





## Main Features

- Max. 200A output current.
- Up to 200 kW output power per connector.
- 200-1000Vdc wide output voltage range.
- Great scalability, up to 4 charging points per system with control box.
- Support multiple cabinets connected together.



## Specifications

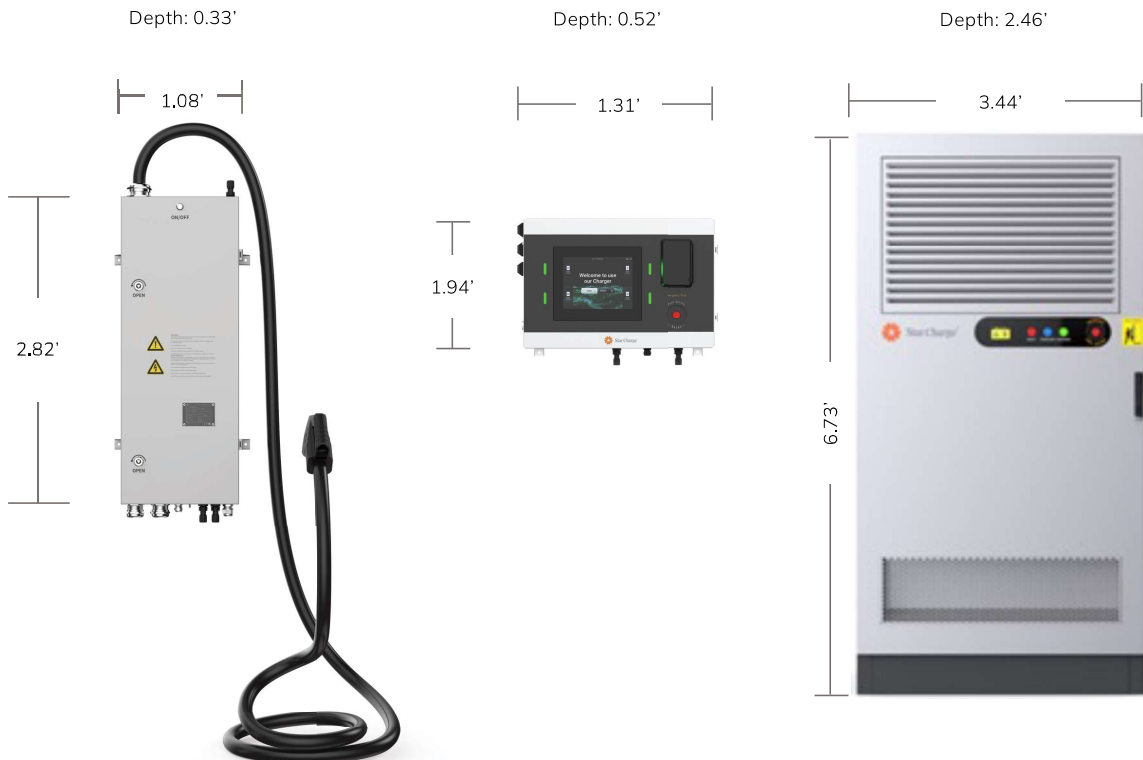
User Unit		
Rendering		 Optional
Power Input	Auxiliary power supply: 85-264Vac, 50/60 Hz, L+N+PE	
Output Interface	1 x CCS1	
Output Power	200kW max.	
Output Voltage	200-1000Vdc	
Output Current	200A max. / connector	
Simultaneous Charging	N/A	
Display	N/A	10.4-inch touch screen
Support Language	English/French/German/Spanish/Vietnamese/Norwegian/Hebrew/Russian/Turkish/Portuguese/Hungarian/Czech/Slovak (Other languages available upon request)	
Button and Switch	ON/OFF Button for maintenance	Emergency Button
Authentication	Control box necessary - RFID, APP, Credit Card (PAX IM30 optional) (POS machine will support RFID card)	
RFID Reader	ISO/IEC 14443 A/B, ISO/IEC 18092, IEC/ISO 15693, NFC, Mifare	
Network Interface	4G/Wi-Fi for backend connection and Ethernet for Power Cabinet local connection	
Protocol (EVSE&Backend)	OCPP 1.6J	
Protocol (EVSE&EV)	DIN 70121, ISO 15118	
Operating Temperature	-22°F to 131°F(Derating from 122°F)	
Storage Temperature	-22°F to 158°F	
Humidity	5%-95% no condensation	
Altitude	≤6561.28' above sea level	
IP Rating	IP55 / NEMA 3R	
IK Rating	IK10 (Screen IK08)	
Cooling	Forced Air Cooling	
Charging Cable Length	16.4' or 32.8' (cable management system is optional)	
Dimensions (WxHxD)	2.82*1.08*0.33'	1.94*1.31*0.52'
Weight	Approx. 110.23 lb	Approx. 44.1 lb
Installation	Wall-mounting	
Standards and compliance	FCC part 15 Class A, UL 2202, UL 2231-1, UL 2231-2	
Certificate	TUV, FCC, OCA	



Power Cabinet	
Input Rating	480Vac±10%, 3 phases, 50/60Hz, L1+L2+L3+N+PE (Support without Neutral)
Input Current Rating	AC 307A
Power Factor	≥0.98 @ Full Load
Efficiency	≥94% @ Full Load (Peak)
Output Power	240kW max. (180kW max. optional)
Output Voltage	200-1000Vdc
Output Current	500A max.
Output Channel	4 Channels max.
Button and Switch	Emergency Button
Network Interface	Ethernet to User Unit
Operating Temperature	-22°F to 131°F(Derating from 122°F)
Storage Temperature	-22°F to 158°F
Humidity	5% to 95% no condensation
Altitude	≤6561.28' above sea level
IP Rating	IP55 / NEMA 3R
IK Rating	IK10
Cooling	Forced Air
Dimensions (WxHxD)	3.44*6.73*2.46'
Weight	Approx. 992.08 lb (excluding power modules)
Installation	Ground mounting
Standards and compliance	FCC part 15 Class A, UL 2202, UL 2231-1, UL 2231-2
Certificate	TUV, FCC, OCA



## Dimensions



Note: Pictures are for reference only, please prevail in kind.



Star Charge



# Charging Infrastructure Neptune Charging System **Commissioning Manual**

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## **Legal Notice**

Star Charge Americas Corp.

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## 1 General




### 1.1 Purpose of document

In order to ensure the normal use of Neptune charging System after installation. Discover and eliminate the failure or hidden dangers of the charger caused by factors such as installation quality and the environment (such as power voltage). Ensure that the charger can be put into operation safely, stably and efficiently.

### 1.2 Scope of application

It is suitable for the commissioning work of Neptune Charging System.

### 1.3 Definition of warning symbols

No	Symbol	Content
1		<p><b>“Electrical hazard” symbol indicates danger</b></p> <p>Failure to pay attention to the procedures, practices or improper implementation may cause installer injuries and death. Only after the conditions referred to are fully understood and fulfilled, the operation accompanied the "electrical hazard" symbol can be performed.</p>
2		<p><b>"Be careful" symbol indicates danger</b></p> <p>Failure to pay attention to the procedures, practices or improper implementation may cause product damaged or destroyed. Only after the conditions referred to are fully understood and fulfilled, the operation accompanied the "be careful" symbol can be performed.</p>
3		<p><b>“Prompt” indicates usage tips or useful information</b></p> <p>Tips and useful information are marked with “prompt”. It does not contain information to warn about dangerous or harmful functions.</p>

## 2 Preparation before commissioning

### 2.1 Safety precautions before field commissioning

- 1) The engineer should have knowledge of electrical safety, understand the principle and performance of chargers, and be proficient in electric shock first-aid and emergency treatment measures, so that various hidden emergencies can be discovered and treated before commissioning.
- 2) When working, the engineer must be clear, focused, not drunk or troubled; those who are not well are forbidden to work.
- 3) During work, the engineer must wear insulated shoes, insulated gloves, and if necessary, safety helmets and other protective supplies. The insulated appliances, instruments, and tools used must be intact and reliable.
- 4) Any electrical equipment or line shall be deemed to have power and shall not be touched before the power inspection. When contact operation is needed, the equipment should be cut off and checked again. Put a “No closing, someone is working” sign on the power switch handle or take other measures to prevent false closing.
- 5) The power must be cut off before work.
- 6) When possible, power off before work, if the engineer needs to operate with power, he must have someone to monitor. The person shall meet the professional requirements and shall not engage in operations or do anything unrelated to monitor when operating.
- 7) When carrying out live work, the engineer should first divide L, N, PE, and choose the working position. When working, do not touch the conductive part and the zero (ground) part at the same time.
- 8) Without permission and approval, the original wiring and structure in the charger must not be changed.
- 9) The coolant used in this product is slightly irritating and corrosive. In case of liquid leakage during charging connector replacement and coolant addition, preventive measures and countermeasures shall be taken in advance.
- 10) After the work is completed, restore the components to their original state, check the tools to prevent omissions, and clean and organize the site.
- 11) In case of safety accident, immediately start the emergency plan for production safety, and report to the relevant person in charge immediately as required, and conduct on-site emergency treatment in accordance with the emergency plan for the first time, control the spread and expansion of the accident, and rescue personnel and property.

- 12) If there is an electric shock, immediately cut off the power and perform rescue according to the emergency rescue method. At the same time, make emergency calls for professional help and report to the superior leader, make a record.
- 13) The sequence to power on is: high-voltage power supply, low-voltage incoming and outgoing line, and load (box transformer → distribution cabinet → charger);
- The sequence to power off is: load, low-voltage incoming and outgoing line side, high-voltage power supply side (charger → distribution cabinet → box transformer).



### 3 Product overviews

#### 3.1 Appearance overview



Figure 1 External View of Neptune Split Charging System

- [ A ] —— 10.4-inch touch screen
- [ B ] —— Card swiping area for charging
- [ C ] —— LED status indicator (User unit)
- [ D ] —— Air Ventilation window
- [ E ] —— Flat lock (User unit)
- [ F ] —— Emergency stop: press the button to stop the device running when the device is running abnormally. (User unit)
- [ G ] —— Charging connector slot
- [ H ] —— Cable management systems
- [ I ] —— Hooks for cables (if cable management system are not equipped)
- [ J ] —— Air Outlet
- [ K ] —— LED status indicator (Rectifier cabinet)
- [ L ] —— Air Inlet
- [ M ] —— Emergency stop: press the button to stop the device running when the device is running abnormally. (Rectifier cabinet)
- [ N ] —— Flat lock (Rectifier cabinet)

### 3.2 Specification

<b>General parameter</b>	<b>Product brand</b>	StarCharge
	<b>Product name</b>	Neptune split charging system
	<b>Product model</b>	Power Cabinet model: DC2400AN053 Dispenser model: DC2400AN06701 DC2400AN06702 DC2400AN06703 DC2400AN06704
<b>Input parameters</b>	<b>Input Range</b>	480 ± 10%, 50/60 Hz, 3P4W(Neutral Optional)
	<b>Power factor</b>	0.98 @ normal load
	<b>Total harmonic current</b>	≤5% @ more than half a load
	<b>Rectification efficiency</b>	95% @ rated condition, 100% load
<b>Output parameters</b>	<b>Output interface</b>	2*200A CCS1 2*300A CCS1 200A CCS1 300A CCS1
	<b>Output voltage</b>	DC 200V~1000V
	<b>Output power</b>	300A CCS1: 240kW 200A CCS1: 200kW
<b>User interface &amp; control</b>	<b>Display screen</b>	10.4 inch touch screen
	<b>Language support</b>	English/French/German/Spanish/Vietnamese/Norwegian/Hebrew/Russian/Turkish/Portuguese/Hungarian/Czech/Slovak, other language available upon request
	<b>Mechanical button</b>	Emergency stop button + 4 mechanical buttons
	<b>RFID</b>	ISO/IEC 14443A/B, ISO 15693, NFC, Mifare
	<b>Credit</b>	PAX IM30(optional)
	<b>Start method</b>	APP scan code/ swipe card start
<b>Communication</b>	<b>Network interface</b>	4G/Wifi/Ethernet
	<b>Communication protocol</b>	OCPP1.6J

<b>Frequency bands</b>	<b>LTE</b>	GSMB3/8, WCDMA B1/8, LTE FDD B1/3/7/8/20, WCDMA Bands: 24 +1/-3dBm (Power Class 3) GSM Band 8: 33±2dBm (Power Class 4) GSM Band 3: 30±2dBm (Power Class 1) LTE: +23dBm +2.7/-2.7dB (Power Class 3) TD-SCDMA : 24 +1/-3dBm (Power Class 2)
	<b>WIFI</b>	2.4 GHz-2.483 GHz (2.4 GHz ISM Band)
	<b>RFID</b>	13.56MHz < 10 (+3/-2.5) dBμA/m at 10 meter (IM30) 13.56M±7K HZ <24.71dBμV/m at 3 meter (QB-RS663)
<b>Environment</b>	<b>Operating temperature</b>	-30°C-55°C(derating above 50°C)
	<b>Storage temperature</b>	-30°C-70°C
	<b>Operating humidity</b>	5%-95%
	<b>Operating altitude</b>	≤2000m
<b>Machinery</b>	<b>Protection level</b>	Type 3R
	<b>Cooling method</b>	Forced air cooling
	<b>Dimensions (W×D×H) / weight</b>	Power cabinet: 1050mm*750mm*2050mm/approx.450kg (excluding rectifier modules,rectifier modules 120kg) Dispenser: 950*450*2000mm/approx. 230kg
	<b>Installation method</b>	Floor mounted
<b>Regulatory requirements</b>	<b>Certificates</b>	cTUVus, FCC

Table 1 Specifications











### 3.3 Description of LED status indicator

Indicator status	Status meaning
<b>Power Cabinet</b>	
Green	Electrified
Yellow	Warning
Red	Fault
<b>Dispenser</b>	
Green	Standby
Blue	Charging
Yellow	Warning
Red	Fault

Table 2 Description of LED status indicator

### 3.4 Commissioning tools

Before you go to the site, please prepare the following tools:

No.	Description	Usage	Picture
1	Laptop	Parameter setting and intercept the passage	
2	P6 small line	M4 board program burning	
3	J-LINK	Flash program	
4	232 tool	Intercept message and flash program	
5	Slotted screwdriver	Fastening screws	
6	Phillips screwdriver	Fastening screws	
7	Allen key		
8	T15 Torx screwdriver		 T15
9	Screwdriver set		
10	Wrench		





11	Multimeter	Electrician measuring appliance	
12	Test pencil	Electrician measuring appliance	
13	Megohmmeter	Insulation resistance measurement	
14	Safety signs	Safety signs	
15	Electrician protective gloves	Safety protective equipment	
16	Electrician protective rubber shoes		
17	TF card	Update program	
18	Ethernet cable	Web setting	

Table 3 Commissioning tools

## 4 Commissioning steps

### 4.1 Commissioning flow chart

The commissioning flow chart of Neptune Charging System is as follows:

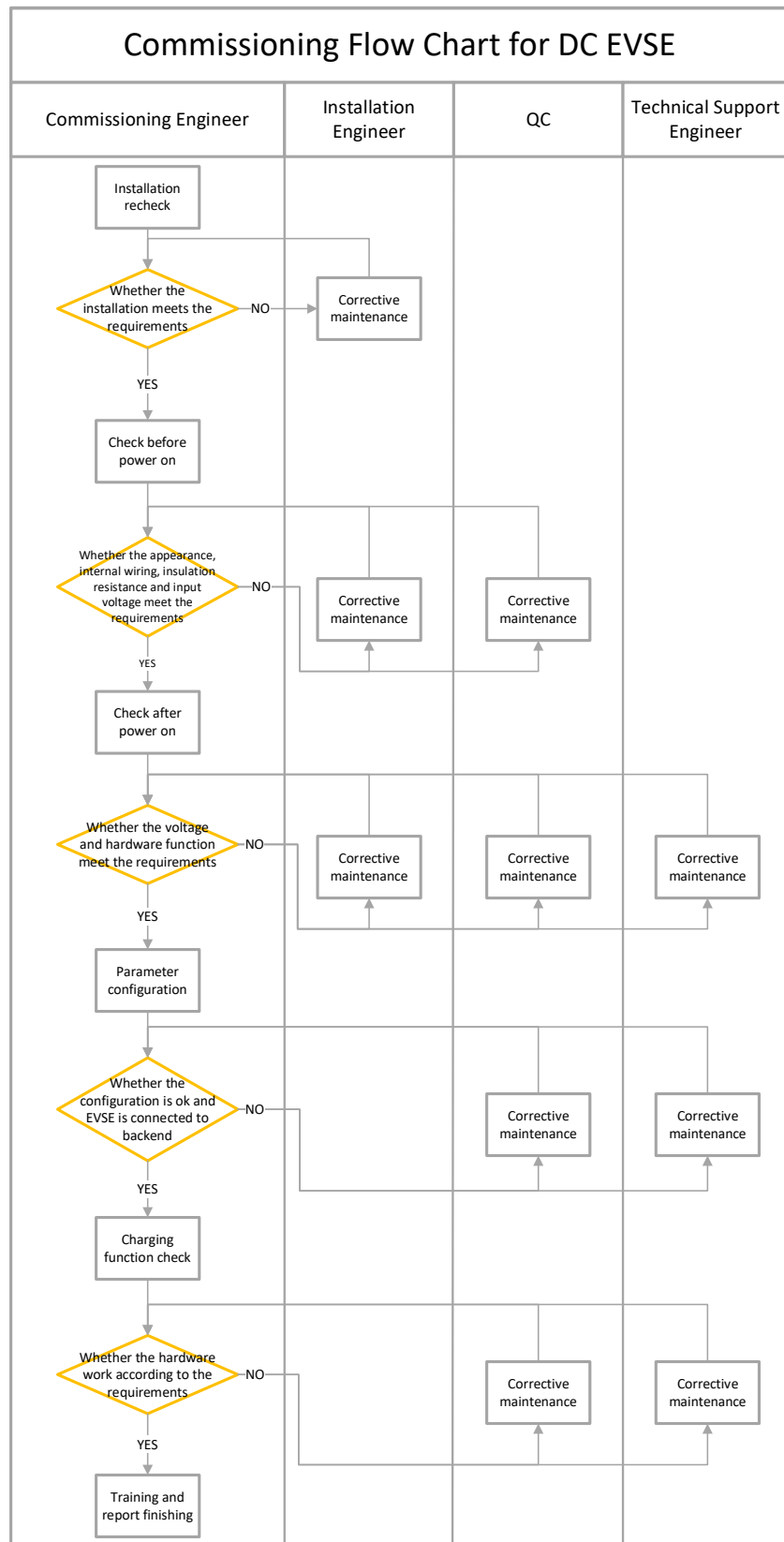





Figure 2 Commissioning flow chart

	<p><b>Warning!</b> During the commissioning, when the door is open, the engineer shall not leave, and remind other personnel of dangerous matters and prevent the third-party personnel from being curious and accidentally electrocuted. When leaving the site, make sure that all doors of the charger are closed and locked.</p>
---	---

#### 4.2 Construction review

Equipment commissioning must be conducted by engineer with special operation certificate (electrician certificate).

The installation must be carried out according to the requirements of the "Installation Manual". During construction and installation, the engineer must follow local laws and regulations. During the review, the engineer must record and report the problems which have been found.

	<p><b>Tips!</b> Before commissioning, each step of this part must be carefully implemented, wear safety protective equipment (insulated shoes, insulated gloves, etc.)!</p>	
---	---	---

- 1) Check whether the base is fixed and sealed.
- 2) Check whether the internal components of the charger are tight and reliable.
- 3) Check whether the specifications of the cables used meet the power requirements of the charger, no breakage, damage, scratches, electrical connections and wiring are correct and complete, and the connections are secure.

The screw torque requirements are as follows:

Size	M3	M4	M5	M6	M8	M10	M12	M16
<b>Torque Settings (N·m)</b>	0.7~1	1.8~2.4	4~4.8	7~8	17~20	34~40	60~70	119~140

- 1) Check whether the protection level of the equipment meets the requirements, especially at the cable entry at the bottom of the charger.
- 2) Check the appearance, marking, completeness and cleanliness.
- 3) Check the grounding resistance / insulation resistance check. The external grounding resistance shall be  $\leq 4 \Omega$ , the internal grounding resistance shall be  $\leq 0.1 \Omega$ , and the insulation resistance of incoming cable shall comply with local standards.





**Note!**

When the item has been checked and accepted in the construction acceptance report, retesting may not be performed; the above requirements are the minimum requirements for the equipment, and the specific standards are subject to local laws and regulations.

**Measure the ground resistance**

Use a ground resistance tester to measure the resistance of each grounding part of the charger. The ground resistance should be  $\leq 0.1\Omega$ .

Method:

The E terminal button on the instrument is connected to 5m wire, the P terminal button is connected to 20m wire, the C terminal button is connected to 40m wire, and the other end of the wire is connected to the ground electrode E' of the measured object, the potential probe P' and the current probe C', P' and C' should be kept straight with a distance of 20m.

Connect the two E-end buttons on the meter, and perform the measurement as shown in the figure below.

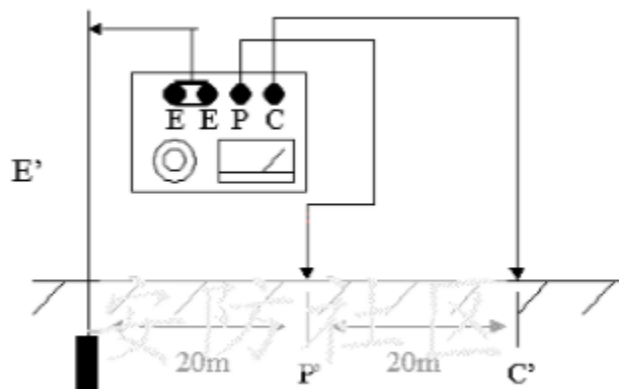


Figure 3 Measure the grounding resistance

**Measure the insulation resistance.**

**Step 1:** Turn off the switch in the distribution cabinet. Turn off the air switch in the charger.

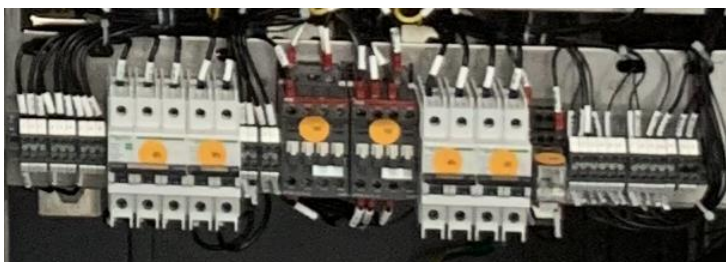


Figure 4 Power cabinet internal drawing

**Step 2:** Pull out all the power modules in the charger. Remove the ground wire of the surge protector.

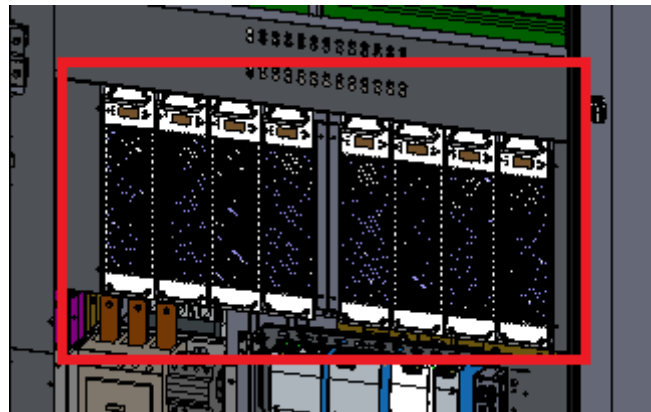


Figure 5 Schematic diagram of the internal structure of the equipment

**Step 3:** Prepare a megohmmeter.

**Note:**

When the megohmmeter makes an abnormal sound after being turned on, please do not test.

If the battery cover is open, do not take any measurements.

When the live line warning symbol A is displayed or the buzzer emits a warning sound, the measurement cannot be performed.

The location and data that need to be measured refer to the " Site acceptance report of charger".

Instructions:

Connect the red and black test lead wires to the corresponding sockets; set the megohmmeter voltage knob switch to the corresponding voltage of 1000V. The screen will display as shown below.



