

Smart thermostat terneo bx is designed to control a warm floor based on an electrical heating cable, a heating film or in the system warm water floor via the terneo mobile app, my.terneo web-page, or by voice via Google Assistant.



Scan to download the free terneo 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 sensor 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 Smart thermostat terneo bx and download the terneo app features brochure from the web-page.

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.

IN CASE OF NO VOLTAGE, all thermostat and heating schedule settings are kept in the non-volatile thermostat storage, and the clock will continue to operate fed from the internal power source for three days.

TECHNICAL DATA	
Adjustment range	5...45 °C
Maximum load current	32 A (max 40 A for 10 min)
Rated load capacity	7 000 VA
Input voltage	230 V ±10 %
Weight in the complete set	0,3 kg ±10 %
Temperature sensor (in set)	NTC thermo-resistor 10K OM 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, 47K OM 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 mm ²
Overall dimensions	53 x 85 x 66 mm
Maximum extension length of the temperature sensor	20 m
Available languages on the app	ru, ua, en, rom, cs, pl, de

WIRING

Thermostat supports two types of sensors: analog sensor (thermal resistor) or digital sensor (DS18B20).

Analog sensor (R10) is connected to terminals 1 and 2. Wires colors are of no importance.

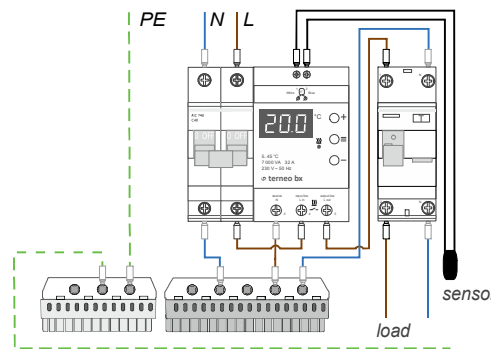
Digital sensor (D18) is connected to terminal 1 using white wire and to terminal 2 using blue wire. If a thermostat pass into accidental regime of work of offloading by timer (Operating Instructions page 12), try connecting to terminal 1 using blue wire and to terminal 2 using white wire. If, at both attempts, the thermostat does not see the sensor, contact the Service Center.

Power voltage (230 V ± 10 %, 50 Hz) is supplied to terminals 3 and 4, at that phase (L) is determined by indicator and is connected to terminal 4, and neutral (N) — to terminal 3.

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

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

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.

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 32 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.

- To install the thermostat you should:
- fix the thermostat on the mounting rail (DIN);
 - supply power, load and sensor wires;
 - perform the compounds according to the passport data.

The thermostat terminals are designed for a wire with section not more than 16 mm². To reduce the mechanical loads on the terminals it is desirable to use a soft wire. The wires are tightened in the power terminals with a screwdriver with a bit width of not more than 6 mm, and in the terminals for the sensor — of not more than 3 mm. A screwdriver with a bit width of more than 6 mm for power terminals (more than 3 mm for sensor terminals) can cause mechanical damage to the terminals. This may cause to the loss of the warranty. Tighten the power terminal with

moment of 2.4 N·m and sensor terminal — 0.5 N·m. Poor tightening can lead to poor contact and overheating of terminals and wires, and excessive tightening — to damage of terminals and wires. **The use of aluminum is not desirable.**

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 3).

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://ds-electronics.com.ua/en/support/warranty/>. If you have a warranty case, please, contact the General distributor in your area.



