SUNGROW
Clean power for all

User Manual

PV Grid-Connected Inverter

SG125CX-P3



SG125CX-P3-UEN-Ver13-202601

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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 low-power grid-connected PV string inverters:

- SG125CX-P3

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.

The inverter must only be installed by professional technicians. The professional technician is required to meet the following requirements:

- Know electronic, electrical wiring and mechanical expertise, and be familiar with electrical and mechanical schematics.
- Have received professional training related to the installation and commissioning of electrical equipment.
- Be able to quickly respond to hazards or emergencies that occur during installation and commissioning.
- Be familiar with local standards and relevant safety regulations of electrical systems.
- Read this manual thoroughly and understand the safety instructions related to operations.

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.

Security Declaration

For details on the product's network security vulnerability response process and vulnerability disclosure, please visit the following website: https://en.sungrowpower.com/security-vulnerability-management.

For more information on network security, please refer to the user manual of the communication module or the Data Logger that comes with the product.

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

When installing, commissioning, operating, and maintaining the product, strictly observe the labels on the product and the safety requirements in the manual. Incorrect operation or work may cause:

- Injury or death to the operator or a third party.
- Damage to the product and other properties.

⚠ WARNING

- **Do not perform any operation on the product (including but not limited to, handling, installing, powering on, or 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 device due to force majeure, such as earthquakes, floods, volcanic eruptions, mudslides, lightning strikes, fires, wars, armed conflicts, typhoons, hurricanes, tornadoes, and other extreme weathers.**
- **In case of fire, evacuate from the building or product area and call the fire alarm. Re-entry into the burning area is strictly prohibited under any circumstances.**

NOTICE

- **Tighten the screws with the specified torque using tools when fastening the product and terminals. Otherwise, the product may be damaged. And the damage caused is not covered by the warranty.**
- **Learn how to use tools correctly before using them to avoid hurting people or damaging the device.**
- **Maintain the device with sufficient knowledge of this manual and use proper tools.**

- The safety instructions in this manual are only supplements and cannot cover all the precautions that should be followed. Perform operations considering actual onsite conditions.
- SUNGROW shall not be held liable for any damage caused by violation of general safety operation requirements, general safety standards, or any safety instruction in this manual.
- When installing, operating, and maintaining the product, comply with local laws and regulations. The safety precautions in this manual are only supplements to local laws and regulations.
- During the product transport, installation, wiring, maintenance, etc., the materials and tools prepared by users must meet the requirements of applicable local laws and regulations, safety standards, and other 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, and 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 devices.**
- **The safety signs, warning labels and nameplates must be clearly visible and cannot be removed or covered before the device is decommissioned.**

NOTICE

After receiving the product, check whether the appearance and structural parts of the device are damaged, and check whether the packing list is consistent with the actual ordered product. If there are problems with the above inspection items, do not install the device and contact your distributor first. If the problem persists, contact SUNGROW in time.

1.2 Installation Safety

⚠ DANGER

- **Make sure there is no electrical connection before installation.**
- **Before drilling, avoid the water and electricity wiring in the wall.**

⚠ CAUTION

Improper installation may cause personal injury!

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

NOTICE

Before operating the product, must check and ensure that tools to be used have been maintained regularly.

1.3 Electrical Connection Safety

⚠ DANGER

- **Before electrical connections, please make sure that the inverter is not damaged, otherwise it may cause 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 may occur!**

⚠ DANGER

The PV string will generate lethal high voltage when exposed to sunlight.

- **Operators must wear proper personal protective equipment during electrical connections.**
- **Must ensure that cables are voltage-free with a measuring instrument before touching DC cables.**
- **Respect all safety instructions listed in relevant documents about PV strings.**
- **The inverter must not be connected to a PV string that requires positive or negative grounding.**

⚠ DANGER

Danger to life due to a high voltage inside the inverter!

- **Be sure to use special insulation tools during cable connections.**
- **Note and observe the warning labels on the product, and perform operations strictly following the safety instructions.**
- **Respect all safety instructions listed in this manual and other pertinent documents.**

⚠ WARNING

Damage to the product caused by incorrect wiring is not covered by the warranty.

- **Electrical connection must be performed by professionals.**
- **All cables used in the PV generation system must be firmly attached, properly insulated, and adequately dimensioned.**

⚠ WARNING

- **Check the positive and negative polarity of the PV strings, and connect the PV connectors to corresponding terminals only after ensuring polarity correctness.**
- **During the installation and operation of the inverter, please ensure that the positive or negative poles of PV strings do not short-circuit to the ground. Otherwise, an AC or DC short-circuit may occur, resulting in equipment damage. The damage caused by this is not covered by the warranty.**
- **Do not 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.**
- **Determine the specifications of AC circuit breakers strictly in compliance with the applicable local laws and regulations and safety standards or the recommendation by SUNGROW. Otherwise, the switch may not open in time in the event of something abnormal, which may then lead to safety incidents.**

NOTICE

Comply with the safety instructions related to PV strings and the regulations related to the local grid.

1.4 Operation 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 working:

- **Do not touch the product enclosure.**
- **It is strictly forbidden to plug and unplug any connector on the inverter.**
- **Do not touch any wiring terminal of the inverter. Otherwise, electric shock may occur.**
- **Do not disassemble any parts of the inverter. Otherwise, electric shock may occur.**
- **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, electric shock may occur.**
- **If the inverter is equipped with a DC switch, do not operate it. Otherwise, it may cause device damage or personal injury.**

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

1.5 Maintenance Safety

⚠ DANGER

Risk of inverter damage or personal injury due to incorrect service!

- **Before maintenance, disconnect the AC circuit breaker on the grid side and then the DC switch. If a fault that may cause personal injury or device damage is found before maintenance, disconnect the AC circuit breaker and wait until the night before operating the DC switch. Otherwise, a fire inside the product or an explosion may occur, causing personal injuries.**
- **After the inverter is powered off for 5 minutes, measure the voltage and current with professional instrument. Only when there is no voltage nor current can operators who wear protective equipment operate and maintain the inverter.**
- **Even if the inverter is shut down, it may still be hot and cause burns. Wear protective gloves before operating the inverter after it cools down.**

⚠ DANGER

Touching the power grid or the contact points and terminals on the inverter connected to the power grid may lead to electric shock!

- **The power grid side may generate voltage. Always use a standard voltmeter to ensure that there is no voltage before touching.**

⚠ CAUTION

To prevent misuse or accidents caused by unrelated personnel, post prominent warning signs or demarcate safety warning areas around the product.

NOTICE

To avoid the risk of electric shock, do not perform any other maintenance operations beyond those described in this manual. If necessary, contact your distributor first. If the problem persists, contact SUNGROW. Otherwise, the losses caused is not covered by the warranty.

NOTICE

- **If the paint on the inverter enclosure falls or rusts, repair it in time. Otherwise, the inverter performance may be affected.**
- **Do not use cleaning agents to clean the inverter. Otherwise, the inverter may be damaged, and the loss caused is not covered by the warranty.**
- **As the inverter contains no parts that can be maintained, never open the enclosure of the inverter or replace any internal components without authorization. Otherwise, the loss caused is not covered by the warranty.**
- **Do not open the maintenance door in rainy or snowy weather. If it is inevitable, 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, check whether there is any object left inside the maintenance compartment, such as screws, tools, etc.**
- **It is recommended for users to use cable sheathing to protect the AC cable. If the cable sheathing is used, make sure it is positioned inside the maintenance compartment.**

1.6 Disposal Safety

⚠ WARNING

Please scrap the product in accordance with relevant local regulations and standards to avoid property losses or casualties.

2 Product Description

2.1 System Introduction

The inverter is a transformerless 3-phase PV grid-connected inverter. As an integral component in the PV power system, the inverter is designed to convert the direct current power generated from the PV modules into grid-compatible AC current and to feed the AC current into the utility grid.

The intended usage of the inverter is illustrated in the following figure.

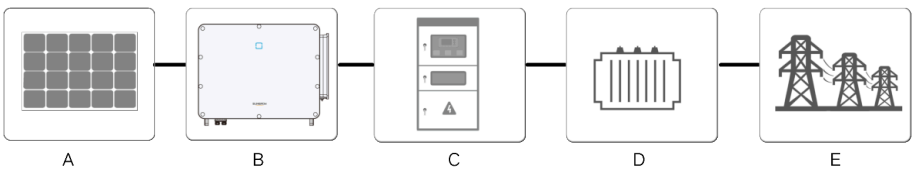


Figure 2-1 Inverter Application in PV Power System

⚠ WARNING

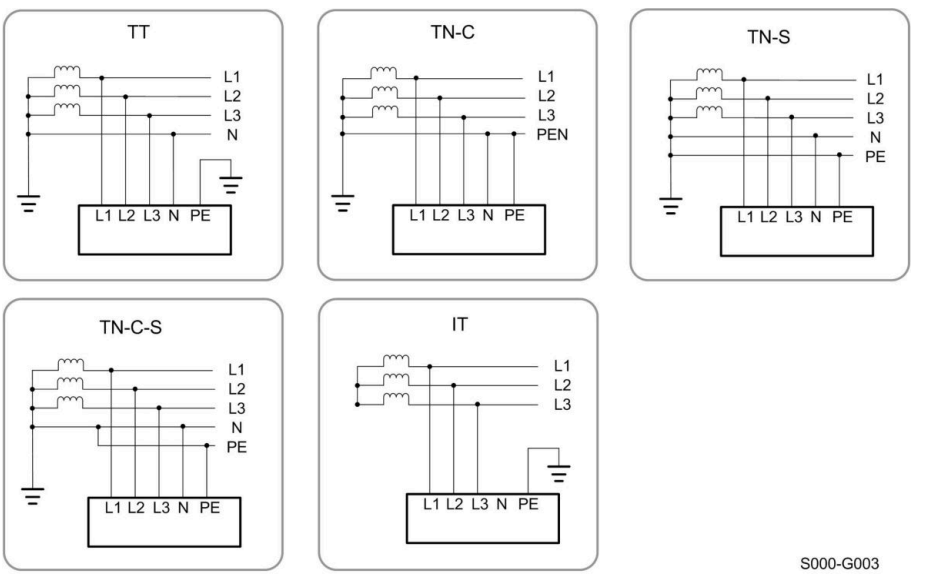
The inverter must not be connected to a PV string that requires positive or negative grounding.
Do not connect any local load between the inverter and the AC circuit breaker.

NOTICE

When designing the system, ensure that the operating ranges of all devices that are connected to the inverter meet the requirements of the inverter.
The PV modules in the system must comply with the IEC 61730-1 class II standard.
The inverter applies only to the scenarios described in this manual.

Item	Description	Note
A	PV strings	Monocrystalline silicon, polycrystalline silicon and thin-film without grounding.
B	Inverter	SG125CX-P3
C	Grid connection cabinet	Includes devices such as AC circuit breaker, SPD, metering device.

Item	Description	Note
D	Transformer	Boost the low voltage from the inverter to grid-compatible medium voltage.(Optional)
E	Utility grid	The grid forms supported by the inverter are shown in the figure below.



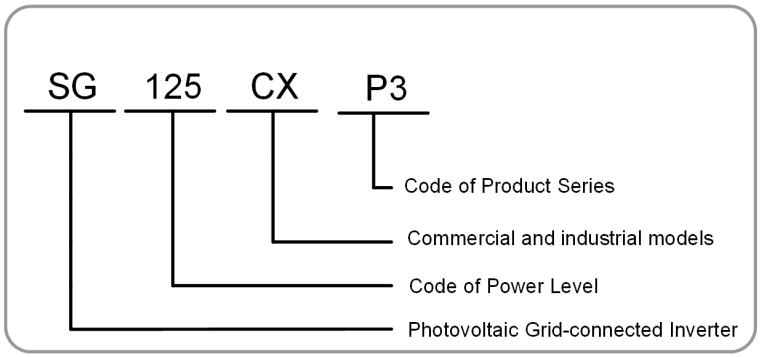
NOTICE

In a TT power grid, the N-PE voltage should be lower than 30 V.
If the inverter is connected to the IT grid (i.e., no N line connection), there may be a risk of single-phase over/under-voltage and single-phase high/low voltage ride through.

2.2 Product Introduction

Model Description

The model description is as follows:



Appearance

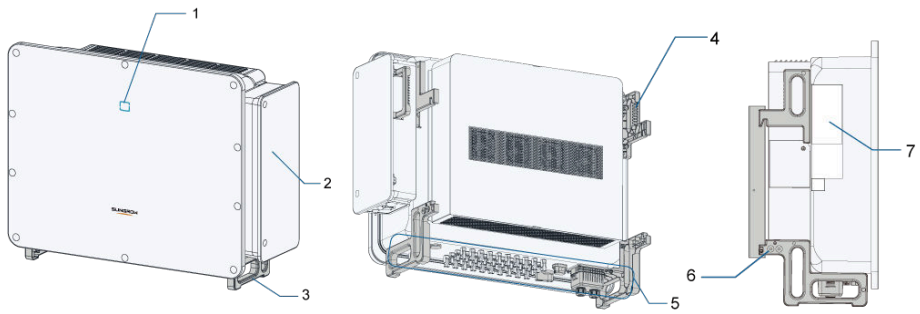


Figure 2-2 Inverter Appearance

* The image shown here is for reference only. The actual product received may differ.

