



# SKYCHARGE

POWERED BY GREEN MOTION AND PIPISTREL

SWISS  
QUALITY 



## TECHNICAL DOCUMENTATION

  
greenmotion

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## 1 INTRODUCTION

### 1.1 Technical Specifications



POWER INPUT		DC SKYCHARGE CHARGER
Input voltage		3 x 400 V <sub>AC</sub> 50 Hz
Input current		3 x 32 A <sub>rms</sub> (22 kW)
Power factor		> 0.99
Standby consumption		< 90 W
POWER OUTPUT		
Output power		22 kW
Output voltage		500 V <sub>DC</sub>
Output current 22 kW		55 A <sub>DC</sub>
Output type		GB/T cable
Efficiency		> 96%
Simultaneous charges		1
USER INTERFACE & CONTROL		
User interface		10-inch touch screen display, Led charge status indicator
Mobile phone app		iOS and Android (online charging station)
Control of access		RFID, App, SMS, Scan & Charge
Network interface		Ethernet cable; 3G/4G
Remote management		Software management system (eMobility Cockpit) (online)
ENVIRONMENTAL		
Operating temperature		-25°C to 45°C
Altitude		Up to 2000 m (6500 ft.)
Setting		Wall; Column; indoor or outdoor
Humidity		< 95% relative humidity
MECHANICAL		
Dimensions		630 x 520 x 263mm
Weight		55 kg
Housing material		Stainless steel
Cooling		Fan cooling
Cable length		8 meters (16.5 ft.)
REGULATION		
Conformity		IEC 61851-1
Protection rating		IP54
Communication protocol		OCPP 1.6J
Bidirectional		V2G ready
Protection		Over current, under voltage, over voltage, residual current, surge protection, short circuit, over temperature, ground fault, galvanically insulated

### 1.2 Dimensions and weights

Width	630 mm
Height	520 mm
Depth	263 mm
Weight	55 Kg

## 2 INSTALLATION

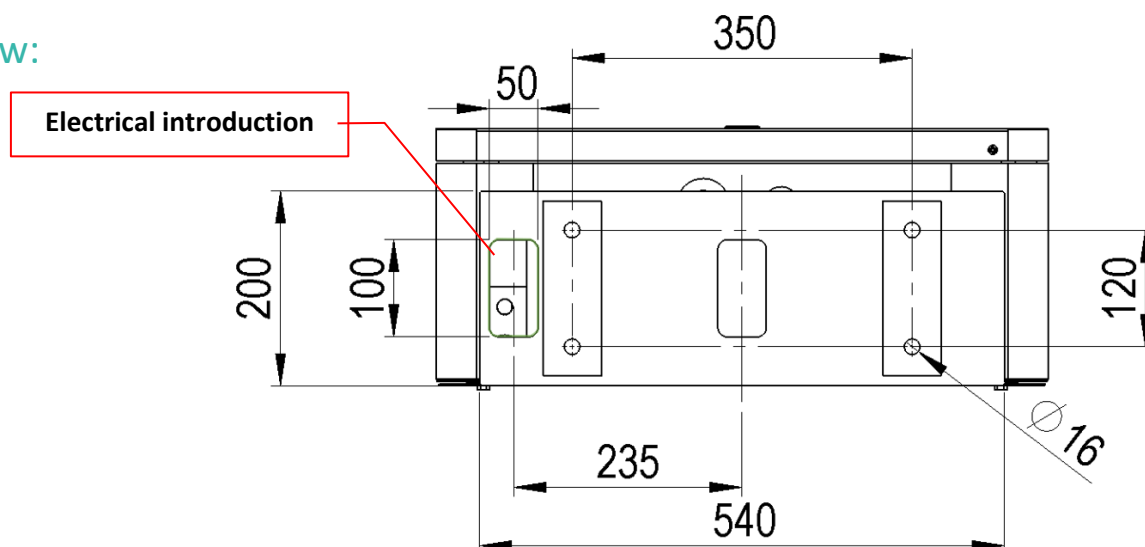
### 2.1 Mounting

Fix the charging station on the column requires a minimum of two people.

Fix the column on the concrete base with 4 threaded rods M10 according to the following diagram.  
Do not forget the flat washers.

