



SEC Series DC Distributed Charger **User Manual**

Issue 01

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Disclaimers:

Manufacturer shall not be liable for any consequence caused by any of the following events:

- Warranty expiration of the warranty service;
- Failure to follow the operation instructions and safety precautions in this document, and the resulting equipment malfunction, component damage, personal injuries, or property damage are beyond the warranty scope;
- Installation or use in environments which are not specified in related international standards.
- Incorrect transportation, removal, storage, installation, or use.
- Unauthorized modifications to the product or software code or removal of the product;
- Device damage due to force majeure (such as lightning, earthquakes, fire, and storms);
- Unauthorized modifications to the product nameplate or serial number or product appearance;
- Storage conditions that do not meet the requirements specified in this document, unused products should be stored in packing cases and placed in a dry, (After delivery shall be started and test equipment operation status within 6 months, otherwise it shall be return to the manufacturer for aging test and payable the shipping cost.);
- Ensure that the area required for heat dissipation, Otherwise, the equipment may become faulty, and the resulting equipment malfunction, component damage, personal injuries, or property damage are beyond the warranty scope;
- Installation or use by unqualified personnel;
- This document content here is for indicative purpose only. If there is any inconsistency between the content and the actual product, it should base on the actual product.

Notice:

- Before connecting the power supply, ensure that electrical connections are correct. Do not connect or disconnect power cables with power on.
- Personnel who will operate the equipment, including operators, trained personnel, and professionals, should possess the local national required qualifications in special operations such as high-voltage operations, working at heights, and operations of special equipment.

Foreword

Reader

This document (this guide) is primarily intended for the following engineers :

- Technical Support Engineer
- Maintenance Engineer
- Installation team

Symbol Conventions

The following symbols may appear in this document and their description are as follows :

Symbol	Description
	<i>DANGER</i> Dangerous Voltage Dangerous voltages can cause death or injury
	<i>WARNING</i> Hazard Warning May cause equipment damage and personal injury
	<i>WARNING</i> Heat warning May cause scald when touch the special parts
	<i>Attention</i> Cause of Hazard Failure to comply may result in equipment damage or functional failure

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1 Safety Precautions

1.1 Special symbols for warnings and dangers

Symbol	Symbol word	Description
	Danger	Since some parts of this power system are under high voltage during operation, it is fatal for direct contact or indirect contact with these parts.
	Danger	Construction operation of high voltage lines may cause fire or electric shock. The wiring area and the area where the line passes through for AC cables must comply with local regulations and laws. Only personnel who are qualified to work with high DC and AC voltage are allowed to install and maintain the DC Charger.
	Danger	It is strictly forbidden to carry out installation and maintenance work during thunderstorms.
	Danger	During operation, it is strictly forbidden to short-circuit the positive and negative pole or any DC distribution pole to Ground. The DC Charger is a high voltage DC power supply, and short circuits may cause damage to the DC Charger and personal safety hazards.
	Warning	Special tools must be used during various operations of high DC and AC voltages.
	Warning	During the handling of equipment by hand, it is necessary to wear protective gloves to prevent injuries caused by sharp objects.
	Warning	Avoid touching specific parts of the charger (E.g., air outlet) to prevent high temperature scald.
	Attention	Make sure that the cable label is correct before the connection of cables.
	Attention	Signal cables shall be kept away from power cables to avoid interference.
	Attention	This equipment is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.

1.2 Safety instructions for use

- The SEC series DC charger is a distributed charger that you can use to supply electricity to an EV in well ventilated indoor and outdoor areas.
- The SEC is a high power and high voltage electric equipment. Only qualified professionals are allowed to install and maintenance it.
- Follow local laws and regulations when installing, operating, or maintaining the equipment.
- Follow the procedures of installation, operation, and maintenance. And make sure complying with this document and accessories provided by the manufacturer.
- The equipment is design and manufactured following local related safety standards on R&D, production, inspection, certification and record. Therefore, if the instructions and safety technical tips for the specified purpose are followed, the SEC series charger will not cause property damage or personnel injury under normal circumstances.
- The instructions contained in this manual must be strictly followed, otherwise there will be potential safety hazards or failure for the devices. Although this manual describes the relevant safety tips, it is still necessary to pay attention to the safety regulations and accident prevention regulations in accordance with the corresponding use conditions.
- When equipment has encountered any problems or faults during operation, please consult the manufacturer after-service center directly. If unauthorized third party provided maintenance under warranty, the manufacturer should not be liable.
- Installation conditions should be far away from fire hazards or other dangerous environment.

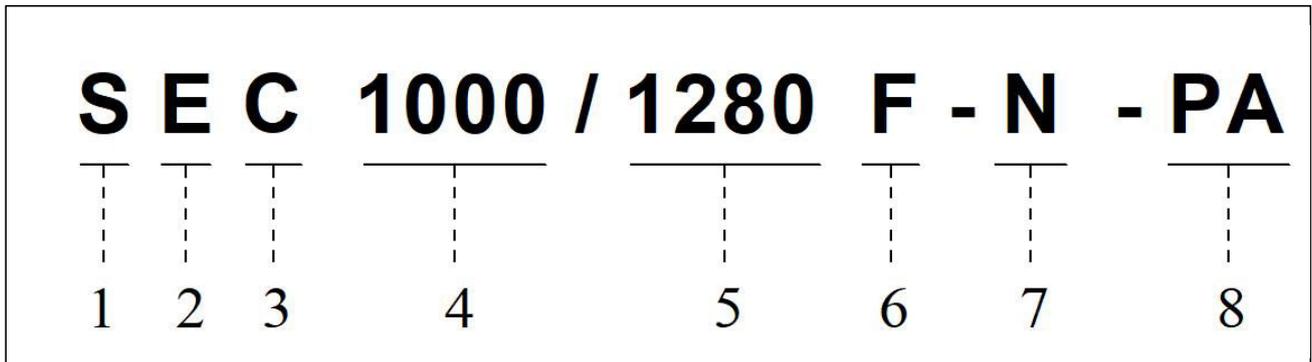
1.3 Safety instructions for operation

- Before using for the first time you must read this document carefully, make sure that the equipment is installed and commissioned according to the instructions in the installation manual.
- Without the manufacturer permission, do not do any unauthorized modification to the product or remove of the components. the manufacturer will not be liable for any consequence caused by these improper operations.
- Do not touch the EV charging connector or vehicle inlet. Keep it dry and clean.
- Do not use this product if the power cord or connector is abraded, has broken insulation, or shows any other signs of damage.
- In case of any abnormal condition, press the emergency button immediately, which will cut all input and output to ensure safety. It is forbidden to use the emergency button in non-emergency situations.
- To make sure that no foreign small object exists in EV charging connector or vehicle inlet.
- Do not connect or disconnect power cables with power on. During maintenance, turn off the superior distributed switch, set up warning board, and check the presence of dangerous voltage to ensure that it has been properly disconnected.
- Pay attention to the copper wire carrying dangerous voltage of equipment, even if all circuit breakers of the charger has been disconnected.
- Before maintenance, prepare for the lumination as there is no light in the interior.
- Connect protective earth wire (PE) well before connecting neutral line and phase line.
- After installation or maintenance, ensure that door has been locked correct.
- After the emergency button is pressed, the operator shall be informed that the charger cannot be started, and only the operation and maintenance personnel or professional operators can restart the charger.
- It is forbidden to use extension cable or adapter for charging connector.

2 Product Overview

2.1 Briefing

- SEC series DC charger is a high-power DC distributed charger independently developed by the manufacturer. It supports new 40kW DC charging module, with a maximum charging power of 1280kW. The whole charging system has high efficiency and flexible configuration. By controlling the User Terminal to charge for EV, it can realize not only even load sharing, but also the flexible output distribution of several connectors. In this way, the SEC distributed charger can realize the flexible power distribution among the connectors.
- SEC series charger can provide liquid cooling and air cooling User Terminal, as well as CCS2 and CHA charging standard. The charger can meet the charging demand of larger capacity and high endurance from electric vehicle on the market.
- SEC series charger adopts modular design, and has multiple protections, flexible power distribution and charging control system, which has high efficiency, stable outputs and high reliability. Therefore, it can charge for the EV with high power via reliable User Terminal.



2.2 SEC series products model

NO.	Meaning
1	S: Product series
2	E: Electric Vehicle
3	C: DC Charger
4	Rated output voltage: 1000Vdc
5	Output parameter: Be classified as Power Bank and User Terminal Power Bank: 960 and 1280 (optional), referring to the output power of the whole charging system. User terminal: 200 ,350 and 500 (optional), referring to the Max. output current per connector
6	Device type F: Flexible power unit (Power Bank) U: User Terminal
7	Charging standard: Only optional for User Terminal. Null for Power Bank. F: FCCS2, Fast charging current connector in CCS2 H: HCCS2, High charging current connector in CCS2 C: CCS2, normal charging current connector in CCS2 J: CHA output connector N: Null Can choose : FF/FH/FC/FN/HH/HC/HJ/HN/CC/CJ/CN/C
8	System type, can choose PA/RA PA: For New version CE certification PB: For New version PTB certification RA: For New version RCM certification N: Null

2.3 Models description

2.3.1 Description of Power Bank

Specification	Maximum Output Power	Maximum Output Current	Maximum Input Current
SEC1000/960F-N-PA	960kW	3200A	1740A
SEC1000/960F-N-RA			
SEC1000/1280F-N-PA	1280kW	4267A	2320A
SEC1000/1280F-N-RA			

2.3.2 Description of User Terminal

Model	Power Distribution		Maximum Output Current	
	Connector A	Connector B	Connector A	Connector B
SEC1000/500U-FF-PA	CCS2:480kW	CCS2:480kW	500A	500A
SEC1000/500U-FF-PB	CCS2:480kW	CCS2:480kW	500A	500A
SEC1000/500U-FF-RA	CCS2:480kW	CCS2:480kW	500A	500A
SEC1000/500U-FH-PA	CCS2:480kW	CCS2:350kW	500A	350A
SEC1000/500U-FH-RA	CCS2:480kW	CCS2:350kW	500A	350A
SEC1000/500U-FC-PA	CCS2:480kW	CCS2:200kW	500A	200A
SEC1000/500U-FC-PB	CCS2:480kW	CCS2:200kW	500A	200A
SEC1000/500U-FC-RA	CCS2:480kW	CCS2:200kW	500A	200A
SEC1000/500U-FN-PA	CCS2:480kW	/	500A	/
SEC1000/500U-FN-RA	CCS2:480kW	/	500A	/
SEC1000/350U-HH-PA	CCS2:350kW	CCS2:350kW	350A	350A
SEC1000/350U-HH-RA	CCS2:350kW	CCS2:350kW	350A	350A
SEC1000/350U-HC-PA	CCS2:350kW	CCS2:200kW	350A	200A
SEC1000/350U-HC-RA	CCS2:350kW	CCS2:200kW	350A	200A
SEC1000/350U-HJ-PA	CCS2:350kW	CHA:62.5kW	350A	125A
SEC1000/350U-HJ-RA	CCS2:350kW	CHA:62.5kW	350A	125A
SEC1000/350U-HN-PA	CCS2:350kW	/	350A	/
SEC1000/350U-HN-RA	CCS2:350kW	/	350A	/
SEC1000/200U-CC-PA	CCS2:200kW	CCS2:200kW	200A	200A
SEC1000/200U-CC-PB	CCS2:200kW	CCS2:200kW	200A	200A
SEC1000/200U-CC-RA	CCS2:200kW	CCS2:200kW	200A	200A
SEC1000/200U-CJ-PA	CCS2:200kW	CHA:62.5kW	200A	125A
SEC1000/200U-CJ-RA	CCS2:200kW	CHA:62.5kW	200A	125A
SEC1000/200U-CN-PA	CCS2:200kW	/	200A	/
SEC1000/200U-CN-RA	CCS2:200kW	/	200A	/
SEC1000/200U-C-PA	CCS2:200kW	/	200A	/
SEC1000/200U-C-RA	CCS2:200kW	/	200A	/

2.4 Parameter table of product specifications

Technical Specifications of Power Bank		
Category	Item	Parameter
Input Characteristic	Input	3P+N+PE
	Input Voltage	AC 400V±10%
	Frequency	50/60Hz
	Power Factor	0.99
	THDi	<5%
Output Characteristic	Output Voltage	DC 200-1000 Vdc
	Rated Power	960kW / 1280kW
	Max current	3200A / 4267A
	Peak Efficiency	96% @ peak efficiency
Standard	System Standard	IEC 61851
Others	Size	W2300*D1100*H2100 mm
	Protection Level	IP55/IK10
	Weight	≤2500 KG
	Communication Protocol	OCPP1.6J
Environmental Conditions	Cooling Method	Forced air cooling
	Operating Temperature	-25℃~+50℃
	Humidity	5%~95%
	Altitude	≤2000m
Protection		Lightning protection Overload protection Short - circuit protection Leakage protection Overcharge protection Over/Under voltage protection Reverse connection protection Over temperature protection

Technical Specification of User Terminal		
Category	Item	Parameter
Input Characteristic	Operating Voltage	AC230V
	Input DC Voltage	DC 200-1000V
Output Characteristic	Output Voltage	FCCS2/HCCS2/CCS2: 200-1000V CHA: 200-500V
	Rated power	200-480kW
	Max Current	FCCS2: 500A HCCS2: 350A CCS2: 200A CHA: 125A
	Connector Standard	IEC 62196
Standard	System Standard	IEC 61851
Others	Energy Meter	High precision meter
	Number of connectors	2 connector: CCS combo 2+CHA or CCS combo 2+ CCS combo 2 or HCCS combo 2+ HCCS combo 2 or HCCS combo 2+ CCS combo 2 or HCCS combo 2+ CHA or FCCS combo 2+ FCCS combo 2 or FCCS combo 2+ HCCS combo 2 or FCCS combo 2+ CCS combo 2 or FCCS combo 2+ CHA 1 connector: CCS combo 2 or HCCS combo 2 or FCCS combo 2
	Network Interface	4G/LAN
	Size	W800*D450*H2100 mm
	Protection Level	IP55/IK10
	Weight	≤272kg
	Cable Length	5m (Exposed cable length is 4.5m)
	Communication Protocol	OCPP1.6J
	Screen	15 inches
	Method of Payment	QR Code/RFID/NFC/Bank card (Optional)
	Language	English
Environmental Conditions	Cooling Method	Liquid cooling/Forced air cooling
	Full power operating temperature	-25~50 °C
	Humidity	5%~95%

Technical Specification of User Terminal		
Category	Item	Parameter
	Altitude	≤2000m
Protection		DC Over current protection Lightning protection Emergency protection Overload protection Short-circuit protection Leakage protection Overcharge protection Over/Under voltage protection Reverse connect protection Over temperature protection

Technical Specification of User Terminal (SEC1000/200U-C-PA)

Category	Item	Parameter
Input Characteristic	Operating Voltage	AC230V
	Input DC Voltage	DC 200-1000V
Output Characteristic	Output Voltage	CCS2: 200-1000V
	Rated power	200kW
	Max Current	200A
	Connector Standard	IEC 62196
Standard	System Standard	IEC 61851
Others	Energy Meter	High precision meter
	Number of connectors	CCS combo 2
	Network Interface	4G/Bluetooth
	Size	W500*D200*H800 mm
	Protection Level	IP55/IK10
	Weight	≤50kg
	Cable Length	5m (Exposed cable length is 4.5m)
	Communication Protocol	OCPP1.6J
	Method of Payment	RFID APP
	Language	English
Environmental Conditions	Cooling Method	Forced air cooling
	Full power operating temperature	-25~50 °C
	Humidity	5%~95%
	Altitude	≤2000m
Protection		DC Over current protection Lightning protection Emergency protection Overload protection Short-circuit protection Leakage protection Overcharge protection Over/Under voltage protection Reverse connect protection Over temperature protection

2.5 Protection device parameters

Name	Main Circuit Breaker			
Item	Rated current (In)	Rated limit short-circuit breaking capacity (Icu)	Rated residual current (IΔn)	Residual current type
960kW	500A	70kA	30mA	Type A
1280kW	700A	70kA	30mA	Type A

Name	Fuse		
Item	Rated current (In)	Rated voltage (Un)	Rated breaking capacity
For 200A connector	315A	1000V	50kA
For 350A connector	630A	1000V	50kA
For 500A connector	800A	1000V	50kA

2.6 Product Features

- The Maximum charging power is up to 1280kW and is available in both 960kW & 1280kW power configurations to meet customized requirements.
- The system includes Power Bank and User Terminals, one Power Bank can provide power to 16 connectors to meet the needs of charging multiple vehicles simultaneously.
- The liquid-cooled User Terminal can automatically allocate power according to vehicle needs and can achieve 480kW high power charging.
- Constant power charging method provides high charging efficiency, simple operation, and reliable performance.
- Ultra-wide output voltage range. The maximum output voltage can reach DC1000V, which can not only meet the low-voltage charging of smaller vehicles, but also meet the charging needs of buses and other high-voltage vehicles.
- The system has multiple protection functions for hazards such as overload, short circuit, leakage, lightning, overcharge, overvoltage, reverse connection and overtemperature.
- The intelligent standby mode can effectively reduce the operating cost of the customer's entire project life cycle and improve the yield of charging stations.

2.7 Product View

- 1. SEC Series Power Bank

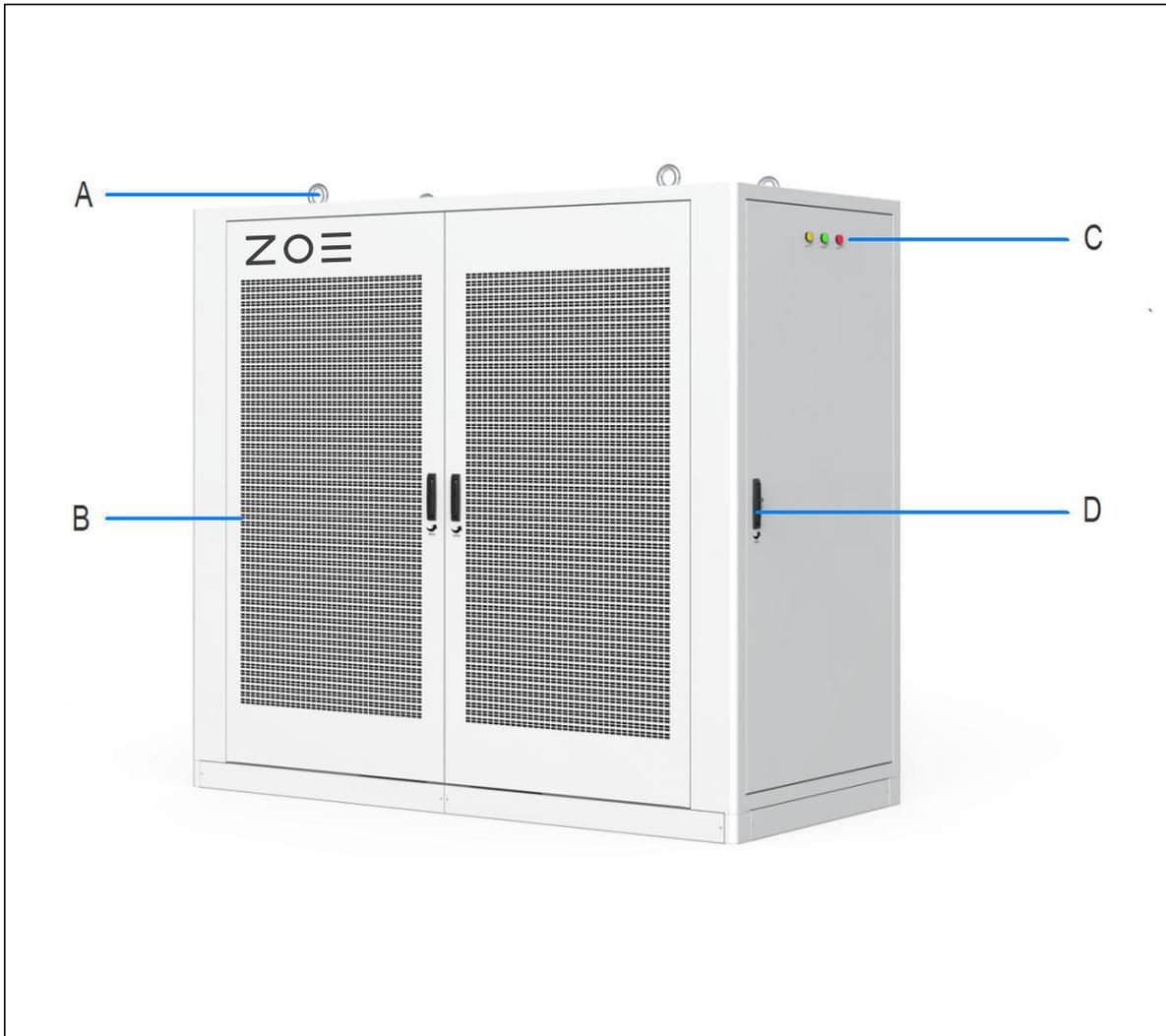


Figure 2.7-A SEC Series Power Bank

A	Eye bolts for lifting	D	Door handle/ lock
B	Ventilation area		
C	LED indicator		

● 2. SEC Series User Terminal



Figure 2.7-B SEC Series User Manual

A	Eye bolts for lifting	E	Door handle/ lock
B	LED indicator	F	Ventilation area
C	Human machine interface		
D	Charging connector		

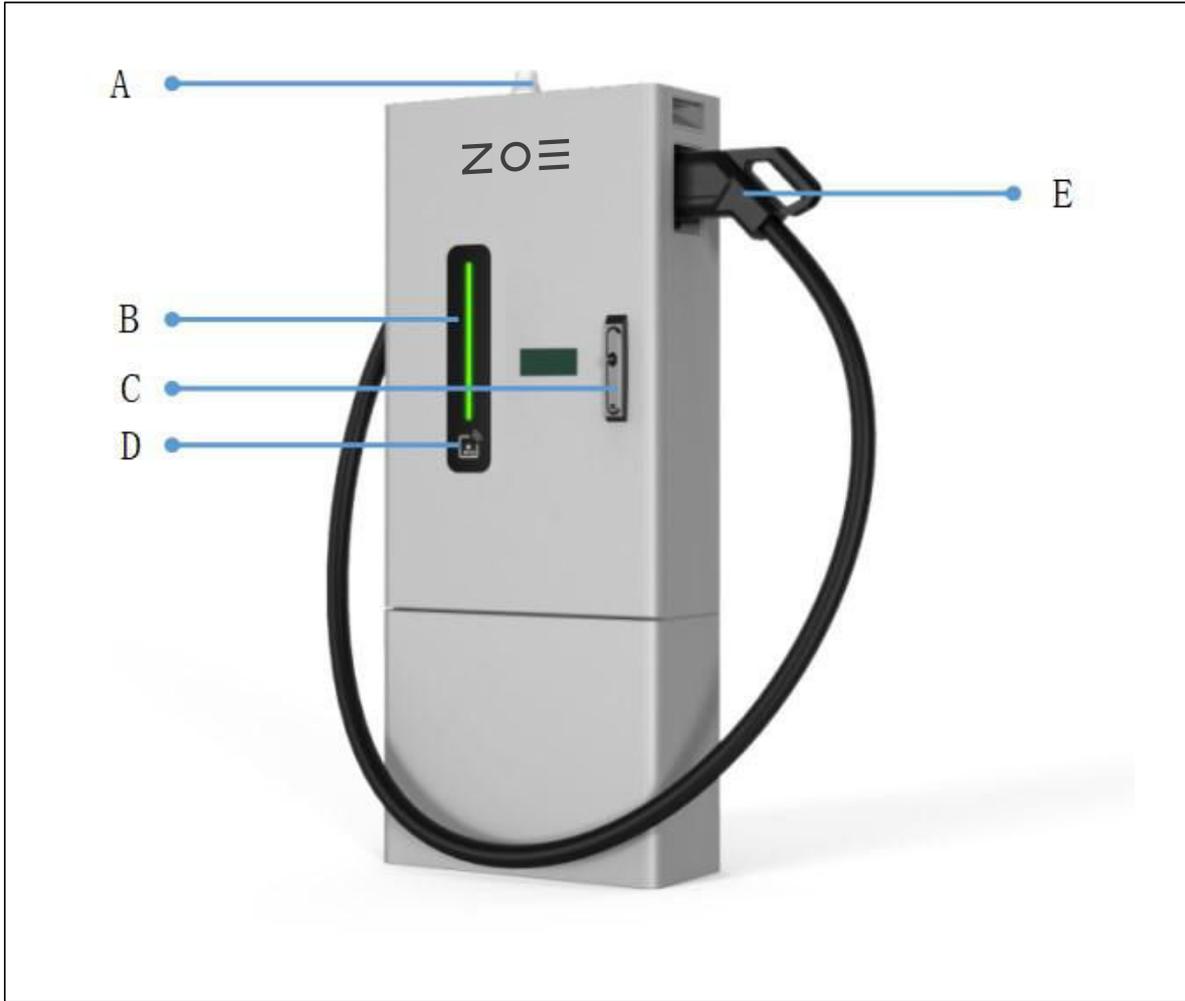


Figure 2.7-C SEC Series User Manual (SEC1000/200U-C-PA)

