SENSORFACT

# Instruction Manual

## Power Meter

# Product description and intended use

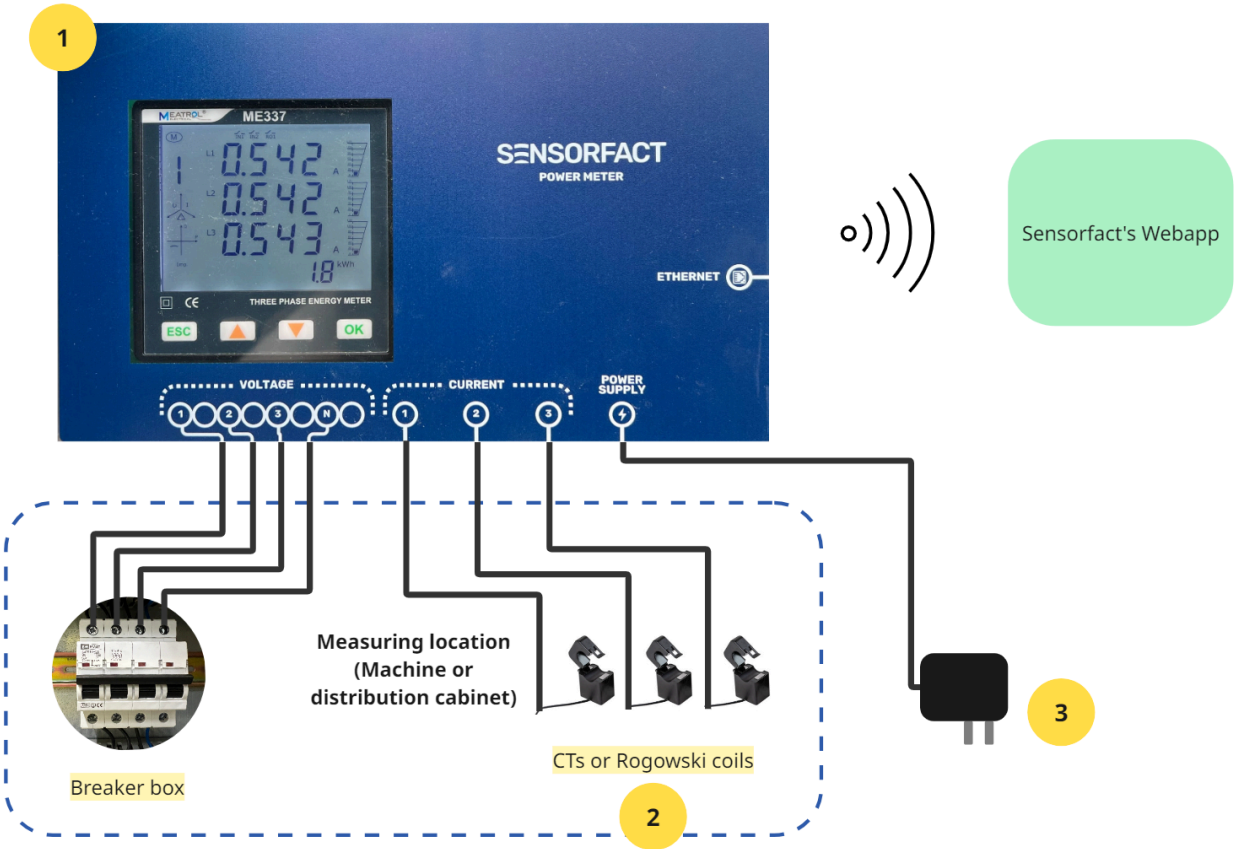
The Power Meter is an energy monitoring device designed for industrial applications. The device measures:

- Voltage, current, power, and energy consumption
- Power factor and related parameters

The device transmits data securely to the online energy monitoring platform via 4G LTE or Ethernet.