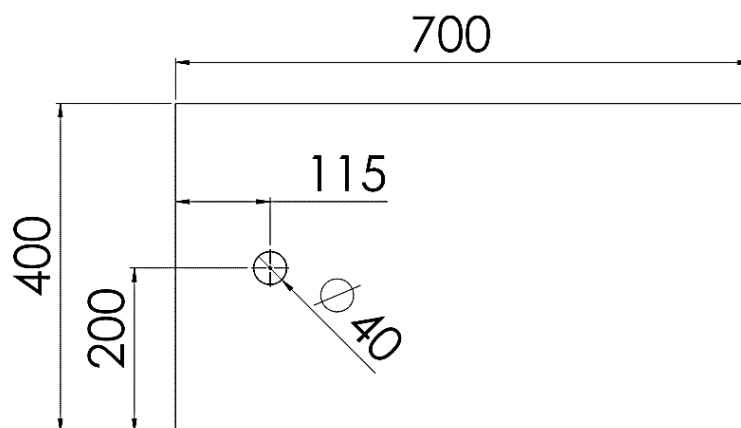
Electrical introduction is done through the left opening size 100x50mm with 1600 mm cable.

#### Bottom view:

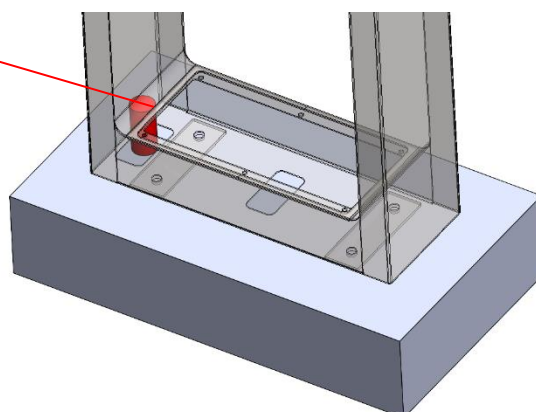


#### Concrete base :

A concrete base have to be settled before receiving the charger with the following dimensions : **700 x 400 x 150 mm**



