

Temperature controller

1 Functional description

The TRM500 is a versatile temperature controller with switching current up to 30 A. The device has a universal input for a wide range of resistance thermometers and thermocouples as well as a digital input. It is provided with a relay output, an alarm output, a DC logic output. The outputs can be configured for different tasks (see Appendix A). The controller can be quickly configured by using three keys.

Functions:

- On-Off or PID control (see Fig. 1)
- Manual control
- 20 mm, 4 digit display
- 10 mm, 4 digit display
- Digital input filter with an adjustable time constant
- Custom 2-point linearization
- Digital input (remote start/stop or setpoint change) (see Appendix D)
- Temperature range alarm
- Auxiliary alarm output
- Additional logic output (SSR)
- Configurable outputs (see Appendix A)
- Autotuning function (see Appendix C)
- Cold junction compensation
- Input calibration (see Appendix E)
- 9 status LEDs

2 Safety precautions

- DANGER** Do not use the device where it is subjected to flammable or explosive gas.
- WARNING** Make sure that the device is fully disconnected from auxiliary power before starting any commissioning or repair work.
- WARNING** Connect the power supply only after the wiring has been completed.

3 Specifications

Table 1 General data

| | |
|-------------------------------|--|
| Power supply | 230 (96...264) V AC; 50 (47...63) Hz |
| Power consumption, max. | 5 VA |
| Resistance thermometer | Pt50, Pt100, Pt500, Pt1000, Ni100, Ni500, Ni1000 |
| Accuracy | 0.25% |
| Connection circuit | 2-, 3-, 4-wire |
| Sampling time for 3-wire | 0.3 s |
| Sampling time for 2- / 4-wire | 0.2 s |
| Lead resistance, max. | 15 ohm |
| Reference junction | internal |
| Thermocouple | B, J, K, L, N, R, S, T |
| Accuracy | 0.50% |
| Sampling time | 0.2 s |
| Lead resistance, max. | 100 ohm |
| Digital input | potential free contact |
| ON max. resistance | 70 ohm |
| OFF min. resistance | 1000 ohm |
| Outputs | |
| OUT1 (relay) | 30A / 250 V AC (resistive) 20A / 30 V DC |
| OUT2 (relay) | 5A / 250 V AC (resistive) 3A / 30 V DC |
| OUT3 (SSR) | 0/5 V, 25-40 mA |
| Dimensions | 96 x 48 x 100 mm |
| IP Code | front IP54, rear IP20 |
| Ambient temperature | -20...+50 °C |
| Humidity | up to 80% (non-condensing) |
| Weight | approx. 160 g |

Table 2 Sensor types

| Sensor | Parameter | Measuring range, °C |
|--------|-----------|---------------------|
| Pt50 | P50 | -100...+850 |
| Pt100 | P100 | -100...+850 |
| Pt500 | P500 | -100...+850 |
| Pt1000 | P1000 | -100...+850 |
| Ni100 | n100 | -60...+180 |
| Ni500 | n500 | -60...+180 |
| Ni1000 | n1000 | -60...+180 |
| K | tP.K | -100...+1300 |
| J | tP.J | -100...+1200 |
| L | tP.L | -100...+800 |
| N | tP.N | -100...+1300 |
| T | tP.T | -100...+400 |
| S | tP.S | 0...+1750 |
| R | tP.R | 0...+1750 |
| B | tP.B | +200...+1800 |

