ZIEHL industrie – elektronik GmbH + Co KG
Daimlerstr.13, 74523 Schwäbisch Hall, Germany
+ 49 791 504-0, info@ziehl.de, www.ziehl.de

Operating Manual TR250

updated: 2022-12-20 / dr
from Firmware: 0-00

For more information and help about this product please scan the QR-Code or choose the following link: TR250

Operating manual, Quick guide, Datasheet, Connection diagram, CAD Data
Firmwareupdates, FAQ, Videos about installation and settings, Certificates

- Temperature-Relay TR250

New from firmware -03

- Alarm counter for 99 alarms (alarm 1 … alarm 3), with relative time (elapsed time since alarm) and reason for alarm (sensor)

New from firmware -01

- Program PrS for protection of transformers with 2 PTC-circuits (sensor-alarm, pre-alarm and tripping)
- Program PrG for Protection of transformers with 3 PTC-circuits (forced cooling, pre-alarm and tripping)

Display of firmware version: Press Set ► for 10 s (in display mode)

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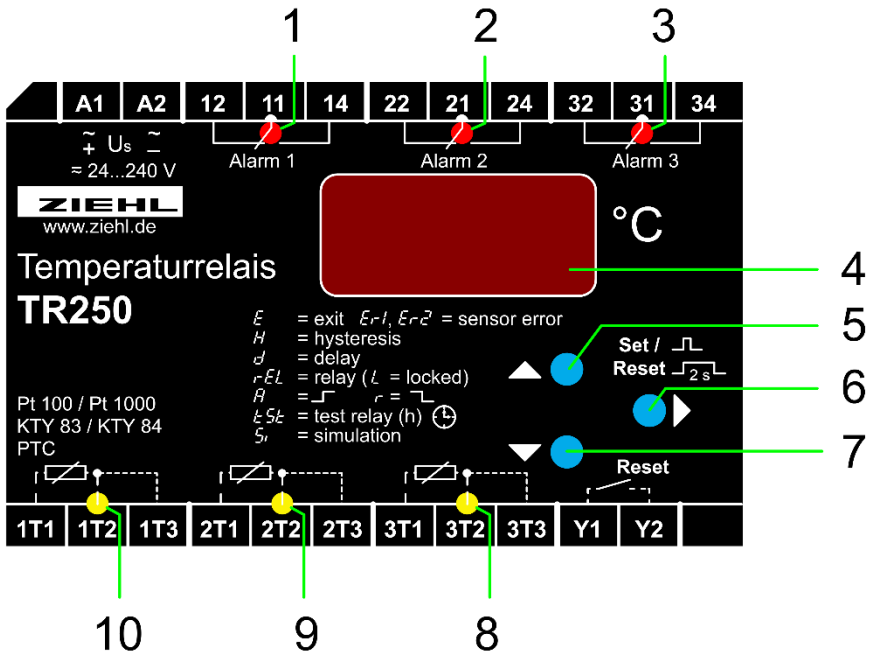
1 General Notes

Compliance with the following instructions is mandatory to ensure the functionality and safety of the product. If the following instructions given especially but not limited for general safety, transport, storage, mounting, operating conditions, commissioning and disposal / recycling are not observed, the product may not operate safely and may cause a hazard to the life and limb of users and third parties.

Deviations from the following requirements may therefore lead both to the loss of the statutory material defect liability rights and to the liability of the buyer for the product that has become unsafe due to the deviation from the specifications.

2 Display and operating elements



1, 2, 3 LEDs Alarm

• OFF	Switching point not exceeded
• Flash ⎍‾‾‾‾‾⎍	Switching delay time dAL runs
• ON	Switching point exceeded, relay switches
• Flash ‾⎍_____⎍‾	Switching back delay time doF runs
• Flash ⎍‾⎍_⎍‾⎍	Ready for Reset, switching interlocked
• ON in programming mode	Selected sensor or sensor group (8, 9, 10) acts on this alarm

4 3 digit digital display

• Display temperature	Appropriate LED Sensor is alight
• Display alarm	AL1 / AL2 / AL3, appropriate LED Alarm is alight
• Display error massages	Er1 = short-circuit in sensor or line Er2 = break of sensor or line Er3/4 = internal error of device Err = common error EEE = measured values too high -EE = measured values too low
• In programming mode	Display of values and functions see 10. Operation

5, 7 button ▲ or button ▼

• Press short	Switch to menu mode, the right decimal-point lights
• Press for ≥ 2 s	Display stored MIN- and MAX- temperature values of selected sensor. Simultaneously pressing of button Set ► for ≥ 2 s deletes all stored MIN- and MAX- temperature values.

6 button Set / Reset ►

- Press short — Display next sensor
- Press short in menu mode — switch to programming mode, the right decimal-point flashes
- Press short in programming mode — switch to next point, the set value will be stored

- Press for 10 s when switching on supply voltage until displayed „Pr 1“ . With buttons ▲/▼it can be select one of these options

Pr 1	Program 1 (factory setting)
Pr2	Program 2
Pr3	Program 3
Pr4	Program 4
Pr5	Program 5 (from firmware -01)
Pr6	Program 6 (from firmware -01)
°C	Resolution 1°C
0.1C	Resolution 0,1°C
°F	Resolution 1°F

With press „Set“ the device reboots. For a new selection this must be repeated.

