Star Charge

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Basic Training for Jupiter V3

Star Charge Europe GmbH

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Star Charge

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Brief Introduction

Highlights & Specification

Highlights

- High power factor >99%
- Multiple connectors combination: CCS2+CHAdeMO+AC Type 2
- Simultaneous charging of all connectors
- Output current: 200A
- Wide output voltage 150-1000Vdc
- Lower noise level
- Cable management system facilitates cable movement

Appearance

A. LED status indicator
B. Card swiping area for charging
C. Touch screen
D. Door lock
E. Charging connector slot
F. Charging cable management system
G. Emergency stop
H. POS terminal

Specification

General Information	
Input Rating	400Vac±10%, 3 phases, 50/60Hz, L1+L2+L3+N+PE
Power Factor	≥0.99 @ Normal Load
Efficiency	≥94% @ Full Load
Grid Type	TN-S, TN-C, TN-C-S, TT
Output Interface	CCS2+CCS2 or CCS2+CCS2+AC Type2 or CCS2+CHAdeMO+AC Type2
Output Power	CCS2: 60kW, CHAdeMO: 60kW, AC Type2 :22kW
Output Voltage	CCS2: 150-1000Vdc, CHAdeMO: 150-500Vdc
Output Current	CCS2: 200A max, CHAdeMO: 125A max, AC Type2 :32A max

Mechanical	
IP Rating	IP55
IK Rating	IK10
Cooling	Forced Air
Charging Cable Length	5m
Dimensions (WxHxD)	1050mm*715mm*1910mm
Weight	Approx. 200kg (excluding power modules 15kg*2)
Installation	Ground mounting

Certification and standards	
Standards and compliance	IEC 61851-1, IEC 61851-21-2, IEC 61851-23, LVD 2014/35/EU, RED 2014/53/EU

Installation

Requirements & Workflow

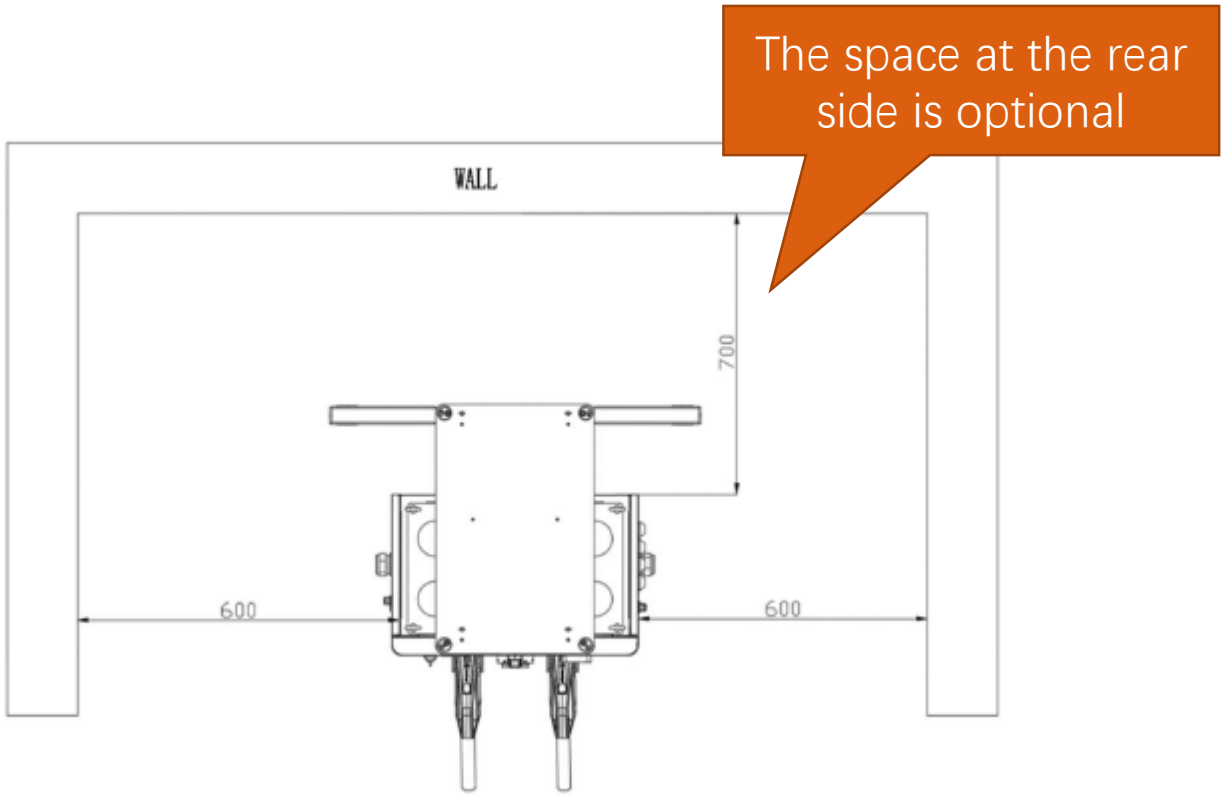
Installation - Requirements

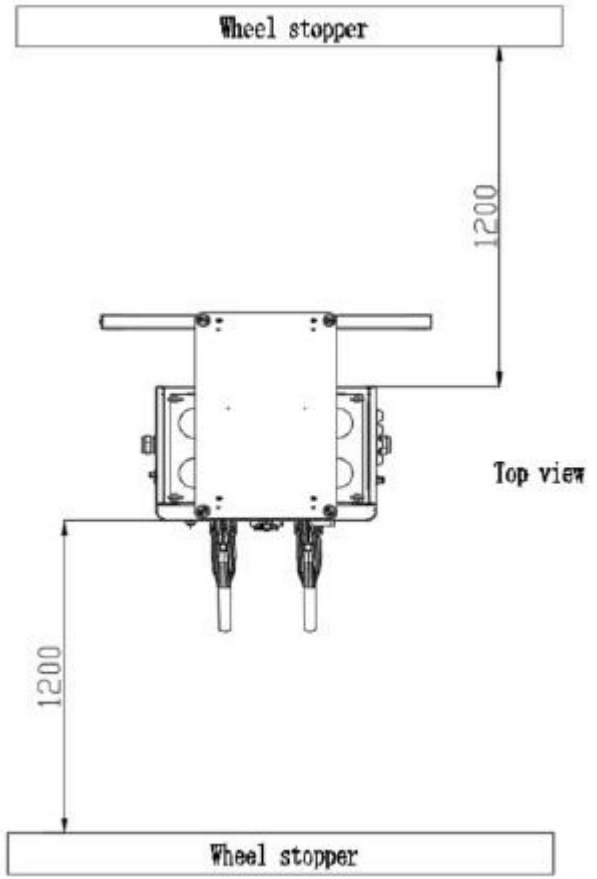
1.Requirements for grid capacity

- If the charger operates at full power, the grid capacity shall be ≥ 85kW
- Three-phase input, phase to phase voltage 400V (±10%), input current up to 130A per phase
- Earthing system: TN/TT
- Recommended parameters of superior circuit breaker Ue = 400V, In ≥ 160A, thermal magnetic type, Icu ≥ 52.5kA, Ics ≥ 35 kA, 4Poles
- Grounding resistance ≤ 4Ω or follow local regulation
- Insulation resistance ≥ 1MΩ or follow local regulation

Installation - Requirements

2.Maintenance distance



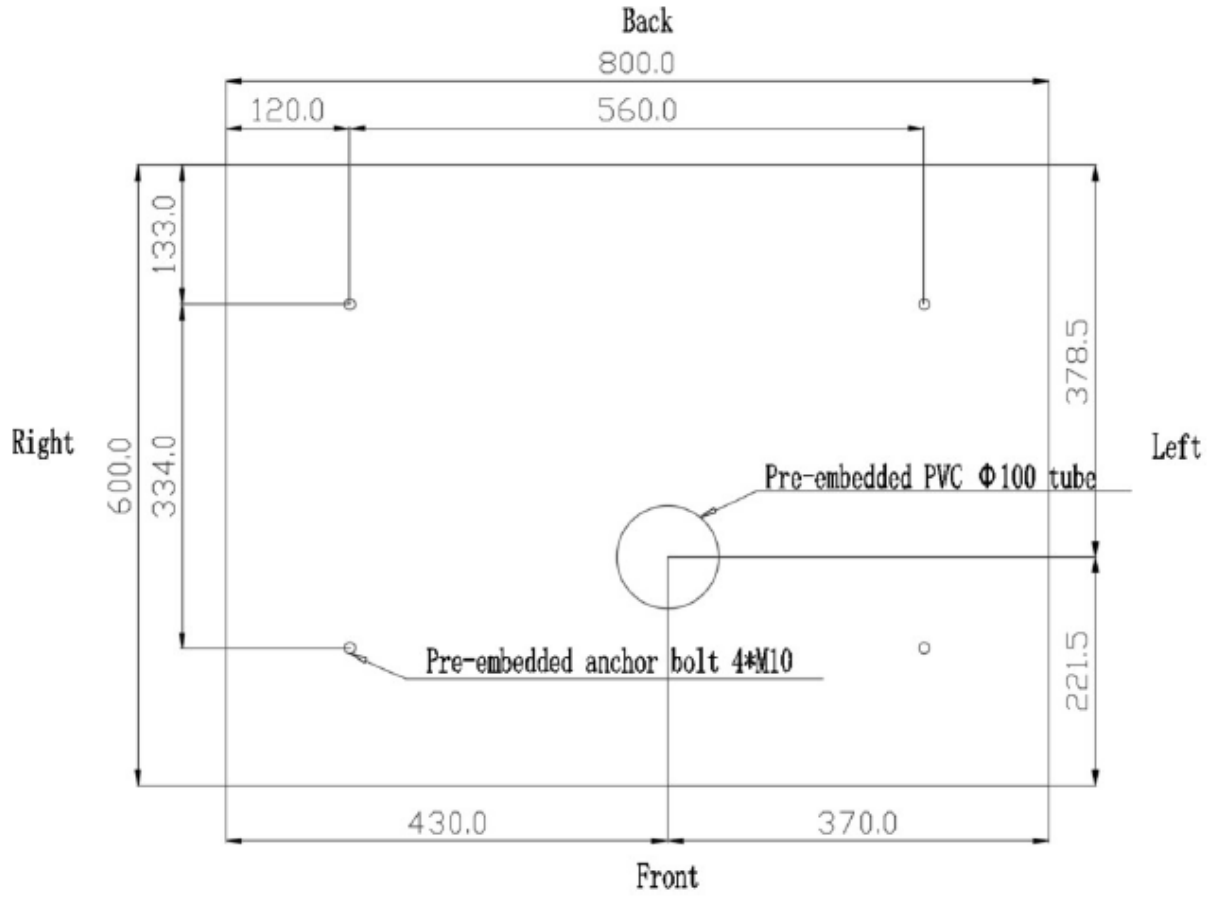


Installation - Requirements

3. Installation foundation

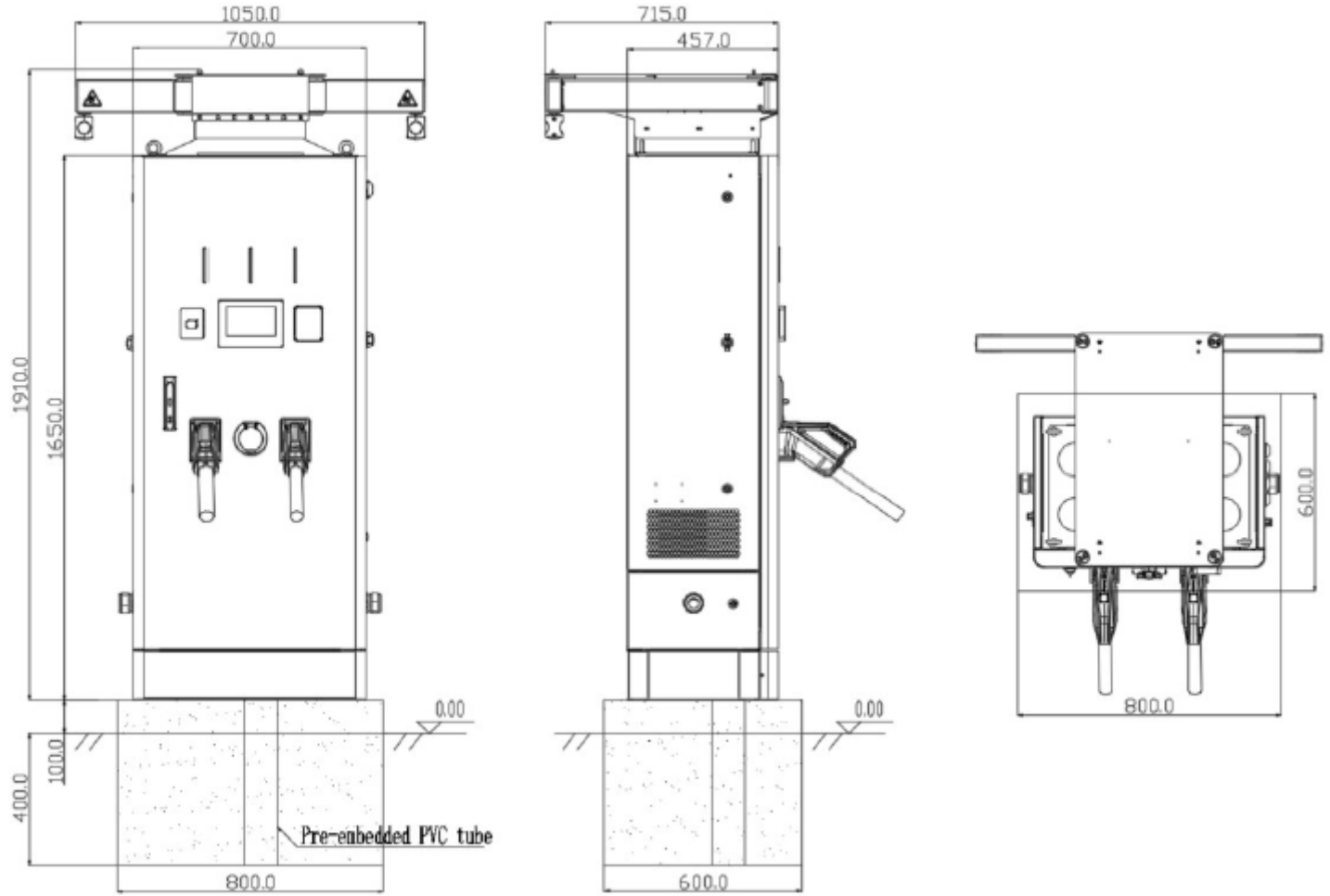
The charger shall be installed on a hard mounting floor (e.g. cement floor), if there is no appropriate mounting floor on site, a concrete foundation is recommended.

- Size 800mm * 600mm * 500mm
- Depth of the foundation 400mm
- Height above the ground 100mm.
- The foundation is filled with C20 concrete



Installation - Requirements

3. Installation foundation



4. Power cable specification

- 3 * 50mm² (L1,L2,L3)+ 2 * 25mm² (N, PE)
- The core material is copper.

