

Smart thermostat terneo bx is designed for controlling underfloor heating systems based on heating cables, films, or water pipes via the mobile app terneo or the account on my.terneo.ua

Scan to download mobile app



Underfloor water heating is controlled by means of electro-thermal servo actuator with operating voltage of 230 V. Servo actuator can be both normally closed, and normally open. At the connection of normally open servo actuator to the temperature regulator use in the additional settings of «cloud» function Normally closed contact.

Heating based on infrared panels, electrical convectors and other electrical heaters is controlled by placing a temperature sensor in the air.

IN THE BOX

Thermostat	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



Scan to see all the benefits of the terneo Smart thermostat on the website and download the terneo mobile app brochure.

Please carefully read this document in its entirety before installing and using the thermostat. This will help avoid potential hazards, errors, and misunderstandings.

In case of power failure, all thermostat settings and heating schedules are stored in the thermostat's non-volatile memory, and the clock operation will continue from the internal power source for up to three days.

TECHNICAL DATA

Adjustment range	5...45 °C
Maximum load current (for category AC-1)	32 A(max 40 A for 10 min)
Maximum power load (for category AC-1)	7 000 VA
Input voltage	230 V ±10 %
Weight in the complete set	0,3 kg ±10 %
Temperature sensor (in set)	NTC thermo-resistor 10 kOhm at 25 °C (R10)
The length of the sensor connected cable	4 m
Types of the supported sensors:	
analog	NTC 4.7, 6.8, 10,12,15, 33, 47 kOhm at 25 °C
digital	D18
Number combinations under heat, at least	100 000 cycles
Number of combinations without heating, no less than	1 000 000 cycles
Temperature hysteresis by floor	0,5...10 °C, step 0,1 °C
Wireless Networking Standard	802.11 b/g/n
Wi-Fi power output	+20 dBm
Minimum recommended speed of Internet connection	128 kb/s
Operating frequency range	2400-2483,5 MHz
Minimal Internet traffic	20–30 MB/ms.
Measured temperature range	–28...+75 °C
Cross section of connection wires	not more than 16 mm²
Overall dimensions	53 x 85 x 66 mm
Maximum extension length of the temperature sensor	20 m
Available languages on the app	ua, en, rom, cs, pl, de, ru

WIRING

The analog sensor (R10) is connected to terminals 1 and 2. The wire colors are not relevant during the connection process.

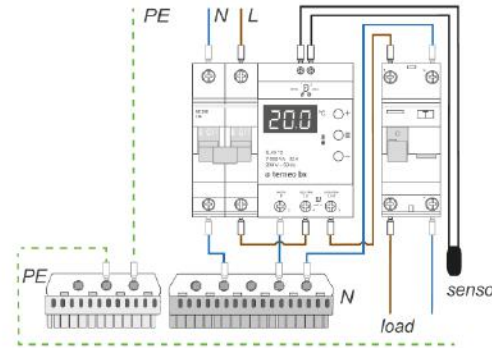
The digital sensor (D18) is connected with the blue wire to terminal 2 and with the white wire to terminal 1. If the thermostat switches to Emergency Mode by Timer (page 12), try connecting the blue wire to terminal 1 and the white wire to terminal 2. If the thermostat still fails to recognize the sensor after both attempts, please contact the service center.

The power supply voltage (230 V ±10%, 50 Hz) is connected to terminals 3 and 4. The phase (L) is identified by the indicator and connected to terminal 4, while the neutral (N) is connected to terminal 3.

The load connection wires are attached to terminal 5 and the neutral terminal block (not included).

Install and check the load before installing and connecting the thermostat.

If the external sensor and mains voltage are not connected correctly, the thermostat may malfunction.



Wiring 1. Connection of the circuit breaker and SSD

INSTALLATION

The thermostat is designed for indoor installation. Minimize the risk of moisture and liquids entering the installation area. When installing in a bathroom, toilet, kitchen, or pool, place the thermostat in a location not exposed to accidental splashes. The ambient temperature during installation should be within –5...+45 °C. The thermostat is to be installed at a height ranging from 0,4...1,7 meters from the floor level.

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 1. 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 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 screwdriver 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.

