

The thermostat **terneo rtp** is designed to maintain a constant temperature of 10...40 °C in underfloor heating systems based on:

1. Electric heating cable or heating film.
2. Water floor system with a normally closed electrothermal actuator, operating voltage 230 V.

The temperature is controlled at that point where there is a temperature sensor. The sensor supplied as part of package is designed to be placed in the mounting tube (reinforced-plastic pipe Ø 16 mm). The pipe is located in the sand cement screed. If necessary the sensor should be easily drawn out of the mounting tube.

IN THE BOX

Thermostat, frame	1 piece
Temperature sensor with connected wire	1 piece
Technical data sheet, installation and operation manual, warranty card	1 piece
The packing box	1 piece

TECHNICAL DATA

Adjustment range	10...40 °C
Maximum load current (for category AC-1)	16 A
Rated load capacity (for category AC-1)	3 000 VA
Input voltage	230 V ±10 %
Weight in the complete set	0,18 kg ±10 %
Basic mounting dimensions	75 × 75 × 43 mm
Temperature sensor (in set)	NTC thermo-resistor 10K OM at 25 °C
The length of the sensor connected cable	3 m
Number combinations under heat, at least	50 000 cycles
Number of combinations without heating, no less than	20 000 000 cycles
Temperature hysteresis	1 °C
Degree of protection GOST14254	IP20

IMPORTANT. Before the installation and operation of the device, please read by the end of this document. This will help to avoid possible danger, mistakes and misunderstandings.

WIRING

Without sensor the thermostat will not work.

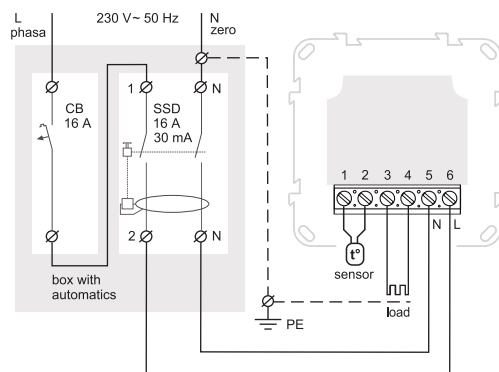
The temperature sensor is connected to terminals 1 and 2.

The supply voltage (230 V ± 10%, 50 Hz) is applied to terminals 5 and 6, and the phase (L) is determined by the indicator and is connected to the terminal 6, a zero (N) — on terminal 5.

To the terminals 3 and 4 is connected the load (the connecting wires from the heating element).

THE THERMOSTAT IS MOUNTED AND CONNECTED after the installation and load testing

IN THE CASE OF INCORRECT WIRING, is possible failure of the thermostat. make sure that external sensor and mains voltage are connected correctly.



Wiring 1. Connection of the circuit breaker and SSD

INSTALLATION

After installation make sure that external sensor and mains voltage are connected correctly. In the case of incorrect wiring, is possible failure of the thermostat.

The thermostat is designed for indoor installation. The ingress risk of moisture or liquid into the place of installation must be minimized. When installed in a bathroom, toilet, kitchen, swimming pool the thermostat should be installed at the place out of reach of casual spraying.

The ambient temperature during installation must be between -5 ... + 45 °C.

The installation height of the thermostat should be in the range 0,4...1,7 m above the floor level.

The thermostat is mounted and connected after the installation and load testing.

To protect against short-circuit in the load circuit the circuit breaker (CB) has to be installed before installing the thermostat. The circuit breaker is installed in the gap of phase conductor, as shown in the Wiring 2. It should be designed for not more than 16 A.

To protect a people against electric shock leakage is installed the SSD (safety shutdown device). This event is obligatory when installing floor heating in wet areas. For working of SSD the heating cable screen must be grounded (connected to the protective conductor PE) or, if there is two-wire network, it is necessary to make protective neutral earthing. That is to connect the screen to a zero before SSD. In Wiring 2 protective neutral earthing is shown with dotted line.

The thermostat is mounted in the standard mounting box 60 mm in diameter, with mounting screws.