Figure 6 Megohmmeter

**Step 4:** Connect the test lead or clip to the test object. The black test lead E of the megohmmeter is connected to the PE terminal of the charger. The red test lead L is connected to the DC + copper bar (the upper and lower ends of the output relay) or DC-copper Row (upper and lower end of output relay).

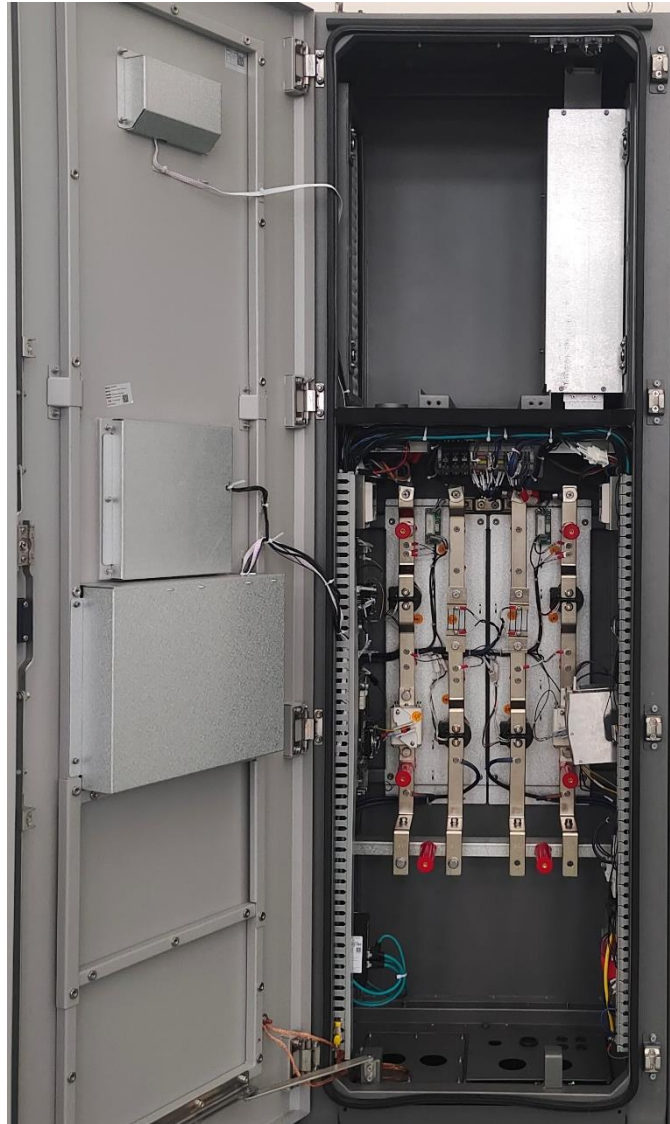


Figure 7 Schematic diagram of the internal structure of the user terminal

**Step 5:** Press the red test knob of the instrument to enter the test state. At this time, the buzzer will intermittently emit "Di, Di", and the high voltage indicator light will be on. The screen displays the following contents during the measurement until the resistance value does not change.

Release the test key (or twist the knob back to the original position from the lock state), and the instrument will automatically release the high voltage generated by the test. The high voltage indicator light will go off, and the high voltage alarm sound "Di, Di" will disappear. The meter line can only be removed when the screen displays "0V":



Figure 8 Schematic diagram of megohm representation

Then relevant photos can be collected with test values recorded. Charger insulation resistance IEC Standard requirements: not less than 7MΩ.

**Note: check the resistance unit.  $1T\Omega = 1000G\Omega$ ;  $1G\Omega = 1000M\Omega$ ;  $1M\Omega = 1000k\Omega$ ;  $1k\Omega = 1000\Omega$ .**

Once measuring the DC +, DC - charger, if the value is less than 7MΩ, need cable line will be removed (main demolition charge cable line DC+, DC-, PE, shielded wire) to measure, and measure the charging cable DC+, DC- two charger to ground resistance, such as less than 1MΩ, cable line needs to be replaced.

**Step 6:** Restore the internal environment of the charger after the test.

## **4.3 Check before power on**

### **4.3.1 Visual inspection of equipment appearance**

There are four visual inspection items listed below. The engineer should check all the items below and expand the inspection contents. If there are any unqualified items, please record them and contact the corresponding person in charge.

- 1) Appearance: check whether the appearance of the charger is damaged, whether there is any damage such as paint loss, scratch, deformation, and whether the structure of charger is damaged during transportation.
- 2) Sign: check whether the nameplate of charger is correct, clear and complete, and whether the safety warning sign is posted in place.
- 3) Documents: check with the customer whether the configuration information of on-site charger conforms to the requirements of the contract, whether the accessories are complete, whether the user manual, factory inspection report and qualification certificate are complete.
- 4) Fire-proof material: check whether the fire-proof material is installed completely.

### **4.3.2 Internal circuit inspection of equipment**

- 1) Short circuit: check whether the distribution cabinet is connected to the charger, and whether there is short circuit between the fire line, neutral line, and earthing line and whether the phase sequence is right.
- 2) Line and screw fastening: check every line connection, connector and screw fixed terminal and copper bar. Check whether the tightening torque meets the requirements and there is no loosening, poor connection, and other conditions.
- 3) Voltage before power on: before powering on the charger, first check whether the power supply voltage at the molded case circuit breaker of the distribution cabinet is normal, and there is no abnormality such as missing phase, overvoltage, undervoltage, and phase sequence.

#### 4.4 Test after charger powered on



**Tip!** Follow the steps to power on the charger. Pay attention to the risk of electric shock. Wear protective gloves and insulating shoes.

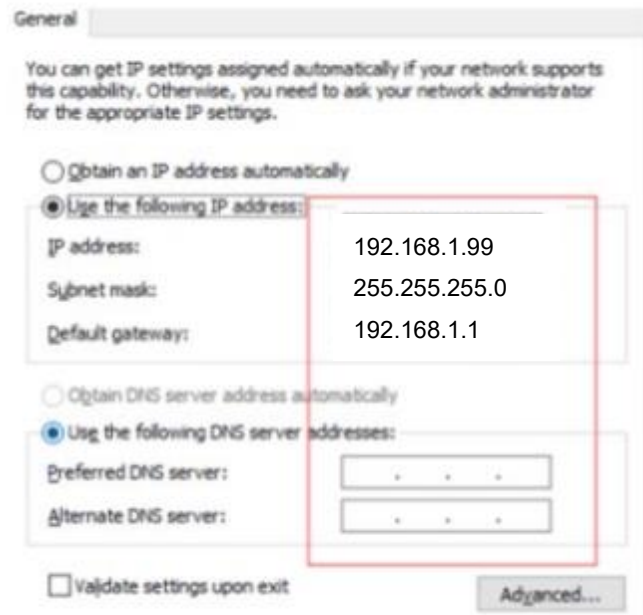
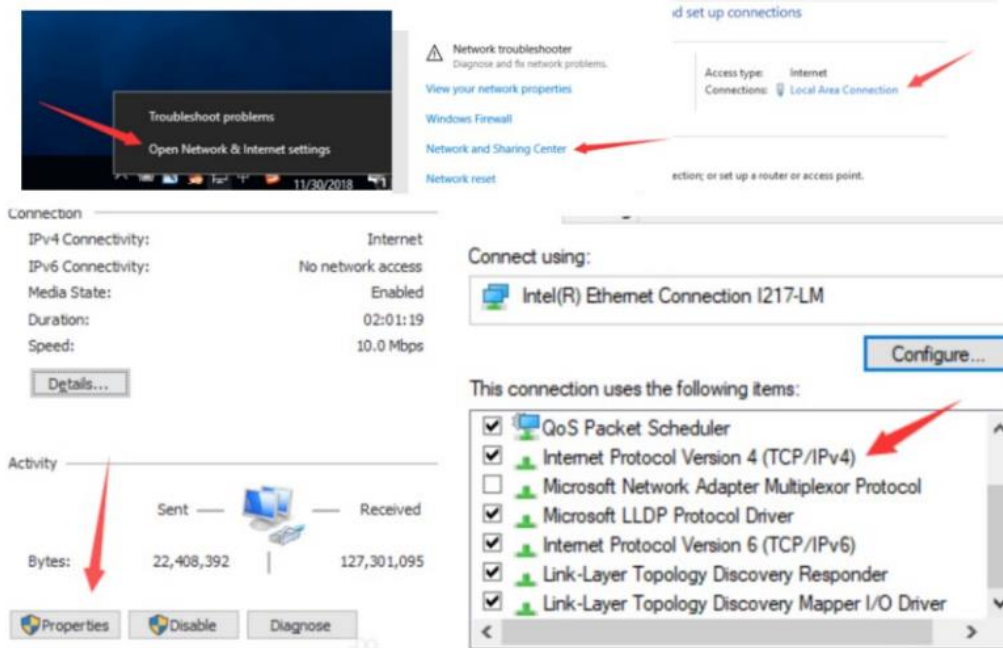
##### 4.4.1 Parameter checking

Set according to the following requirements.

To connect to the network, insert the SIM (mini-SIM) according to the location of 4G communication module.



**Step 1:** Connect the computer to the switch in rectifier cabinet with an Ethernet cable. Set the IP address (192.168.1.xxx, xxx don't use 101 and 136.)



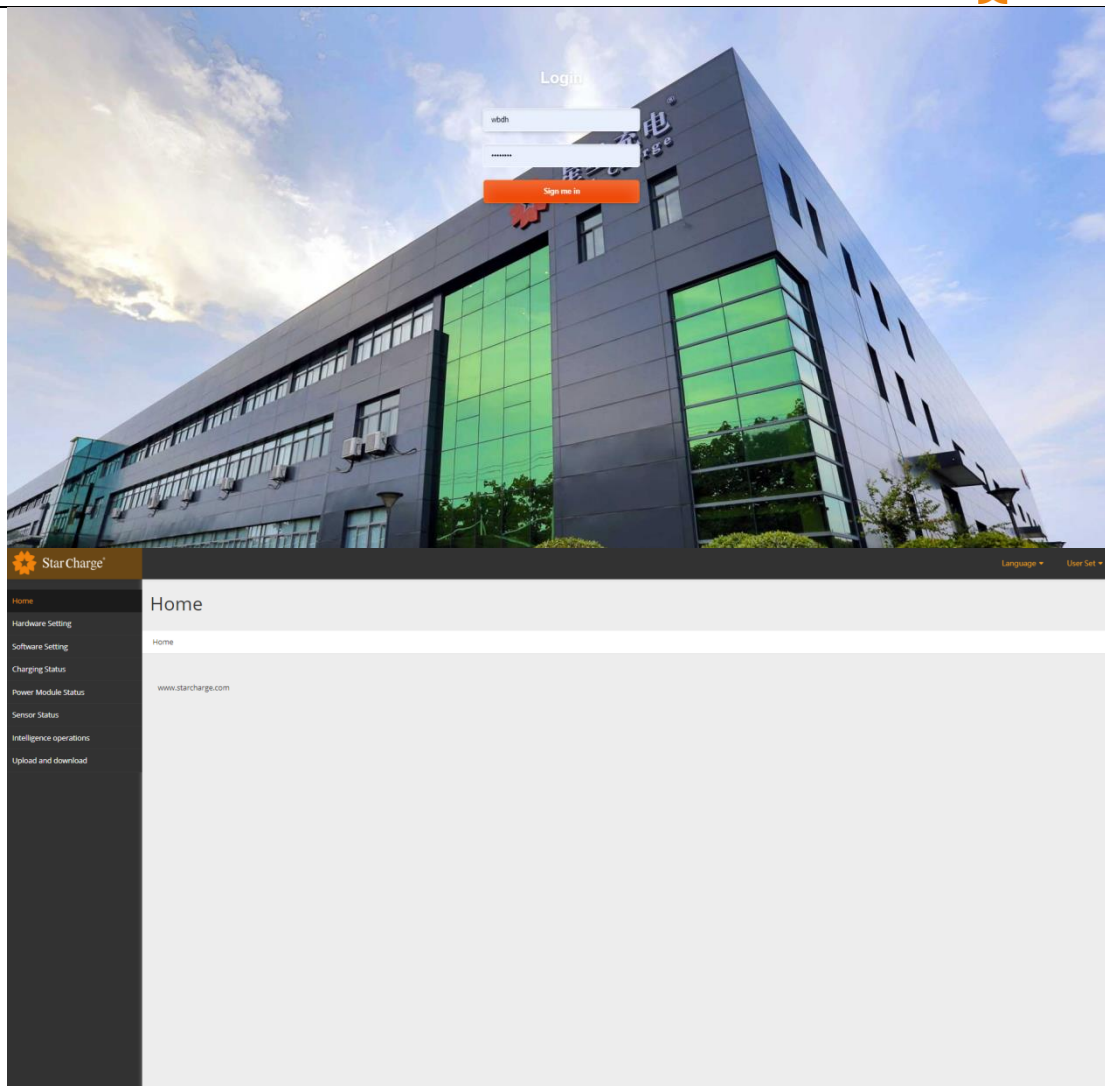
**Step 2:** Open a browser (Chrome is recommended), type in website address “192.168.1.136”. Then type in user name and password.

General account username:      xxcd

Password: Xxcd28912891.

Administrator account username:    wbdh

Password: Wbdh26835941.

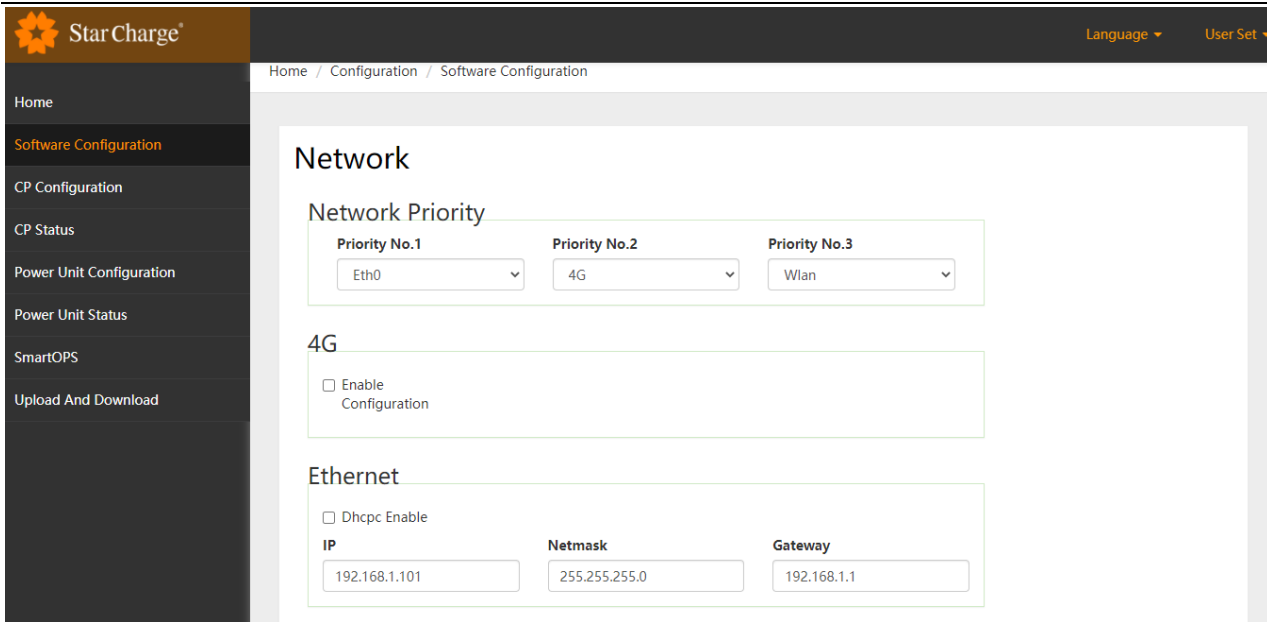


**Step 3:** Web setting according to the actual situation.

**Network Priority:**

- 1) Find "Network priority"
- 2) Set the priority, Ethernet>4G>WIFI for default
- 3) Click "Submit".





Star Charge

Language ▾ User Set ▾

Home / Configuration / Software Configuration

Home

Software Configuration

CP Configuration

CP Status

Power Unit Configuration

Power Unit Status

SmartOPS

Upload And Download

### Network

**Network Priority**

Priority No.1: Eth0 ▾

Priority No.2: 4G ▾

Priority No.3: Wlan ▾

**4G**

Enable Configuration

**Ethernet**

Dhcp Enable

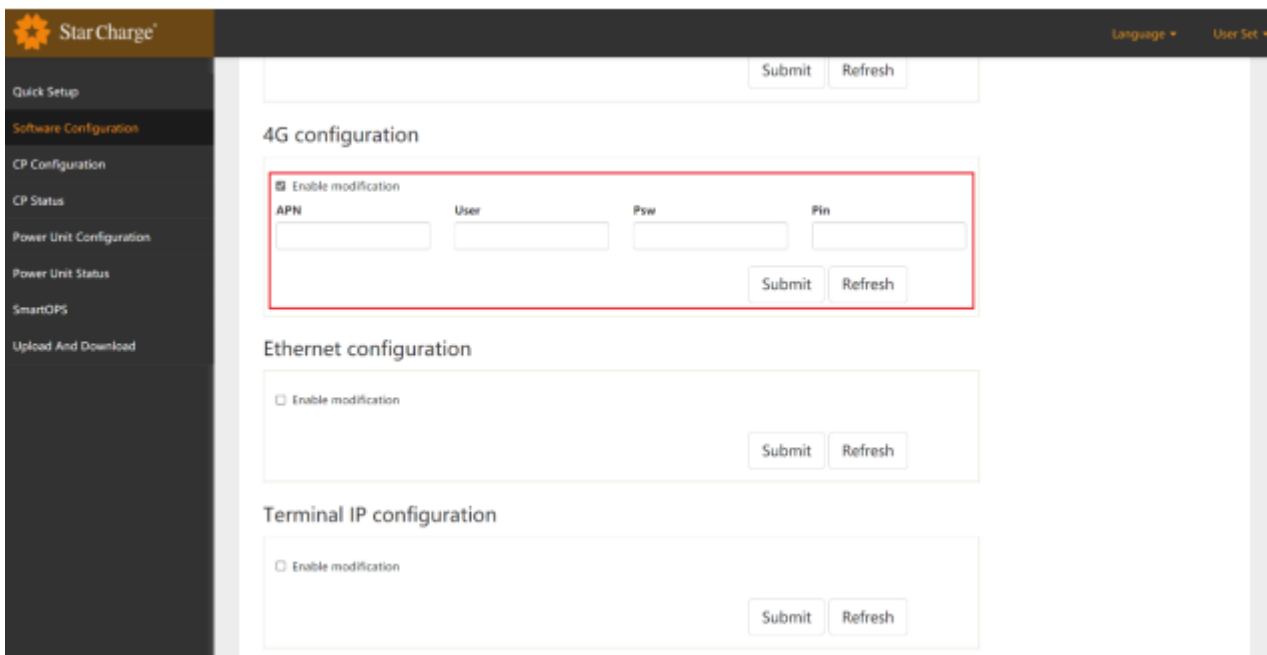
IP: 192.168.1.101

Netmask: 255.255.255.0

Gateway: 192.168.1.1

#### 4G:

- 1) Find “4G configuration”
- 2) Click “Enable modification”
- 3) Set APN, User, Psw, Pin according to actual usage
- 4) Click “Submit”



Star Charge

Language ▾ User Set ▾

Quick Setup

Software Configuration

CP Configuration

CP Status

Power Unit Configuration

Power Unit Status

SmartOPS

Upload And Download

Submit Refresh

### 4G configuration

Enable modification

APN:

User:

Psw:

Pin:

Submit Refresh

### Ethernet configuration

Enable modification

Submit Refresh

### Terminal IP configuration

Enable modification

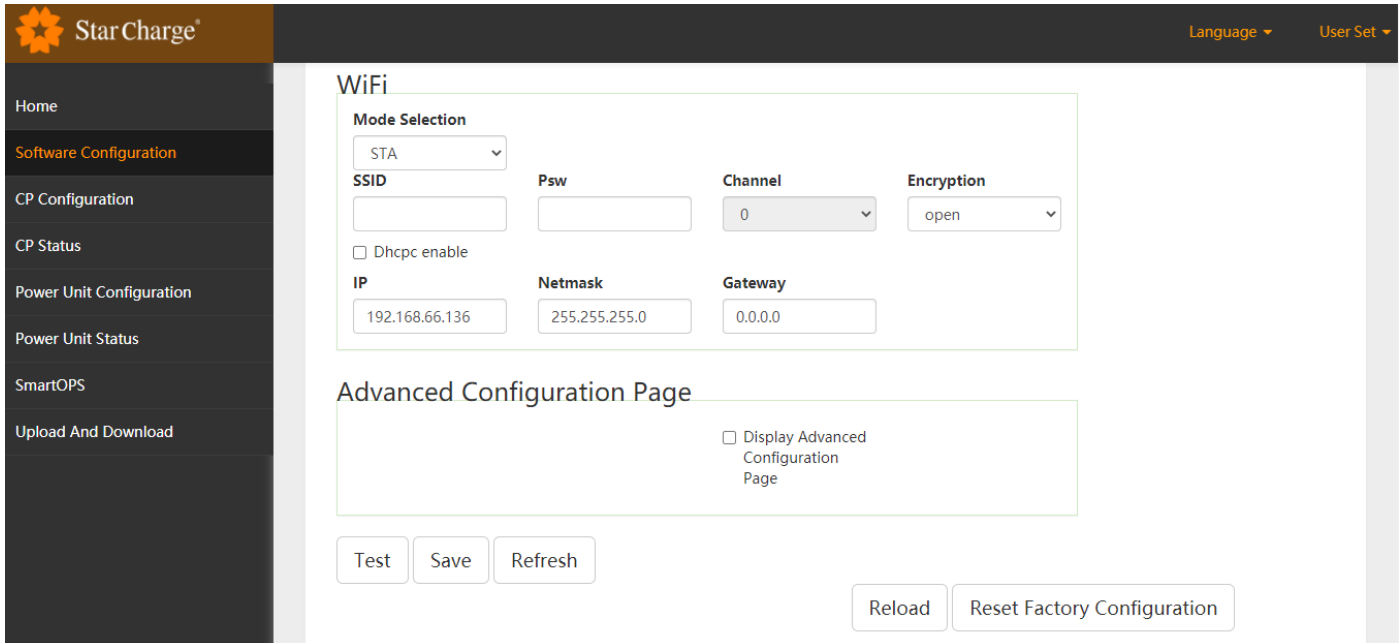
Submit Refresh

#### WIFI:

- 1) Find “Wifi configuration”
- 2) Click “Enable modification”
- 3) “Mode selection” choose “STA”
- 4) Fill in “SSID”(WIFI ID) “Psw”(WIFI password) “Encryption”(EncryMode, generally choose wpa2)

5) Click “Dhcpc enable”

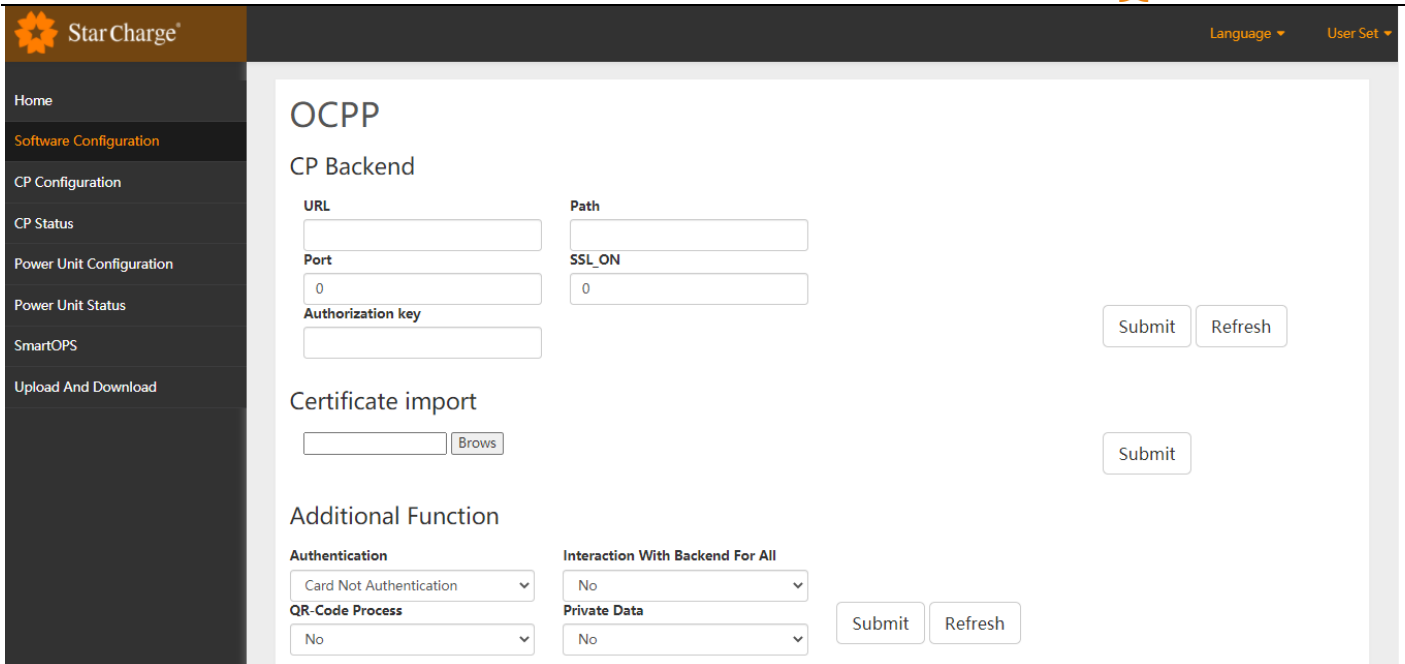
6) Click “Submit”



### OCPP:

Take <http://36.153.57.202:3400/steve/websocket/CentralSystemService> as an example. The information need to be filled in is shown as below:

- 1) Find “OCPP”
- 2) “URL”: Enter IP address or domin name of the backend;
- 3) “Path”: Enter the path after IP in “Path”
- 4) “Port”: Enter Port number of backend
- 5) “SSL\_O”: The value is 1 when the backend uses TLS for access, otherwise the value is 0.
- 6) “Authorization key”: If the backend doesn’t use Basic authorization, just leave it blank. (no need to fill in most cases)
- 7) Click the “Submit” in OCPP Part to confirm delivering the setting information to the backend.
- 8) “Certificate Import”: Load in the CA certificate offered by customer when using TLS; otherwise, leave it blank.
- 9) Click “Submit” to deliver certificate if loading in the certificate.