- Press for ≥ 2 s — Reset Relay locked switching
- Press for ≥ 4 s — Display program number (from firmware -01)
- Press for ≥ 10 s — Display firmware version

8, 9, 10 LEDs Sensor

- ON — Temperature value of this sensor is being displayed
- Flash — Error of displayed sensor, associated alarm LED lights
- 2 or more LEDs Sensor ON — Warmest of those sensors in display
- Alternating illumination — All sensor values are displayed for 2s each consecutively
- ON in programming mode — Selected sensor (8, 9, 10) or sensor error acts on this alarm

Hints:

- Longer pushing of ▲/▼ accelerates the changes in the display
- Button ▲/▼ pushed at the same time sets actual programmed parameter to zero

3 Default Settings

Ex works, 6 programs are selectable. Based on these programs, the relay can be easily adapted to the application. Normally only the temperatures of the alarms have to be changed.
Press button Set ► for 10 s when switching on supply voltage. After that the program Pr 1 . . . Pr4 (from firmware -01: Pr 1 . . . Pr6) and/or the display value (°C / 0.1C / °F) can be selected with ▲/▼ and confirmed with Set ►(°C = Resolution 1°C, 0,1C = Resolution 0,1°C, °F = Resolution 1°F).

Pr 1: Protection of motors/generators with 3 sensors Pt 100 (**Pr 1 is factory setting)**
AL 1 = pre-alarm,
AL2 = tripping,
AL3 = sensor-alarm (all sensors).

Pr2: Protection of transformers with 3 sensors Pt 100.
AL 1 = forced cooling with a periodically test 1/week,
AL2 = pre-alarm and sensor-alarm (all sensors),
AL3 = tripping.

Pr3: Protection of transformers with 1 sensor Pt 100 and 2 PTC-circuits.
AL 1 = forced cooling with a periodically test 1/week (Pt 100),
AL2 = pre-alarm and sensor-alarm (all sensors) (PTC),
AL3 = tripping (PTC)

Pr4: Single association
S1 – AL 1,
S2 – AL2,
S3 – AL3

Pr5: Protection of transformers with 2 PTC-circuits (from firmware -01).
AL 1 = sensor-alarm (sensor S2 and S3),
AL2 = pre-alarm
AL3 = tripping

Pr6: Protection of transformers with 3 PTC-circuits (from firmware -01).
AL 1 = forced cooling with a periodically test 1/week
AL2 = pre-alarm and sensor-alarm (all sensors)
AL3 = tripping

Alarm (AL 1...AL3) = Relay (1 … 3).

Sensor type PTC (thermistor): Display of resistance of sensor in kΩ

Pr.-No.		Pr 1*	Pr2	Pr3	Pr4	Pr5 *1	Pr6 *1	
App-lication	Explanation	Motor-protection 3x Pt 100	Transformer-protection 3x Pt 100	Transformer-protection 2xPTC +1xPt 100	1 Sensor/ Relay	Trans-former-protection 2xPTC	Trans-former-protection 3xPTC	User Data
S 1	Sensor-type	100 (3-L)	100 (3-L)	100 (3-L)	100(3-L)	nc	PTC	
	Alarm	**1+2**	**1+2+3**	**1**	**1**	**-**	**1**	
S 2	Sensor-type	100 (3-L)	100 (3-L)	PTC	100 (3-L)	PTC	PTC	
	Alarm	**1+2**	**1+2+3**	**2**	**2**	**2**	**2**	
S 3	Sensor-type	100 (3-L)	100 (3-L)	PTC	100 (3-L)	PTC	PTC	
	Alarm	**1+2**	**1+2+3**	**3**	**3**	**3**	**3**	
AL 1	Temperature (°C)	120	130	90	50	250	PTC	
H	Hysteresis (°C)	-5	-10	-10	-2	-5	-	
dAL	Switching-delay-time (s)	0	0	0	0	0	0	
doF	Switching-back-delay (s)	0	999	999	0	0	999	
rEL	Function of Relay	r	A	A	r	r	A	
Err	Error (from sensor)	-	-	-	1	2+3	-	
AL2	Temperature (°C)	130	140	PTC	50	PTC	PTC	
H	Hysteresis (°C)	-5	-5	-	-2	-	-	
dAL	Switching-delay-time (s)	0	0	0	0	0	0	
doF	Switching-back-delay (s)	0	0	0	0	0	0	
rEL	Function of Relay	r	r	r	r	A	r	
Err	Error (from sensor)	-	1+2+3	1+2+3	2	-	1+2+3	
AL3	Temperature (°C)	250	155	PTC	50	PTC	PTC	
H	Hysteresis (°C)	-5	-5	-	-2	-	-	
dAL	Switching-delay-time (s)	0	0	0	0	0	0	
doF	Switching-back-delay (s)	0	0	0	0	0	0	
rEL	Function of Relay	r	A	A	r	A	A	
Err	Error (from sensor)	1+2+3	-	-	3	-	-	
tSt	Periodically testing	OFF	ON	ON	OFF	OFF	ON	
	Alarm ON	-	AL1	AL1	-	-	AL1	
don	Test period (h)	-	168	168	-	-	168	
doF	Test time (h)	-	0,2	0,2	-	-	0,2	
Si	Simulation	-						
Cod	Code-lock on/off	oF	oF	oF	oF	oF	oF	
	PIN-Code	504	504	504	504	504	504	

* Factory settings
*1 from firmware -01

4 Application and short description

Short Description
Thermostats TR250 monitor up to 3 sensors at the same time. Output-relays and sensors can be associated freely. Several programs like monitoring 3 sensors for the same switching point with common alarm (e.g. for monitoring motors or transformers) are selectable.

