Advanced Training for Jupiter V2

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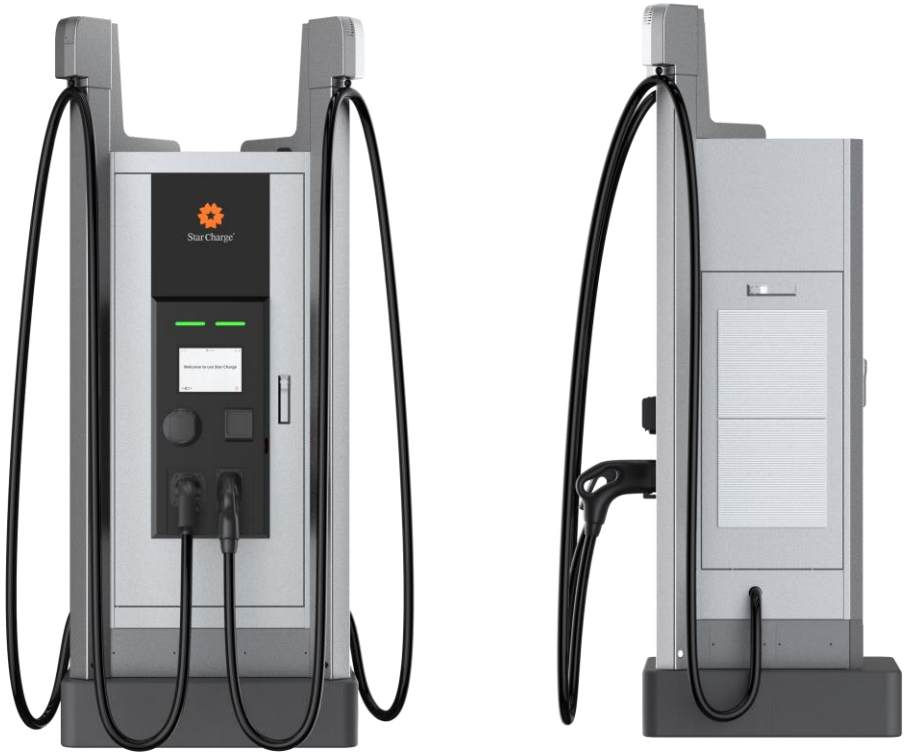
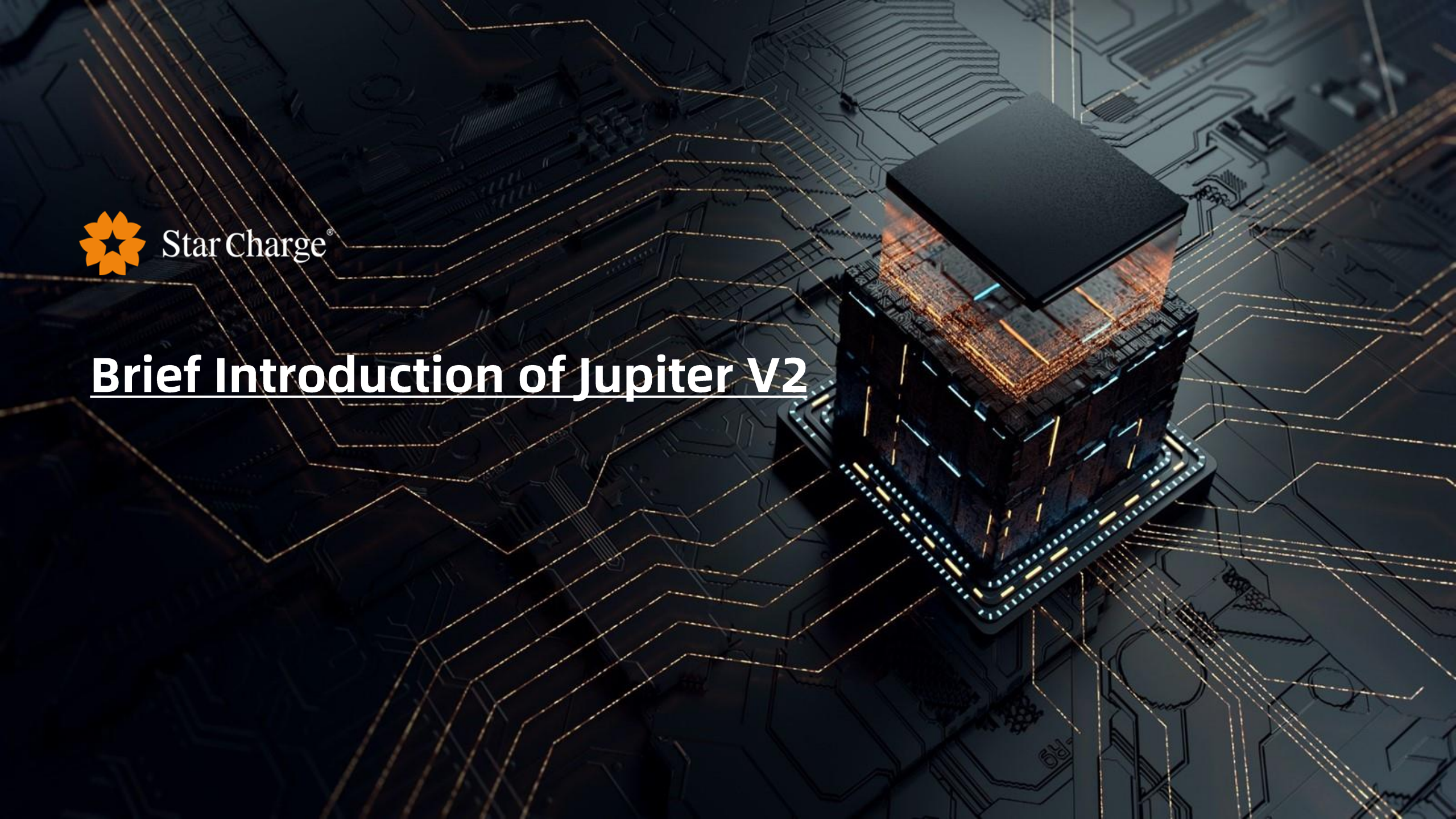
Technical Support Engineer

01.03.2023

Agenda

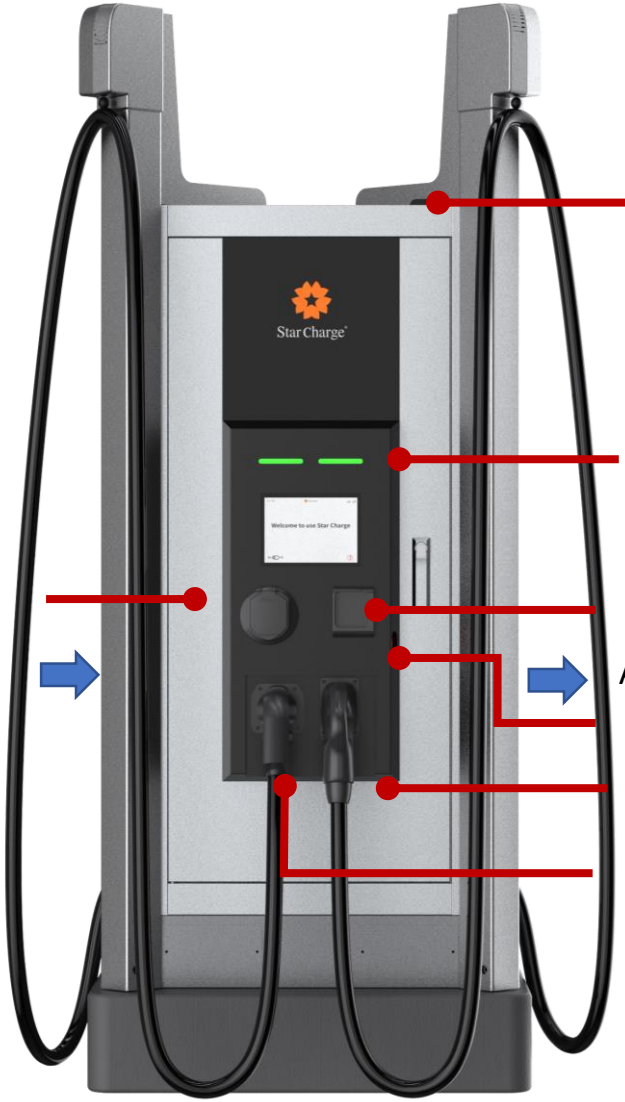
- Brief Introduction
- Installation
- Commissioning
- Spare Parts
- Preventive and Corrective Maintenance





Brief Introduction of Jupiter V2

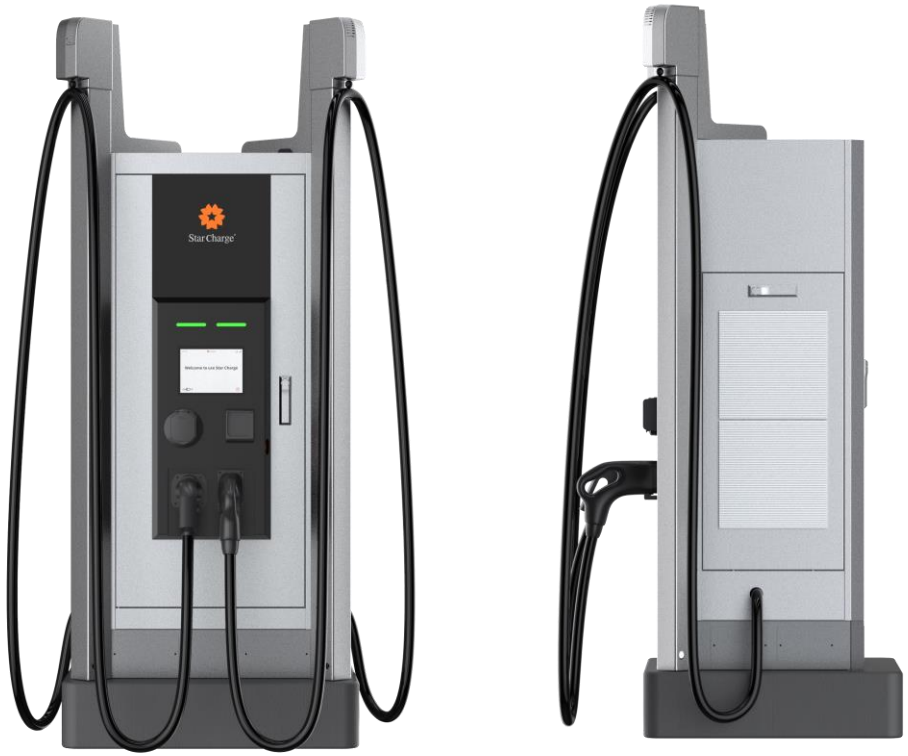
Introduction of JupiterV2 60KW

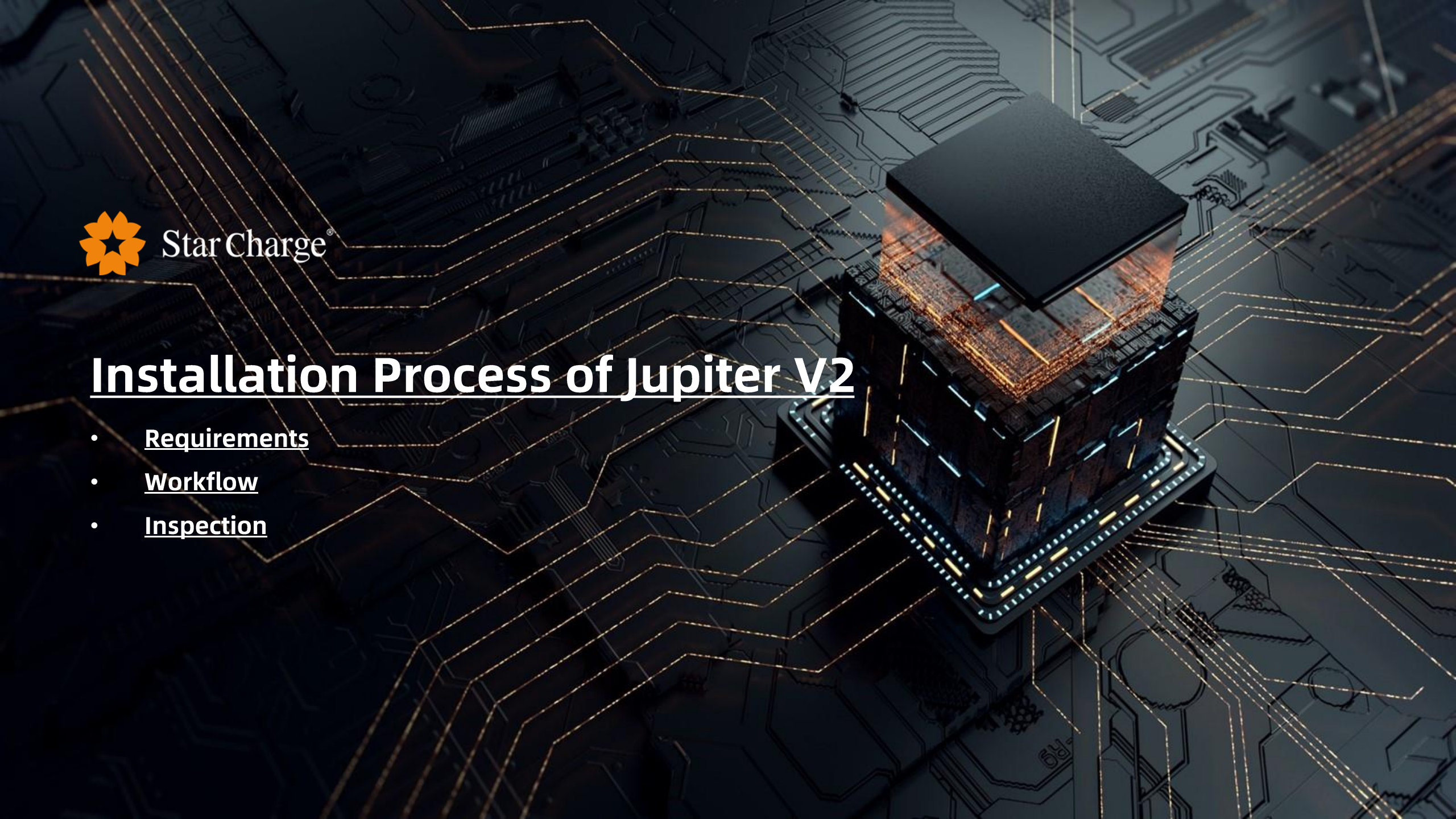


- Max. 95% rectifier efficiency
- CCS2 + CHAdeMO + Type2
- DC output power 60 KW
- AC output power 22 KW
- AC and DC simultaneous charging
- Cable management system and ADA compliance

Specifications Jupiter V2

Jupiter 60 V2		
Power Input	Input Rating	400Vac±10%, three-Phase, 50/60 Hz, L1+L2+L3+N+PE
	Power factor	0.99 at nominal output power
	Current THD	≤5% at nominal output power
	Efficiency Rectifier	≥95% at nominal output power
Power Output	Output Interface	CCS2 + CHAdeMO + Type2 Socket
	Output Voltage	CCS2: 150-550Vdc, CHAdeMO: 150-500Vdc, Type2: 400Vac±10%
	DC Output Power	60kW max. 50kW max. Per Connecter@400V, 60kW max. Per Connector@500V
	DC Output Current	125A max.
	AC Output Power	22kW max.
	AC Output Current	32A max.
User Interface & Control	Display	7'' LCD Touch Panel
	Support Language	English, Other languages available upon request
	Push Buttons	Emergency stop button
	RFID Reader	ISO/IEC 14443 A/B Mifare RFID reader
Communication	Network Interface	4G, Wi-Fi, Ethernet
	Protocol	OCPP1.6J
Environmental	Operating Temperature	-30℃-55℃
	Storage Temperature	-40℃-70℃
	Humidity	5%-95% no condensation
	Altitude	≤2000m
Mechanical	Ingress Protection	IP54
	Enclosure Protection	IK08
	Cooling	Forced air
	Charging Cable Length	5m
	Dimension (W*H*D)	950*2020*670mm
	Weight	Approx. 260kg (excluding power modules)
	Installation	Ground-mounted
Regulation	Certificate	CE





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Installation Process of Jupiter V2

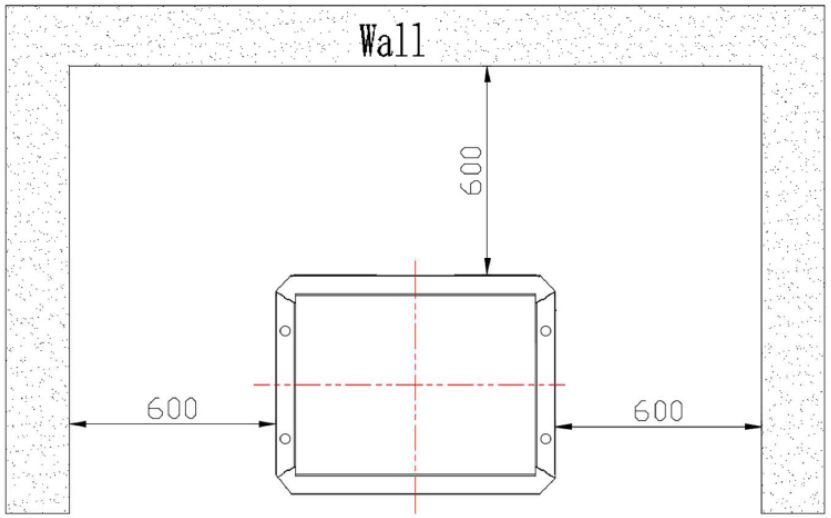
- Requirements
- Workflow
- Inspection

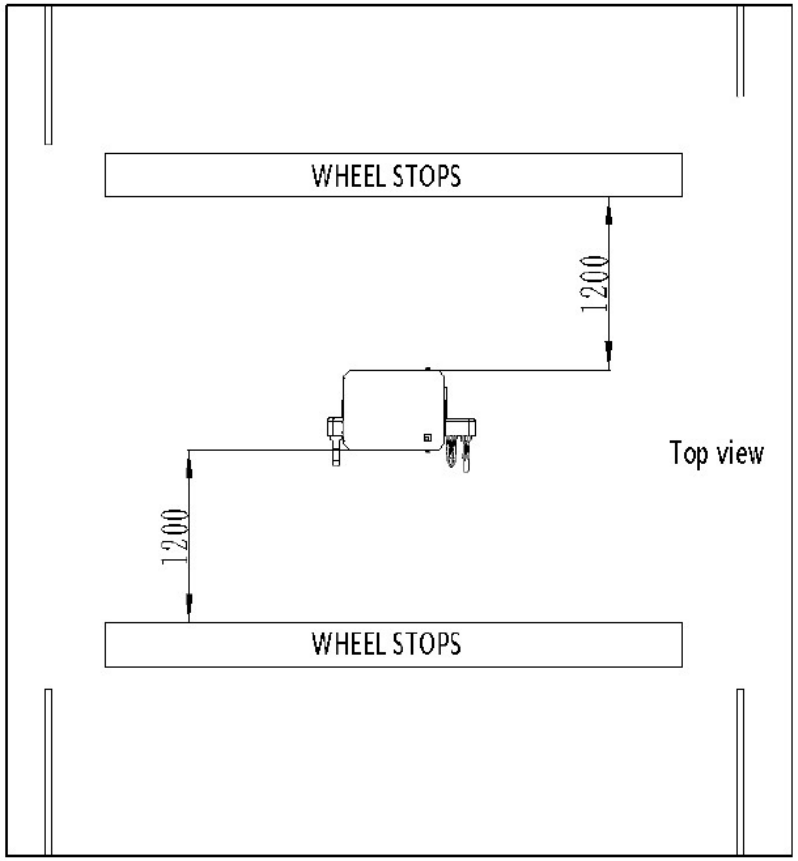
1.Requirements for grid capacity and ground/insulation resistance

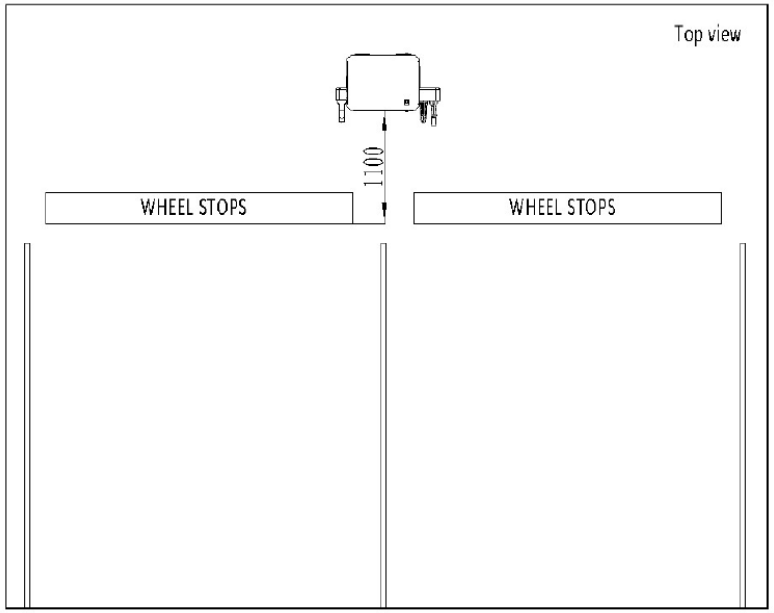
- Power grid capacity should be ≥85kW
- The rated current parameter is 130A
- Recommended parameters of the mains circuit breaker Ue=400V, In≥160A, Thermo-magnetic, Icu=Ics≥25kA, 3P
- Civil grounding resistance must be ≤ 4Ω .
- Civil insulation resistance must be ≥10MΩ.

Installation Requirements

2.Maintenance distance (mm)







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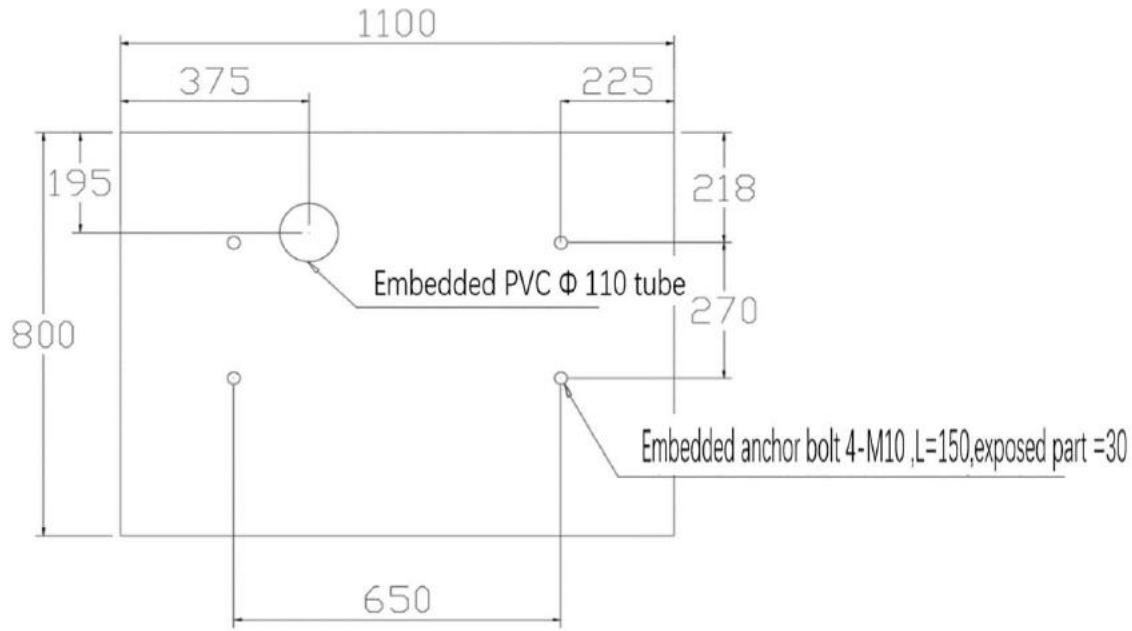
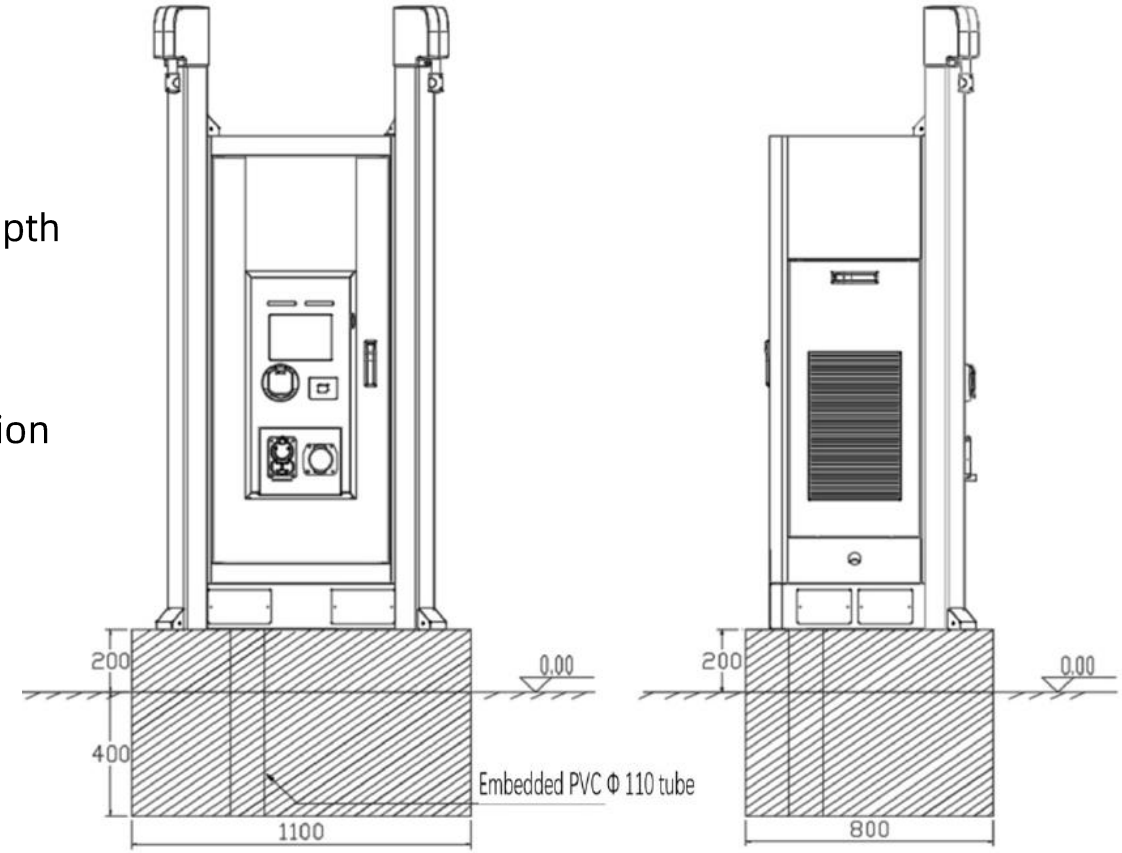
3.Dimension of concrete base

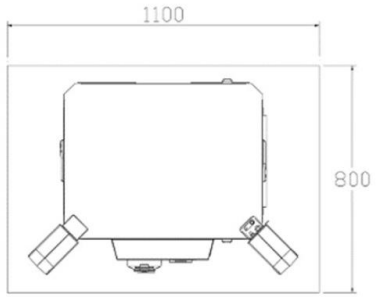
If there is no suitable installation place (hard ground) on site, it is recommended to build a concrete foundation.

The size of the concrete (C20) base is 800mm*1100mm*600mm, the depth of the burial is 400 mm and the height above the ground is 200 mm.

