



Installation Manual

with solar panels

Version 2.0.1

Table of contents

- Introduction 3
- Read before use 4
 - Warnings..... 4
 - Maintenance 4
 - Technical specifications 4
- Connecting the Smappee monitor..... 5
 - Important remarks 10
 - Single-phase connection with solar panels 6
 - Three-phase connection with solar panels 10
- Declaration of Conformity 16

Introduction

The Smappee monitor is a device that measures the energy consumption of your electrical appliances with one sensor close to the fuse box. The sensor is clamped to the main cable and records the energy use. The various devices are recognized by their energy signature or the electrical traces they leave. If you have solar panels, you can also use the Smappee monitor to measure the energy generated.

The Smappee monitor is installed close to the fuse box. It then starts measuring your energy consumption and the yield of your solar panels as well as communicating with your smartphone or tablet. The Smappee app gives you direct insight in your energy consumption, energy costs and the yield of your solar panels. To save on energy costs and contribute to a greener environment, you can take on energy guzzlers and standby power.

This manual describes the installation of the Smappee monitor. All information about the WiFi configuration of the Smappee monitor and the use of the Smappee app can be found in the *Smappee user's manual*.

Read before use

Warnings

Please observe the following safety precautions to avoid possible electric shocks, fire, or personal injury:

- Use the product only as specified as otherwise the safety of the product is not sufficient.
- Do not use the product in environments with explosive gas or vapours, nor in damp or wet environments.
- Do not use damaged power cords and cables. Check the power cords and cables for damaged insulation and exposed metal. Check the connection of the power cords.
- Use only the power cord and cables that are supplied with the product.
- Do not use the product if it is damaged.
- Repairs should only be done by authorized technicians.
- Do not open the product. There is a potential for exposure to hazardous voltage.
- Use only specified replacement parts.
- Do not connect the product to a voltage higher than 240 V.
- Turn off the main power switch before you start the installation of the product.
- Follow local and national safety regulations for installation and use of electrical equipment.

Maintenance

- Clean only the outside with a dry, clean cloth.
- Do not use abrasive agents or solvents.

Technical specifications

- Dimensions: 16 cm (L) x 10 cm (W) x 3,5 cm (H)
- Weight: 300 grams
- Wi-Fi 802.11 b/g/n 2.4 GHz
- Work temperature: 5°C to 40°C
- Storage temperature: -10°C to 60°C
- Relative humidity: 80% 0°C to 40°C
- Sealing IP 20.
- Work altitude: 0 to 2.000 meters
- EMC: EN 55022 (Class B)
- Safety: EN61010-1 Ed 3.0 (2010-06), EN61010-2-032 Ed 3.0 (2012-09)
- Overvoltage category: 300 V/CAT II
- ~110/240V 50/60Hz Max 5W
- Current clamps: 50A

Connecting the Smappee monitor

Attention! Before you can connect the Smappee monitor you must first connect it to your Wi-Fi network as described in the *Smappee user manual*.

Installation video's can be viewed at: <http://www.smappee.com/support>.

For the connection you need:

- The Smappee monitor.
- The power cord, the current clamps and the V-cables supplied with the monitor.

Note: If you have a Smappee monitor with 3 current clamps and no V-cables, please see installation manual version 1.x

There are two options for the connection:

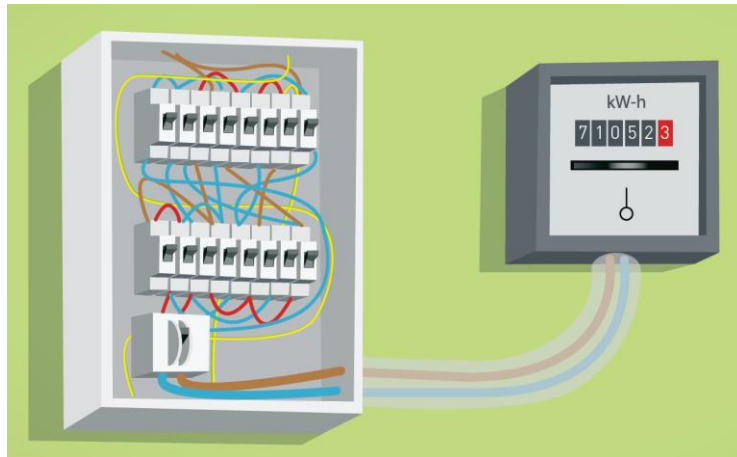
1. Single-phase connection with solar panels
2. Three-phase connection with solar panels

Whether the single-phase or three-phase connection is applicable, depends on your fuse box.

