terneo

Technical data sheet, installation and operation manual

S

smart control of heating

The terneo s thermostat is designed to maintain a constant temperature between 5 and 40 °C in underfloor heating systems based on: electric heating cables or membrane, as well as water floors using a normally closed electrothermal servo with an operating voltage of 230 V.

The thermostat's non-volatile memory saves all your settings during a power outage.

Durability and reliability of the power relay:

- Provides protection against frequent switching with less than 1 minute between switching events. The thermostat will notify you of the protection by a flashing dot on the right side of the screen.
- Please note that switching the relay as close as possible to the moment when the voltage sine wave passes through zero may lead to slight deviations due to different trip times for different relay models.

Please read this document carefully before installing and using the thermostat. This will help to avoid possible hazards, errors and misunderstandings.

TECHNICAL DATA

Adjustment range		5...40 °C
Maximum load current (for category AC-1)		16 A
Maximum power load (for category AC-1)		3 000 VA
Input voltage		230 V ±10 %
Supported sensor types:	analog	NTC 4.7, 6.8, 10, 12, 15, 33, 47 kOhm at 25 °C
	digital	D18
Measured temperature range	analog	–27...+120 °C
	digital	–55...+125 °C
Temperature sensor (in set)		NTC thermo-resistor 10 kOhm at 25 ° C (R10)
Length of the sensor 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
Weight in the complete set		0,18 kg ±10 %
Overall dimensions		75 × 75 × 35 mm

IN THE BOX

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

INSTALLATION

The thermostat is designed for indoor installation at a height ranging from 1,4–1,6 meters from the floor level. The ambient temperature during installation should be within –5...+45 °C. When installing in a bathroom, toilet, kitchen, or pool, place the thermostat in a location not exposed to accidental splashes. Minimize the risk of moisture and liquids entering the installation area.

Recommendations for connecting loads more then 10 A

The terneo thermostat may not handle a current of 16 A and could overheat in the presence of unfavorable factors such as poor heat dissipation from the socket, high ambient temperature, or poor installation quality. We guarantee stable operation of the thermostat with a current up to 10 A. If the current exceeds 10 A, we recommend connecting the heating cable through a contactor (magnetic starter) rated for the required current. See diagram 2.

To protect against short circuits, install an automatic circuit breaker (CB) with a rating of up to 16 A in the phase wire break before the thermostat.

To protect against electric shock, install an SSD (safety shutdown device). See diagram 1.

For installation you need:

- make a hole in the wall with a diameter of 60 mm for the mounting box and channels for power supply and sensor wires;
- bring the heating system power and sensor wires to the mounting box;
- make connections according to this manual;
- secure the thermostat in the mounting box.

The terminals of the thermostat are designed for wires with a cross-section of no more than 2.5 mm². It is recommended to use soft copper wire, which can be tightened in the terminals using a screw-driver with a blade width not exceeding 3 mm and a torque of 0.5 N·m. The use of aluminum is not desirable. A screwdriver with a blade width greater than 3 mm may cause mechanical damage to the terminals, which can result in the loss of warranty service rights.

Place the sensor in the floor screed using a mounting tube, such as a 16 mm diameter metal-plastic tube, which bends once with a radius of at least 5 cm and is inserted into the heating zone for 50 cm. To ensure the sensor can be replaced in the future, seal the end of the tube with a copper plug or insulation tape. Sealing with a copper plug will provide more accurate floor temperature measurements. Insert the sensor into the tube after the screed has hardened.

Strip and crimp the ends of its wire with insulated terminals. If necessary, reduction and increasing (up to 20 m) of sensor.

WIRING

The analog sensor (R10) is connected to terminals 1 and 2. The colors of the wires do not matter when connecting.The digital sensor (D18) is connected with a blue wire to terminal 2 and a white wire to terminal 1. Select the d18 sensor type in the thermostat menu.

The supply voltage (230 V ±10%, 50 Hz) is applied to terminals 4 (N, neutral) and 5 (L, phase).

Connect the load to terminals 3 and 6 (connecting wires from the heating element).