4 screws of M10 are embedded in the concrete foundation in advance and expose 30-40mm on the surface of the concrete foundation







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4.Power cable specification

Recommendation:

- Cross sectional area: 3 * 50mm² + 2 * 25mm²
- Core material: copper

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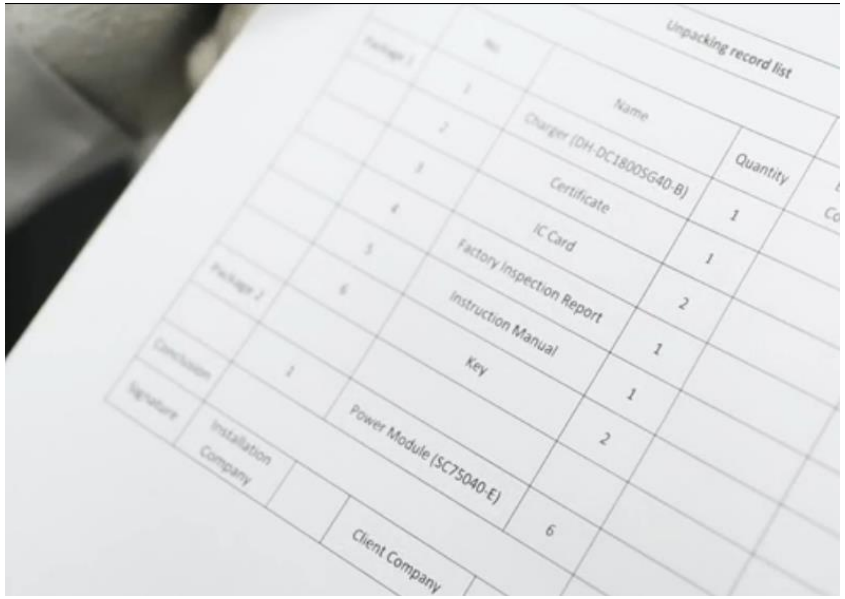
1. Unpacking inspection

- The installer open crate in the presence of customer
- After unpacking inspection, invite customer's representative to confirm and sign on the unpacking record sheet.
- In case of any problem found during the unpacking inspection, besides making record, notify the supplier.
- Fill out the unpacking record sheet. (Appendix 1 of installation manual)



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1. Unpacking inspection

Name	Package	Package Size(mm)	Weight	Attachment document	Parts List
Charger Cabinet	Wooden box	1216*826*2130	260 kg	• Certificate • Factory inspection report	• Isolation switch operating handle*1 • Key*4 • IC card*2
Power module	Carton	1200*800*330	61.5 kg		
Cable management system	Wooden box	2072*478*140	20 kg		• Nut*4 (with flat washer and spring washer) • Expansion bolt*4

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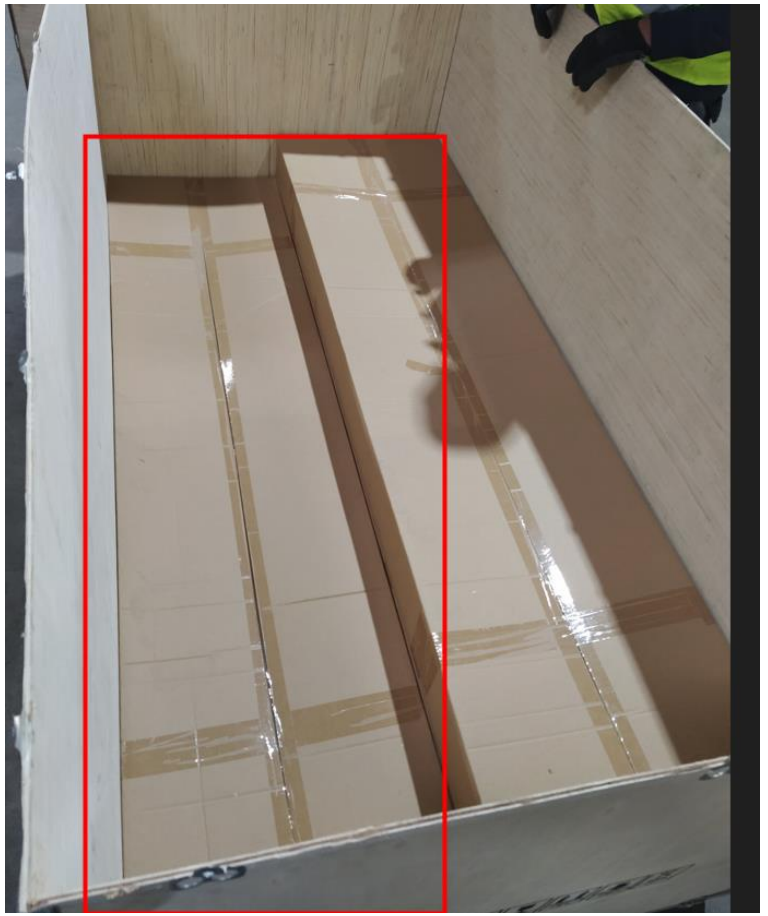
1. Unpacking inspection

Charger cabinet + power modules



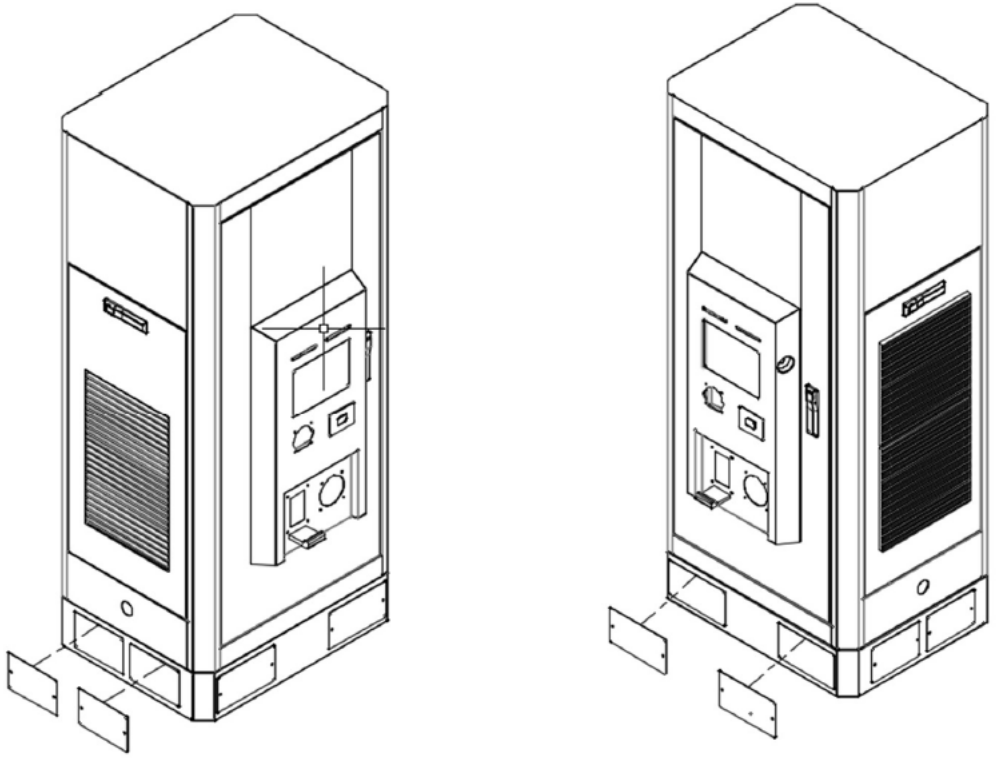
Cable management system

2. Check list before installation (Appendix 2 of installation manaul)

Sub-project	Acceptance items
Installation plan	Whether the on-site equipment installation complies with the construction plan design drawings
Distribution box MCCB	Meet the equipment installation requirements of section 2.8 in the installation manual
Input cable	Meet the equipment installation requirements of section 2.5 in the installation manual
	Network cable cat6a (if Ethernet communication is required)
Concrete foundation	Dimensions meet requirements
	Foundation bolts meet the requirements of section 2.6 in the installation manual
Maintenance distance	The maintenance distance meets the equipment spacing requirements in section 2.7

3.Lifting preparation

- Remove the sealing plates at bottom of charger.



4.Lifting & Fixing

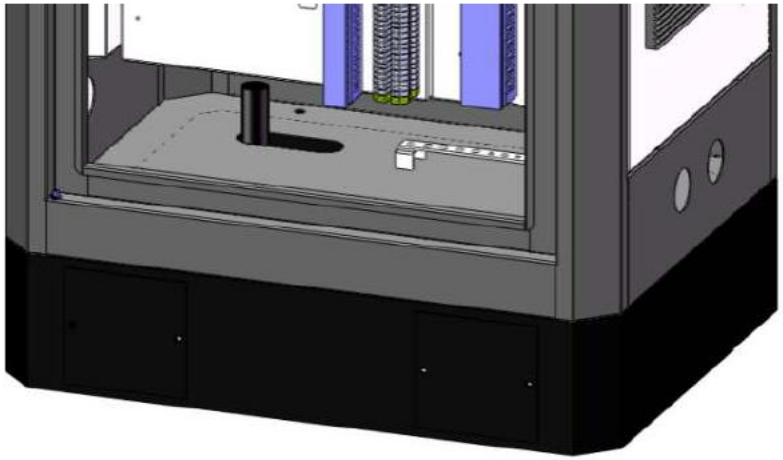
- Lift charge by crane or forklift
- Lower the charger slowly.
- Align 4 holes at the bottom of the charge with the embedded bolts on the foundation.
- Fix the nuts and reinstall the sealing plate.

Forklift

Crane

5. Handling the input supply cable

a) Open the rear door of the equipment and introduce the power cord from the bottom of the cabinet.



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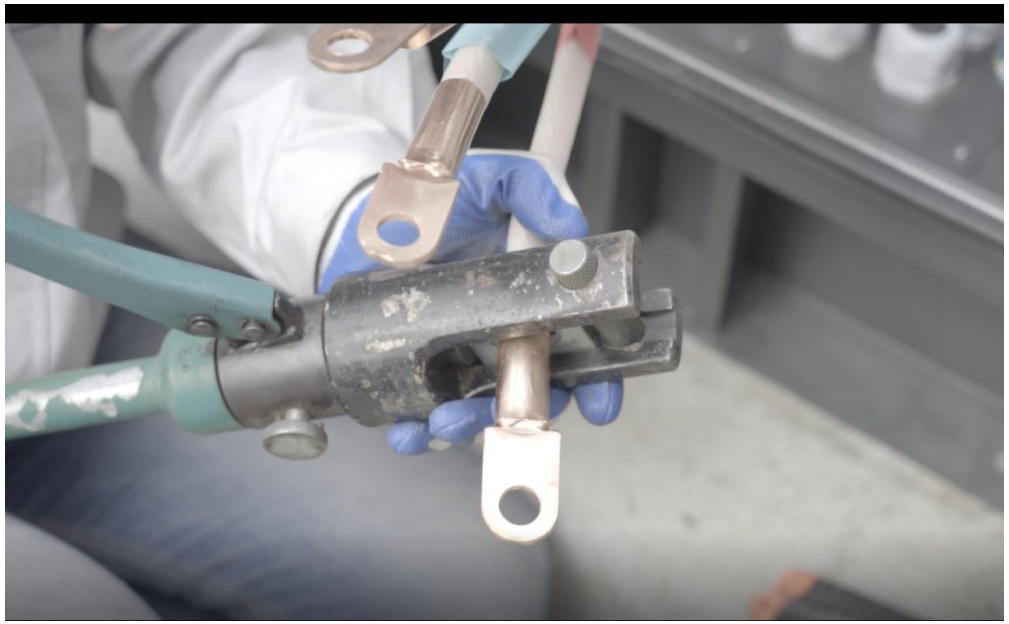
5. Handling the input supply cable

b) Crimping copper nose.



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6. Testing grounding & insulation wíring

- Check the civil grounding resistance, must be ≤ 4Ω.
- Check the civil insulation resistance, must be ≥10MΩ.

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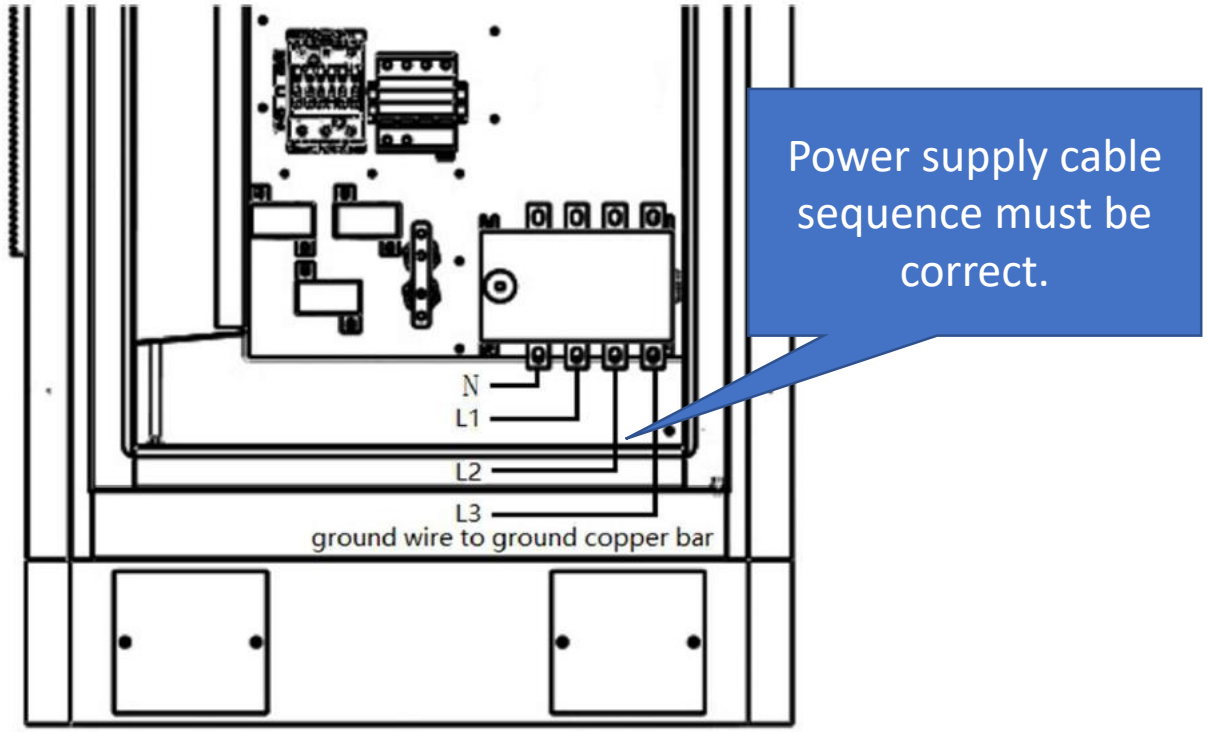
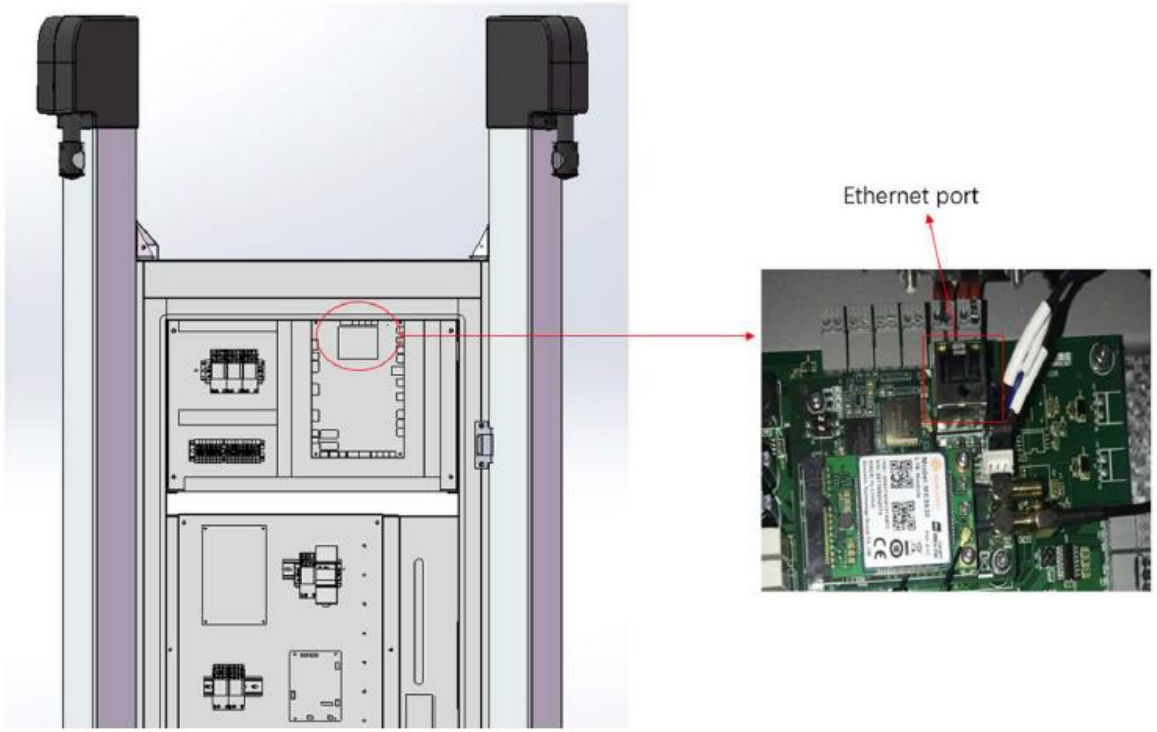
7. Electrical wiring

- Connect the power cable to the terminal.
- Make sure the screws of the wiring are fastened.



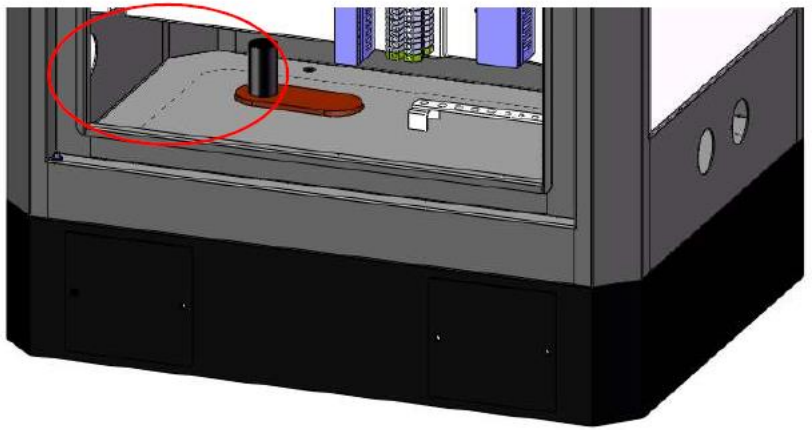
8. Ethernet cable connection (optional)

If the Ethernet communication is required, thread the ethernet cable through the bottom of cabinet and lead it to the Ethernet port on control board.



8. Fire-proof mud seal

To prevent cold air and moisture from entering the charger cabinet, it is recommended to block the power cable hole at the bottom with fire-proof mud.



9. Insert power modules

Insert 4 power modules and fix each module with 2 screws

9. Install cable management system (CMS)

1) Remove the catch bolt of the wire retractor at the bottom of CMS to activate function of the wire retractor

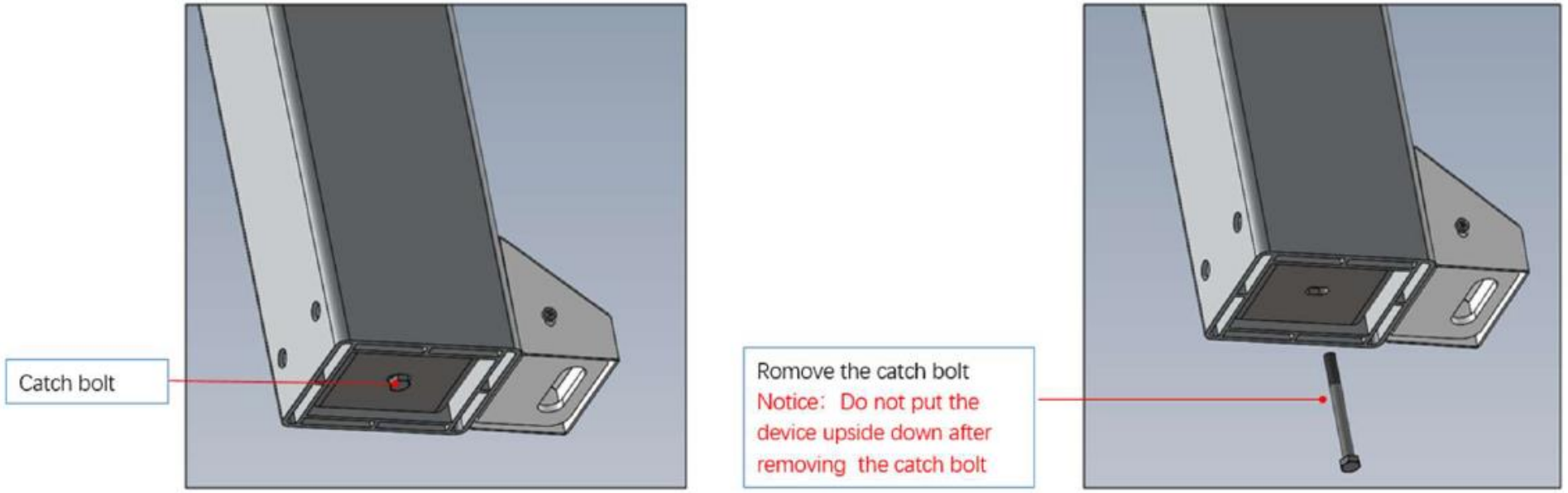


Figure 7 Schematic diagram for removal of catch bolt of wirerope retractor

9. Install cable management system (CMS)

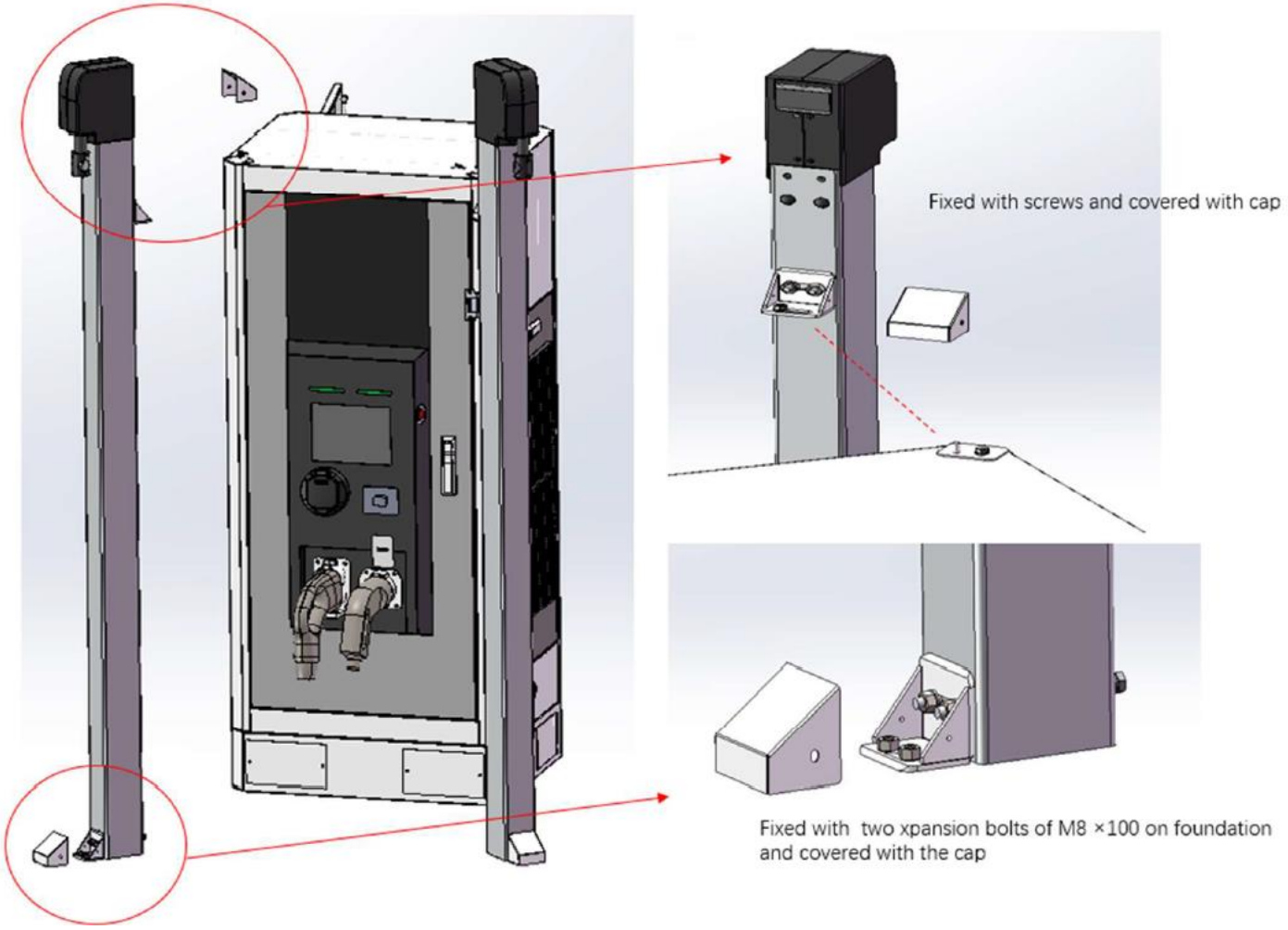
2) Remove the upper and lower caps of CMS

3) Place the CMS next to the charger

4) Insert the bolts on the top of the charger into the bolt holes on the top of the CMS

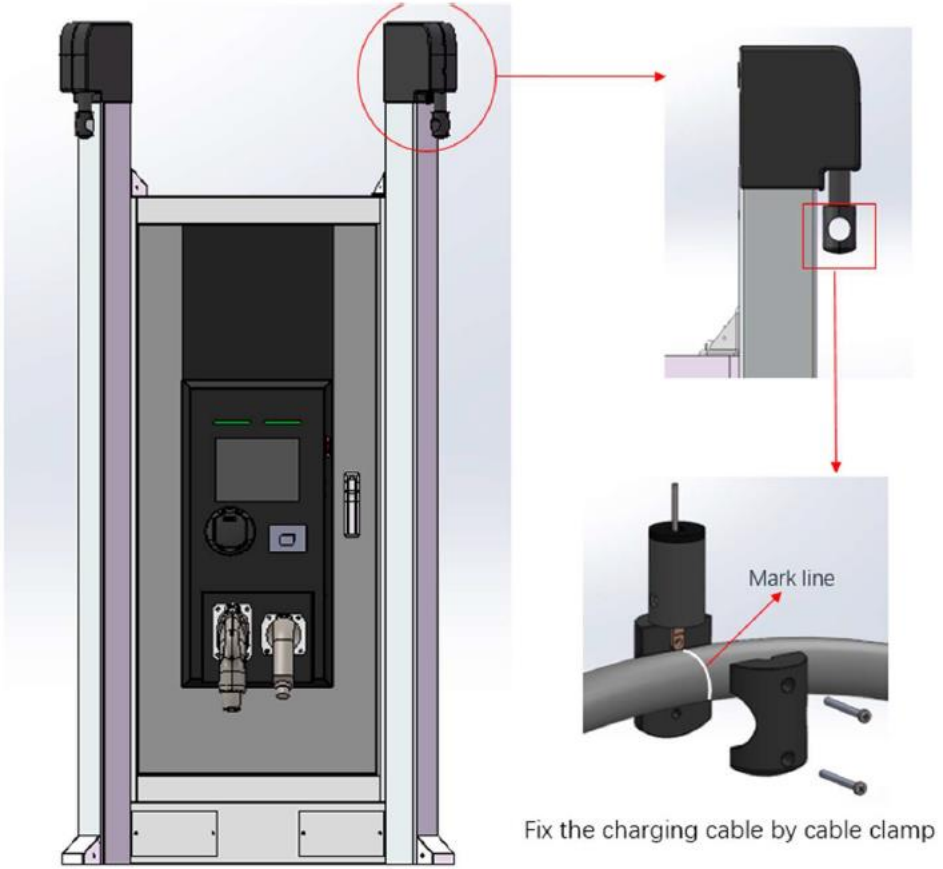
5) The lower end is fixed on the concrete foundation by two expansion bolts of M8×100;

6) Fasten the upper and lower bolts with nuts, and then cover the caps.



