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Operating manual

PTC-resistor relay type MS 220 F and MSR 220 F

Short description

ZIEHL PTC-resistor relays protect motors, transformers, machines and equipment against thermal overload. With ZIEHL PTC Sensors MINIKA ® applied they offer best solutions for nominal response temperatures 60°C…180°C.

Application

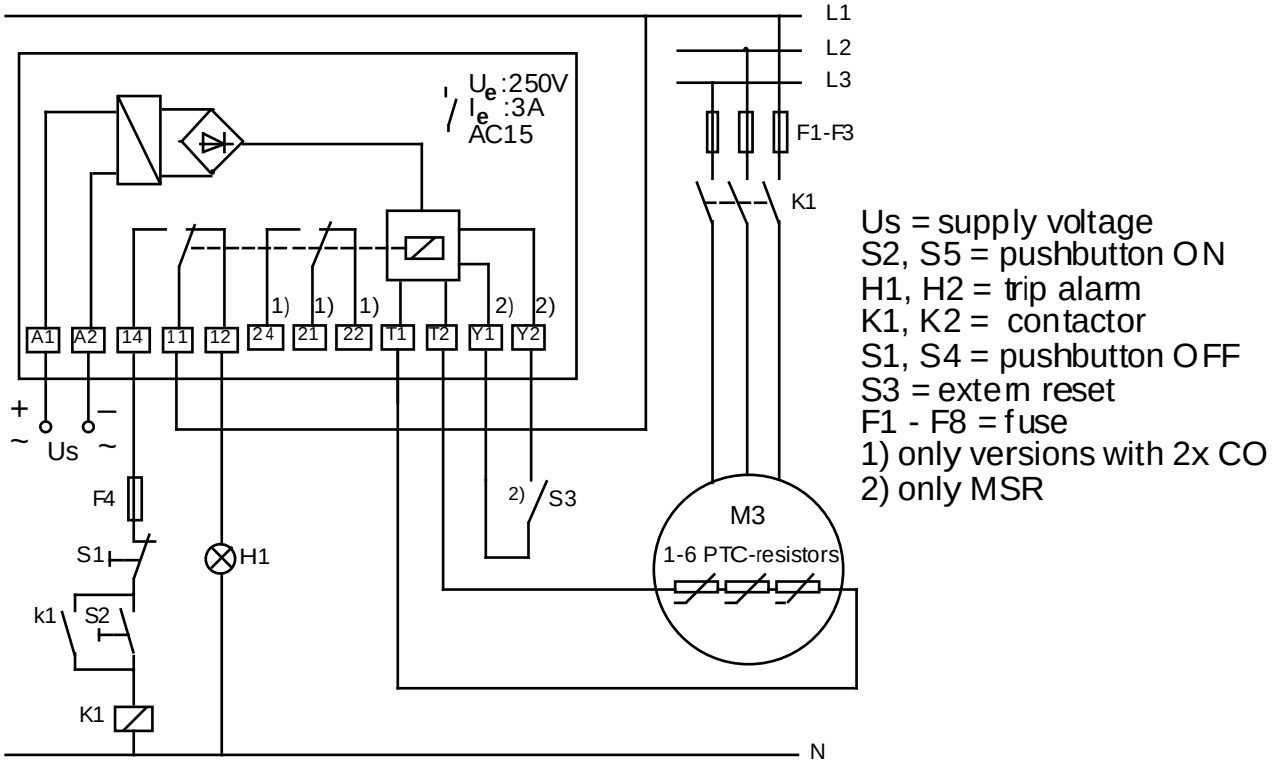
ZIEHL PTC-resistor relays are designed for PTC-sensors according to DIN 44081 and DIN 44082. Therefor sensor and relays are exchangeable. PTC-resistor sensors are suitable for the installation into windings of electrical machines, bearings and transformers as well as to monitor the temperature of liquid media, airflow and gases.
Used in conjunction, they provide a effectively and reliable protection in case of

- blocking rotors, heavy starts, countercurrent operation
- undervoltage and phase failure
- increased ambient temperature and hindered cooling

Approvals: marking see type plate on the device

without electronic reclosing lock	**MS 220 F**
with electronic reclosing lock	**MSR 220 F**

Wiring scheme



Detailed description

Functional overview

- 1 PTC-resistor set with up to 6 PTC-sensors (250Ω) in series
- output relay with 1 or 2 change-over contact (co), floating extern
- snap mounting on 35 mm standard rail DIN EN 50 022
- monitors wire and sensor interruption

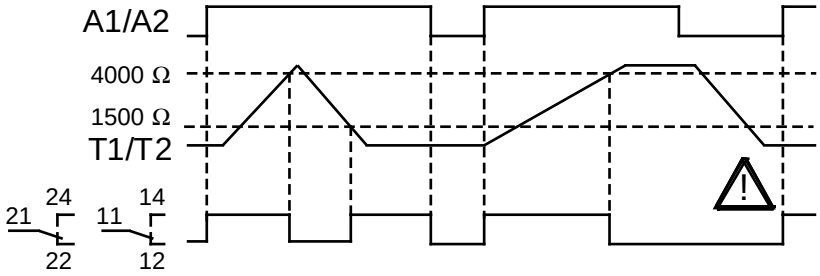
MSR type only

- with electronic reclosing lock
- LED for operation and overheated sensor circuits (alarm)
- integrated RESET – button and link for external RESET
- automatically RESET at voltage recovery

