SUNGROW
Clean power for all

User Manual

DC Power Cabinet

IDC480E

IDC480E-UEN-Ver13-202502

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Contents

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.
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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**.

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.

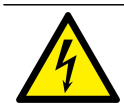
Strictly follow the safety instructions stated in the manual to avoid the hazards mentioned above.

- 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℃.
	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 -40℃ to 70℃.
- 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.
- 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 480kW 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.

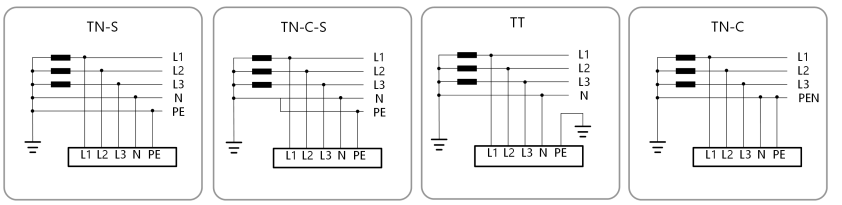
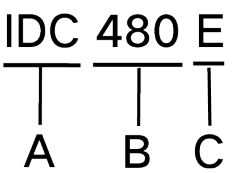


figure 3-1 Earthing Systems

Product Model

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



No.	Definition
A	Product type: Integrated DC charger
B	Rated output power: 480kW
C	Compliance: European standard

3.2 Application Scenarios

The IDC480E DC power cabinet of the split-type charging system has a rated power of 480kW and a total of sixteen 30kW power units. It is equipped with power conversion and distribution capacities, allowing allocation in minimum 30kW increments.

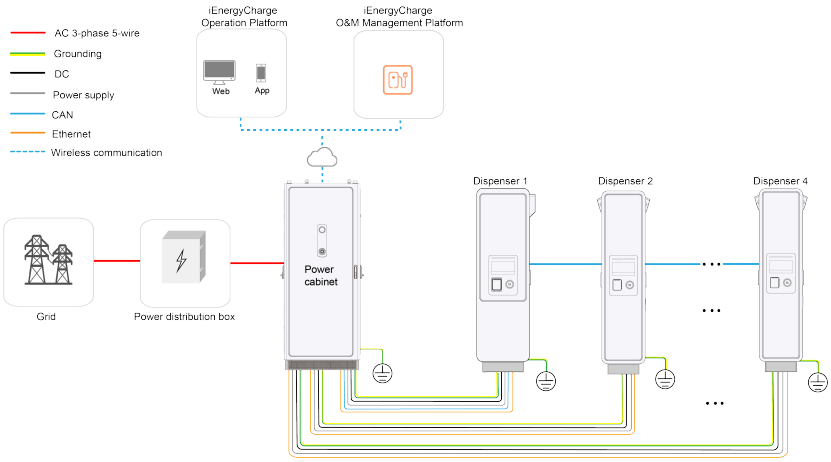


figure 3-2 System Diagram

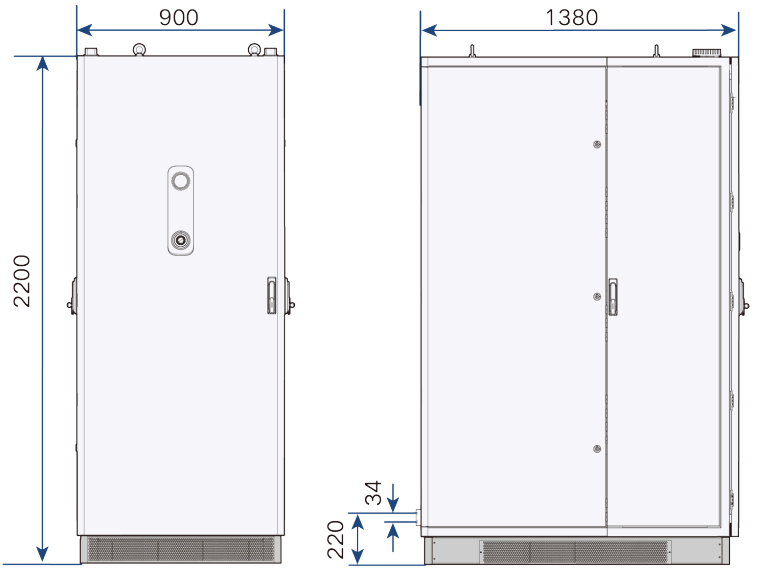
3.3 Marks on the Product

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.
	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℃.

Marks	Description
	TÜV mark of conformity.
DE-M 24 0122 TXXXX-DE	PTB mark of conformity.

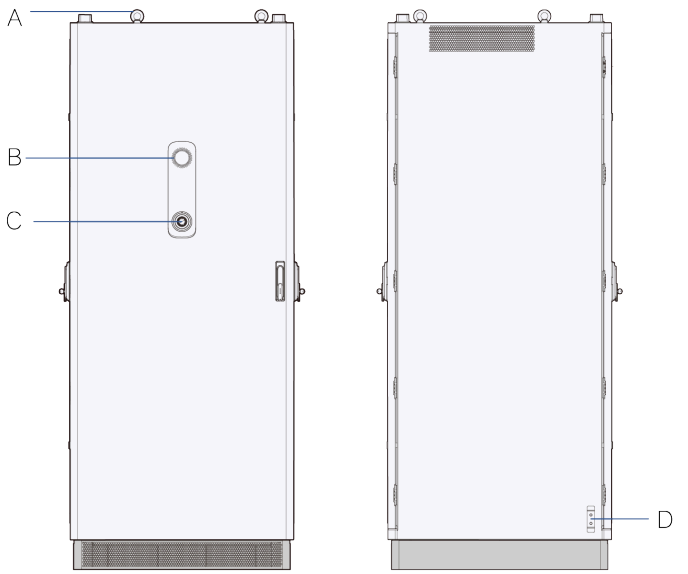
3.4 External Design

Dimensions



*The dimensions of the real product may differ.