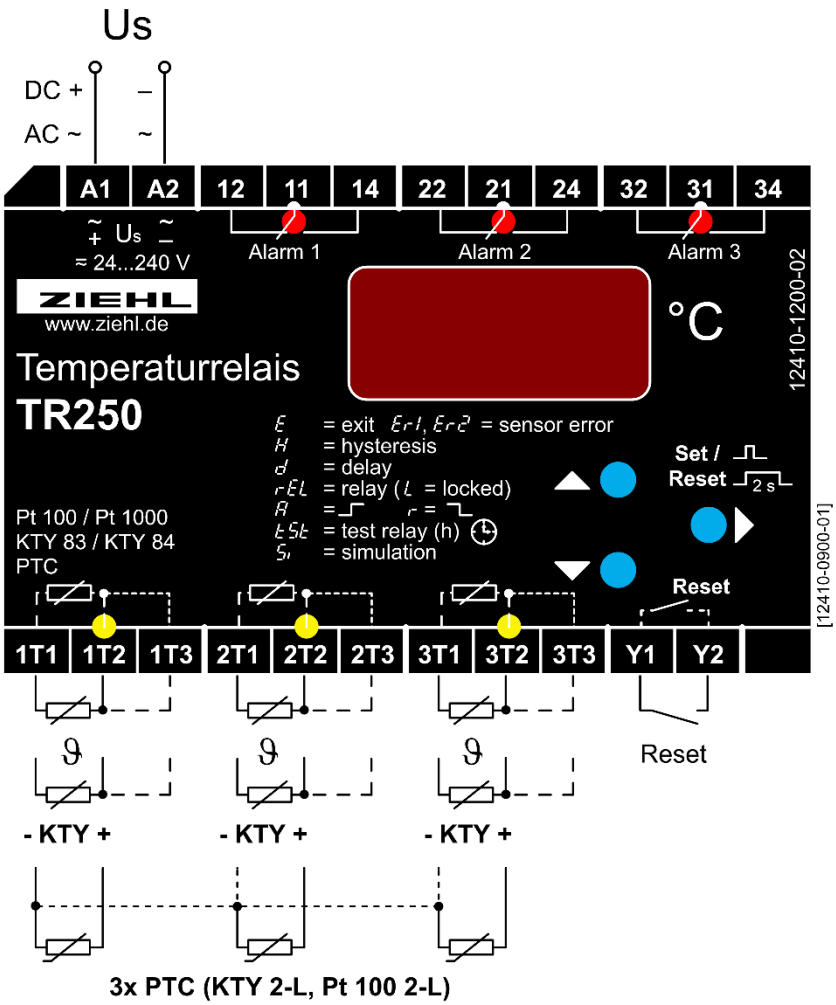
Applications

- Protection of motors or generators against overload, also with simultaneous monitoring of temperatures in bearings
- Protection of dry transformers against overload, also with control of a forced cooling
- General protection of motors and machines against over-temperatures
- Temperature-controller, also for refrigerating systems
- Monitoring of differences in temperature
- Resolution 0.1 °C for measuring range –19.9...99.9 selectable

