SuperHub Instruction Manual

Table of Contents

Introduction

Dear user of this Energybox Product. This Instruction Manual will guide you through the Installation and Setup of the Superhub.

What's in the Box

The package contains the following items:

- SuperHub Gateway

- RF Antenna
- 4G Antenna
- Power Supply
- Mounting bracket
- Mounting material

Safety Instructions

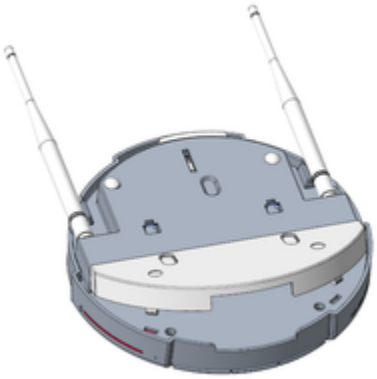
The Installation of the SuperHub gateway device should only be done by certified electrician/technician.

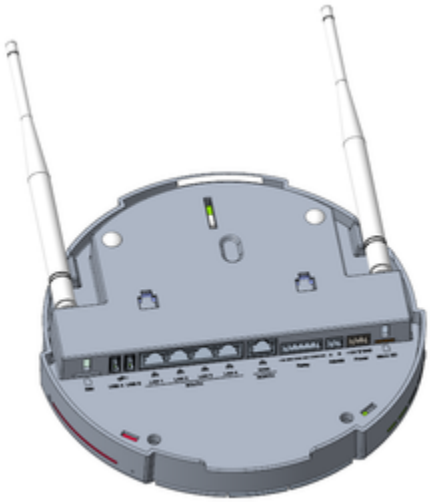
Mounting Instruction

There are two options to install the SuperHub device. Please make sure that it is being installed close to the center of the site to get the best possible wireless connection.

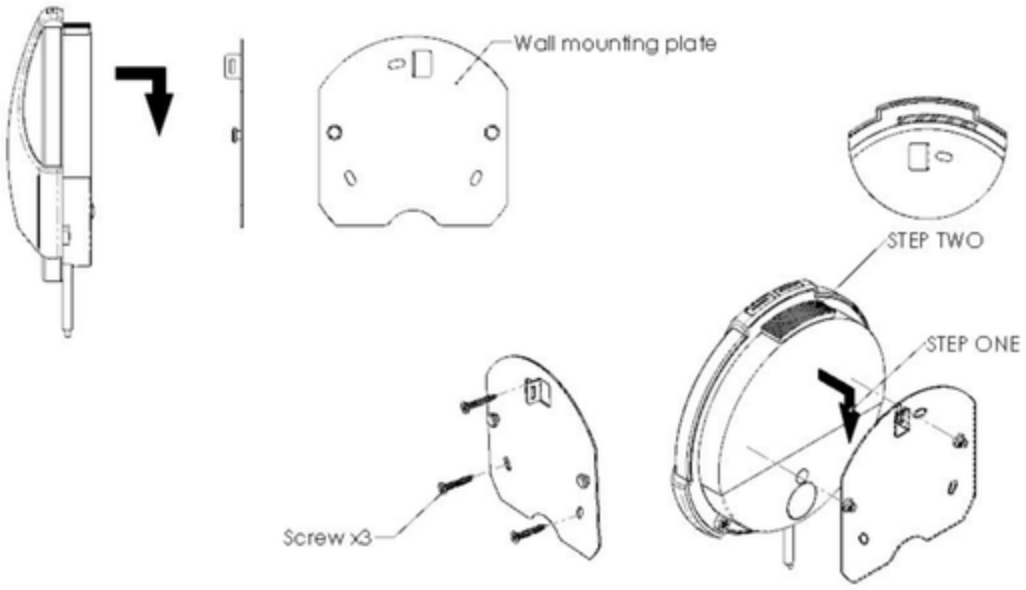
Before installing the SuperHub the mounting bracket and back cover need to be removed to get access to the power supply ports, network ports and Sim card slot.

Important Note: If the Superhub is to be connected to the internet via 4g wireless, make sure that the sim card is inserted before installation.

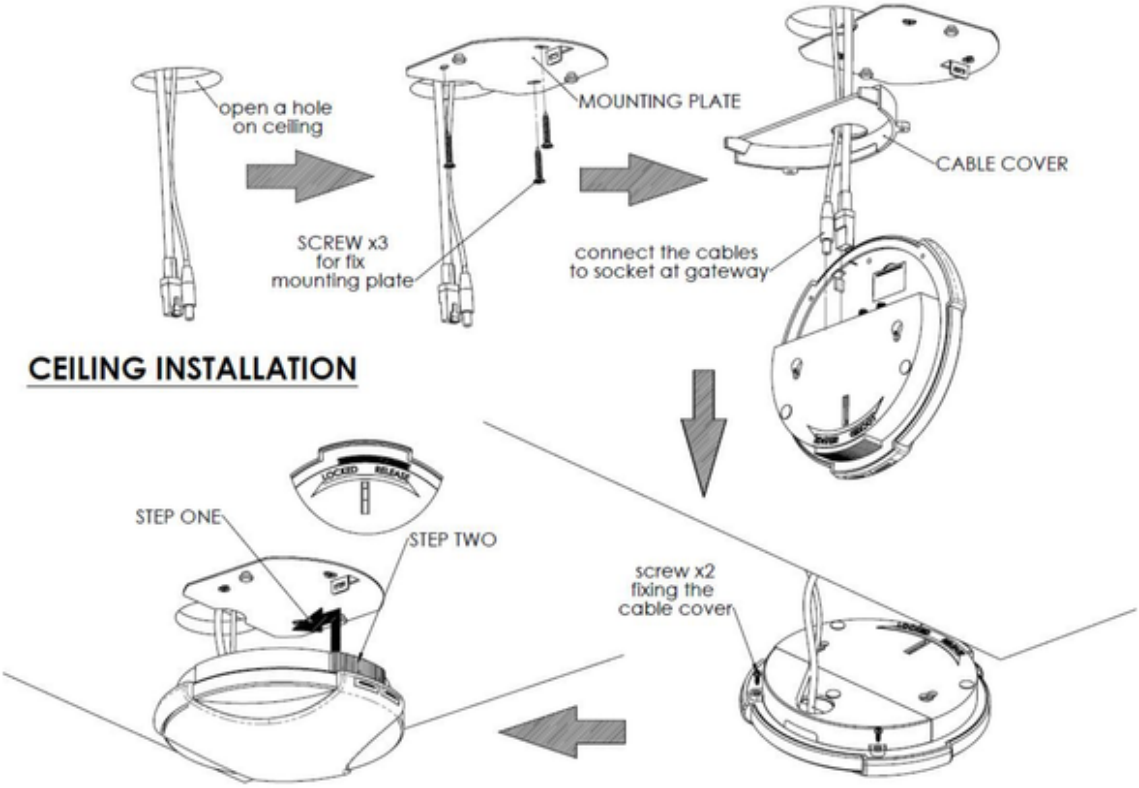




Wall Mount



Ceiling Mount



Installation of Antennas

The SuperHub packaging contains two separate antennas. One for the RF Connection and another one for the 4G Cellular network connection. They have a respective marking on the lower and which shows 4G or RF. They need to be connected the right way to the RF and 4G threads on the backside of the SuperHub device.

Power supply connection

In order to connect the device to supply voltage connect the power socket adapter to the DC power supply for your local outlet type. After it snapped in you need to connect the pre-assembled connector to the terminal on the backside of the superhub. The device will start to light up the main LEDs.

Power supply via Power over Ethernet (PoE)

The Superhub allows you to use Power over Ethernet as an alternative power supply thru the local network switch or router. Please ask the local IT administrator if PoE is available.

Platform Connection

4G Mobile Cellular Connection

The internet connection and connection to the Energybox One Platform will be established via 4G mobile network. This connection type is always preferred over an Ethernet network connection. If Ethernet is necessary or preferred please see the next section.

Sim Card installation

In order to use the 4G mobile connection a Sim Card needs to be inserted into the Superhub. The Sim Card slot is located on the backside of the device. The format needs to be a Standard or also called Mini Sim Card like shown below. The Sim Cards provided by Energybox are Optional and need to be ordered separately. If a Sim Card is inserted, the SuperHub will try to establish a Cloud connection to Energyboxes One Platform automatically.

Ensure SIM card is activated. When inserting a new SIM card, please reboot the device. It can take up to 4-5 minutes until a cellular connection is established.

Ethernet Connection

To connect the Superhub with the internet a standard ethernet cable is required. It needs to be connected to the WAN/ Northbound RJ45 socket on the back of the device. The other end is connected to the local router or switch which provides internet access.

Please notice: Ethernet cable is not included.

DHCP automatic IP address setting

In order to use DHCP for automatic setting of IP address and subnet mask please ask the local IT administrator if DHCP Server is available or if a manual IP address is needed. The DHCP Client function is enabled by default on the SuperHub device.

In case of an active DHCP Server the setting of IP address, subnet mask and DNS is being done automatically. If the setting was successful it can be seen in the settings section of SimplySetup app under WAN dropdown menu.

Manual IP address setting

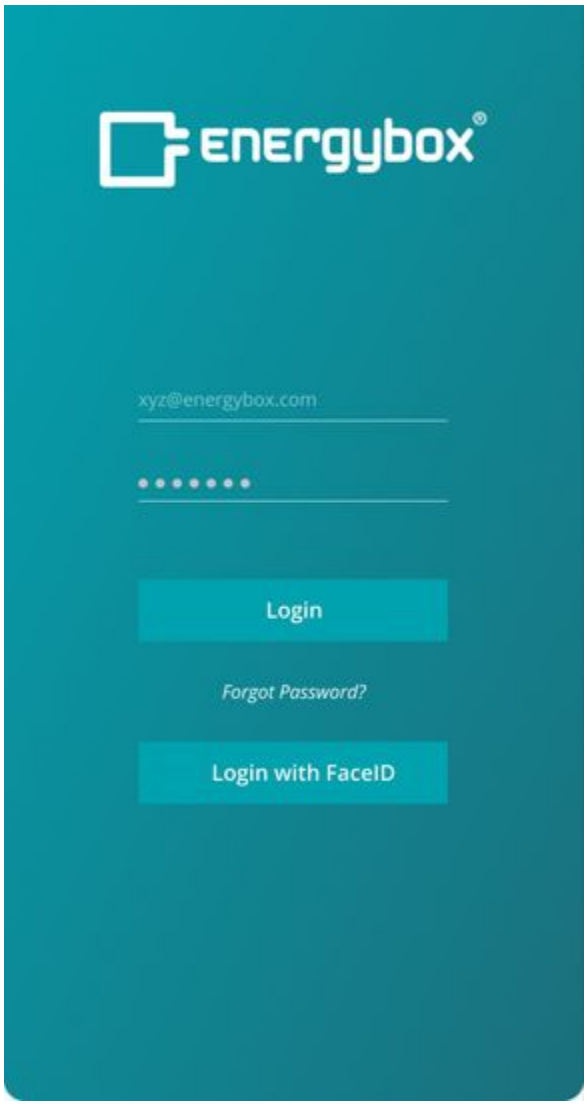
Aside from automatic setting of the IP address there is an option to do it manually. This can be done by disabling the DHCP Client in the WAN dropdown menu in the settings section of the SimplySetup App from Energybox. Please ask the local IT administrator to provide IP address information to be used.

Installation and Setup

After the device is mounted, connected to the power supply and connected to the internet via ethernet or 4G cellular broadband connection you can login to the Superhub by using the SimplySetup app from Energybox.

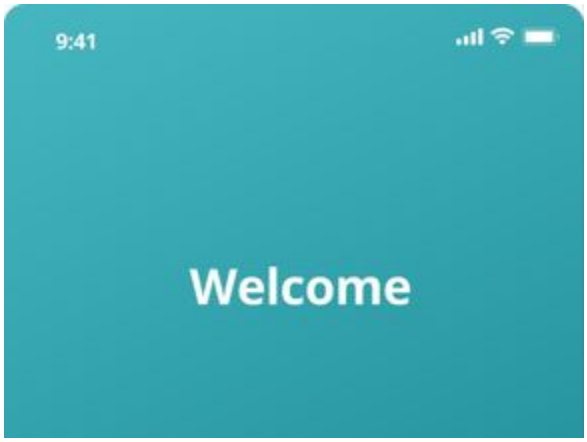
Login

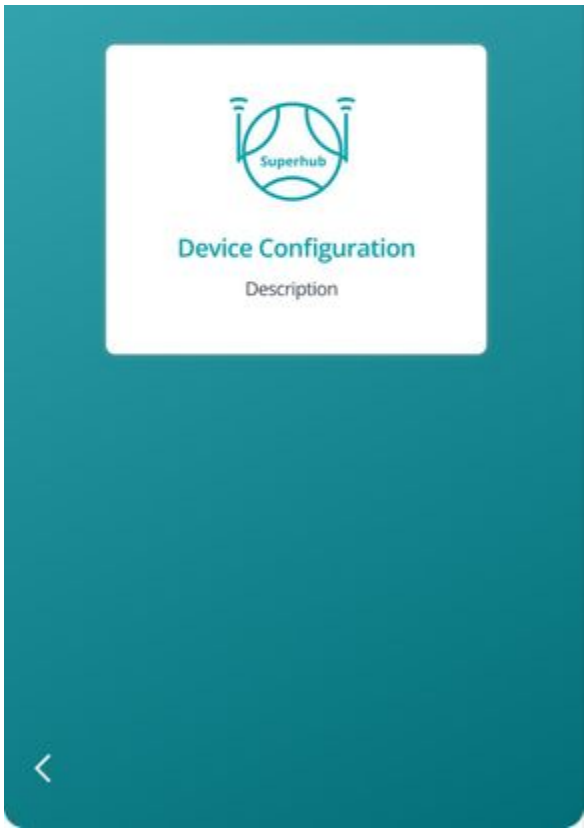
After the SimplySetup app has been installed to your smartphone please go ahead by starting it. On the first screen you are being asked for your login information. Please login with your Energybox One Platform username and password.