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

WARRANTY CARD

serial No: _____ date of sale: _____

a seller, a seal: _____ place of a seal _____

an owner contact for a service center: _____

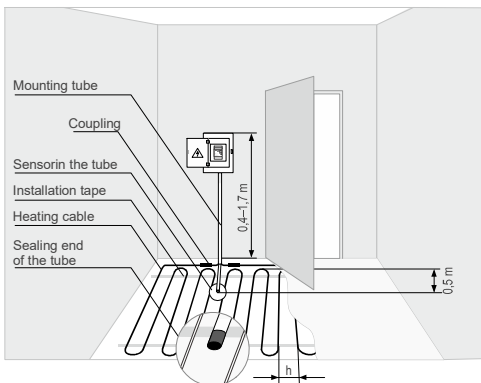
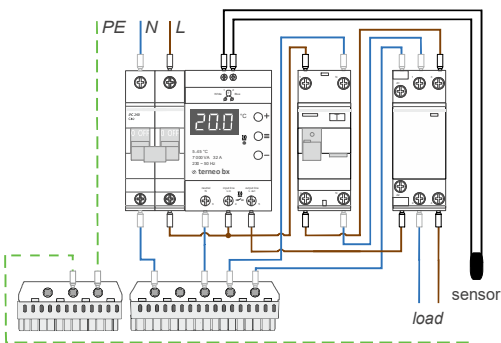


Figure 1. Mounting the thermostat and «warm floor» system

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



Wiring 2. Wiring and simplified internal circuit.

SMART REMOTE CONTROL FEATURES

- WLAN control from a mobile app;
- weekly schedule;
- energy consumption graphs in kWh and monetary terms;
- Nobody is home and Preheat functions (self-learning);
- single control over a group of thermostats;
- granting access to other family members;
- voice control via Google Assistant.

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

CONNECTING TO THE «CLOUD» FOR CONTROL FEATURES

If to say in brief, the «cloud» is intended for the safe keeping of the data in the net Internet, comfortable and safe long-distance connection and operation.

Internet connection available the thermostat constantly synchronizes with the cloud, performs its commands, receives the latest settings and sends the telemetry about its status. If you block the remote control of the thermostat, the «cloud» can only be used to accumulate statistical data (see details in Table 1). For the statistics and heating schedule to operate correctly, after connecting to the «cloud», specify your time zone. Further, the thermostat will independently update the date and time online.

In the absence of the Internet, the thermostat will continue its operation according to the latest settings. In addition, you can control the thermostat via the thermostat buttons or offline mode in the terneo app. Please note that instead of landline connection modes, you can use mobile data. To do this, you need a separate device (for example, a smartphone) with a WLAN Hotspot to share.

When restoring the Wi-Fi connection of the thermostat with the cloud, all settings are synchronized.

Not recommended to use in networks with Multi WAN technology.

CL If previously you connected the thermostat to your Wi-Fi network or want to use these settings, choose «**CL**» Client mode (Table 1).

Setup and terneo Account for Android

1. Download the free app «terneo» on Google Play and launch it.
2. Register or log in with the help of your Facebook account, Apple ID or Google account.
3. Turn the thermostat to the mode «**AP**» — Access Point mode. Upon the first switching on of the thermostat will stay in the Access Point mode during approximately 10 minutes. If during this period of time there is no connection to the thermostatic regulator, there will automatic return to the Client mode «**CL**».

In order to pass to Access Point «**AP**»:

APC • regime button «**≡**» before emergence of the inscription «**APC**»;

AP • using «**+**» or «**-**» replace «**CL**» value with «**AP**».

CON When connecting to the thermostat in the Access Point mode, on the screen there will be a message like «**con**» (connection) every 5 second.

4. In the application press «**+**», further press «Device» or «**≡**», further «Add th», further «Device».
5. Select the Wi-Fi network created by the thermostat (for example, terneo bx_27001A).

6. Enter the name and password from your Wi-Fi.

The WLAN connection does not have to be 5G.

The app will show you how to connect your thermostat. In the presence of the internet, the thermostat will be added to the main application screen and registered in the «cloud».

Setup and terneo Account for IOS

1. Download the free app «terneo» on Google Play and launch it.
2. Register or log in with the help of your Facebook account, Apple ID or Google account.
3. Turn the thermostat to the mode «**AP**» — Access Point mode. Upon the first switching on of the thermostat will stay in the Access Point mode during approximately 10 minutes. If during this period of time there is no connection to the thermostatic regulator, there will automatic return to the Client mode «**CL**».

In order to pass to Access Point «**AP**»:

APC • regime button «**≡**» before emergence of the inscription «**APC**»;

AP • using «**+**» or «**-**» replace «**CL**» value with «**AP**».

