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Temperature Relays and MINIKA®   Mains Monitoring   Digital Panelmeters MINIPAN®   Switching Relays and Controls   Measuring Transducers   Grid- and Plant Protection

Operating Manual TR1200IP

updated: 2023-01-09 / dr
from Firmware: -09

For more information and help about this product please scan the QR-Code or choose the following link: TR1200IP

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

- **Pt 100 temperature relay for up to 12 sensors with electric 10 MBit/s Ethernet interface**
  Configuration through Web server
 **IEC 61850 GOOSE protocol.**

Table of contents

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 controls
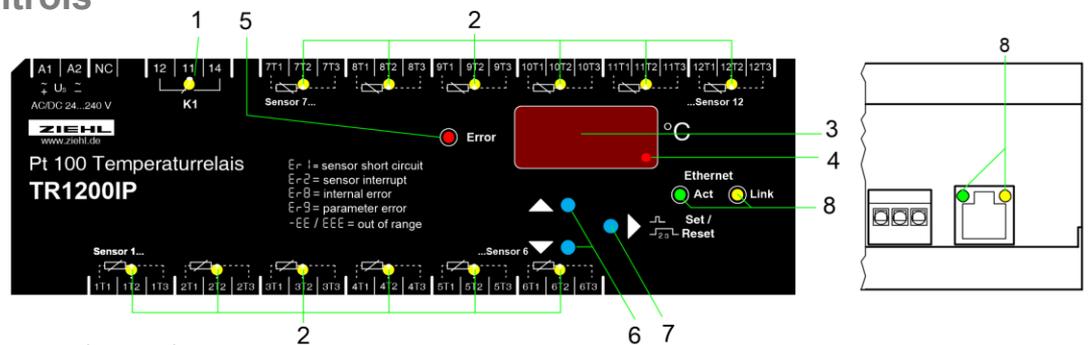
1	**LED relay status** (yellow)	
	OFF	Relay is released
	ON	Relay operating
2	**LEDs sensors** (yellow)	
	ON	Sensor value of the related LED in the digital display
	FLASHES, Er1 or Er2	Sensor error in the corresponding sensor circuit
	MORE THAN ONE ON	Temperature value of the warmest sensor is displayed in the digital display
3	**3-digit digital display** (red)	
	Displays the sensor value	
	Displays the errors with error code e.g. Er 9	
4	**Last decimal point** (red)	
	Off	Display mode
	Illuminated	Menu mode
	Flashes	Configuration mode
5	**LED Error** (red)	
	OFF	No error present
	ON, Er1 , Er2 , Er8 or Er9	Sensor error, device error or configuration error
6	**Up / Down key** (in display mode, normal state)	
	Press briefly	Change into the menu mode
	Press for > 2s:	Displays the MAX (Up) and MIN (Down) measurement, pressing the Set key for ≥ 2s in addition deletes the saved value
7	**Set/Reset key** (in display mode, normal state)	
	Press briefly	Displays the next measurement
	Press for > 2s:	Reset, return to display mode
	Press for > 10s:	Displays the software version e.g. 000
8	**Ethernet interface LEDs** (yellow)	
	Act FLASHES BRIEFLY	Unit is receiving or transmitting via the Ethernet interface
	Link FLASHES BRIEFLY	Valid connection via the Ethernet interface

3   Factory settings and software version

When changing programs, all parameters are reset to the factory settings.

Menu item	Parameter	factory settings	User data
Sen.	**S 1** (Sensor 1)	3-L	
	S 2 (Sensor 2)	3-L	
	S 3 (Sensor 3)	3-L	
	S 4 (Sensor 4)	3-L	
	S 5 (Sensor 5)	3-L	
	S 6 (Sensor 6)	3-L	
	S 7 (Sensor 7)	nc	
	S (Sensor)	nc	
	S 9 (Sensor 9)	nc	
	S10 (Sensor 10)	nc	
	S11 (Sensor 11)	nc	
	S12 (Sensor 12)	nc	
Rel.	**rel** (Relay function)	r	
IP.	**IP1** (1st block IP address)	192	
	IP2 (2nd block IP address)	168	
	IP3 (3rd block IP address)	1	
	IP4 (4th block IP address)	100	
sub.	**su1** (1st block subnetwork)	255	
	su2 (2nd block subnetwork)	255	
	su3 (3rd block subnetwork)	0	
	su4 (4th block subnetwork)	0	
gat.	**ga1** (1st block gateway)	192	
	ga2 (2nd block gateway)	168	
	ga3 (3rd block gateway)	1	
	ga4 (4th block gateway)	1	
UDP.	**rtd** (RTD Protocol)	on	
	Ud1 (1st block UDP port)	50	
	Ud2 (2nd block UDP port)	00	
Cfg.	**htt** (http)	ful	
	Mod (Modbus Protocol)	on	
Si.	**S 1** … **S12** (Sensor 1…12)	0	
CodE.	**On / off**	off	
	pin (Pin code)	504	

Display the software version: Press the "Set" key for 10 s in the display mode.

4   Application and brief description

The TR1200IP can be used wherever multiple Pt 100 sensors (up to 12) need to be evaluated simultaneously:

- Motors or generators,
- also with simultaneous monitoring of bearings or, e.g., exhaust temperatures
- Transformers, also with additional core-temperature monitoring
- Machines and plants

Type TR1200IP temperature relays register the temperature of up to 12 sensors simultaneously and provide the values to the electric 10 MBit/s Ethernet interface.

