

# User Manual

## DC Charging Power Cabinet

IDC480E



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# 1 About This Manual

## Declaration

To ensure the safe use of the product, please read through the below information carefully:

1. The warranty period agreed for this product is subject to the contract.
2. This manual is intended for personnel who are responsible for product installation and other work on the product. Users must have certain electrical and mechanical expertise, and be familiar with the electrical and mechanical schematics and the characteristics of electronic components. SUNGROW shall not be held liable for any personal injury or financial loss arising from the installation operation carried out by non-qualified personnel or not in compliance with the safety instructions specified in this manual.
3. The content of this manual, including the pictures, marks, and symbols used herein, is all owned by SUNGROW. No part of this manual may be reproduced by any non-internal staff without the prior written authorization of SUNGROW.
4. The manual may be updated and revised from time to time, however, there still might be slight deviations from the real product or errors. In such cases, the actual product you have purchased should take precedence. You can find the latest version of the user manual on the company website, or reach your sales for it.
5. To ensure the safety of the installation personnel, the product, and the system, follow strictly the safety instructions specified in this manual when installing the product. SUNGROW shall not be held liable for any personal injury or financial loss arising from failure to follow the instructions specified in this manual.
6. If maintenance on or alteration to this product is needed, please contact SUNGROW customer service in advance. The copyright of this user manual belongs to SUNGROW, and any rights not expressly granted are reserved. The content of the manual is subject to change without notice and the actual up-to-date product shall prevail.

## Valid for

Product Model	Product Aliases
IDC480E	Power cabinet, "the device/product/cabinet"

## Target Group

This manual is intended for qualified technical persons who are responsible for the installation, operation, and maintenance of the product, as well as people who use the product for charging. Installation must only be performed by qualified technical persons, and qualified technical persons must be:

- Have certain electrical wiring, electronic, and mechanical expertise, and be familiar with electrical and mechanical schematics;
- Have received professional training in the installation and commissioning of electrical equipment;
- Be able to respond quickly and effectively to dangers or emergencies that may occur during the process of installation and commissioning;
- Be familiar with applicable local standards and specifications of the country/region where the project is located;
- Read through this manual carefully and have a good understanding of the relevant safety instructions.

### How to Use This Manual

Read through this manual carefully before using the product, and keep it properly in an easy-to-reach place. The manual may be updated and revised from time to time, however, there still might be slight deviations from the real product or errors. In such cases, the actual product you have purchased should take precedence. You can also download the latest version of the user manual at [support.sungrowpower.com](https://support.sungrowpower.com).

### Symbols in the Manual

To ensure the safe and efficient use of the product, the manual provides relevant safety information, which are highlighted using relevant symbols. Symbols that may appear in this manual are listed below, but not all. Please read carefully for better use of this manual.

#### **DANGER**

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

#### **WARNING**

Indicates a moderately hazardous situation which, if not avoided, will result in death or serious injury.

#### **CAUTION**

Indicates a slightly hazardous situation which, if not avoided, may result in minor or moderate injury.

#### **NOTICE**

Indicates a potential hazard which, if not avoided, will result in device malfunction or property damage.



Indicates supplementary information, emphasis on specific points, or tips related to the use of the product that might help to solve your problems or save your time.

## 2 Safety Instructions

Follow strictly the relevant safety instructions during the process of product installation, commissioning, operation, and maintenance. Improper use or misoperation may result in:

- Injury to or death of the operator or other people.
- Damage to the product, or to the property that belongs to the operator or a third party.

Strictly follow the safety instructions stated in the manual to avoid the hazards mentioned above.



- Safety instructions in this manual should only serve as a supplement and not all-encompassing regarding all the norms that need to be followed. All work should be carried out considering the actual situation on the site.
- SUNGROW shall not be held liable for any damage caused by violation of general safe operation requirements, safety standards, and the safety instructions specified in this manual.
- Product installation, operation, and maintenance should be conducted in compliance with applicable local laws, regulations, and specifications. Safety instructions in this manual should only be a supplement to the local laws, regulations, and specifications.

### 2.1 Safety Signs on Product

To ensure users' personal and property safety, warning signs are provided on the product, which should be observed at all times.

**Table 2-1** Safety Signs on the Product

Symbols	Description
	Burn hazard due to the hot surface that may exceed 60°C.
	Disconnect the device from all the external power sources before maintenance.
	Danger to life due to high voltages! Only qualified personnel can open and maintain the device.

## 2.2 Packaging, Transport, and Storage

### Packaging

- The product is packed in a cardboard box with orientation markings that provide loading and unloading instructions.
- Use brushed film to wrap the product tightly, put foam guards around it for protection, and then put it in the cardboard box.

### Transport

- All work related to transport must be carried out in compliance with the applicable local laws and regulations of the country/region.
- Do not turn the product upside down during transport.
- Measures should be taken to fasten the goods during transport, so as to avoid damages to product packaging due to strong shaking or bumping.
- Carry out an inspection upon receiving the delivery. In case of any damage to the goods during transport, contact your transport service provider and SUNGROW for negotiation.

### Storage

- The packaged product should be stored indoors in places with a relative humidity of 5% to 95% and ambient temperature of -35°C to 55°C.
- When the ambient temperature is above 45°C, it's recommended to add shading for extra protection.
- The place where the product is stored should be kept dry, clean, and well-ventilated, protected from hazardous gases.
- Do not store the product in a place where corrosives are kept.

### Unpacking and Inspection

#### NOTICE

**Non-qualified personnel are forbidden from disassembling the product or moving its components.**

- Non-qualified personnel are forbidden from disassembling the product or moving its components.
- Check if the product you have received matches the order you placed.
- Check if the items packed in the box matches the packing list.
- Inspect the product for external damages or damages to its structural parts.
- Check if the safety signs, warning labels, and the nameplate on the product are all legible.
- In case of any problem with the above-mentioned inspection items, do not proceed with installation and contact SUNGROW in time.

## 2.3 Installation Safety

Improper installation operation may result in personal injuries, while poor operating environments may affect the charging efficiency. Therefore, installation personnel must read through the instructions specified in this section carefully before installing the product.

### Installation Notice

- All work related to installation must be conducted in compliance with the applicable local laws and regulations of the country/region.
- Proceed with the subsequent work only if the qualified personnel designated by SUNGROW confirm that the environment where the product is to be installed meets the requirements after an assessment.
- Perform installation only if the product is intact without any signs of damage.
- Installation must be performed by qualified personnel who wear proper personal protective equipment.
- Ensure all electrical connections of the product have been disconnected before installation.
- Before installation, inspect the products and tools to be used and ensure they have all undergone regular maintenance.
- Where hole drilling is required during installation, avoid the internal water pipes and electrical wires when drilling.
- Install the product in a well-ventilated place.
- Do not install the product in an environment with flammables, explosives, or smoke.
- Stop the installation in the event of severe weather such heavy rain, heavy fog, or strong wind.

### Handling Notice

- Installation personnel should wear protective equipment such as anti-impact shoes and safety gloves when handling the product to ensure their own safety.
- When handling the product, get prepared for carrying its weight and keep the balance to prevent it from tilting or falling.
- Do not let go of the product during handling, unless it has been fastened securely.
- The sealed wood crate or tray, upon its arrival on the site, must be loaded/unloaded and handled with a crane or forklift that has sufficient load capacity and is operated by qualified personnel.

### Notice for Handling with a Crane

- Use only specialized cranes that are operated by qualified personnel.
- The load capacity of the crane should meet the requirements of the product's specification.
- The slings must all have a tensile strength and length that meet the requirements.
- The lifting rings on the top of the product are firmly attached.
- No one is allowed to stay under the product when it is lifted up.

- When rotating the crane for unloading, keep it rotating at a low speed. Keep the product steady and as close to the ground as possible.
- Do not shake the slings during handling.
- Do not keep the product lifted up for a long period of time.
- Do not drag the product along any surface.

#### **Notice for Handling with a Forklift**

- Use only specialized forklifts that are operated by qualified personnel.
- The carrying capacity of the forklift should meet the requirements of the product's specification.
- Make sure there are no obstacles, slopes, or other unevenness along the moving path of the product.

## **2.4 Electrical Safety**

Improper wiring may result in personal injuries. Hence, installation personnel must read through the wiring instructions carefully before proceeding with this work.

#### **Wiring Notice**

#### **DANGER**

- **Electrical connection must be performed by qualified personnel who wear personal protective equipment.**
- **Be sure to use specialized insulated tools when performing electrical connection.**

- All work related to wiring must be conducted in compliance with the applicable local laws and regulations of the country/region.
- Wiring must be done in compliance with the applicable local grid regulations and relevant safety instructions specified for the product.
- The specification of cables used should meet the relevant requirements. The cables should be properly insulated and firmly connected.
- Observe the warning signs on the product, and perform operations by strictly following the corresponding safety instructions.
- Before electrical connection, make sure the product is not damaged. Otherwise, it may cause danger.
- Before electrical connection, make sure the product's switches and all switches connected to it are turned "OFF"; otherwise, it may lead to electric shocks.
- Before electrical connection, be sure to test with a measuring instrument and confirm the cables are voltage-free.
- Improper wiring may cause damage to the product and such damages will not be covered by warranty.

## 2.5 Operation Safety

There is high voltage inside the product when it is running, and improper operation may cause personal injuries or property damages. Please perform operations by strictly following the safety instructions specified in this manual and other relevant documents when charging EVs.

### Operation Notice

#### DANGER

- **Do not touch any live part of the product when it is running; otherwise, it may lead to electrical shocks.**
  - **Do not touch any wiring terminal on the product when it is running; otherwise, it may lead to electrical shocks.**
  - **Do not remove any part or component from the product when it is running; otherwise, it may lead to electrical shocks.**
- 
- Operations must all be performed in compliance with the applicable local laws and regulations of the country/region.
  - Do not use an extension cable when connecting the EV to the dispenser.
  - Do not bend, squeeze, or crush the charging connector, which may result in mechanical damage.
  - Only EVs can be connected to the charging dispenser. Do not connect any other devices for charging (e.g., electric tools).
  - Make sure the charging connector does not come into contact with heat, dirt, or water.
  - Please handle the charging connector gently. Plug or unplug the connector neatly at one go, and do not shake it. Damage resulting from improper use, accidents, or misuse (including but not limited to dropping, or impact) is not covered under warranty.
  - Start charging only when the car sits perfectly still. Do not start the car in the middle of a charging process.
  - If the product is not covered by a rainproof shield, please charge with caution in the event of a thunderstorm.
  - Do not use the dispenser when its charging connector or cable is defective, frayed, cracked, or in case of exposed wires. Contact SUNGROW if you have found any of the above issues.
  - Do not plug or unplug any connector of the dispenser during the charging process.
  - During the charging process, do not let children go near or use the dispenser, so as to prevent them from getting hurt.
  - During the charging process, do not touch any hot part of the product (e.g., air outlet for heat dissipation); otherwise, it may cause burns.
  - After charging, insert the charging connector back into the holder on the dispenser, so as to avoid the ingress of water or sand into the connector. Also, put away the cable in time and keep it in a place out of the vehicle's reach so that it will not get run over.

- In case of anything abnormal during use, press the emergency stop button immediately and cut off the power supply.

## 2.6 Maintenance Safety

There is high voltage inside the product when it is running, and improper maintenance operation may cause personal injuries or property damages. Therefore, it is necessary to power off the product before maintenance and perform operations by strictly following the safety instructions specified in this manual and other relevant documents.

