

Quick Guide TR1200



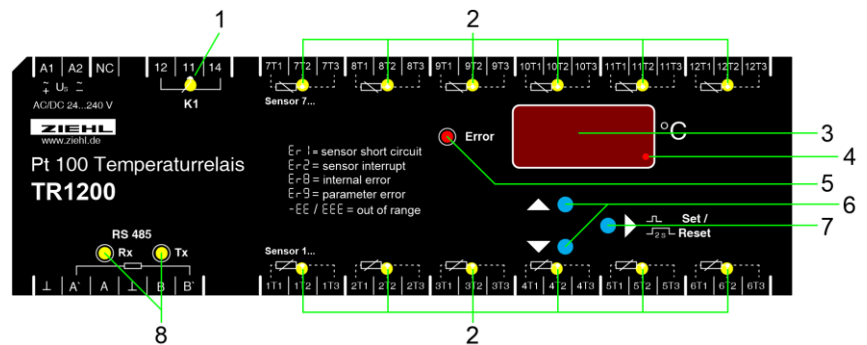
updated: 2017-11-09/Fu
 from Firmware: -03

- Pt 100 thermostat with 12 sensor ports and Interface RS485



Detailed operating manual see: <http://www.ziehl.com/en/Products/detail/TR1200-39>

1 Display and controls



- | | | |
|----------|---|---|
| 1 | LED relay state (yellow) | |
| | OFF | The relay is released |
| | Illuminated | The relay is picked up |
| 2 | LED sensors (yellow) | |
| | Illuminated | Displays the sensor value belonging to the LED in the digital display |
| | flashes, Er 1 or Er 2 | Sensor error in the corresponding sensor circuit |
| | All illuminated | Displays the value of the warmest sensor in the digital display |
| 3 | Digital display 3 digits (red) | |
| | Display of sensor value | |
| | Display of error codes e.g. Er 9 | |
| 4 | Hindmost decimal point (red) | |
| | OFF | Display mode |
| | Illuminated | Menu mode |
| | flashes | Parameter mode |
| 5 | LED error (red) | |
| | OFF | normal operation |
| | Illuminated with Er 1 , Er 2 , Er 8 or Er 9 | Sensor error, malfunction, invalid parameter |
| 6 | Button Up / Down (display mode, normal operation) | |
| | Press briefly | Change into the menu mode (see Operating instructions Point 8.4) |
| | Press for > 2s | Displays the stored MAX value (Up) / MIN value(Down) – press also button Set for ≥ 2s to erase the stored value |
| 7 | Button Set / Reset (display mode, normal operation) | |
| | Press briefly | Displays the value of next sensor (sensor LED illuminates) |
| | Press for > 2s | Reset, back to display mode |
| | Press for > 10s | Displays the software version (e.g. 000) |
| 8 | LED RS485 Interface (yellow) | |
| | Rx flashes briefly | Unit is receiving data via the RS485 interface |
| | Tx flashes briefly | Unit is transmitting data via the RS485 interface |