2 IP protocols are supported, so the registered temperatures can be subsequently evaluated by connected devices that are linked with the TR1200IP via an Ethernet network. In motors, that could be a motor contactor, in transformers a transformer contactor with integrated overload function and thermal monitoring.

An alarm relay reports devices and sensor errors. Sensor breaks or sensor short-circuits are also transmitted via the protocol to the connected evaluation unit.

5   Summary of the functions

- 3-digit digital display for the temperature of up to max. 12 measuring points
- 12 sensor inputs; 1…12 sensors can be connected
- Pt 100 in 2- or 3-wire technology, when connecting Ni100 or Ni120, conversion to the correct temperature in the evaluation unit is required, SIPROTEC devices from Siemens (e.g. 7SK80) support this function.
  The EN100 module in the SIPROTEC 4 units does not support the TR1200 IP.

- 1 alarm relay (1 change-over contact)
- Electric 10 MBit/s Ethernet interface (RTD IP protocol from ZIEHL, or Modbus IP protocol)
- Read-out display, configuration, simulation and firmware update via Web browser
- Tested with Mozilla Firefox 3.5 and Microsoft Internet Explorer 8.0
- LEDs for measurement allocation, error, relay status and Ethernet interface
- Code protection against manipulation of the setpoint values
- Wide area power supply AC/DC 24…240 V
- Distributor housing for panel mounting 8 TE, front-to-back size 55 mm
- Mounting on 35mm DIN EN 60715 standard rail

6   Connection diagram
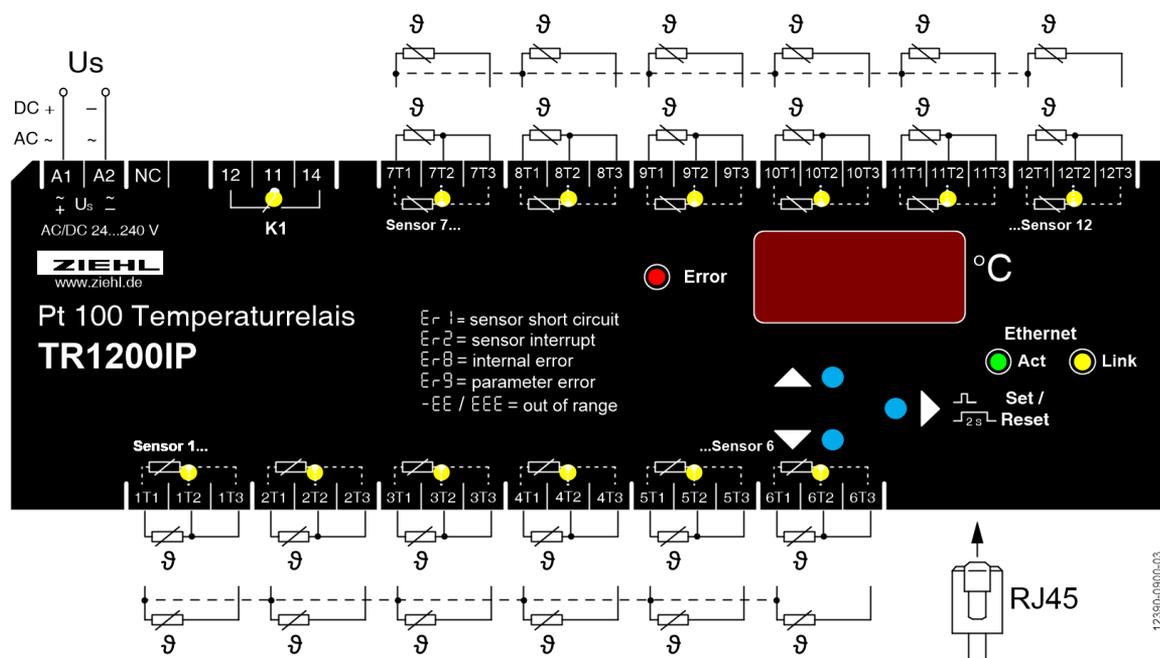
7 Important notice

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

The flawless and safe operation of a device requires that it is shipped and stored appropriately, professionally installed and put into operation and operated according to its intended use.
Only people who are familiar with the installation, commissioning and operation and who have qualifications corresponding to their job are permitted to work on the device. They must comply with the contents of the operating instructions, the notices attached to the device and the relevant safety regulations for constructing and operating electrical plants.
The devices are built and certified in accordance with DIN/EN/IEC and leave the factory in a safe and technically flawless condition. To maintain this state you must comply with the safety regulations indicated with "Caution" in the operating instructions.
If the information in the operating instructions is insufficient at any time, please contact us directly or contact the representation responsible for you.
Instead of the industrial norms and stipulations stated in the operating instructions and applicable in Europe, you must comply with the valid and applicable regulations in the country of utilization if the device is used outside of the area of application.

> ⚠ **Caution! If the operating current execution is programmed for all relays, a failure of the control voltage or the device will not be detected.**
> **When using as a monitoring device, the operator must ensure that this error is detected through periodic performance tests. We recommend programming and correspondingly evaluating at least one relay in closed-circuit current execution.**

> ⚠ **Caution! Sensor connections** It is only permitted to connect to or disconnect from sensor connections terminals or to plug them in or unplug them with the power supply switched off. The pin connections of Sensors 1…6 (below) are not compatible with Sensors 7…12 (above). If a 3-conductor sensor connected below is to be connected above, both external connections must be swapped. The sensors are connected to terminals 1T1 – 1T2 – 1T3, 2T1 - … - 12T3. The plug-in contacts have special contact material and must only be used for connecting the sensors.

