

# EcoPh<sup>i</sup>

Renewables Engineering

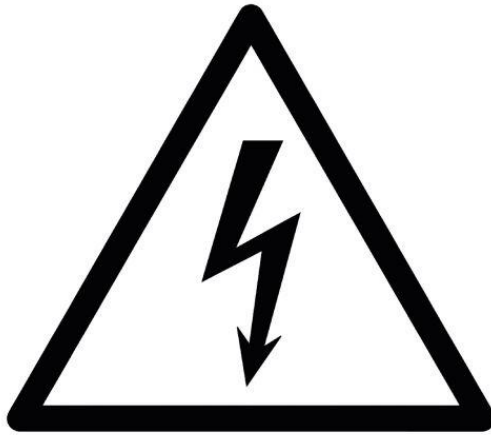
## **EcoPhi Audit Box**

### **Customer Manual**



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**Make sure that the installation is carried out by qualified personnel only!**

## 1 SHORT MANUAL

- 1.) Connect with LAN, SIM or Wi-Fi
- 2.) Place the clamps around the phases and connect them to the Box
- 3.) Connect the power supply

Link to the video manual:

<https://www.youtube.com/watch?v=YZbSvtXCFCg&list=PL2ciO4aA8L1FIPgs3t8TsxB5--ZY-w9DY&index=1>

## 2 INITIAL SETUP

### 2.1 CONNECTION SETTINGS

**Info: If you have ordered an EcoPhi Box with SIM card service, you can skip the connection settings as the Box will automatically connect with the provided SIM card.**

There are 3 ways to connect: LAN, SIM and Wi-Fi.

During the first setup, the device should be connected to a LAN connection if the APN or Wi-Fi is not yet set. Due to the connection quality, it is generally recommended to connect the device via LAN during setup.

Depending on the mobile data provider, the SIM needs manual settings. For this, the device should be connected via LAN. If the SIM card works directly, this is not necessary.

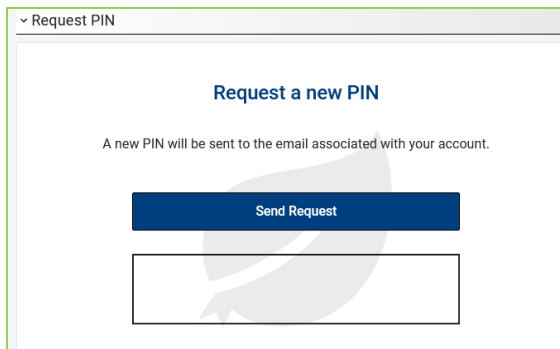
To set the Wi-Fi parameters, the device must be already online. For this, a LAN connection is recommended.

## 2.2 CONNECTION SETTINGS VIA THE ECOPHI PLATFORM

If you use LAN, you don't need to do the online settings.

Log in to the EcoPhi platform ([www.ecophi-monitoring.com](http://www.ecophi-monitoring.com)) and open the "Device Settings" dashboard.

Info: To be able to make device settings, you need access to the EcoPhi platform and a PIN. If you haven't received a PIN yet, open the "Request PIN" tab. An email with your PIN will be sent to your email address. Check the Spam, if you haven't received the mail.



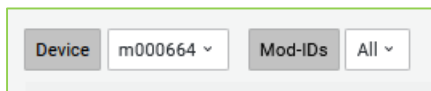
Request PIN

**Request a new PIN**

A new PIN will be sent to the email associated with your account.

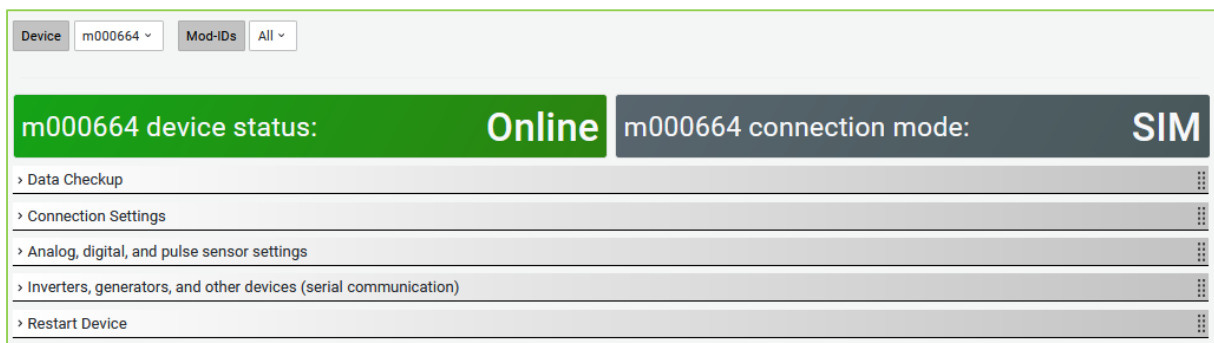
Send Request

On top of the page under "Device", select the correct Device ID (the Device ID is printed on the outside of the EcoPhi Box). Nothing needs to be changed under "Mod IDs".