**⚠️ Intended use: This device is designed for installation in fixed electrical installations by qualified electricians only. It must not be used in households or in explosive or hazardous environments.**

# Components




1. Main power meter unit (with communication module)
2. Current clamps (CTs) or Rogowski coils
3. 24 V DC power supply unit

**Not supplied (customer responsibility):**

- Breaker box with fused protection (6A, 3-phase + neutral)
- 220–240 V AC socket outlet for powering the 24 V supply
- In case of using Rogowski coils: 3 x cable ties

# Technical information

## Dimensions

190 x 289 x 67 mm
Height x Width x Depth

## Weight

2 kg

## Energy consumption

- Max power consumption: 7.0 W
- Idle power consumption: ~4.5 W

Power consumption is calculated based on the sum of the power consumption of the sub components in the product.

# Safety information

### ⚠️ General Warnings

- Risk of **electric shock**: This product connects to 230 V mains.
- Only **qualified personnel** may perform installation.
- Always **disconnect power** before wiring or maintenance.
- Use **personal protective equipment** (PPE) when working near live conductors.
- The enclosure must remain **closed during operation**. Do not open covers while energized.

### ⚠️ Compliance Notes

- This product complies with EU Directives:
  - Low Voltage Directive (2014/35/EU)
  - EMC Directive (2014/30/EU)
  - Radio Equipment Directive (2014/53/EU)
  - RoHS Directive (2011/65/EU)
- Disposal: At end of life, dispose of the product in accordance with the WEEE Directive (2012/19/EU).

# Return and disposal information

## Packaging upon return of the product to Sensorfact

When returning the product to Sensorfact, ensure it is carefully packaged to prevent damage during transport. The product should be protected from impact, crushing, and exposure to moisture or humidity. Use adequate padding and a sturdy box to keep the sensor safe until it reaches us.

## Disposal

Dispose of packaging in an environmentally-responsible manner.

This appliance is labelled in accordance with European Directive 2012/19/EU concerning used electrical and electronic appliances (waste electrical and electronic equipment - WEEE). The guideline determines the framework for the return and recycling of used appliances as applicable throughout the EU.

# Installation - Skilled Personnel Only

**⚠️ Safety First:**

- **Only qualified electricians may perform installation.**
- **Always disconnect mains power before wiring.**
- **Use PPE when working near live conductors.**

