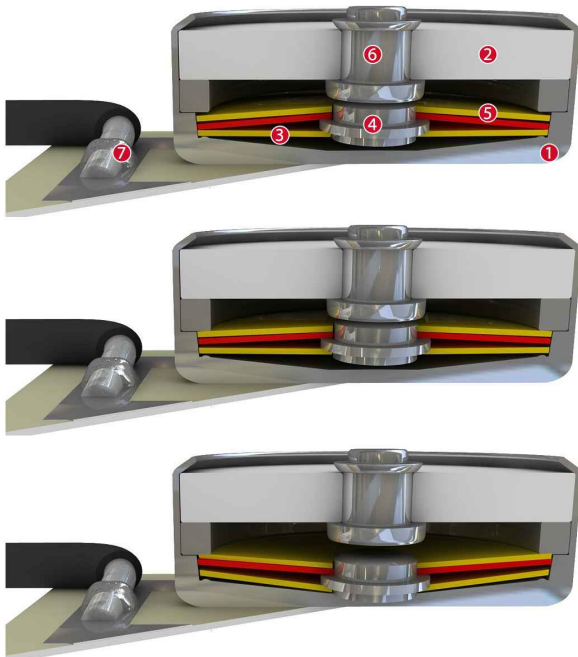


# DATASHEET

## Thermal Protector CWK

### Type series W1



#### Construction and function

The switchgear of type series W1 is fixed in a positive lock and is self-aligning between the floor of a conductive housing (1) and a PTC cap made from barium titanate (2) which sticks out from a stationary silver contact (6). At the same time, the spring snap-in disc (3) which forms the current transfer element bears the movable contact (4) and discharges the flow of current and self-heating from the bimetallic disc (5). The bimetallic disc (5) is held from this stuck out movable contact (4) without having to be welded or fixed. As such, it can continually work (exposed). When the rated switching temperature is reached, the bimetallic disc (5) snaps into its inverted position and pushes the spring snap-in disc (3) downwards. The contact is abruptly opened and the temperature rise of the device to be protected is disrupted. As a result of the aluminium oxide-based semiconductor connected in series (7) with a defined series resistance, the switchgear is heated externally depending on the operating current and shutdown. In addition, the PTC resistance switched in parallel now sustains the operating voltage and deploys a defined electrical heating output on the bimetallic disc (5) regardless of the ambient temperature and permanently sustains it above its springback temperature so that the switchgear cannot reset back. The contact remains open. The Thermal protectors can only cool down again and switch to the original closed state when the external operating voltage is no longer applied and/or disconnection from the mains. As a result of this design, it is no longer necessary to connect the Thermal protectors to the potential heat source of the device to be protected. Such Thermal protectors are often applied equally effectively at other places in the device to be protected.

#### Features:

|                                 |   |
|---------------------------------|---|
| Specially flat design           | to fit closely built-up circuits  |
| Quick response sensitivity      | Featured by small protector mass and the metal-housing  |
| Excellent long term performance | due to instantaneous switching, fine silver contacts, constant contact resistance and to electrically as well as mechanically unstressed bimetallic disc, reproducible switching temperature values |
| Instantaneous switching         | with always constant contact pressure up to the nominal switching point, resulting in low contact stress  |
| Very short bounce times         | < 1 ms  |
| Temperature resistance          | by use of high temperature resistant materials and components   |



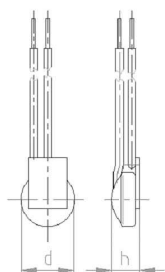
## Technical Data Type CWK

The listed products are an extract from our standard range. Other versions and customised manufacturing are available upon request.