A	Antenna	D	Card reader
B	LED indicator	E	Charging connector
C	Door handle/ lock		

3 Installation Instruction

3.1 Equipment Dimensions

3.1.1 Power Bank

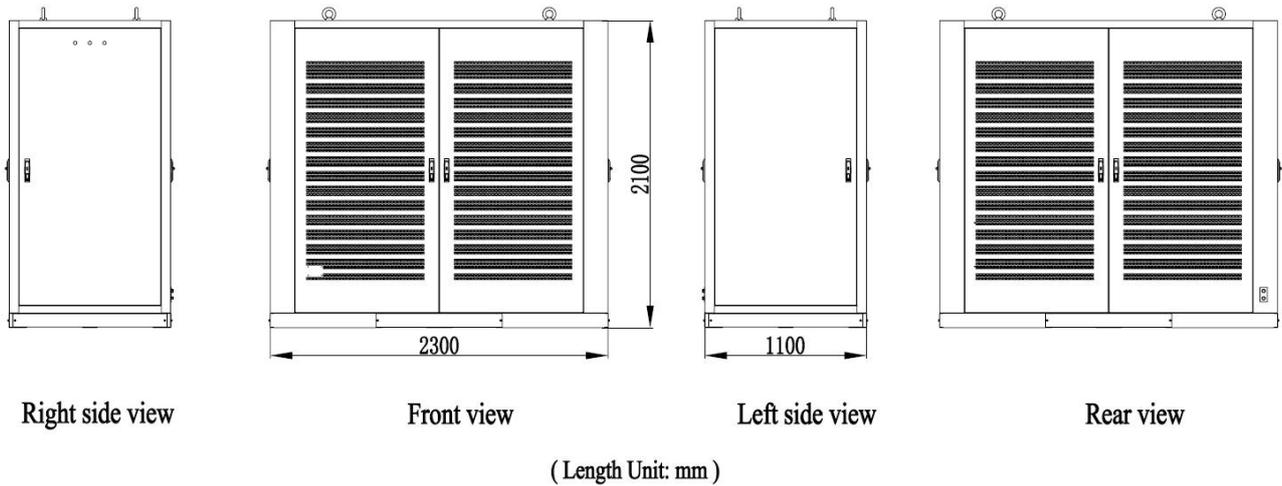


Figure 3.1.1-A Views and dimensions of SEC Series Power Bank

3.1.2 User Terminal

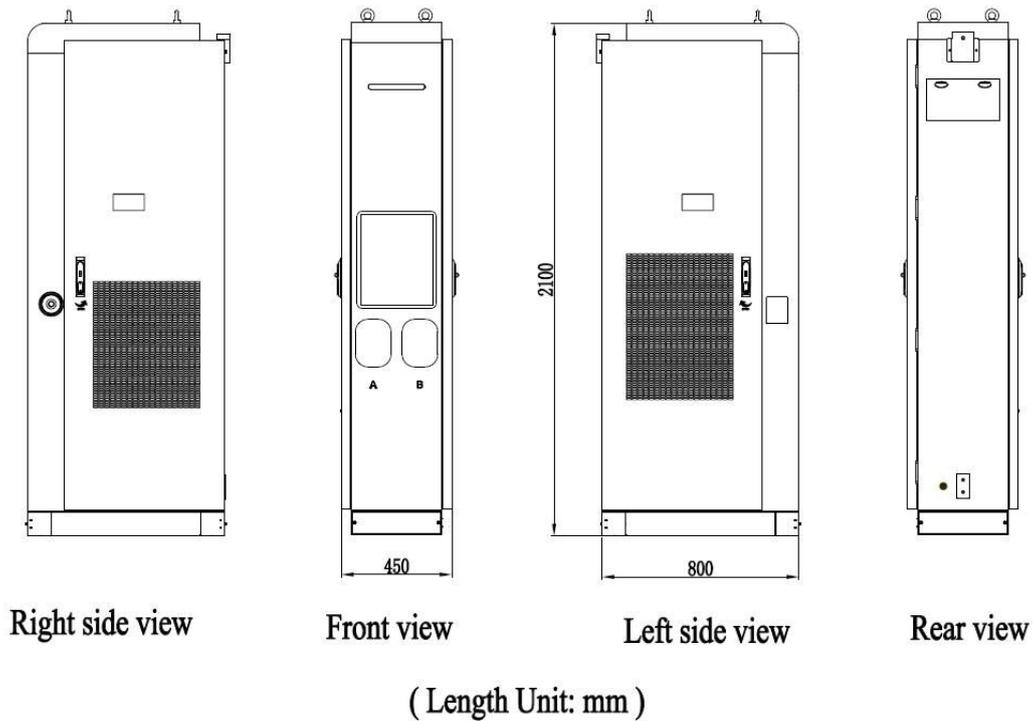


Figure 3.1.2-A Views and dimensions of SEC Series User Terminal

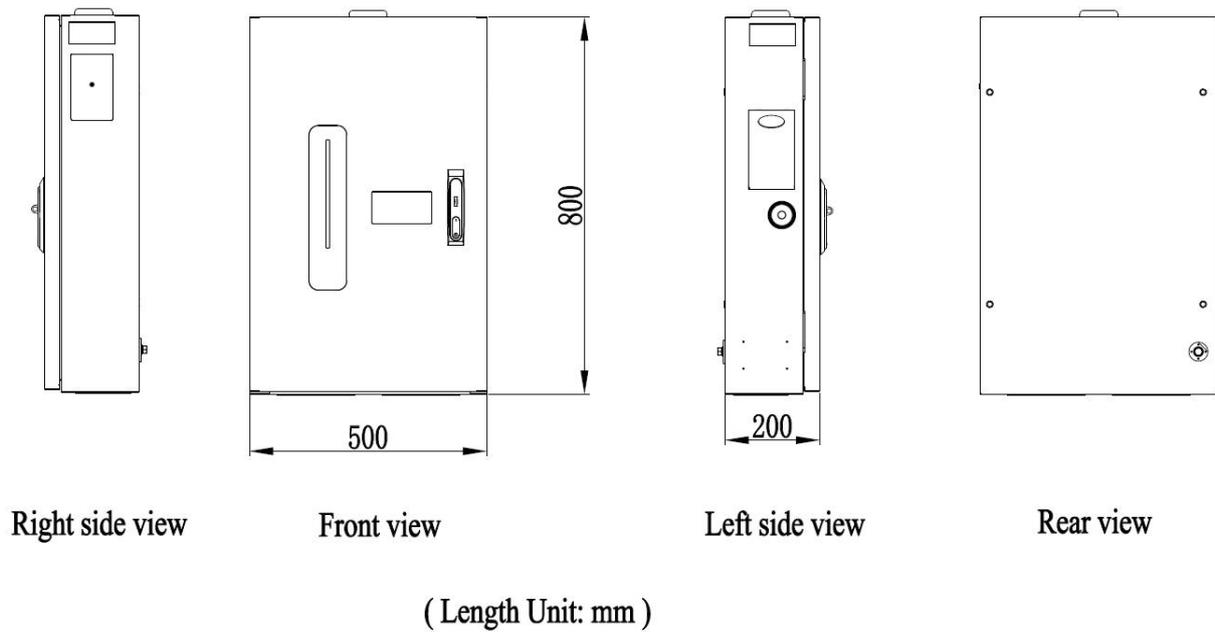


Figure 3.1.2-B Views and dimensions of SEC Series User Terminal (SEC1000/200U-C-PA)

3.2 Installation Requirement

3.2.1 Power Bank

- 1. Space needs to be reserved for the opening of front and rear doors of the Power Bank. Please refer to **Figure 3.2.1-A** for the reserved space dimensions;
- 2. **Figure 3.2.1-B** shows the hole drilling positions and dimensions at the bottom of the Power Bank;
- 3. The Power Bank is recommended to be installed on concrete foundation, and the construction size of the concrete foundation is suggested to be as shown in **Figure 3.2.1-C**;
- 4. The height of the foundation is recommended to be $200\text{mm} \pm 20\text{mm}$, and the vertical inclination of the installation should not exceed $\angle 5^\circ$. Refer to **Figure 3.2.1-D** for details;
- 5. Lay the power cables in advance. Multi-core cables should be stripped under the foundation. After stripping the AC power cables, the reserved length of the exposed foundation should not be less than 600mm. The reserved length of signal cables and auxiliary power cables should not be less than 1000mm. Refer to **Figure 3.2.1-D** for details;
- 6. Install 4 M12*80mm stainless steel expansion bolts between the foundation and the Power Bank cabinet.

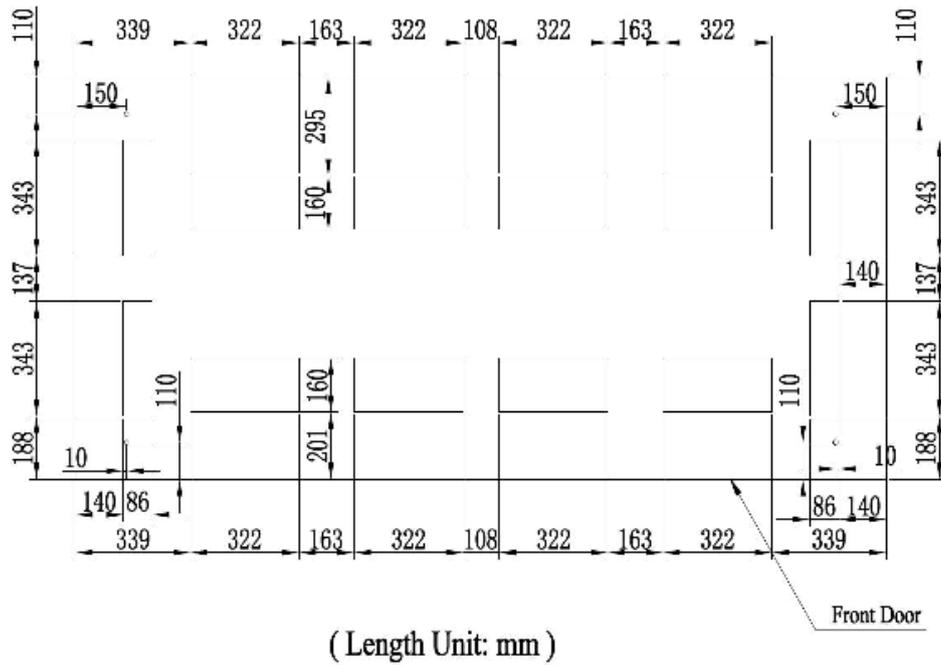


Figure 3.2.1-C Hole positions and dimensions of the Power Bank concrete foundation
(Check from top to bottom)

The reserved length :
 CAN cable $\geq 1000\text{mm}$;
 Network cable $\geq 4000\text{mm}$;
 AC power cable $\geq 600\text{mm}$;
 AC(230V) output cable $\geq 1000\text{mm}$;
 Tripping control cable of the upper circuit breaker $\geq 1000\text{mm}$.

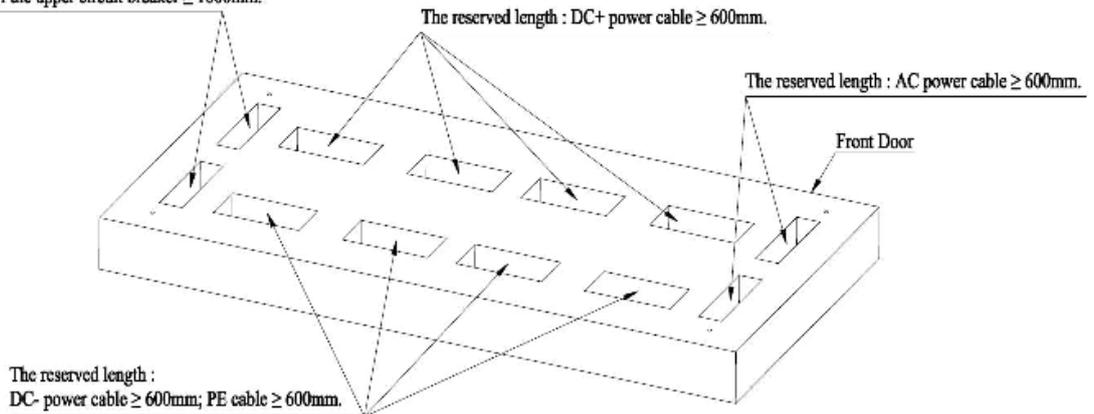


Figure 3.2.1-D Power bank concrete foundation height and the reserved length of the input and output cables

3.2.2 User Terminal

- 1. Space needs to be reserved for the opening of front and rear doors of the User Terminal. Please refer to **Figure 3.2.2-A** and **Figure 3.2.2-B** for the reserved dimensions;
- 2. **Figure 3.2.2-C** and **Figure 3.2.2-D** shows the hole drilling positions and dimensions at the bottom of the User Terminal;
- 3. The User Terminal cabinet is installed on the concrete or channel steel foundation, and the construction size of the concrete foundation is suggested to be as shown in **Figure 3.2.2-E** and **Figure 3.2.2-F**;
- 4. Lay the cables in advance. The reserved length of communication cables and auxiliary power cables should not be less than 700mm; The reserved length of network cables should not be less than 4000mm; The reserved length is not less than 700mm. Refer to **Figure 3.2.2-G** and **Figure 3.2.2-H** for details;
- 5. The height of the foundation installation is recommended to be $200\text{mm}\pm 20\text{mm}$, and the vertical inclination of the installation should not exceed $\angle 5^\circ$. Refer to Figure 3.2.2-D for details;
- 6. Install 4 M12*80mm stainless steel expansion bolts between the foundation and the User Terminal.

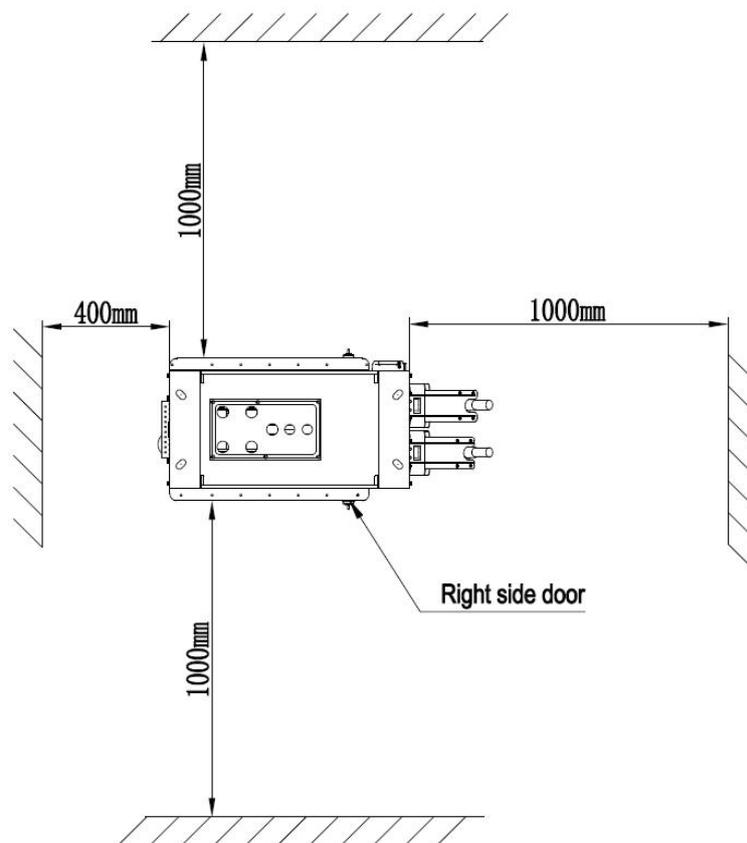
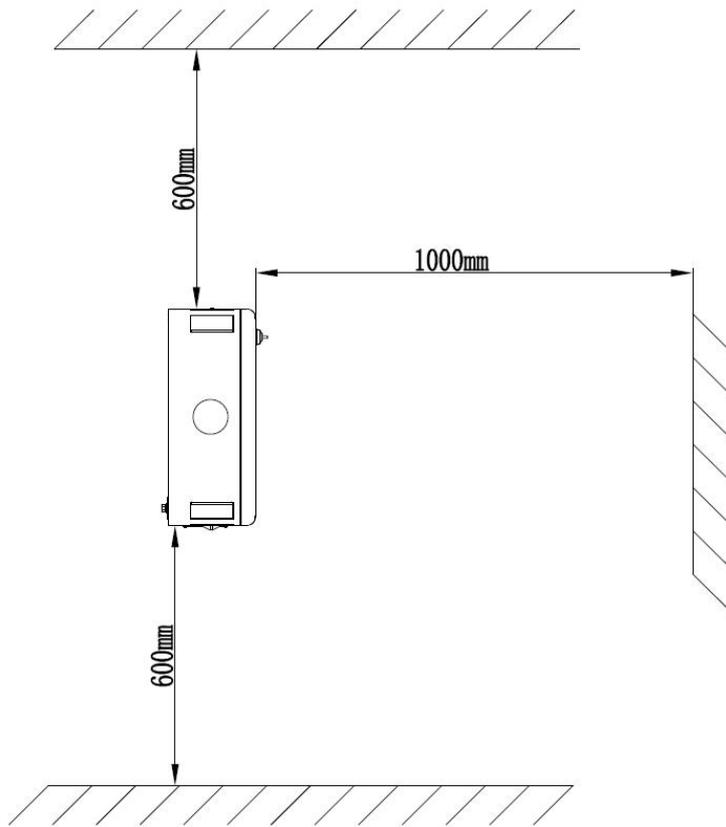


Figure 3.2.2-A User Terminal placement requirements
(Check from bottom to top)



For SEC1000/200U-C-PA

Figure 3.2.2-B User Terminal placement requirements

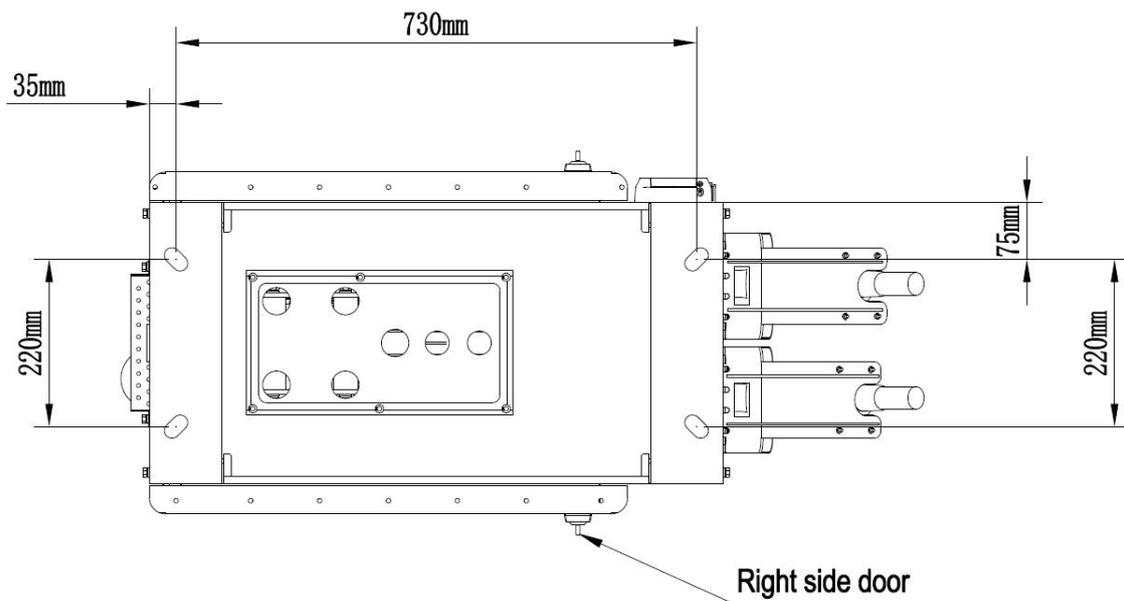
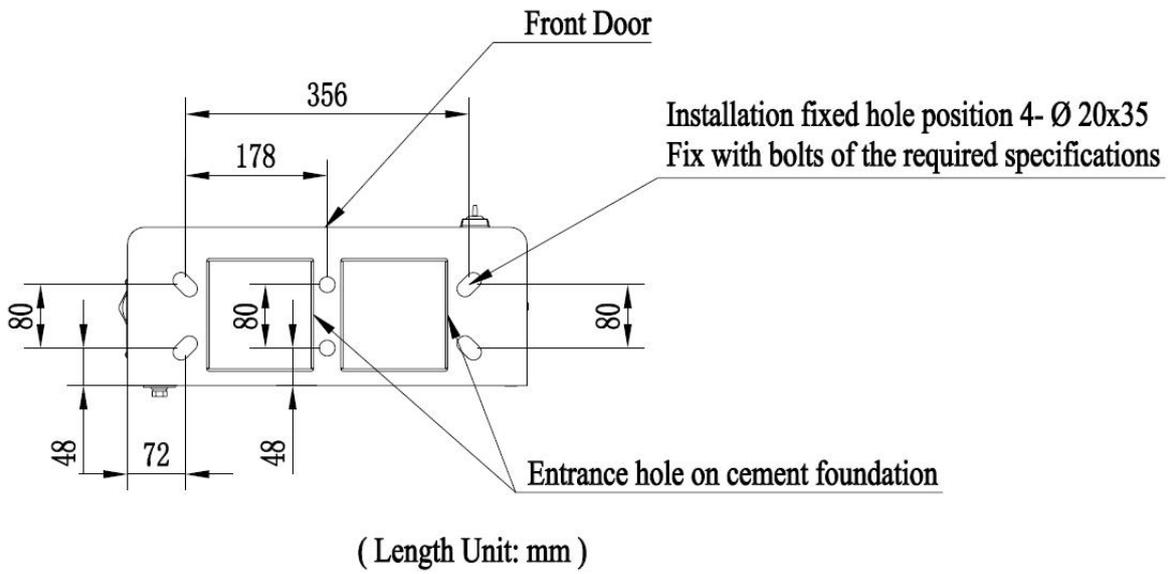


Figure 3.2-2-C Hole positions and dimensions at the bottom of User Terminal
(Check from bottom to top)



For SEC1000/200U-C-PA (Check from bottom to top)

Figure 3.2-2-D Hole positions and dimensions at the bottom of User Terminal

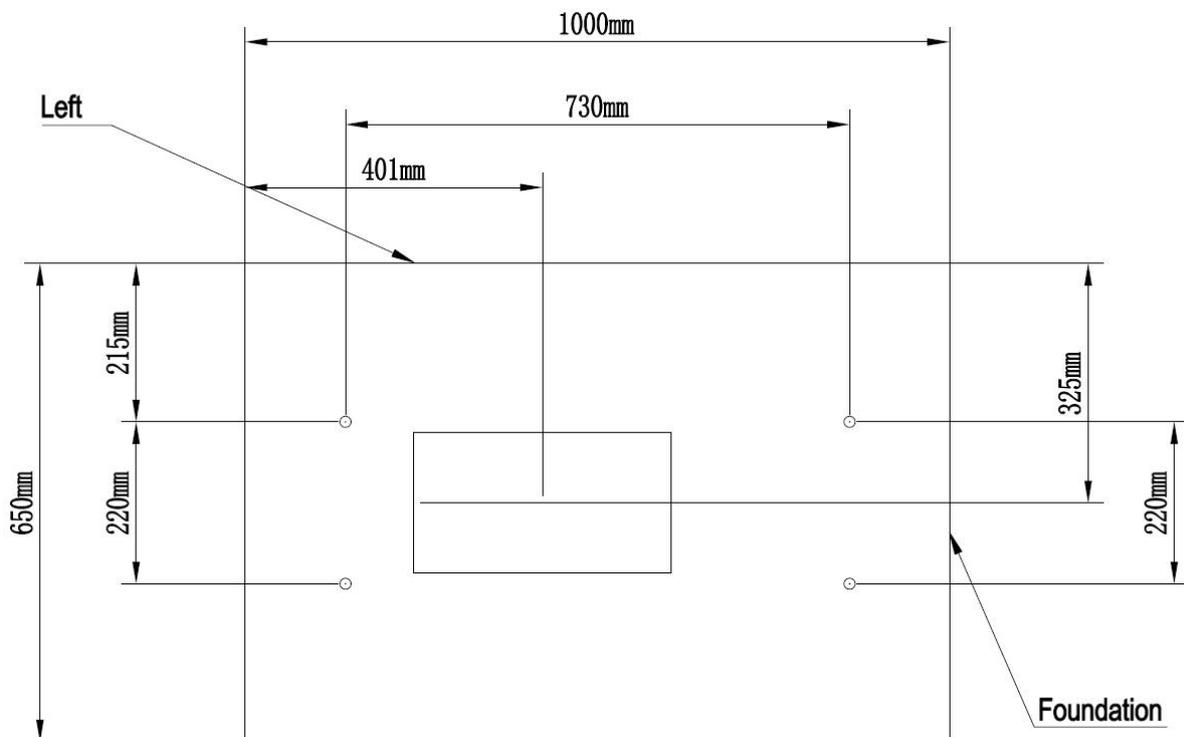
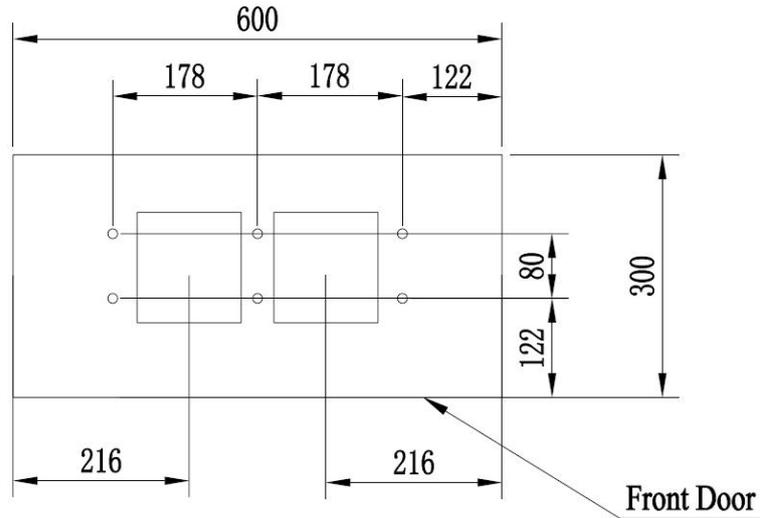