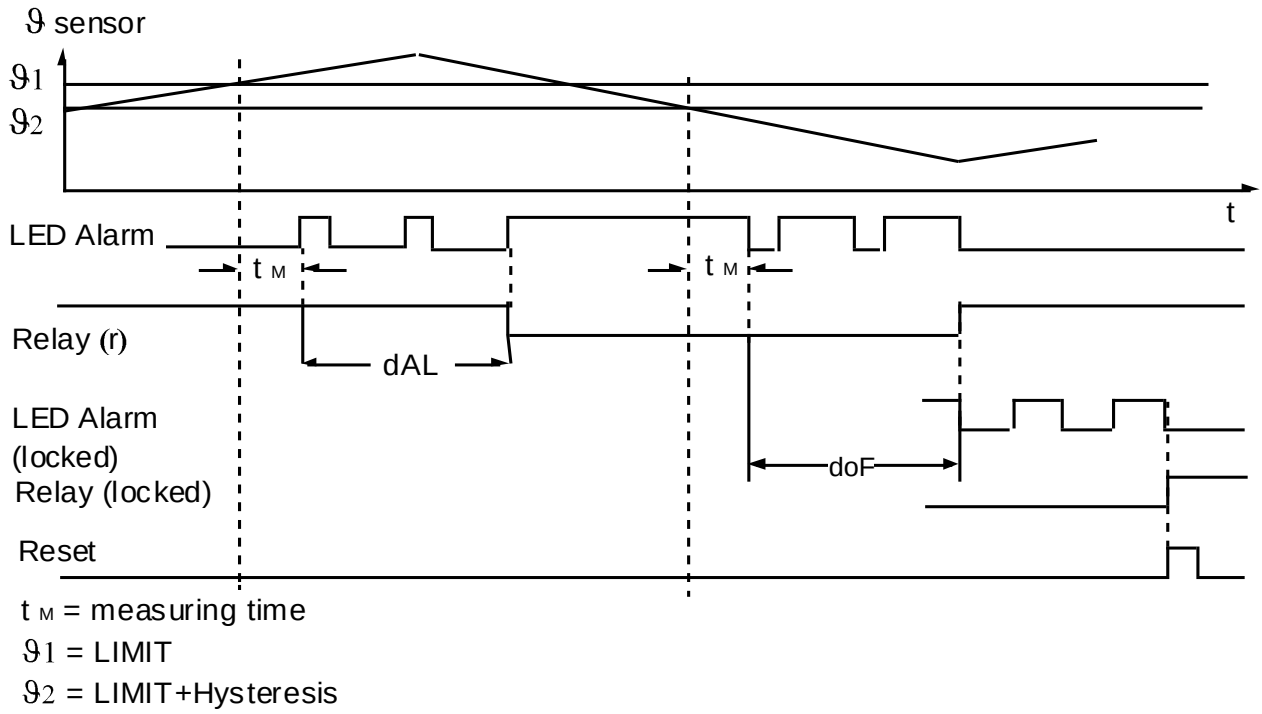
5 Function Overview

- sensor-inputs, Pt 100 (RTD) or Pt 1000 in 2- or 3-wire-connection
- KTY 83, -84, PTC (thermistors)
- relay-outputs (1 change-over-contact each)
- universal power-supply AC/DC 24-240 V

6 Connecting diagram



7 Function Diagram

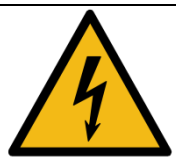


t M = measuring time
ϑ1 = LIMIT
ϑ2 = LIMIT+Hysteresis

Time of Response – Measuring-time t M
The time of response depends on the number of connected sensors and the measuring function. At continuously change temperatures, measuring-time t M is app. 2 s. At rapidly changing temperature, such as appears when simulating temperatures with a potentiometer, measuring time t M is app. 4 … 6 s.

Relay locked switching
In this mode, relay will only switch back, when switching-back-temperature has been reached, switching back delay time has passed and a reset has been made (button, contact Y1-Y2 or switching off and on of the TR250). Readiness is displayed by flashing (1:1) of appropriate alarm-LED.

8 Important notes



DANGER!
Hazardous voltage!
Will cause death or serious injury. Turn off and lock out all power supplying this device before working on this device.

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 equipment is built according to DIN/EN/IEC and checked and leave the plant according to security in perfect condition. To keep this condition, observe the security instructions with the headline „Attention" 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! When all relays are programmed in operation current mode (=pick up at alarm), a loss of the supply voltage or an instrument failure can remain unidentified. When the relay is applied as control instrument, the operator must ensure, that this error is recognized by regular examinations. We recommend to program and accordingly evaluate at least one relay in the closed-circuit current mode.

Attention! Connection of Sensors
Temperature sensors must be connected to the plug-in terminals 1T1, 1T2, 1T3 etc. To ensure proper operation this plug-in terminals have gold-plated contacts. Do not use these plugs for other terminals.

Universal power supply
The TR250 universal power supply works within the range AC/DC 24-240 V. Before switching on make sure, that the rated supply voltage Us of the type- plate and the mains voltage is the same.

9 Installation

The unit can be installed as follows:

- Installation in switchgear cabinet on 35 mm mounting rail according to EN 60715
- With screws M4 for installation on walls or panel. (additional latch included in delivery)

Connection according to connection plan or type plate.

A circuit-breaker or switch must be situated within easy reach of the unit and fused. Installation excess current protection should be ≤ 10 A.

10 Putting into operation

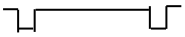
10.1 Display Mode

Indication of the actual temperature of the warmest sensor. LEDs (yellow) show, which sensor or group of sensors is selected. Change with Set ►.
Indication of the stored minimum- resp. maximum-value: Press up ▲ or down ▼ for 2 s. Reset min/max with Reset ► for 2 s.
Leave Display Mode with buttons ▲/▼.
Sensors type Pt ... resp. KTY ..: indication of temperature in °C (optional °F)
Sensor type PTC (thermistor): indication of resistance of sensor in kΩ

LEDs Sensor in Display Mode

ON	Value of this sensor is being displayed
Flash	Sensor Error
2 or more LEDs Sensor ON	warmest of those sensors in display
Alternating illumination	All sensor values are displayed for 2s each consecutively

LEDs Alarm in Display Mode

OFF	Switching point not exceeded
ON	Switching point exceeded, relay switches
Flash 	Switching delay time dAL runs
Flash 	Switching back delay time doF runs.
Flash 	Ready for Reset, switching interlocked.

Reset by button RESET ► or closing of a contact at terminals Y1-Y2.
A continuously closed contact at Y1-Y2 doesn't result in a reset.
During periodical relay-test the appropriate LED lights up.

10.2 Programming Mode

10.2.1 Alarm counter AC

➢ *from firmware -03:*

Select menu item with ▲/▼ until AC is displayed.
With Set ► to alarm counter AC 1. The number of stored alarms is displayed alternating with AC 1.
With ▼ alarms are displayed (latest first). In display number of alarm (n..) is alternating with elapsed time since last alarm (with supply voltage on). (n 14 / 12.5 = alarm no 14 / elapsed time 12 hours, 50 minutes, resolution 10 minutes).
The yellow LEDs at the sensors show, which sensor has caused the alarm.
LED on = limit exceed at this sensor.
LED blinking = error at this sensor.
All LEDs off = test relay.
With ▲/▼ select next/previous alarm.
With Set ► forward to alarm counter 2 and 3.
By pressing Set ► for ≥ 2s all alarms are deleted and return to display mode.
Hint: Elapsed time is stopped when supply voltage is off.
Time is updated every 10 minutes. A deviation of 10 minutes is possible.

