

Operating manual - Archive document

MSF 220 SE

Application

The PTC-resistor trip device MSF 220 SE monitors the winding temperature of machines and equipment. Signals, that can be used as "early warning" or "malfunction" (switching-off), are transmitted as soon as the admissible limit temperature is exceeded.

Two PTC-circuits can be connected to this unit. The integrated rise-delay time ensures a reliable mains voltage build-up.

Function

- * 2 PTC resistor circuits, 1 to 6 PTC each (max. cold resistance of circuit 1500Ω each)
- * potential-free contact for alarm 1
- * potential-free contact for alarm 2
- * voltage of pin 3 is connectet to pin 1 with a time delay of 2 sec., replacing an additional timing relay.
- * alarm 3 for check of relay K3
- * LED's signal state of relays K1 and K2
- * relay K3 picks up time-delayed

Note

Thanks to the delayed switching-on of the error message (approx. 2 s) after the switching-on, this device is especially suitable where an auxiliary voltage is not available and the secondary voltage of the monitored transformer is being used. The MSF-200 SE can furthermore be used advantageously when combining it with operating current releases. For additional devices, the control voltage is available at terminal 1 time-delayed. In case of a breakdown of the supply voltage, the control voltage is available at terminal 7 and can be used as a message. (Attention! This message will also be given for approx. 2 s. after switching-on.)

Functional description

PTC-circuits in closed-circuit current principle. When the closed-circuit current flows, both output relays K1, K2 are picked up. Approx. 2 sec. after switching on supply power, relay K3 picks up time-delayed, closing the contact circuits at terminals 31, 14 and 31, 24. As soon as the temperature of the early warning has been reached, relay K1 releases (terminal 31, 12 closed), the alarm 1 is given. If the temperature of malfunction is reached, also relay K2 releases (terminal 31, 22 closed). This alarm 2 can be used to switch off the equipment. If the temperature drops to approx. 5 °C below the temperature of malfunction or early warning, the relays K1 and K2 resp. are switched on again.

Technical Data

Supply Voltage US	see type plate on the device
Us: DC/AC 24 - 240 V	
Tolerance	DC 20,4 – 297 V, AC 20 – 264 V
Frequency	0, 40...500 Hz, at AC 80 V: 10...500 Hz
Us: DC/AC 90 – 240 V	
Tolerance	DC 80 – 297 V, AC 80 – 264 V
Frequency	0, 40...500 Hz, AC 10...500 Hz
Power consumption	<2 VA
PTC-resistor connection	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	$\leq 1,5$ k Ω
Terminal voltage (sensors)	$\leq 2,5$ V at ≤ 250 Ω $\leq 7,5$ V at ≥ 4 k Ω max. 5 mA
Relay output	contacts AgNi 015
Switching voltage	max. 400 V
Switching current	max. 8 A
Switching power	max. 2000 VA
Rated continuous current I_{th}	5 A
Rated operational current I_e	2 A AC15 400 V 2A DC13 24 V 3 A AC15 250 V
Prefuse for device and contacts	AC: T 4 A DC: T 2 A
Mechanical contact life	3×10^7 operations
Electrical contact life	1×10^5 operations (at max. switching capacity)
Factor of reduction at $\cos = 0.4$	0.5 x max. switching capacity
Switching-on delay	app. 2 s
Testing conditions	EN 60947, EN 50178
Rated insulation voltage	AC 250 V
Isolation	EN 60664
Rated impulse voltage	400 V
Contamination level	2
Transformer	EN 61558
On period	100 %
max. ambient temperature	-20 ... +55 °C, EN 60068-2-2 dry heat
Housing:	design S-12, plug-in housing
Dimensions (H x W x D)	82 x 42 x 121 mm
Line connection	12-pole, max. 2 x 1.5 mm ² each
Protection Housing	IP 40
Protection contacts	IP 20
Panel inclination	any
Mounting	snappable on 35 mm standard rail according to EN 60715 or assembly with screws M 4
Weight	app. 250 g

Subject to technical modifications

Installation - Putting into operation

The plug base can be mounted either with

- * 35 mm mounting rail according to EN 60715 or
- * M4 screws

Wiring directly to plug base

- * Connect wires as per wiring scheme
- * Plug in electronics and fix with knurled screw

Attention!

