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User Manual

tempsensor PRO v2 TEMPERATURE SENSOR WITH EXTERNAL ANTENNA

SAFETY RULES

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 EN 50081-1, EN 50082-1, UL508, EN 60950, will result in the loss of the warranty.

1 INSTALLATION - BASICS

The connection diagram can be found at the end of the manual

- 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 accidental destroyment. Remember that metallic elements (wires, large fitting elements) 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 with the antenna upside. When installing the device outside of dry rooms, pay special attention to provide tightness of the rubber cable glands.
- The measurement probe is waterproof. The probe must not be installed in locations exposed to contact with oils, liquid fuels, solvents, or corrosive substances.
- Familiarize yourself with the diagram and then proceed with the installation of the controller. Pay special attention to the designation of the controller connectors. Start by connecting the power wires: +12/+24V (red or black with a white dotted line) and ground (black).
- Next, connect the external temperature probe, following the wire color order (from left): black, red, and yellow, or white, brown, and green. If additional probes are being installed, they should be connected in parallel or according to the available wiring diagrams. The last, far-right terminal must remain unconnected. It has been designed to allow for future application extensions of the product and is not currently in use.
- The measurement probe is waterproof. It is not allowed to install the probe in a place exposed to contact with oils, liquid fuels, solvents and caustic substances.
- 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).

2 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, go to your smartphone or tablet settings, then go to setting of the WiFi network and find the network name „tempSensor_PRO_v2-xxxxxxxxxx" where xxxxxxxxxx is the serial number of the device. Connect to this network.
- Turn on the wBox application. You will see your device on the main screen. In order to add it to your application account, select "Add device to account". If you are the installer and do not want to assign the device to your account, select "Use only once".

3 WIFI CONNECTION AND SERVICE CONNECTION (AP) SETTINGS

- Go to the WiFi network settings ("Settings" icon in the top right corner of the screen, "Connection" section), where you can connect the device to the home WiFi network to be able to control the device via it or from anywhere in the world. To do this, select the network name from the list of available networks and press "Connect". If required, enter your WiFi password. When connecting the device to the home network, the phone / tablet may disconnect from the device's network.
- You can also configure the network settings using a web browser. After connecting to the controller's wireless network, turn on the browser and go to www.blebox.eu
- After reconnecting the phone to the controller's WiFi network, check the "WiFi Client status" and "Remote access status" fields. The controller is equipped with a network connection supervision system which in case of problems with connection to the WiFi or the Internet will report the problem and its possible causes. If the network is working properly both fields will be set to "Connected".
- In order to communicate with the device from outside the local WiFi network, from anywhere in the world, via the wBox application, the device automatically connects to the BleBox cloud system service by default. The remote access system is fully encrypted and secure, the data are transmitted by European servers from reputable companies. It is possible to disable the remote access service - after clicking the "Configure" button, toogle the switch next to the "Remote access" option. Disabling the "Remote access" option will disable the controller from being used outside the local network. It will also disable access to historical data (including charts), push notifications on smartphones and integrations with external systems (e.g. Google Home, Amazon Alexa). We recommend keeping this function enabled (this is the default setting).
- Enabling the "Event log" option will cause the device to record events (e.g. about sent notifications set in the "Actions" section) in the BleBox cloud system. This allows the history of the events to be viewed later also when the controller is offline.
- After completing the WiFi network configuration, you can disconnect from the device network and connect the phone / tablet directly to your home WiFi network. Control from the wBox application will work in the same way as when the phone / tablet is connected to the device's network. If as a user you leave the local network, eg leaving your home or enclosing mobile data, the wBox application will signal this status as "Remote mode". In this case, you will have access to the device data, but for security reasons settings options will not be available.
- In the "Service connection (AP)" section, you can change the name and give the password of the WiFi network emitted by the device. Remember that changing the network name or password can cause disconnection with the device immediately after clicking the "Save" button, so you should reconnect to the WiFi network.
- It is also possible to completely disable the access point emitted by the device. To do this move the "Access point" slider to the off position and confirm the selection with the "Save" button.