## Installation requirements

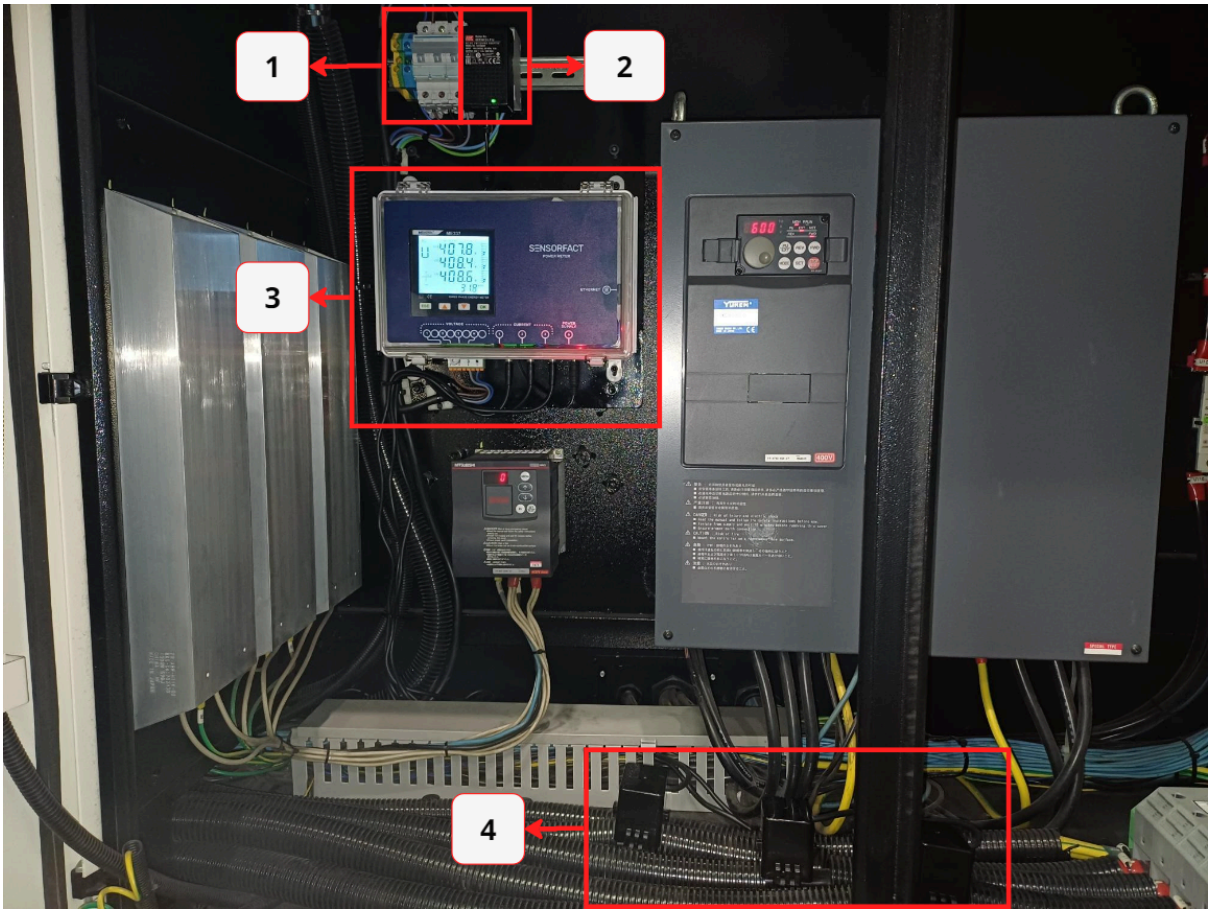
### Circuit breaker

To install the Power Meter, you need access to the voltage phases that power the asset.


- A fused breaker box (6A) must be installed by a qualified electrician.
- Example of suitable breaker box: EMAT Power Group, 3 phases + Neutral, 6A fuse (EAN: 8718924267776).
- This must be installed by the client before the Power Meter setup.
- The machine must be powered off before installation.

### Power socket

- The 24 V DC supply requires a 220–240 V AC socket within 1.5 m of the sensor location.
- If unavailable, install one prior to setup.




1. Circuit breaker
2. Power socket
3. Power Meter main box
4. Current clamps (CT's)

## Installation procedure

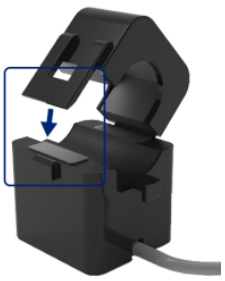
**1. Find the measuring location**

To be able to interpret the data correctly in the online energy management system, it is important that you connect the correct power meters to the designated assets on the inventory list.

- Use the inventory list to match each power meter to the correct asset.
- Check the ID on the side of the power meter main box to identify it.
- Gather the power meter, including the current sensors (CTs) or Rogowski coils, and go to the correct asset.

**2. Mount the main power meter box in a suitable location**

- If possible, install the power meter outside the electrical cabinet to avoid signal issues caused by metal or concrete.
- Use the provided wall mounts to fix the power meter securely.

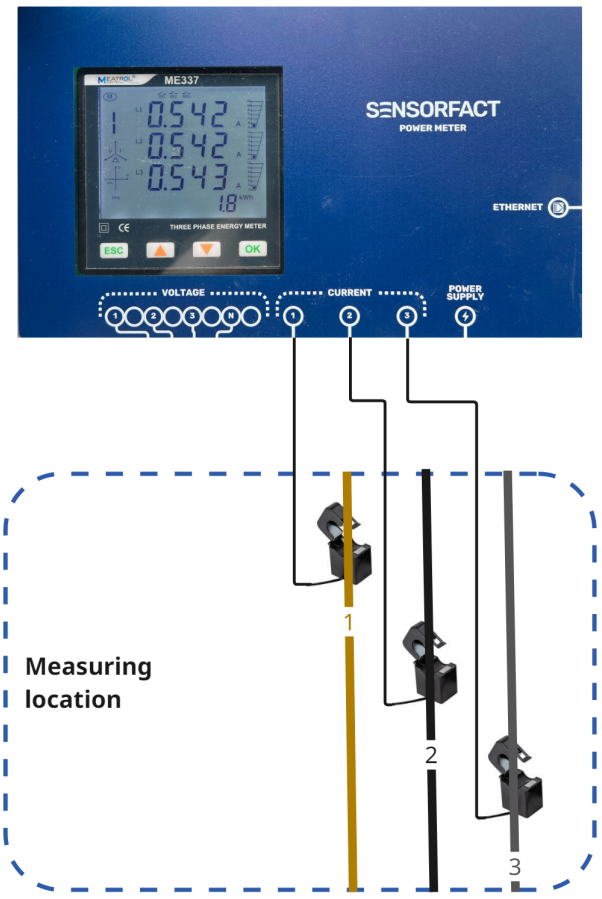


**3. Place the current sensors around the cables**

With Current Clamps (CT's)