Figure 3.2.2-E Hole positions and dimensions of the User Terminal concrete foundation
(Check from bottom to top)



(Length Unit: mm)

For SEC1000/200U-C-PA (Check from bottom to top)

Figure 3.2.2-F Hole positions and dimensions of the User Terminal concrete foundation

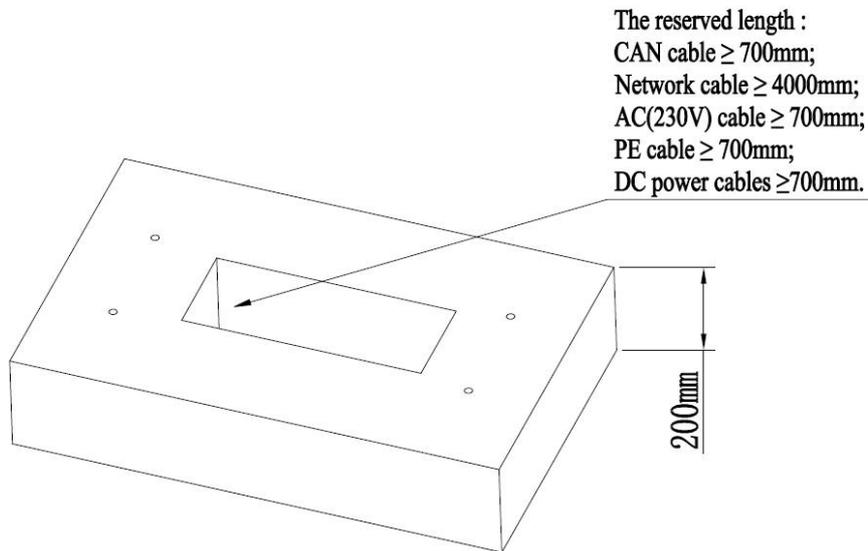
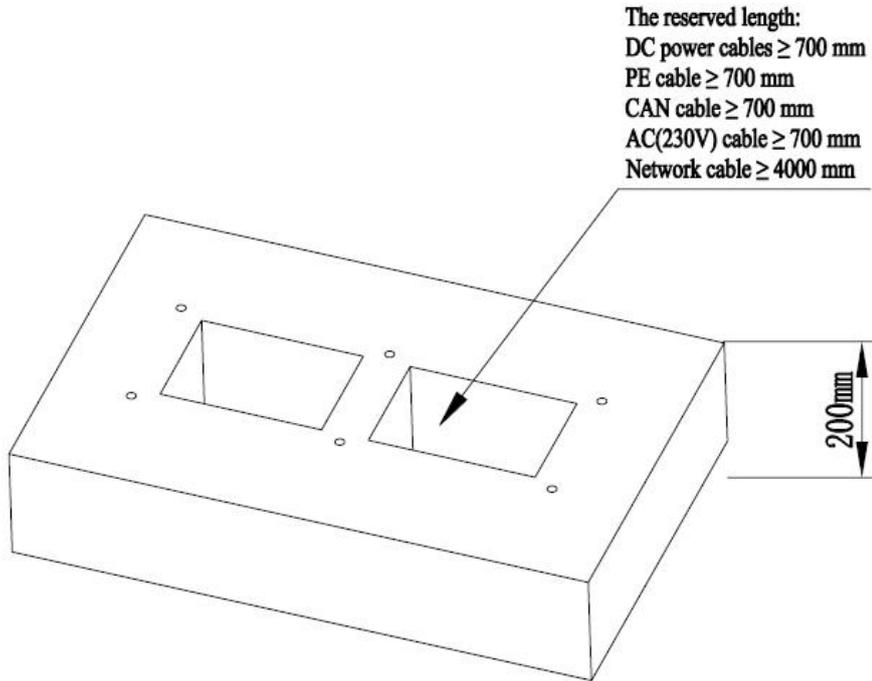


Figure 3.2.2-G User Terminal concrete foundation height and the reserved length of the input and output cables

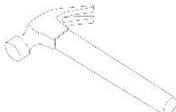
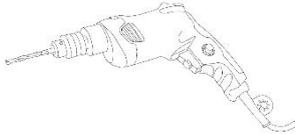
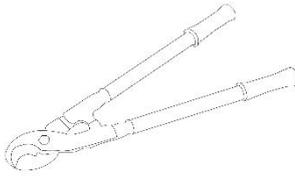
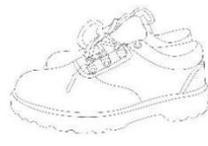
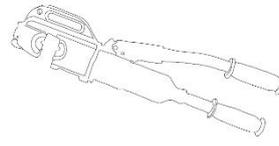
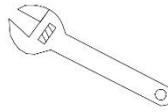
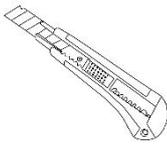


For SEC1000/200U-C-P

Figure 3.2.2-H User Terminal concrete foundation height and the reserved length of the input and output cables

3.3 Installation Steps

Tools required:

S/N	Tools	No.	Drawing	S/N	Tools	No.	Drawing
1	Claw hammer	1		6	Cross screwdriver	1	
2	Herringbone ladder	1		7	Electric drill Equipped with \varnothing 16mm drill bit	1	
3	Insulating gloves	1		8	Cable clipper	1	
4	Insulation shoes			9	Hydraulic clamp	1	
5	Adjustable wrench	1		10	Art knife	1	

3.4 Installation Process

3.4.1 Power Bank

- 1. **Unpacking the outer package of the cabinet**

Tools required: herringbone ladder, art knife, protective gloves, cross screwdriver.

(1) With the help of the herringbone ladder and the protective gloves, straighten the metal card on the top of the packing material, and remove the upper cover plate. As shown in **Figure 3.4.1-A**.

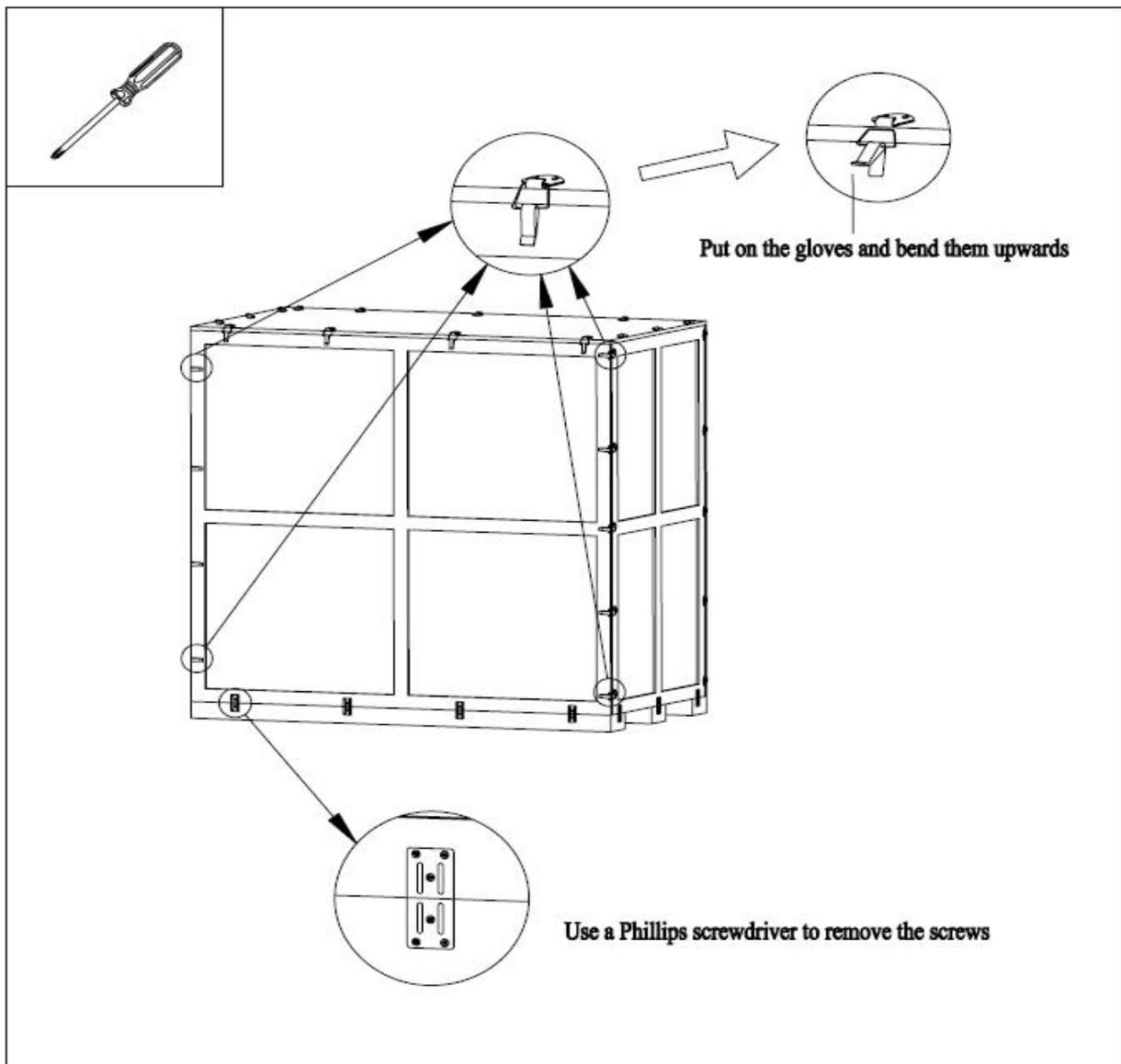


Figure 3.4.1-A

(2) Use a cross screwdriver to unscrew the fixing screws of all metal cards, remove the surrounding boards, use a utility knife to cut the PE bag wrapped on the cabinet, and remove the PE bag and foam. As shown in **Figure 3.4.1-B**.

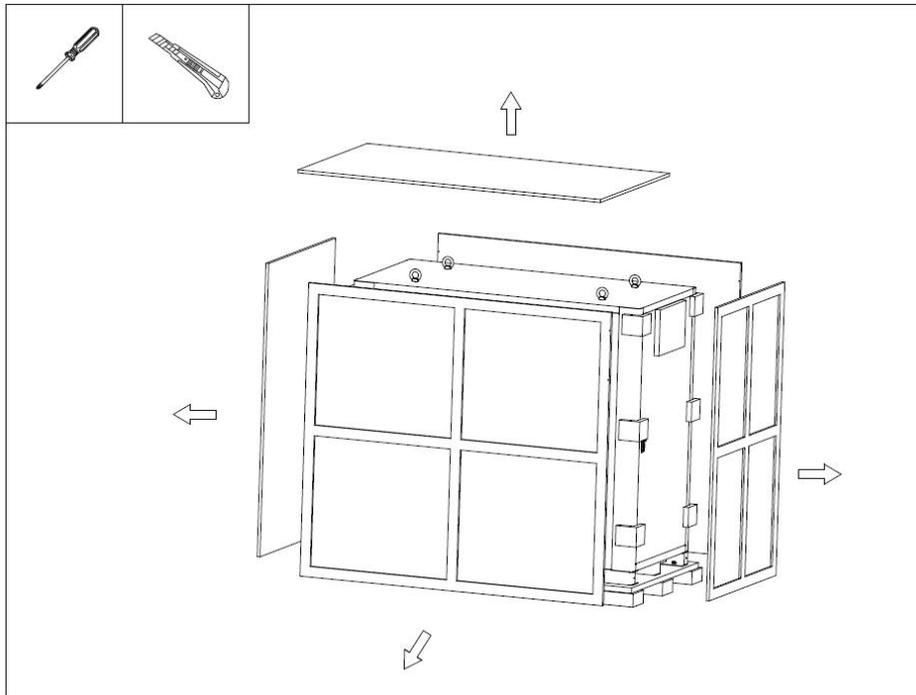


Figure 3.4.1-B

(3) Dismantle the sealing plates on the front, back, left, and right sides of the foundation, as shown in **Figure 3.4.1-B-1**.

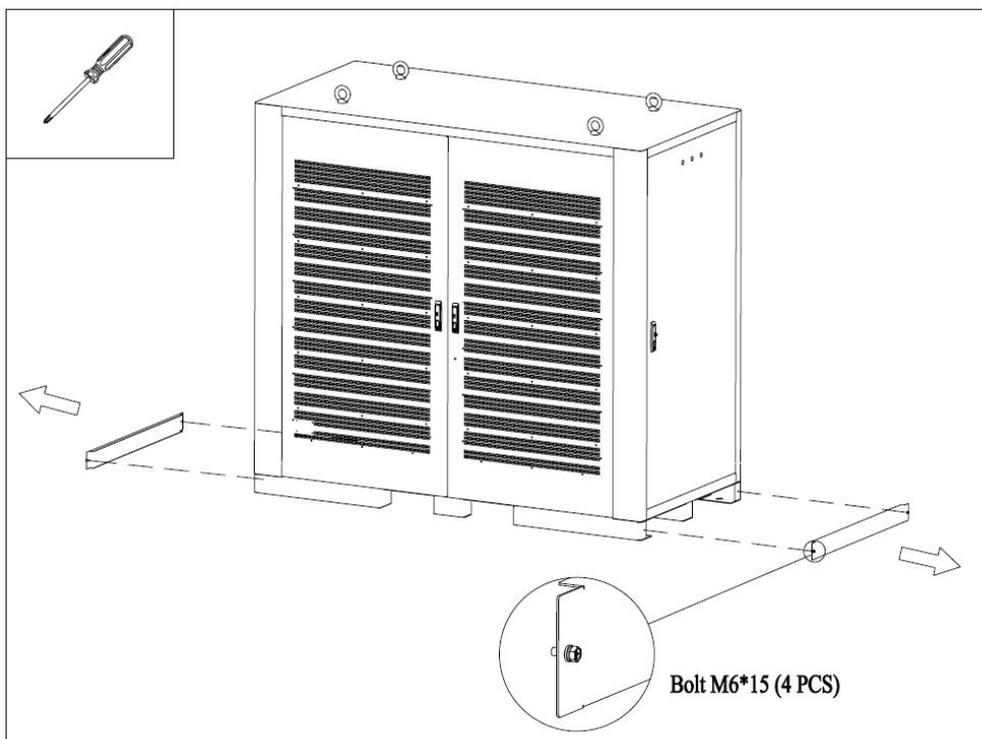


Figure 3.4.1-B-1

(4) Use a wrench to remove the 4 M12 bolts around the foundation, as shown in **Figure 3.4.1-C**

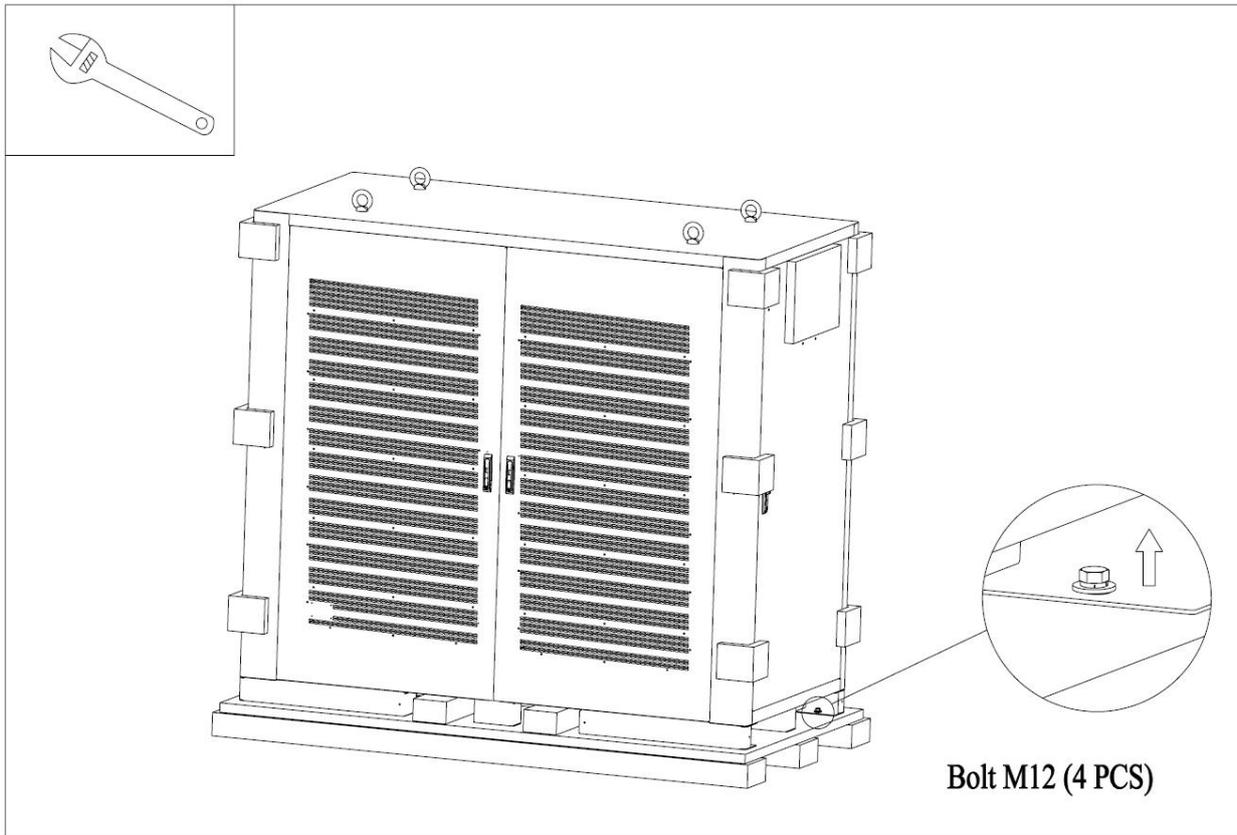


Figure 3.4.1-C

● **2. Foundation drilling**

Tools required: electric drill, $\phi 16\text{mm}$ drill bit, protective gloves.

(1) The foundation is constructed according to the positions and dimensions of the holes shown in **Figures 3.2.1-C and 3.2.1-D**. The cable holes of the foundation correspond to the cable holes at the bottom of the Power Bank cabinet.

(2) According to the marked installation hole positions, use an electric drill to drill 4 $\phi 16\text{mm}$ installation holes with a depth of 80~85mm on the cement installation foundation.

(3) Use a claw hammer to knock 4 M12*80 expansion bolts into the holes, and then unscrew the screw part so that the expansion rods are inserted into the foundation mounting holes. As shown in **Figure 3.4.1-E**.

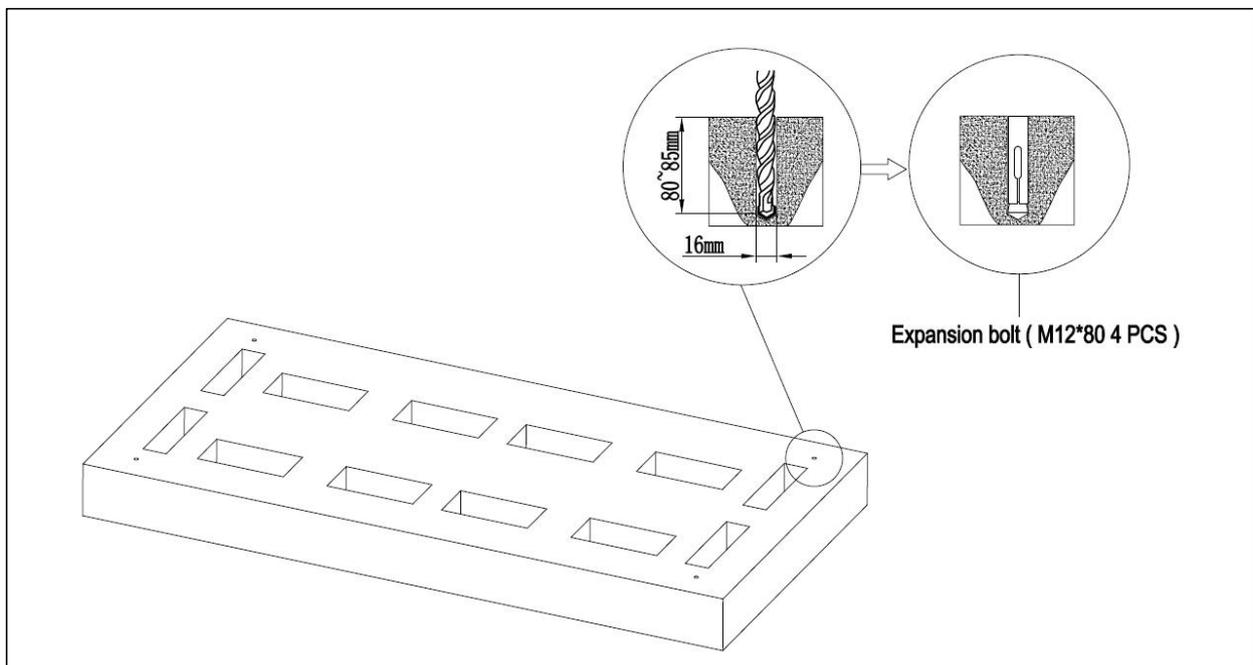


Figure 3.4.1-E

● **3. Placement of the power cabinet**

(1) Use a forklift to transport the Power Bank to the mounting foundation. Use a crane to lift the cabinet, as shown in **Figure 3.4.1-F**.

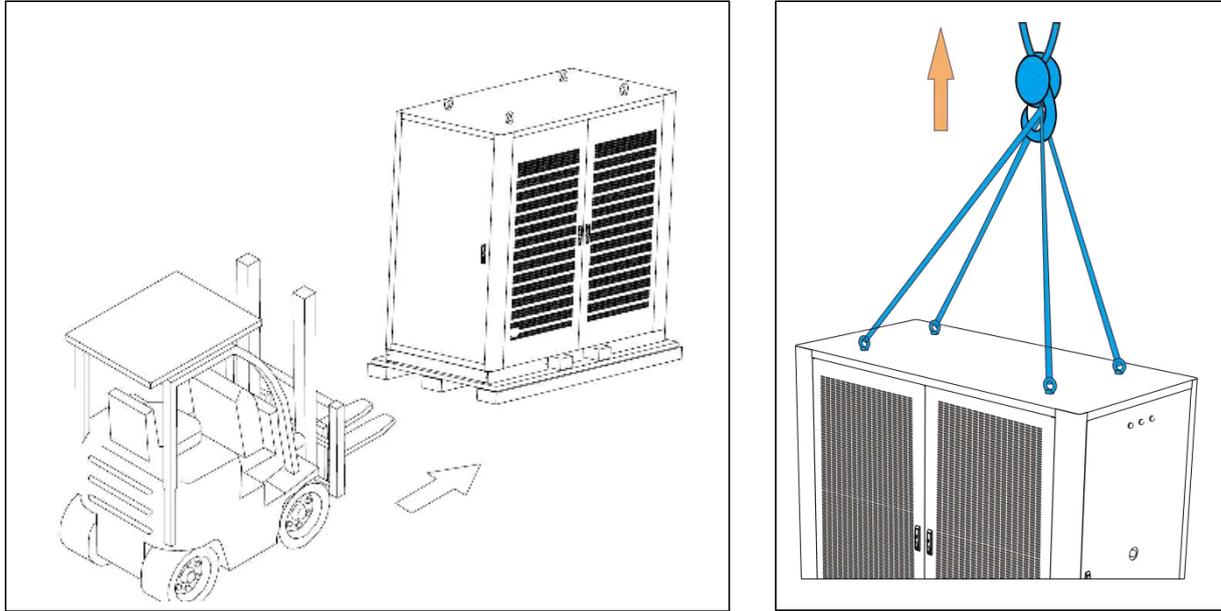


Figure 3.4.1-F

(2) Suspend the Power Bank cabinet above the cement foundation, align the installation holes, open the front door of the cabinet and the rear door of the cabinet, and pull the pre-laid cables from the bottom of the cabinet through the cable entry holes. After that, slowly lower the cabinet and pull the remaining cables until the cabinet is completely placed on the foundation.

