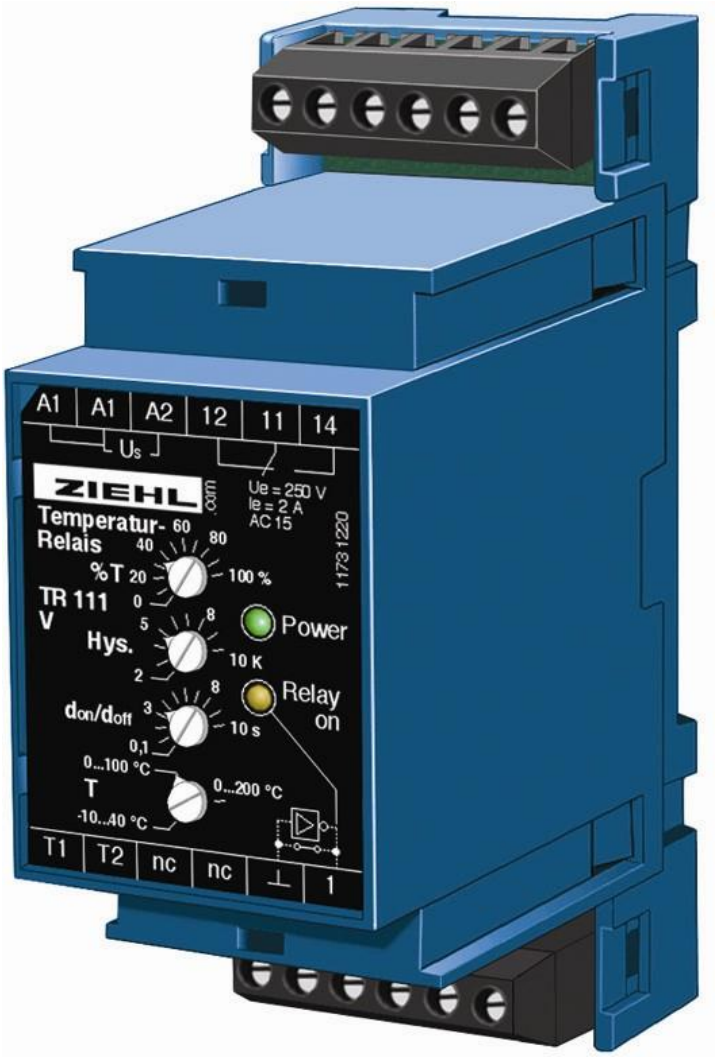
Operating manual - Archive document

Pt 100-Temperature-Relay TR 111 V



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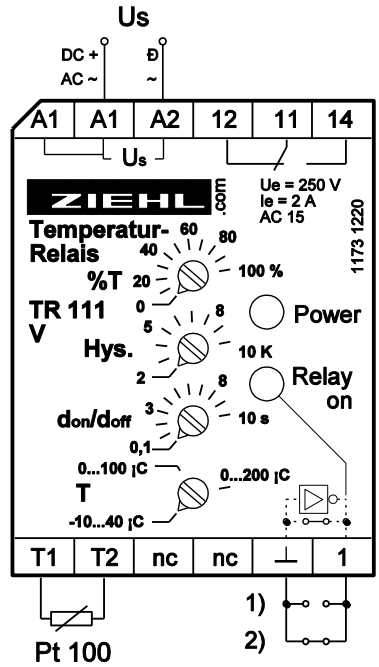
Aplication and short description

Temperature-Relays TR 111 V can be used as limit-switches or 2-point controllers with high repeat accuracy.
3 measuring-ranges, adjustable hysteresis and switching delay and the choice between operating- and closed-current principle of the relay make it a very universal device.
Protection from over-temperature in processes, plants and machines.
Monitoring of temperatures in bearings.
Controlling of temperatures in processes and plants.

Overview of functions

- Measuring input 1x Pt 100 (RTD) / 2-wire
- 3 or 4 measuring-ranges switchable
- 1 limit adjustable 0...100 %
- switching delay adjustable 0,1...10 s
- Output-relay 1 changeover-contact (co)
- Operating- or closed-current-tprinciple selectable with bridge
- Switching off at sensor-shortcircuit or break
- LEDs for display state of operation
- Housing for mounting in switchgear cabinets or fuseboxes, 35 mm wide
- Mounting heigt 55 mm