1) Check that the metal parts of the current clamp are free of dust and dirt. If this is not the case, wipe them clean with a cleaning cloth.
2) Click a current clamp around every phase of the power cable. Make sure that:
    - The arrow is pointing in the direction of the current
    - And that they are securely fastened by checking the snap closures; this prevents discharge vibrations. If the current clamp does not fit around the cable properly, please contact our support.
3) If there are multiple phase cables and not all of them fit inside the current clamp, inform support about:
    - Diameter of the cables
    - Total number of cables per phase
    - Number of cables inside the clamp

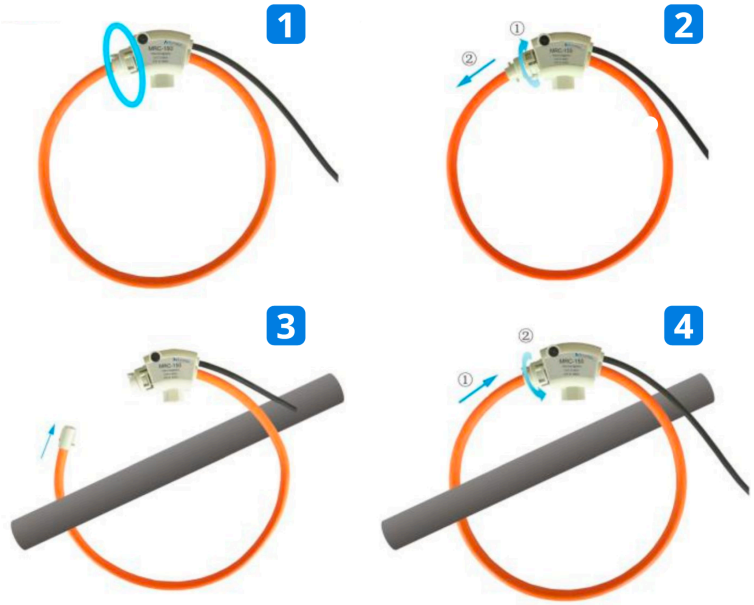
    *Please note: placing the current clamp around one of the phase cables only works if the load is evenly split across all the phase cables.*
4) Connect each current clamp to the correct input on the power meter main box.
    - Example: Phase 1 cable → "Current 1" input



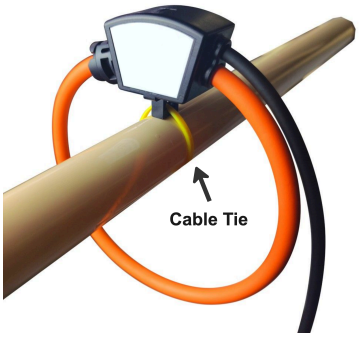

<u>With Rogowski coils</u>

1) One by one, open the Rogowski coils by twisting the locking mechanism and place them around each phase of the power cable. Pay attention to the arrow on the coil. It should follow the direction of the current.
2) Once in place, close the coils, clicking back the mechanism. Do not stress the coil by applying any kind of mechanical force (i.e. twisting, puncturing, excessive

pressure, tight bending, etc.) which will dramatically degrade the device accuracy. See the image below for a more detailed overview of the process.




3) Using a cable tie, secure the cable as close as possible to the clip mechanism on the coil, as described in the picture. If the clamp does not fit around the cable properly, please contact our support.




It is strongly recommended to use a cable tie, as the location of the cable inside the Rogowski coil will affect the accuracy of the measurement read by the coil.