Connect to Superhub

After successful login the SuperHub device configuration screen shows up.





After clicking clicking device configuration the QR Code on the front of the SuperHub device needs to be scanned thru the smartphone's camera.

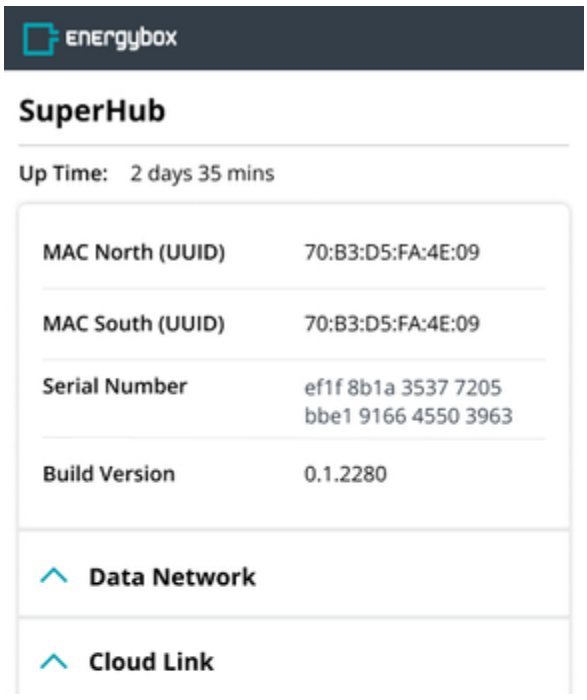
Alternatively the serial number can be entered. It can be found on the backside of the device.

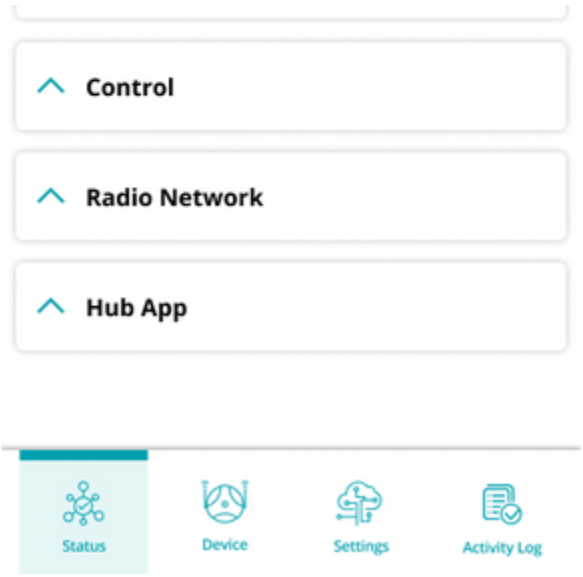
Simply Setup App

The SimplySetup app allows you to check for the actual status of the device and connected accessories including Thermostats, wireless dots and Sitecontroller control solutions. The menu structure consists of four items.

Status

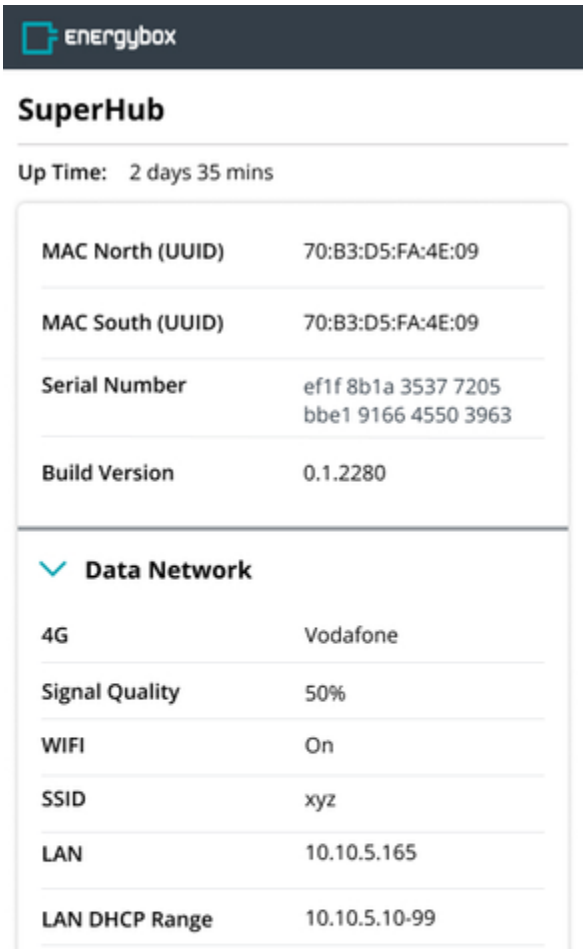
In the status section general status information of SuperHub and accessories is shown. This includes the up time, Mac addresses (UUIDs), Serial Number and the installed software build version.

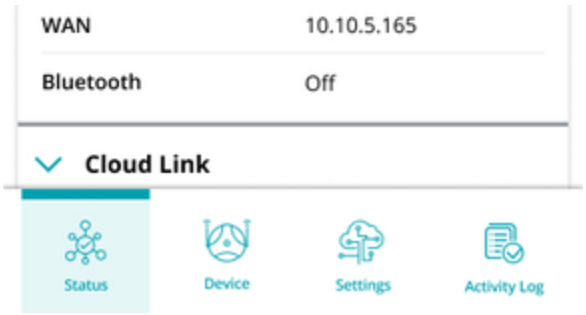




Data Network

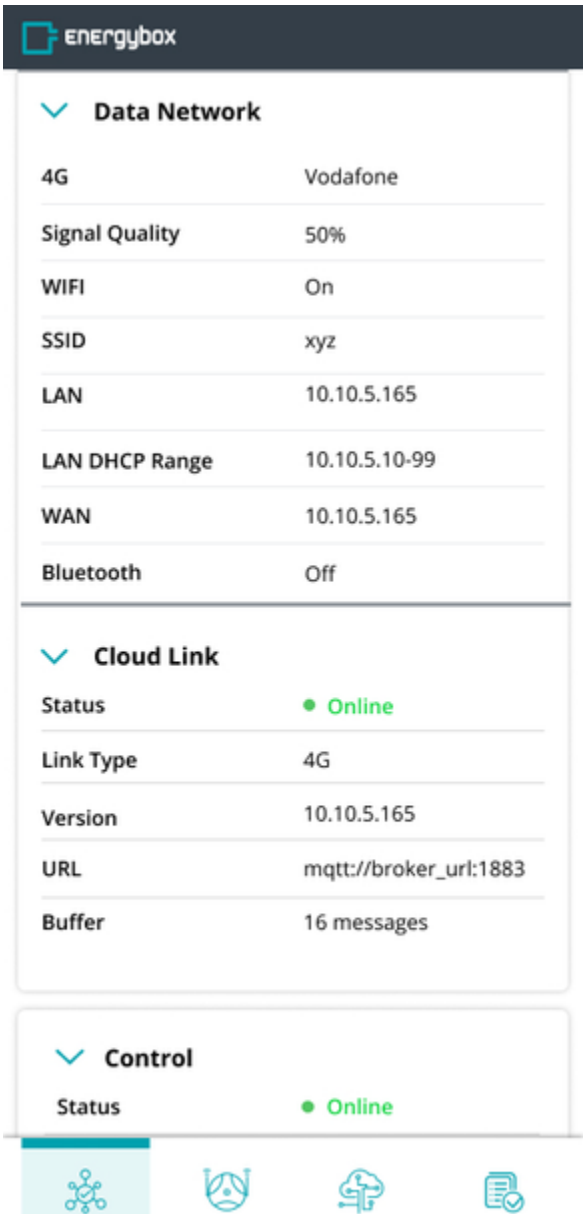
The data network dropdown menu shows information about 4G Network provider, signal quality, Bluetooth and Wifi status and other relevant network details.





Cloud Link

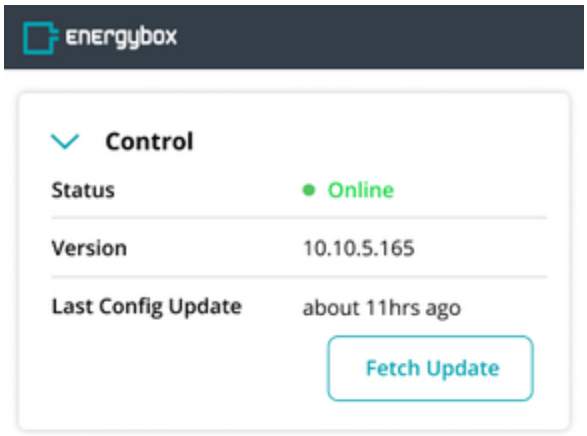
Under cloud link the online connection status and link type is being shown. Also the mqtt broker url can be found here. Furthermore the total of buffered mqtt messages is displayed.



Control

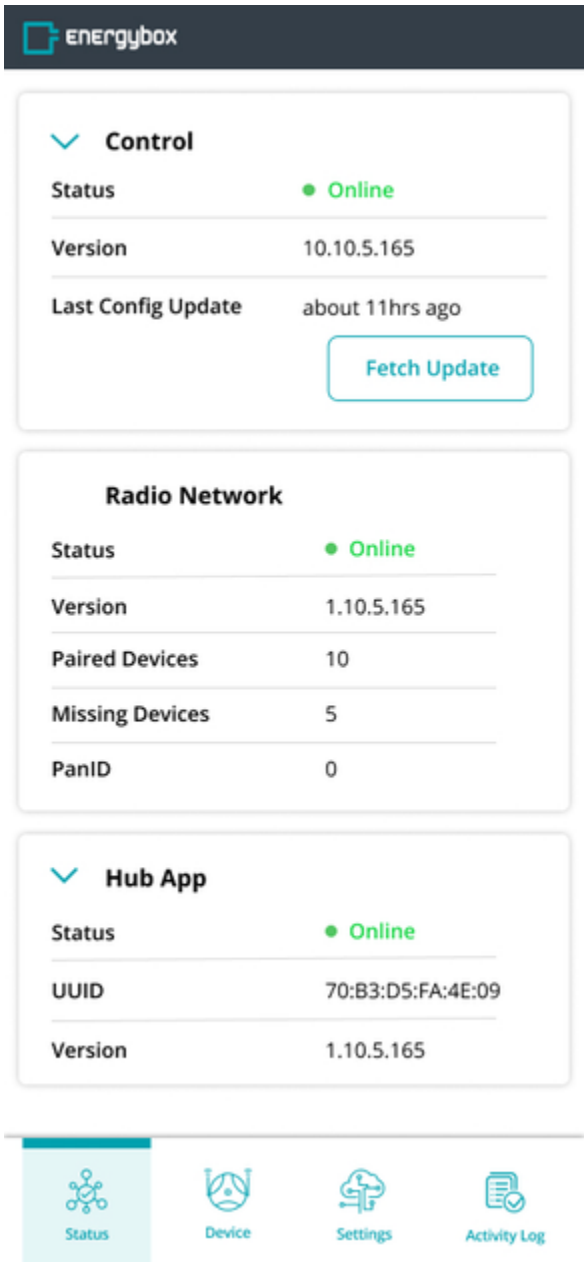
In the section control the online/offline status and version of the controls application is displayed. The last config update row tells when the last update took place.

By pressing the Fetch Update button an update of controls app will be performed if a newer version of the software is available.



Radio Network

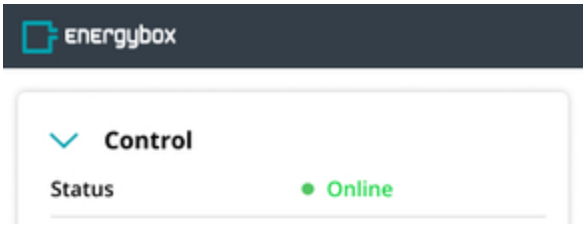
Radio network submenu provides an overview of online status and version and the devices being paired to the SuperHub or are being missed. After a device which was initially paired loses connection will show up here.

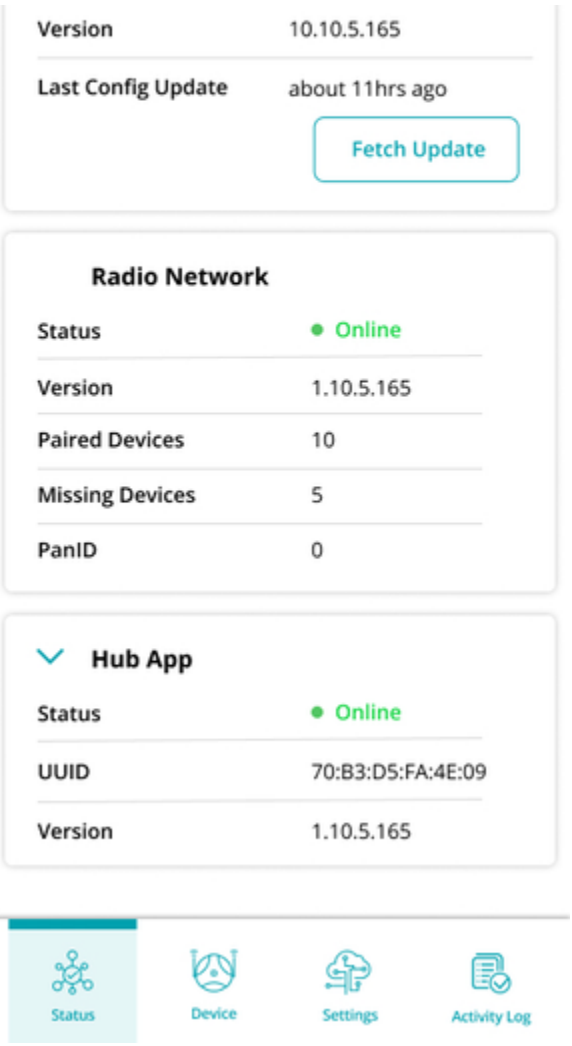


Hub App

The Hub App section within the status menu item shows the Online status of the Hub app and the UUID of the Hub aside the version information.