CON When connecting to the thermostat in the Access Point mode, on the screen there will be a message like «**con**» (connection) every 5 s.

4. In the application press «**+**», further press «Device» or «**≡**», further «Add th», further «Device».
5. Select the Wi-Fi network created by the thermostat, press «Further». The WLAN connection does not have to be 5G.
6. Go to WLAN settings on your iPhone. Connect to Wi-Fi network, created by the thermostatic regulator (for example, terneo bx_27001A). If a password is required for the connection, enter DSEXXXXXX, where XXXXXX is the last six symbols in the name of network (for example: DSE27001A).

Then return to the app and the app will show you how to connect your thermostat. In the presence of the internet, the thermostat will be added to the main application screen and registered in the «cloud».

Setup and terneo Account trough web page my.terneo.ua

1. Turn the thermostat to the mode «**AP**» — Access Point mode. Upon the first switching on of the thermostat will stay in the Access Point mode during approximately 10 minutes. If during this period of time there is no connection to the thermostatic regulator, there will automatic return to the Client mode «**CL**».

In order to pass to Access Point «**AP**»:

APC • regime button «**≡**» before emergence of the inscription «**APC**»;

AP • using «**+**» or «**-**» replace «**CL**» value with «**AP**».

CON When connecting to the thermostat in the Access Point mode, on the screen there will be a message like «**con**» (connection) every 5 second.

2. Go to WLAN settings. On the desktop connect to WiFi

network, created by the thermostat (for example, terneo bx_27001A). If a password is required for the connection, center DSEXXX XXX, where XXX XXX is the last 6 symbols in the name of network (for example: DSE27001A). The Android operating system may prompt you to confirm the connection to a WLAN network that does not have access to the Internet. To continue the connection, click «Do not disconnect».

3. In the address bar of the browser, type 192.168.0.1
4. On the thermostat page, select your Wi-Fi network and enter its password. Click the «Connect» button.
5. The thermostat during one minute will generate the connection to your Wi-Fi net. The successful connection to the WLAN network will be indicated by the constant glow of the blue indicator of the thermostat.
6. After the successful connection the screen of the thermostat will display PIN-code, necessary for the connection to «cloud» (three-digit number without any additional characters).
7. Go to WLAN settings on your phone and make sure you are already connected to your home WLAN network.
8. In the address bar of the browser, enter my.terneo.
9. Register or log in with the help of your Facebook account, Apple ID or Google account.
10. On the desktop app click «+ Add» — «Device» and enter a name (for example, «Bedroom») and a pin-code, which is displayed* on the thermostat screen. Press «Next» and device will be added.

Pin * If there is no PIN-code on the thermostat screen, read the chapter «PIN-code for registration in the cloud or local IP» table 1.

iP If the thermostat displays «iP» instead of a PIN code, this indicates no connection with the «cloud».

If the thermostat screen does not display «**Pin**» or «**iP**» the WLAN connection is failed.

TO CHANGE THE PASSWORD OF YOUR WI-FI NETWORK, follow the first six points of the section «Connecting through web page my.terneo».

STATUS OF THE BLUE INDICATOR on the thermostat indicates the WLAN mode and connection with the «cloud»

● lights	there is a connection with the cloud
○ does not light	no Wi-Fi connection or Wi-Fi off
● (flashing) 2 times / s	mode Access Point (AP)
● (flashing) 1 time / 3 s	the mode Client is a Wi-Fi, but there is no connection to the cloud

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»).

Reduce to factory reset

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 (current firmware version F2.4)

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.