Connection plan

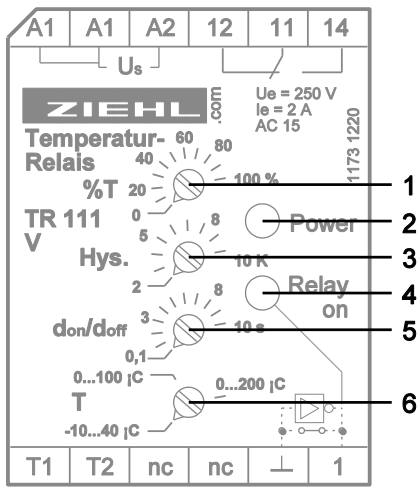


1) Ruhestrom / closed current mode

2) Arbeitsstrom / operating current mode

Display and operating elements

1 Potentiometer for limit value
2 LED Power
3 Hysteresis
4 LED Relay on
5 Switching delay don/doff
6 Range selection



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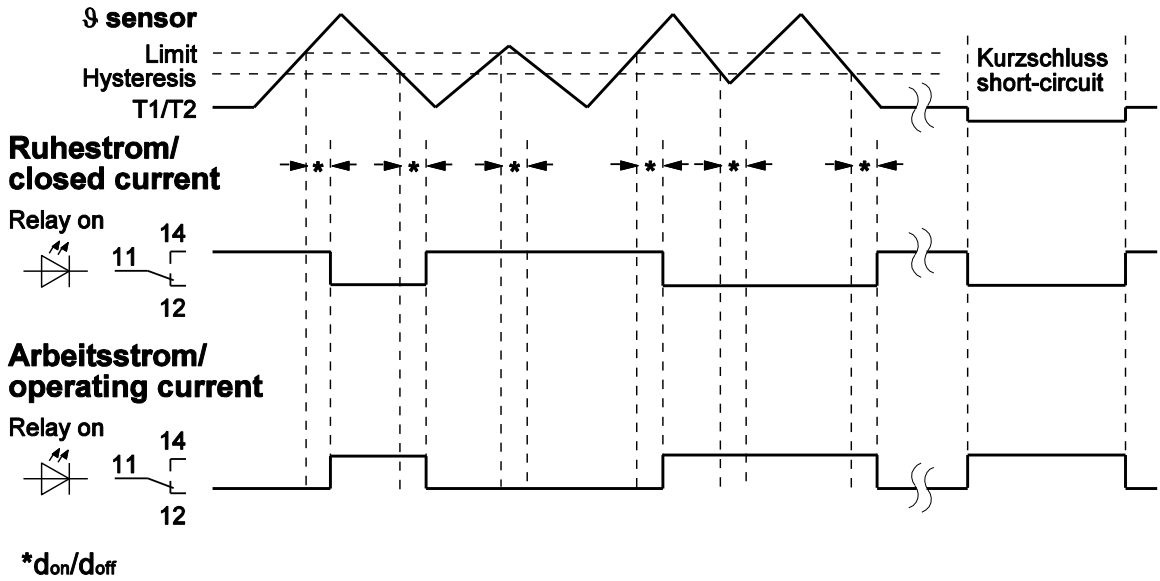
Detailed description

As standard, the TR 111 V thermostats operate according to the closed-current-principle. If a temperature sensor is connected, the installed relay picks up (11-14 closed = ok).
The relay releases in the case of a sensor breakdown.
The thermostat signals and switches when the set limit is exceeded.
If the temperature at the sensor rises over the adjusted value, then the relay releases. The switching status is signalled by a LED: relay picked up = LED on.
At operating-current-principle the function pf the relay is inverted. It picks up at over-temperature (11-12 closed = ok).

Function Diagram



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Important notes

To use the equipment flawless and safe, transport and store properly, install and start professionally and operate as directed.
Only let persons work with the equipment who are familiar with installation, start and use and who have appropriate qualification corresponding to their function. They must observe the contents of the instructions manual, the information which are written on the equipment and the relevant security instructions for the setting up and the use of electrical units.

The equipments are built according to EN and checked and leave the plant according to security in perfect condition. To keep this condition, observe the security instructions with the headline „Attention“ written in the instructions manual. Ignoring of the security instructions may lead to death, physical injury or damage of the equipment itself and of other apparatus and equipment.
If, in any case the information in the instructions manual is not sufficient, please contact our company or the responsible representative.
Instead of the industrial norms and regulations written in this instructions manual valid for Europe, you must observe out of their geographical scope the valid and relevant regulations of the corresponding country.

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

Assembly

- mount on 35 mm mounting rail according to EN 60715
- wall-mount with 2 x screws M4
- connecting wires refer to the wiring diagram.

Putting into operation

- Connect Pt 100 sensor
- Switch on mains voltage
- Relay releases when set temperature is exceeded, the relevant LED is switched on.

Trouble shooting

Die Funktion des Gerätes kann mit einem Pt 100 - Simulator oder nach der Widerstands-tabelle für Pt 100 Sensor EN 60751 überprüft werden. Das Relais schaltet ab bei überschreiten des eingestellten Grenzwertes, bei Sensorbruch oder Sensorkurzschluss. (Ruhestrom)