For installation you must:

- make a hole in the wall for box mounting and wall chase for power wires and the sensor;
- take the power wires of the heating system and the sensor to the mounting box;
- perform the compounds according to the passport data;
- fix the thermostat in the mounting box. To this a front frame must be removed by slipping it from the side with screwdriver inserted into the slot (Fig.1). Put the thermostat in the mounting box and tighten the mounting screws.

The thermostat terminals are designed for a wire with section not more than 2,5 mm². To reduce the mechanical loads on the terminals it is desirable to use a soft wire. The ends of the wires must be cleaned and crimped with ferrules with insulation. The wires are tightened in the terminals using a screwdriver **with a blade width no more than 3 mm**. The screwdriver with a blade width more than 3 mm can cause mechanical damage to the terminals. This may result in the loss of right for warranty. The terminals should be tighten with torque 0,5 N · m.

The couplings with heating wire are poured in the screed. Mounting of the sensor must be performed so that it was possible to easily replace it. From the mounting box with thermostat the mounting tube (metal tube Ø 16 mm) is put into a zone heated by about 0,5 m. The curves and the length of the tube should ensure smooth movement of the sensor. The end of the pipe introduced into the zone, which is heated, must be carefully

sealed to avoid ingress of the solution, for example, with a tape. The sensor is introduced into the pipe after solidifying of screed.

If necessary is acceptable reduction and increasing (up to 20 m) of sensor connecting wires. To increase the length is unacceptable to use two conductors of a multi-wire cable that is used to power the heater. The best solution would be a separate cable to the sensor, mounted in a separate tube. Near the sensor connecting wires should not be the power cables, they may be interfere.

If you purchased a heating cable and its labeling hasn't its rated power, then before connecting the thermostat (to avoid breakdown of the thermostat due to the excess of its certified values) power (P) must to be calculated.

For this to measure the current (I) consumed of the heating cable (using the ammeter with corresponding measurement limit) and multiply by the supply voltage (U). Or to measure the resistance of the heating cable (R) with ohmmeter, divide the mains voltage (U) to the obtained resistance and multiply by the main voltage (U).

$$P = U \times I \text{ (V)} \quad P = U \times (U / R) \text{ (V)}$$

WARRANTY TERMS

The warranty for **terneo** devices is valid for **36 months** from the date of sale, provided that the instructions are followed. The warranty period for products without a warranty certificate is counted from the date of production.

If your device is not working properly, we recommend that you first read the section «Possible problems». If you cannot find an answer, contact Service Center. In most cases, these actions resolve all issues.

If you continue to have issues with the device, please send it to a Service Center or to the store where you purchased the device. If your device is defective due to our fault, we will repair or replace it under warranty within 14 business days.

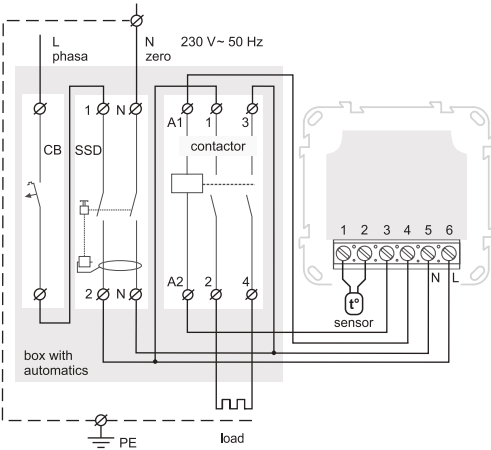
Please see the full text of the warranty and the data you need to send to your Service Center on the website <https://www.ds-electronics.company>. If you have a warranty case, please, contact the General distributor in your area.

WARRANTY CARD

serial №:	date of sale:
a seller, a seal:	place of a seal
an owner contact for a service center:	

It is necessary that the thermostat commutes the current not more than 2/3 of the maximum power specified in the passport. If it exceeds 2/3 of the maximum current specified in the data sheet, the heating cable must be connected with a contactor (magnetic starter, power relay), which is designed for this current. This condition is caused by the risk of increasing the voltage over 230 V. In the case of voltage increase the load capacity will also increase.