**OCPP**

**CP Backend**

URL:  Path:

Port:  SSL\_ON:

Authorization key:

Submit Refresh

**Certificate import**

Brows

Submit

**Additional Function**

Authentication:  Interaction With Backend For All:

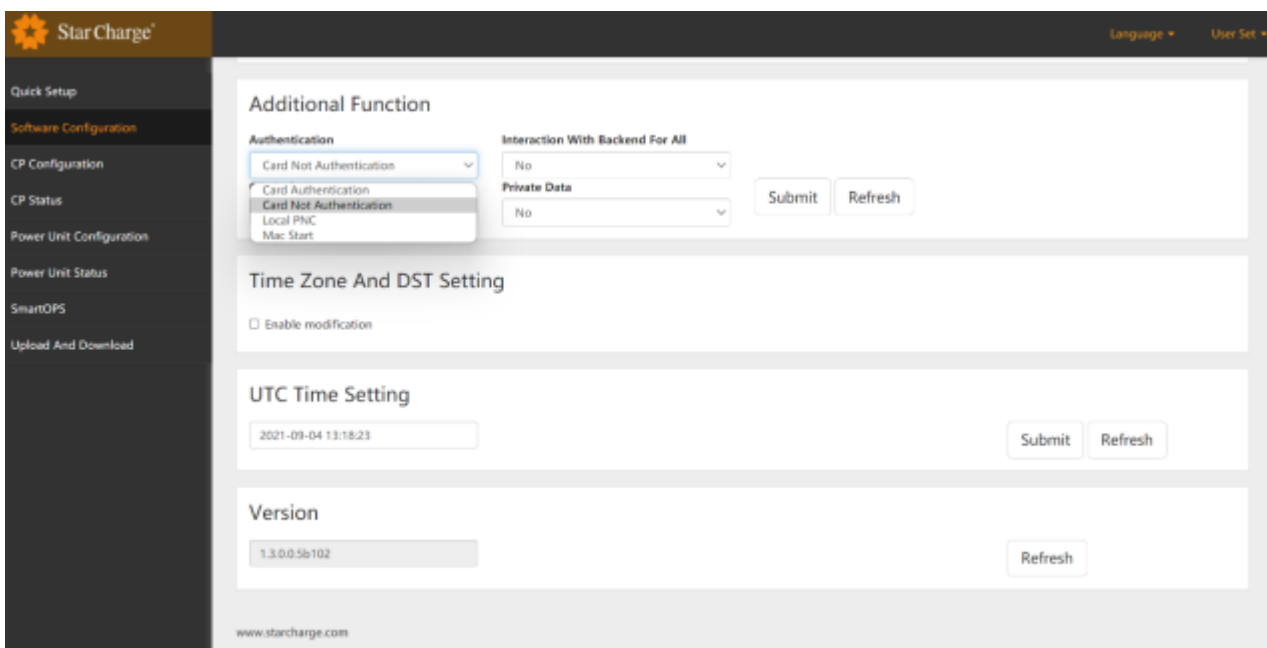
QR-Code Process:  Private Data:

Submit Refresh

### Card Type:

- 1) "Card Not Authentication": Local start-stop card, the EVSE can work by swiping the card without connecting to the backend.
- 2) "Card Authentication": Authentication card, the UID of RFID card must be entered into backend before using, and EVSE must connect to the backend
- 3) "Local PnC": plug in and charge
- 4) "Mac Start": The MAC Code of the EV must be entered into backend. The EV will be charged automatically when the charging cable is inserted.

Click "Submit" after the configuration.



**Additional Function**

Authentication:  Interaction With Backend For All:

Private Data:

Submit Refresh

**Time Zone And DST Setting**

Enable modification

**UTC Time Setting**

Submit Refresh

**Version**

Refresh

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## CP Configuration

**Contents**

- Quick Setup
- Software Configuration
- CP Configuration
- CP Status
- Power Unit Configuration
- Power Unit Status
- SmartOPS
- Upload And Download

Language ▾ User S

### CP Configuration

Home / Configuration / CP Configuration

#### Identification

<b>CP Identity</b> <input type="text"/>	<b>Group Number</b> <input type="text" value="1234"/>	<b>EVSE ID</b> <input type="text" value="1-1"/>
<b>#1 Gun Address</b> <input type="text" value="1"/>	<b>#2 Gun Address</b> <input type="text" value="2"/>	
<b>#1 Gun QRcode</b> <input type="text" value="1234567801"/>	<b>#2 Gun QRcode</b> <input type="text" value="1234567802"/>	

#### Compatible Configuration

<b>Cardreader Block Number</b> <input type="text" value="0"/>	<b>Cardreader Key</b> <input type="text" value="FFFFFFFFFFFF"/>	<b>Cardreader Type</b> <input type="text" value="PAX"/>
<b>Screen Enable</b> <input type="text" value="Disable"/>	<b>ID Cover</b> <input type="text" value="Disable"/>	<b>QR-Code Enable</b> <input type="text" value="Disable"/>

The default settings for the charging connectors are shown as below (Maximum power is set according to the requirements. If you want to change the value of current, voltage and power, please contact the local service engineer):

**Contents**

- Quick Setup
- Software Configuration
- CP Configuration
- CP Status
- Power Unit Configuration
- Power Unit Status
- SmartOPS
- Upload And Download

### Gun

#### EVSE 1

Conn 1
Conn 2

<b>Gun Type</b> <input type="text" value="CCS1"/>	<b>Meter</b> <input type="text" value="Type C"/>	<b>PreChgCircuit Enable</b> <input type="text" value="Disable"/>
<b>Maximum Voltage(V)</b> <input type="text" value="1000"/>	<b>Insulation Board</b> <input type="text" value="Enable"/>	
<b>Minimum Voltage(V)</b> <input type="text" value="150"/>	<b>PLC Board</b> <input type="text" value="Type A"/>	
<b>Maximum Current(A)</b> <input type="text" value="300"/>	<b>Pre-Precharge</b> <input type="text" value="Unknow"/>	
<b>Maximum Power(kW)</b> <input type="text" value="180"/>	<b>GunTemp Policy</b> <input type="text" value="Disable"/>	
<b>Maximum Temperatur(°C)</b> <input type="text" value="90"/>	<b>Cooler Enable</b> <input type="text" value="Disable"/>	

Quick Setup  
Software Configuration  
CP Configuration  
CP Status  
Power Unit Configuration  
Power Unit Status  
SmartOPS  
Upload And Download

## Gun

### EVSE 1

Conn 1
Conn 2

<p><b>Gun Type</b></p> <input type="text" value="CCS1"/> <p><b>Maximum Voltage(V)</b></p> <input type="text" value="1000"/> <p><b>Minimum Voltage(V)</b></p> <input type="text" value="150"/> <p><b>Maximum Current(A)</b></p> <input type="text" value="300"/> <p><b>Maximum Power(kW)</b></p> <input type="text" value="180"/> <p><b>Maximum Temperatur(°C)</b></p> <input type="text" value="90"/>	<p><b>Meter</b></p> <input type="text" value="Type C"/> <p><b>Insulation Board</b></p> <input type="text" value="Enable"/> <p><b>PLC Board</b></p> <input type="text" value="Type A"/> <p><b>Pre-Precharge</b></p> <input type="text" value="Unknow"/> <p><b>GunTemp Policy</b></p> <input type="text" value="Disable"/> <p><b>Cooler Enable</b></p> <input type="text" value="Disable"/>	<p><b>PreChgCircuit Enable</b></p> <input type="text" value="Disable"/>
---	---	---

## Sensor

<p><b>Temperature Sensor</b></p> <input type="text" value="Enable"/> <p><b>Water Level Sensor</b></p> <input type="text" value="Enable"/> <p><b>Fuse Enable</b></p> <input type="text" value="Enable"/>	<p><b>Temperature Threshold(°C)</b></p> <input type="text" value="1300"/> <p><b>Door Sensor</b></p> <input type="text" value="Enable"/> <p><b>Impact Switch Sensor</b></p> <input type="text" value="Enable"/>
---	--

## Power Unit Configuration

Quick Setup

Software Configuration

CP Configuration

CP Status

**Power Unit Configuration**

Power Unit Status

SmartOPS

Upload And Download

### Power Unit Configuration

Home / Configuration / Power Unit Configuration

#### Common

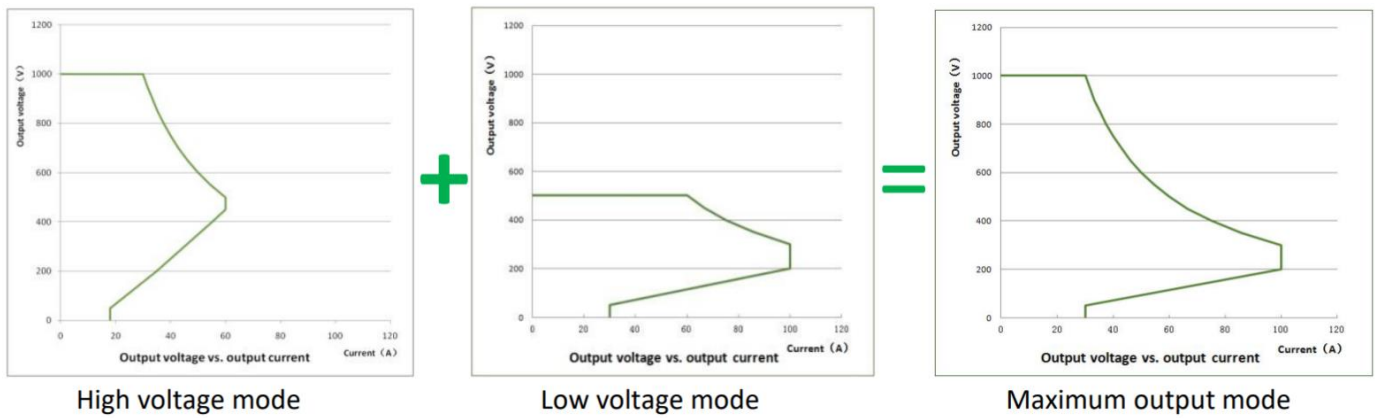
<input type="radio"/> 180_relay	<input type="radio"/> 180_pdu	<input type="radio"/> 360_pdu	
<b>Module Layout</b>	<b>Gun Amount</b>	<b>Power Unit Amount</b>	<b>Maximum Power(kW)</b>
<input type="text" value="Hand In Hand"/>	<input type="text" value="4"/>	<input type="text" value="2"/>	<input type="text" value="360.0"/>
<b>PDU Type</b>	<b>PDU Amount</b>		
<input type="text" value="SCII"/>	<input type="text" value="4"/>		
<b>Fan Type</b>	<b>Power Unit ID</b>		
<input type="text" value="PWM"/>	<input type="text" value="undefined"/>		

#### Power Module

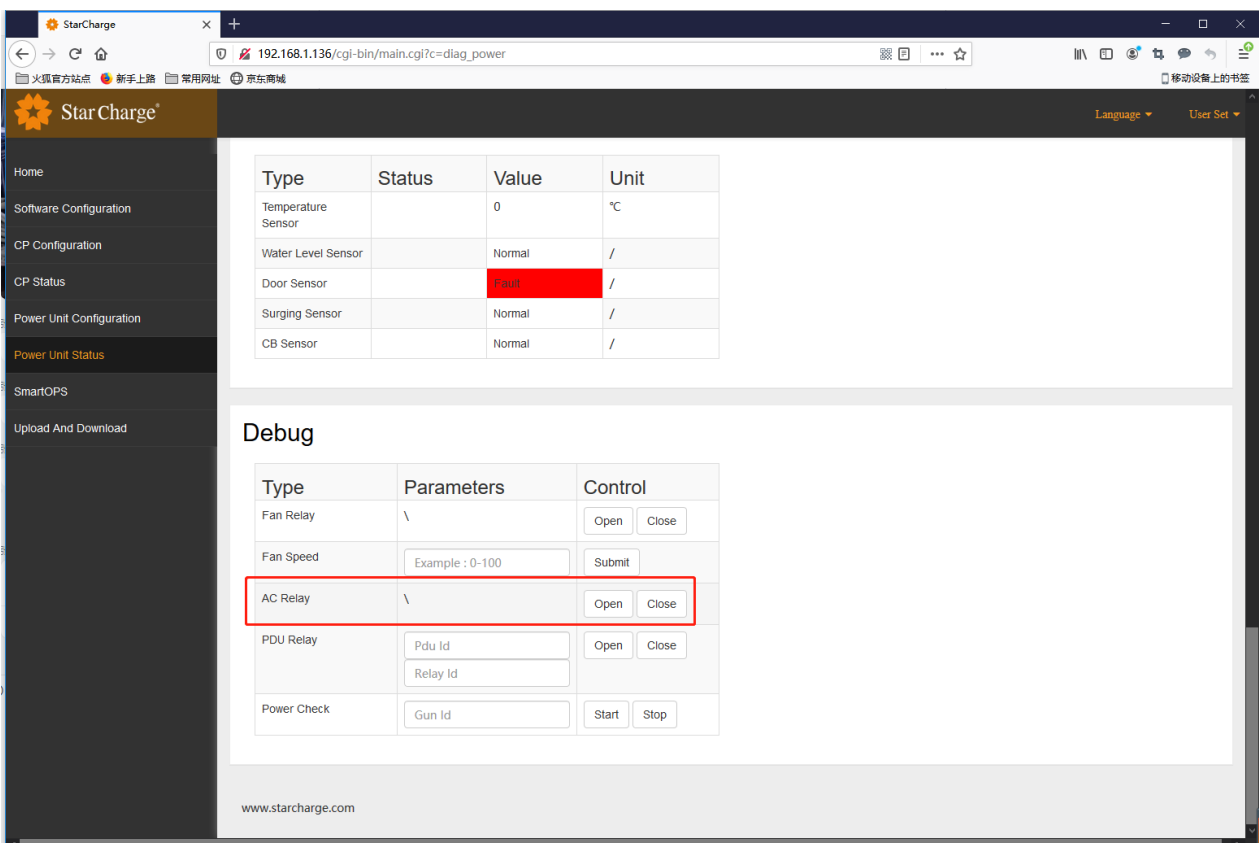
<b>Under-voltage Protection(V)</b>	<b>Over-voltage Protection(V)</b>
<input type="text" value="173"/>	<input type="text" value="280"/>
<b>Module Type</b>	<b>Fan Mode</b>
<input type="text" value="StarCharge 30KW 1000V"/>	<input type="text" value="Type 0"/>

### 4.4.3 Power module grouping

Neptune Charging System uses Star Charge 30kW, 1000V power module. Voltage and current graph of power module is as follows:



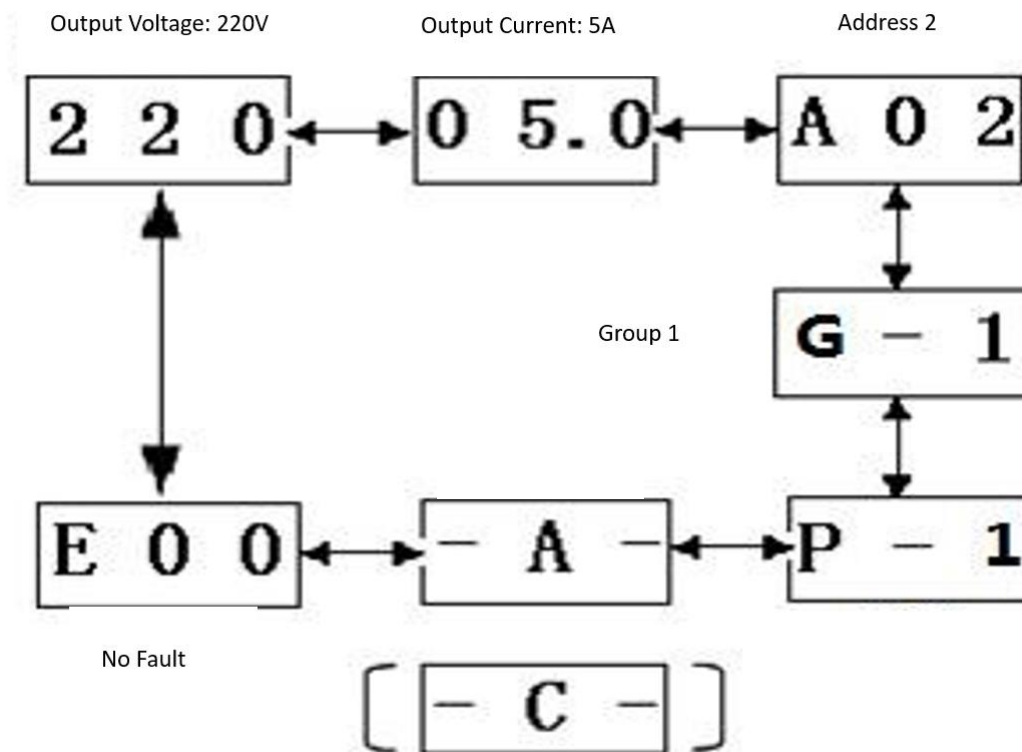
**Step 1:** After installing 6 power modules into the power cabinet, log in to the Web page, click "Power Unit Status" – "Debug" and turn AC Relay on. At this time, the AC contactor in the power cabinet will be closed. Power modules will be powered on.



**Step 2:** Use the up button (▲) and down button (▼) on the module side to adjust the module grouping, and group the 6 modules from A01~A6&G01~G6 respectively

The power module has two keys, up (▲) and down (▼). By pressing the button, you can view the information of the rectifier module. For example, the output voltage of the rectifier module is 220V, the

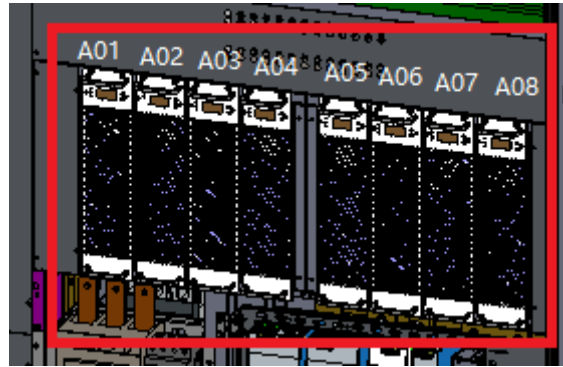
output current is 5A, the address is 2. The group number is 1. Running in automatic mode or manual mode, press ▲ or ▼ to display as follows:



- 1) Press ▲ or ▼ to switch the current display to the information interface to be changed;
- 2) Press ▲ or ▼ after releasing for about 2.5 seconds, you can see the display flickers;
- 3) Press ▲ or ▼ to change the setting value;
- 4) Press ▼ for about 2.5 seconds and then release to save the data; if you discard the change, press ▲ for about 2.5 seconds and release to return to the previous setting value.



**Step 3:** The grouping situation is shown in the figure below.



**Step 4:** After the grouping, log in to the Web page, click "Power Unit Status" – “Debug” and turn AC Relay off. At this time, the AC contactor in the power cabinet will be open. Power modules will be powered off.

#### 4.4.4 Hardware

- 1) Touch-screen: check whether the touch screen display is normal, whether there are obvious white spots, whether the display is clear, whether the operation is flexible and reliable and whether the interface is clear.
- 2) Switching power supply: The switching power supply can provide 12V/24V power supply voltage normally and stably. Use a multi-meter to measure whether the voltage at the output terminal of the switching power supply inside the charger is consistent with the label.
- 3) Electronic lock of charging cable: Electronic lock function: When the device is in the charging state, check whether the charging connector is locked and cannot be pulled out.
- 4) Travel switch: When the device is in the charging state, if its cabinet door is opened, the device should stop charging instantly according to the design requirements.
- 5) Emergency Stop Button: When the device is in the charging status, if the user presses the emergency stop button at the front door of the charger, the device should stop charging immediately according to the design requirements.
- 6) Fan: Check whether the fan of the charger and the fan of the power module can work normally during charging.

7) Indicator light: Check whether the indicator lights the charger is consistent with the design.

LED Status Indicator	Description
Steady green	normal
Flashing green	RFID card detected
Steady yellow	Failure ,but can normal charging
Steady blue	Charging
Steady red	Failure

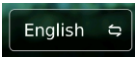
#### 4.4.5 Self check process

Press and release the emergency stop button on power cabinet 3 times in 5 second to run self-check process. The system will output voltage to check wiring of installation. If dispenser screen pops up error message, please check the DC+ and DC- cable again.





Please leave charging plug in sockets of dispenser during self-check process.

#### 4.4.6 Charging test

Charge authentication (Card / QR Code)

**Step 1:** On the main interface of display charging, insert the gun to enter the next step, as shown in figure below. This interface can click "" to switch the display language (Chinese, English, other language available upon request).

A special sign will be displayed in the upper right corner of the interface to represent the current network status of the pile:

- : The user unit currently connects to the network via Wi-Fi;
- : The user unit currently connects to the network via 4G;
- : The user unit currently connects to the network via Ethernet;
- : The terminal is currently connected to the OCPP cloud platform.

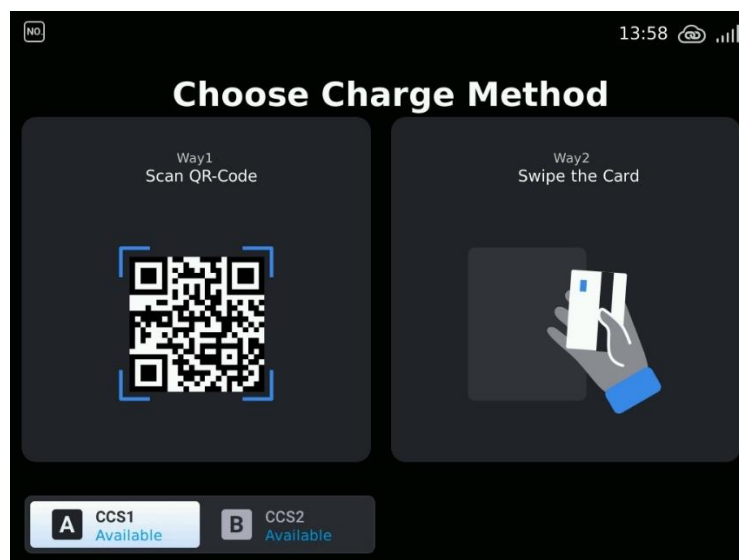


**Step 2:** After the gun is inserted, the display screen jumps to the startup interface. There are two startup modes: Scan QR code and Swipe.

