

# CLEMAP Energy Monitor

## Installation instructions

Version 05.2023

## Table of contents

CLEMAP Energy Monitor .....	1
Material .....	2
Specification .....	3
Description .....	3
Installation requirements .....	4
Safety notice .....	4
Power cable colours and their meaning .....	4
Step 1: Electrical installation .....	5
Step 2: CLEMAP connection to a WIFI network or via Ethernet cable .....	7
Step 3: Activation on floem.clemap.com .....	8
FAQ – Frequently asked questions .....	9



The installation takes place in an electric cabinet or junction box, we recommend you to contact an electrician.

## Material

1 CLEMAP *Energy Monitor* (a)



3 current sensors, CT or Rogowski Coils (b)



Picture 1 Material

## Specification

**Power supply:**

230V+/-10% 50/60Hz AC

**Complies with EU standards:**

- RE Directive 2014/53/EU
- LVD 2014/35/EU
- EMC 2014/30/EU
- RoHS2 2011/65/EU

**Radio protocol:**

WiFi 802.11b/g/n

**Frequency:**

2400 - 2500 MHz

**LAN:**

RJ45 connector

**Operational range (depending on local construction):**

- up to 50 m outdoors
- up to 30 m indoors

**Dimensions (WxHxD):**

105 x 86 x 59 mm

**Electrical consumption:**

<3W

**Mechanical interface:**

DIN Rail

## Description

CLEMAP Energy Monitor can measure the power consumption of a building or industrial facility. The energy consumption can be displayed on a web portal and additional features can be unlocked to contribute to efficient energy use.

CLEMAP Energy Monitor is installed in a circuit breaker box and must be connected to the power supply lines between the meter and the building. It is possible to connect the sensor to a single phase (L1), two phases (L1 and L2), or three phases (L1, L2, and L3).

Usually there are three input cables in a building: the phase conductors (L1=brown, L2=black and L3=grey) and as output the neutral conductor (also called N=blue). The three current sensors must be connected to all three incoming cables.

## Installation requirements

Before you start the installation, check that the following points are fulfilled:

1. you have a smartphone or laptop to activate the CLEMAP product.
2. there is enough space in the fuse box to install the CLEMAP product.
  - a. Yes → Go to step 3.
  - b. No → Check whether you can install CLEMAP next to the fuse box.  
CLEMAP can also be installed in other fuse boxes. Continue to point 3.
3. Is there an Ethernet cable connection or possibly a WIFI network at the installation location of the CLEMAP product?
  - a. Yes → Start the installation.
  - b. No → Pull a LAN cable up to the CLEMAP sensor or install a WIFI repeater and continue with the installation.

## Safety notice



For all work with electricity, safety is paramount. The lines of the area where work is being done must be **switched off "all poles"** before the work. The best way to do this is to switch off the corresponding fuse. But be careful: **All-pole** means that all conductors, i.e. the phase as well as the neutral conductor, are de-energised. To ensure this, the residual current circuit breaker (FI) should also be switched off. **In addition, the cables must be checked to ensure that they are current-free before touching them.**

## Power cable colours and their meaning

The function of each conductor can be recognised by the respective colour of the power cable in a proper electrical installation. But be careful: Old buildings often have the wrong colouring of the conductors because the standards have changed several times over the years.

Basically, there are three types of electrical cables. First, there is the active conductor, the outer conductor, also called the phase conductor (L) or simply phase. Then there is the neutral conductor (N). And finally there is the protective conductor (PE), also simply called earth (not used when installing the CLEMAP product).

The following are the colours of the power cables:

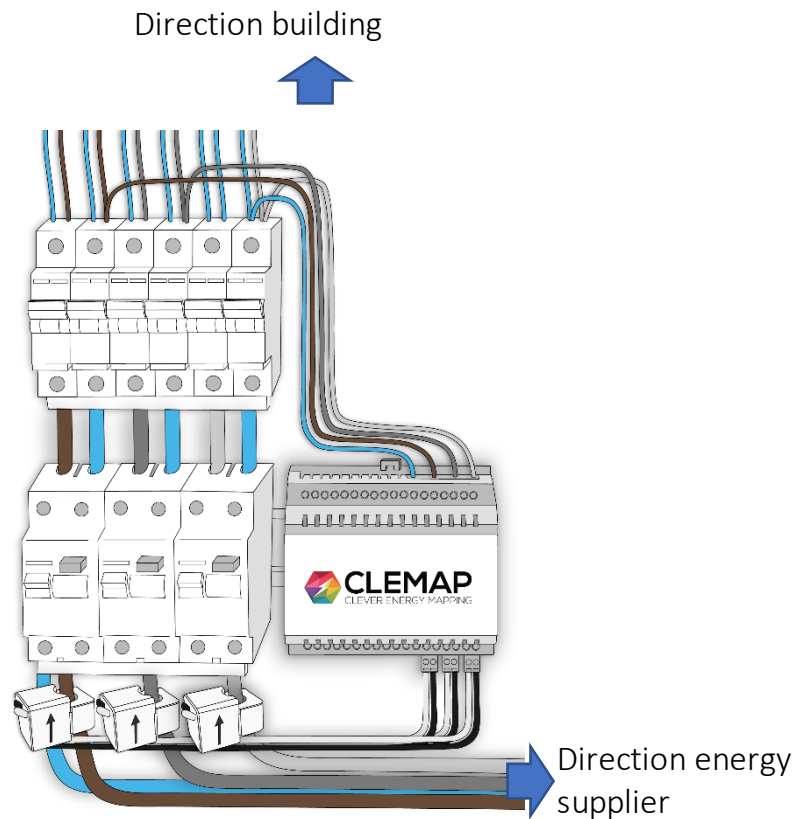
Phase	L1, L2 and L3	brown, black, grey
Neutral	N	blue
Earth	PE	green-yellow

