SUNGROW
Clean power for all

User Manual

PV Grid-Connected Inverter

SG510HX



SG510HX-UCN-Ver11-202607

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About This Manual

The manual mainly contains the product information, as well as guidelines for installation, operation, and maintenance. The manual does not include complete information about the photovoltaic (PV) system. Readers can get additional information at **www.sungrowpower.com** or on the webpage of the respective component manufacturer.

Validity

This manual is valid for the following model of inverters:

- SG510HX

It will be referred to as "inverter" hereinafter unless otherwise specified.

Target Group

This manual is intended for professional technicians who are responsible for installation, operation, and maintenance of inverters, and users who need to check inverter parameters.

All installation operations must be performed by personnel who meet all of the following requirements:

- Have knowledge of electronics, electrical wiring, and mechanical expertise, and be familiar with electrical and mechanical schematics.
- Have received special safety training in the installation and commissioning of electrical devices.
- Be able to respond quickly to hazards or emergencies that may occur during the process of installation and commissioning.
- Be familiar with applicable local standards and relevant safety regulations on electrical systems.
- Read through this manual carefully and have a good understanding of the relevant safety instructions.

How to Use This Manual

Please read this manual carefully before using the product and keep it properly at a place for easy access.

All contents, pictures, marks, and symbols in this manual are owned by SUNGROW. No part of this document may be reprinted by the non-internal staff of SUNGROW without written authorization.

Contents of this manual may be periodically updated or revised, and the actual product purchased shall prevail. Users can obtain the latest manual from **support.sungrowpower.com** or sales channels.

Safety Disclaimer

To learn more about the product cybersecurity vulnerability disclosure and handling process, visit https://en.sungrowpower.com/security-vulnerability-management.

For more network security instructions, please refer to the user manual of the supplied communication module/data logger.

Symbols

This manual contains important safety instructions, which are highlighted with the following symbols, to ensure personal and property safety during usage, or to help optimize the product performance in an efficient way.

Please carefully understand the meaning of these warning symbols to better use the manual.

⚠ DANGER

Indicates high-risk potential hazards that, if not avoided, may lead to death or serious injury.

⚠ WARNING

Indicates moderate-risk potential hazards that, if not avoided, may lead to death or serious injury.

⚠ CAUTION

Indicates low-risk potential hazards that, if not avoided, may lead to minor or moderate injury.

NOTICE

Indicates potential risks that, if not avoided, may lead to device malfunctions or financial losses.

"NOTE" indicates additional information, emphasized contents or tips that may be helpful, e.g., to help you solve problems or save time.

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1 Safety Instructions

Follow the requirements in the manual strictly during the process of product installation, commissioning, operation, and maintenance. Incorrect operation or work will cause:

- 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.

⚠ WARNING

Do not perform any operation on the product (including but not limited to, handling, installing, powering on, and maintaining the product, performing electrical connection, and working at heights) in harsh weather conditions, such as thunder and lightning, rain, snow, and Level 6 or stronger winds. SUNGROW shall not be held liable for any damage to the product due to force majeure, such as earthquakes, floods, volcanic eruptions, mudslides, lightning strikes, fires, wars, armed conflicts, typhoons, hurricanes, tornadoes, or other extreme weather conditions.
In case of fire, evacuate the building or product area and call the fire department. Do not go back to the fire area.
Always tighten the screws to the specified torque using proper tools when fastening the product and terminals. Otherwise, the product will be damaged. The damage caused therefrom will not be covered by the warranty.
Always understand how to use the tools properly before starting to use them, to avoid causing personal injury or product damage.

NOTICE

Perform operations on the product only if you have a good understanding of this manual and appropriate tools in hand.

- Safety instructions in this manual serve only as a supplement and do not cover all required safety practices. 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.
- During the product transport, installation, wiring, and maintenance, etc., the materials and tools prepared by users must meet the requirements of applicable local laws and regulations, safety standards, and other relevant specifications. SUNGROW shall not be held liable for any damage to the product caused by the adoption of materials and tools that fail to meet the above-mentioned requirements.
- Operations on the product, including but not limited to, handling, installing, wiring, powering-on, maintenance, and use of the product, must not be performed by unqualified personnel. SUNGROW shall not be held liable for any damage to the product resulting from operations done by unqualified personnel.
- Where the transport of the product is arranged by users, SUNGROW shall not be held liable for any damage to the product that is caused by users themselves or the third-party transport service providers designated by the users.
- SUNGROW shall not be held liable for any damage to the product caused by the negligence, intent, fault, improper operation, or other behaviors of users or third-party organizations.
- SUNGROW shall not be held liable for any damage to the product arising from reasons unrelated to SUNGROW.

1.1 Unpacking and Inspection

⚠ WARNING

Check all safety signs, warning labels, and nameplates on the device. Ensure that the safety signs, warning labels, and nameplates are clearly visible and cannot be removed or covered before the product is decommissioned.

NOTICE

After receiving the product, check whether the appearance and structural parts of the device are damaged, and check whether the product received is consistent with the order. If there are problems with the above inspection items, do not install the device and contact SUNGROW in time.

1.2 Installation Safety

⚠ DANGER

Make sure there is no electrical connection before installation.
Make sure to avoid water and electrical wiring in the wall before drilling.

⚠ CAUTION

Improper installation will cause personal injury!

- **If the product supports hoisting transport and is hoisted by hoisting tools, no one is allowed to pass beneath or stay under the product.**
- **When handling the product, be aware of the product's weight and keep it balanced to prevent it from tilting or falling.**

NOTICE

Before operating the product, check and ensure that the tools to be used have undergone regular maintenance.

1.3 Electrical Connection Safety

⚠ DANGER

Before electrical connections, always make sure that the product is not damaged; otherwise, it will lead to danger!
Before electrical connections, please make sure that the inverter switch and all switches connected to the inverter are set to "OFF"; otherwise, electric shock will occur!

⚠ DANGER

Hazardous voltages on the PV string when it is exposed to sunlight!

- **Operators must wear proper personal protective equipment during electrical connections.**
- **Check and confirm that the DC cables are voltage-free using a measuring instrument before touching them.**
- **Observe all the safety instructions listed in the documents for the PV string.**
- **The inverter must not be connected to a PV string that requires positive or negative grounding.**

⚠ DANGER

Hazardous high voltage inside the product!

- **Be sure to use special insulation tools during cable connections.**
- **Observe the warning labels on the product, and perform operations by strictly following the corresponding safety instructions.**
- **Strictly observe all the safety instructions listed in this manual.**

⚠ WARNING

Improper wiring will damage the product, and such damage will not be covered by the warranty.

- **Electrical connection must be performed by qualified professionals.**
- **Cables used in the PV power generation system must comply with local laws, regulations, and safety standards.**

⚠ WARNING

- **Before connecting the DC connectors to the inverter, always check the polarity of the PV strings. After confirming that the polarity is correct, insert the DC connectors into the corresponding DC terminals.**
- **During the installation and operation of the inverter, always ensure that the positive or negative polarities of PV strings do not short-circuit to the ground. Otherwise, an AC or DC short-circuit will occur, hence damaging the product. The damage caused therefrom will not be covered by warranty.**
- **Never connect any load between the inverter and the AC circuit breaker directly connected to it, so as to prevent the switch from tripping by mistake.**
- **Always determine the AC circuit breakers to be used strictly in compliance with the applicable local laws and regulations and safety standards or the recommendation by SUNGROW. Otherwise, the circuit breaker may not open in time in the event of something abnormal, which may then lead to safety incidents.**

NOTICE

Comply with the regulations and standard requirements related to the local grid during wiring.

1.4 Operational Safety

⚠ DANGER

When routing cables, ensure a distance of at least 30 mm between the cables and heat-generating components or areas to protect the insulation layer of cables from aging and damage.
When the product is operating:

- **Do not touch the product enclosure;**
- **Do not plug and unplug any connector on the product;**
- **Never touch any wiring terminal of the product. Otherwise, it may lead to electric shock;**
- **Never disassemble or remove any part of the product. Otherwise, it may lead to electric shock;**
- **It is strictly forbidden to touch any hot parts of the inverter (such as the heat sink). Otherwise, it may cause burns.**
- **Do not connect or remove any PV string or any PV module in a string. Otherwise, an electric shock may occur.**

Do not take other actions, such as setting parameters and cutting off the power, during the process of firmware update, to avoid update failure.

1.5 Maintenance Safety

⚠ DANGER

Risk of product damage or personal injury due to improper servicing!

- **Before maintenance, open the grid-side AC circuit breaker and then turn off the DC switch. If a fault that may cause personal injury or equipment damage is detected before maintenance, always open the AC circuit breaker and wait until nighttime before operating the DC switch. Otherwise, the inverter may catch fire or explode, causing personal injury!**
- **After the inverter is powered off for 35 minutes, measure the voltage and current with a professional instrument. Only when there is no voltage or current can operators who wear protective equipment operate and maintain the inverter.**
- **Even if the equipment has stopped operating, it may still be hot and cause burns. Perform operations on the equipment wearing protective gloves after it cools down.**
- **Do not stand directly in front of the equipment when it is operating. Whenever possible, operate the equipment from the side or rear to reduce the risk of accidents.**

⚠ DANGER

Touching the power grid or the contacts and terminals inside the product connected to the power grid may lead to electric shocks!

- **Voltage may be present on the grid side. Use a standard voltmeter to check and confirm that it is voltage-free before touching.**

⚠ CAUTION

To prevent irrelevant personnel from operating the product by mistake or other accidents, always set up highly visible warning signage around the product or fence off a warning zone.

NOTICE

- **If the paint on the product enclosure peels off or the enclosure rusts, always repair it in time. Otherwise, the product performance may be affected.**
- **Never use cleaning agents to clean the inverter. Otherwise, the inverter may be damaged, and the loss caused is not covered by the warranty.**
- **No part inside the product requires maintenance. Therefore, never open the product enclosure (except for the wiring box) or replace any of its internal components without authorization. Otherwise, the damage caused therefrom will not be covered by the warranty.**
- **To minimize the risk of electric shocks, never perform maintenance operations that are not specified in this manual. If necessary, contact SUNGROW for maintenance. Losses arising from failure to observe this instruction will not be covered by warranty.**
- **Never open the maintenance door in rainy or snowy weather. If it is inevitable, always take proper protective measures to avoid the ingress of rainwater and snow into the maintenance compartment; otherwise, the product's operation may be affected.**
- **Before closing the maintenance door, always check whether there is any object left inside the maintenance compartment, such as screws, tools, etc.**
- **Users should use cable sheathing to protect the AC cable. If the cable sheathing is used, always make sure it is positioned inside the maintenance compartment.**

1.6 Disposal Safety

⚠ WARNING

Always dispose of the product in accordance with applicable local regulations and standards to avoid property damage or personal injuries.

2 Product Introduction

2.1 System Introduction

The SG150CX inverter is a three-phase grid-connected string PV inverter without a transformer.

As an integral component of the PV power system, the inverter converts the DC generated from the PV strings into grid-compatible AC and feeds the AC into the utility grid.

⚠ WARNING

The inverter must not be connected to a PV string that requires positive or negative grounding.
During the installation and operation of the inverter, always ensure that the positive or negative polarities of PV strings do not short-circuit to the ground. Otherwise, an AC or DC short-circuit may occur, hence damaging the device. The damage caused therefrom will not be covered by warranty.
Never connect any local load between the inverter and the AC circuit breaker.
The inverter applies only to the scenarios specified in this manual. Never use it in any other scenario.

NOTICE

When designing the system, always ensure that the operating ranges of the devices connected to the inverter all satisfy the inverter's requirements for operation.
The PV modules used in the system must be Class II PV modules as defined in the 61730-1 (2016) standard.

The typical application of the inverter is illustrated in the figure below.

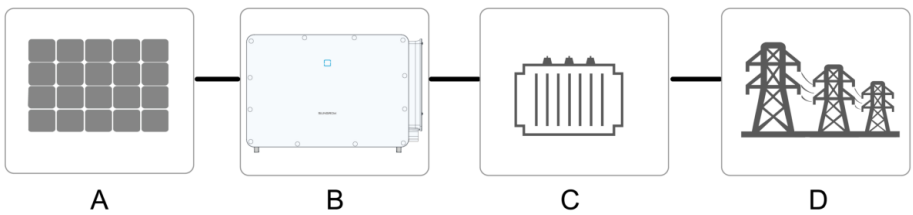
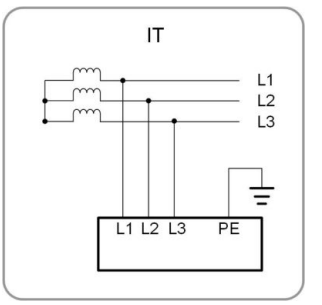


Figure 2-1 Application of Inverter in the PV Power System

SG510HX

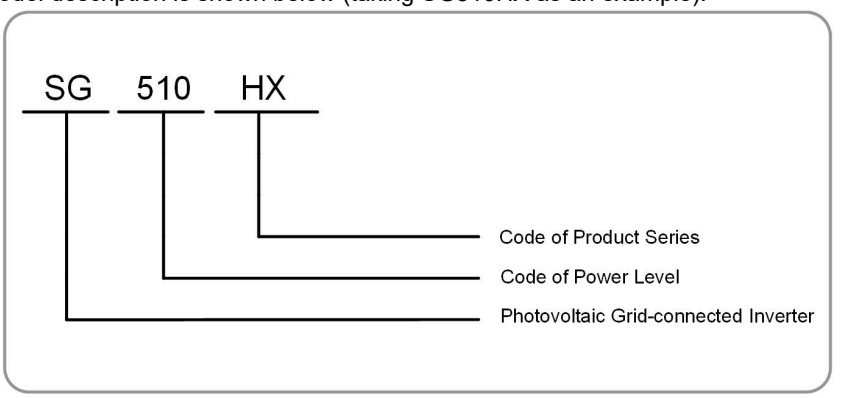
Name	Description	Remarks
A	PV string	Monocrystalline silicon PV modules, polycrystalline silicon PV modules, or thin-film PV modules that do not require grounding.
B	Inverter	SG510HX
C	Step-up transformer	Used to boost the output voltage of the inverter to a grid-compatible level
D	Grid	Grid configurations supported by the inverter are shown below.



2.2 Product Introduction

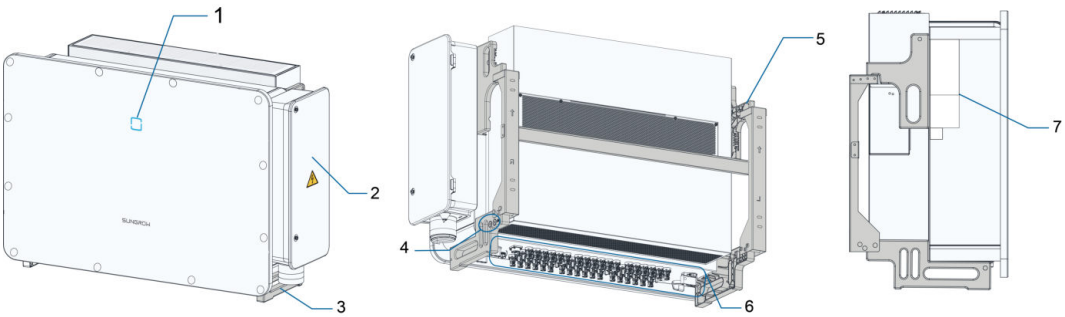
Model Description

The model description is shown below (taking SG510HX as an example).



External Design

The external design of the battery is shown below.

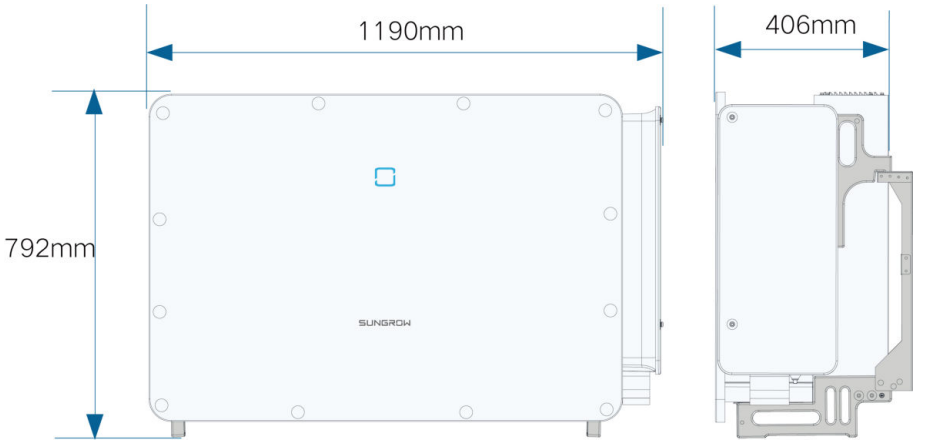


*The figure here is for reference only, and the actual product may differ.

No.	Name	Description
1	LED Indicators	Indicates the current working status of the inverter.
2	AC junction box	Connect the AC cable.
3	Base	Two, used for supporting the inverter.
4	External Protective Grounding Terminal	Two, used for the protective grounding of the inverter.
5	Mounting hanger	Two mounting ears, used to hang the inverter to the mounting bracket.
6	Wiring area	Houses the DC switch, DC PV terminals, and communication terminals. For details, see 5.2 Terminal Description.
7	Label	Includes the nameplate, warning labels, and QR code.

Weight and dimensions

The dimensions of the inverter are shown in the figure below.



Model	Weight	Dimensions (W × H × D)
SG510HX	≤ 130 kg	1190 mm * 792 mm * 406 mm

2.3 Symbols on the Product

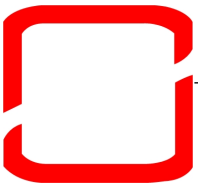
Symbol	Description
	Never dispose of the inverter as household waste.
	Always read the manual before performing any operation on the inverter.
	CE compliance mark.
	Disconnect the inverter from all external power sources before inverter maintenance.
	Burn hazard due to the hot surface! Surface temperature is over 60°C!
	Danger! Lethal high voltage! After the inverter is disconnected from the external power source, wait at least 35 minutes before touching any of its internal conductive parts. Installation and operation must only be performed by personnel qualified for product maintenance.

Symbol	Description
	PE terminal.

2.4 LED Indicators

As a human-machine interface, the LED indicators on the inverter's front panel display the current operating status of the inverter.

Table 2-1 LED Indicator Status Description

Indicator	Status	Description
 Blue	Steady on	The inverter is in grid-connected operation
	Fast blinking (interval: 0.2s) 	The device is connected via Bluetooth, and data communication is in progress; No fault is detected.
	Slow fading blink (interval: 2s) 	The DC and AC sides are powered on, and the inverter is in standby or is starting (not connected to the grid).
 Red	Steady on	A fault occurred and the system cannot be connected to the grid for power generation.
	Blinking	The device is connected via Bluetooth, and data communication is in progress; A fault is detected.
 Grey	Off	The AC and DC sides are de-energized.

2.5 DC switch

The DC switch can disconnect the inverter from the PV strings in a safe manner. The inverter is equipped with one auxiliary switch and three DC switches. The three DC switches control the PV terminals in three different areas, respectively. Upon detecting reverse polarity, back-feeding, or a fault inside the inverter, the DC switch will turn off automatically to interrupt the DC input.

Refer to 8.2.6 DC Switch Maintenance for proper handling when the DC switch trips automatically.



*The figure shown is for reference only, and the actual product shall prevail.

DC switch	PV Terminals Controlled by the Switch
AUXILIARY SWITCH	—
DC SWITCH 1	PV1–PV12
DC SWITCH 2	PV13–PV24
DC SWITCH 3	PV25–PV36

2.6 Operating Principle

The design principle of the inverter is shown below.

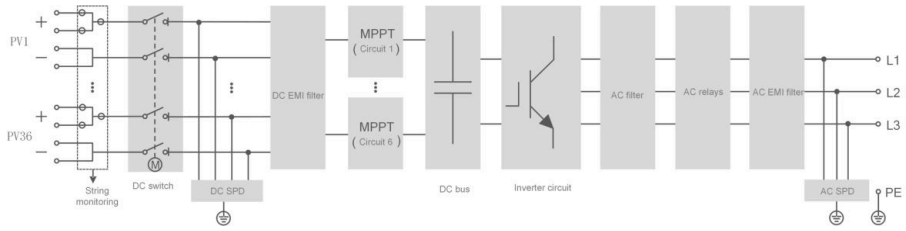


Figure 2-2 Circuit Diagram

- The DC switch is used to safely disconnect the DC current when necessary, ensuring the safe operation of the inverter and personnel safety.

- The EMI filter mitigates electromagnetic interference within the inverter, ensuring compliance with electromagnetic compatibility (EMC) standards.
- The inverter provides multiple MPPTs for its DC inputs, ensuring maximum power harvest under varying PV input conditions.
- The inverter unit converts direct current (DC) into grid-compatible alternating current (AC) and feeds it into the grid.
- The AC filter removes high-frequency components from the inverter's output current, ensuring the output current meets the grid requirements.
- The output relay isolates the inverter's AC output from the grid, allowing the inverter to safely disconnect from the grid in the event of an inverter or grid fault.
- The AC surge protection device (SPD) provides a discharge path for energy from AC-side overvoltage, thereby preventing circuit damage inside the inverter due to overvoltage.

⚠ DANGER

If the lightning level exceeds the protection level of the product, surge protection and overvoltage protection may fail, resulting in electric shock and fatal injury!

2.7 Function Description

The inverter provides the following functions:

DC-to-AC Conversion

The inverter converts DC into grid-compatible AC current and feeds AC into the grid.

Data Storage and Display

The inverter stores system data such as running information and fault history.

Parameter setting:

Inverter parameters are user-definable. The user can set the parameters for the inverter on the iSolarCloud App to accommodate different kinds of needs or to optimize the inverter's operation performance.

Communication Ports

The inverter is designed with standard USB and RS485 communication interfaces.

It allows users to connect a Bluetooth adapter, mobile phone, or computer via the USB communication interface for local maintenance.

The inverter features one RS-485 communication port. The standard RS485 communication interface is used for the inverter to establish communication with the plant monitoring device through the communication cable and upload the collected data to the monitoring background.

Once the inverter has successfully established communication with the communication device via the communication interface, users can view inverter information or set parameters such as operation and protection settings on iSolarCloud.

PLC communication

After getting the inverter to communicate with the communication device via PLC communication, the user can view the inverter information and set the operation and protection parameters for the inverter on iSolarCloud.

Protection Functions

The protective functions are integrated in the inverter, including anti-island protection, LVRT/HVRT, DC reversed polarity protection, AC short circuit protection, leakage current protection, DC overvoltage/overcurrent protection, etc.

3 Unpacking and Storage

3.1 Unpacking and Inspection

The product has undergone strict tests and inspections before delivery. However, as it may still get damaged during transportation, always carry out a thorough inspection before signing the delivery receipt.

- Inspect the packaging for any damage.
- Check the completeness of the goods against the packing list.
- Unpack and inspect the components inside for any damage.

Be sure to contact the transport company or SUNGROW in case of any damage or missing items, and provide relevant photos or the name/quantity of the missing items for better service.