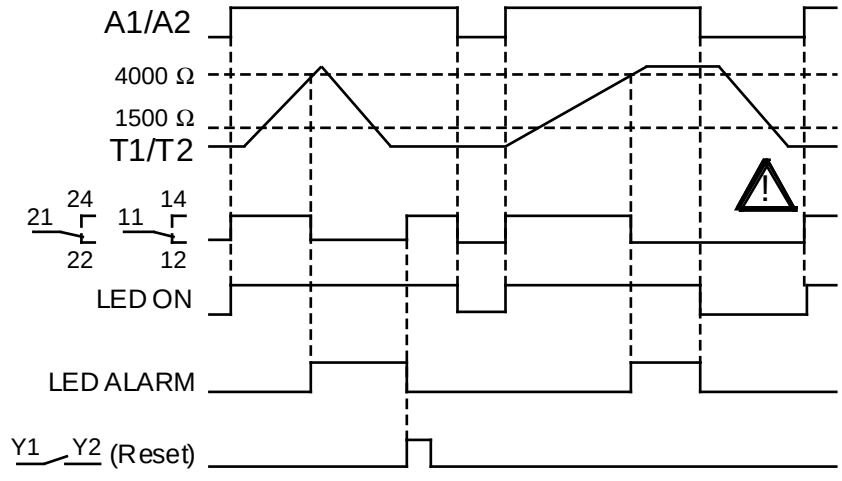
A current monitors continuously the resistance of the sensors. In cold state, the resistance is <250 Ω per sensor (sensor circuit < 1,5 kΩ). The relay has picked up and contacts 11/14 (21/24) are closed. The resistance of the sensor rises rapidly at nominal response temperature NRT. The relay release at a resistance of 3…4 kΩ and contacts 11/12 (21/24) close. MS types switch on automatically when the temperature has decreased approx. 5 °C. MSR types with electronic reclosing lock switch on again when the temperature has decreased approx. 5 °C and RESET is made (push built-in button or external RESET with terminals Y1/Y2 closed) or by return of supply voltage.

Function Diagram:

MS 220 F (auto reset)



MSR 220 F



Putting into operation:

Notice safety remarks!

- Trip relays with supply voltage DC/AC 24 V are intended to use at power supplies according DIN VDE 0551. Wiring connection must be protected.
- The devices must be installed within rooms of international protection class IP 5x or better.
- Trip relays type MSR with electronic reclosing lock switch on automatically by return of the supply voltage. To prevent automatically start-up the applicant must install additional components or monitor the power supply lines.
- The applicant must observe safety rules and standards.
- When installing the device into the switchgear 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 minimum clearance: 10 mm.

Attention!

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

Trouble – shooting and remedies

Relay does not pick up. Please check

- The supply voltage Us at terminals A1-A2. With ready for use equipment type MSR the green LED shines.
- The PTC's at terminals T1 - T2. In the case of disturbance the red LED shines.
- The resistance of a PTC circuit may be at 0 Ω < R < 1500 Ω. The terminal voltage T1-T2 is to be measured < 2,5 V with connected PTC <1500 Ω.

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

- With relay type MSR please push the Reset button. The relay can pick up at resistance R <1,65 kΩ. Alternatively reset can be done with closing an external contact at terminals Y1-Y2 or with power recovery.

Relay does not release. Please check

- With no PTC sensor connected the PTC Trip Relay must release. The voltage at terminals T1-T2 must be approx. 8 V.