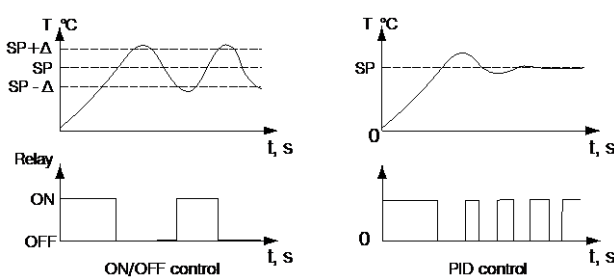


Fig. 1 Control

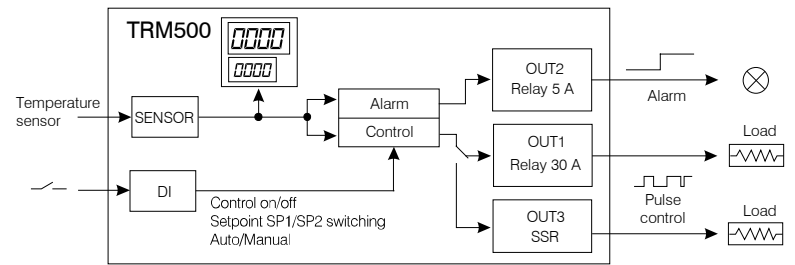


Fig. 2 Block diagram

4 Installation and electrical wiring

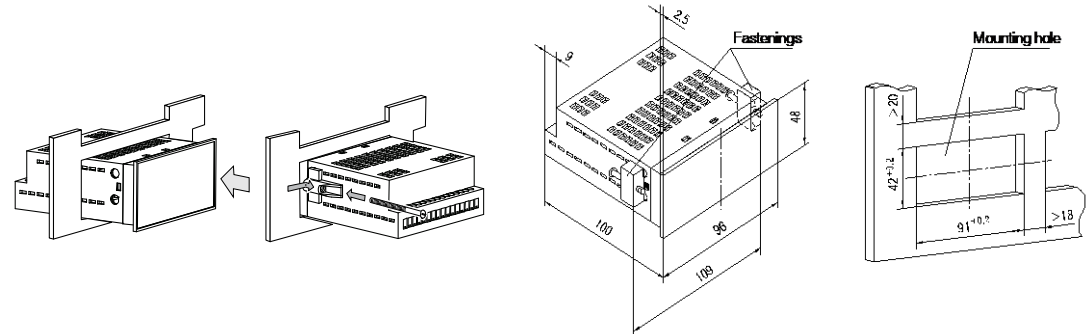


Fig. 3 Mounting and dimensions

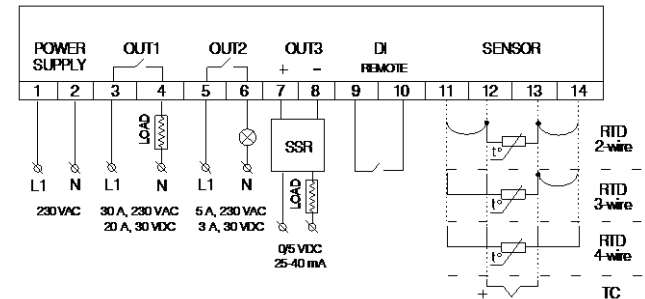


Fig. 4 Electrical wiring

The maximum wire size is 0,75 mm².

5 Maintenance

Technical maintenance should be performed on the device at least every six months by maintenance personnel and comprising the following tasks:

- Removing dust, dirt and foreign matter from the housing.
- Checking mounting of device
- Checking connections

The safety guidelines in Section 2 must be observed when performing maintenance.

6 Transportation and storage

The device must be transported in closed transport boxes.

Protective measures against shocks, vibrations and humidity must be observed.

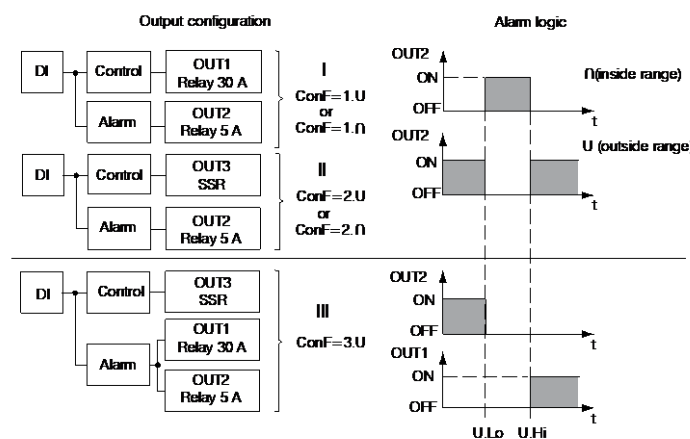
Storage temperature range -30...+60 °C.

There may be no chemically active substances in the air.