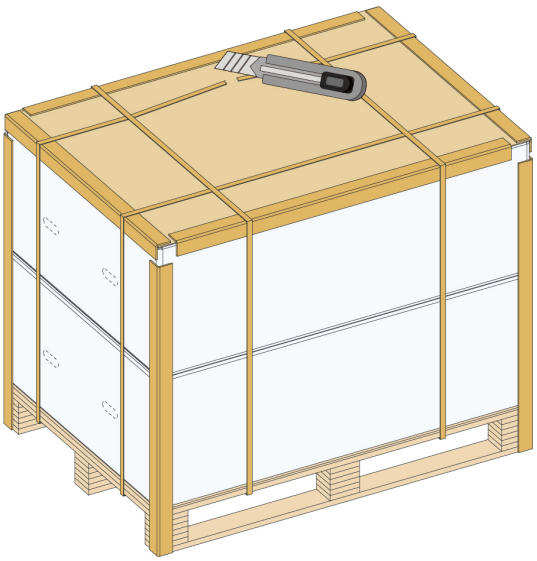
It is prohibited to throw away the original packaging box. Store the device in its original packaging after it is decommissioned.

NOTICE

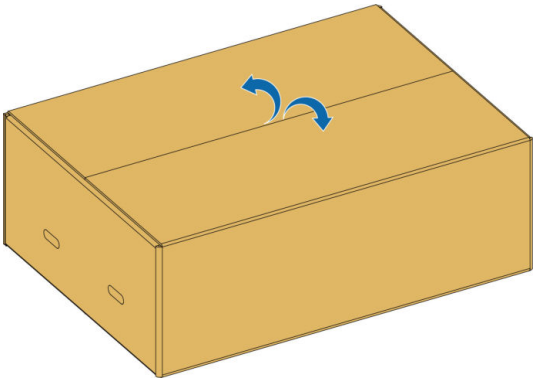
After receiving the product, inspect the appearance and structural components for damage, and verify that the packing list matches the ordered product. If any issues are found during the above inspections, do not install the product and contact SUNGROW promptly.
Never damage the items while using tools for unpacking.

3.2 Unpacking Procedure

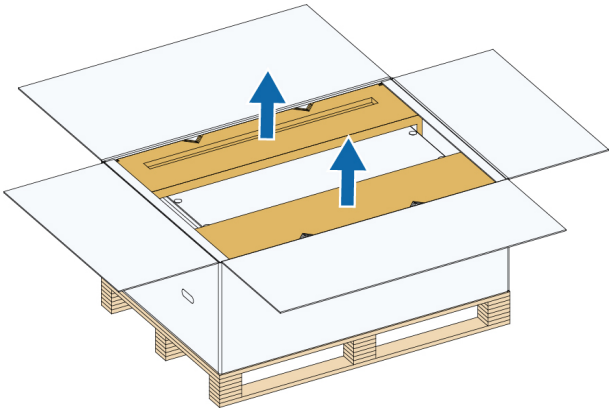
Step 1 Use a utility knife to cut the packing straps. Remove the horizontal and vertical paper corner protectors.



Step 2 Open the packaging box.

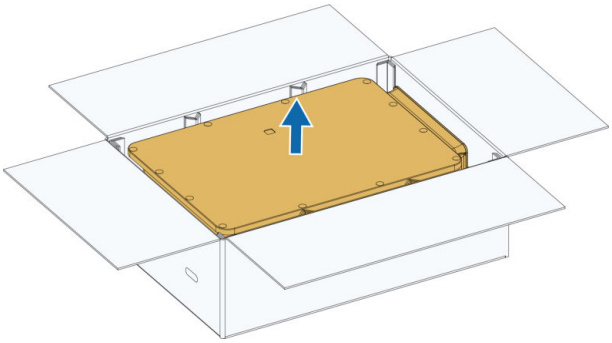


Step 3 Remove the paper angle bead around the inverter.



Step 4 Take out the accessories from the box and keep them in a proper place.

Step 5 Take out the inverter and place it on a flat surface covered with protective materials such as foam or a sponge mat.



--End

3.3 Inverter Storage

If the inverter is not put into operation immediately, it must be stored under specific environmental conditions.

- Repack the inverter in the original packing crate and retain the desiccant.
- The storage temperature ranges from -40°C to 70°C, and the relative humidity ranges from 0 to 95%, without condensation.
- The number of stacked inverter packages must not exceed the stacking limit marked on the outer packaging.
- Do not tilt or invert the packaging boxes!
- If the product needs to be transported again, always pack it securely before loading it for transport.
- Always keep the product away from direct sunlight, rain, or strong electric fields.
- Never place the product in places with items that may affect or damage it.
- Store the inverter in a clean, dry environment to prevent dust and moisture ingress.
- Never store the inverter in locations with chemical corrosion risks or pest infestations.
- Carry out routine inspections. Inspection should be conducted at least once every six months. Replace the packaging materials promptly if damage caused by insects or rodents is found.
- If the inverter has been stored for one year or more, or has been installed but not operated for over three months, it must be inspected and tested by professionals before being put into operation.

NOTICE

Always store the product according to the storage requirements. Damage resulting from failure to meet the requirements will not be covered by the warranty.

4 Mechanical Installation

4.1 Installation Precautions

⚠ DANGER

Make sure there is no electrical connection before installation.

⚠ WARNING

A poor installation environment will affect the performance of the inverter system. For specific requirements of the installation environment, please refer to Installation Environment Requirements. SUNGROW shall not be held liable for any loss caused by a non-compliant installation environment.

⚠ CAUTION

Improper installation will cause personal injury!

- **When moving the inverter, always be aware of its weight and keep it balanced to prevent it from tilting or falling.**
- **Always wear proper protective equipment before performing operations on the inverter.**
- **The bottom terminals and interfaces of the inverter cannot directly contact the ground or other supports. The inverter can never be directly placed on the ground.**

NOTICE

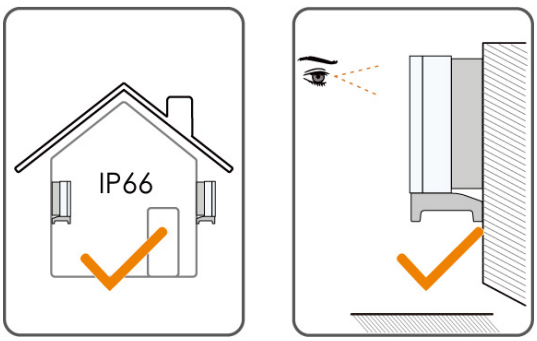
During installation, ensure that no device in the system prevents the DC switch from being turned off or the AC circuit breaker from being opened.
If drilling is necessary during installation:

- **Always wear goggles and safety gloves.**
- **Before drilling, always ensure that the drilling location is clear of concealed water pipes and electrical wiring.**
- **Always cover the product to protect it from the ingress of debris and dust.**

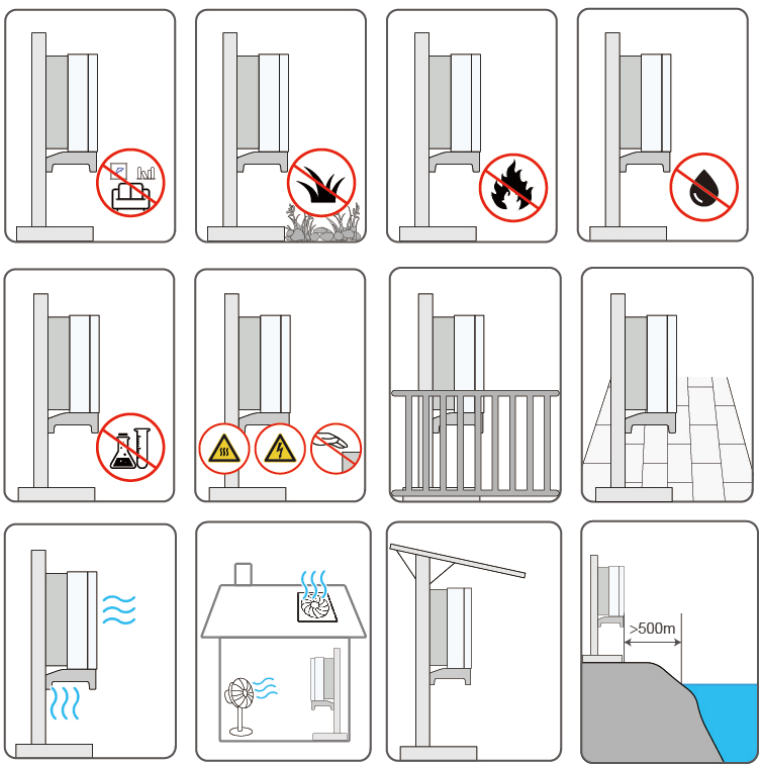
4.2 Installation Location Requirements

The selection of the inverter installation location directly affects the safe operation, service life, and overall performance of the device. Strictly comply with the following installation requirements:

- The inverter has an IP66 rating and can be installed indoors or outdoors.
- Install the inverter at a height that allows easy viewing of the LED indicator panel and convenient electrical connection, operation, and maintenance.



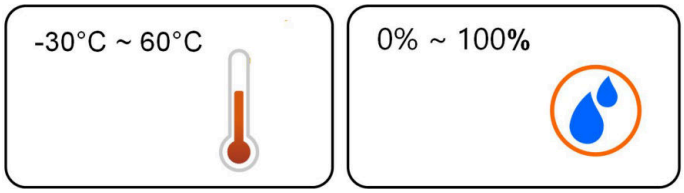
4.2.1 Installation Environment Requirements



- The inverter produces noise during operation; do not install it in places for residential purposes. If this cannot be avoided, install the inverter in a place over 25 meters away from the residential area, or take noise mitigation measures.
- If the inverter is installed in a place with lush vegetation, always weed on a regular basis. In addition, the ground beneath the inverter needs to undergo certain treatment, such as laying cement or gravel, etc. (an area of 3 m × 2.5 m is recommended).
- It is strictly prohibited to install the inverter in an environment with flammables, explosives, or smoke.

- Do not install the device in a place prone to water leakage, e.g., under the air-conditioner vent, the air vent, or the cable outlet window of the machine room, so as to prevent device damage or short circuit caused by liquid ingress.
- Do not install the inverter in areas containing corrosive substances, such as corrosive gases or organic solvents.
- When the inverter is running, its surface may carry high voltages or get very hot. Do not touch it; otherwise, it may lead to burns or electric shocks.
- Do not install the inverter in a place that is easy for people to reach.
- Ensure good heat dissipation of the inverter. Always install the inverter in a ventilated environment.
- If the inverter is installed in an enclosed or semi-enclosed environment, a cooling device or ventilation device needs to be added, and the indoor ambient temperature during operation must not exceed the external ambient temperature. A semi-enclosed environment refers to a special space where not all six sides are fully enclosed, but natural ventilation is hindered, making it prone to gas accumulation or heat buildup.
- The installation site must have firm ground, free from yielding soil, soft soil, or other conditions prone to subsidence. Do not select low-lying areas prone to water or snow accumulation. The site level should be higher than the historical maximum water level in the area.
- Do not install the device in a location that can be submerged by water.
- To prevent ground vegetation or standing water from affecting normal inverter operation, the bottom clearance may be increased beyond the requirements in 4.2.3 Installation Angle Requirement4.2.4 Inverter Installation Clearance Requirements as appropriate, provided that the top clearance requirement is met.
- Install the inverter in a place with shelter, or build a sunshade for it.
- Please consult SUNGROW before installing inverters outdoors in areas prone to salt damage. Such areas mainly refer to coastal areas within 500 m of seawater. Salt spray deposition varies depending on the characteristics of the nearby seawater, sea winds, precipitation, air humidity, topography, and forest cover.
- Do not install the inverter in an environment contaminated with chemicals such as halogens or sulfides.
- Do not install the inverter in an environment with vibration and strong electromagnetic field. A strong magnetic field environment refers to an environment where the magnetic field strength exceeds 30 A/m.
- In dusty environments such as areas with high levels of dust, smoke, or fibrous debris, particles will cling to the device’s air outlet or heat sink, impairing heat dissipation and, in severe cases, damaging the device. Therefore, do not install the inverter in dusty environments. If the inverter has to be installed in such environments, please clean its fans and heat sink on a regular basis to ensure stable heat dissipation.
- Install the inverter away from overhead transmission lines to prevent damage from induced lightning. Maintain a distance of at least 15 m between the grounding grid for the PV modules and inverters and the grounding grid for the transmission towers. Avoid installing PV modules under overhead lines.

- The inverter should be installed in a place over 30m away from the third party wireless communication facilities and environments for living.
- The operating ambient temperature is the average temperature measured within 1 m of the inverter. The temperature and humidity must meet the following requirements:



- Installation requirements for inverters that have been installed but have not been operated for an extended period:
  - After connecting the DC cables, be sure to close the DC switch.
  - Ensure that any unconnected DC terminals are sealed with the supplied blue plugs.
  - If installed in a dusty environment, add protective covers to the air intake and exhaust vents to prevent dust from clogging the air ducts during prolonged storage. Remove these protective covers before putting the inverter into operation.

4.2.2 Mounting Surface Requirements

The mounting surface must have a load-bearing capacity of at least four times the inverter weight and be suitable for the inverter dimensions.

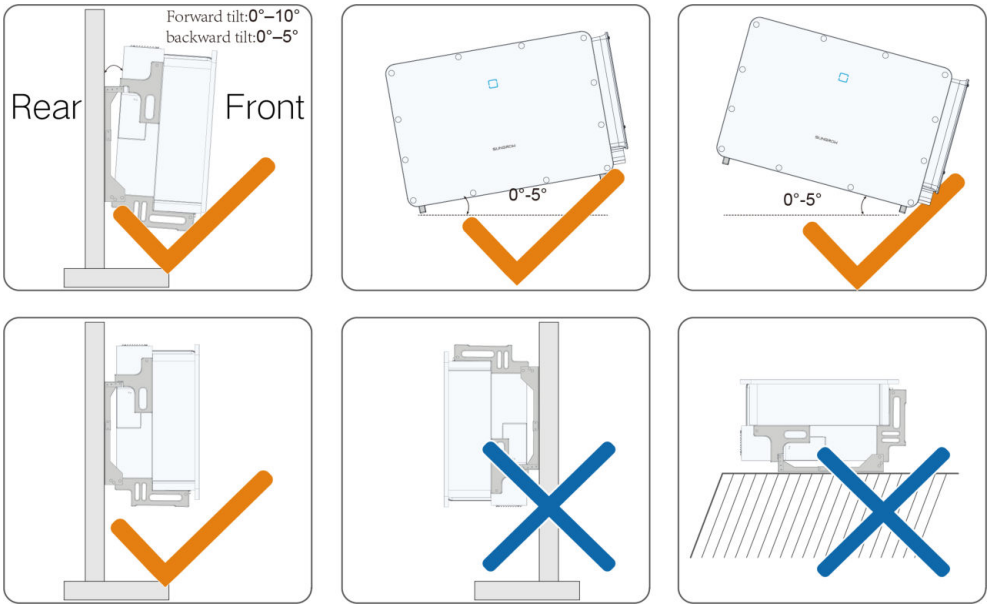
Do not install the inverter on a surface that may resonate, as this may cause excessive noise.

Do not install the inverter on flammable building materials. It may be installed on non-combustible walls (such as concrete, fire-resistant gypsum board, and brick walls) or roofs (such as corrugated color-coated steel roofing sheets, precast concrete slabs, and fiber-reinforced cement boards).



4.2.3 Installation Angle Requirement

- The inverter must be installed vertically for optimal heat dissipation.
- The inverter can be installed with a left or right tilt of ≤ 5°, a forward tilt of ≤ 10°, and a backward tilt of ≤ 5°. Do not exceed these limits under any circumstances, as doing so may impair heat dissipation.

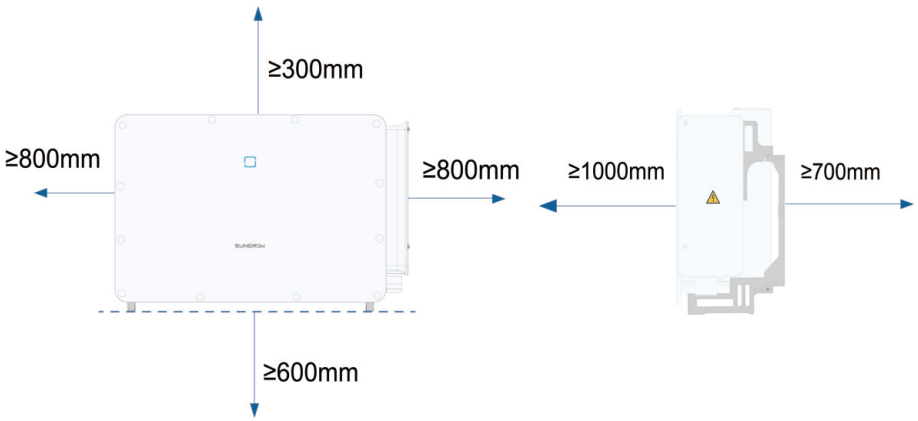


In case of any questions, please contact SUNGROW.

4.2.4 Inverter Installation Clearance Requirements

Space around the inverter

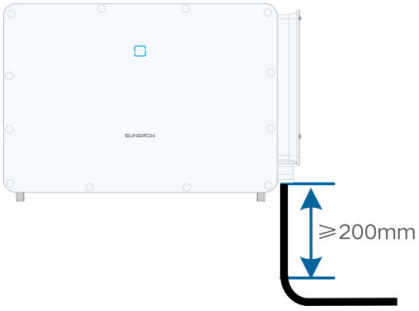
Make sure there is sufficient space around the inverter for good ventilation. The space requirements for installing one inverter are shown in the figure below.



NOTICE

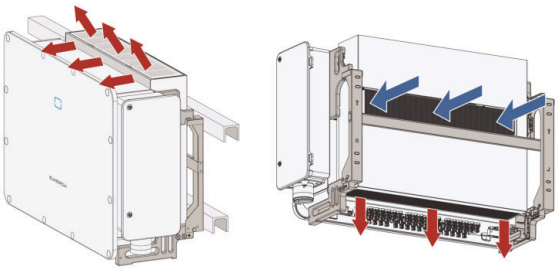
- **To prevent ground vegetation or standing water from affecting normal inverter operation, the bottom clearance may be increased beyond the requirements in 4.2.3 Installation Angle Requirement4.2.4 Inverter Installation Clearance Requirements as appropriate, provided that the top clearance requirement is met.**
- **The space at the bottom of the inverter must also meet the requirements for the bending radius of the AC output cable.**

The AC cable runs into the AC terminal vertically and is kept vertical for a length of ≥200mm.



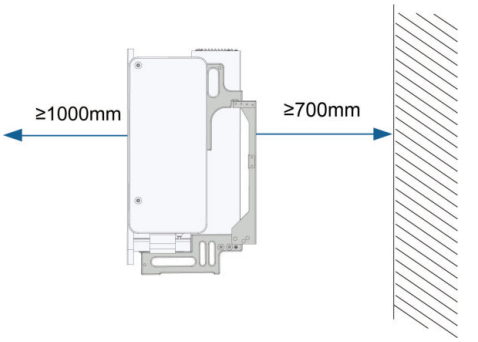
Air inlets/outlets of the inverter

Always make sure there is no obstruction to the air inlets/outlets of the inverter to avoid impacts on its heat dissipation. The following figure shows the air inlets/outlets of the inverter.



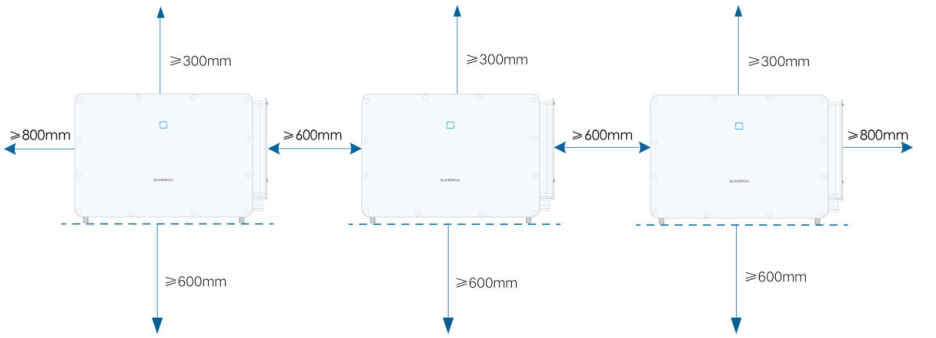
Installed against the wall

If the inverter is installed against the wall, keep it at least 700mm away from the wall.



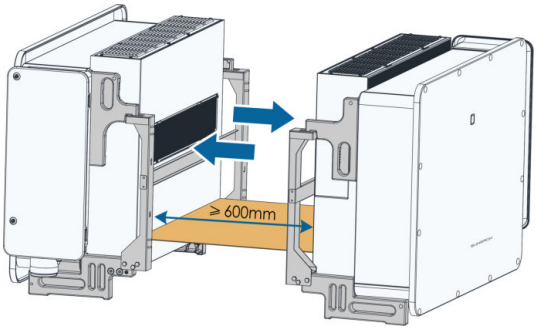
Inverters Installed in One Row

When installing multiple inverters, reserve sufficient space between the inverters. It is recommended to position them in one row.

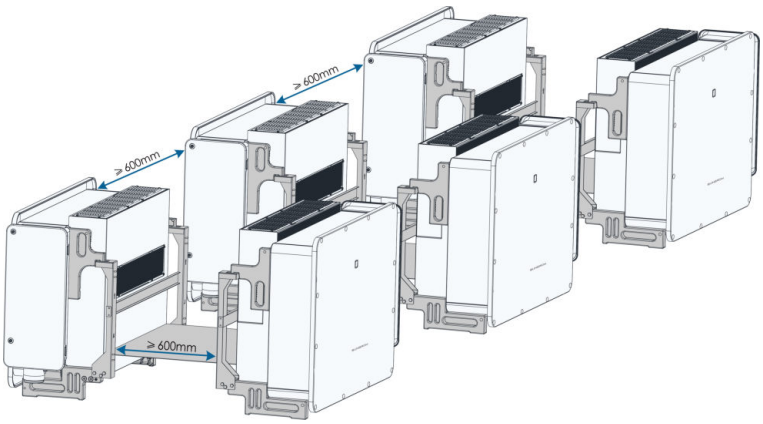


Back-to-Back Installation

For two inverters installed back-to-back, the distance between them should be at least 600mm.



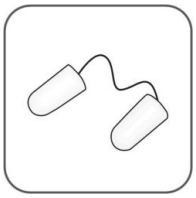
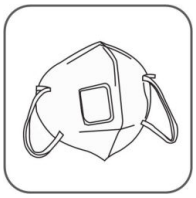
When installing multiple inverters back to back, reserve sufficient space between them.

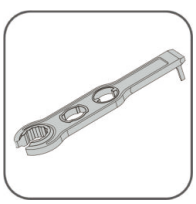


If the above requirements cannot be met, please contact SUNGROW for support.