9. Install cable management system (CMS)

7) Fix the charging cable on the cable management system by cable clamp and keep the mark line of charging cable in the cable clamp



Fix the charging cable by cable clamp

Installation Process

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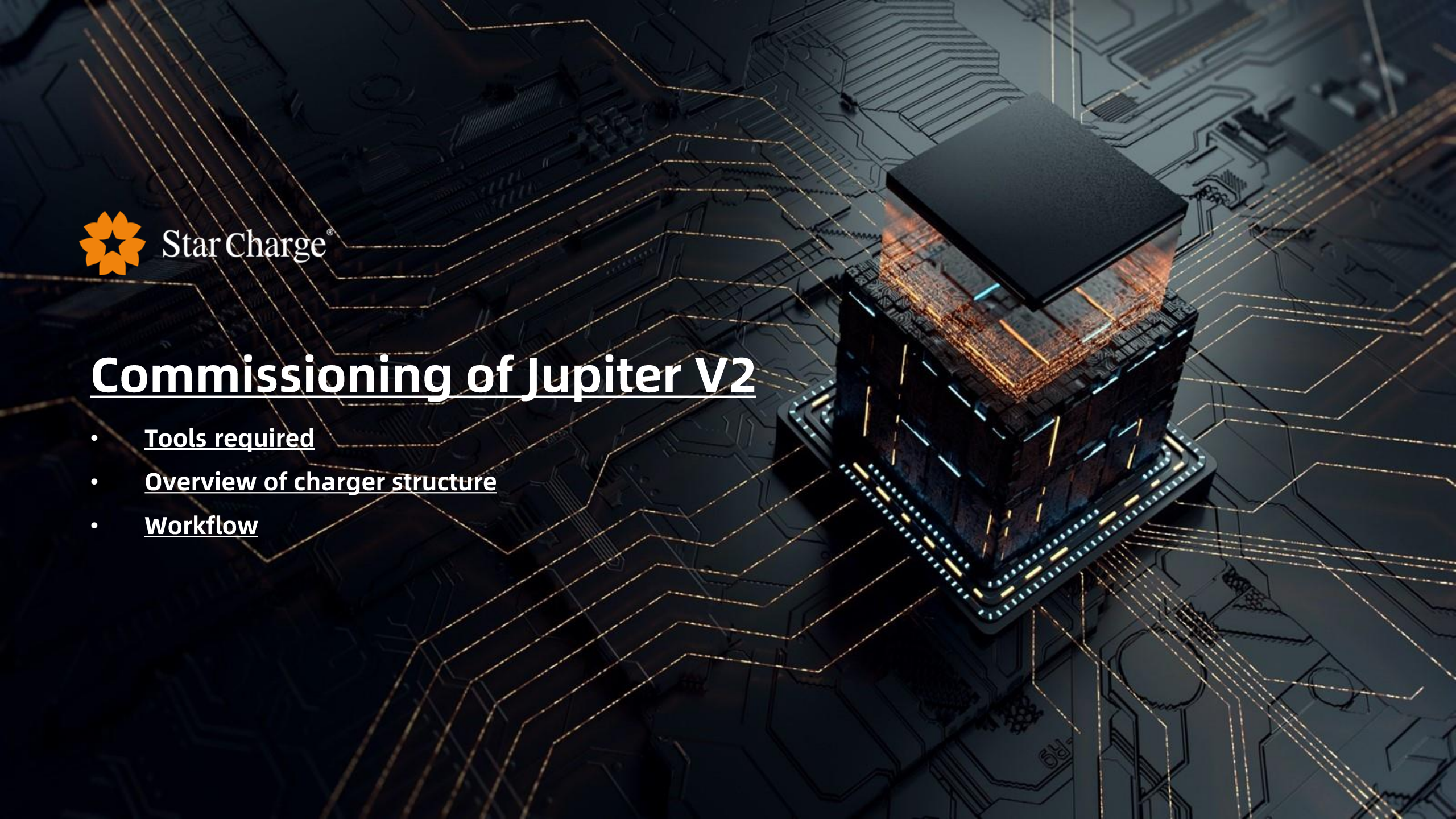
Demo video – Charger installation

Inspection after installation

(1) Short circuit: check the power supply cable , there should no short circuit between the three-phase wire, neutral wire and ground wire.

(2) Power supply voltage : Check the power supply voltage in distribution cabinet, ensure there are no lack-phase, over voltage, under voltage, phase sequence abnormality.

(3) Line voltage of charger inlet terminal should be 400V (±10%).



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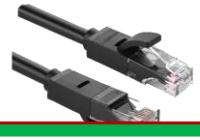
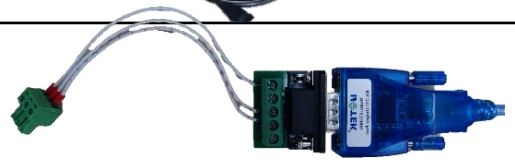
Commissioning of Jupiter V2

- Tools required
- Overview of charger structure
- 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	RS232 tool	Firmware update (for first commissioing & complex troubleshooting)	
5	TF Card and reader	Firmware update (for complex troubleshooting)	
6	Screwdriver set	Assemble and disassemble the screws	

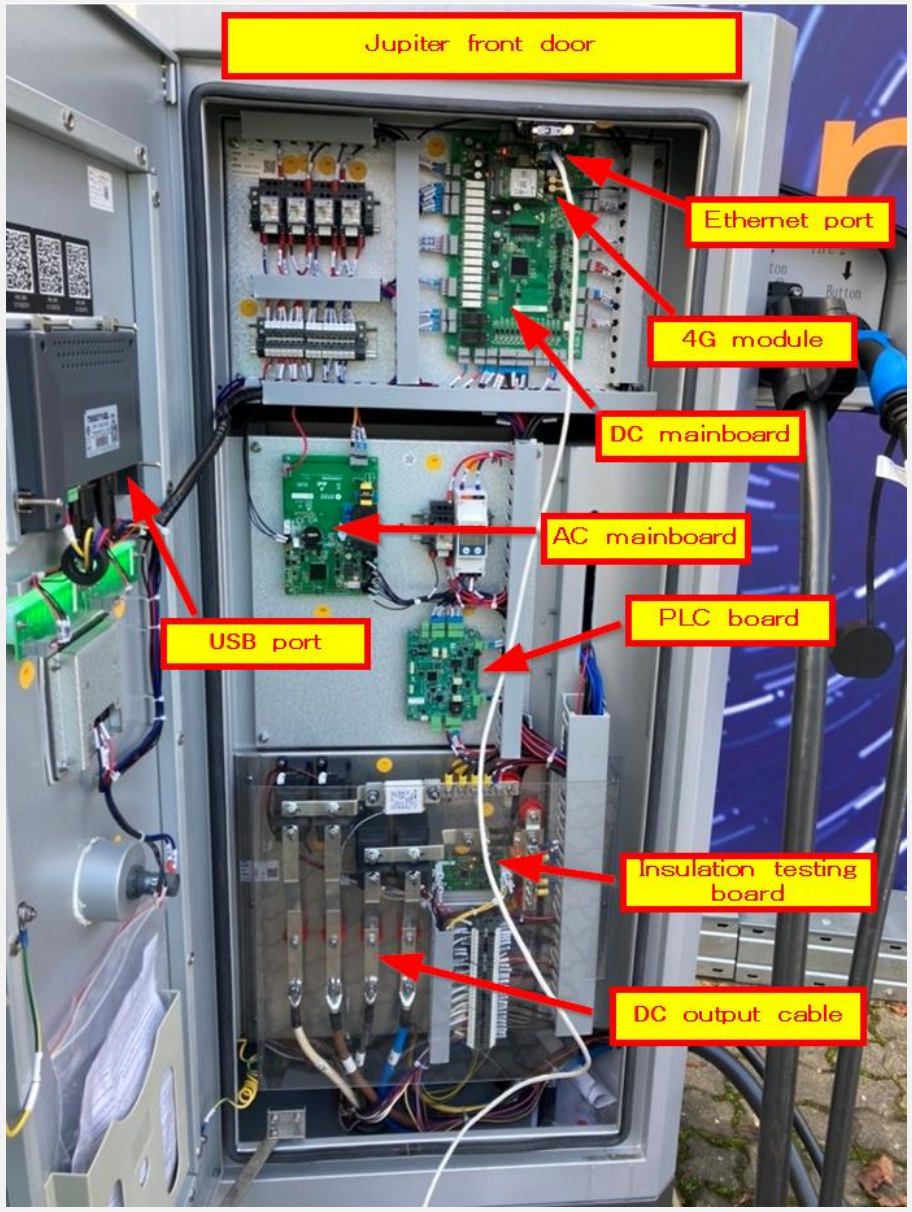
Must have

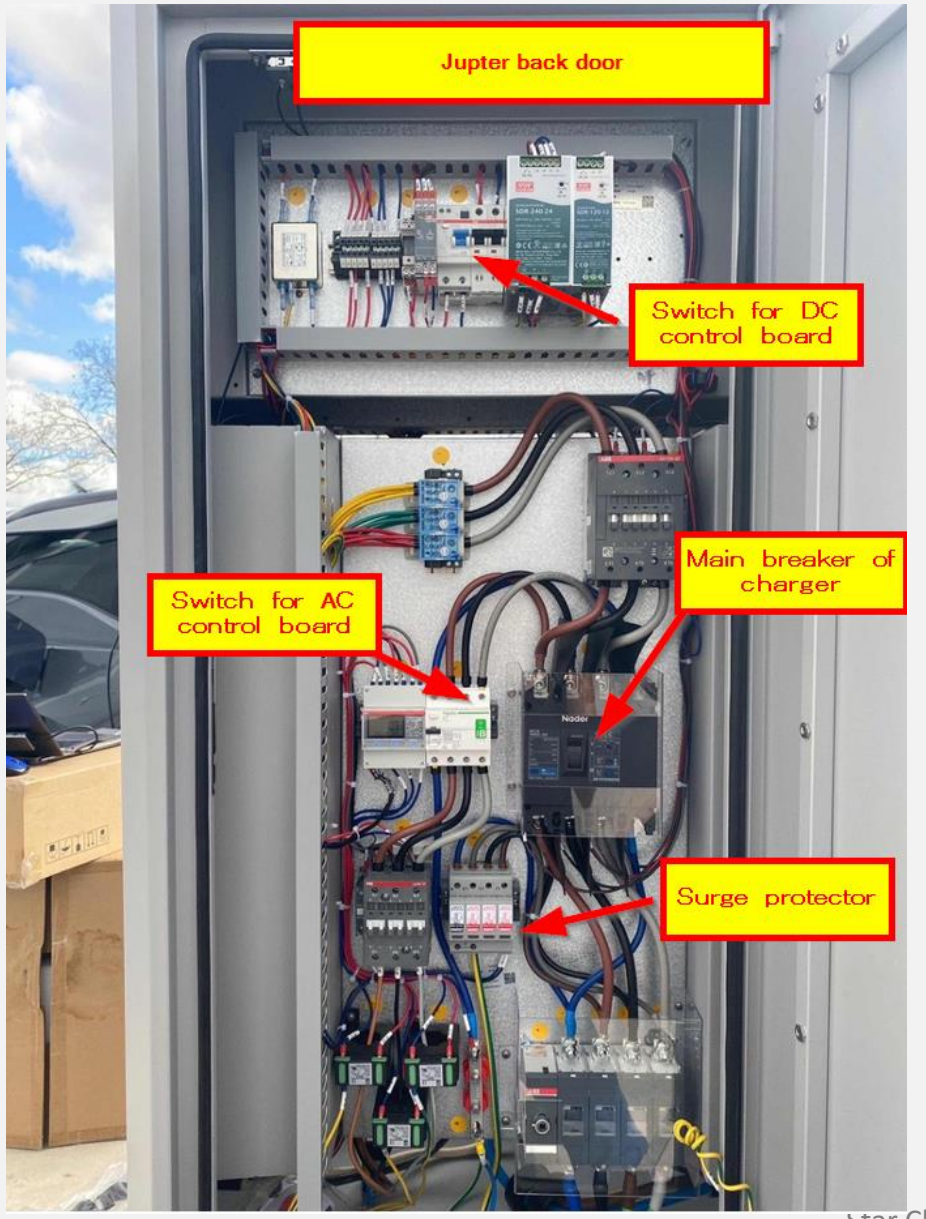
Needed for complex trouble-shooting

Commissioning Tools

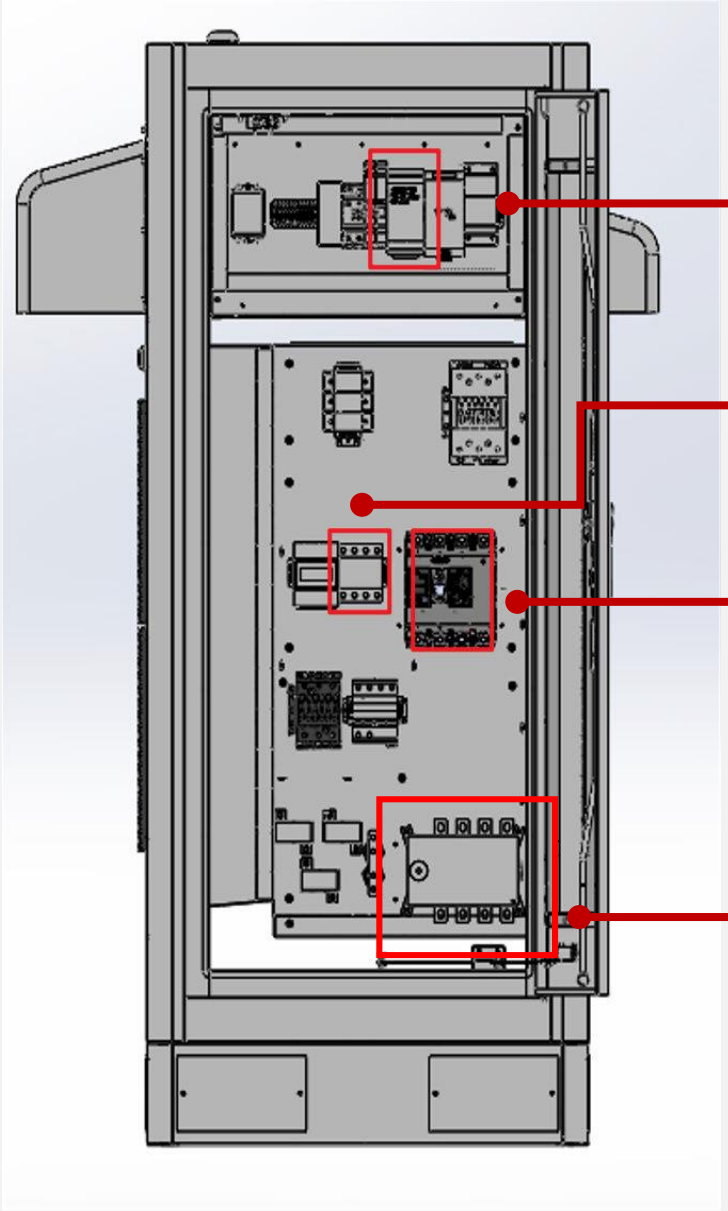
Item	Tools	Usage	Example
7	Wrench set	Standby	
8	Electrical multimeter	Electric measurement	
9	Megohmmeter	Test the insulation	
10	Safety Sign	Warn potential danger on site	
11	Electrician protective gloves	Safety protection	
12	Electrician protective Shoes		

Overview of charger structure





Switches / breakers inside charger



MCB: Auxillary power (12V) for controlboards

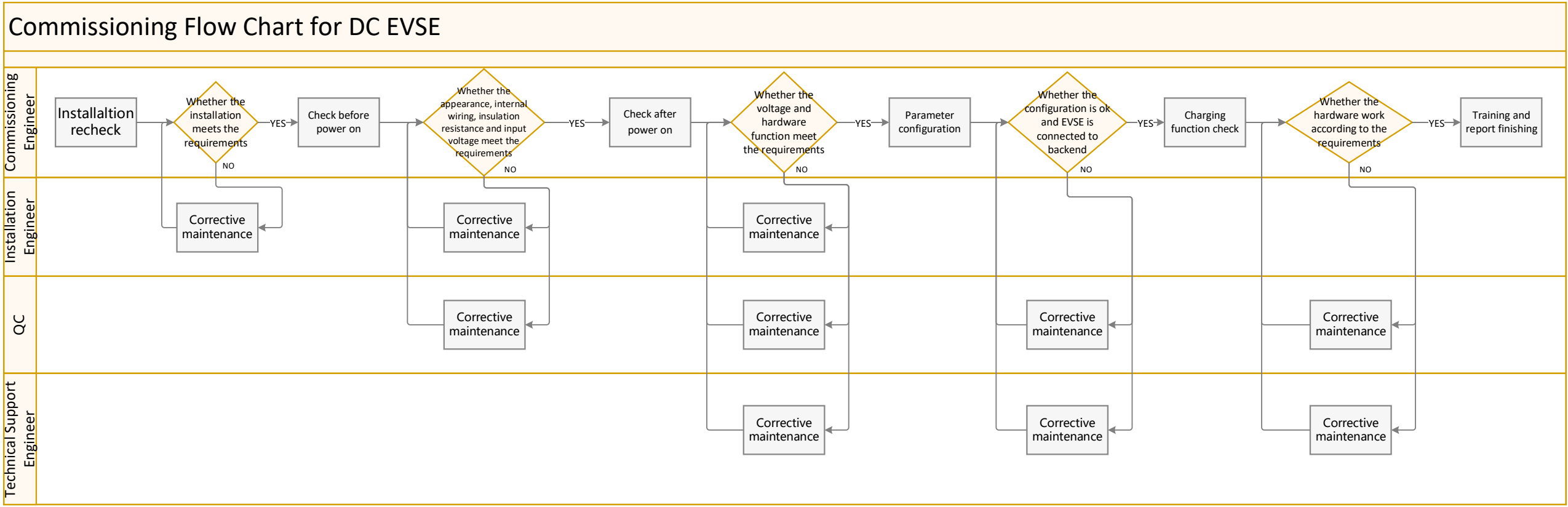
MCB: power supply for AC output

MCCB: power supply for power modules

Isolating switch: Total power supply

To reboot the controlboard, only need to switch off/on this switch.

Commissioning Flowchart



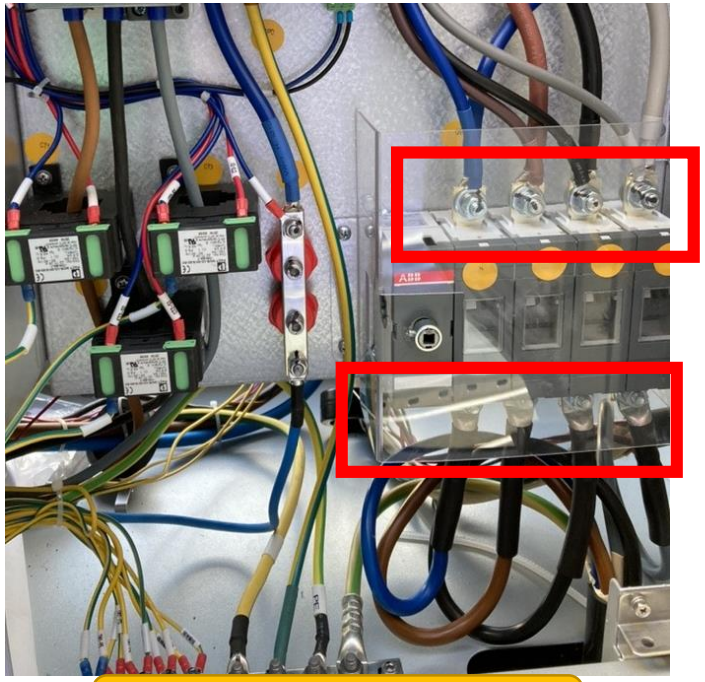
Commissioning workflow
1. Installation Recheck

- Foundation should be fixed and sealed well.
- All inlet cables should meet the requirement of EVSE. The cables are intact. All connections are solid.
- Check insulation resistance: The inlet cable insulation resistance must be ≥10MΩ.
- The surface of cabinet is intact. The charging cable is not broken or damaged. All doors of cabinet can be opened, closed and locked.
- Nameplate and other signs are printed correct and complete.

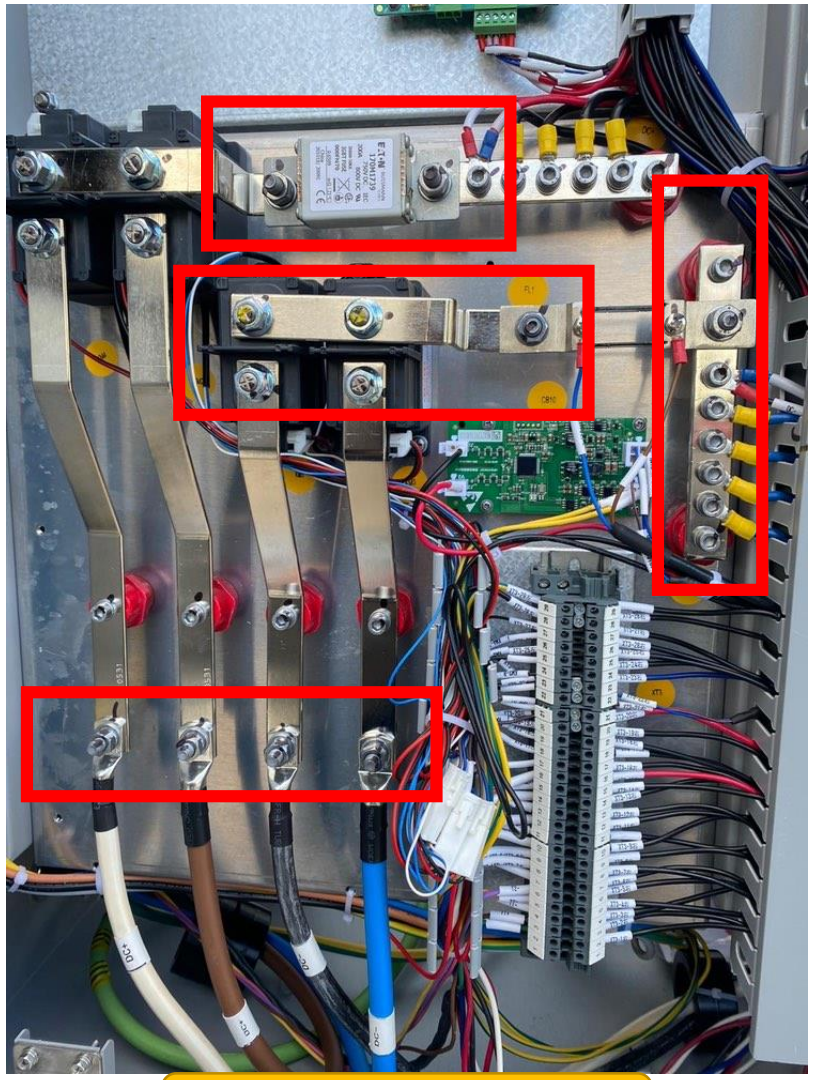
Commissioning workflow
2. Check before power on charger

- Short circuit: Check the inlet cable in charger and ensure there is no short circuit.

- Fasten screw: Check and ensure screws or nuts on each cable connection inside charger are fastened.



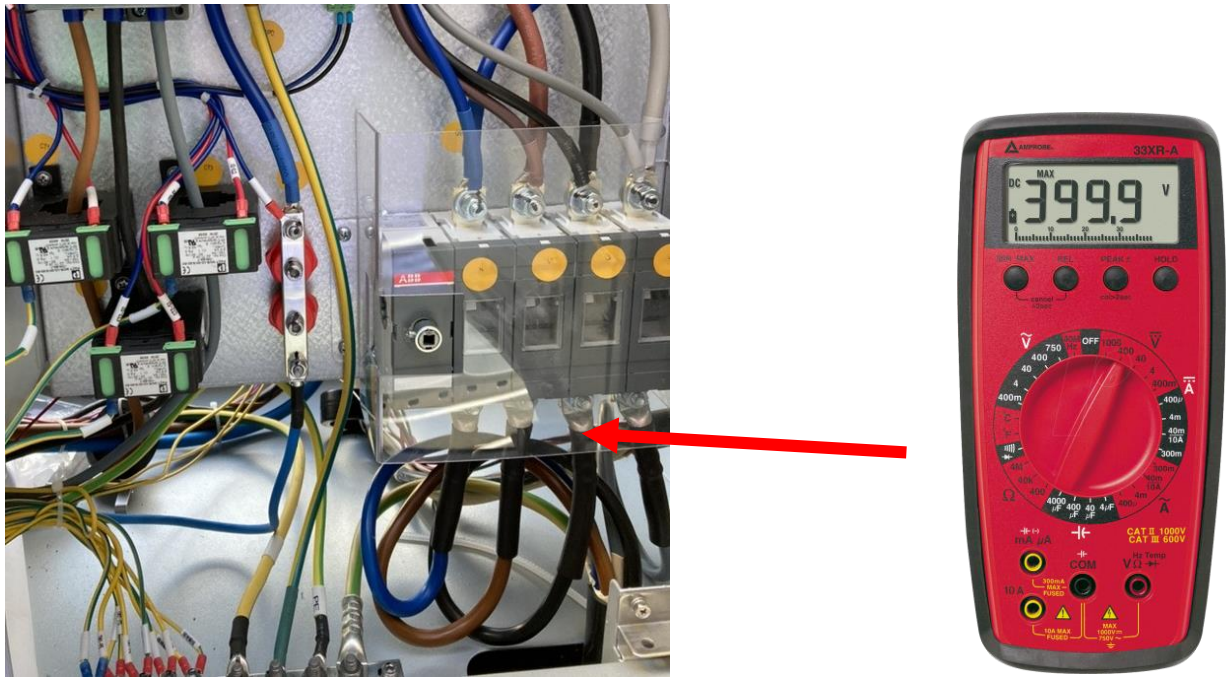
Input power cables



Output power cables

Commissioning workflow
2. Check before power on charger

- Input Voltage：check whether the input voltage of the charger main breaker is correct. There should be no fault such as phase loss, overvoltage, undervoltage and wrong phase sequence.

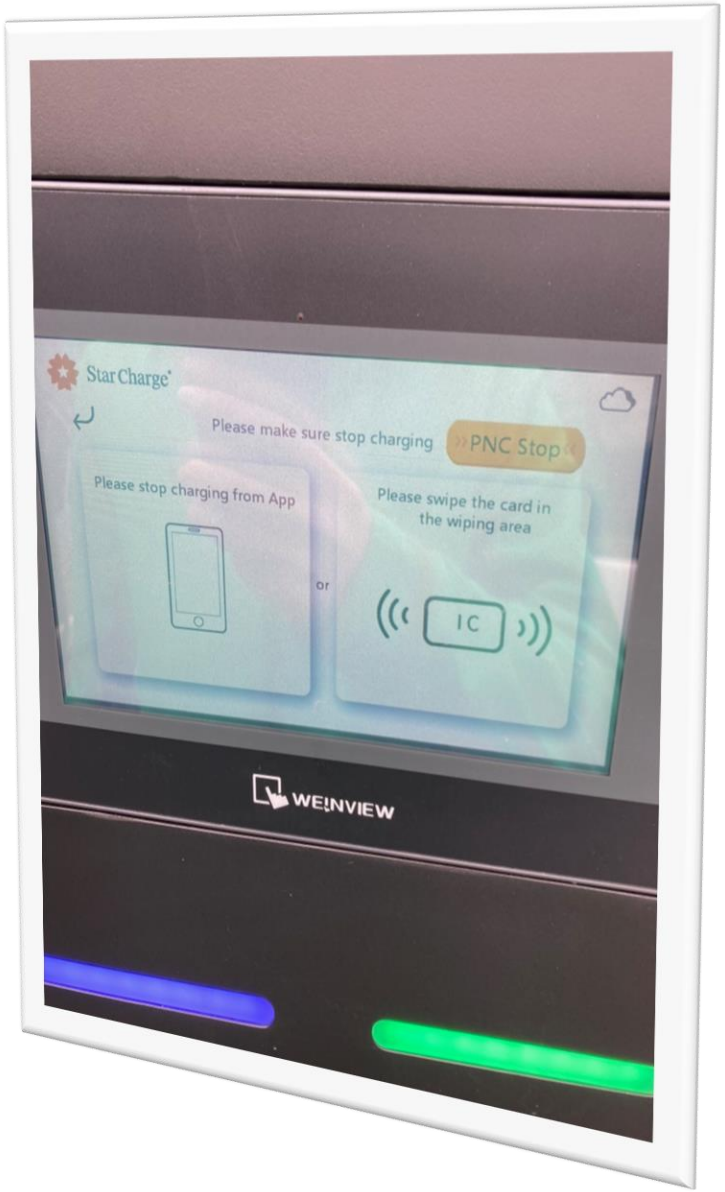


Commissioning workflow
3. Check after power on charger

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

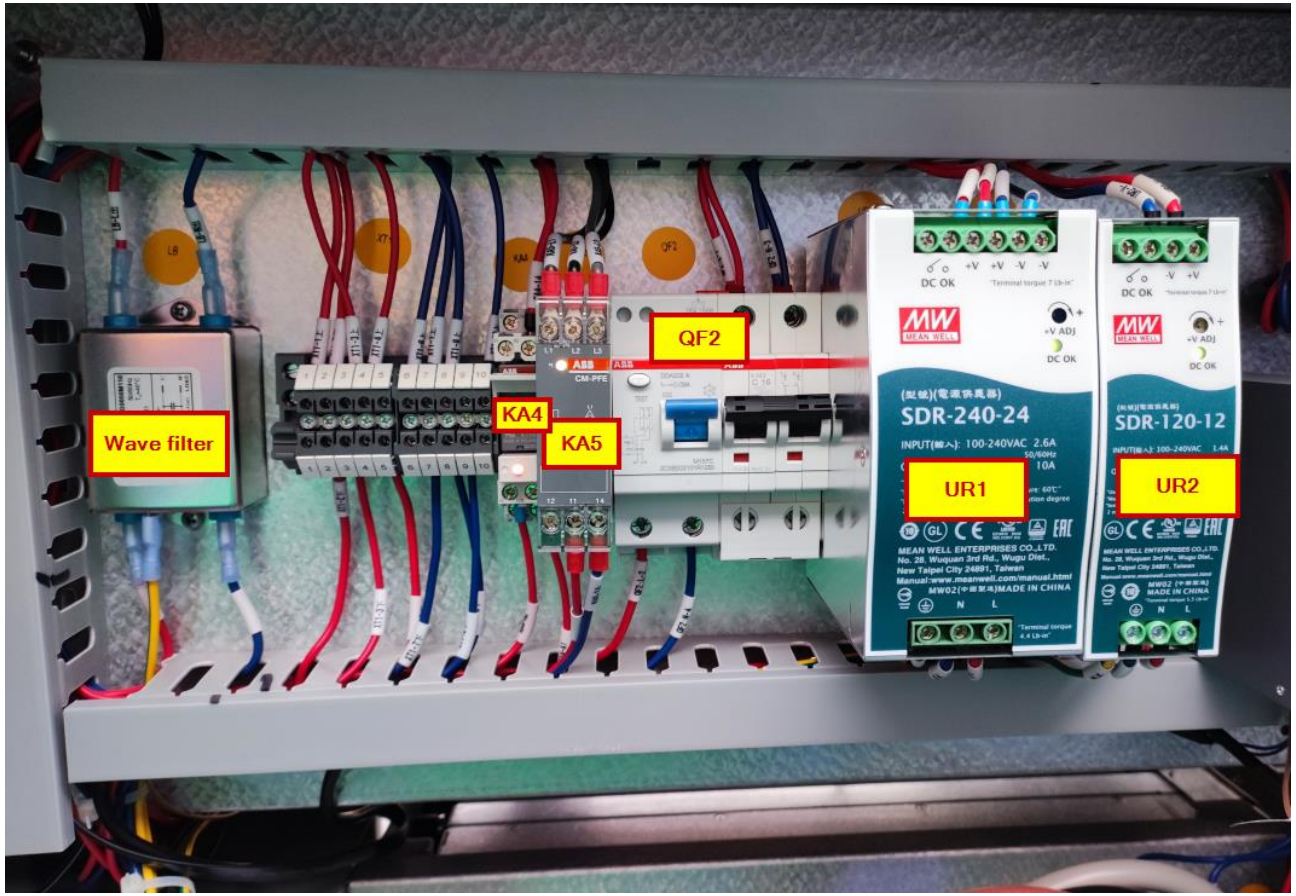
2. LED indicator light: Check whether the LED indicator light on the charger. The LED light should be green.