### Maintenance Notice

#### DANGER

- **Only when no current or voltage is present, qualified personnel, who wear protective equipment, can perform maintenance.**
  - **Do not touch the pins inside the charging connector when it is powered on.**
- 
- All work related to maintenance must be done in compliance with the applicable local laws and regulations of the country/region.
  - Perform maintenance only when you have a good understanding of this manual and appropriate tools and testing instruments.
  - Wait at least 10 minutes after the product stops running. Proceed with maintenance after confirming the voltage has lowered to a safe level.
  - Even if the product has stopped running, it may still be hot and cause burns. Perform operations on the product wearing protective gloves after it cools down.
  - Before maintenance, be sure to check the warning labels inside the product and follow the corresponding instructions.
  - Before maintenance, make sure the product, the external devices connected to it, and the electrical connections are in a safe state.
  - During the maintenance process, prevent irrelevant personnel from entering the site, whenever possible. Set up temporary warning signs or fence off an area to keep irrelevant personnel away and avoid accidents.
  - Maintenance should be performed by following the electrostatic protection rules.
  - Stop maintenance in the event of extreme weather.
  - Only after faults that may affect its safety performance are all removed, the product can be powered on again.
  - For the product that has a long downtime, a thorough and detailed inspection must be carried out before powering it on again. Only after it is inspected and tested by qualified personnel, it can be powered and put into operation again.
  - To minimize the risk of electric shocks, do not perform maintenance operations that are not specified in this manual. If needed, please contact SUNGROW for maintenance and repair services. Otherwise, damages caused therefrom will not be covered by the warranty.

## 2.7 Disposal Safety

Please dispose of the decommissioned product strictly in accordance with applicable local regulations and standards to avoid property damages or personal injuries.

### **Disposal Notice**

- All work related to product disposal must be done in compliance with the applicable local laws and regulations of the country/region.
- Ensure the safety signs, warning labels, and the nameplate on the product are all legible before disposal.

# 3 Product Description

## 3.1 Product Overview

The IDC480E power cabinet is mainly used in public charging pools for quick EV charging. With a rated power of 480 kW (360 kW) and power distribution capabilities, it allows up to 8 charging connectors to be used for charging at the same time.

### Earthing Systems

The device can be used in grids adopting TN-S, TN-C-S, TT and TN-C earthing systems.

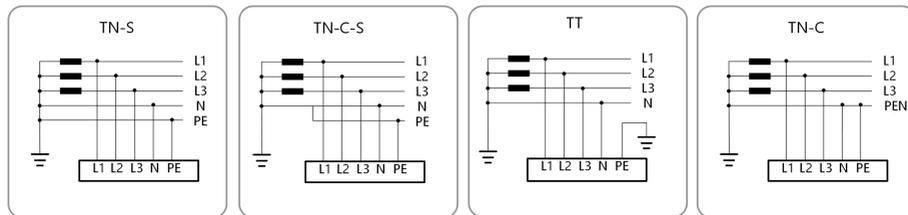
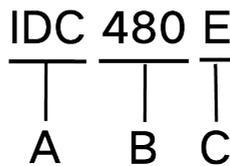


Figure 3-1 Earthing Systems

### Product Model

The DC Charging power cabinet is part of the split-type charging system. The product model is IDC480E, as demonstrated below.



No.	Definition
A	Product type: Isolated DC charger
B	Rated output power: 480kW(360kW)
C	Compliance: European standard

### 3.2 Application Scenarios

The IDC480E power cabinet has a rated power of 480 kW (360 kW) and consists of 16 (12) charging power units, each with a capacity of 30 kW. It is equipped with power conversion and distribution capacities, allowing allocation in minimum 30kW increments.

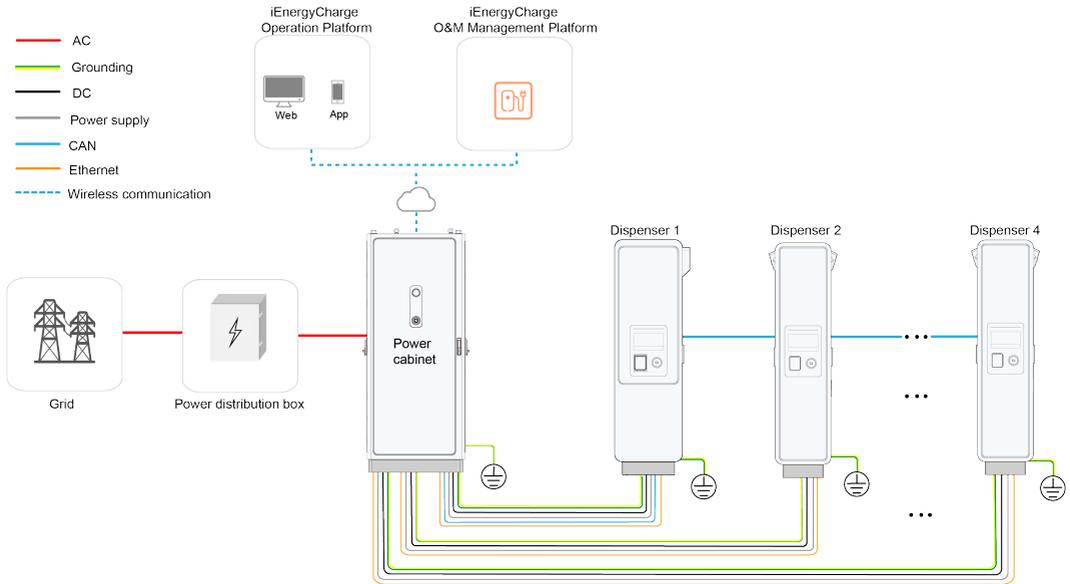


Figure 3-2 System Diagram

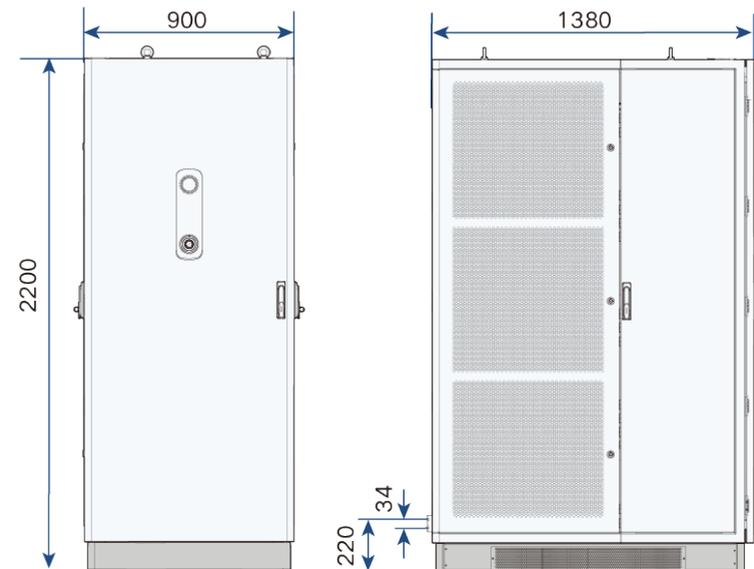
### 3.3 Marks on the Product

Marks	Description
	Additional grounding point.
	Disconnect the device from all external power sources before maintenance.
	Danger to life due to high voltages! Only qualified personnel can open and maintain the device.
	Do not touch live parts until 10 minutes after disconnection from the sources!
	CE mark of conformity. EU/EEA Importer.

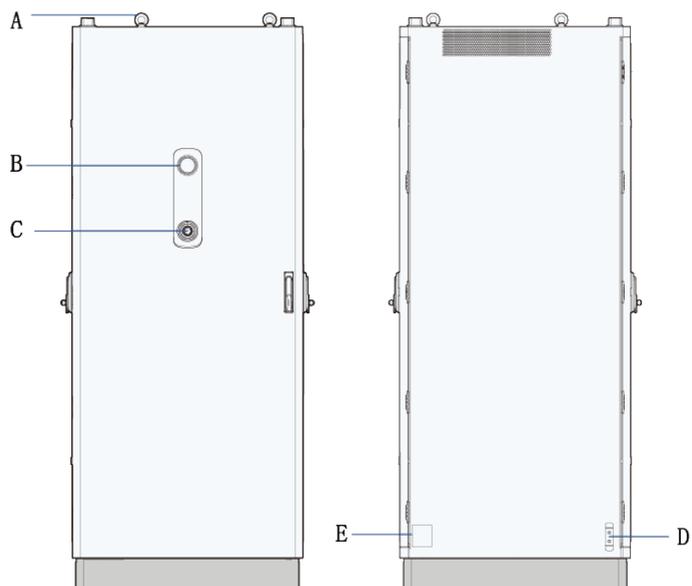
Marks	Description
	Do not dispose of the device together with household waste.
	Read the user manual before maintenance.
	Burn hazard due to the hot surface that may exceed 60°C.
	TÜV mark of conformity.
	PTB mark of conformity.
	Regulatory compliance mark.

### 3.4 External Design

#### Dimensions



\*The dimensions of the real product may differ.

**External Design**

(A) Lifting ring

(B) Energy Star-Ring

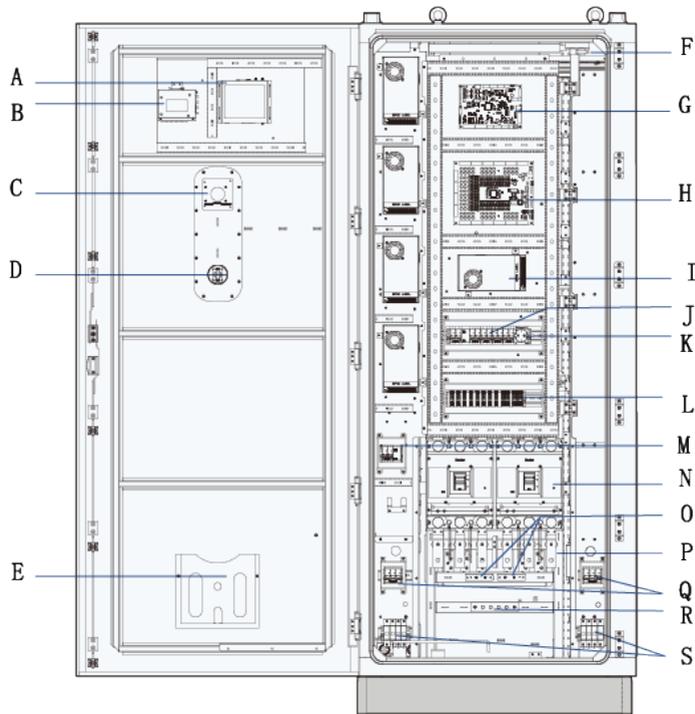
(C) Emergency stop

(D) External protective grounding

(E) Nameplate

### 3.5 Internal Structure

#### Internal Structure (Front Door)



(A) TCU (Toll Control Unit)

(B) Router

(C) LED indicator board

(D) Emergency stop button

(E) Document pocket

(F) Access control

(G) PCU (Power Control Unit)

(H) RCU (Relay Control Unit)

(I) PE continuity-monitoring PCB assembly (optional)

(J) SMPS (Switched-mode power supply)

(K) Power supply circuit breaker

(L) Service socket

(M) Customer wiring terminal

(N) SMPS circuit breaker

(O) MCCB (molded case circuit breaker)