> ⚠ **Ethernet connection:**
> Use the Ethernet connection solely with a shielded patch cable, category 5. The maximum cable length is 20m. When using longer cable lengths, the earth potential can shift, causing transmission interference. Corrective measures by using media converters can be taken which can optically transmit the electrical signal across further distances and, e.g., create the connection to an optical switch.

Comply with the maximum permissible temperature when installing in a switch cabinet. Ensure sufficient clearance to other devices or heat sources. If cooling is inhibited, e.g., through close proximity to devices with increased surface temperature or interference with the cooling-air current, the permissible ambient temperature is decreased.

> ⚠ **Caution!**
> **Before applying mains voltage to the device, make sure that the control voltage U_S complies with the mains voltage connected to the device!**

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

8 Mounting

The device can be mounted:
- Distribution board or switch cabinet on 35 mm rails according to EN 60715

9 Detailed description

9.1 Description of the connections

Connection	Function
A1 and A2	Supply voltage Us, see 12. Technical data
11, 12, 14	Alarm relay
1T1…12T3	Sensor connections (xT2 = connection for sensing cable with 3-wires)
Ethernet	RJ45 jack for 10 Mbit/s Ethernet connection

10 Commissioning

10.1 Control chart
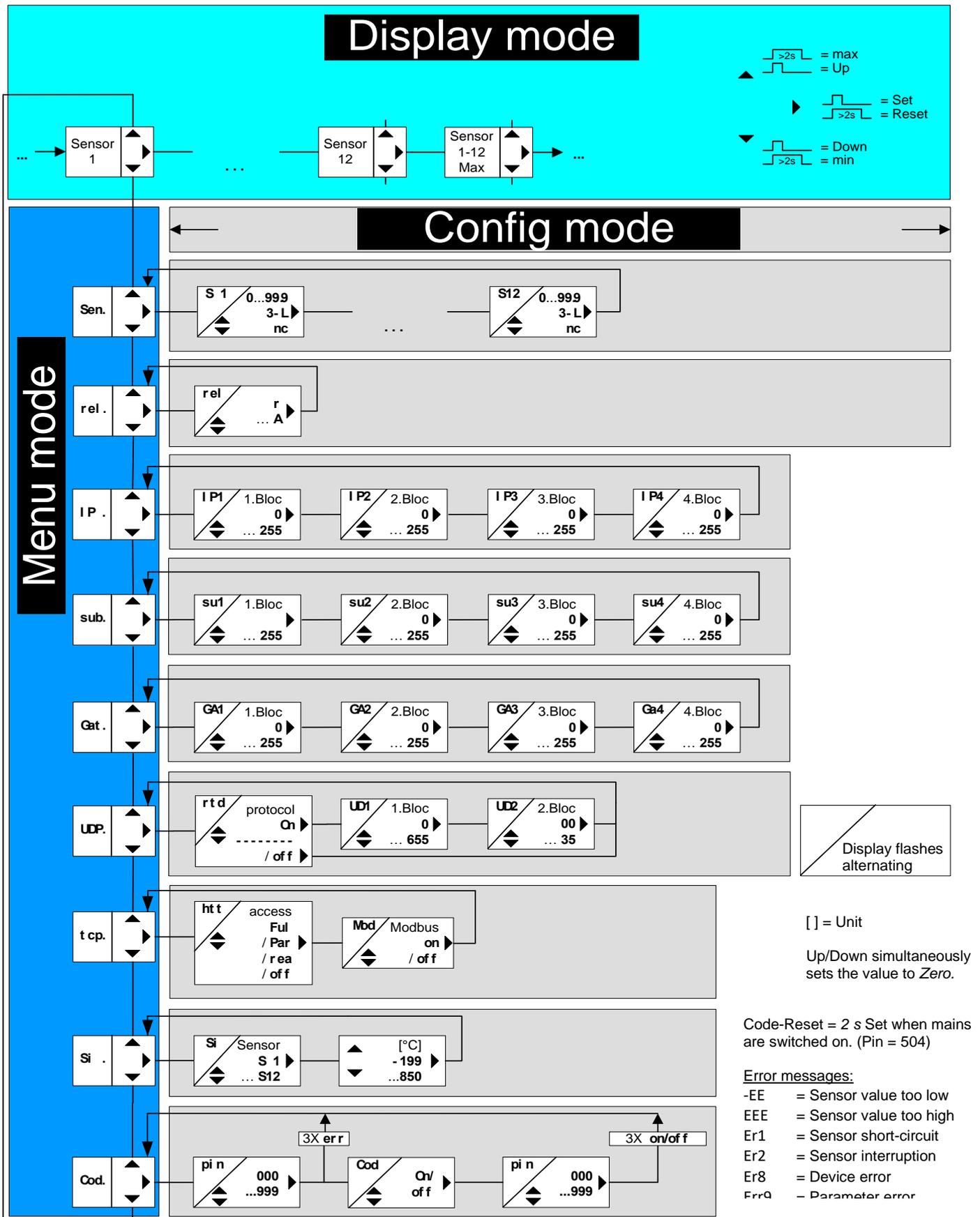
10.2 Web-Server

All parameters that can be changed directly on the TR1200IP can also be intuitively set via the integrated Web server. To accomplish that, it suffices to connect your TR1200IP with your network and execute steps described in 8.9   Configuring the Ethernet interface. You can address the TR1200IP by entering the previously set IP address in your Web browser's address bar.