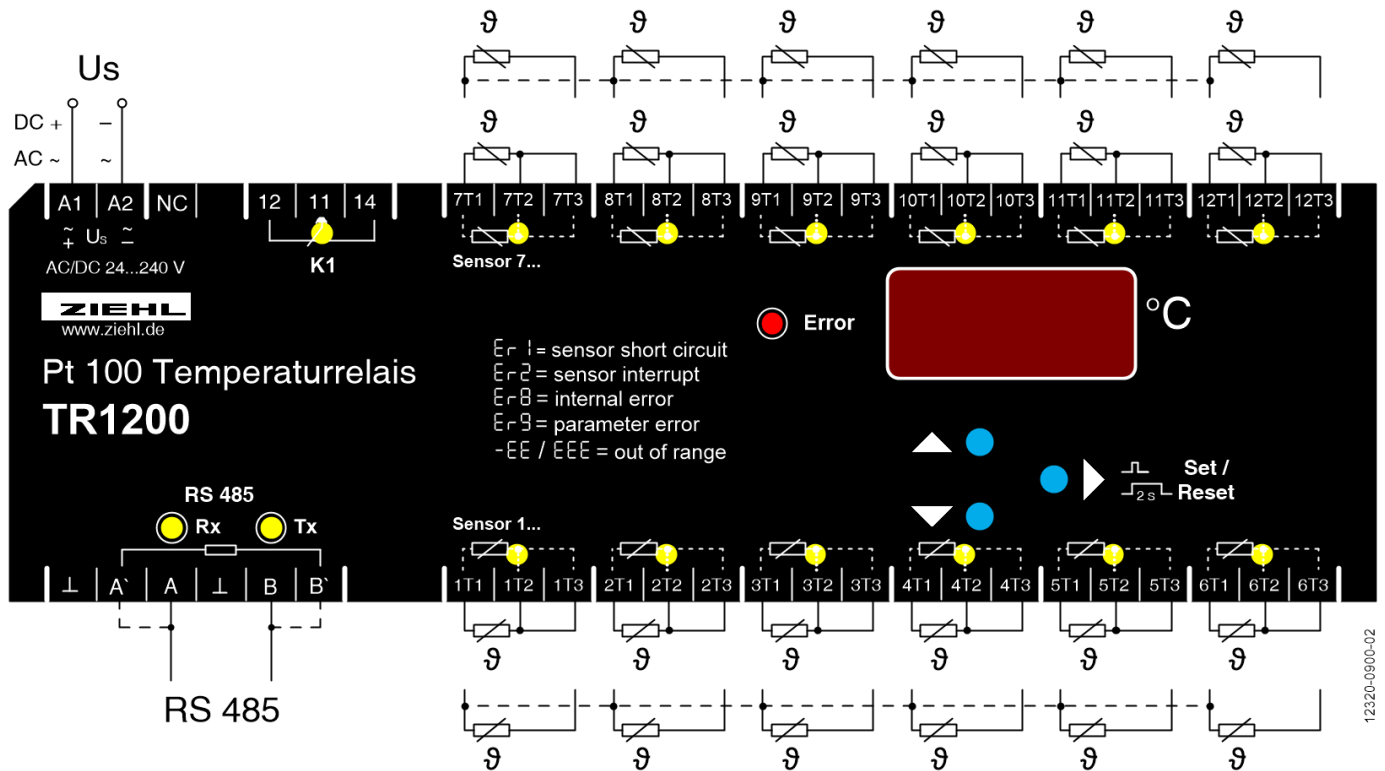
2 Factory settings and software version

Press button "SET" for 10 s when switching on supply voltage for factory settings.

Menu mode	Parameter	Factory settings	My configurations
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 8 (Sensor 8)	nc	
	S 9 (Sensor 9)	nc	
	S 10 (Sensor 10)	nc	
	S 11 (Sensor 11)	nc	
	S 12 (Sensor 12)	nc	
rEL.	rEL (Relay function)	r	
bUS.	Prt (Protocol)	485	
	Adr (Unit address)	0	
	bdr (Baud rate)	96	
	PRr (Parity bit)	EuE	
	StP (Stop bits)	1	
Si	S 1 (Sensor 1)	850	
	...		
	S 12 (Sensor 12)	850	
CodE	on / off	off	
	Pin (PIN code)	504	

Display of Software-Version: Press "SET" for 10 s in display mode

3 Connection diagram



4 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 equipments are built according to DIN / 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!

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.

Caution! Temperature sensor terminals

The pin connections of Sensors 1...6 (below) are not compatible with Sensors 7...12 (above). If a 3-wire-technique sensor connected below is to be connected above, both external connections must be swapped.

Temperature sensors must be connected to the plug-in terminals T11, T12, T13 etc. To ensure proper operation this plug-in terminals have gold-plated contacts. Do not use these plugs for other terminals.

Caution!

The sensor inputs and the RS485 interface are applied to the same electrical potential but are galvanically isolated (2kV) for the auxiliary voltage. Take this into consideration during configuration.

RS485 connection:

Use RS485 Interface only with shielded wires.

Large cable lengths may shift the potential ground and the transmission can be disturbed.

Corrective measures can be galvanic separation or an additional ground wire.

Max. allowed cable length is 1000m.

Observe the maximum temperature permissible when installing in switching cabinet. Make sure sufficient space to other equipment or heat sources. If the cooling becomes more difficult e.g. through close proximity of apparatus with elevated surface temperature or hindrance of the cooling air, the tolerable environmental temperature is diminishing.