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Technical data

Power Supply	(version see lateral type plate)
Supply Voltage Us	AC 230 V 50/60 Hz
	AC 24 V / DC 20...30 V without potentially separation
Tolerance Voltage Us	AC : +10 % / -15 %
Frequency (AC)	48...62 Hz
Power Consumption	< 3 VA
Sensor connection	Pt 100 EN 60751
Sensor voltage	<5 V
Sensor current	<3 mA
Short circuit	<15 Ω
Limit value	
Measuring- ranges	3 or 4 ranges switchable
3 measuring-ranges	-10...40 °C / 0...100°C / 0...200°C
Repead error	app. 0,5 K
4 measuring-ranges	0...100°C / 100...200°C / 200...300°C / 300...400°C
Repead error	app. 0,8 K
Error of setting	±5 K
Temperature-dependence	≤0,05 %/K
Hysteresis	adjustable app. 2...10 K
Switching delay don/doff	adjustable 0,1 s...10 s
Relay output	1 change-over contact (co)
Switching voltage	max. AC 250 V
Switching current	max. 5 A
Switching power AC cos φ= 1	max. 1250 VA (ohmic load)
	max. 48 W at DC 24 V
Derating factor at cos φ 0,7	0,5
Rated operational current AC 15	Ie = 2 A Ue = 250 V
Rated operational current DC 13	Ie = 2 A Ue = 24 V
	Ie = 0,2 A Ue = 125 V
	Ie = 0,1 A Ue = 250 V
Recommended Fuse	3,15 A gl (slow)
Mechanical Contact Life	1 x 10^7 operations
Electrical Contact Life	1 x 10^5 operations at AC 250 V 5 A
	2 x 10^5 operations at AC 250 V 3 A
	6 x 10^5 operations at AC 250 V 1 A
Testing conditions	EN 50178 / EN 60947
Rated insulation voltage Ui	AC 250 V
Insulation	EN 60664
Contamination Level	3
Rated impulse voltage	4000 V
Transformer	EN 61558
EMC	EN 50081-2/EN 50082-2
On period	100 %
max. ambient temperature	-20 °C... +55 °C

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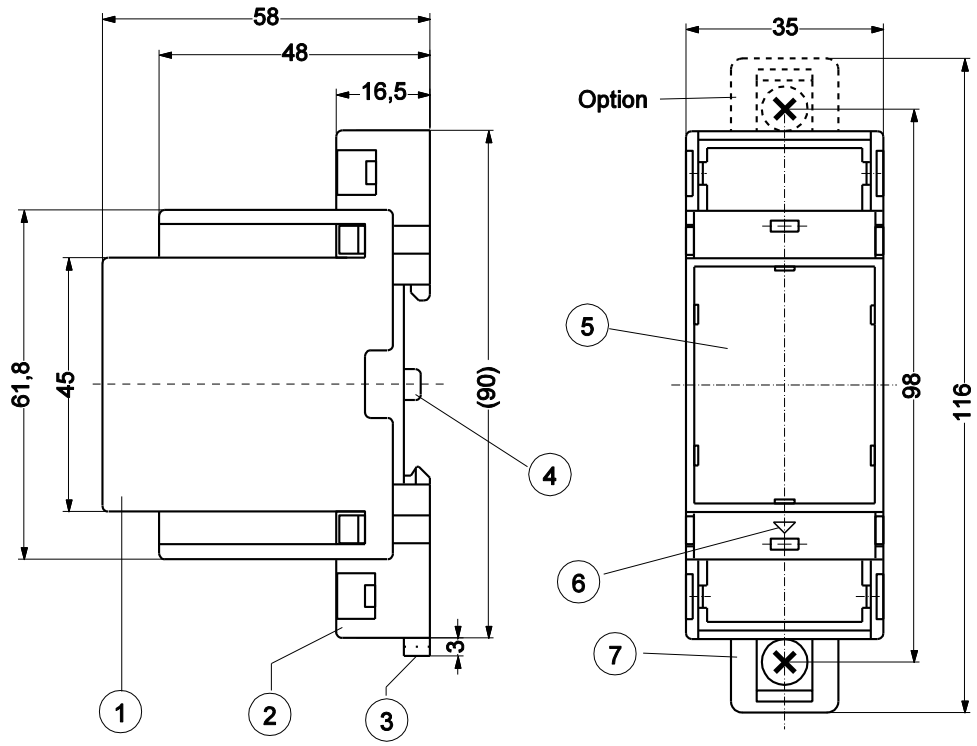
Housing	Design V2
Mounting height	55 mm
Width	2 TE
Dimensions (H x W x D) mm	90 x 35 x 58
Line connection solid wire	1 x 4 mm^2
Stranded wire with insulated ferrules	1 x 2,5 mm^2
Protection class housing	IP 30
Protection class terminals	IP 20
Attachment Mounting	35 mm standard rail according to EN 60715
Optional: Screw mounting	M4
Weight	approx. 130 g

Subject to technical modifications

Form V2

Dimensions in mm



1 Oberteil / cover
2 Unterteil / base
3 Riegel / bar for snap mounting
4 Plombenlasche / latch for sealing
5 Frontplatteneinsatz / front panel
6 Kennzeichen für unten / position downward
7 Riegel bei Wandbefestigung mit Schrauben. Riegelbohrung Ø 4,2 mm / for fixing to wall with screws, Ø 4,2 mm

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