**Scan QR code:** Open "Star Charge" or other mobile clients and scan the QR code on the charging pile interface to charge.

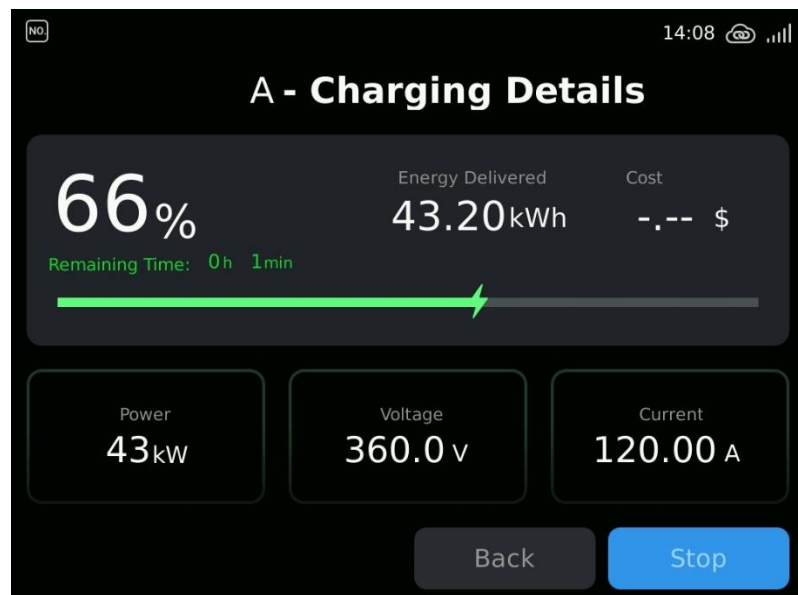
**Swipe Card:** Use the RFID card to place the charging pile in the card swiping area to start charging.

If it is User unit, the two guns are connected at the same time. Click the gun selection button at the bottom of the interface to switch between A gun and B gun start interface.



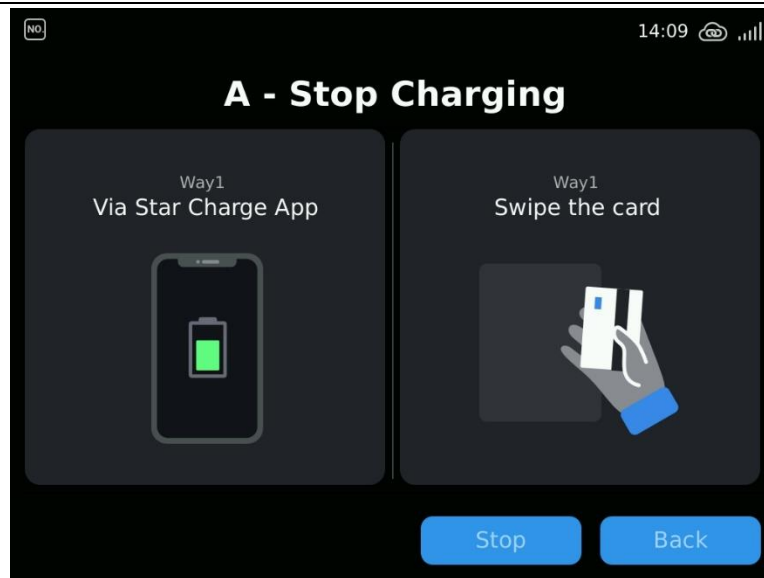
**Step 3:** After the charging is started successfully, the display interface jumps to the charging interface, which can display the charging process information in real time, or click the "Details" button to view more comprehensive charging details.

If it is User unit (natural cooling), the two guns are connected at the same time. Click the gun selection button at the bottom of the interface to switch between A gun and B gun start interface.

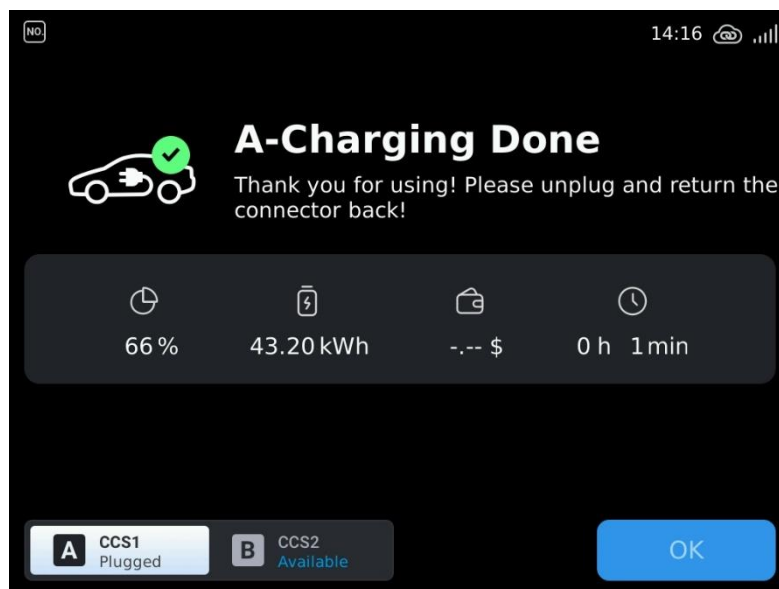


**Step 4:** Stop charging. There are two ways to stop, APP stop and swipe card stop.

- APP stop charging: Direct APP operation to stop charging.
- Swipe to stop charging: When only a single gun is charging, you can directly swipe the card in the swiping area of the charging pile to stop charging; when both guns are in the charging state, you need to click the "Stop" button on the charging interface to enter the stop charging interface of the gun, and then Swipe the card to stop charging.




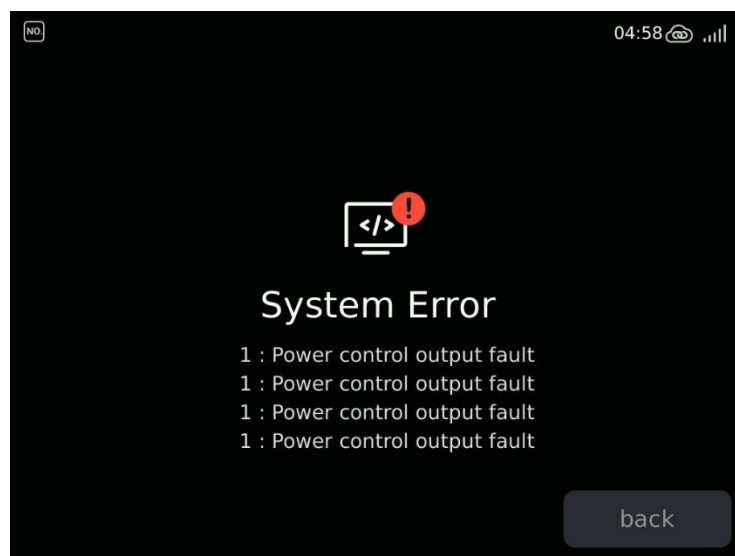
**Step 5:** After fully charging or stopping charging, the display screen will jump to the charging settlement interface, which displays information such as charging amount, charging time, SOC and so on. On the other hand, if charging ends abnormally, the reason for the abnormal stop will be displayed at the bottom of the interface.



**Step 6:** When the emergency stop of the charging pile is pressed, the display screen will jump to the emergency stop fault interface until the emergency stop is restored.



**Step 7:** When the charging pile fails, the lower right foot of the standby interface will appear “” sign, Click to jump to the fault details interface, which displays specific fault information, as shown in Figure 3-10.



--End

## **5 Customer Training Instruction**

After completing the commissioning of the charger, the engineer needs to provide customers with the basic knowledge and instructions on the use of the charger according to the characteristics of the charger. The training methods can be in the form of documentary explanations or live demonstrations. The training content should include safety emergency common sense and basic charging process. After confirming the customer's satisfaction after the training, the commissioning personnel form a training record and the customer will sign for confirmation. Please refer to Appendix 1 "Customer Training Record Form".

**Appendix 1 Customer training record form**

## Customer Training Record Form

Customer:

Project Name		Trainer	
Product Name		Training Method	
Training Dept.		Training Date	
Training Content			
Training Objective			
Training Content Outlines	1. Basic charging process <input type="checkbox"/> 2. Emergency stop button usage scenario <input type="checkbox"/> 3. Safety emergency knowledge <input type="checkbox"/> 4. Malfunction service process <input type="checkbox"/>		
Trainee Signature			
Customer Feedback			
Customer Manager:	PM:		



## Site acceptance report of charger

**Date:**

**Staff:**

**Contract number:**

**Name of the charging station:**

**Address of the charging station:**



## 2 Check the surface

Object	Content	Conclusion	Remark
Surface	The surface is clean. The charging cable is not broken. The charger is not tilted. The QR code is clear.	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Sign	No missing safety warning mark and the nameplate character is clear.	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Components	The charger is the required type. The accessories are complete, including user manual, factory inspection report, and the random documents of qualification certificate.	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Other objects	The fire mud is blocked in place.	YES <input type="checkbox"/> NO <input type="checkbox"/>	

## 3 Check before power on

### 3.1 Check the wiring inside the charger

Object	Content	Conclusion	Remark
Input A (power cabinet) and B (power cabinet)	Open circuit	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Input A (power cabinet) and C (power cabinet)	Open circuit	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Input B (power cabinet) and C (power cabinet)	Open circuit	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Input N (power cabinet) and A (power cabinet)	Open circuit	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Input N (power cabinet) and B (power cabinet)	Open circuit	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Input N (power cabinet) and C (power cabinet)	Open circuit	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Input A (power cabinet) and PE	Open circuit	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Input B (power cabinet) and PE	Open circuit	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Input C (power cabinet) and PE	Open circuit	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Input N (power cabinet) and PE	Close circuit	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Input A (power cabinet) and +/- of DC output	Open circuit	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Input B (power cabinet) and +/- of DC output	Open circuit	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Input C (power cabinet) and +/- of DC output	Open circuit	YES <input type="checkbox"/> NO <input type="checkbox"/>	
+ and - of output to the charging cable	Open circuit	YES <input type="checkbox"/> NO <input type="checkbox"/>	
+ and - of output	Open circuit	YES <input type="checkbox"/> NO <input type="checkbox"/>	
+ and - of the charging cable	Open circuit	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Input A and +/- of DC output	Output copper bar DC+ output gun head DC+ channel	YES <input type="checkbox"/> NO <input type="checkbox"/>	

Object	Content	Conclusion	Remark
	Output copper bar DC- output gun head DC- channel		

### 3.2 Check the crew and other connectors

Size	M3	M4	M5	M6	M8	M10	M12	M16
<b>Torque Settings(N·m)</b>	0.7~1	1.8~2.4	4~4.8	7~8	17~20	34~40	60~70	119~140

Content	Standard	Conclusion	Remark
Three - phase AC A, B, C, N input up and down the screws	The screws of the internal copper bars are not loose or missing	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Main switch top and bottom each screw	The screws of the internal copper bars are not loose or missing	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Three - phase copper line on the various sizes of screws	The screws of the internal copper bars are not loose or missing	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Dc output positive and negative terminal up and down screws	The screws of the internal copper bars are not loose or missing	YES <input type="checkbox"/> NO <input type="checkbox"/>	
All grounding screws for equipment	The screws of the internal copper bars are not loose or missing	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Screw on the positive and negative copper row of dc output	The screws of the internal copper bars are not loose or missing	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Each plug on the main control board	The screws of the internal copper bars are not loose or missing	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Switching power supply	The screws of the internal copper bars are not loose or missing	YES <input type="checkbox"/> NO <input type="checkbox"/>	

### 3.3 Check insulation resistance

Object	Content	Conclusion	Remark
Input of DC+ relay to PE	>7MΩ	YES <input type="checkbox"/> NO <input type="checkbox"/>	

Output of DC+ relay to PE	>7MΩ	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Input of DC- relay to PE	>7MΩ	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Output of DC- relay to PE	>7MΩ	YES <input type="checkbox"/> NO <input type="checkbox"/>	

### 3.4 Check the voltage

Content	Conclusion	Remark
The input voltage of charger is 480Vac±10%.	YES <input type="checkbox"/> NO <input type="checkbox"/>	

### 3.5 Check the details

Content	Conclusion	Remark
Temperature: -30℃~+50℃	YES <input type="checkbox"/> NO <input type="checkbox"/>	
No burr on the surface of the charger, and similar sharp edges, no ignition, burning phenomenon, no loosening of the insulating cap	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Charging cable insert and pull out charging seat, are not too tight or too loose, plug smooth	YES <input type="checkbox"/> NO <input type="checkbox"/>	
The charging cable is inserted into the socket of EV, and the vehicle is in an undrivable state	YES <input type="checkbox"/> NO <input type="checkbox"/>	

## 4 Check the functions

### 4.1 Check the monitor

Object	Content	Conclusion	Remark
Touch screen	The screen shows normally	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Signal lights	The signal lights work normally	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Parameter setting	Set the parameters effectively	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Emergency signal	Emergency signal	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Information match	SOC, voltage, current are the same with vehicle	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Insulation test	Insulation test normally	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Over temperature protect	Have over temperature protect	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Calculate	Calculate normally	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Lock	After the charger starts, the electronic locking device works normally, and the vehicle interface cannot be separated with load	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Meter ratio	The setting of meter ratio is consistent with the parameters of the current transformer	YES <input type="checkbox"/> NO <input type="checkbox"/>	

### 4.2 Charging function

Object	Content	Conclusion	Remark
Start with APP	Start and stop charging	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Start with card	Start and stop charging	YES <input type="checkbox"/> NO <input type="checkbox"/>	

### 4.3 Power module

Object	Content	Conclusion	Remark
Communication	Can effectively and reliably exchange data with the main monitoring device	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Emergency signal	Module failure or power loss can effectively send alarm signal and stop	YES <input type="checkbox"/> NO <input type="checkbox"/>	

**5 Conclusion**

EV type	Vehicle required voltage (V)	Vehicle required current (A)	Output voltage (V)	Output current (A)	Remark

Conclusion	Remark
<input type="checkbox"/> Qualified <input type="checkbox"/> Unqualified	

**Engineer:**
**Date:**



Star Charge



## Charging Infrastructure Neptune Split Charging System **Installation Manual**

---

Version Number:1.3



## **Legal statement**

Star Charge Americas Corp.

46571 Fremont Blvd, Fremont, CA 94538, USA

[www.starcharge.com](http://www.starcharge.com)

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## 1 General

### 1.1 Purpose of document

This document aims to guide the construction personnel to complete the on-site installation of Neptune 240kW split charging system.

### 1.2 Scope of application

#### 1.2.1 This manual applies to following equipment type

Neptune 240kW split charging system.

#### 1.2.2 This Manual applies to the following personnel

Professional installation personnel for the charger.

### 1.3 Definition of related warning symbols





No.	Symbol	Meaning
1		<b>"Electrical hazard" symbol indicates danger</b> Failure to pay attention to the procedures, practices or improper implementation may cause injuries or death. Only after the conditions referred to are fully understood and fulfilled, can the operation accompanied the "Electrical hazard" symbol be performed.
2		<b>"Caution" symbol indicates warning.</b> Failure to pay attention to the procedures, practices or improper implementation may cause product damaged. Only after the conditions referred to are fully understood and fulfilled, can the operation accompanied the "Caution" symbol be performed.
3		<b>"Tips" symbol indicates operation tips or useful information.</b> Operation tips and useful information shall be marked with "Tips". It does not contain information about warnings for dangerous functions or harmful functions.
4		<b>"Waste Disposal" symbol indicates electronic and electrical waste.</b> The logo is located on the product, in the instruction manual or on the packaging, indicating that electrical and electronic equipment and its accessories should be disposed of separately from ordinary household waste. The material can be reused according to its mark. You can make a great contribution to environmental protection by reusing old equipment and materials or other forms of reuse.

Table 1 Definition of warning symbols

## 2 Preparations before installation

### 2.1 Installation tools


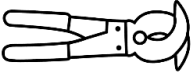
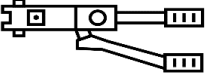
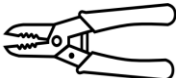

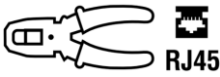
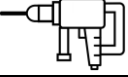






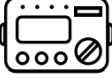
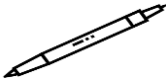

No.	Category	Name	Use	Picture
1	Cable preparation tool	Electrician knife	Stripping of insulating sheath	
2	Cable preparation tool	Cable cutter	Cable cutting	
3	Cable preparation tool	Hydraulic tongs	Terminal crimping	
4	Cable preparation tool	Wire stripping pliers	Stripping of insulating sheath	
5	Cable preparation tool	Hot air gun	Thermal shrinkage of insulating materials	
6	Cable preparation tool	Network cable pliers	Crimping of RJ45 connector	 RJ45
7	Installation tool	Percussion drill	Drilling hole	
8	Installation tool	Open-end wrench (full set)	Installing and removing nuts	
9	Installation tool	Cross screwdriver (PH2)	Installing and removing screws	
10	Installation tool	Hammer	Knocking	
11	Measurement tool	Spirit level	Horizontal measurement	
12	Measurement tool	Tape measure	Distance measurement	
13	Measurement tool	Multimeter	Measurement of voltage, current, etc.	
14	Measurement tool	Megger	Measurement of resistance	
15	Marking tool	Maker pen	Position making	
16	Hoisting tool	Crane	Equipment hoisting	

Table 2 List of installation tools

Note: The above tools shall be selected based on the actual situations on site.

---

## **2.2 Construction materials**

### **2.2.1 Cable terminal**

- (1) 300 kcmil cable Corresponding terminal: TLK185-12 copper lugs terminal (Refer to Appendix 3);
- (2) 400 kcmil cable Corresponding terminal: TLK240-12 copper lugs terminal (Refer to Appendix 3);
- (3) 4/0 AWG cable corresponding terminal: TLK120-12 copper lugs terminal (Refer to Appendix 3);
- (4) 2AWG cable corresponding terminal: TLK35-8 copper lugs terminal (Refer to Appendix 3);
- (5) RJ45 connector for cat6a network cable or Optical fiber if distance between dispenser and power cabinet is over 100 meters (Refer to Appendix 4).

### **2.2.2 Other materials**

- (1) Fire-proof mud or some materials required for fire-proof sealing.
- (2) Accessories such as heat-shrinkable tube and insulating tape for cables.

## **2.3 Requirements for installation personnel**

- (1) The installation personnel entering the construction site shall comply with the safety management regulations of the construction site.
- (2) The installation personnel entering the construction site must wear a safety helmet (fasten the chin strap, and ensure that the safety helmet is intact), and shall not wear unsafe clothing such as loose clothes or slippers, or go to work after drinking, or smoke on the construction site.
- (3) The installation personnel at heights must wear safety helmets, fasten safety belts, wear non-slip shoes and tie up working tools.
- (4) If there is heavy dust on the construction site or painting work is conducted, the installation personnel must wear protective masks.
- (5) Do not enter dangerous areas such as hoisting areas or the places under the position of vertical operation, and do not strike the objects.
- (6) Try to stay away from all kinds of mechanical equipment and electrical circuits to prevent mechanical and electrical damage.
- (7) The installation personnel who use portable power tools must master their use skills and precautions, wear insulating shoes and insulating gloves, and the metal shell must be grounded or connected to neutral line.
- (8) For temporary electricity utilization on the construction site, the electrical box must be kept intact, and damaged electrical components must be replaced in time.
- (9) Rubber cables shall be used for temporary wires on site, plastic flexible cord shall not be used, and wires shall not be plugged directly into sockets.
- (10) It is prohibited to use the temporary electrical components when they are live.
- (11) Worker shall be concentrated when entering borders such as foundation pits and roofs and various openings, to prevent falling from a height.
- (12) Pay attention to the conditions of the ground with iron nails and steel bars, to prevent other injuries

such as piercing, touching, hanging and falling.

(13) The construction protection facilities, safety signs, warning signs and other items at the site shall be dismantled without authorization.

(14) It is required to strengthen the on-site maintenance of construction equipment, maintain the intact rate, and prevent from running them with faults or under overload.

## 2.4 Handover of construction drawings

After arriving at the site, the installation personnel shall first ask for the civil construction drawings of installation site, and check whether the cables and concrete foundations of each equipment meet the requirements.

## 2.5 Inspection of power cables

The following is a checklist of cable models recommended for Neptune series products.