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



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

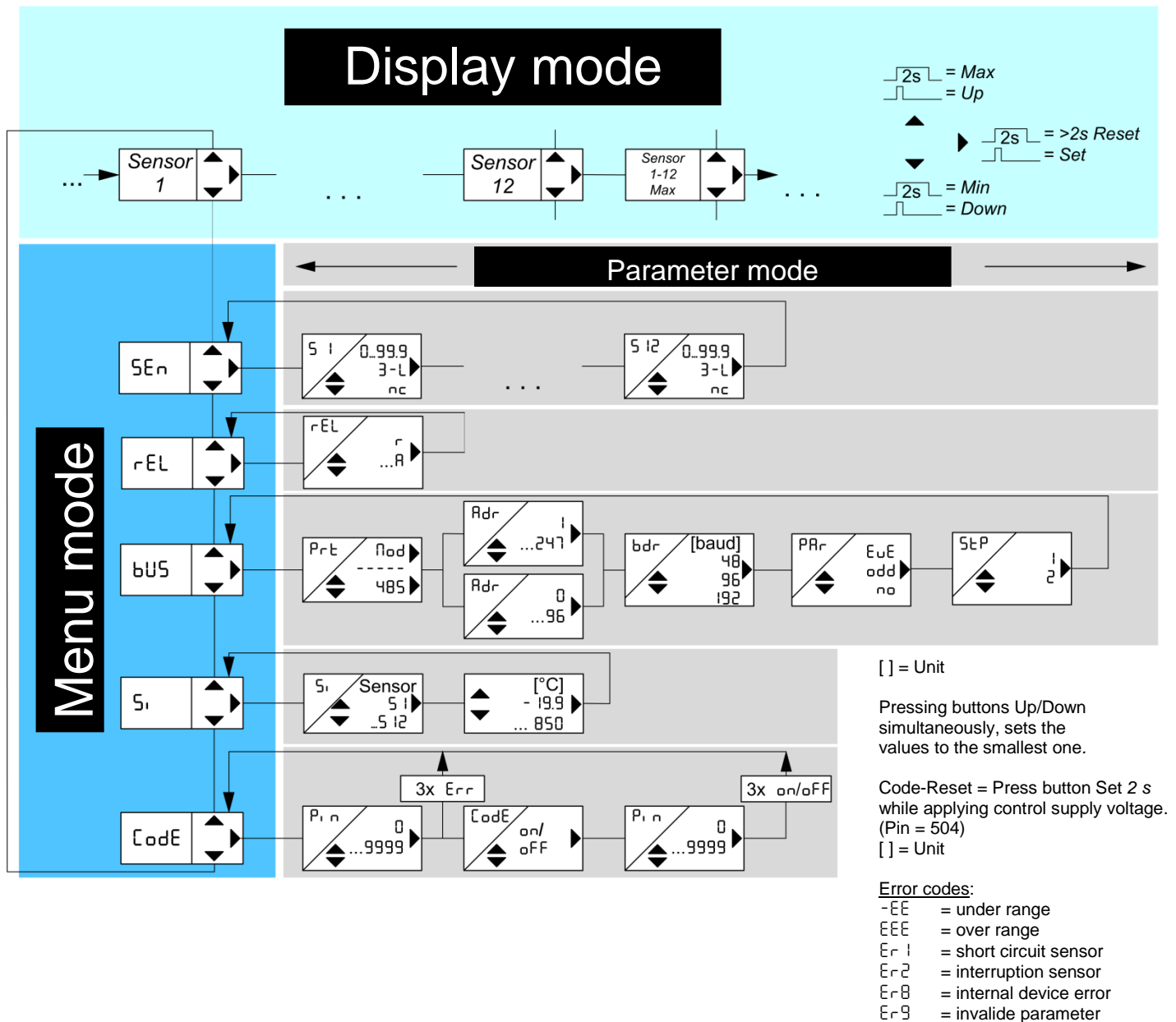
5 Installation

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 not included in delivery)
- Connection according to connection plan or type plate.

6 Commissioning

6.1 Control chart



6.2 Possible indications in display

Display mode

Er 1 ... Er 9	Error messages (see 7 Trouble shooting)
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Menu mode / Configuration mode

SEn	Menu item sensor configuration
S 1 ... S 12	Sensors 1...12
3-L	3-conductor connection
nc	No sensor connected
rEL	Relay function
bUS	Menu item for configuring the RS485 interface
PrE	Protocol RS485 interface
485	RS485 protocol
Mod	Modbus protocol
Adr	Device address RS485 interface
bdr	Baud rate RS485 interface
PAR	Parity bit RS485 interface
StP	Stop bits RS485 interface
Si	Simulation
Cod	Code lock
Pin	Pin code (factory setting 504)