10.3 Description of the parameters

Parameter	Display	Explanation	Adjustment range
Sensors	Sen.	Menu item for sensor configuration	S 1 … S12
Sensor	S 1 S 2 …	Sensor configuration (cable compensation) S1…S12	0.00 , 3-L , nc
Relay function	rel	Zero signal current / operating current	r , A
IP address	IP .	Menu item for setting the IP address, subdivided into 4 blocks	IP1 … IP4
IP address blocks	IP1 IP2 ...	IP address blocks (set to next) Block1.Block2.Block3.Block4	0 … 255
Subnetwork mask	Sub.	Menu item for setting the subnetwork mask, subdivided into 4 blocks	su1 … su4
Subnetwork mask Address blocks	Su1 su2 ...	Subnetwork mask address blocks (set to next) Block1.Block2.Block3.Block4	0 … 255
Gateway	gat.	Menu item for setting the gateway, subdivided into 4 blocks	ga1 … ga4
Gateway address blocks	ga1 ga2 ...	Gateway address blocks (set to next) Block1.Block2.Block3.Block4	0 … 255
UDP	Udp.	Menu item to configure the protocol and the UDP port (2 blocks)	udp , ud1 , ud2
RTD protocol	rtd	Switch RTD protocol on or off	on , off
UDP Port Block 1	ud1	1 Block UDP Port (0...65535) xxx35	0 … 655
UDP Port Block 2	ud2	2 Block UDP Port (0...65535) xxx35	00 … 35
TCP	tcP.	Menu item for http and modbus configuration	htt , mod
http	htt	http Port Access Full access / Read only / Off	ful , par , rea , off
Modbus	mod	Switch modbus on or off	on , off

10.4 Display mode (last decimal point off)

In the display mode, the TR1200IP is in its normal state; here the temperature of the selected sensor is displayed. In addition, the error codes (e.g. `er1`) are displayed.

Function key Set / Reset	Press briefly: Switches the sensor over
	Press for > 10 s: Displays the software version, e.g. `000`
Function key Up / Down	Press briefly: Changes into the menus mode
	Press for ≥2 s: Displays MAX and MIN measurements, additionally pressing the Set key for ≥ 2s deletes the saved values

10.5 Menu mode (last decimal point on)

The menu mode is used to select the menu items. If no key is pressed for 30s, one automatically returns to the display mode.

Function key Set / Reset	Press briefly: Changes into the configuration mode
	Press for ≥2 s: Returns to the display mode (the most recently set values are then applied)
Function key Up / Down	Press briefly: Select menu item; changes into the display mode

10.6 Configuration mode (last decimal point flashes)

The value of a parameter can be set in the configuration mode. The display continually alternates between the parameter name and the currently set value until the Up/Down key is pressed, which changes the value of the parameter.
If no key is pressed for 2s, the display starts alternating again.
If no key is pressed for 30s (simulation mode 15 min), one automatically returns to the display mode (the most recently set value is applied during this)

Function key Set / Reset	Press briefly: The settings are taken over; continue to next parameter. After the last parameter, changes into menu mode
	Press for ≥2 s: Returns to display mode (except simulation mode), the most recently set values are applied during this
Function key Up / Down	Press short/long: Value change of the parameter (slow/fast)

Hint: Pressing the Up and Down keys simultaneously sets the adjustable value to zero. If you keep the Up or Down key pressed while setting a value, the speed of the change in the display is accelerated.

10.7 2-wire cable compensation

The sensor has to be connected to the terminals xT1 and xT3; xT2 remains open.
In a 2-wire connection, the line resistance has to be determined as in the following.
Short-circuit the cable on the sensor and measure the resistance.
We always recommend conducting 2 or 3 cables to each sensor. If in a 2-wire connection a mutual (ground) return circuit with the same conductor cross-section is used, the currents are cumulative and so is the voltage drop on the mutual cable.
Calculate the compensation value to be entered as follows:

RK = (n+1) x RL/2 (RL = Total cable resistance, n = Number of sensors)

10.8 Configuring sensors

Adjustment process:

• Select the menu item with the Up/Down key until …
⇒ Display `SEN.`
• Press the Set key
⇒ Display `S 1` / `3-L` (Sensor 1 / Connection type) flash alternately
• Use the Up and Down buttons to set the connection type or line resistance.   Sensor not connected: Select `nc`   3-wire connection: Select `3-L`   2-wire connection: `0.00` Perform a line compensation and adjust the line resistance
• Press the Set key
⇒ Display `S 2` / `3-L` (Sensor 2 / Connection type) flash alternately
• Configure all 12 sensors in this manner.