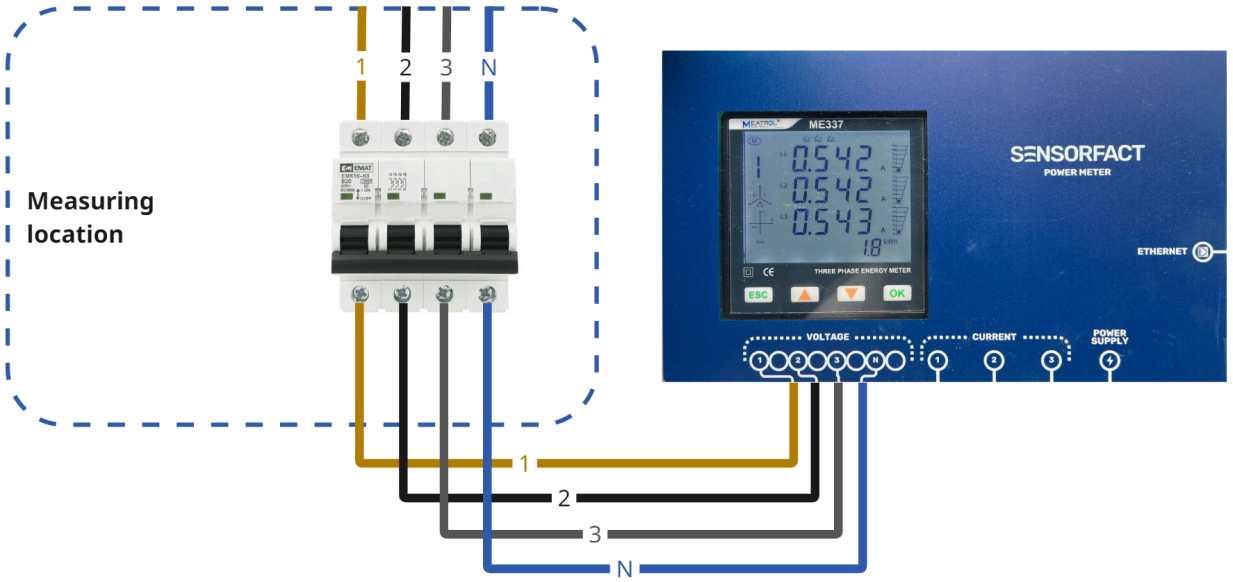
| Conductor Position | Typical Error Introduced by the Rogowski Coil (%) |
|---|---|
| Red location | < 0.5% |
| Blue location | < 0.8% |
| Black location | < 1% |

### 4. Connect the voltage phases to the power meter main box

Gather a suitable cable to connect the breaker box to the power meter. The cable diameter should be 0.75mm2 to 2.5mm2 per phase.

Steps:

1. Make sure the breaker box is installed and turned off. **The breaker box must be in the open position (no voltage on the output terminals) to avoid electric shock**.
2. Measure the cable length.
    - The cable should run from the breaker box to the power meter.
    - Keep it short -maximum 3 meters is ideal—to ensure accurate readings.
3. Prepare the cable.
    - Cut the cable to the correct length.
    - Strip 7mm of insulation from both ends.
    - You can add ferrules to the ends for better connection (optional but recommended).
4. Connect the cable.
    - Attach one end of each phase cable to the breaker box.
    - Connect the other end to the matching phase input on the sensor.
    - Double-check that each phase is connected correctly.
5. Turn on the breaker box. Once everything is connected, switch the breaker box on to provide the voltage signal to the sensor.




## 5. Connect the power meter to the power

1. Connect the power supply to the power meter main box.
2. Plug the power supply into a nearby 220V socket.
3. The power meter should turn on. The screen will light up and show voltage info.
4. After a few minutes, it should appear online in Sensorfact's web app.

*Congratulations! The power meter is now installed.*

# Power Meter installation checklist

**⚠️ Safety First:**

- **Only qualified electricians may perform installation.**
- **Always disconnect mains power before wiring.**
- **Use PPE when working near live conductors.**

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## 1. Prepare for Installation

- ☐ Verify that the breaker box (6A, 3-phase + Neutral) is installed.
- ☐ Ensure a 220–240 V AC socket is available within 1.5 m of the power meter.
- ☐ Gather the power meter, CTs/Rogowski coils, power supply, and tools.
- ☐ Check module ID on power meter  and match to inventory list.