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. Near the sensor connecting wires should not be the power cables, they may be interfere.

It is necessary that the thermostat commutes the current not more than 2/3 of the maximum power specified in the passport. If the 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 (wiring 2).

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 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.com.ua>. If you have a warranty case, please, contact the General distributor in your area.



SERVICE CENTER CONTACT
+38 (091) 481-91-81
Viber WhatsApp 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: _____

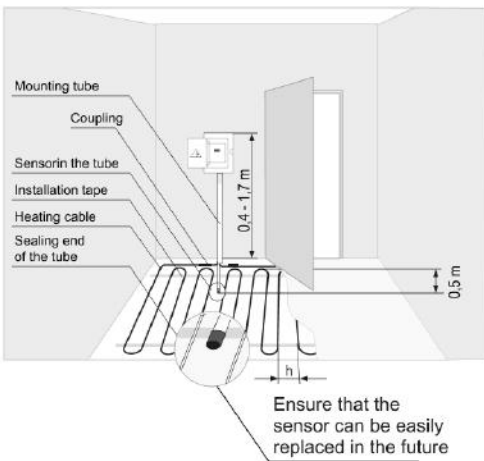
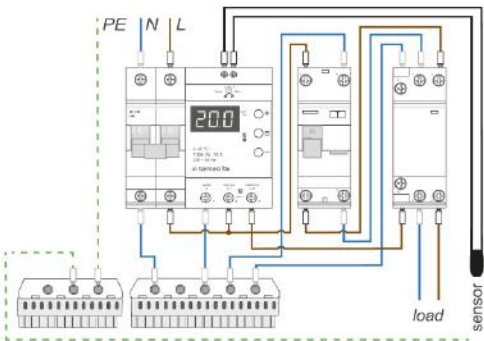


Figure 1. Mounting the thermostat and «warm floor» system



Wiring 2. Wiring and simplified internal circuit

Status of the indicator on the thermostat

● lights	connection to the «cloud» is available
○ does not light	no Wi-Fi connection or it is turned off
(●●) flashing 2 times / second	mode Access Point (AP)
(●●) flashing 1 time / 3 seconds	Client mode «CL» Wi-Fi is available, but there is no connection to the cloud

SMART FUNCTIONS

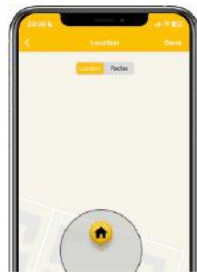
Smart functions allow you to save up to 50% by maintaining a comfortable floor temperature only when needed.



Download the top-rated terneo mobile app on PlayMarket and AppStore



Set up the heating schedule for savings, for example, during your absence and at night



Turn on Geofencing, and heating will automatically turn off when there's no one at home



Fill in your tariff and load to calculate electricity consumption costs



Enable Preheating, and terneo will automatically calculate the time to start heating in advance



Grant access to other family members and, if you have multiple thermostats, group them together

CONNECTION TO THE «CLOUD»

The «Cloud» is designed for remote connection, control, and storing statistics on the Internet.

Please note!

- The thermostat does not work with 5G Wi-Fi networks
- It is not recommended to connect the thermostat to a Wi-Fi network that uses Multi WAN technology.

How the «cloud» works in the presence of the Internet

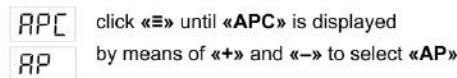
The thermostat is constantly synchronized with the cloud, executing its commands, receiving the latest settings, and sending telemetry about its status. If you disable remote control of the thermostat, the «cloud» can only be used to accumulate statistics (details in Table 1). For proper operation of statistics and heating schedule, after connecting to the cloud, please specify your time zone. Afterwards, the thermostat will automatically update the date and time via the Internet.

How the «cloud» works in the absence of the Internet

The thermostat continues to operate according to the set settings. During this time, you can control the thermostat using the thermostat's buttons or the offline mode in the terneo app. Please note that instead of a fixed internet connection, you can use mobile internet. For this, you will need a separate device (for example, a smartphone) that will act as a Wi-Fi hotspot. After restoring the Internet connection, all settings will be synchronized.