Installation - Workflow

1. Unpacking check

Check the following items:

- packing list number and equipment quantity.
- equipment nameplate information.
- whether spare parts and accessories are complete
- Factory inspection report and certificate.
- whether the appearance of equipment is in good condition

Package	Package Size(mm)	Weight	Attached documents	Parts List
Wooden box	1170*870*2080 （W*D*H）	293kg	Certificate of conformity Factory inspection report User manual	DC charger*1 Key*3 Key of triangle lock*1 IC card*2 Power module*2

2. Power cable preparation

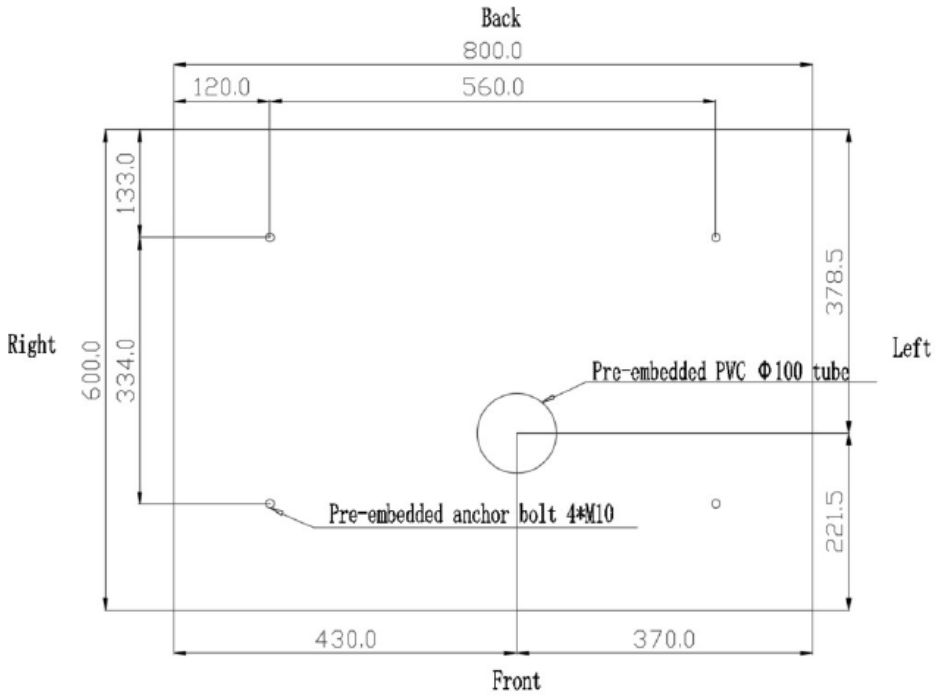
Please lay the power cables in advance.

- power cable: reserve 0.6m length above the ground (or concrete foundation surface)
- If network cable is needed, reserve 1.2m above the ground (or concrete foundation surface)

Installation - Workflow

3. Foundation preparation

4 M10 anchor bolts shall be pre-embedded into the floor in advance and expose 30-40mm on the upper surface of the concrete foundation.

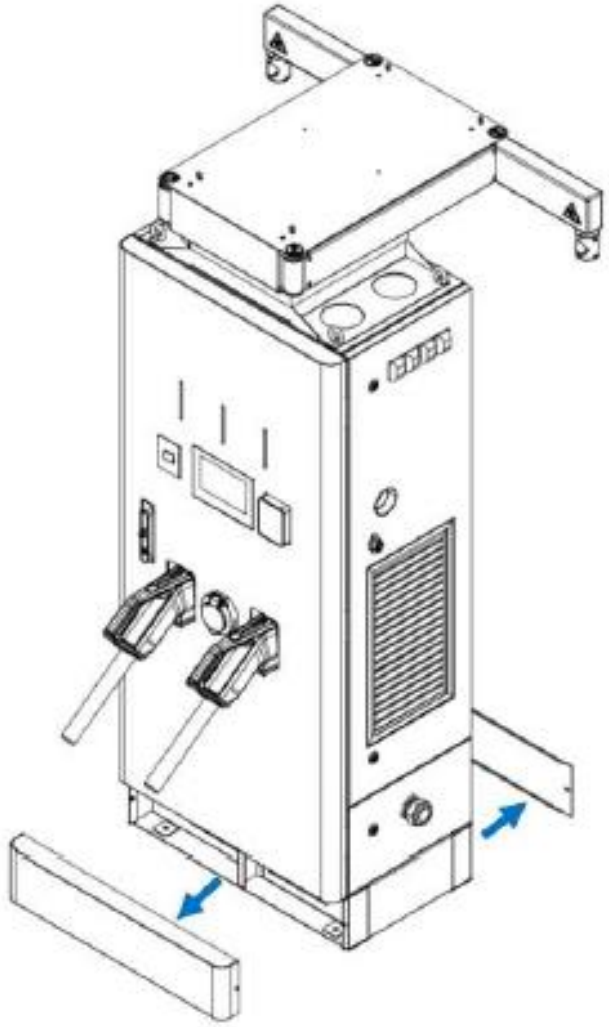


Installation - Workflow

4. Lifting

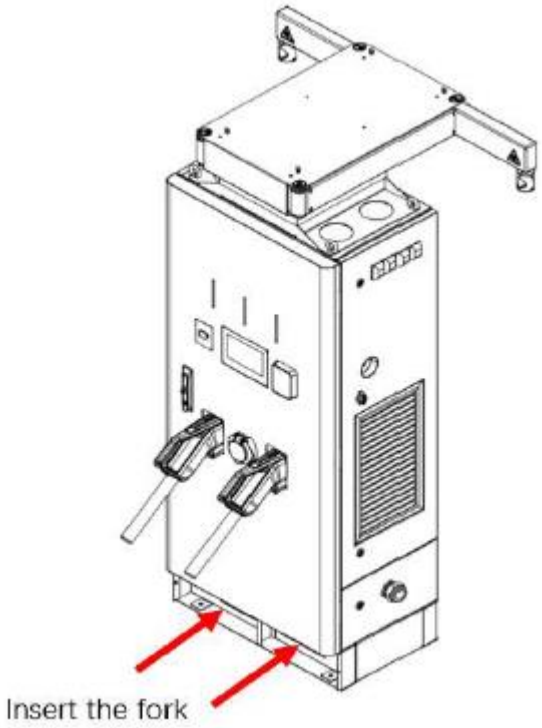
Remove the front / rear sealing plates

Remove screws from pallet



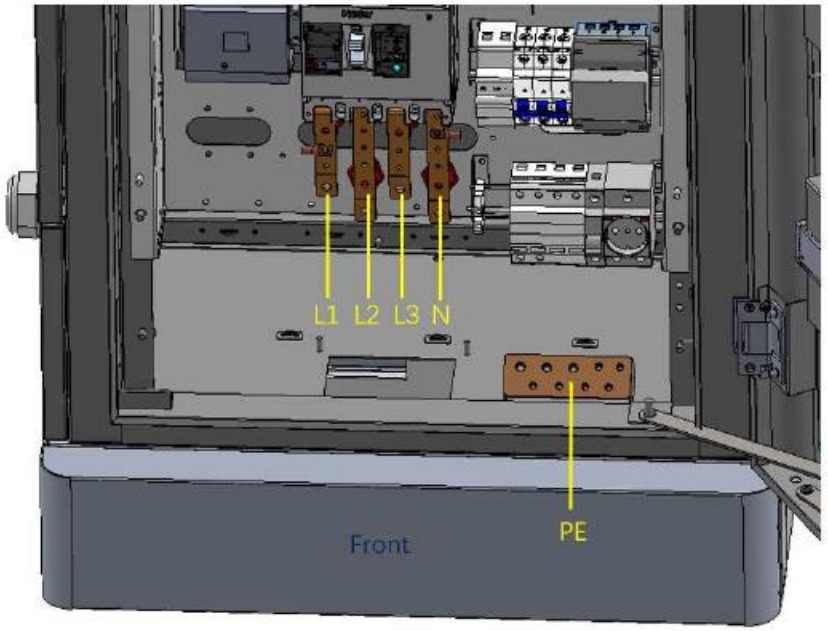
4. Lifting

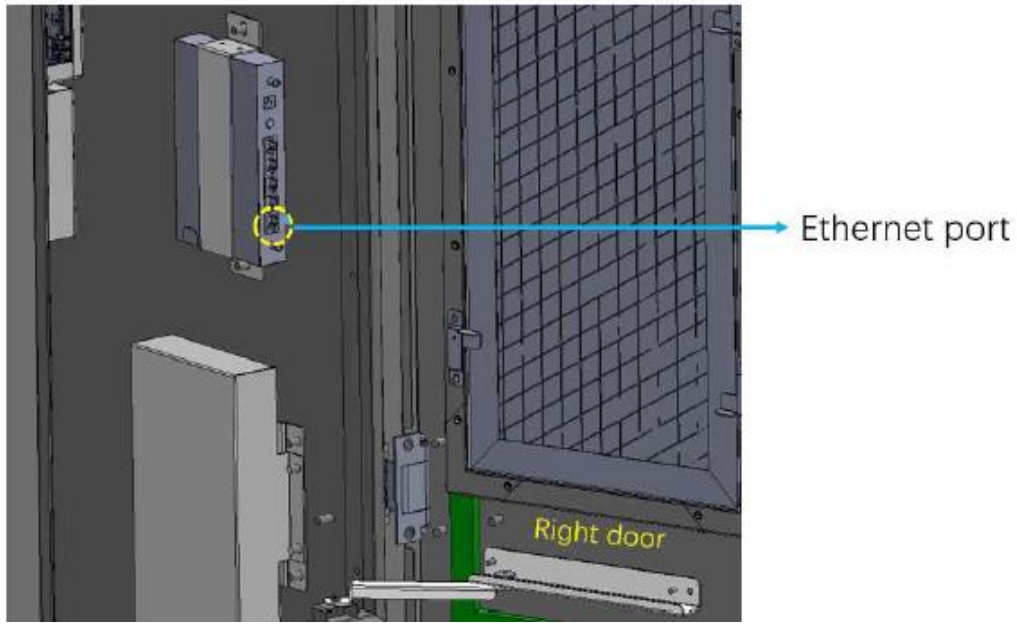
- Lift charge by crane or forklift
- Lower the charger slowly.
- Align 4 holes at the bottom of the charge with the embedded bolts on the foundation.
- Fix the nuts and reinstall the sealing plate.



5. Power cable handling

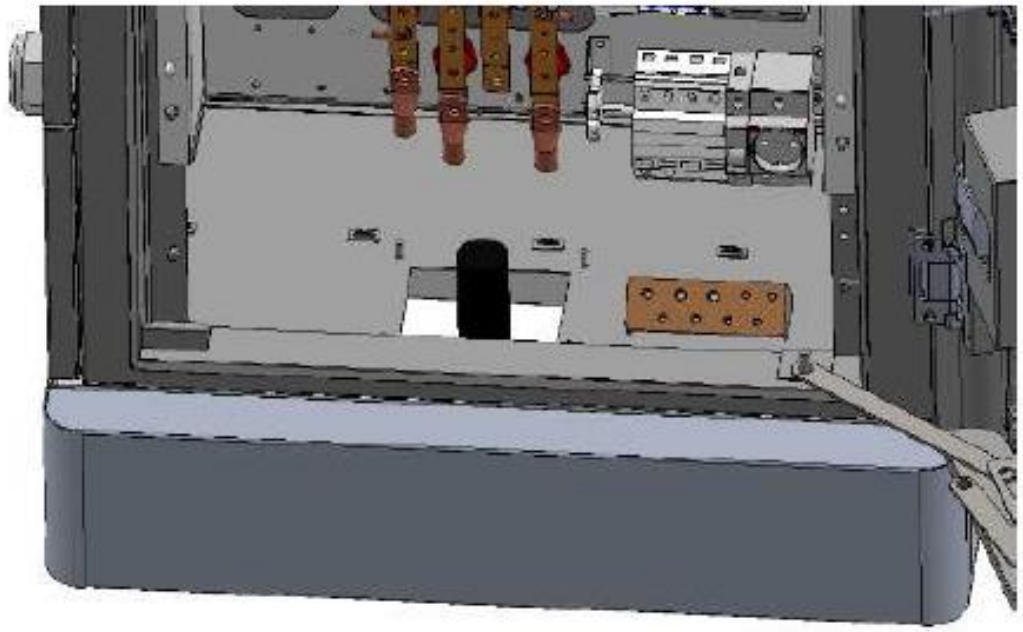
- Open the front door of the charger and thread the power cables from the bottom.
- Connect the power cable to the copper busbar
- If the network cable is used for internet connection, thread the network cable through the bottom of the charger and connect it to the Ethernet port.



