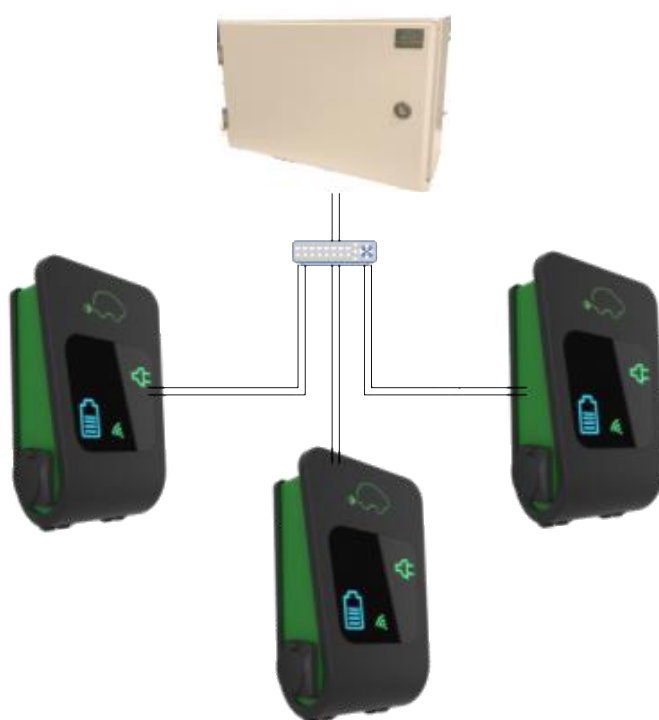


CGC100

Installation manual



Warranty

The CTEK E-Mobility warranty for load balancers in the CGC range is valid for 12 months starting from the date of delivery. Products that become defective during the warranty period will be repaired or replaced. The warranty is only valid if the product has been used in accordance with the manufacturer's instructions.

Manual

This manual is as accurate and up-to-date as possible at the time of issue. However, some information may have been updated since then. CTEK E-Mobility reserves the right to change the content of this manual without prior notice.



An exclamation mark in a triangle means there is important information that you must read.



A lightning symbol in a triangle means there could be a risk of electric shock while installing the product.

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1 General information

The CHARGESTORM® Connected Grid Central (CGC100) is a load monitor for electric vehicle charging stations. It can also monitor other loads at the property during load balancing. The CGC100 can act as an internet gateway to Charge Portal, CHARGESTORM® Connected cloud-based charging portal.

The CGC100 can manage up to 100 loading outlets.

The CGC100 communicates with charging stations using an Ethernet connection.

1.1 Purpose

This document explains how to perform installation and commissioning and how the product works.

1.2 References

ID Document

- 1) Configuration manual CCU, PD_CM_003
- 2) CHARGESTORM® Connected User Manual, Pd_UM_00050.5
- 3) CCU NanoGrid Configuration Manual, Pd_CM_004

2 Before installation

2.1 Tools

Recommended tools for installation.

- Screwdriver
- Stripping pliers
- Spirit level
- Drill
- Mini USB cable

2.2 Material/ equipment

The following materials are also needed to install the CGC100.

- CHARGESTORM® Connected or the CSR100 to be load balanced by the CGC100 load monitor



- Ethernet switch
- Ethernet cables
- Screw joints for cable feeds
- Screw for wall mounting

2.3 Details

CGC100 contains the following components:

- Energy meter Carlo Gavazzi, model EM21, with current transformers



- Control board, CCU
- Power supply CCU
- Fuse 10A
- Terminal block for 230VAC
- Triangular key for door.

All the components are mounted on your DIN rail.

2.4 Dimensions

The CGC100 has the following external dimensions in mm.

| Model | Height | Width | Depth |
|--------|--------|--------|--------|
| CGC100 | 280 mm | 600 mm | 450 mm |

Note: it is important to check that the enclosure door can be opened at the installation site.

2.5 Installation site

Note the following:

- Run the incoming cables (electrical, Ethernet, transformer cables) through

the sub-unit enclosure (at top or bottom).

- If Internet access is via 3G, check whether there is adequate coverage at the relevant location. Do not install an antenna in the sub-unit as this may impair reception.
- The enclosure can be locked with a standard electrical enclosure key (triangular key).

2.6 Installation

Screw the enclosure to the wall through the back of the enclosure.