Connection via mobile application

1. Download the terneo app from Google Play for Android or from the App Store for iOS.
2. Register or log in using your Telegram, Apple ID, or Google account.
3. Upon the first power-up, the thermostat will enter the «AP» mode for the first 10 minutes. After that, set the «AP» independently:



4. Go to the app and press «+» → «Device» or «≡» → «Add» → «Device».

Complete the setup for Android

5. Select the Wi-Fi network created by the thermostat, for example, terneo bx_A68FDB.
6. Then follow the prompts in the app. If there is an internet connection, the thermostat will be added to the main screen of the app and registered in the «cloud».

Complete the setup for iOS

5. Enter the name and password of your Wi-Fi network, then press «Next».

6. Go to Wi-Fi Settings on your iPhone. Connect to the Wi-Fi network created by the thermostat; its name will be in the format — terneo bx_A68FDB. Enter the password DSEXXXXX, where XXXXXX represents the last six characters of the network name (for example: DSEA68FDB).

Next, return to the application and follow the prompts. If you have an internet connection, the thermostat will be added to the main screen of the application and registered in the «cloud».

Connection through the desktop application www.my.terneo.ua

1. Look at the thermostat screen and make sure it is in «AP» Access Point mode. If the screen shows «CLi» follow the instructions from Step 3 in the section Connection through the mobile app.
2. On your computer, go to Wi-Fi settings and connect to the Wi-Fi network created by the thermostat. Its name will be in the format terneo bx_A68FDB. If a password is required for the connection, enter DSEXXXXX, where XXXXXX represents the last six characters in the network name (for example: DSEA68FDB).

The Android operating system may prompt you to confirm the connection to a Wi-Fi network that has no internet access. To proceed with the connection, press «Do not disconnect».

3. Open the browser and enter 192.168.0.1 in the address bar.
4. On the browser page, select your Wi-Fi network and enter its password. Press «Connect».
5. Please wait for a minute until the thermostat connects to your Wi-Fi network, and the indicator on the thermostat will light up blue.
6. Go to the Wi-Fi settings on your phone or computer and make sure you are already connected to your home Wi-Fi network.
7. Go to my.terneo.ua and register using your Telegram, Apple ID, or Google account.

8. To add a thermostat, press «+ Add» → «Device» → set a name, for example, «Bedroom» → enter the PIN-code from the thermostat screen → press «Next» to add the device.

If you don't see the PIN-code on the thermostat screen, press the «≡» button 3 times until «Pin» appears on the screen. Then, press «+» or «-» to request the PIN-code.

Possible malfunctions:

- If instead of the PIN-code, the thermostat displays «iP», it indicates a lack of connection to the cloud. Check the internet connection on the router to which the thermostat is connected.
- If you cannot find the «Pin» and «iP» in the menu, it means there is no Wi-Fi connection. Repeat the connection process through the desktop application starting from step 1.

CONTROL FROM THE BUTTONS

After switching on the thermostat will start to display the sensor temperature. If it is below the current set temperature, voltage is applied to the load. The indicator starts to glow red.

Use «+» or «-» to change the heating temperature. The screen will first display the operating mode, then the set temperature of this mode.

For viewing of necessary section of the menu press certain number of times button «≡». For the selection and change use buttons «+» and «-». 5 seconds after the last push of the buttons, there is a return to the temperature display.

Button blocking (child and public protection)

Loc In order to enable (disable) button blocking press the «+» and «-» buttons at the same time for 6 sec till up to appearance in indicator «Loc» or running line («unLoc»).

Reset to factory settings

dEF For reset of all settings to factory (besides Wi-Fi settings) press button «-» during 30 second. before emergence on the screen of the inscription «dEF». After release of the button thermostat will reload.

Viewing of firmware version

F24 (current firmware version F2.4)
Holding button «-» during 12 seconds will display on the screen the version of insertion. After release of button, thermostat will return to the normal mode.

If the firmware version of thermostat does not meet the version mentioned in the manual, download from website Operation Manual for the required version. The website address can be found in the instructions in the Contacts section.

Our company reserves the right to make changes to its firmware, cloud interface and applications for iOS and Android for improving the energy efficiency of the device and for optimizing its operation.