No.	Name	Description
1	LED indicator panel	HMI interface to indicate the present working state of the inverter.
2	AC junction box	Used to connect AC cables and the power cable for tracking system.
3	Bottom handles	2, used to move the inverter.
4	Mounting lugs	4, used to hang the inverter onto the mounting-bracket.
5	Wiring area	DC switches, DC terminals, and communication terminals. For details, refer to 5.2 Terminal Description
6	External protective grounding terminals	1, used to ground the inverter.
7	Labels	Warning symbols, nameplate, and QR code.

Dimensions

The following figure shows the dimensions of the inverter.

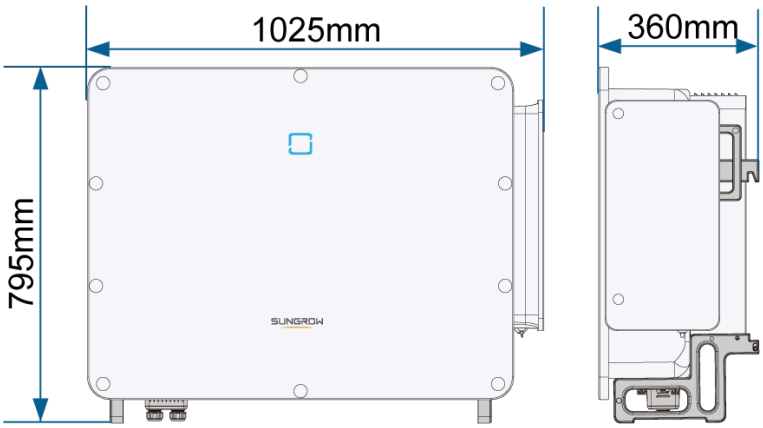


Figure 2-3 Product Dimensions(in mm)

Weight

Model	Weight
SG125CX-P3	≤90 kg

2.3 Symbols on Product

Symbol	Explanation
	Do not dispose of the inverter together with household waste.
	CE mark of conformity. EU/EEA Importer.
	Regulatory compliance mark.
	UKCA mark of conformity.
	The inverter does not have a transformer.

Symbol	Explanation
	CMim mark of conformity.
	TÜV mark of conformity.
	RoHS labeling The product complies with the requirements of the applicable EU directives.
	Disconnect the inverter from all the external power sources before maintenance!
	Burn danger due to the hot surface that may exceed 60℃.
	Danger to life due to high voltages! Only qualified personnel can open and service the inverter.
	*India standard mark for BIS
5min	Danger to life due to high voltages! Do not touch live parts for 5 minutes after disconnection from the power sources. Only qualified personnel can open and maintain the inverter.
	External protective grounding terminal.
	Read the user manual before maintenance!

The table shown here is for reference only. The actual product received may differ.

* The BIS standard mark applies only to products sold in India.

2.4 LED Indicator

The LED indicator on the front of the inverter indicates the working state of the inverter.

Table 2-1 LED Indicator State Description

LED Color	State	Definition
 Blue	On	The device is connected to the grid and operating normally.
	Fast blink (Period: 0.2s)	The Bluetooth connection is established, and there is data communication. No system fault occurs.
	Slow blink (Period: 2s)	The device is in standby or startup state (not feeding power into the grid).
	Slow blink once, fast blink three times	The inverter is performing PID recovery.
 Red	On	A fault occurs and the device cannot connect to the grid.
	Blink	The Bluetooth connection is established, data communication in process, and a system fault occurs.
 Gray	OFF	Both the AC and DC sides are powered down.

⚠ WARNING

Voltage may still be present in AC side circuits after the indicator is off. Pay attention to the electricity safety when operating.

2.5 Circuit Diagram

The following figure shows the main circuit of the inverter.

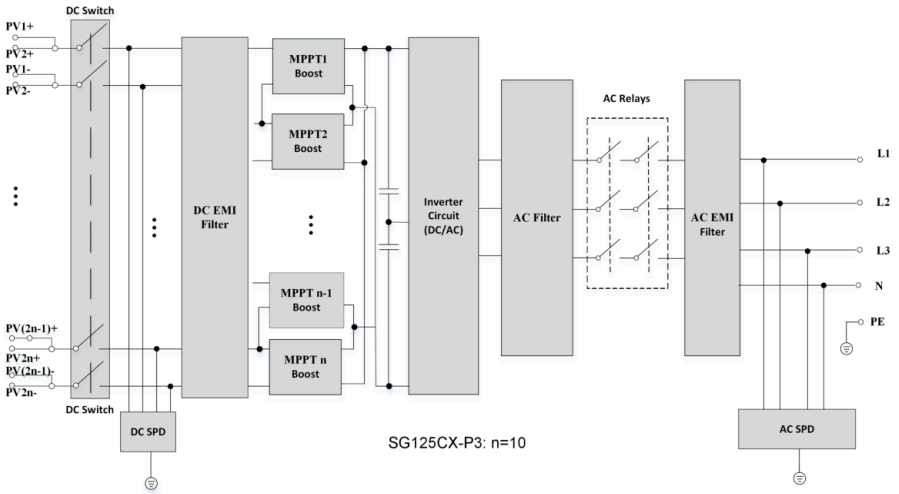


Figure 2-4 Circuit Diagram

- DC Switches can safely disconnect the PV input when necessary to ensure the safe operation of the inverter and the safety of personnel.
- The DC SPD provides a discharge circuit for the DC side overvoltage to prevent it from damaging the internal circuits of the inverter.
- EMI filters can filter out the electromagnetic interference inside the inverter to ensure that the inverter meets the requirements of electromagnetic compatibility standards.
- The MPPT is used to ensure a maximum power from PV arrays at different PV input conditions.
- The Inverter Circuit converts the DC power into grid-compliant AC power and feeds it into the grid.
- The AC filter filters the output AC component of high frequency to ensure that the output current meets the grid requirements.
- The AC relay isolates the AC output of the inverter from the grid, making the inverter safe from the grid in case of inverter failure or grid failure.
- The AC SPD provides a discharge circuit for the AC side overvoltage to prevent it from damaging the internal circuits of the inverter.

⚠ 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!

2.6 Function Description

The inverter is equipped with the following functions:

Conversion Function

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

Data Storage and Display

The inverter logs system information like running information, error records, etc.

Parameter Configuration

The inverter provides various parameter configurations. Users can set parameters via the App to meet different needs and optimize the inverter performance.

Communication Interface

The inverter is designed with standard RS485 communication interfaces and communication accessory port.

- The standard RS485 communication interfaces are used to establish communication with monitoring devices and to upload monitoring data to a monitoring background through communication cables.
- The communication accessory port is used to connect communication module manufactured by SUNGROW, and upload monitoring data by means of wireless communication.

The inverter can be connected to communication devices via either of the two interfaces. When communication is established between the inverter and the communication devices, users can view inverter information or set inverter parameters, such as running parameter and protection parameter, through the iSolarCloud.

> It is recommended to use the communication module from SUNGROW. Using a device from other companies may lead to communication failure or other unexpected damage.

Protection Function

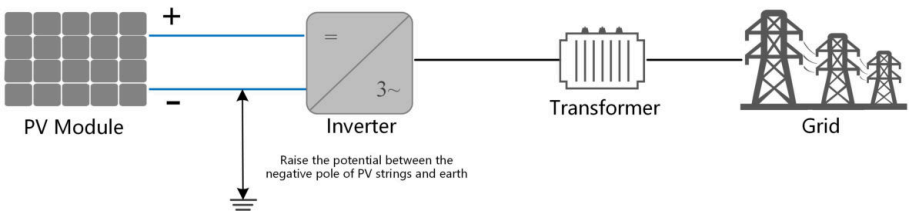
The inverter is equipped with anti-island protection, LVRT/HVRT, DC reversed polarity protection, AC short circuit protection, leakage current protection, DC over-voltage/over-current protection, etc.

PID Recovery

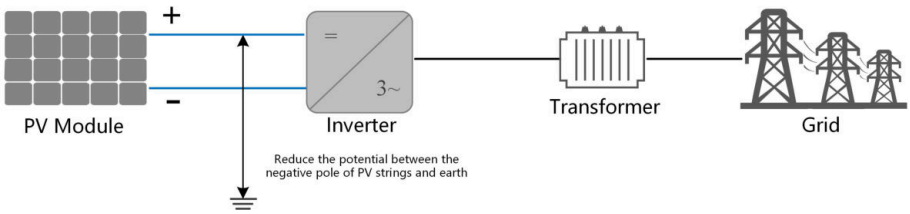
> The PID function may not be applicable in some areas. Please consult SUNGROW for details.

The PID effect (Potential Induced Degradation) of PV modules will cause serious damage to generated output and yield, which can be avoided or recovered by PID recovery function.

- For positive voltage scheme, after the PID is enabled, the voltage to ground of all PV strings is greater than 0, and therefore the PV string-to-ground voltage is a positive value.



- For negative voltage scheme, after the PID is enabled, the voltage to ground of all PV strings is lower than 0, and therefore the PV string-to-ground voltage is a negative value.



NOTICE

- **Before enabling the PID recovery function, make sure the voltage polarity of the PV modules to ground meets requirement. If there are any questions, contact the PV module manufacturer or read the corresponding user manual.**
- **If the voltage scheme for the PID protection / recovery function does not meet the requirement of corresponding PV modules, the PID will not work as expected or even damage the PV modules.**
- **If the PID recovery function is enabled, it only works at night.**
- **PID recovery function and reactive power generation at night cannot be enabled at the same time.**
- **After the PID recovery function is enabled, the voltage of the PV string to ground is 500Vdc by default.**
- **When the inverter is in the PID recovery state (the indicator blinks blue once at long intervals and blinks at short intervals for three times), disable the PID recovery in the iSolarCloud App before manually powering on and maintaining the inverter.**

AFCI Function

The AFCI function may not be applicable in some areas. Please consult SUNGROW for details.

- AFCI activation
  This function can be enabled to detect whether arc occurs in the DC circuit of the inverter.
- AFCI self-test

This function is intended to detect whether the AFCI function of the inverter is normal.

3 Unpacking and Storage

3.1 Unpacking and Inspection

The product is thoroughly tested and strictly inspected before delivery. Nonetheless, damage may still occur during shipping. For this reason, please conduct a thorough inspection after receiving the product.

- Check the packing case for any visible damage.
- Check the scope of delivery for completeness according to the packing list.
- Check the inner contents for damage after unpacking.

Contact SUNGROW or the transport company in case of any damage or incompleteness, and provide photos to facilitate services.

Do not dispose of the original packing case. It is recommended to store the device in the original packing case when 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 packing list is consistent with the actual ordered product. If there are problems with the above inspection items, do not install the device and contact your distributor first. If the problem persists, contact SUNGROW in time.
If any tool is used for unpacking, be careful not to damage the product.

3.2 Inverter Storage

Proper storage is required if the inverter is not installed immediately.

- Store the inverter in the original packing case with the desiccant inside.
- In case of stacking storage, the number of stacking layers should never exceed the limit marked on the outer side of the packing case.
- The packing case should be upright.
- If the inverter needs to be transported again, pack it strictly before loading and transporting it.
- Do not store the inverter in places susceptible to direct sunlight, rain, and strong electric field.
- Do not place the inverter in places with items that may affect or damage the inverter.
- Store the inverter in a clean and dry place to prevent dust and water vapor from eroding.

- Do not store the inverter in places with corrosive substances or susceptible to rodents and insects.
- Carry out periodic inspections. Inspection shall be conducted at least once every six months. If any insect or rodent bites are found, replace the packaging materials in time.
- If the inverter has been stored for one year or longer, or has been mounted but remains non-operational for more than three months, it must be inspected and tested by qualified personnel before being put into operation.

NOTICE

Please store the inverter according to the storage requirements. Product damage caused by failure to meet the storage requirements is not covered by the warranty.

4 Mechanical Mounting

⚠ WARNING

Respect all local standards and requirements during mechanical installation.

4.1 Safety During Mounting

⚠ DANGER

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

⚠ WARNING

For specific requirements for the installation environment, see 4.2.2 Installation Environment Requirements. In case the environment where the product is installed does not meet the requirements, SUNGROW shall not be held liable for any property damage arising therefrom.

⚠ CAUTION

Improper handling may cause personal injury!