4.3 Installation Tools and Parts

Installation tools include but are not limited to the recommended tools below. If necessary, use other auxiliary tools on site.

			
Goggles	Earplugs	Dust mask	Safety gloves
			
Safety shoes	Utility knife	Phillips screwdriver (M4, M6, M8)	Hammer drill (φ12)
			
Electric drill (φ12)	Pliers	Marker	Spirit level

			
Rubber mallet	Socket wrench set (M4, M8, M10, M12)	Open-end wrench (16 mm, 35 mm)	Anti-static wrist strap
			
Wire cutter	Wire stripper	Hydraulic crimping tool	Heat gun
			
Crimping tool (4–6 mm^2) Model: H4VFC4DMS/ H4VMC4DMS (Amphenol)	Assembly wrench	Multimeter (≥ 1500 Vdc)	Vacuum cleaner
			
Scissors	Allen wrench (T30)		

4.4 Move Inverter

The inverter can be handled manually or by lifting, depending on site conditions.

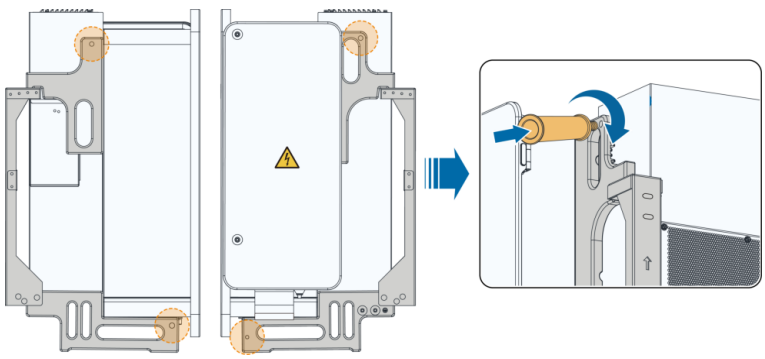
⚠ CAUTION

Improper handling will lead to personal injury!

- **Arrange a sufficient number of installers according to the inverter weight. Installers must wear protective equipment such as safety shoes and gloves.**
- **During inverter handling, always pay attention to the inverter's center of gravity to prevent tilting.**
- **Placing the inverter directly on a hard surface may damage its metal enclosure. Place protective material such as foam or a sponge mat underneath the inverter.**
- **When handling the inverter, always use the designated handles provided on the product. Do not use terminals or other components to lift or hold the inverter.**

4.4.1 Manual Transport

Secure the four supplied screw-in handles into the mounting bracket and the bottom plate. Lift and move the inverter to the destination by using the four handles and the bottom handles.



The screw-in handles are not packed together with the inverter. You can find them in the accessory package.

4.4.2 Hoisting Transport

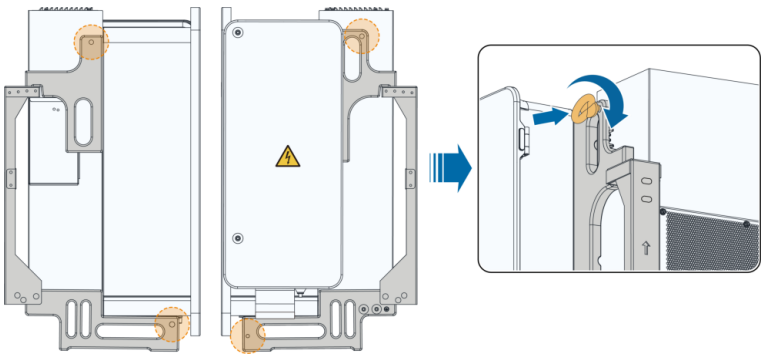
Prerequisite

Table 4-1 Tool Preparation

Device Name	Requirement	Source
Crane	Lifting capacity ≥ 180 kg	Prepared by users
Lifting ring	Two M12 lifting rings, load-bearing capacity of a single ring ≥ 260 kg	Prepared by users

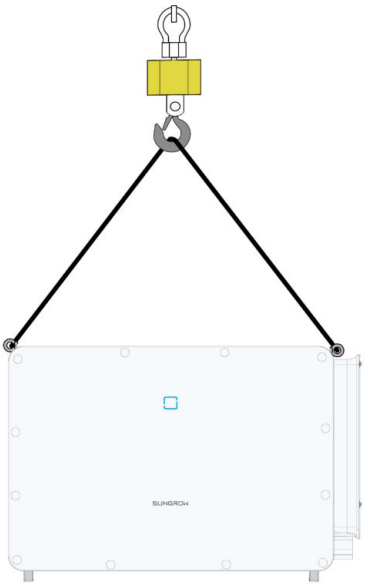
Device Name	Requirement	Source
Sling	1, length ≥ 2.5 m, load-bearing capacity of a single sling ≥ 600 kg	Prepared by users

Step 1 Anchor two M12 thread lifting rings to the hangers of the inverter.



Step 2 Lead the sling through the two lifting rings and fasten the tie-down strap.

Step 3 Hoist the inverter and stop to check for safety when the inverter is 100 mm above the ground. Continue hoisting the device to the destination after ensuring the safety.



Step 4 Remove the lifting rings and reassemble the sealing screws released in Step 1.

⚠ CAUTION

Keep the inverter balanced throughout the hoisting process and avoid collisions with walls or other objects. Hoisting operations must be suspended in adverse weather conditions such as heavy rain, dense fog, or strong winds.

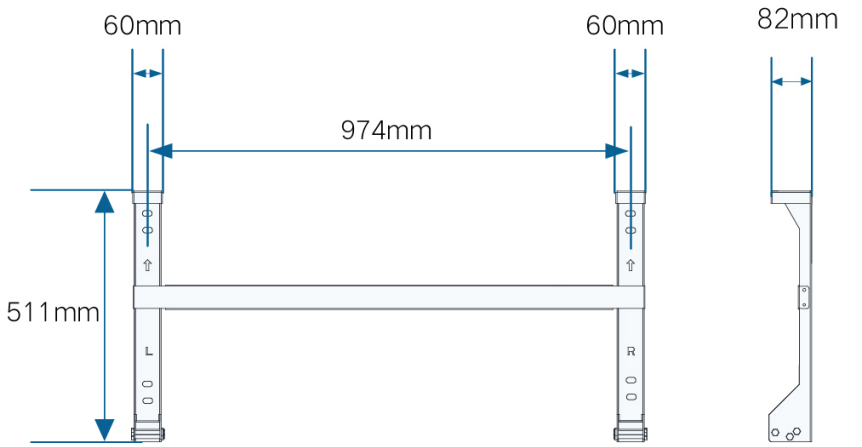
The lifting rings and the sling are not within the delivery scope.

--End

4.5 Install the Mounting Bracket

Use the mounting bracket to install the inverter on a mounting structure, wall, or pole.

Mounting bracket dimensions:



4.5.1 Mounted on PV Bracket

Prerequisite

Required Tools

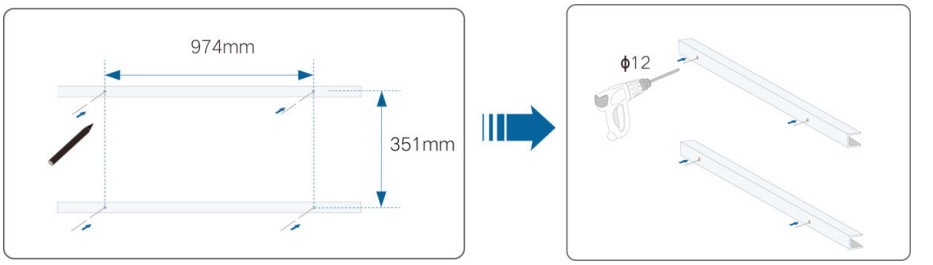
Always use the bolt, nut, and washer assemblies included in the scope of delivery when mounting the inverter on a bracket.

Name	Specifications
Marker	-
Spirit level	-
Electric drill	Drill bit: φ12
Wrench	16 mm

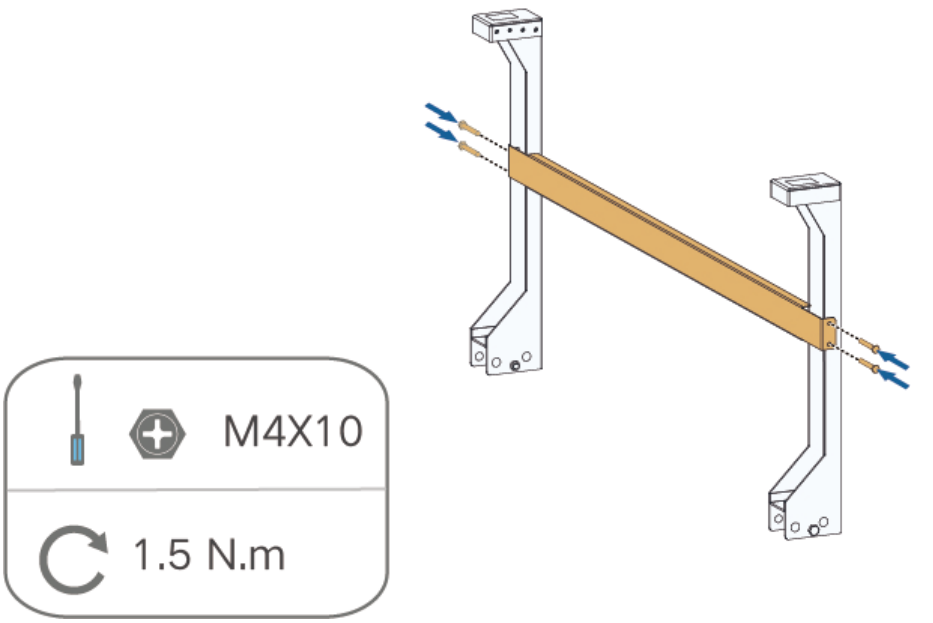
Required Materials

Name	Quantity	Specifications	Source
Bolt assembly	4	M10	Shipping Accessories

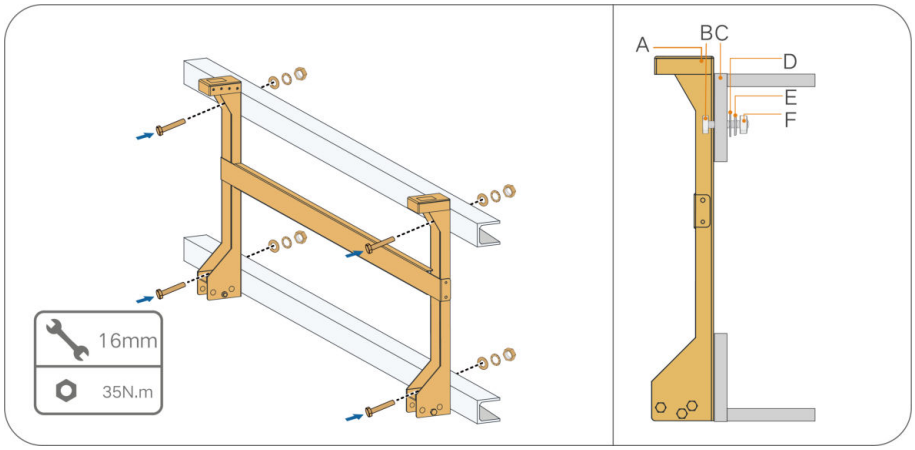
Step 1 Put the mounting bracket on the PV bracket, adjust its angle with the assistance of the level, and mark the hole positions for drilling. Then, drill holes at the corresponding positions using an electric drill.



Step 2 Install the beam between the left and right mounting brackets.



Step 3 Fix the mounting bracket with bolts.



(A) Mounting bracket	(B) Fully-threaded bolt	(C) Metal bracket	(D) Flat washer	(E) Spring washer	(F) Hexagon nut

--End

4.5.2 Mounted on Pole

Prerequisite

Required Tools

Name	Specifications
Marker	-
Spirit level	-
Electric drill*	Drill bit: φ12
Wrench	16 mm

*Determine if tools with different specifications are required based on the size of the bolts used for the matching clamp.

Required Materials

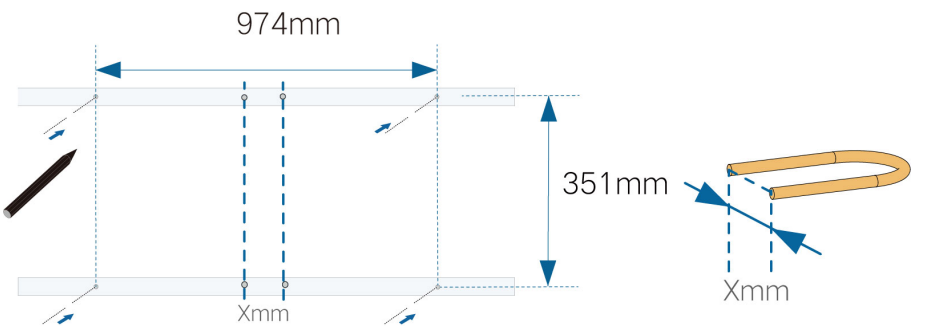
Name	Quantity	Specifications	Source
Bolt assembly	4	M10	Shipping Accessories
Nut assembly	4	M10	Prepared by users

Name	Quantity	Specifications	Source
Steel U-channel	2	-	Prepared by users
Clamp	2	Decide according to the size of the pole.	Prepared by users

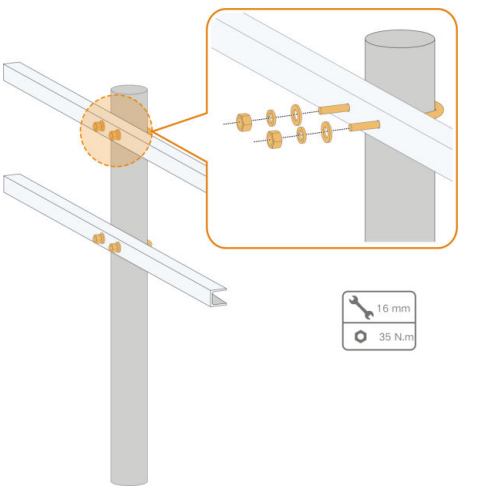
Step 1 Bury the pole to an appropriate depth in the ground at the installation site.

> Skip this step if the inverter is pole-mounted on a cement pillar or PV bracket.

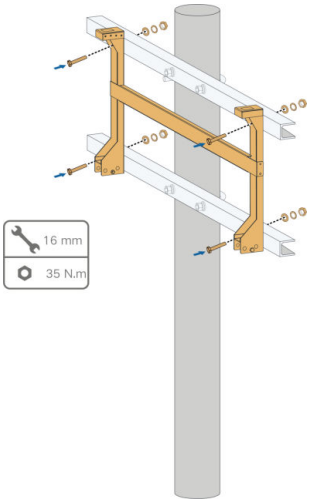
Step 2 Mark the hole positions on the U-channels by referring to the instructions in the figure below, and drill holes.



Step 3 Fix the U-channels to the pole with bolts and clamps.



Step 4 Fix the mounting bracket to the U-channels with bolts.



--End

4.6 Installing the Inverter

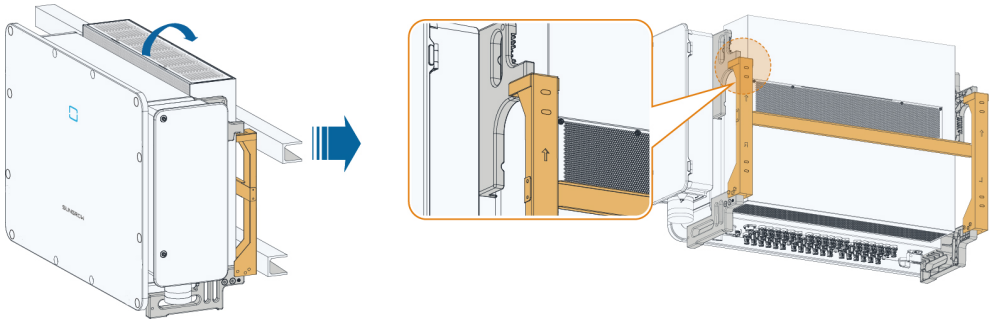
Prerequisite

Required Materials

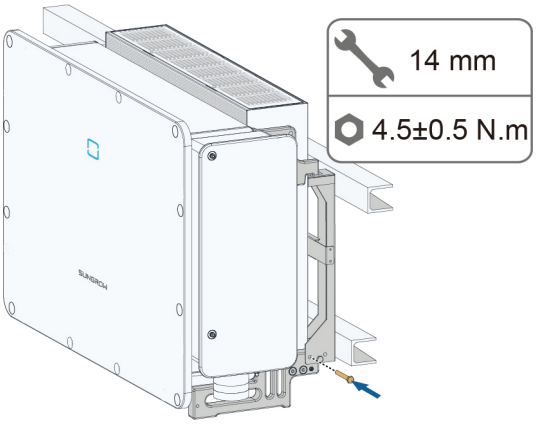
Name	Quantity	Specifications	Source
Bolt assembly	4	M10	Shipping Accessories

Step 1 Hoist the inverter to the installation position when necessary (refer to 4.4.2 Hoisting Transport). Otherwise, skip this step.

Step 2 Hang the inverter to the mounting bracket. Ensure the inverter's mounting ears fit perfectly into the mounting bracket.

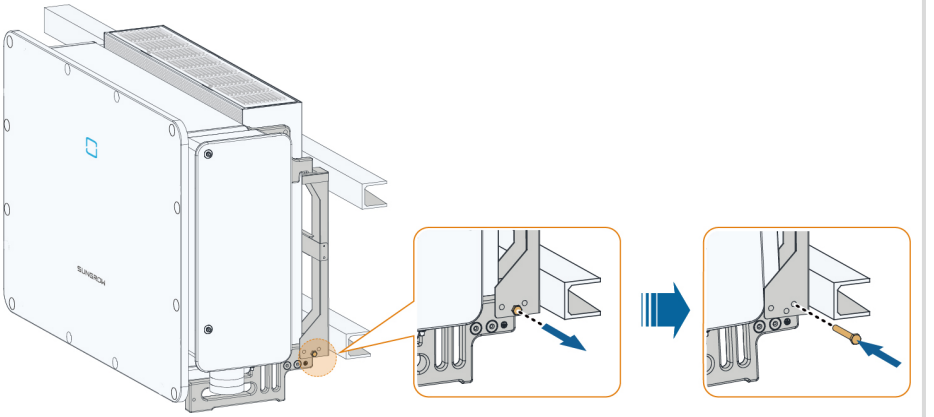


Step 3 Fasten the bottom screw on the inverter mounting bracket.



NOTICE

- **The inverter's left and right sides must be fixed to the mounting bracket with screws; otherwise, the inverter may not be secure.**
- **If the inverter tilt angle does not meet the requirements, you can remove the other screws and fasten the screw closest to the innermost side of the mounting bracket. The inverter allows for a 5° forward adjustment but does not support left or right adjustments.**



NOTICE

- **When the pole spacing L ≤ 2500 mm, the inverter can be installed in the conventional manner. The recommended crossbeam dimensions are as follows:**

Cross-Section Shape	Recommended Dimensions	Remarks
	Cross-sectional dimensions > 100 × 40 × 15 mm; material thickness ≥ 2.5 mm. Installation with the open side facing rearward is recommended. Avoid installation with the open side facing downward.	1. Verify that, under a 250 kg load (twice the inverter weight), the crossbeam deflection is < 15 mm and the stress in the crossbeam is below the yield strength of its material. 2. When the pole spacing is 2.5–4.0 m, it is recommended that the inverter be installed near a pole or that it straddle a pole. 3. When the pole spacing is > 4.0 m, it is recommended that the inverter straddle a pole.
	Use 6.3# channel steel or larger. Installation with the open side facing rearward is recommended. If the crossbeam length is > 2000 mm, avoid installation with the open side facing downward.	
	Cross-sectional dimensions > 50 × 50 mm; material thickness ≥ 2.5 mm.	
	Cross-sectional dimensions > 100 × 80 mm; material thickness ≥ 2.5 mm. Installation with the open side facing rearward is recommended. If the crossbeam length is > 2000 mm, avoid installation with the open side facing downward.	

NOTICE

- **When the pole spacing L > 2500 mm, channel steel or square steel tubing is recommended. The crossbeam dimensions and strength shall meet or exceed the corresponding requirements in the table above. The inverter may be installed near a pole or may straddle a pole.**

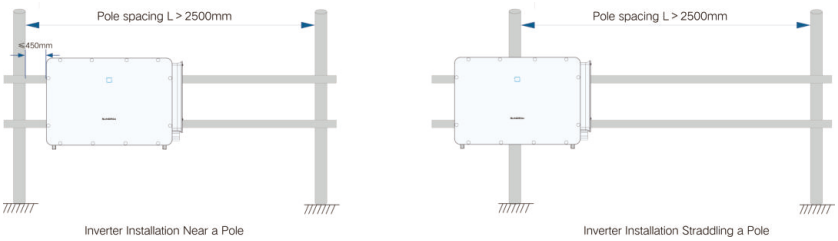


Figure 4-1 Inverter Installation

- **When the pole spacing L > 2500 mm and neither of the above installation methods is used, an additional pole may be installed near the inverter for reinforcement. The spacing X between the additional pole and the adjacent existing pole shall be ≤ 2500 mm.**

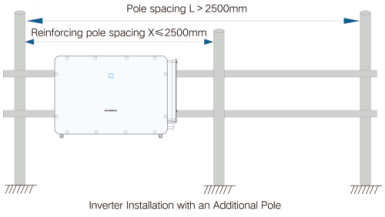
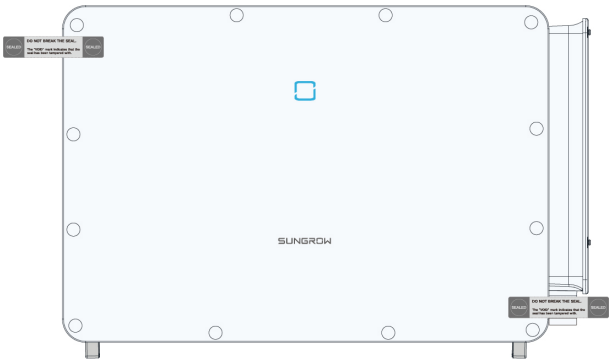


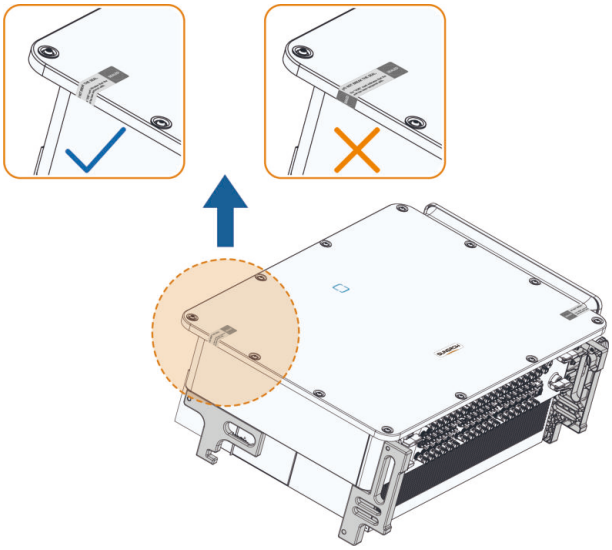
Figure 4-2 Inverter Installation with an Additional Pole

Step 4 After installing the inverter, attach the tamper-evident label to identify whether the inverter has been opened or tampered with without authorization during subsequent use.