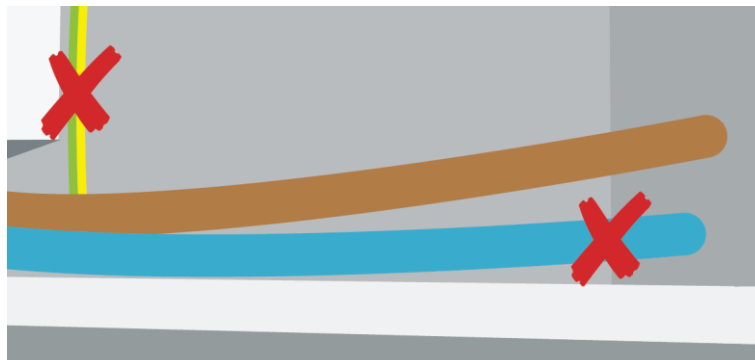
Single-phase connection with solar panels

The following steps describe the **single-phase connection with solar panels**.

1. Turn off the electricity and disconnect the power supply from the solar panels.
2. Open the fuse box and choose the brown (or black) cable coming from the electricity (kWh) meter. Remark: In some installations other colours can be used for the phase wire.



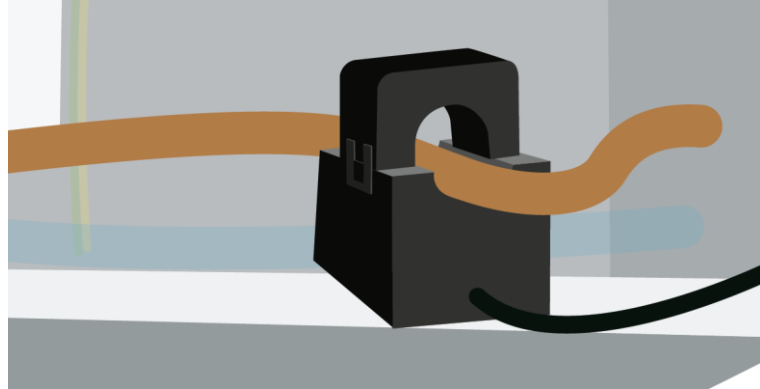
Do not in any case choose the blue (neutral) or yellow/green (earthing) cable!



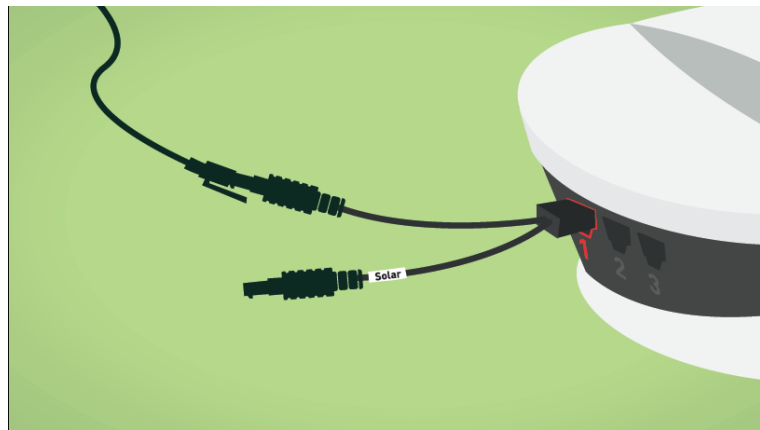
3. Then take the current clamp and check for the symbol $L \leftarrow K$ in the clamp. The arrow shows the direction of the energy flow. Make sure that L points in the direction of the appliances (energy users) and K in the direction of the electricity meter.



4. Place the current clamp over the brown (or phase) cable. Make sure that you properly close the clamp by pressing your thumb on the side until you hear a click.