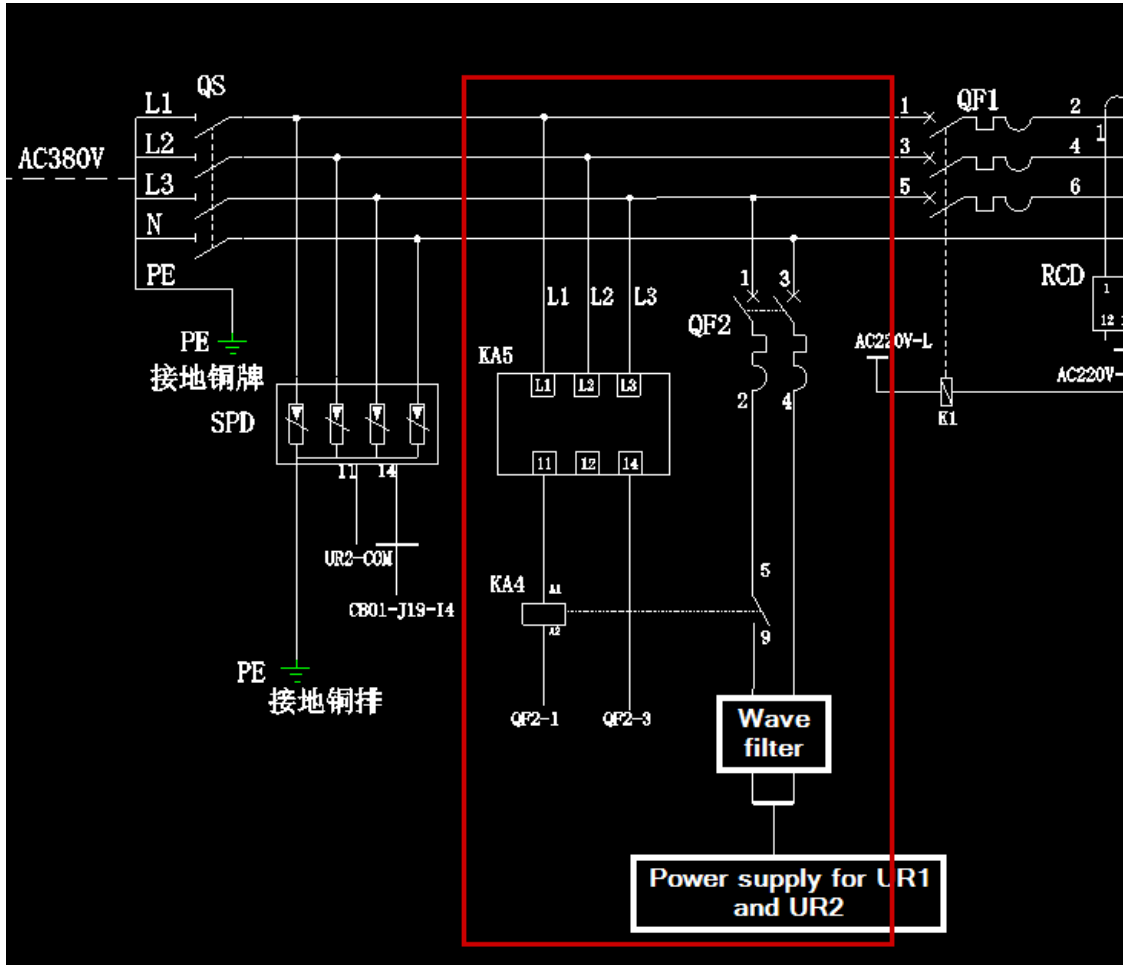
3. If the display and LED indicator are black and have no power, please check the auxiliary power supply: It provides 12V and 24V DC power to control boards. Use electrical multimeter to check the 12V and 24V DC voltage.



Commissioning workflow
3. Check after power on charger

Circuit diagram of auxillary power supply (12 & 24 V)

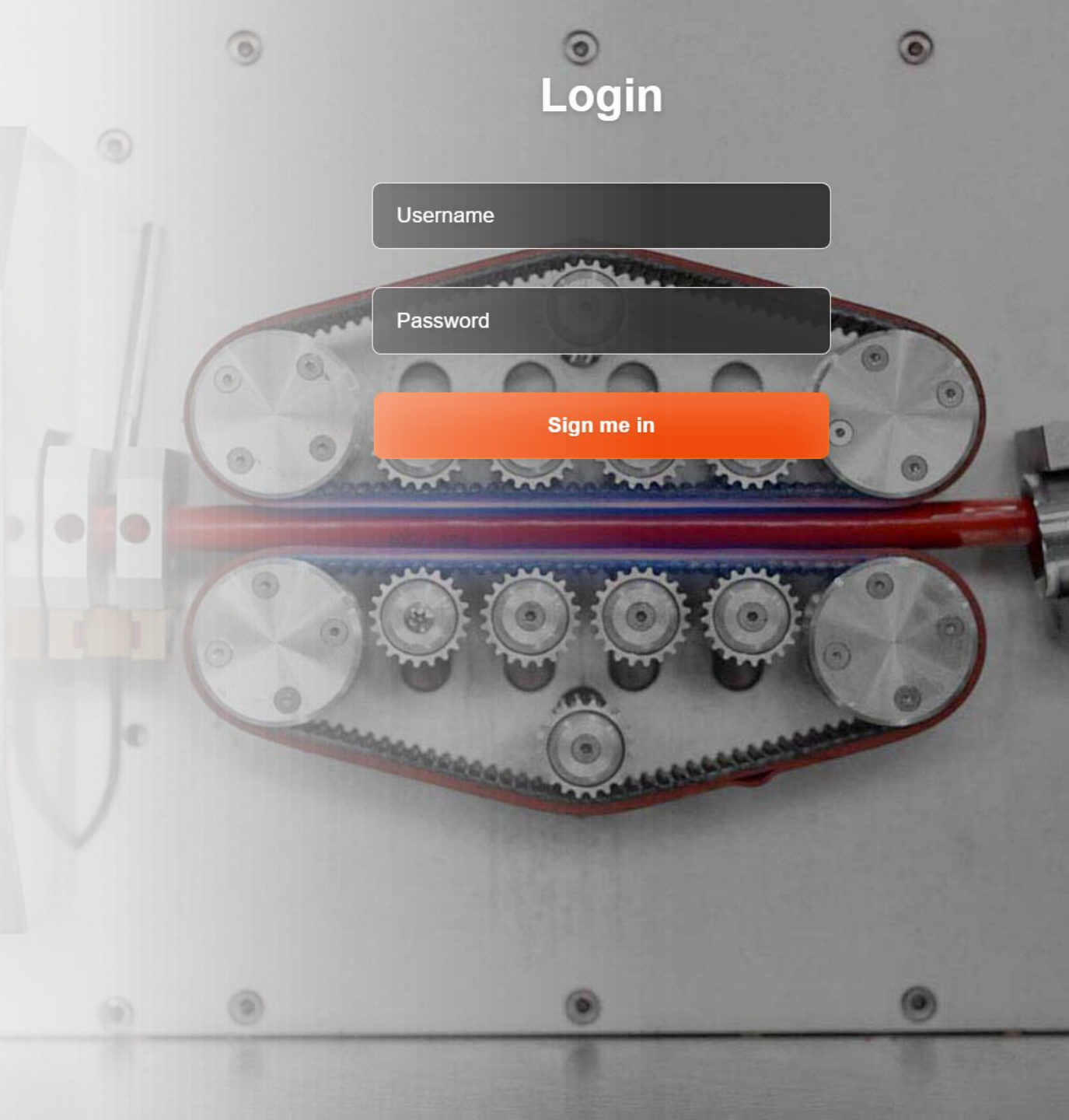




Commissioning workflow
4. Parameter configuration

Software settings needs to be configured:

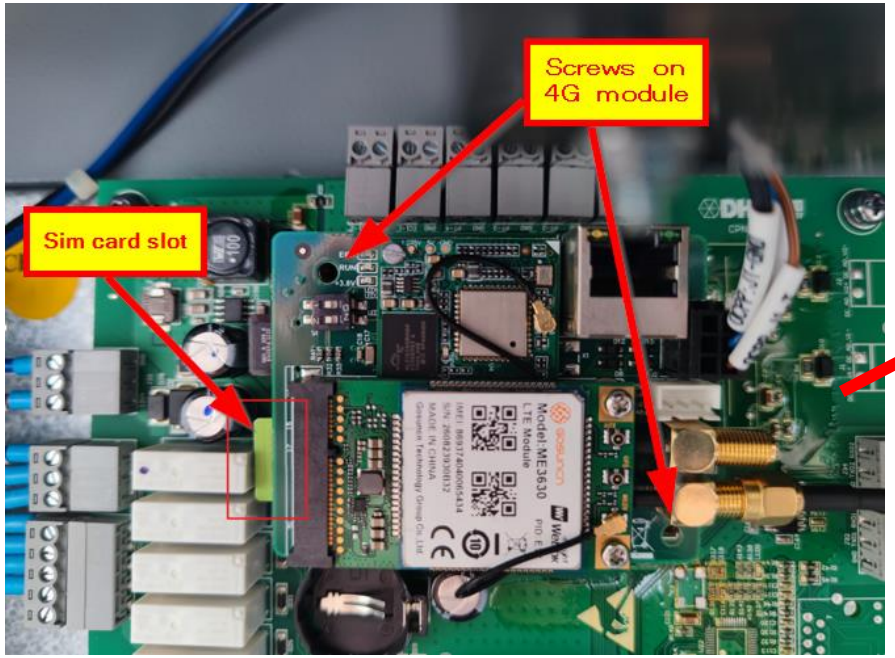
1. Settings in web-panel
    - Internet communication (4G, Ethernet, Wifi)
    - OCPP backend
    - Charger authentication method
2. Settings in charger display
    - Output power configuration
    - Some options needs to be enabled



Commissioning workflow
4. Parameter configuration

Preparation:

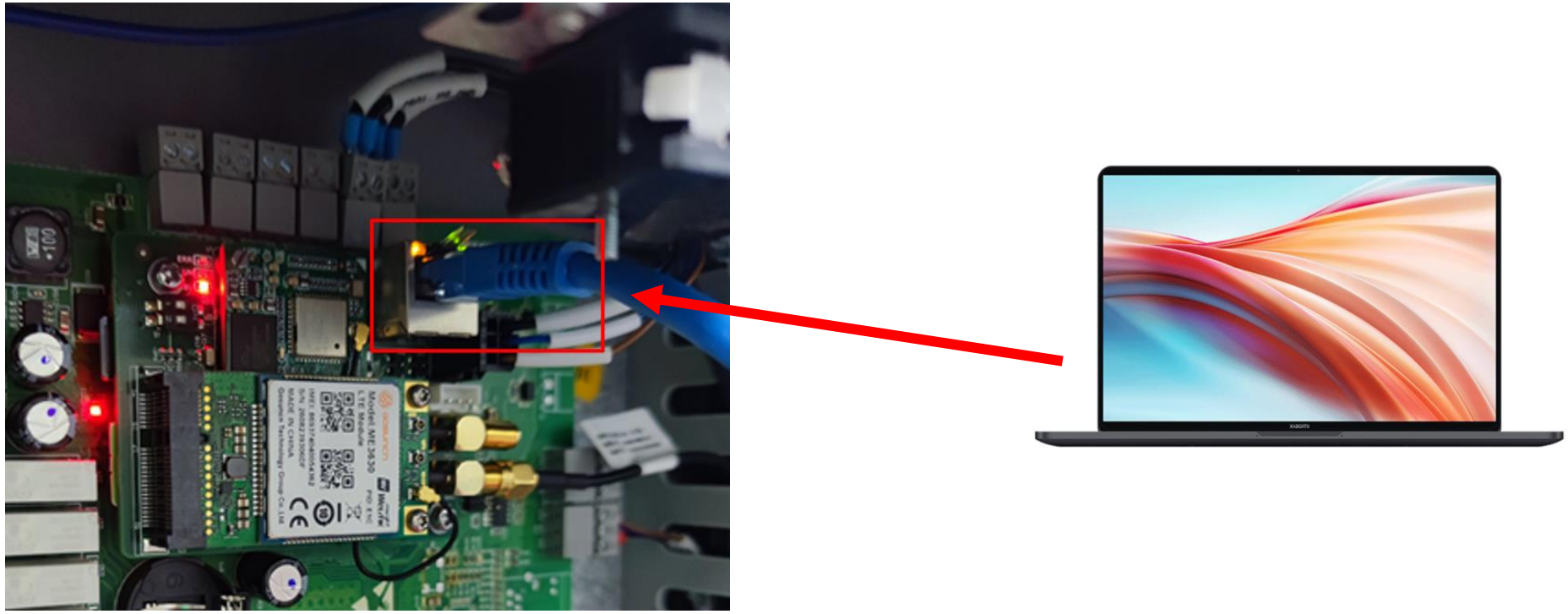
If SIM card is needed for internet communication, insert the SIM into the slot in A7 mainboard



Commissioning workflow
4. Parameter configuration

Preparation:

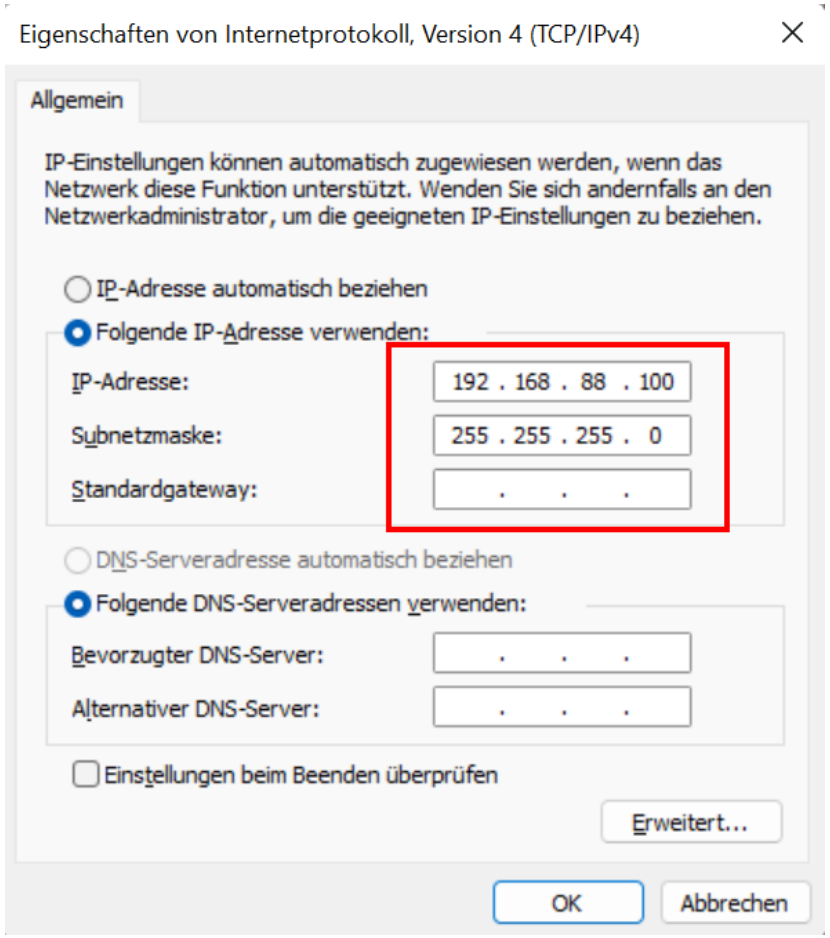
To configure the software settings, connect laptop to router via Ethernet cable



Commissioning workflow
4. Parameter configuration

Preparation:

In laptop, set laptop IP address as shown below (e.g. 192.168.88.xxx, xxx can be any number except 206)



Commissioning workflow
4. Parameter configuration

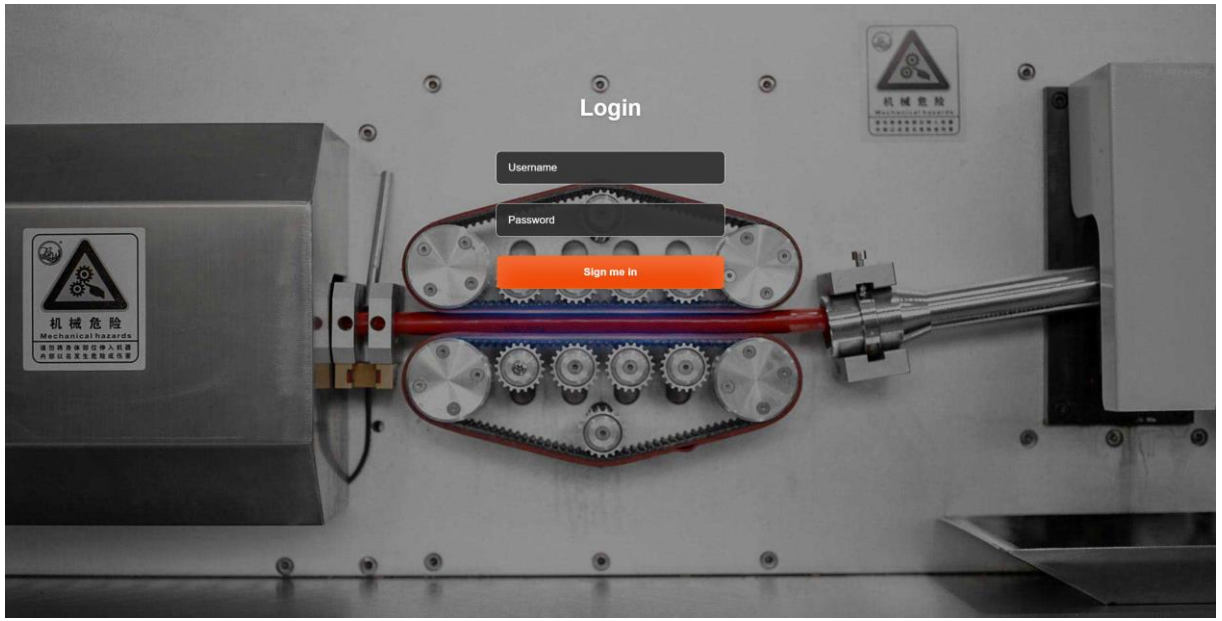
Log in:

Open a browser (e.g. chrome, edge) and enter IP address of charger 192.168.88.206

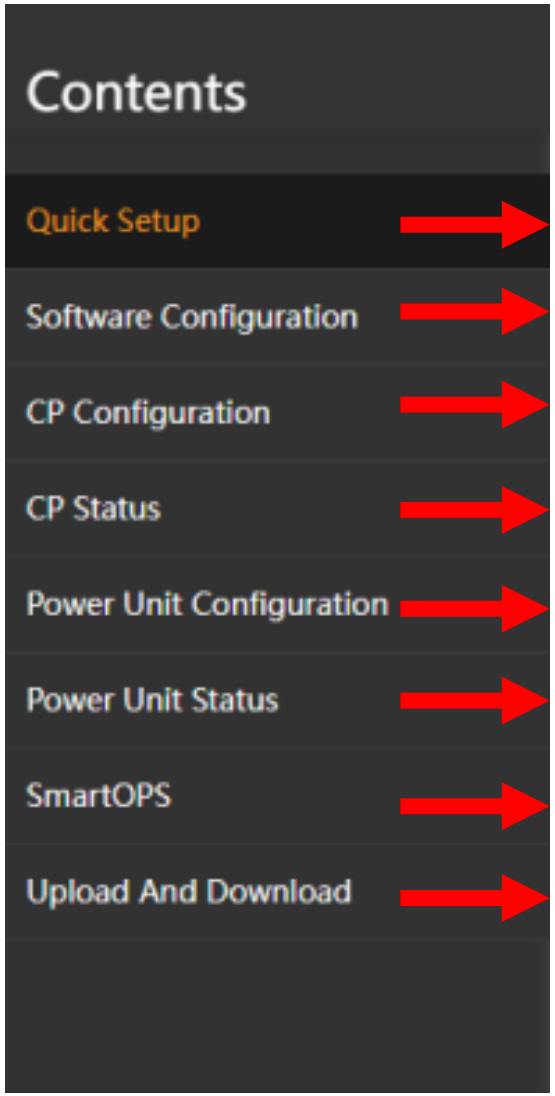
Username wbdh

Password 26835941

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

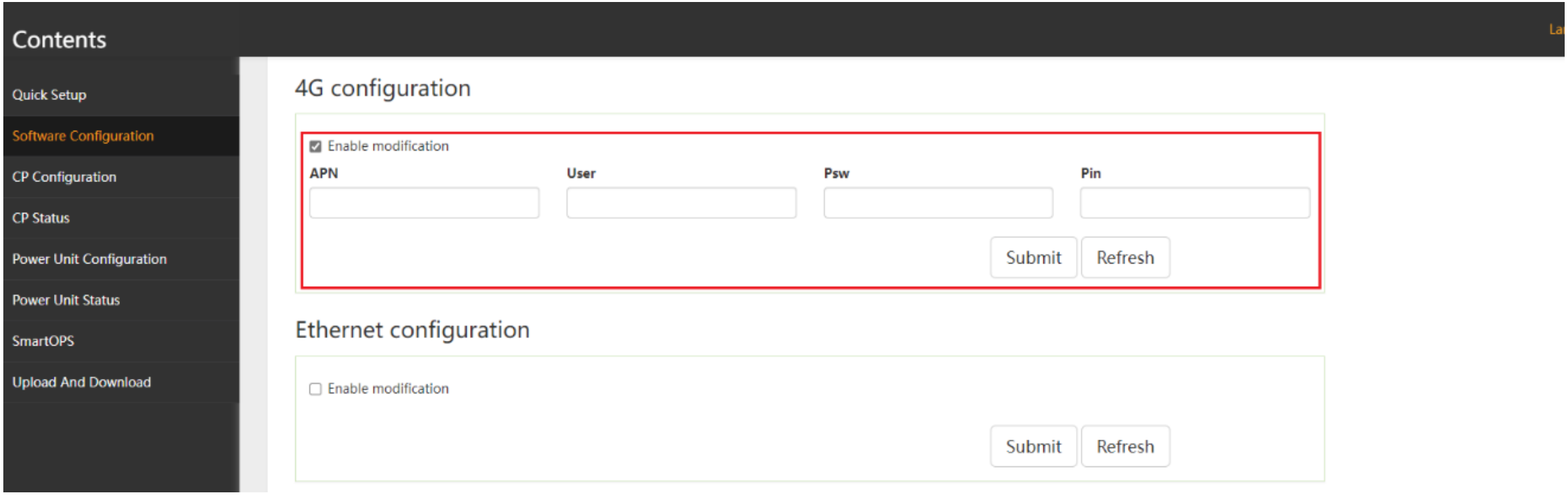
This function is still under development...

Firmware update and log download

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”

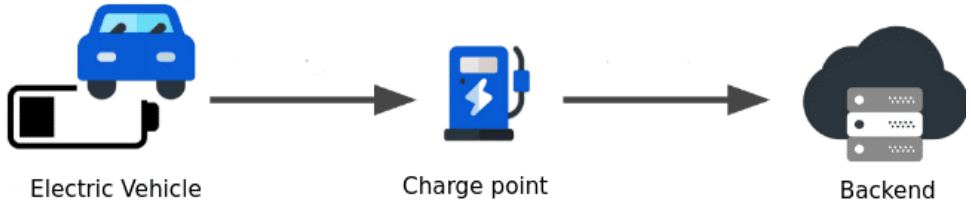


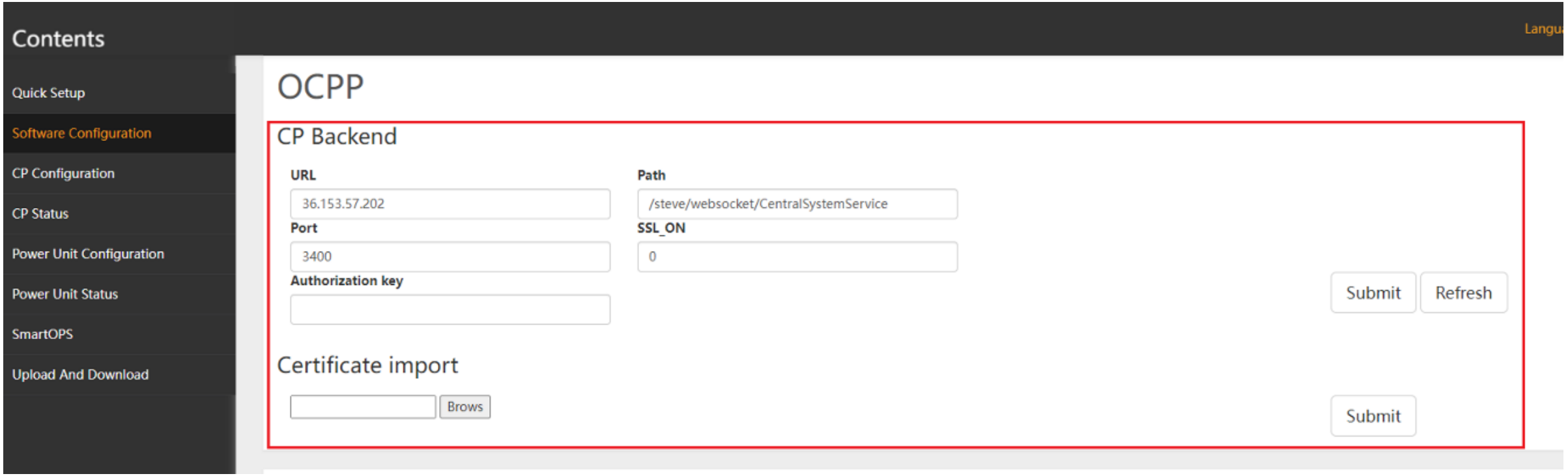
Commissioning workflow
4. Parameter configuration