Enabling sleep mode

oFF Hold the «≡» button for 4 seconds (3 dashes will appear on the display one by one) before appearing on the display «oFF». For a complete shutdown, the circuit breaker should be turned off.

on To disable sleep mode, also hold down the middle button for 4 seconds until «on» pops up on the screen.

Menu	Press button «≡»	Screen	Notes
Operating mode (from the factory «hnd») Away mode is tuned only by means of the app	1 time		Hand mode allows maintaining a constant set temperature all the time. Schedule mode allows setting different temperatures for each day of the week and throughout the day to save energy when you are away. If the Preheat function is enabled in the app, the screen will display «Prh» during its operation. If you change the temperature during the Schedule mode, the screen will display «tPr». This means that the new temperature will be maintained only until the end of the current schedule period, and after its completion, terneo will return to the standard schedule. Away mode. For the cancellation withhold middle button during 4 sec to the apparition of «oFF» in the indicator. After release of the button the thermostat will return in the acting mode before beginning of the period of the Away.
Installed load capacity (factory setting 2.0, a range of change 0,01...25,0 kW, the step length depends on power capacities)	2 times		For proper operation of energy consumption statistics, it is required to insert installed load capacity. Adjustable via the app or controller buttons.
Floor temperature correction (factory setting 0, a range of change ±9,9 °C, step 0,1 °C)	3 times		If necessary, it is possible to make correction to the floor temperature at Indicator of the thermostat. Adjustable via the app or controller buttons.
Brightness in standby mode (factory default 6, adjustable range 0...9)	4 times		In this mode, the digits on the screen will be hidden: <ul style="list-style-type: none"> • left dot indicates the presence of power supply, • middle dot indicates the load status, • right dot indicates the Wi-Fi network status.
PIN-code or local IP (the section is available when connected thermostat to a Wi-Fi network)	5 times		When connected to the «cloud», you may need a three-digit PIN code, or in case of no cloud connection — an IP address. This option is displayed only when Wi-Fi is turned on.
Operating mode Wi-Fi (factory setting «Cli» — Client mode)	6 times without Wi-Fi connection, 5 times		Choose the desired Wi-Fi operating mode: <ul style="list-style-type: none"> • Access Point to connect to the cloud • Client for using previous settings • oFF to turn off Wi-Fi
Blocking remote control of the thermostat (factory setting «LAN» — blocking of changes through local area network)	7 times without Wi-Fi connection, 6 times		«oFF» mode has no restrictions for remote control. «cLd» turn on if you plan to control the thermostat through the Smart Home system. The operation status and all statistics can be viewed in the terneo app. All changes through the app will be locked, control from the buttons will remain available. «LAN» is set by default. Leave it if you plan to control the warm floor through the terneo app. «on» enable it if you want to keep control only with the thermostat buttons.

POSSIBLE PROBLEMS, CAUSES AND WAYS TO OVERCOME THEM

The thermostat does not display the PIN code. The blue indicator on the controller is constantly on

It is necessary to: go to the «Pin» section on the thermostat (see Table 1). You will see a PIN code (a three-digit number with no additional characters).

Connection failed via Android or iOS apps, the indicator is blue

The thermostat is connected to the «cloud», but the account is not accessed.

It is necessary to: follow steps 8-10 to connect via the my.terneo desktop application.

The load is not working according to the settings, and every 5 seconds, the screen displays «OC» or «SC»
open circuit — sensor circuit break
short circuit — sensor circuit short-circuit

The temperature controller has switched to the Emergency Timer Mode.

Possible cause: Failed connection, damage to the sensor circuit, or temperature out of range (see Specifications).

What should be done: check the junction of the temperature sensor with the thermostat and its circuit, check for mechanical damages along the entire length of the connecting wire and no power wiring that passes close.

Operation in the Emergency Timer Mode: the mode will ensure the operation of the underfloor heating in case of damage to the sensor: the user selects the time of the work of the applied force, the rest time in the 30 – minutes cyclic interval the applied force will be switched off. The time of the work of the applied force can be installed in the range oFF, 1...29 minutes, on. For the purpose that applied force will work constantly elect «on», for the purpose to switch off it completely select «oFF».