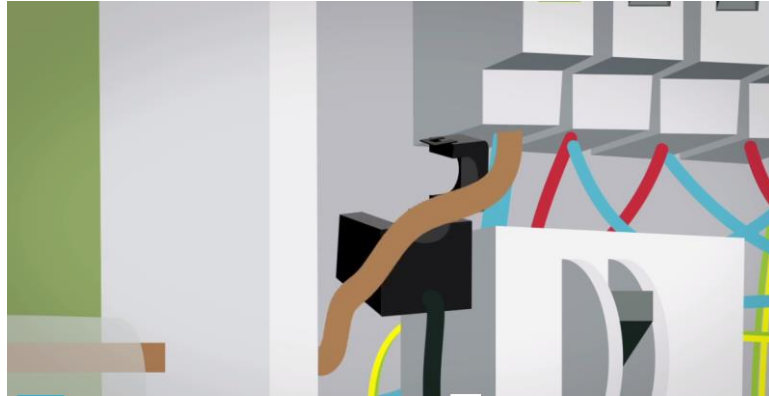
5. Click the V-Cable in input 1 of the Smappee monitor.
6. Plug the end of the clamp cable into the unlabelled input of the V-Cable.



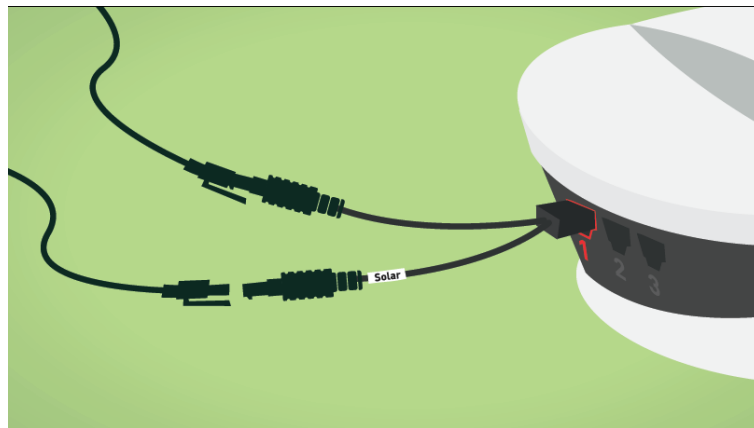
7. Take the second current clamp and check for the symbol L ← K in the clamp. Make sure that K points in the direction of the inverter and L in the direction of the fuse box.



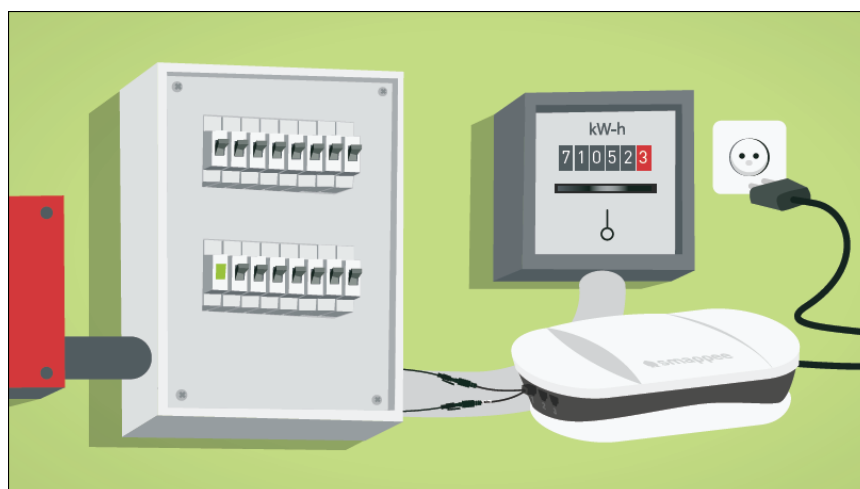
- Place the current clamp over the brown (or phase) cable coming from the PV inverter. Make sure that you properly close the current clamp by pressing your thumb on the side until you hear a click.



- Plug the end of the second clamp cable into the solar labelled input of the V-Cable.