### 2.5.1 Cable checklist of 1\*power cabinet 240kW with 1\*dual CCS1 (300A) user unit

No.	From	To	Cable model	Quantity	Remarks
1	Power distribution box	Power cabinet	300 kcmil rated voltage 0.6kV (copper)	6	L1 & L2 & L3 Dual cable for each phase
2	Power distribution box	Power cabinet	2AWG rated voltage 0.6kV (copper)	1	PE
3	Power distribution box	Power cabinet	2AWG rated voltage 0.6kV (copper)	1	Neutral line (optional)
4	Power cabinet	User unit	4/0AWG rated voltage 1kV (copper)	8	4 for CCS1-A (DC+& DC-) 4 for CCS1-B (DC+& DC-)
5	Power cabinet	User unit	2AWG rated voltage 0.6kV (copper)	1	PE
6	Power cabinet	User unit	2*14AWG	1	AC480V power cable L+L
7	Power cabinet	User unit	Network cable (cat6e)	1	Under communication distance≤100m
8	Power cabinet	User unit	Optical fiber SC-SC (with connector YFOC-M-SC, SC Multi-mode 50/125um connector)	1	Armored multi-mode double core (MMF) Under communication distance≥100m

Table 3 Cable checklist of 1\*power cabinet 240kW with 1\*dual CCS1(300A) user unit

### 2.5.2 Cable checklist of 1\*power cabinet 240kW with 1\*dual CCS1 (200A) user unit

No.	From	To	Cable model	Quantity	Remarks
1	Power distribution box	Power cabinet	300 kcmil rated voltage 0.6kV (copper)	6	L1 & L2 & L3 Dual cable for each phase
2	Power distribution box	Power cabinet	2AWG rated voltage 0.6kV (copper)	1	PE
3	Power distribution box	Power cabinet	2AWG rated voltage 0.6kV (copper)	1	Neutral line (optional)
4	Power cabinet	User unit	300 kcmil rated voltage 1kV (copper)	4	2 for CCS1-A (DC+& DC-) 2 for CCS1-B (DC+& DC-)
5	Power cabinet	User unit	2AWG rated voltage 0.6kV (copper)	1	PE
6	Power cabinet	User unit	2*14AWG	1	AC480V power cable L+L
7	Power cabinet	User unit	Network cable (cat6e)	1	Under communication distance $\leq$ 100m
8	Power cabinet	User unit	Optical fiber SC-SC (with connector YFOC-M-SC, SC Multi-mode 50/125um connector)	1	Armored multi-mode double core (MMF) Under communication distance $\geq$ 100m

Table 4 Cable checklist of 1\*power cabinet 240kW with 1\*CCS1(200A) user unit



### 2.5.3 Cable checklist of 1\*power cabinet 240kW with 2\*dual CCS1 (300A) user unit

No.	From	To	Cable model	Quantity	Remarks
1	Power distribution box	Power cabinet	300 kcmil rated voltage 0.6kV (copper)	6	L1 & L2 & L3 Dual cable for each phase
2	Power distribution box	Power cabinet	2AWG rated voltage 0.6kV (copper)	1	PE
3	Power distribution box	Power cabinet	2AWG rated voltage 0.6kV (copper)	1	Neutral line (optional)
4	Power cabinet	User unit #1	4/0AWG rated voltage 1kV (copper)	8	4 for CCS1-A (DC+& DC-) 4 for CCS1-B (DC+& DC-)
5	Power cabinet	User unit #2	4/0AWG rated voltage 1kV (copper)	8	4 for CCS1-A (DC+& DC-) 4 for CCS1-B (DC+& DC-)
6	Power cabinet	User unit #1&#2	2AWG rated voltage 0.6kV (copper)	2	PE
7	Power cabinet	User unit #1&#2	2*14AWG	2	AC480V power cable L+L
8	Power cabinet	User unit #1&#2	Network cable (cat6e)	2	Under communication distance≤100m
9	Power cabinet	User unit #1&#2	Optical fiber SC-SC (with connector YFOC-M-SC, SC Multi-mode 50/125um connector)	2	Armored multi-mode double core (MMF) Under communication distance≥100m

Table 5 Cable checklist of 1\*power cabinet 240kW with 2\*dual CCS1 (300A) user unit

### 2.5.4 Cable checklist of 1\*power cabinet 240kW with 2\*dual CCS1 (200A) user unit

No.	From	To	Cable model	Quantity	Remarks
1	Power distribution box	Power cabinet	300 kcmil rated voltage 0.6kV (copper)	6	L1 & L2 & L3 Dual cable for each phase
2	Power distribution box	Power cabinet	2AWG rated voltage 0.6kV (copper)	1	PE
3	Power distribution box	Power cabinet	2AWG rated voltage 0.6kV (copper)	1	Neutral line (optional)
4	Power cabinet	User unit #1	300 kcmil rated voltage 1kV (copper)	4	2 for CCS1-A (DC+& DC-) 2 for CCS1-B (DC+& DC-)
5	Power cabinet	User unit #2	300 kcmil rated voltage 1kV (copper)	4	2 for CCS1-A (DC+& DC-) 2 for CCS1-B (DC+& DC-)
6	Power cabinet	User unit #1&#2	2AWG rated voltage 0.6kV (copper)	2	PE
7	Power cabinet	User unit #1&#2	2*14AWG	2	AC480V power cable L+L
8	Power cabinet	User unit #1&#2	Network cable (cat6e)	2	Under communication distance ≤ 100m
9	Power cabinet	User unit #1&#2	Optical fiber SC-SC (with connector YFOC-M-SC, SC Multi-mode 50/125um connector)	2	Armored multi-mode double core (MMF) Under communication distance ≥ 100m

Table 6 Cable checklist of 1\*power cabinet 240kW with 2\*dual CCS1(200A) user unit

**2.5.5 Cable checklist of 2\*power cabinet 240kW in parallel with 2\*dual CCS1 (300A) user unit**

No.	From	To	Cable model	Quantity	Remarks
1	Power distribution box	Power cabinet#1&#2	300 kcmil rated voltage 0.6kV (copper)	12	L1 & L2 & L3 Dual cable for each phase
2	Power distribution box	Power cabinet#1&#2	2AWG rated voltage 0.6kV (copper)	2	PE
3	Power distribution box	Power cabinet#1&#2	2AWG rated voltage 0.6kV (copper)	2	Neutral line (optional)
4	Power cabinet#1	Power cabinet#2	400 kcmil rated voltage 1kV(copper)	4	DC5+&- of power cabinet #1 to DC1+&- of power cabinet#2 Dual cable for each phase
5	Power cabinet#1	Power cabinet#2	2C*20 AWG twisted shielded pair	1	CAN_H&CAN_L&CAN_G
6	Power cabinet#1	Power cabinet#2	Network cable (cat6e)	1	Under communication distance≤100m
7	Power cabinet#1	Power cabinet#2	2AWG rated voltage 0.6kV (copper)	1	PE
8	Power cabinet#1	User unit#1	4/0AWG rated voltage 1kV (copper)	8	4 for CCS1-A (DC+& DC-) 4 for CCS1-B (DC+& DC-)
9	Power cabinet#1	User unit#1	2AWG rated voltage 0.6kV (copper)	1	PE
10	Power cabinet#1	User unit#1	2*14AWG	1	AC480V power cable L+L
11	Power cabinet#2	User unit#2	4/0AWG rated voltage 1kV (copper)	8	4 for CCS1-A (DC+& DC-) 4 for CCS1-B (DC+& DC-)
12	Power cabinet#1	User unit#1	2AWG rated voltage 0.6kV (copper)	1	PE
13	Power cabinet#2	User unit#2	2*14AWG	1	AC480V power cable L+L
14	Power cabinet#1	User unit#1	Network cable (cat6e)	1	Under communication distance≤100m
15	Power cabinet#1	User unit#1	Network cable (cat6e)	1	Under communication distance≤100m
16	Power cabinet#1	User unit#1	Optical fiber SC-SC (with connector YFOC-M-SC, SC Multi-mode 50/125um connector)	1	Armored multi-mode double core (MMF) Under communication distance≥100m

17	Power cabinet#1	User unit#1	Optical fiber SC-SC (with connector YFOC-M-SC, SC Multi-mode 50/125um connector)	1	Armored multi-mode double core (MMF) Under communication distance $\geq$ 100m
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Table 7 Cable checklist of 2\*power cabinet 240kW in parallel with 2\*dual CCS1 (300A) user unit

**2.5.6 Cable checklist of 2\*power cabinet 240kW in parallel with 2\*dual CCS1 (200A) user unit**

No.	From	To	Cable model	Quantity	Remarks
1	Power distribution box	Power cabinet#1&#2	300 kcmil rated voltage 0.6kV (copper)	12	L1 & L2 & L3 Dual cable for each phase
2	Power distribution box	Power cabinet#1&#2	2AWG rated voltage 0.6kV (copper)	2	PE
3	Power distribution box	Power cabinet#1&#2	2AWG rated voltage 0.6kV (copper)	2	Neutral line (optional)
4	Power cabinet#1	Power cabinet#2	400 kcmil rated voltage 1kV(copper)	4	DC5+&- of power cabinet #1 to DC1+&- of power cabinet#2 Dual cable for each phase
5	Power cabinet#1	Power cabinet#2	2C*20 AWG twisted shielded pair	1	CAN_H&CAN_L&CAN_G
6	Power cabinet#1	Power cabinet#2	Network cable (cat6e)	1	Under communication distance≤100m
7	Power cabinet#1	Power cabinet#2	2AWG rated voltage 0.6kV (copper)	1	PE
8	Power cabinet#1	User unit#1	300 kcmil rated voltage 1kV (copper)	4	2 for CCS1-A (DC+& DC-) 2 for CCS1-B (DC+& DC-)
9	Power cabinet#1	User unit#1	2AWG rated voltage 0.6kV (copper)	1	PE
10	Power cabinet#1	User unit#1	2*14AWG	1	AC480V power cable L+L
11	Power cabinet#2	User unit#2	300 kcmil rated voltage 1kV (copper)	4	2 for CCS1-A (DC+& DC-) 2 for CCS1-B (DC+& DC-)
12	Power cabinet#1	User unit#1	2AWG rated voltage 0.6kV (copper)	1	PE
13	Power cabinet#2	User unit#2	2*14AWG	1	AC480V power cable L+L
14	Power cabinet#1	User unit#1	Network cable (cat6e)	1	Under communication distance≤100m
15	Power cabinet#1	User unit#1	Network cable (cat6e)	1	Under communication distance≤100m
16	Power cabinet#1	User unit#1	Optical fiber SC-SC (with connector YFOC-M-SC, SC Multi-mode 50/125um connector)	1	Armored multi-mode double core (MMF) Under communication distance≥100m
17	Power cabinet#1	User unit#1	Optical fiber SC-SC (with connector YFOC-M-SC, SC Multi-mode 50/125um connector)	1	Armored multi-mode double core (MMF) Under communication distance≥100m

**Table 8 Cable checklist of 2\*power cabinet 240kW in parallel with 2\*dual CCS1 (200A) user unit**

## 2.6 Requirements for concrete foundation

The concrete foundation needs to be poured before the installation of charger. The size of the concrete foundation of 240kW power cabinet is 1250mm\*950mm\*600mm, and the depth of foundation is 400mm, with 200mm above the ground. The concrete foundation size of the user unit is 950mm\*600mm\*600mm, and the depth of foundation is 400mm, with 200mm above the ground. The specific size can be adjusted according to customer needs and actual conditions on site. The requirements for concrete foundation inspection are as follows:

- (1) Correct it based on the ground level when pouring the foundation.
- (2) The necessary maintenance channels shall be reserved on site depending on the specific space.
- (3) The concrete strength grade of the foundation is  $\geq 4000$  (consider using impermeable concrete in the areas with wet soil).
- (4) Cable inlet holes shall be reserved on the concrete foundation.
- (5) After the foundation is completed, test the levelness with a spirit level.
- (6) M12 anchor bolts shall be used for fixing and pre-embedding, and they shall be pre-embedded into the concrete foundation in advance according to the drawing positioning, with 30-40mm thread on the upper surface of concrete foundation exposed.
- (7) The top view of the concrete foundation of 180kW (single cabinet) power cabinet is shown in Figure 1, and the installation three views are shown in Figure 2.

Anchor bolt 4-M12\*150 (Length is 150mm, 4 pieces)

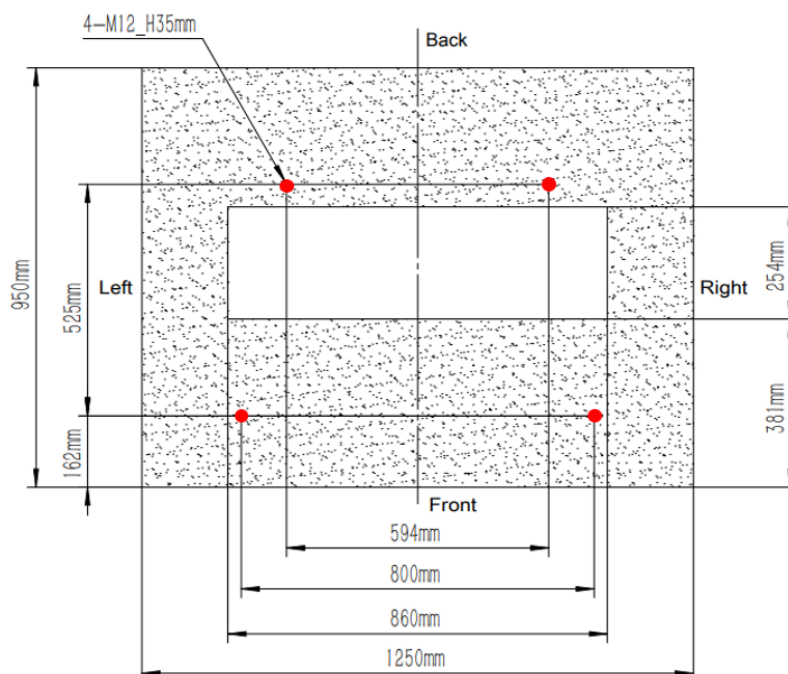


Figure 1 Top view of concrete foundation of 240kW power cabinet

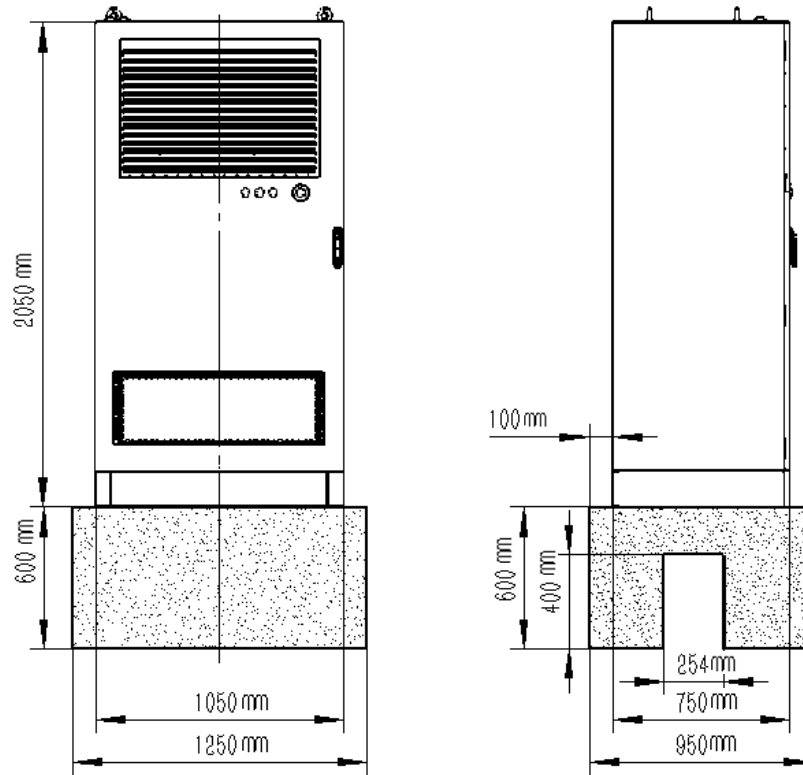


Figure 2 Installation three views of 240kW power cabinet

(8) The top view of the concrete foundation at user unit is shown in Figure 3, and the installation three views are shown in Figure 4.

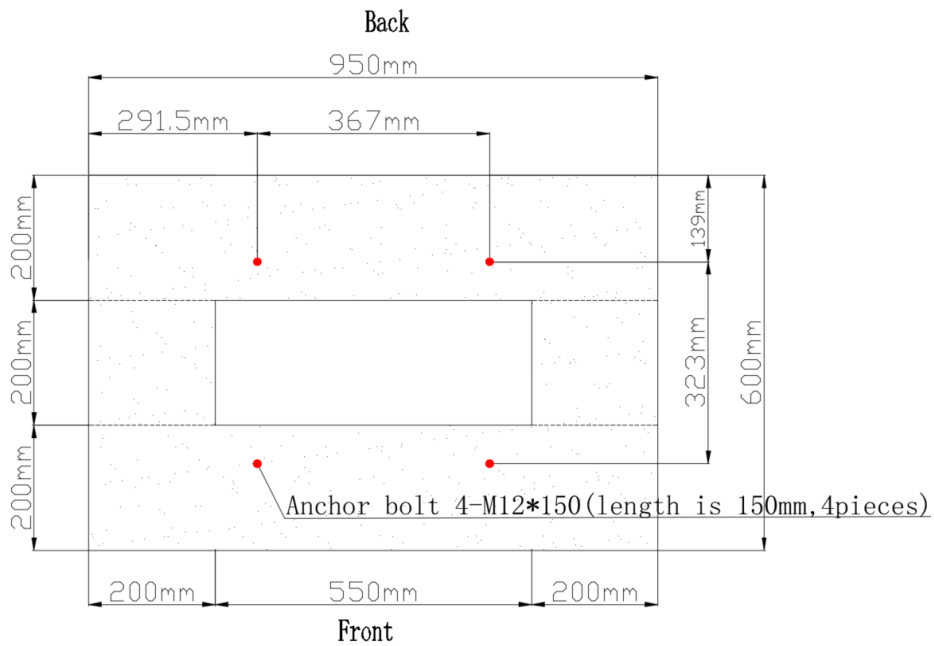


Figure 3 Top view of concrete foundation of user unit

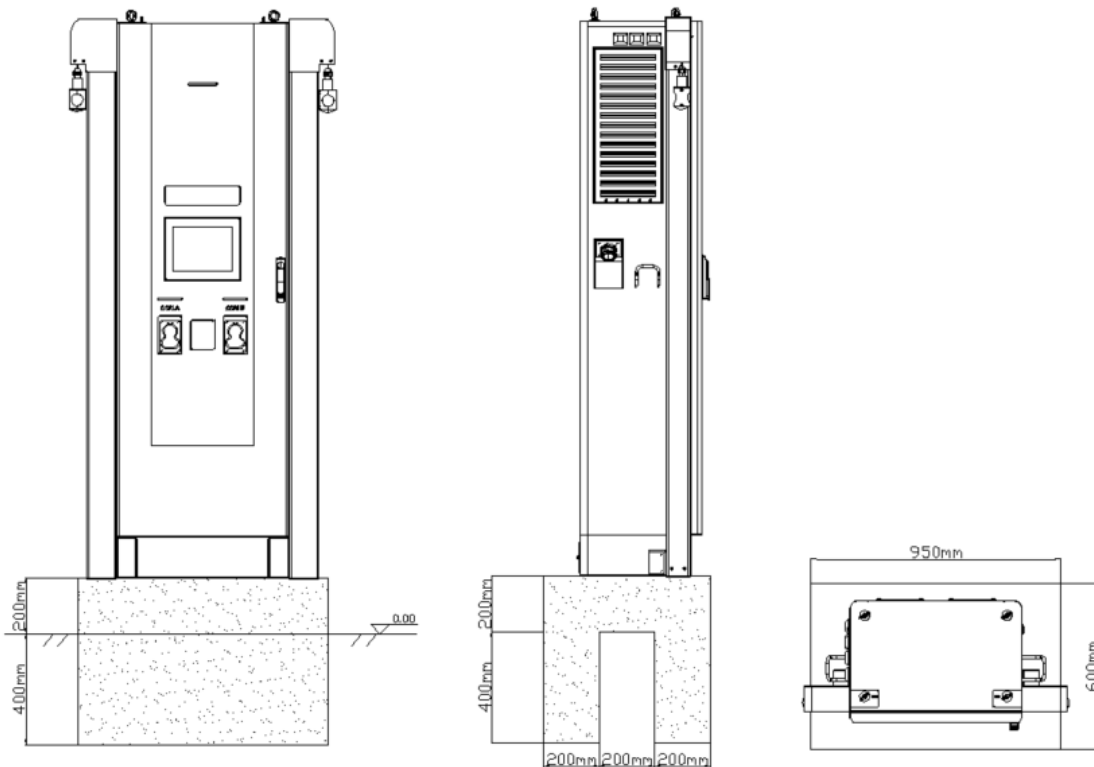


Figure 4 Installation three views of the user unit



## 2.7 Equipment spacing requirements

### 2.7.1 Inspection distance requirements

When the back or side of the charger to be installed is near a wall or other obstacles, a certain inspection distance is required. Please refer to the figure below for details.

(1) The inspection distance requirement for 240kW power cabinet is shown in Figure 5:

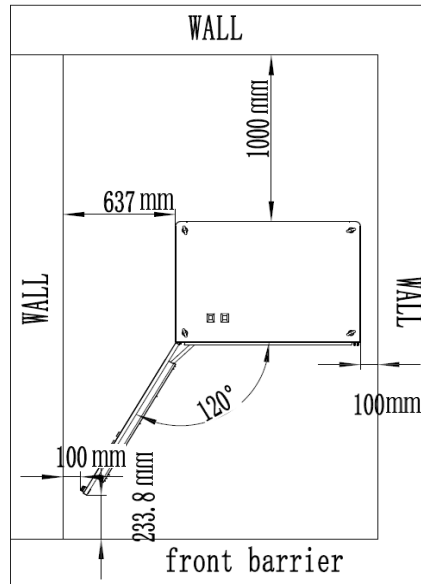


Figure 5 Schematic diagram of inspection distance of 180kW power cabinet

(2) The requirements for inspection distance of user unit are shown in Figure 6:

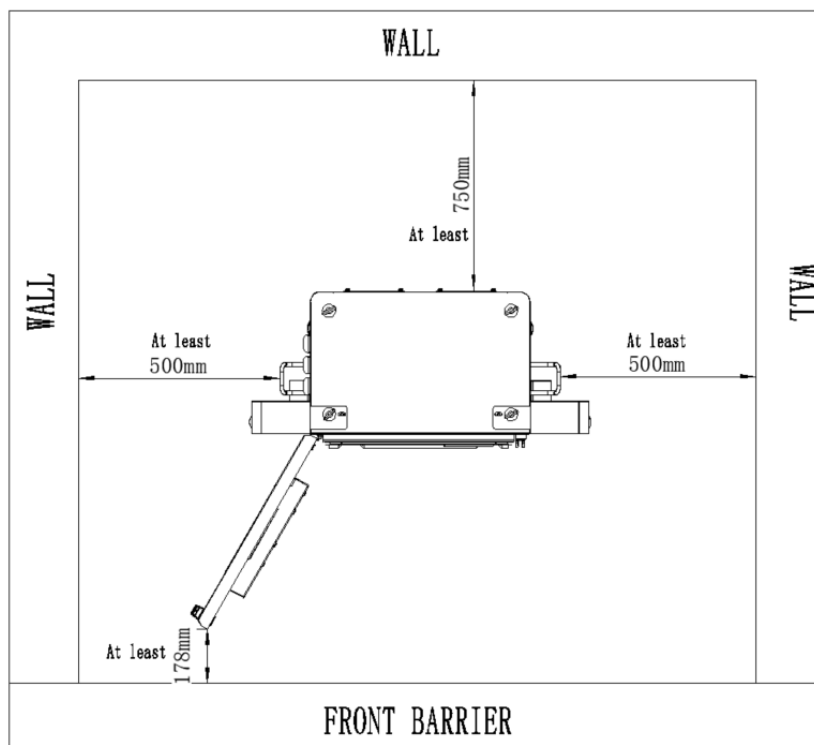


Figure 6 Schematic diagram of inspection distance of user unit

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### 2.7.2 Requirements for distance between the user unit and power cabinet

If the distance between the power cabinet and the user unit is more than 100 meters, the optical fibers should be used for communication.

If the distance between the power cabinet and the user unit is less than 100 meters, the Ethernet cable should be used for communication and the Ethernet cable should be at least cat6a.

### 2.8 Current and distribution capacity requirements

If the charging system of 240kW runs at full power, the capacity provided by the upstream transformer to the system should be  $\geq 250\text{KVA}$ , the maximum input current of power cabinet is 342A when input with full power.

### 2.9 Grounding/Insulation resistance requirements

(1) Check the test report of grounding resistance of civil construction, and ensure that the resistance value of grounding grid made on site is  $\leq 4\Omega$ .

(2) Check the test report of civil construction insulation resistance, to ensure that the insulation resistance value of cable is  $\geq 10\text{M}\Omega$ .



Reminder: The above requirements are the minimum requirements for equipment, and the specific standards are subject to local laws and regulations.

### 3. Installation steps

#### 3.1 Unpacking and inspection

##### 3.1.1 Unpacking list

Name	Packing	Configuration	Packaging sizes (mm)	Weight (kg)	Accompanying documents	List of accessories
Power cabinet	Wooden case	Standard configuration	1162*862*2220	450	1. User Manual 2. Delivery Inspection Report 3. Certificate of Conformity	2*key
User unit	Wooden case	Standard configuration	1160*790*2225	240	None	2*key for ventilation window, 1*key for door
Power module	Wooden case	Standard configuration	800*595*880	135	None	None

Table 9 Unpacking list

##### 3.1.2 Unpacking and inspection

- (1) Check the packing list number and equipment quantity.
- (2) Check the equipment nameplate information.
- (3) Check whether the accompanying documents are complete.
- (4) Check whether the spare parts and accessories are complete.
- (5) Check the delivery inspection report and certificate.
- (6) Check whether the appearance of equipment is good, and whether there are any deformations, bumps, stains and other defects.

##### 3.1.3 Precautions for unpacking

- (1) The installation personnel shall unpack the package in the presence of the owner and fill in the unpacking record in detail. See Appendix 1 for the unpacking record form.
- (2) After passing the unpacking inspection, the owner's representative shall sign on the equipment unpacking record form for confirmation.
- (3) If any problems are found in the process of equipment unpacking and acceptance, make records and wait for the negotiation between the owner and the supplier.

### 3.1.4 Inspection before installation

The installation personnel need to complete the confirmation and check before installation, see Appendix 2 for details.

