



Charge Amps **Measurement Device**

Installation Manual

Installation may only be carried out by authorized personnel who follows basic safety precautions for safe and correct installation according to local, regional, and national installation regulations.

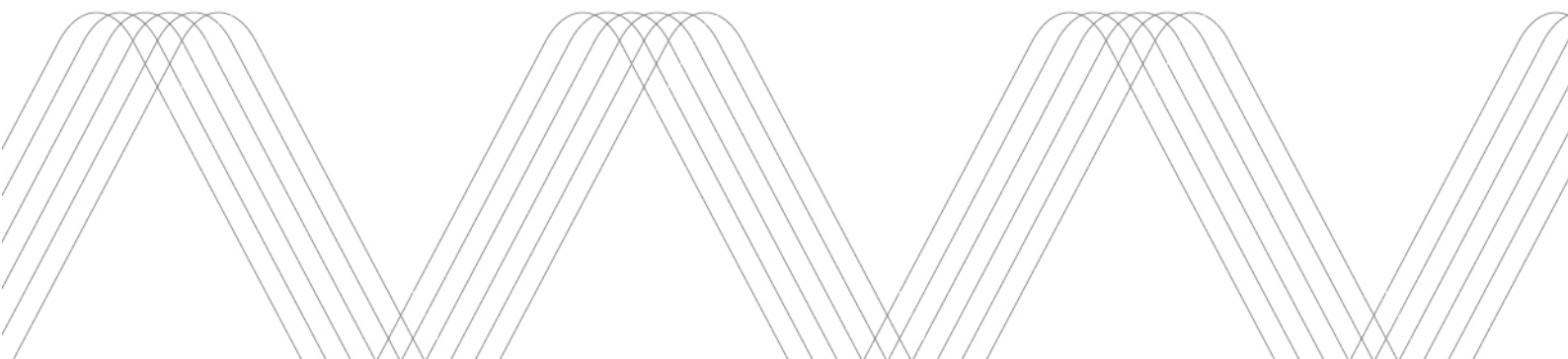




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Measurement Device

Measurement Device is a smart power monitor which enables dynamic load balancing for Charge Amps chargers. Measurement Device logs the total power consumption to the Charge Amps cloud service <https://my.charge.space/> which automatically reduces or increases the available power to the chargers, enabling charging at maximum capacity without worry about blowing fuses.

Together with current-generating equipment such as solar cells or wind turbines, Measurement Device operates as a fully featured, bi-directional Smart meter. Measurement Device needs an internet connection to function properly.

Safety Precautions

This installation manual contains important instructions on how to install the product. In addition to the instructions in this manual, basic safety precautions, including all applicable local, regional, and national laws and regulations, must be complied with when installing, repairing, and maintaining the product.

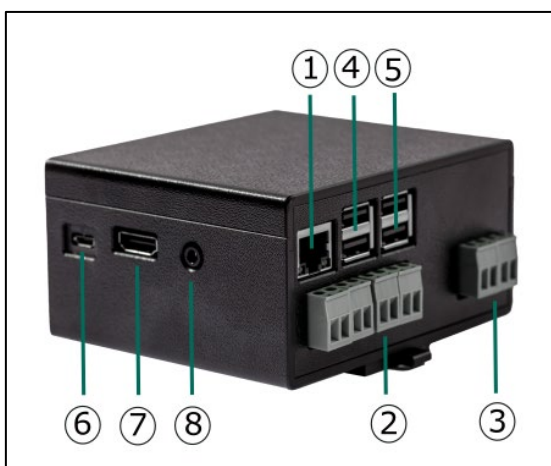
Technical Specification

| | |
|---------------------------|--|
| Measuring range (current) | 0–100 A (Home), 0–400 A (Public) |
| Measuring range (voltage) | 0–390 V |
| Network | LAN, Wi-Fi |
| Power supply | 230VAC/400VAC 50/60Hz (via the voltage/power supply terminal) |
| Installation | DIN rail (6 modules) or standalone |
| Dimensions (mm) | 108 × 97 × 57 |

Contents of the Package

- One Measurement Device (Home or Public)
- Three current transformers (blue 0–100 A for the Home version and black 0–400 A for the Public version)
- One Measurement Device installation manual (this publication)

Model Overview



| | |
|---|--|
| 1 | LAN contact |
| 2 | Terminal contacts to connect the current sensors |
| 3 | Terminal contact for powering the Measurement Device. And also voltage supply if all three phases and N are connected. |
| 4 | USB port for programming |
| 5 | USB port for programming |
| 6 | Micro USB for powering the Measurement Device. Requires a 5V AC/DC converter too. |
| 7 | HDMI port for display connection |
| 8 | AUX to connect an audio unit |

Preparations (Read and Prepare Before Installation)

Customer Needs to Provide LAN or WiFi

Measurement Device must be connected to the internet to supply data to the load balancer which in turn communicates with the charging station(s).