Note:

- ① *The mounting holes of the cabinet foundation need to correspond to the holes on the cement foundation;*
- ② *The PG gland of the cable entry hole of the cabinet can be removed, but the damage of the PG gland should be avoided during the removal process.*

(3) Install 4 M12*80 expansion bolts on the drilled mounting holes around the foundation, and tighten the bolts to ensure the cabinet is fixed reliably, as shown in **Figure 3.4.1-G**.

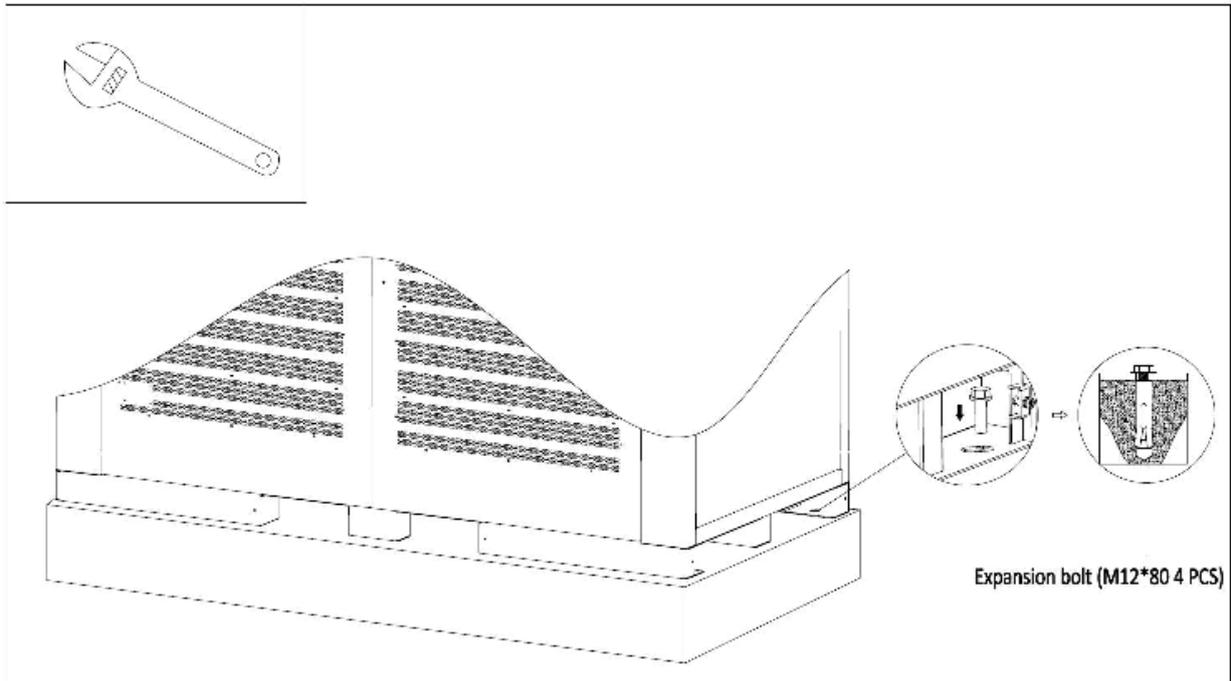


Figure 3.4.1-G

(4) Install the front, rear, left, and right sealing plates of the foundation, as shown in **Figure 3.4.1-H**.

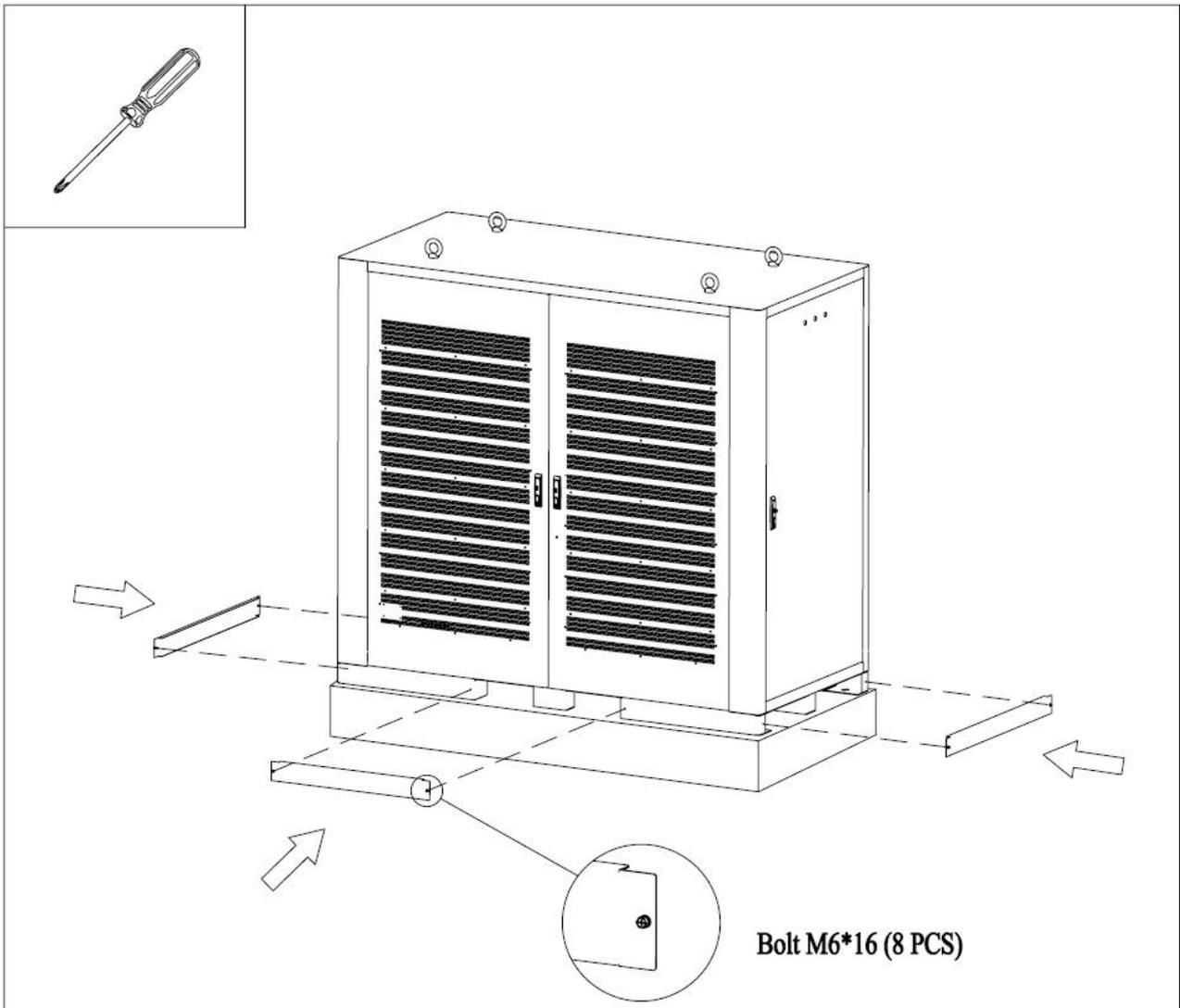


Figure 3.4.1-H

Note:

Install the front and rear sealing plates in the direction shown in the figure first.

*Then install M6*16 screws from both sides of the sealing plate to fasten them.*

3.4.2 User unit

- **1. Unpacking the outer package of the cabinet**

Tools required: herringbone ladder, claw hammer, art knife, protective gloves.

(1) With the help of the herringbone ladder, straighten the metal card on the top of the packing material with a claw hammer, and remove the upper cover plate. As shown in **Figure 3.4.2-A**.

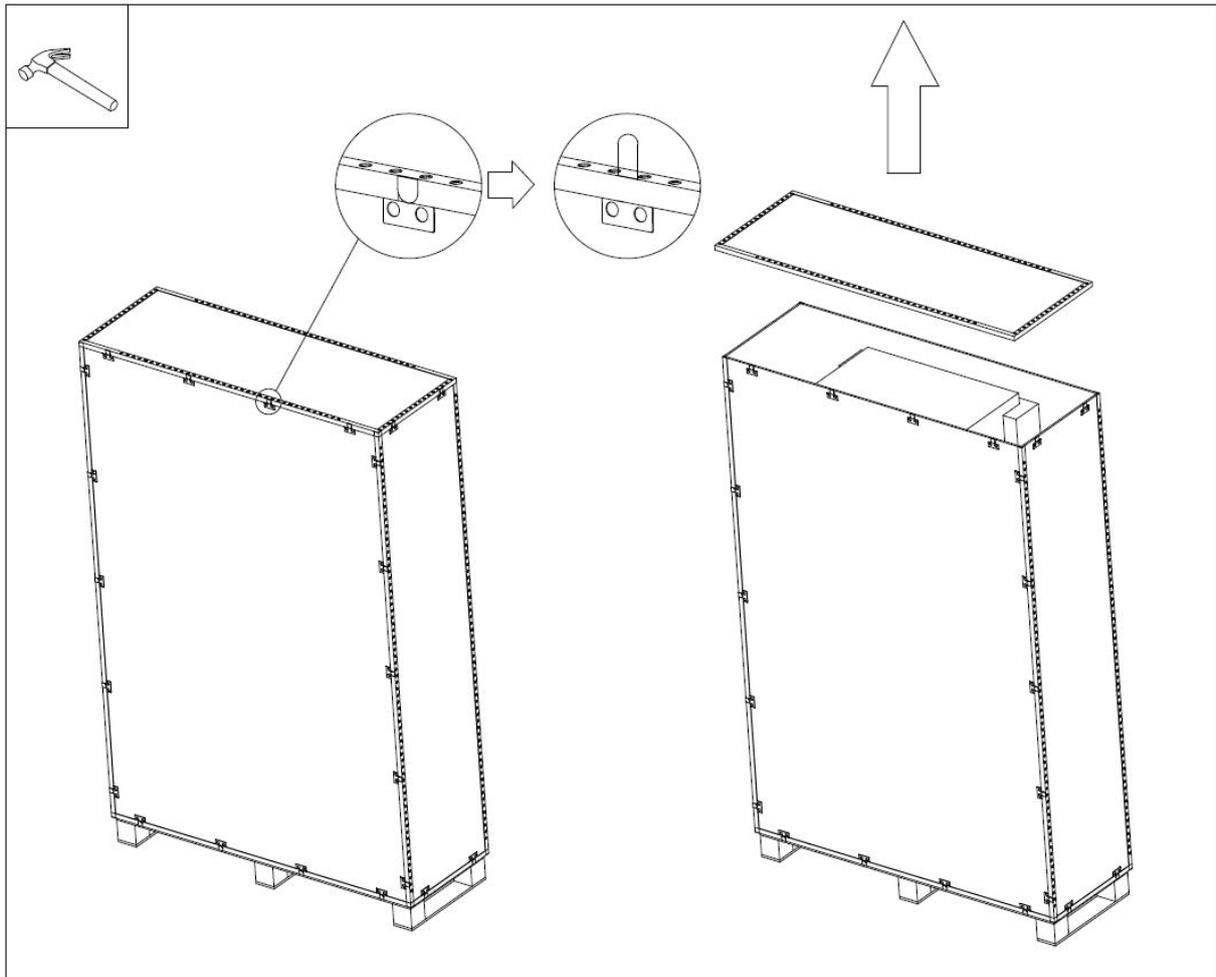


Figure 3.4.2-A

(2) Straighten all metal cards with a claw hammer, remove the surrounding wood boards, cut the PE bags wrapped around the cabinet with the art knife, and remove the PE bags and foam. As shown in **Figure 3.4.2-B**.

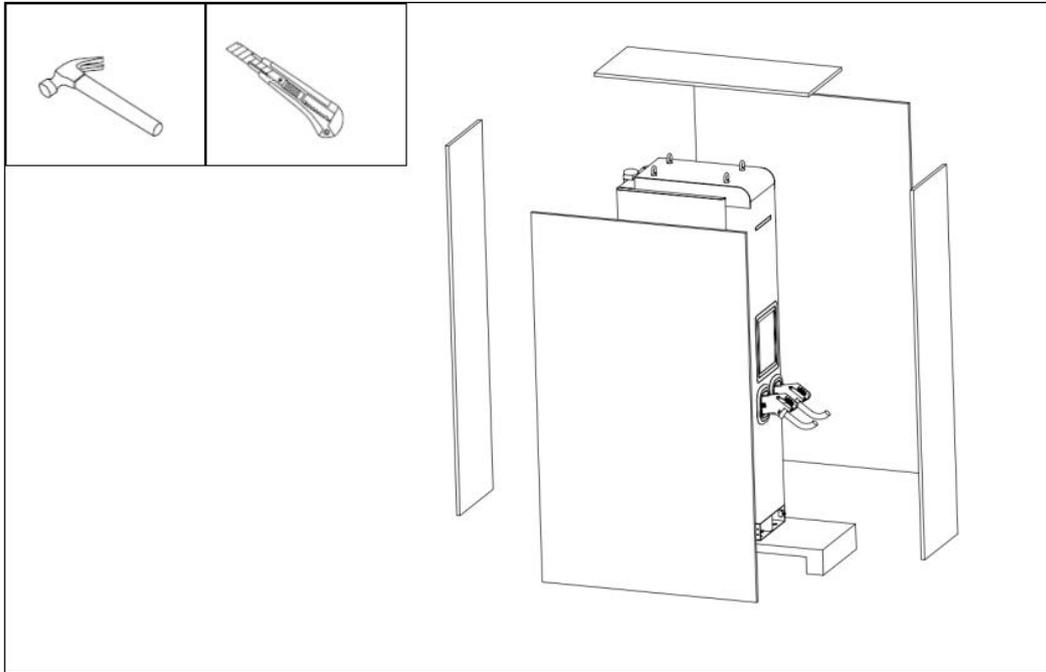


Figure 3.4.2-B

(3) Use a wrench to remove the 4 M12 bolts around the foundation, as shown in **Figure 3.4.2-C**.

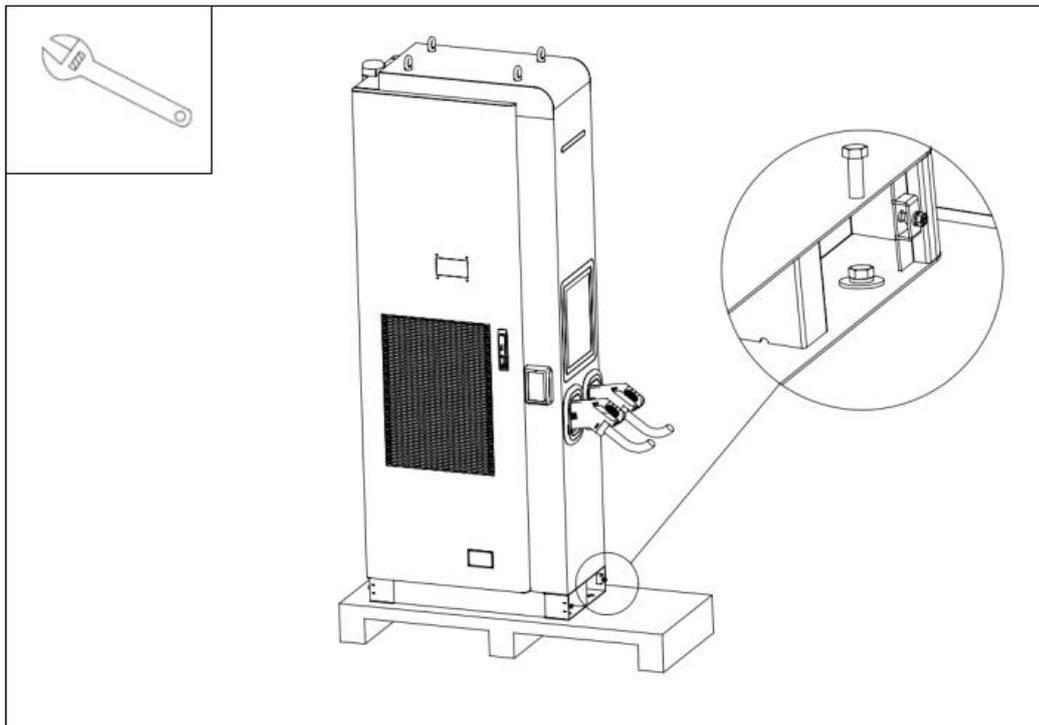


Figure 3.4.2-C

● **2. Foundation drilling**

Tools required: electric drill, $\phi 16\text{mm}$ drill bit, protective gloves.

(1) The foundation is constructed according to the positions and dimensions of the holes given in **Figures 3.2.2-E and 3.2.2-G**. The cable holes of the foundation correspond to the cable holes of the foundation of the User Terminal.

(2) According to the installation hole positions marked in **Figure 3.2.2-C**, use an electric drill to drill 4 $\phi 16\text{mm}$ installation holes with a depth of 80~85mm on the cement installation foundation.

(3) Use a claw hammer to knock 4 M12*80 expansion bolts into the holes, and then unscrew the screw part so that the expansion rods are inserted into the foundation mounting holes. As shown in **Figure 3.4.2-D**.

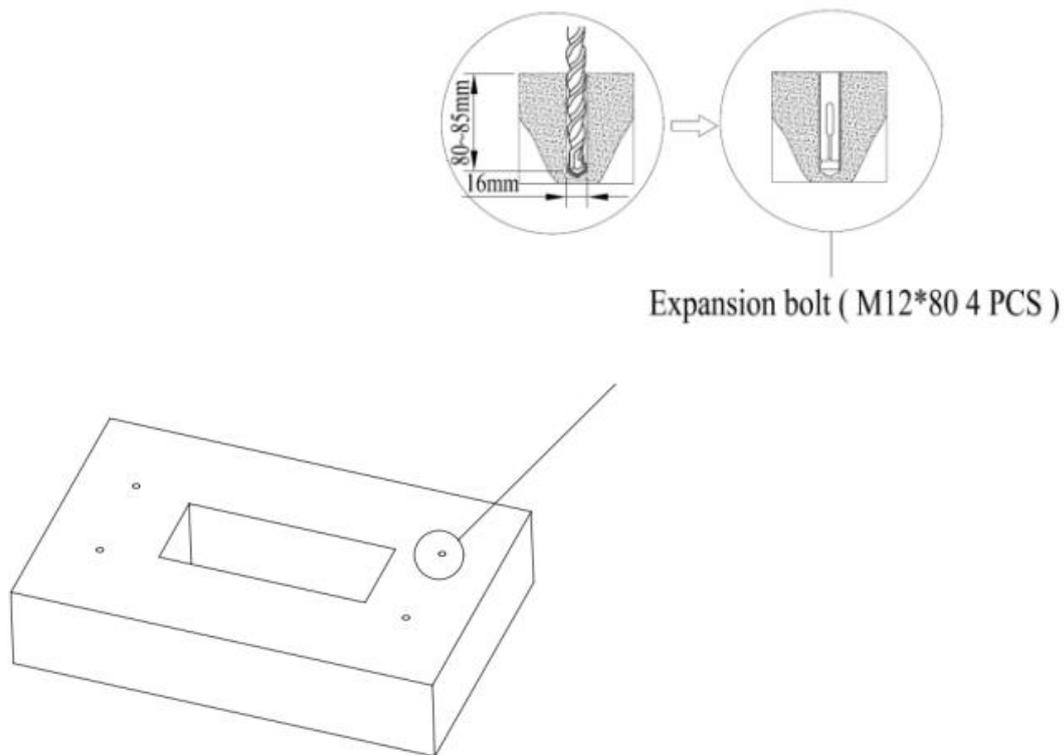


Figure 3.4.2-D

● **3. Placement of the User Terminal**

(1) Use a forklift to transport the User Terminal to the mounting foundation. Use a crane to lift the cabinet, as shown in Figure 3.4.2-E.

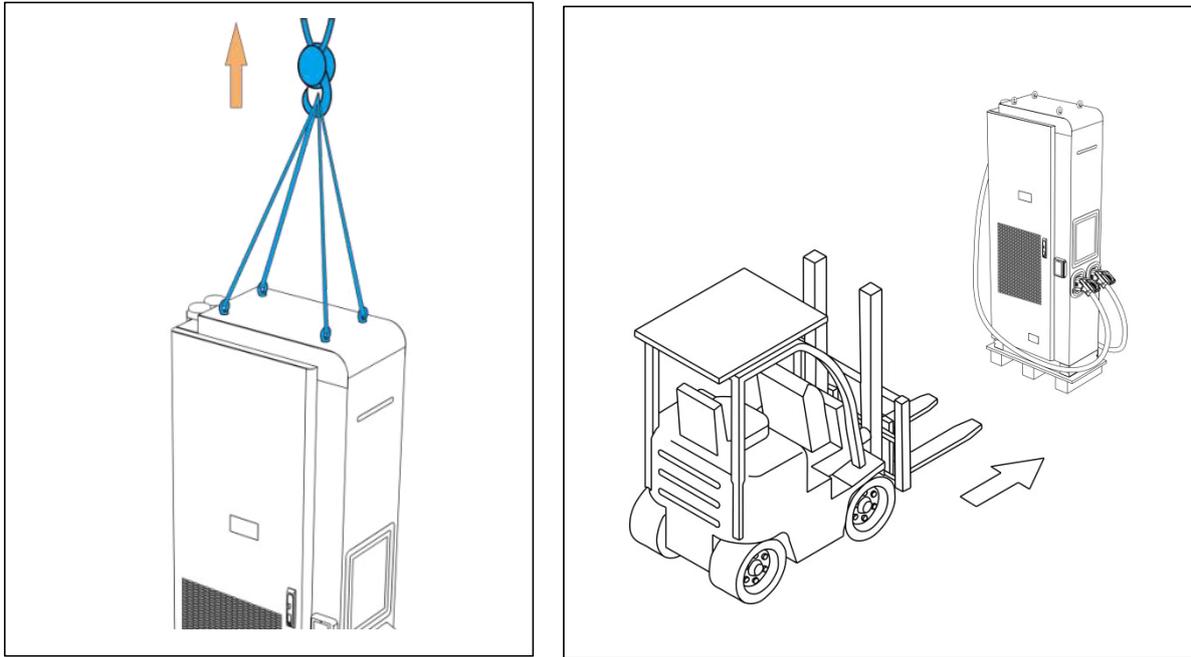


Figure 3.4.2-E

(2) Suspend the cabinet above the cement foundation, open the front door of the cabinet, and pull the pre-buried cables from the bottom of the cabinet into the cabinet through the cable entry hole. After that, slowly lower the cabinet and pull the remaining cables from the front door until the cabinet is completely placed on the foundation.

Note:

- ① The mounting holes of the cabinet foundation need to correspond to the holes on the cement foundation;
- ② The cable entry sealing plate of the cabinet can be removed. It is recommended to remove the sealing plate before entering the cable, and then pass the cable through the waterproof gland. The waterproof gland needs to be tightened to ensure sealing;
- ③ During the operation, please be careful not to damage the cable and the charging cable, as shown in **Figure 3.4.2-F**.

