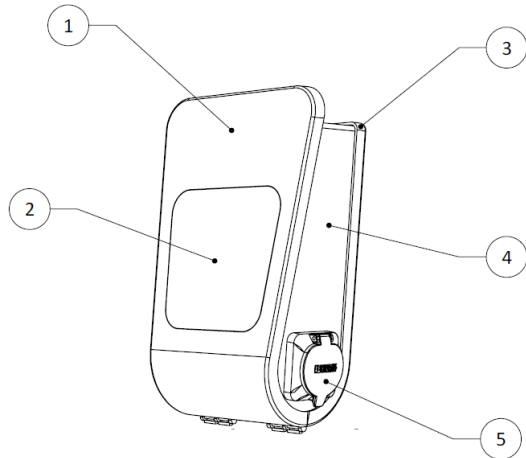| 1	Introduction

This document shows how to install and use the charge station Chargestorm Connected.

1) Front panel

2) Display with charging status symbols

3) Back cover

4) Technical box

5) EV connector (outlet or cable)

Figure 1 Chargestorm Connected

The manual is valid for the Chargestorm Connected family. Model information is found on the top of the technical box. For a complete list of article numbers, please download datasheet at http://www.chargestorm.se

2	Safety

✓ Only accredited electrician is allowed to perform the installation described in this document
✓ Read and follow the instructions in this document before installation and usage of the product
✓ Installation must fulfill local safety regulations

3	Delivery content

Part of delivery
✓ The charging station
✓ Installation and user manual
✓ Two keys
✓ Cover for cable inlet (M32 and M12).
✓ Holder for charging gun (In case charging station is equipped with fixed cable)

To bring
✓ 4 pcs screws (M8) for wall mounting. Select screw type depending of wall.
✓ 4 pcs of rubber seal/gaskets to use with screw. – Note very important!
✓ RFID-tag (in case RFID shall be used) of type Mifare Classic/ IEC 14443 Type A. RFID-tags can be ordered from Chargestorm web-shop (https://chargestorm.se/webbshop/)

Option
✓ Pole mount kit for pole diameter 60 mm. Article number 920-00010.

Din forhandler

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The right battery

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✓ Pole mount kit for two boxes, enabling up to four EV connectors from one pole. Article number 922-00018.

4   Precondition

4.1 Tools

Before the installation make sure that following tools are available:

- ✓ Screwdriver
- ✓ Multi meter
- ✓ Peeler
- ✓ Spirit level

- ✓ Drilling machine
- ✓ Computer (for network configuration)
- ✓ Mini USB cable (to connect computer and controller board)
- ✓ Mifare Classic/ IEC 14443 Type A, compatible RFID-tag.

- ✓ Computer/Laptop (OS: Linux or OSX preferred, Windows10 requires USB-driver installation)

4.2 Cable installation

Before the installation of the charging station, control the following:

- ✓ The cable installation is dimensioned for the charging station. (at least 2,5 mm² cable area for 16A copper cable and at least 6mm² for 32A copper cable). For wall mounting shall 50 cm cable be available for use inside of charging station.
- ✓ Make sure that power is off during installation

4.3 Network connection

In case the charging station shall be connected to a portal or a local controller, check the following depending on network access medium:

- ✓ **3G**: Activated SIM-card must be mounted in the unit with PIN disabled. The subscription shall allow at least 2GB/month.
- ✓ **Ethernet**: Network cable of type Cat5 or better shall be connected to the charging station.

In case the charging station is behind a firewall and shall be connected to a backend system must DNS (port 53), https/wss (port 443) be opened in the firewall. If remote firmware upgrade shall be possible must also ftp be opened in the firewall.