(P) Neutral (N wire) copper bar

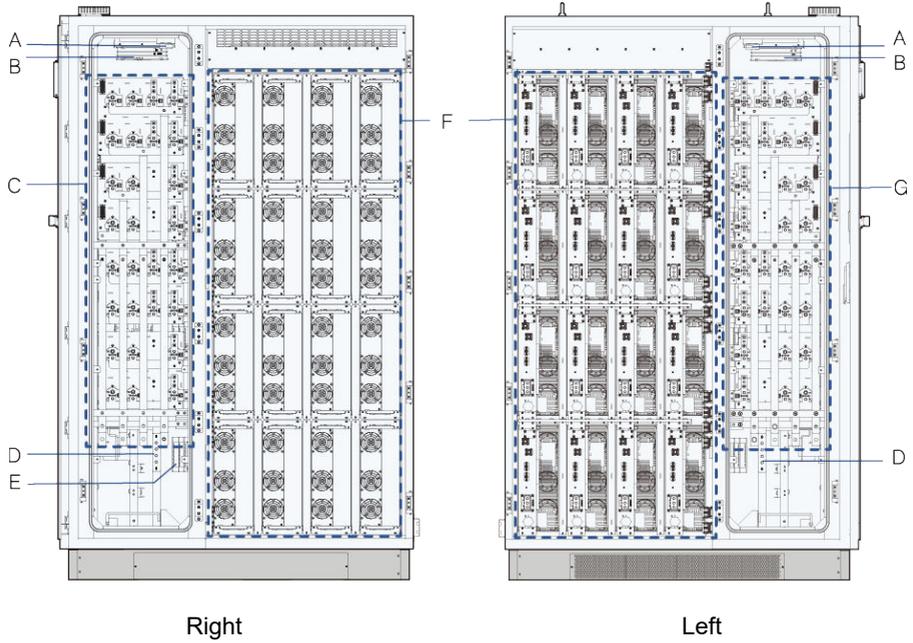
(Q) AC phase wire copper bar

(R) SPD circuit breaker

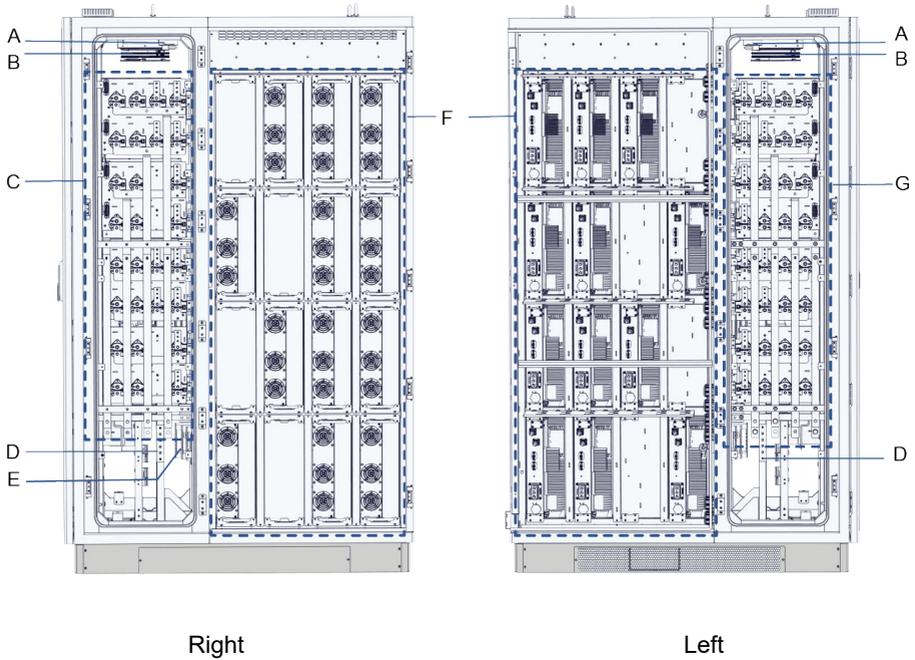
(S) AC grounding copper bar

(T) SPD

### Internal Structure



480kW Power Cabinet



360kW Power Cabinet

- |                     |                                    |
|---------------------|------------------------------------|
| (A) Access control  | (B) Axial flow fan                 |
| (C) DC- wiring area | (D) Dispenser grounding copper bar |
| (E) Network switch  | (F) Power module                   |
| (G) DC+ wiring area |                                    |

### 3.6 Indicator

The power cabinet has an “Energy Star-Ring” indicator on the front door. It serves as a Human-Machine Interface (HMI) that indicates the current operating status of the power cabinet.

**Table 3-1** Indicator Description

Indicator Status	Device Status
 Steady blue	Running
 Steady red	Fault
 Steady green	Standby

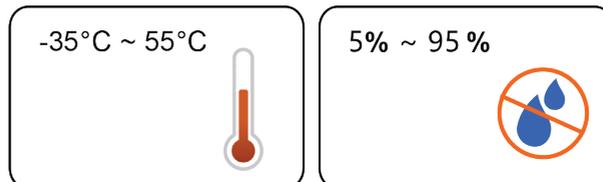
# 4 Installation

## 4.1 Installation Requirements

### Installation Environment Requirements

The device should be installed in an environment that meets the following requirements:

- The place where the device is installed must be free from flammables and explosives.
- Do not install the device in a place with corrosives such as corrosive gas and organic solvent, etc.
- The place where the device is installed and operates should be free from strong vibration, strong impact, and strong electromagnetic field interference. The external magnetic field strength should not exceed 0.5 mT.
- The place where the device is installed must be free from mediums carrying explosion hazards, without hazardous gas or conductive mediums, which may corrode the metal or damage the insulation, around it.
- Please consult SUNGROW before installing the device outdoors in areas prone to salt damage, which mainly are coastal areas within 500 meters of the coast. The sedimentation amount of salt spray is correlated to the characteristics of the seawater, sea winds, precipitation, air humidity, topography, and forest coverage in the adjacent sea areas, and there are substantial differences between different coastal areas.
- Please install the device in a place with proper temperature and humidity. The allowable temperature and humidity range are shown in the figure below:



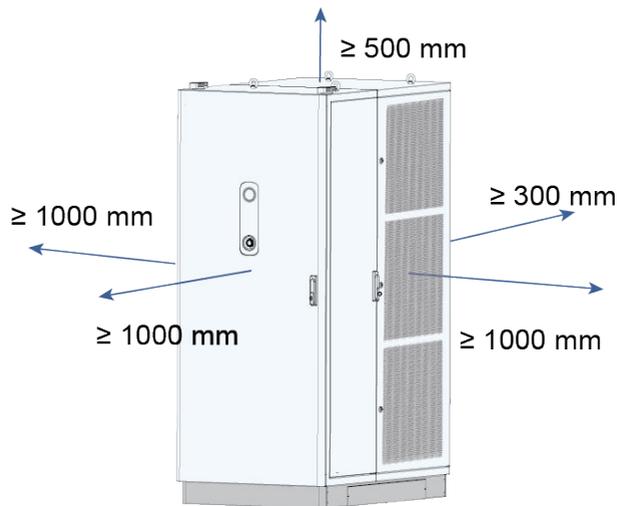
- When the ambient temperature is above 45°C, it's recommended to add shading for extra protection.
- Do not install the device in dusty and smoky environments.
- It is suggested to install the device in a place with shelter, so as to prevent it from getting impacted by direct sunlight or severe weather (e.g., snow, rain, and lightning). The device will derate in high temperatures for self-protection. If installed in a place directly exposed to sunlight, as the temperature rises, the device may witness power reduction.
- Install the device in a well-ventilated place to ensure good heat dissipation. Inspect and clean the air inlets and outlets regularly to keep airflow unobstructed. If the vents are

blocked, stop using the device immediately; any resulting damage is not covered under warranty.

- This device is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.
- The device must be installed at least 30 meters away from any third-party wireless communication facilities.
- It is recommended that the product be installed outside a 50-meter range from residential areas. When geographical conditions do not allow for a 50-meter range, noise reduction measures can be taken. For specific plans, please consult SUNGROW.
- It is recommended that the product be installed outside a 50-meter range from residential areas. When geographical conditions do not allow for a 50-meter range, noise reduction measures can be taken. For specific plans, please consult the station designers.

### Installation Space Requirements

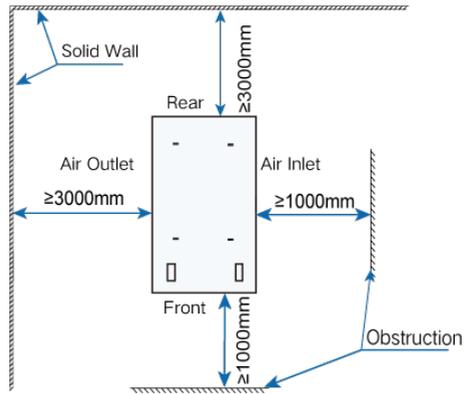
To ensure good heat dissipation and easy maintenance, the minimum space between the device and the objects around it should not be smaller than that specified by the requirements.



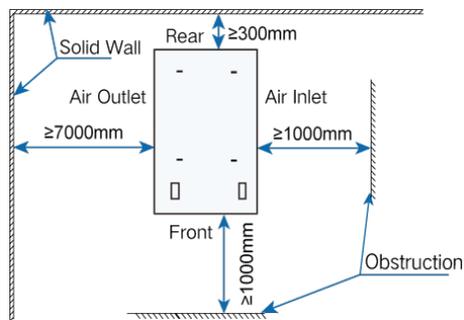
**Figure 4-1** Space Requirements for Installation

To protect the device from direct sunlight, rain, and snow and extend its service life, it is recommended to set a rainproof shed for the device.

When installing one or multiple devices near a solid wall corner, the minimum installation clearances must meet the following requirements:



**Figure 4-2** Installation Method 1 – Clearance Illustration



**Figure 4-3** Installation Method 2 – Clearance Illustration

- i**
- To ensure proper operation, the device must be installed in accordance with the specified spacing requirements. Failure to maintain the minimum installation clearance may result in early power derating during operation.
  - If the device is to be installed within 500 m of the coastline or multiple units need to be installed in close proximity, please consult SUNGROW for a specific installation plan.
  - During installation, ensure the device indicator lights are clearly visible and are not obscured to facilitate status monitoring.



- installation is supplied from a dedicated power transformer or generator, and which is not connected to low voltage (LV) overhead power lines;
- installation is physically separated from residential environments by distance greater than 30 m or by a structure which acts as a barrier to radiated phenomena;
- the manufacturer and/or supplier shall indicate that this equipment meets the disturbance voltage limits for high power electronic systems and equipment of rated input power > 75 kVA and provide information on installation measures to be applied by the installer. In particular, it shall be indicated that this equipment is intended to be used in an installation which is powered by a dedicated power transformer or generator and not by LV overhead power lines.

## 4.2 Installation Tools

Installation tools to be used include but are not limited to those listed below. If necessary, use other auxiliary tools at the site.



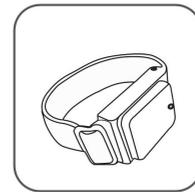
Goggles



Safety gloves



Safety shoes



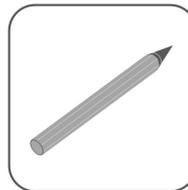
Anti-static wrist strap



Phillips screwdriver



Hammer drill  
( $\varnothing 16$ )



Marker



Safety helmet



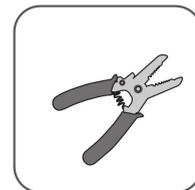
Rubber mallet



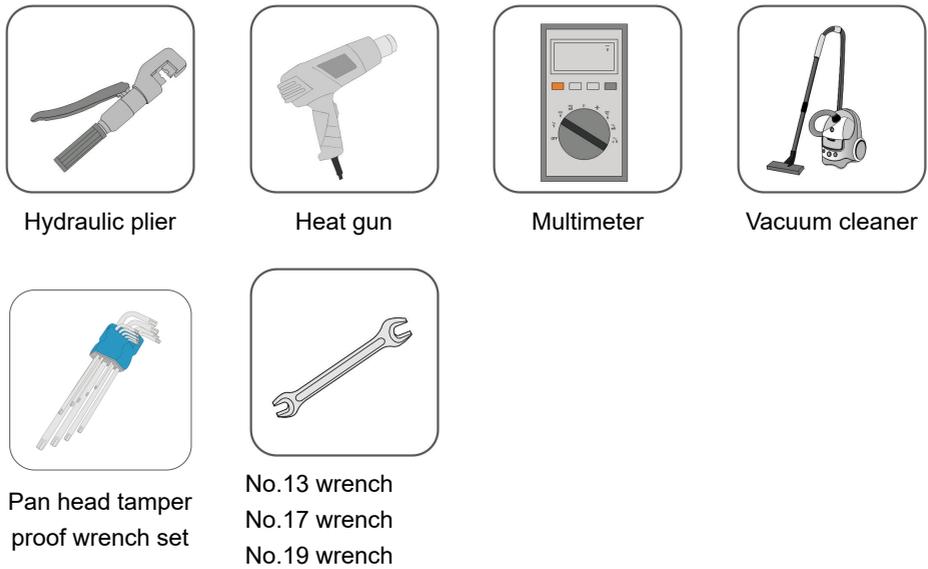
Socket wrench set  
(M8, M10, M12)