The following figure shows how to attach the label:



When attaching the label, center it along the seam to ensure that the label adheres to both the cover and the enclosure.



When attaching the label, be sure to observe the following requirements:

- Ensure that the inverter is powered off and the enclosure surface is clean and dry.
- Peel off the protective backing paper from each tamper-evident label.
- Apply each label smoothly over the seams of the inverter enclosure.
- Press each label with your fingers or a flat tool. Ensure that each label is securely affixed, with no air bubbles or curled edges.
- Once a tamper-evident label is removed, a grid-like security pattern will remain on the surface, clearly displaying the word VOID. The label immediately becomes invalid and cannot be restored to its original state without leaving a trace. This makes it easy to identify unauthorized opening or tampering.

--End

5 Electrical connections

5.1 Electrical Connection Precautions

⚠ DANGER

Hazardous voltages on the PV string when it is exposed to sunlight!

- **Operators must wear proper personal protective equipment during electrical connections.**
- **Check and confirm that the DC cables are voltage-free using a measuring instrument before touching them.**
- **Observe all the safety instructions listed in the documents for the PV string.**

⚠ DANGER

- **Before electrical connections, please make sure that the inverter switch and all switches connected to the inverter are set to "OFF"; otherwise, electric shock will occur!**
- **Always ensure that the inverter is undamaged and all cables are voltage-free before performing electrical work.**
- **Never close the AC circuit breaker until the electrical connection is complete.**

⚠ WARNING

Do not damage the ground conductor. Do not operate the product in the absence of a properly installed ground conductor. Otherwise, it will cause personal injury or product damage.
Always use a measuring instrument rated for a DC voltage of ≥1500 V. Overvoltage can damage the measuring instrument and cause personal injury.

⚠ WARNING

Improper wiring will damage the product, and such damage will not be covered by the warranty.

- **Electrical connections must only be performed by qualified technical persons.**
- **Operators must wear proper personal protective equipment during electrical connections.**
- **All cables used in the PV generation system must comply with the requirements in the manual, be firmly attached, and feature intact insulation.**
- **Cable selection requires a comprehensive evaluation of the following factors: rated current, cable type, routing mode, ambient temperature, and maximum expected line loss.**

NOTICE

All electrical connections must comply with the local and national/regional electrical standards.

- **Cables selected by the user must comply with local laws and regulations.**
- **Only with the permission of the national/regional grid department, the inverter can be connected to the grid.**

NOTICE

Install the external protective grounding cable first when performing the electrical connection and remove the external protective grounding cable last when removing the inverter.
The wiring process must comply with the relevant rules and standards of the local power grid; connections must not be reversed or loose. The number of solar panels in each string should be kept as consistent as possible; do not mix different models of solar panels, and comply with all applicable local standards.

NOTICE

- **After being crimped, the OT terminal must wrap the wires completely, and the wires must contact the OT terminal closely.**
- **When using a heat gun, protect the device from being scorched.**
- **Before connecting a power cable (such as the AC cable, the DC cable, etc.), confirm that the label and identifier on the power cable are correct.**
- **When laying out communication cables, separate them from power cables and keep them away from strong interference sources to prevent communication interruption.**
- **All vacant terminals must be covered with waterproof covers supplied with the inverter to prevent affecting the protection rating. Otherwise, any damage resulting from the ingress of moisture into the inverter will not be covered by the warranty.**
- **Always ensure AC output cables are securely fastened. Failure to comply will result in inverter malfunction or damage to the AC connectors. Such damage is not covered under the warranty.**
- **When the wiring is completed, seal the gap of cable inlet and outlet holes with fireproof/waterproof materials such as fireproof mud to prevent foreign matter or moisture from entering and affecting the long-term normal operation of the inverter.**

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

5.2 Terminal Description

Terminals of inverter are located at its side and bottom, as shown in the figure below:

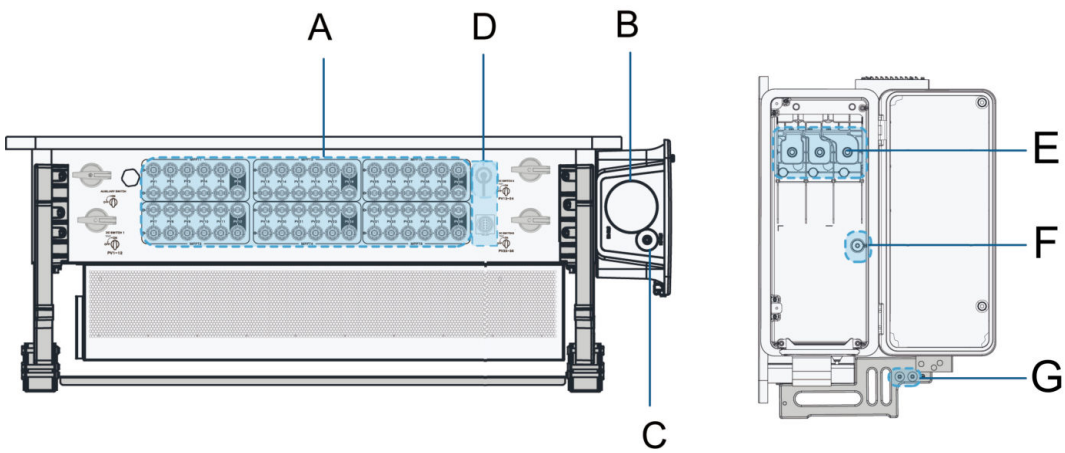


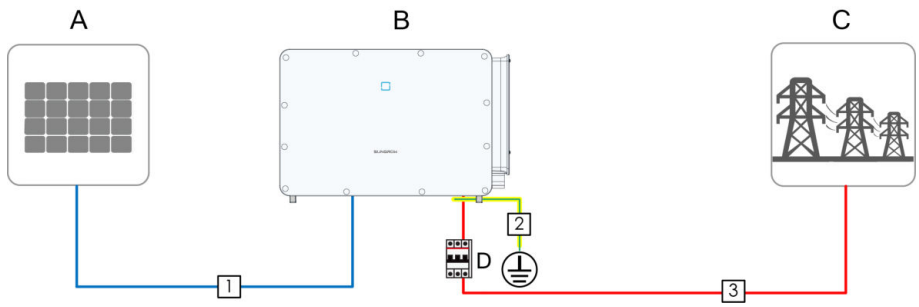
Figure 5-1 Terminal Introduction

*The figure shown is for reference only, and the actual product shall prevail.

No.	Name	Silkscreen Marking	Remarks
A	DC input terminals	+ / -	36 pairs of DC input terminals
B	AC wiring hole	-	AC output wiring hole
C	Backup wiring hole	-	If the PE cable is a separate single-core cable, lead it through the spare grounding wire hole into the AC junction box for wiring.
D	Communication terminal	USB	Communication
		COM1	Used for RS485 Communication
E	AC wiring terminal	-	AC Output Terminal Block
F	Standby grounding terminal	-	If the PE cable is an independent single-core cable, it must be connected to the spare grounding point
G	External Protective Grounding Terminal	⏚	Two, used for the protective grounding of the inverter

5.3 Electrical Connection Overview

To connect the inverter to the PV system, these electrical connections should be completed: external protective grounding connection, grid connection, and PV string connection.



(A) PV strings (B) Inverter (C) Utility grid

(D) AC circuit breaker

Table 5-1 Recommended cable specifications

No.	Name	Type	Specification	
			Cable outer diameter (mm)	**Conductor Cross-Sectional Area (mm^2)**
1	DC cable	PV copper-core cable complying with 1,500 V standard	4.7–6.4 6.4–8.5 (optional)	4, 6 10 (optional)
2	External protective grounding cable	Outdoor single-core copper wire	/	$S_p \geq S/2$
3	AC cable	Single-wire	Refer to Table 5-2 Recommended AC Cable specifications (Single-wire)	
		Double-wire	Refer to Table 5-3 Recommended AC Cable specifications (Double-wire)	

The PE cable size is determined according to the table above or calculated in accordance with IEC 60364-5-54 and other applicable local electrical installation standards.

Note: S is the cross-sectional area of the AC cable conductor, and Sp is the cross-sectional area of the grounding cable conductor.

Whether it is a single-wire cable or a double-wire cable, the AC sealing plates are different. Please contact SUNGROW for details.

The AC cable sealing plates provided with the inverter may vary; the actual product shall prevail. The sealing plates and required AC cables are as follows.

Table 5-2 Recommended AC Cable specifications (Single-wire)

No.	Name	Specification	
		Cable outer diameter (mm)	**Conductor Cross-Sectional Area (mm^2)**
1	Multi-core copper/ aluminum cable(1)	45–76	Copper wire: S: 150–400 $S_p \geq S/2$ Aluminum wire: S: 240–400 $S_p \geq S/2$
3	Single-core(2) copper/ aluminum cable	22–45	Copper wire: S: 150–400 $S_p \geq S/2$ Aluminum wire: S:240–500 $S_p \geq S/2$

1) If aluminum cables are used, the copper-aluminum transition terminals are required. For details, see Aluminum Wire Requirements.

2) If outdoor single-core cables are used as the AC cables, prepare an additional single-core cable sealing plate. Contact SUNGROW if needed.

The sealing plate for the single-wire version is a silicone cold-shrink threading plate.

Table 5-3 Recommended AC Cable specifications (Double-wire)

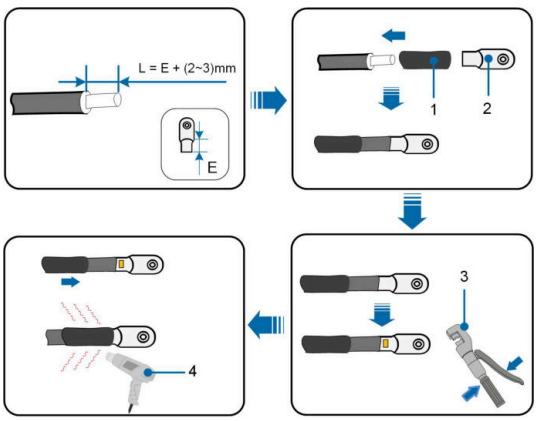
No.	Name	Specification	
		Cable outer diameter (mm)	**Conductor Cross-Sectional Area (mm^2)**
1	Multi-core copper/ aluminum cable(1)	45–66	Copper wire: S:150–240 $S_p \geq S/2$ Aluminum wire: S: 240 $S_p \geq S/2$
2	Single-core copper/ aluminum cable	20–35	

1) If aluminum cables are used, the copper-aluminum transition terminals are required. For details, see Aluminum Wire Requirements.

The sealing plate for the two-wire version is a TPE threading plate.
If a SUNGROW medium voltage system (MVS) is used, refer to the cable requirements specified in the MVS user manual first.

5.4 Crimp OT/DT Cable Terminals

Crimp OT/DT Cable Terminals



(1) Heat shrink tubing	2. OT/DT cable terminal
3. Hydraulic plier	(4) Heat gun

Aluminum Wire Requirements

If aluminum wires are used, use copper-aluminum bimetallic terminals to avoid direct contact between the copper busbar and the aluminum wire.

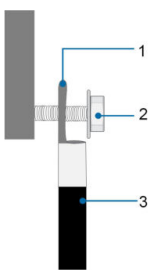


Figure 5-2 Aluminum Wire Terminal Connection Sequence

(1) Copper-aluminum bimetallic terminals	(2) Nut	(3) Aluminum wire

NOTICE

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

5.5 External Protective Grounding Connection

⚠ DANGER

- **High currents are present when the inverter is powered on. If the inverter is powered on without being grounded, not only is there a risk of electric shock, but some critical protective functions, such as lightning protection, may also fail. Therefore, before powering on the inverter, please ensure that it is reliably grounded; otherwise, any resulting damage will not be covered by the warranty.**
- **Grounding must be the first electrical connection made during installation.**

⚠ WARNING

- **Since the inverter is not equipped with an MV substation, neither the positive nor the negative terminals of the PV strings are allowed to be grounded. Otherwise, the inverter will not operate normally.**
- **Connect the external protective grounding terminal to the protective grounding point before AC cable connection, PV string connection, and communication cable connection.**
- **External grounding points ensure reliable grounding. It is strictly prohibited to use metal stakes, rebar, or grounding conductors that do not meet the required wire gauge for grounding; doing so may result in product damage or personal injury.**

⚠ WARNING

The external protective grounding terminal and the AC side grounding terminal must be connected to ground. Other grounding schemes, which meet the local standards and safety regulations, shall also be adopted. However, SUNGROW shall not be held liable for any consequence caused thereby.

5.5.1 Requirements for External Protective Grounding

All non-current-carrying metal parts and device enclosures in the PV power system must be grounded, for example, brackets of PV modules and inverter enclosure.

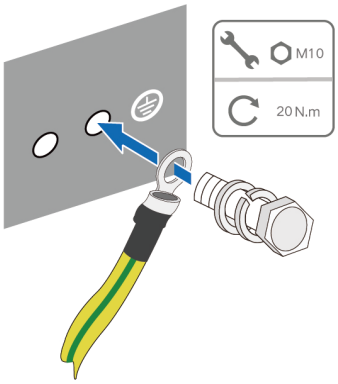
When there is only one inverter, the external protective grounding cable must be connected to a nearby grounding point.

When there are multiple inverters in the PV system, connect the external protective grounding terminals of all inverters and the grounding points of the PV bracket to the equipotential cable (according to the onsite conditions) to implement an equipotential connection.

5.5.2 Wiring Steps

Step 1 Prepare the cable and crimp the OT/DT terminal; refer to 5.4 Crimp OT/DT Cable Terminals.

Step 2 Remove the screw from the grounding terminal and secure the cable using a wrench.



Step 3 Apply paint to the grounding terminal to improve its anti-corrosion performance.

Please connect one of the two external protective grounding terminals to the ground.

The resistance of the inverter's grounding bolt to the ground should be ≤4Ω, and the resistance should be tested and checked every half year.

- The metal frames of two adjacent modules in each string must be connected with a 4 mm^2 yellow-green wire.
- The metal frames of the first and last modules in each string must be connected to the mounting structure using a yellow-green wire.

--End

5.6 AC Cable Connection

5.6.1 AC Side Requirements

> The inverter can only be connected to the grid with the permission of the local power company.

Before grid connection, confirm that the grid voltage and frequency comply with local grid connection standards; otherwise, contact the power company. See "**Technical Data**" for detailed parameters.

AC Circuit Breaker

⚠ WARNING

Install an over-current protection device, such as an AC circuit breaker and a fuse, between the inverter AC side and the grid, to ensure the inverter can disconnect from the grid in a safe manner.

- **Multiple inverters must not share a single AC circuit breaker.**

Table 5-4 Recommended Specifications for AC Circuit Breakers

Inverter	Recommended Rated Voltage	Recommended Rated Current
SG510HX	1000 V	400 A

5.6.2 Requirements for OT/DT Terminals

OT/DT terminals (not included in the scope of delivery) are required for fixing the AC cable to the terminal block. Please prepare OT/DT terminals by following the requirements below.

OT/DT Terminal for AC Phase Wire

- Specification: M12

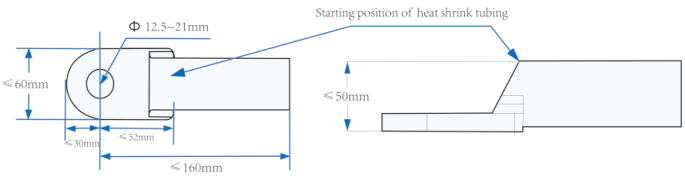


Figure 5-3 Dimensions of Terminal After Crimping

> The OT/DT terminal must be protected with heat shrink tubing after crimping.

Flat washer

If the OT terminal hole diameter is greater than 16.5 mm but less than 21 mm, an additional flat washer must be inserted between the OT and the M12 nut. The flat washer must be made of stainless steel 316/304. Its dimensions and installation diagram are as follows:

Flat washer dimensions

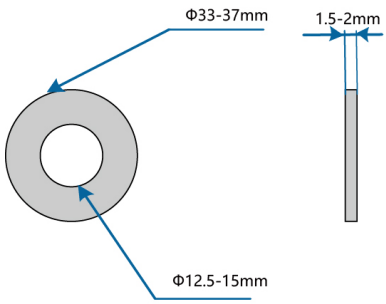


Figure 5-4 Flat Washer Dimensions

Flat washer installation

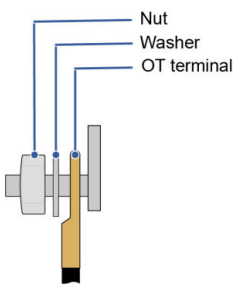


Figure 5-5 Flat Washer Installation

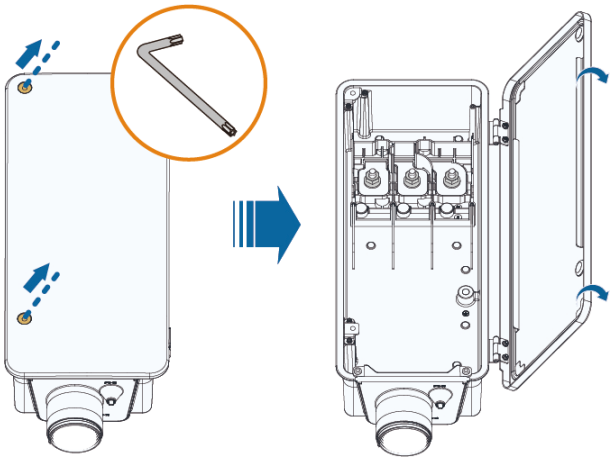
OT/DT Terminal for AC PE wire

- Specification: M12

5.6.3 One-wire-per-phase Wiring (with Multi-core Cable)

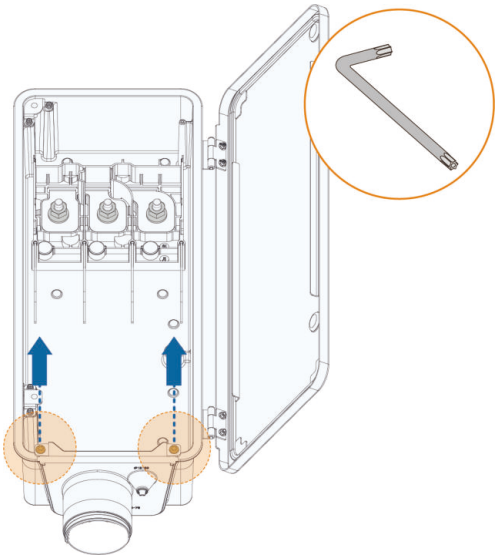
Step 1 Switch off the AC side circuit breaker and prevent it from switching on inadvertently.

Step 2 Loosen the two screws on the front door of the junction box using the Allen wrench (included in the scope of delivery), and open the junction box.

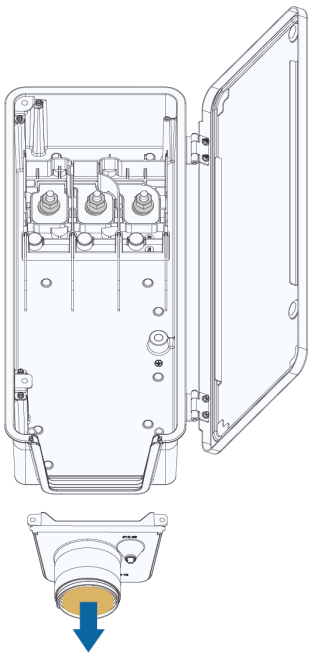


The screws on the door of the junction box are captive screws. After the door is opened, the screws stay on the door and hence will not be lost.

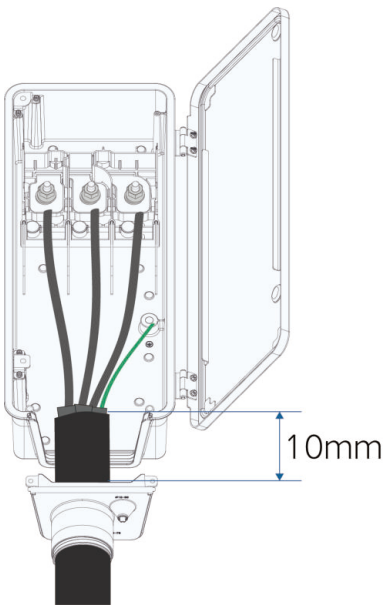
Step 3 Remove the bottom sealing plate by loosening its screws with the provided hex key.



Step 4 Remove the sealing foam.

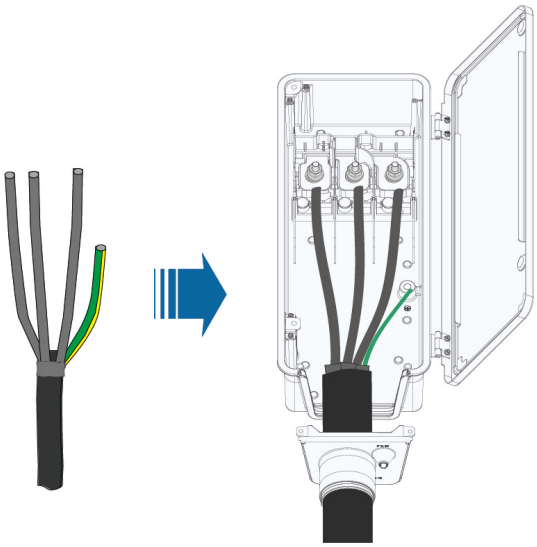


Step 5 Strip the external protective layer of the AC cable. At least 10 mm above the sealing plate of the AC cable's protective layer should remain intact, without being stripped. Pass the AC cable through the bottom sealing plate, and put the AC cable and bottom sealing plate into the junction box. For ease of OT/DT terminal crimping, make sure the cable inside the junction box is long enough.

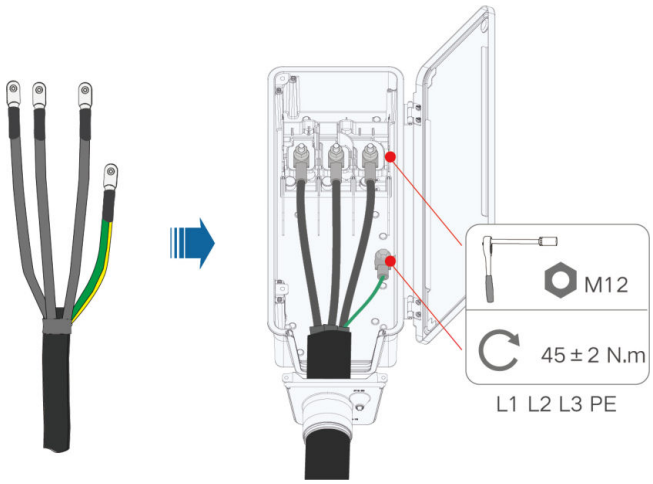


If a multi-core cable is used, the strip length of the L2 wire should be 15 mm shorter than those of L1 and L3 wires.