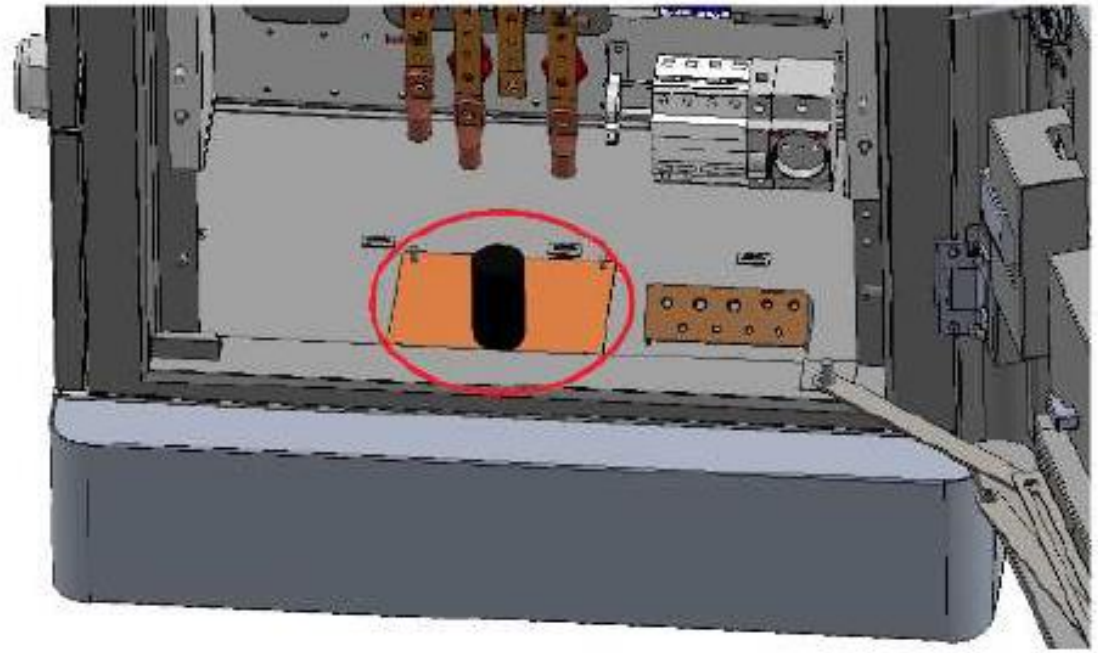


5. Power cable handling

- Fill and block the cable inlet hole at the bottom with fire-proof mud



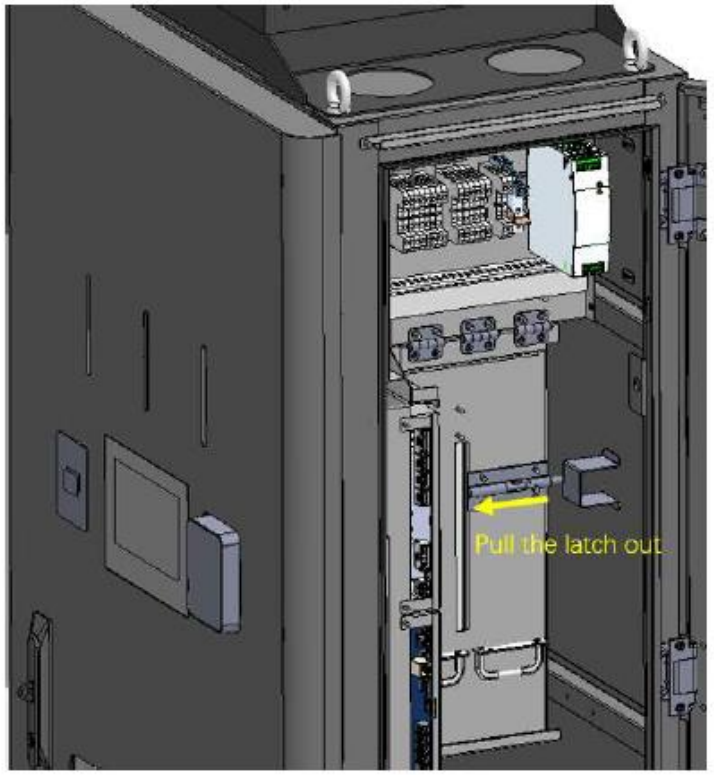
Hole before sealing



Hole after sealing

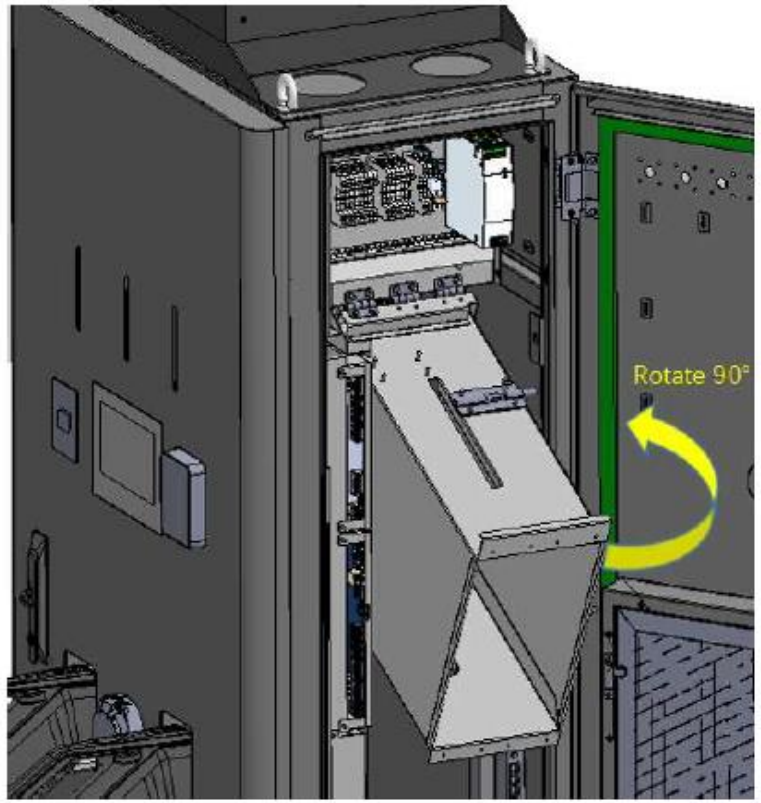
6. Insert power module

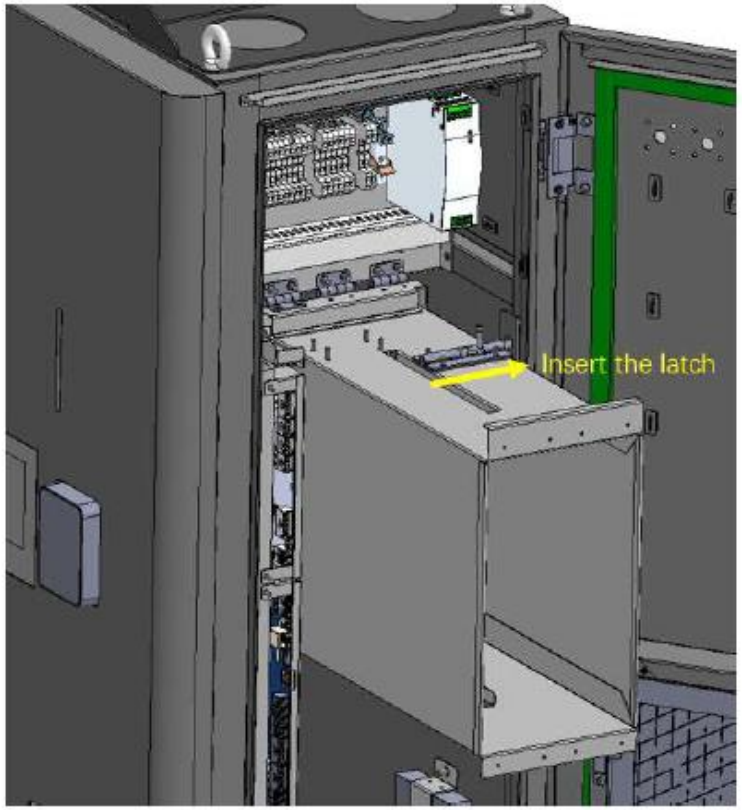
1) Open the left door of the charger, and remove the two screws, then open the right door and pull the latch of the power module slot out



6. Insert power module

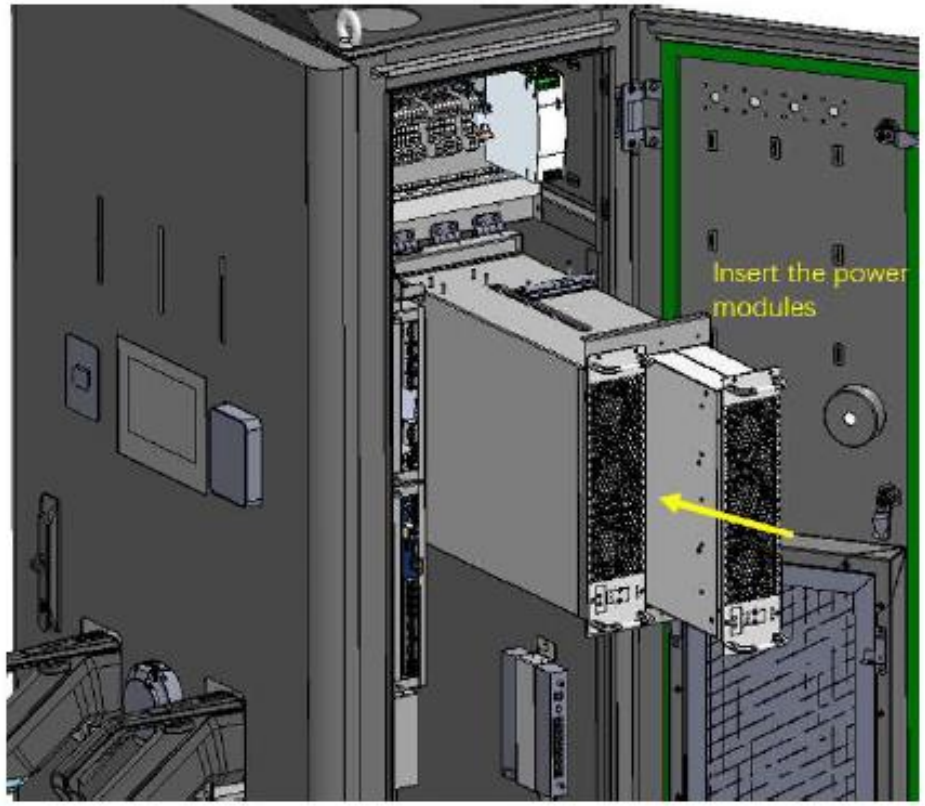
2) Rotate the module slot up 90°and insert the latch.

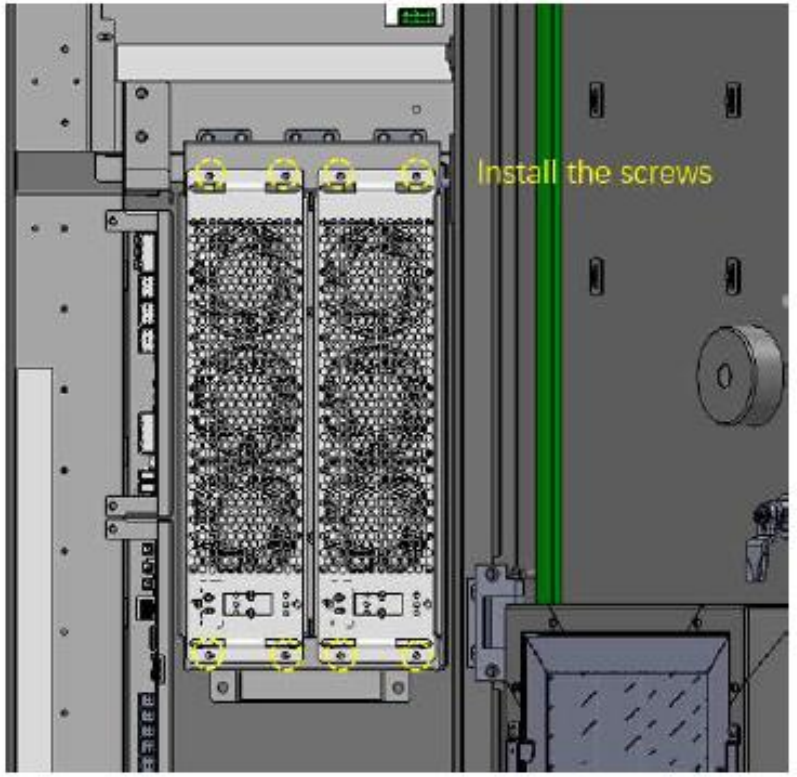




6. Insert power module

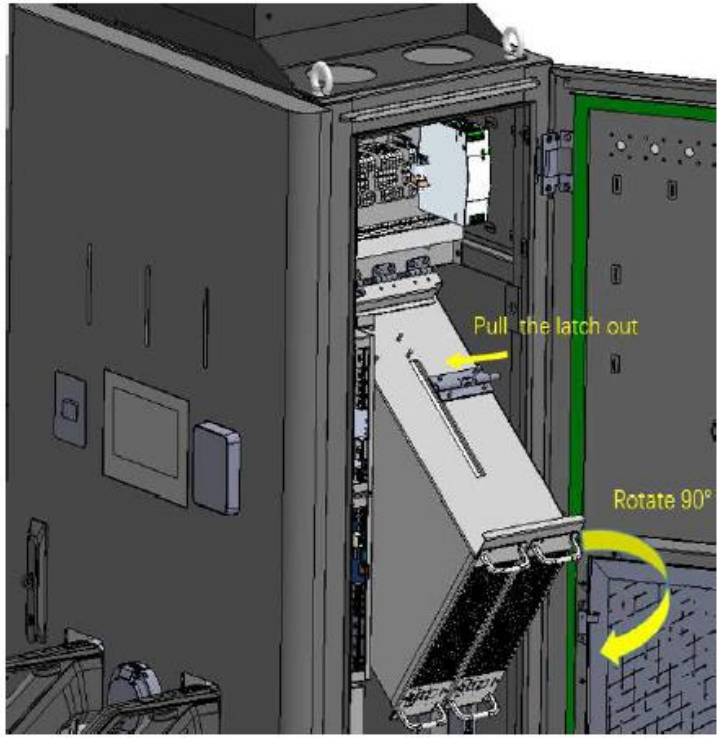
3) Insert the modules into the module slot and fix them with screws.

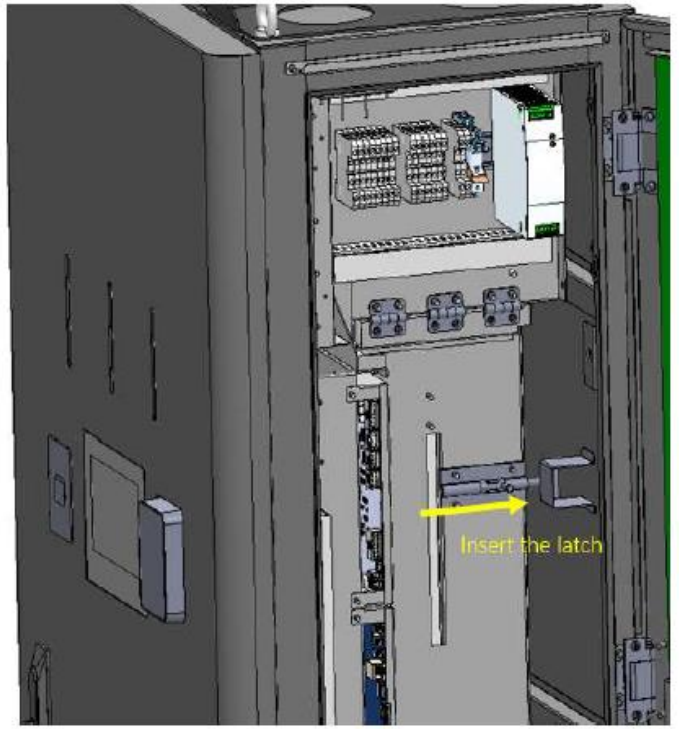




6. Insert power module

4) Pull the latch out and rotate the module slot down 90°. Then insert the latch to keep the module slot in the position.



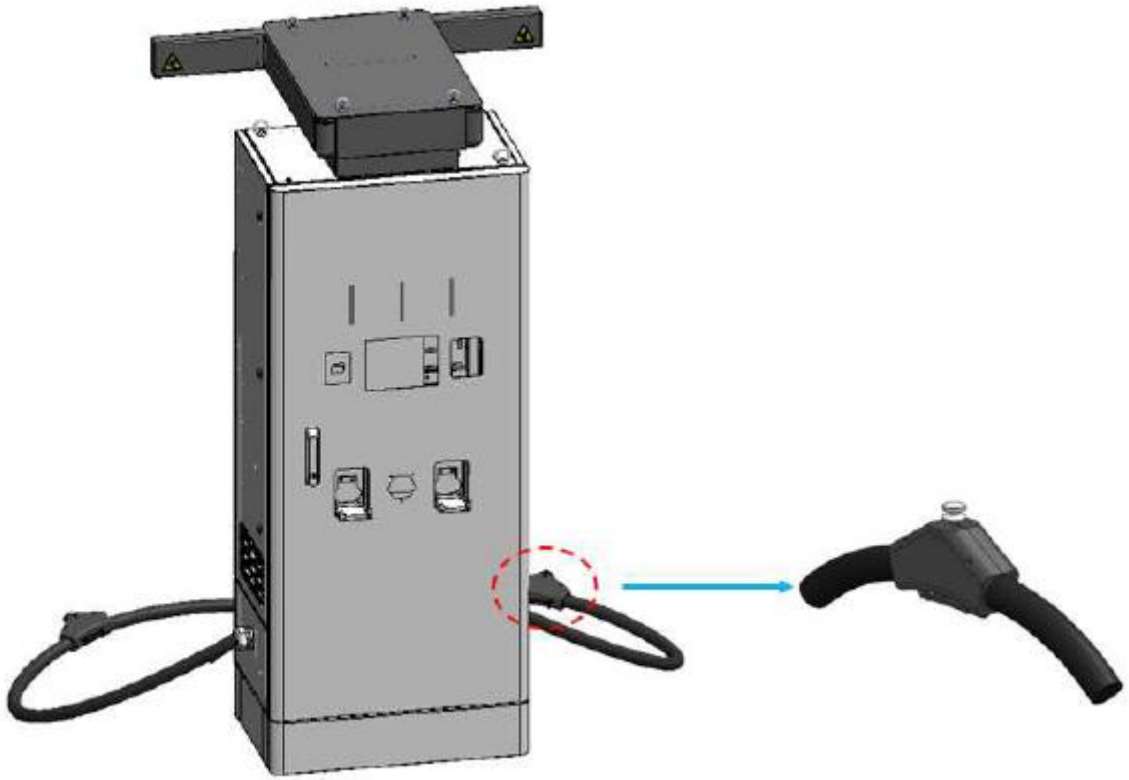


6. Insert power module

5) Reinstall the screws on the right side..