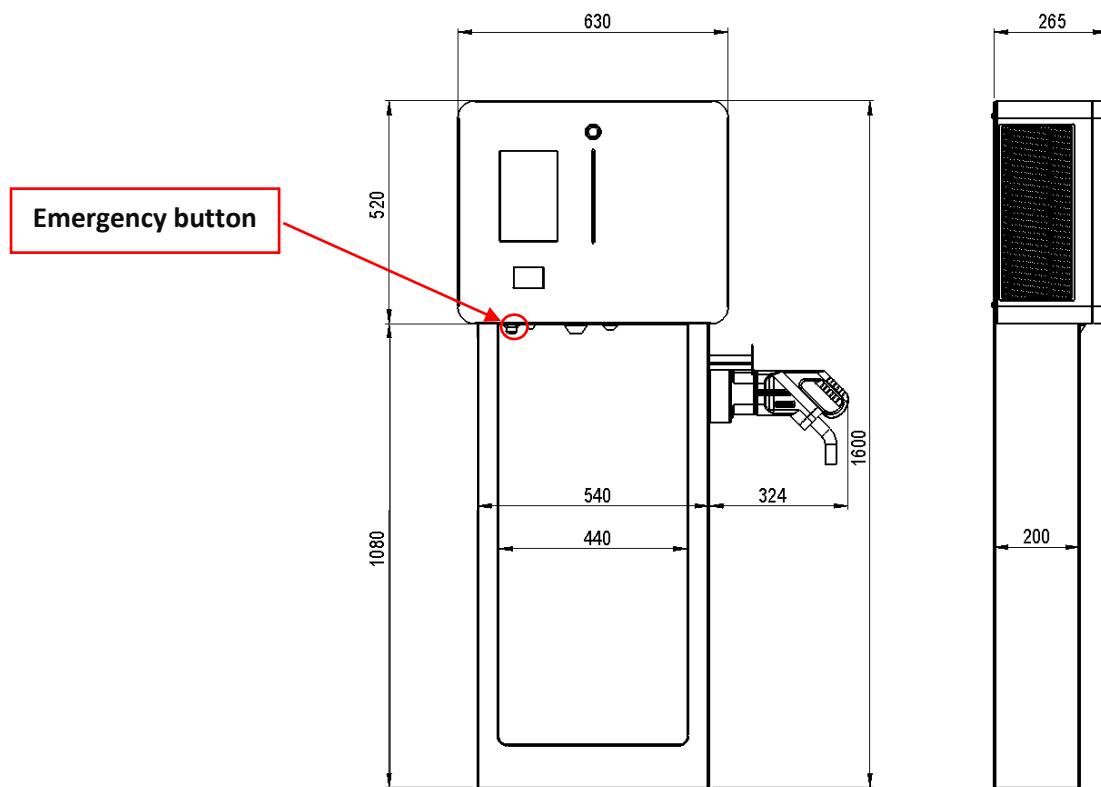
Electrical cable



## Front view:

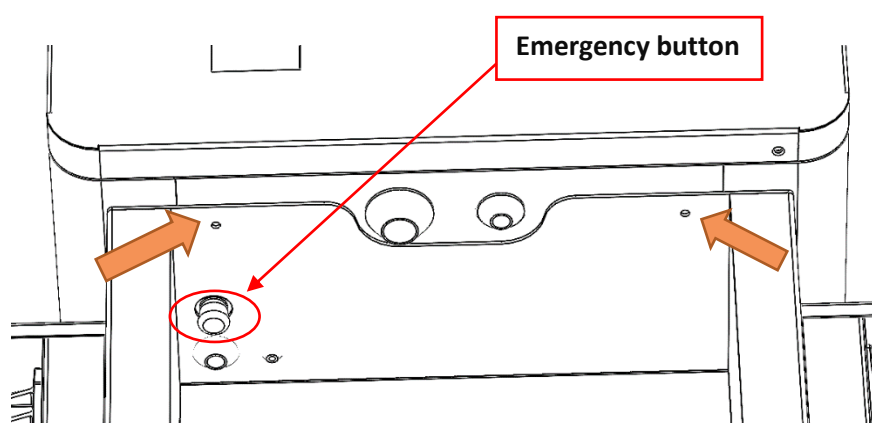
Paste the 4 seals on the back of the charging station

Fix the charging station on the column with 4 stainless steel screws M6x10 and flat washers



Drill 2x Ø7 hole or push the pre-cutting hole under the cabinet and clean the metal shavings

Fix with 2 stainless steel screws M6x10 with 4 serrated lock washers, 4 flat washers and 2 prevailing torque type hex lock nuts



Please make sure the **emergency button** is well protected and not damaged during the installation.

## 2.2 Wiring

Connect the station to the electrical panel with the following protections:

Model	22 kW
Input voltage	400 V <sub>AC</sub>
Input current	32 A <sub>rms</sub>
Power cable min cross section 1	5 x 10 mm <sup>2</sup>
Power supply terminal block max section	16 mm <sup>2</sup>
Circuit breaker at panel 2	C40



Please be sure to install a RCD device after the C40 breaker.

Green Motion strongly recommends using a **Doepke RCCB DFS 4 040-4/0.03-A EV R** as an RCD device or **Eaton RCCB FRCmM-40/4/003-G/A**.

- 1) These sections must be re-assessed by the installer according to the length.
- 2) The Installer must define the types of Circuit breaker.
- 3) The circuit breakers at panel of 40 A and the power cable minimal cross section of 10 mm<sup>2</sup> is overvalued in order to ensure the functioning of the charging station with a temperature increase.

### NOTE FOR SWITZERLAND

- The NIBT standard does not requires DC terminals to be protected against direct fault currents.

## Circuit diagram

Connection Diagram:

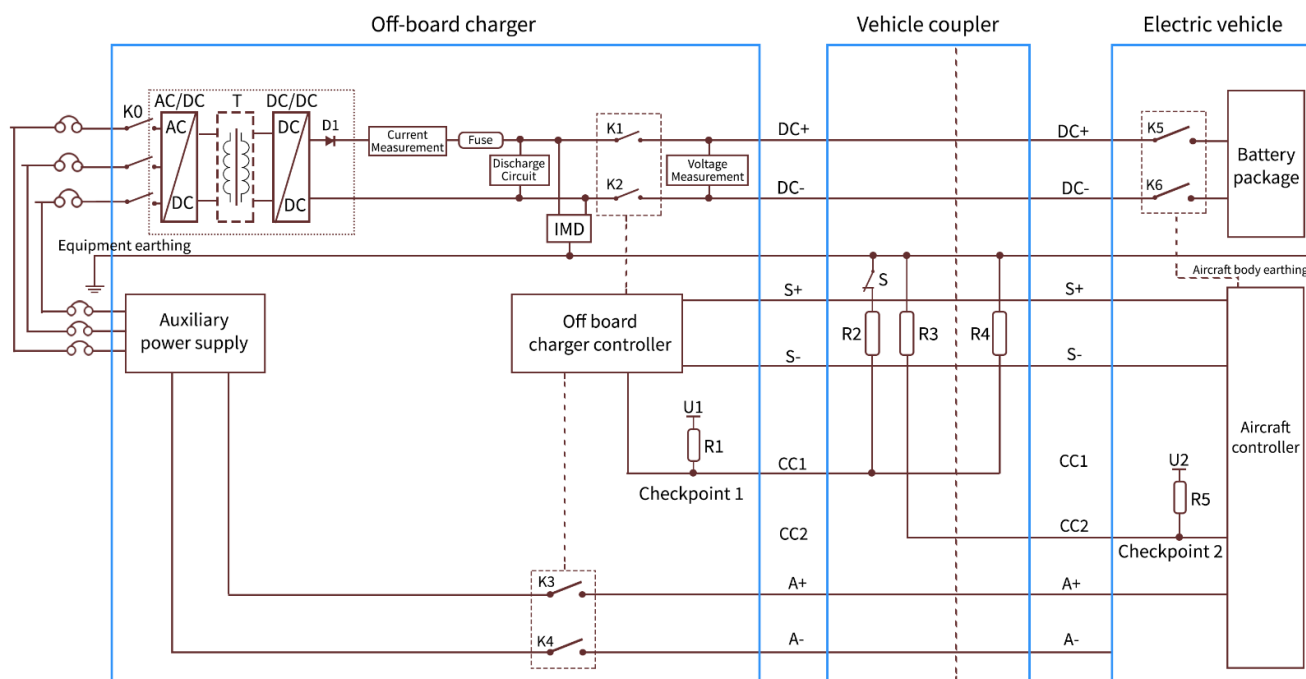


Figure 1: GB/T 18487.1-2015 Schematic Diagram of DC Charging - Extracted from AS6968 Rev.A

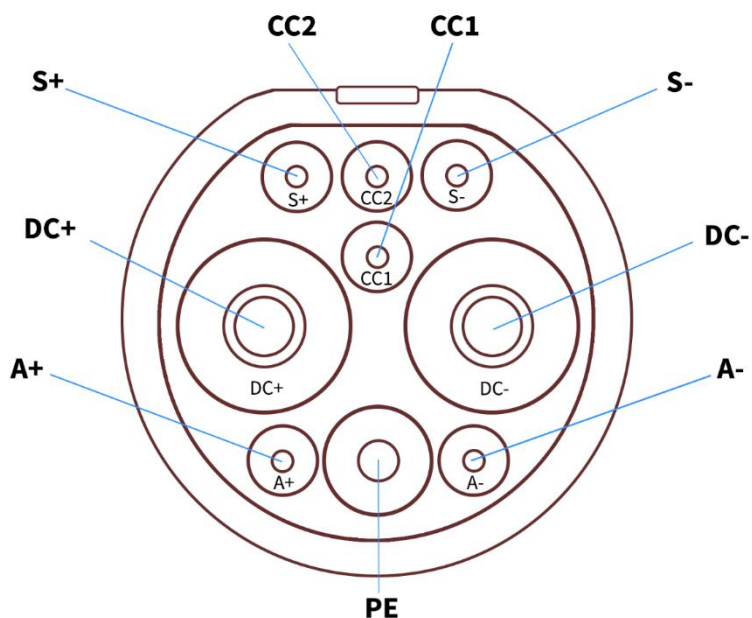


Figure 2: GB/T 20234.3-2015 DC Charging Plug - Extracted from AS6968 Rev.A

### 3 COMMISSIONING



The opening of the charger as well as any configuration changes must be carried out by a qualified electrician according to the local safety and electrical regulations and laws. Failure to comply with the regulations in this manual will result in the end the warranty period.

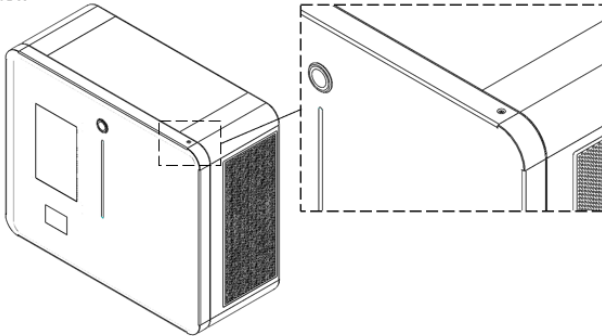


**Electric shock hazard!** Any operation requiring opening of the main converter box can lead to electric shock hazards. Please make sure to carefully read instructions. In case of a doubt, please immediately contact Green Motion support.