Device m000664 Mod-IDs All

The "Device Status" indicates whether the EcoPhi Box is currently connected. "Connection Mode" shows the connection type (LAN, WLAN, SIM).



Device m000664 Mod-IDs All

**m000664 device status: Online** **m000664 connection mode: SIM**

- > Data Checkup
- > Connection Settings
- > Analog, digital, and pulse sensor settings
- > Inverters, generators, and other devices (serial communication)
- > Restart Device

Under "**Data Checkup**" you can see when the last time a connection to the EcoPhi Box was established and you can check all transmitted data in the "All values" graph.



Switch to the "**Connection Settings**" tab.

The screenshot shows the 'Connection Settings: m000664' interface. At the top, there is a green button labeled 'Request current values' and text indicating 'Last updated: <1 minute ago'. Below this is a table with columns 'Setting', 'New value', and 'Current value':

Setting	New value	Current value
APN Name	iot.1nce.net	iot.1nce.net
APN User		
APN Password		
WiFi Name	ecophi	ecophi
WiFi Password	12345689	12345689

Below the table, a note states: 'Note: the characters ; and \ are not allowed as inputs.' There is a 'PIN:' label with an input field, a green 'Submit' button, and a large empty text area at the bottom.

Click on "**Request current values**" to request the current settings from the Box. A query is sent to the EcoPhi Box, after which the EcoPhi Box sends the current settings. A timer of 10 seconds is set for this.

## 2.3 LAN CONNECTION

Open the cover of the EcoPhi Box with the attached key.

Insert a LAN cable through the open cable channel marked "**LAN**" of the EcoPhi Box and connect it to the "**ETH**" port of the data logger.

You don't need to make additional settings for establishing the LAN connection. The box will now automatically establish a connection. If no connection is being established, please restart the device (see instructions below).

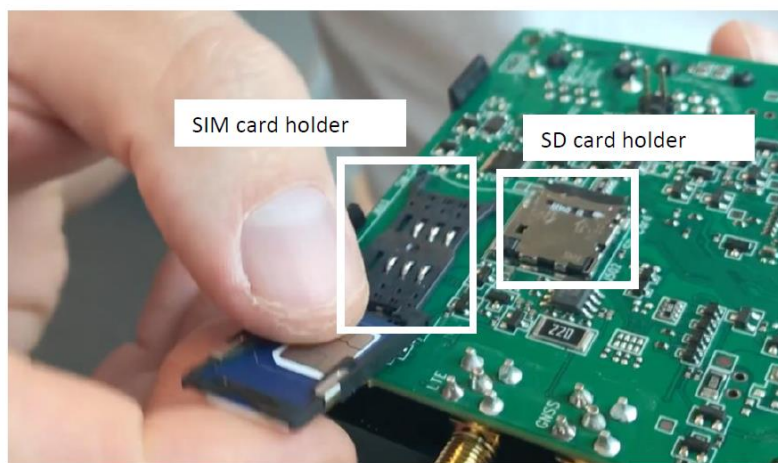
LED A of the data logger is permanently red when a LAN connection is established. When flashing red, an attempt is being made to establish a connection.

## 2.4 SIM/ MOBILE DATA CONNECTION

**Important! Make sure that the SIM card is topped up with mobile data and that no PIN is required!**

Open the EcoPhi Box, open the data logger inside and insert the SIM card:

1. Take out the cover of the data logger to get access to the circuit board.
2. Slide back the metal clip on the SIM card holder and fold it up.
3. Insert a local SIM card with internet connection and without a PIN code.
4. Close the SIM card holder and fasten the metal clip.
5. Put the cover back on the data logger and close the data logger.



Log in to the EcoPhi platform and open the "**Device Settings**" dashboard.