Wire cutter



Wire strippers

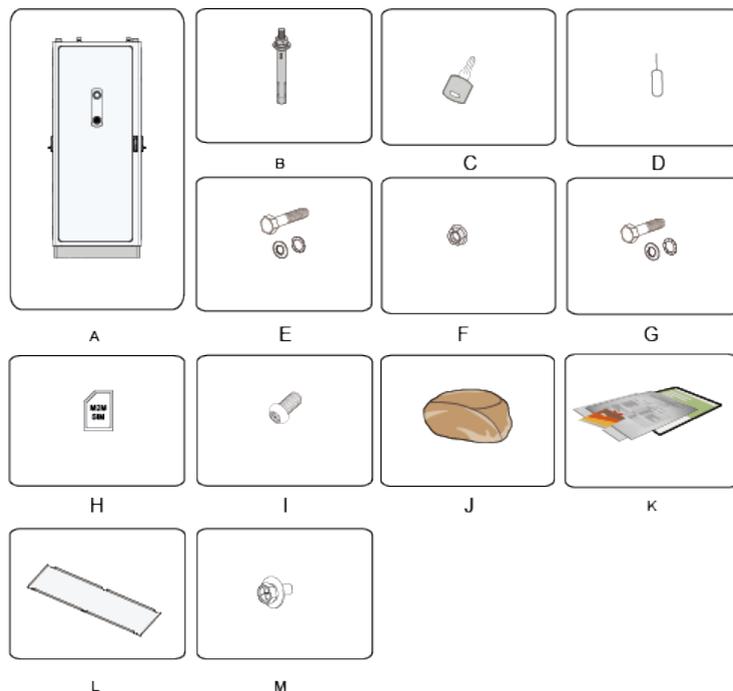


**Figure 4-4** Installation Tools

### 4.3 Packing List

The device has undergone thorough tests and strict inspections before delivery. However, as it may still get damaged during transport, please carry out an inspection carefully before installation.

- Inspect the packaging for any damages.
- Unpack and inspect the items inside for any damages.
- Be careful not to damage the device while using tools for unpacking.



No.	Name	Quantity	Description
A	IDC480E	1	DC Charging power cabinet
B	M12×100 expansion bolt	6	Used to secure the power cabinet onto the foundation
C	Door key	4	Used to open the cabinet door
D	SIM card ejector pin	1	Used to install the SIM card
E	M10×25 bolt assembly	24	Used to secure DC cables and AC phase wires
F	M10 flange nut	24	Used with M10×25 bolts, to secure DC cables and AC phase wires
G	M8×16 bolt assembly	16	Used to secure PE wire and N wire

No.	Name	Quantity	Description
H*	4G IoT SIM card (optional)	1	Used to connect the power cabinet to the network
I	M5×12 screw	14	Used to secure the cover plate at the bottom of the power cabinet
J	Fireproof mud	1	Used to seal off the cable inlet/outlet holes at the bottom of the power cabinet
K	Documents	-	Quick Installation Guide, certificate of conformity, warranty card, packing list, etc.
L	PC Protective Cover	4	Installed on both sides of the device to prevent accidental contact with live parts during operation.
M	M4 X 10 bolt assembly	24	Used to secure the PC Protective Cover.



\*For the Australian market, the product shipment does not include a SIM card. Users must prepare one according to their specific needs. Industrial-grade IoT SIM cards are recommended for Australian users.

In case of any damages or missing items, do not install the device. Contact your transport service provider or SUNGROW, and provide relevant photos to ensure effective assistance.

## 4.4 Mounting



Improper handling may result in personal injury or device damage. For the safety of personnel and devices, it is recommended to use a forklift or crane for handling.

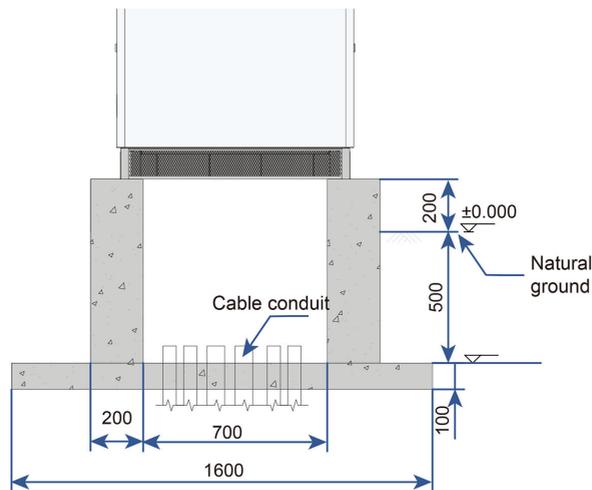
### 4.4.1 Foundation Requirements

Considering its heavy weight, please install the device on a solid brick or concrete foundation to ensure its stable operation. The requirements for foundation building are as follows:

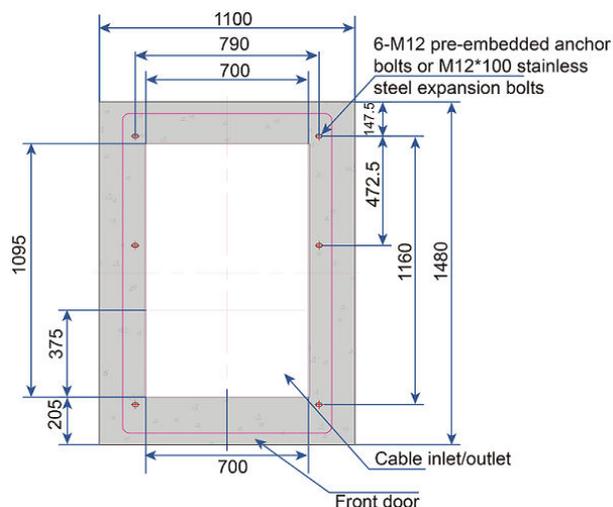
- The soil on the installation site should have a certain degree of density. It is recommended that the relative density of soil on the installation site be at least 98%. In

case the soil on the site is loose, take relevant measures to make sure the foundation is stable.

- The bottom of the foundation pit must be compacted, filled and made even, so that it can provide sufficient and effective support for the device.
- The foundation should be higher than the horizontal ground to protect the device base and interior against rain erosion.
- The cross-sectional area and height of the foundation should meet the requirements.
- Cable laying should be taken into consideration when building the foundation.
- Pre-bury the cable conduit at the foundation bottom, according to the location of the cable inlet provided on the device.
- A drainage system is required, so as to prevent the bottom or internal components of the device from being soaked during the rainy season or a heavy rainfall.



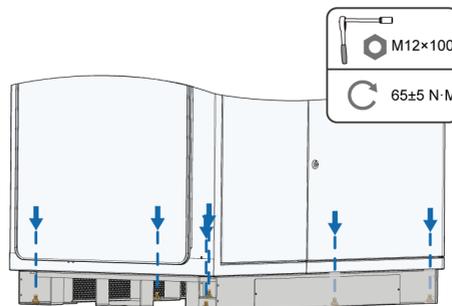
**Figure 4-5** Foundation Dimensions (mm)



**Figure 4-6** Location of Expansion Bolt Holes

### 4.4.2 Secure Power Cabinet

- Step 1** Build a foundation according to the size requirements.
- Step 2** Mark the holes for drilling on the foundation by referring to the figure of "Location of Expansion Bolt Holes".
- Step 3** Use a hammer drill to drill holes at the designated positions. The hole diameter is  $\varnothing 16$  and the depth is 100mm.
- Step 4** Put the sleeves and screws of the expansion bolt assembly in the holes. Then, tap them using a rubber mallet until the expansion sleeves are fully seated in the holes.
- Step 5** Move the power cabinet to the foundation using a forklift or a crane.
- Step 6** Attach the flat washer, spring washer, and nut to the expansion screw in the correct order. Then, tighten the screws using a socket wrench. An S10 (M12) socket wrench is recommended.



--End

### 4.4.3 Handle with Crane

#### Requirements for Handling

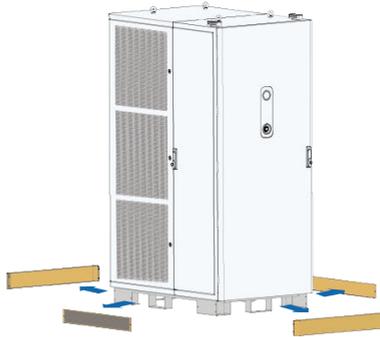
Read through the information below if you are about to handle the power cabinet with a crane.

- Use only specialized cranes that are operated by qualified personnel.
- The load capacity of the crane should meet the requirements of the product's specification.
- The slings must all have a tensile strength and length that meet the requirements.
- The lifting rings on the top of the product are firmly attached.
- No one is allowed to stay under the product when it is lifted up.
- When rotating the crane for unloading, keep it rotating at a low speed. Keep the product steady and as close to the ground as possible.
- Do not shake the slings during handling.
- Do not keep the product lifted up for a long period of time.
- Do not drag the product along any surface.

#### Tools

Item	Requirement	Source
Crane	Load carrying capacity $\geq 6000\text{kg}$ .	Prepared by users
Slings	2 slings; each has a lifting capacity of $\geq 3000\text{kg}$ . The length between the lifting ring and the crane hook should be $\geq 1200\text{mm}$ .	Prepared by users

**Step 1** Remove the front and rear cover plates at the bottom of the cabinet.



**Step 2** Attach the steel wire rope slings to the lifting rings on the top of the cabinet, as shown in the figure below.



**Step 3** Lift the cabinet vertically at an even speed. Make sure it is always held steady and does not tilt.

**Step 4** Suspend hoisting when the cabinet is lifted 100mm off the floor. Then, check that the connections between the slings and the cabinet are secure and that the stress is evenly applied to the lifting points.

**Step 5** After the cabinet is moved to a position over the top of foundation, lower it down steadily. Ensure the expansion bolt holes at the bottom of the cabinet align with the expansion bolts on the foundation.

**Step 6** When the cabinet is fully in contact with the foundation surface, remove the steel wire ropes.

--End

#### 4.4.4 Handle with Forklift

##### Requirements for Handling

Read through the information below if you are about to handle the power cabinet using a forklift.

- Use only specialized forklifts that are operated by qualified personnel.
- The carrying capacity of the forklift should meet the requirements of the product's specification.
- Make sure there are no obstacles, slopes, or other unevenness along the moving path of the product.

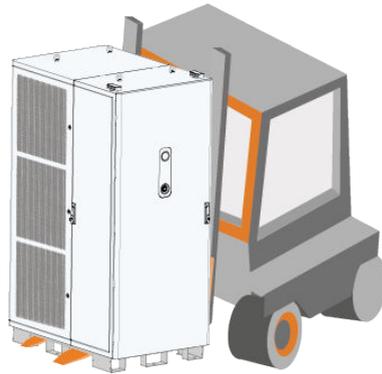
##### NOTICE

- **Pay attention to the device's center of gravity at all times.**
- **A forklift with a load capacity of 6000kg is recommended.**

**Step 1** Remove the front and rear cover plates at the bottom of the cabinet.



**Step 2** Adjust the spacing between and height of the forklift's forks, and drive slowly forward until the forks are fully inserted under the bottom of the power cabinet.



**Step 3** Pick up the cabinet slowly, and drive the forklift to the foundation at a constant speed.

**Step 4** Adjust the height of the forklift's forks. Ensure the expansion bolt holes at the bottom of the cabinet align with the expansion bolts on the foundation.