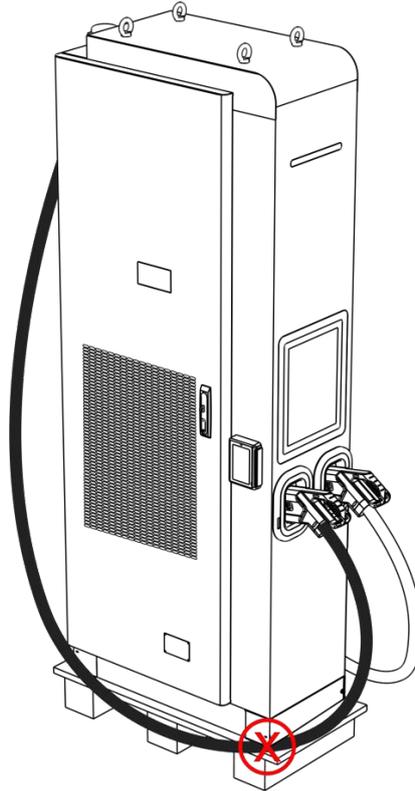


Figure 3.4.2-F

(3) Install 4 M12*80 expansion bolts on the drilled mounting holes around the foundation, and tighten the bolts to ensure the cabinet is fixed reliably, as shown in **Figure 3.4.2-G**

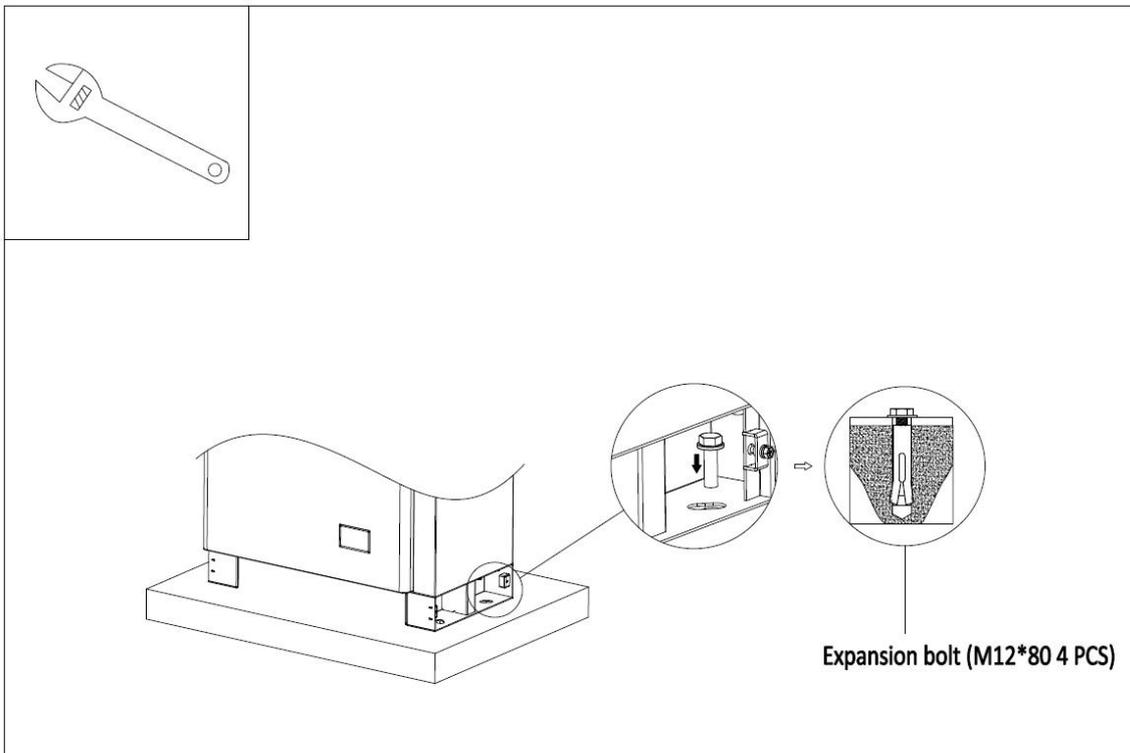


Figure 3.4.2-G

(4) Install the front and rear sealing plates of the foundation, as shown in **Figure 3.4.2-H**.

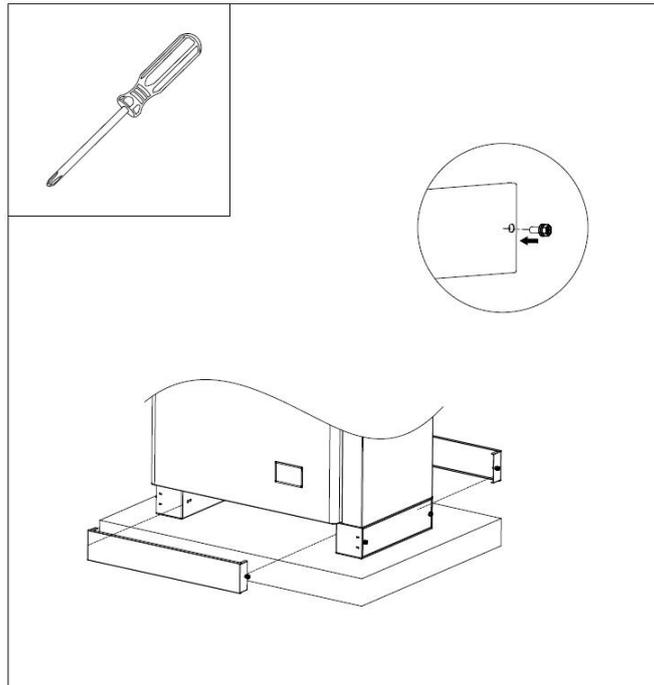


Figure 3.4.2-H

(5) Install the sealing plates on the left and right sides, as shown in **Figure 3.4.2-I**.

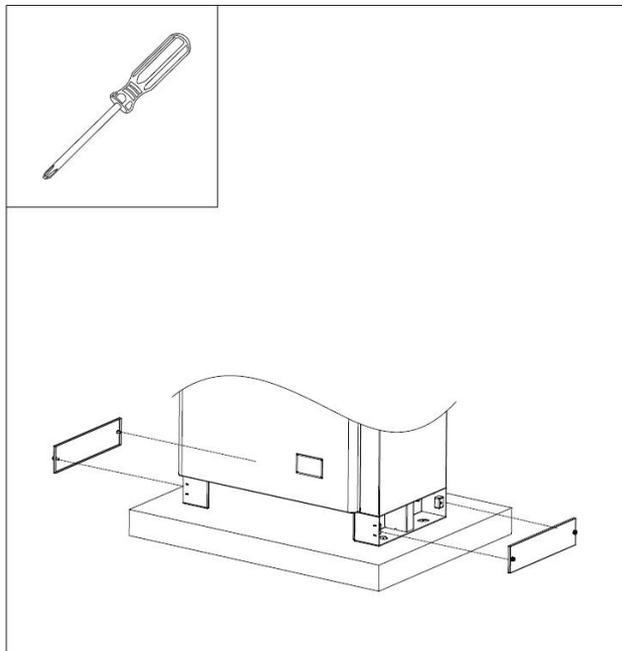


Figure 3.4.2-I

Note:

*Install the sealing plate in the direction shown in the figure first, and then fasten it with 4 screws from both sides of the sealing plate. The screw size is M6*16.*

3.4.3 User unit (SEC1000/200U-C-PA)

- 1. **Unpacking the outer package of the cabinet**

Tools required: claw hammer, art knife, protective gloves.

(1) Straighten the metal card on the top of the packing material with a claw hammer, and remove the upper cover plate. As shown in **Figure 3.4.3-A**.

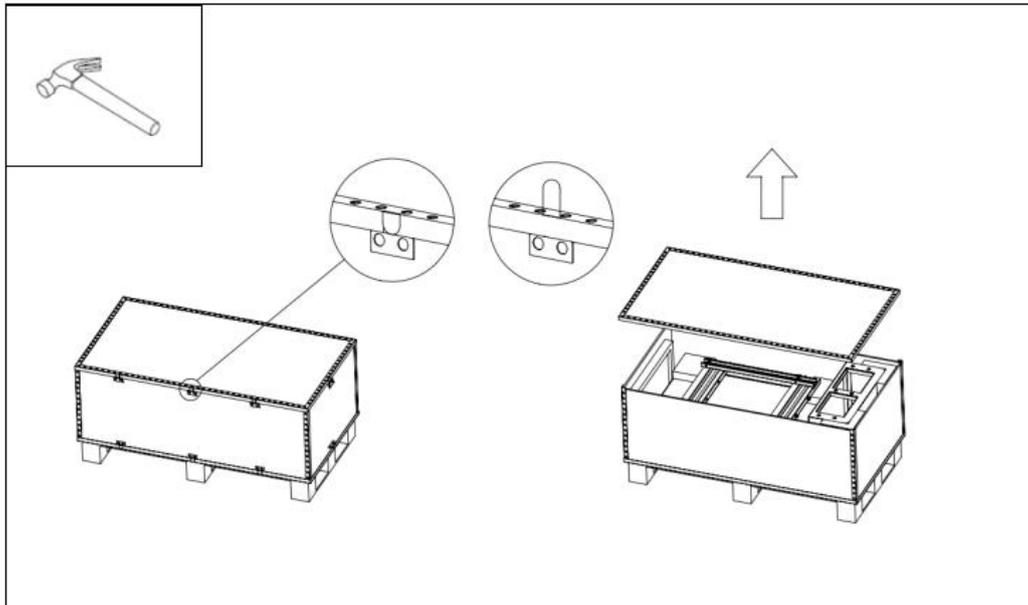


Figure 3.4.3-A

(2) Straighten all metal cards with a claw hammer, remove the surrounding wood boards, cut the PE bags wrapped around the cabinet with the art knife, and remove the PE bags and foam. As shown in **Figure 3.4.3-B**.

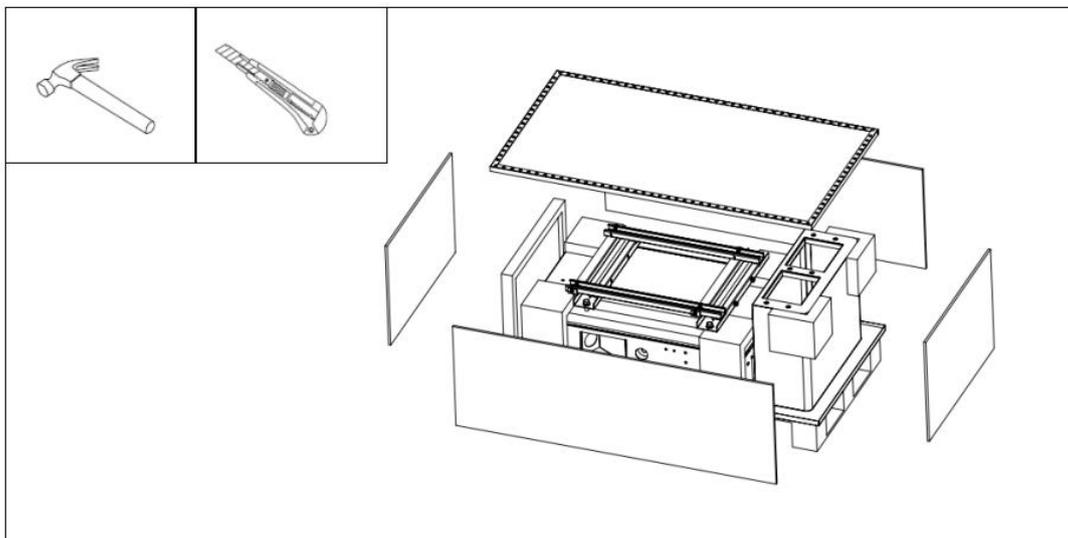


Figure 3.4.3-B

● **2. Foundation drilling**

Tools required: electric drill, $\phi 16\text{mm}$ drill bit, protective gloves.

(1) The foundation is constructed according to the positions and dimensions of the holes given in **Figures 3.2.2-F and 3.2.2-H**. The cable holes of the foundation correspond to the cable holes of the foundation of the User Terminal.

(2) According to the installation hole positions marked in **Figure 3.4.3-C**, use an electric drill to drill 6 $\phi 12\text{mm}$ installation holes with a depth of 80~85mm on the cement installation foundation.

(3) Use a claw hammer to knock 6 M12*80 expansion bolts into the holes, and then unscrew the screw part so that the expansion rods are inserted into the foundation mounting holes. As shown in **Figure 3.4.2-D**.

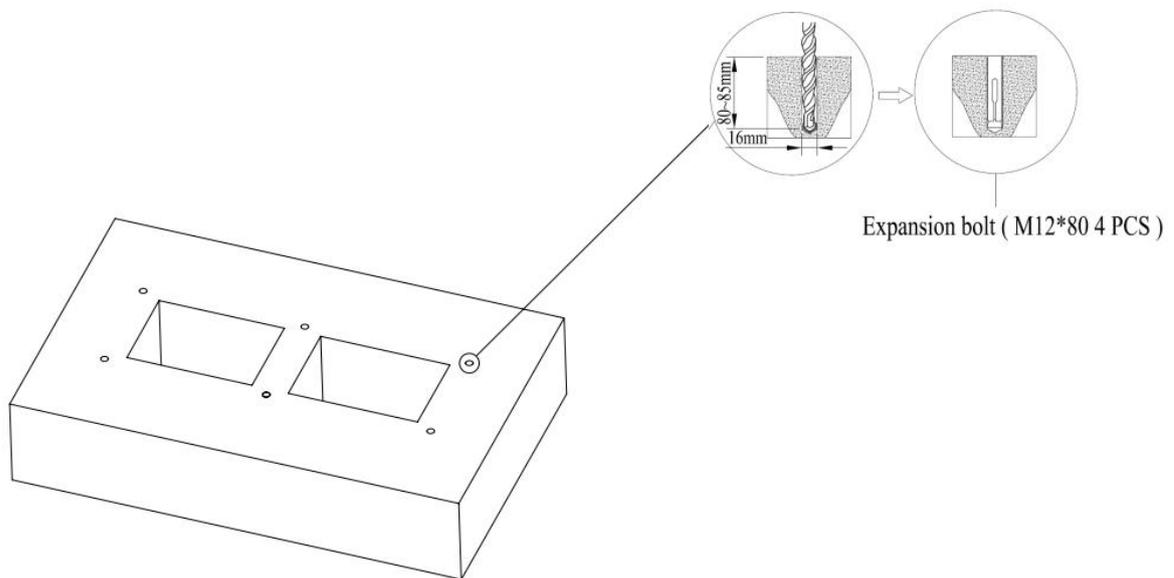


Figure 3.4.3-C

● **3. Placement of the User Terminal**

(1) Suspend the cabinet base above the cement foundation, pull the pre-buried cables from the bottom of the cabinet base into the cabinet base through the cable entry hole. After that, slowly lower the cabinet base and pull the remaining cables until the cabinet is completely placed on the foundation.

(2) Install 6 M12*80 expansion bolts on the drilled mounting holes around the foundation, and tighten the bolts to ensure the cabinet base is fixed reliably, as shown in **Figure 3.4.3-D**.

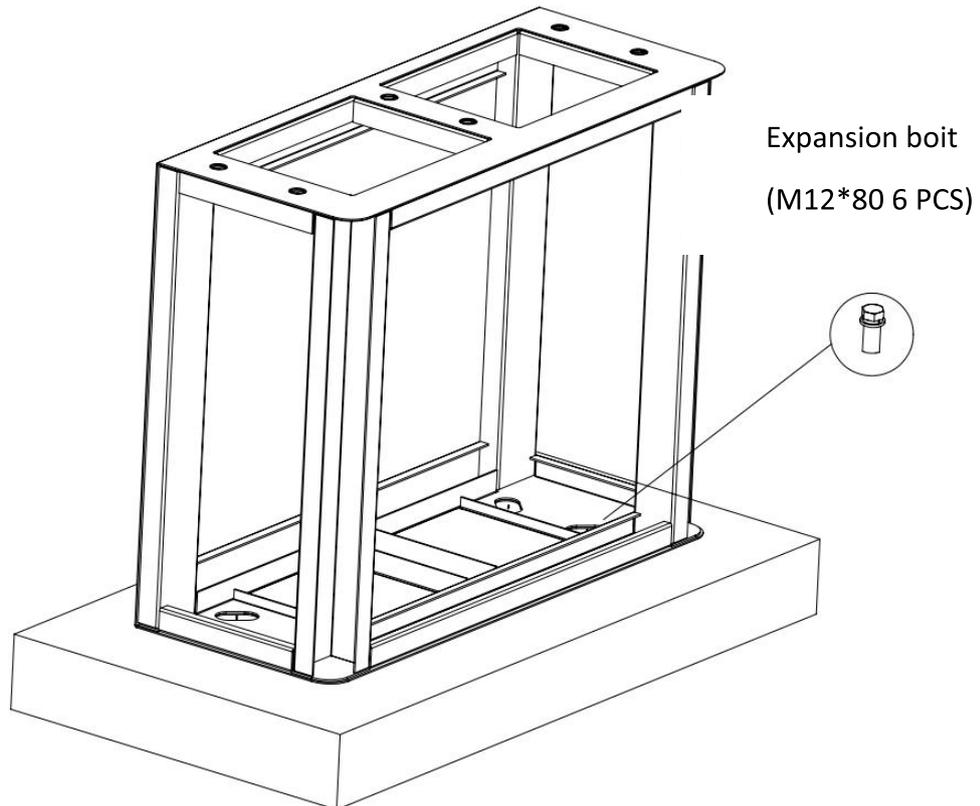


Figure 3.4.3-D

(3) Transport the User Terminal to the mounting foundation, as shown in **Figure 3.4.3-E**.

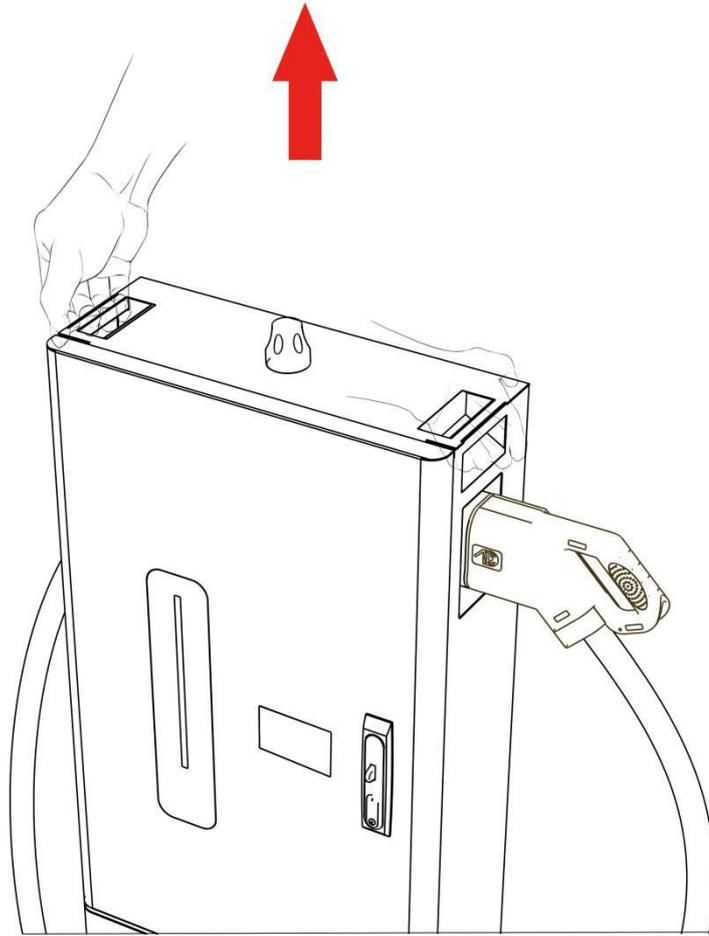


Figure 3.4.3-E

(4) Suspend the cabinet above the base, open the front door of the cabinet, and pull the pre-buried cables from the bottom of the cabinet into the cabinet through the cable entry hole. After that, slowly lower the cabinet and pull the remaining cables from the front door until the cabinet is completely placed on the cabinet base. And tighten the 6 M10 bolts between the cabinet and the cabinet base, as shown in **Figure 3.4.3-F**.

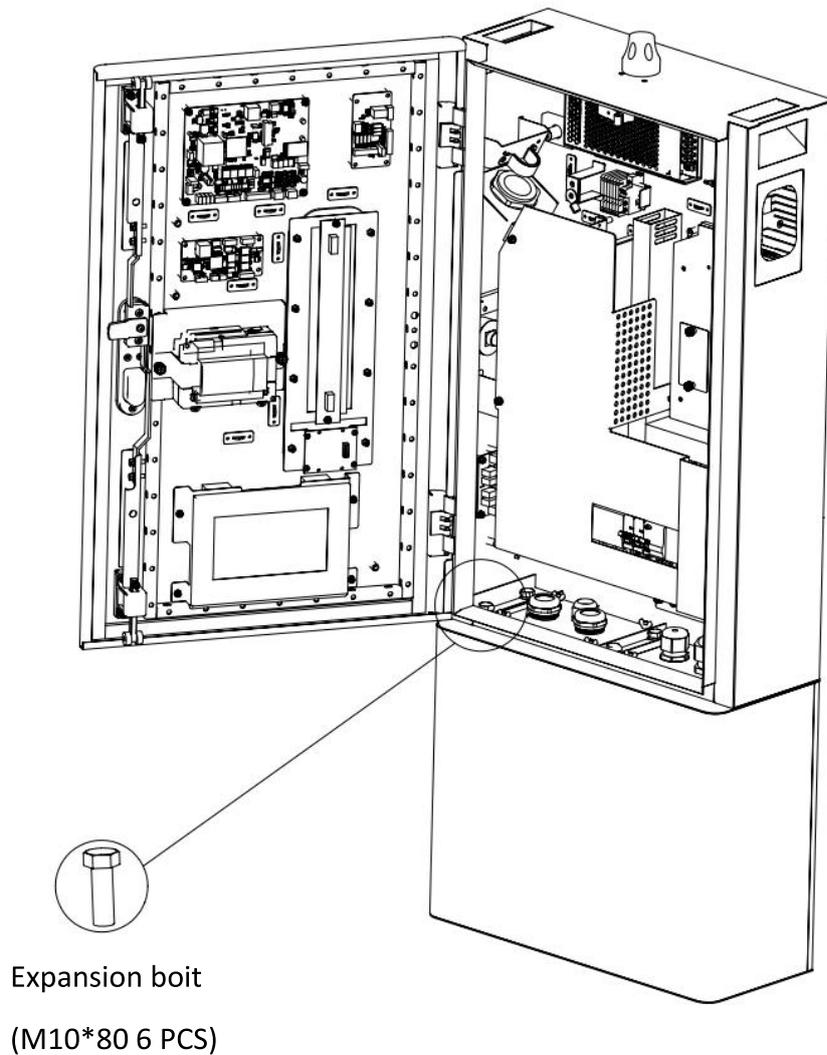


Figure 3.4.3-F

Note:

- ① The mounting holes of the cabinet base foundation need to correspond to the holes on the cement foundation;
- ② During the operation, please be careful not to damage the cable and the charging cable, as shown in **Figure 3.4.3-G**.

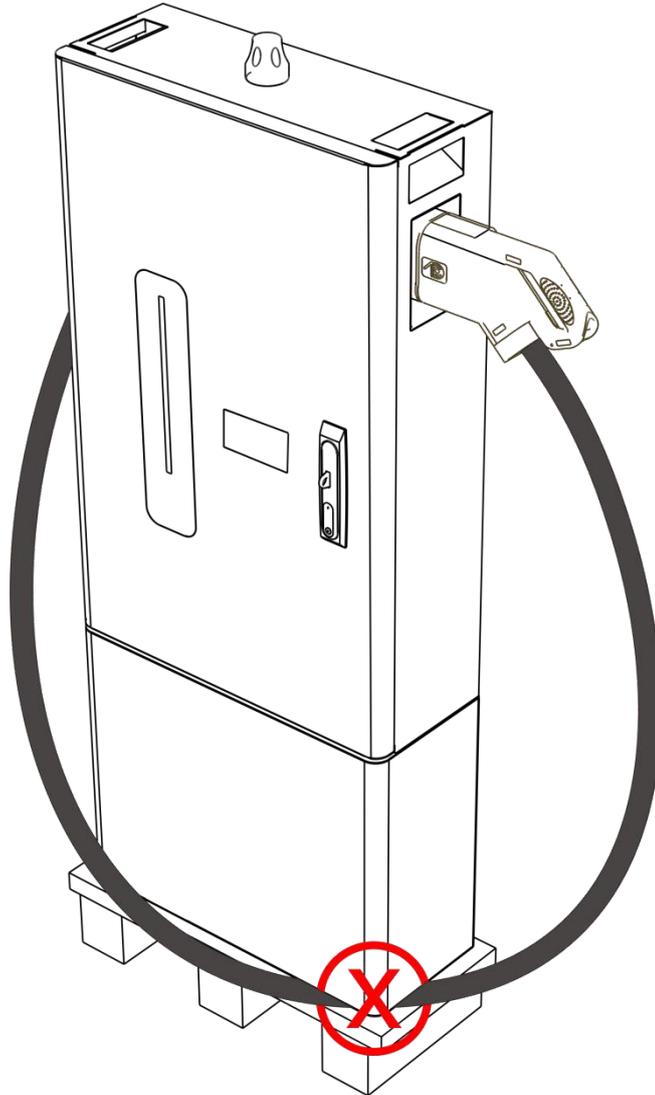


Figure 3.4.3-G

● **4. Placement of the User Terminal (wall hanging)**

(1) Use an electric drill to drill 6 ϕ 12mm installation holes on wall. Use a claw hammer to knock 4 M12*80 expansion bolts into the holes, and then unscrew the screw part so that the expansion rods are inserted into wall. Tighten the bolts to ensure the structural component is fixed reliably. As shown in **Figure 3.4.3-H**.