4.4 Installation location

Control the following at the location where the box will be mounted:

- ✓ That there is enough space available for normal usage.
- ✓ That the wall material is suitable for mounting of the box. The wall must withstand the charging station weight (8,5kg)
- ✓ Avoid installing the unit in direct light sunlight. Symbol visibility is limited and heat in the unit is increasing. Chargestorm Connected has a temperature sensor in the unit that adjust charging current in case of high temperature.
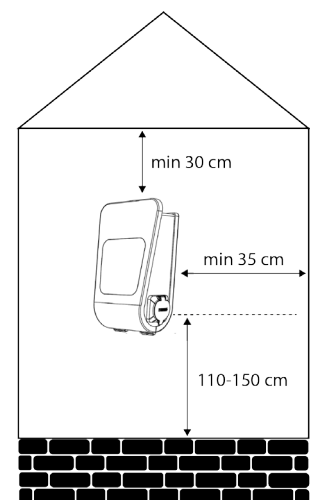- ✓ Always follow local regulation

min 30 cm

min 35 cm

110-150 cm

Figure 2 Mounting distances

5   Installation

Step 1) Unpack – Unpack the charging station and all parts from the cardboard box.

Step 2) Drill holes in the wall – Decide mounting position on the wall. Drill four holes according to drawing, see Figure 4.

Step 3) Decide input location for power and network[1] – Power and network cable can either be connected from the top or the bottom. If cables are inserted from below must holes be drilled in the unit according to Figure 3. It is strongly advised that power cable is coming from below for outdoor installation, avoiding any problems with water entering the unit from the top along the cable during rain.

When cables are connected from the **top**: There are two holes on the top. The largest 2. (M32) is for power while the smaller 1. (M12) is for network see Figure 5. The cable gland for 1. that is delivered with the product supports cable dimensions between 12-22mm while the gland for 2. supports 3-6mm. The glands must be replaced if the cables are outside specified range. If the charging station shall be part of a load balancing installation or be connected to the backend via Ethernet must a network cable be connected to the controller board RJ45 port. Cable glands shall be used to protect for dust and water penetration. More information related to load balancing is available in, ref. 2) and ref. 3). If wiring is connected from below must holes be drilled in the unit according to Figure 3.
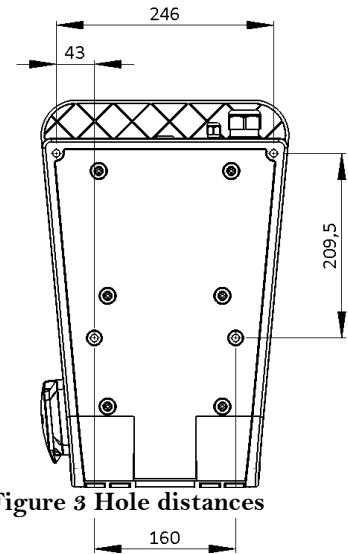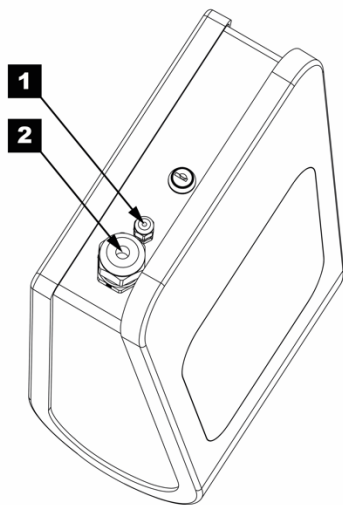
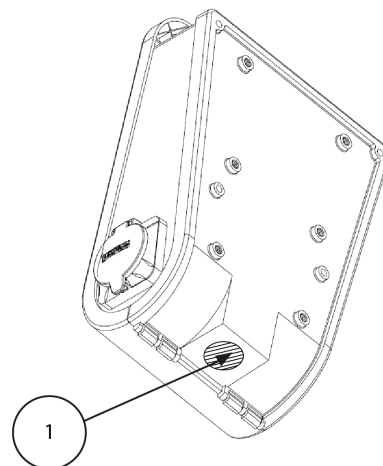**Figure 3 Hole distances**

Figure 5 Cable glands for incoming cables

Figure 4 Drill location

Step 4) Wall mount – Unlock and open the box with the key. Locate the four screwing holes in the back cover. M8 screw with at least t 40 mm length is recommended. Place the charging station on selected wall position and fastened the unit with the four screws. Control that unit is firmly mounted on the wall.