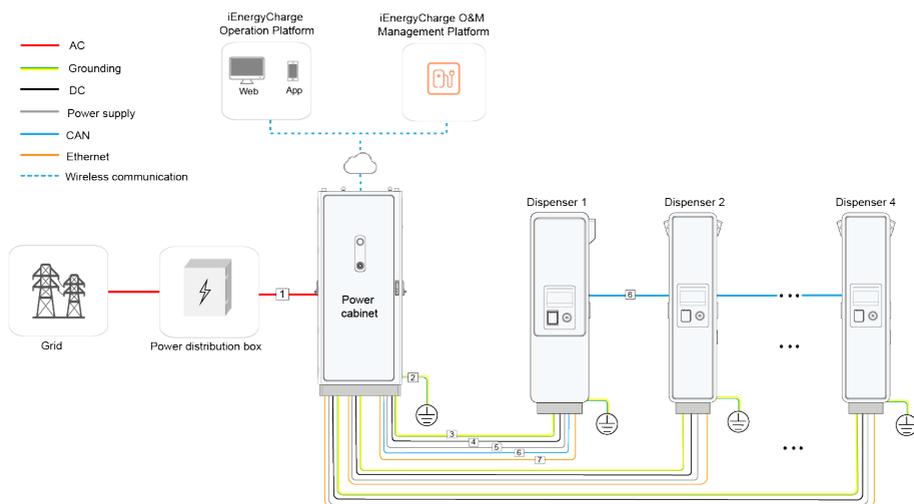
**Step 5** When the power cabinet is fully in contact with the foundation surface, move away the forks slowly.

--End

## 4.5 Electrical Connection

### 4.5.1 Cable Requirements

Before proceeding with the electrical connection, prepare the cables, terminals, and other items that are required. Cables required include the external protective grounding cable, AC cable, DC cable, power cable, and communication cable.



The maximum allowable communication distance between the power cabinet and the dispenser is 80 meters under standard operating conditions.



Use of extension cables is prohibited.

### Cable Specifications

The cables should be prepared separately by users. Recommended cable specifications are listed in the table below.

**Table 4-1** Cable Specifications

No.	Cable	Type	Wire cross-sectional area (mm <sup>2</sup> )	Crimp Terminal
1	AC cable (two inputs)	Outdoor single-core copper cable Withstand voltage: 1kV	L1, L2, L3,N: 185mm <sup>2</sup> PE or PEN: 95mm <sup>2</sup>	L1, L2, L3,N: SC185-10 PE or PEN: SC95-8
		Outdoor single-core aluminum cable Withstand voltage: 1kV	L1, L2, L3,N: 300mm <sup>2</sup> PE or PEN: 150mm <sup>2</sup>	L1, L2, L3,N: SC300-10 PE or PEN: SC150-8
2	External protective grounding cable	Outdoor single-core cable	Copper wire: 95mm <sup>2</sup> Aluminum wire: 150mm <sup>2</sup>	Copper wire: SC95-8 Aluminum wire: SC150-8
3	Common ground (with dispenser) cable	Outdoor single-core cable	air-cooled dispenser: Copper wire: 95mm <sup>2</sup> Aluminum wire: 150mm <sup>2</sup> Liquid-cooled dispenser: Copper wire: 70mm <sup>2</sup> Aluminum wire: 120mm <sup>2</sup>	air-cooled dispenser Copper wire: SC95-8 Aluminum wire: SC150-8 Liquid-cooled dispenser Copper wire: SC70-8 Aluminum wire: SC120-8
4	DC cable between power cabinet	Withstand voltage: ≥1 kV	Copper wire: 150 mm <sup>2</sup> (400A dispenser)	Copper wire: SC150-10

No.	Cable	Type	Wire cross-sectional area (mm <sup>2</sup> )	Crimp Terminal
	and air-cooled dispenser		Aluminum wire: 300 mm <sup>2</sup> (400A dispenser)	Aluminum wire: SC300-10
	DC cable between power cabinet and liquid-cooled dispenser	Withstand voltage: ≥1 kV	Copper wire: 120mm <sup>2</sup>	Copper wire: SC120-10
			Aluminum wire: 240mm <sup>2</sup>	Aluminum wire: SC240-10
5	Power cable between power cabinet and dispenser	Two-core power cable	2.5mm <sup>2</sup>	E1510
6	Communication cable (CAN)	Shielded twisted pair	0.75mm <sup>2</sup>	E1510
7	Network cable between power cabinet and dispenser	8-core Cat5e or Cat6 Ethernet cable	—	—



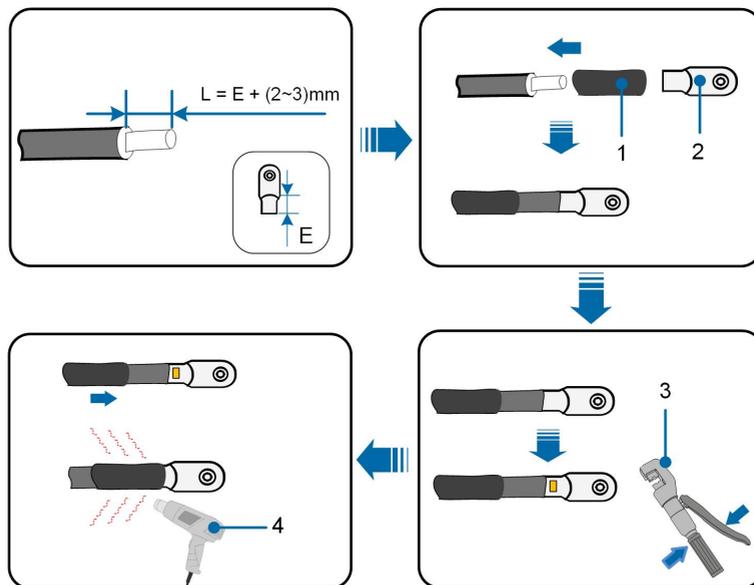
- All cable specifications listed in this manual are recommended values. Users must select appropriate cables based on actual conditions and ensure compliance with local regulations and safety standards.
- The cable specifications recommended in the table are only applicable to cable duct installations. For other installation methods, please select the appropriate cable specifications based on local conditions.
- To avoid wiring errors that may cause device malfunction, it is recommended to clearly label both ends of each cable (e.g., using adhesive labels) before cable routing, and to double-check all connections before and after wiring.

After leading the cable through the AC cable inlet, crimp the terminal onto the cable, so as to ensure reliable connections. Poor contact may lead to overheating or even safety incidents.

Copper wires are recommended. If aluminum wires are selected, use copper-aluminum bimetallic terminals, avoiding direct contact between the copper bar and the aluminum wire.

#### 4.5.2 Crimp OT/DT/SC terminal

##### Crimp OT/DT/SC terminal



Before crimping the terminals, slide heat shrink tubing over the crimping area, ensuring full coverage. After crimping, use a heat gun to evenly heat the tubing until it tightly adheres to the terminals. This prevents loosening, oxidation, or short circuits, ensuring a secure and reliable connection.

1. Heat shrink tubing

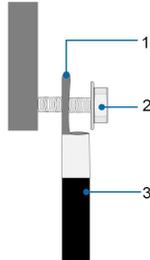
2. OT/DT/SC terminal

3. Hydraulic pliers

4. Heat gun

### Aluminum Cable Requirements

If an Aluminum cable is selected, use a copper-aluminum bimetallic terminal, avoiding direct contact between the copper bar and the aluminum wire.



**Figure 4-7** Aluminum Cable Connection

1. Copper-aluminum bimetallic terminal

2. Flange nut

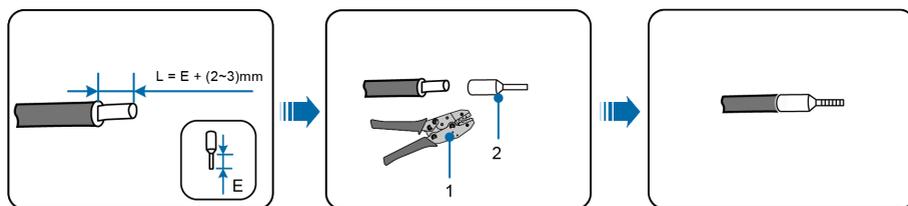
3. Aluminum cable

### NOTICE

Ensure that the selected terminal can directly contact with the copper bar. If there are any problems, contact the terminal manufacturer.  
Ensure that the copper bar is not in direct contact with the aluminum wire. Otherwise, electrochemical corrosion may occur, impairing the reliability of electrical connection.

### 4.5.3 Crimp Cord-end Terminal

#### Crimp Cord-end Terminal



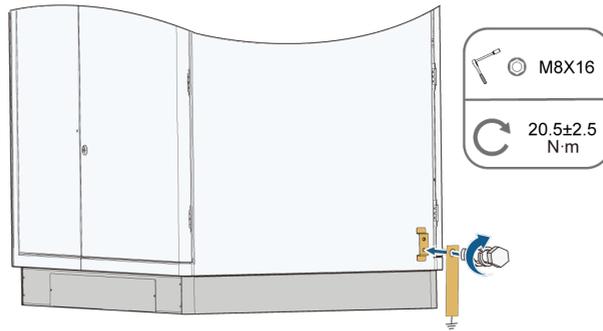
(1) Crimp tool

(2) Cord-end terminal

### 4.5.4 External Protective Grounding Cable Connection

Non-current carrying metal parts and device enclosures in the electric power system should all be grounded.

The copper bar provided on the back of the power cabinet is used for grounding.



**Step 1** Securely connect the external grounding copper bar of the device to one end of the grounding flat steel.

**Step 2** Ensure that the other end of the grounding flat steel is firmly connected to the grounding system. It is recommended to bury it deep underground. If burial or burial at the required depth is not feasible, implement an appropriate grounding method based on the actual site conditions.



- The grounding flat steel needs to be prepared by the user.
- The grounding system must comply with local electrical regulations to ensure safe operation.

--End

#### 4.5.5 AC Cable Connection

The AC cable is used to connect the power cabinet to the grid, so that the grid can supply electricity to the charging system.

#### **⚠ DANGER**

- **Do not connect the AC cable when the device carries voltage; otherwise, it may result in personal injury.**
- **Do not power the device before the AC cable connection and cable laying are completed.**



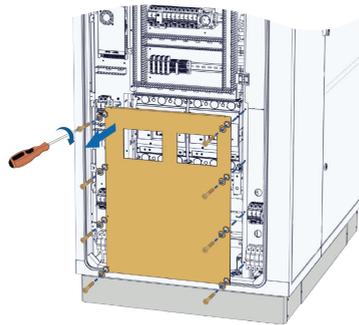
The cable colors in the figures in this manual are for reference only. Please select cables according to local cable codes.

**Step 1** Ensure the circuit breaker between the power cabinet and the grid is in the open state and will not be closed by accident.

**Step 2** Crimp the terminal onto the AC cable by referring to [4.5.2 Crimp OT/DT/SC terminal](#).

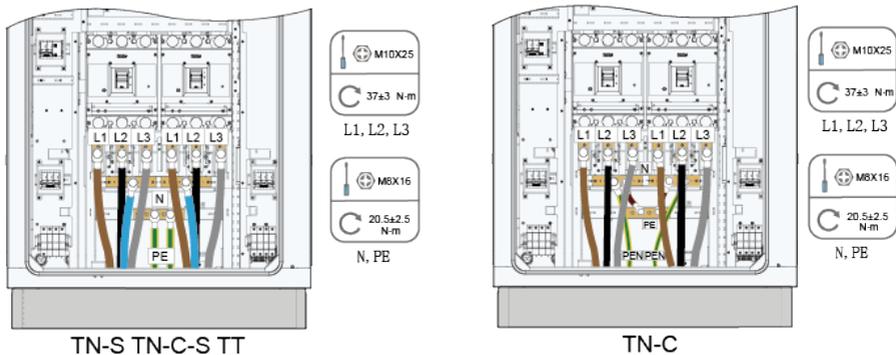
**Step 3** Open the front door of the power cabinet.