10.2.2 Programming of sensors 1-3 (S1/S2/S3)

Select menu item with ▲/▼until S1 and type of sensor are alternating in the display, e.g. S1/ 100 for Pt 100. Here it can be clearly read out, which type of sensor is selected and which alarms are affected by this sensor (red LED Alarm on).
Enter into programming with Set ►.

- Select type of sensor with ▲/▼ (diF can be selected at S3, if S1 and/or S2 are not PtC. with S3 = diF it is handled as difference sensor 2 minus sensor 1).
- Compensate line-resistance (enter value of resistance of line) or select 3-wire or nc (not connected, if no sensor is connected to this input). At setting PtC no compensation of line-resistance is necessary/possible.

10.2.3 2-wire, compensation of line-resistance

To compensate the line resistance, short-circuit the wires nearby the sensor and measure the line resistance. With 2-wire connection and a common line for all signals, all sensor measuring currents will be added on the common line. Thus, the value of the compensation line resistance RK must be calculated as follows:
RK=(n+1) x RL/2 (RL = line resistance of two wires, n = number of sensors)
We recommend using 2 or bettering 3 wires for each sensor.

- Combination of sensor and Alarms (AL/E), **important:** Here it is programmed, which alarms (=relays) are affected by the sensor. Select alarm with ▲/▼. Set switches alarm on or off (see red LED at alarm-contacts). The LEDs of the activated alarms are alight.

Leave menu item with button Set ► when E is in display (on to next menu item)

10.2.4 Programming of Alarms 1-3 (AL1/AL2/AL3)

Select menu item with ▲/▼ until AL1 and Limit (value) alternate in display, e.g. AL1 and 130 for 130 °C. Here it can be clearly read out, which limit is programmed and of which sensors the alarm is effected (yellow LEDs sensor on).
Enter into programming with Set ►.

- Set limit with ▲/▼. At sensors type PtC no limit can be programmed.
- Hysteresis. Negative hysteresis = MAX-alarm, the relay switches at the programmed limit and switches back after the temperature is below the limit by the value of the hysteresis. E.g. limit 130 °C and hysteresis -5 °C: Relay switches at 130 °C and back at 125 °C. Positive hysteresis everything inverted = MIN-limit. At sensors PTC no hysteresis can be programmed.
- Alarm delay dAL: An alarm is being suppressed for this time. Short exceeding of the limit does not result in an alarm.
- Switch-back delay doF: An alarm is switched off this time after the temperature is below the limit, e.g. a cooling fan can cool down a transformer for this additional time to ensure, that it needn't be started again after a short time.
- <u>Function of relays:</u>
  - r-closed-circuit current mode, relay is picked up in GOOD condition (=limit not exceeded) and releases when the limit is reached. Advantage: Errors and malfunctions will normally result in an alarm. Disadvantage: with switched off device and shortly after switching on the supply voltage an alarm is reported. Disadvantageous when the supply-voltage of the device is created by the monitored transformer.
  - A-operating current mode. Relay is released in GOOD condition and picks up when the limit is exceeded. No alarm when supply-voltage is off. This mode is applied normally with heatings, fans or for tripping of transformers.
  - rL/AL: Alarm switches interlocked. Reset only after the temperature is below the limit (+ hysteresis) and after switching-back delay time has passed.
- Error: At Err/SE it can be programmed, if the relay switches at troubles (short-circuit or interruption) at a sensor. (or error of device Er3/4). Select sensor with ▲/▼. Set ► switches sensor on or off (yellow LED at the sensor input changes). LEDs of activated sensors light up. Leave menu item with button Set ► when SE is in display (on to next menu item). We recommend to program this error message for a pre-alarm (Pr2, Pr3 and Pr6) or a relay that is not used for other purposes (Pr1 and Pr5).

10.2.5 LEDs in Programming Mode

Sensor-programming	appropriate LED Alarm is alight
Alarm-programming	appropriate LED Sensor is alight
Err, Error at Sensor	appropriate LED Alarm is alight

10.2.6 Test Relay (tSt)

At this menu item it can be programmed, that a relay switches after a time don, e.g. 1 week (= 168 hours) for the time doF, e.g. 0.2 h (12 minutes) into alarm state, for starting a pump or a fan for a short time to make them move and thus to ensure, that bearings are not damaged by long lasting times without activity.
Select alarm with ▲/▼. Set ► switches on to don and doF.
don = --- = test not active.
Leave menu item with button Set ► when E is in display.
At programs Pr2 and Pr3 (from firmware -01: Pr2, Pr3 and Pr6) a test is programmed for relay 1 (168h/0,2h).

10.2.7 Sensor Simulation (Si)

At this menu item a sensor can be selected and with the buttons ▲/▼ a measured temperature can be simulated. All functions of the device act as if the temperature was measured in real.
15 minutes after the last button has been pushed, the device automatically returns to normal measuring mode.

