

Operating manual - Archive document

PTC-relay MSF 220 K

Application

The PTC-resistor trip device MSF 220 K has been designed for monitoring dry-transformers. 2 PTC-circuits with different nominal-response-temperatures (NRT) can be connected to this unit for pre-alarm and alarm.

Functions

- 2 PTC resistor circuits, 1 to 6 PTC each (max. cold resistance of circuit 1500 Ω each)
- **ALARM-1-function:** potential-free contact K1 (co) for ALARM 1. The relay releases when sensors T0/T1 reach NRT. There is a short alarm-signal of K1 when switching-on the supply-voltage. ALARM 1 also signals an interruption of power-supply.
ALARM 1 = contacts 11-12 closed.
- **ALARM-2-function:** potential-free contact K2 (no) for ALARM 2. The relay picks up when sensors T0/T2 reach NRT.
ALARM 2 = contacts 21-24 closed
- LEDs signal state of relays
- **TEST-button** for testing relays
- Housing for mounting on DIN-rail or wall-mount with second clamp (included)

Technical Data

<u>Supply voltage/frequency Us</u>	see type plate on the device	
Tolerance voltage Us		
Universal power supply	DC 20 ... 297 V	
	AC 19 ... 264 V	20 ... 120 Hz
AC -versions	AC 0.9...1.1 Us	40...62 Hz
Power consumption	< 3 VA	
<u>PTC-resistor connection</u>	2 x 1...6 PTC in series	
Cut-out point	2,8...3,6 k Ω , typ. 3,2 k Ω	
Reclosing point	1,8...2,4 k Ω , typ. 2,1 k Ω	
Collective resistance of cold sensors	≤ 1.5 k Ω	
Terminal voltage (sensors)	≤ 2.5 V at ≤ 250 Ω ≤ 7.5 V at ≥ 4000 Ω	
Terminal current (sensor)	max. 5 mA	
<u>Relay output</u>	material: AgNi 0,15	
	K1 = 1co potential free	
	K2 = 1no potential free	
Switching voltage max.	AC 440 V	
Switching current max.	AC 8 A	
Switching power max.	AC 2000 VA	
Rated continuous current I _{th}	AC 5 A	
Rated operational current I _e		
	AC15:	I _e = 2A, U _e = 400 V I _e = 3 A, U _e = 250 V
	DC13:	I _e = 2A, U _e = 24 V
Mechanical contact life	3 x 10 ⁷ operations	
Electrical contact life	10 ⁵ operations (at max. switching capacity)	
Factor of reduction at cos = 0.4	0.6 x max. switching capacity	
Prefuse for device and contacts	4 A, time-lag (gL)	
<u>Testing conditions</u>	EN 60947, EN 50178	
Rated insulation voltage	AC 250 V	
Rated impulse voltage	4 kV	
Contamination level	2	
Test voltage between supply voltage, relay outputs and sensor side	2.5 kV	
On period	100 %	
max. ambient temperature	-20 ... +55 °C	
EMC	EN 50081/EN 50082	
<u>Housing:</u>	design K	
Dimensions (H x W x D)	75 x 22,5 x 110 mm	
Material	Polyamid PA 66, UL 94 V-2	
Protection housing/contacts	IP 20	
Line connection single-wired	1 x 0,5...2,5 mm ² each	
fine wired with end sleeves	1 x 0,14 ... 1,5 mm ² each	
Panel inclination	any	
Mounting	snapable on 35 mm standard rail according to EN 60715 or assembly with 2 screws M 4	
Weight	app. 110 g	

Subject to technical modifications

Installation - Putting into operation

Mounting and connection:

- mount on 35 mm mounting rail or wall-mount with 2 x screws M4
- connect wires as per wiring scheme

When installing the device into the switch-gear cabinet, please observe the max. admissible temperature. Care for both, sufficient clearance to other devices or sources of heat or enough forced draught.

Before switching on make sure that the operational voltage U_s of the type- plate and the mains voltage are the same.