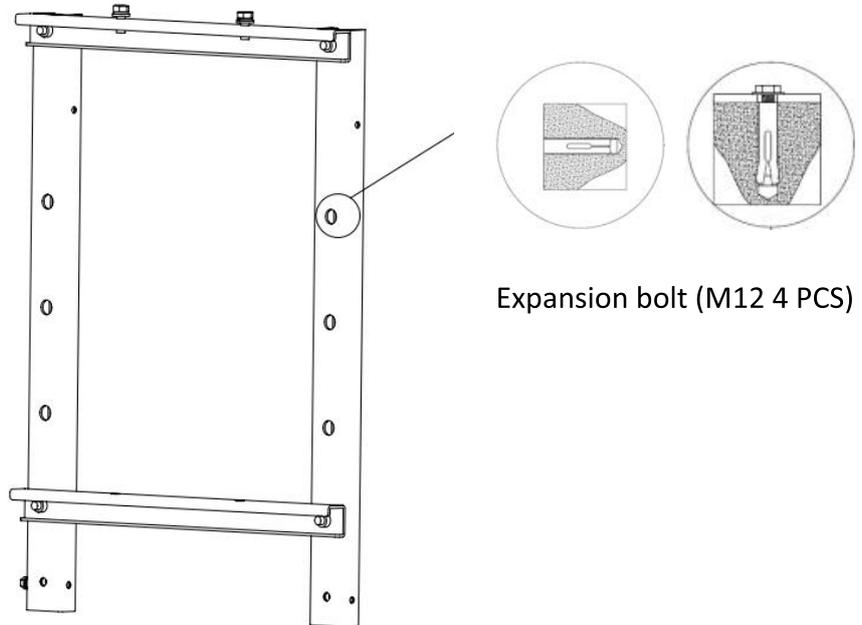


Figure 3.4.3-H

(2) Use 4 M10 bolts secure cabinet and structural component. As shown in **Figure 3.4.3-I**.

Expansion bolt (M10 4 PCS)

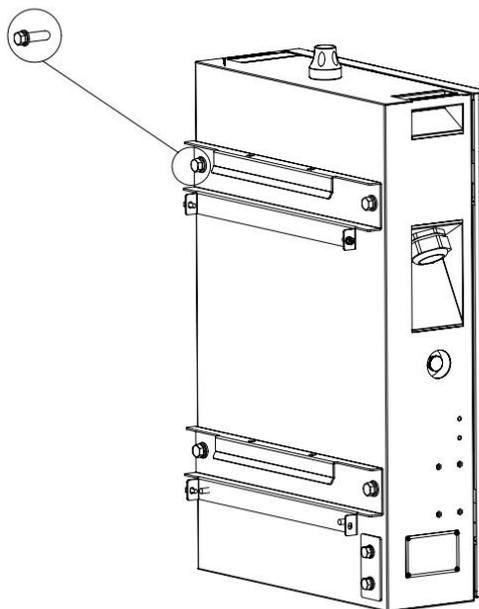


Figure 3.4.3-I

(3) Hang the cabinet on the structural component and secure it with screws, as shown in **Figure 3.4.3-J**.

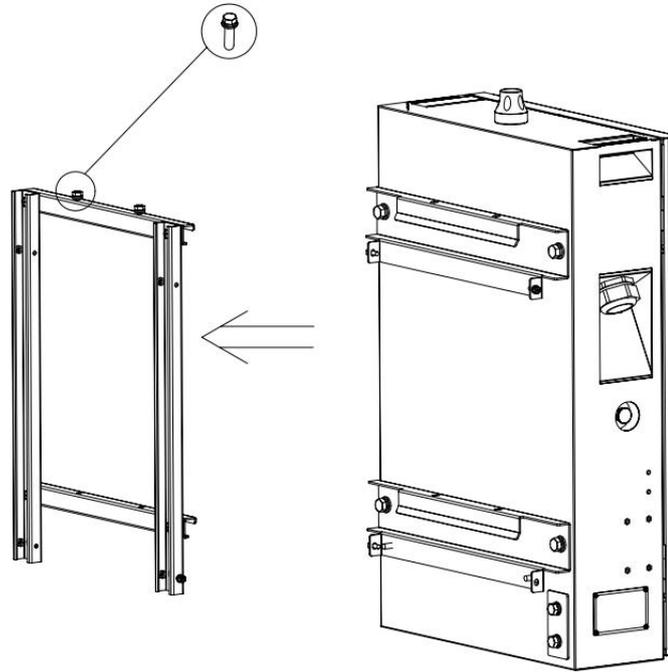


Figure 3.4.3-J

3.5 Construction of power cables

3.5.1 Layout requirements of power cables

1. The AC input and DC output cables of the Power Bank enter from the Input and output hole at the bottom of the charger, and the cable shall be laid through the cable trench.
2. The AC input cable of the portable power bank is copper core wire or aluminum core wire, and the DC output cable is copper core wire. The cross-sectional area of the cable depends on the load.
3. The AC input cable starts from the site distribution switch and connects to the copper bar of the charger's input switch. Protection devices shall be provided at the superior side.
4. The colors of AC input cable are brown (L1), black (L2), gray (L3), blue (n) and yellow&green (PE). If the input cable has only one color, it is necessary to put cable number identification (or sleeve with mark) on it.
5. The power cables, auxiliary source cables and communication cables of the User Terminal come from the input hole at the bottom of the charger through the cable trench.
6. The colors of DC power cable connecting the Power Bank and the User Terminal are red (DC+) and black (DC-) . If the DC power cable has only one color, it is necessary to put cable number identification (or sleeve with mark) on it.
7. The outdoor power cable shall be laid according to the power specification. The power cable and the signal cable must be laid separately with signal cable in a separate tube to avoid radio interference.
8. The cable shall not be laid in the area which can be easily damaged by means of mechanical factors, corrosive medium, humidity, strong magnetic field and strong electrostatic field interference. If necessary, please take corresponding protection measures.

3.5.2 Process requirements of power cables

1. Cable laying shall be free from external force, distortion and damage of insulation layer.
2. It is strictly forbidden to twist, flatten, break the protective layer and wear the protective layer severely.
3. The protective pipe shall be cleaned before the cable passes through the pipe, and the wire shall not be damaged.
4. The cable arrangement shall be tidy and the conjunctions should be avoided.
5. Sufficient clearance shall be reserved for each wire of the cable, and the curve ratio shall be consistent.
6. Crimp the terminal of the cable to ensure no clearance between the contact surface.
7. When crimping the termination of input cable, the hot-shrinking tube should be installed between the cable and the termination, and the inside and outside of the tube shall be smooth without damage and crack. Before setting the hot-shrinking tube, the foreign objects on the cable should be removed (e.g., burr and iron filings) on the surface to prevent damage to the tube. The color of the tube should be in accordance with the phase. When the tube is being heated, flame should be avoided inside the cabinet to prevent burning the internal components and cables. The appearance after it should be flat, smooth, in uniform shrinkage with no dust and crack.
8. Attention should be paid to the wires type when crimping RJ45 connector for ethernet cable. Check whether it is in good status after crimping.

3.5.3 Recommended Cable Specifications

- 1. Cable specifications for AC input of the Power Bank (Recommended)

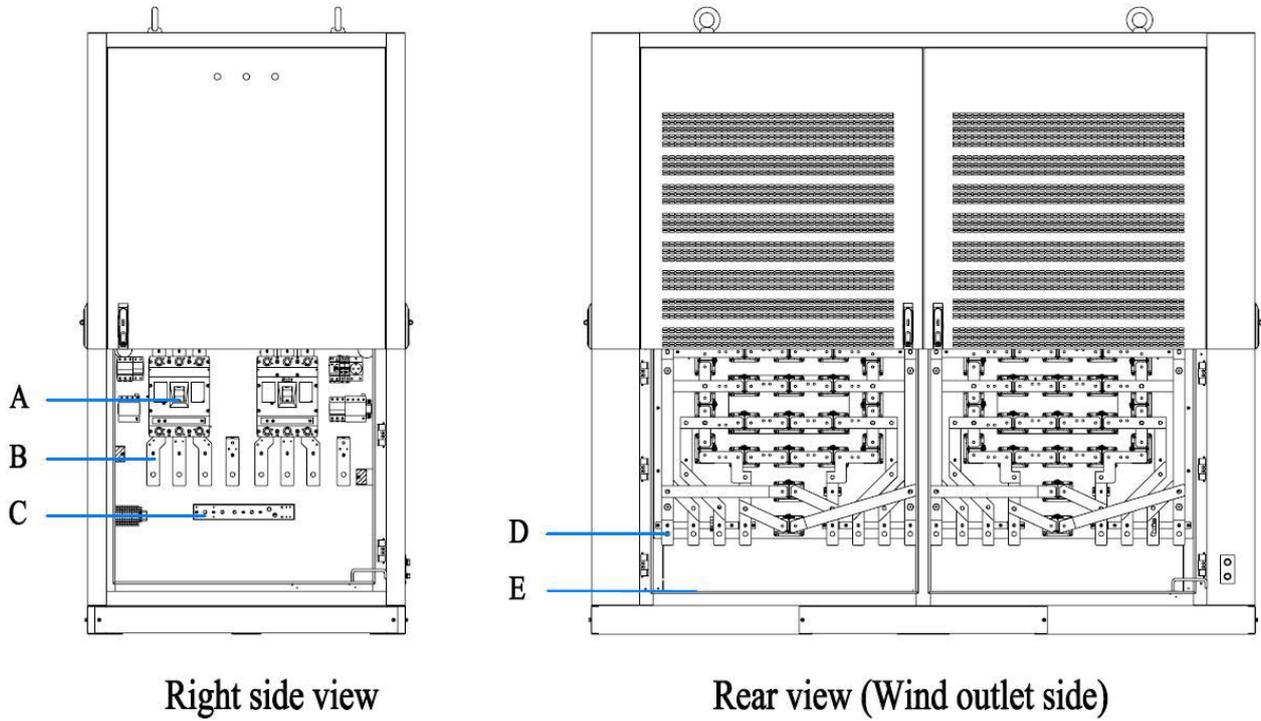
Capacity (kW)	Cable specification	Capacity of superior distribution switch	Screw specification (diameter: mm)
960kW	Copper: $4*(4*300\text{mm}^2+1*150\text{mm}^2)$ Aluminium: $4*(8*150\text{mm}^2+1*150\text{mm}^2)$	2200A	L1/L2/L3/ N: M16 PE:M12
1280kW	Copper: $4*(8*150\text{mm}^2 +1*150\text{mm}^2)$ Aluminium: $4*(8*240\text{mm}^2 +1*240\text{mm}^2)$	2900A	L1/L2/L3/ N: M16 PE:M12

- 2. Cable specifications for DC input, AC auxiliary input and communication cables of the User Terminal (Recommended)

Cable category	Cable specification	Screw specification (diameter: mm)
DC power cable	Copper: $4*300\text{mm}^2+150\text{mm}^2$	DC1+/DC1-/ DC2+/DC2-: M16 PE: M12
DC power cable For SEC1000/200U-C-PA	Copper: $2*95\text{mm}^2+50\text{mm}^2$	DC1+/DC1-/DC2+/ DC2-:M16/M12 PE: M12/M10
AC secondary cable	$2*4\text{mm}^2$	/
Communication cable	shielded twisted pair 2*1.0 (grounding shield)	/

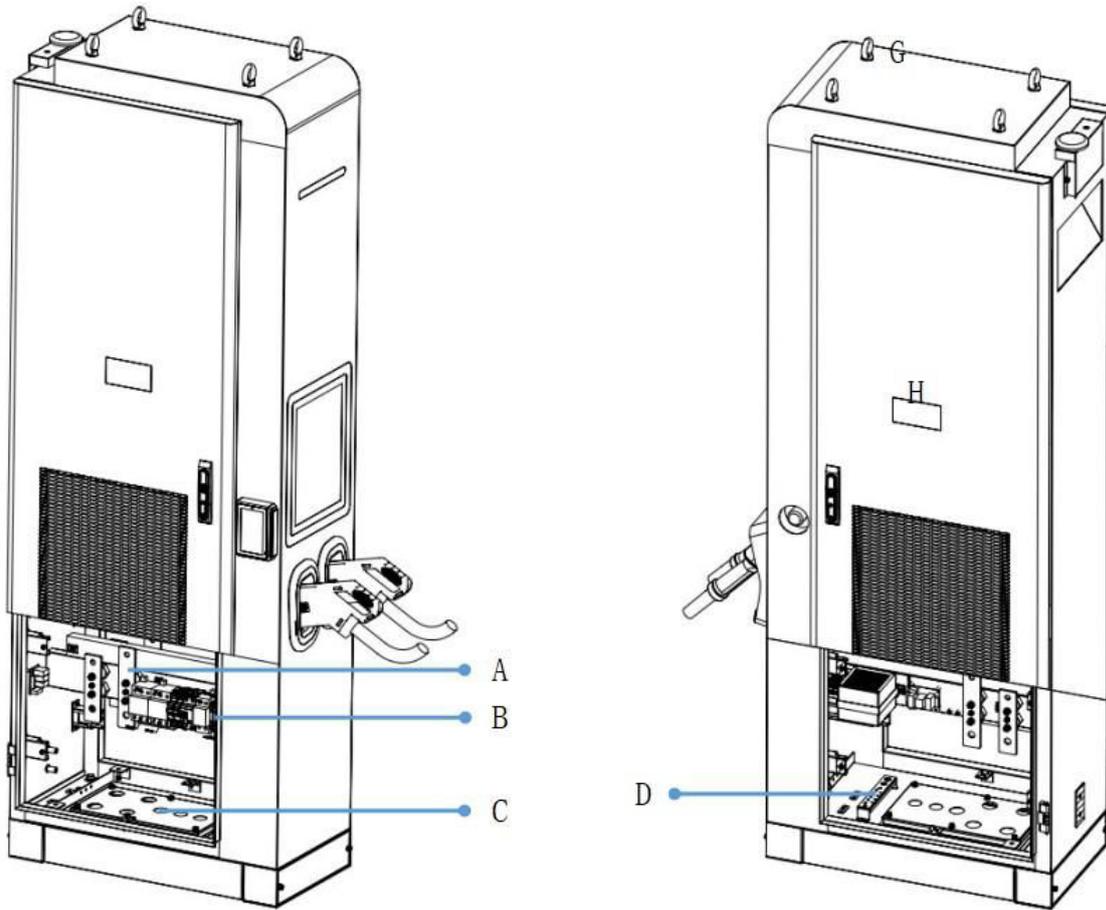
3.5.4 Internal wiring diagram

- 1. Internal wiring diagram of Power Bank



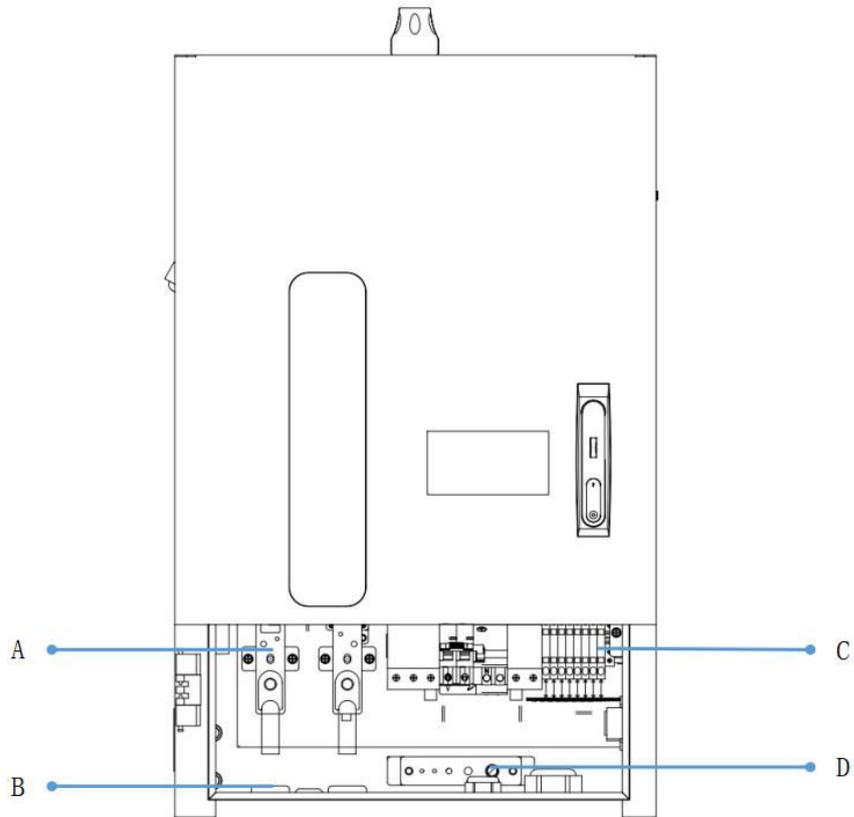
A	Main circuit breaker	D	Copper bar of DC output cable
B	Copper bar of AC input cable	E	Grounding copper bar to User Terminal
C	Grounding copper bar		

● 2. Internal wiring diagram of User Terminal



A	DC input copper bar	C	Input hole
B	Auxiliary power source and CAN cable transfer terminal	D	Grounding copper bar

● 3. Internal wiring diagram of User Terminal(SEC1000/200U-C-PA)



A	DC input copper bar	C	Auxiliary power source and CAN cable transfer terminal
B	Input hole	D	Grounding copper bar

3.5.5 Internal wiring details

- 1. Internal wiring details of Power Bank

(1) The Power Bank's internal AC input cables are located behind the front door, and the circuit breaker cables are N, L1, L2, L3 from left to right. The cabinet grounding parts are divided into three parts, two of which are the grounding copper bars inside, and the other one is at the external casing. The auxiliary power source and CAN cable from the Power Bank to the User Terminal are transferred through the terminal block, as shown in **Figure 3.5.5-A**.

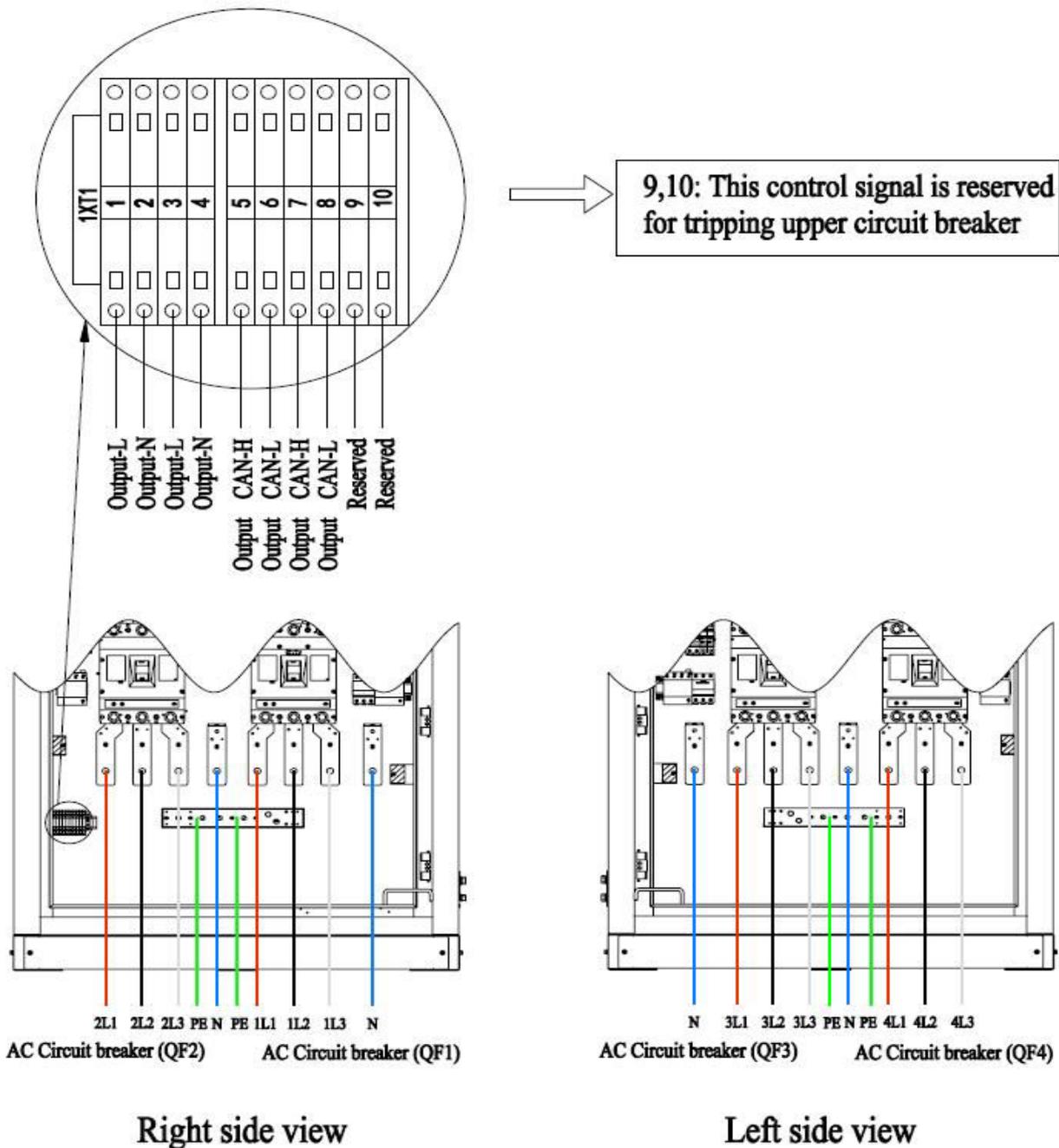


Figure 3.5.5-A-1 Right and Left view of internal wiring diagram of Power Bank

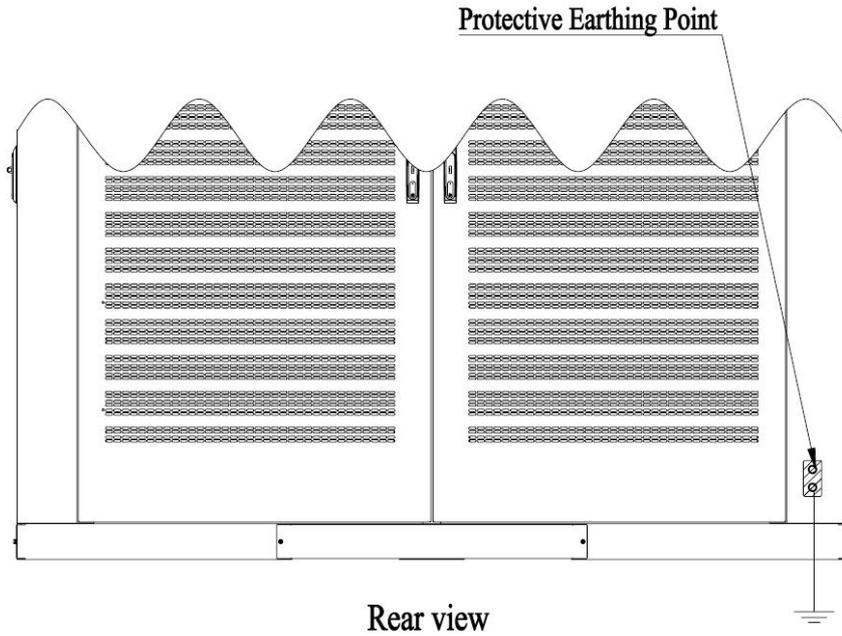


Figure 3.5.5-A-2 Rear view of Power Bank

(2) The Power Bank's internal DC output power cables are located behind the front door and rear door. The output cables are divided into sixteen groups which are 1A ~ 8A and 1B ~ 8B. The grounding wire of each User Terminal needs to be laid out from Power Bank separately, as shown in **Figure 3.5.5-B**. The Power Bank output and User Terminal input connection correspondence is shown in **Table 3.5.5**.