- **When moving the product, be aware of its weight and keep the balance to prevent it from tilting or falling.**
- **Wear proper protective equipment before performing operations on the product.**
- **The bottom terminals and interfaces of the product cannot directly contact the ground or other supports. The product cannot be directly placed on the ground.**

NOTICE

During installation, ensure that no device in the system causes it hard for the DC switch and the AC circuit breaker to act or hinders maintenance personnel from operating.
If drilling is required during installation:

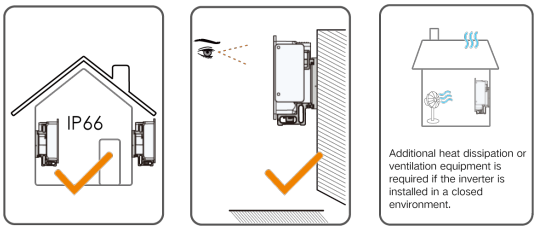
- **Wear goggles and protective gloves when drilling holes.**
- **Make sure to avoid the water and electricity wiring in the wall before drilling.**
- **Protect the product from shavings and dust.**

4.2 Installation Location Selection

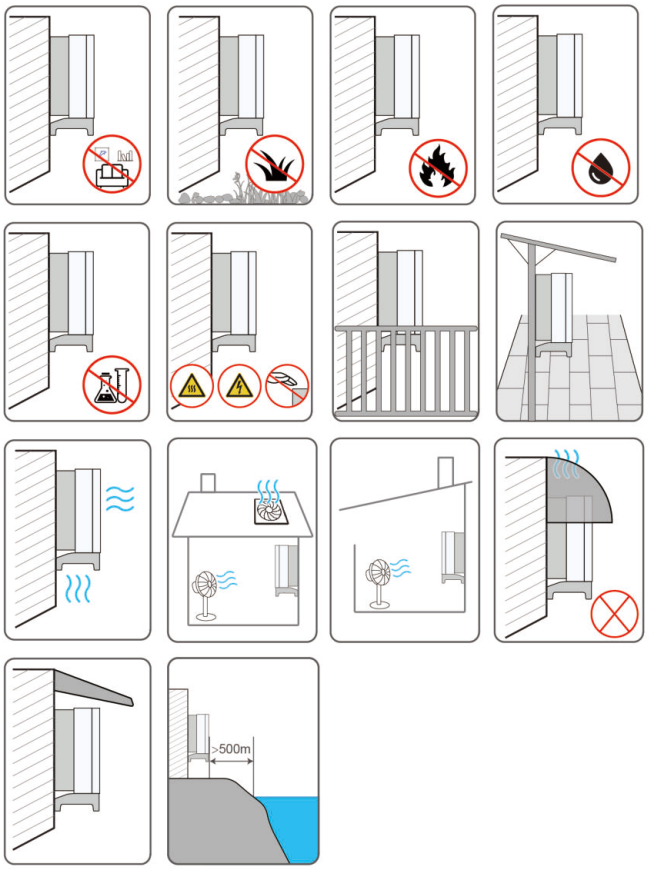
4.2.1 Location Requirements

To a large extent, a proper installation location ensures safe operation, service life, and performance of the inverter.

- The inverter with protection rating IP66 can be installed both indoors and outdoors.
- The inverter should be installed at a height that allows easy viewing of the LED indicator panel, as well as easy electrical connection, operation and maintenance.

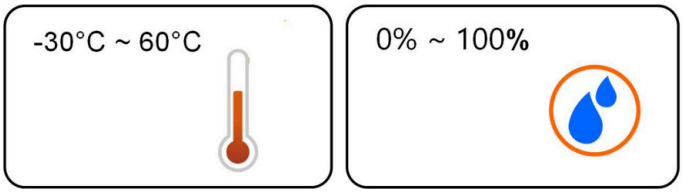


4.2.2 Installation Environment Requirements



- The inverter produces noise during operation, thus it is not recommended to install it in places for residential purposes. If this cannot be avoided, it is recommended to 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, 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).
- Do not install the inverter in an environment with flammables, explosives, or smoke.
- Do not install the inverter in places prone to water leak, 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 intrusion of water.
- Do not install the inverter in a place with corrosives such as corrosive gas and organic solvent, etc.
- 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 can be easily reached.
- The installation site must have solid ground, free of rubber-like soils (which cannot be effectively compacted) or weak soils, and should not be prone to subsidence. Also, avoid low-lying areas where water or snow may accumulate. Ensure the site is located above the highest recorded water level in the area.
- Do not install the inverter in a position that could be flooded.
- To prevent vegetation or water on the ground from impacting inverter operation, if the space above meets the designated requirements, elevate the inverter to an appropriate height.
- Install the inverter in a place with shelter, so as to prevent it from getting impacted by direct sunlight and severe weather (e.g., snow, rain, and lightning). The inverter will derate in high temperatures for self-protection. If installed in a place directly exposed to sunlight, as the temperature rises, the inverter may experience power reduction.
- Good heat dissipation is very important to the inverter. Please install the inverter in a ventilated environment.
- If the inverter needs to be installed in a closed or semi-closed environment, please install additional heat dissipation or ventilation devices. Furthermore, while the inverter is operating, ensure the indoor ambient temperature does not exceed the outdoor ambient temperature. A semi-closed environment refers to a special space where natural ventilation is limited and gas or heat may easily accumulate, although it is not fully enclosed on all six sides.
- Please consult SUNGROW before installing inverters outdoors in areas prone to salt damage, which are mainly coastal areas within 500 meters of the coast. The sedimentation amount of salt spray is correlated to the characteristics of the seawater, sea winds, precipitation, air humidity, topography, and forest coverage in the adjacent sea areas, and there are substantial differences between different coastal areas.
- To ensure device safety and service life, avoid using this product in highly polluted environments containing substances such as sulfur or halogens.

- The inverter is strictly prohibited from being installed in environments with vibration or strong electromagnetic fields (including strong common-mode interference). A strong magnetic field environment refers to one where the magnetic field strength exceeds 30 A/m. The aforementioned environments may cause the product to malfunction.
- In dusty environments such as places full of dust, smoke, or floc, particles may cling to the device's air outlet or heat sink, thus impacting its heat dissipation performance or even getting it damaged. 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 a good heat dissipation performance.
- The average temperature approximately 1 m around the inverter should be taken as its ambient operating temperature. The temperature and humidity should meet the requirements below:



- For installed inverters that remain non-operational for an extended period, follow these requirements:
  - Seal all unused DC terminals with the plugs supplied with the inverter.
  - If the inverter is installed in a dusty or sandy environment, add protective covers at the air inlet and outlet to prevent dust accumulation that could obstruct airflow and affect fan operation. Remove the protective covers before putting the inverter into service.

4.2.3 Carrier Requirements

The mounting structure where the inverter is installed must comply with local/national standards and guidelines. Ensure that the installation surface is solid enough to bear four times the weight of the inverter and is suitable for the dimensions of the inverter (e.g. cement walls, plasterboard walls, etc.).

Do not install the inverter on a carrier that may vibrate in resonance, so as to avoid making bigger noise.

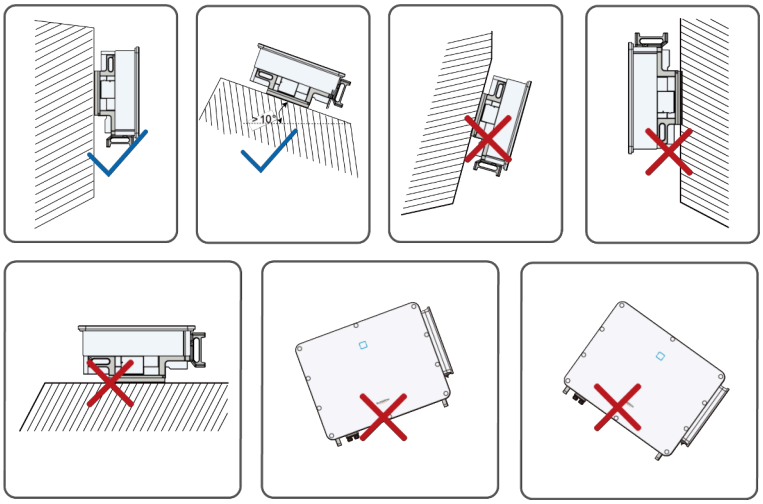
Installation on combustible building materials is strictly prohibited. Suitable mounting surfaces include:

Non-combustible wall surfaces: Concrete, fire-resistant gypsum board, brick wall, etc. Non-combustible roof structures: Color-Coated corrugated steel roofing sheets, precast concrete slabs, fiber-reinforced cement boards, etc.

4.2.4 Angle Requirements

Install the inverter vertically or at the maximum allowable rear tilt angle. Do not install the inverter horizontally, forward, excessively backward, sideways, or upside down.

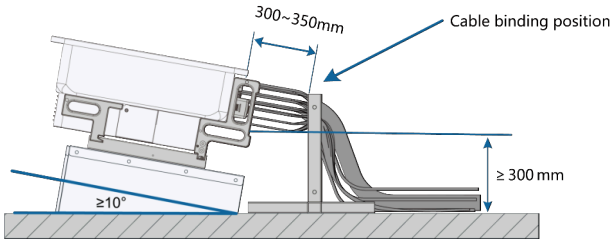
Inverters in floating plants cannot be installed at a back tilt.



tilting backwards installation requirements

> To ensure the operational stability and safety of the device, the tilting backwards installation method is not recommended.

In case the installation site is a level surface, mount the inverter to the horizontal-mounting bracket to meet the mounting angle requirements, as shown in the figure below.



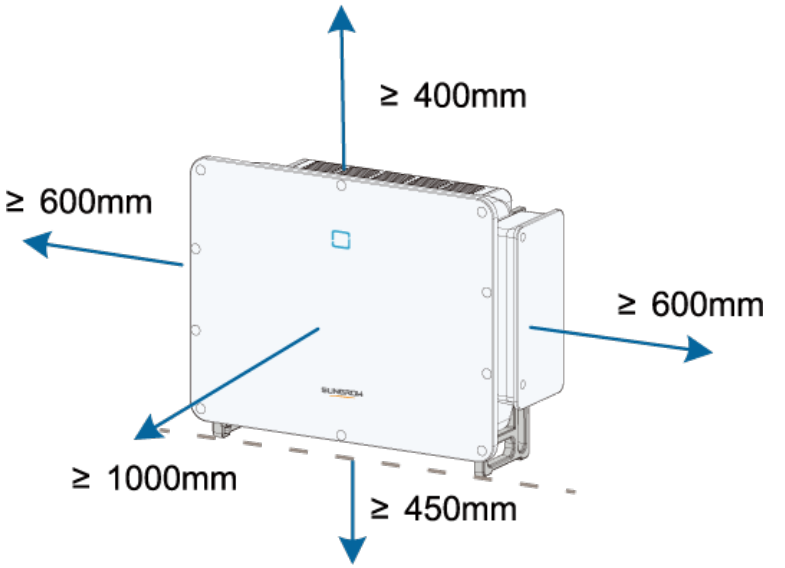
Take the following items into account when designing the bracket scheme:

- Consider onsite climate conditions and take anti-snow and anti-rain measures if necessary.
- Ensure that the waterproof connectors are at least 300mm higher than the ground surface.
- Bind the cables at the positions 300~350mm away from the DC connector and communication waterproof terminal.
- The various waterproof terminals should be tightened with the torque specified in this manual to ensure that they are securely sealed.

4.2.5 Clearance Requirements

Spacing for installing an inverter

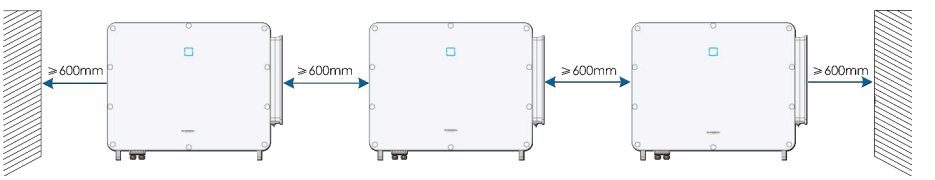
Reserve enough clearance around the inverter to ensure sufficient space for heat dissipation.



High-temperature area: Areas where the highest average temperature exceeds 35°C in at least one month of a year.

Spacing for installing multiple inverters

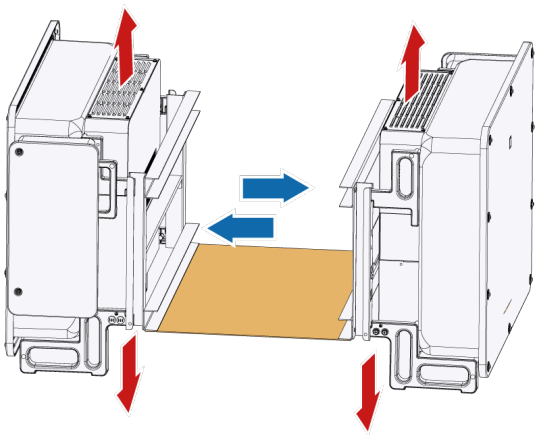
In case of multiple inverters, reserve specific clearance between the inverters. For other installation scenarios, please refer to the relevant technical documents on http://support.sungrowpower.com/.