10.9 Configuring the relay

Adjustment process:

• Select the menu item with the Up/Down key until…
⇒ Display `rel.` (Relay function)
• Press the Set key
⇒ Display `rel` / `r` (Relay function / Zero signal current) flash alternately
• Use the Up and Down keys to select the relay function
• Press the Set key (exits the configuration mode)
⇒ Display `rel.` (Relay function)

10.10 Configuring the Ethernet interface

Adjustment process:

• Select the menu item with the Up/Down key until …
⇒ Display `IP.` (Bus)
• Press the Set key
⇒ Display `IP1` / `192` (IP address 1st block / 192) flash alternately
• Set the desired address for 1st block of the IP using the Up and Down keys
• Press the Set key
⇒ Display `IP1` / `168` (IP address 2nd block / 168) flash alternately
• Set the desired address for 2nd block of the IP using the Up and Down keys
• Press the Set key
⇒ Display `IP3` / `1` (IP address 3rd block / 1) flash alternately
• Set the desired address for 3rd block of the IP using the Up and Down keys
• Press the Set key
⇒ Display `IP4` / `100` (IP address 4th block / 50) flash alternately
• Set the desired address for 4th block of the IP using the Up and Down keys
• Press the Set key
⇒ Display `IP.` (IP address)
• Press Down key

ZIEHL

	⇒ Display `sub.` (subnetwork mask)
• Press the Set key	
	⇒ Display `su1` / `255` (subnetwork mask 1st block / 255) flash alternately
• Set the 1st block of the subnetwork mask using the Up and Down keys	
• Press the Set key	
	⇒ Display `su2` / `255` (subnetwork mask 2nd block / 255) flash alternately
• Set the 2nd block of the subnetwork mask using the Up and Down keys	
• Press the Set key	
	⇒ Display `su3` / `255` (subnetwork mask 3rd block / 255) flash alternately
• Set the 3rd block of the subnetwork mask using the Up and Down keys	
• Press the Set key	
	⇒ Display `4u3` / `0` (subnetwork mask 4th block / 0) flash alternately
• Set the 4th block of the subnetwork mask using the Up and Down keys	
• Press the Set key	
	⇒ Display `sub.` (subnetwork mask)
• Press Down key	
	⇒ Display `gat.` (Gateway)
• Press the Set key	
	⇒ Display `ga1` / `0` (gateway 1st block / 0) flash alternately
• Set the 1st block of the gateway using the Up and Down keys	
• Press the Set key	
	⇒ Display `ga2` / `0` (gateway 2nd block / 0) flash alternately
• Set the 2nd block of the gateway using the Up and Down keys	
• Press the Set key	
	⇒ Display `ga3` / `0` (gateway 3rd block / 0) flash alternately
• Set the 3rd block of the gateway using the Up and Down keys	
• Press the Set key	
	⇒ Display `ga4` / `0` (gateway 4th block / 0) flash alternately
• Set the 4th block of the gateway using the Up and Down keys	
• Press the Set key	
	⇒ Display `gat.` (Gateway)
• Press Down key	
	⇒ Display `udp.` (UDP configuration)
• Press the Set key	
	⇒ Display `rtd` / `on` (RTD protocol / on) flash alternately
• Turn the RDT protocol on /off using the Up and Down keys	
• Press the Set key	
	⇒ Display `ud1` / `5` (UDP Port 1st block/ 5) flash alternately
• Set the 1st block of the UDP port using the Up and Down keys	
• Press the Set key	
	⇒ Display `ud2` / `000` (UDP port 2nd block/ 000) flash alternately
• Set the 2nd block of the UDP port using the Up and Down keys	
• Press the Set key	
	⇒ Display `udp.` (UDP)

• Press Down key	
⇒ Display `tcP.` (TCP configuration)	
• Press the Set key	
⇒ Display `htt` / `ful` (http port / full access) flash alternately	
• Configure the http port with the Up and Down keys	
• Press the Set key	
⇒ Display `mod` / `on` (Modbus / on) flash alternately	
• Turn the modbus protocol on /off using the Up and Down keys	
• Press the Set key	
⇒ Display `tcp.` (TCP configuration)	

Note: Note: The UDP port always applies for the transmission of Sensors 1…6.
Sensors 7...12 are transmitted via the set UDP port +1.

10.11   Simulation

A sensor can be selected and a temperature simulated here. All device functions operate as if this value is actually being measured. Error messages are only indicated with the LEDs and not in the display.
The set values are simulated until the menu item `si.` is left with the Up or Down button.
If no key is pressed for 15 minutes, the device automatically switches back to the display mode.

Adjustment process:

• Select the menu item with the Up/Down key until…
⇒ Display `si.` (Simulation)
• Press the Set key
⇒ Display `si` / `S 1` (Simulation / Sensor) flash alternately
• Use the Up and Down keys to select the sensor function
• Press the Set key
⇒ Display `0` (Temperature)
• Simulate the desired temperature using the Up and Down keys
• Press the Set key
⇒ Display `si.` (Simulation)
By pressing the Set button repeatedly all sensors can be selected in succession. The simulated values are retained until the menu item `si.` is left by pressing Up or Down.

10.12 Code lock

Here, the set parameters can be protected by activating a code lock. The device acknowledges an incorrect entry with `err` (flashes three times).