**Step 4** Remove the protective cover from the AC terminals using a screwdriver.



**Step 5** Lead the AC cable out from the conduit and pass it through the AC cable inlet at the bottom of the power cabinet.

**Step 6** Use a wrench to secure the cables of two AC inputs to the designated terminals, by referring to the figure below. For easier connection, start by connecting the cables to the inner N and PE copper bars, then connect the L1, L2, and L3 cables to the outer terminals.



## NOTICE

If the charging site uses a TN-C grounding system, make sure to follow the TN-C wiring diagram carefully. Here are the key points to check:

- To prevent electric shock during operation and maintenance, ensure the external protective grounding is properly installed (refer to [4.5.4 External Protective Grounding Cable Connection](#)). Verify all connections are secure, with no looseness or poor contact.
- The wiring for the L1, L2, and L3 AC cables should remain as shown in the diagram. Connect the two PEN wires to the corresponding terminals on the N copper bar.
- Use two separate wires to connect the N copper bar and PE copper bar. The required wires and crimp terminals need to be prepared by the user, following the PEN wire requirements outlined in [4.5.1 Cable Requirements](#)

**Step 7** Use the fireproof mud included in the shipment or locally compliant foam to properly seal the AC cable inlet.

**Step 8** Reinstall the protective cover removed in Step 4 in its original position, ensuring it is securely installed with no looseness or misalignment.

### NOTICE

- **Connect the cables in the proper order to the correct positions. Failure to do so may damage the device and such damages will not be covered by the warranty.**
- **The power cabinet has two AC inputs. Make sure they are both connected.**

--End

#### 4.5.6 Common Ground Connection (with dispenser)

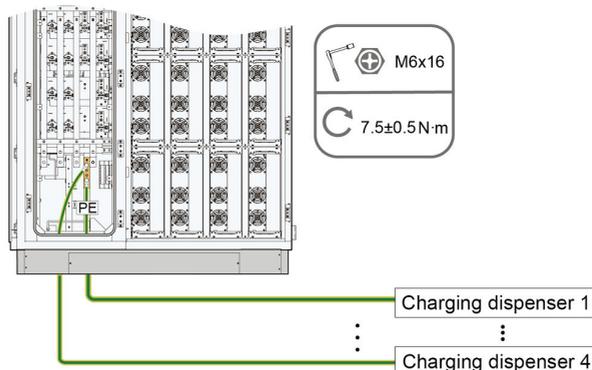
A grounding cable is required between the power cabinet and the dispenser for common ground.

**Step 1** Crimp the terminal onto the cable by referring to [4.5.2 Crimp OT/DT/SC terminal](#).

**Step 2** Lead the grounding cable out from the conduit, and pass it through the cable inlet at the bottom of the power cabinet.

**Step 3** Connect the grounding cable to the designated grounding bar using a wrench, as shown in the figure below.

**Step 4** Connect the other end of the grounding cable to the designated position on the dispenser.



**Step 5** Use the fireproof mud included in the shipment or locally compliant foam to properly seal the grounding cable inlet.

--End

#### 4.5.7 DC Cable Connection

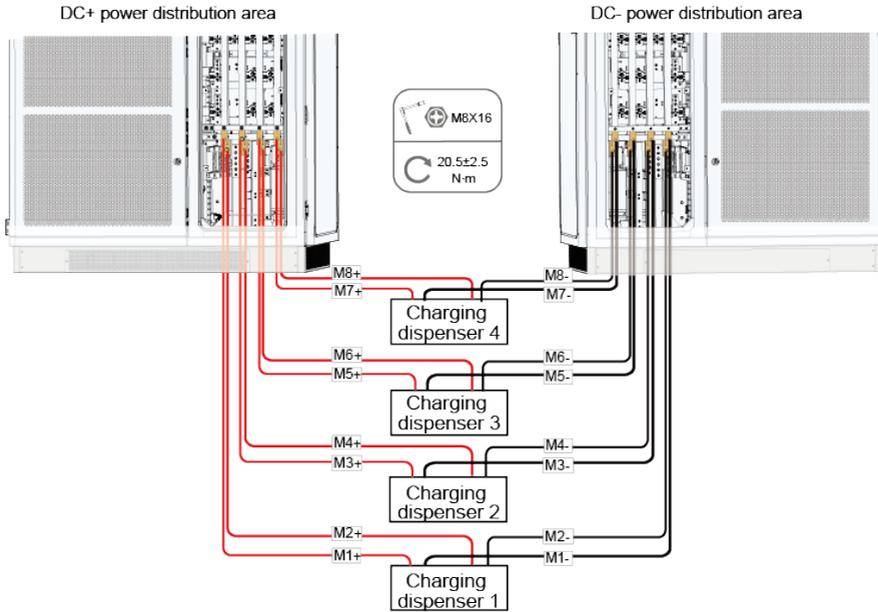
**Step 1** Lay the cable along the pre-buried cable conduit, with one end placed at the foundation of the power cabinet and the other end at the foundation of the dispenser.



To avoid wiring errors that may cause device malfunction, it is recommended to clearly label both ends of each cable (e.g., using adhesive labels) before cable routing, and to double-check all connections before and after wiring.

**Step 2** Crimp the terminal onto the DC cable by referring to [4.5.2 Crimp OT/DT/SC terminal](#).

- Step 3** Open the left and right doors of the power cabinet.
- Step 4** Lead the DC cable out from the conduit and pass it through the DC cable inlet at the bottom of the power cabinet.
- Step 5** Use a wrench to connect the DC+ cable to the corresponding position in the DC+ wiring area, and DC- cable to the corresponding position in the DC- wiring area.



Follow the wiring rules outlined in the table below to establish the DC connections between the power cabinet and dispensers. Configure the corresponding dispensers and connectors according to the dispenser type.

**Table 4-2** Rules for DC Wiring Between Dispensers and Power Cabinet

Dispensers No.	Dispenser Type	Charging Connector ID	Connection Points
dispenser 1	Air-cooled	GUN1	DC1+/DC1-: M1+ / M1-
		GUN2	DC2+/DC2-: M2+ / M2-
dispenser 2	Liquid-cooled*	GUN1	DC1+ / DC1-: M1+ / M1- DC2+ / DC2-: M2+ / M2-
		GUN3	DC1+ / DC1-: M3+ / M3-
	Air-cooled	GUN4	DC2+ / DC2-: M4+ / M4-
		GUN3	DC1+ / DC1-: M3+ / M3- DC2+ / DC2-: M4+ / M4-
dispenser 3	Air-cooled	GUN5	DC1+ / DC1-: M5+ / M5-

Dispenser s No.	Dispenser Type	Charging Connector ID	Connection Points
dispenser 4	Liquid-cooled	GUN6	DC2+ / DC2-: M6+ / M6-
		GUN5	DC1+ / DC1-: M5+ / M5- DC2+ / DC2-: M6+ / M6-
	Air-cooled	GUN7	DC1+ / DC1-: M7+ / M7-
		GUN8	DC2+ / DC2-: M8+ / M8-
	Liquid-cooled	GUN7	DC1+ / DC1-: M7+ / M7- DC2+ / DC2-: M8+ / M8-

\*If there is only one liquid-cooled dispenser, connect it in the position of dispenser 1.

### **⚠ CAUTION**

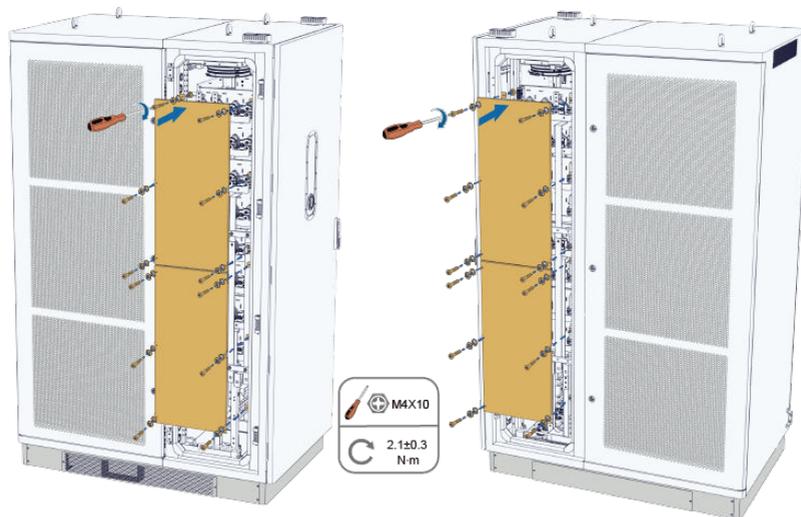
**Ensure the DC+ and DC- cables are all connected in the correct positions, otherwise, the device cannot operate properly.**

As an example, for a charging system with 2 liquid-cooled dispensers (Dispenser 1 and 2) and 2 air-cooled dispensers (Dispenser 3 and 4), refer to the table below for the DC wiring and corresponding dispenser/connector configurations.

Dispensers No.	Dispenser Type	Charging Connector ID	Connection Points
dispenser 1	Liquid-cooled	GUN1	DC1+ / DC1-: M1+ / M1- DC2+ / DC2-: M2+ / M2-
dispenser 2	Liquid-cooled	GUN3	DC1+ / DC1-: M3+ / M3- DC2+ / DC2-: M4+ / M4-
dispenser 3	Air-cooled	GUN5	DC1+ / DC1-: M5+ / M5-
		GUN6	DC2+ / DC2-: M6+ / M6-
dispenser 4	Air-cooled	GUN7	DC1+ / DC1-: M7+ / M7-

Dispensers No.	Dispenser Type	Charging Connector ID	Connection Points
		GUN8	DC2+ / DC2-: M8+ / M8-

- Step 6** Lead the other end of the DC cable through the cable inlet on the dispenser and connect it to the designated DC terminal.
- Step 7** Use the fireproof mud included in the shipment or locally compliant foam to properly seal the DC cable inlet.
- Step 8** After completing DC cable connections, install the left and right protective PC covers using a screwdriver. Verify that the covers are firmly secured with no looseness or misalignment.

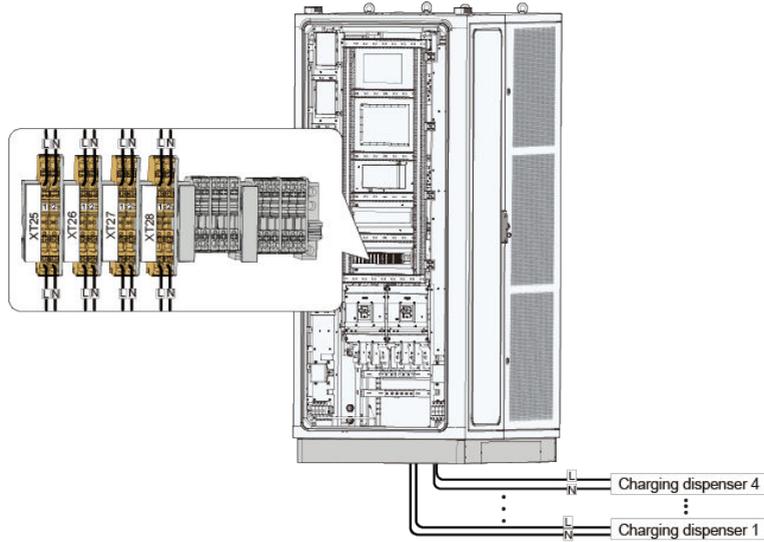


--End

#### 4.5.8 Power Cable Connection

The power cabinet is connected to the dispensers with power cables so that it can supply power to the dispensers.

- Step 1** Crimp the cord-end terminal on the power cable by referring to [4.5.3 Crimp Cord-end Terminal](#).
- Step 2** Lead the power cable out from the conduit and pass it through the cable inlet at the bottom of the power cabinet. Then, connect the cable to the designated power supply wiring terminal.
- Step 3** Connect the other end of the power cable to the designated power supply wiring terminal on the dispenser.