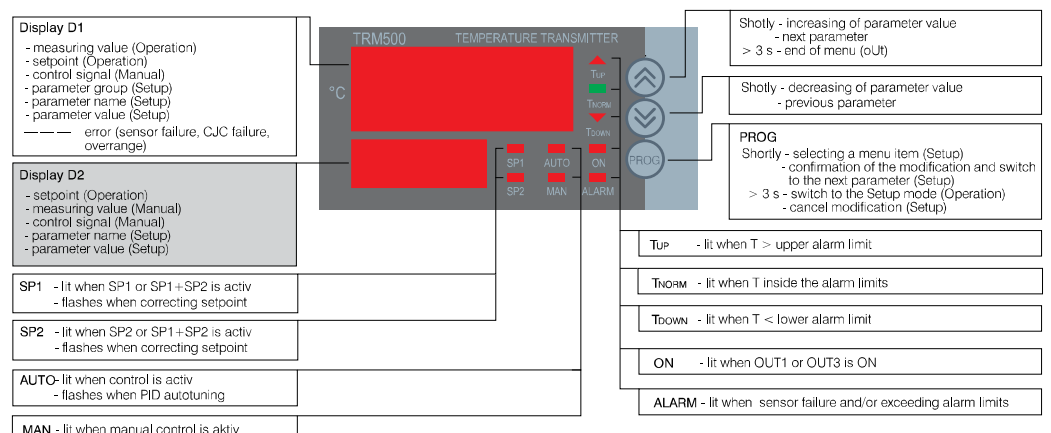
7 Package content

- Temperature controller TRM500 1
- User manual 1

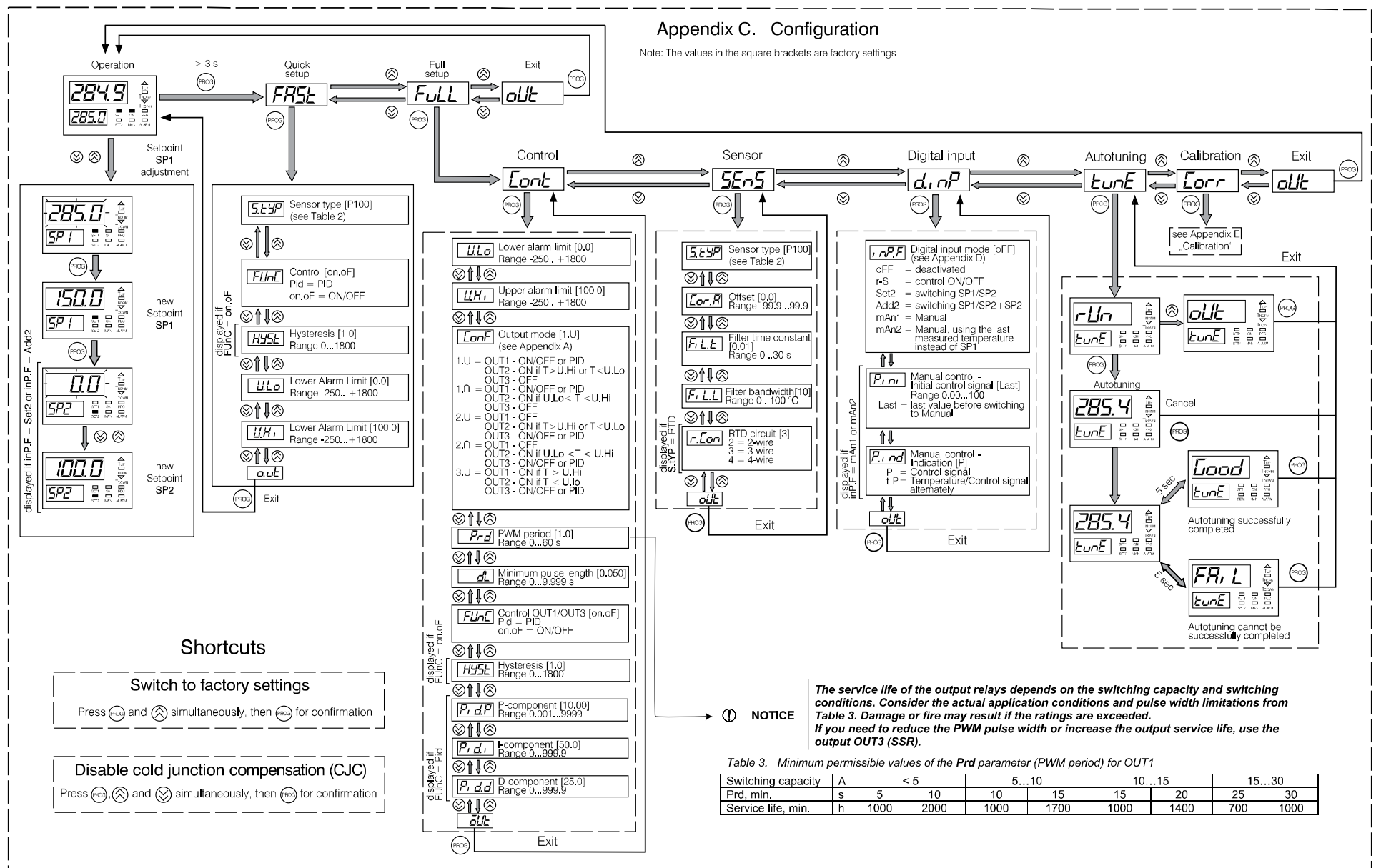
Appendix A. Output configuration