External Design

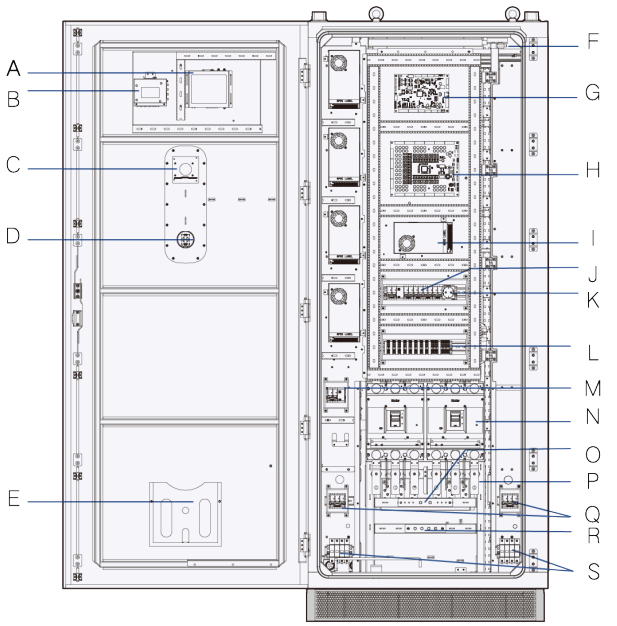


(A) Lifting ring (B) Energy Star-Ring

(C) Emergency stop (D) External protective grounding

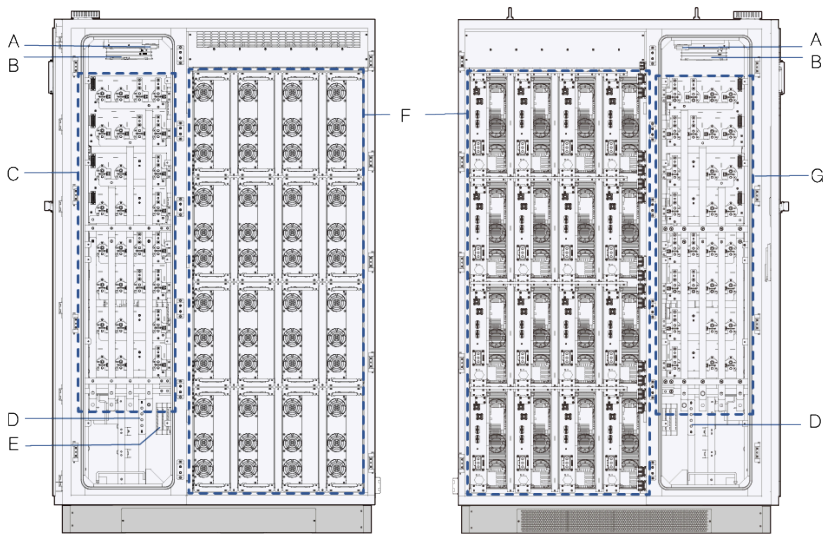
3.5 Internal Structure

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) SMPS (Switched-mode power supply)
(J) Power supply circuit breaker	(K) Service socket	(L) Customer wiring terminal
(M) SMPS circuit breaker	(N) MCCB (molded case circuit breaker)	(O) Neutral (N wire) copper bar
(P) AC phase wire copper bar	(Q) SPD circuit breaker	(R) AC grounding copper bar
(S) SPD		

Internal Structure (Left and Right Doors)



(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

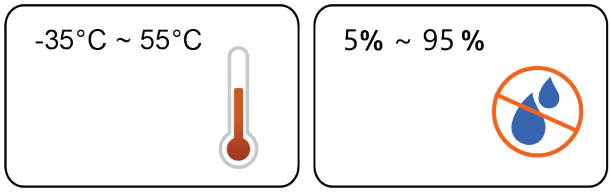
4 Installation

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 no 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:



- 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.
- 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 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.

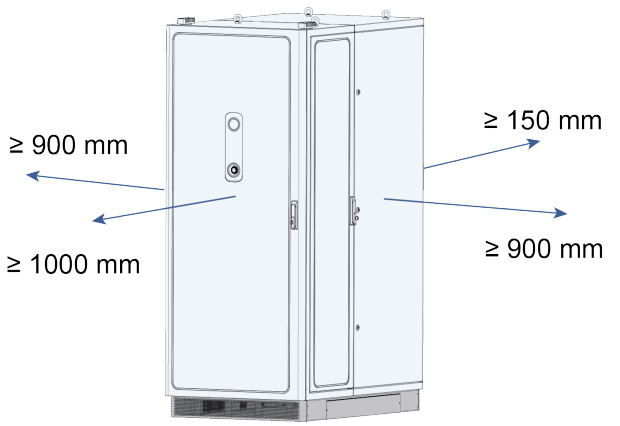
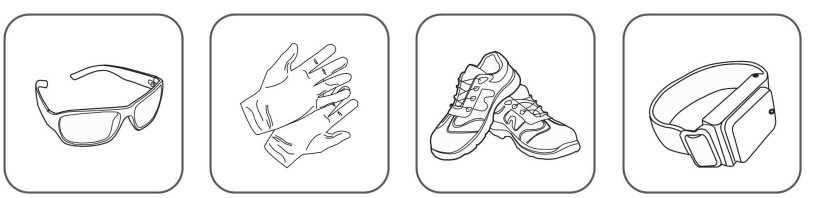


figure 4-1 Space Requirements for Installation

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.