2.7 Cable installation

2.7.1 General information

The CGC100 communicates with the CHARGESTORM® Connected and/or CSR100 charging stations over Ethernet via a switch.

Note that the Ethernet switch is not part of the load monitor and must be purchased separately. One port is needed per charging box plus one for the load monitor. You will also need an additional port for Internet access, if required.

It is advisable to run the Ethernet and electrical cables simultaneously.

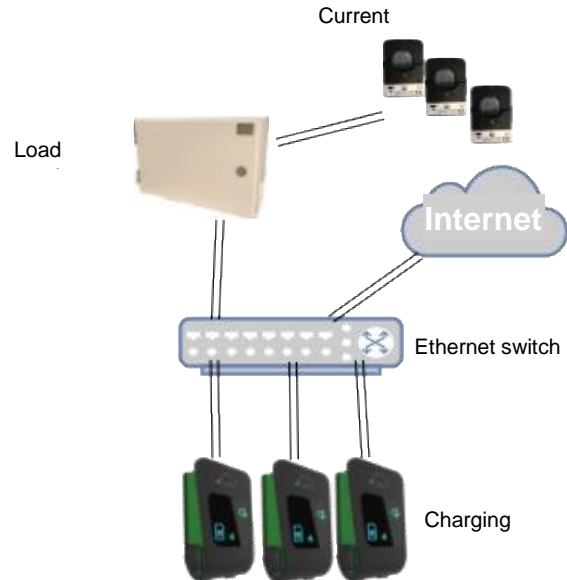
A personal protective device for each charging outlet is located in the charging station.

2.7.2 Cable installation – Ethernet

The following Ethernet cables need to be connected (the Ethernet cables should be Cat5 or Cat6 cables with an RJ45 connector at each end).

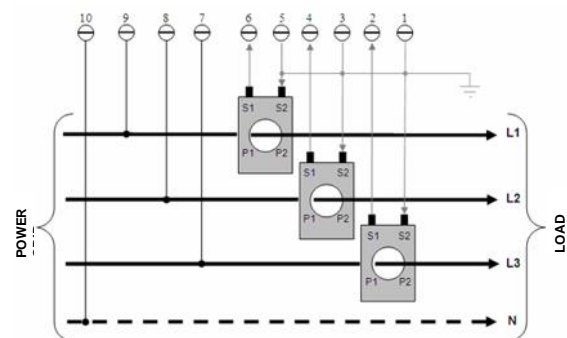
- You will need one cable between each charging box and switch. For instance, if there are eight charging boxes in the installation, you will need eight cables.
- Install one cable between the load monitor and the switch.
- If Internet access is required, please install an appropriate cable.

Note that the Ethernet cables may not be longer than approx. 90 m. If longer cables are needed, repeaters must be used to strengthen the signal.



2.7.3 Current transformers

When other loads in the premises need to be monitored by the load monitor, current transformer cables must be installed from the energy meter in the CGC100 to the relevant metering point. Install one current transformer per phase, i.e. three current transformers: L1, L2 and L3.



Note: Current is only measured via the current transformers. The current direction must be correct. The kWh will NOT increase and the LED will NOT flash if the current direction is incorrect. The current and voltage must be measured on the same phase. A neutral conductor must be available. Below is an example of connection in a 3-phase system.

2.7.4 Cable installation – power

The CGC100 is supplied with 230VAC. The input power should be connected to an internal terminal block.



Because the unit is connected to the power grid, installation must be performed by a certified electrician.

- after changing the configuration (See manual ref. 1) how to connect to the local web interface)
- b. Configure CGC100 via the mini USB interface. Activate NanoGrid. Upload NanoGrid.ini. Reboot. For a description of the load balancing file NanoGrid.ini see ref. 3)

3 Installation

3.1 Step by step

1. Cable installation.
 - a. Choose the installation points for the sub-unit, charging stations and Ethernet switch.
 - b. Install the electrical and Ethernet cables.
 - c. Install the current transformers in a location where other loads are to be measured.
2. Install the units
 - a. Screw the CHARGESTORM® Connected units to a wall or a post and connect the Ethernet cables.
 - b. Connect the phases alternately on each charging box. Carefully note down the phase rotation, which must be known when the load balancing is configured in the software. Documentation regarding the phase rotation is sometimes available in advance.
 - c. Install the sub-unit, CGC100 and connect the cables.
3. Connect the power.
 - a. Check the installation before switching on the power to prevent the risk of short-circuiting.
 - b. After the power is switched on, the charging station should automatically switch on and a green indicator light will illuminate.
4. Configure the load balancing:
 - a. Configure each individual charging box via the mini USB interface so that NanoGrid is activated. Verify that the firmware version is R3.6.1 or higher. Remember to reboot