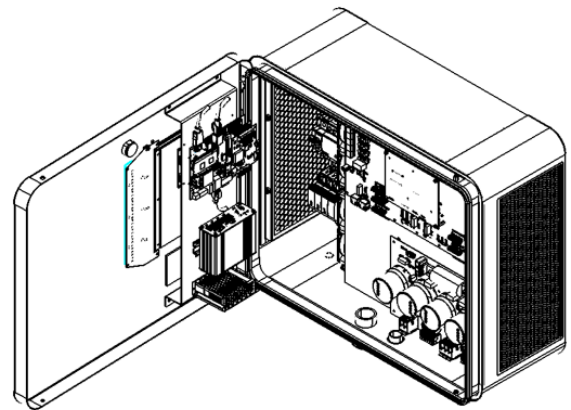
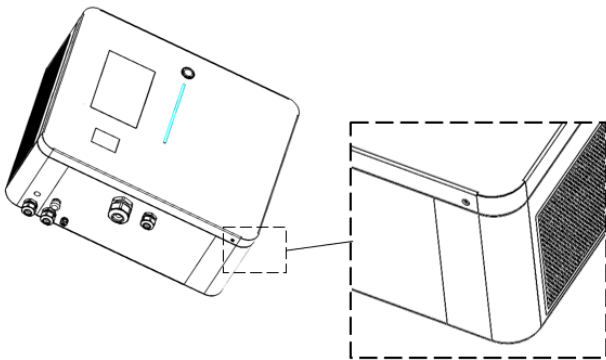
#### 3.1 Opening the SKYCHARGE casing

Use a TR20 screwdriver to unscrew the 2 screws located on the top and the bottom right side of the SKYCHARGE front door. The front door can be opened sideways.

Front view



Bottom view



**Electric shock hazard!** In case of an operation on the power converter, the operators shall disconnect the MCB and wait for at least 5min. Before opening the door, operators shall ensure absence of voltage on the DC-link capacitors.



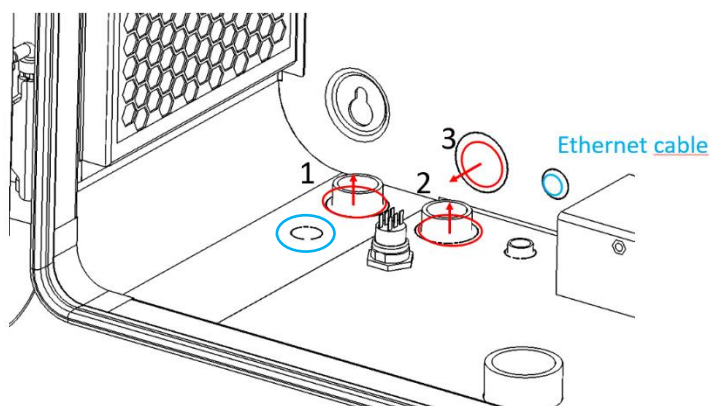
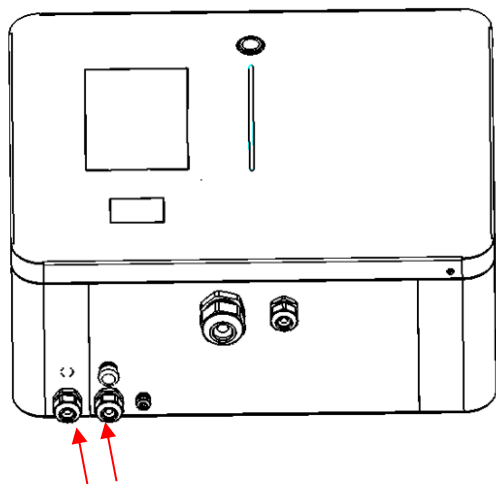
### 3.2 Changing the charging current



**Electric shock hazard!** Please make sure that the main power supply is turned off before trying to connect the power to the charging station. In any case, working under voltage shall be avoided.

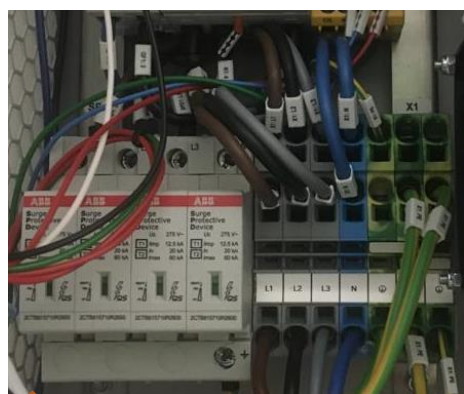
The electrical cable must reach the terminal from the left.

The electrical cable and the communication cable can be introduced into the SKYCHARGE housing from the bottom left side (1 & 2) or from the rear left side (3).