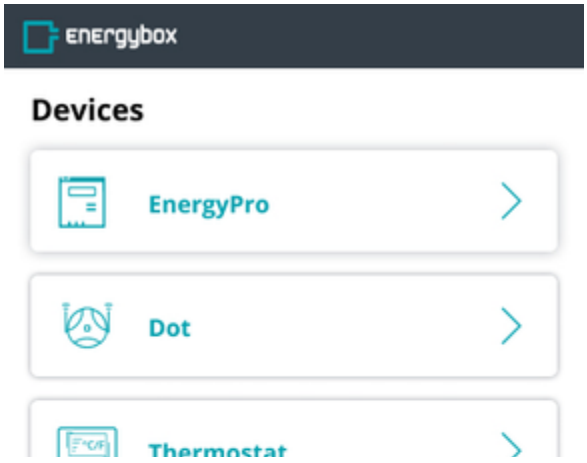
Important notice: The Hub UUID is necessary for the completion of the setup in the Energybox platform.

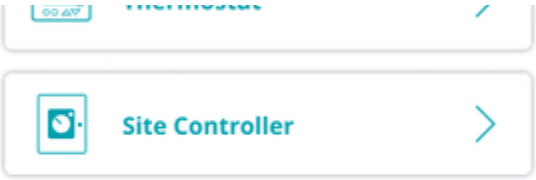




Device

The Device section of the menu allows the user the configuration of different Energybox devices. The configuration is separated into Energypro for Energy measurement purposes as part of the EnergyTracker service, Dots for Temperature, Humidity and door access data in conjunction with SiteHero service. Thermostat and Sitecontroller for control of HVAC systems and electrical circuits on site.



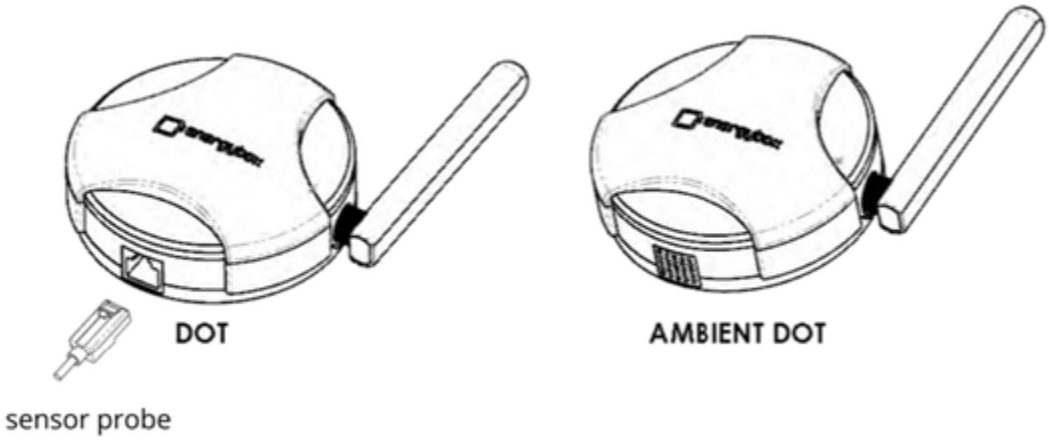


Energypro

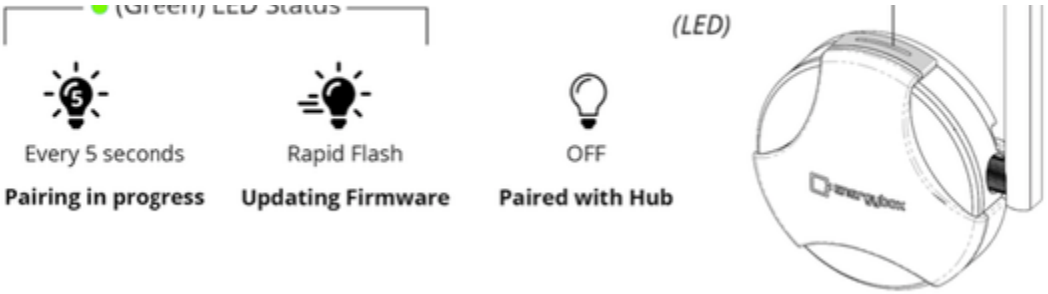
To be updated

Dots

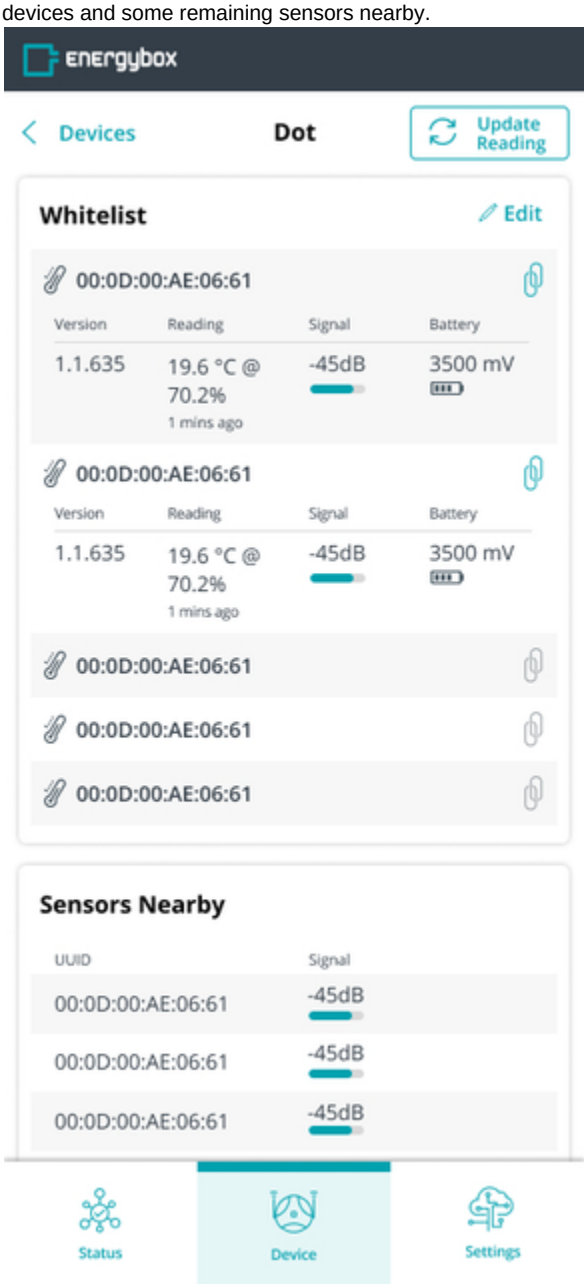
This chapter describes the installation and configuration of the Energybox Dot Sensors.



The picture above shows the different types of EnergyBox Dots. To connect or pair a dot sensor with the Superhub please follow the next steps. Insert the batteries into the dot and make sure the dot is in pairing mode by pressing and holding the pairing button until the LED is flashing green every 5 seconds. The SuperHub will detect the dot(s) within RF range and they will appear under the Sensors nearby section.



The Dot page provides an overview of Sensors Nearby and a Whitelist of paired Dots. The image shows an example of already whitelisted devices and some remaining sensors nearby.

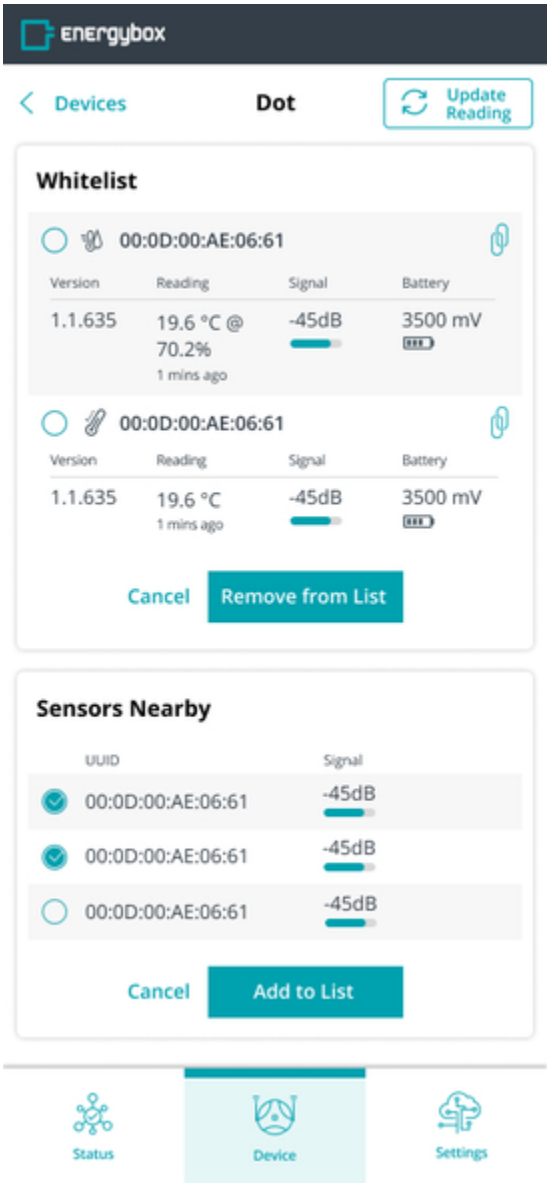


Dot pairing

To pair a Dot and bring it to the whitelist click the edit button on the top right and select the dots which should be added, click “add to list” in order to whitelist the dot sensor.

Dot removal from whitelist

If a paired and whitelisted dot needs to be disconnected from SuperHub again, the Edit button on the top right can be clicked. This will allow you to select a whitelisted device. After selecting the dot which should be disconnected the remove from list button will appear. After clicking the dot is not whitelisted anymore and is now able to be connected to another SuperHub if necessary.



Dot mounting

Before application please check the surface material. Polycarbonate (PC), polypropylene (PP), and bare stainless steel surfaces are suitable. Painted or powder-coated surfaces are not. Ideal tape application temperature range is 70°F to 100°F (21°C to 38°C). Initial tape application to surfaces at temperatures below 50°F (10°C) is not recommended because the adhesive becomes too firm to adhere readily.

Follow the instructions below to apply:
Step 1: Make sure the chosen surface is suitable for mounting.
Step 2: Clean surface with isopropyl alcohol or heptane.

Step 3: Wait until surface is dry.
Step 4: Remove tape backings on one side.
Step 5: Apply tapes to Dot.
Step 6: Remove tape backings on the another side.
Step 7: Press Dot firmly against surface for 20 seconds.

If the double-sided tapes cannot be used, and screw-mount is not an option, please consult with Energybox about alternative mounting options.

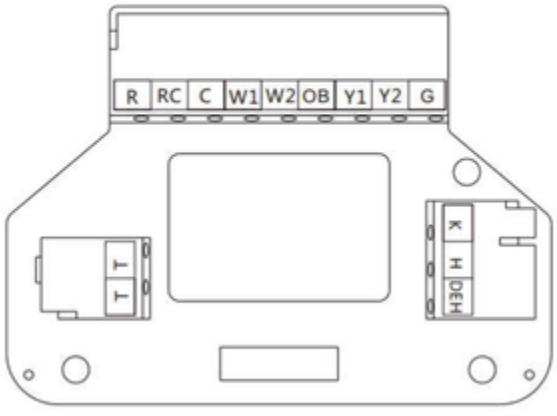
Thermostat

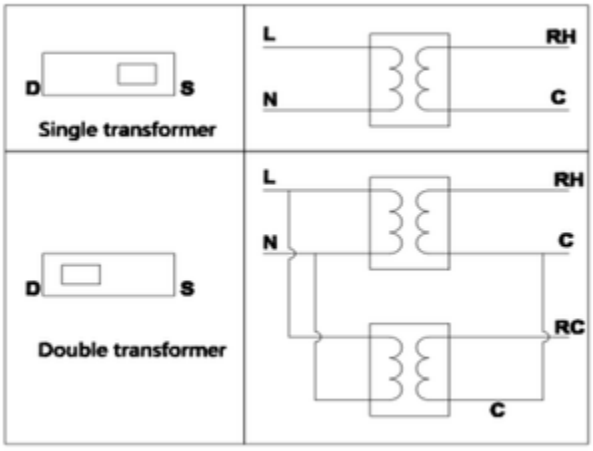
This chapter explains the installation and initial configuration of the EnergyBox Thermostat. The Thermostat requires a 24V AC power supply and RF wireless connection to the SuperHub.

