

KT

simple heat control

The **terneo kt** thermostat efficiently manages snow melting systems, ensuring safe movement for people and vehicles during the winter season without the need for snow-clearing equipment or salt.

The thermostat activates the load when the air temperature sensor readings fall within the specified range.

To ensure the durability of the power relay and the reliability of its contacts, the thermostat is equipped with protection against frequent switching. The load is activated as close as possible to the moment when the voltage sine wave crosses zero. Minor deviations from the zero-crossing point may occur due to variations in the disconnection time across different power relay samples.

Please read this document in its entirety before installing and using the temperature controller. This helps to avoid possible hazards, errors and misunderstandings.

TECHNICAL DATA

The limits of regulation	upper: 0...10 °C, lower: -20...-1 °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
Temperature sensor	NTC thermo-resistor 10 kOhm 25 °C (R10)	
Length of the sensor cable	3 m	
The number of switches under the load, at least	50 000 cycles	
The number of switches without the load, no less than	20 000 000 cycles	
Temperature hysteresis	0,1...10 °C	
Measured temperature range	analog	-30...+130 °C
	digital	-55...+125 °C
Overall dimensions	85 × 80 × 35 mm	
Weight in the complete set	0,18 kg ±10 %	
Protection degree according to GOST 14254	IP20	

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. Exclude the risk of moisture and liquids entering the installation area.

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.

It is necessary for the temperature controller to switch the current to no more than 2/3 of the maximum current specified in the specification. If the current exceeds this value, the load must be connected through a contactor (magnetic actuator, power relay), which is optimized for this current (Wiring 2).

Air temperature sensor installation

Air temperature sensor should be mounted on the wall or under the edge of the roof in order to ensure its protection from direct sunlight, rain and snow, and ensure the opportunity for easy replacement in the event of a malfunction or damage (Fig. 1).

If necessary, it is allowed to shorten and expand sensor connecting wires (separate cable not more than 20 m long with a cross-section greater than 0,75 mm²). Power wires should not be placed near connection wire of sensor otherwise they may cause interference.

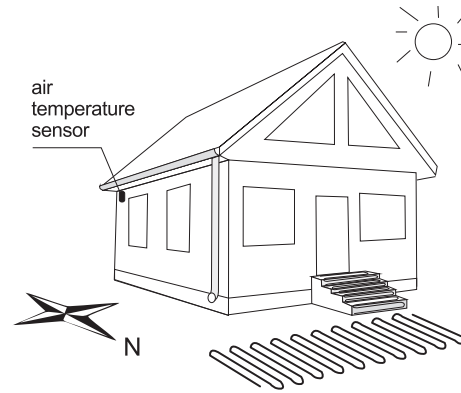


Figure 1. Air temperature sensor installation

WIRING

The thermostat supports two types of sensors: analog (R10) and digital (D18). The analog sensor is supplied with the thermostat and is connected to terminals 1 and 2.

The digital sensor (D18) is connected with the blue wire to terminal 2 and the white wire to terminal 1. If the thermostat switches to Emergency Timer Mode (pages 7–8), try connecting the blue wire to terminal 1 and the white wire to terminal 2. If the **terneo** thermostat does not detect the sensor after both attempts, please contact the Service Center.

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).

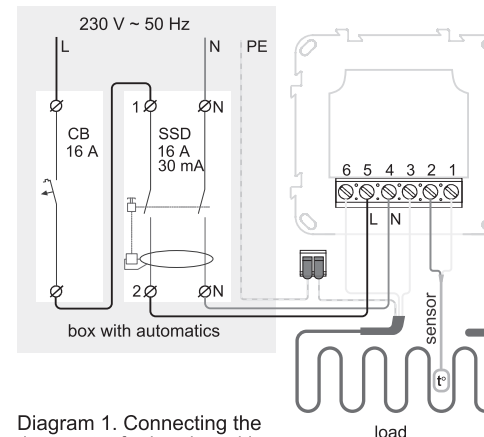


Diagram 1. Connecting the thermostat for heating with a twin-core cable

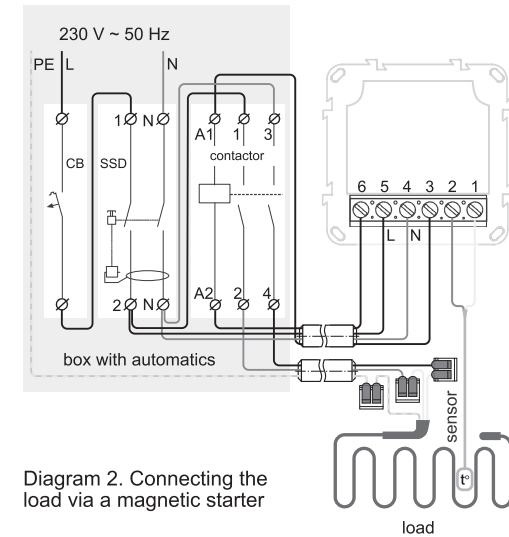


Diagram 2. Connecting the load via a magnetic starter

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>

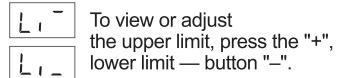
WARRANTY CARD

serial Nr:	date of sale:
a seller, a seal:	place of a seal
an owner contact for a service center:	

EXPLOITATION

Setting Upper and Lower Limits

(factory setting upper limit 5 °C, lower –10 °C)



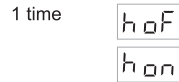
Next, adjust the desired limit value using the "+" or "-" buttons. The thermostat will turn on the heater if the temperature falls within the set limits. A red indicator will signal that the heater is active.