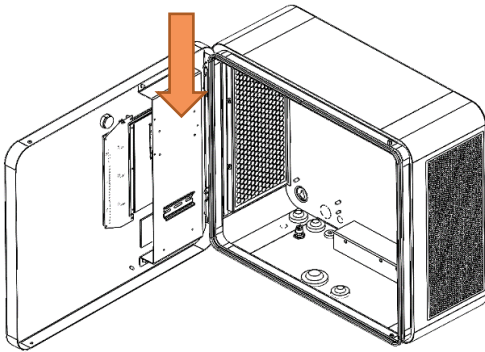
The electrical connection is made on the power supply terminals located at the bottom of the charger. (See in blue circle)

Please measure the rotating field and the line voltage.



## 1.1 eMobility Cockpit connection

The SKYCHARGE implement's a 3G/4G/LAN router to enable the IoT connection.  
The router is located on the SKYCHARGE door.



### Router Configuration

The configuration is performed on the Green Motion Manufacturing Plan

Teltonika RUTX09 modem router configuration

Default settings:

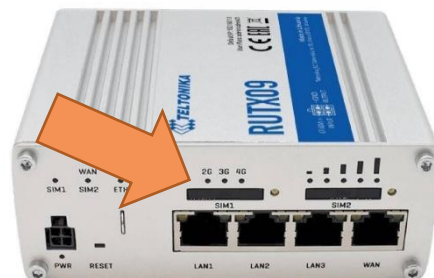
- IP: 192.168.1.1
- User: admin
- Password: admin01
- The router requires a password change during the first start \*

(\*) Please contact Green Motion SA support for the password.

### 3G/4G Configuration

Insert the SIM card in the SIM1 port

- Connect a computer and go to the site [http://192.168.52.1\(\\*\)](http://192.168.52.1(*))
- If a step-by-step configuration menu "Setup Wizard" appears, you must ignore it and go directly to the menus described below.
- Go to the Network> WAN menu
- Activate and edit the MOB1S1A1 network
- If necessary, enter the APN and the PIN code of the SIM card (APN: shared.m2m.ch)
- Press Save & Apply



(\*) Please contact Green Motion SA support for the password.

## LAN Configuration

Connect a computer and go to the site <http://192.168.52.1> (\*)

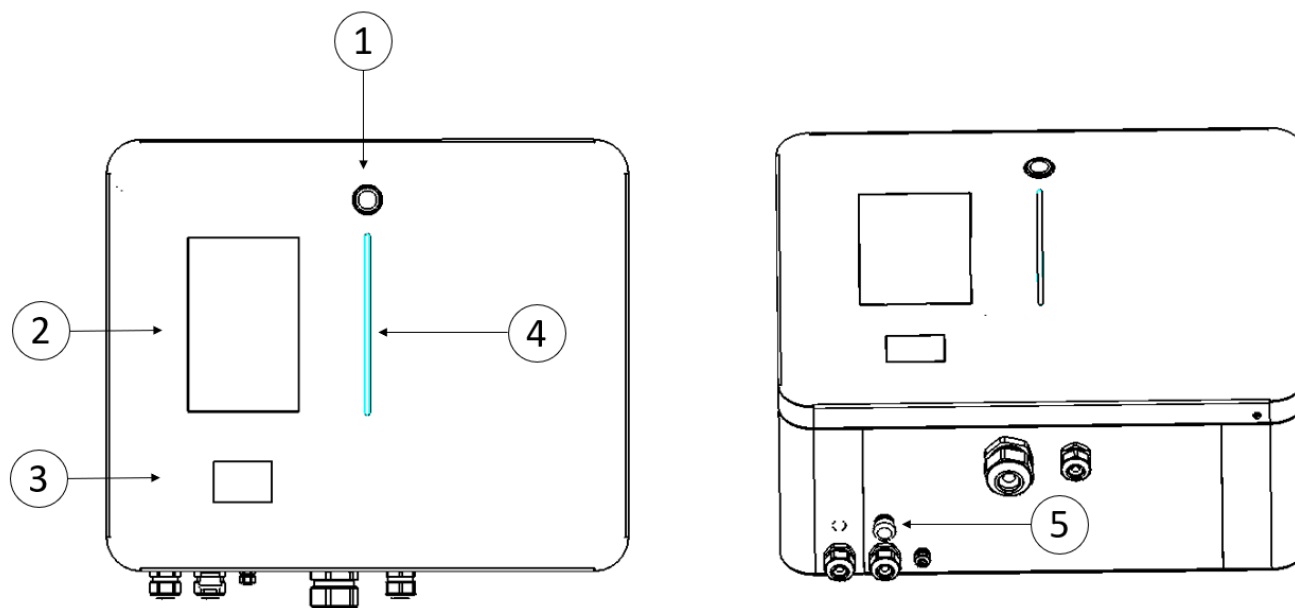


- If a configuration step-by-step menu appears, it must be closed.
- Go to the Network > WAN menu
- Activate the WAN network and deactivate the other networks
- Press Save & Apply
  - Authorize the management of the router from the WAN (Only if in a private network)
    - Go to System> Administration> Access control
- Check Enable Remote HTTP and Enable Remote HTTPS

