VOITAS INNOVATIONS

# USER MANUAL

## VOITAS Smart Meter

RELEASE DATE: MAY 2023, REV. 1.0

# User Manual

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# Electrical Safety Instructions

**WARNING!**

Please keep a copy of this Manual throughout the life of the product. This document contains the information necessary for the safe installation and use of the VOITAS Smart Meter. Before installing it, read the entire contents of the *User Manual*.

**VOITAS SMART METER**

VOITAS Innovations GmbH is not responsible for the material damage caused by failure to follow installation and operating instructions or employment of unqualified personnel. Use of the VOITAS Smart Meter is permitted only if the installation has been carried out according to the instructions in this *User Manual* by a qualified electrician. Safety-threatening malfunctions must be corrected only by qualified personnel.

**The device must be connected to a single-phase or three-phase network according to the current norms and standards. The method of connection is specified in this *User Manual*.**

**WARNING!**

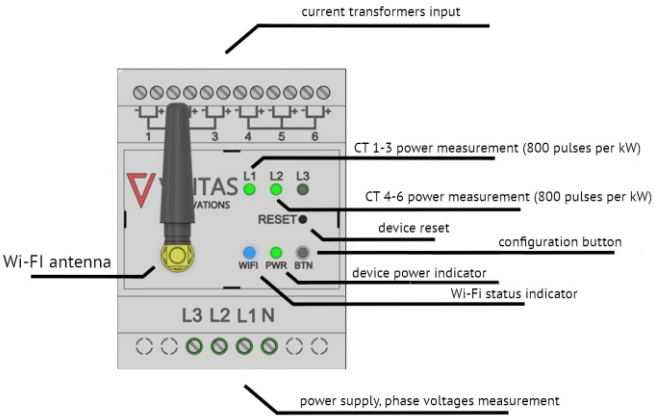
**Installation, connection, and adjustment activities should be carried out by qualified electricians who are familiar with the instructions and functions of the device. Disassembling the housing will void the warranty and poses a danger of electric shock.**

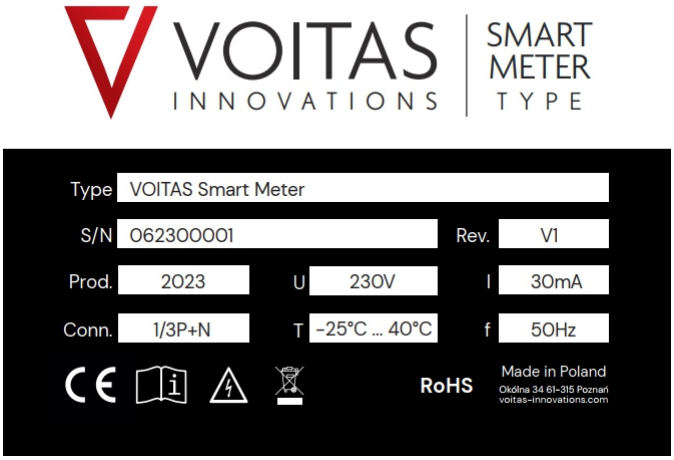
Before starting the installation, ensure there is no voltage on the connection wires. Installation of the device is not recommended in the following cases: missing components, damage as well as deformation of the device or defective electrical installation. In case of malfunction, contact the manufacturer through our website https://voitas-innovations.com/pages/kontakt.

**Our product complies with the following norms: EU Directive 2014/35/EU, RoHS, the EMC Directive (2014/30/EU) and the RED Directive (2014/53/EU).**

Important note on the correct disposal of the product based on Directive 2012/19/EU. The product must not be disposed of with household waste. It must be recycled at a special collection point for used electrical appliances.

# Introduction




The VOITAS Smart Meter makes the VOITAS V11/V22 system unique. The main advantage of the VOITAS V11/V22 is that in addition to being a charger for electric vehicles, it has the ability to adjust automatically based on feedback from the electrical system. This is used for surplus charging.

To take advantage of this feature of the VOITAS V11/V22, the user needs the VOITAS Smart Meter. This device acts as a two-way energy meter that monitors the electrical system for surplus energy.

Surplus energy occurs in electrical installations with any source of power generation such as a photovoltaic installation.

The VOITAS Smart Meter is designed to be installed with the main switchboard of a power grid.

The VOITAS Smart Meter measures active power with current transformers and voltage measurement of individual phases of the power grid. The VOITAS V11/V22 connects to the VOITAS Smart Meter via Wi-Fi, retrieves power values from it, and based on these values, determines the amount of surplus power returned to the grid. This power under load management can be directed entirely to charge the car.