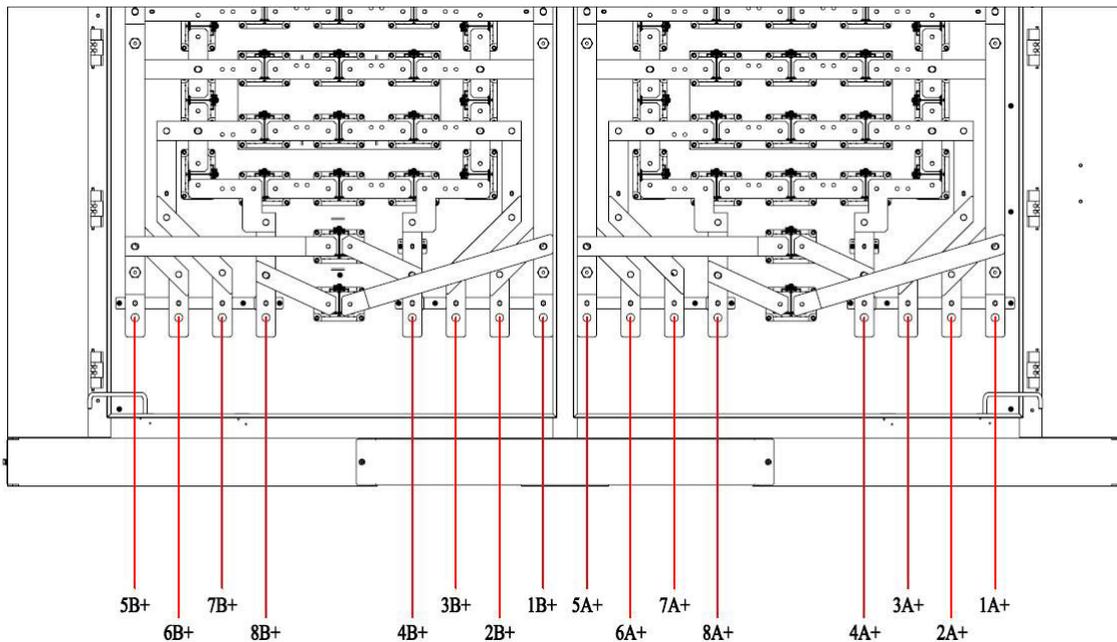


Figure 3.5.5-B-1 Front view of internal wiring diagram of Power Bank

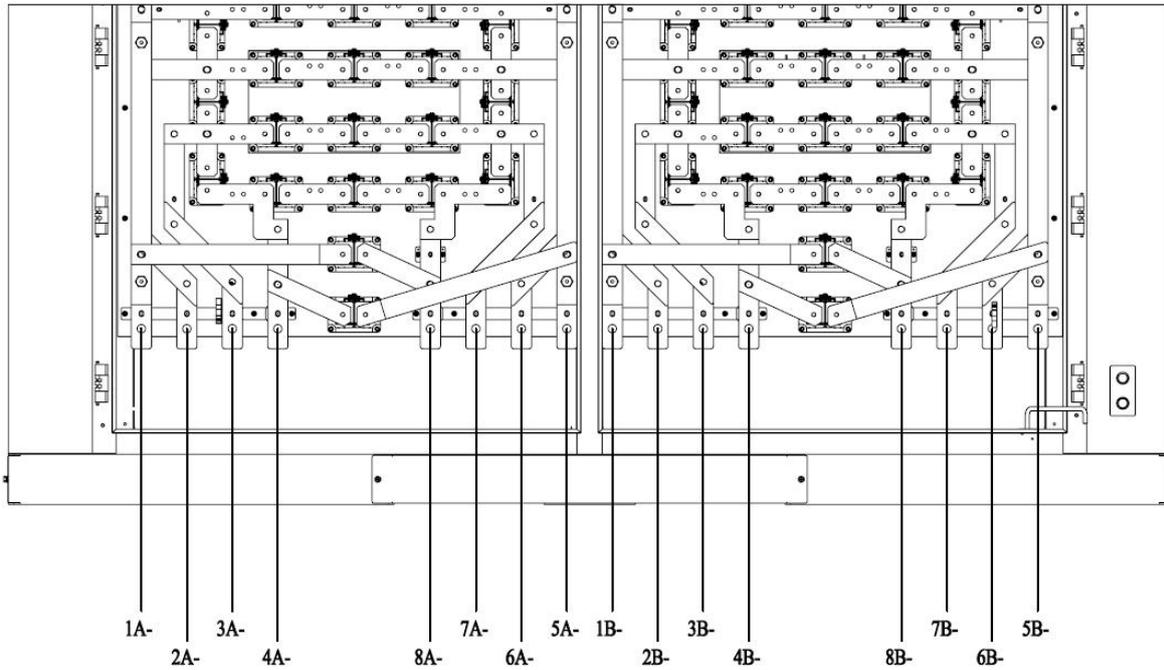


Figure 3.5.5-B-2 Back view of internal wiring diagram of Power Bank

Power Bank	1A+ 1A-	1B+ 1B-	2A+ 2A-	2B+ 2B-	3A+ 3A-	3B+ 3B-	4A+ 4A-	4B+ 4B-
<i>User Terminal</i>	#1 DC1+ DC1-	#1 DC2+ DC2-	#2 DC1+ DC1-	#2 DC2+ DC2-	#3 DC1+ DC1-	#3 DC2+ DC2-	#4 DC1+ DC1-	#4 DC2+ DC2-
Power Bank	5A+ 5A-	5B+ 5B-	6A+ 6A-	6B+ 6B-	7A+ 7A-	7B+ 7B-	8B+ 8B-	8A+ 8A-
<i>User Terminal</i>	#5 DC1+ DC1-	#5 DC2+ DC2-	#6 DC1+ DC1-	#6 DC2+ DC2-	#7 DC1+ DC1-	#7 DC2+ DC2-	#8 DC1+ DC1-	#8 DC2+ DC2-

Table 3.5.5 Power Bank output and User Terminal input connection correspondence

Connection Instructions of equipment:

- (1). The shield of CAN Communication cable must be grounded reliably.
- (2). The power cable and CAN communication cable need to be laid separately to avoid interference.
- (3). The grounding wire of each User Terminal needs to be laid out separately from the host, and the grounding wire between the User Terminals is not allowed to be connected in series.

● **2. Internal wiring diagram of User Terminal**

The internal wiring of User Terminal mainly includes DC power cable, AC230V cable and CAN cable. All wiring parts are located behind the front door, which are AC auxiliary power cable, CAN cable, DC1+, DC1-, DC2+, DC2- output cables from left to right. The wiring diagram is shown in **Figure 3.5.5-C**.

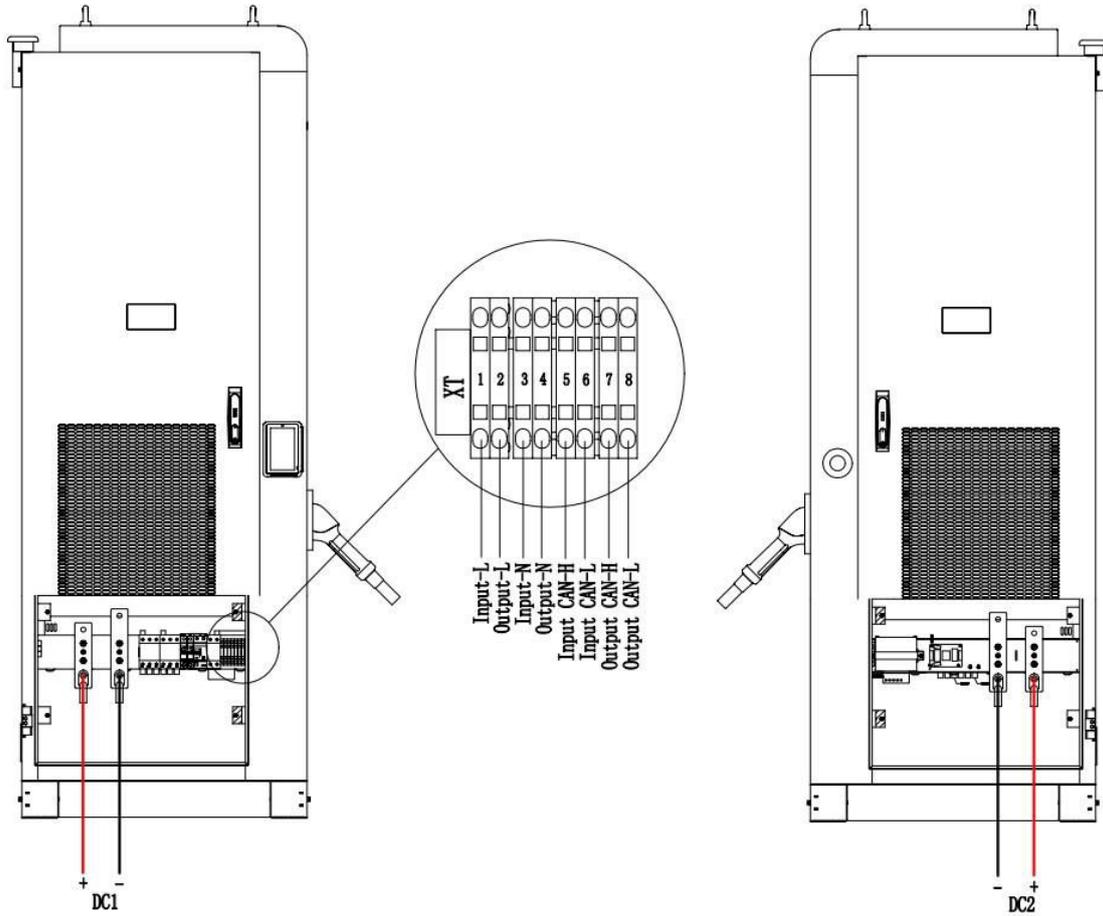


Figure 3.5.5-C Left and right view of internal wiring diagram of User Terminal

● 3. Internal wiring diagram of User Terminal (SEC1000/200U-C-PA)

The internal wiring of User Terminal mainly includes DC power cable, AC230V cable and CAN cable. All wiring parts are located behind the front door, which are DC1+, DC1-, AC auxiliary power cable, CAN cable output cables from left to right. The wiring diagram is shown in **Figure 3.5.5-D**.

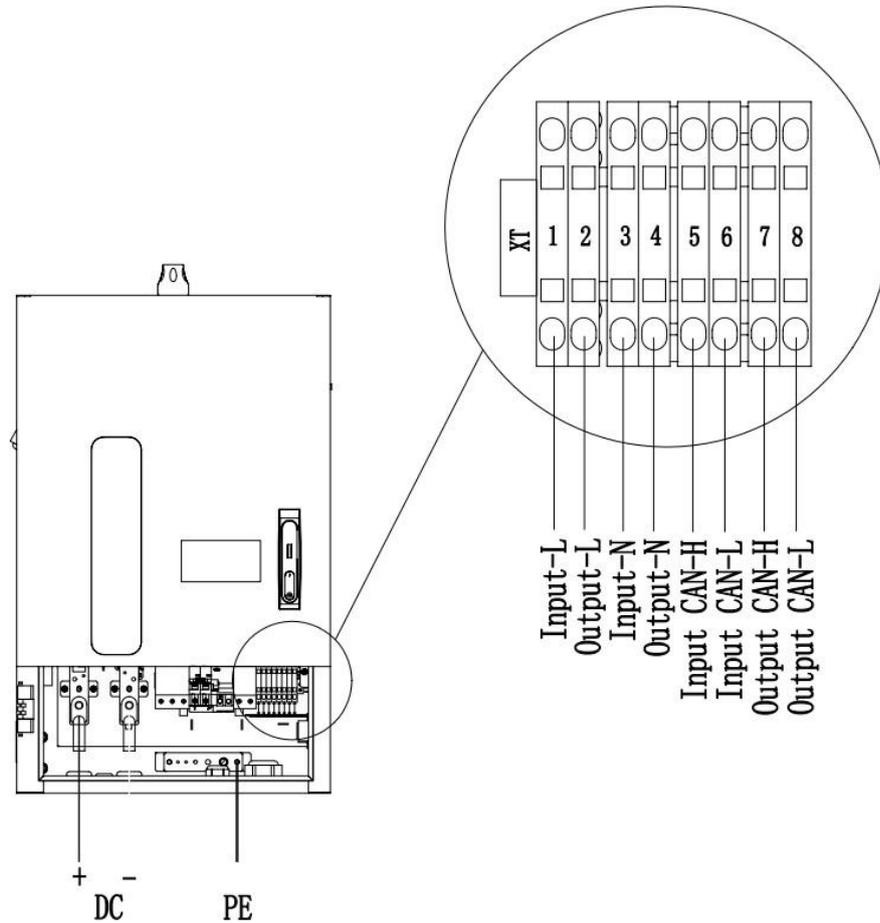


Figure 3.5.5-D Front view of internal wiring diagram of User Terminal

● 4. Network communication between Power Bank and User Terminal

Power Bank PCU Board and #1 User Terminal Router are connected to port J32 and port LAN with a Network cable is shown in **Figure 3.5.5-E**.

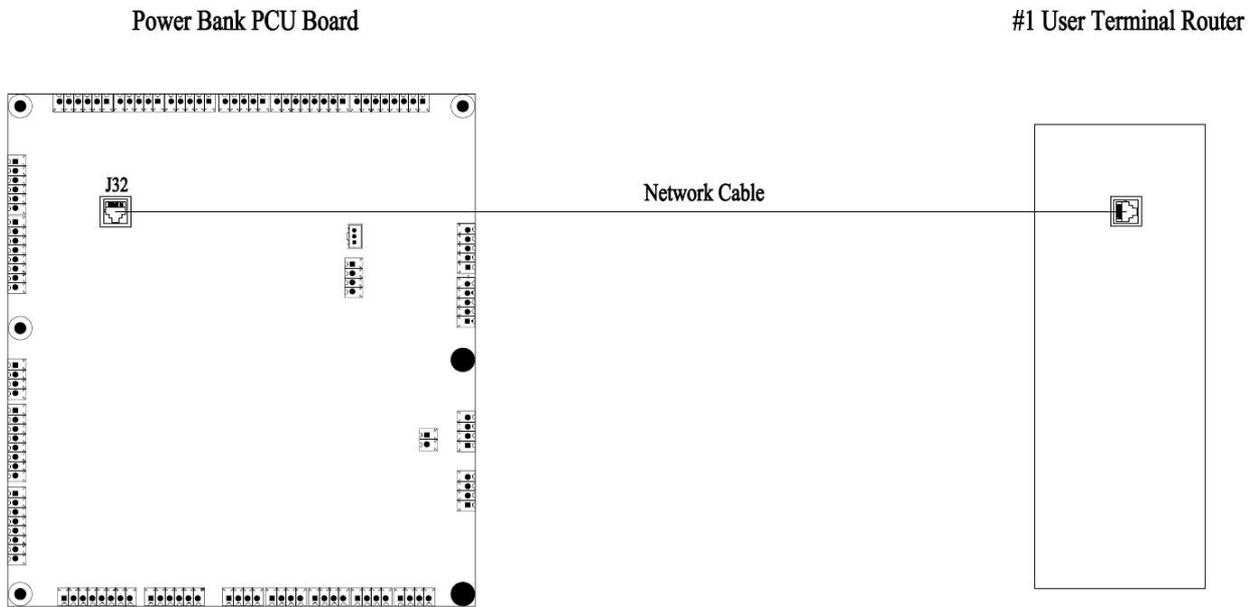


Figure 3.5.5-E

3.6 Inspection after installation

1. Tightness

According to the requirements of design and protection level, the junction between the input sealing plate and the input cable at the bottom of the cabinet should be sealed with waterproof gland to ensure tightness.

2. Stability

After the charger being installed, try to shake the cabinet from different directions, and there should be no obvious loosening and shaking. Please make sure the fastening screws are tightened.

3. Clean up

- Dispose of all transportation and packaging materials in accordance with local regulations.
- Clean up the junk inside and around the cabinet, such as small section of cable, binding tape, screw / nut, desiccant, etc. Do not leave installation tools on site or inside the cabinet (record the type and quantity of tools to prevent loss).
- Wipe the insulation parts with anti-static cloth. Do not use any corrosive solvent.

4. Inspection

- Check whether the base is fixed and sealed.
- Check whether the internal components of the equipment are tight and reliable.
- Check whether the electrical connection and wiring are correct and complete, whether the connection and the grounding parts are reliable.
- Check whether the cable terminal is loose using the screw driver.
- Check whether the cable is broken, damaged and scratched.
- Check whether the protection level of the equipment meets the requirements, especially the cable entrance at the bottom of the charger.
- Check the appearance, marking, integrity and cleanliness.
- Check the installation of the equipment is in accordance to the foundation installation drawing.

4 Operation interface

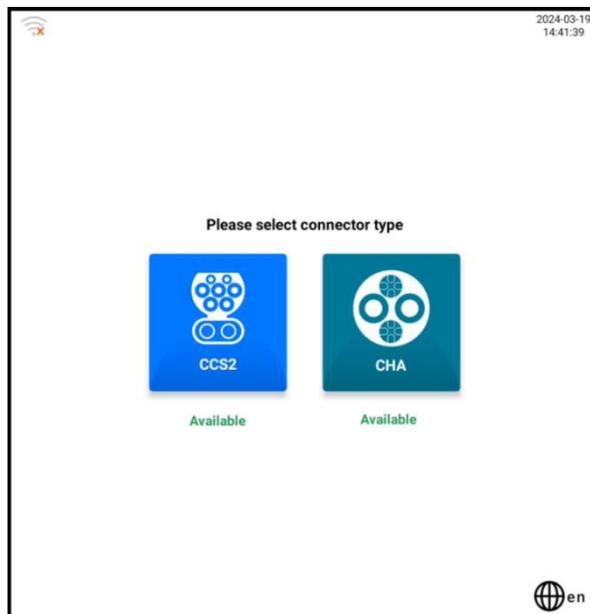
4.1 Notes before charging

- (1) Before charging, make sure that the charger system is in a normal state.
- (2) Before charging, make sure that the charging cable is not damaged, and the charging connector is free of water. If the charging connector gets water, do not charge directly.
- (3) Before charging, the user should fully read the User Manual and be familiar with the safety operation instructions to prevent dangerous operations.
- (4) Before charging, the user should be familiar with the charging operation steps to prevent improper operation.

4.2 Charging process

	<p>Note: When the charger is in the standby state, the screen is in the screen-off sleep mode. Before operation, you need to touch the screen with your finger to wake up the screen.</p>
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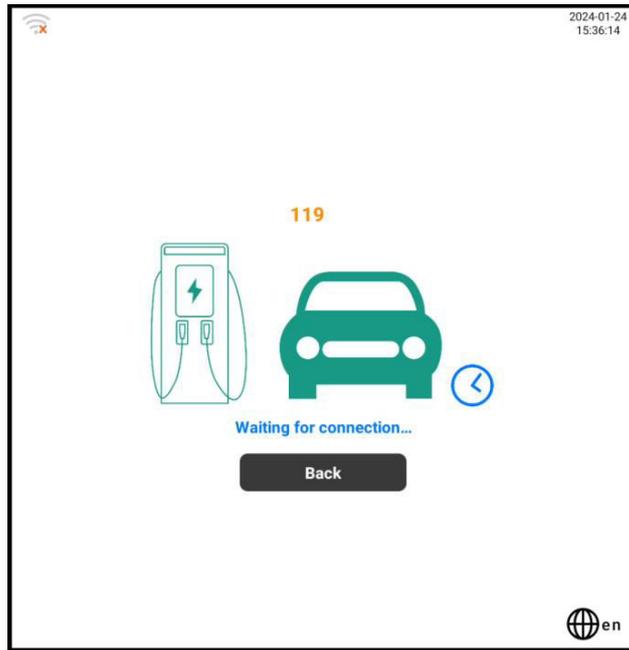
4.2.1 Standby interface



Tip:

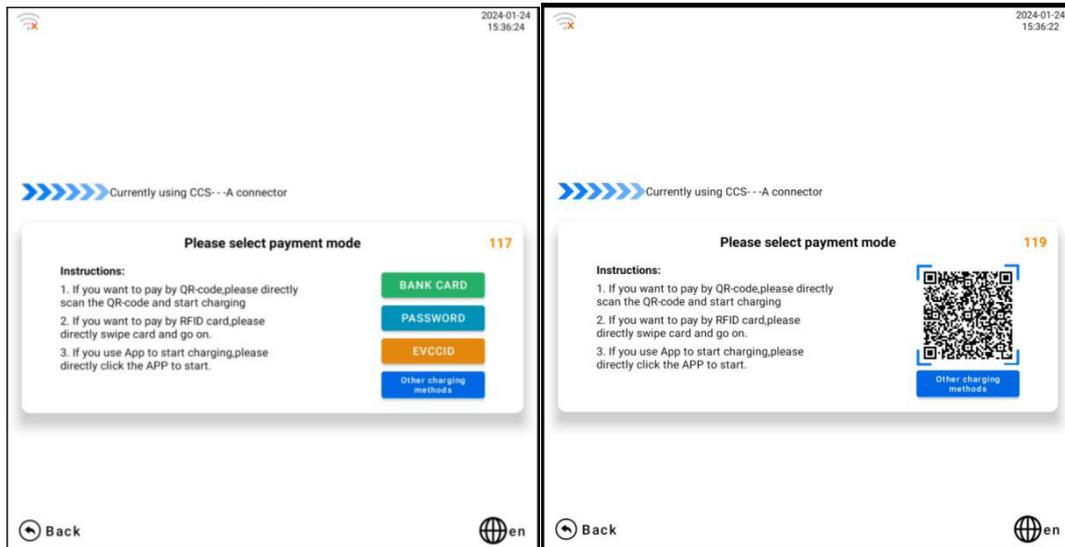
- (1). Select CCS connector or CHA connector according to the socket type of the car. The following is the process of selecting CCS, and the CHA steps are consistent with CCS.
- (2). Click "language" in any interface to switch the language mode of the UI. At present, Chinese, English and Korean are supported.

4.2.2 Waiting for connector insertion interface



Tip: Connecting the connector to the car will jump to the connector insertion interface.

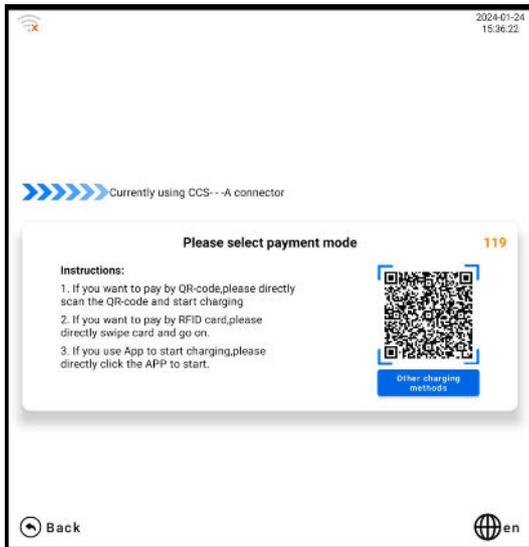
4.2.3 Select charging mode interface



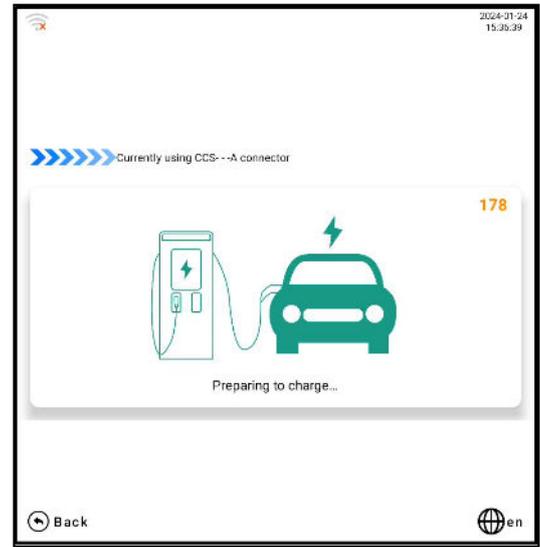
Notice:

- (1). If you want to pay by QR -code, please directly scan the QR-code and start charging
- (2). If you want to pay by RFID card, please directly swipe card and go on.
- (3). If you use App to start charging, please directly click the APP to start.

