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Operating manual - Archive document -

MSF 220 SV

Application

The PTC-resistor trip device MSF 220 SV monitors the winding temperature of machines and equipment. It signals “early warning" or “malfunction" (switching-off) or switches on a forced ventilatition as soon as the nominal response temperature (NRT) in the relevant PTC-circuit is exceeded.
Two PTC-circuits can be connected to this unit. The integrated rise-delay time ensures a reliable mains voltage build-up.

Function

* 3 PTC resistor circuits, 1 to 6 PTC each (max. cold resistance of circuit 1500Ω each)
* potential-free contact for switching forced cooling
* potential-free contact for alarm 1
* potential-free contact for alarm 2
* LED´s signal state of relays
* 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 SV can furthermore be used advantageously when combining it with operating current releases. In case of malfunction of the supply voltage or of the relay, there will be no tripping of the alarms. The correct function can be detected by monitoring the no-contacts of the relays for alarm 1 or 2 (Pins 4 or 5).

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 36-14 and 36-24.
When the NRT in the PTC-circuit "VENT" is exceeded, relay K4 picks up. The relay releases app. 20 minutes after temperature has dropped under the switching point. This ensures a longer period of cooling.
As soon as the temperature of the early warning has been reached, relay K1 releases (terminal 36-12 closed), the alarm 1 is given. If the temperature of malfunction is reached, also relay K2 releases (terminal 36-22 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 are switched on again.

Technical Data

	……
Type-Plate	
Order number	see type plate
Supply voltage Us / frequency	on the device
	……
Tolerance vottage Us	AC 0.9...1.1 Us DC 0.85...1.35 Us
Tolerance frequency Us	48…62Hz
PTC-resistor connection	3 x 1...6 PTC in series
Cut-out point	2,8...3,6 kΩ, typ. 3,2 kΩ
Reclosing point	1,8...2,4 kΩ, typ. 2,1 kΩ
Collective resistance of cold sensors	≤ 1.5 kΩ
Terminal voltage (sensors)	≤ 2.5 V at ≤ 250 Ω ≤ 7.5 V at ≥ 4 kΩ
Relay output	contacts AgCdO
Switching voltage	AC max. 400 V DC 110-250 V 0.25 A
Switching current	AC max. 8 A DC 60 V 0.5A
Switching power	AC max. 1100 VA DC 30 V 1.5 A
Rated continious current I_{th}	AC 6 A DC 24 V 5 A
Rated operational current I_e	2A AC15 400 V 2A DC13 24 V 4A AC15 250V
Prefuse for device and contacts	AC: T 4 A DC: F 2 A
Mechanical contact life	5 x 10^7 operations
Electrical contact life	2 x 10^5 operations (at max. switching capacity)
Factor of reduction at cos = 0.4	0.6 x max. switching capacity
Switching-on delay	app. 2 sec.
Testing conditions	VDE 0660 / VDE 0160
Rated insulation voltage	AC 250 V
Isolation	VDE 110 / Gr. C
Transformer	VDE 0550
Test voltage between supply voltage, relay outputs and sensor side	2.5 kV
On period	100 %
max. ambient temperature	-20 ... +55 °C
Climatic category	F (according to DIN 40 040)
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	snapable on 35 mm standard rail according to DIN or assembly with scrwes M 4
Weight	app. 250 g

Installation - Putting into operation

The plug base can be mounted either with
* 35 mm mounting rail according to DIN 50 002 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. Generally recommended mininum clearance: 2 cm.

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

* Apply mains voltage to terminals 11 and 12.
* When device is ready for operation, relays “ALARM1” and “ALARM2” switch on immediately, the LED’s are off. After approx. 2 s. relay “ON” picks up, terminals 3 - 4, 3 - 5 are connected.
* Relay "VENT" picks up, as soon as the input at terminal 7, 10 becomes high-resistive.
* Relay "VENT" releases 20 min. after the input at terminal 7, 10 becomes low-resistive.
* Relay “ALARM1” releases as soon as the input at terminal 8, 10 becomes high-resistive.
* Relay “ALARM2” releases as soon as the input at terminal 9, 10 becomes high-resistive.
* Relay “ALARM1”, “ALARM2” pick up as soon as the inputs at terminals 8, 10 ; 9, 10 become low-resistive.
* Relay “ON” releases first, as soon as the supply voltage is switched off.