**The VOITAS Smart Meter nameplate**

The nameplate is located on one side of the VOITAS Smart Meter.
S/N placed on the nameplate indicates the serial number of the VOITAS Smart Meter.

# Set-up & Installation

**SET-UP OF THE VOITAS SMART METER:**

1. Make sure your electrical panel has free space on a DIN rail with a width of 4 modules.

2. Make sure you have access to single-phase or three-phase supply that connects directly to the grid (three-transformer configuration), the wires coming out of the PV inverter and the grid wires that power all electrical equipment (see the next section for diagrams).

3. If the actions from point 2 cannot be completed, purchase a small portable switchboard with at least 4 DIN-rail modules, and install it where it allows you to reach the phase wires from the power grid, and connect it according to the diagram corresponding to your electrical installation.

4. Make sure the main power supply is switched off to proceed to step 5.

5. Connect the power supply to the VOITAS Smart Meter according to the connection diagram appropriate to your installation. Start connecting the wires with the neutral wire (see the next section for diagrams).

6. Switch on the main power supply.

**WARNING!**

**Pay special attention to the order of phases and the correct connection of the neutral wire.**

**ENTERING THE INTERNET CONNECTION CONFIGURATION MODE:**

1. When the power is connected, the PWR LED will indicate that the device is on.

2. Hold down the 'BTN' button for at least 5 seconds.

3. Wait until the Wi-Fi LED flashes about once a second.

4. Start the VOITAS App now. Go to the Configuration tab in the bottom navigation.

5. Select the Smart Meter tab in the screen header.

6. At the network password type in 'SMARTMETER' (without quotation) and select 'Connect'.

7. Configure the VOITAS Smart Meter as outlined in the Quick Start Guide and connect it to the local Wi-Fi access point. The application will notify you that it has successfully connected to a Wi-Fi network.

8. It is recommended to validate the current transformers by connecting the load current on each phase.

9. After installation, press the 'RST' button to exit the configuration mode.

# Instructions & Connection Diagrams

**NOTE:**

Make sure that the VOITAS Smart Meter and the VOITAS V11/V22 are within range of your Wi-Fi network.

**NOTE:**

The VOITAS Smart Meter can be connected to the electrical system in 3 ways, using three or six current transformers.

**CONNECTING CURRENT TRANSFORMERS TO THE ELECTRICAL SYSTEM:**

CT1 and CT4 transformers measure the current flowing in phase L1.

CT2 and CT5 transformers measure the current flowing in phase L2.

CT3 and CT6 transformers measure the current flowing in phase L3.

CT1, CT2, CT3 transformers are marked as 'Probe 1'. in the App.

CT4, CT5, CT6 transformers are marked as 'Probe 2'. in the App.

The transformers are directional and must be plugged in properly.

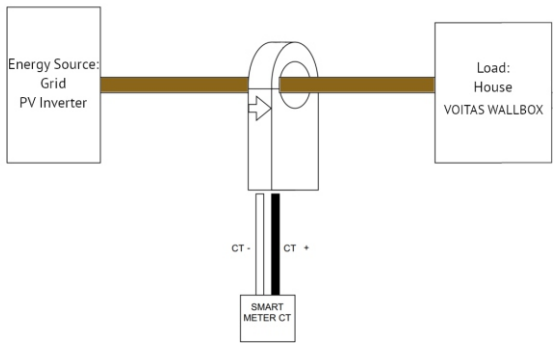
**NOTE:**

In the case of a single-phase network, the connection diagrams applies only to phase L1.

Phases L2 and L3 should be omitted.

**NOTE:**

In some cases the positive cables from current transformers can be red instead of black.



# Instructions & Connection Diagrams

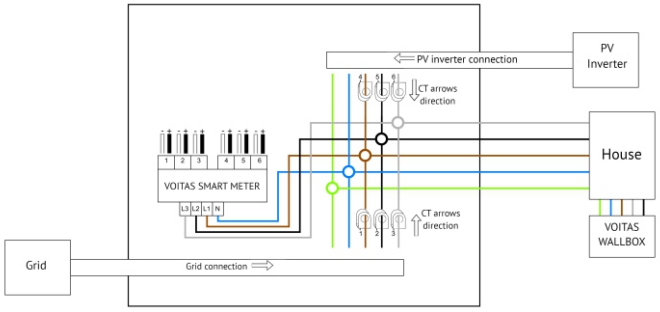
**THE VOITAS SMART METER CONNECTION DIAGRAMS TO THE GRID:**

**NOTE:**

Probe 1 applies to current transformers CT1, CT2, CT3.
Probe 2 applies to current transformers CT4, CT5, CT6.