However, especially with older installations, do not assume that the colour scheme of the electrical installation is correct.

## Step 1: Electrical installation



As installation takes place in an electric cabinet, we recommend you to contact an electrician.



Picture 2 diagram of CLEMAP installation in the junction box of an industrial building



Figure 6: Current sensor. The arrow must follow in the direction of the current (to the consumers).

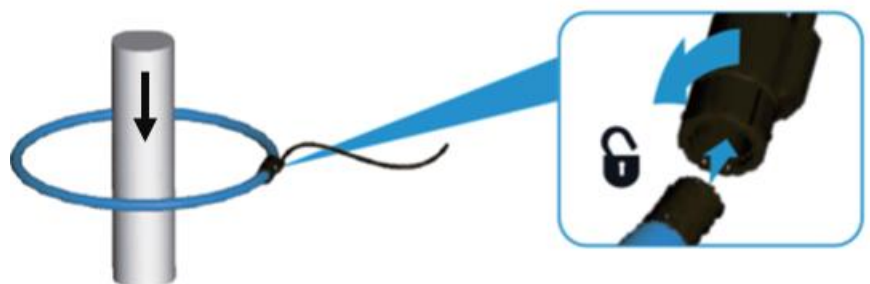


Figure 7: Rogowski coil. The direction of current is shown by the arrow.

- a. make sure that the power supply in the fuse box is disconnected.
- b. position the CLEMAP product (a) so that the current sensors (b) can be easily connected to the main input cables (L1, L2 and L3) (as shown in Fig. 2).
- c. Attach the CLEMAP product to the fuse box.
- d. Connect the current sensors (b) to the insulated incoming power lines (L1, L2 and L3), **making sure that the arrow shown in figure 3 points in the direction of the electrical loads.**
- e. connect the current sensors (b) to the CLEMAP product and make sure that the current sensors of the L1, L2 and L3 cables match the corresponding voltage inputs L1, L2 and L3.
- f. Connect the inputs N, L1, L2 and L3 to the corresponding voltage lines after fusing (maximum 16 A).
- g. Switch on the fuses and wait 3 minutes until the sensor is active.

POWER LED- feedback	
OFF	The CLEMAP product is currentless.
ON	The CLEMAP product is switched on.

STATUS LED feedback	
OFF	<b>Hotspot Mode</b> The CLEMAP product has no connection to a LAN or WLAN network, so it creates its own hotspot (see step 2 on the next page).
Slow Flashing	The WiFi login data is configured, an attempt is made to establish a connection to the WiFi.
Flashing	The CLEMAP product is connected to a network. It is currently seeking communication with the Internet.
ON	The CLEMAP product is connected to a WLAN network or connected via an Ethernet cable and receives data from the Internet.

RESET button	
pressed between 1 and 5 seconds	<b>Hotspot Mode</b> If the CLEMAP product does not have a connection to a LAN or WLAN network, it will create its own hotspot (see step 2 on the next page).
pressed between 5 and 10 seconds	<b>Restart</b> The CLEMAP product is restarted.
pressed for more than 10 seconds	<b>Reset saved WIFI</b> The saved WIFI is deleted and the CLEMAP product creates a new hotspot.

## Step 2: CLEMAP connection to a WIFI network or via Ethernet cable

- a. Connect to the WiFi network created by the CLEMAP product with your smartphone or laptop. ((Name: clemapXX, where XX = the last two digits of the serial number, Password: sensorsetup). **WARNING:** If an Ethernet cable is connected to the CLEMAP sensor, the clemapXX's WIFI hotspot is automatically deactivated.

**NOTE:** For security reasons, the hotspot is deactivated after 10 minutes without connection. To reactivate it, press the RESET button for more than 1 second (until the status LED starts flashing rapidly).