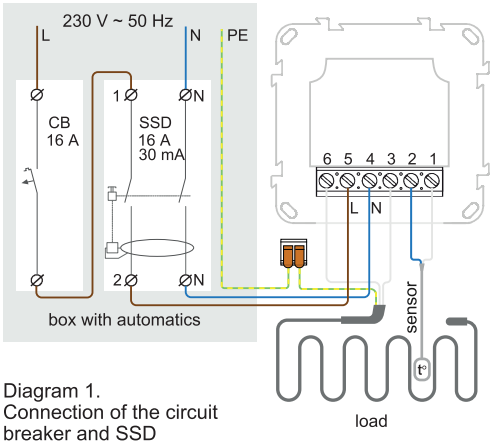

Diagram 1.
Connection of the circuit breaker and SSD

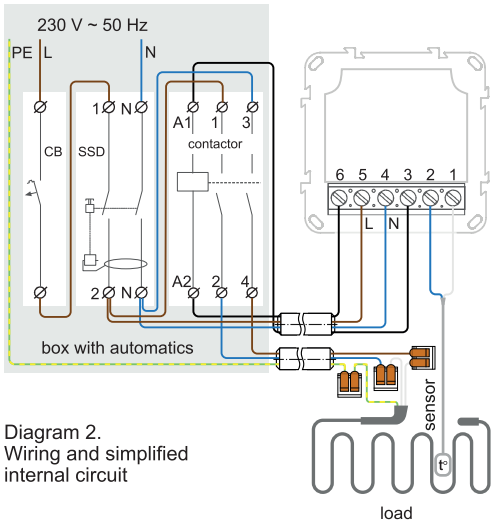

Diagram 2.
Wiring and simplified internal circuit

Important! Install and check the load before installing and connecting the thermostat. Before turning on the device, make sure that the wires are connected correctly. Failure to do so may result in the thermostat malfunctioning.

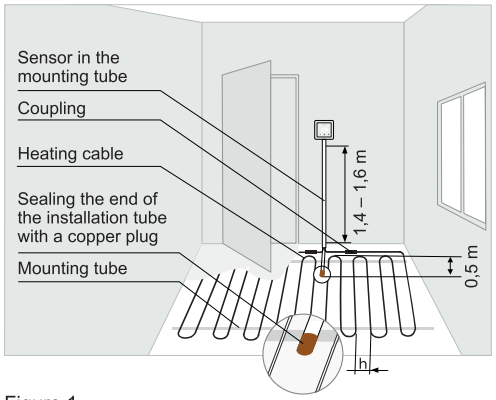

Figure 1.
Mounting the thermostat and underfloor heating

WARRANTY TERMS

The warranty for 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, contact the General distributor in your area or 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 check 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

terneo

SERVICE CENTER CONTACT
+38 (091) 481-91-81
Viber Whats App Telegram
support@dse.com.ua

WARRANTY CARD

serial №:

date of sale:

a seller,
a seal:

place of a seal

an owner contact
for a service center:

EXPLOITATION

According to the data from the temperature sensor. The thermostat located in the floor controls the heating: turns off the heating when the desired temperature is reached and turns it on when it drops by 1 °C.

When the buttons are not in use, the brightness of the display and screen decreases by up to 30%.

Temperature selection

(factory setting 25 °C)

Use "+" and "–" to select the temperature. When the load is applied to the underfloor heating, the red indicator light will turn on.

Locking the buttons

Hold "+" and "–" for 6 seconds until "Loc" appears on the screen (when unlocking "oFF"). Locking can be useful to protect your settings from children and in public places.

Menu

Use "≡" to select a menu item, and "+" and "+" buttons to change the parameters. The first time you press the button, the parameter will start blinking, the second time it will change. 5 seconds after the last press, the display returns to the temperature display.

Sleep mode

Hold the middle button for 4 sec until "oFF" appears on the screen. For a complete shut-down, you need to turn off the automatic switch.

To exit the sleep mode, also press and hold the middle button for 4 sec until "on" appears on the screen.

Reset to factory settings

Hold the 3 buttons for 9 seconds until "dEF" appears. When released, the thermostat will reset and reboot.

Firmware version

Hold "–" button for 6 seconds. The manufacturer reserves the right to make changes to the firmware in order to improve the characteristics of the thermostat.

