











SAFETY RULES

-  Do not connect the device to loads exceeding the permitted values.
-  Connect only in accordance with the diagram presented in the manual. Improper connections may be dangerous, it can damage the controller, and loss of the warranty.
-  **DANGER!** Risk of electric shock! Even with the device turned off, the outputs may be live. All assembly work should be ALWAYS performed with the disconnected power circuit.
-  The installation of the device to a power mains that does not meet the quality requirements defined by PN-EN 50160, will result in the loss of the warranty.
-  To ensure protection against electric shock, the protective terminal of a I class devices must always be connected to the protective earth (PE) terminal in the TN-S network or to the neutral-protective (PEN) terminal in the TN-C network. At the installation of electrical devices, special attention must be paid to the protection against electric shock described in International Standard IEC 60364-4-41.
-  Protect the power circuit with overcurrent protection in B characteristic and rated current up to 16A.
-  Connection of the controller must be carried out only by persons with the corresponding electrician license.

to exceed the safe surface temperature (measured with the safety probe) while reaching the set temperature. The main probe provides readout of the current room temperature for regulation.


- After making sure that the device is connected in accordance with the diagram and that there are no metal components near the controller which may accidentally cause short-circuit, start the device by turning on the power (turning on the mains fuse or connecting the power cord to the power outlet).

Connection diagrams shown at the end of the manual 

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FIRST START

- Download the **free wBox application**. If you have an Android mobile device, you will find the application in the Play Store. For iOS devices the application is in the App Store.
- By using your mobile phone or tablet, connect it to the device wireless network. To do this, enter to your smartphone or tablet settings, then go to setting of the WiFi network and find the network name "thermoBox-xxxxxxx" where xxxxxxxx is the serial number of the device. Connect to this network.
- Turn on the wBox application. A device will appear at the top of the screen. To add it to the application, click on "+" on the right side of the name. To pre-configure the controller, click on the default device name.

 You can also set the configuration using the web browser of your phone / tablet. After connecting to the wireless network of the controller, turn on the browser and go website www.blebox.eu

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- Go to settings ("Settings" icon in the upper right corner of the screen) to the "Thermo settings" section. Select the device operating mode - "Heating" or "Cooling". In the fields "Minimum temperature" and "Maximum temperature", it is possible to change the operating range of the temperature controller. Limiting the operating range helps with the precise adjustment of the temperature using the setting scroll bar.
- If you have connected two probes select from the table below which probe is a safety probe and enter "Maximum safe temperature" to which the controller can heat / cool. To recognize the probes heat one of them e.g. by holding it in your hand. Refresh the temperature readings by pressing the button with two arrows. Confirm the settings by clicking the "Save" button just below.
- The further description of the controller behavior will be based on the operating mode as a heating controller. In the case of the "Cooling" mode the settings will be analogous but the logic will be reversed.
- Return to the control screen. Wait a while for sensors initialization. Test the work of the controller by moving the ON / OFF button to the ON position in which it is possible to adjust the desired temperature. Move the temperature control scroll bar upwards. When the desired temperature exceed current temperature the controller will turn on the relay and heating will start. Observe the readings of measured temperature: the readings should increase at the same time as the room heats up.
- You can also turn on the "Boost" mode which will start heating to the "Maximum temperature" for the time specified in the settings - so you can quickly heat the room. Then the controller will return to regulation according to the primary temperature set.
- The controller operational status is visible below the temperature setting slider. The regulation system is completely turned off (power-down) when the ON / OFF slider is in the OFF position.

