Ratio Sense Kit All-in-One (38807) - Installation Guide

Ratio Sense Kit All-in-One with CT clamps (item no. 38807)

What is this kit?

The Sensor box measures current/power per phase and sends data to the Ratio charger, so you can use dynamic load balancing (and optionally PV / Solar).

You can connect it in 2 ways:

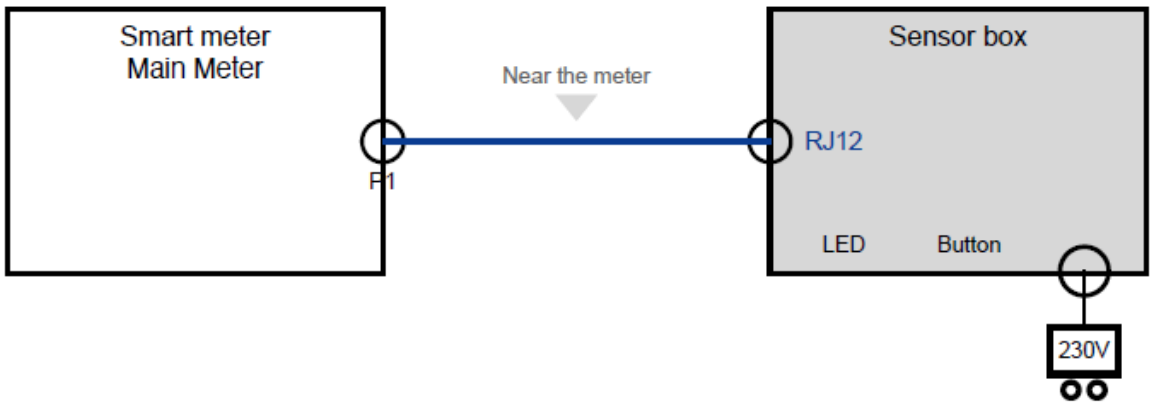
- Via the smart meter P1 port (RJ12-RJ12 cable).
- Via CT clamps (current transformers) around L1/L2/L3.

Before you start

- Make sure the charger is fully installed and ready to be powered on, but still de-energized (OFF).
- Place the Sensor box close to the meter (preferably with clear space for radio communication).
- Ratio recommend a distance between charger and Sensor box not greater than 15m. Any many cases longer distance can be achieved.
- Insure your Ratio charger supports wireless sensorbox communication - Refer to charger manual.

NOTE: Work inside the electrical panel / meter cabinet must be carried out by a qualified electrician.

Overview: P1 connection



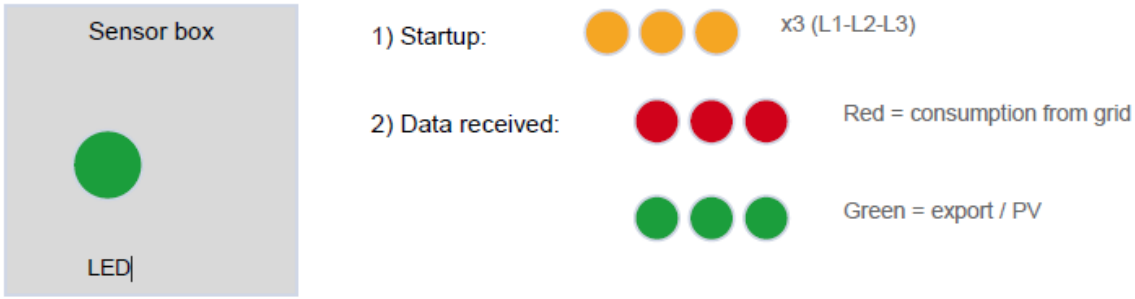
Connection via smart meter (P1)

Use this method if your smart meter has a P1 port and supports data readout.

Step by step

1. Place the wireless sensor box at the smart meter and secure it with the included tape.
2. Connect the included RJ12-RJ12 cable between the sensor box P1 port and the smart meter P1 port.
3. Connect the power supply to the sensor box and a wall outlet.
4. Check the LED status on the sensor box (see below).

LED indicator (connection check)



- First, the LED flashes orange 3 times (once per phase L1-L2-L3).
- When data is received via the P1 port, the LED flashes red and/or green 3 times:
- - Green: power is fed back to the grid on that phase (PV).
  - Red: power is drawn from the grid on that phase.

If you already have other devices on the P1 port, you must use an active P1 splitter and a suitable power supply for the device/splitter.