The customer must provide an internet connection via a network cable (LAN) or WiFi (2.4 Ghz). LAN connection, if available, is preferred for a more secure connection to the internet. Normally, no firewall changes are needed. The network needs to have DHCP activated to ensure an IP address is automatically assigned to Measurement Device.

If choosing to use WiFi, please provide an SSID and WiFi password for the selected network to the installer. The WiFi password needs to contain maximum 30 ASCII characters (a-z, A-Z, 0-9_).

For WiFi networks not meeting these requirements, we recommend specifying a separate WiFi SSID for use by the Measurement Device or, alternatively, change the details of the existing network.

Installer Needs a Charge Amps Partner Account

A Charge Amps partner account is needed to complete the installation (one partner account per installation company). To gain access to such an account:

1. Create a normal user account on <https://my.charge.space/>
2. Contact Charge Amps (email support@charge-amps.com) and inform of your company name and the e-mail address used when creating the account.

Charge Amps will change it to a partner account and confirm once it is done.

Equipment Provided by the Installer

- Partner account on <https://my.charge.space>
- Mobile phone, tablet, or computer with internet connection
- Small screwdriver



Installation Instructions

Electrical Installation

For one-phase systems, L2 and L3 shall not be used.

In order to monitor all power usage, install the Measurement Device directly after the main switch of the building.

Connect the Current Sensors

Measurement Device comes with three current sensors (one for each phase) which are either blue (100 A) for Home or black (400 A) for Public. They are marked to show the direction in which they need to be mounted. The arrow must point in the current direction, in towards the house:

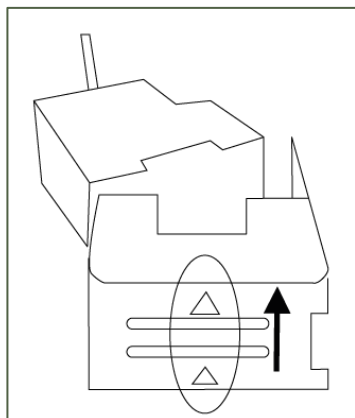
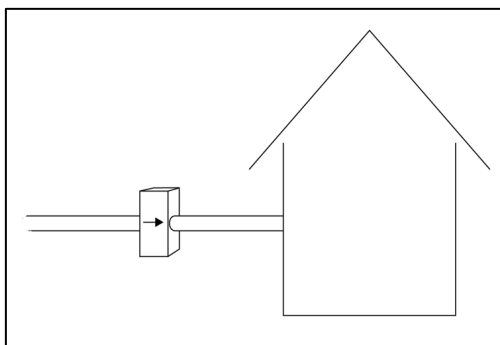


Figure 1. Current sensor for the Home version

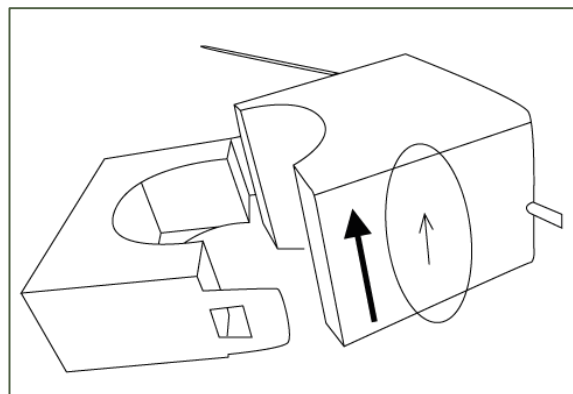


Figure 2. Current sensor for the Public version

IMPORTANT: It is extremely important for the sensors to be connected to the correct phase, the clamps to be in the right direction and connected the correct way into the Measurement Device terminals. The sensors must be positioned correctly around the main power cables according to the indicators on the clamps.