Very often it's not required to enter the APN details manually. If you are not sure, you can try it with your SIM card by just inserting the SIM card without changing the APN details. The device might need 20 minutes for the first connection, but entering the APN manually is not always required.

To change the settings online, go to the "**Connection Settings**" tab and enter the APN data. You can get the APN information online or directly from the mobile data provider.

**Connection Settings: m000664**

Last updated: <1 minute ago

Setting	New value	Current value
APN Name	<input type="text" value="iot.1nce.net"/>	iot.1nce.net
APN User	<input type="text"/>	
APN Password	<input type="text"/>	
WiFi Name	<input type="text" value="ecophi"/>	ecophi
WiFi Password	<input type="text" value="12345689"/>	12345689

Note: the characters ; and \ are not allowed as inputs.

PIN:

Confirm the entries with your PIN.

The connection settings are not applied until the system is restarted. For a restart, switch to the lower tab "**Restart Device**". Confirm the restart with your PIN.

Info: As long as the EcoPhi Box is connected via LAN, this connection is maintained. To check the SIM and Wi-Fi settings, you have to disconnect the LAN connection first.

LED A is permanently green when a SIM connection is established. When flashing green, an attempt is being made to establish a connection.

If no connection is being established, restart the device again.

**2.5 WLAN/ WIFI CONNECTION**

If you want to establish a Wi-Fi connection, the device first has to have a connection via LAN or SIM.

To establish a Wi-Fi connection, enter the Wi-Fi name and the password under the "**Connection Settings**" tab.

Note: The characters ";" and "\" are not valid and therefore cannot be part of the Wi-Fi password.

**Connection Settings: m000664**

Last updated: <1 minute ago

Setting	New value	Current value
APN Name	<input type="text" value="iot.1nce.net"/>	iot.1nce.net
APN User	<input type="text"/>	
APN Password	<input type="text"/>	
WiFi Name	<input type="text" value="ecophi"/>	ecophi
WiFi Password	<input type="text" value="12345689"/>	12345689

Note: the characters ; and \ are not allowed as inputs.

PIN:

Confirm the entries with your PIN.

The connection settings are not applied until the system is restarted. For a restart, switch to the lower tab "**Restart Device**". Confirm the restart with your PIN.

Info: As long as the EcoPhi Box is connected via LAN, this connection is maintained. To check the SIM and Wi-Fi settings, you have to disconnect the LAN connection first.

LED A lights up orange continuously when a Wi-Fi connection is established. When flashing orange, an attempt is being made to establish a connection.

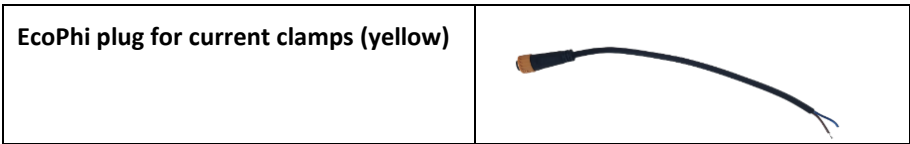
**2.6 PREPARATION OF THE CURRENT CLAMPS (CURRENT TRANSFORMERS)**

**Pre-assembled current clamps**

If you have ordered pre-assembled clamps, the current clamps are already prepared and connected to the EcoPhi plug and you can skip this step.

**Not assembled current clamps**

If you have not ordered pre-assembled clamps, you need to prepare the current clamps by connecting them to the EcoPhi plugs before using them. The EcoPhi Audit Box comes with the selected current clamps and the matching plugs.



Depending on the size of the clamps, they have either a cable or a labeled terminal. When connecting the current clamps to the EcoPhi plugs, make sure that the connection is done professionally.



Depending on the type and size of the current clamp, connect the clamp to the EcoPhi plug as follows:

Current clamp	EcoPhi plug
White	Brown
Black	Blue

Or:

Current clamp	EcoPhi plug
"S1"	Brown
"S2"	Blue

Or:

Current clamp	EcoPhi plug
"K"	Brown
"L"	Blue

### 3 INSTALLATION

In order to use the Audit Box for monitoring, it has to be set up initially. Make sure, the box has already been prepared as described in Chapter 2 "Initial Setup".

#### 3.1 CONNECTING THE CURRENT CLAMPS

**Make sure that each current clamp is around the phase which it is supposed to. (Phase 1 to L1, Phase 2 to L2 and Phase 3 to L3). If these are mixed up, the results will massively be spoiled.**

- a. Plug the connector of one of the current clamps to the Audit Box (Phase 1-3) (a clicking sound indicates a correct connection).