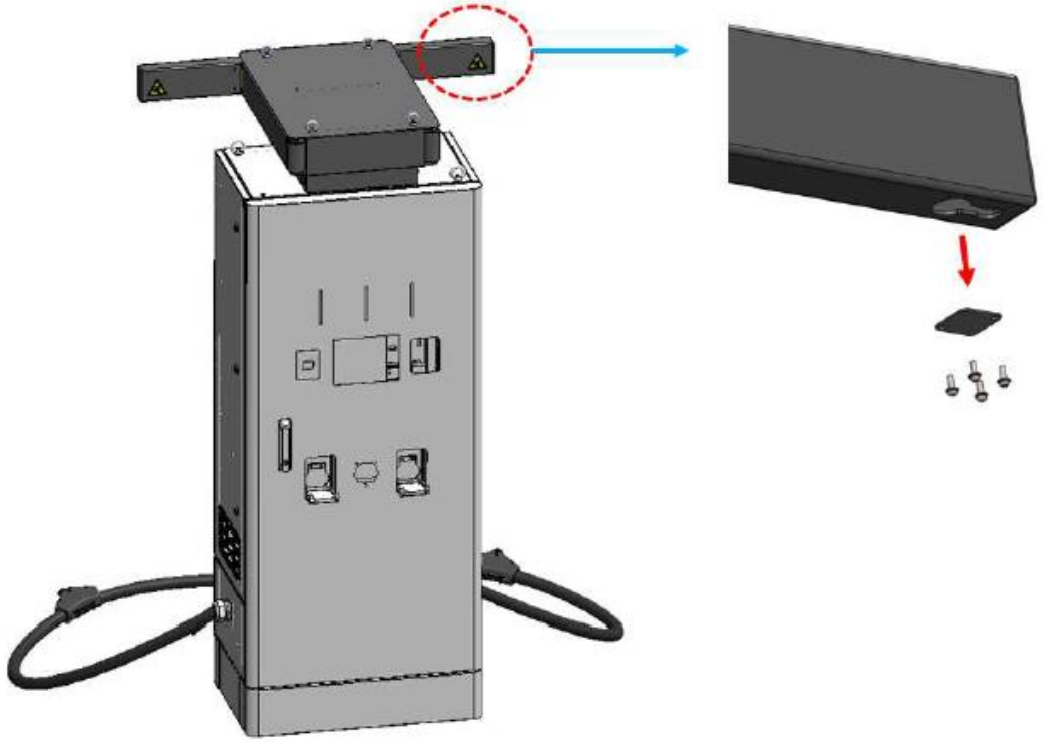
7. Fix charger cable

1) Open the package of the charger cable (clamp is already on the charging cable).



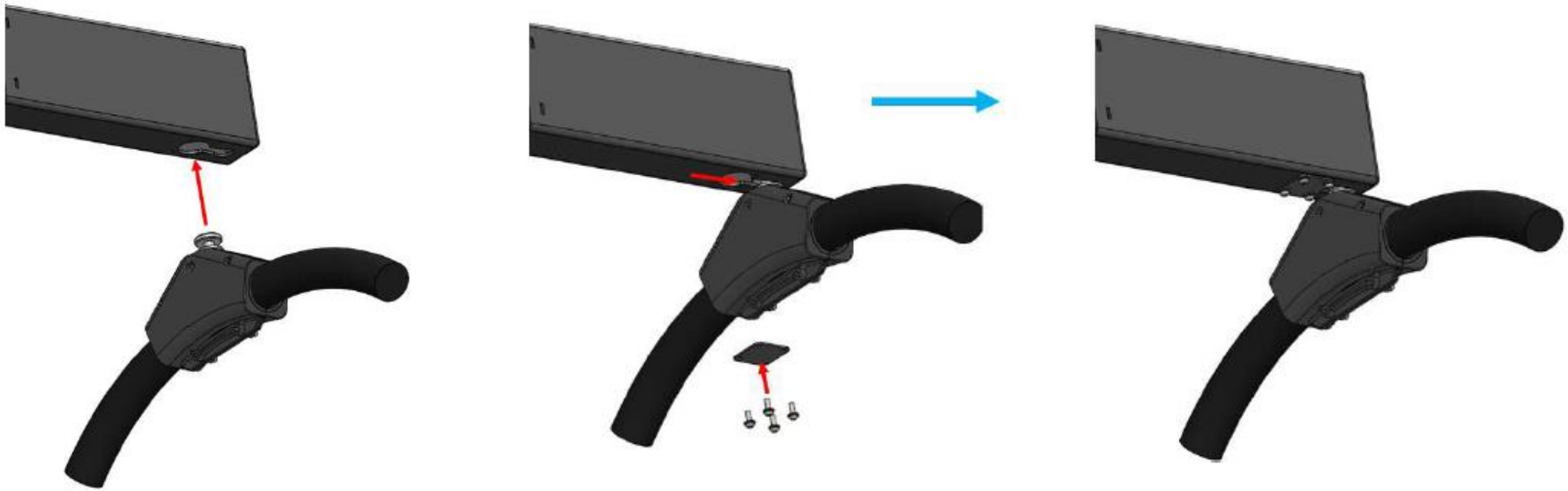
7. Fix charger cable

2) Remove the sealing plate from the CMS (cable management system).



7. Fix charger cable

3) Insert the axis of the charger cable clamp into the hole of the CMS. After that move the charger cable clamp to the right position, then install the sealing plate

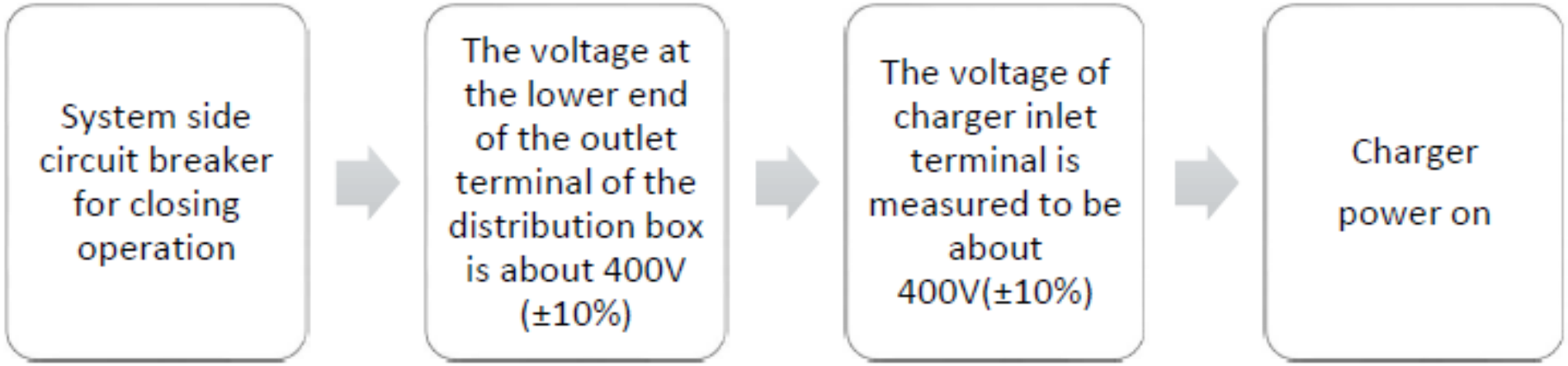


Installation - Workflow

Inspection after installation

Check the power supply cable in upstream power distribution cabinet and charger cabinet, ensure there are short circuit, no lack-phase, over voltage, under voltage, phase sequence abnormality.

Measure the voltage of different power equipments in the following order:



Commissioning

Tools & Workflow

Commissioning - Tools

Item	Tools	Usage	Example
1	Laptop	Configure the settings, read the log, Troubleshooting	
2	Ethernet cable	Connect laptop to charger	
3	J – LINK tool	Firmware update (for complex troubleshooting)	
4	SD Card (8 or 16GB) and reader	Firmware update (for complex troubleshooting)	
5	Screwdriver set	Assemble and disassemble the screws	

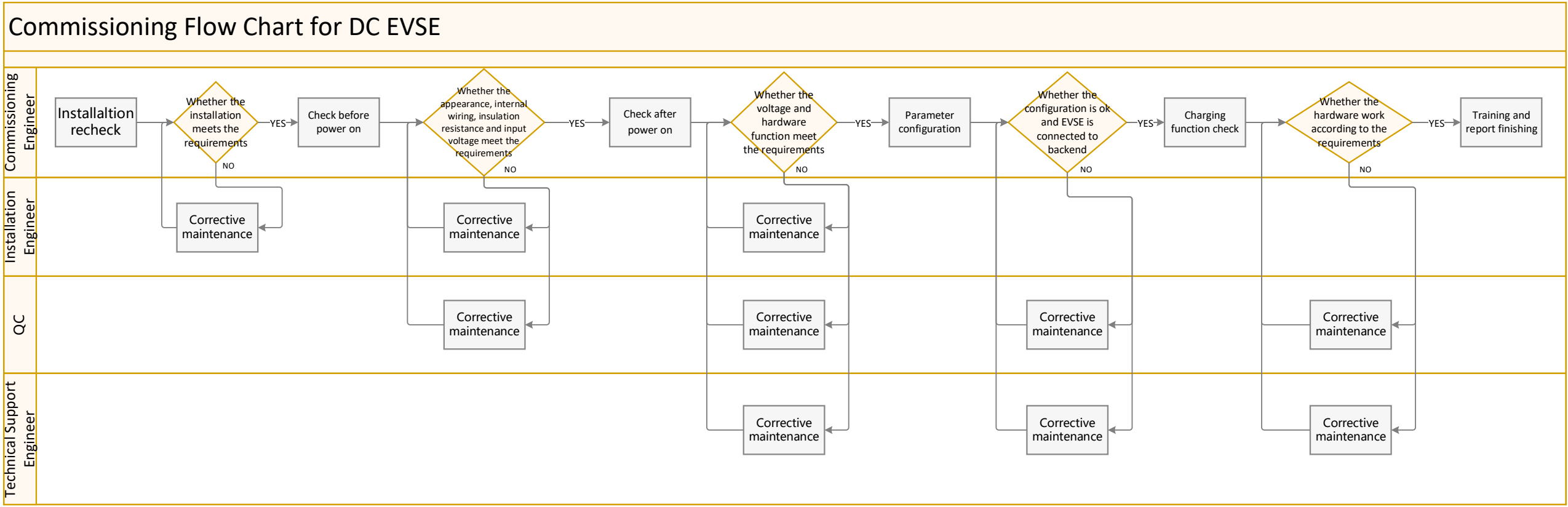
Must have

Recommended to have, only needed for complex trouble-shooting

Commissioning - Tools

Item	Tools	Usage	Example
6	Wrench set	Standby	
7	Electrical multimeter	Electric measurement	
8	Safety Sign	Warn potential danger on site	
9	Electrician protective gloves	Safety protection	
10	Electrician protective Shoes		

Commissioning - Workflow



Commissioning - Workflow

1. Installation Recheck

1. Pedestal of charger should be fixed and sealed well.
2. Outside appearance of cabinet should be intact
3. Power supply cables should be intact and tightened well.
4. Grounding/Insulation resistance should in compliance with the local regulation
5. Read information on nameplate and sign: confirm the rated output power.

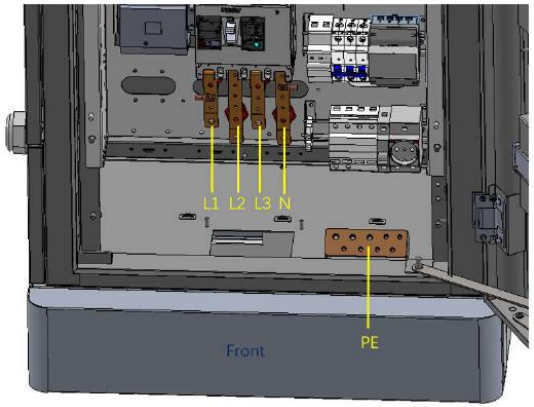
Commissioning - Workflow

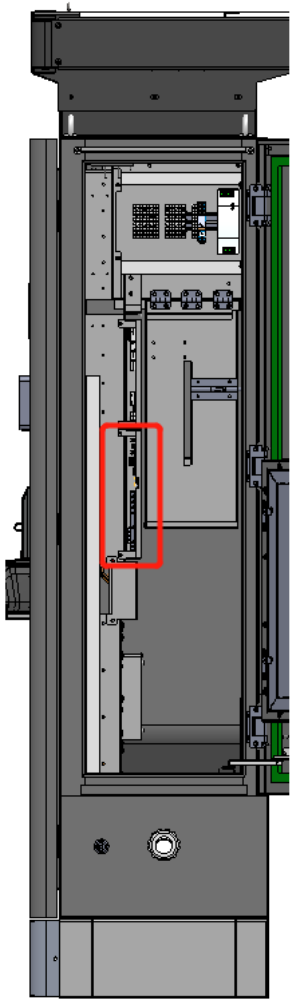
2. Check before power on charger

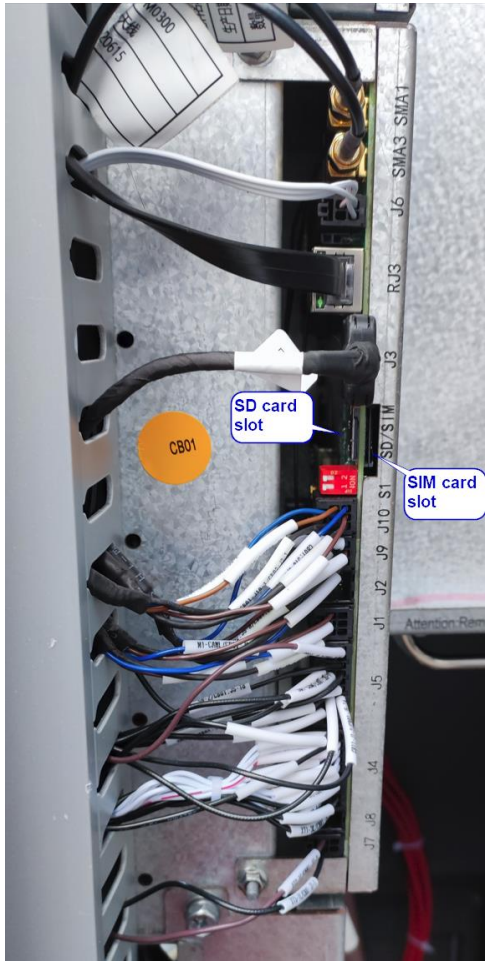
1) Fasten screws : Check whether the screws on power connection are fastened.

2) Check the input power voltage: Check the input voltage of the main breaker in charger and make sure there’s no fault such as phase loss, overvoltage, undervoltage and wrong phase sequence.

3) If SIM card is used for the internet connection, please insert the SIM card into the slot of A7 control board.