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[1] For three-phase Chargestorm Connected models with dual connectors power cable must enter from below. Further, these models support 16mm² cable area.
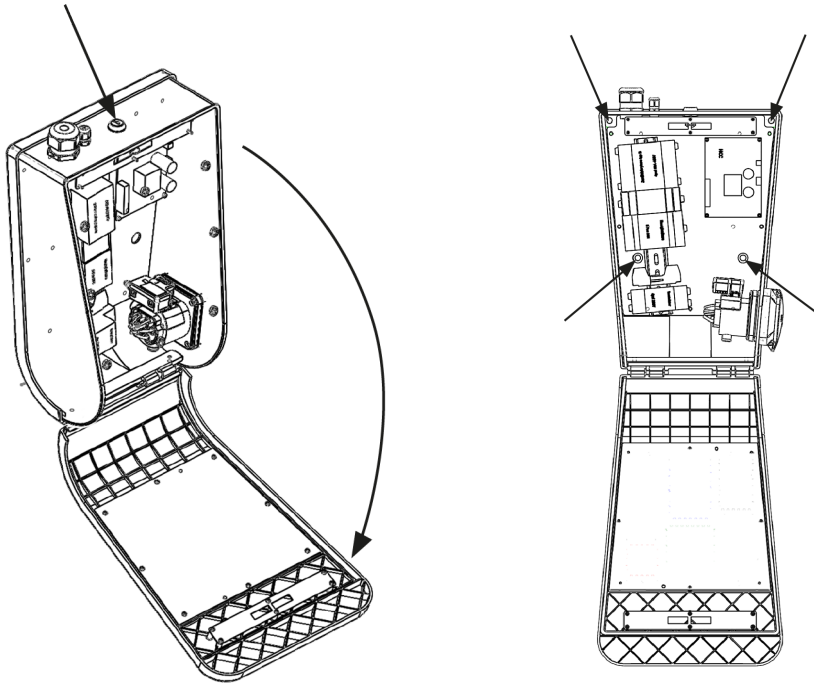
Figure 6 Open front cover with the key and fasten the unit on the wall

Step 5) Connect incoming power[2] -Pull the power cable through the cable gland about 450 mm. Peal the wires about 8mm at the end. The wires cross section area must not exceed 16mm². Make sure protected ground wire is longer than the other wires sot that it will be the last wire to detach if pulled. Connect the supply wires to the terminal blocks. Check that L1-L3, PE and N is correctly mated between female and male connector. Put back protection cover and close and lock with the key.

[2] For three-phase Chargestorm Connected models with dual connectors is incoming power connected to the DIN rail mounted terminal blocks at the bottom between the connectors. Check that L1-L3, PE and N is correctly mated. For schematics see chapter 11.
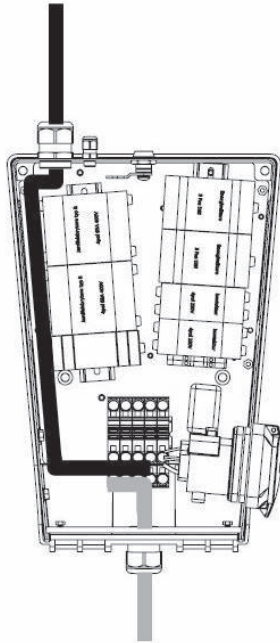
Cables inside the unit for the supply wires from top to terminal blocks shall follow the black line while supply wires from the bottom shall follow the grey line in Figure 7.
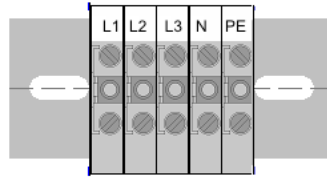

Figure 8 Terminal blocks marking

Figure 7 Cable schematics

Step 6) Connect network – In case Ethernet is used connect cable to RJ45-connector on the control board located on the front panel. When cable is connected in both ends shall link and activity led on the RJ45 connector be active. If 3G is in use, check that the SIM-card is installed on the modem unit on the control board. Also check that the antenna cable is attached in both ends. See schematics in chapter 11.