Do not plug in device alive nor detach it from socket.

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 lateral type plate and the mains voltage are the same.

- * Apply mains voltage to terminals A1 and A2
- * When device is ready for operation, relays K1 and K2 switch on immediately, the LED's are off. After approx. 2 s. relay K3 picks up, terminals 31-14, 31-24, 31-34 are connected.
- * Relay K1 releases as soon as the input at terminal T11, T12 becomes high- resistive.
- * Relay K2 releases as soon as the input at terminal T21, T22 becomes high-resistive.
- * Relay K1, K2 pick up as soon as the inputs at terminals T11, T12 and T21, T22 become low-resistive.
- * Relay K3 releases first, as soon as the supply voltage is switched off.

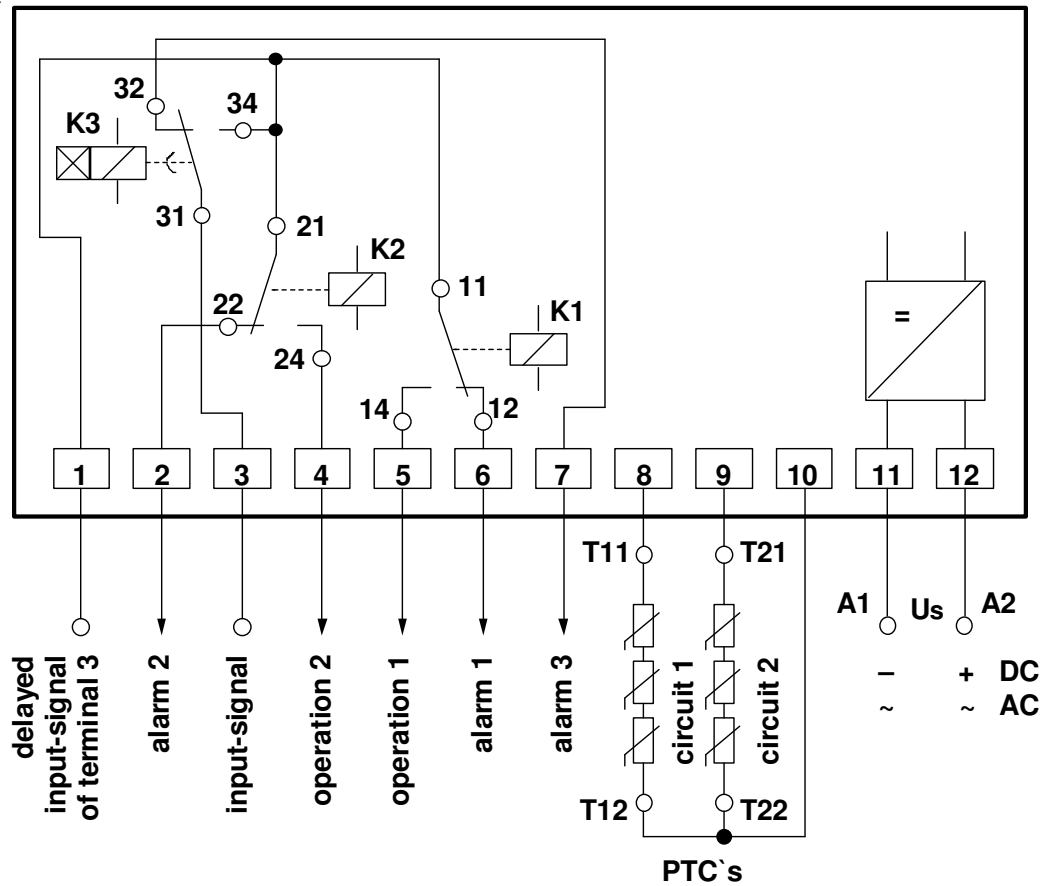
Trouble-shooting and remedies

- * Relays are not switched on.
Check whether supply voltage U_s at terminal A1, A2 is available and corresponds to the voltage indicated on the lateral type plate of the device.
- * LED's light up continuously.
Check whether PTC's at terminals T11, T12 and T21, T22 are connected correctly. Both PTC's must be connected and low-resistive.

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 S 12