Terminals and wiring of Thermostat

Terminal	Description
R	AC 24V power supply
RC	
C	
W1	1st stage heating
W2	2nd stage heating or auxiliary heating
O/B	Changeover
Y1	Compressor stage1
Y2	Compressor stage2
G	Fan
K	Wire with 4-5T module
H	Humidity
DEH	Dehumidity
T	External temp. sensor
T	External temp. sensor

REQUIRED: 24 VAC POWER ("C" WIRE)



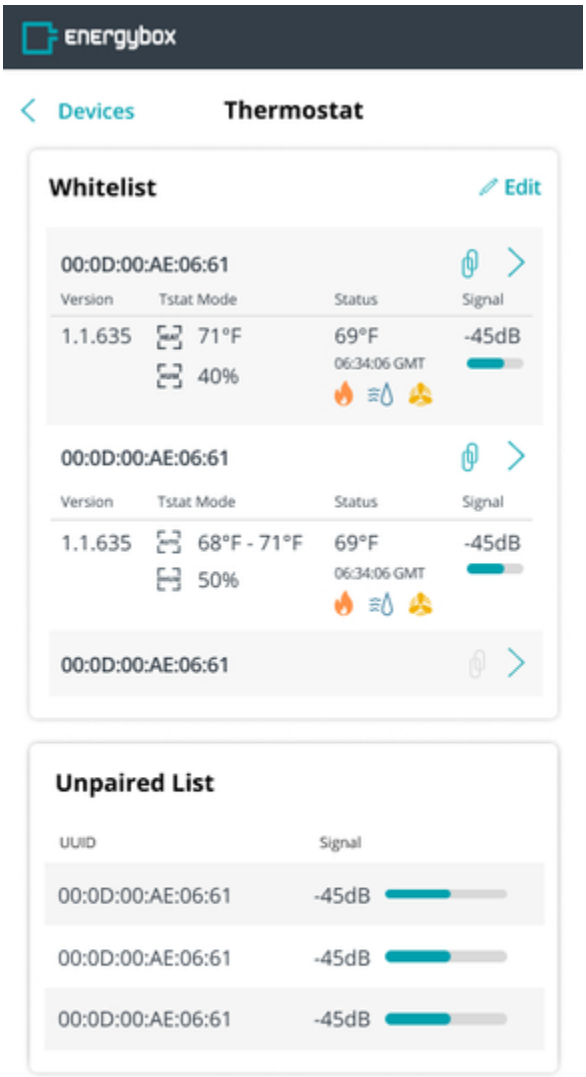


Add-a wire

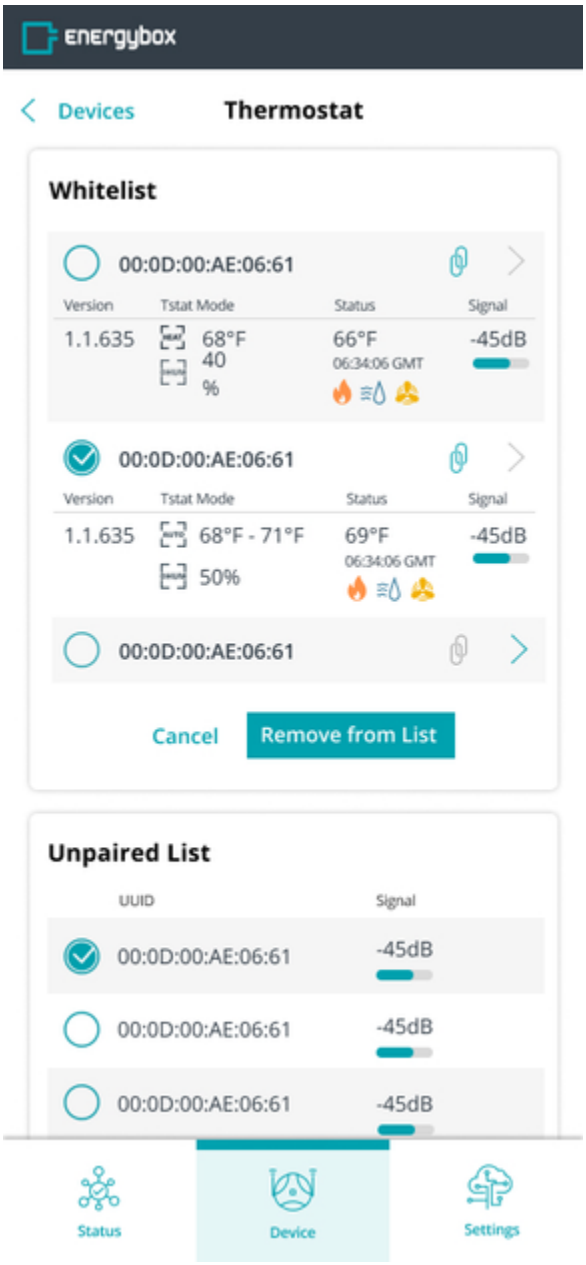
In applications where additional wiring cannot be run, the Add-A-Wire accessory can be used to add a wire to the thermostat. The Add-a wire accessory allows to use a 4 wire cable with a 5 wire thermostat

Thermostat pairing and whitelisting

After the installation of the Energybox Auto thermostat and Login into SimplySetup app, select device thermostat to access the following screen. The example shows some already whitelisted and unpaired thermostats as well. To whitelist a thermostat the edit button on the top right needs to be clicked.

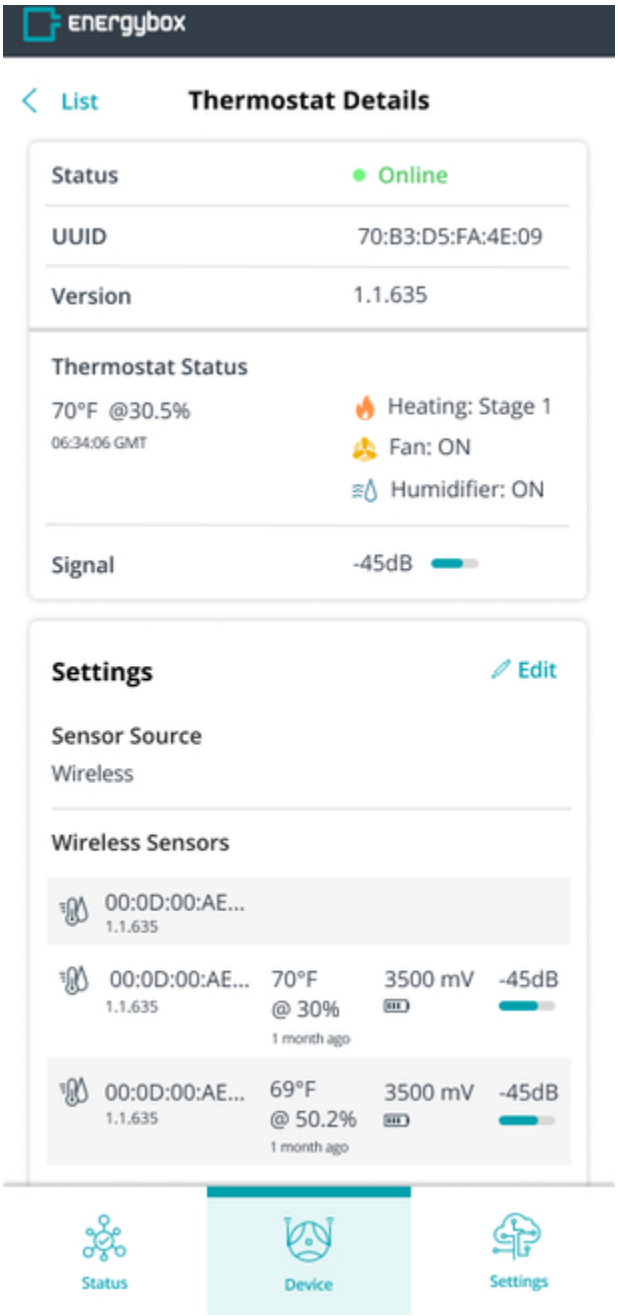


Once clicked the screen below will allow the user to select the unpaired devices to be whitelisted or to remove already whitelisted ones.



Thermostat details info screen

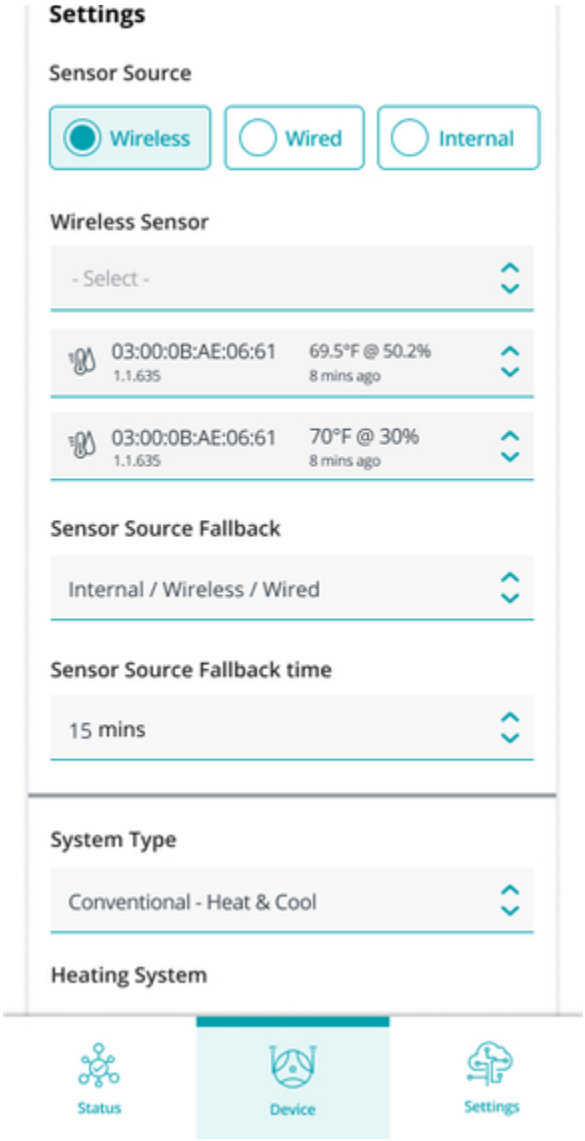
The Thermostat details page is accessible through the arrow to the right of the thermostat's UUID. It shows general information like online status, UUID, Firmware Version and thermostat status.



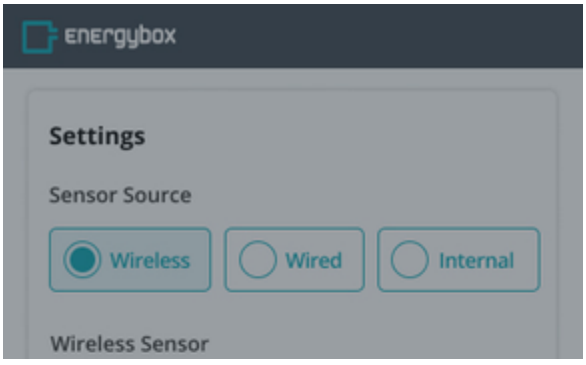
The picture above shows the actual temperature and humidity and that the HVAC system is currently heating on stage on with fan and humidifier on.

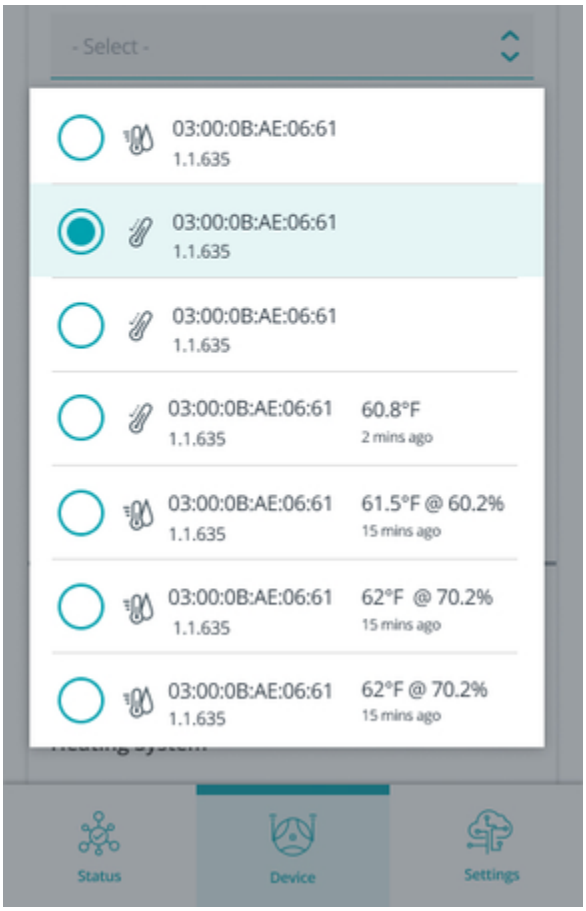
Thermostat settings and sensor source

As the location of the thermostat may vary it might be necessary to use another sensor as input source. For example when the thermostat is located outside the room which is being controlled. Therefore the thermostat allows the use of wired external sensors or wireless dots as input sources. The respective selection can be made by clicking on the edit button in the settings section.



There are three different sensor sources to choose from (wireless/ wired/ internal). While wired and internal do not need to be configured into more detail. When wired is selected a wired sensor needs to be connected to the T/T named terminals. When using wireless sensors they need to be connected/whitelisted under the device dot section before. After successful whitelisting up to three Energybox Dots can be used to determine the ambient temperature. The selection of only one sensor is already sufficient for the system to work. In order to achieve higher precision and redundancy it is recommended to use more than only one dot ambient as wireless temperature probe. When using at least two sensors the averaged temperature will be used.





The picture above shows a list of sensors which can be selected.