Step 7) Test – Activate power from the distribution panel, after closing and locking the charging station with the key. Do not forget to put the cover on the key-lock. Green connector symbol shall be active on the front panel after turning on power. Follow directives in chapter 8.
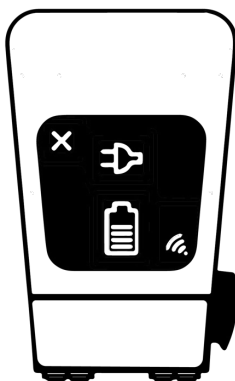

Figure 9 Symbols. Models with double outlets have two rows of symbols

Display symbols

Available for charging

In use. Fixed blue light when connected. Pulsing blue light when charging.

RFID- Green –waiting for tag, blinking yellow – checking tag, blinking green – tag approved, blinking red - tag denied

Out of order.

6   Provisioning

When the electrical and network installation is ready shall the charging station be configured for operational use (such as network configuration and portal configuration). The Portal is a software that is used for remote operation and maintenance of the unit. To configure the charging station control board through the local web interface is a mini USB cable required. The mini-USB port is located on the control board while a standard USB port is used on the computer for configuration. If the computer is running Microsoft Windows must an Ethernet to USB-driver be installed to support access to the local web interface. For Linux and Mac OSX is the driver part of the operating system. For detailed description of the local web interface see ref. 1)

Chargestorm recommends that the installation technician documents the result of the provisioning tests in a dedicated protocol.

Perform the following step to complete configuration.

1. Log in to the local web interface. URL: http://192.168.7.2 with user name **ccu** and password **ccu.** All modern web browsers work but Chrome is recommended.

2. Configure network interface (Ethernet or 3G) so that internet access is available

3. Configure URL and charging station identity (ChargeboxId) to portal

4. Configure usage of RFID

5. Configure load balancing

6.1 Local web interface

To connect to the local web interface shall a USB cable be connected between the computer and the controller board mini USB port. In your browser enter IP address 192.168.7.2 to reach the web interface. The log in page is shown after entering the address. To log in enter:
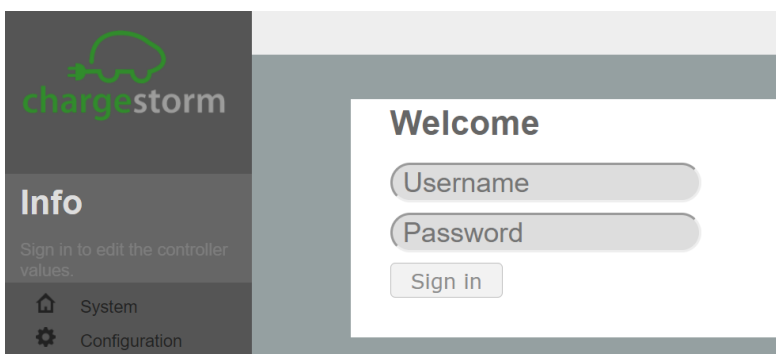
Username: ccu

Password: ccu

Figure 10 Log in page

6.2 Network settings

After successful log in, is the network settings found under Configuration → interfaces

When network configuration is ready check on the status page that internet access is established.

6.2.1 *Ethernet*

To set the IP settings for Ethernet follow the instruction below.