- Attention! If the controller does not have a stable connection to the WiFi network ("WiFi client status": "Connected", without any error warnings), restarting the access point will not be possible - in this situation, the only solution is to reset the controller to the factory settings. Disabling the access point is recommended only after the complete driver configuration and making sure that the entire system is working properly.

4 DEVICE SETTINGS

- On the main control screen, where the temperature measured by the probes is displayed, go to the device settings (the "gear" icon in the upper right corner).
- In the "Name and Icon" section, you can change the device name under which it is displayed in the wBox application. Here you can also assign custom, user-friendly names to individual sensors, e.g. "Air Temperature" or "Pool Water Temperature."
- In this section, you can set a different icon for each sensor (e.g. water temperature, pool, hot tub, sauna, indoor temperature, outdoor temperature, smokehouse, etc.). This allows the user interface to be better adapted to the specific application.
- In the "Device Settings" section, in addition to the option to disable the LED indicator, you can configure the connected temperature probes. After the device is powered on for the first time, the probes are automatically detected and assigned to the appropriate tabs ("Sensor 1", "Sensor 2", etc.) based on their unique identifiers. Configuration is carried out separately for each probe. If the full number of sensors is not being used, you can disable the display of a selected sensor here by deactivating the "Sensor enabled" option. By default, the device will configure as many sensors as probes are connected.
- Under the "Probe" position displays a list of found probes with the current temperature values. 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 .Select from the list the probe you want to assign to the given sensor.
- The "Temperature value shift" option allows you to correct the probe reading by a constant value. The adjustment can be made by moving the slider, using the "plus" and "minus" buttons, or entering a numeric value by clicking the pencil icon.

5 MEASUREMENT DATA

- The main screen of the controller shows the current reading of temperature, below there are indicators of the trend of changes.
- 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".
- Historical measurement data can be exported for further processing, comparison, and archiving in external systems and analytical tools. To do this, click the "three dots" icon in the upper right corner of the screen and then select the "Export" option. You can choose between the ".csv" and ".xlsx" (Excel) formats.

6 ACTIONS / TEMPERATURE REGULATOR

- The controller allows you to send control commands to other BleBox controllers via the WiFi network through the API. Each action will be deployed on particular trigger, eg. like temperature lower than, which allows you to build, for example, a temperature control system.
- When adding an action, in the "When" tab, select e.g. "Temperature lower than" or "Temperature higher than" as the "Trigger type". In the "Sensor" field, indicate the probe responsible for triggering the action, and finally fill in the "Temperature °C" field.
- In the "Execute" tab select "Control other device" as "Result", confirm. Click on the "Select device" icon. The device will search the network for compatible devices and display them in a list. Choose the device you want to control. If the device is not listed you must use the general API control method described below or update the firmware in target device. **Caution! All controllers must be in the same local network, and the "wireless client isolation" option in the AP/router must be disabled.**
- Then in the "Call API" field enter the API command that the driver will call.
- The most popular API control commands /s/ for switchBox and shutterBox are presented below:

  Switching on the radiator via switchBox: 1

  Switching off the radiator via switchBox: 0

  Opening the roof window via shutterBox: u

  Closing the roof window via shutterBox: d
- By default, the action will be triggered once, when the trigger condition is met. It is also possible to repeatedly call a given action by selecting one of the repeat options and setting the interval.
- If the device was not on the found list or you want to control another device in the network, select "Call URL" as "Action type".
- In the "URL" field, enter the API command preceded by the http protocol prefix and the IP address of the controller you want to operate. The IP address can be found in the settings of the given device. **Caution! All controllers must be in the same local network, and the "wireless client isolation" option in the AP/router must be disabled.**
- The most popular API commands for switchBox and shutterBox are presented below. It was assumed that the IP address of the device which will be controlled is: 192.168.1.123

  Caution! In the router settings (DHCP), a static IP address must be assigned to the controller.

  Switching on the radiator via switchBox: http://192.168.1.123/s/1

  Switching off the radiator via switchBox: http://192.168.1.123/s/0

  Opening the roof window via shutterBox: http://192.168.1.123/s/u

  Closing the roof window via shutterBox: http://192.168.1.123/s/d

The temperature regulator requires a hysteresis configuration, it means, a certain difference between the switch on temperature and the switch off temperature. In the case of the radiator control, the switch on temperature must be lower than the switch off temperature, e.g. "Temperature lower than: 19°C, action: turn on", "Temperature higher than 21°C, action: turn off".