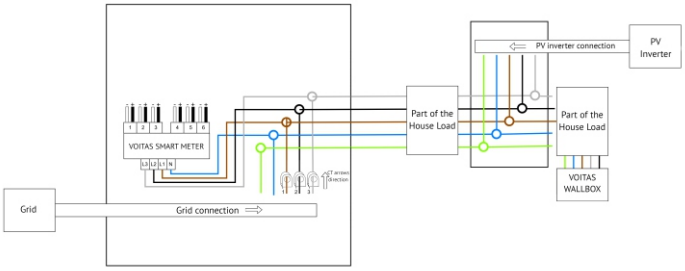
**Variant 1**

When you have access to the wires of the PV inverter, and the wires coming out of the power grid.
(Probe 1 GRID, Probe 2 Solar)




**Variant 2**

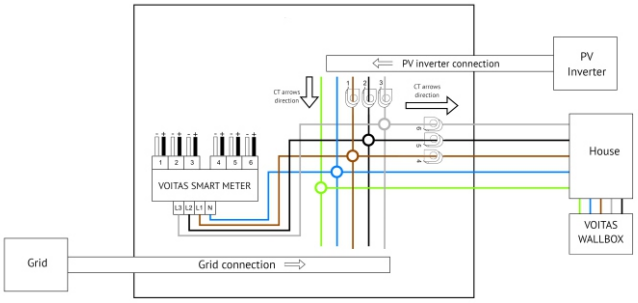
Connecting the PV installation with 3 current transformers.
(Probe 1 GRID, Probe 2 None)



# Instructions & Connection Diagrams

**Variant 3**

If you do not have access to the wires coming out of the power grid.
(Probe 1 Solar, Probe 2 House)

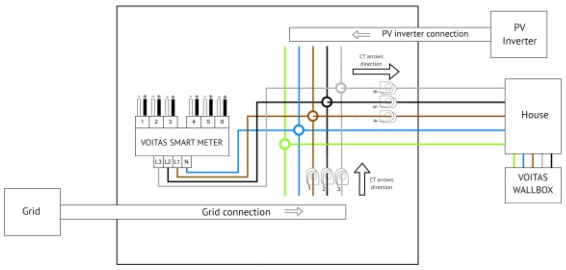



**Variant 4**

If you do not have access to the wires connecting the PV inverter to the home grid.
(Probe 1 GRID, Probe 2 House)

**NOTE:**

If necessary, you can extend the wires from the current transformers. It is recommended to use a twisted pair of wires with a minimum cross-section of 0,35 mm².




**WARNING!**

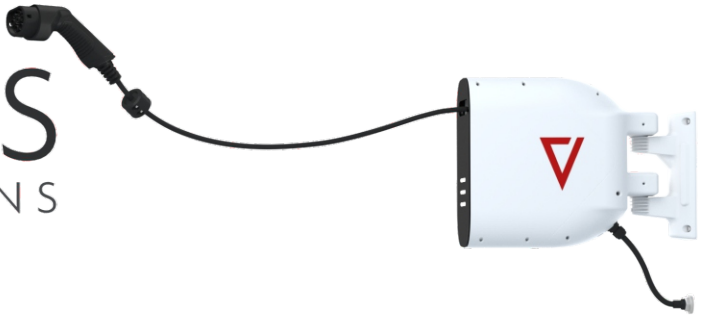
**When extending cables from current transformers, do not exceed a total length of 3 meters.**

# Datasheet

**VOITAS Smart Meter**

| | |
|---|---|
| Nominal voltage | 1/3x230 V AC 50Hz |
| Rated power input | 1W |
| Measured current range | 0-50A AC |
| Measured voltage range | 100-260 V AC |
| Working temperature range | -25°C to 40°C |
| Ingress protection | IP 20 |
| Wire gauge | 2,5 mm2 |
| Dimensions | 89x89x70 [mm] |
| Mounting | DIN rail, 4 modules |
| Communication | Wi-Fi 2.4GHz 802.11 b/g/n |
| Weight | 152 g |
| App control | Yes |
| Compliance with norms, directives and certificates | EU Directive 2014/35/EU, RoHS, the EMC Directive (2014/30/EU) and the RED Directive (2014/53/EU) |

VOITAS INNOVATIONS



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