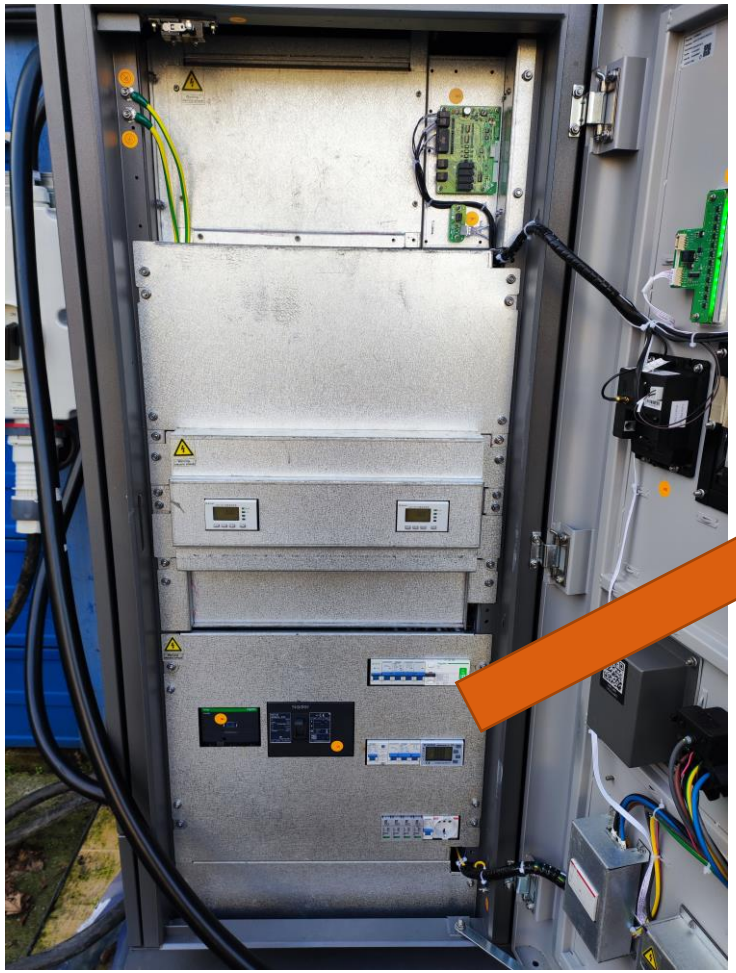


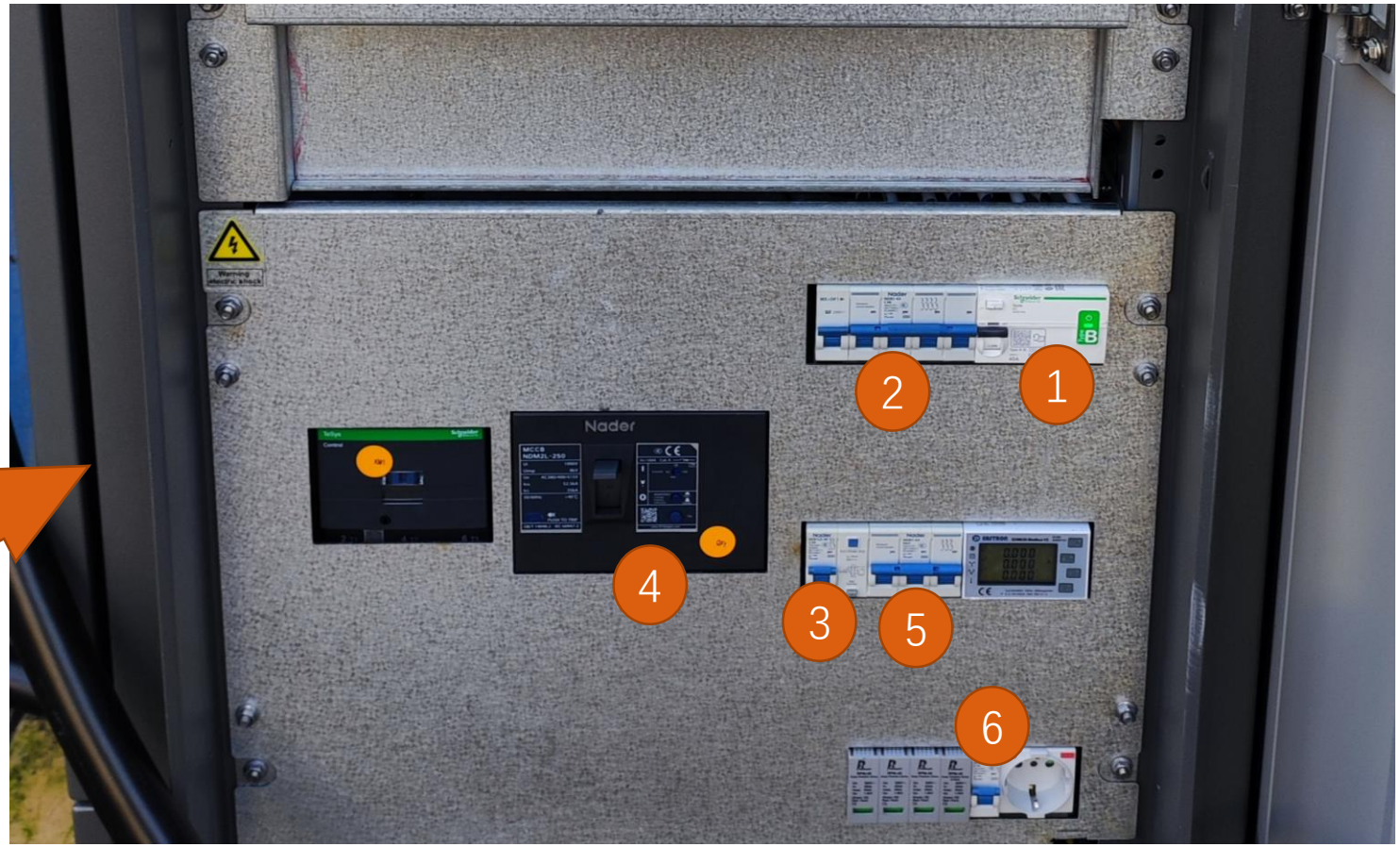




Commissioning - Workflow

3. Check after power on charger





1: RCD for AC socket 2: MCB for AC socket 3: MCB for 12V auxiliary power
4: MCCB for power modules 5: MCB for SPD 6: MCB for 230V auxiliary power

Commissioning - Workflow

3. Check after power on charger

1. Touch screen: Check whether the touch screen displays normal. The display image should be clear.

2. LED indicator light: Check whether the LED indicator light on the charger. The LED light should be green.

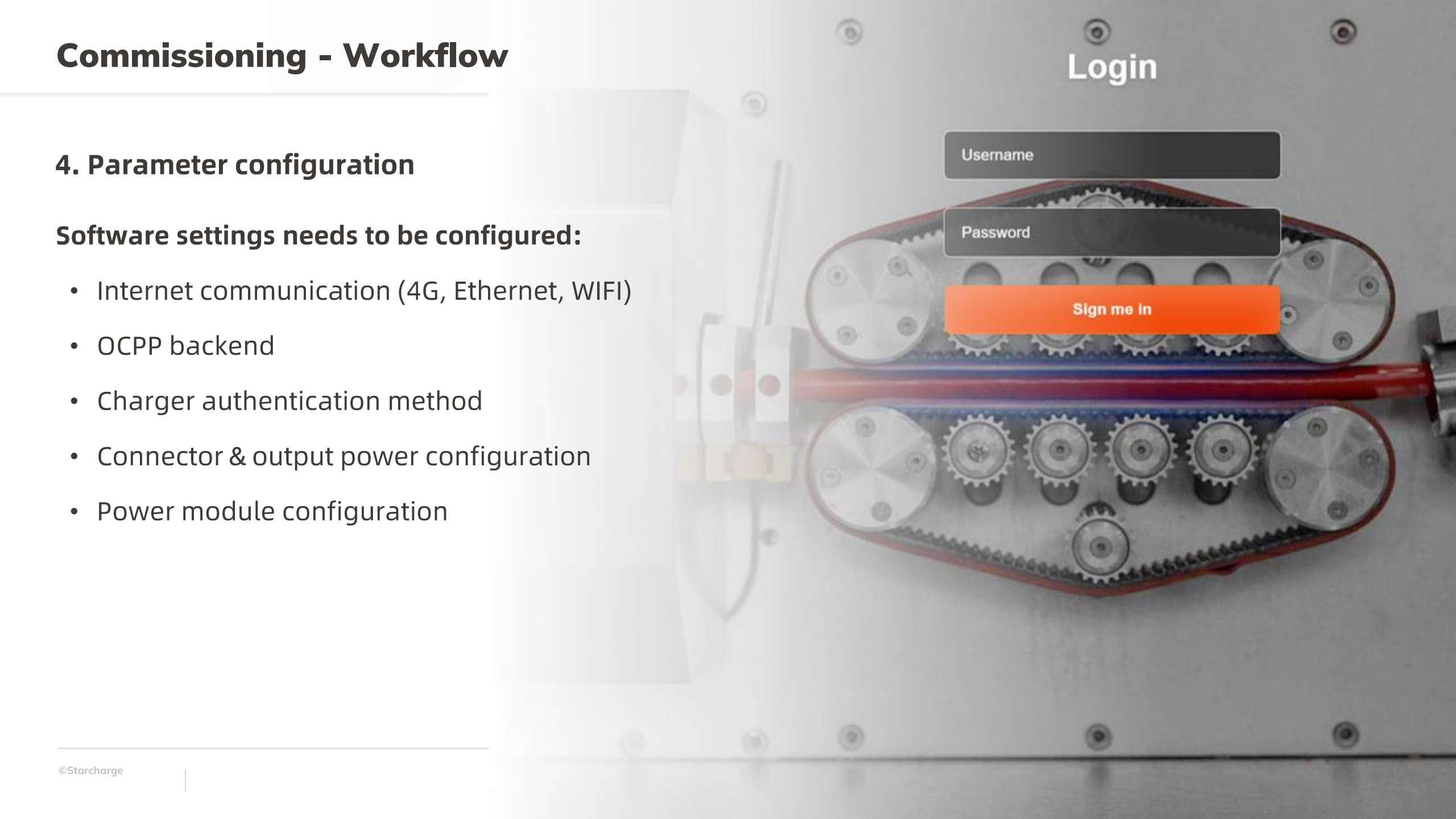
Note: If display is not on, check the switching power supply inside charger: It provides 12V DC power to control boards and screen

Commissioning - Workflow

4. Parameter configuration

Software settings needs to be configured:

- Internet communication (4G, Ethernet, WIFI)
- OCPP backend
- Charger authentication method
- Connector & output power configuration
- Power module configuration

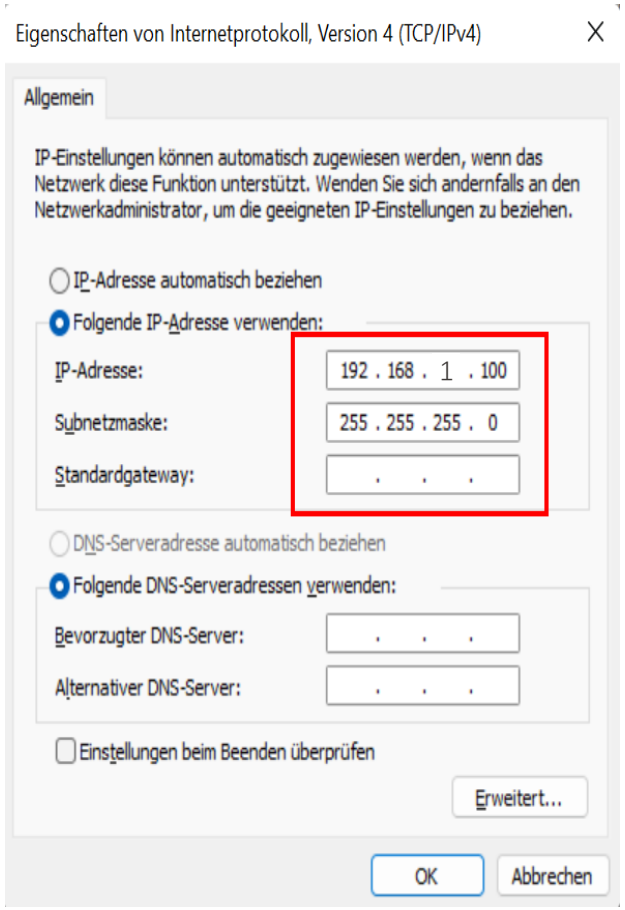


Commissioning - Workflow

4. Parameter configuration

Preparation:

Connect laptop to router via Ethernet cable and set laptop IP address as shown below (e.g. 192.168.1.xxx, xxx can be any number except 136)



4. Parameter configuration

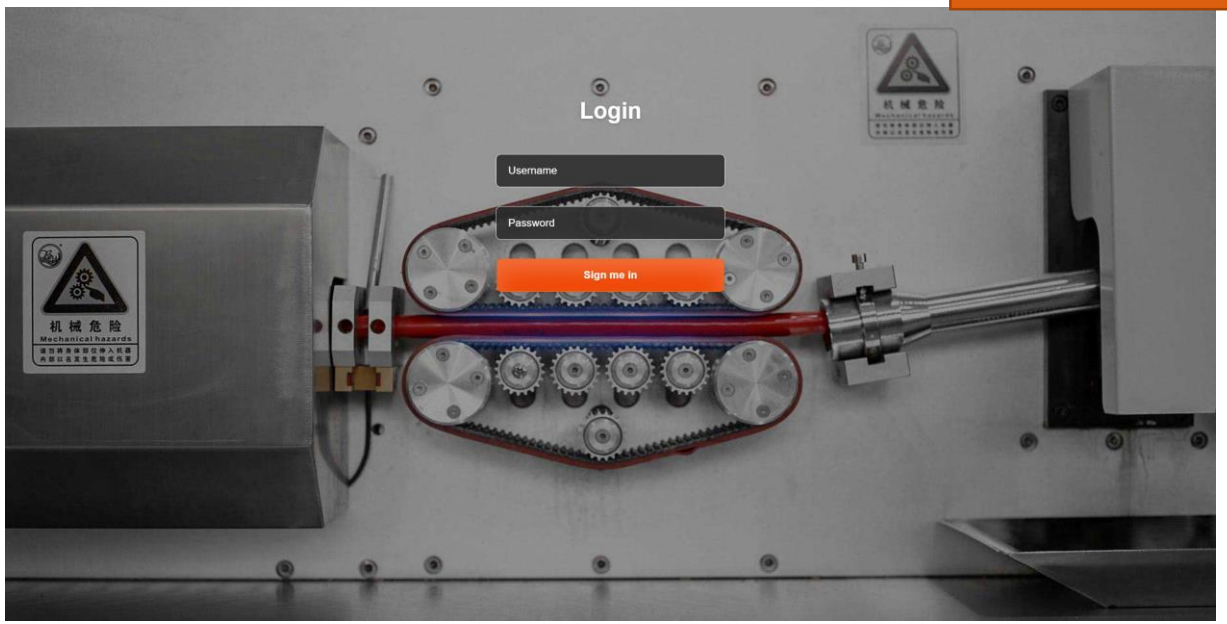
Log in:

Open a browser (e.g. chrome, edge) and enter IP address of charger 192.168.1.136

Username wbdh

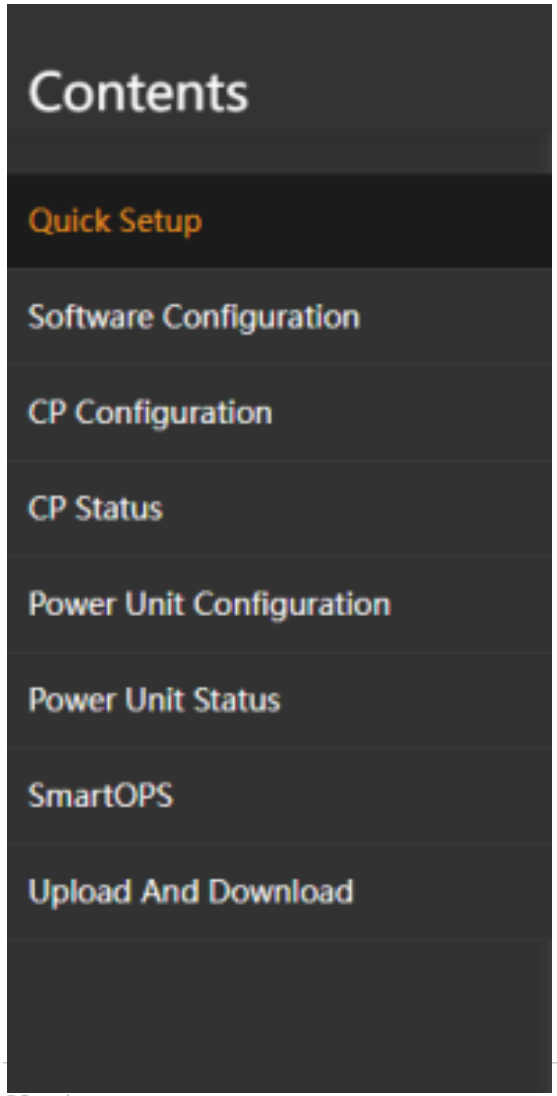
Password Wbdh26835941.

The username and password may change in new firmware version. If you have issue during log in, please contact StarCharge service tam



Commissioning - Workflow

4. Parameter configuration



Collection of the most used settings

Settings for 4G, Ethernet, WIFI, OCPP and authentication methods

Charger connector settings for connector type, output power limit, etc.

Check the internet and backend connection status

Settings for power unit assignment

Check the status of power unit status

This function is still under development...