## 3.2 Equipment installation

### 3.2.1 Power cabinet installation

The installation diagram of power cabinet base is shown in Figure 7:

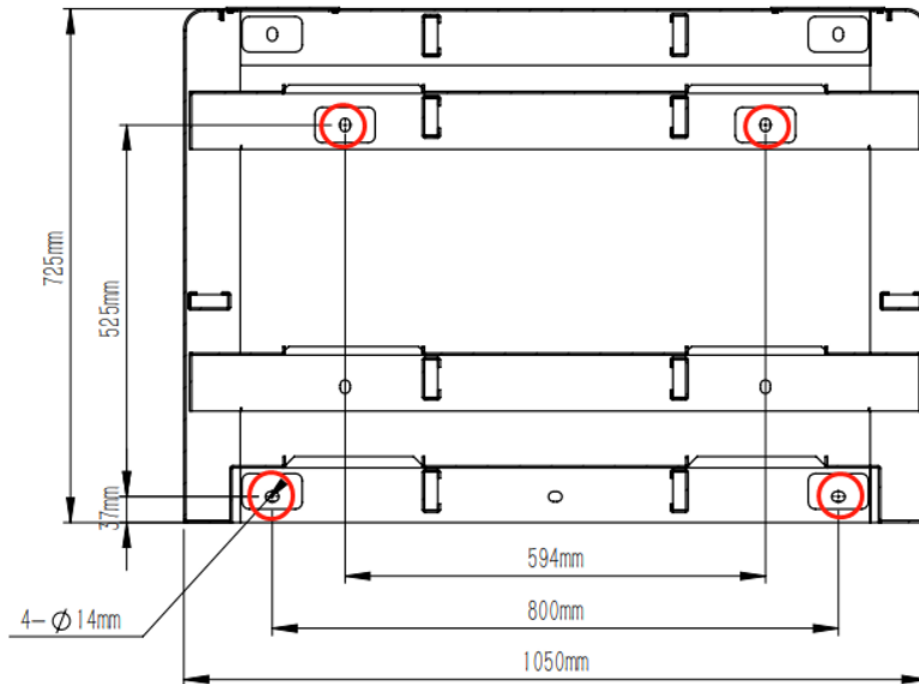


Figure 7 Installation diagram of the power cabinet base

(1) Remove the sealing plates in the front and back of the base of the power cabinet.

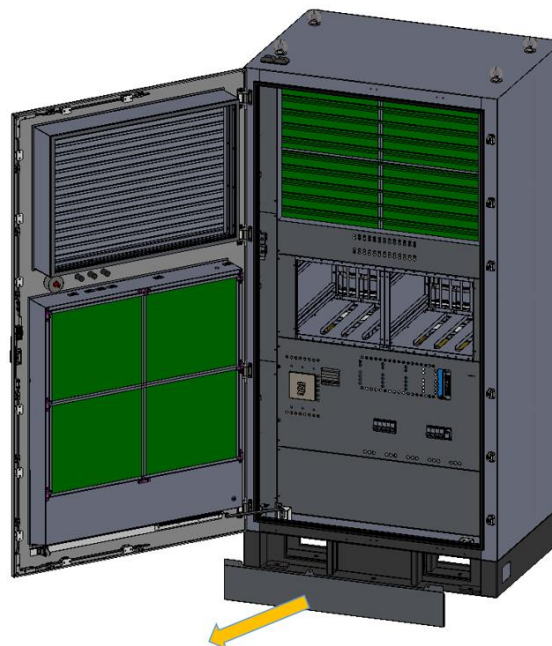


Figure 8 Diagram of removing the sealing plates of the base

(2) Remove two plates from front side as shown in Figure 9.

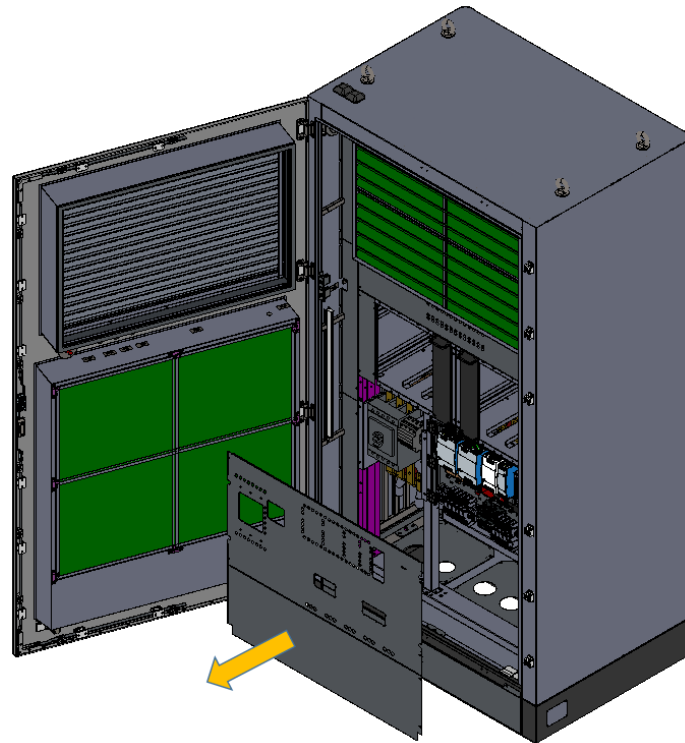


Figure 9 Diagram of removing the plates from front side

(3) Remove plates for AC and DC cable inlets.

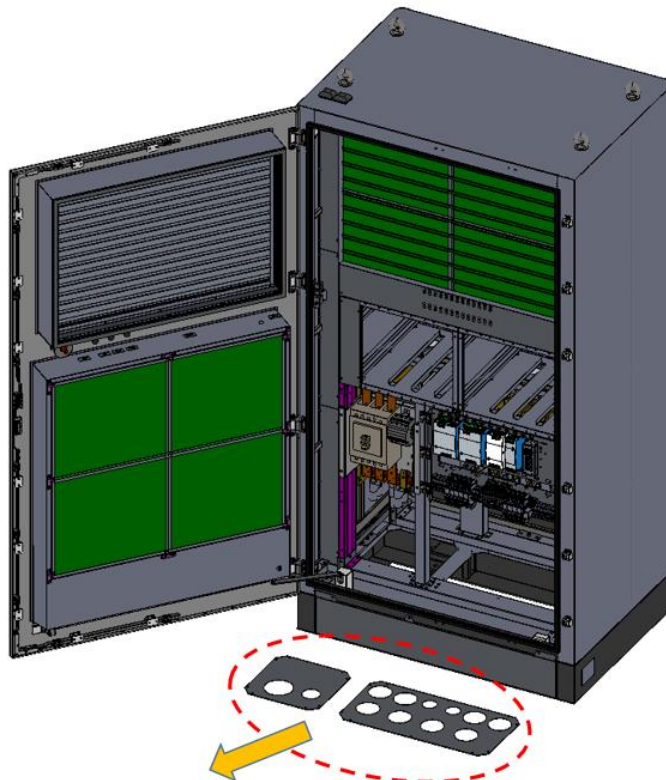


Figure 10 Diagram of removing the plates for AC and DC cable inlets

(4) Close the front door then hoist the power cabinet to the installation position of base with a crane. Please take care to protect the surface of equipment from damage during transportation.

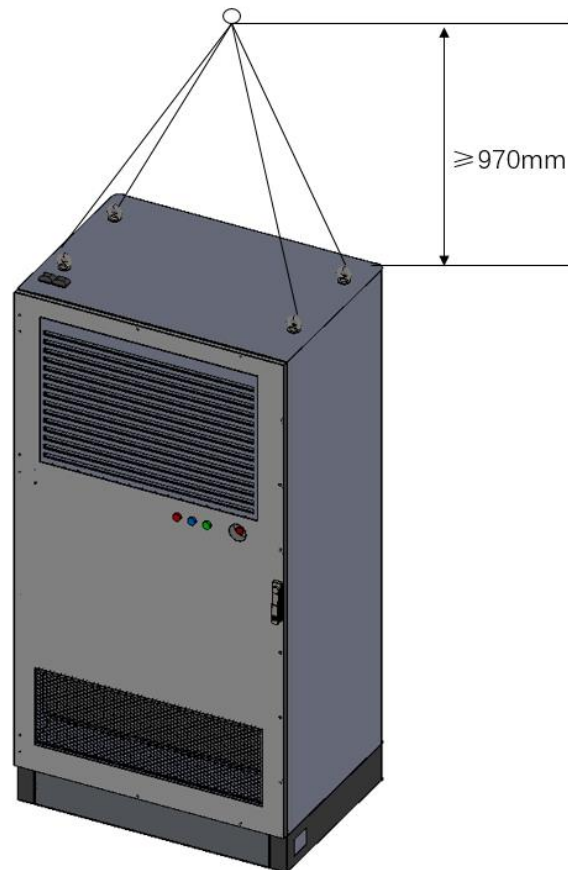


Figure 11 Schematic diagram of hoisting the power cabinet

(5) Make the anchor bolts on the concrete foundation insert into the mounting holes at the bottom of the charger and fix the power cabinet on the concrete foundation with M10 nuts, then restore the sealing plates on both sides after fixing.

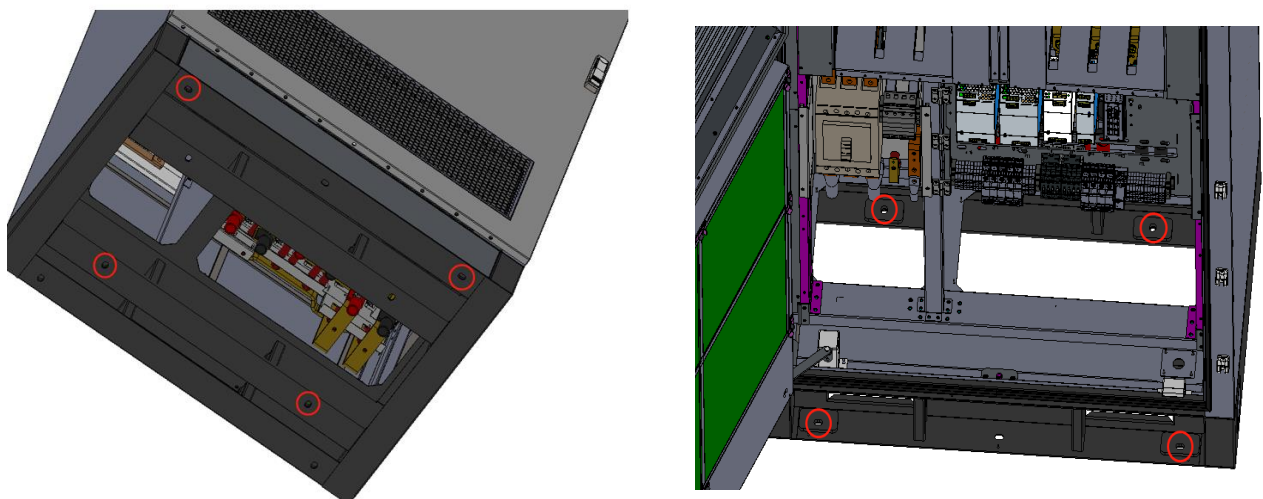


Figure 12 Schematic diagram of fixing power cabinet

(6) The cables are led in from the bottom of cabinet, and the cable inlet holes at the bottom of cabinet are shown in Figure 13, and then the cables will be connected to the corresponding cable terminals.

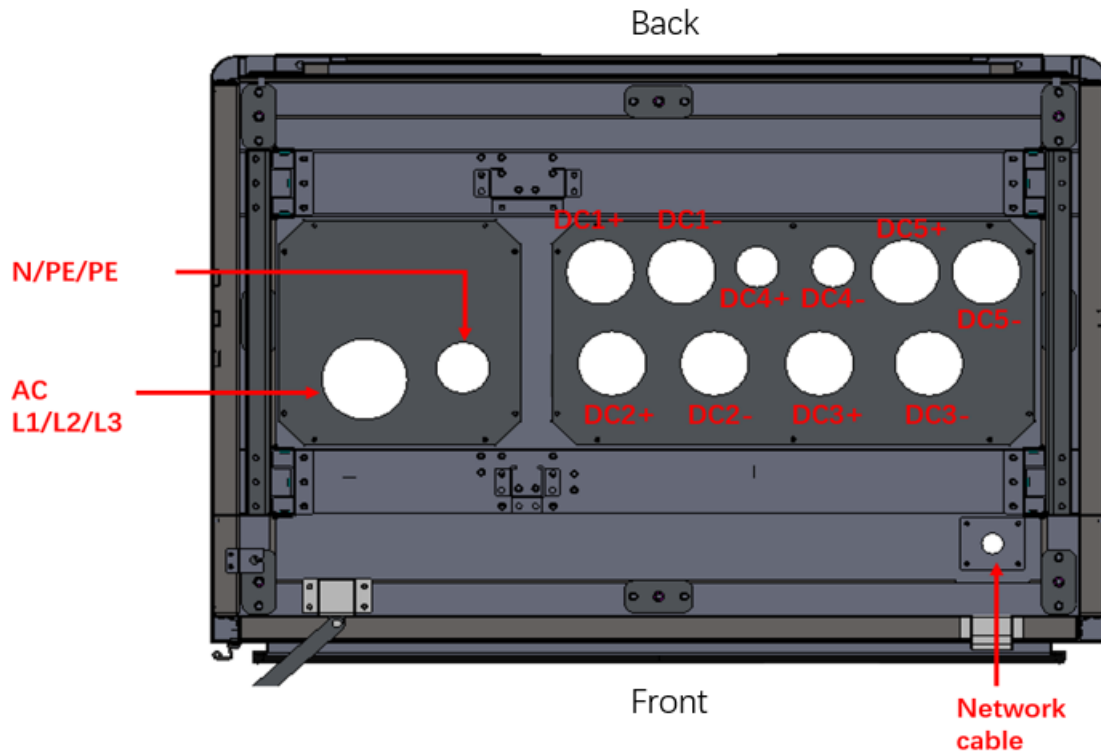


Figure 13 Cable inlet holes at the bottom of power cabinet

### 3.2.2 User unit installation

The installation diagram of the user unit base is shown in Figure 14:

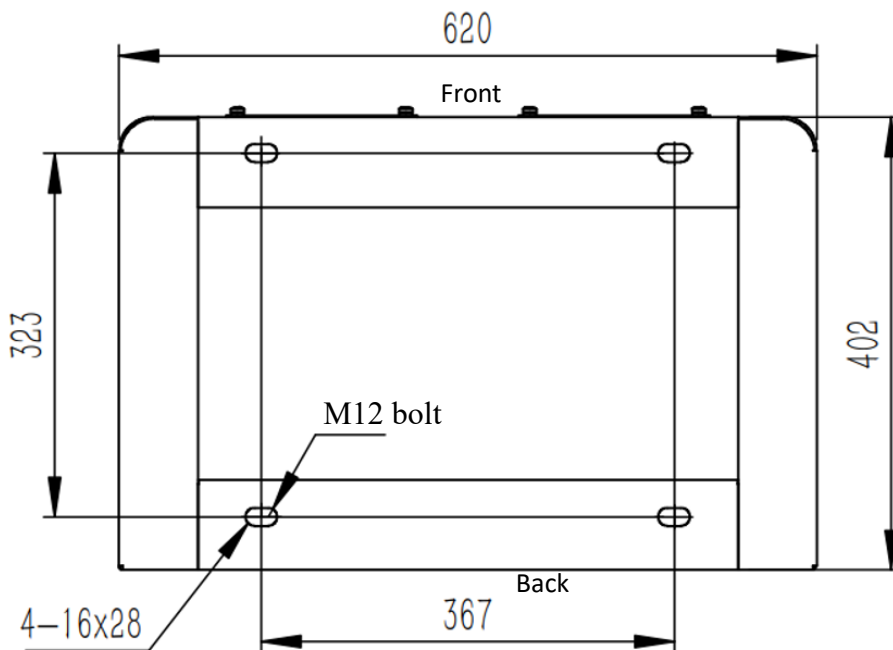


Figure 14 Installation diagram of the user unit base

**Installation steps:**

(1) Remove the sealing plates in the front and back of the base of the user unit.

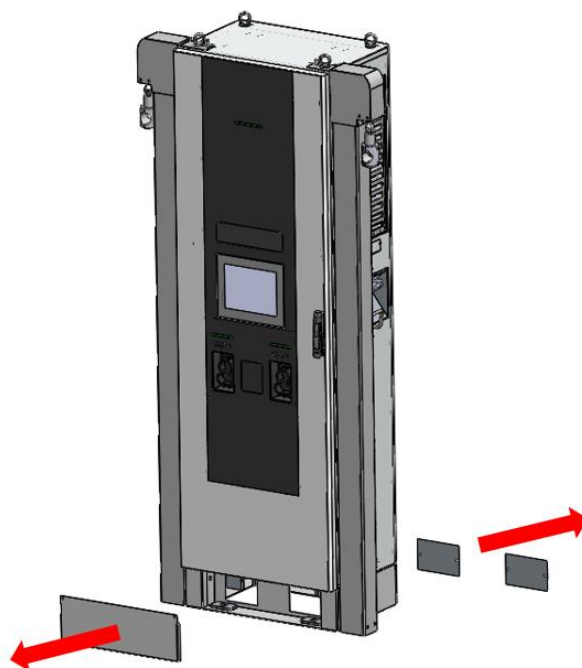


Figure 15 Schematic diagram of removing the user unit sealing plates

(2) Lift the power cabinet to the installation position with a crane. Please take care to protect the surface of equipment from damage during transportation.

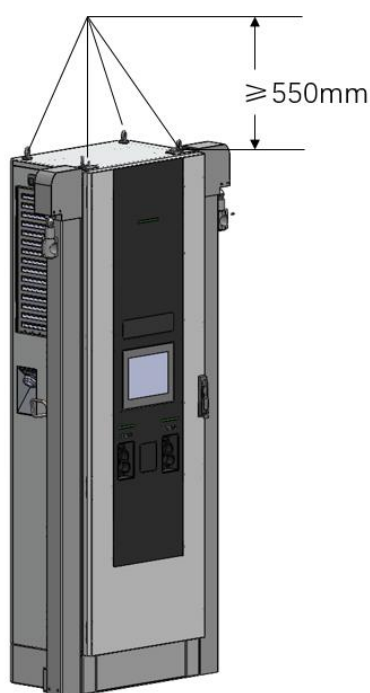


Figure 16 Schematic diagram of hoisting user unit



(3) If the cable retractors are equipped, remove two at the bottom of cable retractors then the user unit is lifted up to release the counter weight blocks.

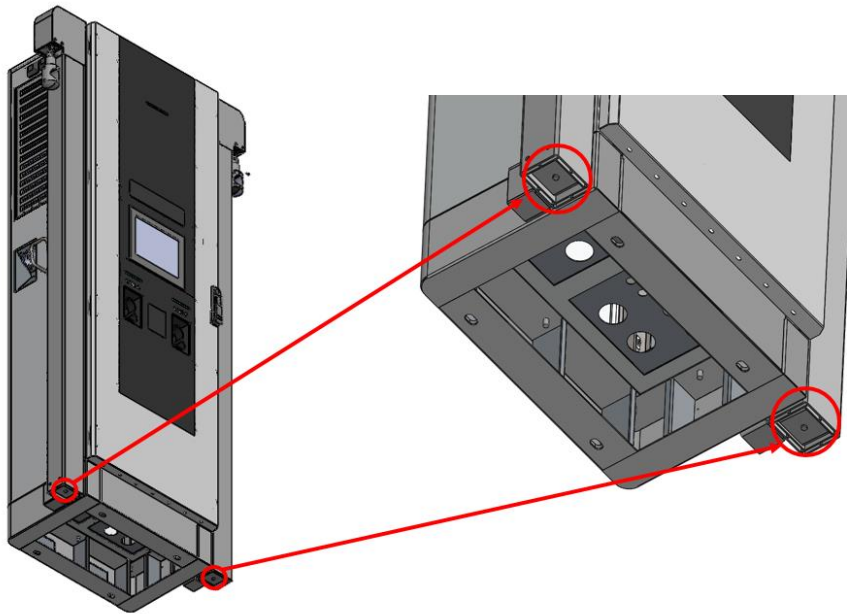


Figure 17 Schematic diagram of releasing counter weight blocks

(4) Fix the user unit to the concrete foundation with M12 bolts, and restore the sealing plates on both sides after fixing.

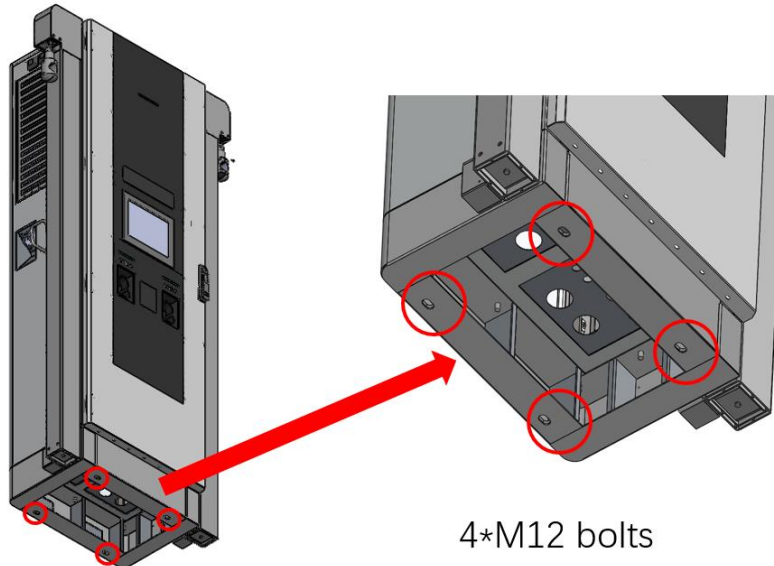


Figure 18 Schematic diagram of fixing user unit

(5) The cables are led in from the bottom of the user unit, and the cable inlet holes at the bottom of cabinet are shown in Figure 19, and then they will be connected to the corresponding cable terminals.

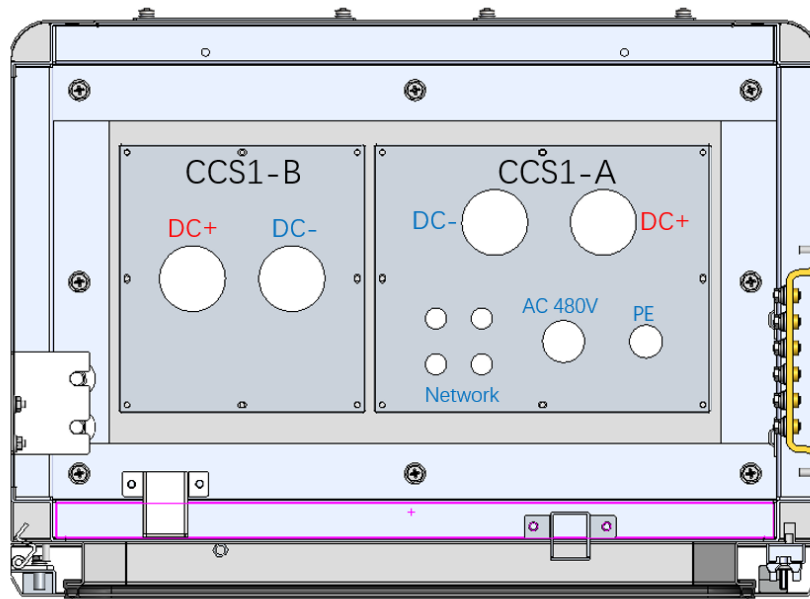


Figure 19 Cable inlet holes at the bottom of user unit

(6) If cable retractors are equipped. Fix the charging cable with the clamp on cable management system, as shown in Figure 20.