- b. go to <http://192.168.1.100:4000>, via a browser, if the sensor is connected with an Ethernet cable, the IP may be different.

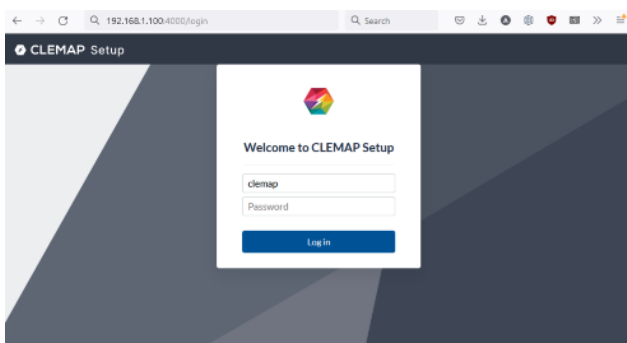


Figure 8

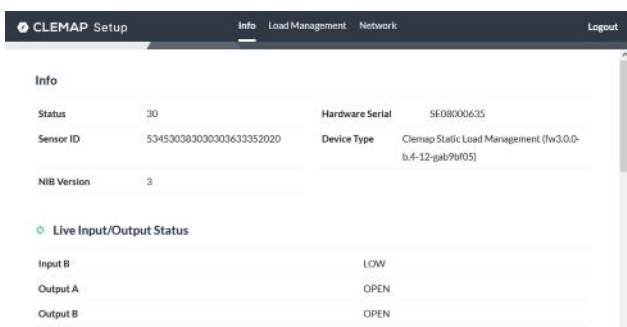


Figure 9

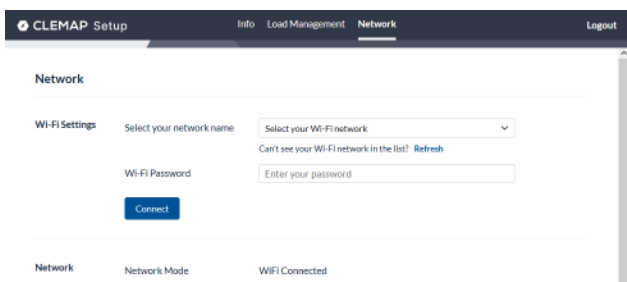


Figure 10

- c. Registration with
  - User: clemap
  - Password: The serial number on the housing (e.g. SE12345678)
- d. briefly check if the displayed consumption values (P, V and I) for the three phases L1, L2 and L3 are realistic. In case of anomalies, check if each current sensor matches the correct voltage phase, if the current sensors are connected to the correct input (main) cable and if they "clicked" when closed
- e. In the case of a **WiFi connection**, proceed to the next step. In the case of an **Ethernet connection**, connect the cable and go directly to step 3.
- f. Select "Network", select "Refresh" and your Wi-Fi network from the pop-up menu and enter your Wi-Fi password.
 

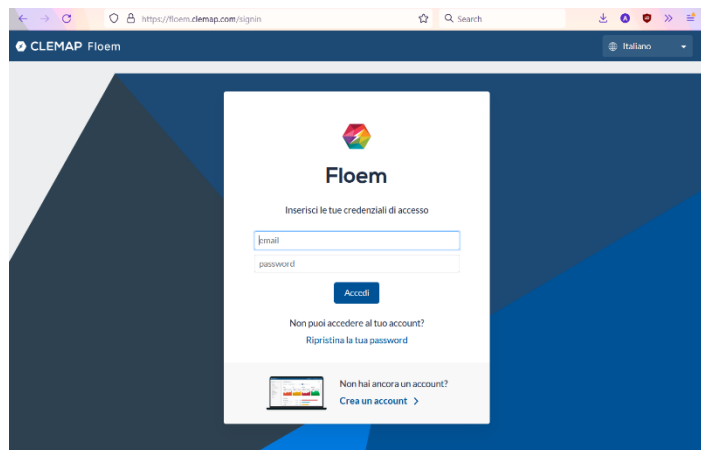
**CAUTION:** the CLEMAP product only supports WIFI on the 2.4 GHz band. Once you have saved the WIFI password, you can log out. Within a few minutes, the sensor will be connected to the WIFI network you have chosen.

### Step 3: Activation on floem.clemap.com

Go to

<http://floem.clemap.com>

Figure 11



- Select Log In or Create an account (you will need the serial number and activation code that are included with these instructions).
- During the registration process you will receive a confirmation email, if you cannot find it, please check your spam folder.
- Follow the instructions. Then select under "Settings", "Metering Point Settings", "Activate new metering point".



## FAQ – Frequently asked questions

**During installation, the CLEMAP product does not create a WIFI network with the name «clemapXX»:**

NOTE: For security reasons, the hotspot is deactivated after 10 minutes without connection. To reactivate it, press the RESET button for more than 1 second (until the status LED starts flashing rapidly).