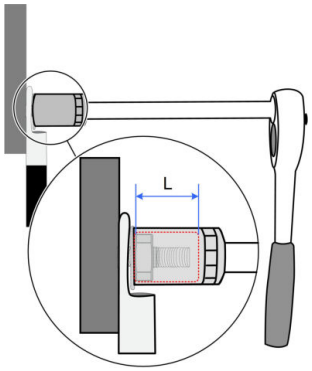
Step 6 Smooth the cut edge of the cable's protective layer. Then, wrap it with the insulating tape, and then fit the three-finger sleeve and cold-/heat-shrink tubing. After that, fit the screws on the bottom sealing plate. The three-finger sleeve and cold-/heat-shrink tubing should be prepared by users separately and their specifications should match the requirements of the cable used.



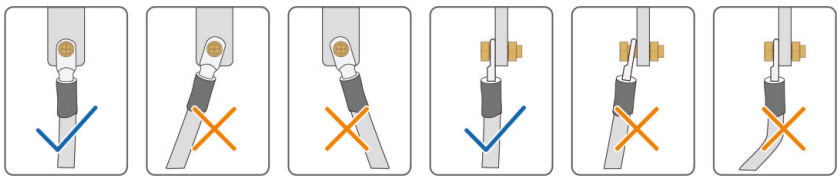
Step 7 Prepare the cable by crimping the OT/DT terminal. Secure the wires to the corresponding terminals, at a torque of 45±2 N.m, as specified on the label inside the AC junction box. Fixing terminals at a torque smaller or greater than the specified value may lead to poor contact.



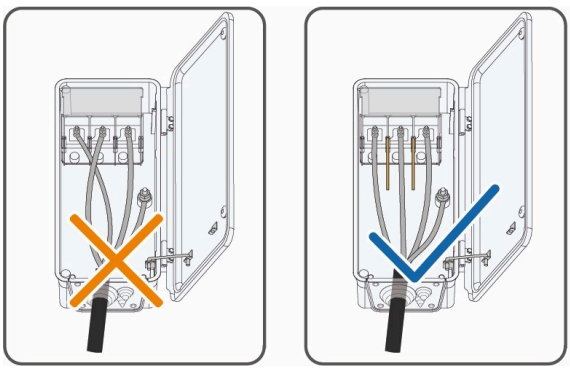
- Ensure that the inner depth L of the socket used is ≥ 28 mm.



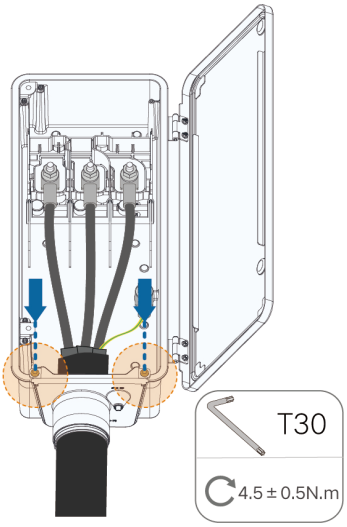
- When fixing the wires to the corresponding terminals, make sure the wires do not lean forward, backward, leftward, or rightward.



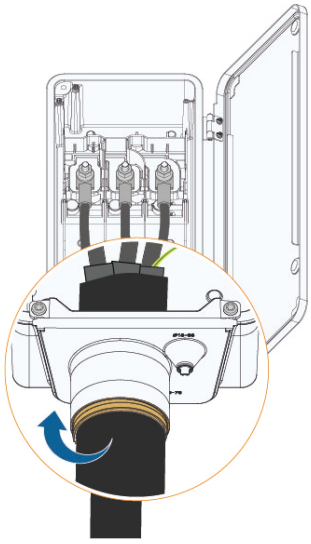
- Cables must not cross.



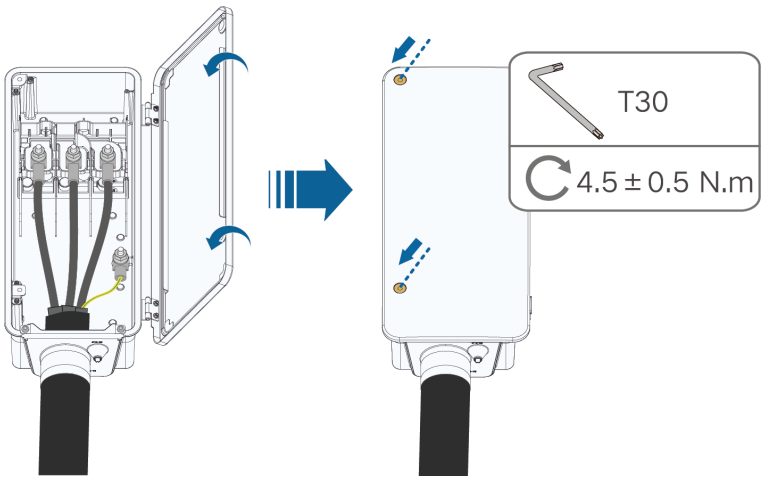
Step 8 Tighten the two screws on the door using the supplied Allen wrench.



Step 9 When performing this operation, be sure to route the internal white coil out from the bottom of the AC wiring sealing plate, pulling the white coil from the inside out.



Step 10 Close the door of the junction box, and tighten the two screws on the door using the Allen wrench.



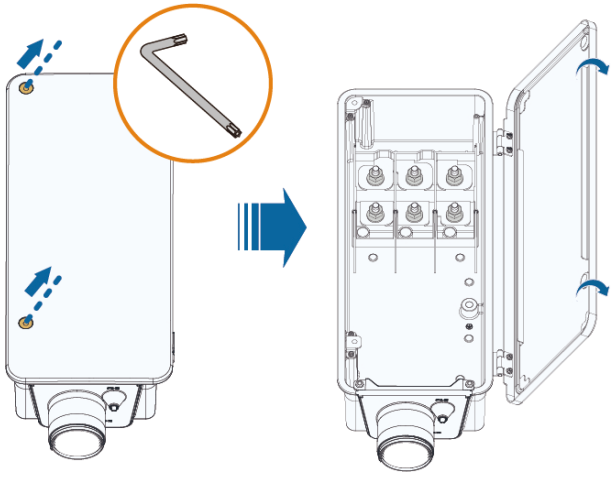
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*If the PE cable is an independent single-core cable, pass it through the spare grounding point into the AC junction box for wiring.

5.6.4 One-wire-per-phase Wiring, Duplex Junction Box (with Multi-core Cable)

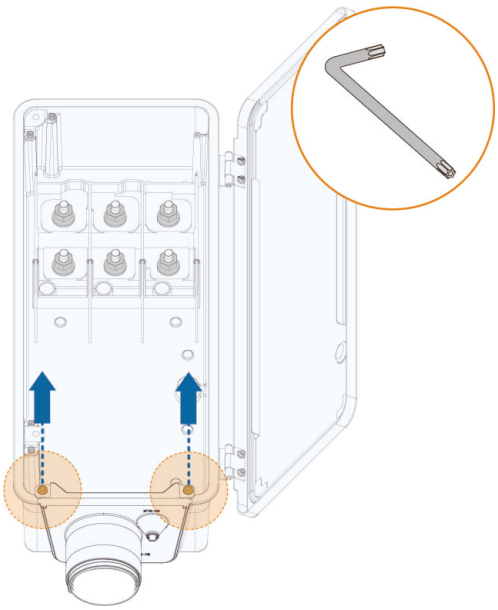
Step 1 Switch off the AC side circuit breaker and prevent it from switching on inadvertently.

Step 2 Loosen the two screws on the front door of the junction box using the Allen wrench (included in the scope of delivery), and open the junction box.

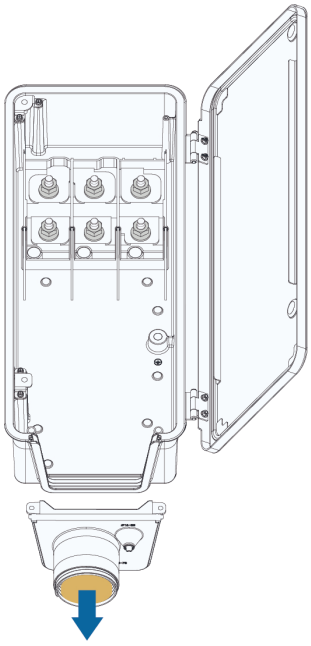


The screws on the door of the junction box are captive screws. After the door is opened, the screws stay on the door and hence will not be lost.

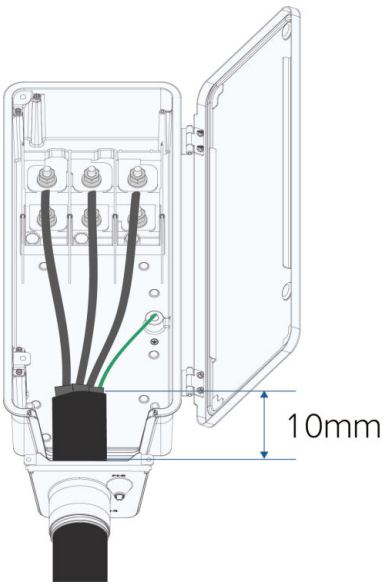
Step 3 Remove the bottom sealing plate by loosening its screws with the provided hex key.



Step 4 Remove the sealing foam.

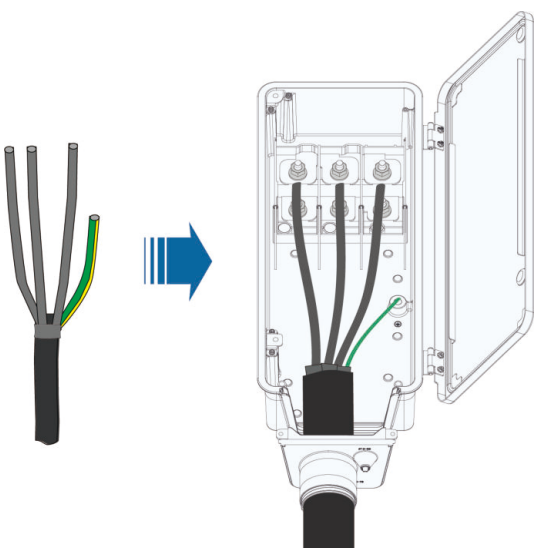


Step 5 Strip the external protective layer of the AC cable. At least 10 mm above the sealing plate of the AC cable's protective layer should remain intact, without being stripped. Pass the AC cable through the bottom sealing plate, and put the AC cable and bottom sealing plate into the junction box. For ease of OT/DT terminal crimping, make sure the cable inside the junction box is long enough.

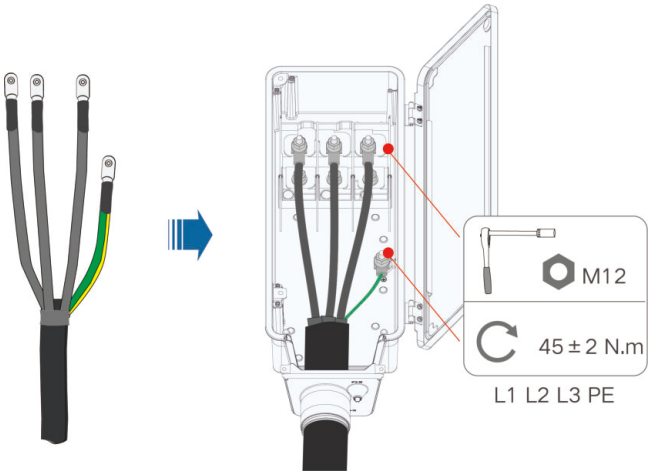


If a multi-core cable is used, the strip length of the L2 wire should be 15 mm shorter than those of L1 and L3 wires.

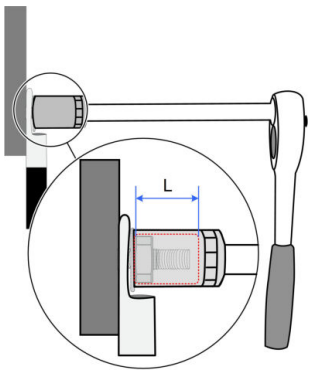
Step 6 Smooth the cut edge of the cable's protective layer. Then, wrap it with the insulating tape, and then fit the three-finger sleeve and cold-/heat-shrink tubing. After that, fit the screws on the bottom sealing plate. The three-finger sleeve and cold-/heat-shrink tubing should be prepared by users separately and their specifications should match the requirements of the cable used.



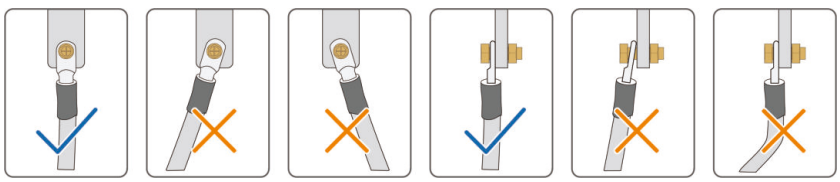
Step 7 Prepare the cable by crimping the OT/DT terminal. Secure the wires to the corresponding terminals, at a torque of 45±2 N.m, as specified on the label inside the AC junction box. Fixing terminals at a torque smaller or greater than the specified value may lead to poor contact.


M12
45 ± 2 N.m
L1 L2 L3 PE

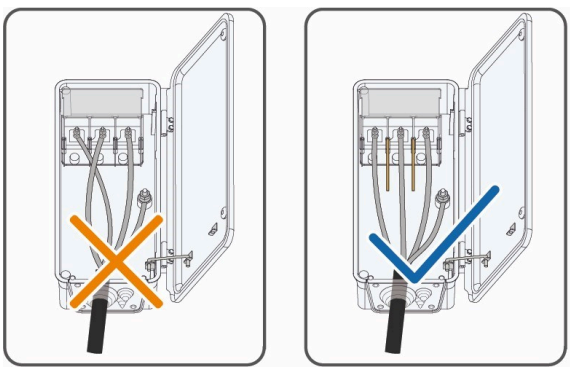
- Ensure that the inner depth L of the socket used is ≥ 28 mm.



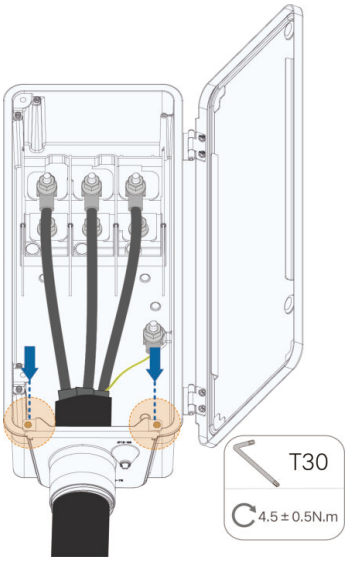
- When fixing the wires to the corresponding terminals, make sure the wires do not lean forward, backward, leftward, or rightward.



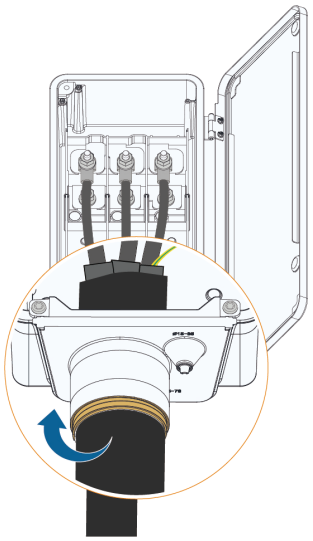
- Cables must not cross.



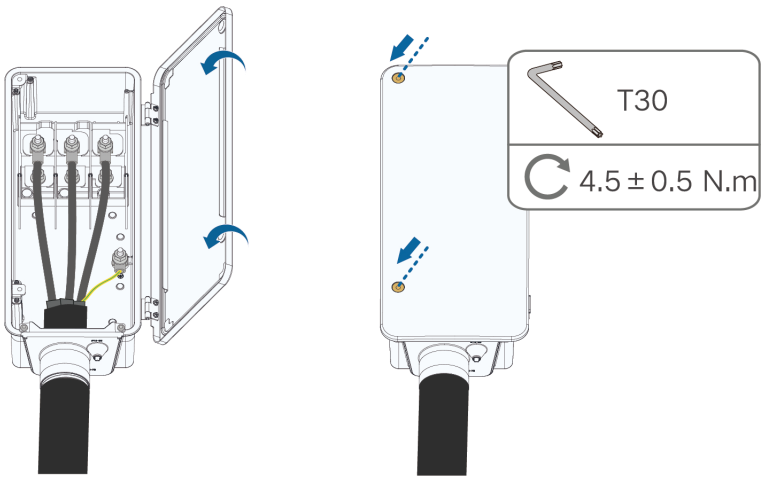
Step 8 Tighten the two screws on the door using the supplied Allen wrench.



Step 9 When performing this operation, be sure to route the internal white coil out from the bottom of the AC wiring sealing plate, pulling the white coil from the inside out.



Step 10 Close the door of the junction box, and tighten the two screws on the door using the Allen wrench.



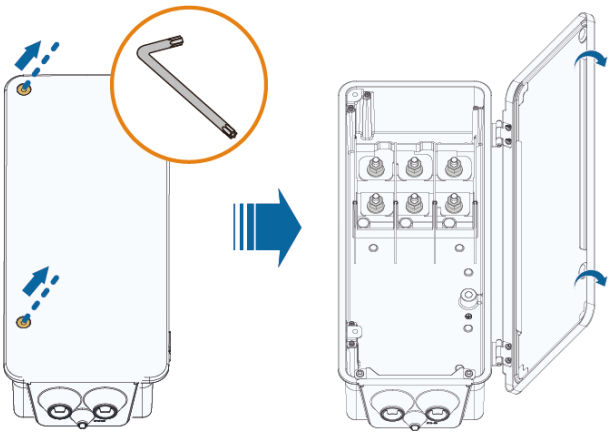
--End

*If the PE cable is an independent single-core cable, pass it through the spare grounding point into the AC junction box for wiring.

5.6.5 Two-wires-per-phase Wiring, Duplex Junction Box (with Multi-core Cable)

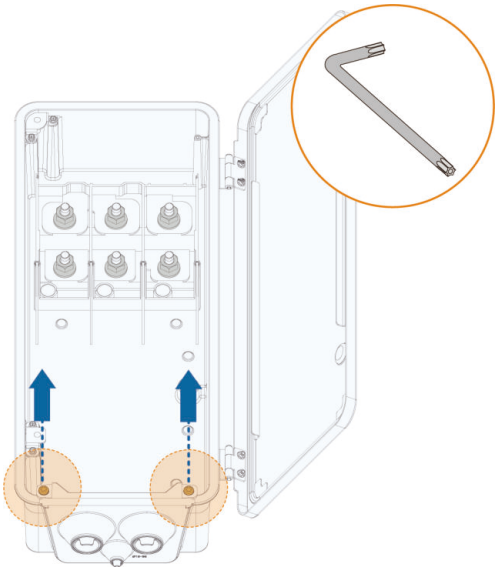
Step 1 Switch off the AC side circuit breaker and prevent it from switching on inadvertently.

Step 2 Loosen the two screws on the front door of the junction box using the Allen wrench (included in the scope of delivery), and open the junction box.

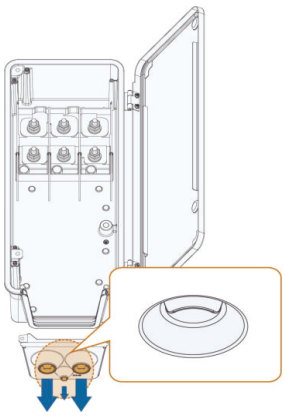


The screws on the door of the junction box are captive screws. After the door is opened, the screws stay on the door and hence will not be lost.

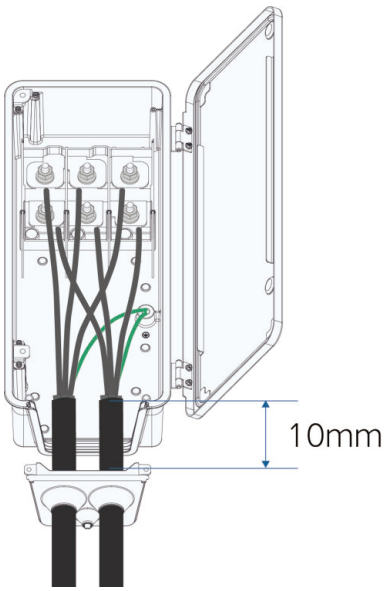
Step 3 Remove the bottom sealing plate by loosening its screws with the provided hex key.



Step 4 Tear off the pull tab on the sealing plate.

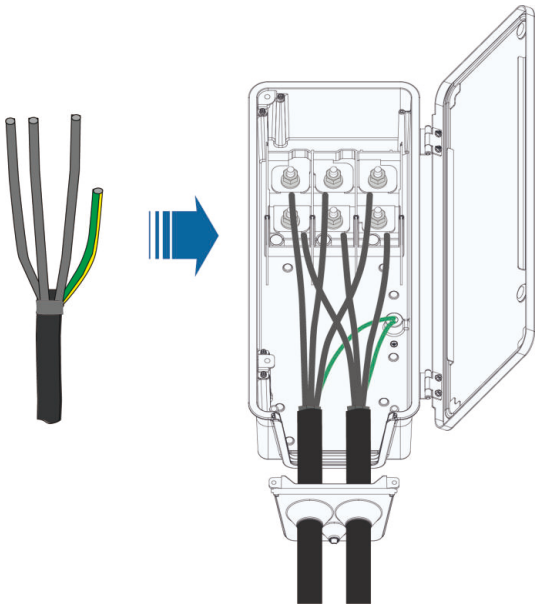


Step 5 Strip the external protective layer of the AC cable. At least 10 mm above the sealing plate of the AC cable's protective layer should remain intact, without being stripped. Pass the AC cable through the bottom sealing plate, and put the AC cable and bottom sealing plate into the junction box. For ease of OT/DT terminal crimping, make sure the cable inside the junction box is long enough.



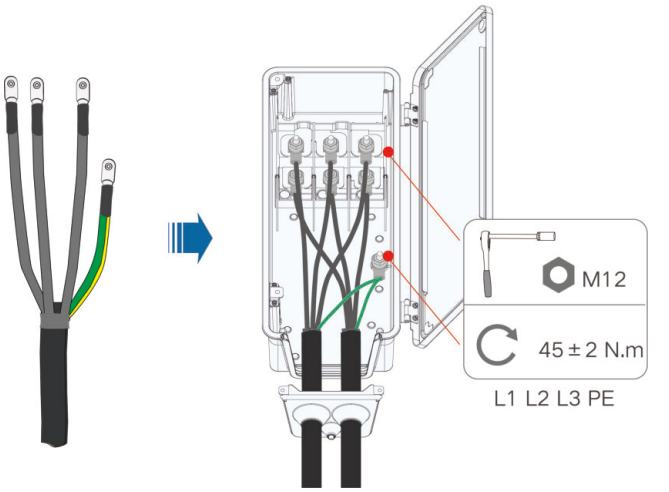
If a multi-core cable is used, the strip length of the L2 wire should be 15 mm shorter than those of L1 and L3 wires.