Firmware update and log download

4. Parameter configuration

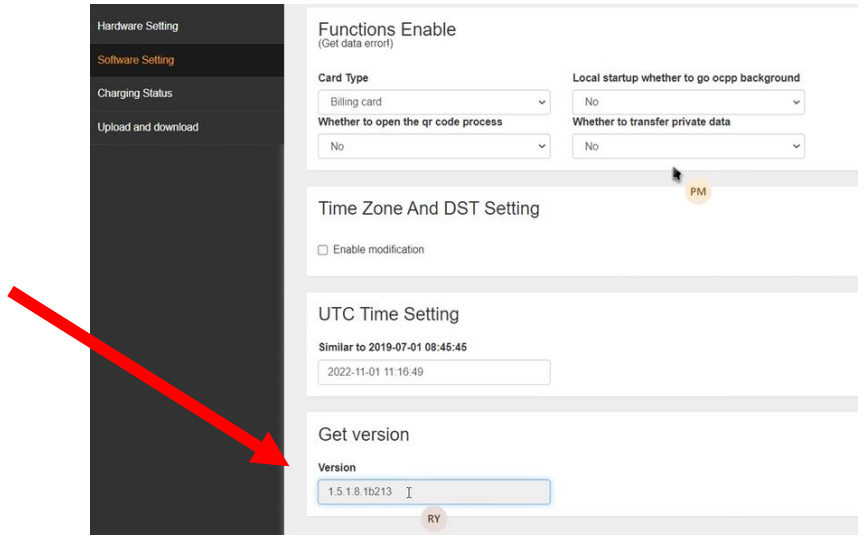
Firmware update:

In the first commissioning of a new charger, the firmware of the charger is usually relative old and needs to be updated to newest version to optimize the charger performance.

To check the firmware version, go to “Software setting“ and find “version” data.

Star Charge engineer will provide you the newest firmware version and guide you do the update.

About how to update the firmware, it will be explained in a separate training session video.

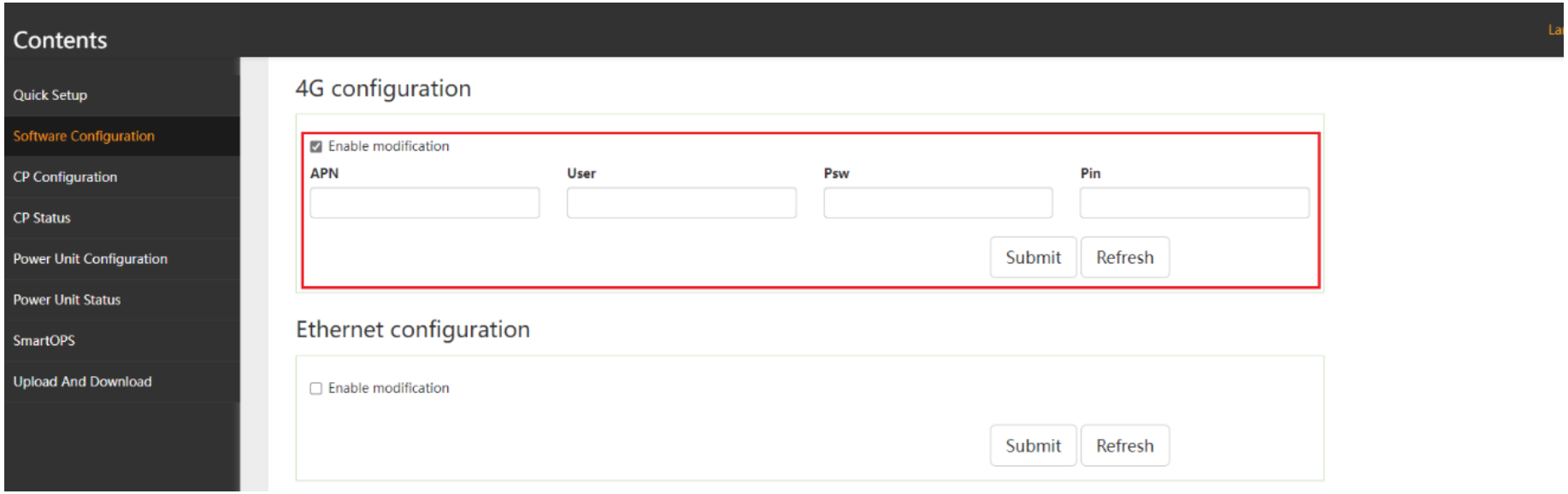


Commissioning - Workflow

4. Parameter configuration

Internet communication (4G, Ethernet, Wifi)

1. Click “Enable modification”
2. Enter data for APN, User, Psw and Pin
3. Click “Submit”

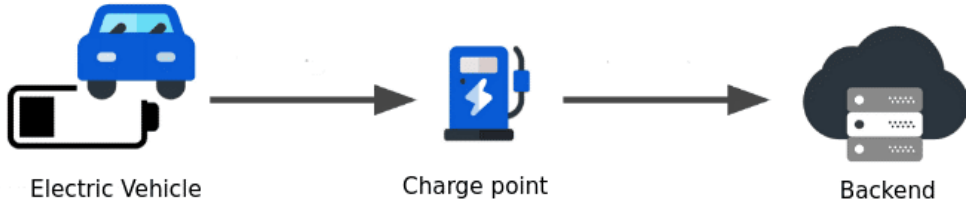


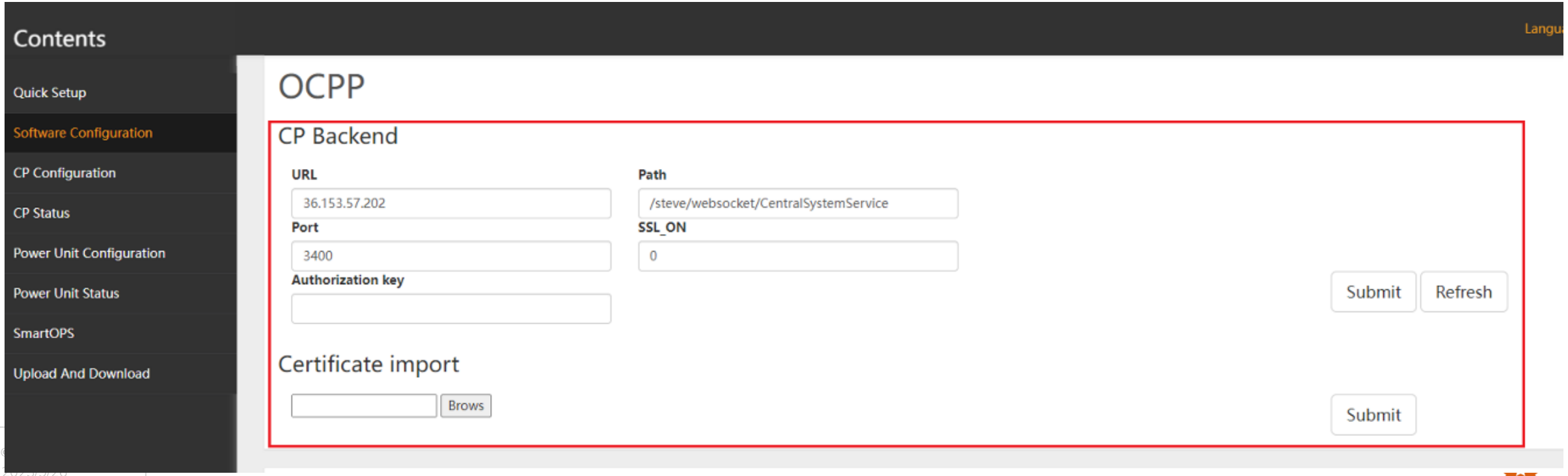
Commissioning - Workflow

4. Parameter configuration

For OCPP backend

Set CP backend: Enter data for URL, Path, Port and SSL_ON according to OCPP backend address





Commissioning - Workflow

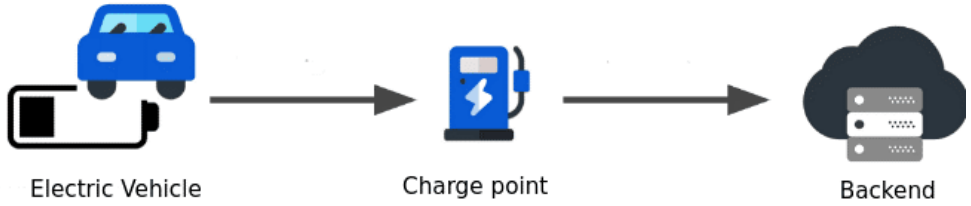
4. Parameter configuration

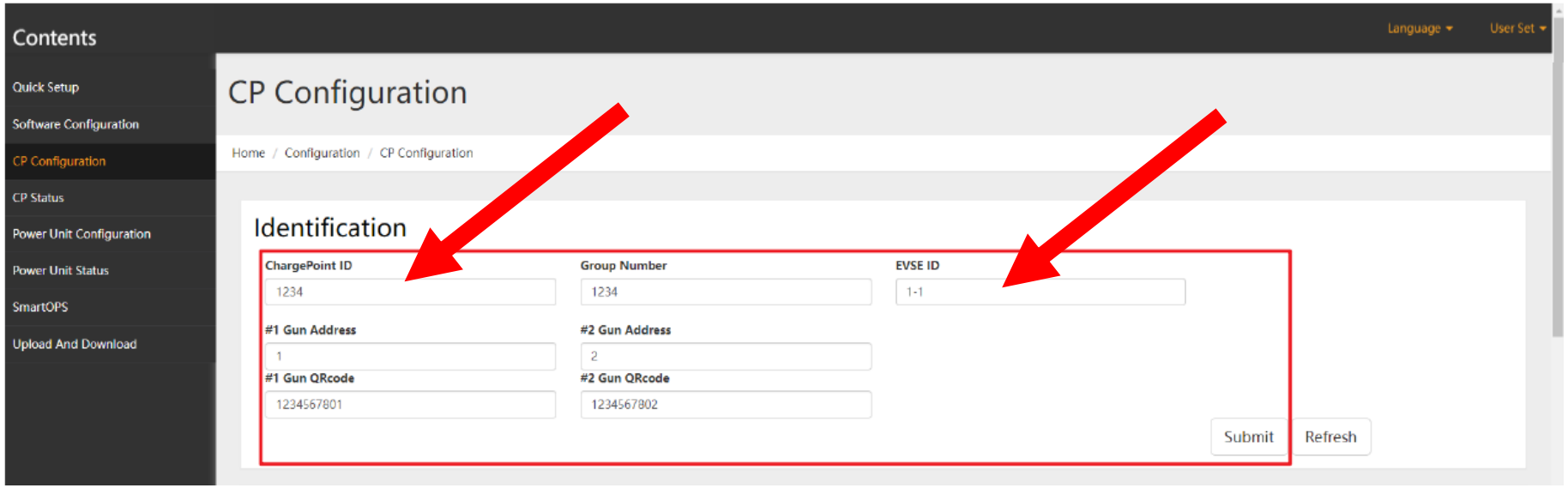
For OCPP backend

Set CP Identity: Enter the charger ID number which is registered in the OCPP backend.

EVSE ID: for charger with 3 connector, “1-1-1”

for charger with 2 connector, “1-1”

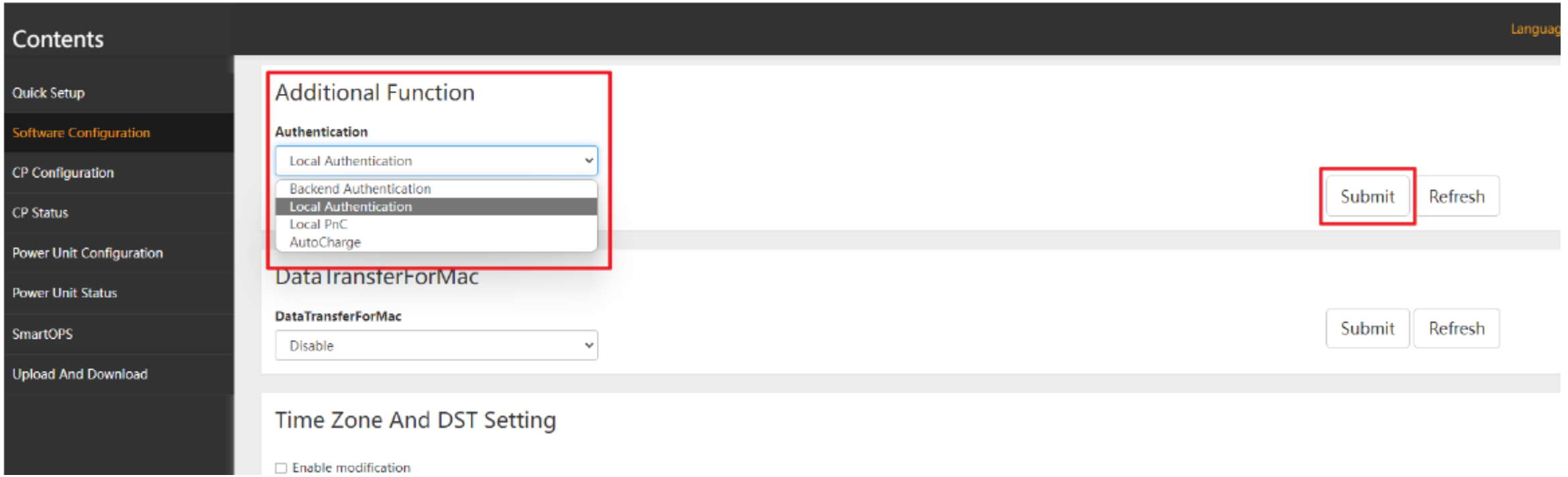




4. Parameter configuration

Charger authentication method

Following authentication method can be selected:



4. Parameter configuration

Charger authentication method

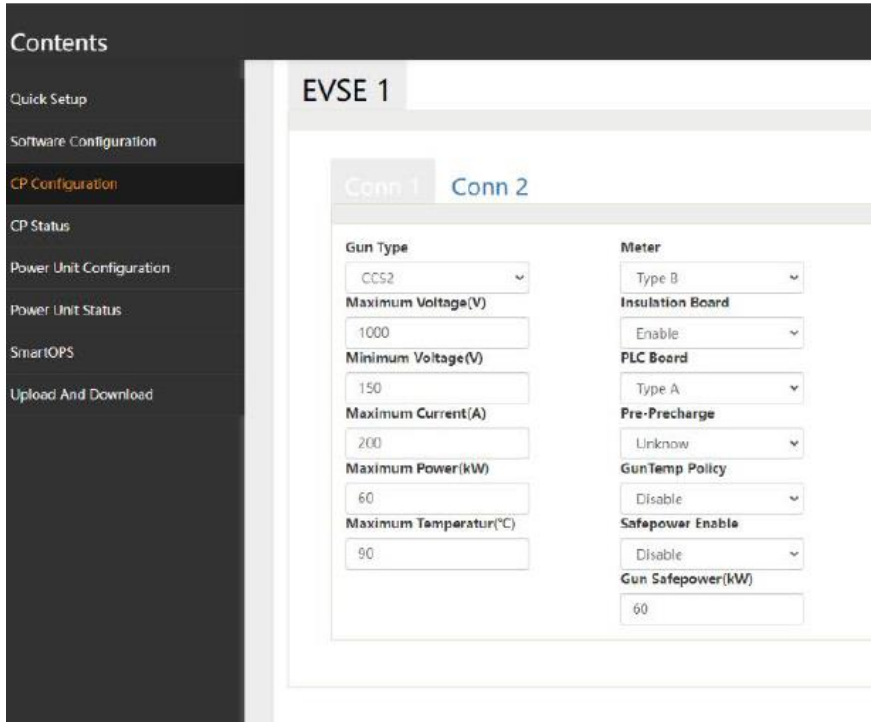
Authentication method	Principle
Card Authentication	Use authenticated IC card to start charging session card. The IC card must be whitelisted in backend platform and EVSE must always connect to the backend
Card Not Authentication	Use the IC cards from charger accessories to start charging session. No authentication.
Local PnC	Once plug in the charger connector, the charging session automatically begins without any authentication.
AutoCharge	Similar to PnC mode, but with MAC code authentication. The MAC Code of the EV must be registered in backend.