Adjustment process:

• Select the menu item with the Up/Down key until…
⇒ Display `Cod.` (Code lock)
• Press the Set key
⇒ Display `Pin` / `0` (Pin / Pin code) flash alternately
• Use the Up and Down keys to set the **saved** pin code (**factory setting is `504`**)
• Press the Set key

• Set the desired code lock using the Up and Down keys:
  ○ `off.` off, all parameters can be changed
  ○ `On` on, no parameters can be changed

• Press the Set key
⇒ Display `Pin` / `504` (Pin / Pin code) flash alternately
• Set the desired new pin code with the Up and Down keys (caution: write down the pin code)
• Press the Set key (exits code locking)
⇒ Code lock on, display `on` flashes three times ⇒ Code lock off, display `off` flashes three times
⇒ Display `Cod.` (Code lock)

10.13 Possible indications in display

Display mode

Er1 … er9	Error messages (see 11. Troubleshooting and measures

Menu mode / Configuration mode

Sen.	Menu item sensor configuration
S 1 … S12	Sensors 1…12
3-L	3-conductor connection
nc	No sensor connected
rel	Relay function
IP.	Menu item for configuring the IP address
IP1 … IP4	Blocks 1 to 4 to set the IP address
sub.	Menu item for configuring the subnetwork mask
su1 … su4	Blocks 1 to 4 to set the subnetwork mask
8gat.8	Menu item for configuring the gateway
ga1 … ga4	Blocks 1 to 4 to set the gateway
udp.	Menu item to configure the RTD protocol and the setting of the UDP port
rtd	ZIEHL RTD protocol
ud1 … ud2	Blocks 1 to 2 to set the UDP port (if possible > 1024)
tCP.	Menu item for configuring the http port and the modbus protocol
htt	Configure the http port
Ful	Full access, http port and firmware update On
par	Measurements and device data along with configuration in the browser (no firmware update, no network settings modification)
rea	Read access, only measurements and device data in the browser
off	No user interface and no firmware update
Mod	Modbus TCP protocol
Si	Simulation
Cod	Code lock
Pin	Pin code (factory setting 504)
Upd	Firmware update is running

11 Maintenance and repair

The TR 1200 is maintenance-free. Periodically test for proper functioning.

12 Troubleshooting and measures

Error	Cause	Remedy
`-EE` appears in the display	Sensor short-circuit	Measurement range of -199°C (sensor resistance <18.39 Ohm) undercut
`EEE` appears in the display	Sensor interruption	Measurement range of 850°C (sensor resistance >390.26 Ohm) exceeded
`Er1` appears in the display	Sensor short-circuit	The LED in the defective sensor circuit flashes, check sensor circuit for short-circuit
`Er2` appears in the display	Sensor interruption	The LED in the defective sensor circuit flashes, check sensor circuit for interruption
`Er8` appears in the display	Internal device error	The unit needs to be returned
`Er9` appears in the display	Parameter error	Do a factory reset
False values or sensor error for Sensors 7…12	Sensors 7…12 are not connection compatible to Sensors 1…6	Connect Sensors 7…12 correctly
The device cannot be configured	Code lock	The code lock provides protection against unauthorised manipulation on the device. If the code lock is active, the parameters cannot be changed. The pin can be set by the user. Pin code unknown? -> Perform a code reset: While switching on the supply voltage, press the "Set" key for **2 s** ⇨ The display alternates `888` – `Cod` – `off` – `888` ⇨ Release the Set key Code lock is switched off, Pin code = 504
Unable to receive GOOSE messages	The settings in the IEC61580 System Configuration Utility must match the settings of TR1200IP. The Ethernet switch must support 10-Mbit/s.	Check settings. Check Switch.

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, < 10 VA

Relay output:	1 Wechsler (CO)
Switching voltage	max. AC 415 V
Switching current	max. 5 A
Switching capacity	max. 1250 VA (ohmic load)
	max. 120 W at DC 24
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
Nominal operating 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 series fuse	T 3.15 A (gL)
Contact service life, mech.	1×10^7 operating cycles
Contact service life, electr.	1×10^5 operating cycles at AC 250 V / 6 A

Temperature measurement:	
Measurement time sensor	0.25…3s (dependent on the number of sensors)
Measurement time sensor	0.25…30s (for measurement cycle of one sensor)
Measurement range	-199°…850°C
Resolution	1°C

Sensor connection:

12x Pt 100 acc EN 60751, connection of Ni100 and Ni120 sensors possible. Conversion of the measured values must be performed in the evaluation unit.

	Measurement range °C		Short-circuit Ohm	Interruption Ohm	Sensor resistance + line resistance Ohm
Sensor	min	max	<	>	max
Pt 100	-199	860	15	400	500

| Tolerance	±0.5 % of measurement ±1 K
Sensor current	≤ 0.8 mA
Temperature drift	<0.04°C/K

Ethernet interface:	
Transmission speed	10 MBit/s
IP address	Standard: 192.168.1.100, adjustable
Subnetwork mask	Standard: 255.255.255.0, adjustable
UDP port	Standard: 5000 (5001), adjustable
Max cable length	20m when using CAT 5 patch cable
Max response time RTD / Modbus	< 700 µs

Test conditions:	EN 61010-1
Rated impulse withstand voltage	4000 V
Surge category	III
Pollution level	2
Rated insulation voltage Ui	300 V
Operating time	100 %
Galvanic insulation	Supply voltage– Measurement input DC 3820 V
	Ethernet Control voltage–Measurement input DC 500V

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

Housing:	Type V8, distribution board
Dimensions (W x H x D)	140 x 90 x 58 mm
Front-to-back size / Width 55 mm / 8 TE	
Wiring connection single strand	each 1 x 1.5 mm^2
Finely stranded with wire end ferrule	each 1 x 1.0 mm^2
Starting torque of the terminal screw	0.5 Nm (3.6 lb.in)
Protection class housing / terminals	IP 30 / IP20
Mounting position	Arbitrary
Mounting	Snap-on fastening standard rail
	35 mm acc EN 60715 or
	Fasten with screws (with 2 additional bars)
Weight:	Approx. 350 g

We reserve the right to make technical changes.