7 Trouble shooting

Error code	Cause	Remedy
-EE	Under range $15 \Omega < R < 18,39 \Omega$	check sensor and line resistance compensation
EEE	Over range $390,26 \Omega < R < 400 \Omega$	check sensor and line resistance compensation
Er1	Sensor or line short circuit LED error illuminates, LED of the corresponding sensor flashes	check sensors/wires/terminals
Er2	Sensor or line interruption LED error illuminates, LED of the corresponding sensor flashes	check sensors/wires/terminals
Er8	Internal device error Malfunction of the device	Switch unit off and back on. If the error continues to appear, the unit must be returned to the factory for repair.
Er9	Invalid parameter	Press button "SET" for 10 s when switching on supply voltage for factory settings.
Wrong temperature values	Sensors with 3-wire technique interchanged	Check sensors with 3-wire technique. Terminals of sensor 1...6 are not compatible to terminals sensor 7...12
Parameter configuration not allowed	Code lock active	<p>The Code-lock can be activated as a protection against manipulation of the settings. The user can change the PIN-Code.</p> <p><u>You have forgotten the PIN? -> Make a code-reset:</u></p> <ul style="list-style-type: none"> press button "SET" for 2 s when switching on supply voltage <p>⇒ display changes 888 - Cod - oFF - 888</p> <p>⇒ Release button „SET“ Code = OFF, PIN = 504</p>

8 Technical Data

Rated supply voltage Us:

Tolerance

Power consumption

AC/DC 24 – 240 V, 0/50/60 Hz

DC 20, 4 - 297 V AC 20 - 264 V

< 3 W

< 10 VA

Housing

Dimensions (W x H x D)

Mounting height/width

Wire connection, single wire

Stranded wire with insulated ferrules

Torque of screw

Protection class housing / terminals

Fitting position

Installation

Design V8, distribution cabinet mounting

140 x 90 x 58 mm

55 mm / 8 TE

each 1 x 1.5 mm²

each 1 x 1,0 mm²

0,5 Nm (3,6 lb.in)

IP 30 / IP 20

any

Snap mounting on mounting rail 35 mm according to EN 60 715 or

with screws M 4 (2 additional bars, not included in delivery)

Weight

app. 350 g

Subject to technical changes

9 Appendix SIPROTEC configuration

9.1 Configuration of the TR1200 for SIEMENS SIPROTEC 4-Devices

The sensor connections and the configuration of the TR 1200 for evaluation on a Siemens SIPROTEC 4 protection device are described below. While doing so, the Thermo box operation mode is differentiated.

RS485-Bus Settings

- ⇒ RS485-Protocol **bUS.** → **Prt.** → **485**
- ⇒ Set device address in menu item **bUS.** → **Adr** to **0**
- ⇒ Set number of stop bits in menu item **bUS.** → **StP** to **1**
- ⇒ Baud rate and Parity **bUS.** → **bdr** 96 → **PAR** to **EUE** (Default settings 9600 Bd, 8E1)

6 RTD Simplex operation mode (1x TR 1200 works like 1x TR 600) = Factory setting

The TR 1200 transmits the data from Sensors 1...6 cyclically every 3s.

- ⇒ 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 device address in menu item **bUS.** → **Adr** to **0**

6 RTD half duplex operation mode (1x TR 1200 works like 1x TR 600)

The TR 1200 transmits the data from Sensor 1...6 on request with address 1

- ⇒ 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 device address in menu item **bUS.** → **Adr** to **1**.

12 RTD half duplex operation mode (1x TR 1200 works like 2x TR 600)

The TR 1200 transmits the data from Sensors 1...6 on request with address 1, and from Sensors 7...12 on request with address 2

- ⇒ Connect Sensors 1...12
- ⇒ Configure Sensors 1...12 in menu item **SEn.** depending on the connection (configure sensors that are not connected as **nc**)
- ⇒ Set device address in menu item **bUS.** → **Adr** to **1**

9.2 Configuration of the TR1200 for SIEMENS SIPROTEC 5-Devices

The sensor connections and the configuration of the TR 1200 for evaluation on a Siemens SIPROTEC 5 protection device are described below. You can connect up to 4 TR1200. The communication is carried out with the "Modbus protocol" (in SIPROTEC 5 „SUP Serial“ Protocol“).

The TR 1200 transmits the data from Sensors 1...12 on request with the SIPROTEC 5 address.

- ⇒ Connect Sensors 1...12
- ⇒ Configure Sensors 1...12 in menu item **SEn.** depending on the connection (configure sensors that are not connected as **nc**)
- ⇒ RS485-Bus-Protocol **bUS.** → **Prt.** → **Mod (Modbus)**
- ⇒ Set device address in menu item **bUS.** → **Adr** as in the SIPROTEC 5 Device (e.g. 1-4)
- ⇒ Set number of stop bits in menu item **bUS.** → **StP** to **1**
- ⇒ Baudrate and Parity **change** **bUS.** → **bdr** 96 → **PAR** to **no** (Default 9600 Bd, 8E1)

Note: The baud rate and the data format can alternatively be adapted to the default values of the TR1200 also in the SIPROTEC 5 device. The connection and the parameter setting of the devices are described in SIPROTEC 5 "Function-Group Type Analog Units" in the manual.