(\*) Please contact Green Motion SA support for the password

## 4 USAGE OF THE STATION

### 4.1 Description of the station







1. Button indicator
2. Touch screen display
3. RFID reader
4. LED display
5. Emergency stop button

To start a charge, simply connect the plane via the GB/T cable. Then press on the screen to charge the plane up to 80% or 100%. In future software development, starting the charge will be possible via an RFID card (offline and online), via the mobile app (online stations only) or via a SMS (online stations only).

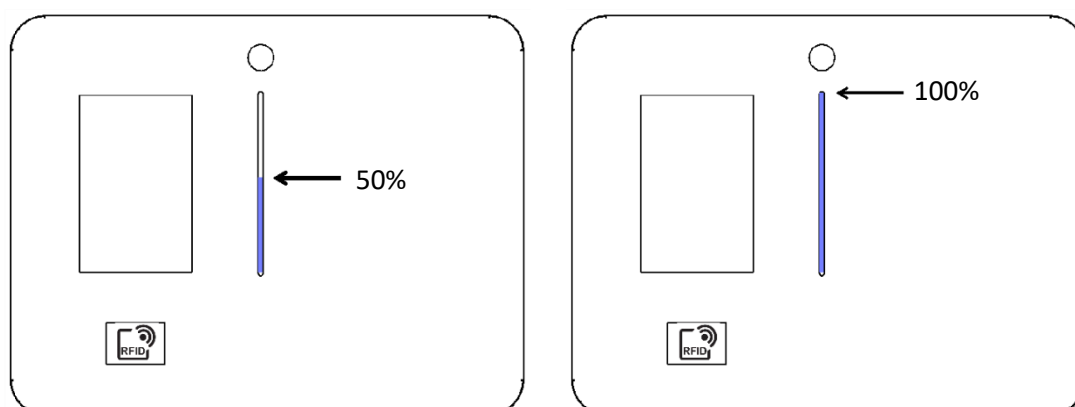
## 4.2 Charging states









### Button indicator

Button	Status display	Comments
	No light	Not powered or start-up stage
	Green light on	Ready to be use or need user interaction
	Blue light on	Charge initialization, vehicle charging, or charge finished
	Red light on	Error in charging

## LED display

The LED display indicates the charge status.


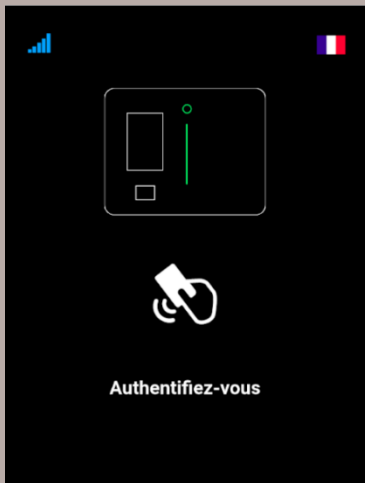


LED Display	Status display	Comments
	Green light on	Ready to be use
	Flashing green light	Start-up stage
	Breathing green light	Waiting for user interaction
	Flashing blue light	Charge start-up stage
	Breathing blue light	Vehicle in charge
	Blue light on	Vehicle charged
	Red light on	Error in charging
	No light	Stopped or not powered

## Touch screen display

As the touch screen display is the user interface and implements a lot of screen, please take time to read what is described and write on the screen before to operate.

In this section you will find the information to start your experience.

LED Display	status display
 <p>The splash screen displays the Skycharge Solo logo, which consists of a stylized 'C' with a flame-like shape above it, and the text 'SKYCHARGE SOLO' below. At the bottom center, there is a small icon of a hand touching a screen.</p>	<p>Splash screen Touch the screen to wake up.</p>
 <p>The authentication screen shows a status bar at the top with a blue 4G signal icon on the left and a French flag on the right. Below the status bar is a central graphic of a smartphone with a green vertical bar and a small green circle. Underneath is an icon of a hand holding an RFID badge. At the bottom, the text 'Authentifiez-vous' is displayed.</p>	<p>Authentication screen</p> <p>Before any operation, please ensure that the 4G sign is colored in blue on the top left corner.</p> <p>If bar graph is RED, there is no connection to the server.</p> <p>By touching the Flag, you can select your language.</p> <p>Present the RFID badge on the RFID reader to initiate authentication.</p>

## 5 MAINTENANCE



In order to prevent any technical failure, Green Motion is performing maintenance services. Please contact Green Motion Support for more information on maintenance contracts.