10.2.8 Code (Cod)

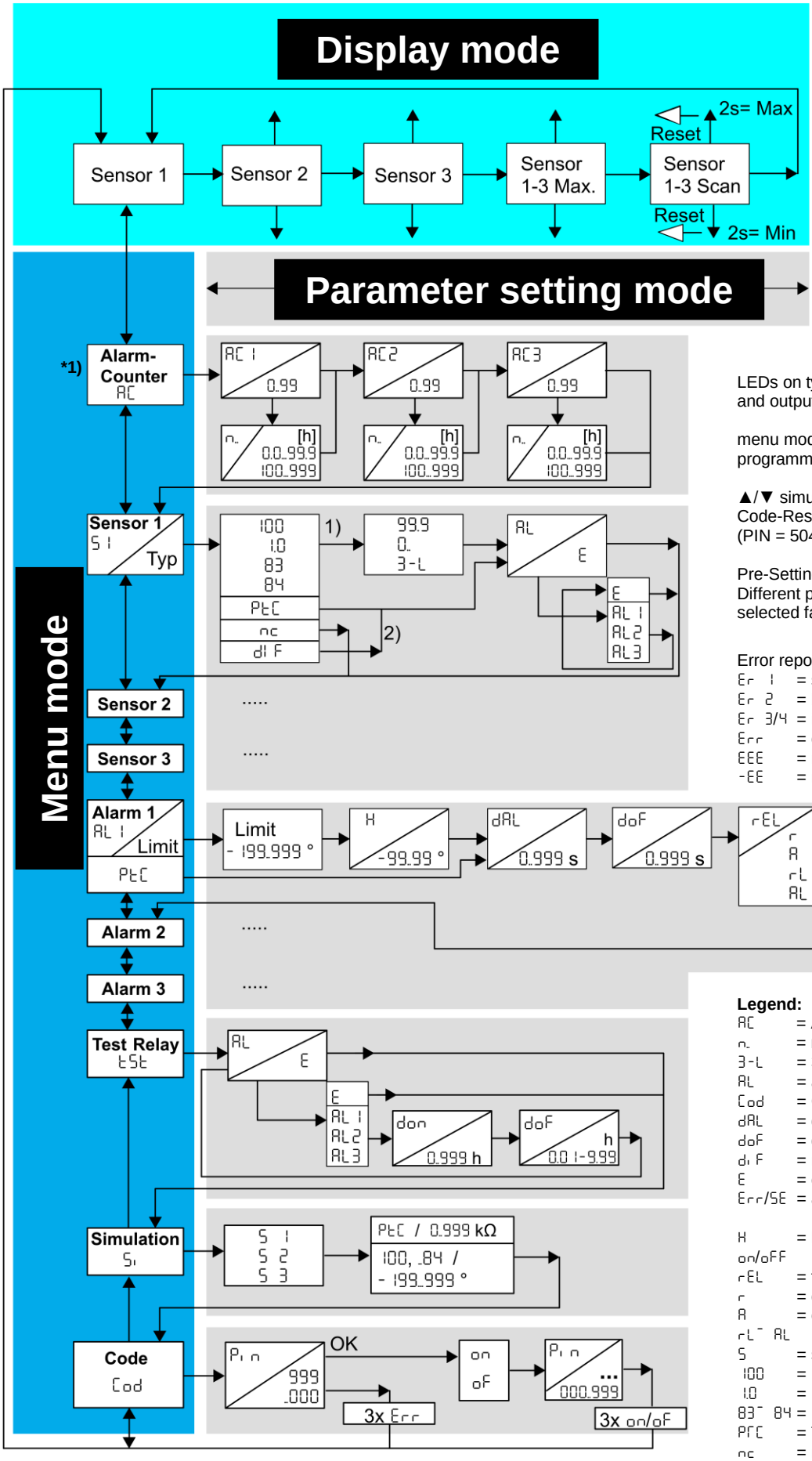
After setting all parameters they can be protected by activating the code lock.

- After pushing Set ►, the display indicates Pin. Adjust with buttons ▲/▼ Pin 504 (factory setting).
- After pushing Set ►, code lock can be activated or switched off.
- After pushing Set ► again, an individual Pin can be selected (write down).

When code lock is activated all parameters can be seen but not be changed anymore.
In case of problems with the code lock (forgotten Pin) the lock can be switched off and the Pin can be set back to 504, by pushing button Set ► while connecting the device to supply-voltage until CodE / oF is indicated in the display.

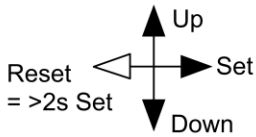
Hints:

- With programs Pr 1 to Pr4 (from firmware -01: Pr 1 to Pr6) the most important parameters can be pre-set for various applications. After that only slight changes should be necessary, e.g. setting of the limits for the alarms.
- After a menu-item has been finished, it is automatically switched to the next menu-item. E.g. after programming the combination of sensor and alarm for sensor 1 it is switched to sensor 2 when Set ► is pushed.
- When the right decimal-point in the 7 segment-display is alight, you have left the display-mode and you can select the different menu-items with ▲/▼ (left vertical column in flow chart).
- When the right decimal-point in the 7 segment-display is flashes, you are i a menu-item. Parameters can be changes with ▲/▼ in this mode (right side of flow chart).
- Longer pushing of ▲ or ▼ accelerates the changes in the display.
- Button ▲ and ▼ pushed at the same time sets actual programmed parameter to zero.
- With a reset (push Set/Reset ► for 2 s) you return to display-mode from any position in the programming-mode (last programmed parameter is stored).