- b. Open the current clamp.



- c. Place the cable of the phase you to want to monitor into the current clamp.



- d. The current clamps have an arrow symbol engraved. In this case, make sure that the arrows engraved into the current clamps point into the direction of positive power flow, so the arrow has to point into the direction of the power source. **If you disregard this step, the power values measured will be negative.**
- e. Close the clamp.
- f. Repeat steps a) – e) for all three clamps and phases.

### 3.2 CONNECTING THE AUDIT BOX TO THE POWER SUPPLY

**Important notice: Make sure that you turn off the power or work on a secure line when you connect the EcoPhi connector to the power source!**

**Notice: Make sure that the phases match the current clamps plugged to the Audit Box. Otherwise, the measurements will be wrong!**

EcoPhi plug for power (red)



- a) Connect the endings of the EcoPhi plug to the phases of the power source according to the right color coding.

EcoPhi plug	Power source
Black	L1 (often "red")
Green	L2 (often "yellow")
Red	L3 (often "blue")
Yellow	N

**Option 1:** Each of the endings of the EcoPhi plug needs to be connected to these phases of the power supply individually.

**Option 2:** If a three-phase socket is available, use a CEE three-phase plug to extend and connect it to the EcoPhi plug. If you have ordered the Audit Box with pre-assembled cables, this plug is part of your Audit Box delivery.



- b) Connect the EcoPhi power plug to the **PWR/ Power** connector of the Audit Box.  
c) Turn on the power of the power source.

The Audit Box will directly start sending data. Please directly check the data (Chapter 4.1), to see if all current clamps and phases are connected correctly.

Negative powers indicate that the current clamp is placed in the wrong way. In this case, open the current clamp, turn it around and close it again.

Power factors which don't make sense usually indicate, that the current clamp and the phase don't match. In this case, make sure that all phases and current clamps are connected in the right way.

#### **Careful:**

Three mistakes that can happen during installation and can lead to incorrect values are:

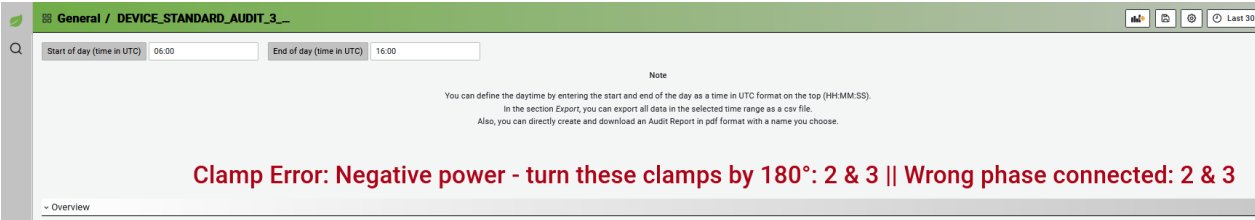
1. Current clamp installed the wrong way: Negative power values
2. Phase and current clamp do not match: Wrong values
3. Wrong current clamp size settings: Wrong factor

To avoid wrong values, please make sure that the current clamps match to the right phases.

You can check the dashboard to see if there may have been an error during installation.

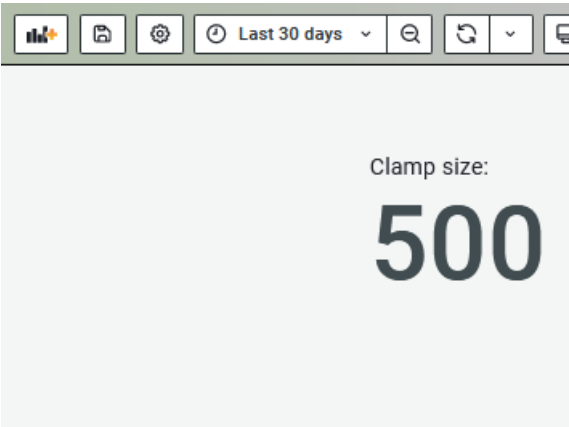
In the upper area of the dashboard you will see a note in red if error 1. or 2. has been detected. Please then check the corresponding components.

Note: In order to receive reliable warnings, the system must be connected and running with at least 5% of the power.



The current clamp size is displayed in the upper right corner of the dashboard. Make sure that this number corresponds to the current clamp size.