Neither indicator nor display light up upon thermostat switch-on

Possible reason: no power supply voltage.

Required: check availability of power supply voltage using a voltmeter. If power supply voltage is available then contact the Service center please.

The thermostat does not respond to changing settings on the app

Possible reason: switched on blocking of changes from «cloud».

Required: go to the thermostat menu section «blc» and change its status to «oFF» (see Table 1, «Remote management blocking by thermostat»).

The load is turned off, and the screen is flashing «ohT»



The temperature inside the housing exceeded 85 °C and triggered protection against internal overheating. Every 1 sec the screen displays «ohT».

Possible cause: inner overheating of the device to which can lead: bad contact in the terminals of the device, high ambient temperature, overwhelming power output or incorrectly selected cross-section of wires for connecting.

It is necessary to: check tension of power wires in the device terminals, make sure that the switching load does not exceed the permissible and that the cross section of the wires is selected correctly.

Feature of protection against internal overheating: the device will be unlocked in case if the temperature inside will decrease to 75 °C. If the protection trips more than 5 times within 24 hours, the thermostat is blocked until the temperature inside the case drops to 75 °C and one of the buttons is pressed or after 30 minutes without pressing any buttons. When overheated, pressing any button will display the current temperature of the thermal protection sensor.

Every 5 sec the screen displays «Ert»



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

It is necessary to: send the device to the Service Center. Otherwise control over inner overheating will not be done.

When you press the buttons, it displays «Lbt»



Possible cause: discharge or damage to the internal power supply.

It is necessary to: wait approximately 1-2 hours to charge the power supply or contact the service center. Otherwise, if there is no power in the network, the operation of the clock will not continue.

For the connected controller, the LED has stopped glowing blue, the state of the controller on the application is offline

Possible cause:

- internet connection unavailable or provider-side issues;
- change of the router, its settings or its damage;

It is necessary to:

- make sure you have an available WLAN connection or Internet access;
- in case of changing the router settings, reconnect the thermostat via the terneo desktop app;
- until the issue is solved, you can change the temperature using the thermostat buttons or using the offline mode on the Android application.

Preheating does not work or works incorrectly

Cause:

- Preheating function is disabled in the app;
- there are frequent sharp temperature or power changes in the room, or the heating power is insufficient to reach the set temperature in less than 3 hours;
- a switch between heating/cooling modes was made, but there was not enough time for self-learning;
- floor temperature correction was changed, but there was not enough time for self-learning.

It is necessary to: ensure that there are no frequent sharp temperature or power changes in the room and that the heating power is sufficient to reach the set temperature in less than 3 hours. Make sure that the Preheating function is enabled in the app, the thermostat is in Schedule mode, and enough time has passed for its self-learning process.

The heating does not turn off, and the set heating temperature remains unachieved

Possible cause:

- insufficient heating cable power;
- absence or inadequate thermal insulation;
- incorrect installation of the heating cable or temperature sensor;
- inadequate power supply for the operation of the heated floor in the specified mode.

It is necessary to: please ensure that the heated floor is installed correctly (the cable's cross-section is chosen correctly, the level of thermal insulation in the room is sufficient, and the installation of the heating cable and temperature sensor complies with the requirements). Also, verify that the power capacity of your power supply is sufficient for the operation of the heated floor. Otherwise, please contact the Service Center.

Incorrect password when connecting to the Wi-Fi network created by the thermostat

It is necessary to: enter the password considering the case, language, and the number of characters. The password to input will be DSEXXXXXX, where XXXXXX — represents the last six characters of the Wi-Fi network name created by the thermostat and to which you are connecting (for example: DSEA68FDB).

Technical Support Chat

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

[@dselectronics_bot](https://t.me/dselectronics_bot)



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, cloud interface, mobile applications, and desktop application my.terneo.ua to improve the energy efficiency of the thermostat and optimize its operation.

Your personal data is safe

We take user confidentiality seriously and strive to be open and honest in the use of data. We keep your personal data secure and never share information that can identify you without your permission.

More about our Privacy Policy at the link: <https://my.terneo.ua/confidential/en>

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 media.

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.

F24_230725



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

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