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

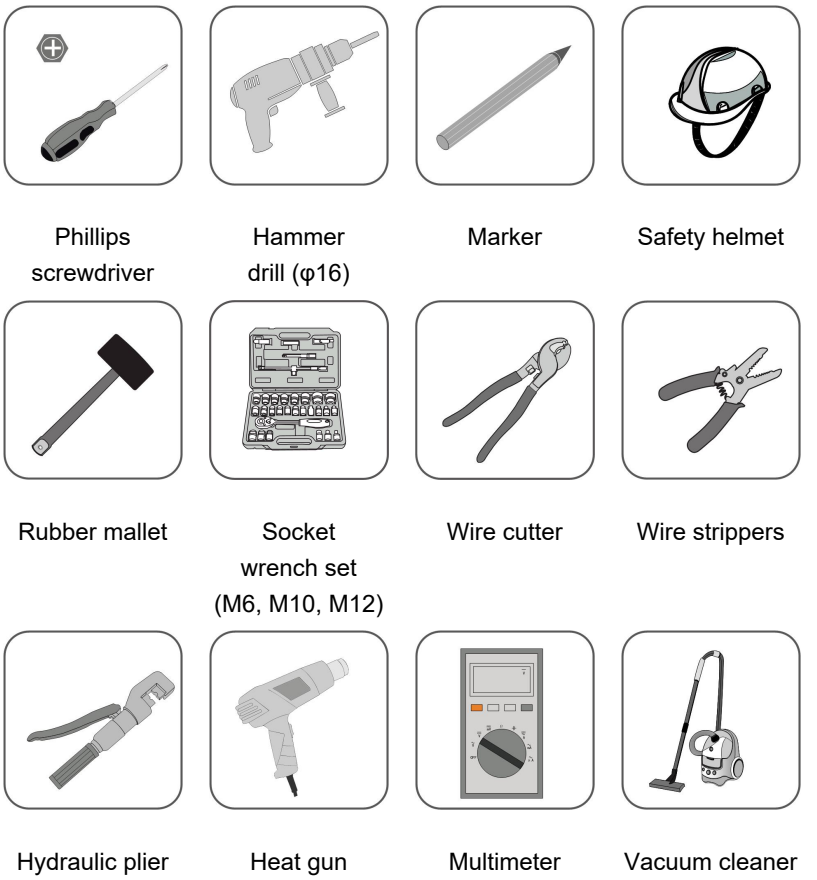
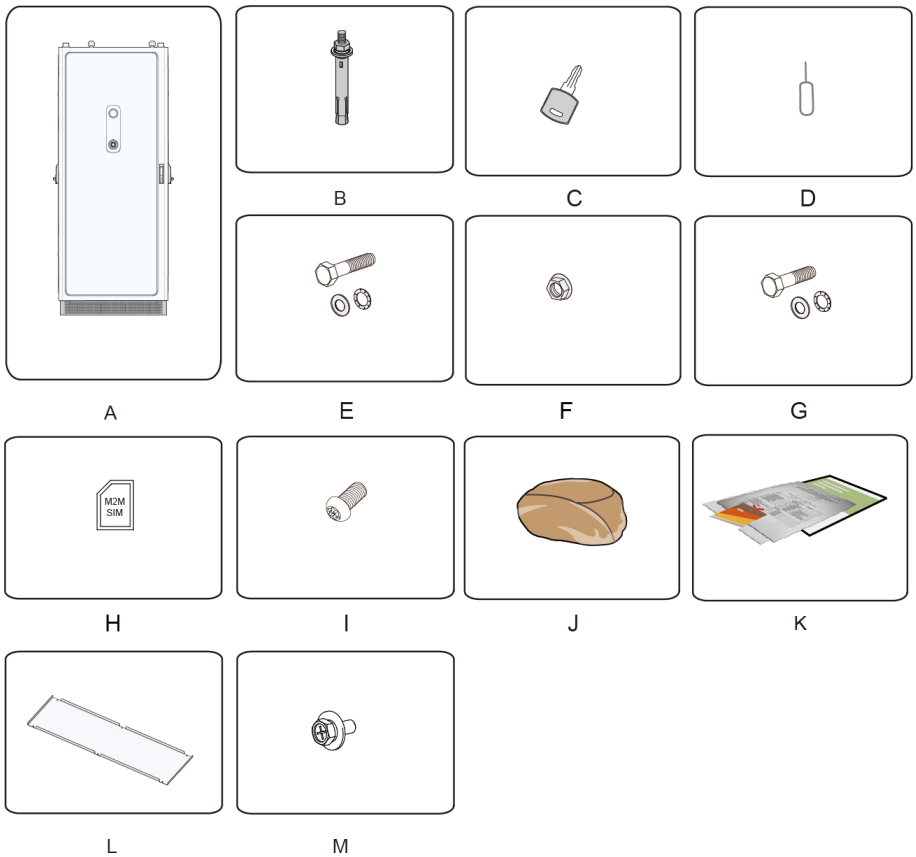


figure 4-2 Installation Tools

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 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
H	4G IoT SIM card	1	Used to connect the power cabinet to the network

No.	Name	Quantity	Description
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.

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.

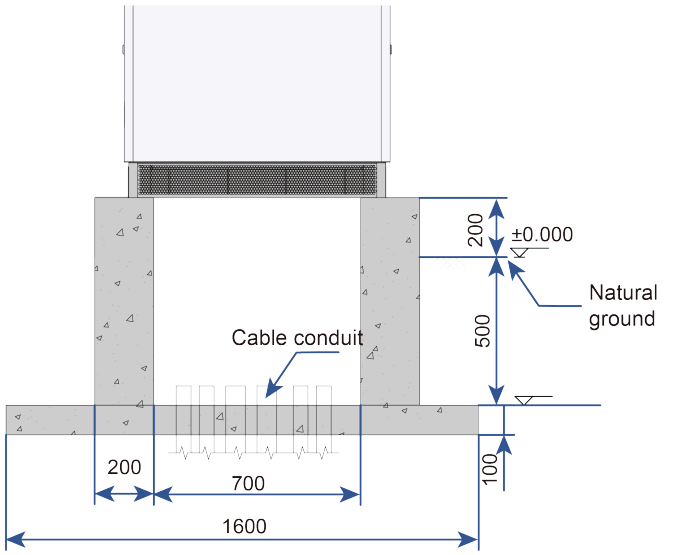


figure 4-3 Foundation Dimensions (mm)