**Table 4-3** Connections Between Power Cabinet and dispenser

Connection Point	Dispenser
XT25	dispenser 1
XT26	dispenser 2
XT27	dispenser 3
XT28	dispenser 4

**Step 4** Use the fireproof mud included in the shipment or locally compliant foam to properly seal the power cable inlet.

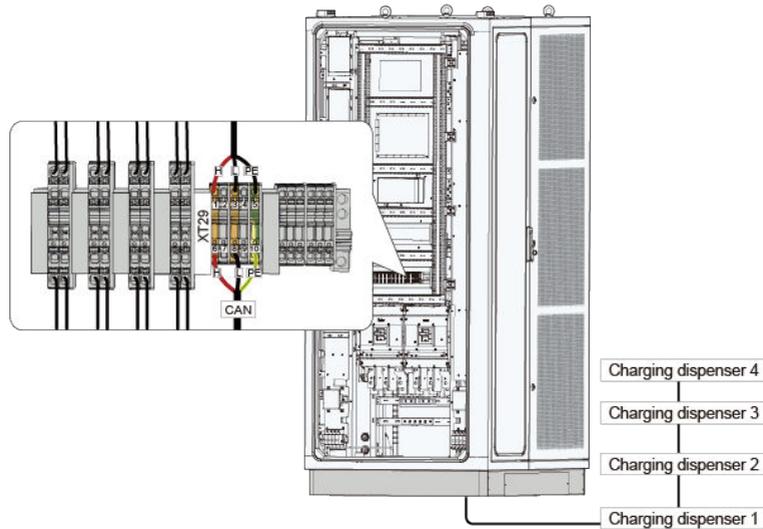
--End

#### 4.5.9 CAN Cable Connection

The power cabinet is connected to the dispenser with a CAN cable for communication.

**Step 1** Crimp the cord-end terminals onto the wires of the communication cable by referring to [4.5.3 Crimp Cord-end Terminal](#).

**Step 2** Lead the communication cable out from the conduit and pass it through the cable inlet at the bottom of the power cabinet. Then, connect its wires to the designated CAN wiring terminals.



The CAN cable must be a twisted shielded pair. The shielding layer must be properly grounded.

**Step 3** Use the fireproof mud included in the shipment or locally compliant foam to properly seal the CAN cable inlet.

--End

## 4.5.10 Power Cabinet Network Connection

### 4.5.10.1 Communication Interfaces

The product supports 4G, Ethernet and Wi-Fi network. Communication data is transmitted to the cloud platform to facilitate operation and maintenance by qualified personnel. A SIM card is required to enable 4G wireless communication, while connecting the product to a router with a network cable is required to enable Ethernet communication.

The charging management platform is a cloud platform incorporating functions of monitoring, operation, and management. Users can manage and maintain their devices on this platform, with functions such as charging authorization, order management, and remote fault troubleshooting. The device communicates with the charging management platform over the OCPP protocol.

OCPP (Open Charge Point Protocol) defines the protocol standard for network interconnection between the product and the charging management platform. Charging transaction data can be synchronised to the OCPP backend system. For specific configuration and information viewing methods, please refer to the operating manual provided by the system's operator.

**Table 4-4** Hardware Interfaces

Interfaces	Visible	Use Case
Ethernet interface	Y	Network Communication
4G Communication Slot	Y	4G Communication
Wi-Fi interface	N	Communication via Wi-Fi

**Table 4-5** Supported Communication Protocols

Protocols	Description
HTTP+TLS	OCPP server connection; WiFi module and App connection
LTE	4G SIM card communication
Modbus	Communication based on MbedTLS

The product operates a web service via port 8089, providing a browser-based interactive management interface. Users can access this interface to perform system management tasks, including login, network configuration, device status monitoring, OCPP protocol settings, certificate management, charging parameter configuration, system reboot, SSH service management, and data traffic monitoring.

4G and Ethernet communication is recommended. The parameters required for each type of network connection are detailed in the table below.

**Table 4-6** Supported Network Connection Methods

Communication Method	Technical Data	Connection Method
4G	Frequency Band: <ul style="list-style-type: none"> <li>• LET-FDD: Band 1/3/7/8/20/28A</li> <li>• LTE- TDD: Band 38/40/41</li> <li>• WCDMA: Band 1/8</li> <li>• GSM: Band 3/8</li> </ul> Transmitting Power: <ul style="list-style-type: none"> <li>• LET-FDD (Band 1/3/7/8/20/28A): 23dBm-2dB/23dBm+2dB</li> <li>• LTE-TDD (Band 38/39/40): 23dBm-2dB/23dBm+2dB</li> <li>• GSM (Band 3): 26dBm</li> <li>• GSM (Band 8):</li> </ul>	SIM card
Ethernet	Rate (Mbit/s): 10/100 self-adaptive	Ethernet interface

During high network traffic conditions, the device will enter a protection mode and activate rate limiting measures. There are three types of protection mechanisms:

- **IP-Based request rate limiting**  
Each accessing IP address is assigned a separate token bucket. Up to 10 tokens are replenished per minute, with a maximum capacity of 60 tokens. Each API request consumes one token. Once the tokens are depleted, any further requests from that IP will be directly rejected.
- **Global request rate limiting**  
The system maintains a global token bucket to limit the total number of requests from all IP addresses. The global limit is set at 200 requests per minute. Any requests exceeding this limit will be uniformly rejected to prevent system overload.
- **IP blacklisting mechanism**  
If an IP address repeatedly triggers request denials within a short period (i.e., continues sending requests after exhausting its tokens), the system will blacklist the IP. While blacklisted, the IP address will be denied access to all API endpoints for 5 minutes. After the ban period ends, the system will automatically remove the IP from the blacklist, allowing access to resume.

#### Network Traffic Monitoring Panel Overview

- **Start/Stop toggle:** Activates or halts network monitoring.
- **Monitoring indicator (green):** Indicates that network monitoring is active.
- **Update interval:** Sets the refresh interval for the displayed data.
- **Black terminal window:** Displays real-time connection and traffic statistics for the current network interface (e.g., wlo1).
- **Host name (port/service if enabled):** Displays the hostname or IP address of the connected devices.
- **=> / <= Symbols:** Indicate the direction of data transmission (send/receive).
- **Last 2 s / 10 s / 40 s:** Shows the amount of data transmitted in the past 2, 10, and 40 seconds, respectively.
- **Cumulative:** Displays the total traffic since monitoring activation.



Hereby, Sungrow Power Supply Co., Ltd. declares that this radio equipment is in compliance with Directive 2014/53/EU.

### 4.5.10.2 SIM Card Installation

#### Required Materials

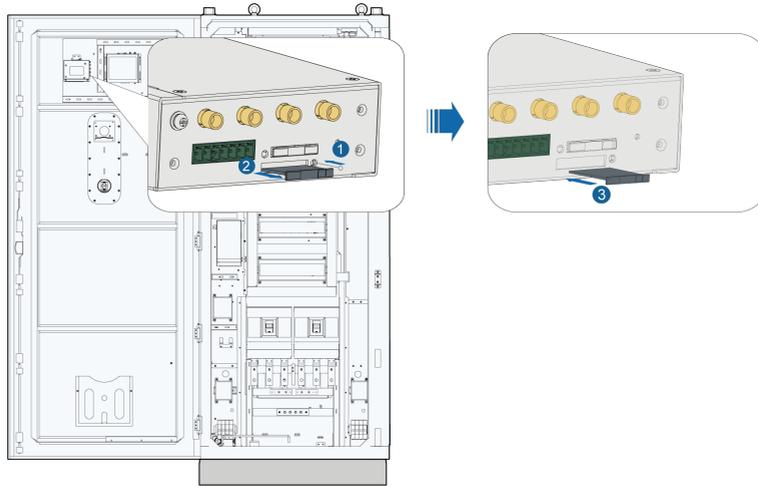
- M2M SIM card with a size of 2FF 25mm\*15mm.



The SIM card should be prepared separately by the user.

**Step 1** Use the ejector pin (prepared by the user separately) to pop open the SIM card tray.

**Step 2** Put the SIM card on the card tray and align it with the card slot on the cabinet, following the direction indicated in the figure below.



**Step 3** Push the SIM card gently into the slot until it is in place. Do not exert too much pressure, to avoid card deformation or damage.

- To enable 4G connectivity, a SIM card must be installed. The SIM card is not included and must be purchased by users. Industrial-grade IoT SIM cards are recommended for users.
- Select an appropriate data plan based on the number of devices in the charging system. It is recommended to allocate 500MB/month per device (e.g., for a system with 1 power cabinet and 3 dispensers, a 2GB/month data plan is suggested).
- If the monthly data limit is exceeded, the device will be disconnected from the network. Ensure timely purchase of additional data to restore connectivity.

--End

#### 4.5.10.3 Ethernet Cable Connection

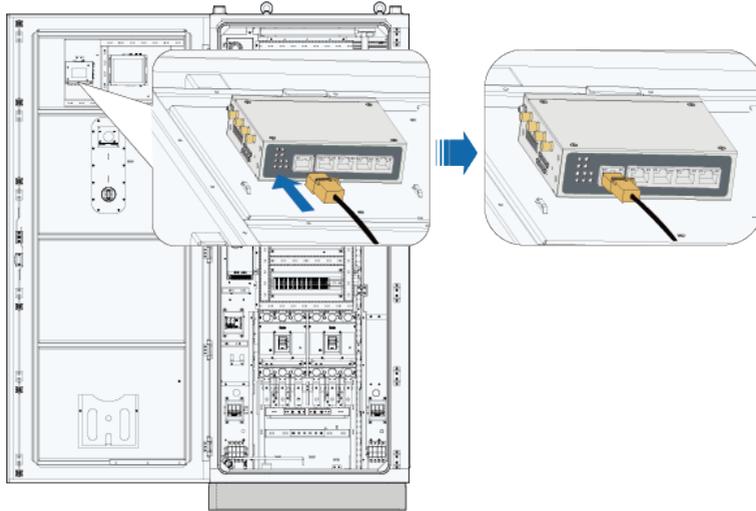
##### Required Materials

- 8-core Cat5e or Cat6 Ethernet cable

**i** The Ethernet cable should be prepared separately by the user.

**Step 1** Lead the Ethernet cable through the cable hole on the foundation and into the cable inlet on the power cabinet.

**Step 2** Insert the RJ45 plug of the Ethernet cable into the network port on the cabinet, by referring to the instructions shown in the figure.



**Step 3** Upon hearing an audible “click”, pull the network cable gently backward and make sure the connection is secure.

**Step 4** To remove the network cable, press the tab on the RJ45 plug and pull the cable out.  
--End

#### 4.5.11 Dispenser Network Connection

After connected to the power cabinet via an Ethernet cable, the dispenser can access the network and upload communication data to the cloud, thereby facilitating operations and maintenance through the cloud platform.

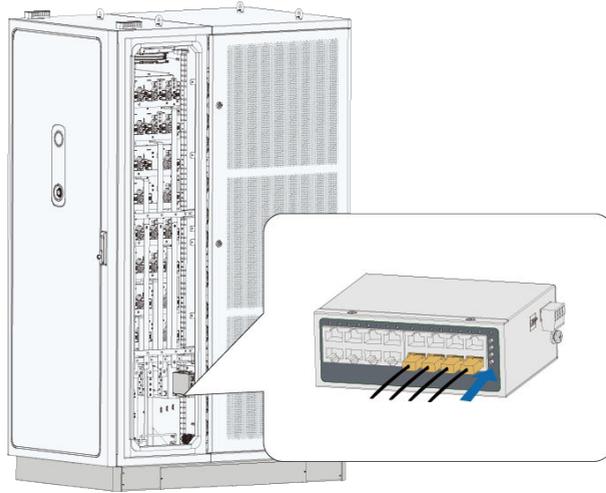
##### Prerequisite

8-core Cat5e or Cat6 Ethernet cable is recommended. The cable should be prepared by the user.