***1) from firmware -03**

Operation with pushbuttons



1) Change of sensor-type *Temp. / PTC* clears association sensors/alarms
2) Monitoring of difference in temperature selectable for sensor 3, only when type of sensor 1 and 2 are identical (dif = sensor 2 minus sensor 1)

LEDs on type-plate display appropriate inputs and outputs

menu mode: right decimal-point lights
programming mode: right decimal-point flashes

▲/▼ simultaneously sets value to *Zero*
Code-Reset = *2s* ► when switching on device (PIN = 504)

Pre-Settings = *10 s* ► when switching on device
Different pre-settings and °C / °F / 0.1 °C can be selected factory reset with ▲/▼

Error reports:
Er 1 = short-circuit in sensor or line
Er 2 = break of sensor or line
Er 3/4 = internal error of device
Err = common error
EEE = measured values too high
-EE = measured values too low

Legend:
AC = Alarm counter / Alarm counter 1, 2, 3
n. = number of stored alarm
3-L = 3-wire-connection
AL = alarm (or Relay-function)
Cod = Code (PIN)
dAL = delay until alarm
doF = delay until switching back
di F = measuring of difference in temperature
E = exit (leave loop)
Err/SE = association which relay reports / Sensor Exit
H = hysteresis
on/oFF = on/off
rEL = function of relay
r = closed circuit current mode
A = operating current mode
rL AL = with locked switching
S = sensor
100 = Pt 100 (RTD-sensor)
1.0 = Pt 1000
83 84 = KTY-sensor 83, 84
PtC = Thermistor
nc = not connected
Si = simulation
tSt = relay-test, periodical test after time *don* duration *doF* (both in hours)
don = --- = *no test*

12 Troubleshooting and remedies

12.1 Pre-Set ex works (WE)

Press button Set ► for 10 s when switching on supply voltage.
After that, the program "Pr 1... Pr4" (from firmware -01: Pr 1...Pr6) can be selected (see "Default-Settings") and temperature display can be changed 1°C <--> 0.1°C <--> °F.
Ex works (factory settings) Pr 1 and 0.1°C are selected.

- **Display of program number** (from firmware -01): Press Set ► for ≥ 4 s in display mode

12.2 Display

EEE	sensor interruption or over-range
-EE	sensor short circuit or under-range

12.3 Relay cannot be programmed – Code Lock

The Code-lock can be activated as a protection against manipulation of the settings. The user can change the PIN-Code.
You have forgotten the PIN? Make a code-reset by pressing button Set ► for 2 s when switching on supply voltage:
Display: "888"; "Cod"; ""oF"; "888". Release button Set ►: Code = off, PIN = 504.

12.4 Displayed Temperature is different from Sensor-Temperature

1. Unit °C / °F correct? When switching on power supply °C / 0.1C / °F is displayed for a short moment. Change of unit see "Factory reset".
2. Check connected types of sensors and programmed types

12.5 Display Error „Er 1 or Er2"

Er 1 Short-circuit in sensor or line
Er2 Break of sensor or line
Er3 and Er4 are internal errors. Switch off and on the device and if necessary, reset to one of the programs. If the error cannot be cleared, the relay should be replaced and sent back to the factory.

12.6 Relay trips regularly without limit exceeded

Check if a time "don" is programmed for this relay at Test Relay "tSt".
At Pre-Settings Pr 2 and Pr 3 (from firmware -01: Pr2, Pr3 and Pr6) for relay K1 don = 168 hours for testing an fan once a week.
Remedy: change setting for don to 0.

12.7 Firmware version

Display of firmware version: Press Set ► for 10 s in display mode.

HINT 1: To return to display mode from any position of programming press button Set ► for 2 s (last settings will be stored).

HINT 2: To set the actual programmed parameter to zero (000), press „▲" and „▼" simultaneously for 2 s.

13 Technical Data

Rated supply voltage Us:	AC/DC 24 – 240 V	
Tolerance	DC 20, 4 - 297 V	AC 20 - 264 V 50/60 Hz
Power consumption	< 3 W	< 7 VA
Relay output:	3 x co (change-over)	
Switching voltage	max. AC 415 V	
Switching current	max. 5 A	
Switching power	max. 1250 VA (resistive load)	
	max. 120 W at DC 24 V	
UL electrical ratings:	250 V ac, 5 A, resistive	
E214025	240 V ac, 1/2 hp, 120 V ac, ¼ hp	
	B 300 – pilot duty, UL 508	
Rated operational current Ie:		
AC15	Ie = 3 A	Ue = 250 V
DC13	Ie = 2 A	Ue = 24 V
	Ie = 0,2 A	Ue = 125 V
	Ie = 0,1 A	Ue = 250 V
Recommended fuse for contacts	T 3,15 A (gL)	
Expected contact life mechanical	3 x 10^7 operations	
Expected contact life electrical	1 x 10^5 operations with AC 250 V / 6 A	
Test conditions:	EN 61010-1	
Rated impulse voltage	4000 V	
Overvoltage category	III	
Contamination level	2	
Rated insulation voltage Ui	300 V	
On-time	100 %	
EMC-tests:	EN 61326-1	
emitted interference	EN 61000-6-3	
Burst	EN 61000-4-4 +/-4 kV	
	Pulse 5/50 ns, f = 5 kHz, t = 15 ms, T = 300 ms	
SURGE	IEC 61000-4-5 +/-4 kV	
	Impulse 1,2/50 µs (8/20 µs)	
discharge of static electricity	IEC 61000-4-2 +/-4 kV contact,	
	+/- 8kV air	
Environmental conditions:		
Ambient temperature range	-20 °C ... +65 °C	
Storage temperature range	-20 °C … +70 °C	
Altitude	Up to 2000 m	
Climatic conditions	5 – 85 % rel. humidity, no condensation	
External wiring temperature range	-5 °C … +70 °C	
Vibration resistance EN 60068-2-6	2…25 Hz ±1,6 mm	
	25 ... 150 Hz 5 g	