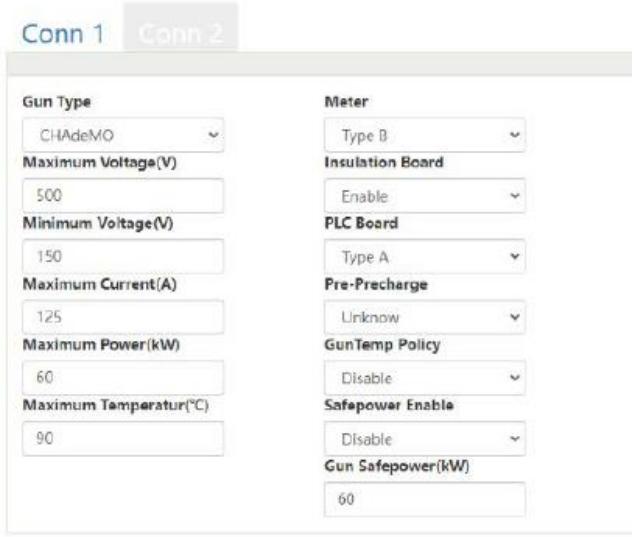
4. Parameter configuration

Connector and Output power configuration

According to the use scenarios and grid capacity, output power of DC connector can be individually configured .

- Maximum Voltage
- Minimum voltage
- Maximum current
- Maximum power



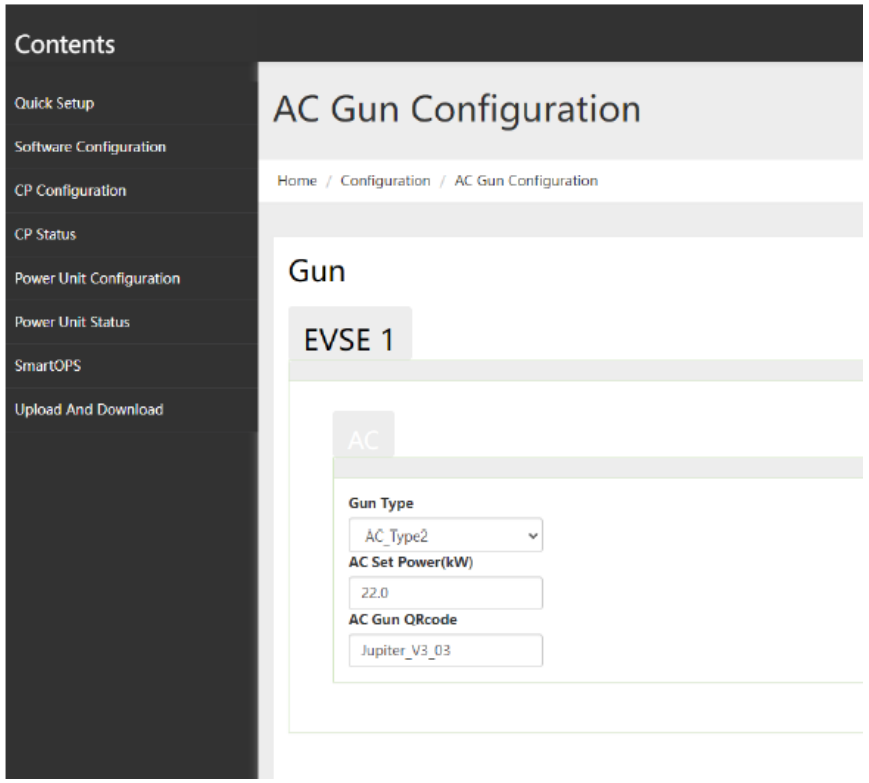


4. Parameter configuration

Connector and Output power configuration

According to the use scenarios and grid capacity, output power of AC connector can be individually configured .

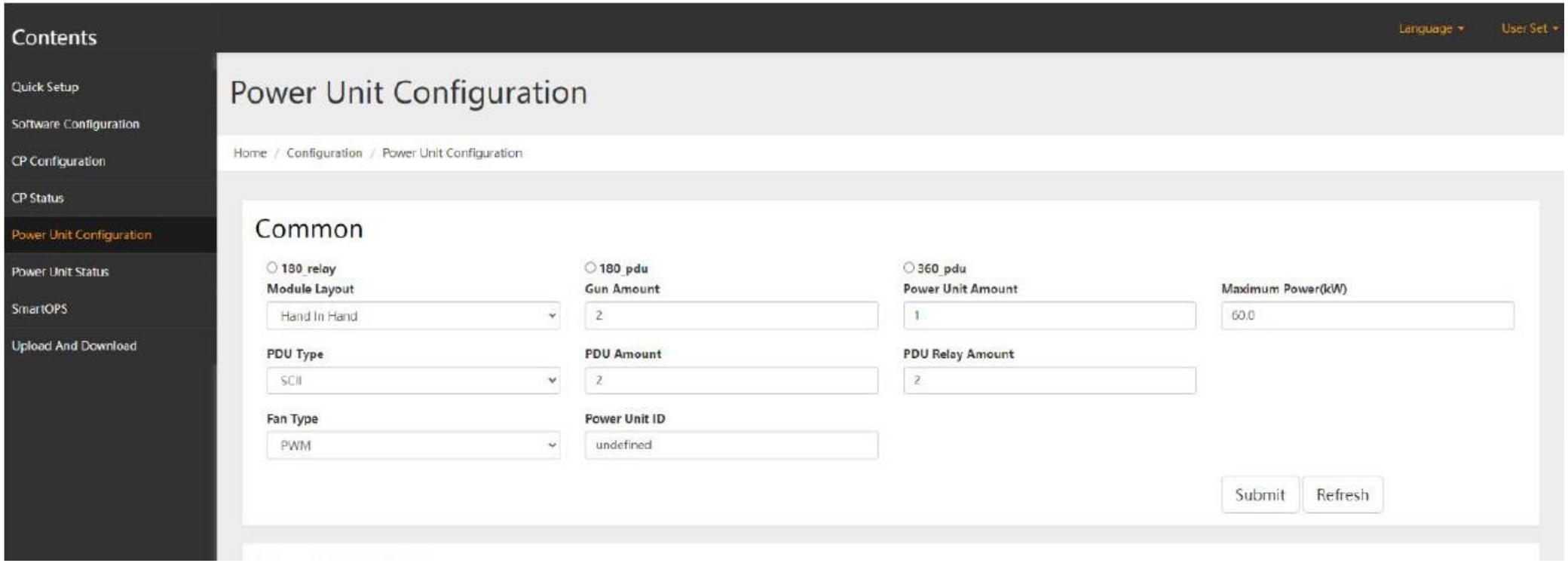
- Maximum power



4. Parameter configuration

Power module configuration

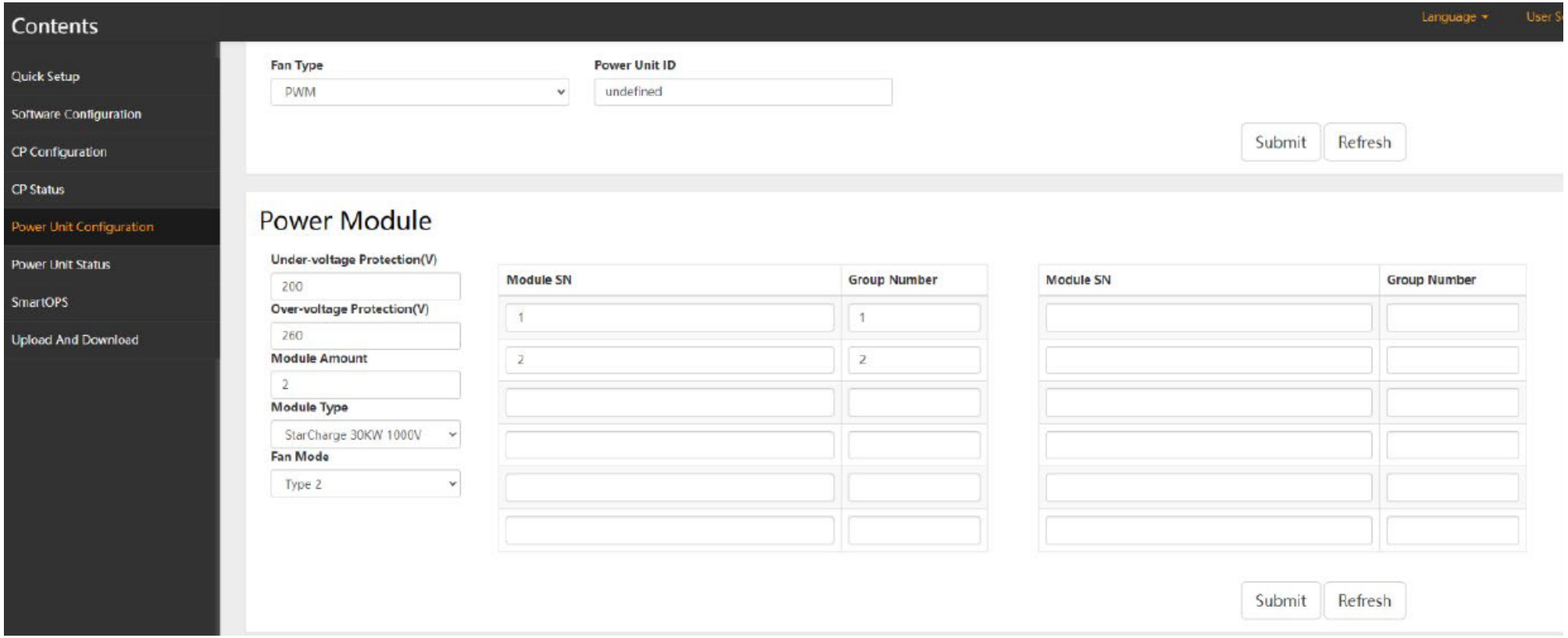
Configure the Power Unit as follow:



4. Parameter configuration

Power module configuration

Configure the Power Unit as follow:



4. Parameter configuration

Power module configuration

All power modules from factory have the same default sequence number A1 saved in hardware.

After inserting them into charger cabinet, during the first commissioning, technician needs to manually assign sequence number for each power module.

Set the power module sequence as the picture shown :

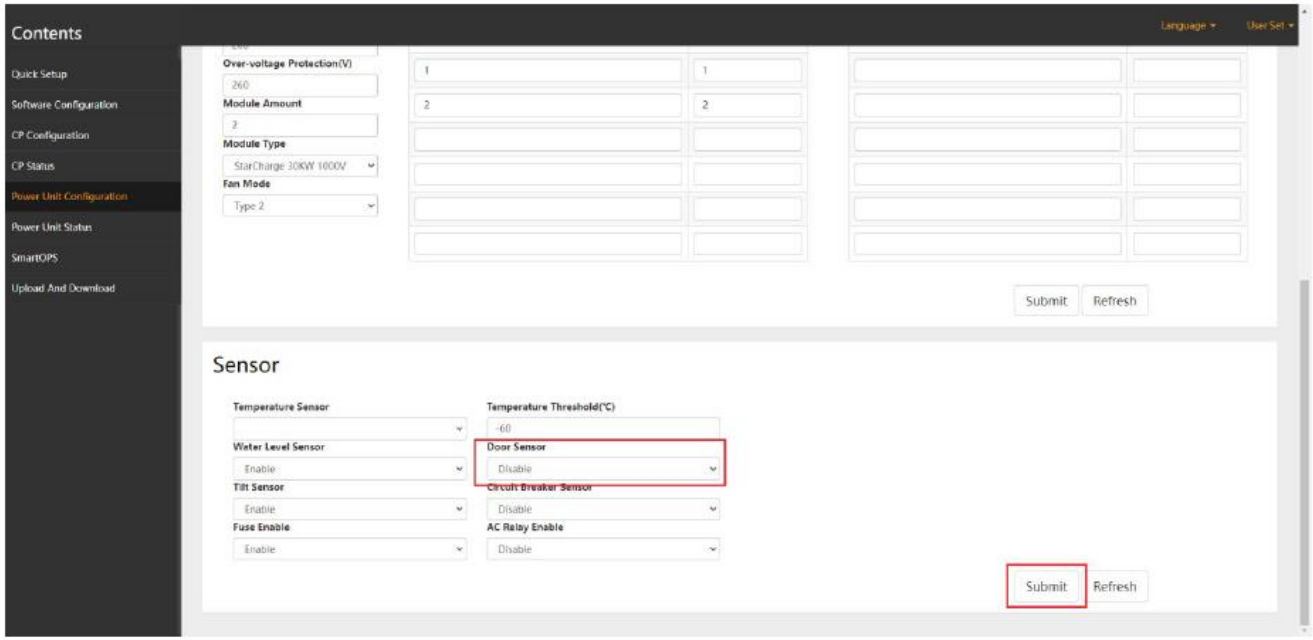
From right to left: A1 to A2.

4. Parameter configuration

Power module configuration

Workflow to set the power module number:

Step 1: disable door sensor. If the door sensor is active, the input power of power module will be automatically cut off, when the door is opened.

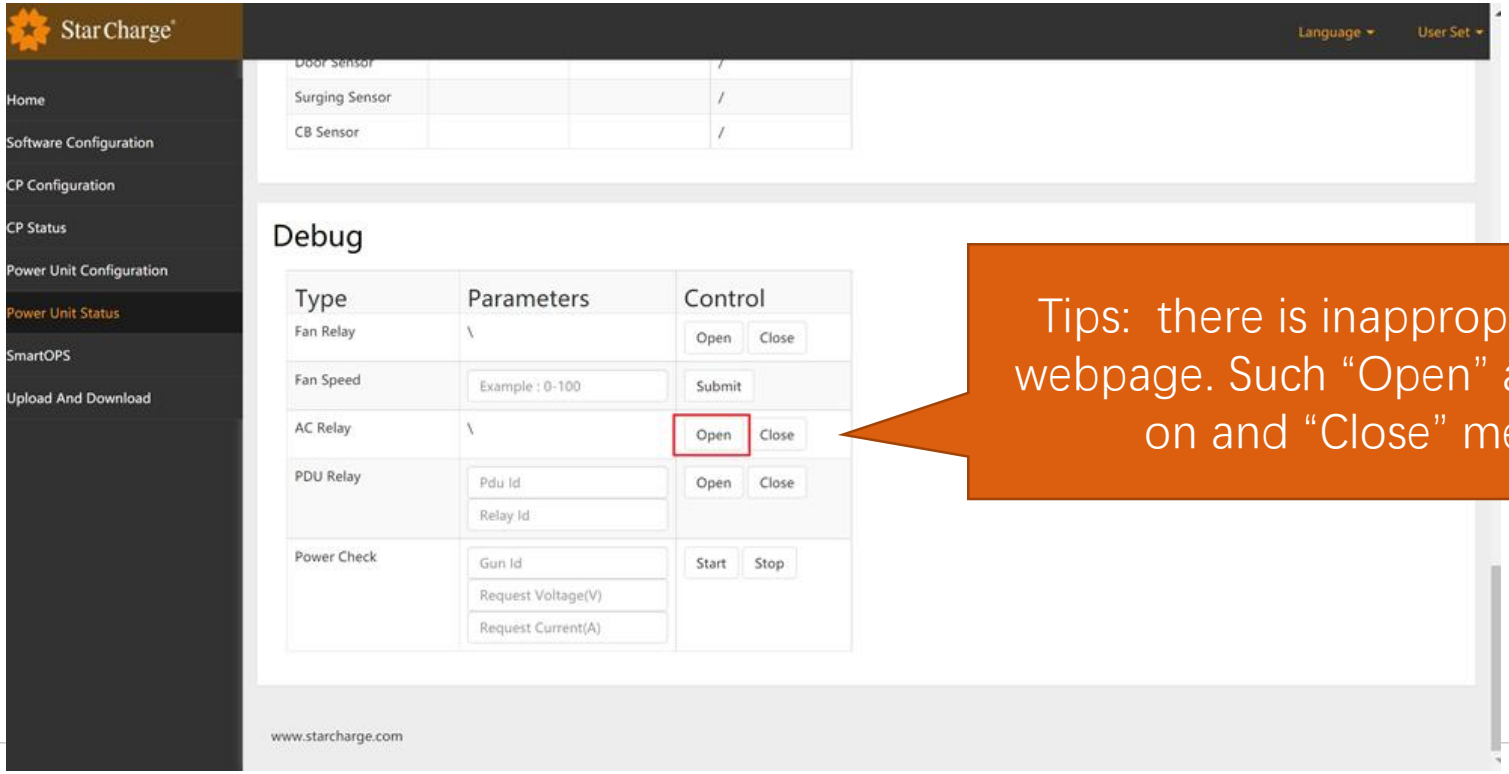


4. Parameter configuration

Power module configuration

Workflow to set the power module number:

Step 2: Open the AC relay to manually turn on the supply power for power module.