- Close the fuse box taking care not to jam the cables
- Turn the electricity back on and re-connect the power supply from the solar panels.
- Plug the power cord for the monitor into the wall socket and wait until the monitor shows a green breathing. Information about the colour codes can be found in the *user manual*.



12. You can now get started with the Smappee app as described in the *Smappee user manual*.

Three-phase connection with solar panels

Important remarks

1. Correct connection

When connecting the current clamps it is **very important** that the respective phases of the grid and the inverter are respected. We recommend to label the cables of the current clamps: L1, L2, L3 for the grid phases and S1, S2, S3 for the corresponding phases of your inverter.

This connection requires a basic knowledge of electrical installations. If necessary, ask for the support of an electrician.

2. Space in the fuse box

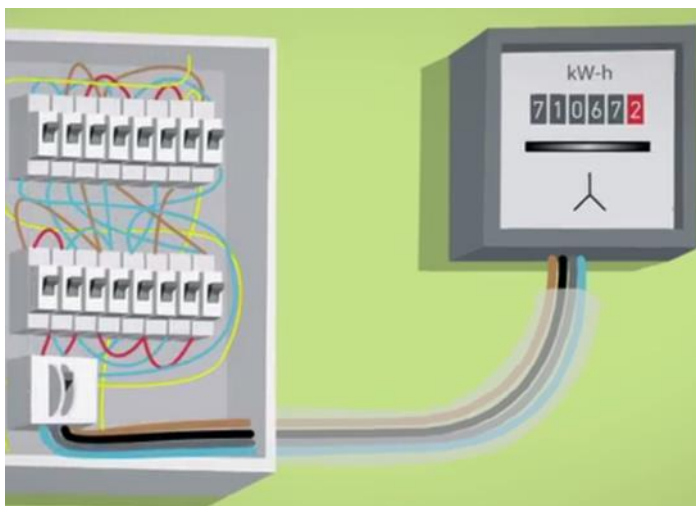
6 current clamps will have to be installed in your fuse box. First check if there is enough space available in the fuse box.

The following steps describe the three-phase connection with solar panels.

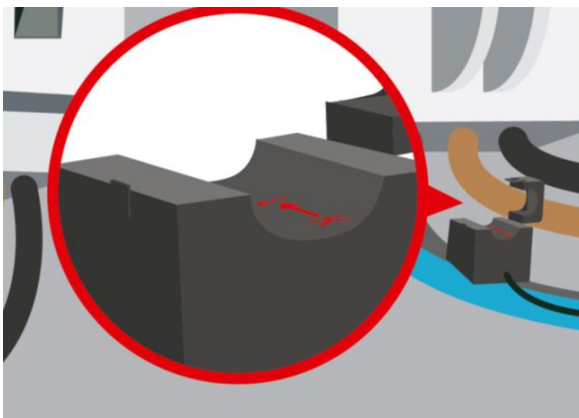
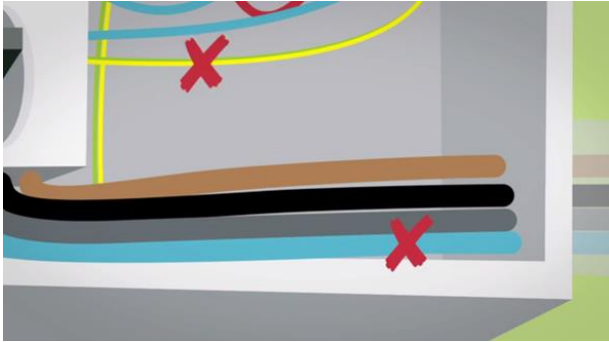
Preparation: You have already connected your Smappee monitor with your Wi-Fi network (green breathing).

Steps

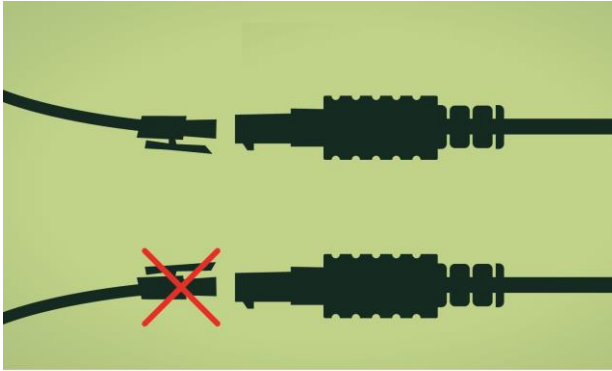
1. Turn off the electricity.
2. Open the fuse box. You see 4 cables coming from the electricity (kWh) meter. (example colours of the cables: “brown, grey, black & blue” or “brown, 2 x black & blue”) Remark: In some installations other colours can be used for the phase wires.