The sections of the wires, which is connected to the thermostat, must be at least for copper $2 \times 1,0 \text{ mm}^2$. Use of aluminum is not desirable.



Wiring 2. Wiring and simplified internal circuit

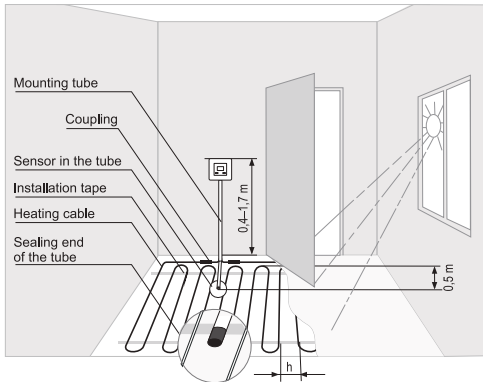


Figure 1. Mounting the thermostat and «warm floor» system

The resistance of the sensor at different temperatures	
5 °C	25339 Ω
10 °C	19872 Ω
20 °C	12488 Ω
30 °C	8059 Ω
40 °C	5330 Ω

OPERATION

Turn on / off

To turn on the thermostat, turn the knob clockwise until it clicks. LED will glow green. Then turn the knob clockwise to the end, and the LED will turn red, indicating the inclusion of the heating system.

Once a comfortable level of heat has been reached (when you first start it may take up to 3 days), turn the knob counter-clockwise until the LED glows green, fixing the desired temperature.

To turn off the heat turn the knob counter-clockwise until it clicks.

POSSIBLE PROBLEMS, CAUSES AND WAYS TO OVERCOME THEM

When indicator is not lit by turning on the thermostat at all positions of the regulating knob.

Possible cause: No power.

It is necessary to: make sure there is power supply voltage with a voltmeter. If voltage is present, then please refer to the Service Center.

It is not possible to turn on the heating system by turning the temperature setting knob. Red light does not light up.

Possible cause: wrong connection, there was an open or short circuit in the sensor circuit, the sensor of another type temperature measured by the sensor is above 40 °C.

It is necessary to check: correct connection of the sensor; the connection point of the sensor to the thermostat, lack of mechanical damages over the entire length of the connecting wires of the sensor, lack of close passing of power cables. If all these factors are excluded, please contact the Service Center.

ADDITIONAL INFORMATION

Do not fire and do not throw away the device with the household waste.

After the end of its service life, the product must be disposed of in accordance with applicable law.

Transportation of goods carried in the package, ensuring the safety of the product.

The device is transported by any kind of transport (rail, sea, motor, air transportation).

Date of manufacture is on the back side of device. Application time is unlimited.

The device does not contain harmful substances.

If you have any questions or you something will not clear, call the Service centre the telephone number listed below.

SAFETY INSTRUCTIONS

Carefully read and become aware of yourself these instructions.

Connection of the device must be done by a qualified electrician.

Do not connect 230 V mains voltage instead of the sensor (it leads to failure of the thermostat).

Before the installation (dismantling) and connection (disconnection) of the device, turn off voltage supply and also act according to the «Rules of an arrangement of electric installations».

Do not immerse the sensor with a connecting wire in the liquid medium.

Do not switch the non assembled device to the network.

Turning on and off or and configure the device should be with dry hands.

Do not connect the device to the network disassembled.

Avoid hitting of water or moisture to the device.

Do not expose the device to extreme temperatures (higher than 40 °C or below -5 °C) and high humidity.

Never clean the device with the use of chemicals such as benzene, solvents.

Do not store the device and do not use it in areas with the dust.

Do not attempt to disassemble and repair the device.

Do not exceed the landmarks value adaptor and power.

To protect against overvoltage caused by lightning discharges, use a lightning protector.

Protect the children from games with the working device, it is dangerous.

v2108



MOUNTING OF THE SENSOR MUST BE PERFORMED SO THAT IT WAS POSSIBLE TO EASILY REPLACE IT.

Low Voltage Directive 2014/35/EU
EMC Directive 2014/30/EU

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