1. Clamp the current sensor around the incoming phase, pay attention to the current direction.
2. Connect each current sensor to the corresponding terminal contact:

| | Left | Right |
|--------|-------|-------|
| Home | White | Red |
| Public | Black | White |

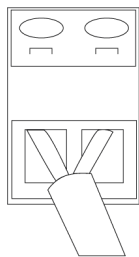


Figure 3 Home terminal contact

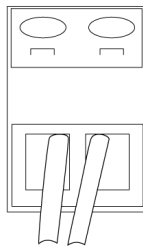


Figure 4 Public terminal contact

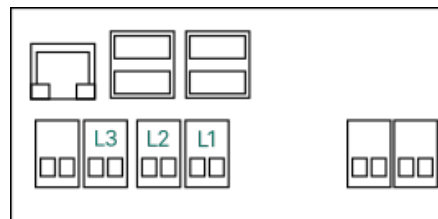


Figure 5 Sensor terminals

3. Repeat for all three phases

Connect the Main

IMPORTANT: Each phase must be connected to the right terminal connector position for current measurement and load balancing to function correctly.

The mains are used to power the Measurement Device and are used to measure voltage. The inputs for power supply are located on the bottom right and shall be connected in the right order according to N, L3, L2, L1 as shown in the illustration. For installations which do not have any generating producing equipment, such as solar panels or wind power, it is sufficient to connect N and L1.

To power the unit, connect all three phases and neutral conductor to the connector on the right side of the unit with N321 (right side in picture). If not all three phases are to be connected, the Measurement Device is only energized by L1.

NB! The sensors must be connected to the correct phase and placed according to the drawing when measuring current. See arrows showing current direction for Measurement Device Home and Measurement Device Public in the images below.