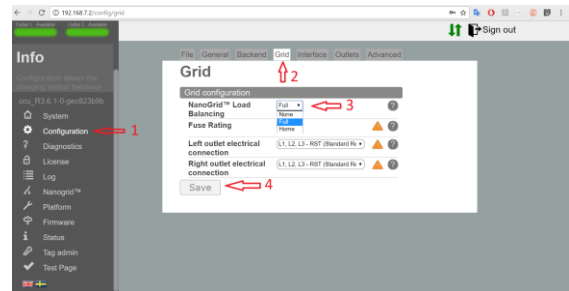


Figure 1 Activate NanoGrid

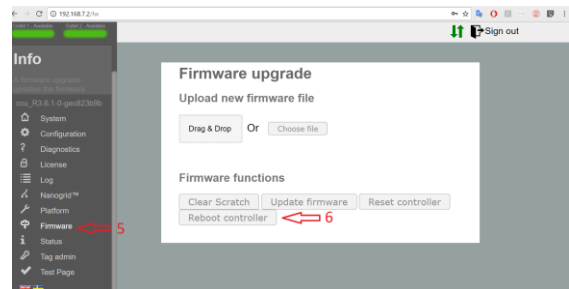


Figure 2 Reboot

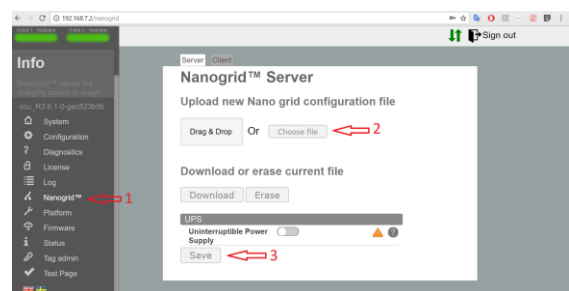


Figure 3 Load nanogrid.ini file

5. Option: Internet connection to Charge Portal
 - a. See next section

3.2 Options

3.2.1 Internet connection Charge Portal
Customers can access their electrical vehicle charging statistics via the Internet using CHARGESTORM® Connected cloud-based Charge Portal. To access Charge Portal, the

CGC100 sub-unit must be connected to the Internet. It can be connected either via 3G or Ethernet. The way in which the load monitor connects to the internet and contacts the portal is described in reference 1). The login details for the portal must be obtained from CTEK E-Mobility in advance. You can request the login details from your sales contact.

4 Functionality

The load monitor and charging stations can be used immediately after installation and commissioning/configuration.

CHARGESTORM® Connected shows the electric vehicle charging status using symbols. See user manual, ref. 2).

4.1 Vehicle charging

Connect the charging cable to the vehicle. The green outlet symbol will change to a flashing blue battery and charging will begin.

To stop charging, disconnect the cable from the car.

4.2 Maintenance

The residual current device should be tested once a year.

4.3 Resetting of personal protective device

If the personal protective device on the CHARGESTORM® Connected is triggered, open the front panel with the key and reset the device.

5 Testing

After installation, perform the following tests on all the charging stations (if no other test instructions are available).

To do this you need access to a chargeable vehicle, or to a CHARGESTORM® Connected test box that can simulate charging.

5.1 Testing of electric vehicle connector

Connect the electric vehicle connector to the vehicle and verify that charging has started. The LED indicator turns blue during charging.

5.2 Earth fault testing

Press the test button on the residual current device in the CHARGESTORM® Connected and note whether the device trips. If there is an earth fault, the 'X' will turn red.

5.3 Testing the load monitor

Connect electric vehicles to all the units and check that the sub-unit is showing that the total current does not exceed the rated current.

Fault reporting

Any faulty units should be sent to:

CTEK E-Mobility Center
Malmgatan 4
S-602 23 Norrköping
SWEDEN

Tel.: +46 11 333 0002
Fax: +46 11 333 0003

Or to your local CHARGESTORM® Connected distributor.

Include a fault description to help us locate the fault.