thermik®

DATASHEET
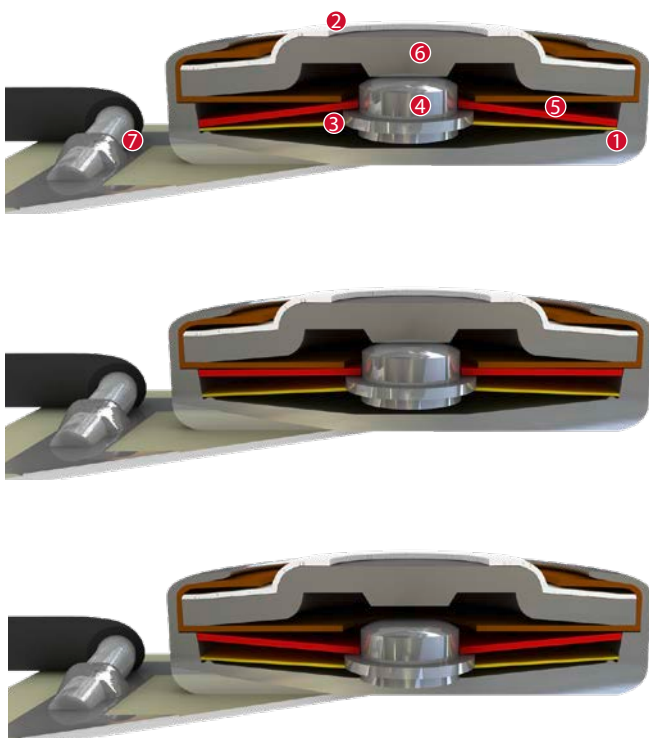## Thermal Protector CZ1

Type series Z1

Construction and function

The switchgear of type series Z1 is fixed in a positive lock and is self-aligning between the floor of a conductive housing (1) and a contact cap which is made of steel (2) and insulated from it, plus an integrated stationary silver contact (6) which closes the housing like a button cell. 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) by exercising consistent, steady contact pressure. The bimetallic disc (5) is held on the one movable contact (4) which sticks out through this 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. If the ambient temperature now falls, the bimetallic disc (5) snaps back into its start position when reaching the defined reset temperature and the contact is closed again. 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. 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.
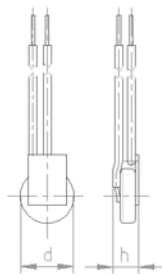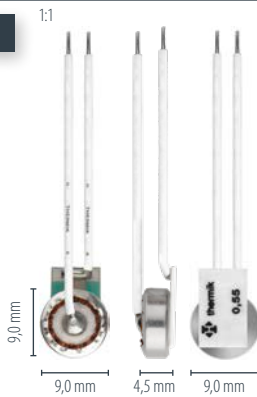
Features:

Quick response sensitivity	featured by the metal housing and small protector mass
Defined response time	< 20 s due to series resistor RS
Excellent long term performance	due to fine-silver contacts. Reproducible switching temperature values due to tempered, electrically and mechanically unstressed bimetallic disc
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

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

CZ1 1:1

Type: Normally closed; resets automatically; defined as current sensitive; with or without epoxy; with connector cables; without insulation

9,0 mm

9,0 mm   4,5 mm   9,0 mm

Diameter d	9,0 mm
Installation height h	from 4,5 mm

Nominal switching temperature (NST) in 5 °C increments		70 °C - 160 °C
Tolerance (standard)		±5 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	≥ 35° C
	VDE	≥ 35 °C
Installation height		from 4,5 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		Lead wire 0,25 mm² / AWG22
Available approvals (please state)		IEC; ENEC; VDE; UL (NST 70°C - 130°C)
Operational voltage range AC		up until 500 V AC (DC on demand)
Rated voltage AC		250V (VDE) 277V (UL)
Rated current AC cos φ = 1.0/cycles		2,0 A / 3.000
Rated current AC cos φ = 0.6/cycles		1,6 A / 3.000
Max. switching current AC cos φ = 1.0/cycles		4,0 A / 3.000
Total bounce time		< 1 ms
Contact resistance (according to MIL-STD. R5757)		≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz		100 m/s²

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_S [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_S	other nominal resistance values upon request																			

Ordering example:

CZ1 - 125. 05 0100/ 0100 1,1

Type / version
NST [°C]
Tolerance [K]
Lead lengths [mm] L_1 L_2
Series resistors RS [Ω]

Marking example:

Trade mark		**thermik**
Type / version		**Z1**
NST [°C] . Tolerance [K]		**125.05**
Series resistors RS [Ω]		**1,1**

More varieties of the type series Z1:

• SZ1– with or without epoxy; with connector cables; insulation: Mylar®-Nomex®   www.thermik.de/data/SZ1

*In accordance with the Thermik test • Specifications relating to part applications (on the part of the buyer) which deviate from our standards are not checked for their capacity to support an application and/or conformity with standards. The responsibility for testing the suitability of Thermik products for such applications falls upon the user. • Slight deviations are possible in terms of dimensions/ values, depending on the embodiment of the product. • We reserve the right to make technical changes in the course of further development. • Details concerning certain data, measurement methods, applications, approvals, etc. can be supplied upon request.