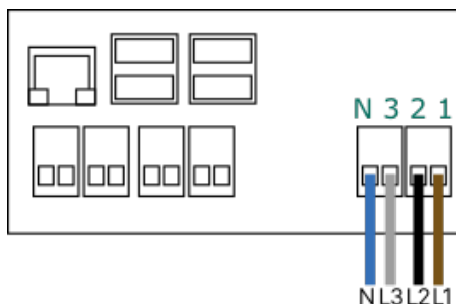


Figure 6 Power supply connected to Measurement Device

Final Result of the Electrical Installation

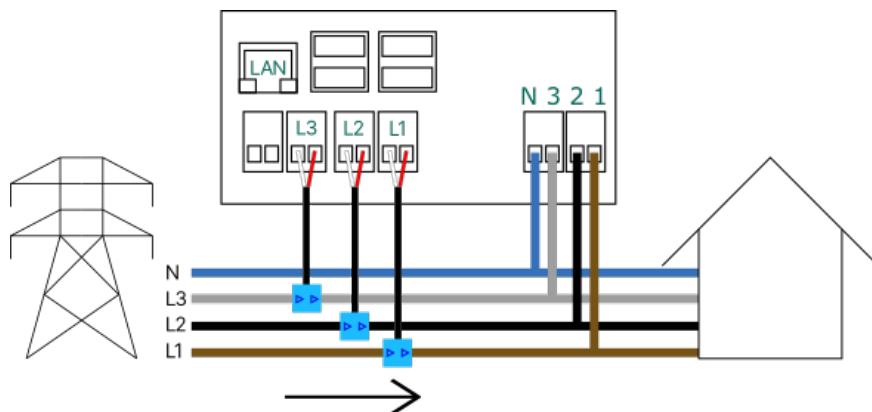


Figure 7. Overview of the installation of Measurement Device Home

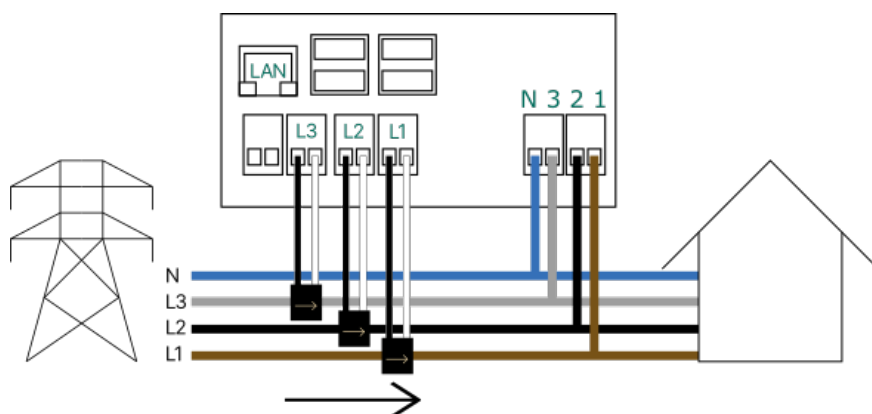


Figure 8. Overview of the installation of Measurement Device Public

Network Installation

LAN Installation

Connect a (Cat 6) network cable to the ethernet port (LAN) on the rear side of the Measurement Device:

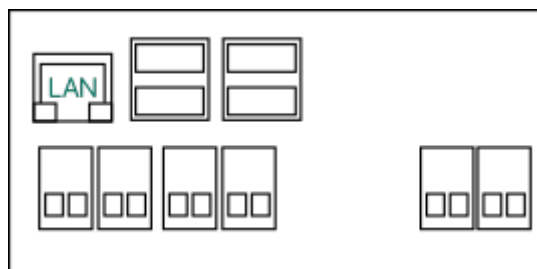


Figure 9 Ethernet/LAN port

WiFi Installation

NB!

- Only 2,4GHz Wi-Fi is supported. Risk of malfunction if 5GHz and 2,4GHz has the same SSID.
 - Only numbers 0-9 and letters a-z/A-Z for SSID and password are accepted. Blank space or any special characters will not be accepted.
 - If this causes a problem, try one of below option to fix the problem:
 - Rename SSID and update password, using only accepted characters.
 - Create and connect to a guest network using the Wi-Fi router, where SSID and password consist of only accepted characters.
1. Before starting, make sure you have the SSID and password for the WiFi network you intend to use.
 2. Go to mobile settings > WiFi and select the WiFi network "Measurement Device_*****"
(* = Specific to Measurement Device's serial number).
 3. Connect using the password that is specific to your Measurement Device.
 4. Enter the following address from a web browser: <http://192.168.251.1>
 5. Enter the SSID and Password in the form on the configuration page and click Submit.



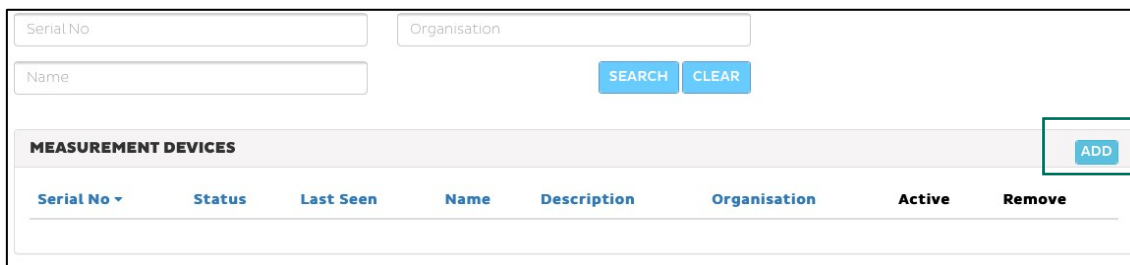
Configuration in the Cloud

For Measurement Device to work correctly, it is necessary to set the parameters in a so called load balancer group via the Charge Amps cloud service <https://my.charge.space/>.

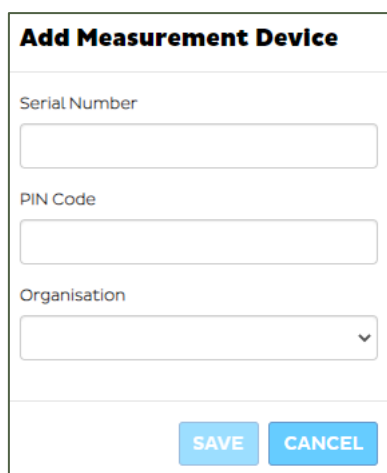
This is done via a partner account on the Charge Amps cloud service and must be carried out by the installer. For even more detailed information, see the Load Balancing Configuration manual.

Importing Measurement Device

1. Log in as a partner on <https://my.charge.space/partner>.
2. Select "Measurement Device" from the menu and click "Add":



3. Enter the serial number, password and the organisation where the Measurement Device will be located.



4. Click "Search" to find the newly imported Measurement Device.
5. Click the serial number to go to the information page.
6. Click "User" and select user as the owner of the Measurement Device. If the user is not selectable, ask the customer to create a user account.