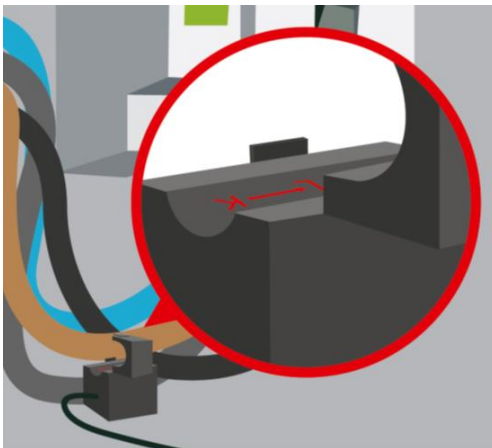
3. The phase wires are the brown, black or grey cables, the blue cable is the neutral conductor and the striped green/yellow cable is the earthing cable.



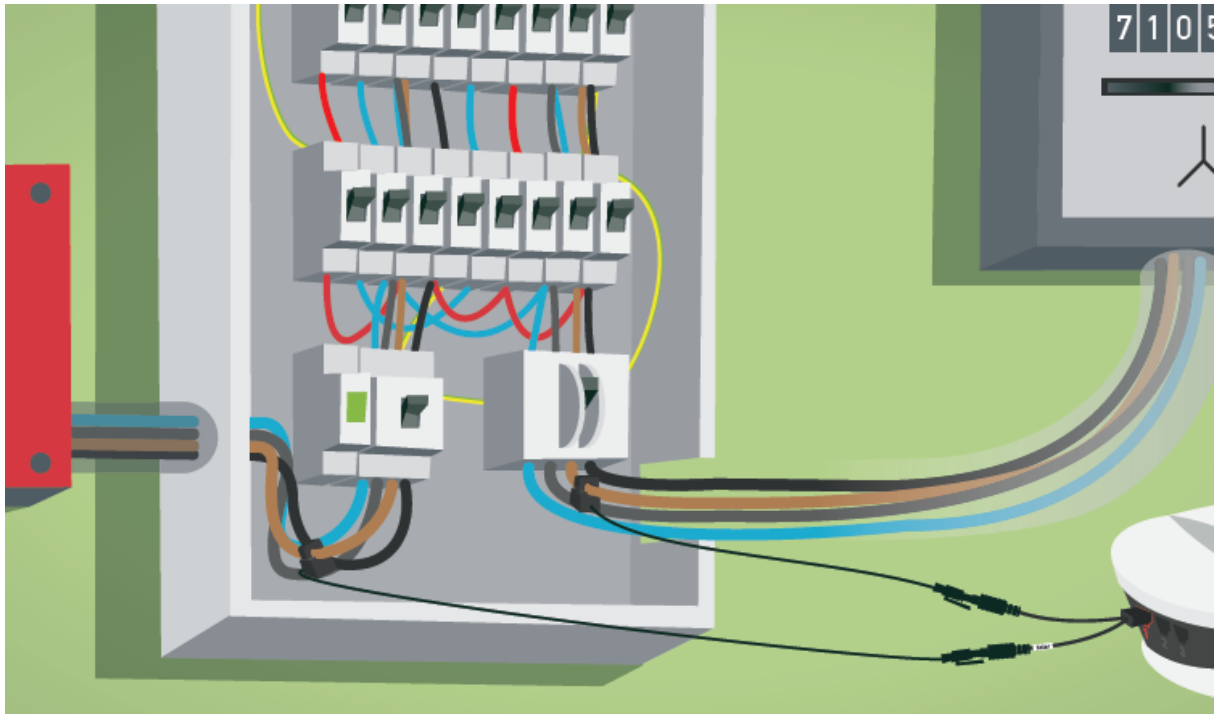
4. Then take the current clamp and check for the symbol $L \leftarrow K$ in the clamp. The arrow shows the direction of the energy flow. Make sure that L points in the direction of the appliances (energy users) and K in the direction of the electricity meter.
Place the power clamp over a phase wire and make sure that you properly close the clamp by pressing your thumb on the side until you hear a click.
5. Plug the end of the clamp cable into the V-cable. Choose the connector without "Solar" mark. See the figure below for a proper connection.