**Electric shock hazard!** Please make sure that the main power supply is turned off before trying to open the charging station. In any case, working under voltage shall be avoided.

*CHECK THAT THE CIRCUIT-BREAKERS ARE OPEN ON THE PANEL BEFORE ANY MANIPULATION*

### 5.1 Troubleshooting

Before any troubleshooting action, please carefully observe the led status colour and read with attention the indication displays on the screen.

The charging station does not start	- Check the power supply on the electrical panel, switch off and reset the circuit-breaker to restart it.
The charging station indicates that the emergency button is pushed	- The emergency button is located underneath the station main case. Turn it for release until it clicks into open position.
The charging station visual indicators are red	- Try to disconnect the plane from the charging station and retry - Check the emergency button, it should be pull out
Antenna bar graph is red	- Check that the connection of the SKYCHARGE to the backend is available / network is available
Authentication refused	- Check that you are a recognize and authorized user subscribed to the charging point operator database - Check that the connection of the SKYCHARGE to the backend is available
The socket visual indicators are red	- Check the power supply on the electrical panel, switch off and reset the circuit-breaker to restart it.
The plane is locked to the charging station	- In some cases, the user must unlock the plug from the plane's dashboard or using the key control (long press is sometimes required) - In case the user is really not able to remove the cable, press the emergency shutdown to release the cable. The emergency button must then be set back to its initial position
The plane does not charge	- Check the condition of the Cable GB/T. - Check the power supply on the electrical panel, switch off and reset the circuit-breaker to restart it. - Try to start and move the plane, then retry to charge



## 5.2 Cleaning or replacing the filters



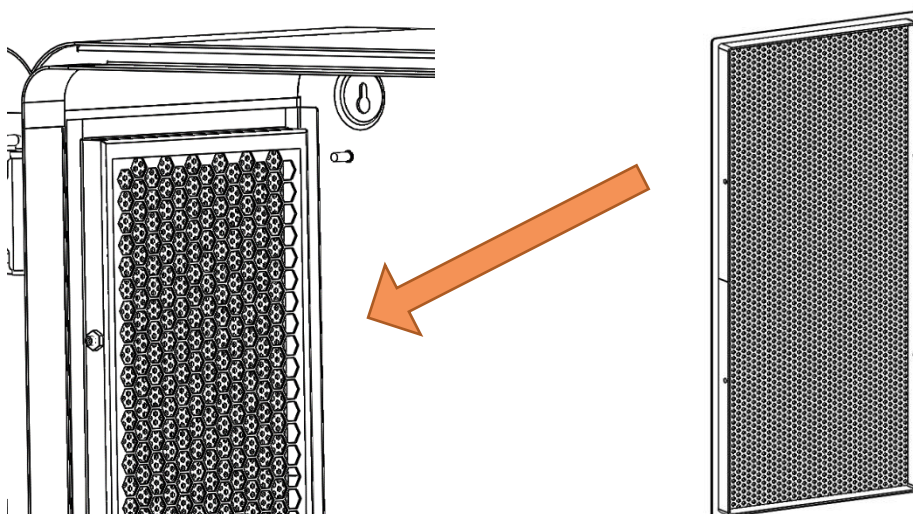
**Moving part – Risk of Injury:** Please make sure that the fans are turned off and that the station is not in use during the maintenance operation. Moving fans can be dangerous and cause finger injuries



**Filter Maintenance.** Please make sure the filters are checked on a yearly basis to ensure they are not obstructed and working properly. In case of obstruction, filters need to be replaced immediately.

Filters can be replaced. They are accessible as described below.

Using a 2.5 mm hex key, remove the 2 screws attaching each filter cartridge to the unit:



The filters are located inside the filter cartridge. Contact Green Motion support for spare filter parts.

Filter reference is:

**GM500075**      MZ4-161-397-20-S/290  
FIBRES SYNTHÉTIQUES BLANC  
ISO COARSE 50% / G4  
DIM. 161 X 397 MM

## 5.3 Support

Green Motion telephone support is available Monday to Friday from 08:00 to 12:00 and from 13:00 to 17:00 (16:00 on Friday) CET

Email: [support@greenmotion.ch](mailto:support@greenmotion.ch)

Tel: +41 21 544 04 46