Sensor Source Fallback

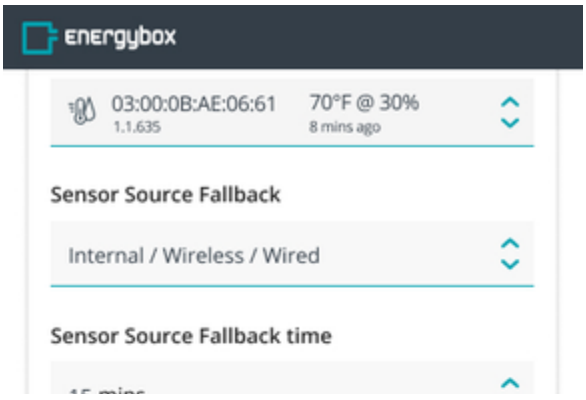
This function allows defining the sequence in case of sensor failure. The available fallback options are wireless/ wired/ internal and wireless/ internal/ wired.

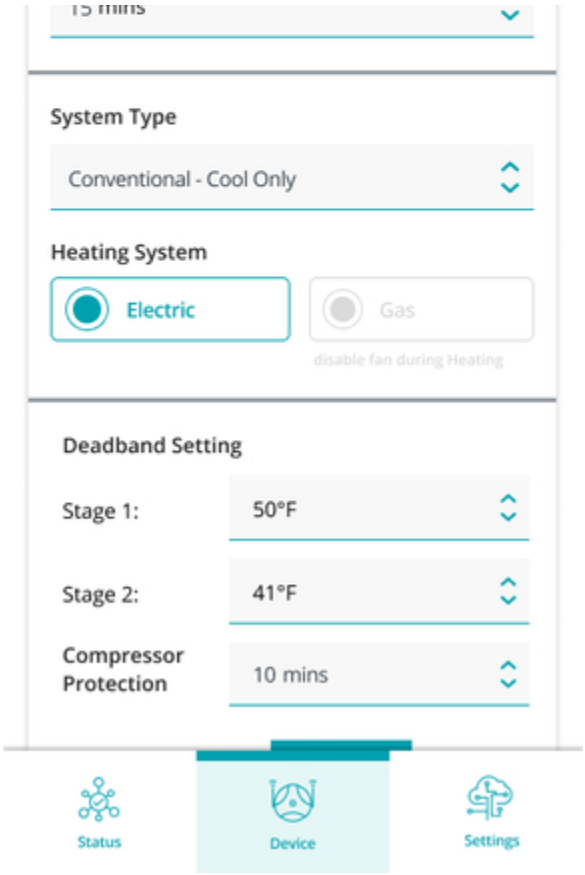
Sensor Source Fallback Time

The fallback time before switching to the next temperature sensor reading can be set here. Standard setting is 15 minutes.

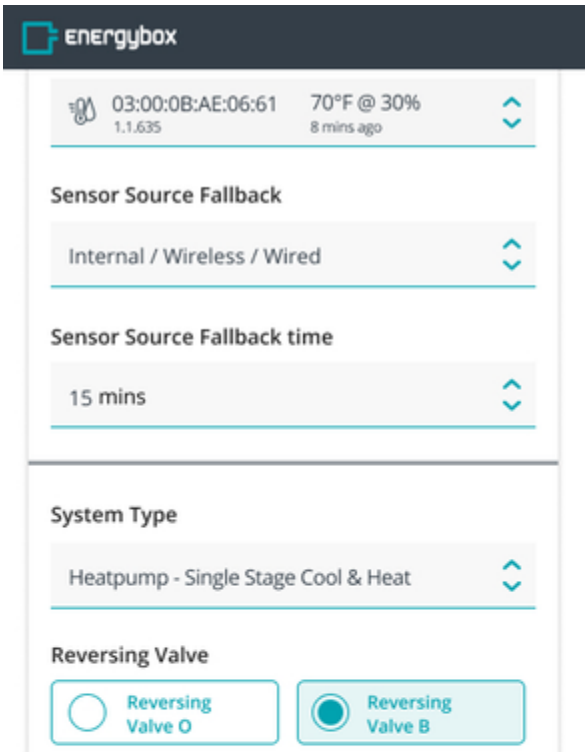
System Type and Heating System

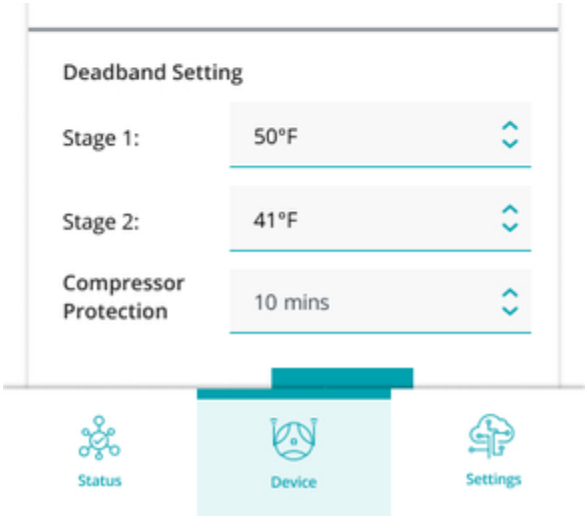
The system type menu offers a selection of all relevant HVAC system types. For example Conventional - Cool only. Please select the most appropriate from the dropdown menu.





For the heating system settings part, electric and gas are the options.





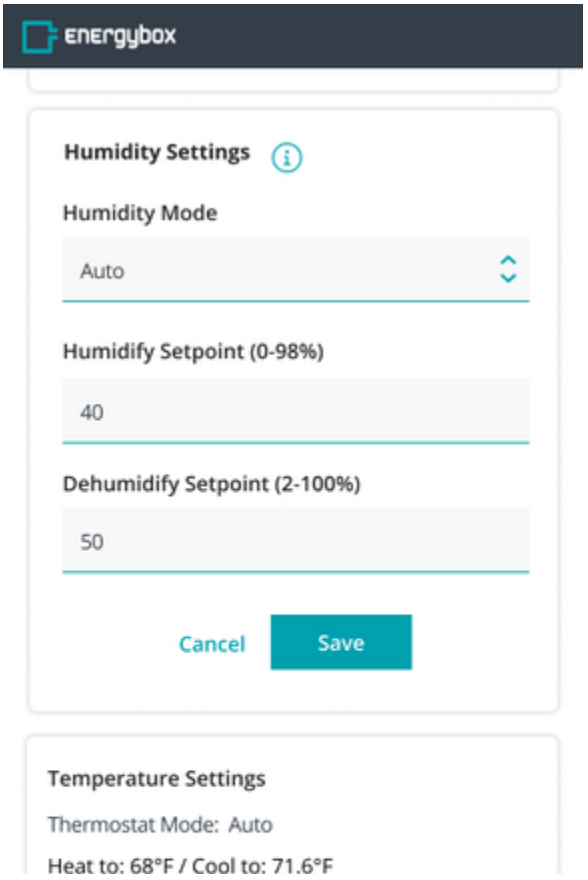
When a Heat Pump based system is installed, the selection of a reversing valve is mandatory.

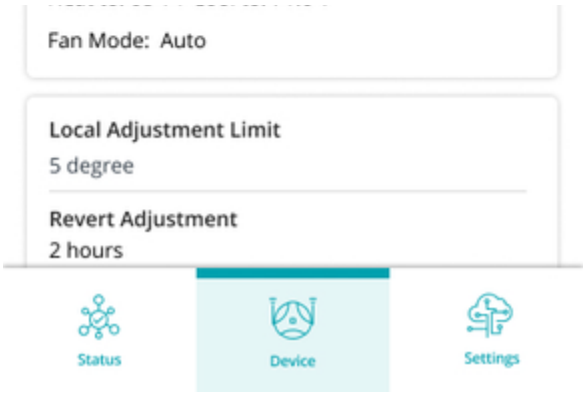
Deadband setting

Within this section the deadbands can be defined for 2 independent Heating/Cooling stages according to the system type. Additionally the Compressor protection timer setting is located within this submenu.

Humidity and Temperature setting

By clicking edit within the humidity settings section the humidity mode and humidity setpoint can be set. The temperature setting will take place on the thermostat itself and is displayed here only.



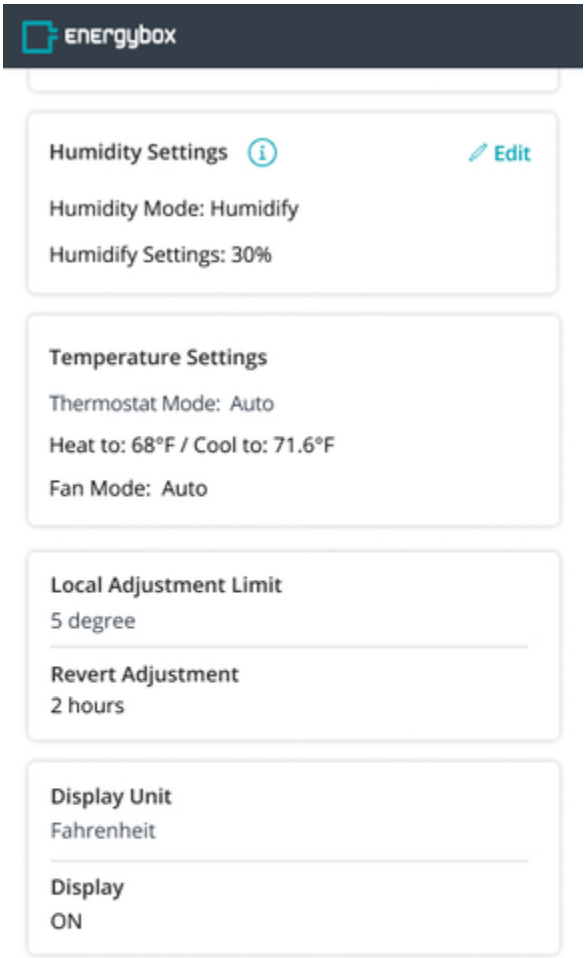


Local adjustment limits

The limits being set here will allow to limit the adjustment range on the thermostat. Aside from the temperature range a revert time can be set additionally. After this time the local temperature adjustment will be overwritten by the platform settings again.

Display settings

The display is able to show temperature values in degrees Fahrenheit and Celsius. Standard setting is Fahrenheit. Display tells if the thermostat' s display is currently on or off.

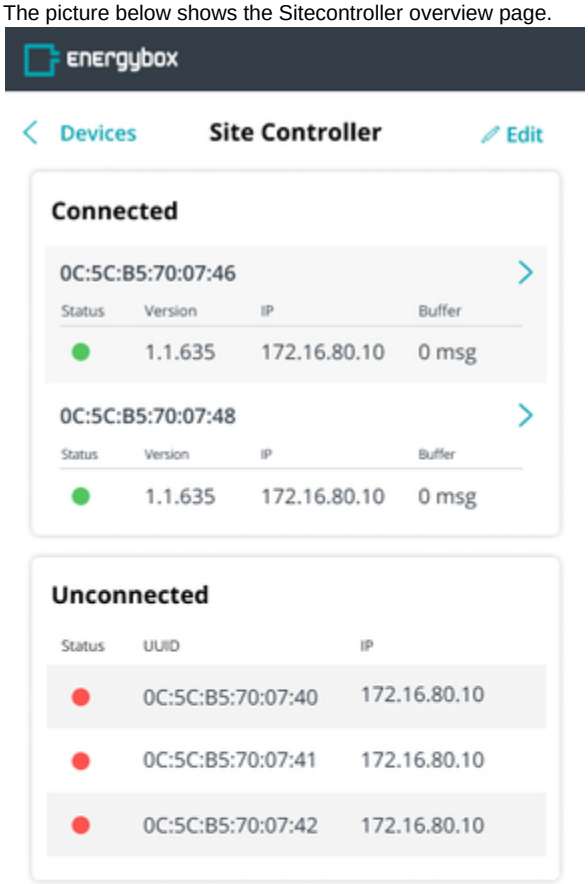


Thermostat maintenance mode

Sitecontroller

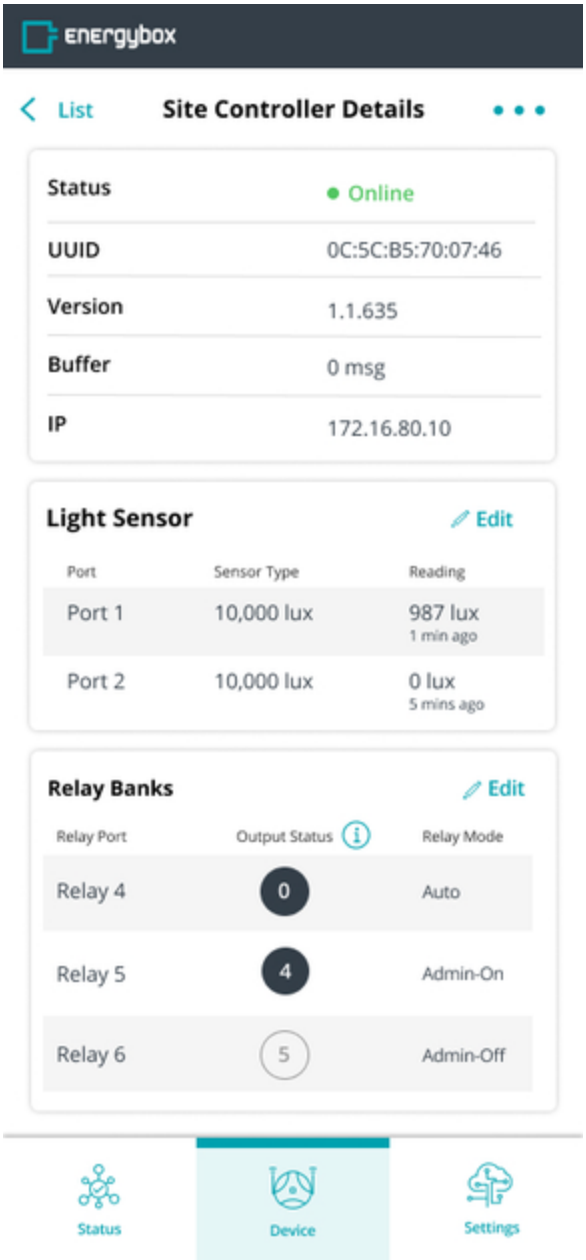
The following chapter shows how a sitecontroller is being connected and configured. After the Sitecontroller is mounted and wired on site it needs to be connected to the SuperHub using the integrated Ethernet connection. Therefore one of the four RJ-45 Ethernet ports (Northbound) can be used. Once the physical installation is complete, proceed with the configuration in the SimplySetup app.