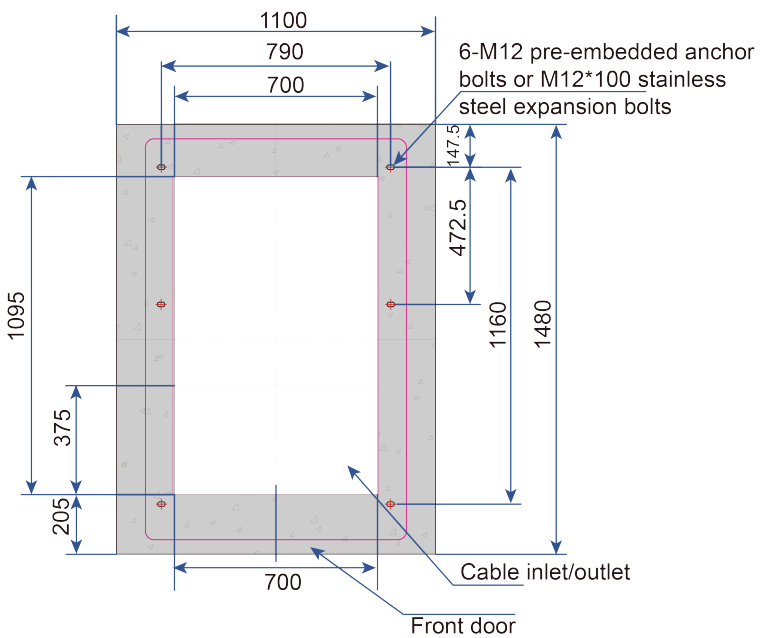


figure 4-4 Location of Expansion Bolt Holes

4.4.2 Secure Power Cabinet

step 1 Build a foundation according to the size requirements.

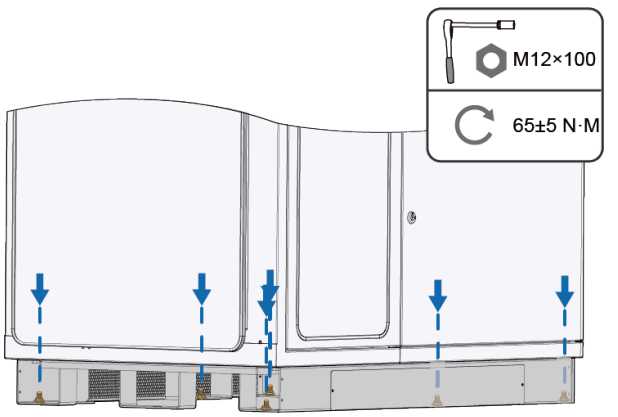
step 2 Mark the holes for drilling on the foundation by referring to the figure of “Location of Expansion Bolt Holes”.

step 3 Use a hammer drill to drill holes at the designated positions. The hole diameter is Ø16 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.

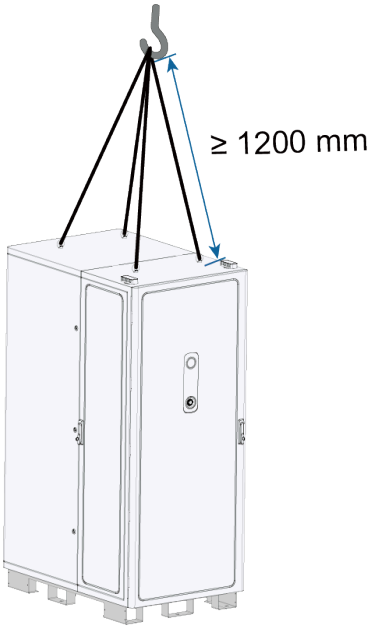
Tools

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

Steps

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

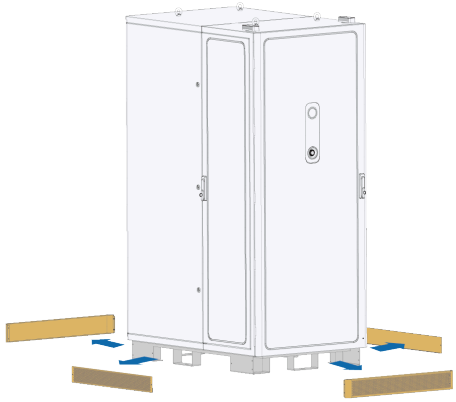
Read through the information below if you are about to handle the power cabinet using a forklift.

- 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.

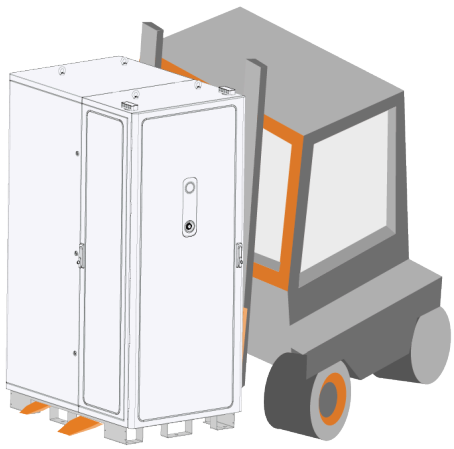
NOTICE

- **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.