BleBox also offers dedicated WiFi temperature controllers, such as "thermoBox" and "saunaBox", which independently perform the hysteresis function.

- The "Send URL" action can also be used to transmit measurements to an external server. While creating the action, the "Action Symbols" button is available. It displays a list of available placeholders along with short descriptions. To add a action placeholder, click the "plus button".
- The best trigger type for this kind of use is "Cyclic" trigger. It allows sending information at various time intervals (at least every 15 seconds). Below are examples that use placeholders, also known as action symbols:
- Sending the temperature from probe number 1 to an external server:

  - http://177.120.11.5/temperature/{temp_c.0}
- Sending the temperature from probe number 2 to an external server:

  - http://177.120.11.5/temperature/{temp_c.1}
- Sending the temperature and status of probe number 1 to an external server using a "query string":

  - http://177.120.11.5/sensor1?temperature={temp_c.0}&state={s_state.0}
- In the "Summary" tab name the action, check its correctness and confirm the entry with the "Save" button.
- A detailed description of control options and integrations examples for other controllers using the local open API can be found on our website, https://blebox.eu, in the FAQ section. The full technical API documentation for BleBox Devices is available at: https://technical.blebox.eu
- The added action will be displayed on the list. By expanding its details it is possible to preview the status of its last execution.

7 NOTIFICATIONS

- The controller allows you to display a system notification on a phone with the wBox application installed on the particular trigger, e.g. “Temperature higher than”.
- Notifications only work when the controller has a stable Internet access and the “Remote access” option is enabled (default setting).
- Notifications are added similarly to “Actions” - fill in the form fields and in the “Execute” tab select “Notification” as “Result”. Confirm with the “Save” button.
- Additionally, it is possible to create “Custom Notifications” that allow you to define your own notification text. In custom notifications, you can use so-called placeholders (action symbols). They make it possible to display the temperature from any probe at any position within the text. The temperature is shown in degrees Celsius or Fahrenheit, depending on the selected action symbol.
- While creating a “Custom Notification” action, the “Action Symbols” button is available. It displays a list of available placeholders along with short descriptions. To add a placeholder, click the “plus” button. Below are examples of “Custom Notifications” using placeholders, also known as action symbols:
- Custom notification message containing the temperature readings from probe number 1:

  Living room temperature: {temp_c.0}°C
- Custom notification message containing the temperature readings from probe number 1 and probe number 2:

  Outdoor temperature: {temp_c.0}°C , Pool temperature: {temp_c.1}°C
- For a notification to appear on your phone, you need to allow notifications from the selected BleBox device. This can be done in two ways:

  1. Go to the controller settings, select the “Notifications” tab, and enable the “Action notifications” option.

  2. On the wBox app home screen, open the menu by tapping the “three lines” icon in the upper left corner, then select “Notifications.” Go to the notification settings, find the controller in the device list, and from the drop-down menu next to it, select “Action notifications.”

  In both cases, you can also enable other types of notifications. Confirm the changes by pressing the “Save” button in the upper right corner of the screen.
- If notifications are not displayed despite their configuration check in the phone system settings (Android / iOS) whether the wBox application is authorized to display system notifications.

8 TIME AND LOCATION OF THE DEVICE

- Go to settings, to the “Time and location” section. In the “Device time” tab, select your region and location from the list, confirming the changes with the “Save” button. The device will synchronize its time with the NTP time server (if the controller is in a WiFi network with Internet access) or will download the time from the phone / tablet. Since the controller does not have a clock backup battery, the clock resets itself when the power is disconnected. Hence, it is recommended that the controller is always connected to a WiFi network with internet access so that it can automatically synchronize its clock. This is especially important in controllers that have the function of working with the schedule.
- You can specify the location of the controller using your smartphone or tablet. In the “Device location” tab click the “Set location” button. The application will ask whether to share the location - allow. The approximate coordinates of your location should appear in the “Coordinates” box. If the “Set location” button flashes red with “Error” or the “Coordinates” field has not changed the value from “Not set” to numerical data there has been a failure in retrieving the location. You should then make sure that the phone / tablet has a GPS module and that the wBox application has access rights to download the location in the phone settings. Setting the location is especially important in controllers that have the function of working with the schedule, in which the schedule is based on sunrise and sunset.