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INSTALLATION - BASICS

- Disconnect the installation supply voltage before installing the controller. Remember that any mounting works should be carried out when the mains voltage is disconnected (switch off the mains fuse or disconnect the power cord from the mains socket).
- The controller should be installed in a place protected against adverse environmental conditions, protected from third party access - in the flush box or inside the enclosure of the controlled device. Remember that metallic elements (wires, housing parts) have a negative influence on the range of the device, and consequently the comfort of use. It is recommended that the device be mounted in a stable and fixed position. Due to the operating voltage of the device it is necessary that the connectors of the controller be protected against accidental contacts or short circuits, which could cause electric shock or damage to the device.
- Read the diagram and then proceed to install the controller. Pay particular attention to the designation of the controller connectors. Start with power wires - phase L (usually brown) and neutral N (blue). Then, connect the load. Remember to connect the protective wire PE (yellow-green). If you only want a local control with a wall switch, connect the wall push-button according to the diagram. To control using only your phone or Tablet, it is not necessary to install the wall push-button.
- Connect the external temperature probe to the blue connector in the order of colors (from top): black, red and yellow or white, brown and green. If an additional safety probe is also installed, it must be connected in parallel to the main probe.
- A digital probe was used to measure the temperature, which should be placed inside the heated / cooled room according to the recommendations in the diagrams. The final decision on the choice of probe location is made by the installer. It is not recommended to extend the original temperature probe cable excessively since the induced interference can cause the controller malfunction or even damage it.
- The controller is designed to work with an additional safety sensor whose task is to limit the heating of the surface contiguous to the heaters (e.g. wooden floor) during heating or freezing (e.g. evaporator) during cooling. The maximum (minimum) safe temperature is selected in the controller settings during configuration. The controller will regulate heating / cooling so as not



- If you have connected a push button, check its operation - the next short pressing of the button turns the regulator off and on to the last setting which will be visible on the device control screen in the application. A long button press activates the Boost mode.
- After a power failure the controller returns to the last state - when it was turned on it starts working with the last temperature set while when it was turned off it remains in the off state.

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OTHER DEVICE SETTINGS

- Go to the configuration ("Settings" icon in the upper right corner of the screen). In the "Main configuration" section, you can change the name of the device that is displayed in the wBox application. The "Status LED enabled" option allows you to turn off the built-in LED on the device.
- To communicate with the device from outside the local Wi-Fi network, from anyplace in the world, through the wBox application, the option "Enable remote access" must be set to "Yes". Selecting the option "Yes" also means accepting to send measurement data to the BleBox server in order to process and archive them. Setting this option to "No", will cause no access to the controller from outside the internal network or access to the historical data; it will only be possible to obtain a visualization of the current values.
- In the "Thermo settings" section after clicking the "show advanced" button additional settings for the controller adjustment parameters will be displayed. Remember that incorrect selection of settings may cause system overshoots and even damage the connected heating / cooling system.
- In the "Boost time" field you can change the heating time with the "Maximum temperature" setting (quick heating function). Default: 1h.
- The "Control time" is the minimum time interval between switching on / off of the output relay. It is independent of the set hysteresis. Setting the value too low will significantly shorten the life of the relay and may damage the switched load (e.g. solenoid valve). Default: 5sec.
- The "Hysteresis window" is the range of allowed temperature fluctuations around the set (target) temperature that the controller should maintain. The settings can be made with a slider or by filling values in the fields. The width of the hysteresis window depends on the heated object, its cubature, heating efficiency and the expected precision of the system. The window can be centered in relation to the set value or moved when it is important, for example, not to overheat the room. Too narrow hysteresis window will result in intensive operation of the regulator (and thus also frequent switching of the relay and the equipment connected to it). Default: -0.2°C - 0.2°C.
- The "Temperature value shift" option allows to correct the temperature reading from the probe by a constant value. Settings can be made with a slider or by filling a value in the field. This option is useful in case of unusual probe installation when it turns out that the probe lowers or increases the real temperature. The setting is made separately for each probe. Default: 0°C.

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MEASUREMENT DATA

- The main screen of the controller shows the reading of the current temperature.
- Historical measurement data are available by clicking on the diagram icon in the upper right corner of the screen. Measurement data are stored only on the BleBox server and are available only when the "Remote access" option is set to "Yes".