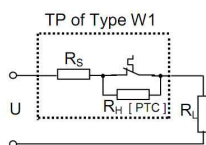
### CWK

1:1

Type: Normally closed; does not reset automatically; voltage applied; defined as current sensitive; with connector cables; without insulation



Diameter d 9,0 mm  
Installation height h ab 5,1 mm



|   |                              |
|---|------------------------------|
| Nominal switching temperature (NST) in 5 °C increments  | 70 °C - 160 °C               |
| Tolerance (standard)  | ±5 K                         |
| Reverse switch temperature (RST) below NST<br>(defined RST is possible at the customer's request) | UL ≥ 35 °C<br>VDE ≥ 35 °C    |
| Installation height   | from 5,1 mm                  |
| Diameter  | 9,0 mm                       |
| Resistance to impregnation *  | suitable                     |
| Series resistor for setting the current sensitivity   | from 0,12 Ω to 70,0 Ω        |
| Suitable for installation in protection class   | I                            |
| Standard connection   | wire with d = 0,5 mm / AWG22 |
| Available approvals (please state)  | IEC; VDE                     |
| Operating voltage range AC  | from 100 V to 250 V AC       |
| Rated voltage AC  | 250 V (VDE) 277 V (UL)       |
| Rated current AC cos φ = 1.0/cycles   | 2,5 A / 1.000                |
| Rated current AC cos φ = 0.6/cycles   | 1,6 A / 1.000                |
| Max. switching current AC cos φ = 1.0/cycles  | 9,0 A / 1.000                |
| Total bounce time   | < 1 ms                       |
| Contact resistance (according to MIL-STD. R5757)  | ≤ 50 mΩ                      |
| Vibration resistance at 10 ... 60 Hz  | 100 m/s <sup>2</sup>         |

#### switching current

|                                 |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|---------------------------------|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| from ...A                       | 0.47   | 0.50 | 0.65 | 0.63 | 0.75 | 0.90 | 1.00 | 1.10 | 1.30 | 1.60 | 1.70 | 1.83 | 2.00 | 2.13 | 2.80 | 3.30 | 3.80 | 4.50 | 5.3  | 6.5  |
| to ...A                         | 0.60   | 0.70 | 0.85 | 0.90 | 1.00 | 1.20 | 1.40 | 1.60 | 1.80 | 2.20 | 2.40 | 2.60 | 2.90 | 3.00 | 3.60 | 4.00 | 5.30 | 6.30 | 7.4  | 9.0  |
| R <sub>S</sub> [in Ω]           | 27   | 21   | 14   | 12.6 | 10.5 | 7.6  | 5.1  | 4.2  | 3.1  | 2.05 | 1.75 | 1.5  | 1.25 | 1.1  | 0.75 | 0.55 | 0.36 | 0.25 | 0.18 | 0.12 |
| Series resistors R <sub>S</sub> | other nominal resistance values upon request |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

#### Ordering example:

CWK - 125. 05 0100 / 0100. 1,1

Type / version \_\_\_\_\_  
NST [ °C ] \_\_\_\_\_  
Tolerance [ K ] \_\_\_\_\_  
Lead lengths [ mm ] \_\_\_\_\_ L<sub>1</sub> L<sub>2</sub>  
Series resistor R<sub>S</sub> [ Ω ] \_\_\_\_\_

#### Marking example:



Trade mark \_\_\_\_\_ thermik  
Type / version \_\_\_\_\_ WK  
NST [ °C ] . Tolerance [ K ] — 125.05

#### More varieties of the type series W1:

- SW1 – defined as current sensitive; with connector cables; insulation: Mylar®-Nomex®
- CW1 – defined as current sensitive; with connector cables; without insulation
- VW1 – with connector cables; fully cast in a Mylar®-Nomex® insulation cap
- VWK – with connector cables; fully cast in a Mylar®-Nomex® insulation cap

[www.thermik.de/data/SW1](http://www.thermik.de/data/SW1)

[www.thermik.de/data/CW1](http://www.thermik.de/data/CW1)

[www.thermik.de/data/VW1](http://www.thermik.de/data/VW1)

[www.thermik.de/data/VWK](http://www.thermik.de/data/VWK)