TECHNICAL SPECIFICATIONS

power supply	12-24V
energy consumption	< 1W
measurement range	from -55°C to 125°C
measurement accuracy	± 0,5°C in the range of -10°C to 85°C
dimensions	50 x 92 x 28 mm (without antenna), 85 x 230 x 28 mm (with the antenna located vertically), antenna length 197 mm
housing	made of polyurethane composition not containing halogens, self-extinguishing for thermal class B (130 °C)
type of probe	single wired waterproof probe, cable length 1m
additional probe	yes - "blebox tempProbe", available as an accessory
maximum number of connected probes	4x15m max
mounting method	two oval mounting holes with dimensions of 18 mm x 3,5 mm (width x height) or self-adhesive element (tape)
protection level	IP54 according to PN-EN 60529
protection	inverted polarization, ESD
antenna output	yes
antenna connector type	RP-SMA
antenna	omnidirectional, 5dB gain - included in the kit
API	open https://technical.blebox.eu/
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 stan- dard 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	iOS (e.g. iPhone, iPad), Android, macOS (ARM processors labeled M1 or newer)
controller operating temperature	-20°C to +50°C

TECHNICAL SPECIFICATIONS
blebox tempProbe

power supply	3.0 - 5.5V
sensor type	digital
measurement accuracy	from -55°C to 125°C
measurement range	± 0.5°C in the range from -10°C to 85°C
dimensions	diameter: 6mm length: 30mm thickening on the heat-shrink tubing - 6.5mm
housing	metal, filled with polyurethane compound. Halogen-free, self-extinguishing for thermal class B (130°C), heat-shrink tubing
protection level	IP68
cable	LiYY 3x0.14mm^2, diameter: 3.5mm
available cable lengths	1m, 2m, 5m, 10m, 15m, 30m* or up to 100m* on request

***supported only by tempSensor DIN**

ADDITIONAL INFORMATION

SOFTWARE UPDATE

In order to update the software in the controller it must be connected to the home WiFi network (see "WiFi connection settings" section) which is connected to the Internet. Go to settings, to the "Details, update and help" section and click the "Check for update" button. If an update is available the button changes to "Download new software". After clicking it, wait about 1 minute without closing the interface or taking any other actions. The device will download the latest software and then reboot. You can read the device ID, hardware and software versions in the device details.

HELP

The latest versions of the manual, additional informations and materials about products are available on our website: blebox.eu

General questions: info@blebox.eu
Service and technical support: support@blebox.eu

Before contacting our service, if it is possible, prepare the "Service key" of the given controller available in its settings, in the "Details, update and help" tab. By clicking the icon, the key will be copied to the phone's clipboard. Prepare also the "Installation key" of the wBox application, available in the main application menu, in the "Settings" tab.

Factory reset manual is available at: http://blebox.eu/start/reset

The controller reconfiguration manual is available at: http://blebox.eu/start

Warning: Restoring factory settings resets the controller configuration but does not unlink it from the user accounts it is assigned to. If the owner (the first user who added the device to their account) removes the controller, it is removed from all other users as well.

To remove the controller from your account in the wBox app: open the main menu, go to "Manage devices", select the controller, and click "Remove device." Alternatively, sign in to portal.blebox.eu, go to "Devices," select the controller, open "Actions" (top right), and click "Remove device." If you are not the owner, this removes the controller only from your account.