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## 2. Mount Power Meter

- ☐ Choose a suitable location (preferably outside metal/concrete cabinets).
- ☐ Use wall mounts to fix the sensor securely.

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## 3. Install Current Sensors

**Current clamps (CTs):**

- ☐ Clean current clamp metal parts.
- ☐ Place current clamp around each phase cable; following the current direction arrow and ensuring snap closure is secure.
- ☐ Connect current clamps to correct inputs on the power meter box.

**Rogowski Coils:**

- ☐ Open coil locking mechanism.
- ☐ Place around each phase cable, following the current direction arrow.
- ☐ Close coil and secure with cable ties.

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## 4. Connect Voltage Phases

- ☐ Turn off the breaker box.

- [ ] Cut and strip cable to correct length.
- [ ] Optional: add ferrules to cable ends.
- [ ] Connect each phase to the breaker box and matching power meter input.
- [ ] Double-check phase connections.
- [ ] Turn on the breaker box.

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## 5. Connect Power Meter to Power

- [ ] Connect the 24 V DC power supply to the power meter box.
- [ ] Plug into 220–240 V AC socket.
- [ ] Confirm power meter powers on and displays voltage info.
- [ ] Wait for the measurement data to appear online in the Sensorfact web app.

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## ✅ Installation Complete

- [ ] Power meter correctly mounted and powered.
- [ ] Data appearing in Sensorfact's webapp.
- [ ] All components and wiring are secured.

# How to configure the Power Meter for different CTs or Rogowski coils - Skilled Personnel Only

⚠️ **Safety First:**

- **Only qualified electricians may perform maintenance.**
- **Always disconnect mains power before wiring.**
- **Use PPE when working near live conductors.**

## Steps to configure the power meter

Your Power Meter is pre-configured and ready to use upon receipt, meaning you do not need to adjust the settings. You should only proceed with configuring the settings if you plan to replace the current clamps or Rogowski coils that were originally shipped with the product with a different size.

### Opening the setup menu

1. Power the power meter. Plug an available power supply to the power meter main box to turn it on.
2. Open the power meter lid to access the interface.
3. On the main screen, click ESC to access the menus
4. Enter password: 1000
    a. Press ok to enter password input mode
    b. Short press ▲ or ▼ to switch the value and press ok to confirm
5. You should see the display pictured below. Navigate to the CUr menu by short pressing ▼ and press ok to enter the Current Transformer Parameter settings menu.


### Configuration for Current clamps (CTs)

1. Once in the current setting menu, you will see the following screen - please note that lines 2 and 3 may say UCt (CT/current clamp) instead of rCoL (Rogowski Coil):


2. If the screen already shows UCt in lines 2 and 3, no further setup needs to be done.
3. If the screen shows rCol in lines 2 and 3, follow these steps to change them to UCt:
    a. Press ok to enter the change settings mode
    b. Short press ▲ or ▼ to change the value, and long press ▲ or ▼ to switch the value to be changed
    c. Once complete, press ok to confirm
    d. You will be prompted to save, short press ▲ or ▼ to select Yes and press ok to save

**Configuration for Rogowski Coils**

1. Once in the current setting menu, you will see the following screen - please note that lines 2 and 3 may say UCt (CT/current clamp) instead of rCoL (Rogowski Coil):


2. If the screen already shows rCol in lines 2 and 3, no further setup needs to be done.
3. If the screen shows UCt in lines 2 and 3, follow these steps to change them to rCol:

a. Press ok to enter the change settings mode.

b. Short press ▲ or ▼ to change the value, and long press ▲ or ▼ to switch the value to be changed.

c. Once complete, press ok to confirm.

d. You will be prompted to save, short press ▲ or ▼ to select Yes and press ok to save.

**Configuration of the CT or Rogowski coil size**

1. Navigate to the next page by short pressing the ▼ key. This menu allows you to configure the transformer ratio. The ratio should be set differently depending on the size of the CT or Rogowski. Use the values stated on the table below.

| Power Meter menu | For 200A CT | For 600A CT | For 1000A CT | For 3000A Rogowski |
|---|---|---|---|---|
| **Line 1** | 123.r | 123.r | 123.r | 123.r |
| **Line 2** | 0200 | 0600 | 1000 | 1000 |
| **Line 3** | 0.033 | 0.033 | 0.033 | 0.085 |


*Example of the current transformer ratio configuration menu*

2. Perform the steps below to setup the sensor to the correct values:

a. Press ok to enter the change settings mode.

b. Short press ▲ or ▼ to change the value, and long press ▲ or ▼ to switch the value to be changed (the selected value to be changed will flash).

c. Once complete, press ok to confirm.

d. You will be prompted to save, short press ▲ or ▼ to select Yes and press ok to save.

