In case of deviating values, check the order of the CT connections on the Sensorbox. The value of L1 must be displayed correctly, if the voltage input is also connected to the same phase.

When phases 2 and 3 are not displayed correctly, swapping the CT's on connection 2 and 3 should fix things.

Status LED

If the sensor box is used with a smart meter, it's status LED will briefly light up green, every 2 seconds.

If the LED lights orange when using a smart meter, it's probably not a (D)SMR 5 meter, but an older type. Unfortunately these meters are not supported, as with this type the power per phase can not be read from the meter.

When using the CT inputs, the led will light up 3 times briefly. Once for each phase measured.

Green means feeding back to the grid, while orange indicates that power is being drawn from the grid.

If no measurement can be done the led will light up red.

Program port

The program port can be used to update the sensor box software. More information will be placed on the Github page of the sensor box as soon as it is available.

Sensorbox 2

For use with the SmartEVSE v2

Manual v1.02

Description

The Sensorbox 2 measures the current(direction) on 1 to 3 phases and transmits this information to the SmartEVSE controller. The SmartEVSE uses this to smart charge a connected car. When other appliances are switched on, the power to the EV will be automatically reduced.
It is also possible to charge the EV on solar power. The SmartESVE uses the sensor box to try to send all generated power from solar panels to a charging car.
To measure the current, current clamps or a suitable smart meter (DSMR5) can be used.

Safety instructions

- ⚠ Read the installation instructions completely. Before using the sensorbox or SmartESVE .
- ⚠ Installation, operation and maintenance may only be caried out by qualified electricians. Follow the installation instructions as described.
- ⚠ When installing the sensorbox, use a suitable voltage measuring device to ensure that no mains voltage is present.

Designed and manufactured in The Netherlands by

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The Sensorbox

The Sensorbox 2 has three inputs for CT's (current transformers), a voltage input to determine the direction of the current, and a P1 port for reading a smart meter (DSMR 5). The connection to the SmartEVSE is via a 4-pole plug.

With the Sensorbox 2 it is possible to determine the direction of the current, this makes it possible to charge the car with self-generated solar power. The Sensorbox 2 works with software version 2.10 or higher of the SmartEVSE v2.

The Sensorbox 2 can also be connected to a smart meter with a P1 port. This smart meter must support the DSMR 5 protocol.

The following meters have been found to work well with the Sensorbox 2:

- Iskra AM550-TD2
- Landis+Gyr e360
- Sagemcom T210-D and T211-D
- Kaifa MA304H4CNL

Connection to a smart meter

If a suitable smart meter is installed, it can be connected to the Sensorbox using the supplied RJ12 cable.

⚠ Make sure to use only the supplied RJ12 cable!
Other cables might have the RJ12 plug crimped on reversed

Furthermore, only the green 4-pole plug needs to be connected. (See connection to the SmartESVE -->)
The connections on the other side of the Sensorbox (CT inputs and MAINS) are not used.

Connecting the CTs (not using a smart meter)

If a suitable smart meter is not available, CTs should be used to measure the total current of all devices.

When using the CTs, the voltage input (220-240V) must also be connected. Note that this is not a power supply for the Sensorbox, but serves as a sensor input to determine the direction of the measured current.

Clip the CT's around the phase wires, just after they come out of your main electricity meter. Try to find out which wire is L1, and connect it to connection 1 of the Sensorbox. Make sure that the orientation of the CT's is the same for all phases. (arrow on the CT in the same direction)
From the same phase also a voltage connection must be made to the MAINS input of the Sensorbox. Use the supplied mains cable for this.

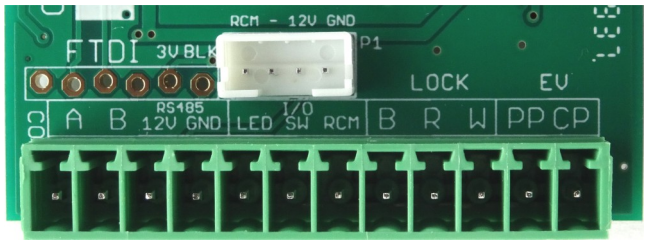
⚠ The voltage input (MAINS) must be connected to the same phase, as the CT connected to terminal 1 !

Then connect the CTs of phase L2 (to 2), and L3 (to 3) (when used).

Connection to the SmartEVSE

Make a 4 wire connection to the SmartEVSE , using the 4-pin green plug. Power for the sensorbox is provided by the SmartEVSE.

Cat5 cable can also be used for this wire.
The length of the cable can be up to 100 meters.



Connect the Sensorbox wires to terminals A, B, 12V and GND of the SmartEVSE.

Testing and configuring

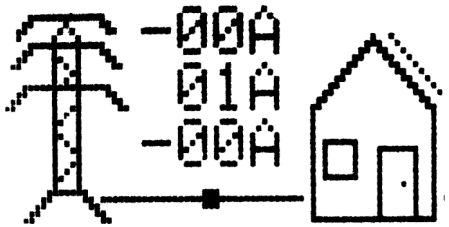
Configure the SmartEVSE controller, and make sure the option **MODE** is set to *SMART* or *SOLAR*.

Also make sure the menu option **MAINSMET** is set to *Sensorbox* .

When the CT's are connected the menu option **GRID** is available. Here you can select the type of grid connection.
4Wire : star connection with 3 phase wires and neutral.
3Wire : delta connection with 3 phase wires without neutral.
Usually the correct setting is *4Wire*.

In Belgium and Norway there are delta grids without neutral wire. Here you should choose *3Wire.*

After exiting the menu, the measured currents should be visible on the display.



From top to bottom the display shows the measured values for L1, L2 and L3. A minus indicates that the power at that phase is delivered to the grid.

What to do when the measured values are wrong

When using the CT's, it's possible that the measured currents are not displayed correctly.

If there are negative values shown, while not feeding back to the grid, the voltage input plug (MAINS) on the Sensorbox should be reversed.