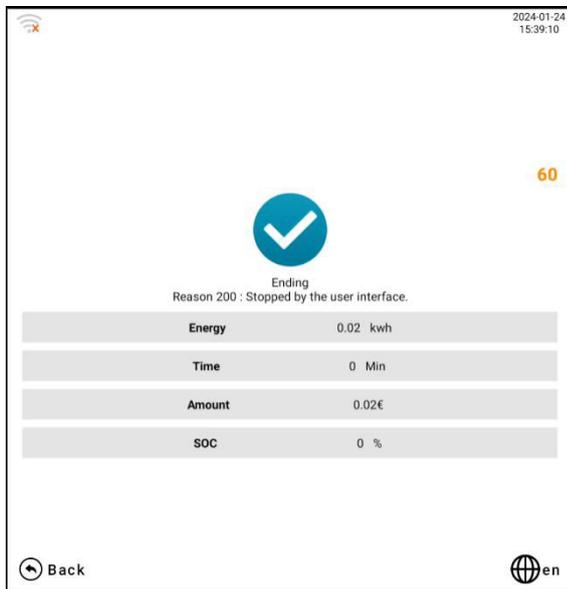
● 1. Code scanning charging interface process



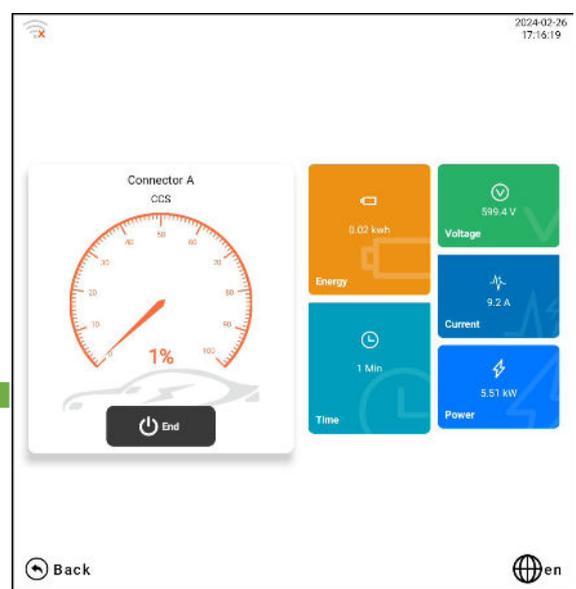
Scan the QR to enter the start charging interface .



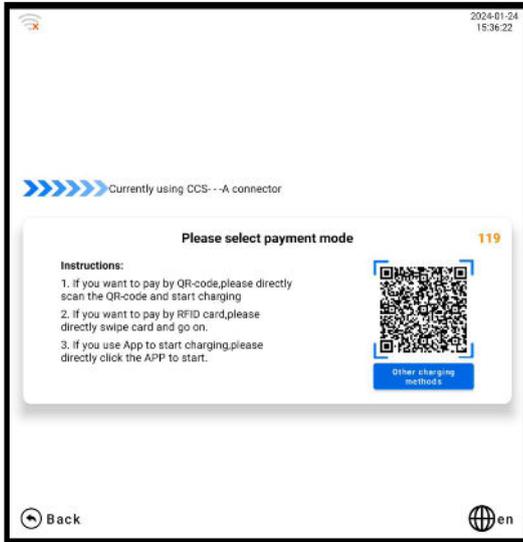
Charging interface.



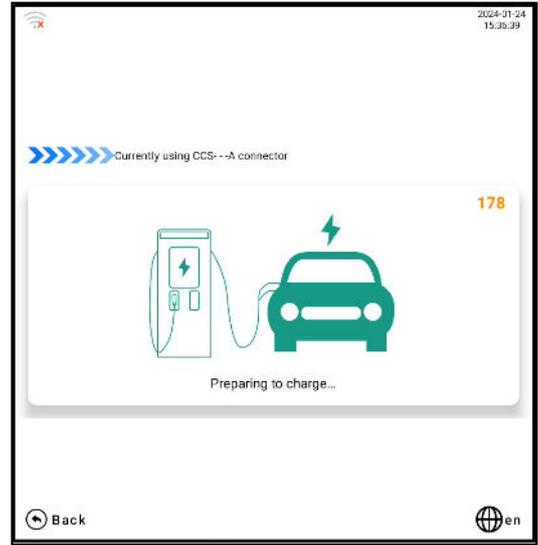
Click "End" to end charging and enter the settlement interface .



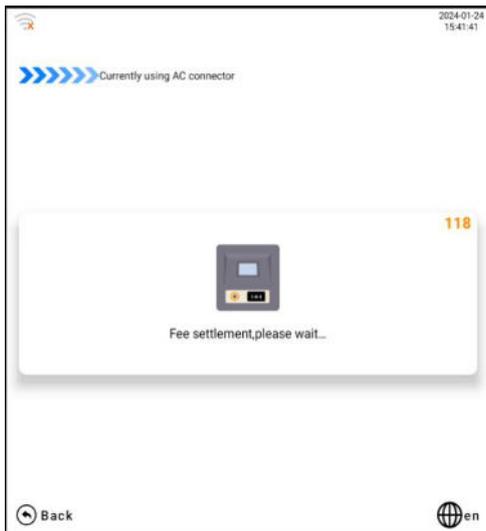
● 2. RFID card charging interface process



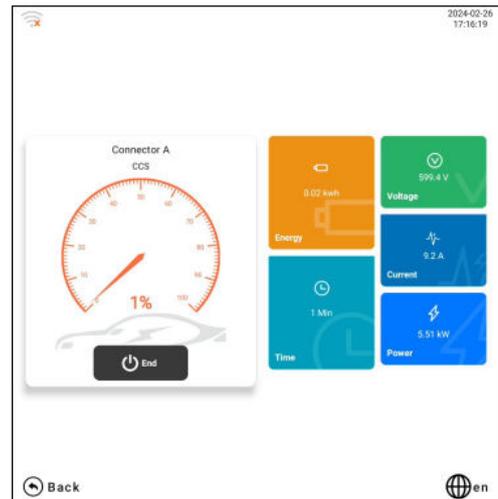
Direct card swiping for charging



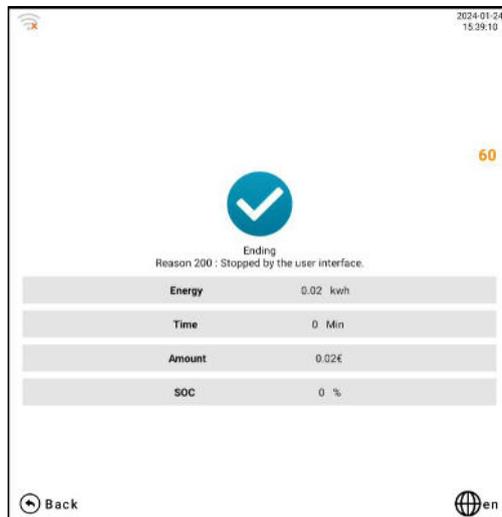
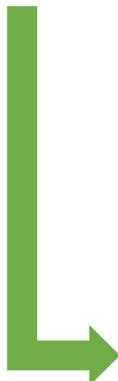
Charging interface.



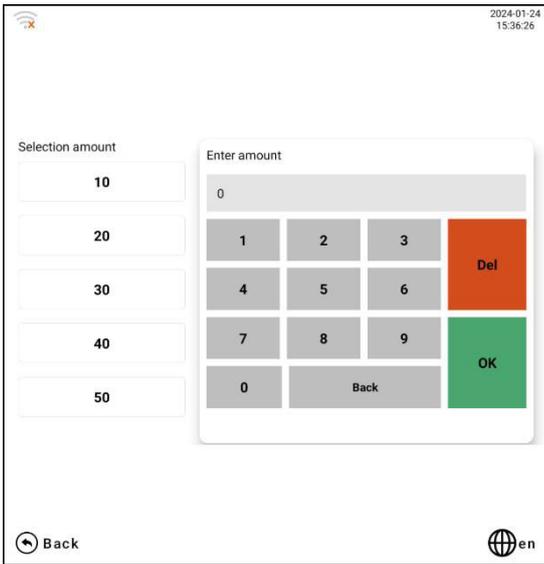
Click "end" to end charging and enter the card swiping settlement interface



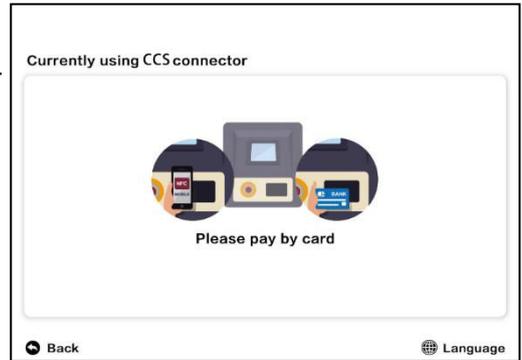
Enter the settlement interface after paying by card according to the interface prompt.



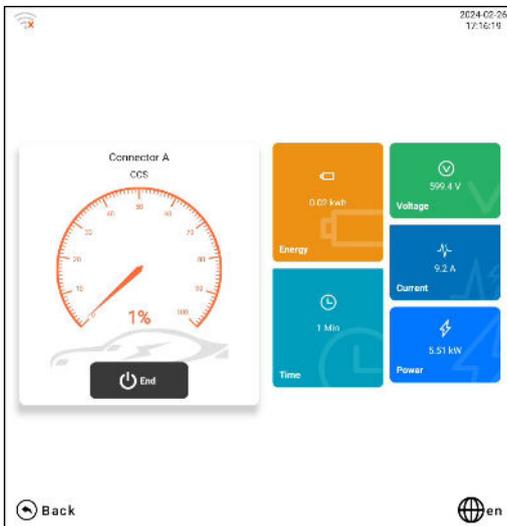
● 3. Interface process of pay by card charging



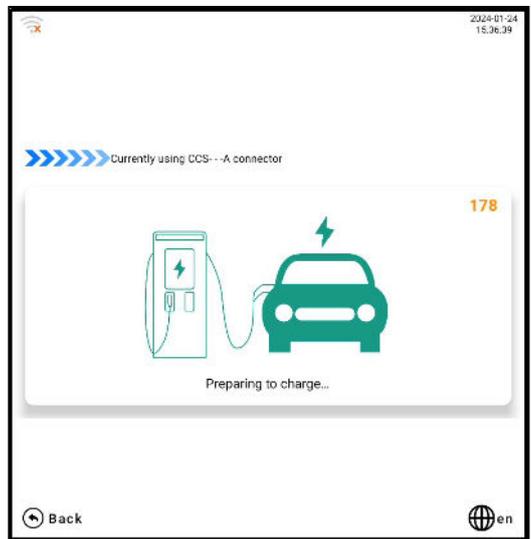
Select or enter the precharge amount to enter the card swiping interface.



Pay by card according to the interface prompt to enter the charging start interface.

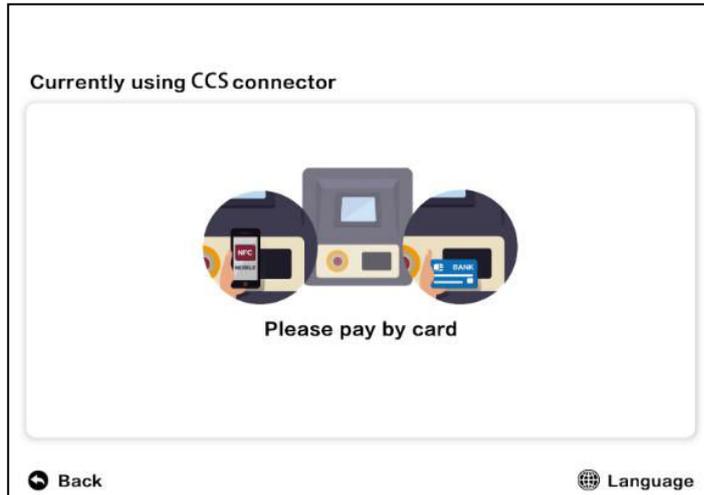


Charging interface.

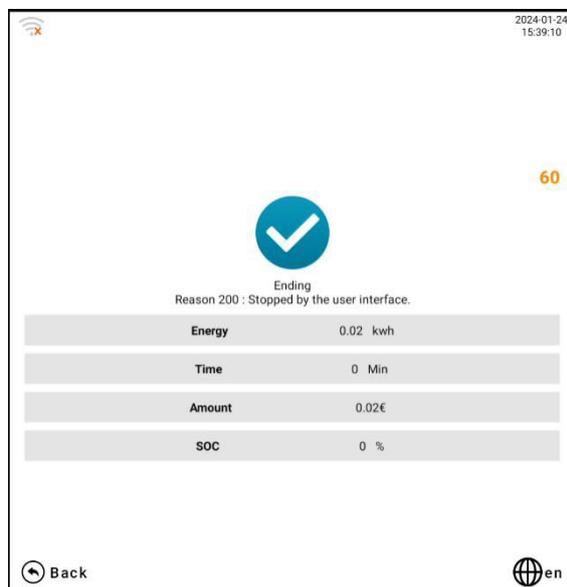




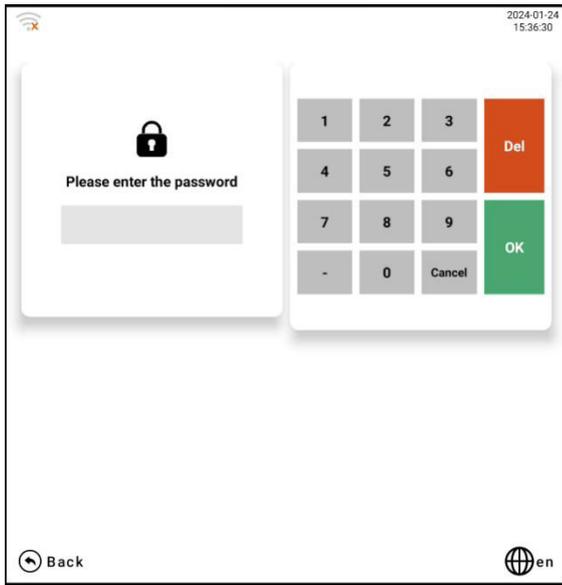
Click "End" to end charging and enter the pay by card interface.



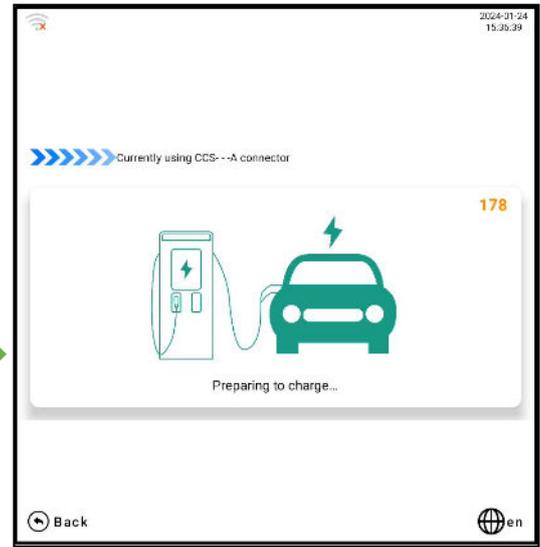
Enter the settlement interface after paying by card according to the interface prompt.



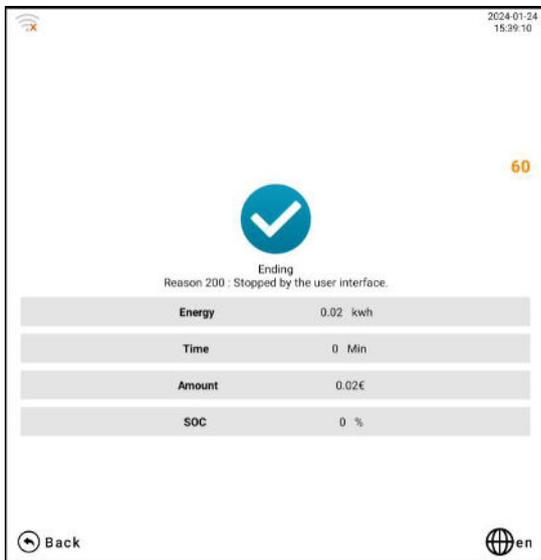
● 4. Password charging interface process



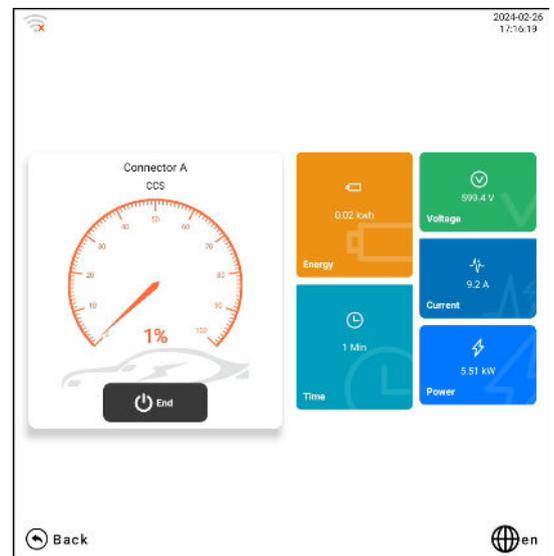
Enter the password to enter the start charging interface.



Charging interface.



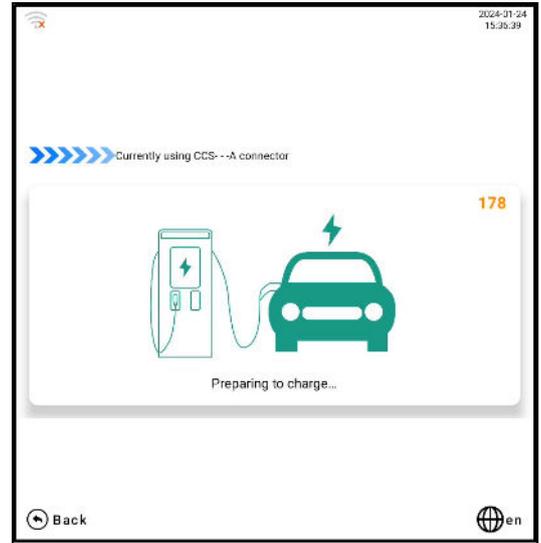
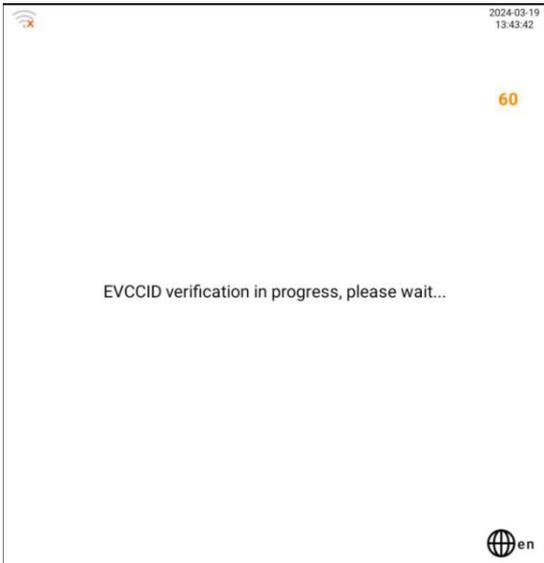
Click "End" to end charging and enter the pay interface.



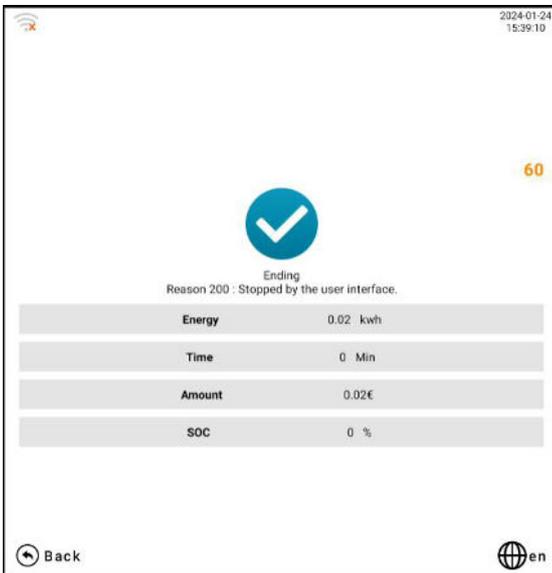
Tip:

Click the input box to pop up a small keyboard. Enter the complete password through the keyboard and click OK to verify the password. After passing the verification, it will jump to the password start charging interface (password setting: administrator > Settings > MCU > function > offline charging password).

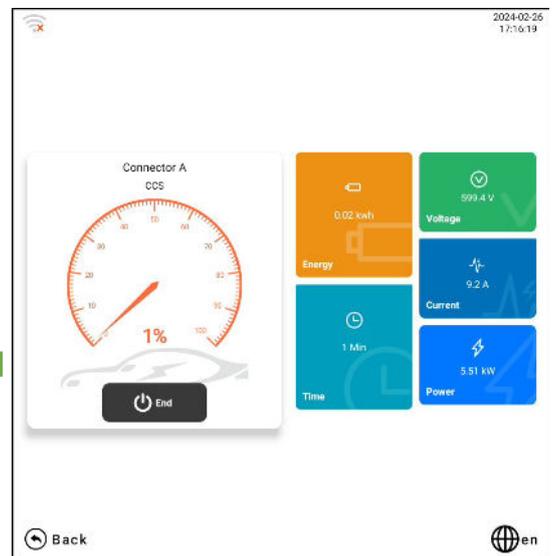
● 5. EVCCID charging interface process



Charging interface.



Click "End" to end charging and enter the pay interface



5 Simple troubleshooting

Analysis and treatment of common faults

Refer to the maintenance manual for detailed treatment

S/N	Alarm or fault	Processing method
1	Lightning protection failure	Check the status of lightning arrested. If the visual window of lightning protection is red, it means it is damaged. Please replace it.
2	Emergency stop fault	Please check whether the emergency stop button is pressed and not reset. If the fault has been solved, please reset the emergency stop button. (Only the station operation and maintenance personnel and professional operators can operate)
3	Over temperature protection of air outlet	Please check whether the air duct of the system is blocked and whether there is too much dust on the dust screen. Please check whether the air outlet fan of charger works normally. If the fan fails, please replace it.
4	Access protection	Please check whether the cabinet door is completely closed; Confirmed that the door is closed, but the alarm still exists. Please check the status of the door access switch. If it is damaged, please replace it.
5	Charging module failure	Check the module fault code, confirm the fault type and find the cause. Pull out the fault module and replace with a new one.
6	RCD triggered	Check whether it is a leakage trip. If so, the following methods should be used: <ul style="list-style-type: none"> ● Check whether there is insulation fault in the circuit at the back end of RCD. ● Check whether the casing is reliably grounded.
7	PCU reset	If the PCU board restarts automatically, the auxiliary power source may be abnormal, or the power supply circuit may be faulty. Check the auxiliary power source and check whether the power supply circuit is normal.
8	PDU reset	If the PDU board restarts automatically, the auxiliary power source may be abnormal, or the power supply circuit is faulty. Check the auxiliary power source and check whether the power supply circuit is normal.
		Warning: In order to prevent personal electric shock accidents, it is necessary to disconnect all switches of the equipment and the superior power distribution switch during fault detection and resolving. Protective measures and tools should be used.

6 After-sales service

If you have any questions or questions, please contact the equipment supplier. Before contacting the equipment supplier:

- (1). Please check the troubleshooting measures in the chapter 5" Simple troubleshooting".
- (2). Please record the model and serial number of the equipment (name plate of the equipment) and the failure time.

Appendix A---Module Group Number Setting Guide

1280 kW Front View

2M1 (GO A1)	2M16 (GO A16)	1M8 (GO A8)	1M9 (GO A9)
2M2 (GO A2)	2M15 (GO A15)	1M7 (GO A7)	1M10 (GO A10)
2M3 (GO A3)	2M14 (GO A14)	1M6 (GO A6)	1M11 (GO A11)
2M4 (GO A4)	2M13 (GO A13)	1M5 (GO A5)	1M12 (GO A12)
2M5 (GO A5)	2M12 (GO A12)	1M4 (GO A4)	1M13 (GO A13)
2M6 (GO A6)	2M11 (GO A11)	1M3 (GO A3)	1M14 (GO A14)
2M7 (GO A7)	2M10 (GO A10)	1M2 (GO A2)	1M15 (GO A15)
2M8 (GO A8)	2M9 (GO A9)	1M1 (GO A1)	1M16 (GO A16)

960 kW Front View

2M1 (GO A1)	2M16 (GO A16)	1M8 (GO A8)	1M9 (GO A9)
2M2 (GO A2)	2M15 (reserved)	1M7 (reserved)	1M10 (GO A10)
2M3 (reserved)	2M14 (GO A14)	1M6 (GO A6)	1M11 (reserved)
2M4 (GO A4)	2M13 (GO A13)	1M5 (GO A5)	1M12 (GO A12)
2M5 (GO A5)	2M12 (GO A12)	1M4 (GO A4)	1M13 (GO A13)
2M6 (GO A6)	2M11 (reserved)	1M3 (reserved)	1M14 (GO A14)
2M7 (reserved)	2M10 (GO A10)	1M2 (GO A2)	1M15 (reserved)
2M8 (GO A8)	2M9 (GO A9)	1M1 (GO A1)	1M16 (GO A16)