Back to Back Installation

When installing inverters back-to-back, the distance between every two inverters should be at least 600 mm.

Add a baffle between the two inverters to form a heat dissipation channel. The baffle plate should be placed horizontally between two inverters and should not block the air outlet of inverters.

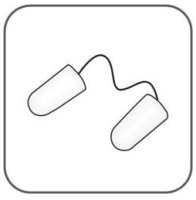
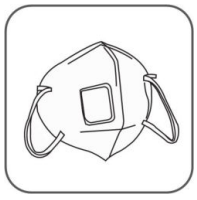


The baffle between inverters must be provided by the user.

4.3 Installation Tools

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

Table 4-1 Tool specification

			
Goggles	Earplugs	Dust mask	Safety gloves
			
Safety shoes	Utility knife	Slotted screwdriver (M2, M3, M6)	Phillips screwdriver (M4, M6, M8)



Hammer drill (φ12)



Pliers



Marker



Level



Rubber mallet



Socket wrench set (M4, M8, M12)



Open-end wrench (16 mm, 33 mm)



Anti-static wrist strap



Wire cutter



Wire stripper



Hydraulic plier



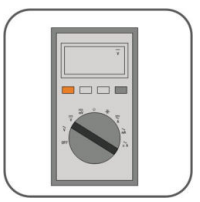
Heat gun



Crimping tool 4–6mm^2



Connector wrench



Multimeter ≥ 1100 Vdc



RJ45 crimping tool



Vacuum cleaner



Allen wrench



Electric drill (φ12)

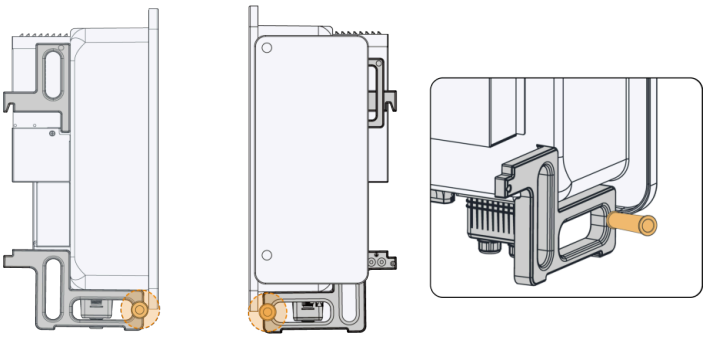


Scissors

4.4 Move the Inverter

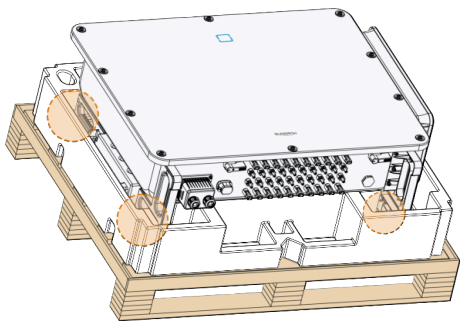
Before installation, take the inverter out of the packing crate and move it to the target position.

It is recommended to move the inverter using its top and bottom handles and the add-on handles. Grip the handles, lift the inverter, and move it to the target position.



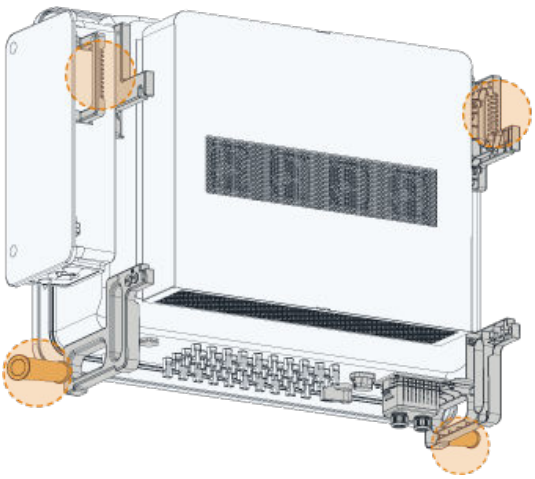
Move an Inverter that Lays Flat

To take the inverter out of the crate, use mainly the vertical handles at the top and bottom of the inverter (as indicated in the figure below).



Hang the Inverter to the Mounting bracket

To hang the inverter to the mounting bracket, use mainly the top vertical handles, the bottom-left horizontal handle, and the bottom-right add-on handle.



⚠ CAUTION

Improper handling may lead to personal injury!

- **Properly decide the number of installation personnel to handle the inverter based on the inverter's weight. Installation personnel should wear protective equipment such as anti-impact shoes and safety gloves.**
- **Always pay attention to inverter's center of gravity during handling and prevent it from getting tilted.**
- **Putting the inverter directly on a hard ground may cause damage to its metal enclosure. Therefore, protective material such as foam or a sponge mat should be placed underneath the inverter.**
- **Move the inverter by holding its handles. Do not move it by gripping its connectors.**

4.5 Installing Mounting-bracket

Inverter is installed on the wall and bracket by means of mounting bracket.

The expansion plug set shown below is recommended for the installation.

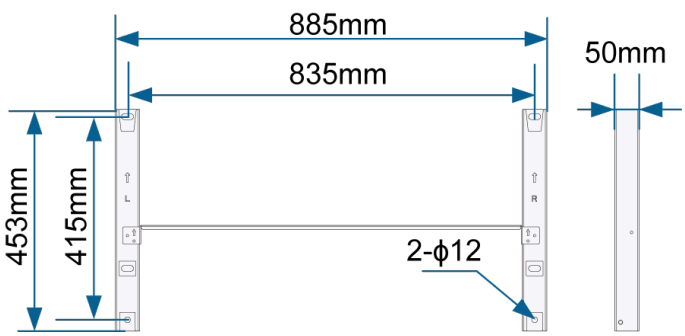
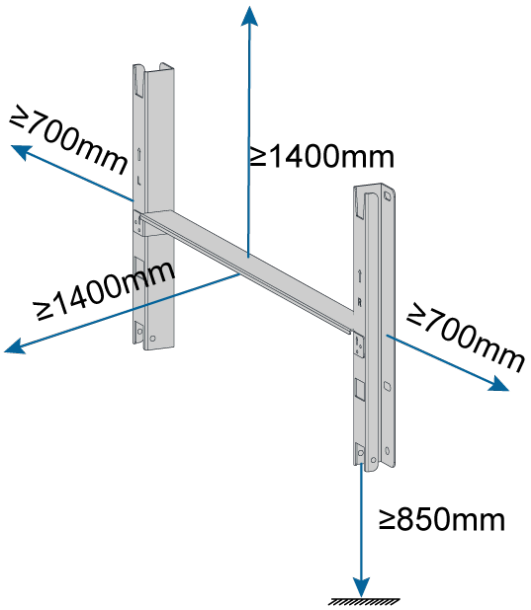


Figure 4-1 Dimensions of Mounting-bracket

Reserve enough space when installing the mounting-bracket to meet the installation space requirements of the inverter.



4.5.1 PV Bracket-Mounted Installation

Prerequisite

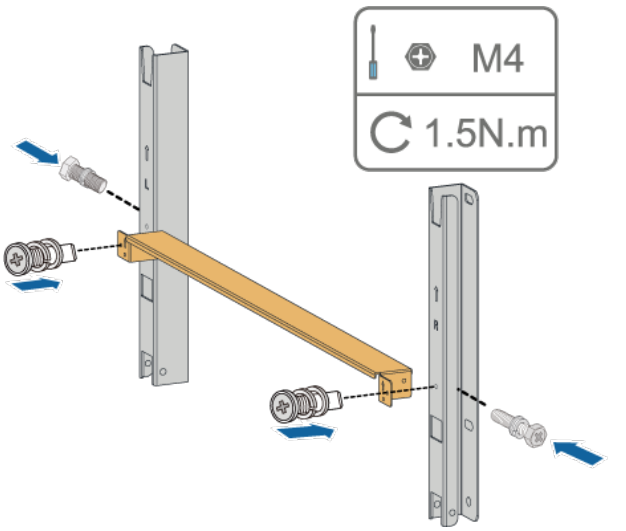
Tools

Item	Specification
Phillips screwdriver / electric screw driver	M4
Marker	-
Level	-
Electric drill	Drill bit: φ12
Wrench	Opening: 16 mm

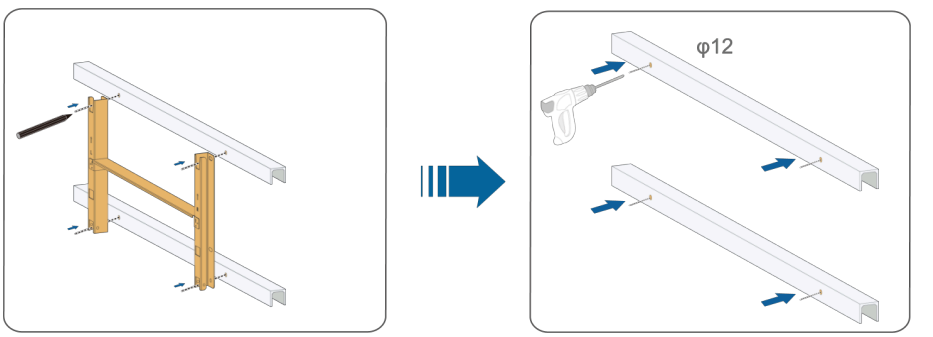
Spare parts

Item	Quantity	Specification	Source
Grub screw	4	M4×10	Delivery scope
Bolt assembly	4	M10	Delivery scope

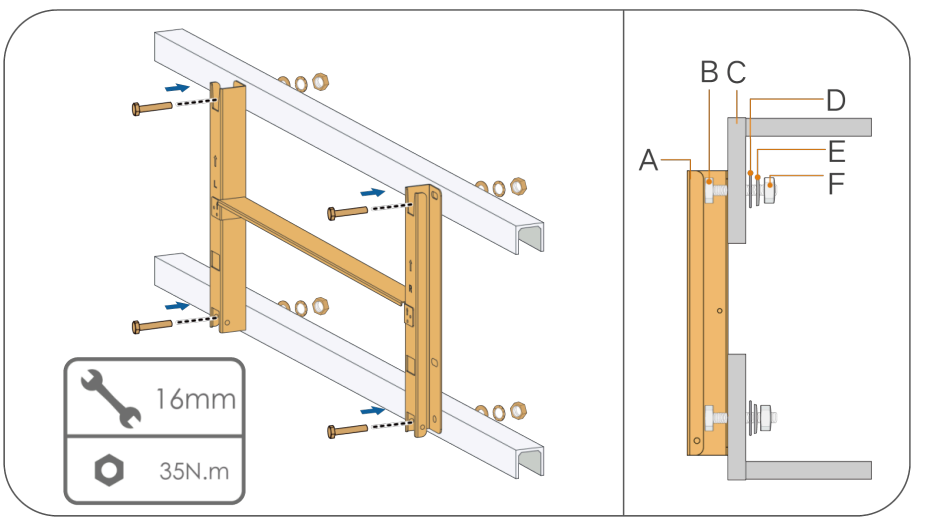
Step 1 Assemble the mounting-bracket.



Step 2 Level the assembled mounting-bracket by using the level, and mark the positions for drilling holes on the PV bracket. Drill the holes by using a electric drill.



Step 3 Secure the mounting-bracket with bolts.



(A) Mounting-bracket	(B) Full threaded bolt	(C) Metal bracket
(D) Flat washer	(E) Spring washer	(F) Hex nuts

--End

4.5.2 Wall-Mounted Installation

Prerequisite

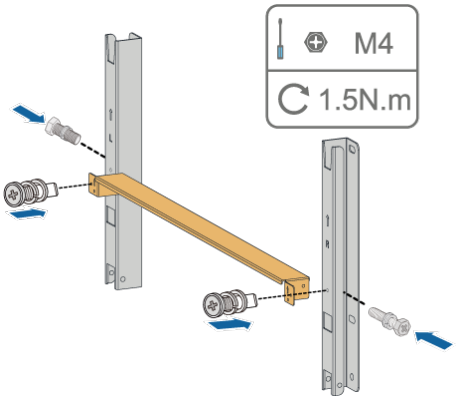
Tools

Item	Specification
Phillips screwdriver / electric screw driver	M4
Marker	-
Level	-
Hammer drill	Drill bit: φ12
wrench	Opening: 16mm

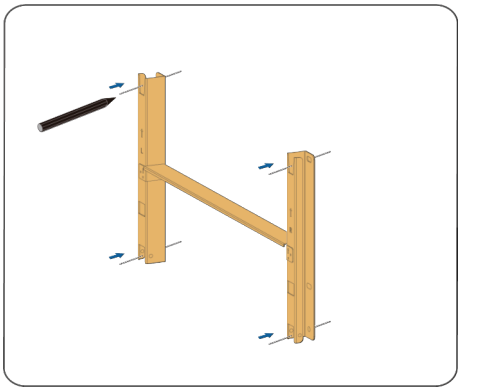
Spare parts

Item	Quantity	Specification	Source
Grub screw	4	M4×10	Delivery scope
Bolt assembly	4	M10×95 (Recommended)	Self-prepared

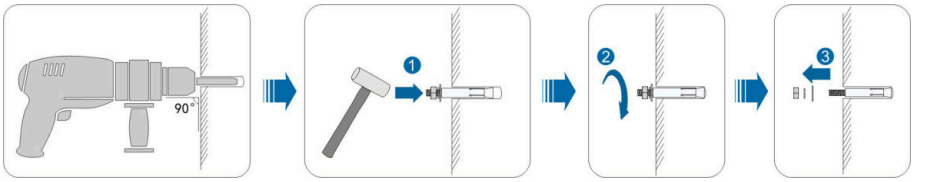
Step 1 Assemble the mounting-bracket.