Step 6 Smooth the cut edge of the cable's protective layer. Then, wrap it with the insulating tape, and then fit the three-finger sleeve and cold-/heat-shrink tubing. After that, fit the screws on the bottom sealing plate. The three-finger sleeve and cold-/heat-shrink tubing should be prepared by users separately and their specifications should match the requirements of the cable used.

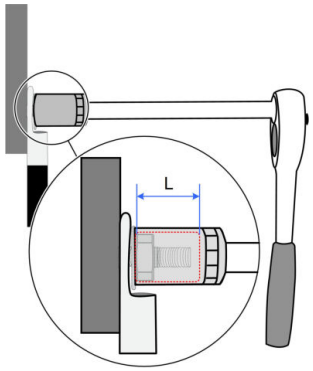


Step 7 Prepare the cable by crimping the OT/DT terminal. Secure the wires to the corresponding terminals, at a torque of 45±2 N.m, as specified on the label inside the AC junction box.

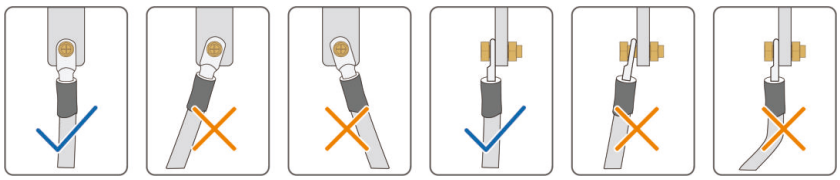
Fixing terminals at a torque smaller or greater than the specified value may lead to poor contact.



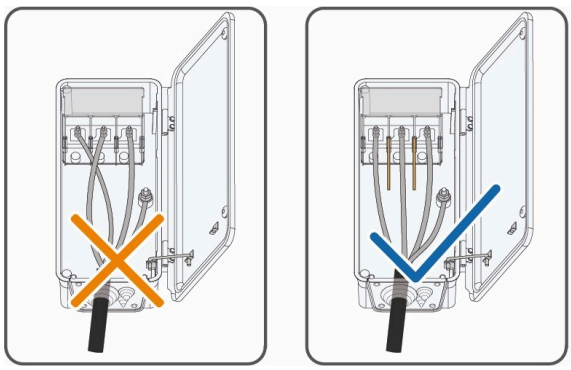
- Ensure that the inner depth L of the socket used is ≥ 28 mm.



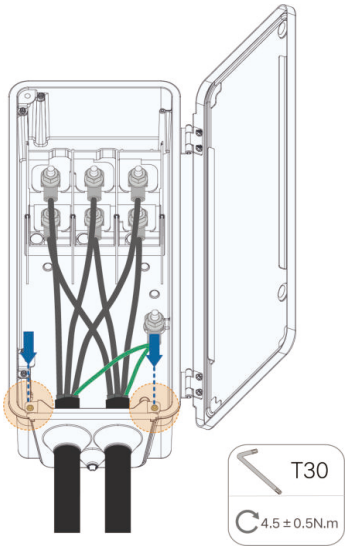
- When fixing the wires to the corresponding terminals, make sure the wires do not lean forward, backward, leftward, or rightward.



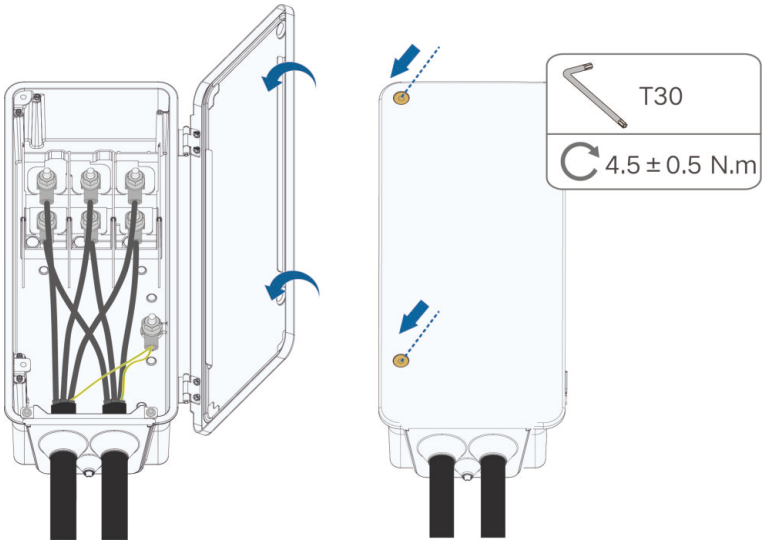
- Cables must not cross.



Step 8 Tighten the two screws on the door using the supplied Allen wrench.



Step 9 Close the door of the junction box, and tighten the two screws on the door using the Allen wrench.



--End

*If the PE cable is an independent single-core cable, pass it through the spare grounding point into the AC junction box for wiring.

5.7 DC Side Connection

⚠ DANGER

Hazardous voltages on the PV string when it is exposed to sunlight!

- **Observe all the safety instructions listed in the documents for the PV string.**

⚠ WARNING

- **Ensure that the PV array is properly insulated from ground before connecting it to the inverter.**
- **Ensure that the voltage of each PV string is ≤1500 V and the maximum short-circuit current is ≤ 30 A. For details, see“Technical Data”.**
- **Before connecting the DC connectors to the inverter, check the polarity of the PV strings. After confirming that the polarity is correct, insert the DC connectors into the corresponding DC terminals.**
- **During inverter installation and operation, always ensure that neither the positive nor the negative side of any PV string is short-circuited to ground. Otherwise, an AC or DC short circuit may occur and damage the product. Such damage is not covered by the warranty.**
- **Always ensure that the DC connectors are fully seated. Otherwise, arcing or connector overheating may occur. Any resulting damage is not covered by the warranty.**
- **If the DC input polarity is reversed or both the positive and negative terminals of different MPPTs are short-circuited to ground while the DC switch is set to the "ON" position, never operate the inverter immediately; otherwise, it may cause damage. When the string current drops below 0.5 A, turn the DC switch to "OFF", disconnect the DC connector, and correct the string polarity.**
- **The inverter does not support the full parallel connection of PV strings (Full parallel connection refers to a connection method in which all PV strings are first connected in parallel outside the inverter and then split into separate inputs to the inverter.).**
- **Never connect one PV string to multiple inverters. Otherwise, the inverters may be damaged.**
- **For grid-connected AC-side wiring, always keep the DC switch in the OFF position to ensure installation safety.**

NOTICE

The following requirements for PV string connection must be met. Otherwise, it may cause irreversible damage to the inverter, which is not covered by the warranty.

- **Mixed use of different brands or models of PV modules in one MPPT circuit, or PV modules of different orientations or angles in a string, will not necessarily damage the inverter but may degrade system performance.**

NOTICE

Note the following items when laying out cables on site:

- **Add cable tie points for the DC cables and ensure that the cable sections between the tie points and the equipment are not under tension. If necessary, form loops in the cables to provide sufficient slack.**
- **The axial tensile force of the DC cable on the PV DC connector must be less than 80 N. Avoid prolonged axial cable stress on connectors during wiring.**
- **Radial stress or torque is strictly prohibited; otherwise, it may cause connector waterproofing failure and reduced reliability.**
- **In offshore PV applications, route DC cables through a cable tray and leave at least 150 mm of slack near the inverter. This prevents cables from moving around, thereby avoiding poor contact and damage caused by terminals being stressed.**

5.7.1 PV Input Configuration

- The inverter supports multiple PV inputs, as shown in the figure below, with the PV inputs all connected to MPP trackers (MPPTs).
- Each MPPT can be connected to up to 6 PV strings For the best use of their input power, make sure the PV strings connected to each MPPT are identical in configuration (model and number of PV modules, tilt and azimuth angles, etc.).

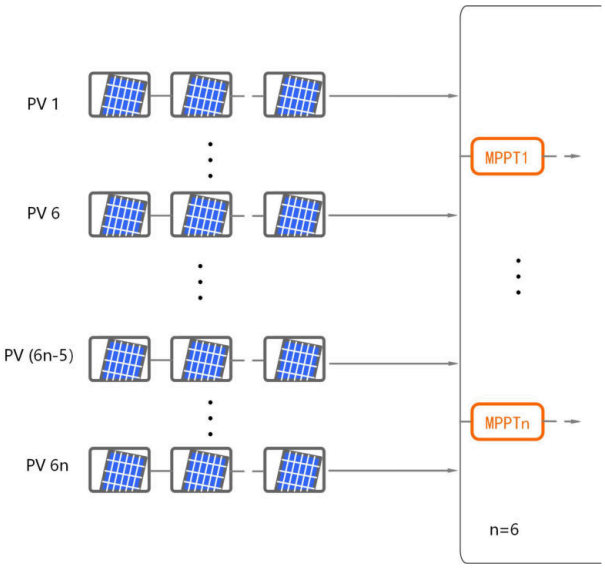


Figure 5-6 PV Input Configuration

Before connecting PV inputs to the inverter, please ensure that the strings in each input meet the following requirements:

- The maximum open-circuit voltage of the strings does not exceed 1500V DC.
- The maximum allowable operating current of strings is 25A.

- The voltage difference between different MPPTs must be less than 110 V.

Wiring Instructions

Please refer to the following requirements for PV terminal connection:

- The PV1 terminal must be used for connection.
- Always make sure the PV terminals connected are relatively evenly distributed across the MPPTs.
- Always connect terminals in the white area first. Connect the black area terminals only when the white area terminals are fully occupied.

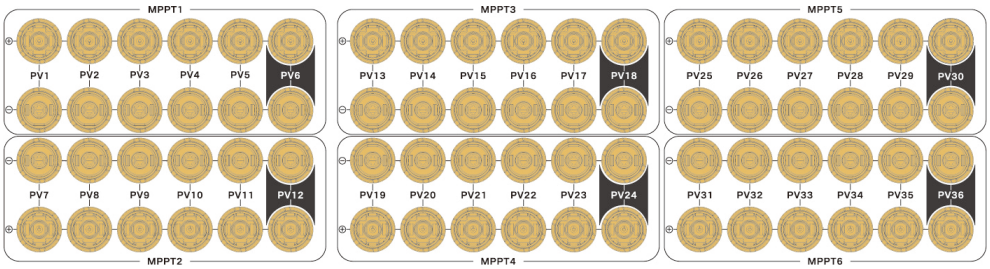


Figure 5-7 Area Division of Bottom Terminals

5.7.2 Connecting the DC Connectors

Prerequisite

⚠ DANGER

High voltage may be present in the inverter!

- **Ensure all cables are voltage-free before performing electrical operations.**
- **Never connect the AC circuit breaker before finishing the electrical connection.**

⚠ CAUTION

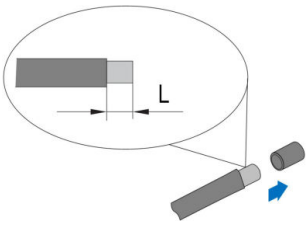
- **Cables must be secured with cable ties 300–350 mm from the DC connector and the waterproof communication connector to prevent them from swaying or swinging, which could subject the waterproof connectors to excessive stress and compromise the overall protection rating of the inverter.**
- **Ensure the cable runs straight between the clamp point and the waterproof terminal. The cable must be free of tension after the clamp point and can be coiled if necessary.**

NOTICE

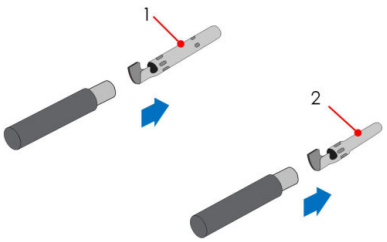
Always use the PV connectors included in the shipment or purchase the following PV connectors of the recommended model. Damage caused by using incompatible terminals or connectors is not covered under warranty.

- **For a DC cable cross-sectional area of 4/6 mm^2, the supplied PV connectors, models H4VFC4DMS/H4VMC4DMS (Amphenol), must be used.**
- **For a DC cable cross-sectional area of 10 mm^2, purchase PV connectors separately or contact SUNGROW. Models: H4SFC8DMS/H4SMC8DMS (Amphenol).**

Step 1 Strip the insulation layer of DC cables by 8–10mm.

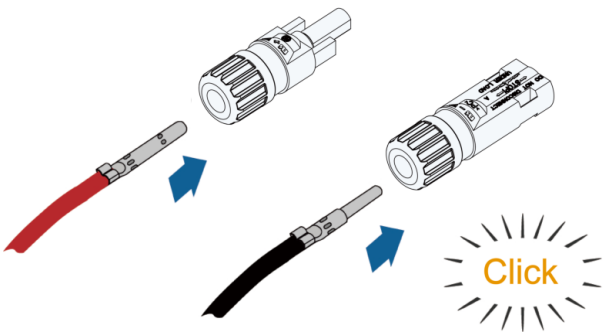


Step 2 Crimp the contact on the cable wires using a crimping tool.

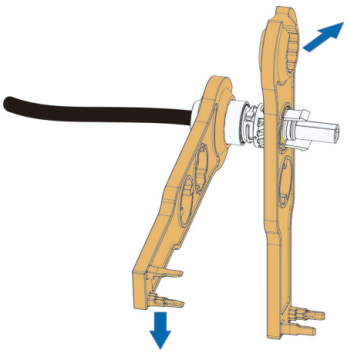


1: Positive crimp contact 2: Negative crimp contact

Step 3 Route the cable through the cable gland and insert it into the insulating sleeve until it clicks into place. Gently pull the cable to make sure the connection is secure. Tighten the cable gland and insulating sleeve to a torque of 2.5–3 N·m.



Step 4 Tighten the swivel nut.



Step 5 Check and confirm that the PV string cables are connected in the correct polarity.

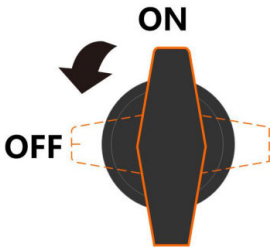
NOTICE

The inverter will report a fault or alarm and not function properly if the positive and negative DC input cables are connected reversely.

--End

5.7.3 Installing the PV Connectors

Step 1 Ensure the auxiliary switches and DC switches are turned to "OFF"; otherwise, manually turn them to "OFF".

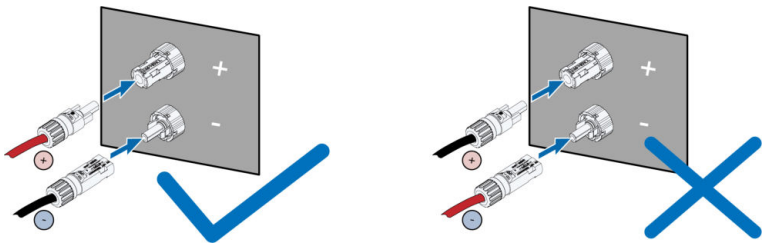


Step 2 Check that the polarity of the PV string connection cables is correct, and ensure that the OCV never exceeds the inverter's maximum input voltage of 1500 V.

NOTICE

The multimeter must have a DC voltage measuring range of at least 1500V. If the voltage is negative, the DC input is connected with reverse polarity; in this case, correct the wiring. If the voltage exceeds 1500V, too many PV modules are connected in the string; in this case, reduce the number of modules.

Step 3 Insert each DC connector into the corresponding DC terminal until you hear it click into place.



Step 4 Connect the cables of other PV strings by following steps 2 and 3.

Step 5 Close off the unused PV terminals with the waterproof stopper plugs.

--End

5.8 RS485 Communication Connection

5.8.1 Interface Description

As shown below, all communication terminals are located at the bottom of the inverter.

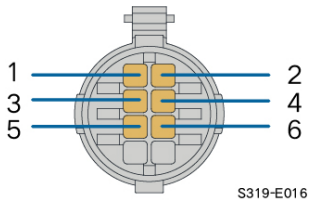


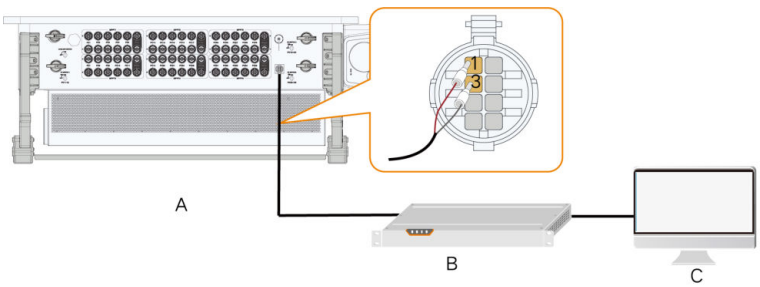
Table 5-5 Communication Terminal Definition

Port	PIN	Description	Description
RS485_1	1	RS485A IN, RS485 differential signal (+)	Used for cascading inverters or connecting to devices such as the Data Logger.
	2	RS485A IN, RS485 differential signal (+)	
	3	RS485B OUT, RS485B communication signal (-)	
	4	RS485B OUT, RS485B communication signal (-)	
PE	5	PE, shielding ground	—
	6	PE, shielding ground	

5.8.2 RS485 Communication System

RS485 Communication of One Inverter

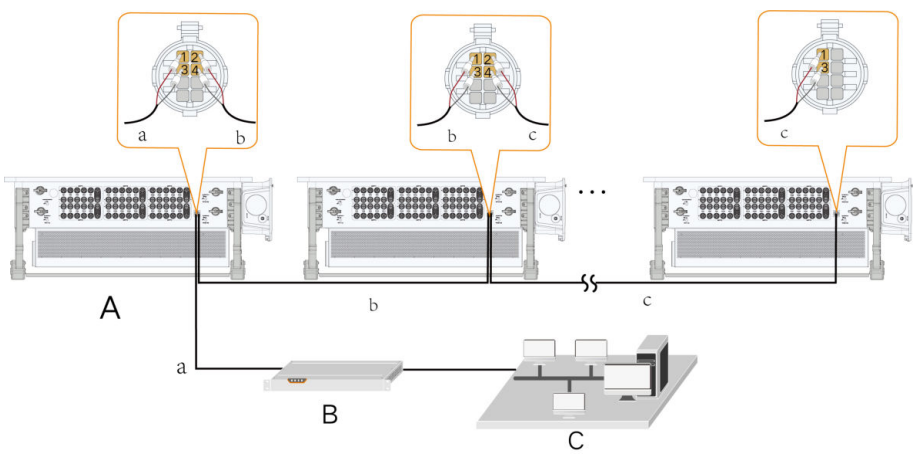
Where only one inverter engages in communication, one RS485 communication cable must be used for wiring.



(A) Inverter (B) Data logger (C) Host computer

Multi-inverter Communication System

Where multiple inverters engage in communication, always connect the inverters in a daisy chain using RS485 communication cables.

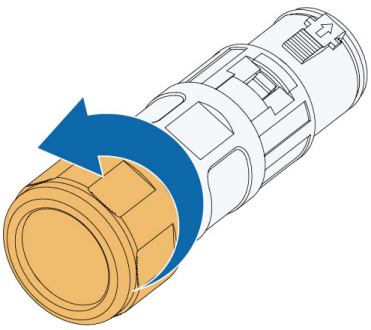


(A) Inverter (B) Data logger (C) Host computer

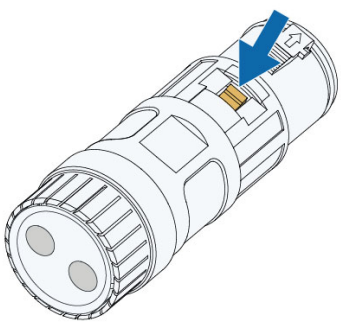
- The wire diameter range and requirements of the RS485 cable must be compatible with the EMU or third-party data logger.
- If multiple inverters are connected to the data logger, the number of permissible daisy chains and the number of devices allowed to be connected should meet the requirements (refer to the user manual for the data logger).
- To ensure system communication stability and data accuracy, ensure that inverters on the same winding are connected to the data logger using the same RS485 channel. Inverters with different windings must not be connected to the data logger via an RS485 daisy chain; otherwise, data collection will fail, and the resulting problems are not covered by the warranty.

5.8.3 Wiring Steps

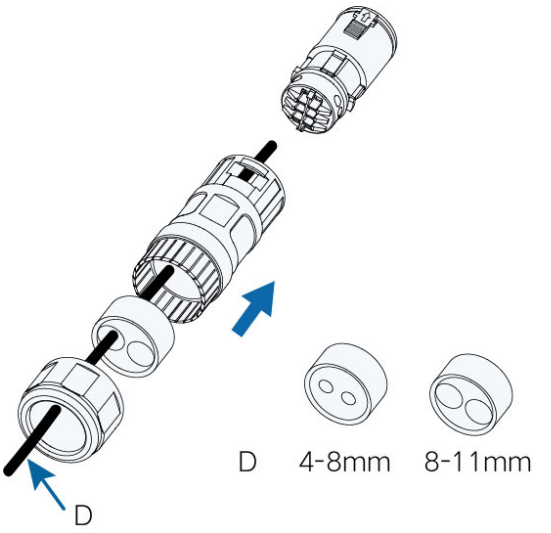
Step 1 Loosen the lock nut of the communication terminal and remove the sealing ring.



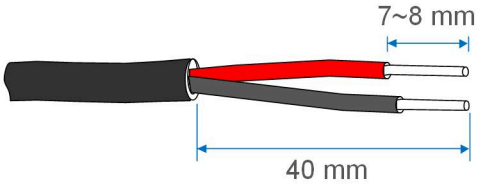
Step 2 Press the latches on both sides of the connector to remove the field wiring component.



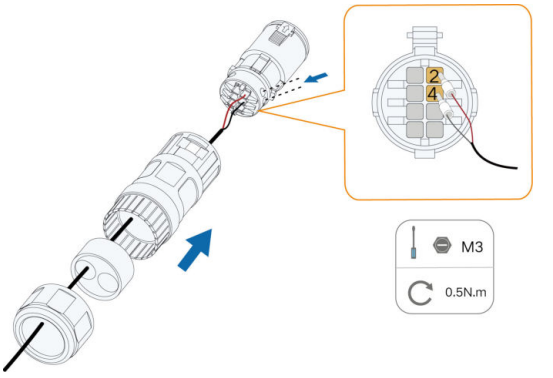
Step 3 Select a seal according to the outer diameter D. Lead the cable through the swivel nut, the sealing ring, and the field wiring component in sequence.



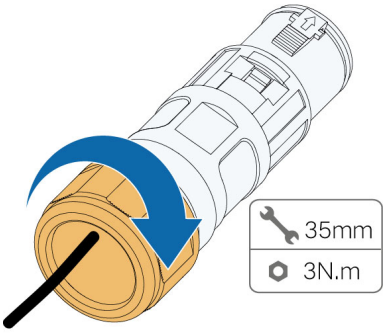
Step 4 Strip the protection layer and insulation layer by specific length.