The picture below shows the Sitecontroller overview page.



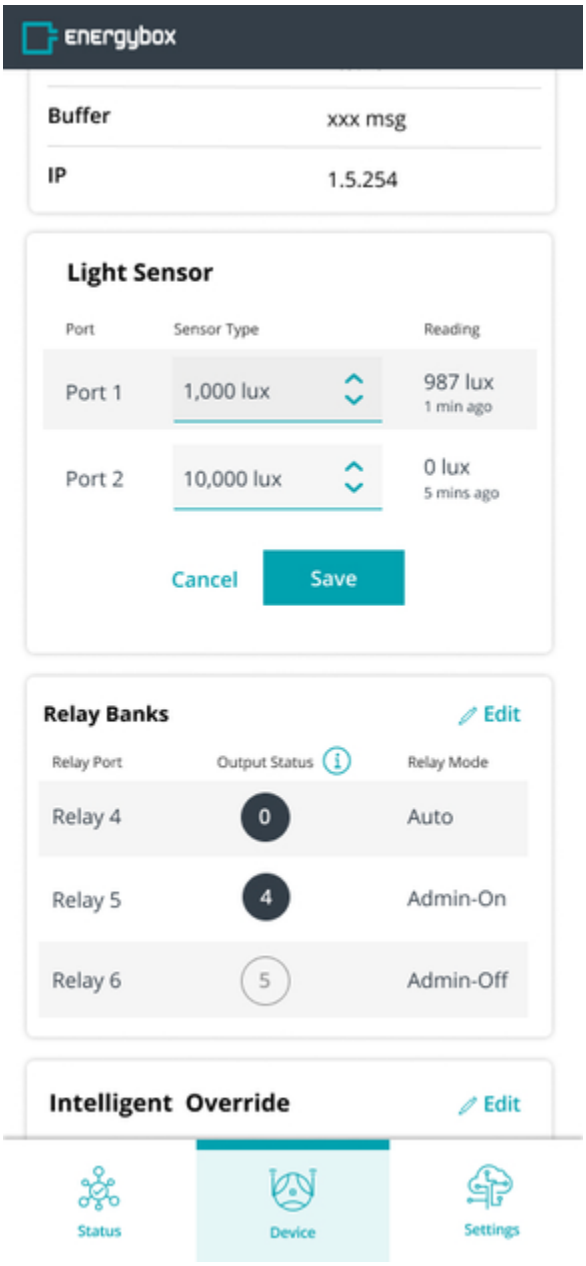
In order to connect a Sitecontroller within the app, click Edit on the top right corner and select the Sitecontroller to be connected and click connect. The device now shows up in the connected section. Aside from the UUID the Online Status, FW Version, IP address and buffer information are displayed.

By clicking on the arrow the configuration menu will open up. The following picture shows the respective overview of more detailed information including relay mappings and related output statuses.



Light Sensor

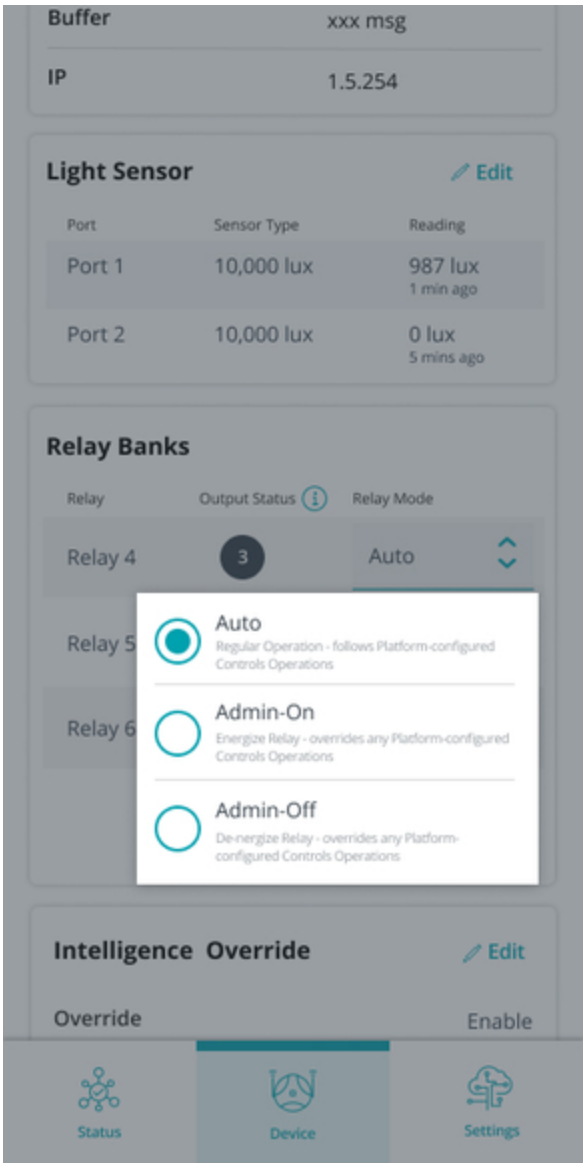
The Sitecontroller has two independent ports to connect external light sensors. If a light sensor is part of the installation it needs to be configured by clicking edit. The submenu asks for the Sensor Type and port, once selected a click on save will guide the user back to sitecontroller overview page.



Relay Banks

The next step is to configure the Relays under the Relay Banks section by clicking edit.

The relay mode can be set for each relay separately. The modes are Auto/ Admin-On/ Admin-Off. As the final Setup of SOP will take place in the Energybox Platform, Auto is the standard setting for individual relays. The other modes are only being used in special cases like maintenance or testing.



The current output status is shown in the circle, showing where the signal comes from (Locally set/ platform) and if on or off.

Output Status overview:

0: None

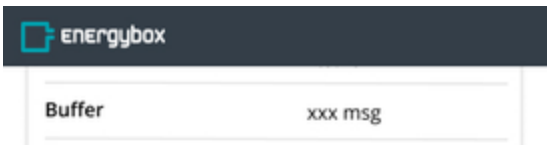
1: Local_User

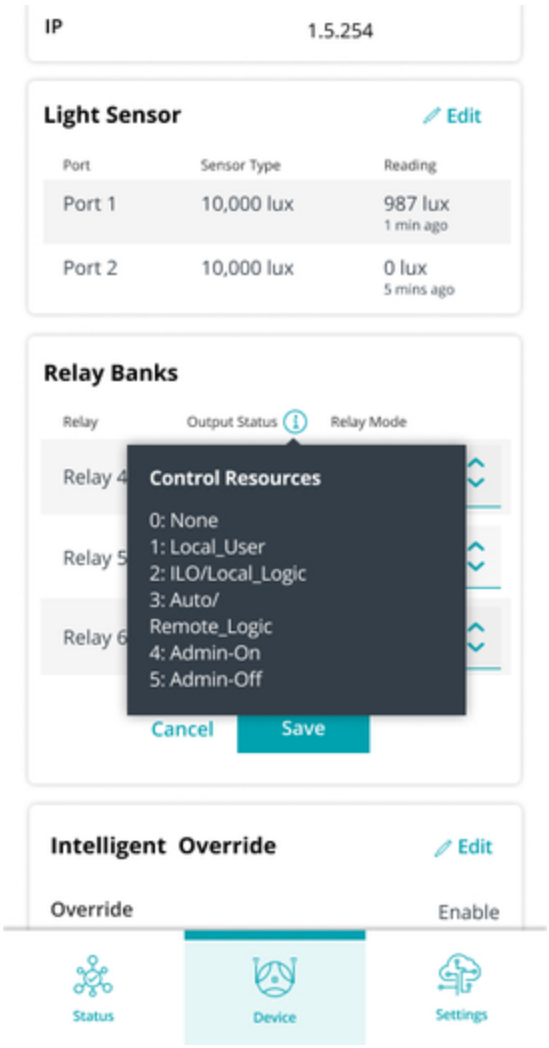
2: ILO/Local_Logic (ILO = Intelligent Override)

3: Auto/Remote_Logic

4: Admin-On

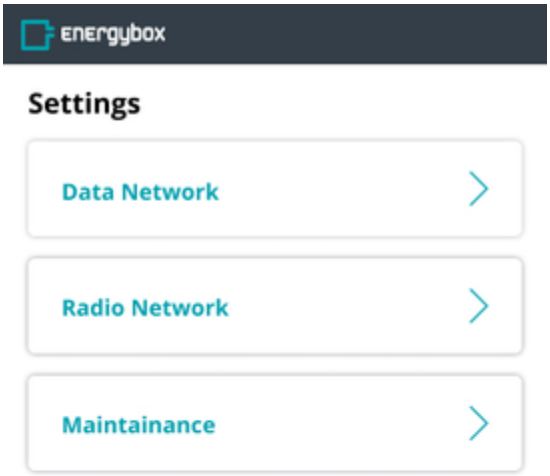
5: Admin-Off





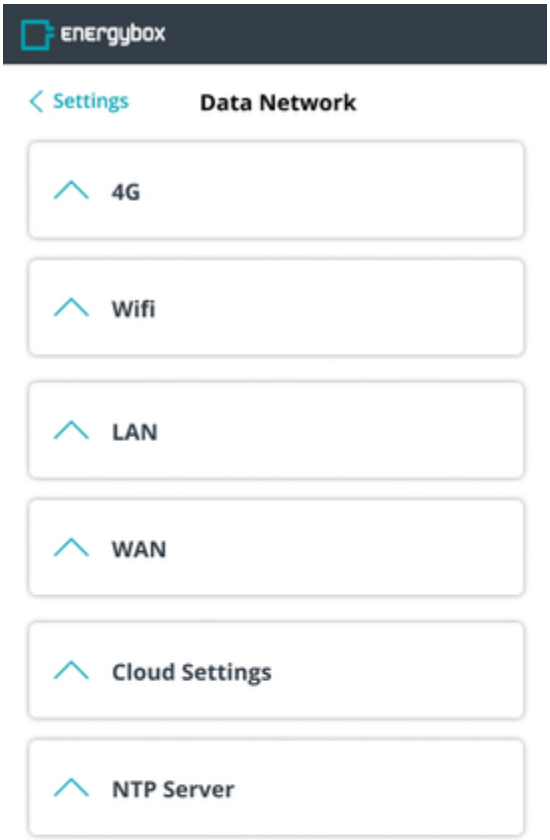
Settings

The settings section of this document provides information on the SuperHub settings which can be made. This includes Data network settings for all internet and cloud related functions, Radio network for RF functionality and Maintenance.



Data Network

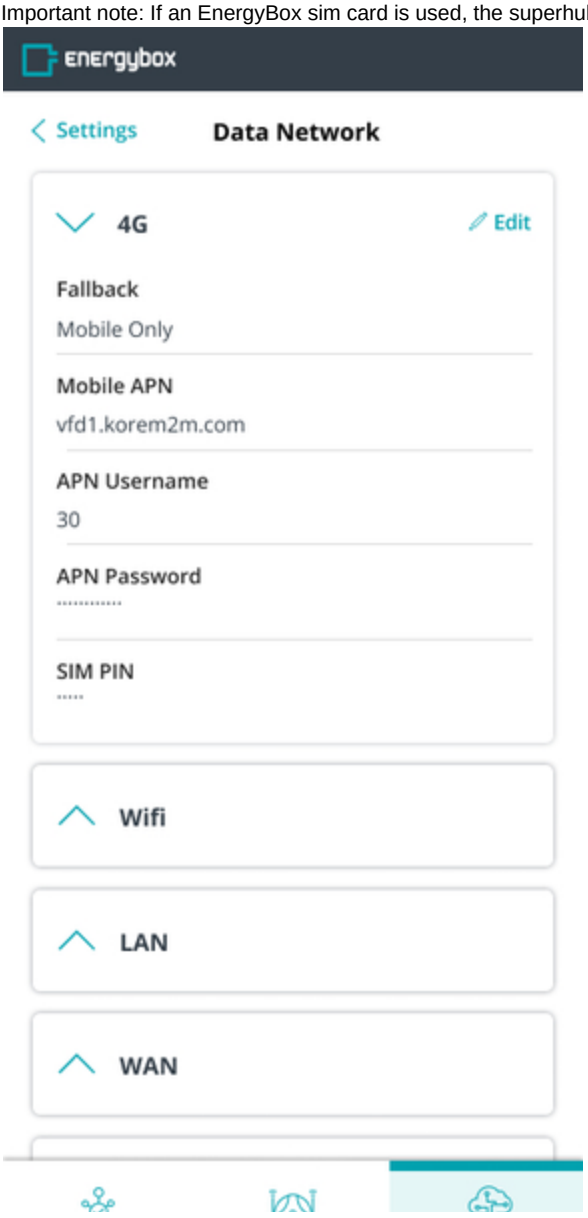
Data network submenu allows the configuration of the SuperHub's internet access via Ethernet or Cellular 4G.