OCPP backend

For OCPP backend

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



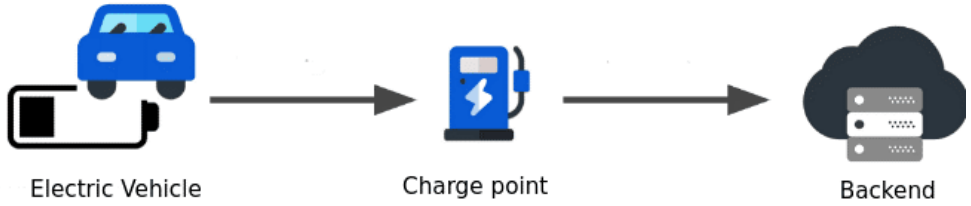


Commissioning workflow
4. Parameter configuration

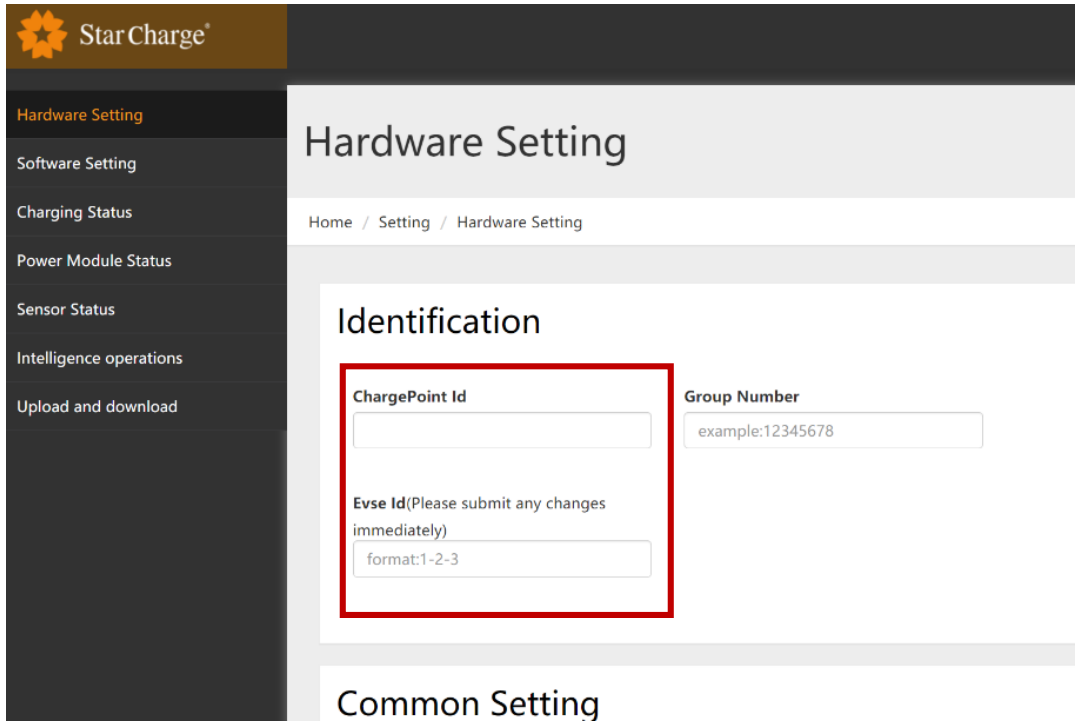
OCPP backend

For OCPP backend

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



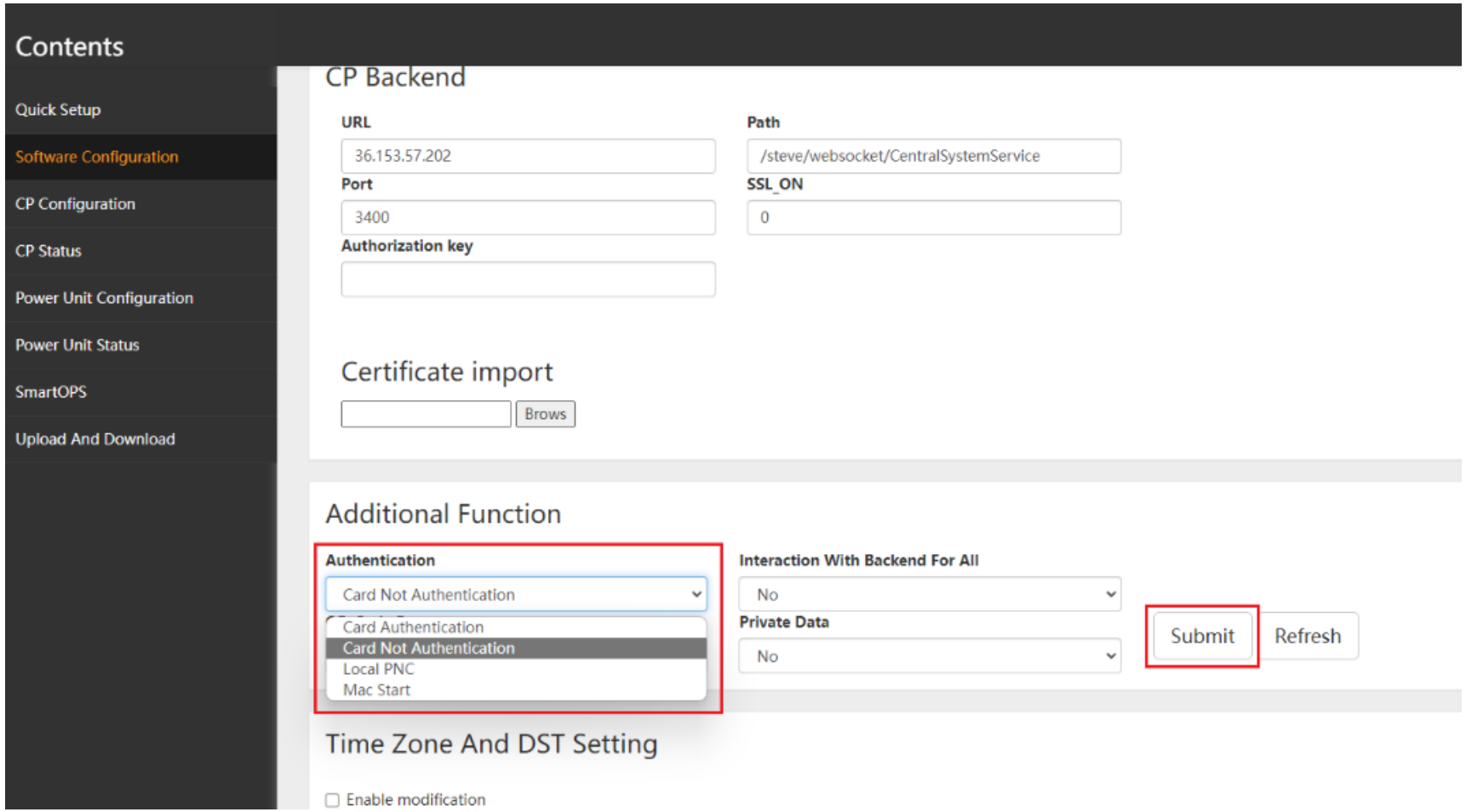
For Jupiter, set the EVSE ID as “2-1” (important).



Commissioning workflow
4. Parameter configuration

Charger authentication method

Following authentication method can be selected:



Commissioning workflow
4. Parameter configuration

Charger authentication method

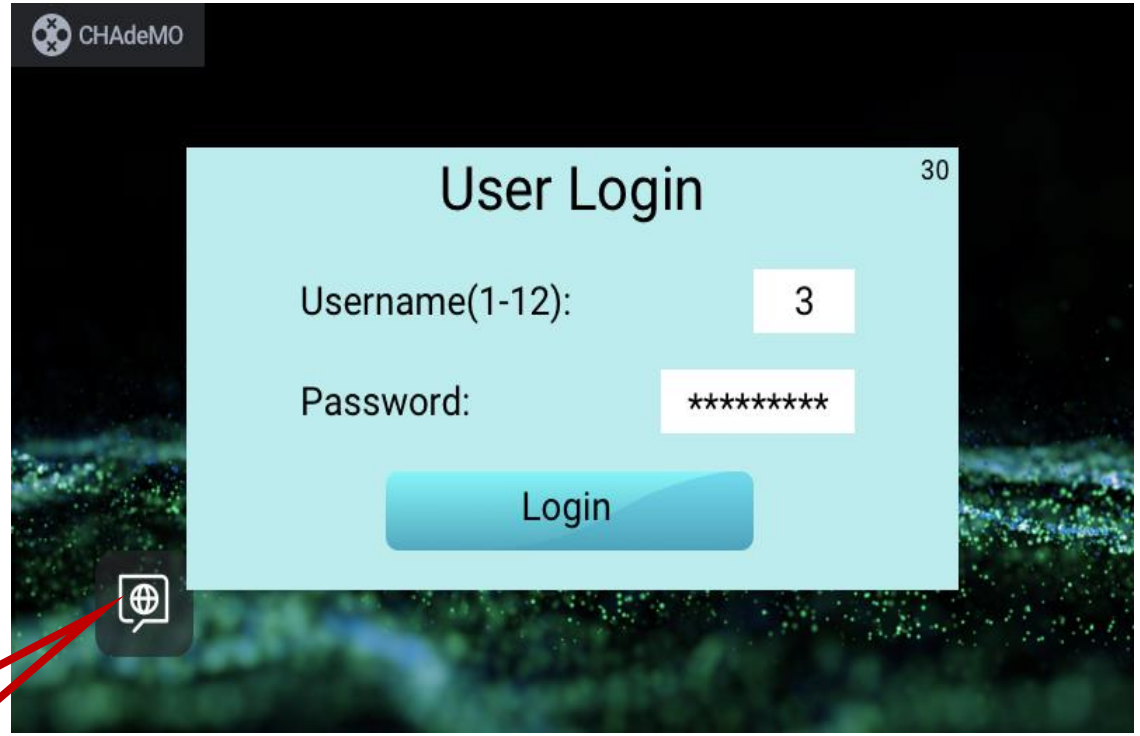
Following authentication method can be selected:

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.

Commissioning workflow
4. Parameter configuration

Settings in charger display

Click the upper center area of the touch screen and type in user name 3 and password 28912891.

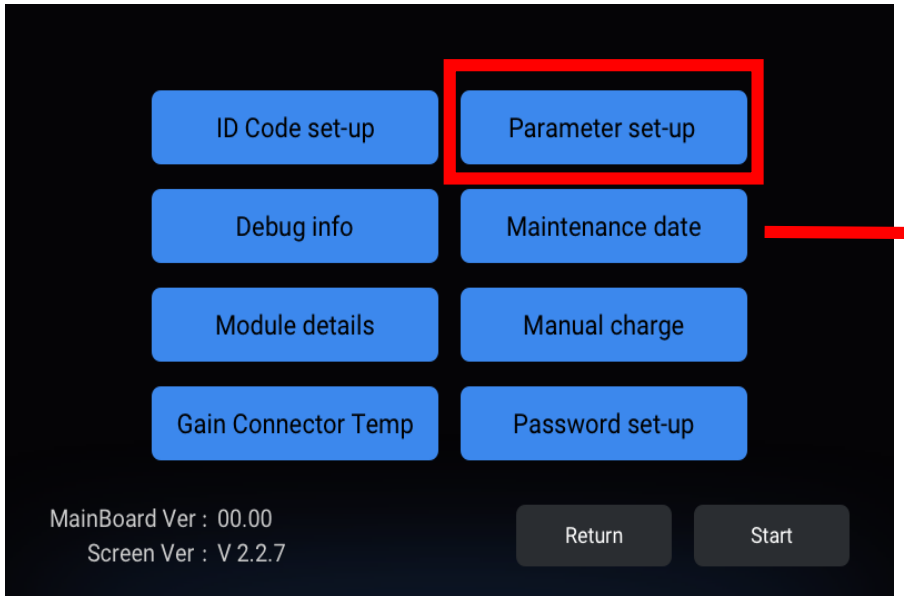


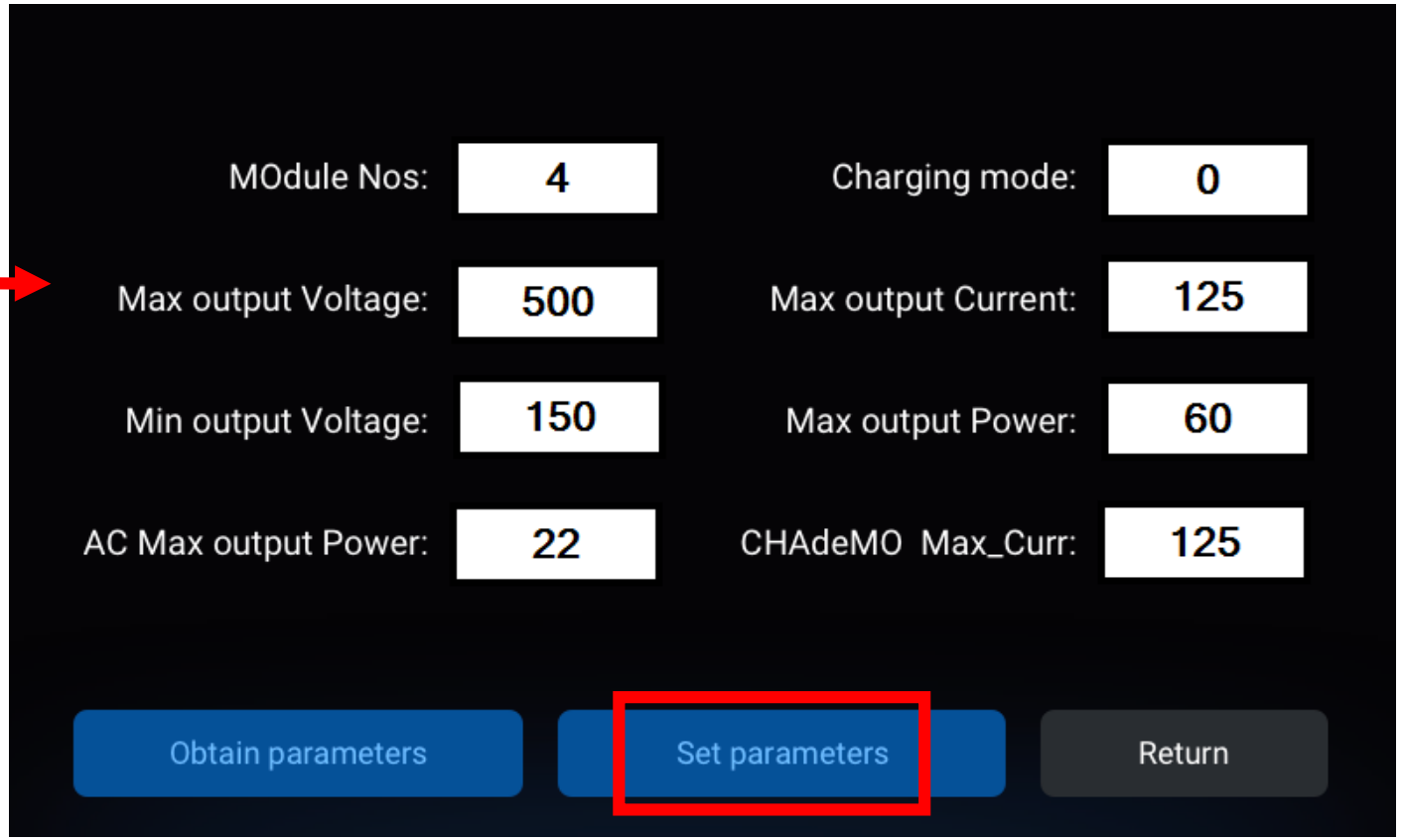
Choose languags

Commissioning workflow
4. Parameter configuration

Settings in charger display

Click “Parameter set-up”. Set the parameter as shown below. After that, click “set parameters” after setting.



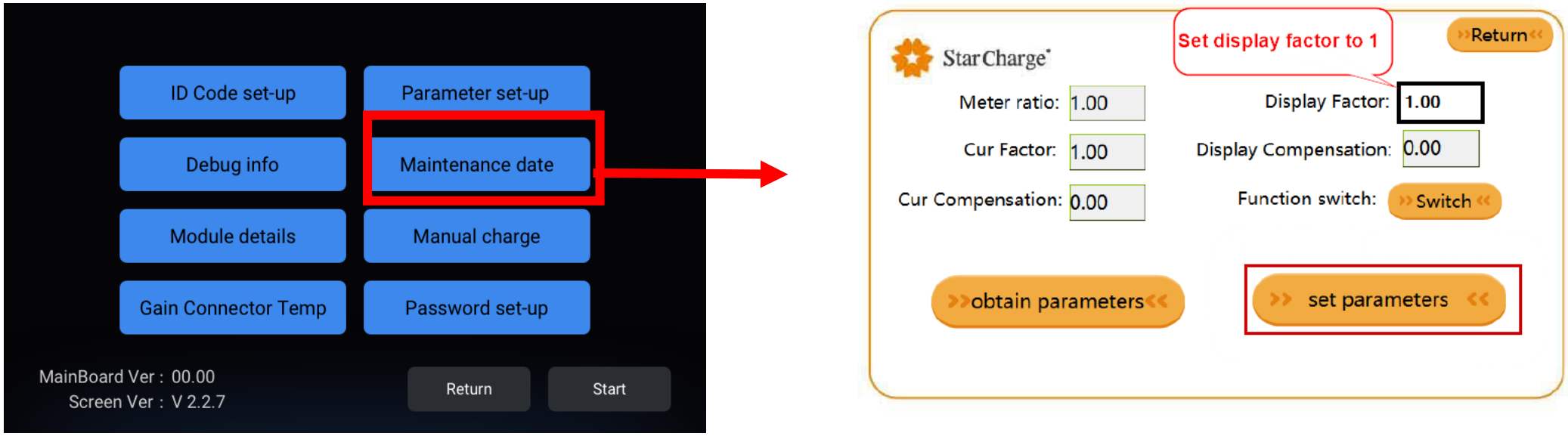


Commissioning workflow
4. Parameter configuration

Settings in charger display

Click “Maintenance data”.

Check the setting of “Display factor”, its value should be 1. If not, please correct it and click “set parameters”

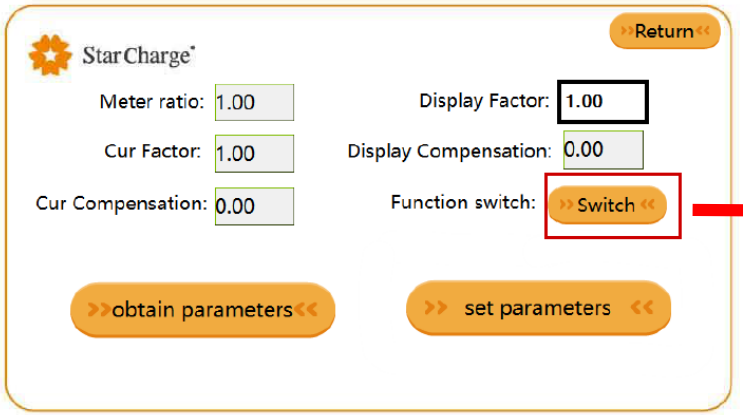


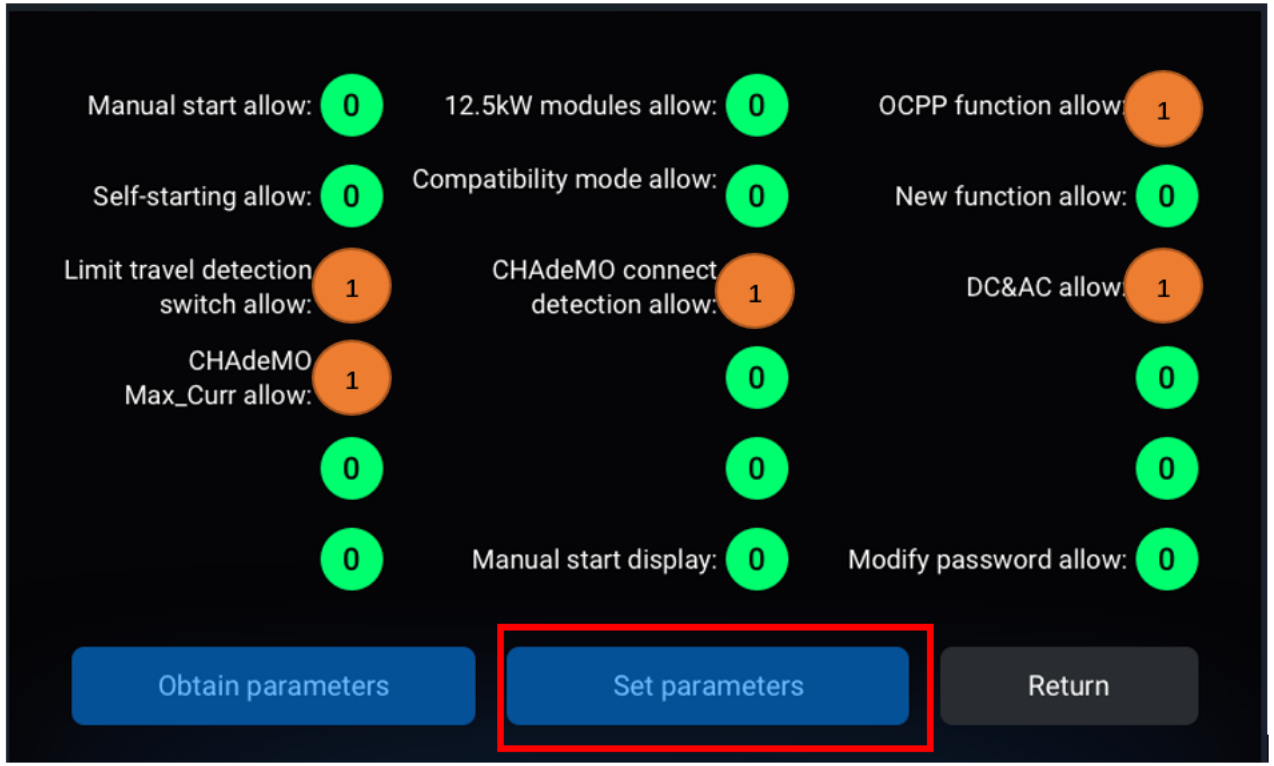
Commissioning workflow
4. Parameter configuration

Settings in charger display

Click “Switch”.

Enable the options as shown below. Enable = 1, Disable = 0

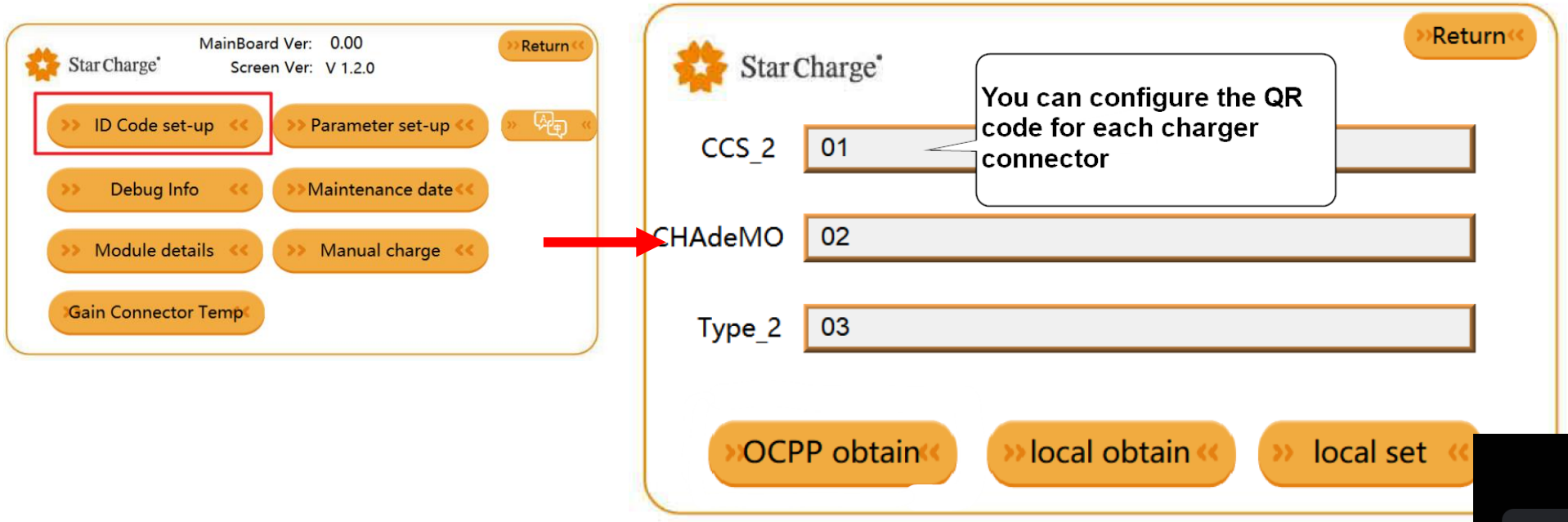


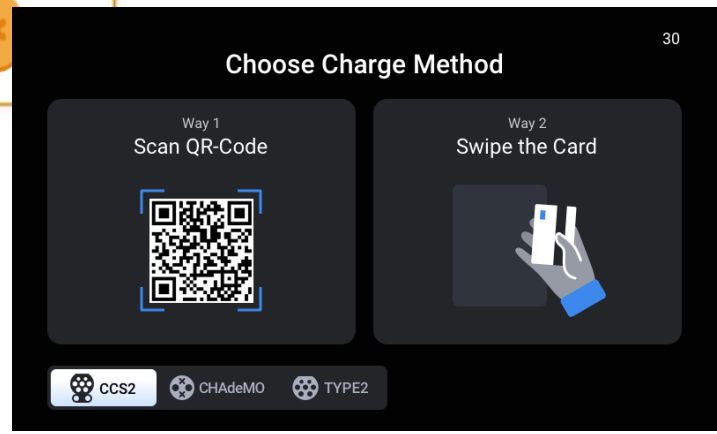


Commissioning workflow
4. Parameter configuration

Settings in charger display

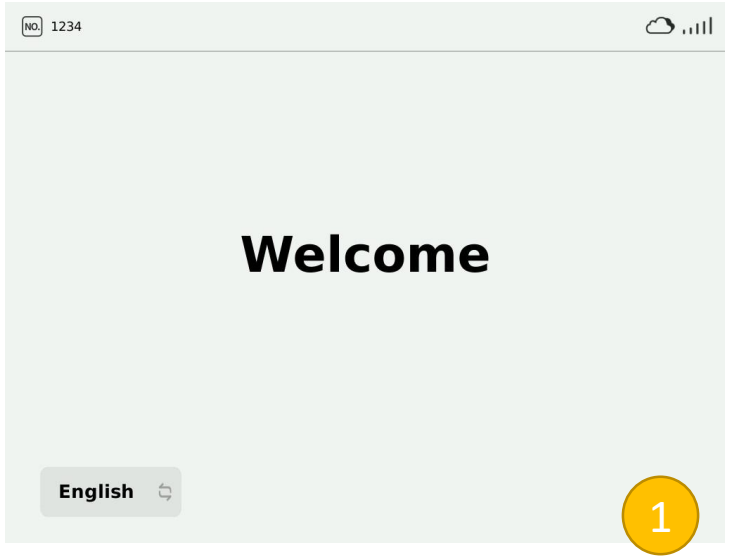
This setting is optional: if you want to configure the QR code for each charger connector, you can define the QR code here



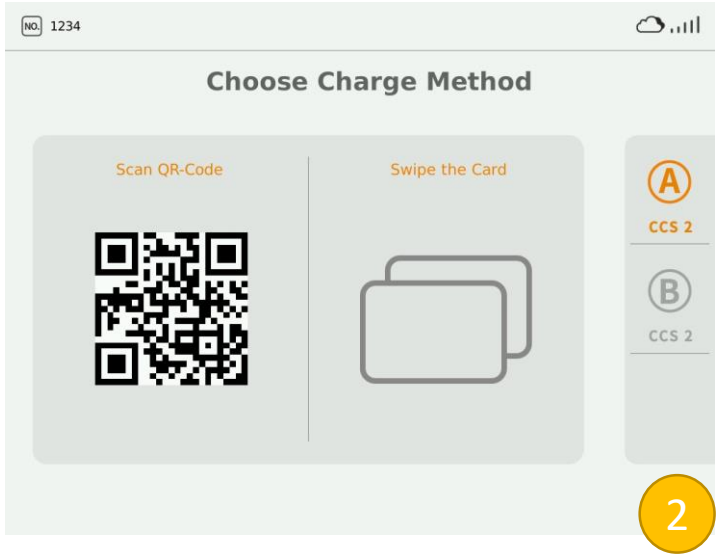


Commissioning workflow
5. Charging test

Plug in the charger connector to an EV and then swip IC card or use App to start charging session

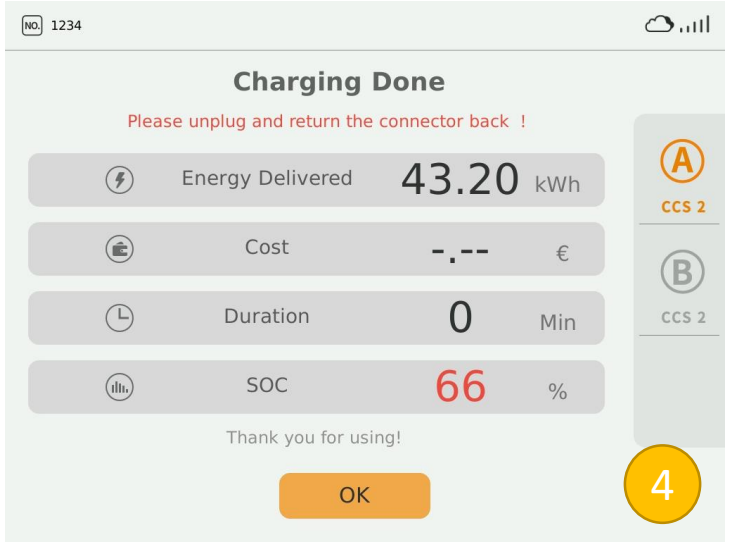


Plug charger gun into EV



Swipe RFID card or use App to start

Swipe RFID card or use App to stop



Commissioning workflow
5. Charging test

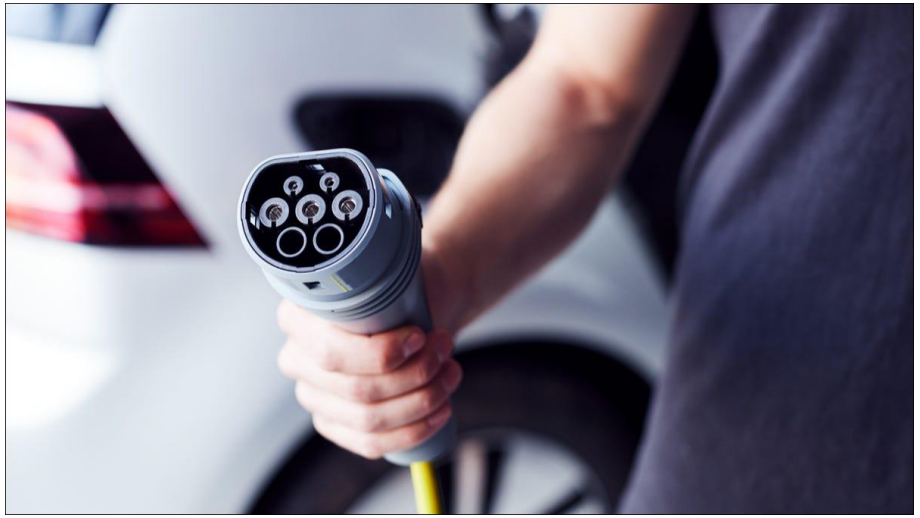
During the charging session, check / test following items