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ACCESS POINT AND WIFI NETWORK SETTINGS

- Once you turn on the controller for the first time, you can proceed to its further configuration. Being connected to the WiFi network emitted by the device, in the control panel of the wBox application select the device, then go to "Settings" (icon at the top-right corner of the screen).
- You can change the name of the device that is displayed in the wBox application. In addition, you can change the name and password of its generated WiFi network. Remember that changing the network name or password will disconnect the device immediately after you click the "Save" button, so re-connect to the device using the newly assigned network name and password.
- You can add the controller to your home WiFi network to control it through this home network or from anywhere in the World. To do this, in the "Connect" settings section, select a network name from the list and press "Connect". If is required, enter the WiFi network password. During the connection of the controller to your home network, the phone / tablet may be disconnected from the network. In this case, you will need to reconnect your phone / tablet to the controller network.

- Please remember that in order to control the device outside the local WiFi network, from anyplace in the World by using the wBox application, the option "Remote access enabled" in the controller settings must be set to "Yes".
- Once you've finished configuring the WiFi network, you can disconnect your phone/tablet from the controller network and connect your mobile device directly to your home WiFi network. The control from the wBox application will work the same way as when the phone / tablet is connected to the controller network. If the user leaves the local network, for example, leaving home or using the mobile data, the wBox application will signal this state as "Remote mode". In this case, the devices can be controlled, but for security reasons settings are not available.

TECHNICAL SPECIFICATIONS

supply voltage	230V AC
energy consumption	< 1W
maximum load	16A / 230V AC, 16A / 24V DC
maximum power	3680VA for 230V AC (for resistive load e.g. heater)
supported switches	monostable (push-button), not-illuminated
inputs type	temperature probe
galvanic isolation	yes
number of pushbutton inputs	1
inputs type	logical, pushbutton, short circuited to N, configurable
number of outputs	1
type of outputs	relay, galvanic isolation
measurement range	from -55°C to 125°C
measurement accuracy	± 0,5°C (from version ≥ 1.1) in the range of -10°C to 85°C
housing	made of polyurethane composition not containing halogens, self-extinguishing for thermal class B (130 °C)
dimensions	41,5 x 47 x 12 mm
number of supported probes	2 pcs (main probe and optional safety probe)
protection level	IP20

controller signaling	blinking blue diagnostic diode (option to switch off in the controller settings)
mounting method	in a flush-mounted box (deepened or double), in the receiver housing - e.g. a heater, air conditioner
API	open
communication standard	µWiFi, compatible with WiFi, 802.11g
transmission type	bi-directional, encrypted
radio frequency	2.4 GHz
mode	direct connection (as Access Point), Wi-Fi connection via a standard router, connection with access from any location in the world (requires only access to the Internet)
encryption	WPA2-PSK and authenticated encryption with associated data (AEAD)
compatible devices and systems	Apple iPhone, Apple iPad, iPad Mini, Android, computers and mobile devices supporting HTML5
controller operating temperature	-20°C to +50°C

Adding schedule entries can be performed by clicking the "Add item" button in the "Schedule" section of settings. You can select the days in which the task will be performed, the type of entry (at a specific time, or relative to sunrise / sunset - only having a correctly set location) and set the parameters of the task. The set tasks will be visible as a list, individual entries can be edited or deleted.

SOFTWARE UPDATE

To update the software in the controller, connect it to your home WiFi network (see "Access Point and WiFi settings" section) which is connected to the Internet. Go to "Settings" (icon at the top-right corner of the screen) and click the "Get new firmware" button in the final section on settings. Wait about 1 minute, do not close the interface and don't perform other actions. The device will download the latest software. The software version number, hardware version and device identifier can be read at the bottom of the settings screen.

For more information visit our website

www.blebox.eu

Or send us an email to: info@blebox.eu

Support is available at support@blebox.eu

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ADDITIONAL INFORMATION

LOCATION AND TIME OF THE DEVICE, SCHEDULE

The controller has the ability to work according to a given schedule. To make this possible, set the device's time. Go to settings in the "Device time" section, click "Change timezone". Then select your region and location from the list, confirm your selection clicking the "Save" button. The device will synchronize its time with the server time (if the controller is in a WiFi network with access to Internet) or it will download time from the phone / tablet. It is recommended that the controller is always connected to a WiFi network with Internet access so that it can automatically synchronize its clock.