- Under "Configuration→Interface→General", select WAN="Wire".
- Under "Configuration→Interface→Wire", select "DHCP" or "Static" (for Static enter IP address, netmask and gateway). For "DHCP" is IP address assigned automatically.
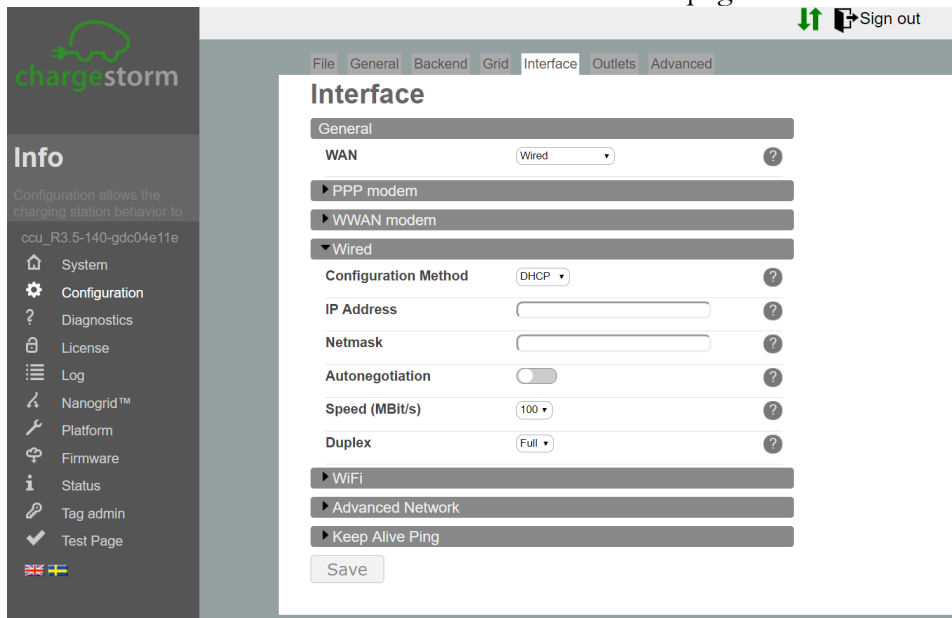- Push the "Save" button on the bottom of the page.

Figure 11 Ethernet configuration

6.2.2 *PPP modem*

Follow the step by step instruction below to configure PPP over 3G

- Under "Configuration→Interface→General", select WAN="Wireless"
- Under "Configuration→Interface→PPP modem", enter "APN" applicable for the selected 3G operator. Remaining fields can usually be left empty.
- Push the "save" button (at the bottom of the page).

Figure 12 3G Configuration

6.2.3 *WWAN modem*

WWAN is a specific 3G-mode. WWAN tends to be more robust than PPP described in previous chapter. Follow the step by step instruction to configure WWAN.

- Under "Configuration→Interface→General", select WAN="Wireless"
- Under "Configuration→Interface→WWAN", enter "APN" applicable for the selected 3G operator. Remaining fields can usually be left empty.
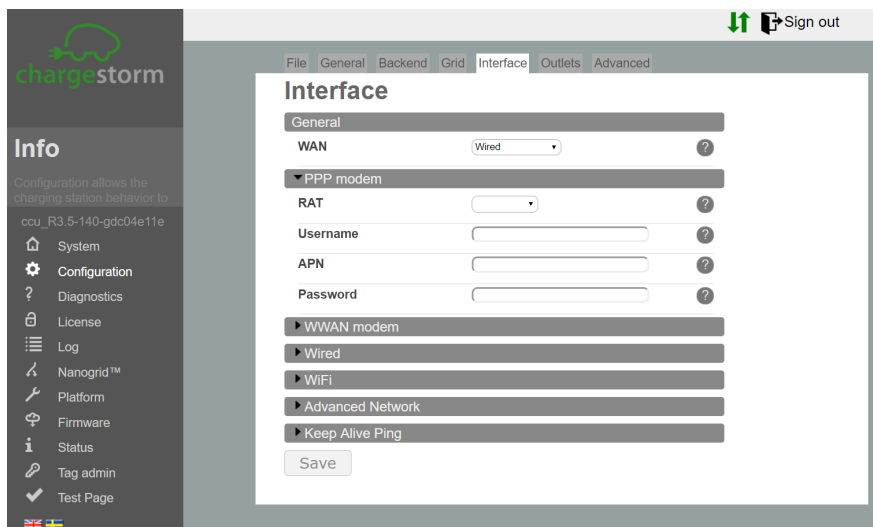- Push the "save" button (at the bottom of the page).