You can change this setting in the bottom row "Settings" under "Set Clamp Size". Select the correct size from the list and confirm the entry with your PIN.



### 3.3 AUDIT BOX FOR SINGLE PHASE SYSTEMS

All three phases of the **PWR/ Power** connector will have to be connected, so the single phase has to be split up and connected to the 3-phase Audit Box.

EcoPhi provides a single phase power cable which you can use for this purpose.



Connect **only one** current clamp to either L1, L2 or L3 of the Audit Box and place it around the single phase.

### 3.4 DISCONNECTING THE BOX

First, turn off the power supply and disconnect the endings of the EcoPhi power plug. Carefully turn the wheel on the EcoPhi power plug and disconnect it from the box. Disconnect the current clamps in the same way. Remove the current clamps from the cables of the phases.

## 4 OPERATION

### 4.1 CHECK YOUR SYSTEM OPERATION

To check your system and see the data, log in to the EcoPhi platform ([www.ecophi-monitoring.com](http://www.ecophi-monitoring.com)). You should have received an email with your login information. Contact your support agent or send an email to [support@ecophi.de](mailto:support@ecophi.de) if you haven't received your login credentials.

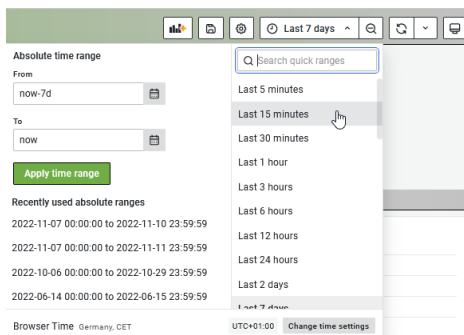
After logging in to the platform, you see an overview of your devices on the right side.

Click on your device to get to the device dashboard.

#### Overview

Here, you find an overview of the energy and power measurements.

You can change the time ranges on the top right to either select a relative or absolute time range.



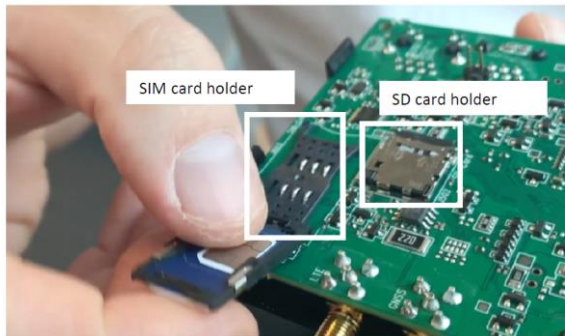
#### Details

Here, you find detailed graphs of the measured values.

#### Export

Here you can export your device data as a csv file, create a standard audit report or request a report by EcoPhi. The data of the csv and standard report will be based on the selected time range on the top right.

### 4.2 RETRIEVE LOCALLY STORED DATA VIA SD CARD



- a) The SD card is located next to the SIM card
- b) Slide back the metal piece on the card holder
- c) Pull out the SD card

### 4.3 RESTART THE DEVICE

To restart the device, press the button between the GNSS and WLAN antenna ports on the datalogger with a small needle or paperclip.



## 5 TROUBLESHOOTING

**I have inserted a SIM card but the device doesn't connect to the cloud:**

Does the SIM card have a PIN? It is important to remove the PIN.

Does the SIM card have mobile data available? Make sure that you have mobile data.

Make sure you have the correct APN information from your SIM provider.

If possible, try to connect the device to LAN first.

Otherwise you can remove the SIM card and create a mobile hotspot, with **name:** *aveefunky\_2,4* and **password:** *funky2015avee2019*

Once the device is connected to either LAN or Wi-Fi, make the correct APN settings online (see instructions above).

Restart the device after that.

**I have connected the current clamps but I am seeing negative values power values on the dashboard:**

Check, which of the phase(s) is negative.

Turn the current clamp around at this phase.

**My measurements don't seem to make sense:**

Make sure that each current clamp matches the right phase.

Check, which of the phase(s) is negative. Turn the current clamp around at this phase.

Both wrong phases and wrong direction of current will lead to wrong measurements.

## 6 ECOPHI SUPPORT

The device ID is printed outside of the box (the number starts with "m..."). Make sure you provide this number when you contact the EcoPhi support.

In case you have difficulties setting up your EcoPhi Monitoring Box, we are here to help you. Please contact the EcoPhi support under [support@ecophi.de](mailto:support@ecophi.de) or contact your support agent at EcoPhi.