Trouble-shooting and remedies

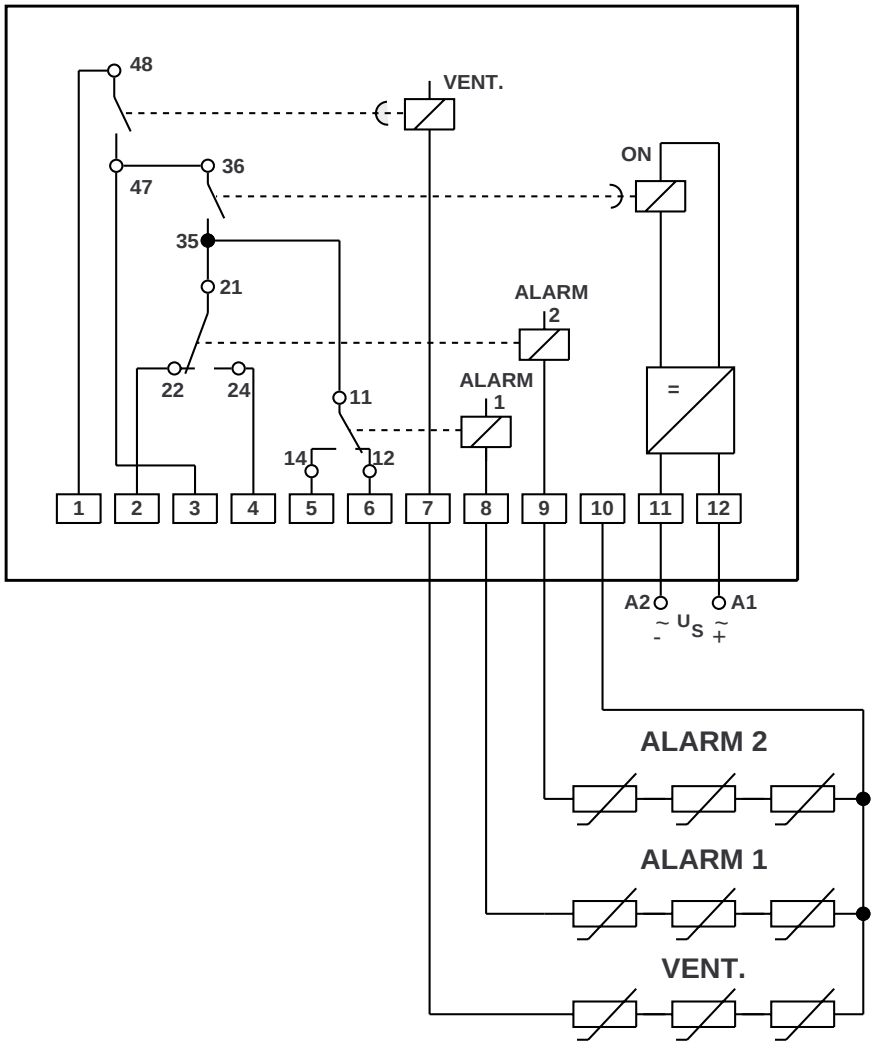
* Relays are not switched on.
  Check whether supply voltage U_S at terminal 11, 12 is available and corresponds to the voltage indicated on the lateral type plate of the device.

* LED´s light up continuously.
  Check whether PTC’s at terminals 7-10, 8-10 and 9-10 are connected correctly. Both PTC’s must be connected and low-resistive.

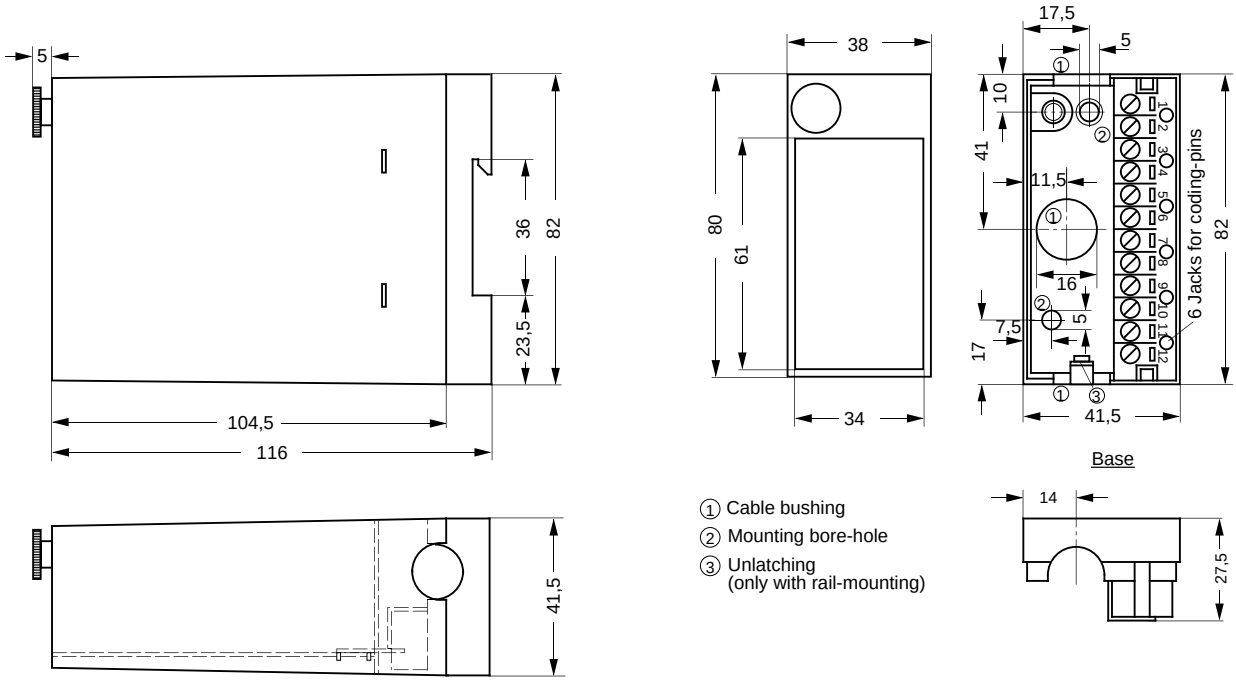
Attention! Check PTC’s only with measuring voltages of < 2.5 V.

* 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



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