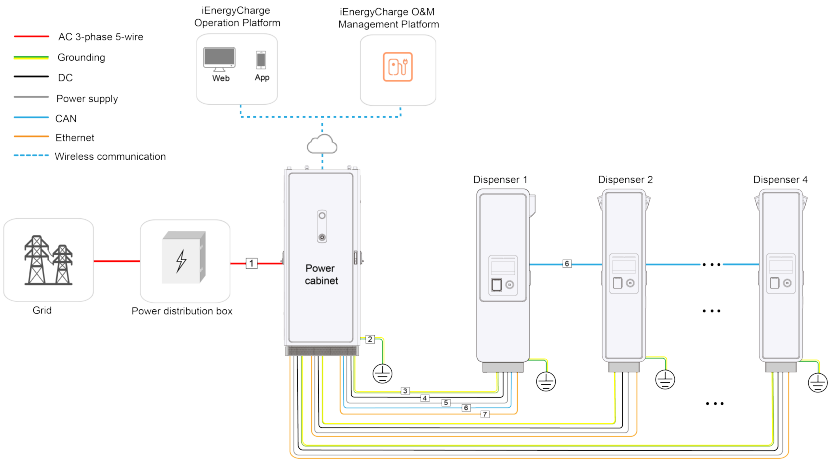
step 5 When the power cabinet is fully in contact with the foundation surface, move away the forks slowly.

- - 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.



Cable Specifications

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

table 4-1 Cable Specifications

No.	Cable	Type	Wire cross-sectional area (mm^2)
1	AC cable (two inputs)	Outdoor single-core copper cable Withstand voltage: 1kV	L1, L2, L3: 150mm^2 N, PE or PEN: 95mm^2
		Outdoor single-core aluminum cable Withstand voltage: 1kV	L1, L2, L3: 300mm^2 N, PE or PEN: 150mm^2
2	External protective grounding cable	Outdoor single-core cable	Copper wire: 95mm^2 Aluminum wire: 150mm^2

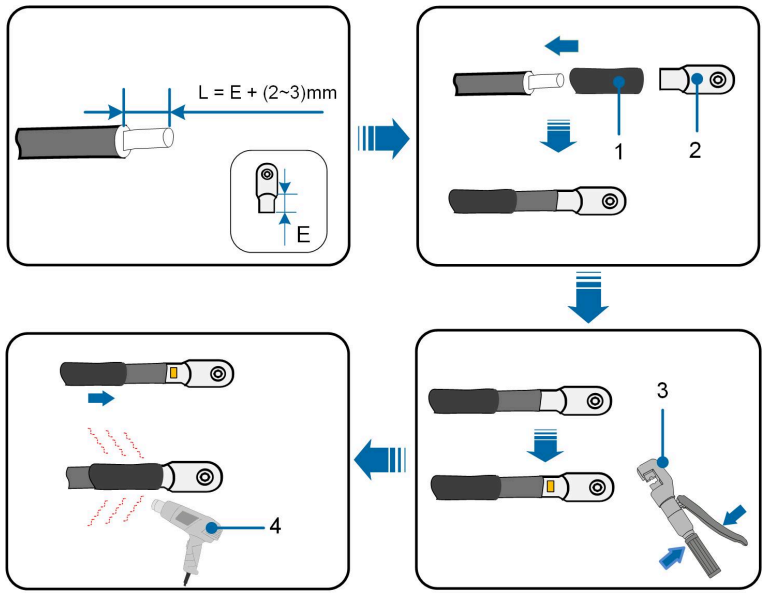
No.	Cable	Type	Wire cross-sectional area (mm^2)
3	Common ground (with dispenser) cable	Outdoor single-core cable	400A air-cooled dispenser Copper wire: 95mm^2 Aluminum wire: 150mm^2 Liquid-cooled dispenser Copper wire: 70mm^2 Aluminum wire: 120mm^2
4	DC cable between power cabinet and air-cooled dispenser	Withstand voltage: ≥1 kV	Copper wire: 150 mm^2 (400A dispenser)
			Aluminum wire: 300 mm^2 (400A dispenser)
	DC cable between power cabinet and liquid-cooled dispenser	Withstand voltage: ≥1 kV	Copper wire: 120mm^2
			Aluminum wire: 240mm^2
5	Power cable between power cabinet and dispenser	Two-core power cable	2.5mm^2
6	Communication cable (CAN)	Shielded twisted pair	0.75mm^2
7	Network cable between power cabinet and dispenser	8-core Cat5e or Cat6 Ethernet cable	—

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



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.

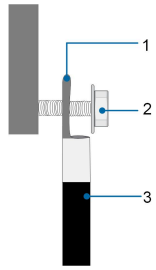


figure 4-5 Aluminum Cable Connection

1. Copper-aluminum bimetallic terminal
2. Flange nut
3. Aluminum cable

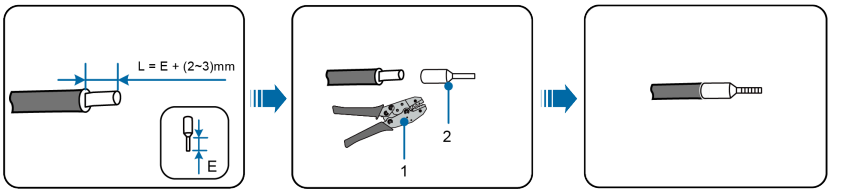
NOTICE

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

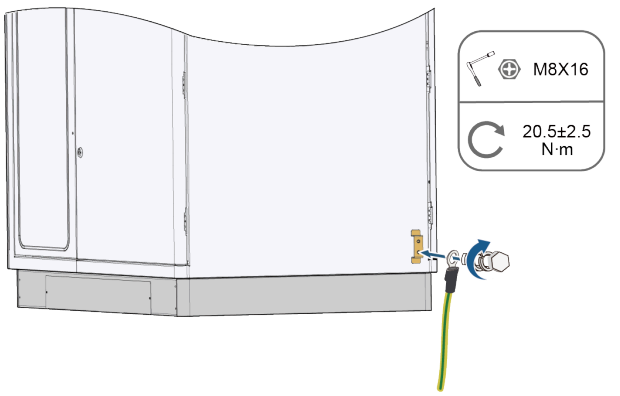
4.5.4 External Protective Grounding Cable Connection

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. Ensure the external protective grounding cable is connected to the copper bar at the device bottom on one side, and to ground on the other side. The grounding cable and terminal should be prepared separately by the user.

step 1 Crimp the terminal onto the cable by referring to 4.5.2 Crimp OT/DT/SC terminal.

step 2 Connect the grounding cable to the grounding copper bar on the back of the device.



step 3 Make sure the grounding cable is properly and firmly connected.