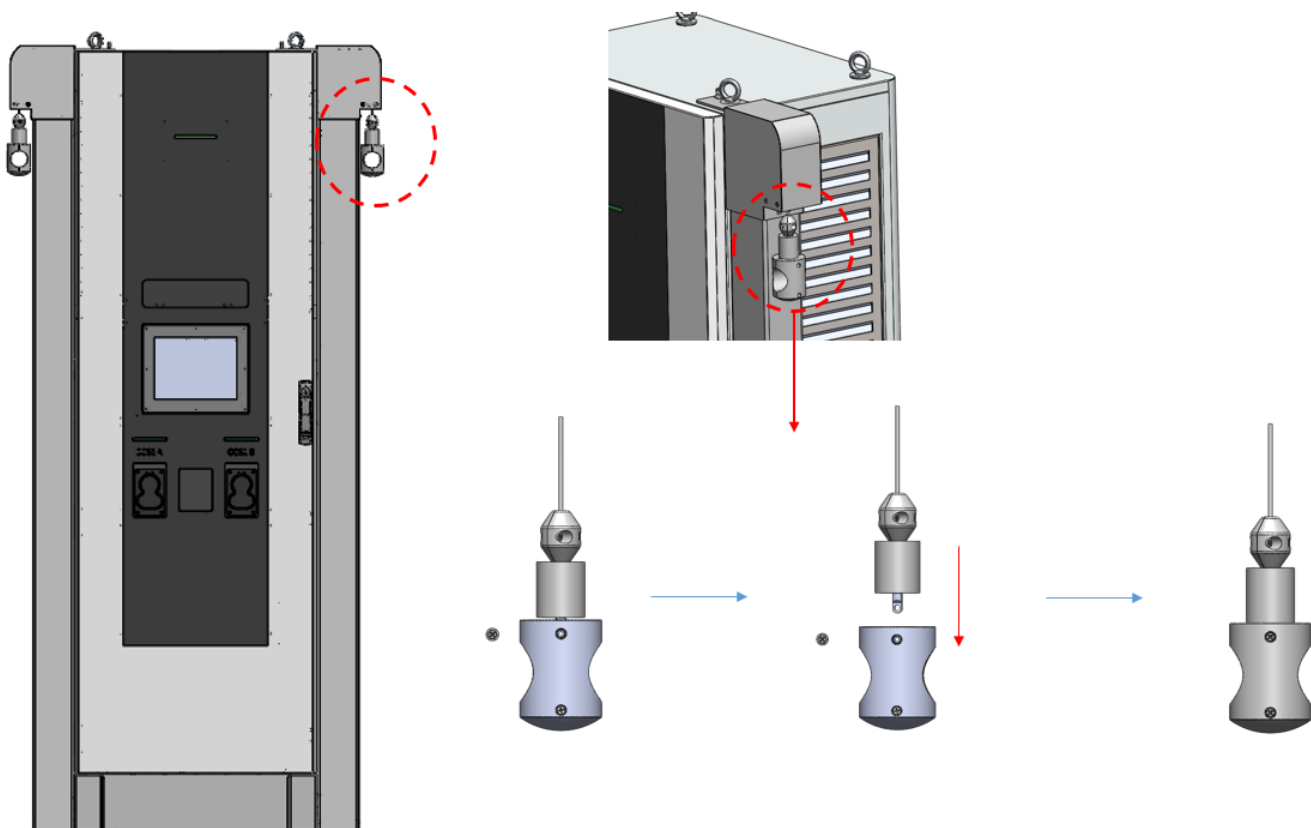


Figure 20 Schematic diagram of fixing charging cable

### 3.2.3 Electrical wiring for single power cabinet system

(1) AC power cable wiring of power cabinet: Connect the power cable to the wiring copper busbar in the power cabinet. The wiring copper busbar is shown in Figure 21. The neutral line is optional.

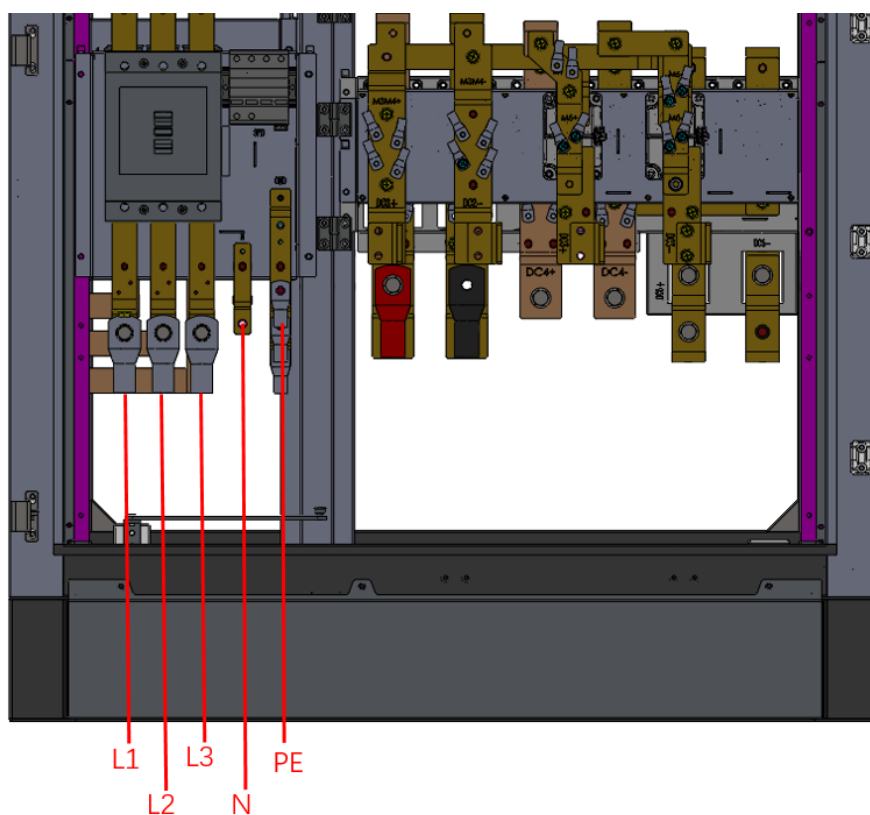


Figure 21 Schematic diagram of AC power copper busbar in the power cabinet

(2) DC copper busbar wiring: There are 5 groups of DC+/DC- outlet copper busbars in the power cabinet as shown in Figure 22 that will be connected to the user unit through the power cable.

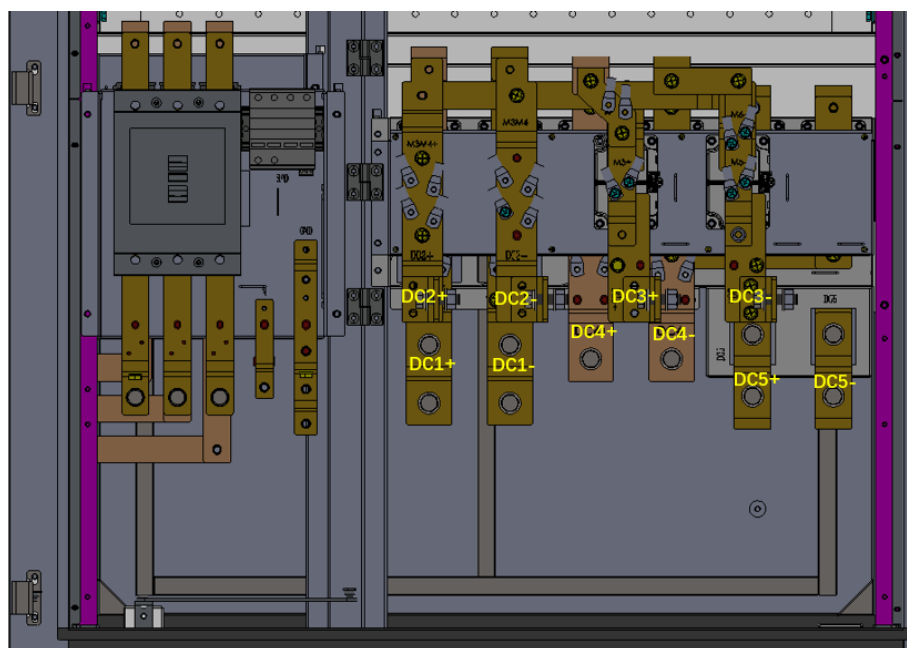


Figure 22 DC+ and DC- copper busbars of the power cabinet

a) If the system has two connectors, the sequence is as follows: DC1+&DC1- connect to CCS1-A (user unit 1), DC3+&DC3- connect to CCS1-B (user unit 1). The PE copper busbar of the power cabinet also needs to be connected to the PE copper busbar in the user unit.

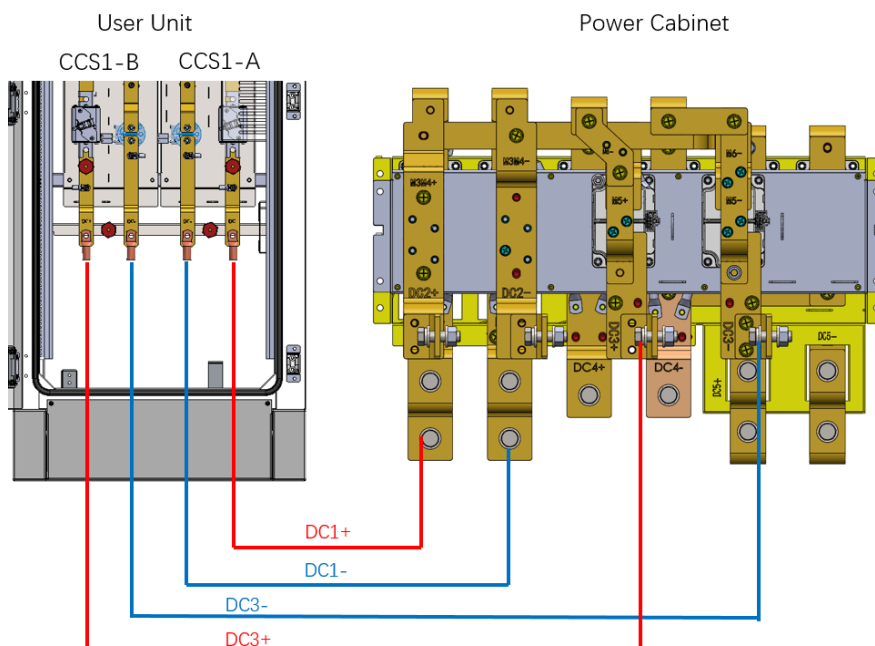


Figure 23 DC connection between the power cabinet and the user unit

b) If the system has four connectors, the sequence is as follows: DC1+&DC1- connect to CCS1-A (user unit 1), DC2+&DC2- connect to CCS1-B (user unit 1), DC3+&DC3- connect to CCS1-A (user unit 2), DC4+&DC4- connect to CCS1-B (user unit 2), DC5+&DC5- connect to another power cabinet for the combination. The PE copper busbar of the power cabinet also needs to be connected to the PE copper busbar of the user unit.

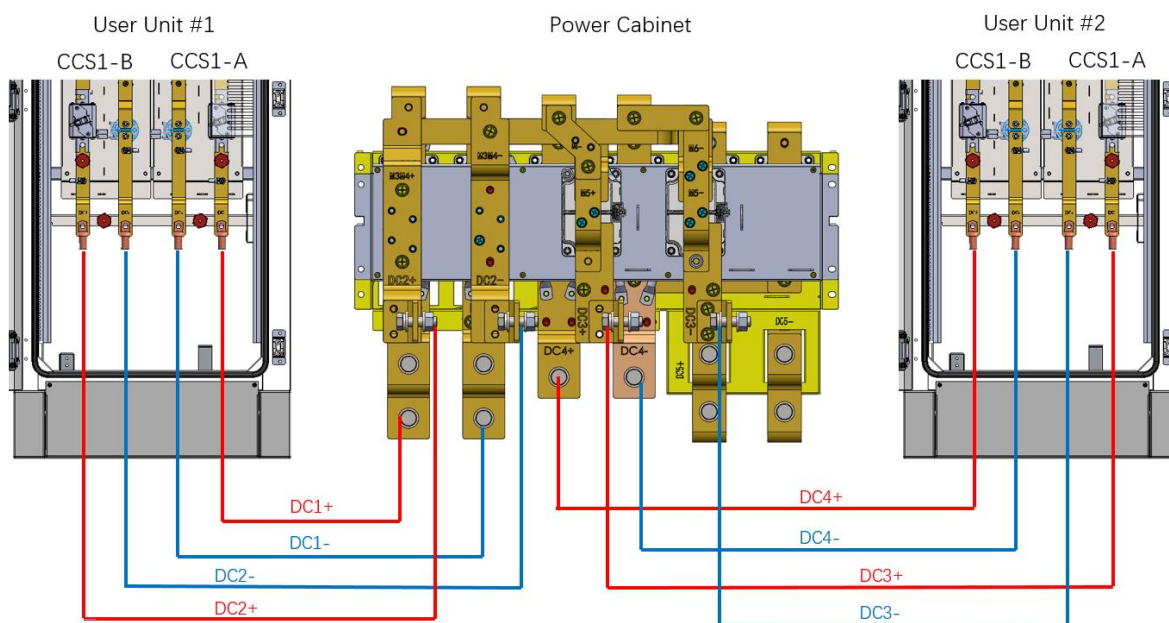


Figure 24 DC connection between the power cabinet and user unit

(3) Connection of AC480V power cable: Connect the 480V power outlet MCB of the power cabinet to the 480V inlet terminal of the user unit with a laid cable.

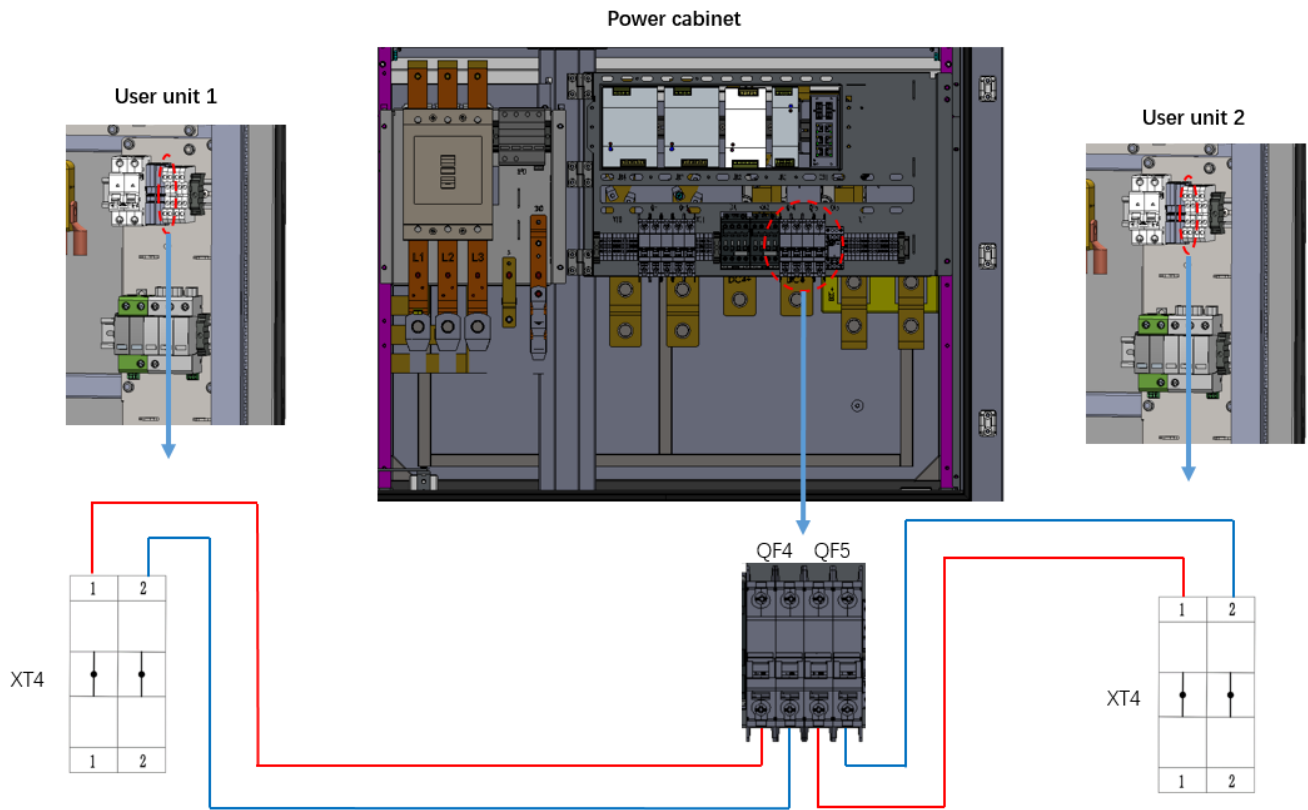


Figure 25 Wiring schematic diagram of AC480V power supply

(4) Connection of network: Connect the switch in the power cabinet to the switch in the user unit with a network cable, crimp the laid network cable with RJ45 connectors, and insert them into the network port of the switch in the power cabinet and the network port of the switch in the user unit respectively, as shown in Figure 26;

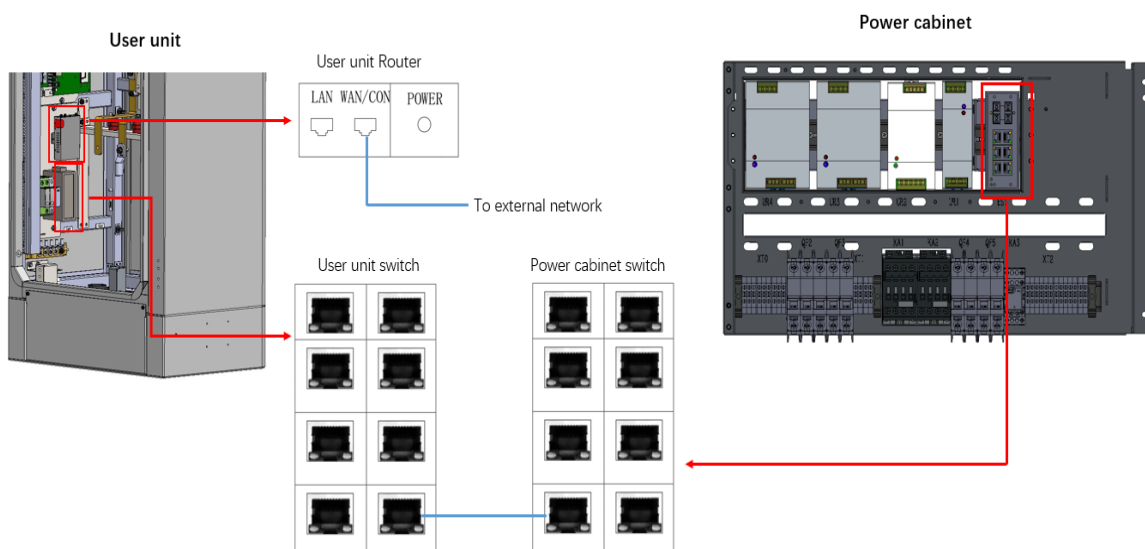


Figure 26 Schematic diagram of network cable connection of single power cabinet system

### 3.2.4 Electrical wiring for dual power cabinet system

(1) For dual cabinet in parallel solution, modification needs to be done on both power cabinets follow the instruction below.

- a) Use M16 tamper-resistant Torx screwdriver to remove 8 screws of lower back door. Then open that door carefully since the door is connected to cabinet with the PE cable.

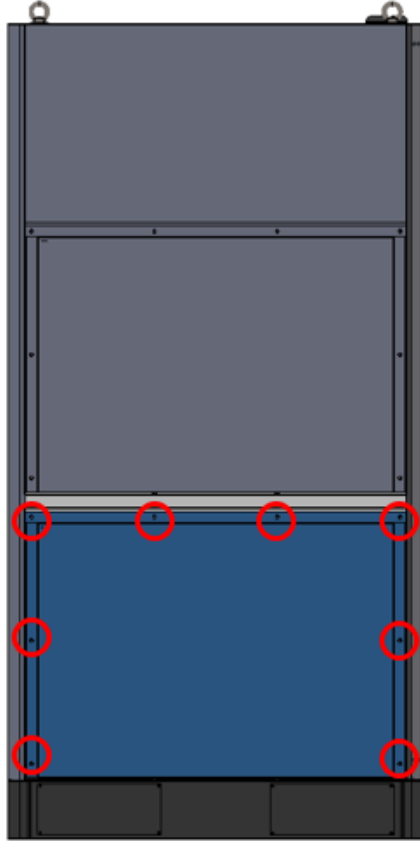


Figure 27 DC connection between the power cabinet and user unit

- b) Use M8 socket wrench to remove 8\*M8 bolts on DC+ and DC- busbars. Then remove the 2 busbars from the power cabinet.

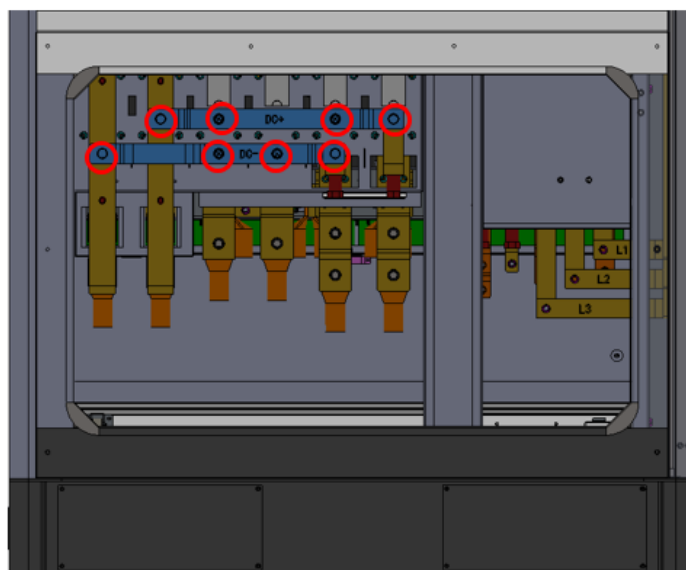


Figure 28 DC connection between the power cabinet and user unit

c) Install the lower back door on the power cabinet, apply 4-4.9Nm on each screws.

(2) AC power cable wiring of power cabinet: Connect the power cable to the wiring copper busbar in both power cabinets. The wiring copper busbar is shown in Figure 29. The neutral line is optional.

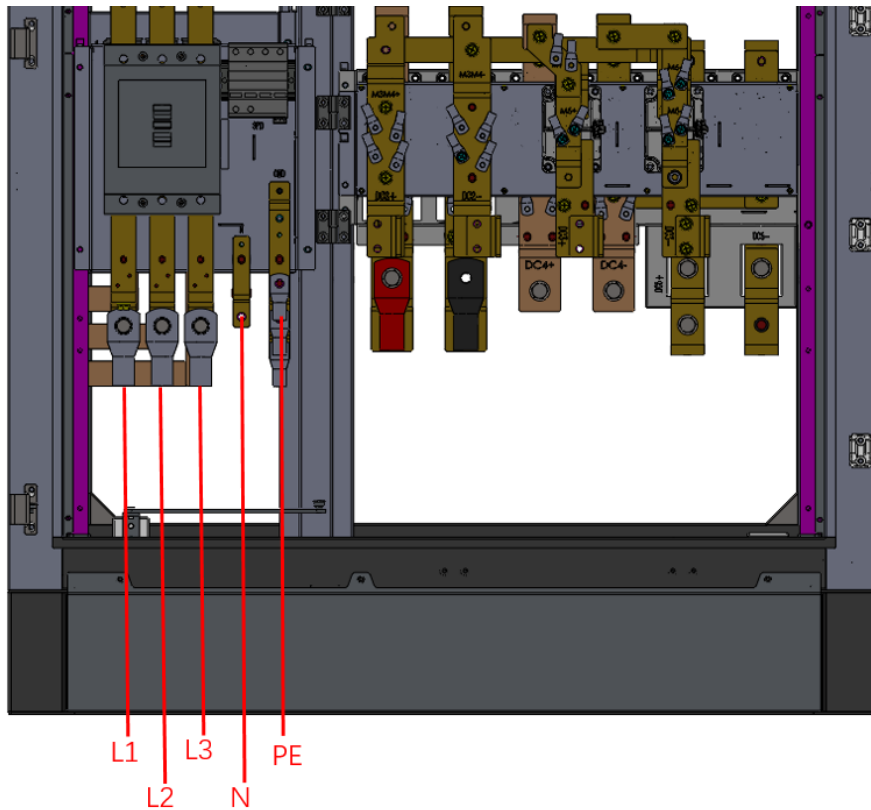


Figure 29 Schematic diagram of AC power copper busbar in power cabinet

(3) DC power cable wiring between power cabinets: There are 5 groups of DC+/DC- outlet copper busbars in the power cabinet as shown in Figure 30 which connect to user units. For power cabinet in parallel, connect DC5 of power cabinet #1 to DC1 of power cabinet #2, PE of power cabinet #1 to PE of power cabinet #2.