for more information visit our website

www.blebox.eu

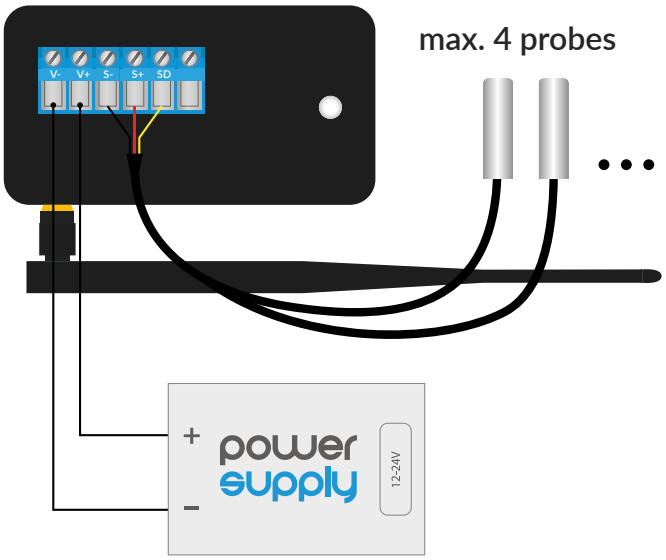
or send us an email to: info@blebox.eu

support is available at support@blebox.eu

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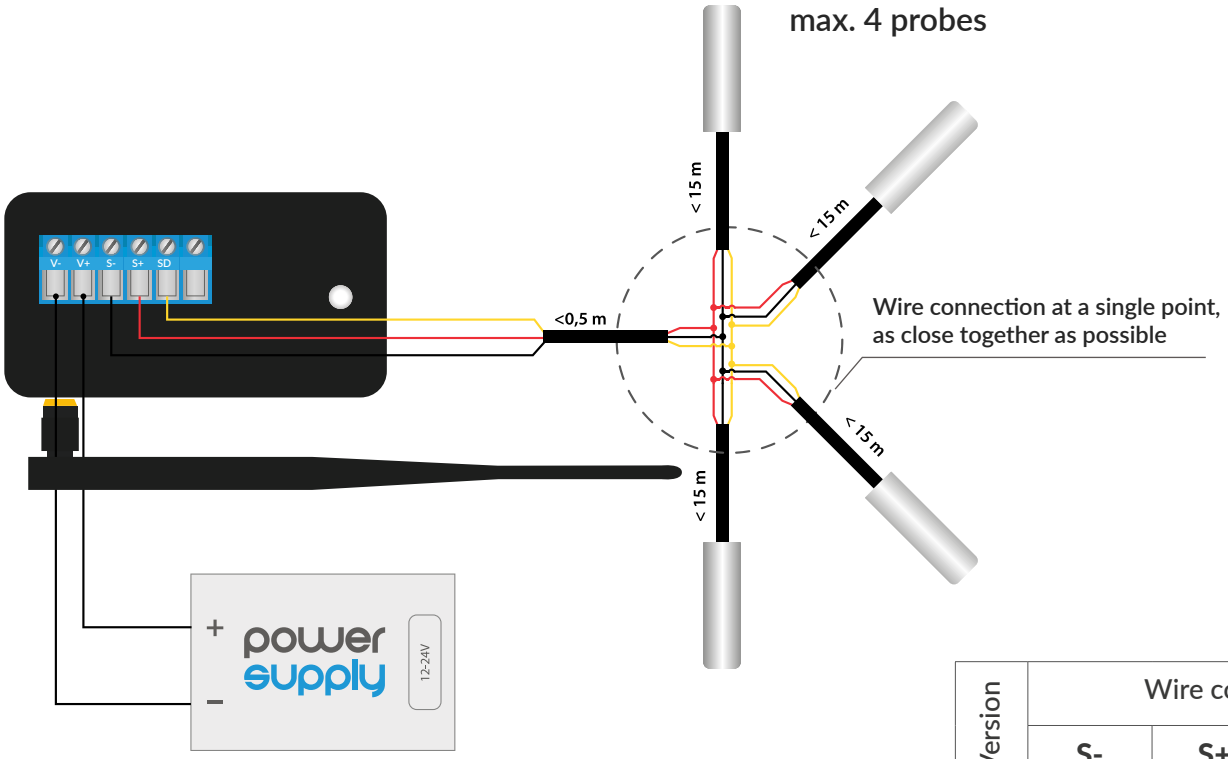
Connection diagrams

1. General wiring diagram:



Version	Wire colors		
	S-	S+	SD
I	black	red	yellow
II	white	brown	green

2. Wiring diagram – Star topology:



Version	Wire colors		
	S-	S+	SD
I	black	red	yellow
II	white	brown	green