14 Mounting type V8:

Dimensions in mm
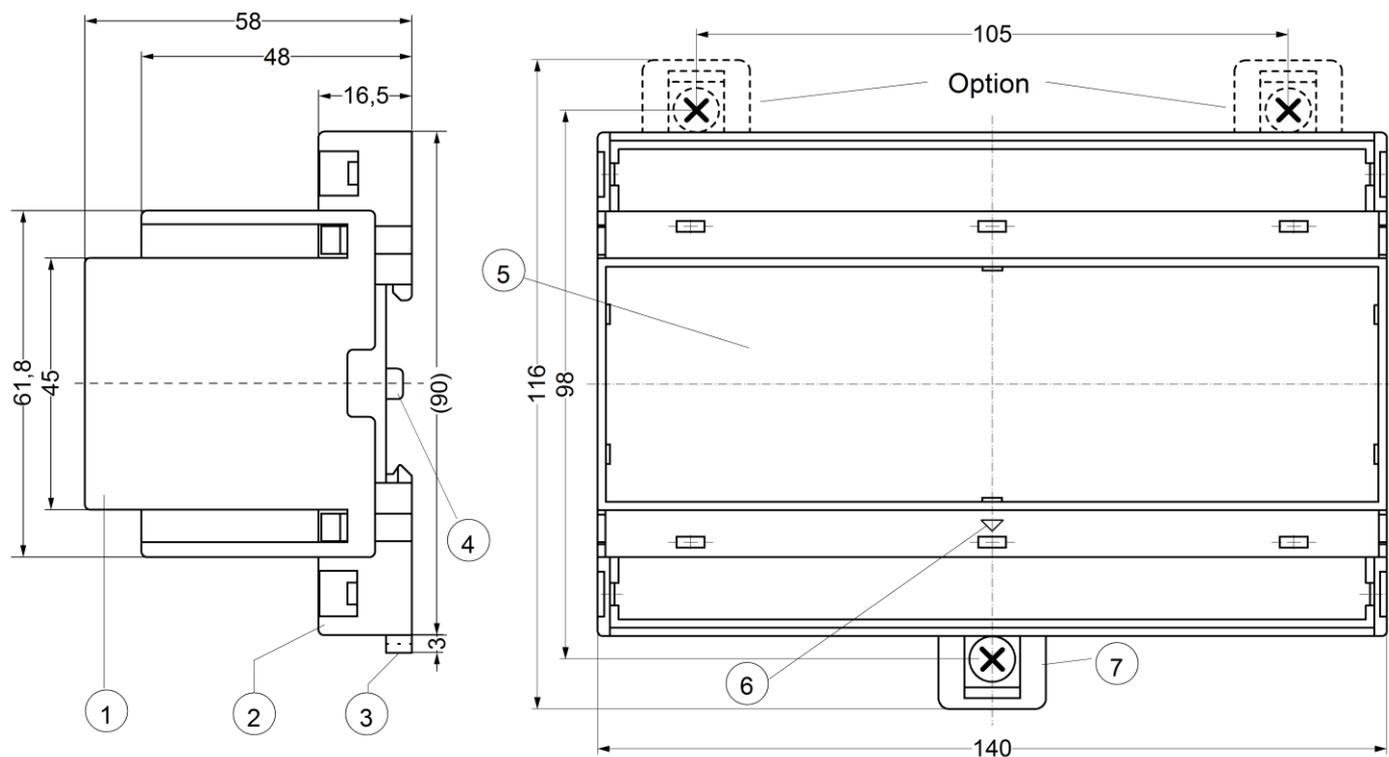
1   Cover
2   Base
3   Bar for snap mounting
4   Latch for sealing
5   Front panel
6   Identification for down / position downward
7   Bar for wall mounting with screws. Bar drill hole Ø 4.2 mm / for fixing to wall with screws, Ø 4.2 mm.

15 TR1200IP Ethernet interface

Ethernet	UDP (Port 0…65535)	ZIEHL RTD (can be switched off)	Read measurements and device data	
	TCP	MODBUS TCP (Port 502, disconnectable, 1 connection)	Read measurements and device data	
		http (interface) (Port 80 disconnectable)	Read access	Read measurements and device data
			Configuration access	+ configure sensors and relays
			Full access	+ network settings and firmware update

All protocols can be activated or deactivated independent of each other.

15.1 ZIEHL RTD UDP protocol

The ZIEHL RTD protocol can be switched off in the menu item udp. - rtd .
The UDP Port can be set in the menu item udp. - ud1 and ud2 in the range of 0…65535 in 2 blocks.
You can find documentation on the ZIEHL RTD protocol in the Internet at
 www.ziehl.com TR1200IP – ZIEHL RTD protocol

15.2 Modbus TCP protocol

The modbus protocol can be switched off in the menu item tcp. - mod .
The modbus TCP Port is permanently set to 502 and cannot be changed.
You can find documentation on the Modbus TCP protocol in the Internet at
 www.ziehl.com TR1200IP – Modbus TCP protocol.

15.3 http protocol

The browser and firmware update function depend on the access set in the menu item tcp. - http .