3. Navigate to the next page by short pressing the ▼ key. This menu allows you to configure the phase ABC nominal current. The nominal current should be set as specified in the table below:

| Power Meter menu | For 200A CT | For 600A CT | For 1000A CT | For 3000A Rogowski |
|---|---|---|---|---|
| **Line 1** | 123.F | 123.F | 123.F | 123.F |
| **Line 2** | 0000 | 0000 | 0000 | 0000 |
| **Line 3** | 0200 | 0600 | 1000 | 3000 |


*Example of the phase ABC nominal current*

4. Perform the steps below to setup the sensor to the correct values:

a. Press ok to enter the change settings mode.

b. Short press ▲ or ▼ to change the value, and long press ▲ or ▼ to switch the value to be changed (the selected value to be changed will flash).

c. Once complete, press ok to confirm.

d. You will be prompted to save, short press ▲ or ▼ to select Yes and press ok to save.

### Finish setup

Once the above steps have been followed, the sensor should be configured to work with the matching CTs or Rogowskis. Press the 

key to exit the settings menu.

# Removal Instructions - Skilled Personnel Only

⚠️ **Safety First:**

- **Only qualified electricians may perform deinstallation.**
- **Always disconnect mains power before wiring.**
- **Use PPE when working near live conductors.**

## Removal requirements

- Ensure the breaker box controlling the power meter is accessible and powered off.
- Have basic tools ready for removing mounting hardware and electrical connections.
- Maintain a clean workspace to avoid dropping or damaging components.

## Removal procedure

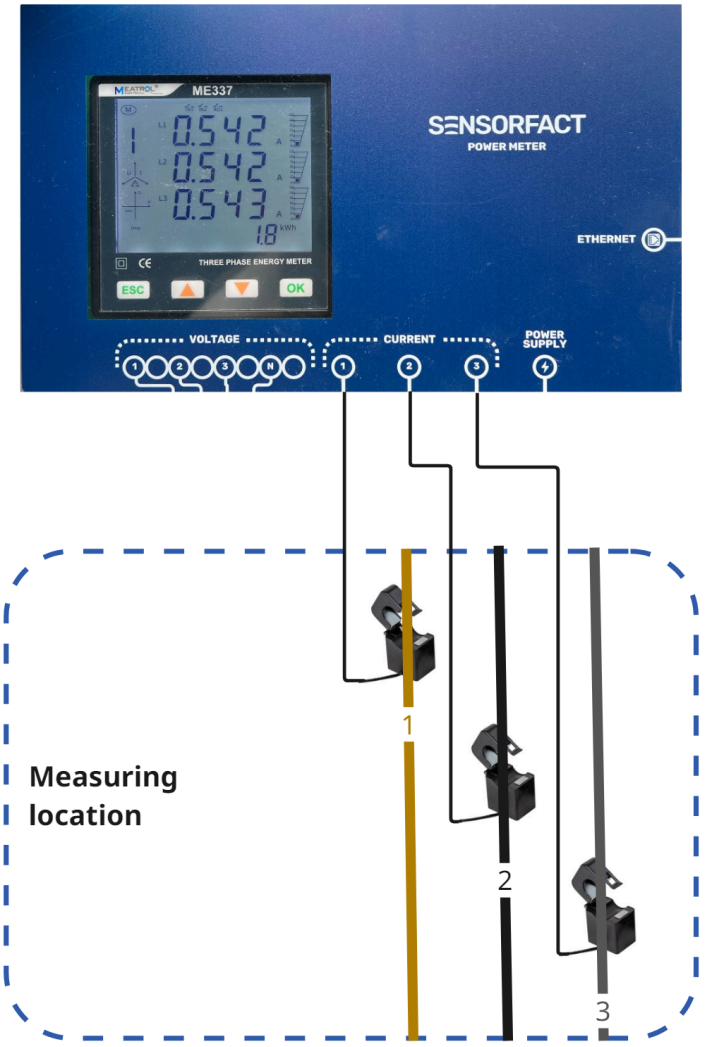
1. **Disconnect the power meter from power**
   - Turn off the breaker supplying the voltage signal to the power meter box.
   - Unplug the power supply from the 220–240 V AC socket.
   - Confirm that the power meter is powered off.