4G Settings

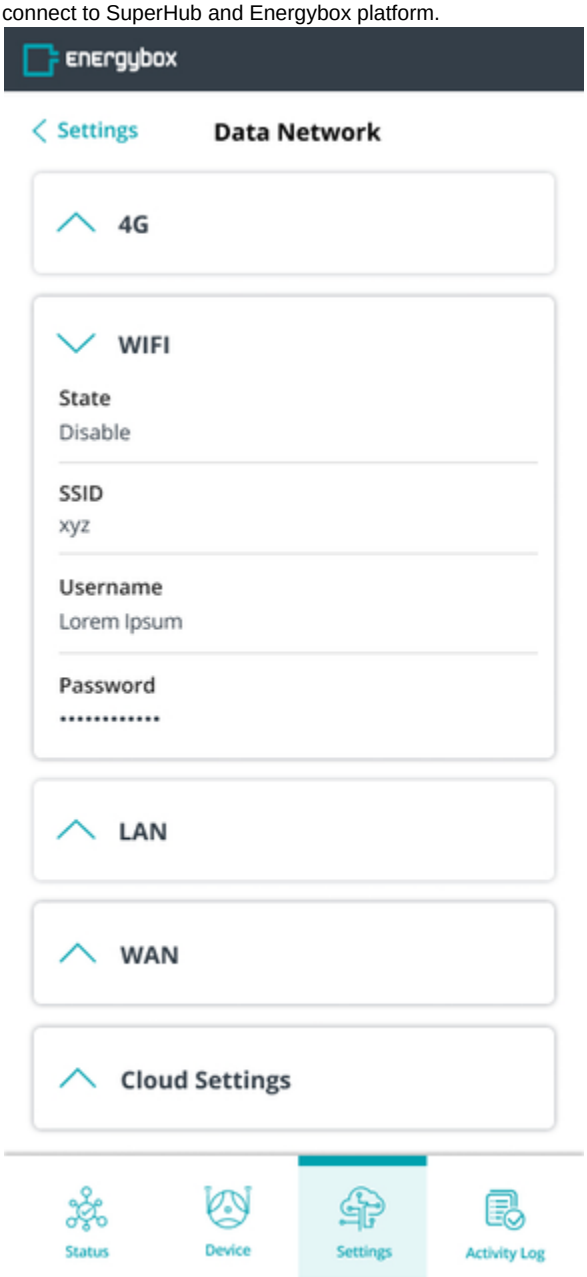
The 4G submenu allows to set up the cellular internet connection of the SuperHub. After clicking on edit the fallback option can be selected and the relevant APN data can be entered. This data is provided by the network carrier together with the sim card.

Important note: If an EnergyBox sim card is used, the superhub detects and automatically selects the correct apn data.



Wifi Settings

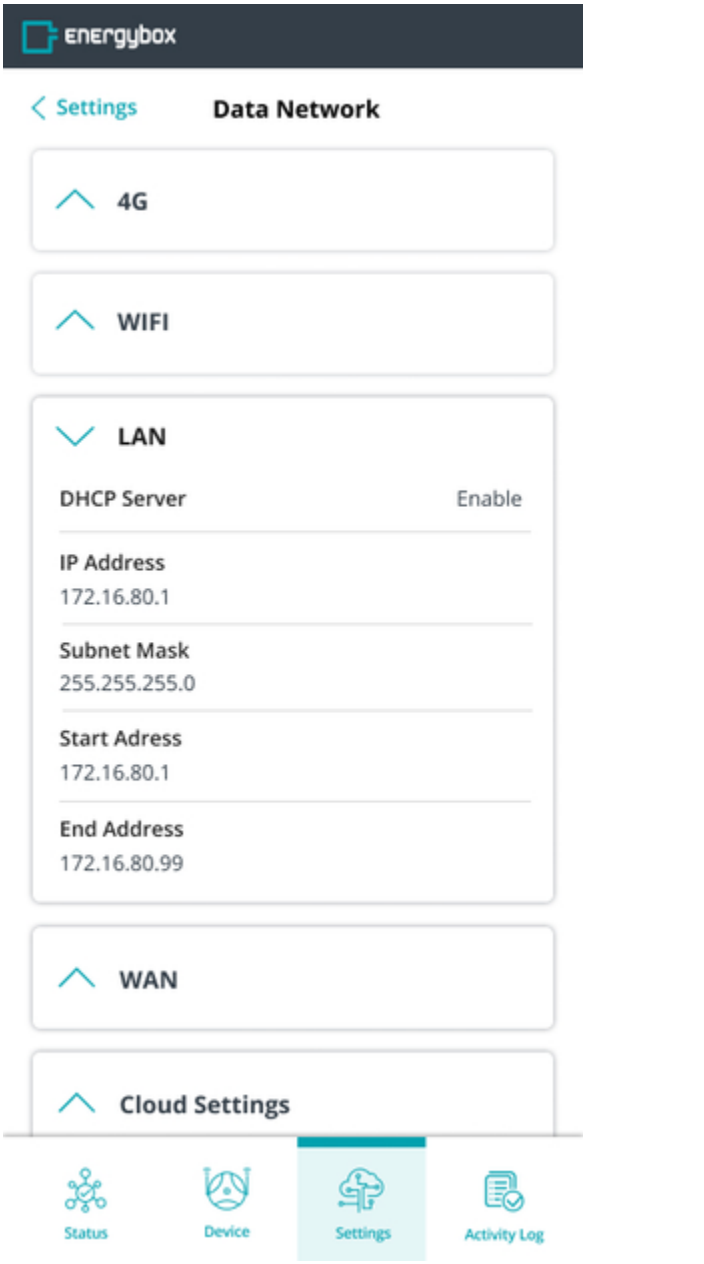
The Wifi settings menu provides information about the wifi access point integrated in the SuperHub. Using the credentials provided will allow to connect to SuperHub and Energybox platform.

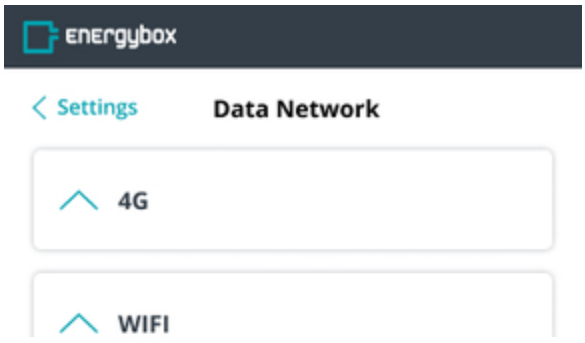


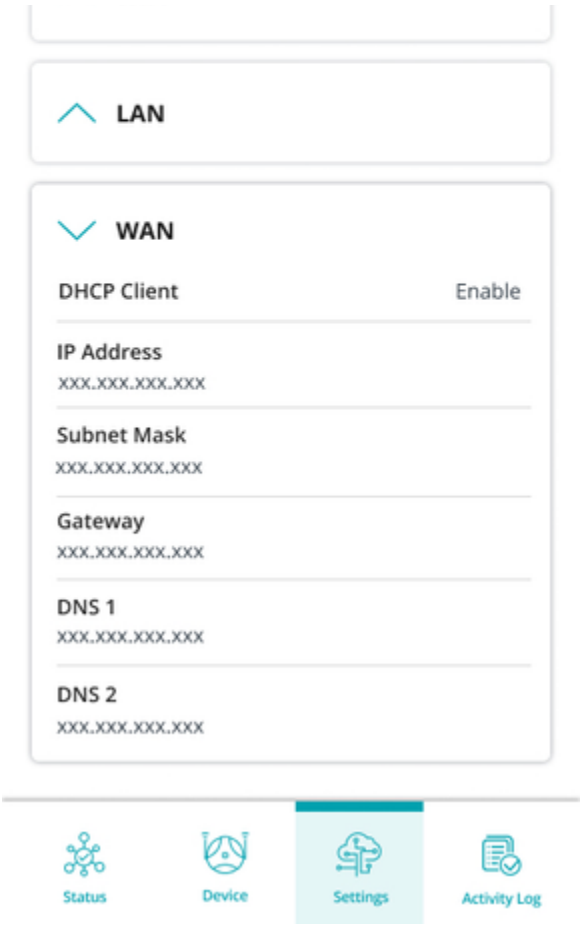
LAN/ WAN Settings

The LAN and WAN dropdown menus contain information about local LAN and wired WAN internet access including DHCP Server and Client. Standard setting is activated DHCP Server for devices like Sitecontroller connected to the SuperHub and DHCP Client for Internet connection via cable.

Important Note: In order to use SuperHub with wired internet connection, ask the local IT administrator if a fixed IP address needs to be used or if DHCP is applicable.

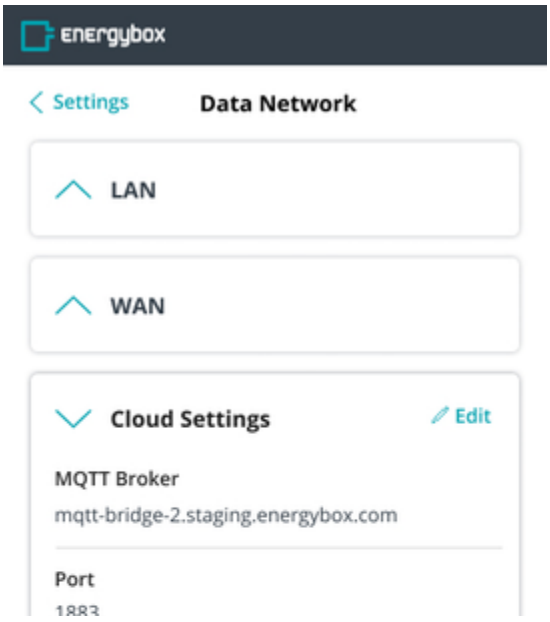


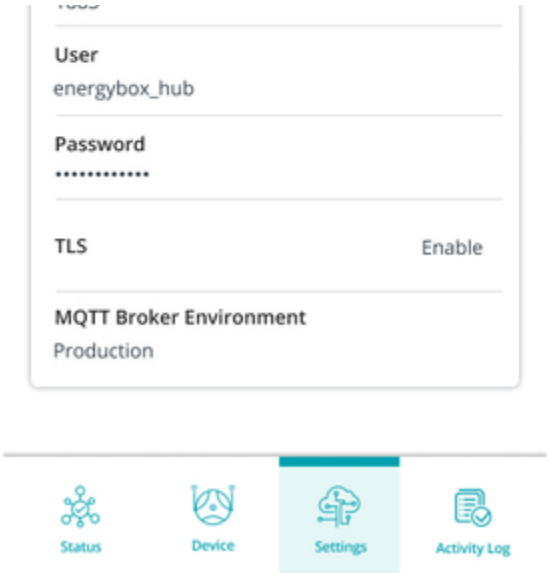




Cloud Settings

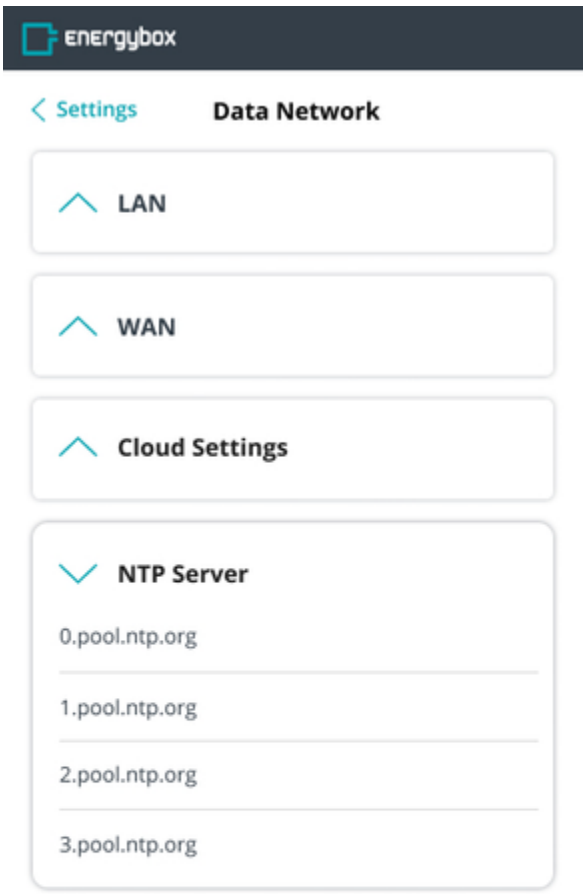
The cloud settings define the MQTT Broker address and port, as well as user and password. Respective settings are pre configured by EnergyBox and do not need to be changed. A change or wrong entry might lead into a connection loss.





NTP Server (Time server)

The NTP Server settings allow defining multiple Network Time Servers in order to synchronize the time across the SuperHub system and Energybox platform. Respective server addresses are pre configured.