6.3 Current limit

From the local web interface is the max current limit configured (in case the limit shall be lower than the charging status fuse level). Under configuration outlet, see Figure 13 is the current limit set.
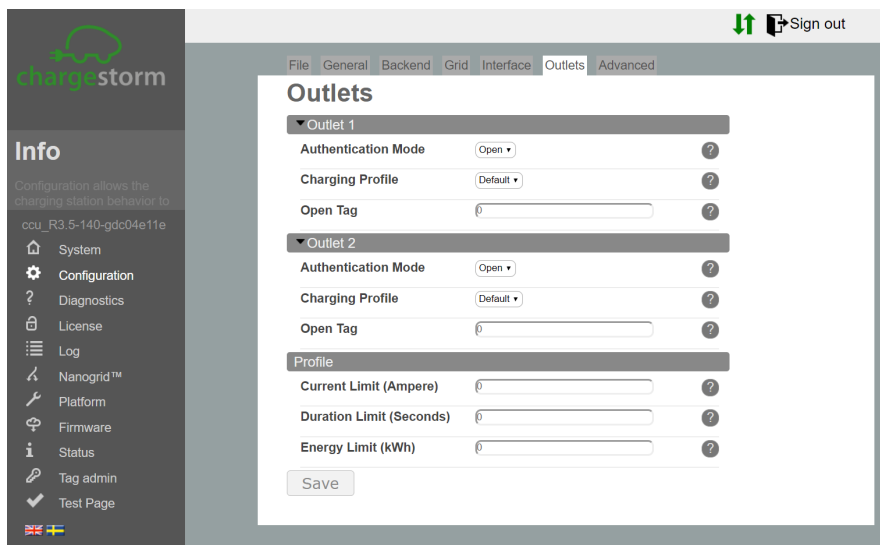

Figure 13 Configuration of current limit

6.4 Portal access

Portal configuration connection requires that the internet access is working. The OCPP chargeboxid and server address must be known in advance in order to connect the charging station to the portal. The information shall be provided by the portal operator. In case Chargestorm's portal "Charge Portal" is used is the URL to the portal on the following format. wss://<companyname>.oamportal.com/Ocpp/websocket Chargeboxid must not contain more than 22 characters and it must be unique (charging stations cannot have the same chargeboxid). The charging station uses OCPP v1.5 or v1.6, which must be supported by the selected portal.

- Select "Configuration→Server" and enter the "ChargeboxId"
- Select communication protocol to OCPP v1.5 or OCPP v1.6.
- Enter server address. Most often can the other parameters remain unchanged.
- Push the "Save" button (on the bottom of the page)

After completing the configuration navigate to the status page and verify that the portal communication is established.
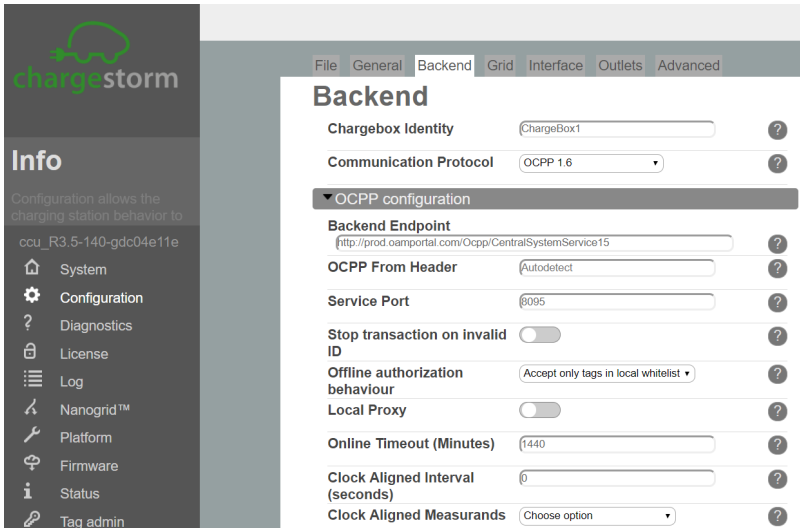
Figure 14 Portal configuration

6.5 RFID

In order to activate user authentication can RFID be used. RFID-configuration can either take place from the portal (from a browser) or be configured on local web interface.