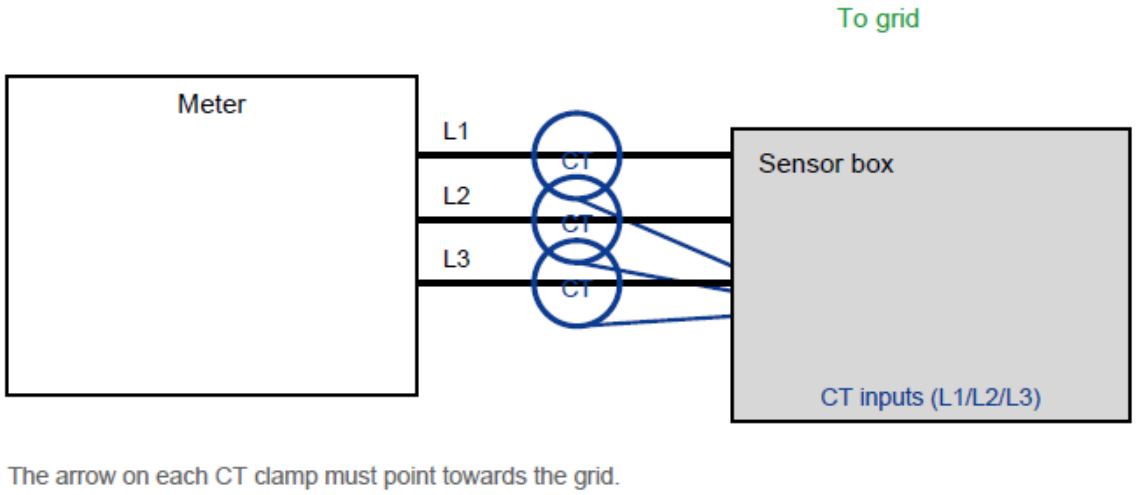
Connection via CT clamps (current transformers)

Use this method if you cannot (or do not want to) use the P1 port.

Step by step

1. Place the sensor box near the meter and secure it with the included tape.
2. Mount the CT clamps around phases L1, L2 and L3 just before or just after the meter. The arrow on each CT clamp must point towards the grid.
3. Make sure the CT clamps are connected to the sensor box in the correct order (L1/L2/L3).
4. Connect the power cable to an outlet that is connected to phase L1, and to the sensor box. The power cable is phase/neutral sensitive - flip it if needed.

Illustration: CT clamps and direction



The arrow on each CT clamp must point towards the grid.

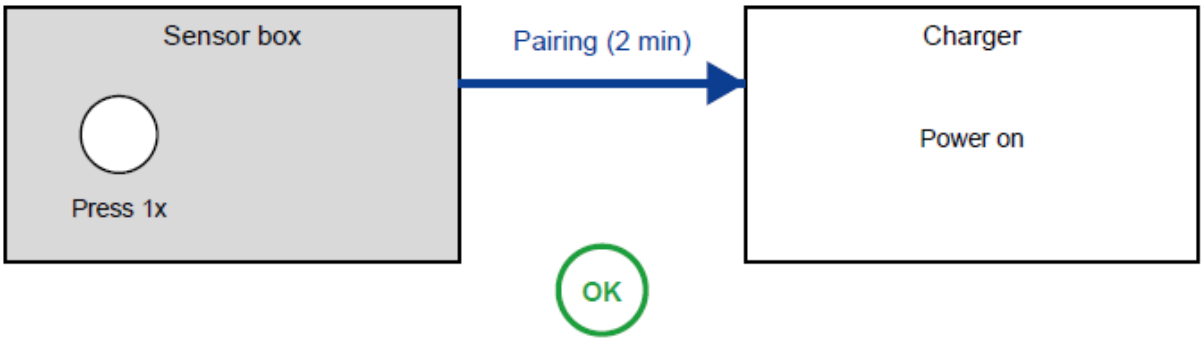
The LED check is the same as for P1 connection. If not as expected read more under Troubleshooting.

Pairing and check in app

The charger and sensor box must be paired wirelessly. During pairing, the charger stores a unique ID so it only receives data from this sensor box.

Pairing

1. Press the button on the sensor box. Pairing mode is active for 2 minutes.
2. Power on the charger. The charger also enters pairing mode for 2 minutes.
3. When the charger receives data, the sensor box ID is stored and pairing ends automatically.



Pairing can be repeated at any time (e.g. if parts are replaced) using the same procedure.

Check in Ratio EV Charging App

- Pair the charger in the app and enable Sensorbox in Advanced Settings.
- Tap the three dots at the top and select Measured values.
- Verify that data is correct. If PV installed turn these off and verify no (-) negative values are present.

Check current direction:
A positive value means current comes from the grid. A negative value (-) means current on that phase comes from the PV system.

If you do not have PV or a home battery, negative values should not be shown.

Wired connection (optional)

Optional: Wired connection is also possible. See the charger's Quick Install Guide.

Troubleshooting

Problem	Possible cause / solution
There are already other devices on the P1 port	Use an active P1 splitter to connect multiple devices. Ensure a suitable power supply for the device/splitter.
No LED flashes after connecting to smart meter	Check the cable and only use the included cable. Check compatibility: most DSMR 5.0 meters are supported. If the smart meter does not supply power to the sensor box, use external power via the sensor box USB port.
No measured values in the app, but LED flashes	No radio contact between sensor box and charger. Distance may be too large, or the signal may be shielded by walls/metal. Move the sensor box closer to the charger or to a location with less metal nearby.
CT clamps get warm / measure wrong at high current	CT clamps are rated max. 63 A. Higher-current CT clamps can be purchased separately.

Values negative (-) when no PV is producing? The 230V Sensor box connection is Phase/Neutral sensitive. Take out the 230V plug, turn it 180 degrees and plug in again. The values will change in the app.