Step 2 Level the assembled mounting-bracket by using the level, and mark the positions for drilling holes.

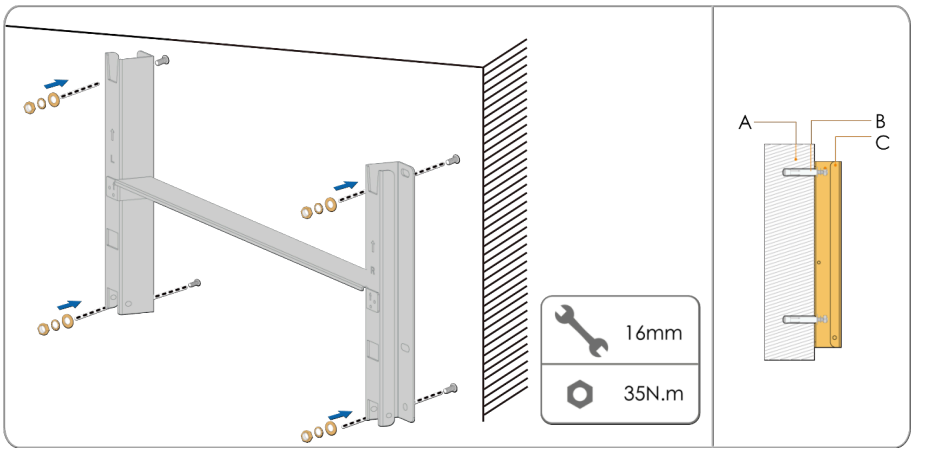


Step 3 Insert the expansion bolts into the holes and secure them with a rubber hammer. Fasten the nut with a wrench to expand the bolt. Remove the nut, spring washer, and flat washer, and store them properly.



After removing the nut, spring washer, and flat washer, level the front of the expansion tube with the wall. Otherwise, the mounting brackets will not stay steady on the wall.

Step 4 Install the mounting-bracket to the wall with the expansion bolts with the expansion bolts.



(A) Wall (B) Expansion bolt (C) Mounting-bracket

--End

4.5.3 Pole-Mounting

Tools

Item	Specification
Phillips screwdriver / electric screw driver	M4
Marker	—
Level	—
Electric drill *	Drill bit: φ12
wrench	Opening: 16 mm

* Check whether other tools are needed according to the specification of clamp bolts.

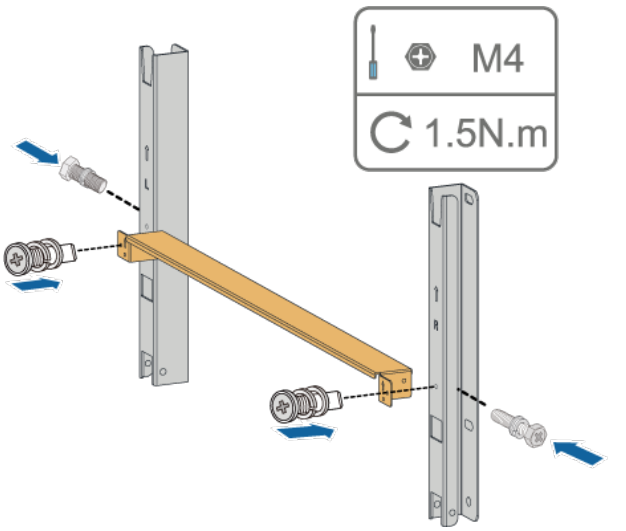
Spare parts

Item	Quantity	Specification	Source
Grub screw	4	M4×10	Delivery scope
Bolt assembly	4	M10	Delivery scope
Nut assembly	4	M10	Self-prepared
U-beam	2	—	Self-prepared
Clamp	2	Determined by pole size	Self-prepared

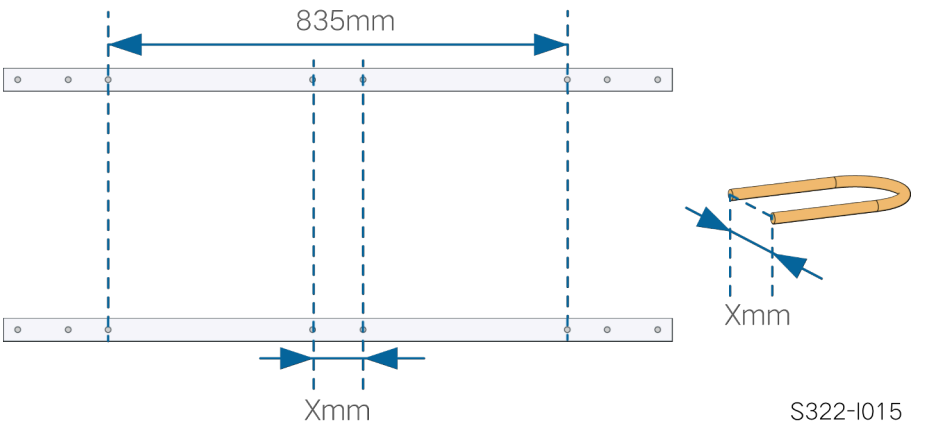
Step 1 Bury the pole into the installation site.

> Please skip this step if the inverter is to be installed on a concrete post, PV bracket, etc.

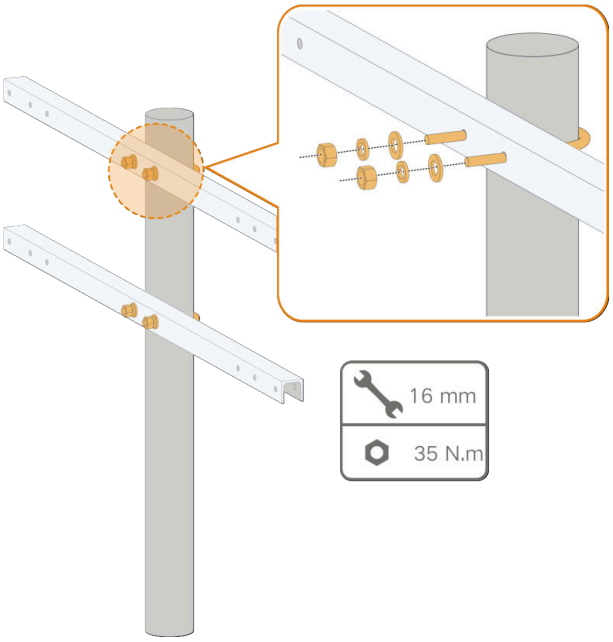
Step 2 Assemble the mounting-bracket.



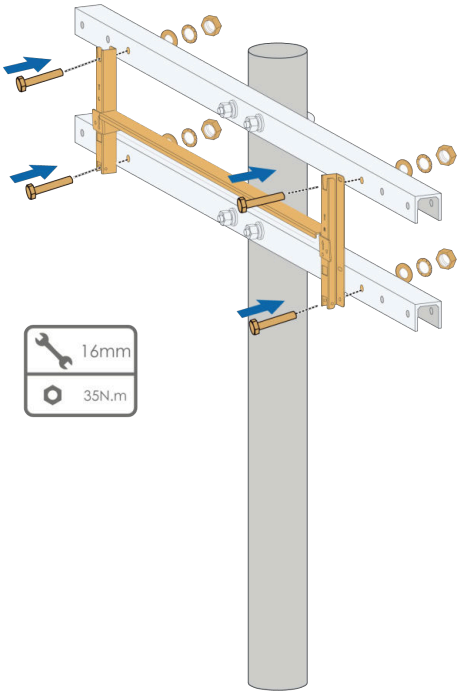
Step 3 Mark and punch holes in the U-beam according to the dimensions shown below.



Step 4 Use bolts and clamps to fix the U-beam to the pole.



Step 5 Use bolts to secure the mounting-bracket to the U-beam.



--End

4.6 Installing Inverter

Prerequisite

Tools

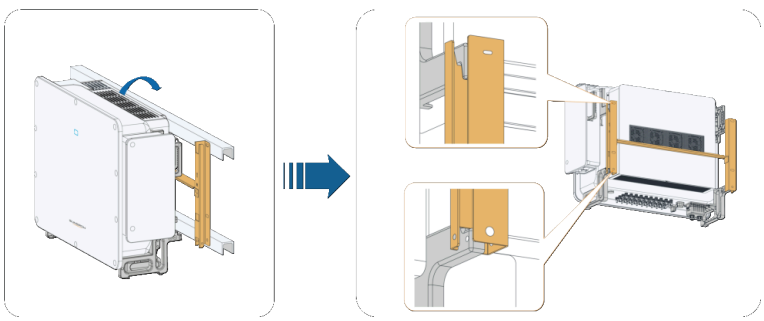
Item	Specification
Phillips screwdriver / electric screw driver	M6

Spare parts

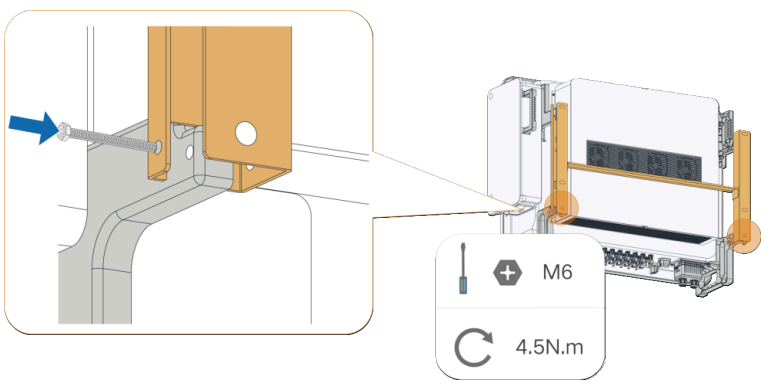
Item	Quantity	Specification	Source
Grub screw	2	M6×65	Delivery scope

Step 1 Take out the inverter from the packing case.

Step 2 Hang the inverter to the mounting-bracket and ensure that the mounting ears perfectly engage with the mounting-bracket.



Step 3 Fix the inverter with screws.



NOTICE

It is necessary to fix the left and right sides of the inverter with screws. Otherwise, the inverter may be unstable.

--End

5 Electrical Connection

5.1 Safety Instructions

⚠ DANGER

The PV string will generate lethal high voltage when exposed to sunlight.

- **Operators must wear proper personal protective equipment during electrical connections.**
- **Must ensure that cables are voltage-free with a measuring instrument before touching DC cables.**
- **Respect all safety instructions listed in relevant documents about PV strings.**

⚠ 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 may occur!**
- **Ensure that the inverter is undamaged and all cables are voltage free before performing electrical work.**
- **Do not close the AC circuit breaker until the electrical connection is completed.**

⚠ WARNING

Do not damage the ground conductor. Do not operate the product in the absence of a properly installed ground conductor. Otherwise, it may cause personal injury or product damage.
Please use measuring devices with an appropriate range. Overvoltage can damage the measuring device and cause personal injury.
Damage to the product caused by incorrect wiring is not covered by the warranty.

- **Electrical connection must be performed by professionals.**
- **Operators must wear proper personal protective equipment during electrical connections.**
- **All cables used in the PV generation system must be firmly attached, properly insulated, and adequately dimensioned. Cables used shall comply with the requirements of local laws and regulations.**
- **The factors that affect cable selection include rated current, cable type, routing mode, ambient temperature, and maximum expected line loss.**

NOTICE

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

- **Cables used by the user shall comply with the requirements of 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 electrical connection and remove the external protective grounding cable last when removing the inverter.**
- **Keep the AC output cable and the DC input cable close to each other during electrical connection.**
- **Comply with the safety instructions related to PV strings and the regulations related to the utility grid.**

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.**
- **Keep the PV+ cable and PV– cable close to each other when connecting DC input cables.**
- **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 to prevent affecting the protection performance.**
- **Ensure that AC output cables are firmly connected. Failing to do so may cause inverter malfunction or damage to its AC connectors.**
- **When the wiring is completed, seal the gap at the 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 cable colors in figures in this manual are for reference only. Please select cables according to local cable standards.