- To activate RFID, navigate to "Configuration→Outlet→Authentication" and select "RFID" for all outlets. This setting will require user to authenticate with RFID tag before charging starts.
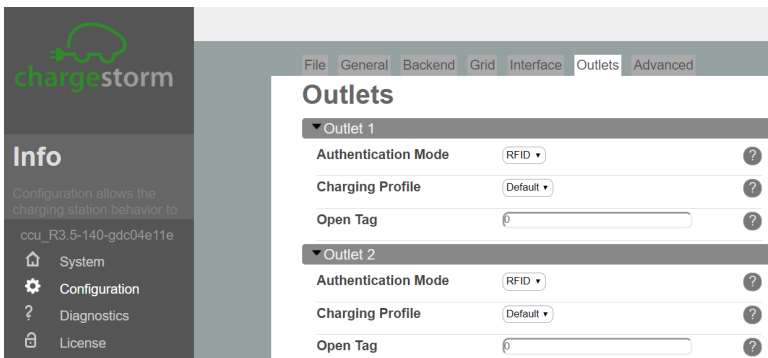

Figure 15 Outlet in RFID-mode

- It is possible in "Tag administration" to add and delete RFID-tags that shall be activated on the charging station.

7   Product information

Power input

Power	16-32A, 230V, 1-phase or 16-32A, 400V, 3-phase, 50Hz. Power input connector depends on model.
Charging current	16-32A
Supply Connection	L1,L2,L3,N,PE. Cable area $2,5 - 16mm^2$.

Fuses	C-characteristics. Type A. Breaking capacity 6kA. Nominal current 16 or 32A depending on model.
Mechanics	
Weight	Less than 12kg (depends on model)
Dimension	Height: 395mm, Width: 278mm, Depth: 160mm
Material	Front and back cover in ABS plastic. Colored zinc oxide metal box for electronics.
IP	44
Temperature	-25°C - +50°C
Interfaces	
EV connector	1 or 2 outlets Type 2 or fixed cable of Type 1 or Type 2
Schuko	1 pc Schuko-outlet CEE 7/3 (on some models)
Display	LED-light symbols
Lock	Mechanical lock with key.
Energy meter	MID-approved energy meter. (on some models)
RFID	Mifare Classic RFID-reader. Frequency 13.56MHz, Magnetic field +42 dBµA/m (ETSI EN 300 330 V2.1.1)
3G Option	Frequency band: 800/850/900/1700/1800/1900/2100 MHz
	Power class 3: +24 dBm, Power class 4: +21 dBm (EN 301 908-2 v11.1.1)
Compatibility	
Standards	IEC 61851-1, IEC 62192-2, IEC 61439-1:2011
Approval	CE. Declaration of Conformity can be downloaded from http://www.chargestorm.se/en/manual
Safety	
Ground fault detector	Model dependent. Ground fault detector of type A. DC-detector.

8   Installation and maintenance tests

Preventive maintenance of the charging station shall be conducted at least once per year.

At installation and maintenance of the charging station shall the following tests be performed.

Test:

- ✓ Trip ground circuit breaker. Use test button on breaker.
- ✓ Control power cables (and re-tighten cables when needed).
- ✓ Control that charging outlet /cable is in good condition. Replace otherwise.
- ✓ Check gaskets. Remove dirt if needed

- ✓ Charge a vehicle. Check current and that charging symbols on display are working.
- ✓ Update software if needed
- ✓ Control network access to back end (in case the charging station is connected)

9   Recycling

Chargestorm Connected contains electronics and shall be recycled. You can send back the charging station to Chargestorm and we will take care of the recycling. Alternatively, follow your local guide for recycling of electronics.

10   Warranty

Warranty period for Chargestorm Connected is 1 year from delivery to customer.