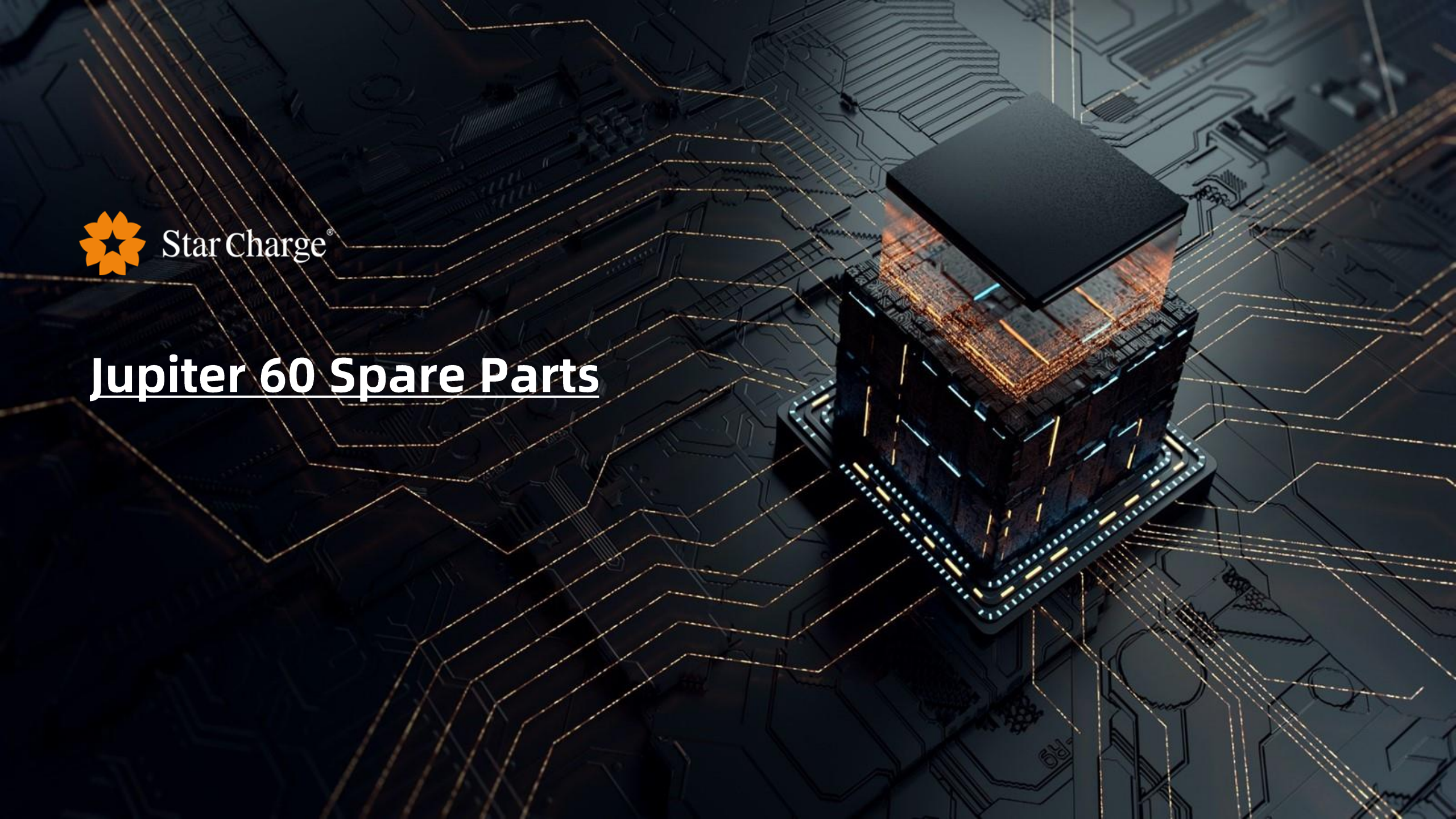
1. Door sensor: Open the door of EVSE when charging, the EVSE should stop charging.
2. Emergency stop: Press the emergency stop button on the EVSE when charging, the EVSE should stop charging.
3. Fan: Check the wind speed and direction of fan of inside.
4. Meter: Check whether the meter measures accurately during charging.
5. Charging cable: There’s no burrs, no sharp edges, no overheating, no loosen insulation cap of the charger cable. It’s 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, engineer should give a basic training to end users:
  - how to use charger;
  - safety knowledge;
  - basic charging procedure;
  - Support contact.
- Last and not least, the commissioning report needs to be finished after whole work.

  (Template refers to appendix 2 of commissioning manual)




Star Charge®
Jupiter 60 Spare Parts

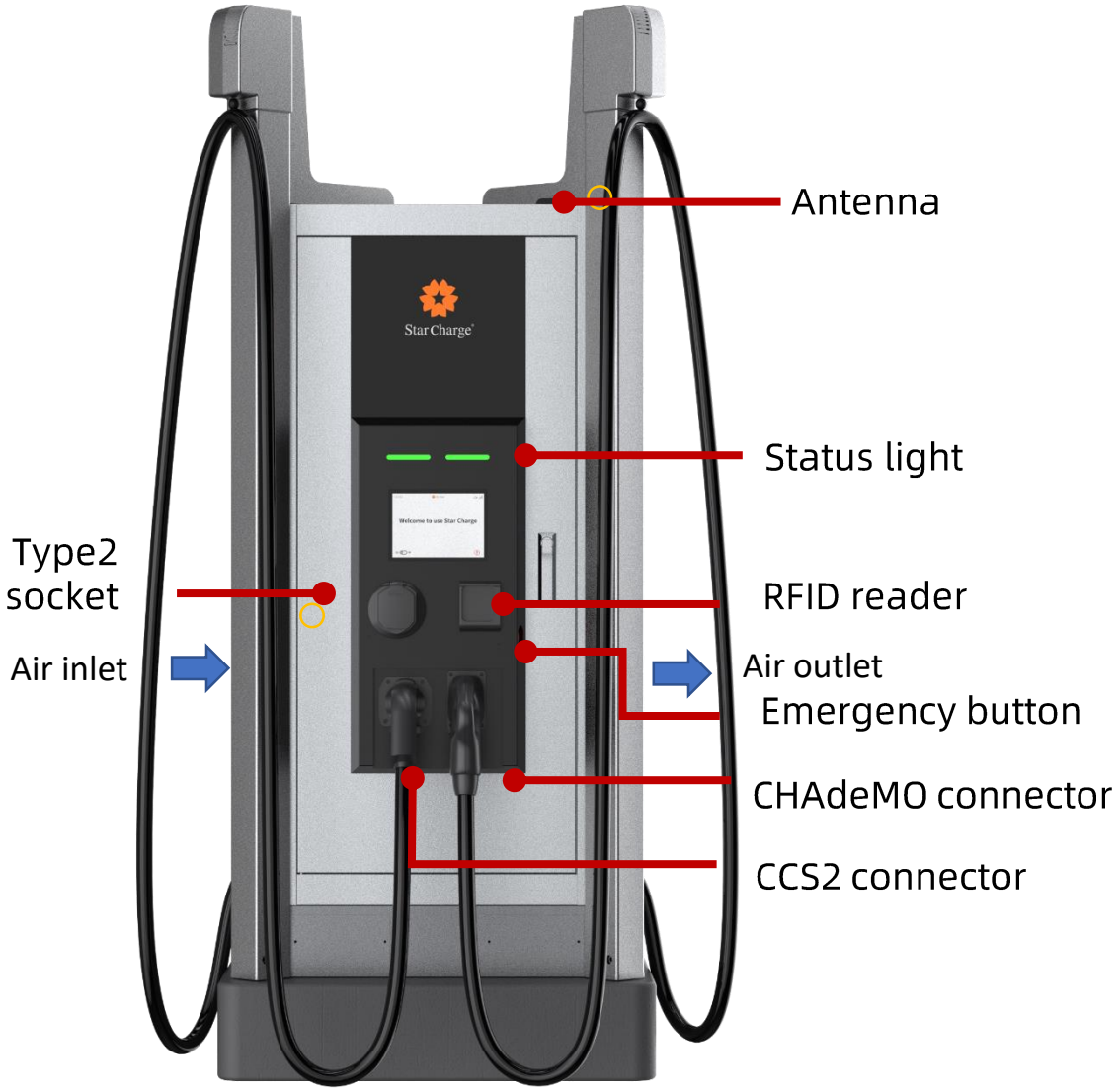
Spare parts list

No	SKU Code	Description	Specification
1	ADQAMT0016	AC Meter	B24-212-100
2	ADQAPG0115	AC Charging Cable	DB-E-3130-050 63A 3phase 5m,Bals
3	ADQBCP0009	Core Board	A6G2C-WB128LI
4	ADQBCP0010	Insulation Testing Board	SIM100MOD
5	ADQCOM0041	PLC Board	GQEVSE32PLC-V3.1-CHA
6	ADQCOM0118	Card Reader	QB-RS522-V1.8
7	ADQCOM0129	4G Board	ME3630E1C_MP01
8	ADQCOP0027	Screen Communication Line	DH-TY-DQ-XL-002，200cm
9	ADQCPN0025	DC Mainboard	DH-DC-MainBoard1.0
10	ADQCPN0121	AC Mainboard	DH-AC-DCMainBoard_V1.0
11	ADQCPN0172	OCPP Board	DH-DC-OCPPCommBoard
12	ADQCTR0004	AC Contactor	AX80-30-11 AC220V
13	ADQCTR0018	AC Contactor	AX150-30-11 AC220V
14	ADQDMT0013	DC Meter	SPM90 DC1000V 200A
15	ADQDPD0016	Touch Screen	TK6071IQL
16	ADQDPG0181	DC Charging Cable	HVCOCMTR8PF550L5000,125A,5m
17	ADQDPG0251	DC Charging Cable	SEVD-02E-050
18	ADQDRL0025	DC Relay	EVRA200CE-1
19	ADQFLT0002	Filter	B84112G0000M116
20	ADQFUS0014	Fuse Protector	170M1739 200A

Spare parts list

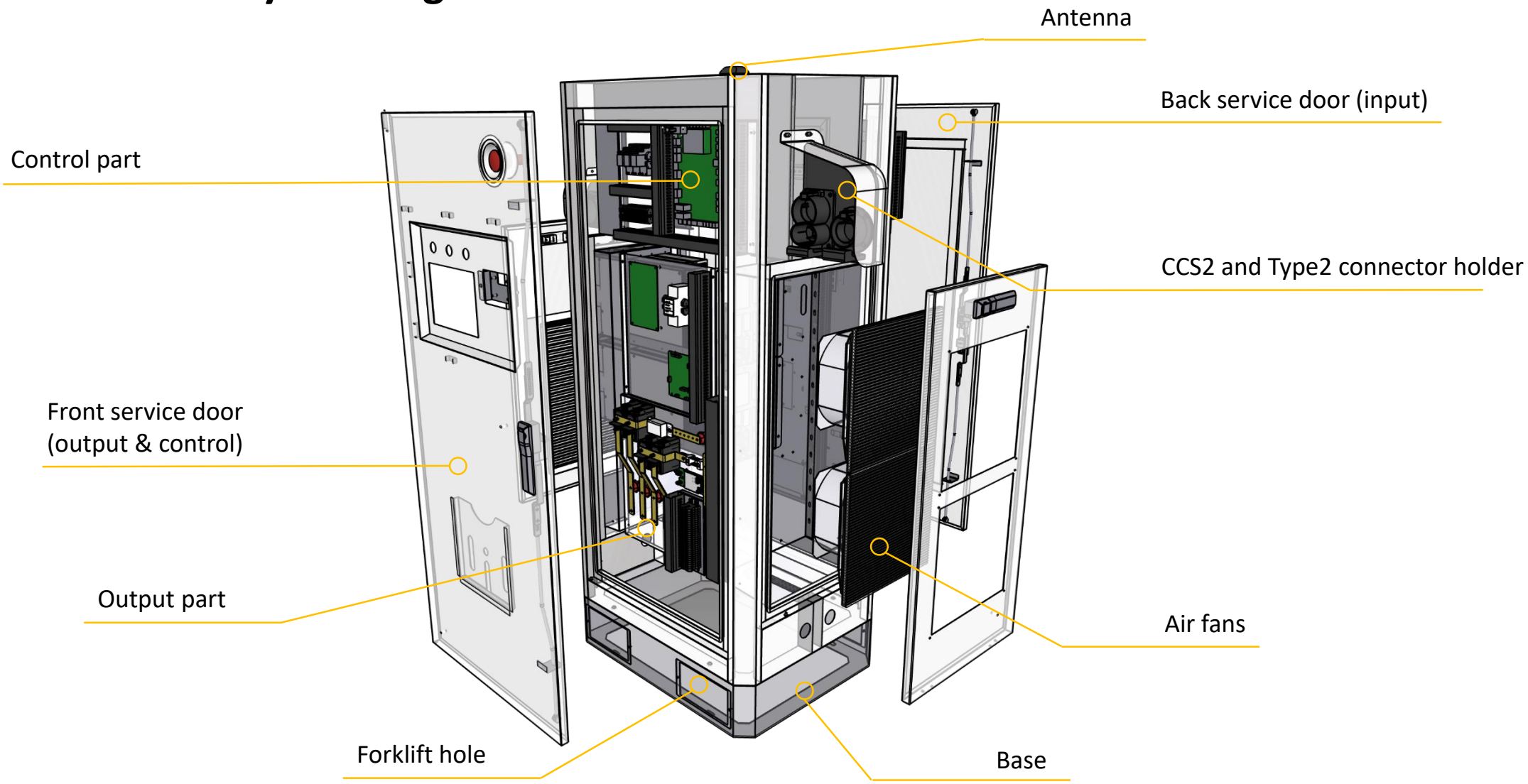
No	Code	Description	Specification
21	ADQIRL0026	Intermediate Relay	CM-PFE phase seq 1 c/o 208-440VAC
22	ADQIRL0027	Intermediate Relay	CR-P/M 22
23	ADQIRL0028	Intermediate Relay	CR-P230AC1
24	ADQIRL0029	Intermediate Relay	CR-PSS
25	ADQIRL0030	Intermediate Relay	CR-PH
26	ADQIRL0031	Intermediate Relay	CR-P/M
27	ADQIRL0033	Intermediate Relay	CR-MX012DC2L
28	ADQIRL0034	Intermediate Relay	CR-M2SFB
29	ADQMCB0016	Miniature Circuit Breaker	S202-C16
30	ADQMCB0018	Residual Current Action Miniature Circuit Breaker	DDA202 A-25/0.03
31	ADQMCC0137	Residual Current Action Module	NL210 3PN 63A 30mA B 10kA
32	ADQMCC0302	Molded Case Circuit Breaker	NDM2L-250M/AXV/4300B,In=160A
33	ADQMTC0078	Power Module Plug-in	REG20KW11-18
34	ADQMTC0079	Power Module Plug-in	REG20KW22-18
35	ADQPWM0051	Power Module	REG50040G
36	ADQSPD0011	Surge Protector	VAL-MS385/40/3+1/FMGY
37	ADQSPS0014	Switching Power Supply	SDR-120-12
38	ADQSPS0069	Switching Power Supply	SDR-240-24
39	ADQSWT0019	Emergency Stop Button	CE4T-10-11
40	AJGVEN0029	Fan	LK 3326.230

3D drawing Jupiter 60



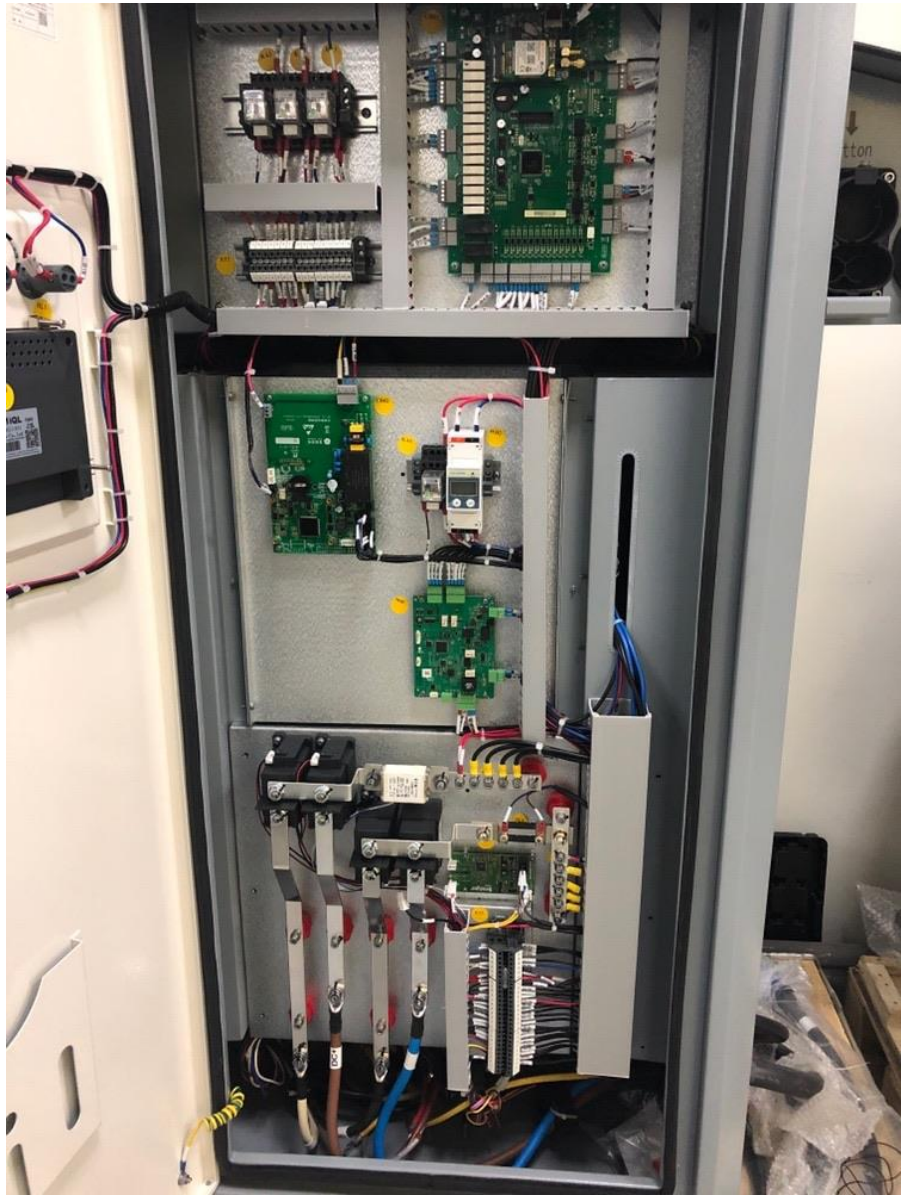
- Max. 95% rectifier efficiency
- CCS2 + CHAdeMO + Type2
- DC output power 60 KW
- AC output power 22 KW
- AC and DC simultaneous charging
- Cable management system and ADA compliance

3D disassembly drawing



Note: This drawing is based on Jupiter OldID. Its structure is very similar to Jupiter V2, except the position of Type2 socket, emergency button.

Front door



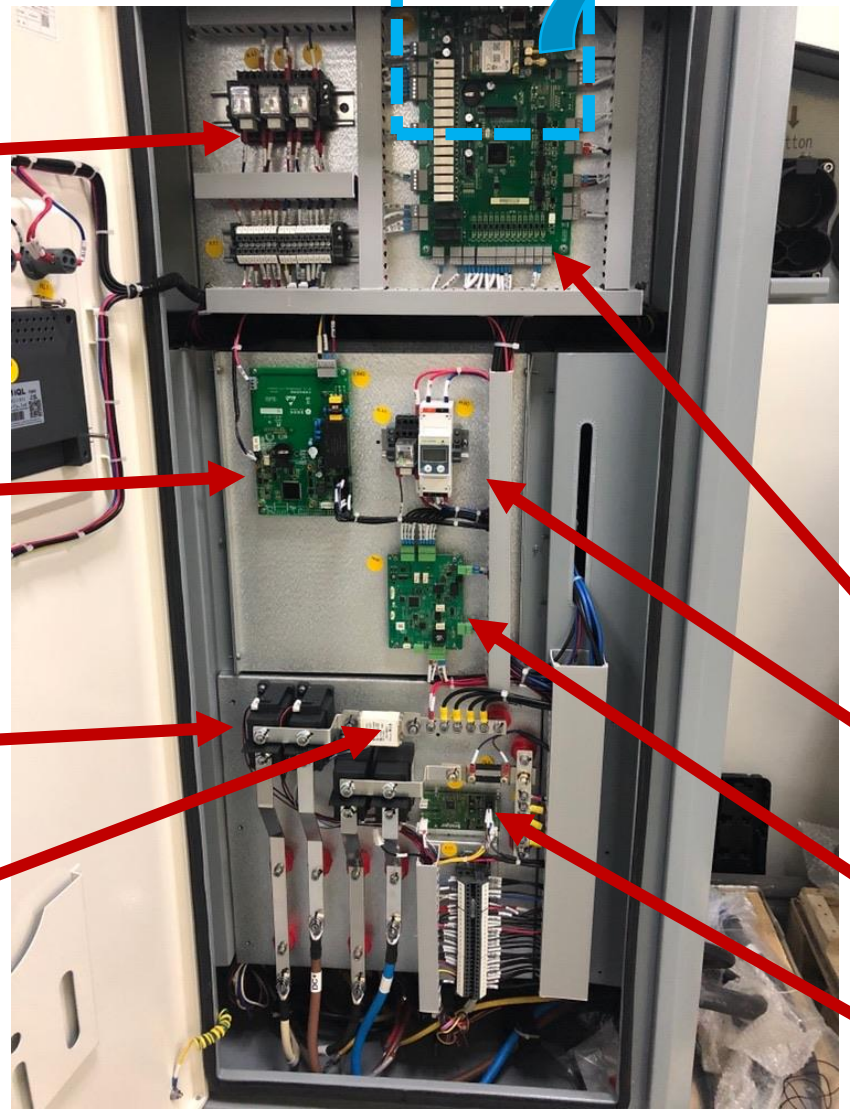
Front door

Touch screen
No.: ADQDPD0016
Function: screen display

Screen communication line
No.: ADQCOP0027
Function: 485 communication

Card reader
No.: ADQCOM0118
Function: Card reader authentication started

Front door



Intermediate relay
No.: ADQIRL0033

AC mainboard
No.: ADQCPN0121

DC relay
No.: ADQDRL0025

Fuse protector
No.: ADQFUS0014

OCPP board
No.: ADQCPN0172

Core board
No.: ADQBCP0009

4G communication board
No.: ADQCOM0040

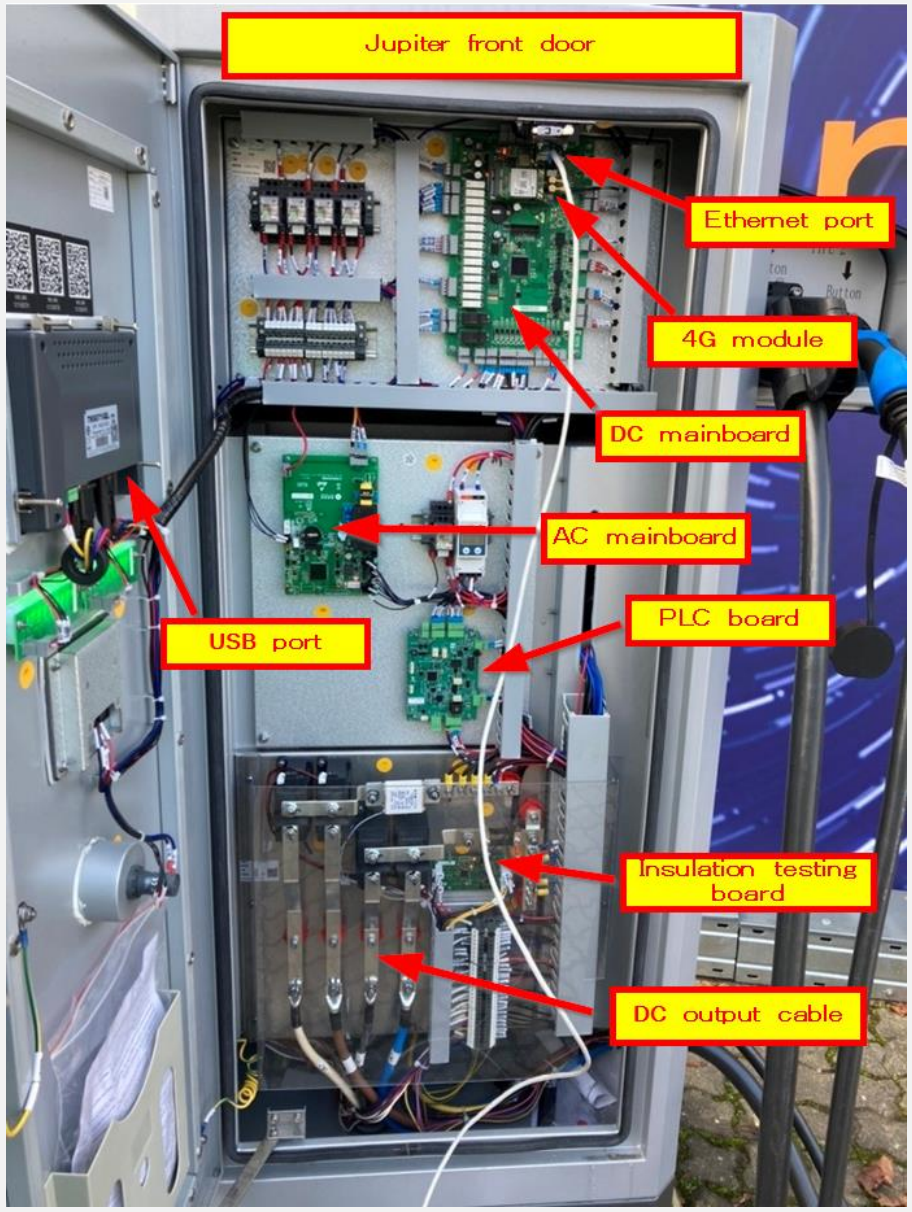
DC mainboard
No.: ADQCPN0025

DC meter
No.: ADQDMT0013

PLC board
No.: ADQCOM0041

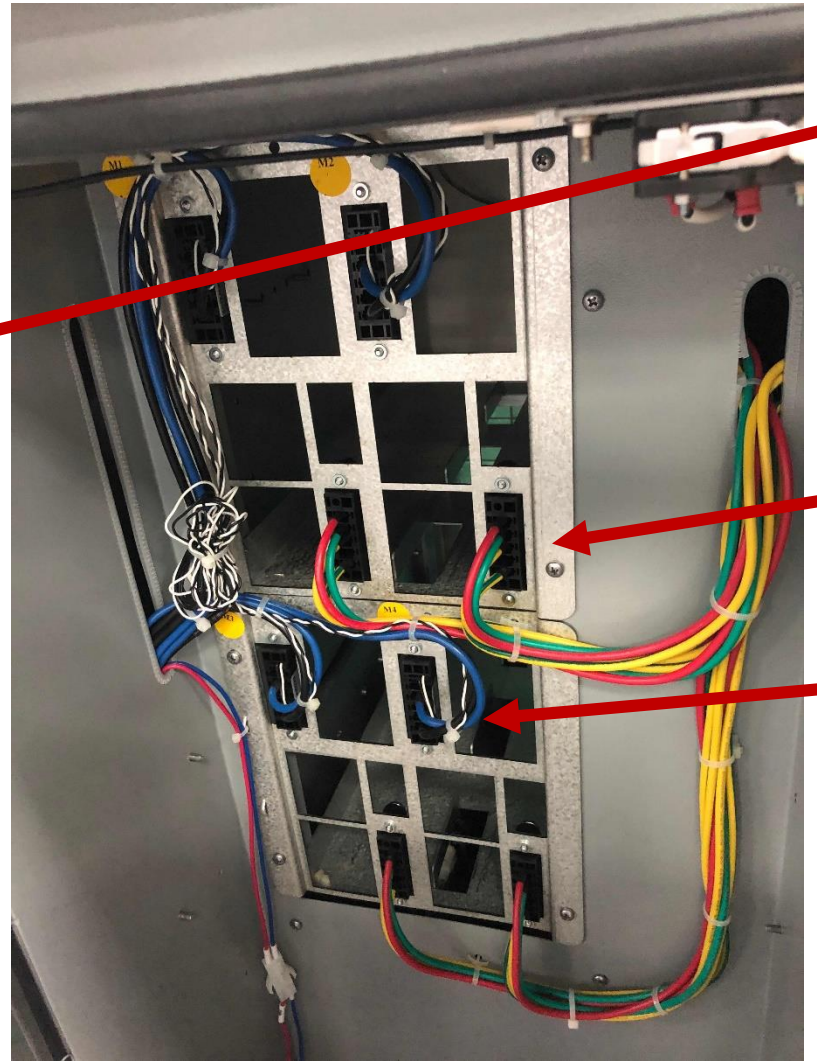
Insulation testing board
No.: ADQBCP0010