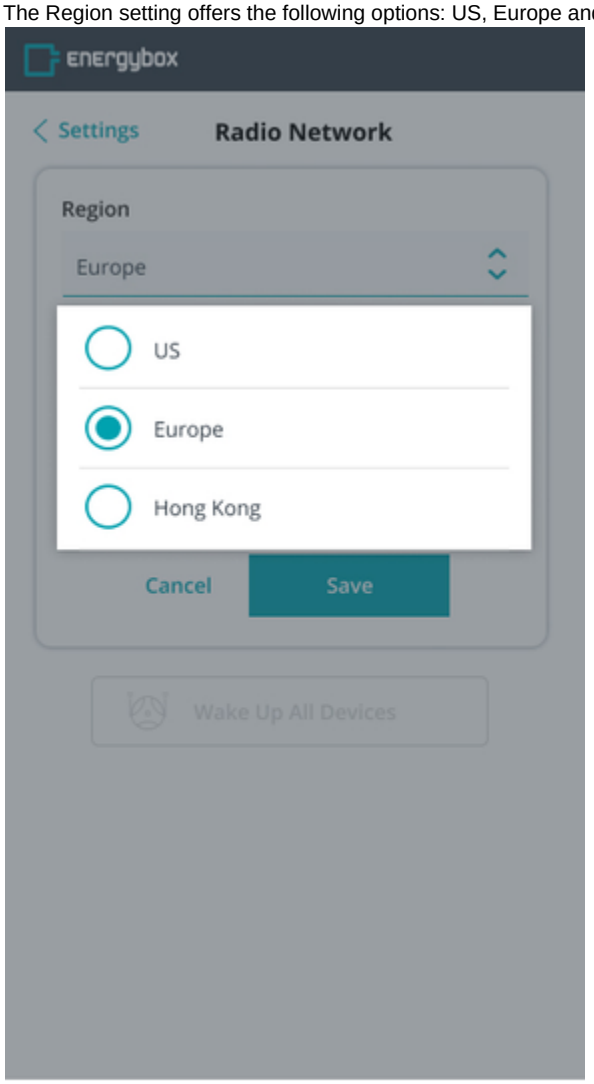


Radio Network

In the Radio Network section the region setting and Pan ID alongside the actual Version can be checked. The standard settings are US region and 0 as Pan ID. The edit button on the top right will open a menu where changes can be made if necessary. For example, the Site is outside the United States. A change of the Pan ID is only necessary if more than one SuperHub is being used in parallel within the same facility.

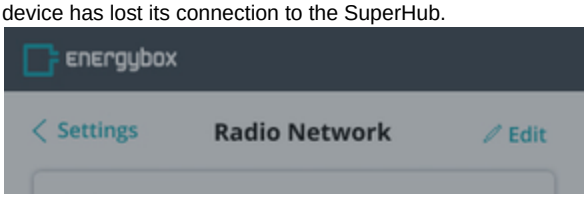
Region Setting

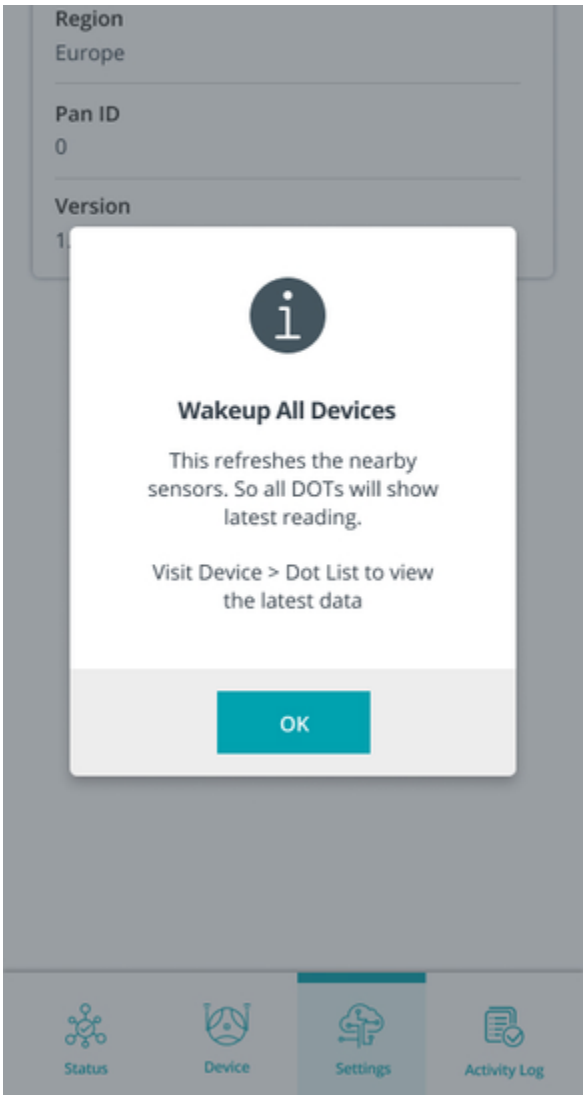
The Region setting offers the following options: US, Europe and Hong Kong. Pleasure ensure the correct region is set.



Device Wake Up

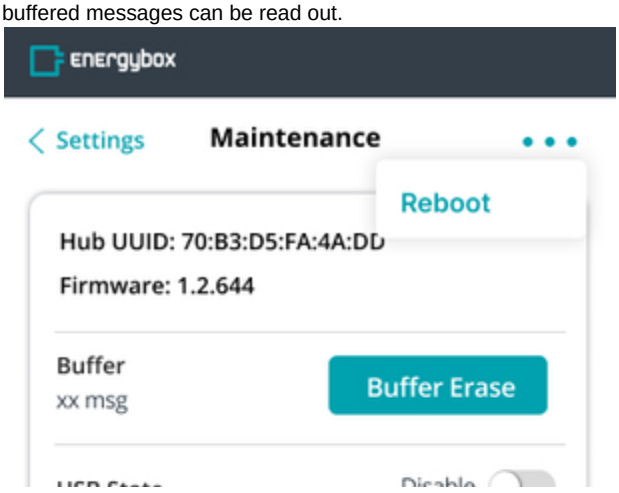
To simplify maintenance of the system, it is possible to wake up all connected RF devices. This is helpful if a connected or already whitelisted device has lost its connection to the SuperHub.





Maintenance

The maintenance section contains information about the Hub application including Firmware Version and UUID. Additionally the quantity of buffered messages can be read out.



1. Reboot

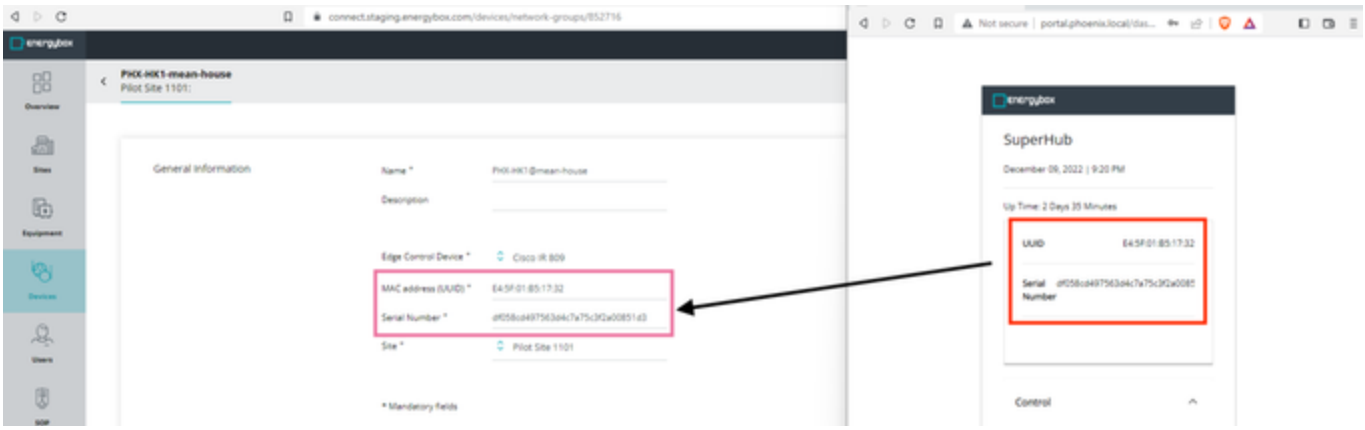
By clicking on the three dots on the top ride a dropdown menu will pop up. In order to perform a device reboot please click the button.

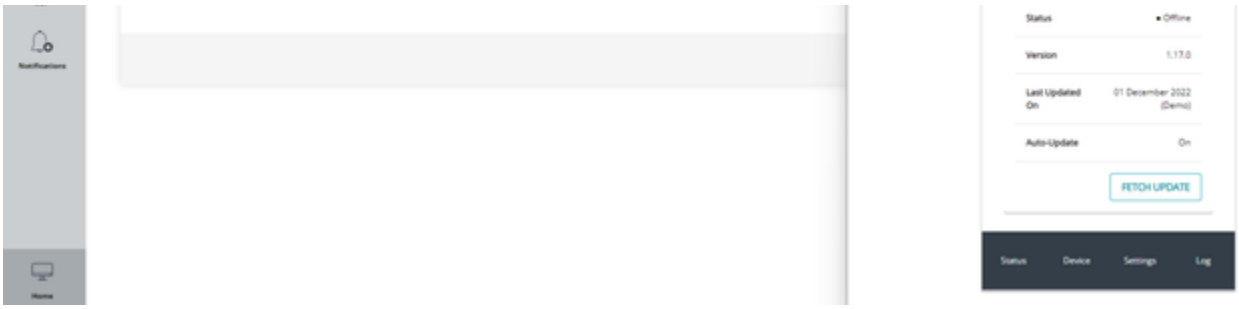
1. Buffer Erase
2. USB State

The SuperHub is equipped with an USB interface for external devices. Currently

SuperHub integration in Energybox One Platform

After the physical installation and configuration of SuperHub and connected auxiliaries, this chapter shows how to configure the SuperHub in the Energybox One platform.





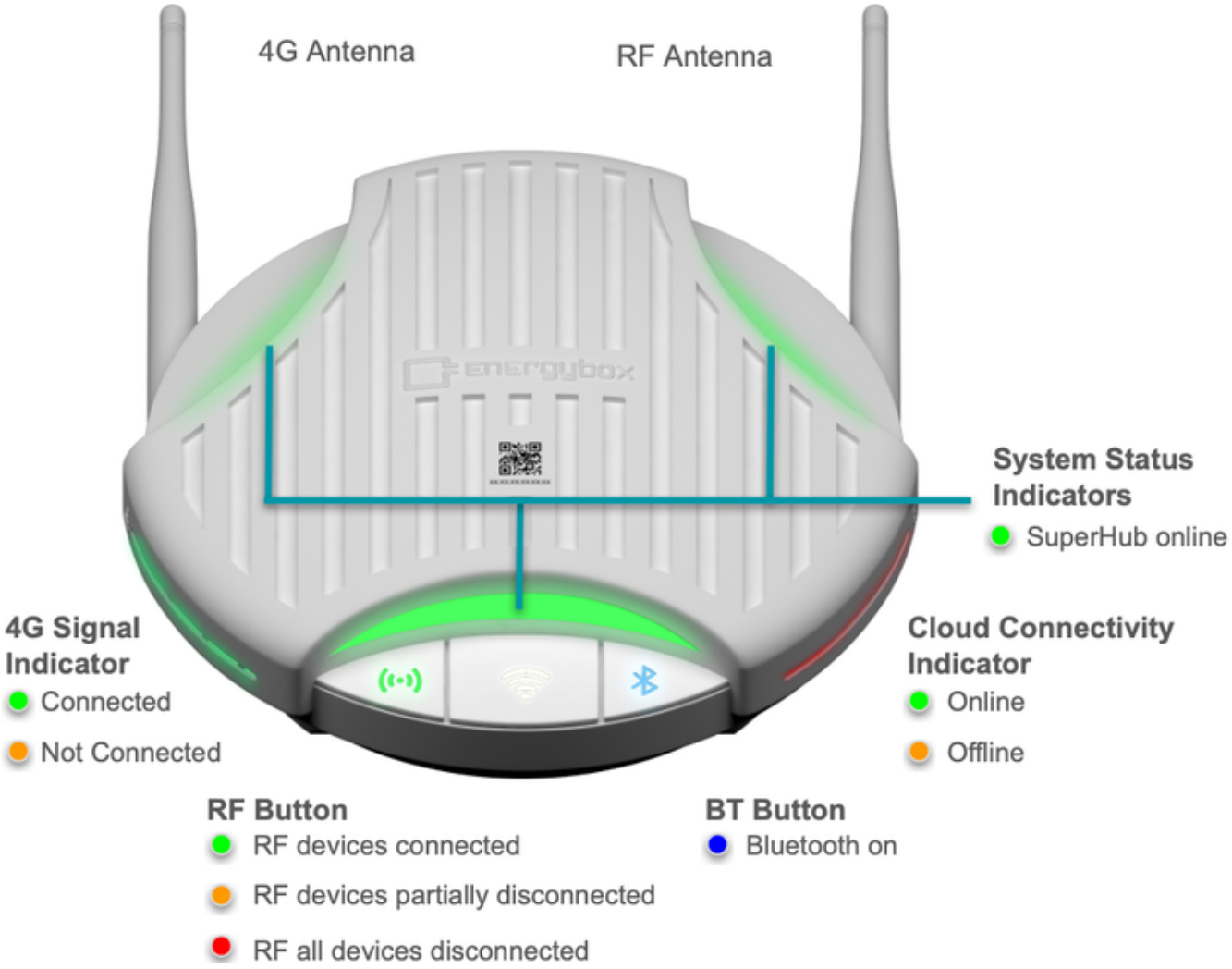
Firmware Update

A SuperHub Firmware update is being carried out via the EnergyBox One platform.

Technical Data

LED Status

LED Indication:



Power status, Alert/ Notification, Pairing, Cloud Connectivity, Sensor Connectivity, 4G Network Connectivity

Device Buttons/ Control Elements

The Superhub is equipped with three buttons on the front.

RF button

By pressing the RF button the SuperHub will start searching for new RF devices within reach, indicated by flashing in yellow. If the button shows green it means all whitelisted/paired devices are connected. If at least one whitelisted device is not connected it will light up in red.

Wifi button

The wifi button activates the integrated wifi hotspot which can be used to access the energybox platform via the smartphone. Once the button is pressed the active wifi hotspot will be indicated by a white LED.

Bluetooth button

The bluetooth button is currently without function and will be used for future system enhancements.

Factory Reset Button

The reset button resets the device to factory default settings.

Troubleshooting and FAQ

1. Device Power
2. Cloud/Platform Connection
3. Equipment/Services
4. Restart/ Reset physically

Regulatory Notes

FCC

FCC Regulatory Compliance

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.