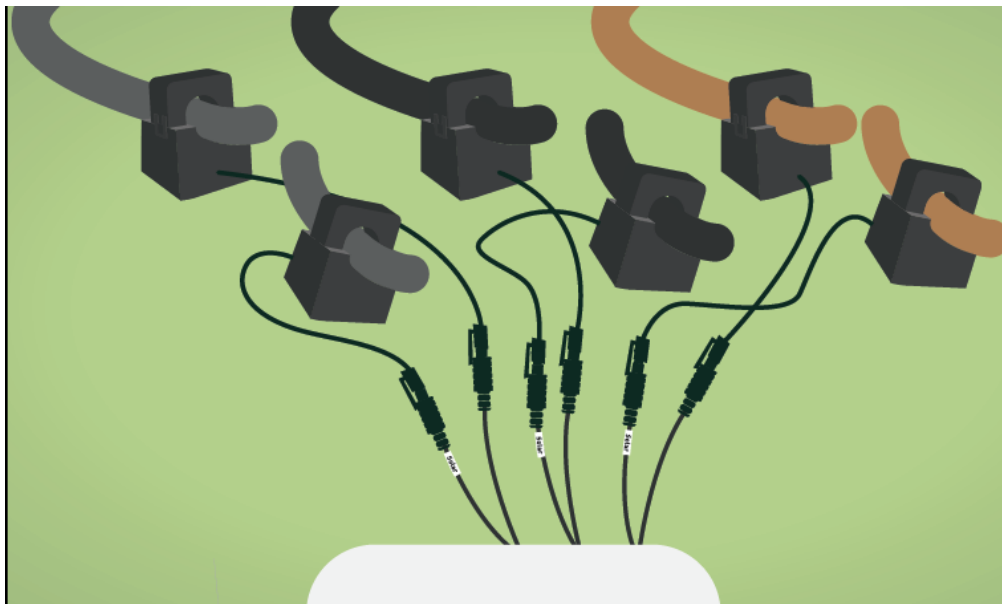
6. Choose the **corresponding** phase cable from the inverter of your solar panels. **Proceed very carefully!** If you selected phase 1 (L1) in step 4 then you should now select the corresponding phase 1 of your inverter (S1). **If this is not properly done Smappee will not be able to measure correctly.** Put the current clamp over this phase cable and observe the right direction: **K** should point in the direction of your inverter and **L** in the direction of your fuse box.



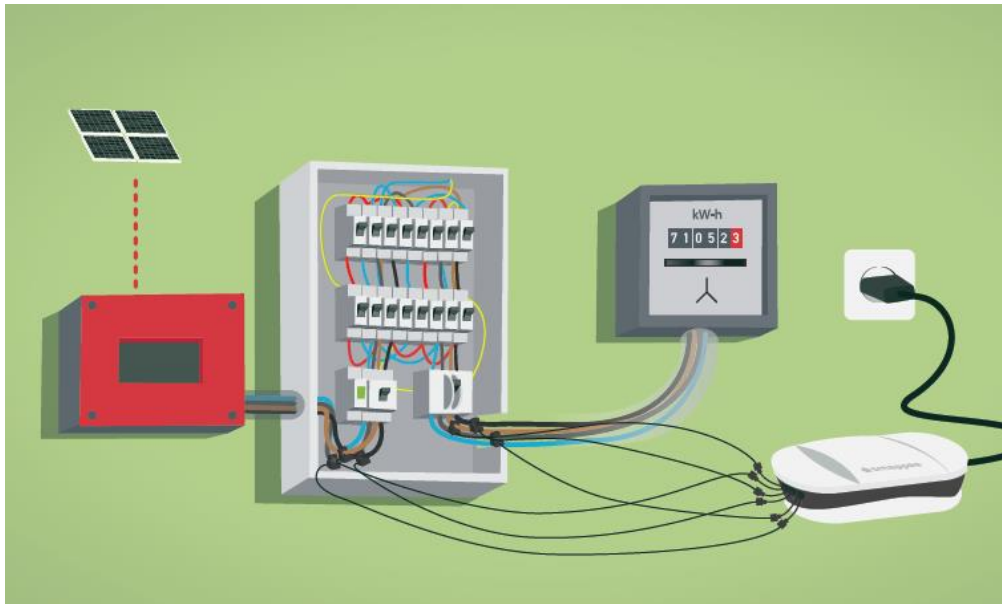
7. Plug the end of the clamp cable into the free connector of the V-cable, marked with "Solar". Plug the V-Cable into port 1 of the Smappee monitor. The result of step 4 to 7 can be seen in the figure below.