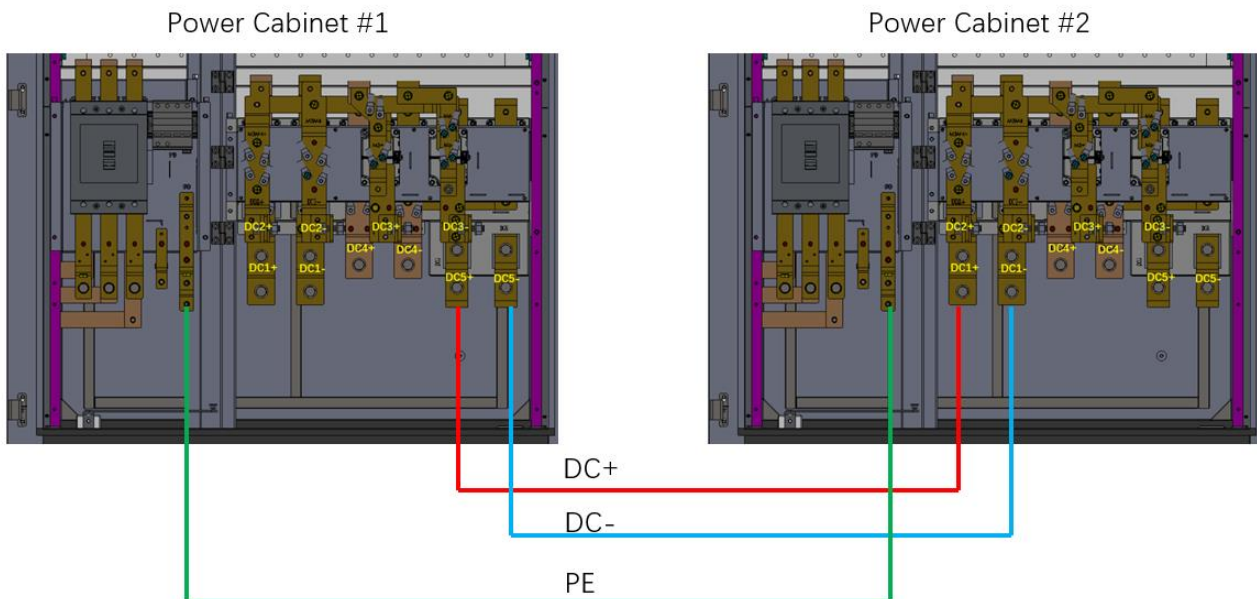


Figure 30 DC cable wiring for two power cabinet in parallel

(4) DC power cable wiring between **user unit #1** and **power cabinet #1**: DC2+&DC2- connect to CCS1-A (user unit 1), DC3+&DC3- connect to CCS1-B (user unit 1). The PE copper busbar of the power cabinet also needs to be connected to the PE copper busbar in the user unit.

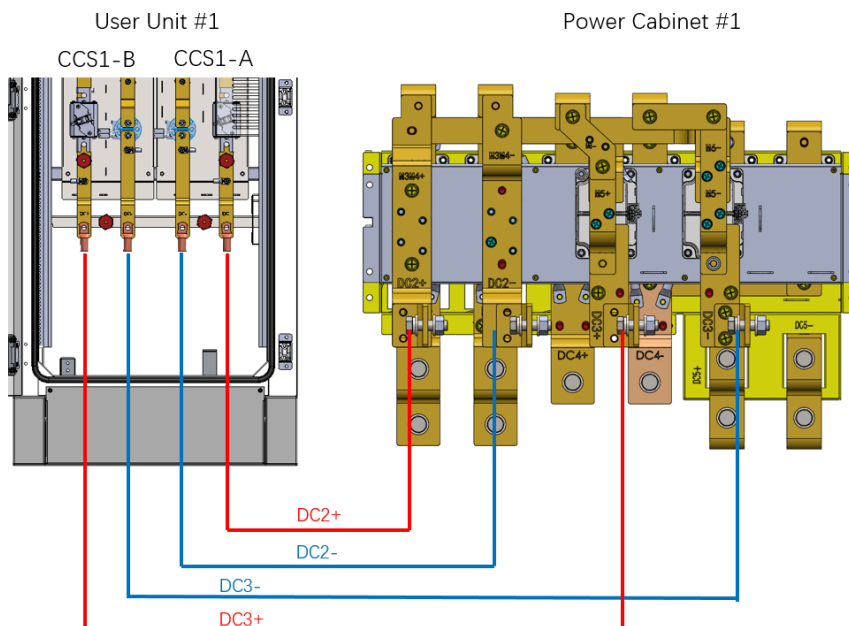


Figure 31 DC connection between the power cabinet #1 and user unit#1

(5) DC power cable wiring between **user unit #2** and **power cabinet #2**: DC2+&DC2- connect to CCS1-A (user unit 2), DC3+&DC3- connect to CCS1-B (user unit 2). The PE copper busbar of the power cabinet also needs to be connected to the PE copper busbar in the user unit.

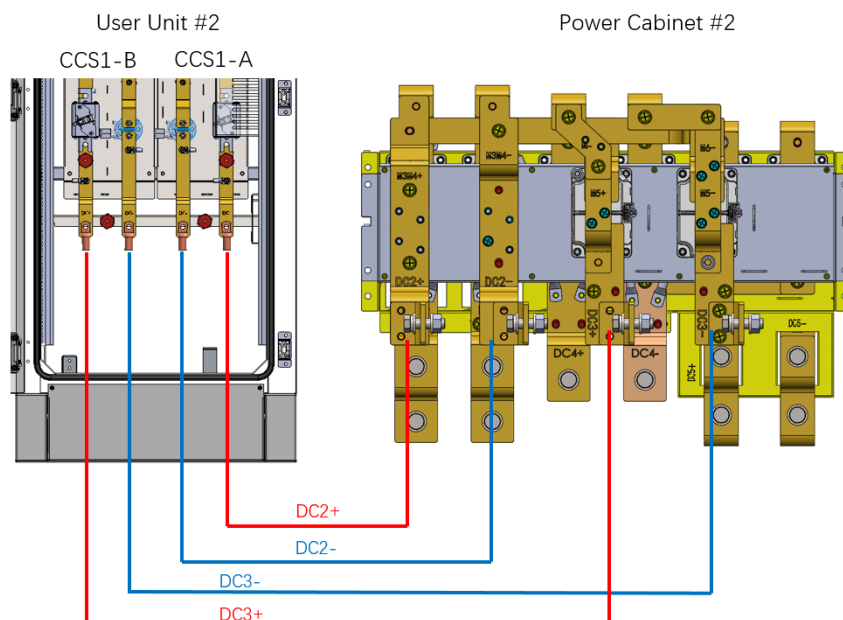


Figure 32 DC connection between the power cabinet #2 and user unit #2



(6) Connection of AC480V power cable: Connect the 480V power outlet MCB of the power cabinet to the 480V inlet terminal of the user unit with a laid cable. Two user units can be connected to the same power cabinet MCB (QF4 and Q5) or two separate power cabinet MCB (QF4).

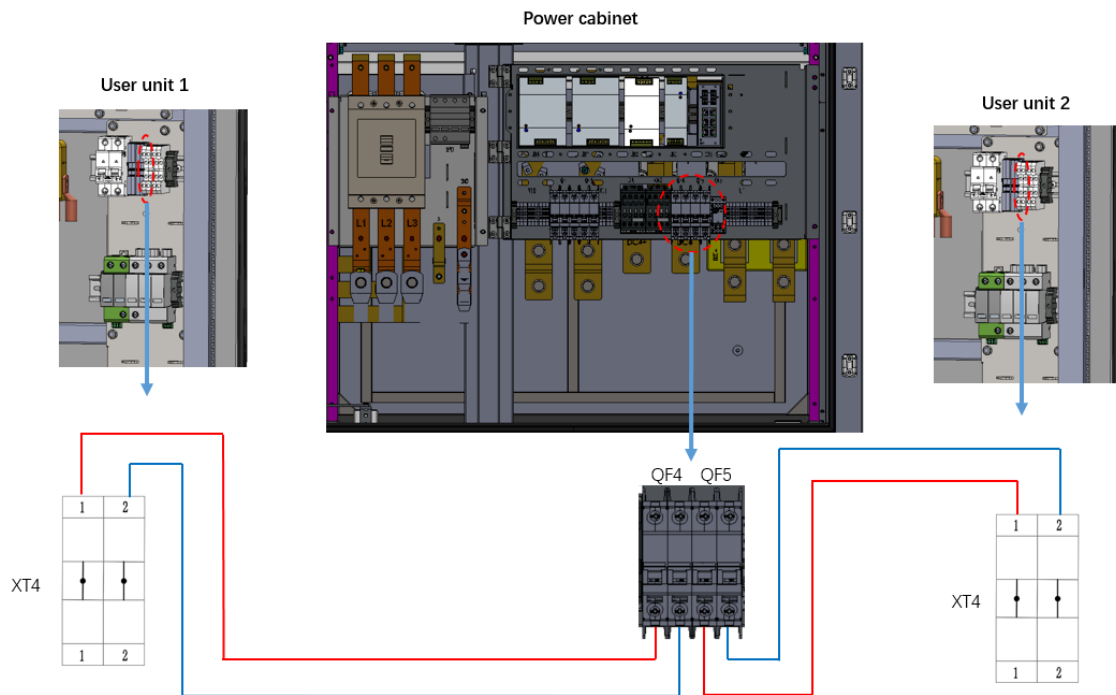


Figure 33 DC connection between the power cabinet and user unit

(7) Connection of network: Connect the switch in the power cabinet to the switch in the user unit with a network cable, crimp the laid network cable with RJ45 connectors, and insert them into the network port of the switch in the power cabinet and the network port of the switch in the user unit respectively, as shown in Figure 34.

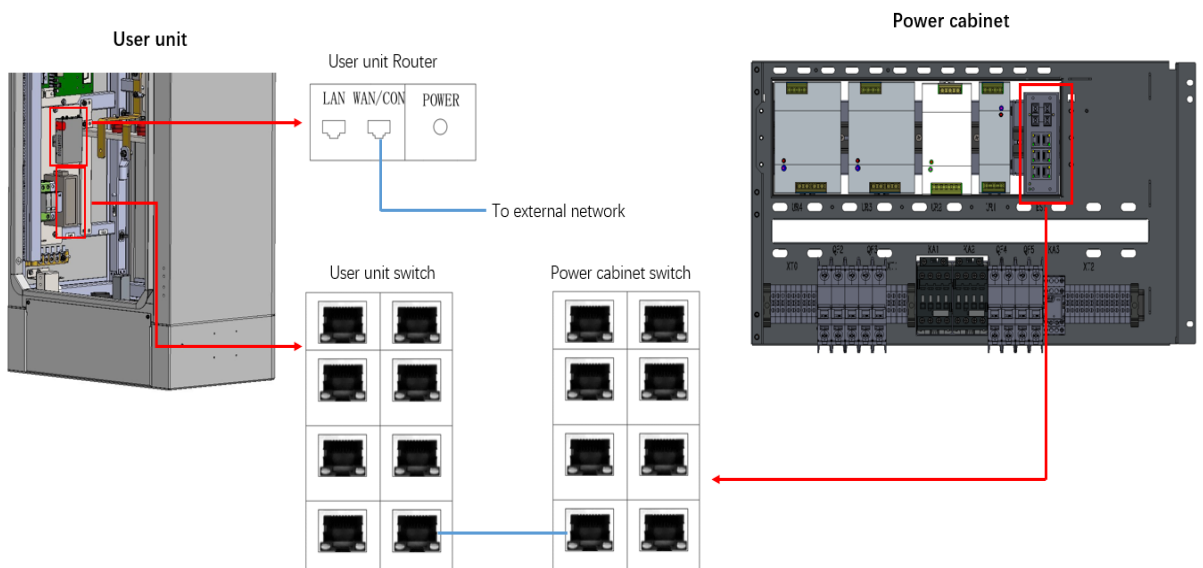


Figure 34 Schematic diagram of network cable connection of single power cabinet system

(8) Connection of CAN communication cable: Terminal 15-17 of XT-2 is for CAN communication cable between two power cabinets. Use a shielded twisted pair, connect XT2-15 of #1 to XT2-15 of #2, XT2-16 of #1 to XT2-16 of #2, use shield of the cable to connect XT2-17 of #1 to XT2-17 of #2.

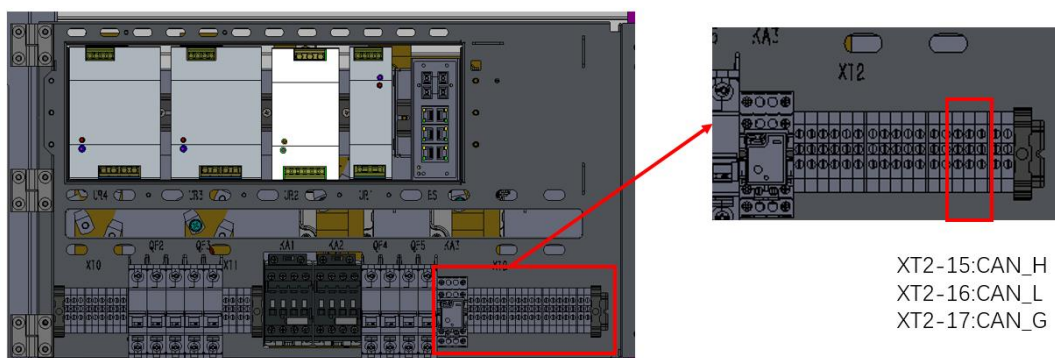


Figure 35 Schematic diagram of CAN communication cable connection of single power cabinet system

### 3.2.5 Installation of power modules

(1) Open the front door of the charger, and gently insert the power modules into the module slots as shown in Figure 36.



Figure 36 Installation of the power module

(2) Each module shall be secured with four M4\*12 cross screws.

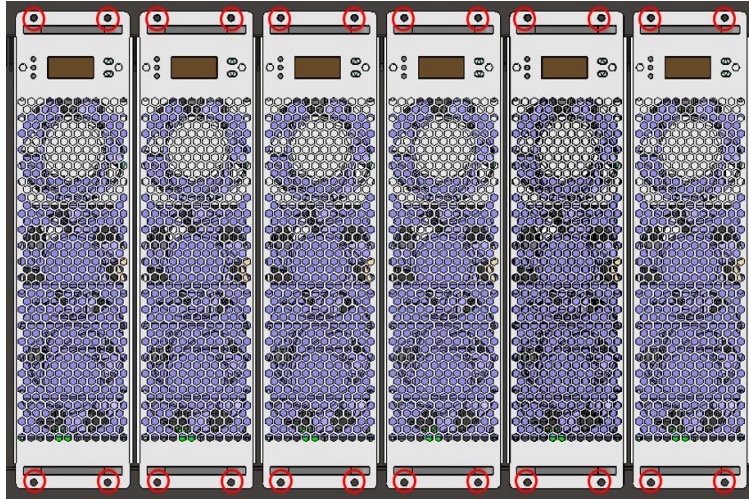


Figure 37 Screw fastening of the power module



Warning: The operation must be implemented in accordance with specifications and correct operation procedures, so as to prevent personal injuries or death.

---

## 4. Inspection after installation



Note: the live parts can only be operated by the engineers with relevant local qualifications.

### 4.1 Installation and wiring inspection

#### 4.1.1 Equipment and equipment fixing inspection

(1) The appearance of charging equipment shall clean and tidy without bumps or damages, its position shall be consistent with the base and fixed firmly without looseness.

(2) The orientation of equipment shall meet the installation standards.

(3) Missing parts shall be avoided.

(4) Levelness of installation meets the requirements.

#### 4.1.2 Cable laying and connection inspection

(1) Check whether the insulating jacket of cable is scratched or damaged.

(2) Check whether the power cable terminals are compliant and whether the wiring is firm.

(3) Check whether the wiring terminal of communication cable is correct and there is no looseness.

(4) Check whether there are hanging cable signs.

(5) Check whether the bending radius of cable meets the requirements.

(6) Check whether the ground wire is led to the grounding grid for each device.

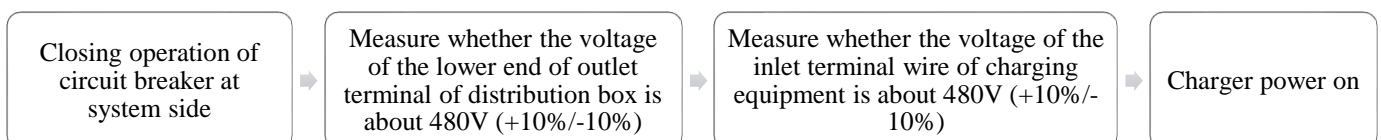
### 4.2 Check before power-on

(1) Short circuit: check the power cable of the low-voltage distribution cabinet connected to the charger, and check whether there is a short circuit between the three-phase wire, neutral wire and ground wire.

(2) Power voltage before power-on: before powering on the equipment, check whether the power voltage at the upper end of the MCCB in the low-voltage distribution cabinet is normal, and there is no phase lack, overvoltage, undervoltage, phase-sequence anomaly and other abnormalities.

### 4.3 Power-on inspection

(1) The equipment can only be powered on after confirming that the wiring of equipment is completed correctly. The power-on operation is as follows:



(2) Complete the overall installation.

## 5. Installation environment

Do not perform installation operations outdoor on rainy days.

<b>Ambient conditions</b>	<b>Recommended range</b>
Ambient temperature	-30°C to 55°C
Altitude	≤2000m
Humidity	5% to 95%RH, no condensation inside the product
Degree of dust	≤1mg/m <sup>3</sup>
Corrosive substances	No pollutants, such as salt, acid, smoke, etc.
Vibration	≤1.5mm/s <sup>2</sup>
Insects, pests, vermin, termites	None
Mold	None
Moisture	Rain prevention
Fire Prevention	No flammable substances on the top and bottom of cabinet

Table 9 Installation environment

## 6. Completion documents

<b>No.</b>	<b>Document name</b>	<b>Page</b>	<b>Document necessity</b>
1	Unpacking record form	1	√
2	Pre-installation Checklist of Neptune 240kW Split Charging System	1	√

**Appendix 1**

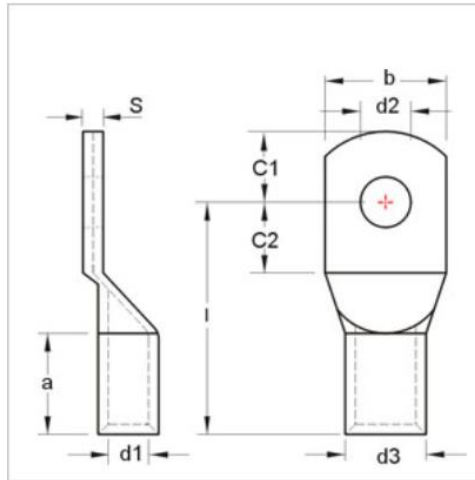
<b>Unpacking record form</b>					
<b>Owner's name</b>				<b>Unpacking date</b>	
<b>No.</b>	<b>Case</b>	<b>Name of goods</b>	<b>Quantity</b>	<b>Acceptance</b>	<b>Notes</b>
<b>Unpacking conclusions</b>	<b>Installation unit</b>			<b>Owner's unit</b>	
<b>Signature block</b>					

**Appendix 2**

<b>Checklist before installation</b>				
<b>Project name:</b>				
<b>Civil construction unit:</b>			<b>Equipment installation unit:</b>	
<b>Sub-project</b>	<b>SN</b>	<b>Main acceptance items</b>	<b>Acceptance records</b>	<b>Treatment measures</b>
Installation plan	1	Check whether the on-site equipment installation complies with the construction plan design drawings		
Distribution box circuit breaker	1	Meet the equipment installation requirements (the maximum input current of each 240kW power cabinet is 342A)		
Cable type	1	The cable selected meets the requirements in Chapter 2.5		
Concrete foundation	1	Dimensions meet the requirements		
	2	The concrete foundation meets the requirements of Chapter 2.6 in the installation manual		
Maintenance channel	1	The maintenance channel meets the equipment distance requirements in Chapter 2.7		
<b>Conclusions:</b>				
Note: (1) In the acceptance record, fill in "√" or "×" according to the on-site situation; (2) At the conclusion, fill in "qualified" or "need to be rectified" according to the on-site situations				
Signature of the person in charge of inspection: _____				<b>Date:</b>

### Appendix 3

#### Cable copper terminal specification

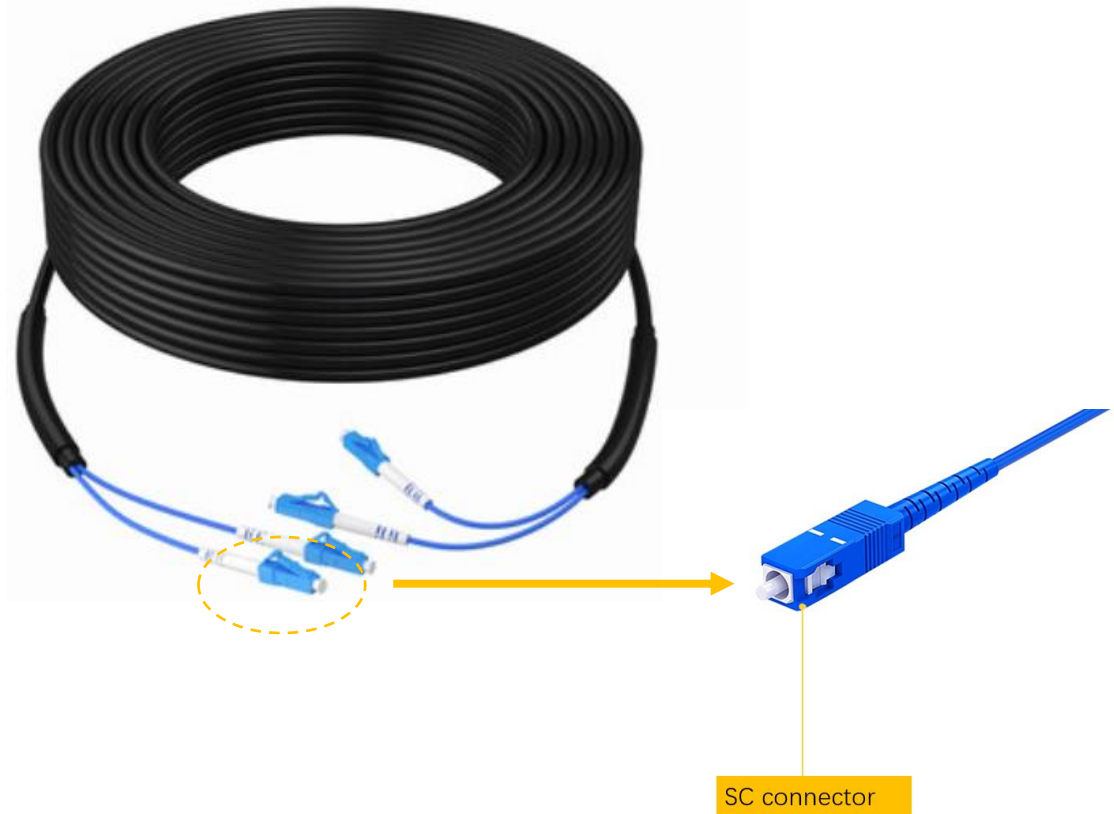


Wire range	Model	Dimension (mm)								
		a	b	C1	C2	d1	d2	d3	I	S
2AWG 35mm <sup>2</sup>	TLK35-8	17	17	10	10	8.5	8.4	12	34	3.2
4/0AWG 120mm <sup>2</sup>	TLK120-12	26	28	14	14	15	13	19.5	51	4.3
300kcmil 185mm <sup>2</sup>	TLK185-12	30	35	18	18	19	13	24	65	4.7
400kcmil 240mm <sup>2</sup>	TLK240-12	35	39	21.5	21.5	21	13	26	72.5	4.8



## Appendix 4

### Optical fiber



Optical fiber specification: Armored Multi-mode 50/125um, double core(MMF).

Outer diameter:6mm.

SC connector model: YFOC-M-SC, SC Multi-mode 50/125um.

Insert loss:  $\leq 0.3\text{dB}$

Return loss:  $\geq 35\text{ dB}$

Interchangeability:  $\leq 0.1\text{dB}$

Repeatability:  $\leq 0.1\text{dB}$

Operating temperature:  $-30^{\circ}\sim 80^{\circ}$

Storage temperature:  $-30^{\circ}\sim 85^{\circ}$