Add Measurement Device to a Load Balancer Group for Chargers

1. Log in as a partner on <https://my.charge.space/partner>.
2. Select "Load balancer" from the menu and create a new group or select an existing one.
3. Edit the group (the load balancer group must be deactivated to do this).
4. Select the newly imported Measurement Device and enter the correct values for the installation, see information below.

DETAILS FOR LOADBALANCERGROUP:

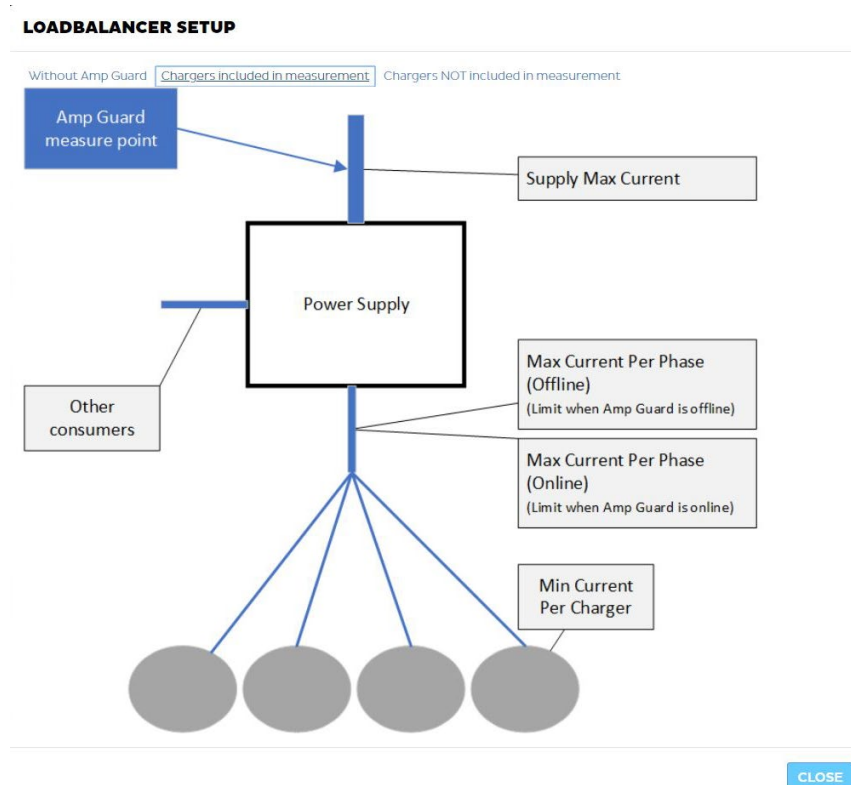
| | | | |
|-----------------------------------|--|---|-------|
| Name | Bellerofon | Phases | 1,2,3 |
| Organisation | Chimaera | Max Current Per Phase (AG Offline) | 10 |
| Description | Halo + AG 25A | Max Current Per Phase (AG Online) | 16 |
| Socket (Schuko) Enabled | <input checked="" type="checkbox"/> | Min Current Per Charger | 6 |
| Chargers included in measurements | <input checked="" type="checkbox"/> | Supply Max Current (Measurement Device) | 25 |
| Measurement Device | 2005000488G - 2005000488G | | |
| Loadbalancer Type | Standard_V6 - Release candidate (restricted use) | | |
| Use Peak Adjustment | <input type="checkbox"/> | Initial Peak Limit | |

5. Click Save and activate the load balancer group.

Maximum Current Per Phase – Settings

A higher total current per phase is permitted when a Measurement Device is installed, since the Load Balancer automatically reduces the charging output if required. There is, however, always a risk that Measurement Device will stop sending data (network problems, current switched off, etc.). In that case, the load balancer does not use the maximum current that the system can handle, since other users may also be active on it.

Example:



A distribution board dimensioned for 25 A is used. There are other users on the system who are expected to use up to 15 A. A suggested setting would be as follows:

- Maximum current per phase (standalone): 10 A (allows other electricity consumers to be active).
- Maximum current per phase (Measurement Device): 25 A (when other electricity consumers can be measured, Measurement Device can compensate for them).

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