- - 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.

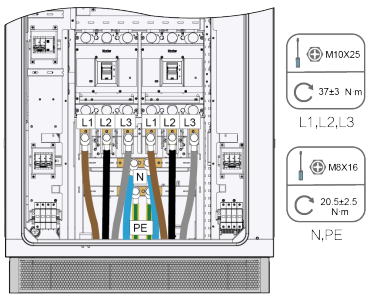
step 1 Ensure the circuit breaker between the power cabinet and the grid is in the open state and will not be closed by accident.

step 2 Crimp the terminal onto the AC cable by referring to 4.5.2 Crimp OT/DT/SC terminal.

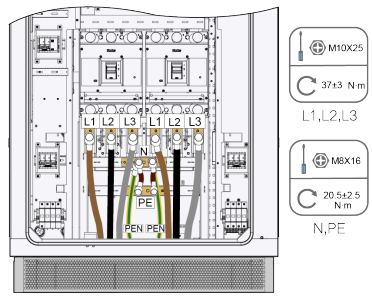
step 3 Open the front door of the power cabinet.

step 4 Lead the AC cable out from the conduit and pass it through the AC cable inlet at the bottom of the power cabinet.

step 5 Use a wrench to secure the cables of two AC inputs to the designated terminals, by referring to the figure below.



TN-S TN-C-S TT



TN-C

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 to4.5.4 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 in4.5.1 Cable Requirements**

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)

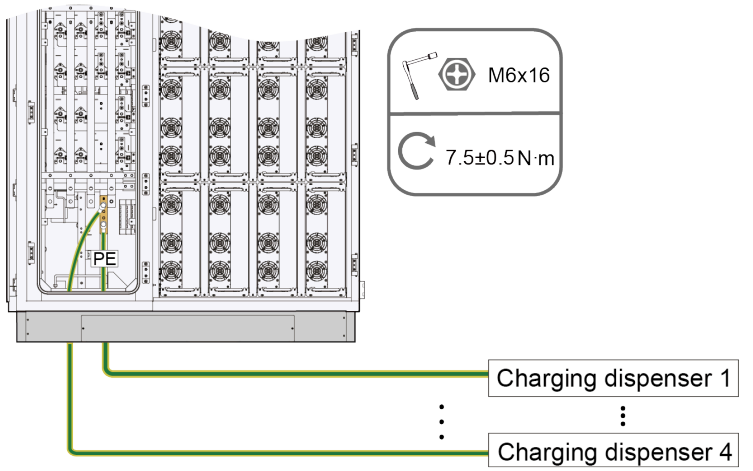
A grounding cable is required between the power cabinet and the dispenser for common ground.

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.



- - End

4.5.7 DC Cable Connection

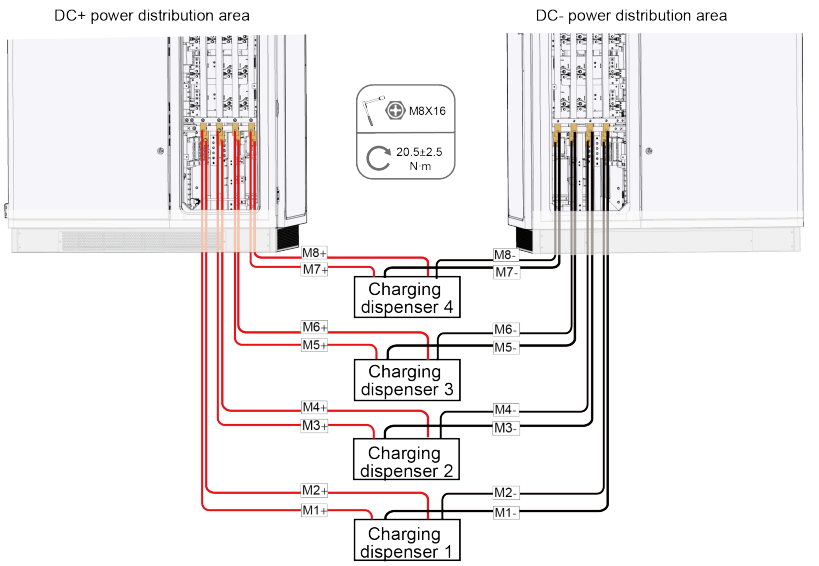
step 1 Lay the cable along the pre-buried cable conduit, with one end placed at the foundation of the power cabinet and the other end at the foundation of the dispenser.

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.



Connect the DC cables of dispensers to the power cabinet properly by following the rules below.

table 4-2 Rules for DC Wiring Between Dispenser and Power Cabinet

Dispensers No.	Dispenser Type	Connection Points
dispenser 1	Air-cooled	Charging connector A: M1+ / M1− Charging connector B: M2+ / M2−
	Liquid-cooled*	DC1+ / DC1–: M1+ / M1– DC2+ / DC2–: M2+ / M2–
dispenser 2	Air-cooled	Charging connector A: M3+ / M3− Charging connector B: M4+ / M4−
	Liquid-cooled	DC1+ / DC1–: M3+ / M3– DC2+ / DC2–: M4+ / M4–
dispenser 3	Air-cooled	Charging connector A: M5+ / M5− Charging connector B: M6+ / M6−
	Liquid-cooled	DC1+ / DC1–: M5+ / M5– DC2+ / DC2–: M6+ / M6–
dispenser 4	Air-cooled	Charging connector A: M7+ / M7− Charging connector B: M8+ / M8−
	Liquid-cooled	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.