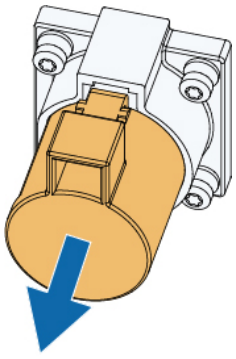
Step 5 Fix the wires to the corresponding positions in the terminal block plug.



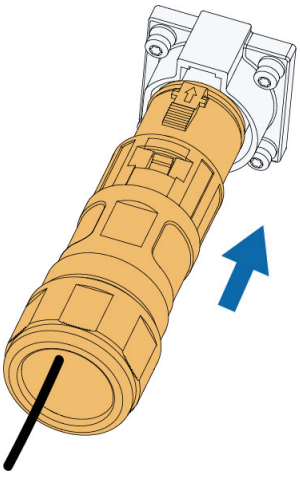
Step 6 Pull gently the cables backward and tighten the swivel nut clockwise.



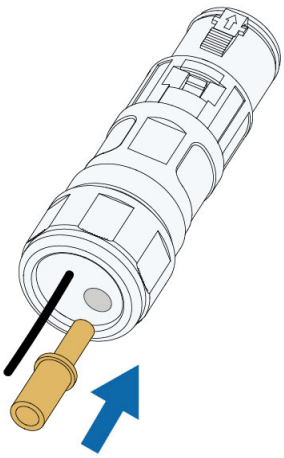
Step 7 Remove the waterproof cover of the communication terminal.



Step 8 Connect the connector to the communication terminal.



Step 9 Use waterproof plugs to seal the vacant connector seals.



--End

5.9 PLC Communication Connection

The inverter features a built-in PLC communication module and must be paired with a data logger provided by Sungrow Power Supply Co., Ltd. to enable data communication.

- The data logger is an optional accessory and must be ordered from Sungrow Power Supply Co., Ltd.
- The data logger conducts data communication by directly using the AC output cable of the inverter and thus avoids laying and maintaining the special communication cables.

5.9.1 Application Scenarios

The device should be connected to the double-winding or double-split transformer. The corresponding wiring diagrams are shown below, with PLC1 representing the MPLC node built into Logger5000. All wiring runs outside Logger5000 in the diagram, only for a clear illustration of the wiring principles.

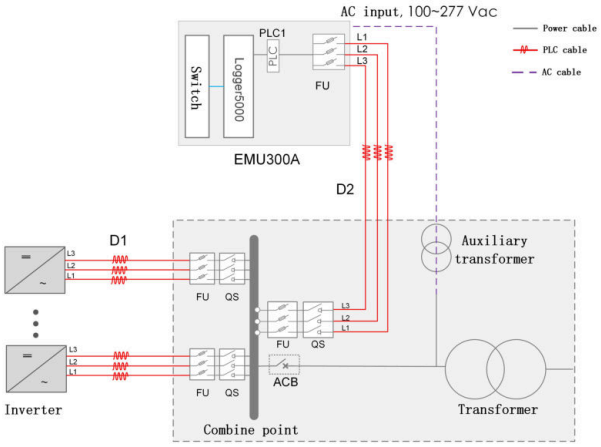


Figure 5-8 Wiring to Double-winding Transformer

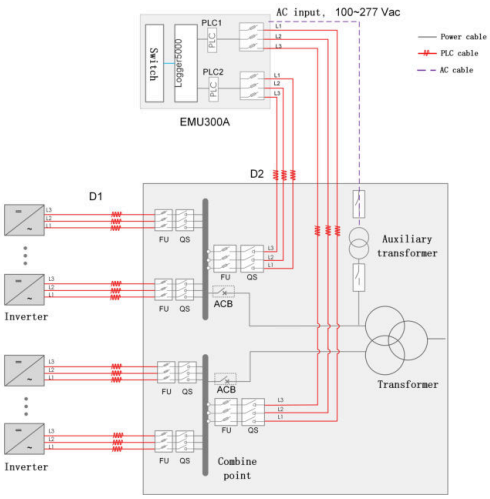


Figure 5-9 Wiring to Double-split Transformer

Descriptions of parameters in the diagrams are listed in the table below.

Parameter	Description	Specifications
D1	Cable from MV substation to inverter	• For multi-core AC cables, when D2 ≤ 10 m, the maximum length of multi-core cables is 1000 m. • For single-core AC cables, when D2 ≤ 10 m, the maximum length of single-core cables is 800 m. • For two-wire-per-phase cables, the cable length requirements are the same as those for single-core AC cables.

Parameter	Description	Specifications
D2	Cable from MV substation to communication box or external PLC module	• Use outdoor-type UV-resistant multi-core copper AC cables with a core diameter of 2.5 mm² to 10 mm². • Cable isolation voltage > 1500 V. • Cable length ≤ 10 m. **NOTICE** **The shorter the cable length, the greater the communication quality. If the cable length exceeds 10 m, there is a risk of communication interruption.**

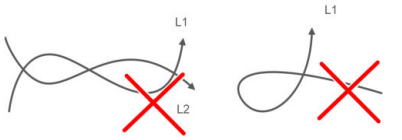
5.9.2 AC Wiring Principle

Rules for AC Wiring Between MV Station and Inverter

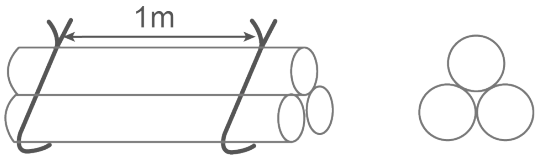
Multi-core AC cables, single-core AC cables, or two-wire-per-phase cables can be used to connect the MV substation and the inverter. Select the cable type based on actual project requirements.

To ensure communication quality, give priority to multi-core cables.

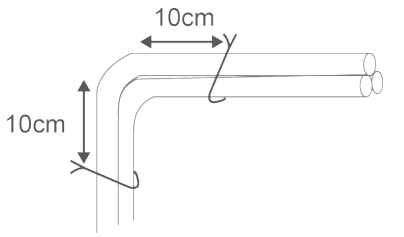
- The AC cable between the MV Station and the inverter should be laid in cable ducts, cable trenches, or pipelines.
- Lay the cables in parallel in the cable duct. Do not knot or wind the cables.



- If single-core cables are used, fasten the cables every 1 m and arrange the three-phase cables in a triangular formation.



In this scenario, the cables are difficult to bend. Fasten the cables 10 cm before and after each bend.



- If the single-core cable length exceeds 200 m, log in to the Logger5000 web interface, choose **System > MPLC**, and set the frequency band of the PLC master node to **Band2** or **Band3**.

Requirements for Two-Wire-in-One-Output Wiring

When cables with two wires per phase are used, ensure that the length difference between the two cable groups does not exceed 5 m to ensure MPLC communication quality. For two-wire-per-phase wiring using single-core cables, the requirements for the two cable groups and frequency band settings are the same as those described above.

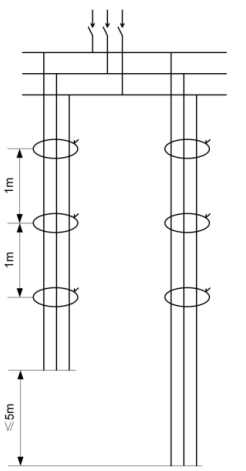
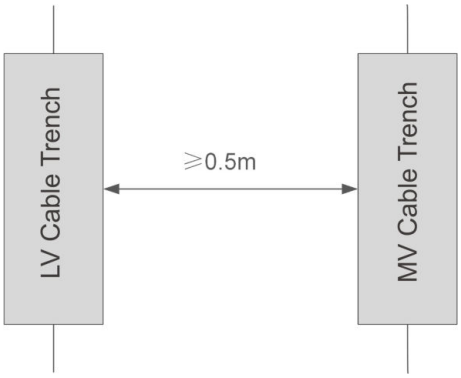


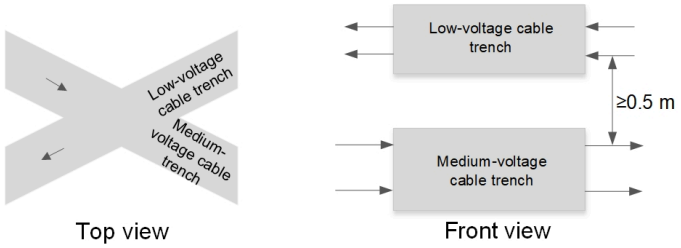
Figure 5-10 Two-Wire-in-One-Output Wiring

AC Cable Installation Requirements

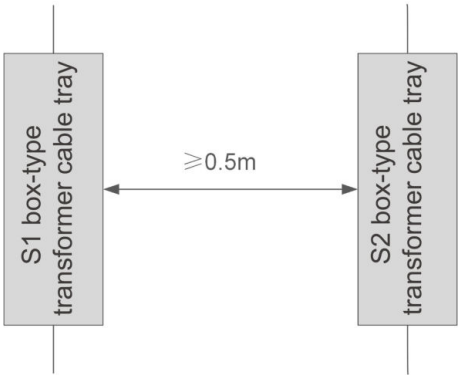
- The spacing between LV AC cables and MV AC cables must meet the following requirements:
  - If two cables are laid in parallel, the horizontal spacing must be at least 0.5 m.



- If two cables cross each other, the vertical spacing must be at least 0.5 m.



- Only AC cables from the same MV substation can be routed in the same cable duct.
- When different MV substations are used, the spacing between LV-side cable trays must meet the following requirements:
  - If two cables are laid in parallel, the horizontal spacing must be at least 0.5 m.



  - If two cables cross each other, the vertical spacing must be at least 0.5 m.

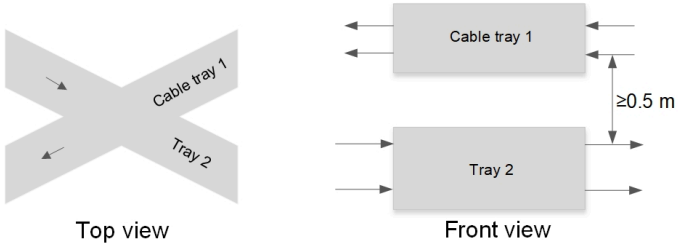


Figure 5-11 Vertical Spacing Between AC Cables (Crosswise)

Rules for wiring from the communication box to the MV Station

1. The AC cable between the communication box and the MV Station should be laid parallel to each other; getting knotted or entangled in the cable trench is strictly prohibited.
2. When connecting the AC cable to the busbar of the MV Station, take the circuit breaker corresponding to the middle point of the busbar as the coupling point. For instance, for an 8-branch busbar, choose the coupling point corresponding to the 4th or 5th branch of the busbar; for a 9-branch busbar, choose the one corresponding to the 5th branch. For details, see 5.9.1 Application Scenarios

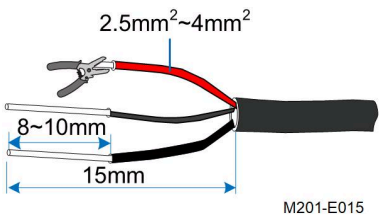
5.9.3 PLC Wiring

Pre-Wiring Preparation

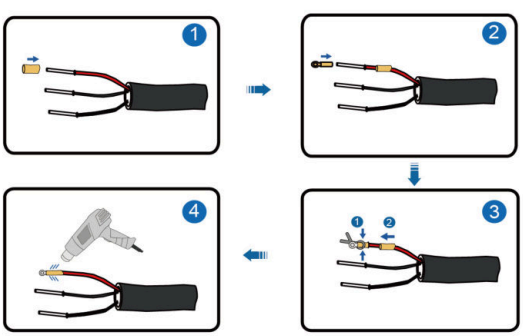
- Before AC wiring, ensure that the upstream AC switches and all fuses inside the device are disconnected.
- Please refer to 5.9.1 Application Scenarios for PLC application scenarios and cable specifications.
- Please refer to 5.9.2 AC Wiring Principle for wiring diagrams under different application scenarios.

Wiring Steps

1. Unscrew the "MPLC" waterproof connector at the bottom of the device, and route the external AC cable through the connector.
2. Use a wire stripper to strip the protective layer of the cable and expose the copper cores, as shown in the figure below:



3. Crimp the OT terminals onto the wires using OT2.5-6 terminals.



4. Connect the wires to the corresponding terminals, as shown in the figure below.

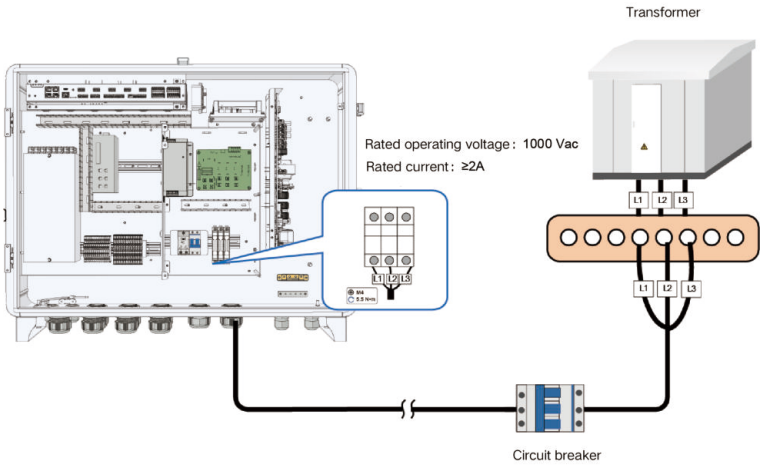


Figure 5-12 Three-Phase Three-Wire Connection

- The circuit breaker in the middle of the busbar should be used as the coupling point for connecting the PLC cable to the MV Station busbar.
- For parameters of the circuit breaker on the MV Station side, always refer to the parameters of the circuit breaker inside EMU300A in the above figure.
- Please pay attention to the phase sequence of wires and terminals in the wiring process. The phase sequence of client node wiring on the inverter side should be the same as the phase sequence of wiring the MV Station copper bar to the host node and that set on the data logger. It is AC (L1, L3) by default.

5. Check that the cables are correctly connected, and then tighten the screws. Tightening torque: 5.5 N·m.

5.10 USB Connection

5.10.1 Bluetooth Connection

1. Remove the waterproof cover from the USB port.

2. Insert the B-Link Bluetooth adapter into the USB port. Gently shake the adapter to make sure the installation is secure.

- The inverter supports connecting to a mobile phone via a B-Link Bluetooth adapter for power-on commissioning; the Bluetooth adapter is used as an example here.
- The B-Link Bluetooth adapter is ready for use once plugged in.
- The B-Link Bluetooth adapter is a commissioning and O&M tool; it is ready for use as soon as it is plugged in. After commissioning, remove and store the Bluetooth adapter, and tighten the USB waterproof cap. Never leave the Bluetooth adapter connected to the inverter for an extended period.
- The B-Link Bluetooth adapter supports BR/EDR and LE (2400-2483.5MHz).
- If there is no data exchange for an extended period after the Bluetooth adapter is plugged into the inverter, the connection may be lost. You need to unplug and plug in the Bluetooth adapter again to reconnect it.

5.10.2 Data Cable Connection

To connect a phone using a data cable (Android phones only), first connect a USB On-The-Go (OTG) adapter to the USB cable, or use a USB cable that supports OTG. Connect the cable to the phone first and then to the inverter.

6 Commissioning

6.1 Inspection Before Commissioning

Perform inspections as follows before starting the inverter for the first time, and make sure the requirements below are all met.

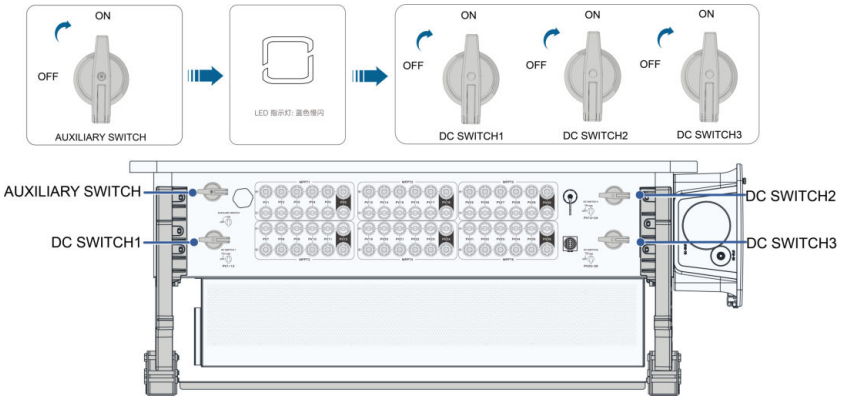
- All devices are properly installed.
- The DC switch and AC circuit breaker are all set to “OFF”.
- The grounding cable is properly and reliably connected.
- The AC cable is properly and reliably connected.
- The DC cable is properly and reliably connected.
- The communication cable is properly and reliably connected.
- The unused terminals have been sealed off properly.
- No tools or other items are left on the top of the device, or inside its wiring box (if any).
- The AC circuit breaker is selected in compliance with the relevant requirements specified in this manual and applicable local standards.
- All safety signs and warning labels are firmly attached and clearly visible.

6.2 Commissioning Steps

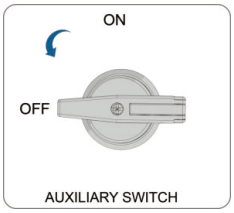
If the requirements for the above-mentioned items are all met, proceed with the steps below to start up the inverter for the first time.

1. Always make sure there is a string connected to PV1.
2. Turn the auxiliary switch on the bottom of the inverter to “ON”. Check the indicator on the inverter.
3. If the indicator is on, turn the other DC switches to “ON”.
   - If the DC switch automatically trips, refer to 8.2.6 DC Switch Maintenance for the next steps.
   - If the inverter indicator is not on after 30 seconds, do not close the DC switches (the DC switches are the rotary switches SWITCH1, SWITCH2, and SWITCH3), and meanwhile turn off the auxiliary switch. Check whether the positive and negative input cables are connected in reverse, or whether the PV1 input voltage meets the requirement of the start-up voltage. After inspections, go through the commissioning procedure again. If the indicator is still not on, turn off the auxiliary switch and

contact SUNGROW for technical support.



4. Turn the auxiliary switch on the inverter to “OFF”.



NOTICE

- **Always follow the above steps strictly in order. Otherwise, the product may get damaged, and the loss caused therefrom will not be covered by warranty.**
- **If the DC side is powered on while the AC side is not, the inverter indicator will turn red, and the inverter will report a "Grid Power Outage" fault (the fault information can be viewed on the iSolarCloud App. See “Records” for details). The fault will be cleared automatically once the AC circuit breaker between the inverter and the grid is switched on.**
- **Before switching on the AC circuit breaker between the inverter and the grid, always measure the AC voltage using a multimeter set to “AC voltage”, and make sure the voltage reading is within 1.3 times the rated value. Otherwise, the inverter will be damaged.**

The auxiliary switch needs to be turned on only when the system is powered on for the first time. It should remain in the open state during operation.

5. Switch on the AC circuit breaker between the inverter and the grid.
6. Remove the waterproof cover from the USB port, and plug the B-Link Bluetooth adapter into the USB port of the inverter.
7. Install the iSolarCloud App.

8. Set initial protection parameters via the iSolarCloud App when the inverter is connected to the grid for the first time. If the irradiation and grid conditions meet requirements, the inverter normally operates.
9. You will go to the Home screen after initialization is completed. If its indicator is steady blue, the inverter is running on grid.

⚠ WARNING

Do not switch on the DC switch when the inverter is in the grid-connected state. Otherwise, the inverter will be damaged due to the absence of an insulation resistance test, and the loss caused therefrom will not be covered by warranty.

10. After completing the grid connection, unplug the B-Link Bluetooth adapter and store it properly.
11. After use, screw the USB waterproof cover back on to protect the port.

7 iSolarCloud App

7.1 About iSolarCloud

With the iSolarCloud App, communication with the inverter can be established via Bluetooth, thus allowing for local maintenance of inverters. Users can use the App to view inverter information, query alarms and events, set parameters, and download logs.

> The screenshots in this manual are from Android App V2.1.6. The actual screens may vary.

7.2 Download and Install the App

Method 1

Download and install the App from one of the following app stores:

- MyApp (Android users in the Chinese mainland)
- Google Play (Android users outside the Chinese mainland)
- App Store (iOS)

Method 2

Scan the following QR code, and follow the on-screen instructions to download and install the App.

The App icon appears on the home screen after installation.



7.3 Default Password

User Type	Username	Default Password	Permissions
General user	user	user+SN	System monitoring only. Such as viewing the overview, device monitoring, viewing some history data, and changing the password.
O&M user	admin	admin+SN	This role inherits all permissions assigned to a general user and can also perform higher-level routine device operations, including configuring parameters, downloading logs, upgrading firmware, and generating configuration reports.
Administrator	administrator	administrator+SN	Manage all users (including create, view, delete, and reset password operations), session

User Type	Username	Default Password	Permissions
			management, and enable O&M mode.
Developer	develop	A dynamic password generated from the SN with customer authorization	In addition to O&M user permissions, this role can configure and issue key R&D parameters and perform higher-level device operations, such as restarting the device, restoring factory settings, and commissioning the device.

- To ensure the security of your account, the system will require you to change the initial password. Keep the new password secure and update it regularly to prevent unauthorized access caused by password disclosure.
- The password should be 8 to 32 characters long and must include at least three of the following four types of characters. Character type: Uppercase letters, lowercase letters, numbers, and special characters.

7.4 Inverter Commissioning

For device commissioning operations, please refer to the iSolarCloud User Manual, which is also accessible by scanning the QR code below.



8 Troubleshooting and Maintenance

8.1 Troubleshooting

When an inverter fault occurs, the fault information can be viewed in the mobile App. If the inverter has an LCD, the information can also be viewed on the screen.

Fault codes and corresponding troubleshooting methods are all listed in the table below, which are intended for all PV inverter products. Some of these faults may not occur in the product you have purchased. In case of a fault in the inverter, you can check its detailed information by fault code on the iSolarCloud App.

Fault Code	Fault Name	Troubleshooting Methods
2, 3, 14, 15	Grid overvoltage	Generally, the inverter will reconnect to the grid once the grid returns to normal. If the fault occurs repeatedly: 1. Measure the actual grid voltage. Contact your local power company for solutions if the grid voltage is higher than the set value. 2. Check protection parameters via the App or LCD. Obtain consent from the local grid operator before modifying the overvoltage protection threshold. 3. If the fault is not caused by the foregoing reasons and persists, please contact Sungrow Customer Service.
4, 5	Grid undervoltage	Generally, the inverter will reconnect to the grid once the grid returns to normal. If the fault occurs repeatedly: 1. Measure the actual grid voltage. Contact your local power company for solutions if the grid voltage is lower than the set value. 2. Check whether the protection parameters are appropriately set via the App or the LCD. 3. Check whether the AC wiring connections are secure. 4. If the fault is not caused by the foregoing reasons and persists, please contact Sungrow Customer Service.
8	Grid overfrequency	Generally, the inverter will reconnect to the grid once the grid returns to normal. If the fault occurs repeatedly: 1. Measure the actual grid frequency, and contact the local power company for solutions if the grid frequency is beyond the set range.