5.2 Terminal Description

All electrical terminals are located at the side and bottom of the inverter.

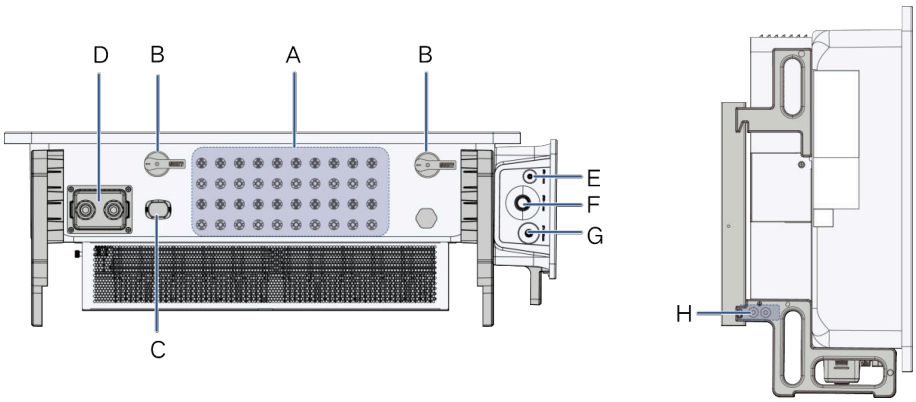


Figure 5-1 Terminal Description

* The image shown here is for reference only. The actual product received may differ.

Item	Terminal	Mark	Note
A	PV terminals	+ / -	20 pairs of terminals
B	DC Switch	DC SWITCH	Used to switch on and off the DC input.
C(1)	Communication terminal	COM1	For communication module connection.
D(2)	Communication terminals	COM2, COM3	Used for RS485 communication, and DI/DO/DRM wiring.
E	Tracker terminal	Tracker	Used for power supply wiring of the tracking system.
F	AC wiring terminal	AC	Used for AC output wiring.
G	Spare grounding point*	AC	Used for internal grounding.
H	External protective	⏚	Used for reliable grounding of the inverter. Two grounding terminals are provided. Use at least one of them to ground the inverter.

Item	Terminal	Mark	Note
	grounding terminal		

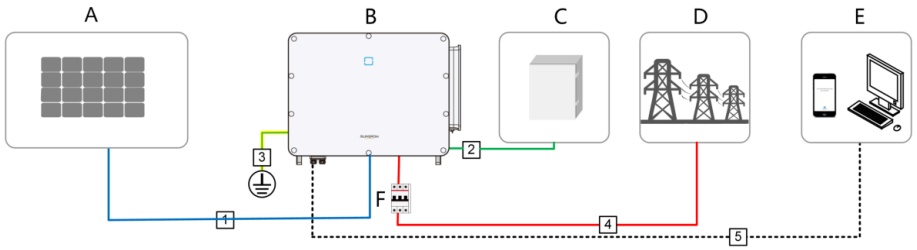
Note(1): The COM1 port is designed exclusively for communication modules and strictly prohibits direct connection with external communication cables.

Note(2): Shielded cables are required for all RS485 communication and DI/DO/DRM wiring connections.

*If the PE cable is an independent single-core cable, it should be inserted into the AC junction box through the standby grounding terminal.

5.3 Electrical Connection Overview

The electrical connection should be realized as follows:



(A) PV string (B) Inverter (C) Tracking control box

(D) Grid (E) Monitoring device (F) AC circuit breaker

Table 5-1 Cable Requirements

No.	Cable	Type	Specification	
			Cable Diameter(mm)	Cross-sectional Area(mm^2)
1	DC cable(4)	PV cable complying with 1,100V standard	5.9 ~ 8.8 □copper cable□;	4 /6□copper cable□;
2	Power cable for tracking system	Outdoor two-core copper cable	8 ~ 18	0.5 ~ 10(recommended range: 4 ~ 6)

No.	Cable	Type	Specification	
			Cable Diameter(mm)	Cross-sectional Area(mm^2)
3	Additional grounding cable	Outdoor single-core copper cable	The same as that of the PE wire in the AC cable	
4	AC cable	Outdoor five-core copper wire cable	30 ~ 60	L1, L2, L3, N wire: 70~150(3) PE wire: refer to Table 5-2 PE Wire Requirements
		Outdoor four-core copper cable Outdoor PE cable	L1, L2, L3, N wire: 30 ~ 60 PE wire: 14 ~ 32	
		Outdoor five-core aluminum cable(1)	30 ~ 60	L1, L2, L3, N wire: 120~240 PE wire: refer to Table 5-2 PE Wire Requirements
		Outdoor four-core aluminum cable(1) Outdoor PE cable	L1, L2, L3, N wire: 30 ~ 60 PE wire: 14 ~ 32	
		Outdoor five single-core copper cables	14 ~ 32	L1, L2, L3, N wire: 70 ~ 150(3) PE wire: refer to Table 5-2 PE Wire Requirements
		Outdoor four single-core aluminum cables(1)(2) Outdoor PE cable	14 ~ 32	L1, L2, L3, N wire: 120 ~ 240 PE wire: refer to Table 5-2 PE Wire Requirements
5	Communication cable	Shielded twisted pair (terminal block)	4.5 ~ 18	0.2 ~ 1.5

No.	Cable	Type	Specification	
			Cable Diameter(mm)	Cross-sectional Area(mm^2)
		CAT-5 Ethernet cable (RJ45)		/

Note(1):A copper to aluminum adapter terminal is required when an aluminum cable is used. For details, refer to Aluminum Cable Requirements.

Note(2):In the case of five single-core cables, a spare AC sealing plate accessory is required as shown in the following figure. To purchase the AC sealing plate accessory, contact your distributor. If the distributor is unable to provide the AC sealing plate accessory, contact SUNGROW.

Note(3):Select AC cables that meet local standards and safety regulations based on the requirements listed in the table.

Note(4):The use of copper conductors is recommended. The above information is provided for reference only and local installation standards and regulations shall also be complied with. The use of non-compliant conductors may result in poor heat dissipation at the DC terminals, posing a risk of terminal burnout.

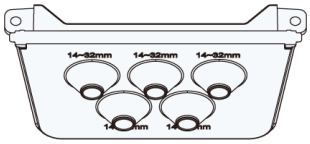


Figure 5-2 Spare AC Sealing Plate

Inverters for Australia and New Zealand are equipped with the five-core sealing plate by default.
Inverters for Brazil are equipped with the three-core sealing plate by default, while the five-core sealing plate is included in the shipping accessories.

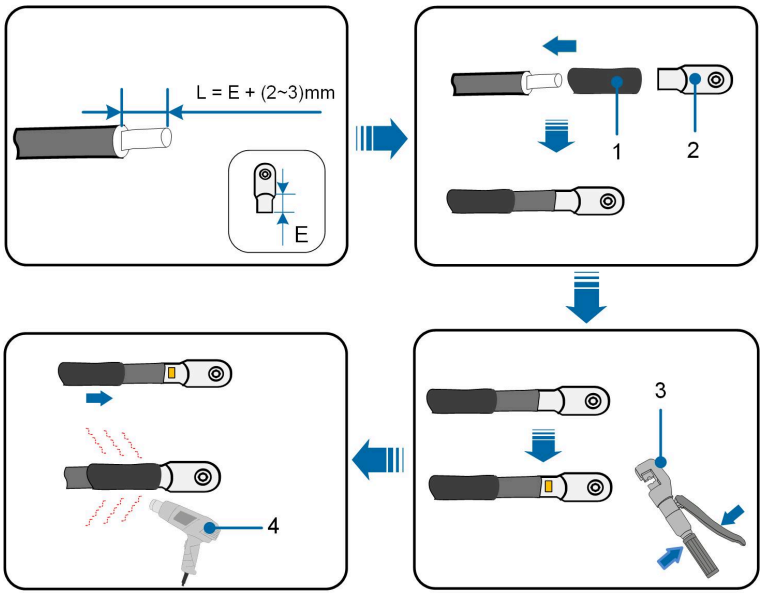
Table 5-2 PE Wire Requirements

PE Wire Cross Section	Note
S/2 S: Phase wire cross-section	The specifications are valid only when the phase wire and PE wire use the same material. If otherwise, ensure that the cross section of the PE wire produces a conductance equivalent to that of the wire specified in the table.

Other sizes of grounding cables that meet local standards and safety regulations can also be used for grounding connections. But SUNGROW shall not be held liable for any damage caused.

5.4 Crimp OT/DT terminal

Crimp OT/DT terminal



1. Heat shrink tubing
2. OT/DT terminal
3. Hydraulic pliers
4. Heat gun

Aluminum Cable Requirements

If an Aluminum cable is selected, use a copper to Aluminum adapter terminal to avoid direct contact between the copper bar and the Aluminum cable.

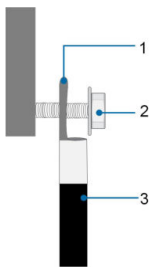


Figure 5-3 Aluminum Cable Connection

1. Copper to Aluminum adapter terminal	2. Flange nut	3. Aluminum cable

NOTICE

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

5.5 External Protective Grounding Connection

⚠ DANGER

- **There are large currents during the inverter's operation. If the inverter is powered on and put into operation without being grounded, it may lead to electric shock hazards or failures of major protective functions such as surge protection. Therefore, before powering on the inverter, make sure it has been reliably grounded; otherwise, damages caused therefrom will not be covered by warranty.**
- **When performing electrical connections of the inverter, give the highest priority to grounding. Be sure to carry out the grounding connection first.**

⚠ WARNING

- **Since the inverter is not equipped with a transformer, neither the negative electrode nor the positive electrode of the PV string can be grounded. Otherwise, the inverter will not operate normally.**
- **Connect the grounding terminal to the external protective grounding point before AC cable connection, PV string connection, and communication cable connection.**
- **The external protective grounding point provides a reliable ground connection. Do not use an improper grounding conductor for grounding, Otherwise, it may cause product damage or personal injury.**
- **Depending on Local Rules, please also ground the PV panel subconstruction to the same common grounding point (PE Bar) in addition to local lightning protection rules.**

⚠ WARNING

The external protective grounding terminal must meet at least one of the following requirements.

- **The cross-sectional area of the grounding cable is not less than 10 mm^2 for copper wire or 16 mm^2 for aluminum wire. It is recommended that both the external protective grounding terminal and the AC side grounding terminal be reliably grounded.**
- **If the cross-sectional area of the grounding cable is less than 10 mm^2 for copper wire or 16 mm^2 for aluminum wire, ensure that both the external protective grounding terminal and the AC side grounding terminal are reliably grounded.**

The grounding connection can be made by other means if they are in accordance with the local standards and regulations, and SUNGROW shall not be held liable for the possible consequences.

5.5.1 External Protective Grounding Requirements

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

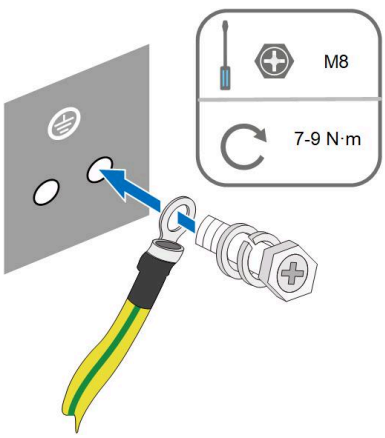
When there is only one inverter in the PV system, connect the external protective grounding cable to a nearby grounding point.

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 module brackets to ensure equipotential connections to ground cables (according to the onsite conditions).

5.5.2 Connection Procedure

Step 1 Prepare the cable and OT/DT terminal, refer to Crimp OT/DT terminal.

Step 2 Remove the screw on the grounding terminal and fasten the cable with a screwdriver.



Step 3 Apply paint to the grounding terminal to ensure corrosion resistance.

The grounding screws have been anchored to the side of the inverter before delivery, and do not need to be prepared.
There are two grounding terminals. Use one of them to ground the inverter.

--End

5.6 AC Cable Connection

5.6.1 AC Side Requirements

Only with the permission of the local grid department, the inverter can be connected to the grid.

Before connecting the inverter to the grid, ensure the grid voltage and frequency comply with requirements, for which, refer to **"Technical Data"**. Otherwise, contact the electric power company for help.

AC Circuit Breaker

An independent circuit breaker or fuse should be installed on the output side of the inverter to ensure safe disconnection from the grid.

Inverter Model	Recommended Rated Voltage	Recommended Rated Current
SG125CX-P3	400V	250A
SG110CX-P3	400V	250A
SG80CX-P3	400V	160A

⚠ WARNING

AC circuit breakers should be installed on the output side of the inverter and the grid side to ensure safe disconnection from the grid.