2. **Disconnect voltage connections**
   - Open the breaker box controlling the power meter input (ensure no voltage is present on the terminals).
   - Carefully disconnect each phase from the power meter input.
   - Disconnect the corresponding wires from the breaker box.
   - Safely isolate and cap the wires according to local electrical standards.

3. **Remove current measuring devices**

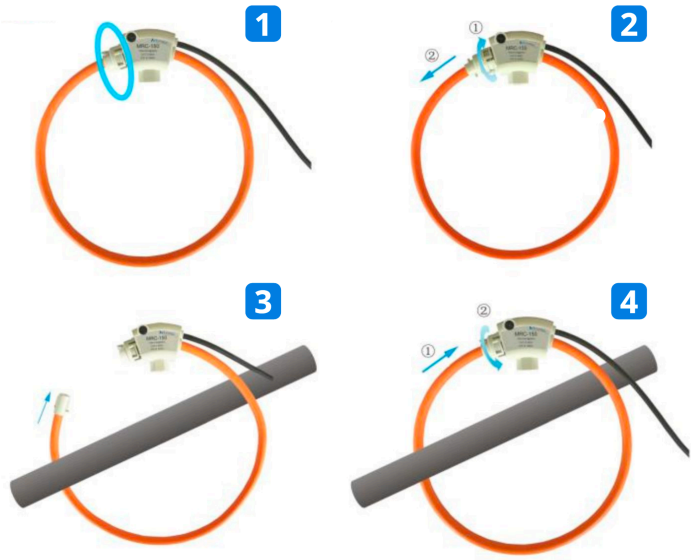
With Current clamps (CTs)

1) Open the current clamp closure carefully.
2) Remove each current clamp from around the power cable.
3) Inspect the current clamps for damage and store them properly.




With Rogowski coils

1) Unlock the Rogowski coil mechanism.
2) Gently remove the coil from each phase cable, avoiding twisting, puncturing, or bending.
3) Remove any cable ties used to secure the coils.
4) Inspect and store the coils safely.




4. **Dismount the main power meter box**
   - Remove wall mounts or screws holding the power meter box in place.
   - Carefully take the power meter box down.
   - Store the power meter box in a safe location.

5. **Post-removal**
   - Verify that all electrical connections are safely isolated.
   - Return all supplied components to storage or packaging.
   - Dispose of any waste according to local regulations.

⚠️ **Reminder: Do not leave exposed wires or energized terminals unattended.**

# Product Maintenance - Skilled Personnel Only

## Regular maintenance

- The power meter should have a light on the bottom right of the enclosure indicating it is powered on.
- Check voltage/current cable connections periodically.
- Ensure no connectors have loosened due to vibration.
- Ensure the power meter is firmly attached to its location (for example: wall, machine cabinet).

## Safety/deterioration checks during maintenance

- Enclosure integrity (no cracks, deformation).
- Cable insulation intact, no exposed conductors.

# Faults and what to do about them

For any questions about your product, contact Sensorfact Customer Support: support@sensorfact.nl

| Fault | Possible cause | Remedy |
|---|---|---|
| The display of the unit is off | The unit is not receiving power | Check the power supply and connectors. |
| Erratic or no measurement data. | The unit is turned off | Check the power supply and connectors. |
| | The unit cannot connect to the internet | Depending on the connectivity type used (4G, Ethernet, WiFi), ensure the device has access to the internet. |
| | Communication error between the sensor and transmitter inside the unit | Contact Sensorfact support team at support@sensorfact.nl |
| | Faulty unit | Contact Sensorfact support team at support@sensorfact.nl |

# About this manual

Last revision: 13 March 2026
Target model(s): Sensorfact's Power Meter v1
Contact details: support@sensorfact.eu