Fault Code	Fault Name	Troubleshooting Methods
9	Grid underfrequency	2. Check whether the protection parameters are appropriately set via the App or the LCD. 3. If the fault is not caused by the foregoing reasons and persists, please contact Sungrow Customer Service.
10	Grid outage	Generally, the inverter will reconnect to the grid once the grid returns to normal. If the fault occurs repeatedly: 1. Check whether the grid supplies power reliably. 2. Check whether the AC wiring connections are secure. 3. Check whether the AC cables are connected to the correct terminals (whether the live wire and the N wire are reversed). 4. Check whether the AC circuit breaker is closed. 5. If the fault is not caused by the foregoing reasons and persists, please contact Sungrow Customer Service.
12	Excess residual current	1. Humid conditions around the PV modules or insufficient irradiance may cause this fault. In general, the inverter will reconnect to the grid after the environmental conditions improve. 2. If the environment is normal, check whether the AC and DC cables are well insulated. 3. If the fault is not caused by the foregoing reasons and persists, please contact Sungrow Customer Service.
13	Grid anomaly	Generally, the inverter will reconnect to the grid once the grid returns to normal. If the fault occurs repeatedly: 1. Measure the actual grid frequency and voltage. If the grid parameters are outside the set ranges, contact the local power company for assistance. 2. If none of the above reasons apply and the fault persists, please contact Sungrow Customer Service Center.
17	Grid voltage unbalance	Generally, the inverter will reconnect to the grid once the grid returns to normal. If the fault occurs repeatedly: 1. Measure the actual grid voltage. If grid phase voltages differ greatly, contact the local power company for solutions. 2. If the voltage difference between phases is within the permissible range of the local power company, modify the grid voltage unbalance parameter through the App or the LCD.

Fault Code	Fault Name	Troubleshooting Methods
		3. If none of the above reasons apply and the fault persists, please contact Sungrow Customer Service Center.
448–479, 2500–2503	PV reverse polarity fault	1. Check whether the corresponding string is of reverse polarity. If so, turn off the DC switch and adjust the polarity when the string current drops below 0.5 A. 2. If the fault is not caused by the foregoing reasons and persists, please contact Sungrow Customer Service. The codes 448 to 479 correspond to the reverse polarity fault of strings 1 to 32, respectively. The codes 2500 to 2503 correspond to the reverse polarity fault of strings 33 to 36, respectively.
532–547, 564–579, 2532–2535	PV reverse polarity alarm	1. Check whether the corresponding string is of reverse polarity. If so, turn off the DC switch and adjust the polarity when the string current drops below 0.5 A. 2. If none of the above reasons apply and the alarm persists, please contact Sungrow Customer Service. The codes 532 to 547 correspond to strings 1 to 16, respectively. The codes 564 to 579 correspond to strings 17 to 32, respectively. The codes 2532 to 2535 correspond to strings 33 to 36, respectively.
548–563, 580–595, 2564–2567	PV anomaly alarm	Check whether the voltage and current of the inverter is abnormal to determine the cause of the alarm. 1. Check whether the corresponding module is sheltered. If so, remove the shelter and ensure module cleanness. 2. Check whether the battery board wiring is loose. If so, make it reliably connected. 3. If there is a DC fuse, check if it is damaged. If so, replace the fuse. 4. If the alarm is not caused by the foregoing reasons and persists, please contact Sungrow Customer Service. The codes 548 to 563 correspond to strings 1 to 16, respectively. The codes 580 to 595 correspond to strings 17 to 32, respectively.

Fault Code	Fault Name	Troubleshooting Methods
		The codes 2564 to 2567 correspond to strings 33 to 36, respectively.
37	Excessively high ambient temperature	Generally, the device will resume operation after the internal temperature or module temperature returns to normal. If the fault occurs repeatedly: 1. Check whether the ambient temperature of the device is over 60°C; 2. Check whether the device is in a well-ventilated place; 3. Check whether the device is exposed to direct sunlight. Shield it if it is under direct sunlight. 4. Check whether the fan is running properly. Replace the fan if it is not working normally. 5. If the fault is not caused by the foregoing reasons and persists, please contact Sungrow Customer Service.
43	Ambient temperature too low	Stop and disconnect the inverter. Restart the inverter when the ambient temperature rises within the operation temperature range.
39	Low system insulation resistance	Wait for the inverter to return to normal. If the fault occurs repeatedly: 1. Check whether the ISO resistance protection value is greater than the set value via the App or the LCD, and ensure that it complies with the local regulations. 2. Check the resistance to ground of the string and DC cable. Take corrective measures in case of a short circuit or damaged insulation layer. 3. If the cable is normal and the fault occurs on rainy days, check it again when the weather turns fine. 4. If batteries are installed in the system, check if the battery cables are damaged or if wiring terminals are loosened or in poor contact. If so, replace the damaged cable and tighten the terminals to ensure a reliable connection. 5. If the fault is not caused by the foregoing reasons and persists, please contact Sungrow Customer Service.
106	Grounding cable fault	1. Check whether the AC cable is wired in the correct phase sequence. 2. Check whether the insulation between the ground cable and the live wire is normal.

Fault Code	Fault Name	Troubleshooting Methods
		3. If the fault is not caused by the foregoing reasons and persists, please contact Sungrow Customer Service.
11, 19–21, 24–25, 36, 38, 40–42, 47–50, 69, 116, 321	System fault	1. Wait for the system to return to normal. 2. Disconnect the AC and DC switches for 15 minutes, reconnect them, and restart the inverter. If the fault persists, please contact Sungrow Customer Service.
59, 70–72, 78–81, 220–232, 635–638	System alarm	1. The inverter can continue running. 2. Check the wiring and terminals associated with the alarm for anomalies, check for foreign objects or other abnormal conditions in the surrounding environment, and rectify any issues found. 3. If the alarm occurs repeatedly, please contact Sungrow Customer Service.
332–363	Boost capacitor over-voltage alarm	1. The inverter can continue running. 2. Check the wiring and terminals associated with the alarm for anomalies, check for foreign objects or other abnormal conditions in the surrounding environment, and rectify any issues found. 3. If the alarm occurs repeatedly, please contact Sungrow Customer Service.
364–395	Boost capacitor over-voltage fault	Open the AC and DC switches. If a battery is installed, open the battery side switch. Wait 15 minutes, then close the AC and DC switches in sequence and restart the system. If the fault persists, please contact Sungrow Customer Service.
1548–1579	String current backfeed	1. Check whether the number of PV modules of the corresponding string is less than other strings. If so, disconnect the DC switch and adjust the PV module configuration when the string current drops below 0.5 A. 2. Check whether the PV module is shaded. 3. Disconnect the DC switch to check whether the open circuit voltage is normal when the string current drops below 0.5 A. If so, check the wiring and configuration of the PV module. 4. Check whether the orientation of the PV module is abnormal.

Fault Code	Fault Name	Troubleshooting Methods
670	MPPT 1 DC Terminal Overtemperature Fault	1. Disconnect the DC-side switch of the device and power off the AC side, and wait for the device to completely discharge; 2. Check whether there are any cables that do not meet the specifications; 3. Check for MPPT DC terminals that do not meet the required model specifications; 4. Check for MPPT terminals that are not securely plugged in, have loose wire connections, or have loose contacts; 5. If the fault is not caused by the foregoing reasons and persists, please contact Sungrow Customer Service.
671	MPPT 2 DC Terminal Overtemperature Fault	
672	MPPT 3 DC Terminal Overtemperature Fault	
673	MPPT 4 DC Terminal Overtemperature Fault	
674	MPPT 5 DC Terminal Overtemperature Fault	
675	MPPT 6 DC Terminal Overtemperature Fault	
677	AC terminal over-temperature fault	1. Disconnect the DC-side switch of the device and power off the AC side, and wait for the device to completely discharge; 2. Check whether there are any cables that do not meet the specifications; 3. Check for AC terminals that do not meet the required model specifications;

Fault Code	Fault Name	Troubleshooting Methods
		4. Check for AC terminals that have loose wire connections, or have loose contacts; 5. Power on the inverter and enable the AC terminal fault manual clear switch; 6. If the fault is not caused by the foregoing reasons and persists, please contact Sungrow Customer Service.

If the recommended actions in the “Troubleshooting methods” column do not resolve the problem, contact the dealer directly. If the dealer cannot resolve the problem, contact SUNGROW.

8.2 Maintenance

8.2.1 Maintenance Precautions

⚠ DANGER

When servicing the product, do not open it if there is an unusual odor, smoke, or any obvious anomaly in its appearance. If none of these conditions are present, troubleshoot or restart the inverter according to the recommended actions for the alarm. Avoid standing directly in front of the inverter during maintenance.
Risk of personal injury or equipment damage due to improper maintenance!

- **Always use specialized insulated tools when performing high-voltage operations.**
- **Before maintenance, open the grid-side AC circuit breaker and then turn off the DC switch. If a fault that may cause personal injury or equipment damage is detected before maintenance, always open the AC circuit breaker and wait until nighttime before operating the DC switch. Otherwise, the inverter may catch fire or explode, causing personal injury!**
- **After the inverter is powered off for 35 minutes, measure the voltage and current with a professional instrument. Only when there is no voltage or current can operators who wear protective equipment operate and maintain the inverter.**
- **Even if the equipment has stopped operating, it may still be hot and cause burns. Perform operations on the equipment wearing protective gloves after it cools down.**

⚠ CAUTION

Prevent unauthorized personnel from approaching the product to avoid misoperation or accidents. Place prominent warning signs around the product or set up a safety warning barrier to prevent accidents caused by misoperation.

NOTICE

Restart the inverter only after removing the fault that impairs safety performance. The inverter contains no components that require maintenance. It is strictly prohibited to open the inverter enclosure or replace internal components.
To minimize the risk of electric shocks, never perform maintenance operations that are not specified in this manual. If needed, contact SUNGROW for maintenance and repair services. Otherwise, damages caused therefrom will not be covered by the warranty.

NOTICE

Touching the PCB or other electrostatic-sensitive components may cause damage to the device.

- **Do not touch the circuit board unless it is necessary.**
- **Observe the provisions for protection against electrostatic discharge and wear anti-static wrist straps.**

8.2.2 Shut Down the Inverter

Prerequisite

⚠ CAUTION

Burn hazard!
A burn hazard remains even after the inverter is shut down. Wait for the inverter to cool down. Then, perform operations on the inverter wearing safety gloves.

Normally, the inverter does not need to be shut down. However, for maintenance or repair, shutdown is required. Strictly follow the steps below to disconnect the inverter from both AC and DC power. Failure to do so will result in personal injury or device damage.

Step 1 Open the external AC circuit breaker and ensure that it cannot be closed accidentally.

Step 2 Open the external DC circuit breaker, then rotate the inverter's DC switch to the "OFF" position.

Step 3 Wait for at least 35 minutes for the internal capacitors to be completely discharged.

Step 4 Test the DC cables using a current clamp and ensure they are current-free.

--End

8.2.3 Routine Maintenance

The maintenance item and period of the device are listed in the table below.

Item	Inspection Method	Maintenance Period
Device cleaning	Check whether the air inlet/outlet and heat sink are blocked by dust and other objects.	Once every 6 months to once a year.

Item	Inspection Method	Maintenance Period
	Clean the air inlet/outlet and the heat sink if necessary.	
Fans	Check the fans for abnormal noise during operation. Inspect whether there are cracks on the fan blades. Replace the fan as necessary.	Once a year
Cable inlet design	Check whether the cable inlet hole of the device is fully sealed. If not, fill the crack with fireproof and waterproopf materials.	Once a year
Electrical connections	Check whether any cable connections are loose or disconnected. Check the cables for damage, especially cuts where they contact the metal enclosure.	Once every 6 months to once a year.
Surrounding vegetation clearance	Conduct proactive inspections and weed the area before the vegetation withers. Remove cut vegetation promptly. Do not allow it to accumulate around the inverter.	Follow the local vegetation growth patterns.

8.2.4 Cleaning Air Outlet

A significant amount of heat is generated in the process of running the inverter. The inverter adopts a controlled forced-air cooling method.

In order to maintain good ventilation, please check to make sure the air inlet and outlet are not blocked.

Clean the air inlets and outlets using a soft brush when needed.

8.2.5 Fan Maintenance

⚠ DANGER

- **Before maintaining its fans, power off the inverter and disconnect it from all power sources.**
- **Wait 35 minutes after the inverter is powered off, then test the voltage and current using specialized measurement instruments. Maintenance and operation must only be performed by qualified personnel who wear protective equipment after confirming that no voltage or current is present.**
- **Fan maintenance must only be performed by qualified technical personnel.**

The inverter is equipped with built-in fans for heat dissipation during operation. If the fans do not operate normally, the inverter may not be cooled down, and inverter efficiency may decrease. Therefore, it is necessary to clean dirty fans and replace the broken fans in a timely manner.

Clean and replace the fans as follows:

Step 1 Stop the inverter, referring to 8.2.2 Shut Down the Inverter.

Step 2 Loosen the screws on the fan cover of the inverter.

Step 3 Disconnect the fan power connector.

Step 4 Loosen the screws on the side of the fans.

Step 5 Pull out the fan holder and clean the fans using a soft brush or a vacuum cleaner. Replace the fan if it is damaged.

> If space is limited, you can pull out one fan section first, and then remove the screws between the two fan sections.

--End

8.2.6 DC Switch Maintenance

Prerequisite

- The DC switch is able to interrupt the circuits automatically when the device detects reverse polarity or back-feeding in the strings or a fault inside the inverter.
- To avoid personal injury and equipment damage, before troubleshooting or replacing the inverter, use a current clamp to check the DC cables for voltage. Only after confirming there is no current in the strings should the terminals be disconnected and reconnected for adjustments.

In case the DC switch on the inverter trips, please proceed with the following steps:

Step 1 Check the fault information on the App or Web system of iSolarCloud.

Step 2 In case of reverse polarity or back-feeding in the strings connected to the inverter, manually turn the DC switch to the "OFF" position, and perform troubleshooting according to the fault alarm information. After the fault is cleared, turn the DC switch to the "ON" position.

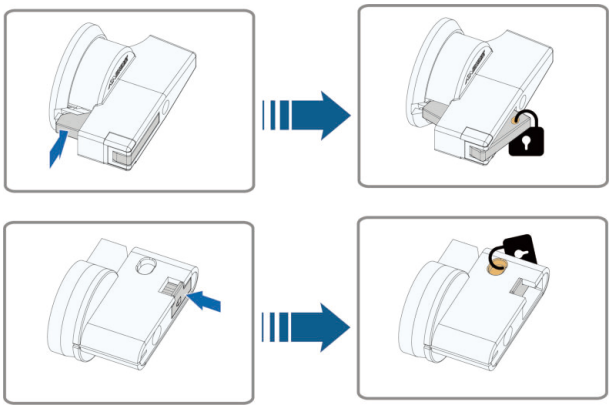
Step 3 If the inverter experiences an internal fault, the DC switch cannot be closed manually. In this case, it is strictly forbidden to close the auxiliary switch. Please contact SUNGROW immediately for technical support.

--End

⚠ WARNING

If the DC switch cannot be closed after tripping, it indicates an internal inverter fault or 5 external faults (reverse polarity, low insulation impedance between both PV+ and PV- to ground). Do not attempt to close the switch on your own; please contact SUNGROW.

During inverter maintenance, turn the DC switch knob to the "OFF" position and attach a lockout/tagout (LOTO) lock to prevent accidental reclosing by others and protect O&M personnel. The two LOTO methods are shown in the figures below.



The shackle diameter of the padlock (to be provided by the customer) should be less than 4 mm.

8.3 Inverter Disposal

8.3.1 Dismantling the Inverter

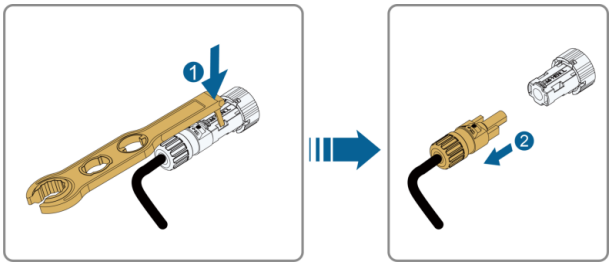
Prerequisite

⚠ CAUTION

Danger of burns and electric shocks!
After the inverter is powered off for 35 minutes, measure the voltage and current with a professional instrument. Only when there is no voltage or current can operators who wear protective equipment operate and maintain the inverter.

- Before dismantling the inverter, both the AC and DC sides must be de-energized.
- If there are more than two layers of inverter DC terminals, dismantle the outer DC connectors before dismantling the inner ones.
- If the original packing materials are available, put the inverter inside them and then seal them using adhesive tape. If the original packing materials are not available, put the inverter inside a sturdy cardboard box suitable for the weight and size of this inverter and seal it properly.

Step 1 Refer to 5 Electrical connections and disconnect all electrical connections of the inverter by following the steps in reverse order. To remove a DC connector, use the assembly wrench to release the locking mechanism, and then install the waterproof plug.



Step 2 Refer to 4 Mechanical Installation and dismantle the inverter by following the steps in reverse order.

Step 3 If necessary, remove the wall-mounting bracket from the wall.

Step 4 If the inverter is to be used at a later time, please refer to 3.3 Inverter Storage for proper storage of the inverter.

--End

8.3.2 Disposal of the Inverter

Users take the responsibility for the disposal of the inverter.

⚠ WARNING

Always dispose of the product in accordance with applicable local regulations and standards to avoid property damage or personal injuries.

NOTICE

Some parts of the inverter will cause environmental pollution. Always dispose of them in accordance with the disposal regulations for electronic waste applicable at the installation site.

9 Appendix

9.1 Technical Data

Parameter	SG510HX	SG465HX
Input (DC)		
Max. input voltage	1500 V	
Min. input voltage / startup voltage	500 V/550 V	
Rated input voltage	1200 V	
MPPT voltage range	500 V–1500 V	
Number of MPPT	6	
Max. number of PV strings per MPPT	6	
Max. input current	6 × 105 A	
Max. DC short-circuit current	6 × 155 A	
Output (AC)		
Rated output power	511.5 kVA @ 30°C/465 kVA @ 40°C/420 kVA @ 50°C/413 kVA @ 51°C	465 kVA @ 30°C/465 kVA @ 40°C/420 kVA @ 50°C
Max. output current	295.3 A	268.5 A
Rated grid voltage	3 / PE, 1000 V	

Parameter	SG510HX	SG465HX
Rated grid frequency	50 Hz / 60 Hz	
Grid frequency range	45 Hz – 55 Hz / 55 Hz – 65 Hz	
Adjustable power factor range	0.8 leading–0.8 lagging	
Total harmonic distortion (THD)*	< 1% (under rated conditions*)	
Efficiency		
Max. efficiency	99.11%	
European efficiency	98.8%	
Protection		
DC intelligent circuit breaker	Supported	
DC reverse polarity protection	Supported	
DC insulation resistance detection	Supported	
AC short-circuit protection	Supported	
AC overcurrent protection	Supported	
Leakage current protection	Supported	
Surge protection	DC Type 2 / AC Type 2	
AC/DC terminal over-temperature protection	Supported	
Communication		

Parameter	SG510HX	SG465HX
Display	LED indicators + APP	
MPLC	Supported	
RS485	Supported	
USB	Supported	
General Parameters		
Dimensions (W × H × D)	1190 mm * 792 mm * 406 mm	
Weight	≤ 130 kg	
Isolation method	Transformerless	
IP rating	IP66	
Operating temperature range**	-30°C to 60°C	
Allowable relative humidity range (non-condensing)	0%–100%	
Cooling method	Smart forced air cooling	
Max. operating altitude	5000 m (> 4000 m derating)	4000m
DC connection	Amphenol	
AC connection	OT/DT crimp terminals (three-core cable: max. 400 mm²/ single-core cable: max. 500 mm²)	OT/DT terminal (Max. 400 mm²)
Compliance	IEC 62109, IEC 61727, IEC 62116, IEC 60068, IEC 61683, VDE-AR-N 4110:2018, VDE-AR-N4120:2018, EN 50549-2, UNE 217002, NTS, UTE C15-712-1:2013, Rpps 3.1	IEC 62109, IEC 61727, IEC 62116, IEC 61683, EN 50549-2, IEC60947-2, etc.

Parameter	SG510HX (Korean version)
Input (DC)	
Max. input voltage	1500 V
Min. input voltage / startup voltage	500 V/550 V
Rated input voltage	1200 V
MPPT voltage range	500 V–1500 V
Number of MPPT	6
Max. number of PV strings per MPPT	6
Max. input current	6 × 105 A
Max. DC short-circuit current	6 × 155 A
Output (AC)	
Rated output power	485 kW
Max. output power	511.5 kW
Max. output apparent power	511.5 kVA
Rated output current	280 A
Max. output current	295.3 A
Rated grid voltage	3 / PE, 1000 V
Rated grid frequency	60 Hz
Grid frequency range	55 Hz – 65 Hz
Adjustable power factor range	0.8 leading–0.8 lagging
Total harmonic distortion (THD)*	< 1% (under rated conditions*)
Efficiency	
Max. efficiency	99.11%
European efficiency	98.8%
Protection	

Parameter	SG510HX (Korean version)
DC intelligent circuit breaker	Supported
DC reverse polarity protection	Supported
DC insulation resistance detection	Supported
AC overcurrent protection	Supported
Leakage current protection	Supported
Surge protection	DC Type 2 / AC Type 2
AC/DC terminal over-temperature protection	Supported
Communication	
Display	LED indicators + APP
MPLC	Supported
RS485	Supported
USB	Supported
General Parameters	
Dimensions (W × H × D)	1190 mm * 792 mm * 406 mm
Weight	≤ 130 kg
Isolation method	Transformerless
IP rating	IP66
Operating temperature range**	-30°C to 60°C
Allowable relative humidity range (non-condensing)	0%–100%
Cooling method	Smart forced air cooling
Max. operating altitude	5000 m (> 4000 m derating)
DC connection	Amphenol
AC connection	OT/DT crimp terminals (three-core cable: max. 400 mm²/single-core cable: max. 500 mm²)

Parameter	SG510HX (Korean version)
Compliance	IEC 62109, IEC 61727, IEC 62116, IEC 60068, IEC 61683, VDE-AR-N 4110:2018, VDE-AR-N4120:2018, EN 50549-2, UNE 217002, NTS, UTE C15-712-1:2013, Rpps 3.1, compliance KS C 8565, KSGA 025-15-1, Renewable Energy Technical Connection Code for Transmission Level

*SG510HX: DC voltage 1200 V, AC voltage 1000 V, AC power 465 kW.

*SG465HX: DC voltage 1200 V, AC voltage 1000 V, AC power 420 kW.

**The ambient temperature is determined as the average temperature obtained from at least four evenly distributed temperature monitoring points located at a distance of 1 meter from the equipment, at a height halfway up the equipment. The temperature sensors must be shielded from airflow, thermal radiation, and rapid temperature fluctuations to prevent display inaccuracies.

9.2 Quality Assurance

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

The software security update period for this product aligns with the warranty period. During the warranty, security patches or updates will be provided if any vulnerabilities or compatibility issues are identified.

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.

9.3 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**

Sungrow Power Supply Co., Ltd.

www.sungrowpower.com

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