If the Edge Device does not find a WLAN network to connect to, it goes into discovery mode and provides its own WLAN network (called "clemapXX"). It may take up to 3 minutes until "clemapXX" appears among the available networks.

ATTENTION: If an Ethernet cable is connected to the CLEMAP product, the clemap WLAN hotspot is automatically deactivated.

**The password for clemapXX WIFI network is not accepted:**

After entering the clemapXX WIFI network password "sensorsetup", it is not accepted.

The network is set up, try again in 30 seconds.

**I can't reach floem.clemap.com through my browser:**

Check the network connection. Check that you have selected the correct home WIFI and that you can reach the Internet (e.g. [www.google.com](http://www.google.com)). Try again later.

**During the installation (step 2) I cannot reach 192.168.1.100:4000 via my browser:**

Check whether you are connected to the "clemapXX" WIFI network or whether the LAN cable is plugged in. Refresh the webpage <http://192.168.1.100:4000> and wait up to 30 seconds. Check again that you are connected to the "clemapXX" WIFI network or that the LAN cable is plugged in and try to access the webpage <http://192.168.1.100:4000> again. If you still cannot access the webpage, try opening the webpage with another device, e.g. another mobile phone or computer.

Perform a hard reboot by pressing the RESET button for more than 5 seconds (and less than 10 seconds) and wait 3 minutes.

**During the installation (step 2) I cannot find my WIFI in the list of available networks:**

Check whether the WIFI reaches the control cabinet in which the CLEMAP product is installed. If the WIFI router is too far away, install a LAN cable, a power line adapter (e.g. TP-LINK TL-WPA4220KIT) or a WIFI repeater. The sensor only supports WIFI networks on the 2.4 GHz frequency, if the network is on the 5 GHz frequency, activate transmission on 2.4 GHz via the menu of your WIFI router or install a repeater.

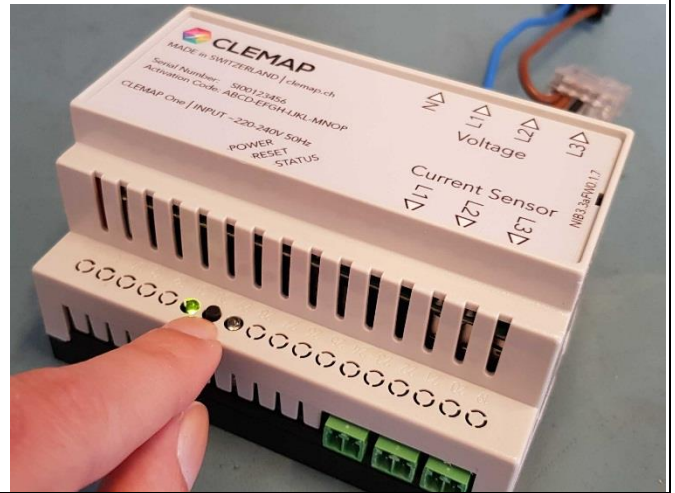
**Ground fault circuit interrupter switches off**

The RCD can compare the amount of current flowing in and out. If the sum is intact, the current flowing in must be as high as the current flowing back, whereby the sum of the currents of the neutral conductor and phases must be zero. If this is not the case, the RCD disconnects the circuit, it "pops out". If L1, L2 and/or L3 are connected after the RCD and the neutral is connected before it, the RCD will notice a difference between the current flowing back and forth. Make sure that L1, L2, L3 and the neutral are connected after the RCD.

**The sensor cannot connect to the cloud (status LED flashes):**

1. Check whether the ports TCP 443, 3032, 8883 and UDP 123 of the wireless router are open.
2. Perform a hard reboot by pressing the RESET button for more than 5 seconds (and less than 10 seconds) and wait 3 minutes.
3. Some charging station models have their own DNS server which may interfere with the setup process. Plug charging stations into the router last so that the IP address is given by the router and not by the charging station.

Figure 12 Hard Reboot



**I have installed the CLEMAP product correctly and registered it on the platform, but the data is not accessible on floem.clemap.com:**

Check whether the sensor is communicating with <https://floem.clemap.com> by looking at the LED status on the sensor. If this flashes or is switched off, check whether the radio connection is also accessible when the control cabinet door is closed (install a repeater if necessary) and whether the router doors are open.

→ **See question: The sensor cannot connect to the cloud (status LED flashes).**

If the status LED is constantly lit, check at <https://floem.clemap.com> whether the measuring point is online. If this is not the case, please contact support.

Do you have any further questions about the installation? We will be happy to answer them at [support@clemap.ch](mailto:support@clemap.ch) or by phone +41 44 548 20 61.