- **Determine whether an AC circuit breaker with greater overcurrent capacity is required based on actual conditions.**
- **Do not connect any local load between the inverter and the AC circuit breaker except for the tracking axis.**
- **Multiple inverters cannot share one AC circuit breaker.**

Residual Current Monitoring Device

With an integrated universal current-sensitive residual current monitoring unit included, the inverter will disconnect immediately from the mains power once a fault current with a value exceeding the limit is detected.

However if an external residual current device (RCD) (type A is recommended) is mandatory, the switch must be triggered at the residual current. RCD of other specifications can also be used according to local standard. The recommended residual current is as follows.

Inverter	Recommended Residual Current
SG125CX-P3	1250 mA
SG110CX-P3	1100 mA
SG80CX-P3	800mA

Multiple Inverters in Parallel Connection

If multiple inverters are connected in parallel to the grid, ensure that the total number of parallel inverters does not exceed 25.

MV Transformer

The MV transformer used together with the inverter should meet the following requirements:

- A distribution transformer can be used if it is designed for the typical cyclical loads of a PV system (there is load in the day and no load at night).
- A liquid-immersed type transformer or a dry type transformer can be used, and the shield winding is not a requisite.
- The line-to-line voltage on the LV side of the transformer should endure the output voltage of inverter. When the transformer is connected to the IT grid, to-ground withstanding voltage of the LV winding of the transformer, the LV side AC cables, and the LV side secondary equipment (including the relay protection device, detection & measuring device, and other related auxiliary devices) should not be lower than 1,100V.
- The line-to-line voltage on the HV side of the transformer should comply with the local power grid voltage.
- A transformer with a tap changer on the HV side is recommended in order to keep the voltage consistent with the grid voltage.
- The voltage drop of system cable is no more than 3%.
- The DC component that the transformer can withstand is 1% of the fundamental current at rated power.
- For thermal rating, the load curve of the transformer and environment conditions should be taken into account.
- The apparent power of the inverter should never exceed the power of the transformer. The maximum AC current of all inverters connected in parallel must be taken into account. It is recommended that the total number of inverters that are connected to the grid not exceed 25.
- The transformer must be protected against overloading and short circuit.

- The transformer is an important part of grid-connected PV generation system. The fault tolerance capacity of the transformer should be taken into account at all times. The fault include: system short circuit, grounding fault, voltage drop, etc.
- Take ambient temperature, relative humidity, altitude, air quality, and other environmental conditions into account when selecting and installing the transformer.

5.6.2 Requirements for OT/DT Terminal

OT/DT terminals (not included in the delivery scope) are required for fixing AC cables to the terminal block. Purchase the OT/DT terminals according to the following requirements.

OT/DT Terminals of Phase Wire

- Specification: M12

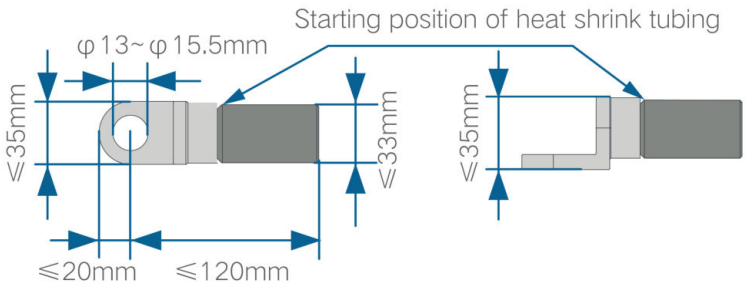


Figure 5-4 Specifications of the Crimped OT/DT Terminal

OT/DT Terminal of PE Wire

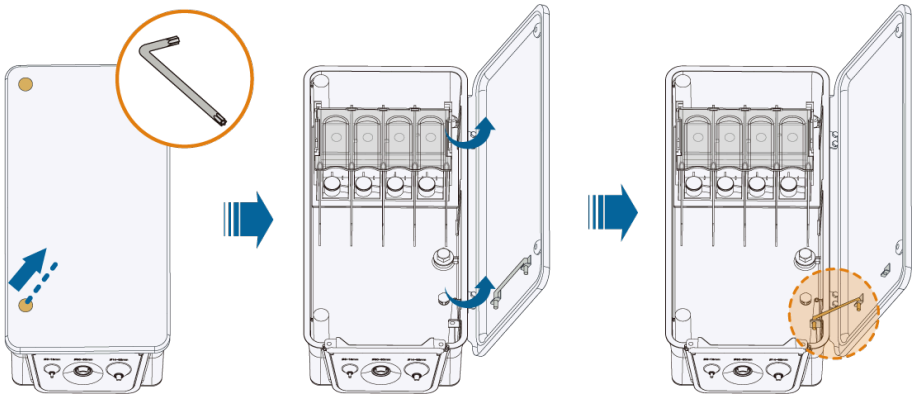
- Specification: M12

5.6.3 Connection Procedure (For a Multi-core Cable)

> In this manual, description is given by using five-core cable as an example. The wiring of the four-core cable is the same.

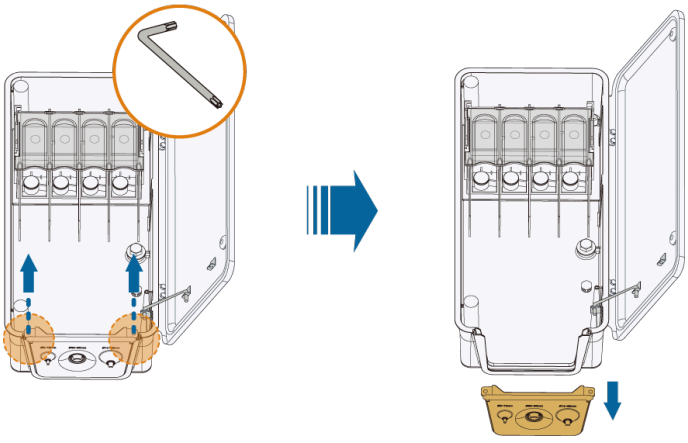
Step 1 Disconnect the AC-side circuit breaker and prevent it from inadvertent reconnection.

Step 2 Loosen two screws on the front cover of the junction box using the supplied hexagon socket wrench, and open the junction box. Keep the cover of the junction box open during wiring with a limit rod attached to the cover.



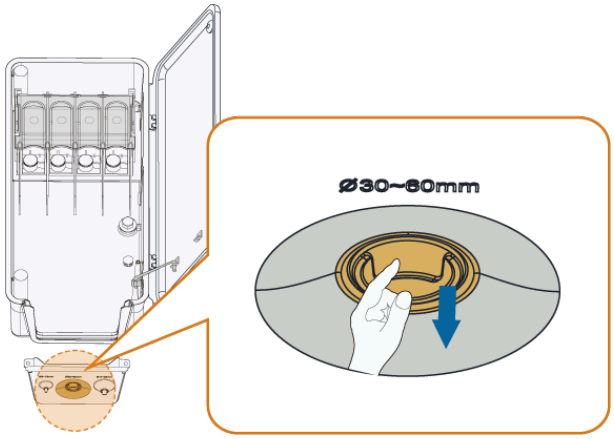
The screws on the front cover are captive screws. When the front cover is opened, the screws remain on it.

Step 3 Loosen screws on the bottom sealing plate using the supplied hexagon socket wrench, and remove the sealing plate.

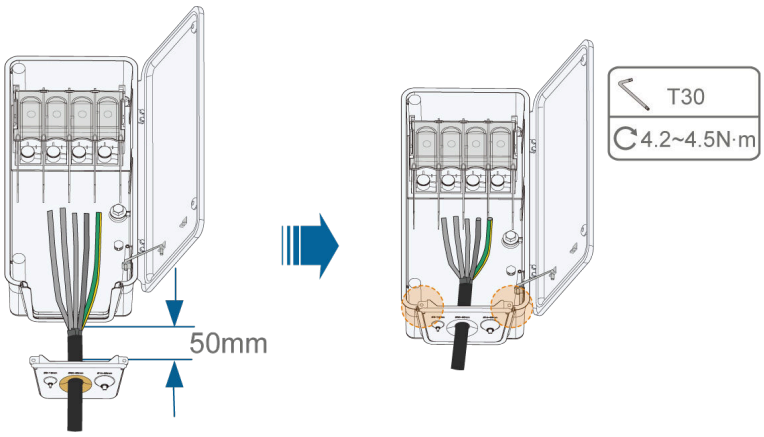


The screws on the sealing plate are captive screws. When the sealing plate is removed, the screws remain on it.

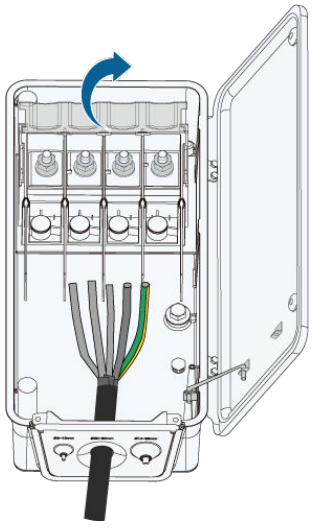
Step 4 Tear off the seal.



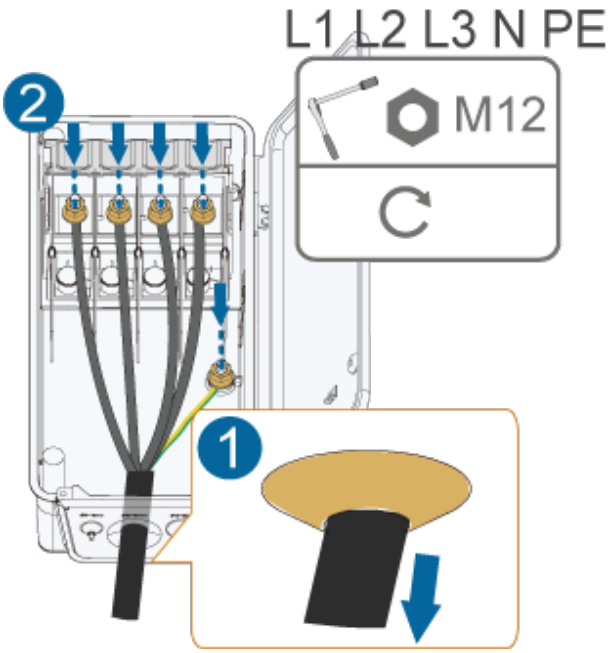
Step 5 Lead the cable with the protective layer stripped through the sealing ring and secure screws on the bottom sealing plate.



Step 6 Open the protective cover.



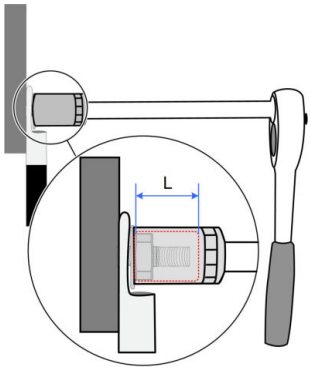
Step 7 Gently pull the conductors back to verify that the rubber grommet is properly seated (outer side convex, inner side concave). Connect cables with crimped OT/DT terminals to corresponding terminals and secure them. Please fasten AC terminals referring to the torque specified on the label inside the AC box.



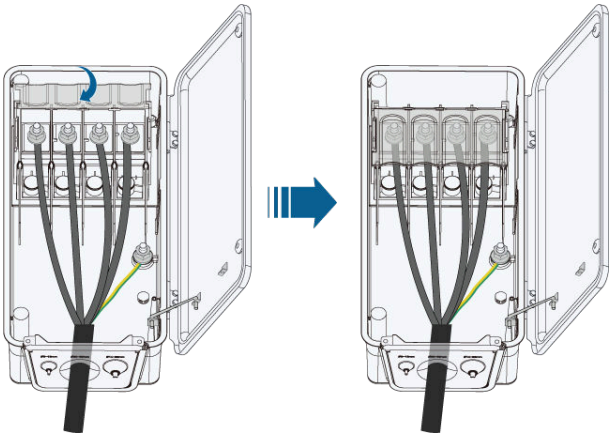
NOTICE

Note the terminal positions of PE wire and N wire. If a phase wire is connected to the PE terminal or N terminal, unrecoverable damage may be caused to the inverter.