- Repeat step 4 to 7 for the two remaining phases and plug the V-cable in respectively port 2 and 3.
NOTE: V-Cables must always be mounted. Never plug current clamps directly into the Smappee Monitor.

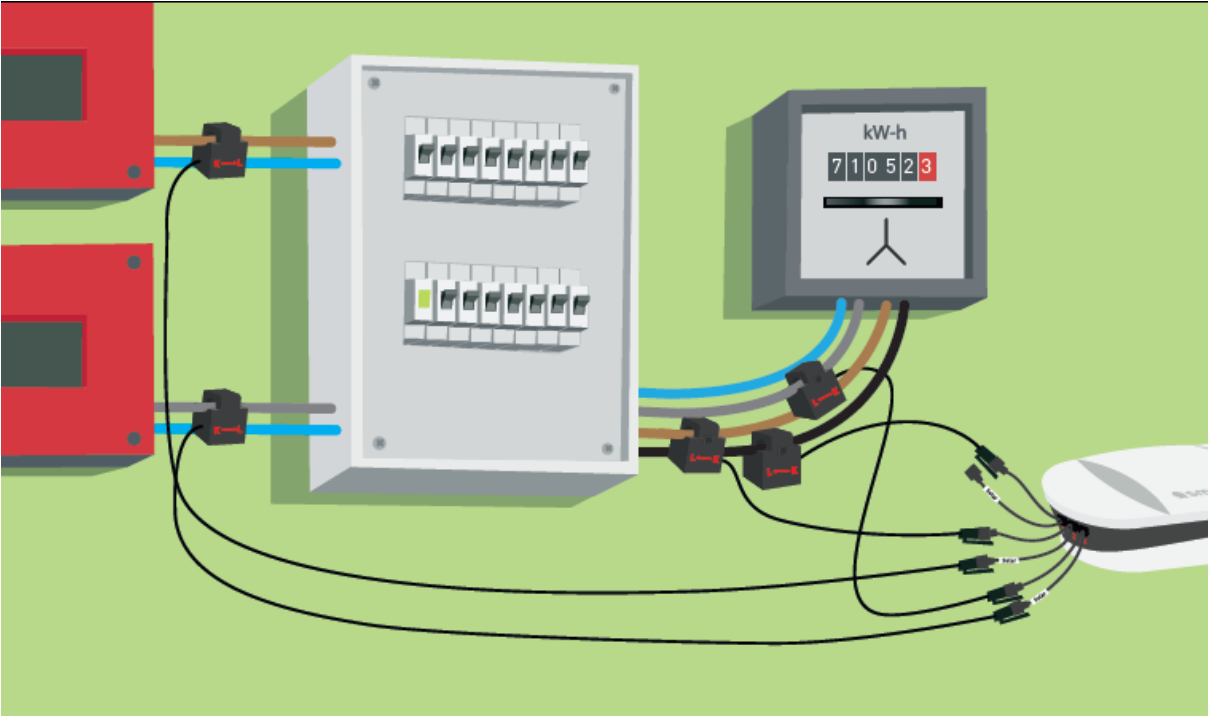


- You can see the end result in the figure below.