Internal structure of Jupiter 60kW



Left door

Right door

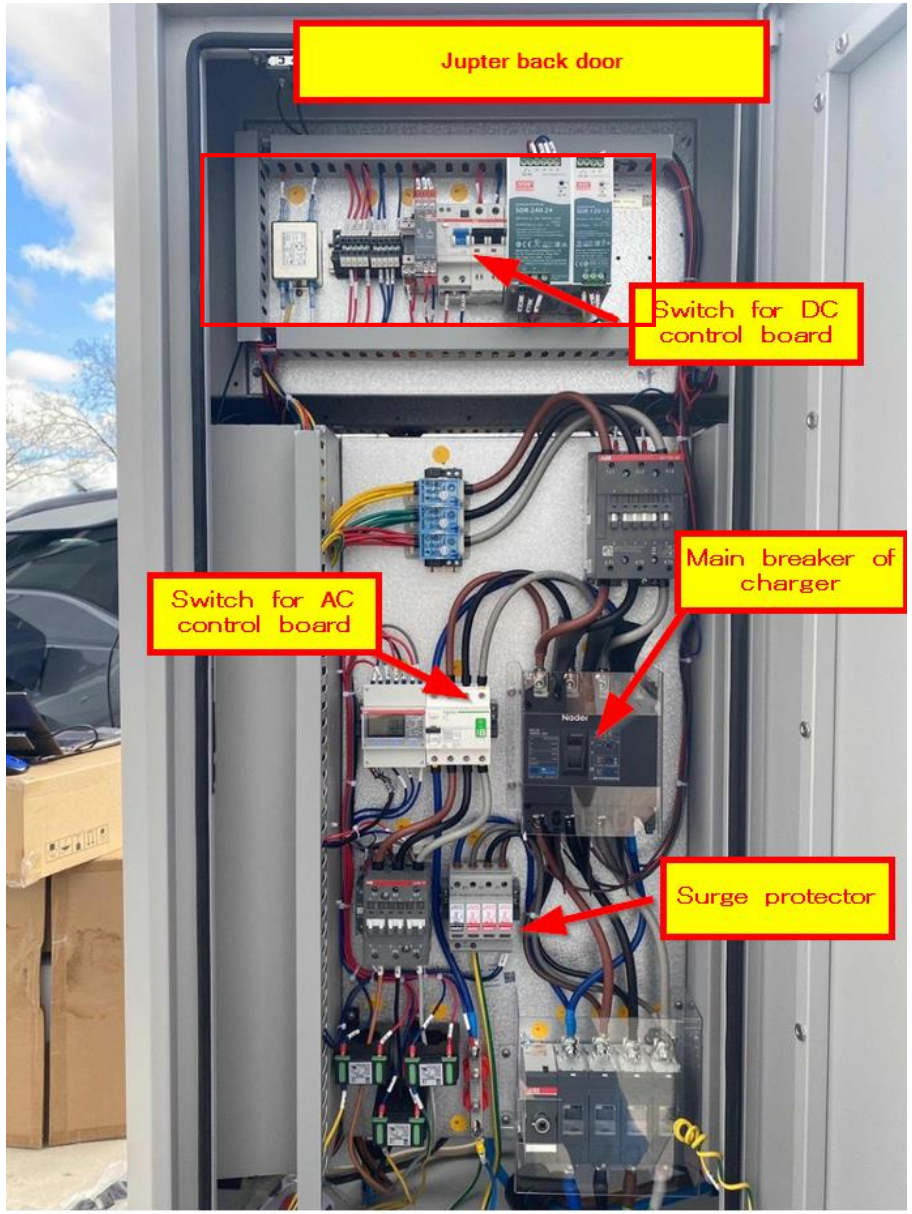


Fan
No.: AJGVEN0029
Function: Ventilation and heat dissipation

Power module plugin
No.: ADQMTC0078
Function: AC input

Power module plugin
No.: ADQMTC0079
Function: DC output

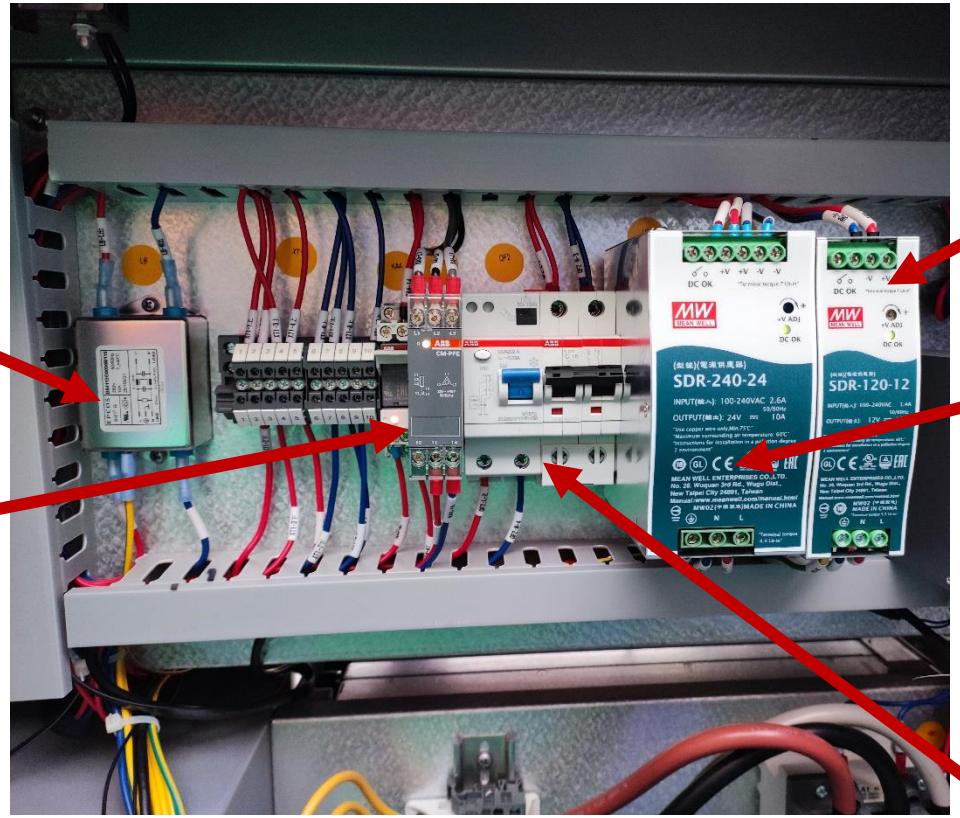
Back door


Jupter back door
Switch for DC control board
Main breaker of charger
Switch for AC control board
Surge protector

Back door - Top area

Filter
No.: ADQFLT0002
Function: Stabilize the power signal frequency

Intermediate relay
No.: ADQIRL0033
Function: Used in the control circuit and transmitting signals



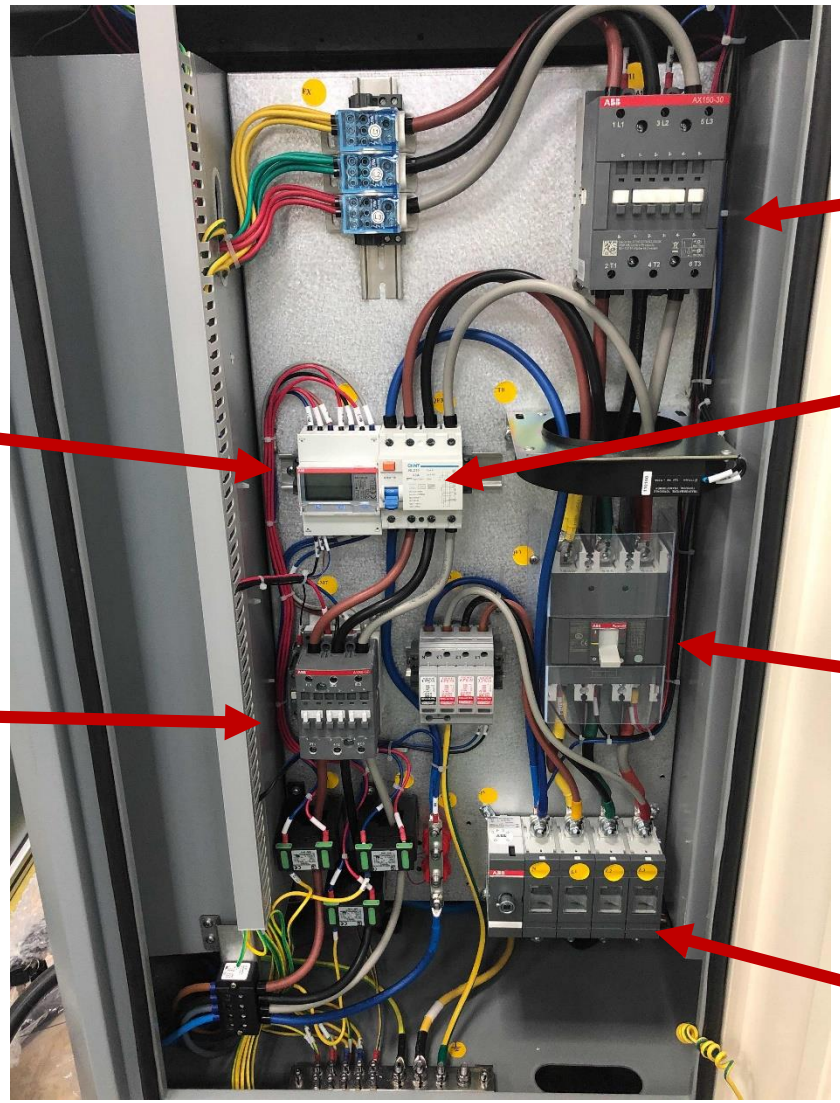
Switch power supply(12V)
No.: ADQSPS0014

Switch power supply(24V)
No.: ADQSPS0069

Residual current operated miniature circuit breaker
No.: ADQMCB0018

Miniature circuit breaker
No.: ADQMCB0016

Back door – bottom area



AC meter
No.: ADQAMT0016

AC contactor
No.: ADQCTR0004
Function: control the AC output

AC contactor
No.: ADQCTR0018
Function: : It is used to break and connect the power supply for power modules.

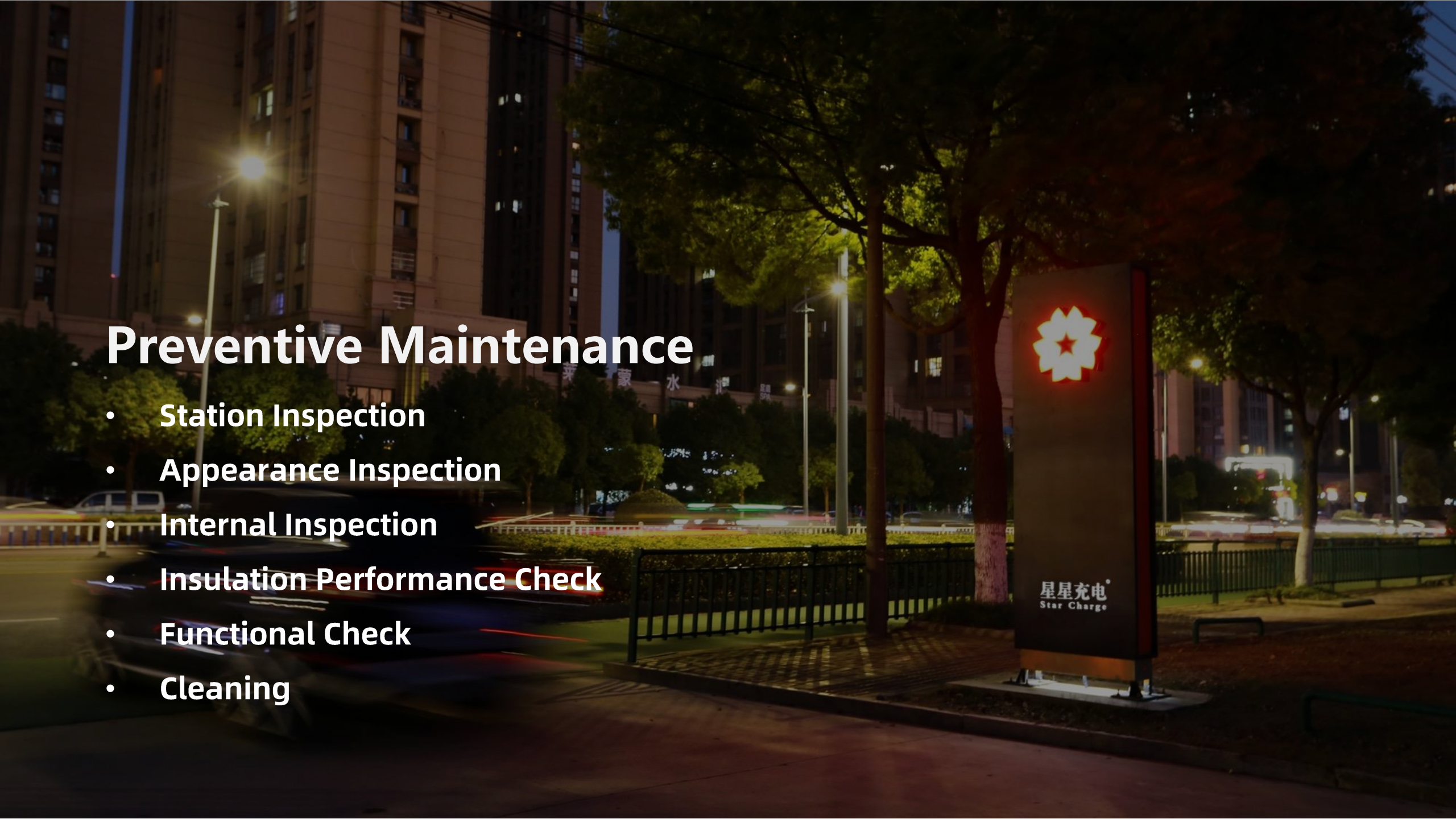
Residual current action module
No.: ADQMCC0137
Function: It is used to break and connect the power supply for AC output.

Molded case circuit breaker
No.: ADQMCC0165
Function: It is used to break and connect the power supply for power modules.

Disconnector
No.: ADQDSW0003
Function: Isolation of power supply.

Maintenance and Troubleshooting

- Preventive Maintenance
- Corrective Maintenance



Preventive Maintenance

- Station Inspection
- Appearance Inspection
- Internal Inspection
- Insulation Performance Check
- Functional Check
- Cleaning

Station Inspection (Every six month)

Requirements:

It is necessary to identify the dangerous source at the charging station site and report the hidden safety hazard station manager.

Working hours：10min/station

Station Inspection (Every six month)

Item	Description	Method	Conclusion	Remark
Station Inspection	There is charging procedure information.	Visually	Pass □ Fail □	
	CCTV camera works normally.	Visually	Pass □ Fail □	
	Equipped with fire extinguishers and other safety facilities. Safety facilities are available.	Visually	Pass □ Fail □	
	Equipped with parking bars.	Visually	Pass □ Fail □	
	No flammable, explosive and something dangerous around.	Visually	Pass □ Fail □	
	The surrounding of the station is suitable (no dust, oil, humidity, weeds).	Visually	Pass □ Fail □	
	The canopy is not damaged.	Visually	Pass □ Fail □	
	Check that the terrain is leveled, not around flood discharge point.	Visually	Pass □ Fail □	
Power Distribution Cabinet Check	The surface of the charger is flat and smooth, without obvious mechanical damage or deformation.	Visually	Pass □ Fail □	
	Warning symbols and electrical hazard signs are complete and clear.	Visually	Pass □ Fail □	
	The name plate is complete, correct and firm.	Visually	Pass □ Fail □	
	Can not open the door after the door is closed and locked.	Visually	Pass □ Fail □	
	The cabinet body is placed properly on the foundation, and there are no bolts lost or loose.	Visually	Pass □ Fail □	
	Electrical schematic diagram, qualification certificate, factory inspection report, key.	Visually	Pass □ Fail □	
	Every breaker’ s label represents its respective charger	Visually	Pass □ Fail □	
	The breakers work normally.	Visually	Pass □ Fail □	
	The power cable is not damaged.	Visually	Pass □ Fail □	
	The wiring is not loose.	Visually	Pass □ Fail □	
	Verification of meter data.	Visually	Pass □ Fail □	
	Check the internal exposed three-phase copper bar protection.	Visually	Pass □ Fail □	
	Not soaked in water after heavy rain or typhoon.	Visually	Pass □ Fail □	

Appearance Inspection (Every six month)

Requirements: Switch off the input power.

Working hours: 10min/unit

Item	Description	Method	Conclusion	Remark
Appearance checks	All components of the equipment are free from stains, scratches, deformations	Visual	Pass □ Fail □	
	Name plate and other signages including safety warning signs are accurate, clear and complete	Visual	Pass □ Fail □	
	Charging cable is complete without damage. No water or dust in the charging connector. The insulation cap is complete	Visual	Pass □ Fail □	
	LED indicators work normally	Visual	Pass □ Fail □	
	Emergency stop button should not be pressed	Visual/ Manual	Pass □ Fail □	

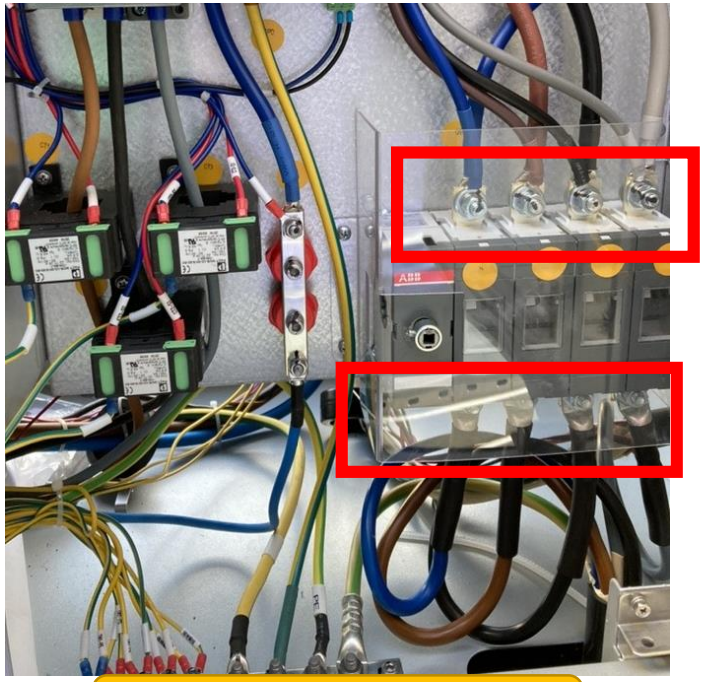
Internal Inspection (Every six month)

Requirements: Switch off input power. Working time: 20min/unit

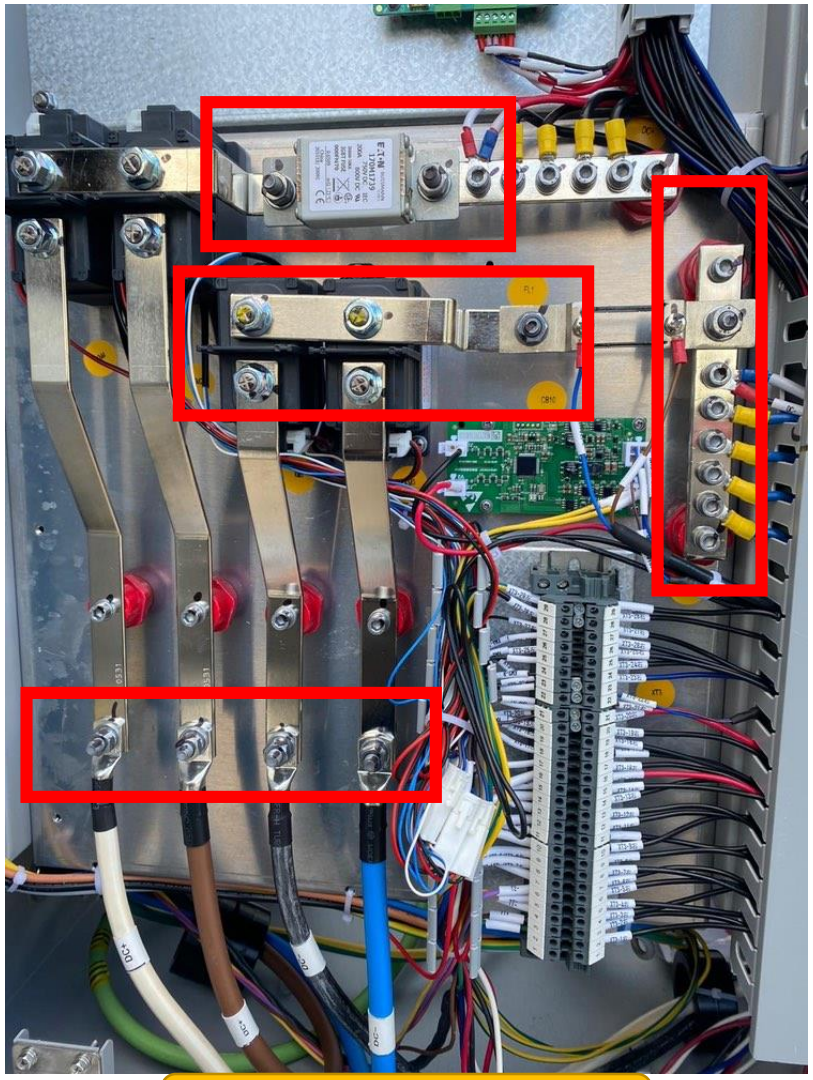
Item	Description	Method	Conclusion	Remark
Internal Check	Charging cabinet, hinge and locks of are functioning normally. The inner components of the cabinet should be free of liquid stains and leakages (from coolants or condensation), rust as well as no signs of physical damages.	Visual/ Manual	Pass ☐ Fail ☐	
	Input and communication terminals are tightened and free from signs of burns.	Visual/ Manual	Pass ☐ Fail ☐	
	PE wire of the cabinet is reliable with no signs of damage and rust	Visual/ Manual	Pass ☐ Fail ☐	
	L1, L2, L3, N, and PE are clearly marked, and the wiring is reliable and in good contact	Visual/ Manual	Pass ☐ Fail ☐	
	Measure three-phase input voltage	Measurement	Pass ☐ Fail ☐	
	No short circuit is present between the DC+ and DC- of the input of charging cable No short circuit is present between the DC+ and DC- of the output of charging cable	Measurement	Pass ☐ Fail ☐	
	No short circuit is present between the DC+ of the input of charging cable and DC+ of the input of charging cable No short circuit is present between the DC- of the input of charging cable and DC- of the input of charging cable	Measurement	Pass ☐ Fail ☐	
	There should be no reverse connection in DC+/DC- of the input/output of charging cable	Measurement/ Visual	Pass ☐ Fail ☐	
	Ensure fireproof material at the bottom is sealed and intact	Visual	Pass ☐ Fail ☐	
	Ensure the wiring connections of the AC input main circuit and their screws are tightened properly (such as AC input terminal connector, MCCB, AC contactor, leakage circuit breaker, junction box or terminal, PE wiring and its screws, etc.). If any screw or connection is found loose, a screwdriver must be used to tighten it.	Visual/ Manual/Measurement	Pass ☐ Fail ☐	
	Ensure screw and wire connections for DC output circuit, and circuit contact points of various components are tight and in contact (such as power module, PDU output copper wire, DC circuit relay, fuse, charging gun DC terminal, PE wiring, copper plate screw, etc.). If any screw or connection is found loose, a screwdriver must be used to tighten it.	Visual/ Manual/Measurement	Pass ☐ Fail ☐	
	Ensure the cotton filter is free of accumulation of particulates and foreign material, and not damaged. Else, replace it.	Visual	Pass ☐ Fail ☐	
	Ensure the power module fans are clean and firmly screwed on.	Visual	Pass ☐ Fail ☐	

Internal Inspection - Key Items

Using L key, wrench/nut driver drill bit, check for any loosen up screws and wire insulation damage on all of the points marked in red below.



Input power cables



Output power cables

Insulation Check (Every six months)

Requirements: Switch off input power, remove the power modules, remove PE line of surge protector, remove DC+ and DC- of insulation detection module.

Working time：15min/unit

Item	Description	Method	Conclusion	Remark
Insulation Performance Check	Ensure resistance of output of DC+ relay to PE is not less than 1 MΩ and record this value.	Measurement	Pass □ Fail □	
	Ensure resistance of output of DC- relay to PE is not less than 1 MΩ and record this value.	Measurement	Pass □ Fail □	
	Ensure resistance of L1/L2/L3 to PE is not less than 10 MΩ and record this value.	Measurement	Pass □ Fail □	

Functional Check (Every six month)

Working hours：15min/unit

Object	Content	Standard	Conclusion	QR code of the unqualified charger
Touch screen	Display normally, no obvious snowflake highlights, clear handwriting display; The operation is flexible and reliable, the key surface identification is clear	The same with content	YES□ NO□	
Lights	The lights work normally	The same with content	YES□ NO□	
Communication	Set the parameters effectively	The same with content	YES□ NO□	
Emergency stop button	Stop charging when the emergency button is pressed	The same with content	YES□ NO□	
Emergency signal	Give emergency signal effectively	The same with content	YES□ NO□	
Insulation test	The insulation test is normal	The insulation testing board works normally	YES□ NO□	
Temperature of charging cable	The temperature is in the range	75℃~93℃	YES□ NO□	
Calculate the electric quantity	If the charger shows the electric quantity	The touch screen shows the electric quantity	YES□ NO□	

Cleaning (Every six month)

Working hours：20min/unit

Item	Description	Method	Conclusion	Remark
Cleaning	Dustproof cotton / filter	Replace or use air blower		

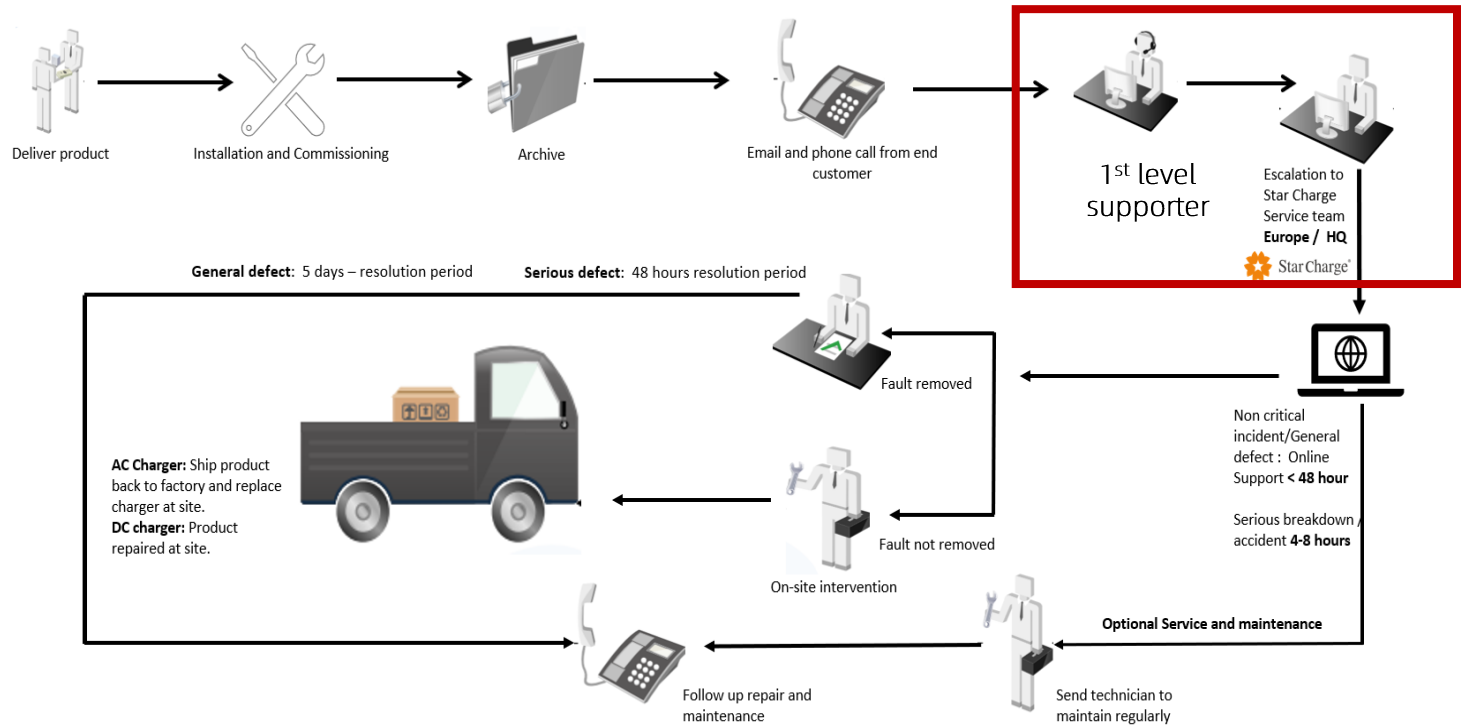
Corrective Maintenance & Troubleshooting

Communication with Star Charge– Ticketing system

In case that you have complex issue and need our support, please contact us via the ticket system.