Table 1. FUNCTION MENU

Menu section	Press button «≡»	Screen	Notes
Robot mode (factory setting «hnd» — Hand mode). The controller has 4 operating modes. One of two modes can be set from the thermostat buttons only: «hnd» — Hand mode or «Sch» — Schedule mode.	1 time		Hand mode. Adjustable via the app or controller buttons. It allows you to maintain one pre-set temperature.
			Schedule mode. Adjustable via the app. If the Preheat feature is enabled on the app, the screen will display «Prh».
			Temporary mode. If to change the temperature of the setting in the mode Schedule to the timetable, the thermostat will support it until the end of the current period. The outcome from the temporary mode under: the return of the setting back, the shutdown of the supply, turning on of the period of the leaving.
			Away mode. Is tuned only by means of the app. For the cancellation of the mode Away withhold middle button during 4 seconds 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		Adjustable via the app or controller buttons. For proper operation of energy consumption statistics, it is required to insert installed load capacity.
Floor temperature correction (factory setting 0, a range of change ±9,9 °C, step 0,1 °C)	3 times		Adjustable via the app or controller buttons. If necessary, it is possible to make correction to the floor temperature at Indicator of the thermostat.
The brightness in the mode of waiting (factory setting 6, a range of change 0...9)	4 times		With 0 in the screen only points will be displayed: left — indicator of the presence of the tension of the power supply; middle — is reflected state of loading; right — is reflected state of Wi-Fi net.
PIN-code or local IP (the section is available when connected thermostat to a Wi-Fi network)	when connection to a Wi-Fi network 5 times	 	When Wi-Fi is turned off, the item is unavailable. When connected to the cloud, it outputs a PIN-code for registration. When you connect to Wi-Fi, but the lack of communication with the cloud will output your local IP address.
Operating mode Wi-Fi (factory setting «Cli» — Client mode)	when connection to a Wi-Fi network 6 times otherwise 5 times		Access point mode.
			Client mode.
			Wi-Fi is turned off.
Remote management blocking by thermostat (factory setting «LAn» — blocking of changes through local area network)	when connection to a Wi-Fi network 7 times otherwise 6 times		Switched of.
			Switched on blocking of changes from «cloud».
			Switched on blocking of changes through local area network.
			Total blocking of management from the cloud. It is possible to change parameters only using buttons of the thermostat.

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 does not operate according to the settings, every 5 seconds the screen displays «OC» or «SC»



«OC» — open of circuit of the sensor



«SC» — short circuit of the sensor

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 disabled, oht flashes on the screen «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.

Preliminary warming up out-of-service or incorrect operation

Possible cause:

- the function is disabled on the app Preliminary warming up;
- there are often sudden changes in temperature in the

room or the power of the underfloor heating is not enough to reach the set temperature in less than 3 hours;

- the transition between heating / cooling modes is completed, and there is not enough time for self-learning;
- the floor temperature offset has been changed, and there is not enough time for self-learning.

It is necessary to: make sure that there are no frequent sudden changes in the room temperature or that the power of the underfloor heating is sufficient to reach the set temperature in less than 3 hours. For the preheat function to operate, make sure that this function is enabled on the app, the thermostat is in schedule mode and enough time has passed for self-learning.

Heating does not turn off, the set heating temperature remains not reached

Possible cause:

- insufficient power of the heating cable;
- lack or insufficient thermal insulation;
- incorrect installation of the heating cable or temperature sensor;
- the power is not enough for the operation of the underfloor heating in the specified mode.

It is necessary to: make sure that the underfloor heating is installed correctly (the cable section is selected correctly, a sufficient level of thermal insulation of the room is made, the heating cable and temperature sensor are installed in accordance with the requirements) and that the power of your power supply network is sufficient for the operation of the underfloor heating. Otherwise, contact the service center.

Wrong password when connecting to the WLAN network created by the thermostat

It is necessary to: enter a password case-sensitive, language-sensitive, and number-of-character-sensitive DSEXXXXXX, where XXXXXX is the last six symbols in the name of network Wi-Fi, created by the thermostat and to which actual connection is being established (for example: DSE27001A).

WE TAKE YOUR PRIVACY SERIOUSLY

We're committed to being open and honest about how we use data. We'll work hard to keep your data safe and we always ask for permission before sharing personally identifiable information.

To learn more about our Privacy Policy, go to <https://my.terneo.ua/confidential/en>.

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.

vF24_220728



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

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