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.

- - 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.

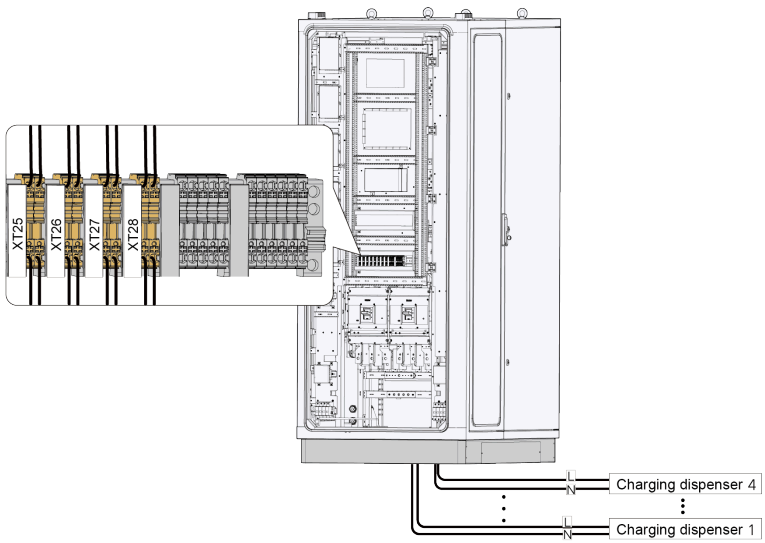


table 4-3 Connections Between Power Cabinet and dispenser

Connection Point	Dispenser
XT25	dispenser 1
XT26	dispenser 2

Connection Point	Dispenser
XT27	dispenser 3
XT28	dispenser 4

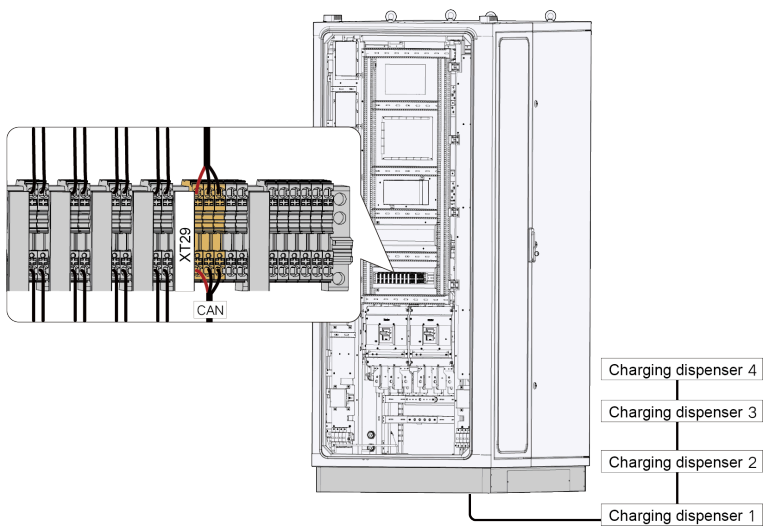
- - End

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.



- - End

4.5.10 Power Cabinet Network Connection

The power cabinet supports 4G and Ethernet communication. A SIM card is required to enable 4G wireless communication, while connecting the power cabinet to a router with a network cable is required to enable Ethernet communication. 4G communication is recommended.

Required Materials

- SIM card: Use an M2M SIM card with a size of 2FF 25mm*15mm.
- Recommended communication cable: 8-core Cat5e or Cat6 Ethernet cable.

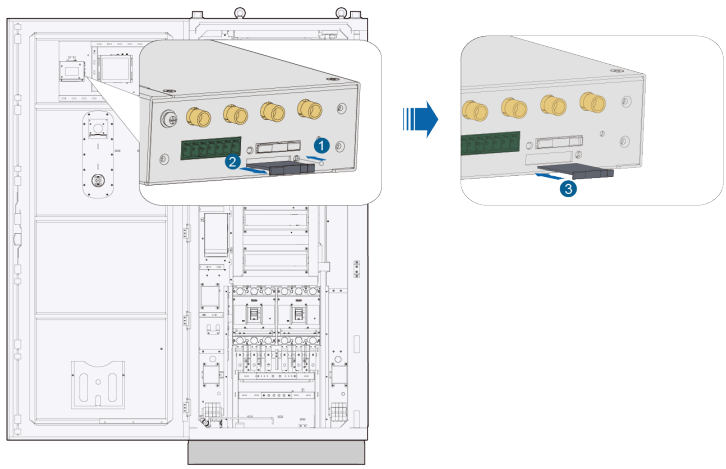
*The SIM card and Ethernet cables should be prepared separately by the user.

Wiring Steps

step 1 To adopt 4G wireless communication, follow the steps below to install the SIM card into the card slot on the inside of the cabinet door.

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

ii. 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.



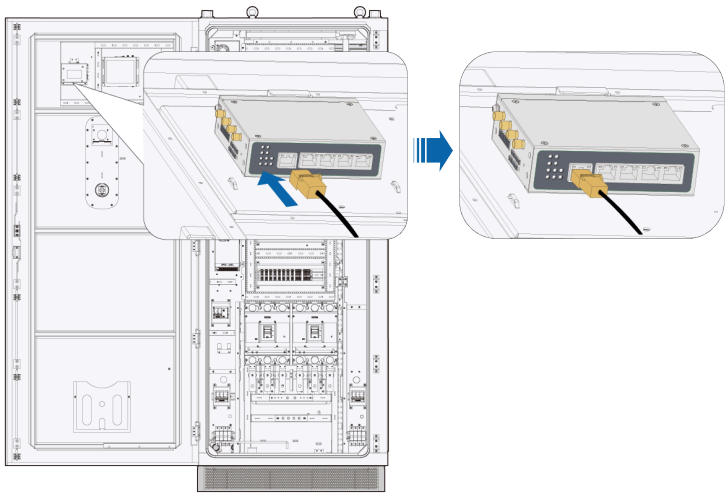
iii. Push the SIM card gently into the slot until it is in place. Do not exert too much pressure, to avoid card deformation or damage.