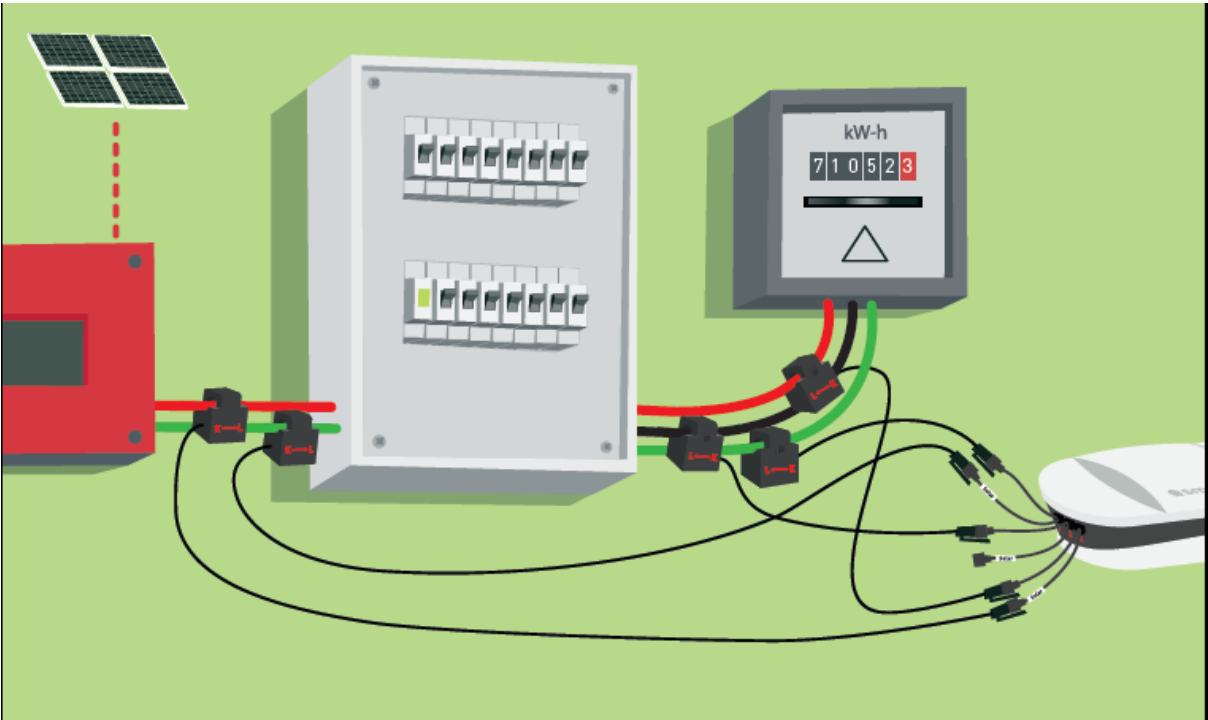


10. Turn the electricity back on.
11. Plug the power cord of the Smappee into the wall socket and wait until the monitor shows a green breathing.
12. You can now get started with the Smappee app as described in the Smappee user manual.

NOTE: When using a 1-phase inverter in a 3-phase system, you need to put a clamp on every connection made to a phase cable.
For example in a 3x400V + N system only 1 current clamp is needed as the second wire from the inverter is connected to the neutral.



In a 3x230V without N 2 current clamps need to be mounted as both wires from the single phase inverter are connected to a phase wire.



Declaration of Conformity

October 5, 2013

We,

Smappee NV
Evolis 100
8500 Kortrijk
Belgium

following the provision of the following EC Directives:

- 2006/95/EC The Low Voltage Directive
- 2004/108/EEC The Electromagnetic Compatibility Directive

hereby declare that the product:

Smappee monitor-e1

is in conformity with the applicable requirements of the following documents

* Emissions:

Radiated Emission EN 55022 (Class B)
Conducted Emission EN 55022 (Class B)
EN 61000-3-2
EN 61000-3-3

* Immunity:

EN 55024
EN 61000-4-2
EN 61000-4-3
EN 61000-4-4
EN 61000-4-5
EN 61000-4-6
EN 61000-4-1

* Safety:

EN61010-1 Ed 3.0 (2010-06),
EN61010-2-032 Ed 3.0 (2012-09)

Authorized signatory



Hans Delabie
Chief Operating Officer