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.
- 10 seconds after the last press, the display returns to the temperature display.

Forced Heating

(factory setting: "hoF" — off, "hon" — on, range: 0.5–9 hours).



Load operating time counter

Press "+" or "-" to view, the next "-" press resets the counter.



Temperature correction

(factory setting 0, a range of change ±5,0 °C)



Hysteresis

factory setting 1 °C, range 0,1..10 °C, step 0,1 °C)

Example of recalculating hysteresis when the temperature range is too narrow: If the hysteresis value exceeds the specified temperature range, the thermostat will recalculate the hysteresis. For instance, with a hysteresis of 3 °C and a range of –1...0 °C, the hysteresis will be recalculated as $1/2 = -0.5$ °C.

Locking the buttons

Hold down the "+" and "-" buttons for 6 sec until "Loc" or "un Loc" appears on the screen. This function is used as child lock and in public places.

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



Forced Heating (factory setting: "hoF" — off, "hon" — on, range: 0.5–9 hours).	1 time		Allows the load to be turned on for a specified time (maximum of 9 hours) independently of the thermostat's operating logic, for example, during commissioning work in summer or autumn. Use the "+" and "-" buttons to set the Forced Heating duration.
Load operating time counter Press "+" or "-" to view, the next "-" press resets the counter.	2 times		Allows you to calculate the energy consumption since the last reset of the meter by multiplying the operating time by the load power and the tariff. Displays the time using a ticker (hours and minutes).
Temperature correction (factory setting 0, a range of change ±5,0 °C)	3 times		If necessary, you can use the correction of the floor temperature on the thermostat screen.
Hysteresis factory setting 1 °C, range 0,1..10 °C, step 0,1 °C)	4 times		Hysteresis is the difference between the temperatures at which the load turns on and off. By default, the hysteresis value is set to 1 °C. For the factory temperature range settings of –10...+5 °C, the thermostat will turn on heating when the temperature enters the range of –9...+4 °C and turn it off when the temperature moves outside –10...+5 °C.
Sensor type (factory setting 10r)	5 times		Select the type of sensor you are using: analog sensor — 4.7r, 6.8r, 10r, 12r, 15r, 33r, 47r, where r — is kΩ at 25 °C, digital sensor — d18.
Brightness in standby mode (factory setting 30 %, adjustable range 0...100 %)	6 times		Use this feature to reduce the visual emphasis on the room thermostat. When the buttons are used, the screen lights up to 100% brightness.
Switching to sleep mode (factory setting "on")	hold 4 sec		Hold the "≡" button for 4 seconds, then release it. Three dashes will appear on the screen one after another. After turning off the load, the "oFF" message will be preserved on the screen.

POSSIBLE PROBLEMS, CAUSES AND WAYS TO OVERCOME THEM

The load does not work, the screen says "oht"

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

Instructions: Check the tightness of the power wires in the thermostat terminals; ensure that the power of the connected load does not exceed the permissible limit, and the wire cross-section for connection is selected correctly.

Features of the internal overheating protection: when the temperature inside the casing drops below 60 °C, the thermostat will resume operation. If the protection is triggered more than 5 times in a row, the device will be locked until the temperature inside the casing drops below 60 °C, and one of the buttons is pressed.

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 disabled, indicator nor the screen light up

Possible reason: no power supply voltage.

Required: check availability of power supply voltage. If power supply voltage is available then contact the Service.

The screen displays "Er0" every 10 seconds

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.

Voltage not displayed on screen "oFF"

The thermostat has entered the Emergency Timed Mode (described below). The screen continuously displays "oFF" or flashes the "t" symbol and the time remaining until the next load is switched on/off.

open circuit — breakage of the sensor circuit short circuit — short circuit of the sensor circuit

Possible cause: damage to the sensor and its chain, incorrect sensor type selected in the thermostat settings, the temperature measured by an analog sensor has gone beyond the range (see Tech. data table).

Required action: check the integrity of the sensor and the absence of mechanical damage to its chain, check for nearby power wires. Check the correctness of the colors during the connection of the digital sensor. Make sure the appropriate type is selected in the sensor settings.

Emergency Timer Mode This mode ensures the operation of the load in case of detector damage: in a 30-minute cyclic interval, the load is switched on for the set time, and the load is switched off for the rest of the time. The load operation time can be set in the range from 1 to 29 minutes using the "+" or "-" buttons. The screen will then display "t" and the time remaining until

the next on/off. From the factory, the Mode value is "oFF", the load is permanently off. To make the load run continuously, increase the time to a maximum of "on", or to turn it off completely to a minimum of "oFF".

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 date of manufacture is indicated on the device body. The shelf life is unlimited. Does not contain any harmful substances.

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.

version: 3G.3.2_2411
EMC Directive 2014/30/EU
Low Voltage Directive 2014/35/EU