11   Electrical schematics

Below is an example of a schematics for Chargestorm Connected Connected (3ph dual outlet).
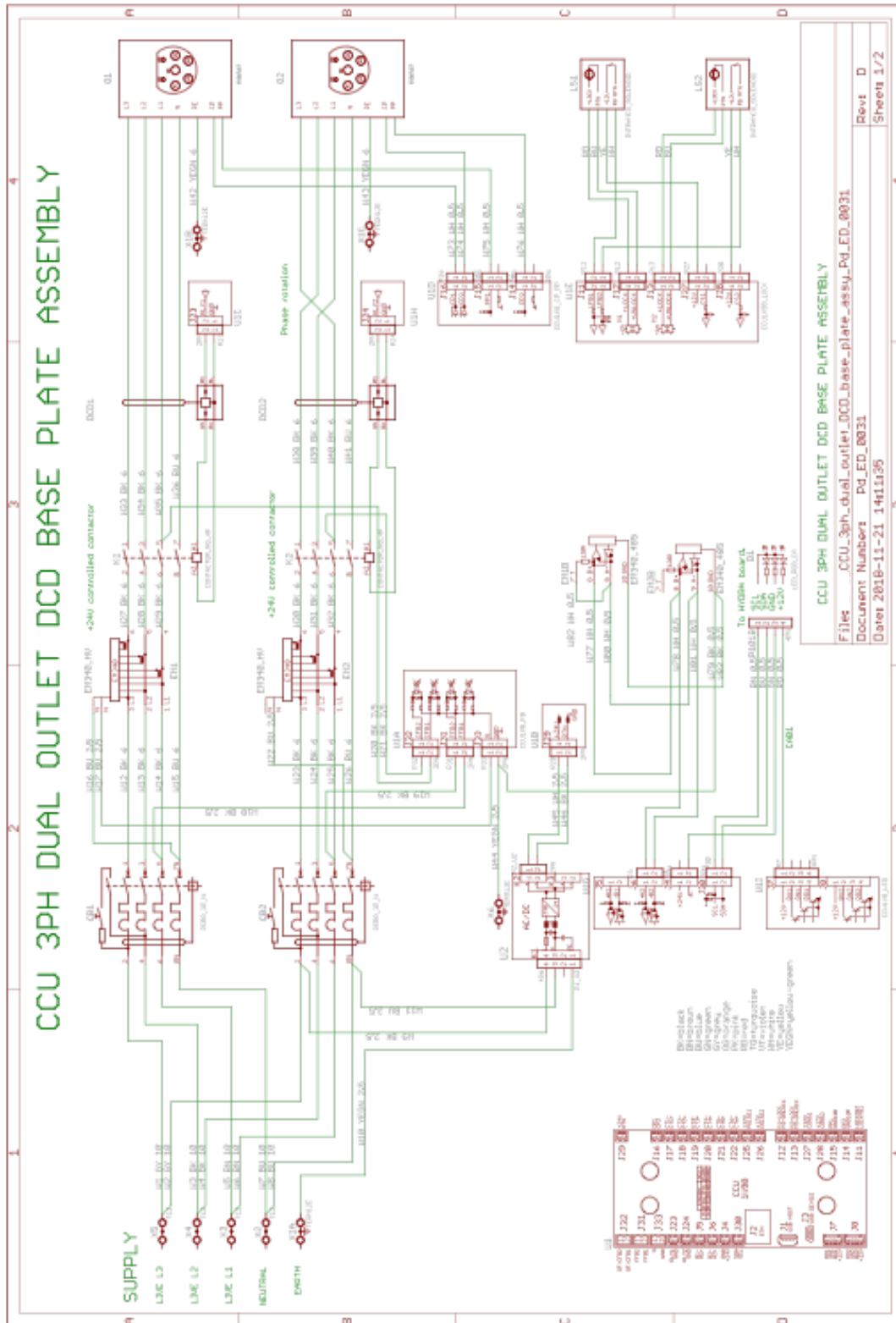
12 General

12.1 References

Id	Tit	Dokument Id
1)	CCU configuration manual	Pd_CM_002
2)	CGC Installation manual	Pd_IM_0007
3)	Home load balancing manual	Pd_IM_0012

12.2 Copyright

This manual is delivered "as is" and contain content that can change without prior notice. Chargestorm AB does not guarantee that everything is correct in the manual. Chargestorm AB is not responsible for faults or incidents or damages that can be traced to the usage of this manual.

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12.3 Contact information

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