Sensor connection:	Pt 100, Pt 1000 acc. to EN 60751

	Range °C		Short-circuit Ohm	Break Ohm	Resistance of sensor + line Ohm
Sensor	min	max	<	>	max
Pt 100	-199	860	15	400	500
Pt 1000	-199	860	150	4000	4100
KTY 83	-55	175	150	4000	4100
KTY 84	-40	250	150	4000	4100
PTC			20	20000 *	
				* when no value 3800 ... 20000 ohm has been measured before	

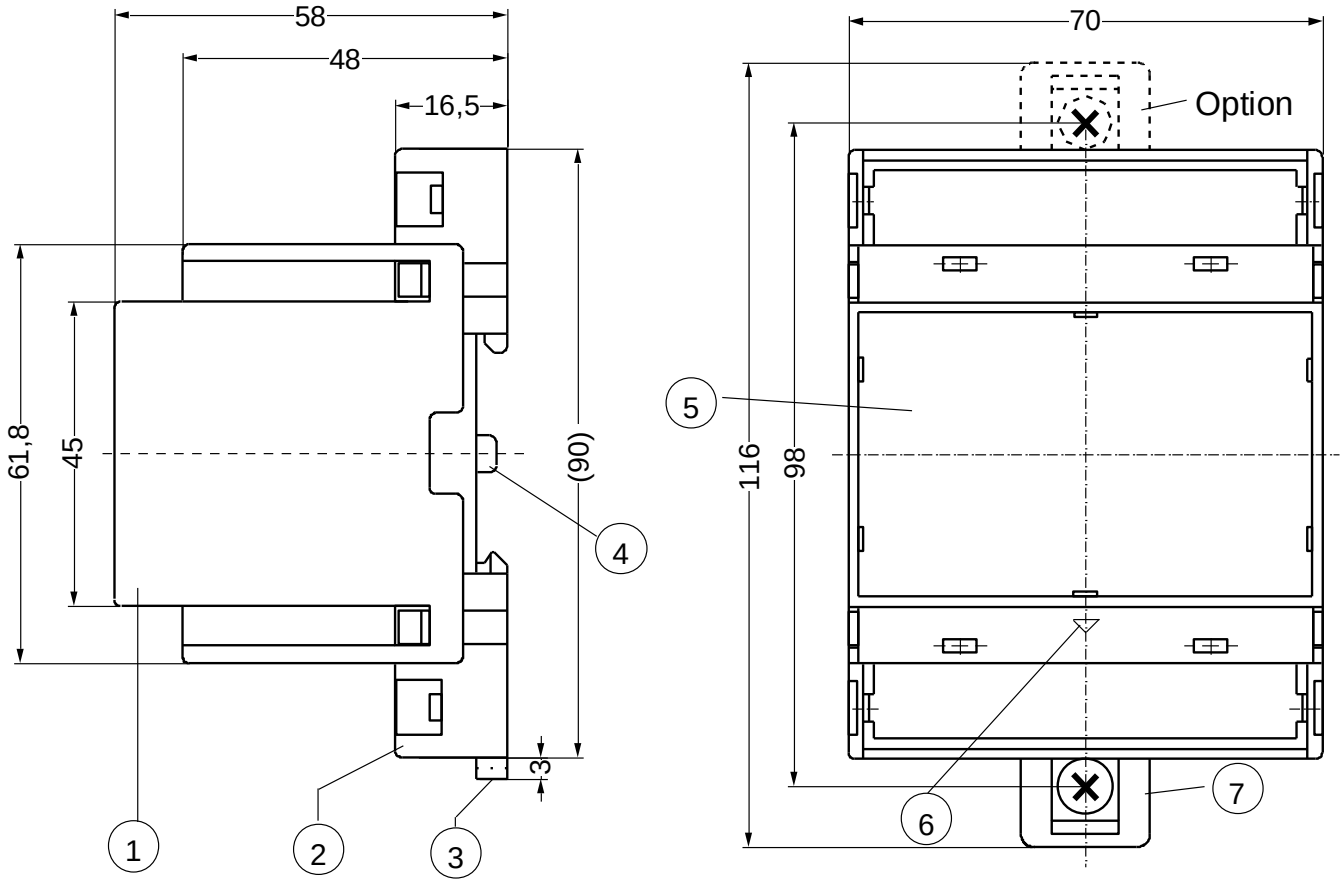
Accuracy	±0,5 % of value ±1 K (KTY ±5 K)
Sensor-current	≤ 1 mA
Measuring time t_M	<2,5 s (depending on number and type of connected sensors)

Housing:	type V 4
Mounting height	55 mm
Width	4 TE
Dimensions (W x H x D)	70 x 90 x 58 mm
Line connection solid wire	each 1 x 1,5 mm^2
Stranded wire with insulated ferrules	each 1 x 1,0 mm^2
Torque	0.5 Nm (3,6 lb.in)
Protection class housing / terminals	IP 30 / IP 20
Fitting position	any
Mounting	Snap mounting on 35 mm standard rail EN 60 715 or M4 screws
Weight	app. 200g

Subject to technical modifications

14 Design V4

dimensions in mm



1 cover
2 base
3 bar for snap mounting
4 latch for sealing
5 front panel
6 position downward
7 for fixing to wall with screws, Ø 4.2 mm.

15 Disposal

Disposal should be carried out properly and in an environmentally friendly manner in accordance with legal provisions.
ZIEHL is registered with the EAR Foundation under WEEE no .: DE 49 698 543.