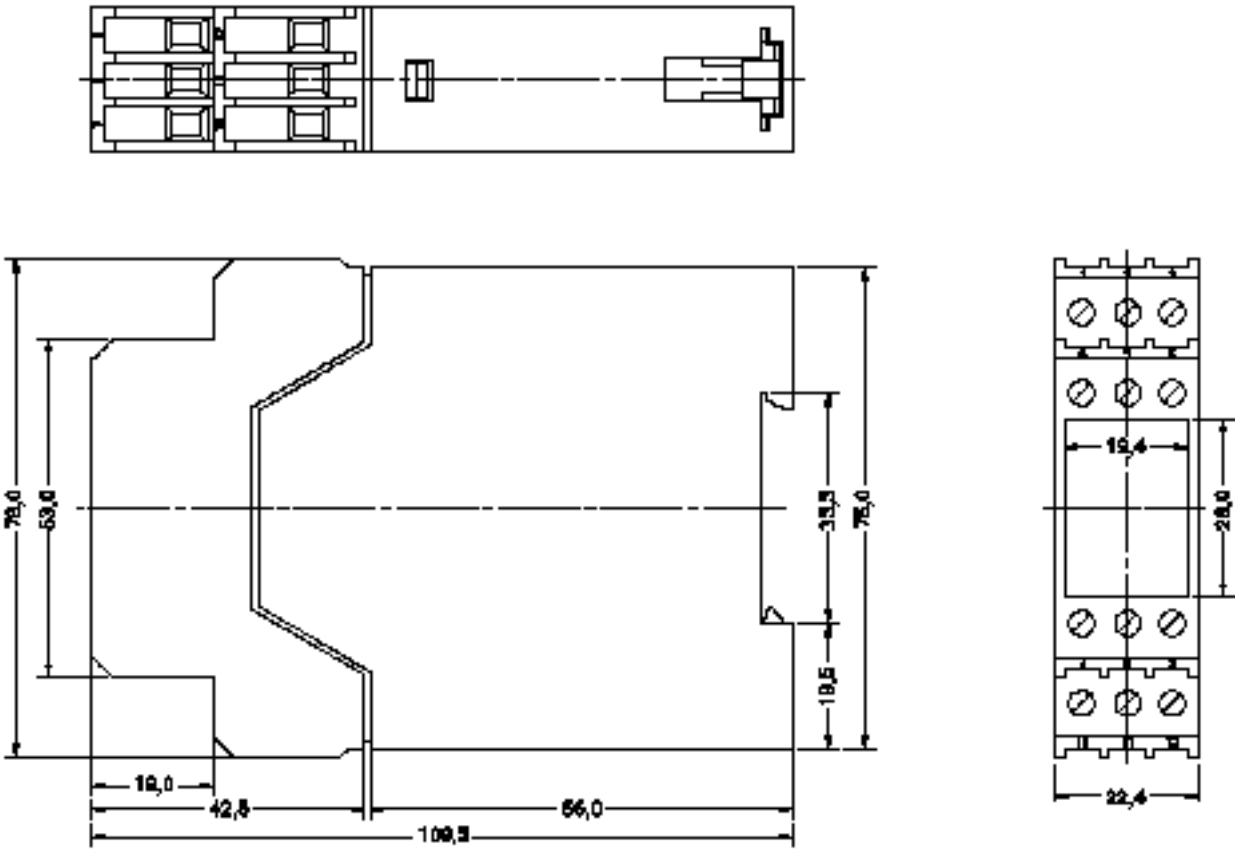
In case of any other malfunctions, replace device. Please add a description of the occurred malfunction when sending back for repair.

Technical data

Power supply	
Rated supply voltage Us	AC 110-120 V, AC 220-240 V, AC 380-415 V (see lateral type plate) AC/DC 24 V (no potential separation)
Tolerance voltage Us	AC 0,9 Us … 1,1 Us DC 21 ... 30 V
Frequency (AC)	50 / 60 Hz
Tolerance frequency	45 - 62 Hz
Power consumption	<2 VA
PTC-resistor connection	PTC-sensor according to DIN 44081 / DIN 44082
Number	set with 1 ... 6 PTC´s in series
Cut-out-point	≤4 kΩ
Reclosing point	≥1,65 kΩ
Collective resistance cold sensors	≤1,5 kΩ
Terminal voltage (sensors)	≤ 2,5 V at R ≤1,5 kΩ, ≤ 3,53 V at R= ≤4 kΩ max. 9,2 V at R = ∞
Terminal current (sensors)	<1,29 mA
Power consumption	<2 mW
Relay output	EN 60947-5/IEC 947-5
Contacts	1 OR 2 change-over contact (co)
Switching voltage	max. AC 415 V
Switching current	max. 6 A
Switching power AC cos = 1	max. 2000 VA max. 120 W at DC 24 V
Rated operational current Ie	3 A AC15 250 V ; 2 A DC13 24 V
Recommended fuse	3,15 A gl (slow)
Mechanical contact life	3 x 10^7 operations
Electrical contact life	1 x 10^5 operations at 240 V / 6 A 1 x 10^6 operations at 240 V / 2 A
Factor of reduction at cos=0,3	0,5 of max. switching capacity
UL electrical ratings	250 V ac, 3 A, general use 240 V ac, 1/4 hp, 2.9 FLA 120 V ac, 1/10 hp, 3.0 FLA C 300
Testing conditions	EN 60 947
Rated impulse voltage	4000 V
Overvoltage category	III
Contamination level	3 2
Rated insulation voltage Ui	250 V 415 V
Transformer	EN 61558-2-6 (VDE 0551)
On-period	100 %
Rated ambient temperature range	-20 ... +55 °C EN 60068-2-1 Dry Heat
EMC - Immunity	EN 61000-6-2
EMC - Emission	EN 50 081-1
Vibration resistance EN 60068-2-6	2…25 Hz ±1,6 mm 25 ... 150 Hz 5g

Housing:	design "F"
Dimensions (H x W x D)	78 x 22,5 x 110 mm
Line connection	2 x 1.5 mm^2 each
Protection housing EN 60529	IP 40
Protection terminals EN 60529	IP 20
Panel inclination	any
Attachment	on 35 mm standard rail according to EN 50 022
Weight	approx. 170 g

Design F dimensions in mm



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