Communication via ticketing system

service.europe@starcharge.com

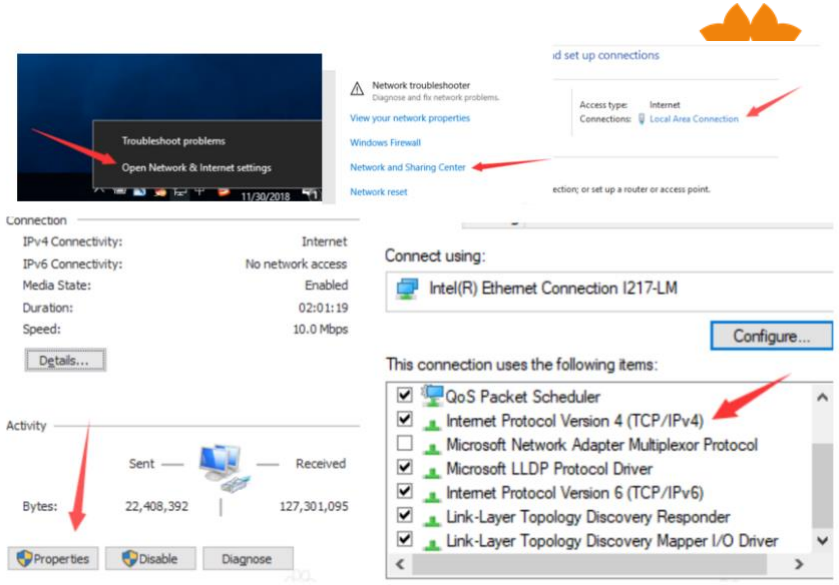


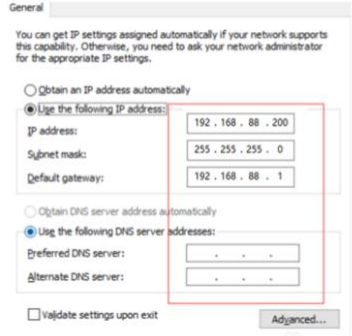
Issue 1: Could not access web panel

Phenomenon:
Could not access web panel (192.168.88.206) successfully.

Analysis:

- Wrong website address;
- IP address of your PC is not configured correctly;
- Unstable LAN connection;
- Hardware issue (core board/OCPP board/DCmainboard)





Troubleshooting workflow

1. Check the IP address setting of your PC;
2. Check the connection of LAN cable;
3. Change a browser (Edge and Chrome is recommended) or clear the cache and try again;
4. Use SD card to flash the firmware in OCPP board;
5. Replace the Core board or OCPP board.

Issue 2: No Network Connection

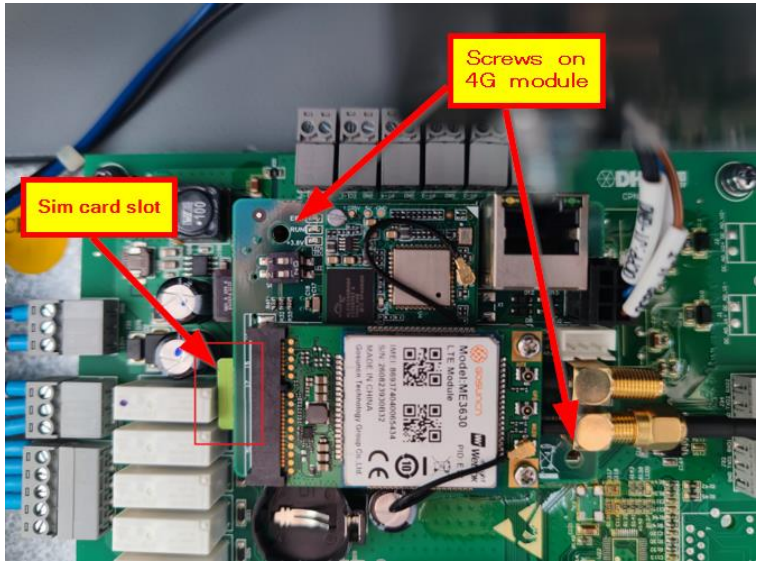
Phenomenon:
EVSE is offline on the web panel in “Network State”

Analysis:

- SIM card is not inserted correctly;
- Incorrect APN configuration;
- Unstable 4G signal onsite;
- SIM card is out of charge
- 4G communication module or OCPP board is broken.

Issue 2: No Network Connection

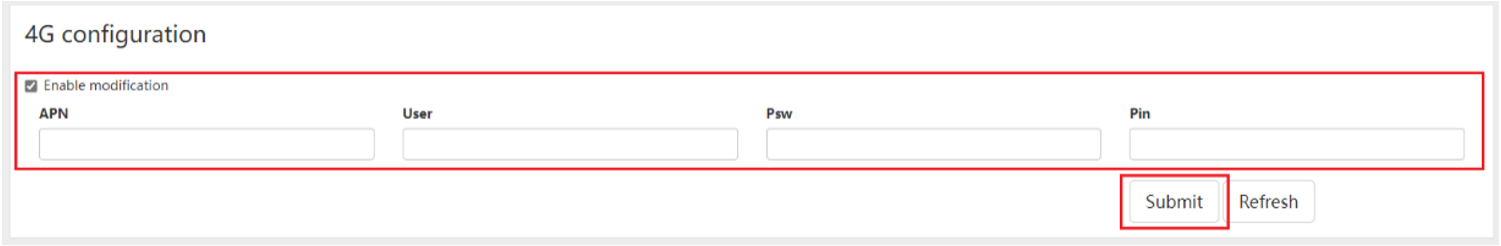
Phenomenon:
EVSE is offline on the web panel in “Network State”



Solution:

1. Check whether SIM card is inserted correctly. And SIM card should be inserted when EVSE is powered off. If inserting SIM card when EVSE is powered on, rebooting is necessary.

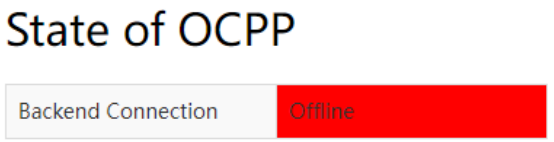
2. Check whether the SIM card is workable and make sure APN data of SIM is correct.



3. Check “Strength of 4G” in web panel. (If CSQ<18, the site signal is not stable)

Issue 3: EVSE is Offline

Phenomenon:
EVSE is offline in the backend.

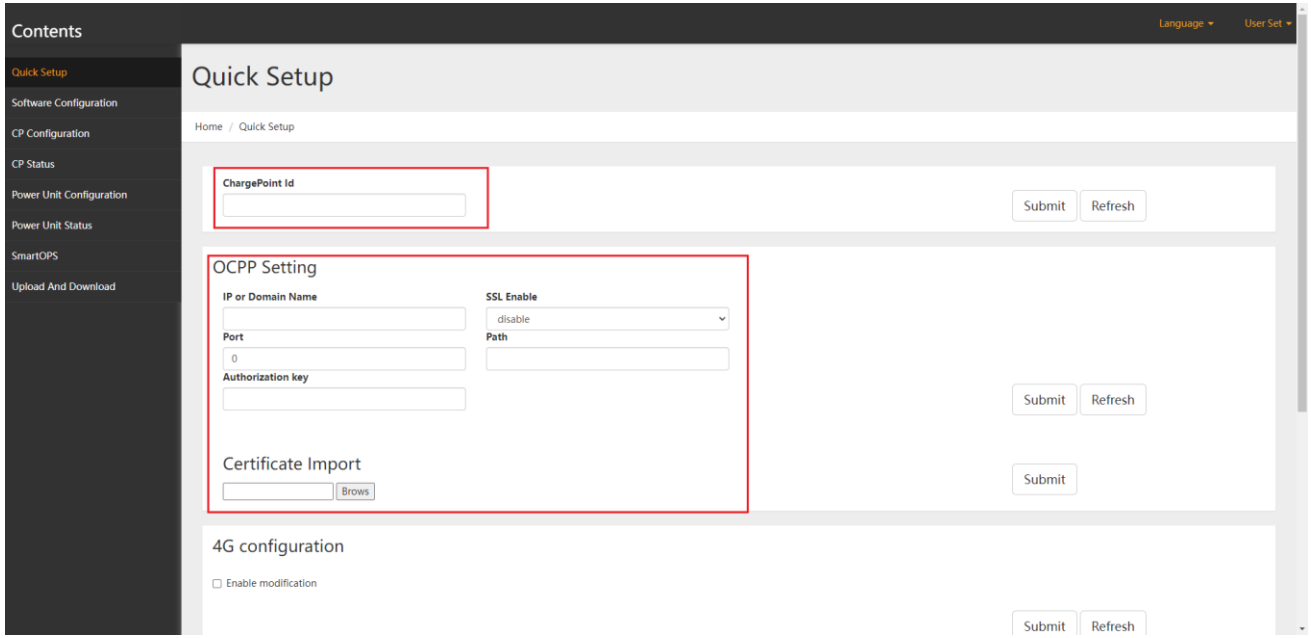


Analysis:

- EVSE is out of power;
- EVSE is not connected to network successfully;
- Backend configuration is not set correctly in web panel or backend;
- 4G communication module or OCPP board is broken.

Solution:

1. Check whether EVSE is powered on.
2. Check the network connection;
3. Check the OCPP backend and ID configuration.



Issue 4: Power Module Communication Fault

Phenomenon:

"Power module communication fault" Error code.

Analysis:

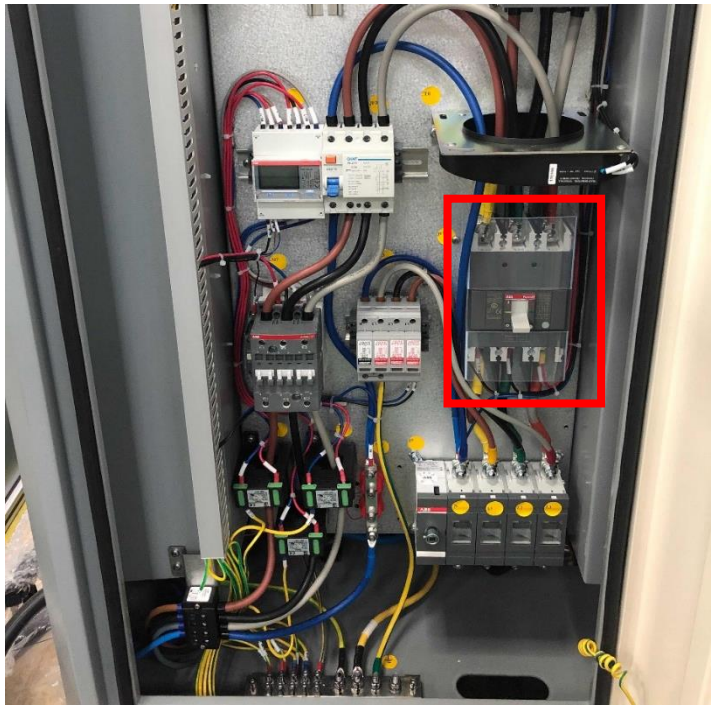
- Power module or power module socket itself is broken;
- Main breaker is broken or tripped;
- AC contactor is broken;

Issue 4: Power Module Communication Fault

Solution:

1. Measure the input voltage of EVSE. Phase voltage 230V, line voltage 400V (±10%)

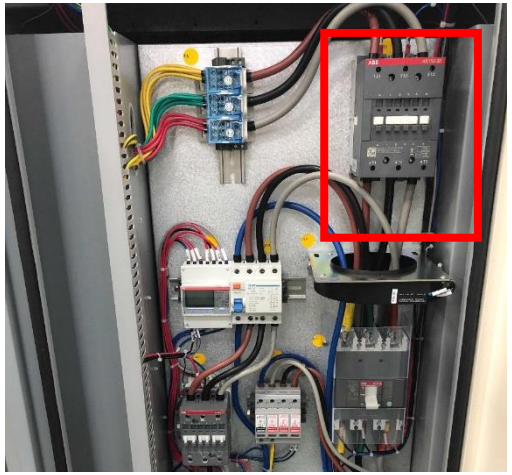
2. If input power is normal, check whether the main breaker is tripped. If so, turn it on. If not, measure the input and output voltage of the main breaker. If no output, replace the main breaker.



Issue 4: Power Module Communication Fault

Solution:

3. Check whether the AC contactor is normally turned on. If not, check the wiring or replace the AC contactor.



4. Check the status of the power module indicator light. If the indicator light is abnormal, please re-plug the power module. Otherwise, replace the power module.

Issue 5: Meter Fault

Phenomenon:

"Meter fault" Error code.

Analysis:

- Meter itself is broken;
- The communication line between meter and Main control board is unstable.

Solution:

1. Check whether the meter is power on. If not, check the input power.
2. Check the communication line between meter and main control board.
3. If not solved, send log file to Star Charge for analysis.

Issue 6: Input Under-Voltage

Phenomenon:
"Input under voltage" Error code.

Analysis:

- The input voltage is over 400V-10%

Solution:

1. Measure the input voltage.

Issue 7: Input Over-Voltage

Phenomenon:

"Input over voltage" is shown on the display.

Analysis:

- The input voltage is over 400V+10%

Solution:

1. Measure the input voltage

Issue 8: Insulation Fault

Phenomenon:

"Insulation fault" is shown on the display.

Analysis:

- Something wrong with the charging connector (e.g. water, small stone in connector).
- The circuit is abnormal.
- The insulation detection board is broken.
- The power module is broken.

Issue 8: Insulation Fault

Phenomenon:

"Insulation fault" is shown on the display.

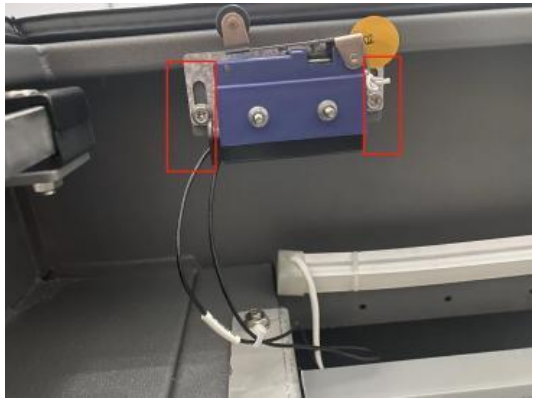
Solution:

1. Check whether there is water, stone or something inside the charging connector. If so, clean or dry it.
2. Measure the insulation resistance of input power cable and charging connector as mentioned during the commissioning steps.
3. Check the wiring of insulation detection module.
4. Monitor the power module during charging, whether some of them no voltage increase, if so, replace the broken power module.

Issue 9: Door Sensor Fault

Phenomenon:

"Door is open" Error code.



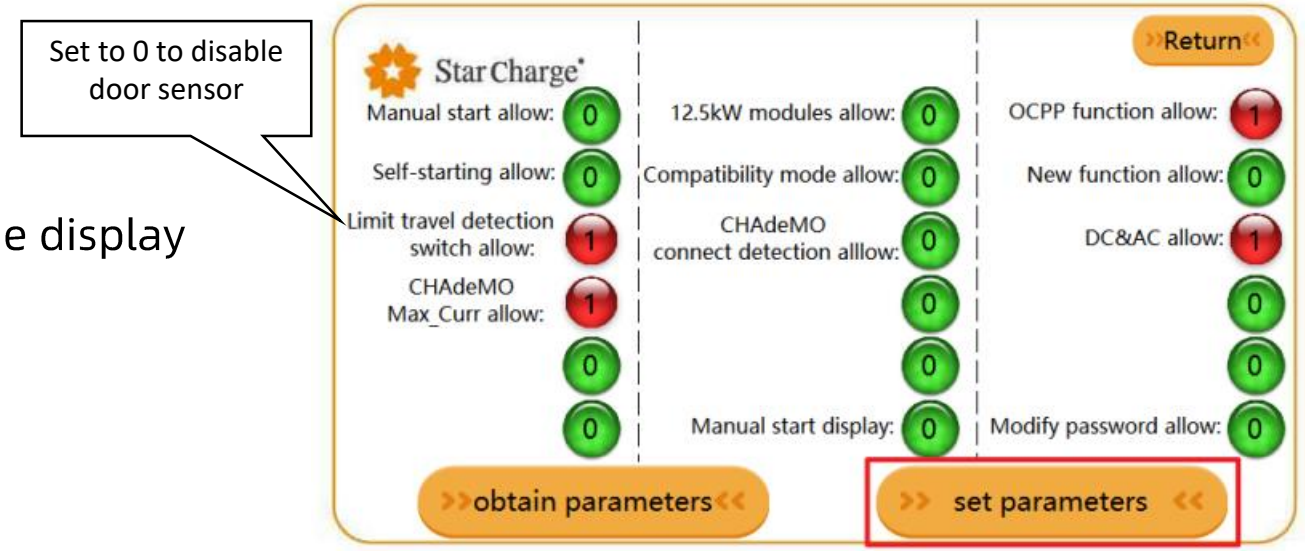
Analysis:

- Door is open when door sensor is enable;
- Door sensor is broken;
- Structural issue (there is gap between sensor and the door).

Solution:

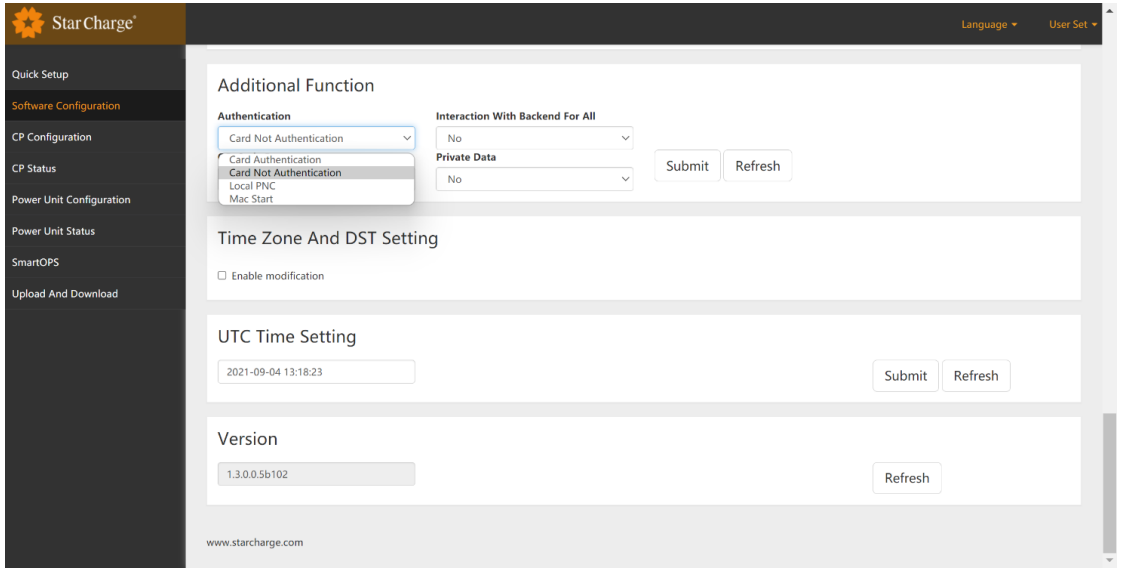
1. If the door is open when door sensor is enabled. Close the door or disable door sensor;
2. Check the wiring on the door sensor
3. Replace the door sensor

Door sensors can also be disabled in the settings on the display



Issue 10: No response after swipe RFID card

Phenomenon:
No response after swipe RFID card



Analysis:

- Wrong configuration;
- UID of RFID card is not registered in backend;
- Incompatible format
- Card reader is broken

Solution:

1. Check the configuration in web panel;
2. If EVSE is set in “Card Authentication” mode, make sure UID of RFID card is registered in backend;
3. Hold the RFID card in front of card reader for 3s (sometimes the RFID reader need longer time to detect the cards);
4. Replace the RFID card reader.
5. If the issue still, send the log file and the specification of RFID card to Star Charge for analysis.

Issue 11: No auxiliary power (12V)

Phenomenon:
Display and boards inside are off.

Analysis:

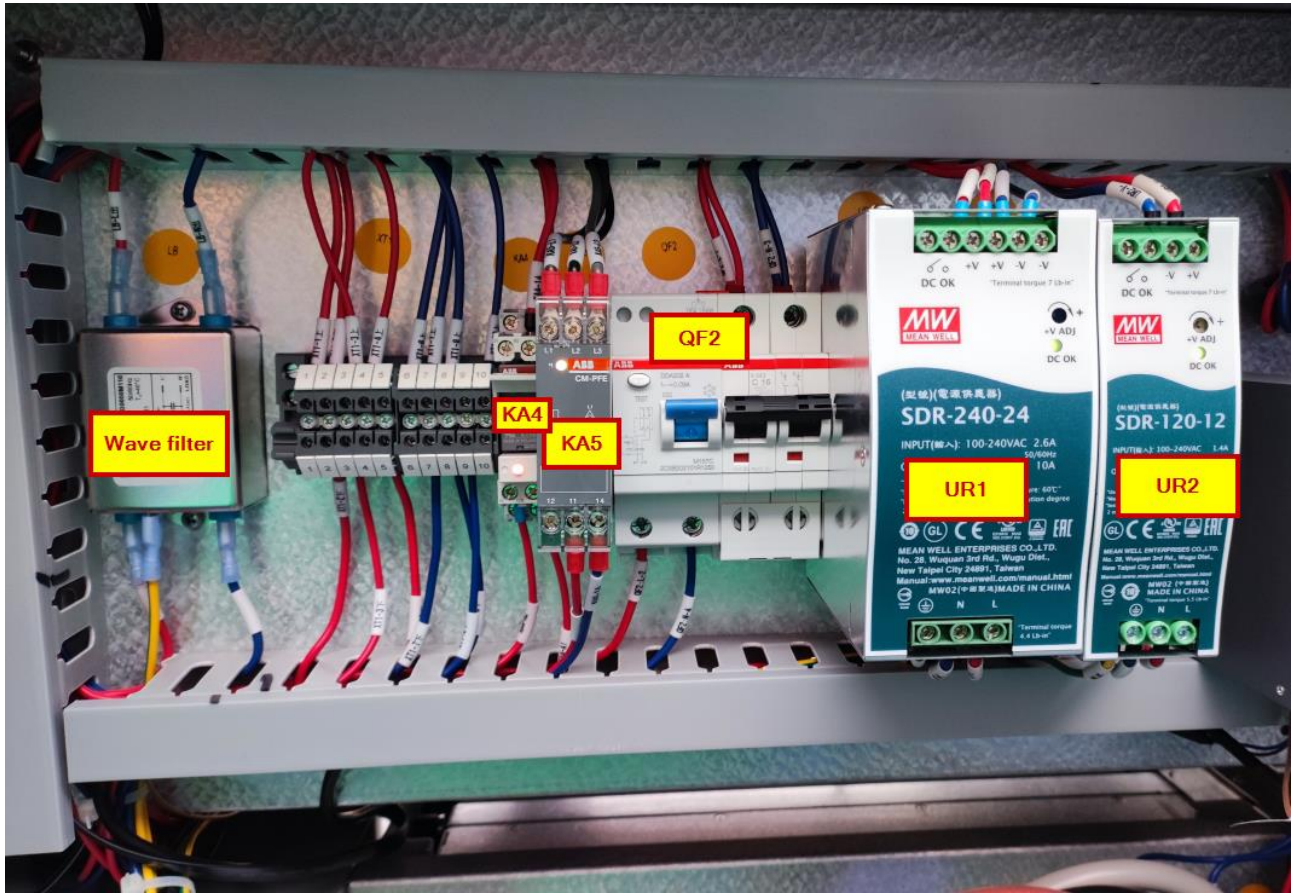
- No 230V input power for the switch power supply module (230V to 12V);
- MCB (QF2) is tripped;
- Intermediate relay (KA5) detects wrong phase sequence in the power supply;
- Switch power supply module (UR1 or UR2) is broken.

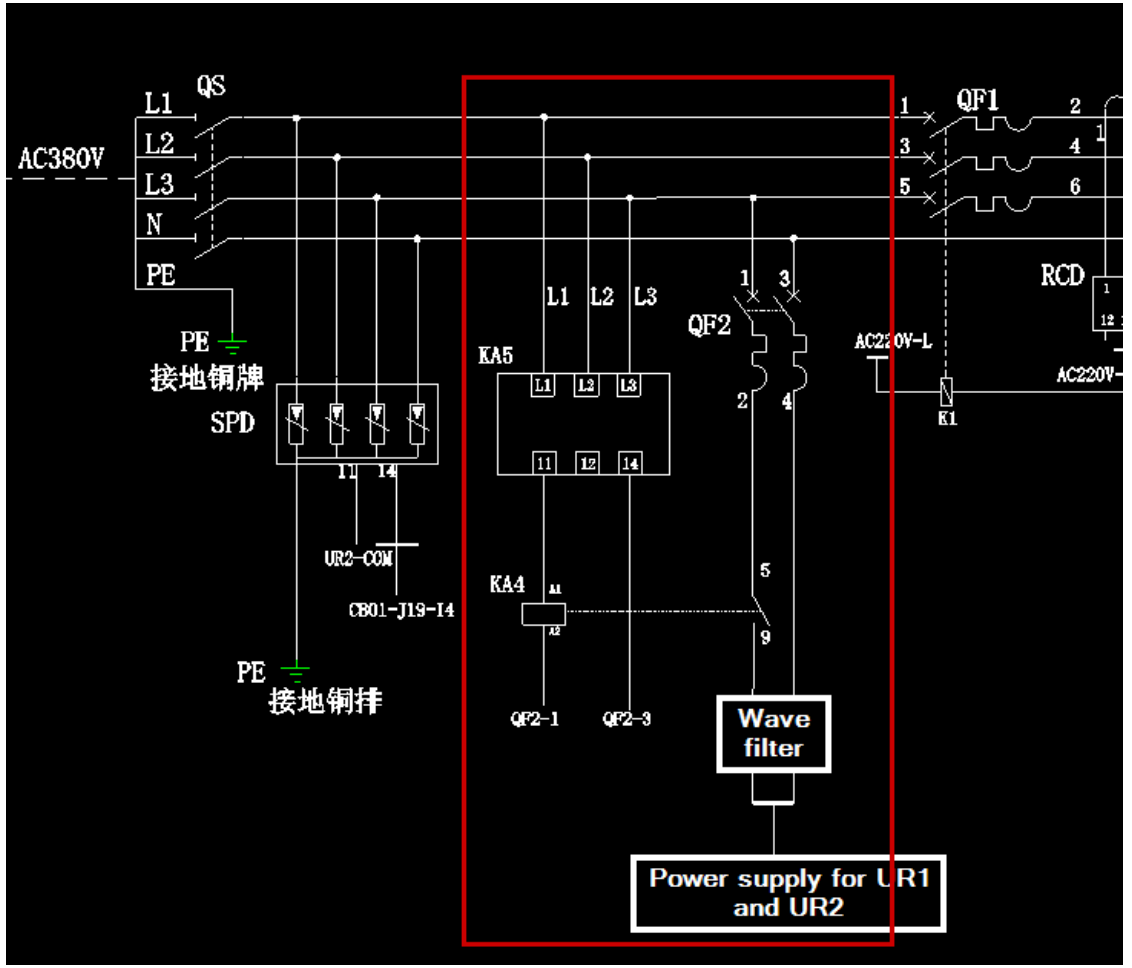
Solution:

1. Check whether there is 400V input power supply;
2. Check whether there is input power for the MCB (QF2);
3. Check the phase sequence (L1, L2, L3)of the power supply;
4. Check whether there is input and output voltage from switch power supply module (UR1 or UR2).
   If not, replace the module.

Issue 11: No auxiliary power (12V)

Circuit diagram of auxillary power supply (12 & 24 V)





Issue 12: Display is not working

Phenomenon:
Display is not working.

Analysis:

- No input power;
- Poor connection;
- Display is broken.

Solution:

1. Follow steps in “Issue 11: No auxiliary power” to check input power for display.
2. Replace the communication cable;
3. Replace the display.

Thank you

Connect the World. Connect the People.

Star Charge®

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