To be able to control devices using the local sunrise and sunset, you must also select the location of the controller. You can specify the location of the device using a smartphone or tablet. In the section "Device location", click "Set locations". Browser will ask whether to share locations - allow. In the "Coordinates" field, should appear the approximate coordinates of your location. If the "Set locations" button blinks red with the word "Error", or the "Coordinates" field did not change the value from "Not set" to numeric data, a failure has occurred during the location download. You should make sure that the phone / tablet has a GPS module and that the sharing location service is enabled on the phone.

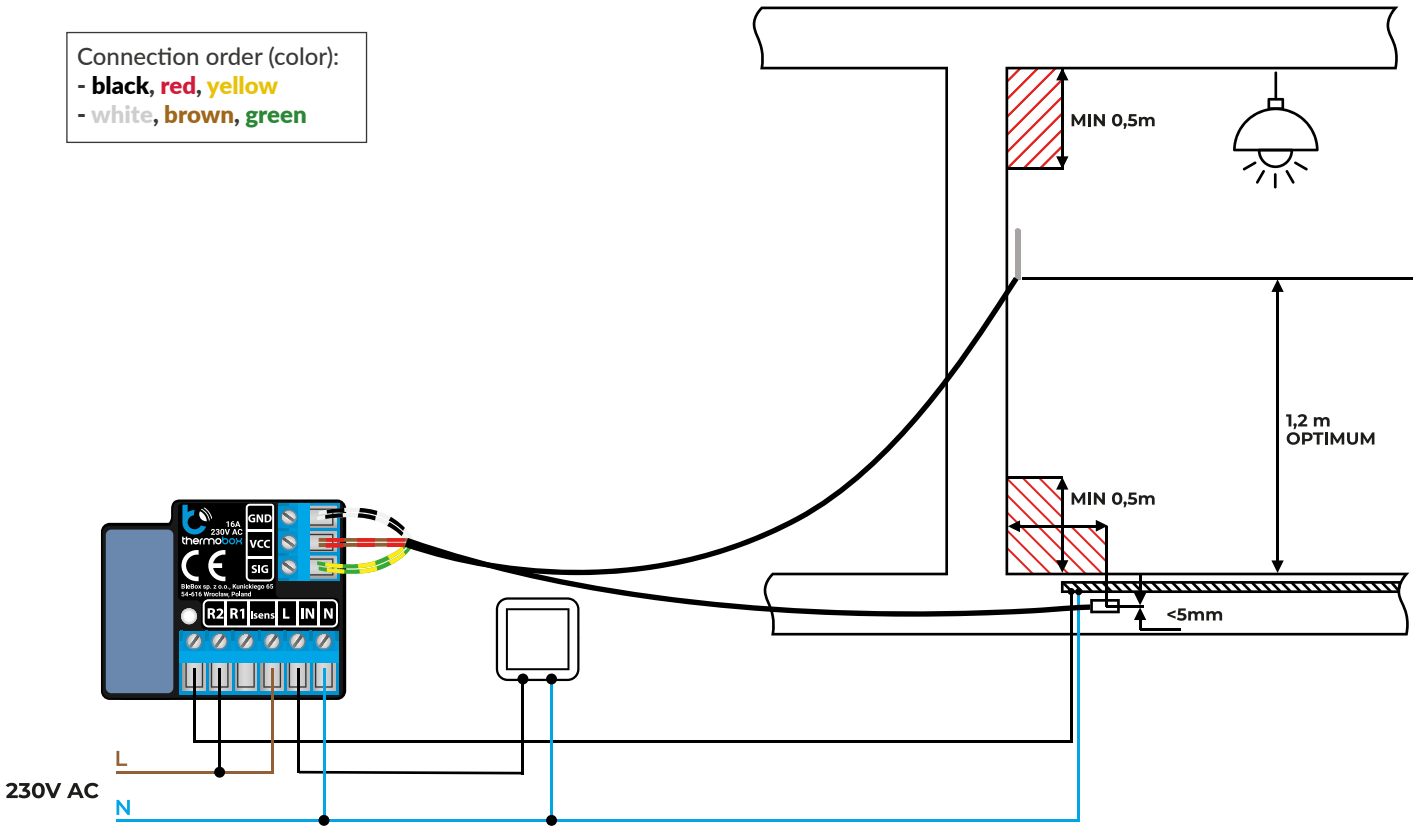


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CONNECTION DIAGRAM

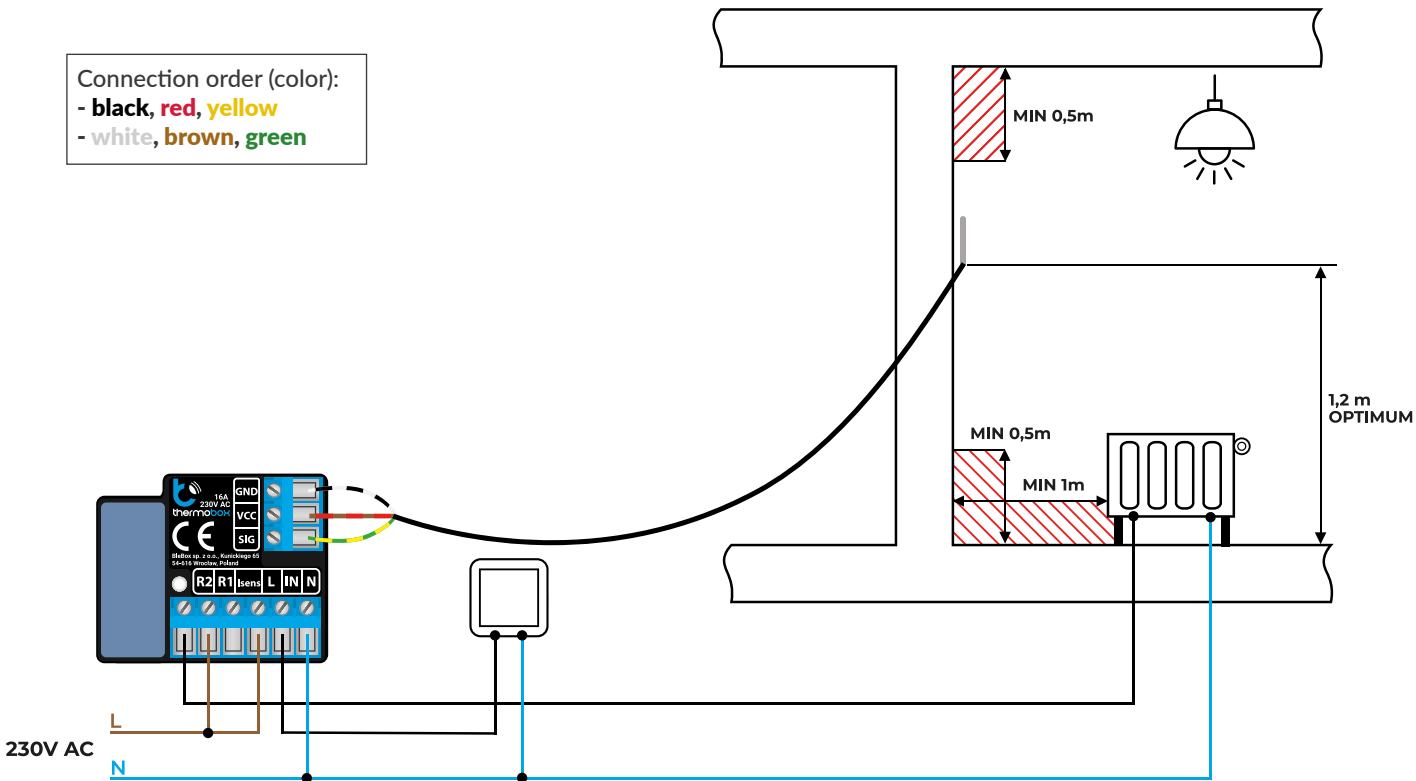
Connection diagram for 230V heating mats:

Connection order (color):
 - **black, red, yellow**
 - **white, brown, green**



Connection diagram for 230V electric heaters:

Connection order (color):
 - **black, red, yellow**
 - **white, brown, green**

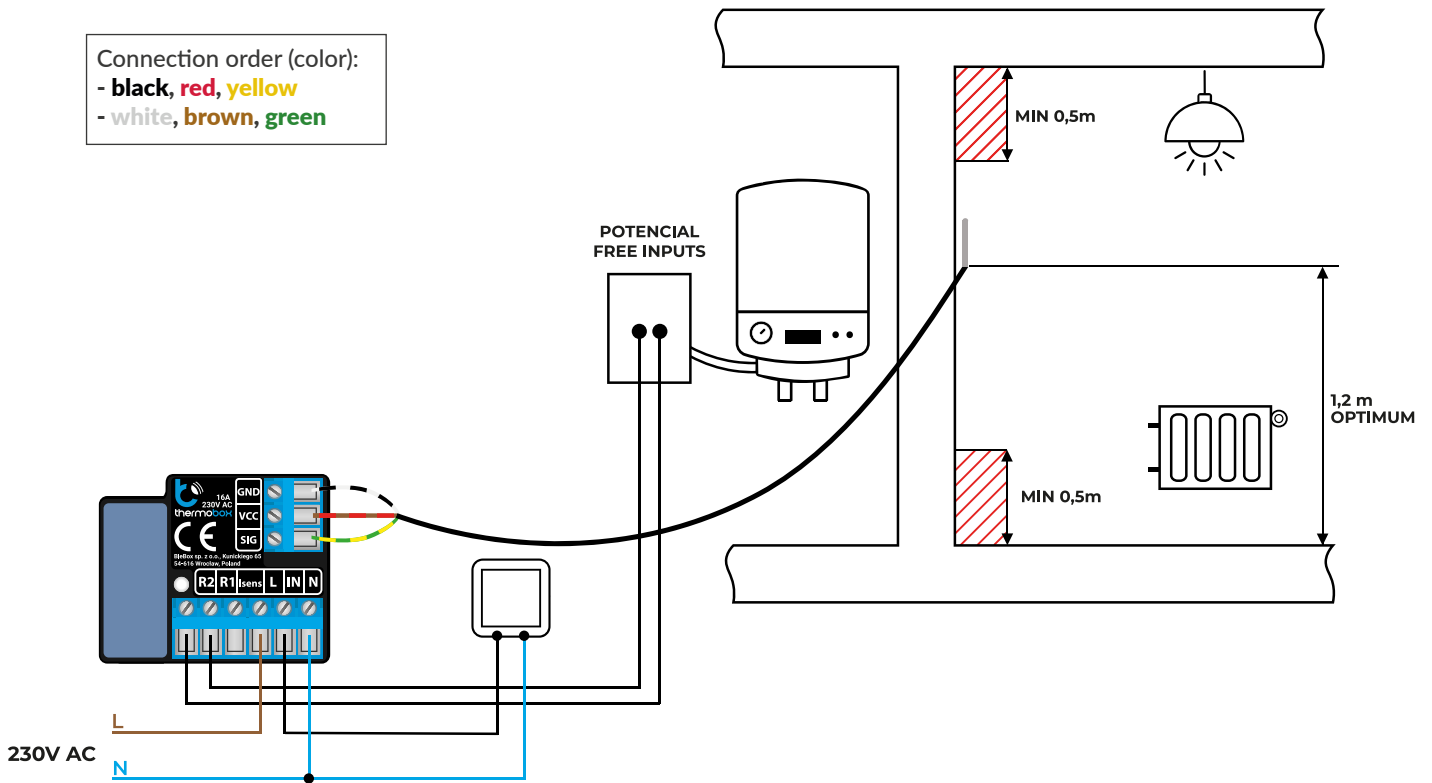


Potential-free (dry-contacts) connection diagram for max 0 - 230V AC / 0 - 24V DC (central heating stove, central heating controllers):

Connection order (color):

- **black, red, yellow**

- **white, brown, green**



Potential-free (dry-contacts) connection diagram for max 0 - 230V AC / 0 - 24V DC (solenoid valves, thermal actuators for heat distributor manifold, thermoelectric heads)

Connection order (color):

- **black, red, yellow**

- **white, brown, green**