- Apply mains voltage to terminals A1 and A2 (DC A1=+, A2=)
- When device is ready for operation, relay K1 picks up (contacts 11-14 close), the green LED "ON" is alight
- Press button "TEST" with a tool, i.e. a ball-pen. Relay K1 releases (contacts 11-12 close) and relay K2 picks up (contacts 21-24 close), The red LEDs Alarm 1 and Alarm 2 are alight.



In case of failure of supply voltage , the monitored unit is not protected any more. The operator must ensure, that a failure is detected, e.g. by monitoring Alarm 1 (K1) or by testing the unit regularly.

Even if no temperature warning is monitored with alarm 1, the function of the relay K1 should be evaluated, otherwise the monitoring can fail unnoticed (missing supply- voltage, equipment failure etc.). When no sensor is connected to T0/T1, the sensor entrance must be bridged.

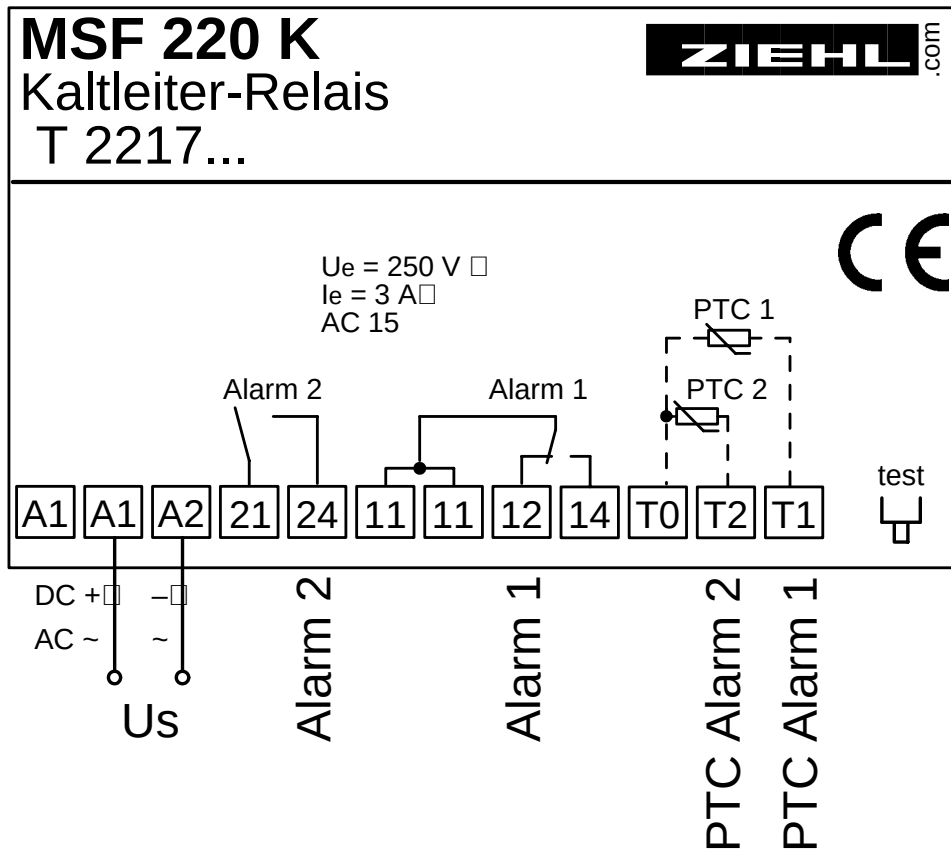
Trouble-shooting and remedies

- LED "ON" is not alight:
Make sure that supply voltage is connected correctly (+/-) to terminals A1/A2 and is the same as on the type plate
- K1 doesn't pick up, red LED Alarm 1 is alight:
Make sure, that the PTCs are connected to terminals T0/T1 and that the resistance of the PTCs is $< 1,5 \text{ k}\Omega$
- K2 picks up, red LED Alarm 2 is alight:
Make sure, that the PTCs are connected to terminals T0/T2 and that the resistance of the PTCs is $< 1,5 \text{ k}\Omega$

Attention! Check PTC's only with measuring voltages of $< 2.5 \text{ V}$.

- In case of any other malfunctions, replace device and send it in together with a description of the occurred malfunction.

Wiring Scheme:



Design K