Tips: there is inappropriate translation in webpage. Such “Open” actually means turn on and “Close” means turn off.

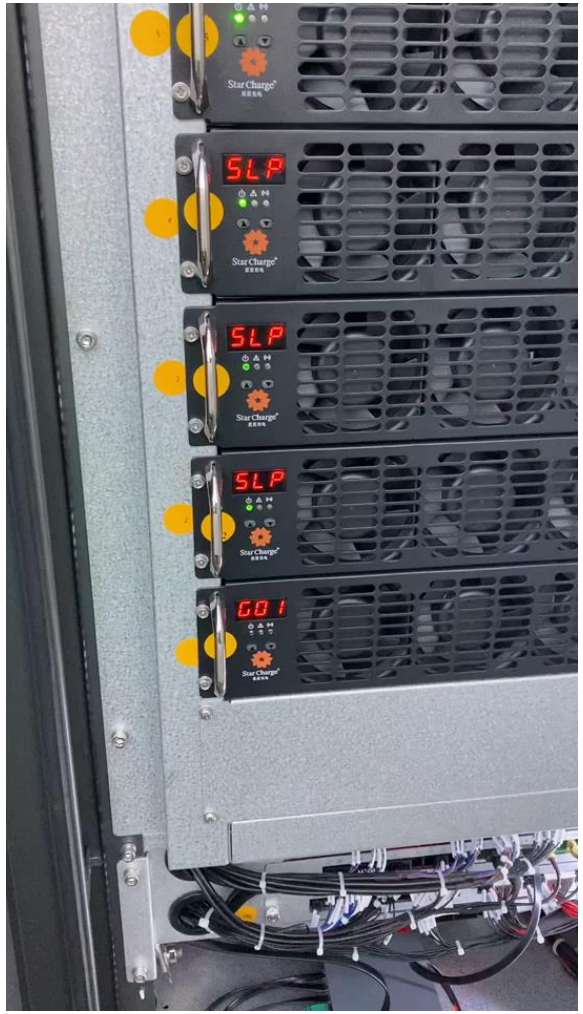
4. Parameter configuration

Power module configuration

Workflow to set the power module number:

Step 3: click the button on power module to set the sequence number

1. Press ▲ or ▼, change the interface;
2. Press and hold ▼ for about the 3s, the value will be flashing;
3. Press ▲ or ▼ to change the value;
4. Press and hold ▼ for about 3s to save the value.



Commissioning - Workflow

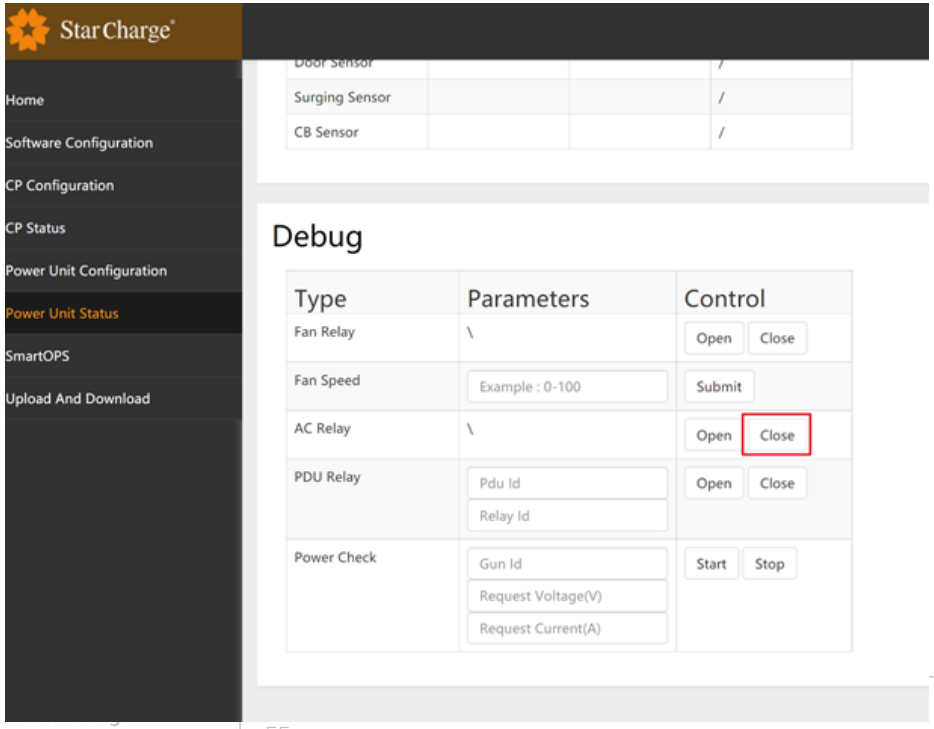
4. Parameter configuration

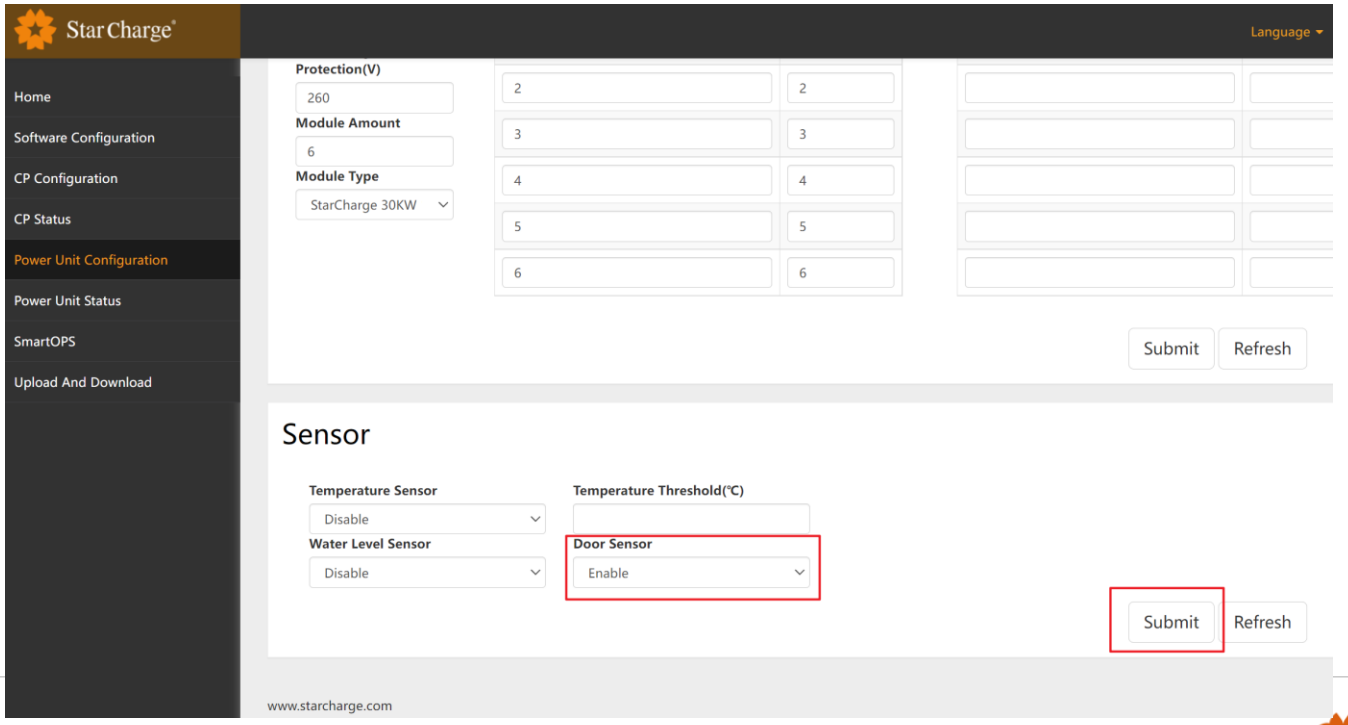
Power module configuration

Workflow to set the power module number:

Step 4: close AC relay.

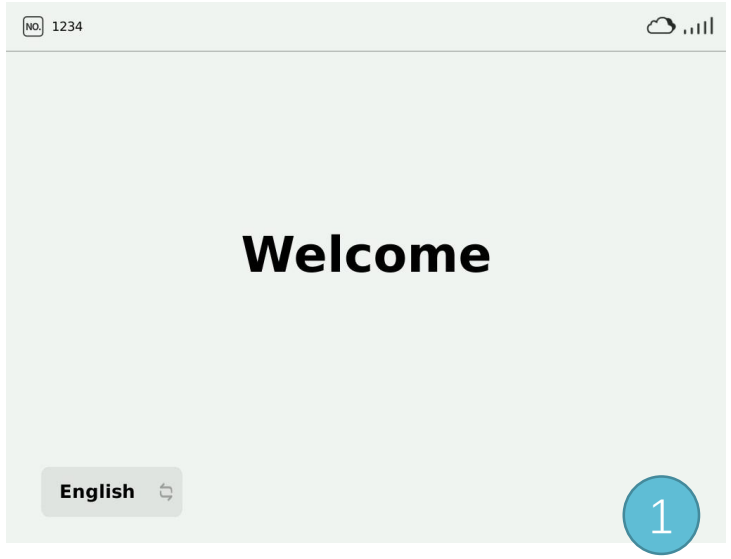
Step 5: enable the door sensor



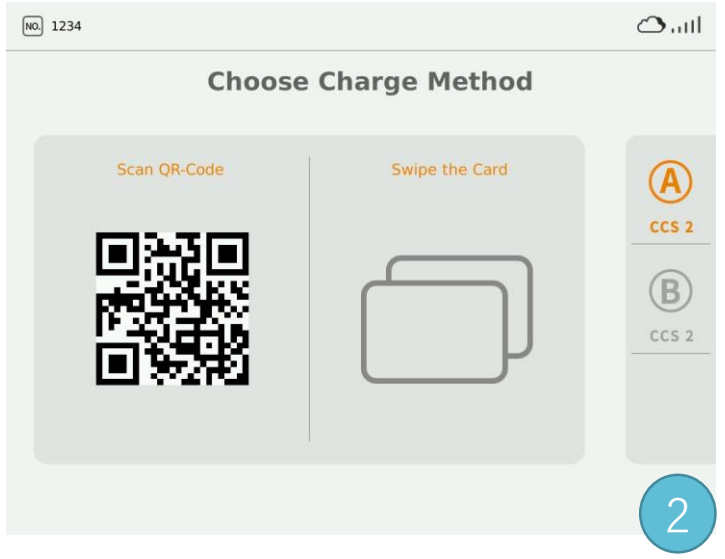


Commissioning - Workflow

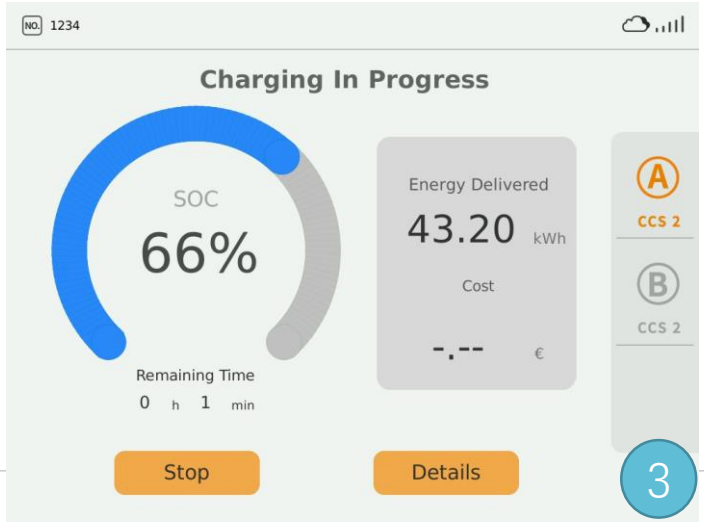
5. Charging test



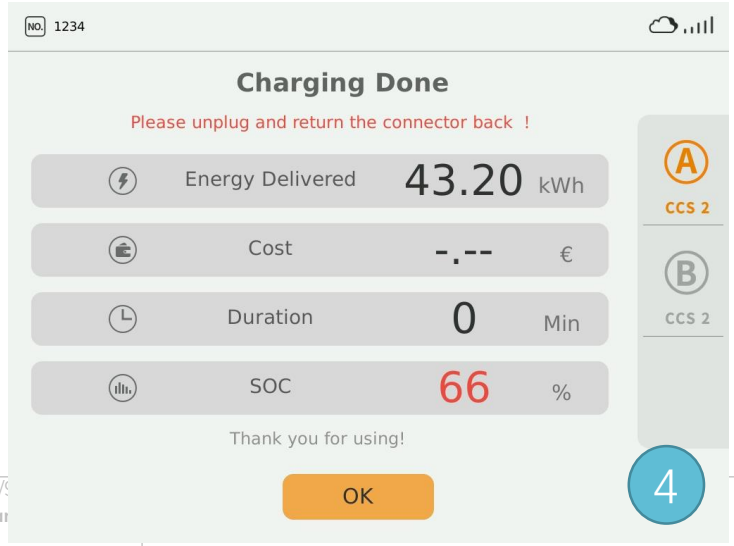
Plug charger gun into EV



Swipe RFID card or use App to start



Swipe RFID card or use App to stop



5. Charging test

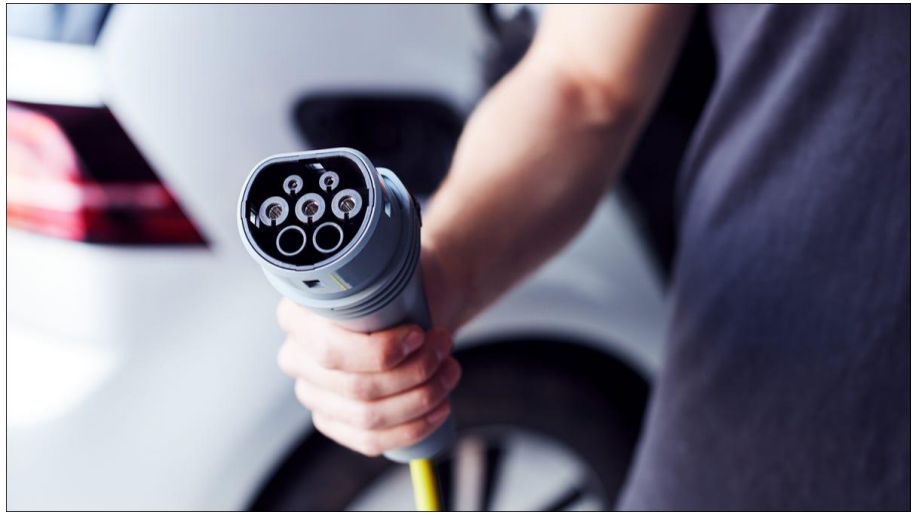
During the charging session, check / test following items

1. Door sensor: Open the door of EVSE when charging, the EVSE should stop charging.
2. Emergency stop: Press the emergency stop button on the EVSE when charging, the EVSE should stop charging.
3. Ventilator: Check the wind speed and direction of fan of inside.
4. Meter: Check whether the meter measures accurately during charging.
5. Connector cable: There is no sharp edges, no overheating, no loosen insulation cap of the charger cable. The charging cable is neither too tight nor too loose when inserting and pulling out the charging cable.

Commissioning - Workflow

6. Customer Training and finishing commissioning report

- After the commissioning work for the EVSE, engineer should give a basic training related to the main characteristics of the EVSE to guide the customer how to use EVSE. The training content should cover safety knowledge, basic charging procedure etc.
- Last and not least, the commissioning report needs to be finished after whole work. (Template refers to appendix 2 of commissioning manual)



Thank You.

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Star Charge

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