- To enable 4G connectivity, a SIM card must be installed. The SIM card is not included and must be purchased by the user.
- 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.

step 2 To adopt wired communication, follow the steps below to connect the Ethernet cable to the network port on the inside of the cabinet door.

i. Lead the Ethernet cable through the cable hole on the foundation and into the cable inlet on the power cabinet.

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



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

iv. To remove the network cable, press the tab on the RJ45 plug and pull the cable out.

- - End

4.5.11 Dispenser Network Connection

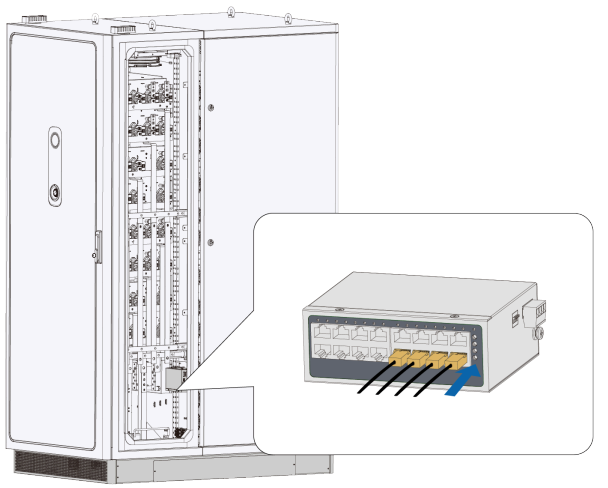
After connected to the power cabinet via an Ethernet cable, the dispenser can access the network and upload communication data to the cloud, thereby facilitating operations and maintenance through the cloud platform.

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	• No visible scratch on or deformation on the enclosure. • No paint peeling on the exterior. • The parts and components of the device are secure and reliable, and the nameplate and marks are all legible. • The device is installed in an environment where heat can be well dissipated, without any clutter piled on its top or around it.
Charging connector inspection	Visual Inspection	• No wet spots or foreign matters on the charging connector. • The charging cable is intact.
Power supply cable inspection	Multimeter/screwdriver	• The three-phase power supply cable is securely attached to the MCCB. • The grounding cable is securely and properly connected to allow for effective grounding. • The screws for the input cable are fastened. • Check if there is short-circuit in the AC/DC circuits using a multimeter. • Check if the supply voltage is within the input voltage range allowed for the device using a multimeter.

Item	Methods/Tools	Requirements
Electric vehicle (EV) inspection	Visual Inspection	• The EV is parked in the designated place. • The EV sits perfectly still.

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.

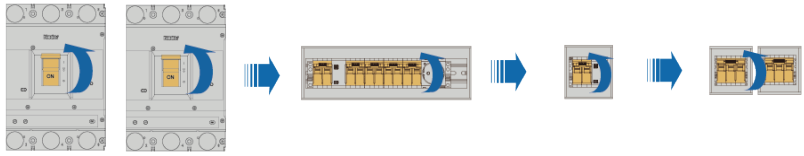
The PC Protective Cover is included in the accessory package and will be shipped with the product.

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. Then, you may open the cover plate for inspection.
- 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

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.

i. Ensure that the indicator lights and the screen are both turned off.

ii. 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	N	0V
L2		0V
L3		0V
L1	PE	0V
L2		0V
L3		0V

iii. 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.

iv. 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	• Check if there is any deformation with the enclosure of the device. • Check if there is paint peeling on the exterior of the device. • Check if the nameplate and marks on the device are all legible. • Check if there is anything abnormal with the exterior of peripheral components such as the charging connector holder and antenna.	Once every 6 months
Device structure	• Check if the parts and components of the device are secure and reliable. • 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. • Clean the dust-proof fabric and dirt and dust inside the device, and check if there is any wet spot.	Once every 6 months
Electrical connections	• Check if the electrical line is burnt or has aged and if the fixing screws are loose. • Check whether the grounding cable is properly connected to allow for reliable grounding. • Check the cables for deficiency, crack, abrasion, damage, wire exposure, etc. • Other inspection items can be arranged based on the actual situation on the site.	Once every 6 months
Fan	• c the fan and the fan opening for any foreign matters, and remove them promptly if found • Check whether the fan is operating normally during runtime.	Once every 6 months

7 Appendix

7.1 Technical Data

table 7-1 Technical Data

Model	IDC480E - Power Cabinet
AC input	
Grid voltage	3 / N / PE, 400 Vac (± 10 %)
Nominal grid frequency	50 Hz / 60 Hz
Rated input current	770 A
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
DC output	
Max output power	480 kW
Output voltage range	200 Vdc ~ 1000 Vdc
Max. output current	1600 A
Number of output	Max. 8
Max. Efficiency	96.5 %
General data	
Dimensions (W*H*D)	900 mm * 2200 mm * 1380 mm
Weight	1100 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

Model	IDC480E - Power Cabinet
Communication	
Communication interface	4G / Ethernet / WLAN
Communication protocol (charger-to-CSMS)	OCPP 1.6 J Ready for OCPP 2.0.1
User interface	
Emergency stop	Yes
Display	LED indicator
Protection	
Over/Under voltage protection	Yes
Overload protection	Yes
Over temperature protection	Yes
Leakage protection	Yes
Surge protection	Yes
Short-circuit protection	Yes
Norm and certification	
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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www.sungrowpower.com