The following functions are available in the browser:

Full access ful	Measurements and device data can be viewed
	The TR1200IP can be configured
	Network settings can be modified
	Firmware update is possible
Configuration access par	Measurements and device data can be viewed, configuration possible, network settings cannot be modified
Read access rea	Measurements and device data can be viewed
No access off	The http port is completely switched off

The http port is permanently set to 80 and cannot be changed.

15.4 IEC 61850 GOOSE protocol

GOOSE application descriptions see: http://www.ziehl.com/en/AllProducts/detail/TR1200IP-40

TR1200IP

| Status | Simulation | Sensor Config | IP Config | TCP/UDP Config | **GOOSE** | Firmware Update | Help |

Achtung: VLAN ID / Priorität wird nicht ünterstützt!
Warning: VLAN ID / Priority is not supported!

IEC 61850:	⦿ On ○ Off
Goose MAC:	01:0C:CD:01 : 10 : 00
IEC 61850 Name:	TR1200IP 504
Go ID:	ZIEHL_TR1200IP
App ID:	0x 0504
Monitoring time min:	10 ms
Monitoring time max:	2000 ms
Deadband:	99 .0 °C
Config revision:	1

Save Config

Download IEC 61850 IED Capability Description (ICD) file

Sensor state of single sensor	Internal error / device error 0 = no error	temperature value	Quality of the temperature value
Valid temperature	0	-199..859 °C	0
Sensor = not connected	0	980 °C	0x0042
Sensor interruption	0	999 °C	0x0042
Sensor short-circuit	0	-999 °C	0x0042
any	> 0	-199..859, -999, 980,999 °C	0x0042

QUALITY 0x0042 = INVALID + FAILURE

16 Appendix SIPROTEC configuration

16.1 Configuration SIPROTEC Compact-Devices (only 7SJ80 and 7SK80)

Connection of sensors and configuration of RTD box TR 1200 IP for evaluation of Siemens SIPROTEC Compact-devices 7SJ80 and 7SK80 at Port A.

Settings for the Ethernet connection between SIPROTEC Compact-device and RTD box TR1200 IP:

-Setting in SIPROTEC Compact-device is „**Ziehl RTD UDP Protocol**"

-Setting in RTD TR1200 IP is „**Modbus UDP Protocol**" with „**On**" (Presetting = „On") activated.

CAUTION! The EN100 module in the SIPROTEC 4 devices does not support this function.

The connection type „**6 RTD Ethernet**" or „**12 RTD Ethernet**" from the RTDs set within „Function scope" of the Compact-device.

Following settings have to be done in RTD box TR1200 IP:

For „6 RTD Ethernet" Connect Sensors 1…6
⇒ Configure Sensors 1...6 in menu item `SEN.` depending on the connection (configure sensors that are not connected as "nc")
⇒ Configure Sensors 7…12 in menu item `SEN.` as "nc"
⇒ Set IP address in menu item `IP.` and UDP port in menu item `udp`
The TR 1200 IP transmits the data of Sensors 1...6 on enquiry (see protocol description) with the IP address under the set UDP port.

For "12 RTD Ethernet" Connect Sensors 1…12
⇒ Configure Sensors 1...12 in menu item `SEN.` depending on the connection
⇒ Set IP address in menu item `IP.` and UDP port in menu item `udp`
The TR 1200 IP transmits the data of Sensors 1...6 on enquiry (see protocol description) with the IP address under the set UDP port. On enquiry with the same IP address under the set UDP port +1, the TR 1200 IP transmits the data of Sensors 7…12.

Find detailed application description in Internet, at following Link :
www.siprotec.com > Accessories > Temperature Detection > 7XV5662-8AD10 > Downloads

16.2 Configuration SIPROTEC 5-Devices

Settings for the Ethernet connection between SIPROTEC 5 and RTD box TR1200 IP:

-Setting in SIPROTEC 5-device is „**SUP-Protocol**" (Slave Unit Protocol)

-Setting in RTD TR1200 IP is „**Modbus TCP Protocol**" with „**On**" (Presetting = „On") activated.

The „**Modbus**" TCP-Protocol can be activated with the function buttons under the menu `tcP` – `mod` or using the Web-Browser in the tab „**TCP/UDP Config**" with „**On**" activated.

The setting „RTD" (RTD-Protocol) and „UDP Port" have no influence here.

The Modbus TCP Port is fix set to 502 and cannot be changed.

The setting of the SIPROTEC 5-device can be found in manual (e.g. 7UT82) in chapter 5.9 „function group type analog converter".
In Internet under: www.siprotec.com > SIPROTEC 5 > 7UT82 > Downloads

Attention! The RTD box TR1200 IP suppers only **10 MBit/s Ethernet** connections, so no direct connection to **100 MBit-communication modul** is possible. In such a case you have to use e.g. an autom. 10/100 MBit/s- Autosensing-Switch between TR1200 IP and SIPROTEC 5.

17 Firmware update

⇒ Set the access to `Ful` in the menu item `tcp.` - `http`
⇒ Start the "Firmware update" page in the browser
⇒ Select the file with the new firmware
⇒ Start the firmware update by clicking on the "Update" button; the file will be downloaded from TR1200IP
⇒ During transmission, the `Upd.` is displayed and the sensor LEDs S1…6 illuminate in succession.
⇒ As soon as the firmware has been transmitted, the TR1200IP reprograms itself. During this process the sensor LEDs S1…6 flicker rapidly. <u>Do not switch off the unit under any circumstances.</u> As soon as the firmware update has completed, the TR1200IP restarts and is ready for operation again

18 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.