Technical Support Chat

If you haven't found the answer, please contact our technical support engineer

dselectronics_bot

terneo_official

To move through the menu, press "≡"	Screen	Setting
Timer for delayed heating start (factory setting "toF", range of changes: "toF" — off, "ton" — on)	 	While the Timer is running, the screen will display the time remaining until the heating starts. For example, 9.0h with a flashing "h" symbol. If the temperature drops below 5 °C, the anti-freeze mode will turn on and the thermostat will maintain a temperature of 5 °C until the end of the Timer.
Time counter load operation		The time display is performed using a running line "hours. minutes". To reset the Time counter press the button "–" once.
Timer for delayed heating start settings (factory setting 9 hours, a range of change 0,5–99 hours)		Select the time after which the thermostat should resume heating, i.e. apply a load to the underfloor heating. The maximum delayed start time is 4 days.
Temperature correction (factory setting 0, a range of change ±5,0 °C)		If necessary, you can use the correction in the display of the floor temperature on the thermostat screen.
Sensor type (factory setting 10r, range of change analog: 4.7r, 6.8r, 10r, 12r, 15r, 33r, 47r, where r is kΩ at 25 °C, or digital d18)		If you are using a different temperature sensor than the one supplied with the thermostat, select the correct sensor type in the settings. *For more information.* Resistance of the external temperature sensor at different ambient temperatures 5 °C — 25339 Ω 10 °C — 19872 Ω 20 °C — 12488 Ω 30 °C — 8059 Ω 40 °C — 5330 Ω

POSSIBLE PROBLEMS, CAUSES AND WAYS TO OVERCOME THEM

The load is disabled, "oht" flashes on the screen

Temperature inside the frame exceeds 85 °C, triggered protection against internal overheating

Required: check the tightness of the power wires in the thermostat terminals, make sure that the power of the switched load does not exceed the permissible power, and that the cross-section of the wires for connection is correct.

Features of the internal overheating protection: when the temperature inside the case drops below 80 °C, the thermostat will resume operation. If the protection is triggered more than 5 times in a row, the thermostat will lock until the temperature in the case drops below 80 °C and one of the buttons is pressed to unlock it.

The load does not work according to the settings, every 5 sec the screen displays "OS" or "SS"

open circut — breakage of the sensor circuit

short circut — short circuit of the sensor circuit

The thermostat has switched to the Percentage Load Control mode (factory setting 50 %, range of changes 10...90 %). This mode will ensure the operation of the underfloor heating in case of sensor failure. In a 30-minute cycle interval, the thermostat will turn on the load for the selected percentage of time, and the load will be turned off for the remaining 30 minutes. In this case, the heating temperature control is not available.

Possible cause: incorrect connection, damage to the sensor circuit, or temperature outside the measuring range (see technical data).

Required: check the connection point of the temperature sensor to the thermostat and its circumference, the absence of mechanical damage along the entire length of the connection cable, and the absence of power cables passing close by.

Every 4 sec the screen displays "Ert"

Reason: open or short circuit of the internal overheating sensor. Control over inner overheating will not be done.

Required: Send the device to the Service Center. Otherwise, control over inner overheating will not be done.

The load is switched off, the screen and indicator are off

Possible cause: No power supply voltage.

Required: Make sure that the power supply is available. If the voltage is present, contact a service center.

When the screen turns on it displays 5 sec "Er0"

Reason: malfunction of the control system for the transition of the sinusoid through zero.

Required: Send the device to the Service Center. Otherwise, the control of the transition of the sinusoid through zero will not be carried out.

SAFETY INSTRUCTIONS

To avoid injury and damage to the thermostat, carefully read and understand these instructions for yourself.

The installation of the thermostat should be carried out by a qualified electrician.

Do not connect 230 V mains voltage instead of the sensor (this will damage the thermostat).

Before starting the installation (disassembly) and connection (disconnection) of the thermostat, disconnect the power supply and follow the "Rules of an arrangement of Electric Installations".

Do not immerse the sensor with its connecting wire in liquid environment.

Do not connect the thermostat to the power supply in a disassembled state.

Prevent liquid or moisture from coming into contact with the thermostat.

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

Do not clean the thermostat using chemicals such as benzene and solvents.

Do not store or use the thermostat in dusty environments.

Do not attempt to disassemble or repair the thermostat yourself.

Do not exceed the maximum current and power limits.

Use surge protectors to protect against overvoltage caused by lightning discharges.

Keep children away from playing with a functioning device as it is dangerous.

ADDITIONAL INFORMATION

Please do not burn or dispose of the thermostat with household waste.

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

The product is transported in packaging that ensures its preservation.

The thermostat can be transported by any kind of transportation (such as by car, plane, train or ship).

The manufacturing date is indicated on the back of the device, and there is no expiration date.

If you have any questions regarding this device, please contact the Service Center at the phone number provided in the Warranty Terms section.

The manufacturer reserves the right to make changes to the firmware, server interface, mobile applications, and desktop application my.terneo.ua to improve the energy efficiency of the thermostat and optimize its operation.

version: S24_2408

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

04136, Ukraine, Kyiv region, Kyiv, 1–3 Pivnichno-Syretska str.
Sales Department: +38 (091) 481-91-81, support@dse.com.ua
www.ds-electronics.company