**Step 1** Open the cabinet door and locate the Ethernet port on the switch.

**Step 2** Lead the Ethernet cable out from the conduit, and pass it through the cable inlet at the bottom of the power cabinet. Then, insert the cable to the designated Ethernet port. Upon hearing an audible “click”, pull the network cable gently backward and make sure the connection is secure.

**Step 3** Connect the other end of the network cable to the designated port on the dispenser.



--End

# 5 Commissioning

## 5.1 Inspection Before Commissioning

To ensure safe use, please perform the following inspections on the device before powering it on.

**⚠ CAUTION**

**Do not power the device unless the inspections are completed.**

**Table 5-1** Inspection Items

Item	Methods/Tools	Requirements
Device inspection	Visual Inspection	<ul style="list-style-type: none"><li>• No visible scratch on or deformation on the enclosure.</li><li>• No paint peeling on the exterior.</li><li>• The parts and components of the device are secure and reliable, and the nameplate and marks are all legible.</li><li>• The device is installed in an environment where heat can be well dissipated, without any clutter piled on its top or around it.</li></ul>
Charging connector inspection	Visual Inspection	<ul style="list-style-type: none"><li>• No wet spots or foreign matters on the charging connector.</li><li>• The charging cable is intact.</li></ul>
Power supply cable inspection	Multimeter/screwdriver	<ul style="list-style-type: none"><li>• The three-phase power supply cable is securely attached to the MCCB.</li><li>• The grounding cable is securely and properly connected to allow for effective grounding.</li><li>• The screws for the input cable are fastened.</li><li>• Check if there is short-circuit in the AC/DC circuits using a multimeter.</li><li>• Check if the supply voltage is within the input voltage range allowed for the device using a multimeter.</li></ul>

Item	Methods/Tools	Requirements
Electric vehicle (EV) inspection	Visual Inspection	<ul style="list-style-type: none"> <li>The EV is parked in the designated place.</li> <li>The EV sits perfectly still.</li> </ul>

## 5.2 Power

Ensure the device has been properly installed and the pre-commissioning inspection items all meet the requirements. Power on and commission the device first before putting it into operation.

### DANGER

- Do not touch any live part of the product when it is running; otherwise, it may lead to electrical shocks.
- Do not touch any wiring terminal on the product when it is running; otherwise, it may lead to electrical shocks.
- Do not remove any part or component from the product when it is running; otherwise, it may lead to electrical shocks.

**Step 1** After the wiring is complete, install the transparent PC Protective Cover before powering on to prevent accidental contact with live parts during subsequent operations.



The PC Protective Cover is included in the accessory package and will be shipped with the product.

**Step 2** Switch on the external AC circuit breaker.

**Step 3** Before switching on the circuit breaker inside the power cabinet, measure the voltage of the copper bars of the two inputs by following the instructions below, and ensure the input voltage is in normal range.

Test point 1	Test point 2	Normal voltage range
L1	L2	360–440V
L1	L3	
L2	L3	
L1	N	208–254V
L2	N	
L3	N	

**Step 4** Switch on the MCCB, power supply circuit breaker, SMPS circuit breaker, and SPD circuit breaker on the front door one by one.



**Step 5** Close all doors and check the Energy-Star Ring indicator on the front door. If the indicator is steady green, the device is in standby mode.



After completing the above steps, perform charging commissioning by referring to the commissioning instructions specified for the dispenser.



In case of an emergency, users can press the emergency stop button on the cabinet to stop charging immediately.

--End

# 6 Routine Inspection

## 6.1 Inspection Instructions

It is suggested to perform regular inspections on the device, so as to extend its service life. The inspection interval should be determined with on-site conditions taken into consideration. In case the device works in extreme weather conditions, be sure to shorten the inspection interval and increase inspection frequency.

- Before inspection, power off the cabinet. For details, see [6.2 Power off the Power Cabinet](#).
- In case of a fault with the device, contact your local service provider or manufacturer immediately. Do not open the device without permission.
- If some devices need to be replaced during the inspection, please contact SUNGROW.
- Losses caused by failing to perform inspections in compliance with the instructions specified in this manual will not be covered by the warranty.
- Do not perform inspections on the device on rainy, humid, or windy days. SUNGROW shall not be held liable for any possible outcome resulted from inspections in such weather conditions.
- To reduce the risk of electric shocks, do not perform inspections that are not specified in this manual. If needed, please contact SUNGROW for inspection and repair services. Otherwise, damages caused therefrom will not be covered by the warranty.

## 6.2 Power off the Power Cabinet

### Prerequisite

Power off the power cabinet first before performing routine inspections or maintenance.

### CAUTION

**Even if the power cabinet has stopped running, it may still be hot and cause burns. Work on it wearing safety gloves after it cools down.**

Following the instructions below to power off the power cabinet. Otherwise, it may lead to device damage or personal injuries.

**Step 1** Press the emergency stop button on the power cabinet.

**Step 2** Open the power cabinet door and switch off the molded case circuit breaker.

**Step 3** Switch off the AC circuit breaker in the upstream power distribution box.

**Step 4** Ensure the charging connector is detached from the EV. Wait for 10 minutes before proceeding with voltage test.

- a. Ensure that the indicator lights and the screen are both turned off.
- b. Measure the voltage at the two AC output copper bars in the power cabinet using a multimeter set to the AC mode to confirm that the input voltage is 0.

**Table 6-1** AC Input Voltage of the Power Cabinet

Test point 1	Test point 2	Voltage
L1	L2	0V
L1	L3	0V
L2	L3	0V
L1		0V
L2	N	0V
L3		0V
L1		0V
L2	PE	0V
L3		0V

- c. Measure the voltage between L and N, and between L and PE of the dispenser using a multimeter set to AC mode to confirm the voltage is 0.
- d. Measure the voltage between each DC+ output copper bar and its corresponding DC- output copper bar using a multimeter set to DC mode to confirm the voltage is 0.

**Step 5** Once the voltage test is completed and the results meet the requirements, the dispenser is powered off.

--End

## 6.3 Routine Inspection

It is recommended to perform routine inspections on the device once every 6 months. However, the actual inspection interval is subject to the operating environment.

Inspection Item	Inspection Method	Recommended Inspection Interval
Device exterior	<ul style="list-style-type: none"> <li>• Check if there is any deformation with the enclosure of the device.</li> <li>• Check if there is paint peeling on the exterior of the device.</li> </ul>	Once every 6 months

Inspection Item	Inspection Method	Recommended Inspection Interval
	<ul style="list-style-type: none"> <li>• Check if the nameplate and marks on the device are all legible.</li> <li>• Check if there is anything abnormal with the exterior of peripheral components such as the charging connector holder and antenna.</li> </ul>	
Device structure	<ul style="list-style-type: none"> <li>• Check if the parts and components of the device are secure and reliable. Inspect and tighten the screws of the door lock. If the keyhole cover is loose, use the Phillips screwdriver to tighten the internal mounting bolts inside the lock mechanism to secure the cover, thereby preventing water ingress that could cause corrosion.</li> <li>• Check if there is any damage to the internal power units, main control board, auxiliary low-voltage power supply, charging interface, and power supply interface.</li> <li>• Clean the dust-proof fabric and dirt and dust inside the device, and check if there is any wet spot.</li> </ul>	Once every 6 months
Electrical connections	<ul style="list-style-type: none"> <li>• Check if the electrical line is burnt or has aged and if the fixing screws are loose.</li> <li>• Check whether the grounding cable is properly connected to allow for reliable grounding.</li> <li>• Check the cables for deficiency, crack, abrasion, damage, wire exposure, etc.</li> <li>• Other inspection items can be arranged based on the actual situation on the site.</li> </ul>	Once every 6 months
Fan	<ul style="list-style-type: none"> <li>• Check the fan and the fan opening for any foreign matters, and remove them promptly if found</li> <li>• Check whether the fan is operating normally during runtime.</li> </ul>	Once every 6 months

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Inspection Item	Inspection Method	Recommended Inspection Interval
	If a power cabinet fan fault is reported, first check whether the circuit breaker QF6 has tripped, and reset or troubleshoot further as needed.	

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# 7 Appendix

## 7.1 Technical Data

**Table 7-1** Technical Data

Model	480kW Power Cabinet	360kW Power Cabinet
<b>AC input</b>		
Grid voltage	3 / N / PE, 400 Vac ( ± 10 % )	
Nominal grid frequency	50 Hz / 60 Hz	
Rated input current	770 A	577A
Power factor	≥ 0.99	
Standby power	≤ 30 W	
Earthing system	TN-C, TN-S, TN-C-S, TT	
Total harmonic distortion (THDi)	<5 % at full output power	
Over voltage category	III	
Safety class	Class I	
Charging mode	Mode 4	
<b>DC output</b>		
Max output power	480 kW	360 KW
Output voltage range	200 Vdc ~ 1000 Vdc	
Max. output current	1600 A	1200A
Number of output	Max. 8	
Max. Efficiency	96.5 %	
<b>General data</b>		

<b>Model</b>	<b>480kW Power Cabinet</b>	<b>360kW Power Cabinet</b>
Dimensions (W*H*D)	900 mm * 2200 mm * 1380 mm	
Weight	1100 kg	980 kg
Operating temperature	-35 °C - 55 °C	
Operating humidity range	5 % - 95 % ( non-condensing )	
Operating altitude	≤ 2000 m	
Noise (typical)	≤ 65 dB ( A ) at 1m distance / 25 °C, at full output power	
Mechanical impact protection	IK10 ( enclosure )	
Enclosure rating	IP65	
Anti-corrosion degree	C5	
<b>Communication</b>		
Communication interface	4G / Ethernet / WLAN	
Communication protocol (charger-to-CSMS)	Ready for OCPP 2.0.1	OCPP 1.6 J
<b>User interface</b>		
Emergency stop	Yes	
Display	LED indicator	
<b>Protection</b>		
Over/Under voltage protection	Yes	
Overload protection	Yes	
Over temperature protection	Yes	
Leakage protection	Yes	

Model	480kW Power Cabinet	360kW Power Cabinet
Surge protection		Yes
Short-circuit protection		Yes
<b>Norm and certification</b>		
Certifications		CE / CB
Compliance	ETSI / EN 300 328, EN 300 330, EN 301 489-1 / 3 / 17 / 52, ETSI / EN 301 908-1 / 13, EN 50665, BS / EN IEC 61851-1, BS / EN IEC 61851-21-2, BS / IEC EN 61851-23 / 24, EN IEC 62311	
Warranty	3 years ( standard )	

## 7.2 Quality Assurance

When product faults occur during the warranty period, SUNGROW will provide free service or replace the product with a new one.

### Evidence

During the warranty period, the customer shall provide the product purchase invoice and date. In addition, the trademark on the product shall be undamaged and legible. Otherwise, SUNGROW has the right to refuse to honor the quality guarantee.

### Conditions

- After replacement, unqualified products shall be processed by SUNGROW.
- The customer shall give SUNGROW a reasonable period to repair the faulty device.

### Exclusion of Liability

In the following circumstances, SUNGROW has the right to refuse to honor the quality guarantee:

- The free warranty period for the whole machine/components has expired.
- The device is damaged during transport.
- The device is incorrectly installed, refitted, or used.
- The device operates in harsh conditions beyond those described in this manual.
- The fault or damage is caused by installation, repairs, modification, or disassembly performed by a service provider or personnel not from SUNGROW.
- The fault or damage is caused by the use of non-standard or non-SUNGROW components or software.

- The installation and use range are beyond stipulations of relevant international standards.
- The damage is caused by unexpected natural factors.

For faulty products in any of above cases, if the customer requests maintenance, paid maintenance service may be provided based on the judgment of SUNGROW.



Product data such as product dimensions are subject to change without prior notice. The latest documentation from SUNGROW should take precedence in case of any deviation.

### 7.3 Contact Information

In case of questions about this product, please contact us. We need the following information to provide you the best assistance:

- Model of the device
- Serial number of the device
- Fault code/name
- Brief description of the problem

For detailed contact information, please visit: <https://en.SUNGROWpower.com/contactUS>

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