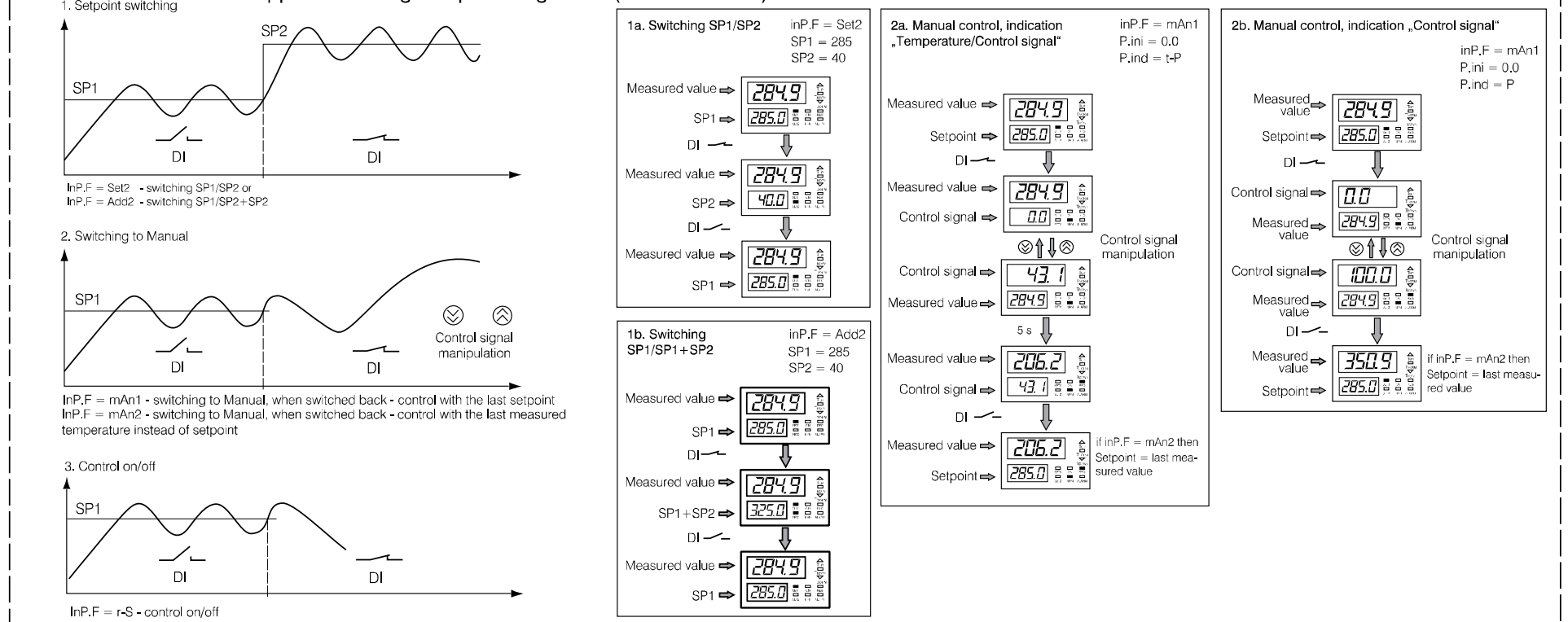
Appendix B. Displays and control elements



Temperature controller



Appendix D. Digital input configuration (Parameter InP.F)



Appendix E. Calibration