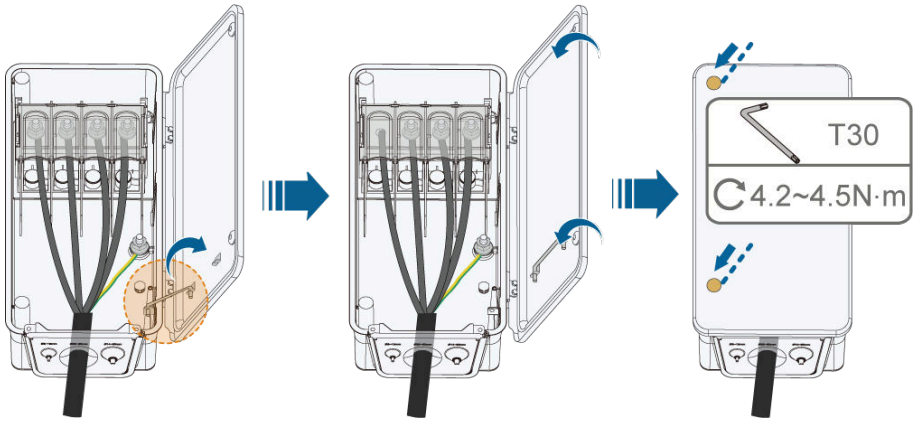
Ensure that the depth L of the socket used is not less than 28mm.



Step 8 Close the protective cover.

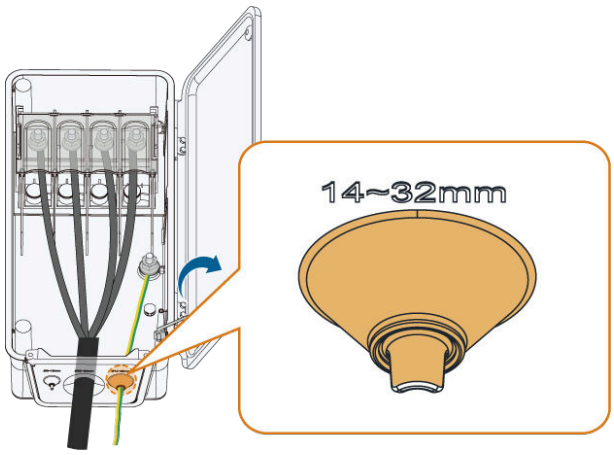


Step 9 Remove the limit rod and put it back. Close the junction box and tighten the two screws on the front cover using the supplied hexagon socket wrench.



--End

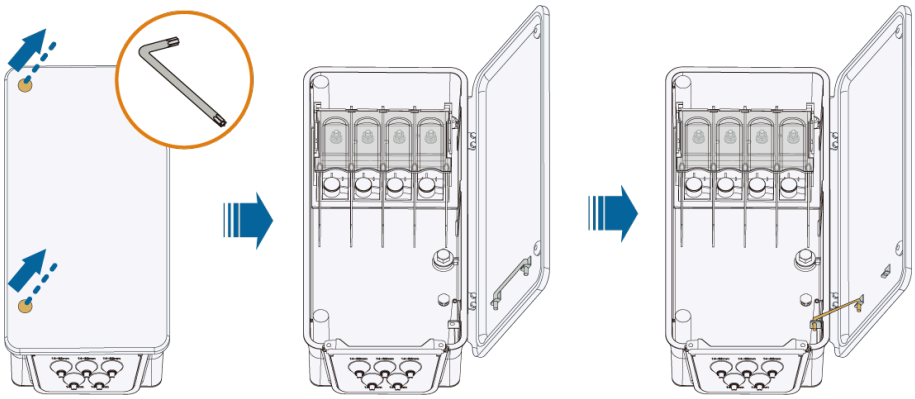
*If the PE cable is an independent single-core cable, it is inserted into the cabinet through the standby grounding terminal.



5.6.4 Connection Procedure (For Single-core Cables)

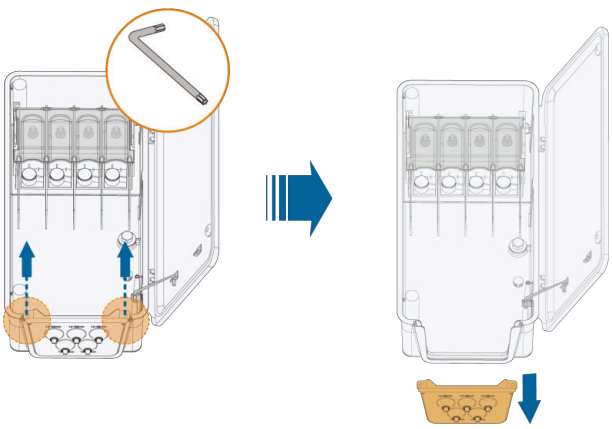
Step 1 Disconnect the AC-side circuit breaker and prevent it from inadvertent reconnection.

Step 2 Loosen two screws on the front cover of the junction box using the supplied hexagon socket wrench, and open the junction box. Keep the cover of the junction box open during wiring with a limit rod attached to the cover.



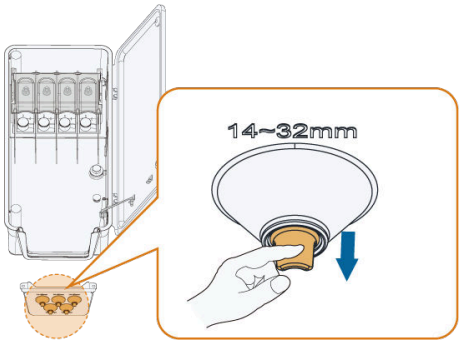
The screws on the front cover are captive screws. When the front cover is opened, the screws remain on it.

Step 3 Loosen screws on the bottom sealing plate using the supplied hexagon socket wrench, and remove the sealing plate.

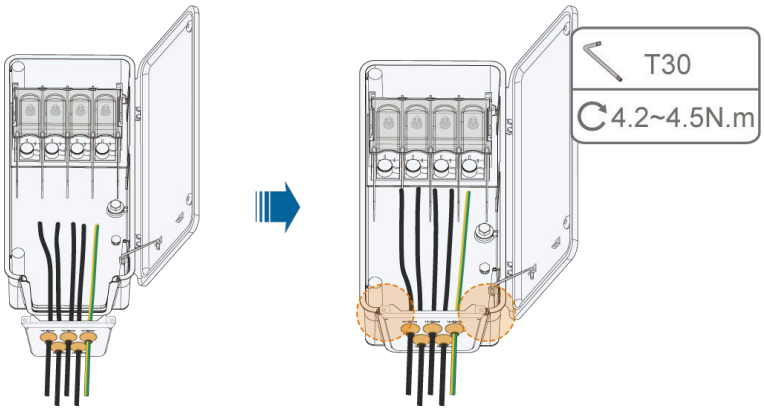


The screws on the sealing plate are captive screws. When the sealing plate is removed, the screws remain on it.

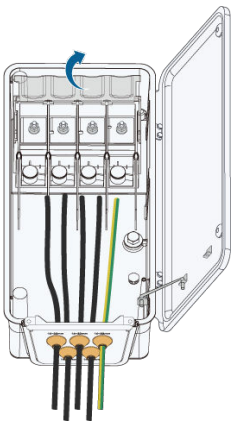
Step 4 Tear off the seal.



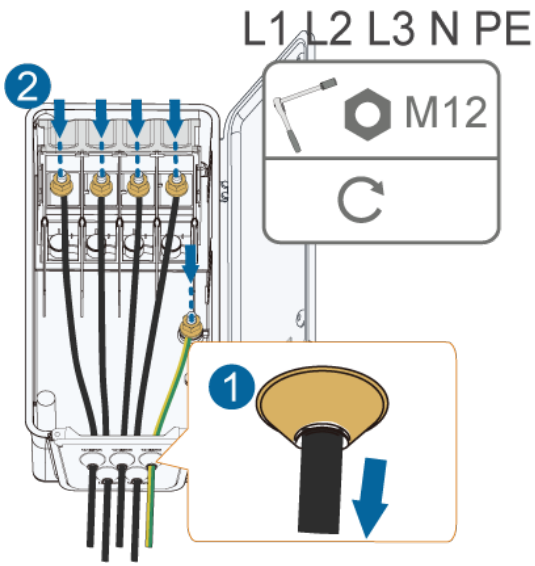
Step 5 Lead the cable through the sealing ring and secure the screws on the bottom sealing plate.



Step 6 Open the protective cover.



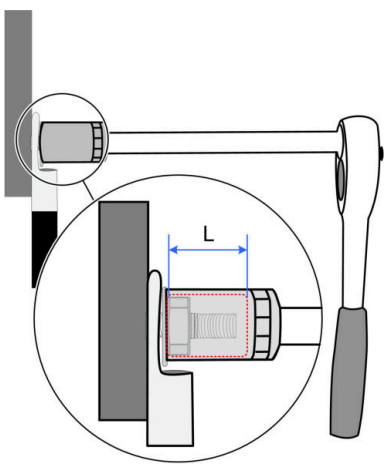
Step 7 Gently pull the conductors back to verify that the rubber grommet is properly seated (outer side convex, inner side concave). Connect cables with crimped OT/DT terminals to corresponding terminals and secure them. Please fasten AC terminals referring to the torque specified on the label inside the AC box.



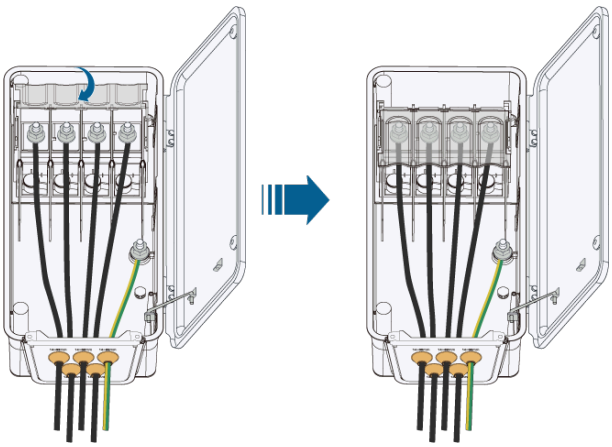
NOTICE

Note the terminal positions of PE wire and N wire. If a phase wire is connected to the PE terminal or N terminal, unrecoverable damage may be caused to the inverter.

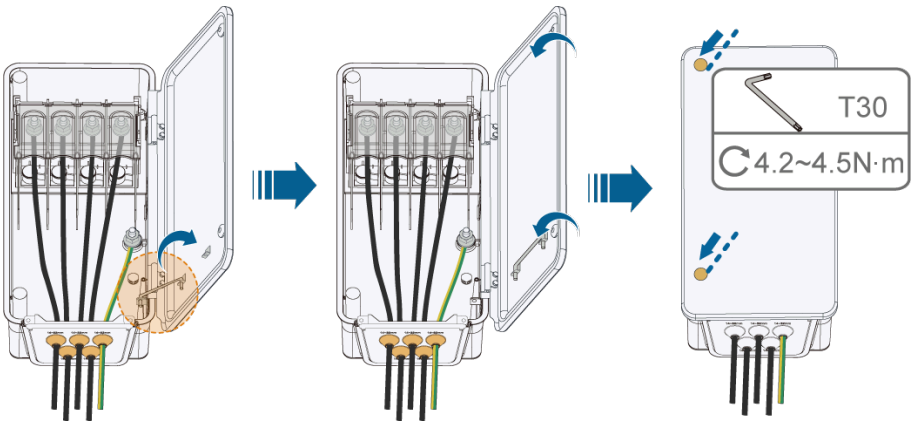
Ensure that the depth L of the socket used is not less than 28 mm.



Step 8 Close the protective cover.



Step 9 Remove the limit rod and put it back. Close the junction box and tighten the two screws on the front cover using the supplied hexagon socket wrench.



--End

5.7 DC Cable Connection

DANGER

The PV string will generate lethal high voltage when exposed to sunlight.

- **Respect all safety instructions listed in relevant documents about PV strings.**

⚠ WARNING

- **Make sure the PV array is well insulated to ground before connecting it to the inverter.**
- **Make sure the maximum DC voltage and the maximum short circuit current of any string never exceed inverter permitted values specified in "Technical Data".**
- **Check the positive and negative polarity of the PV strings, and connect the PV connectors to corresponding terminals only after ensuring polarity correctness.**
- **During the installation and operation of the inverter, please ensure that the positive or negative electrodes of PV strings do not short-circuit to the ground. Otherwise, an AC or DC short-circuit may occur, resulting in equipment damage. The damage caused by this is not covered by the warranty.**
- **Electric arc or contactor over-temperature may occur if the DC connectors are not firmly in place, and the loss caused is not covered by the warranty.**
- **If the DC input cables are reversely connected or the positive and negative terminals of different MPPT are shorted to ground at the same time, while the DC switch is in the "ON" position, do not operate immediately. Otherwise, the inverter may be damaged. Please turn the DC switch to "OFF" and remove the DC connector to adjust the polarity of the strings when the string current is lower than 0.5 A.**
- **Use the DC connectors supplied with the product for DC cable connection. Using incompatible DC connectors may result in serious consequences, and the device damage is not covered under warranty.**
- **Inverters do not support full parallel connection of strings (Full parallel connection refers to a connection method in that strings are connected in parallel and then connected to the inverter separately).**
- **Do not connect one PV string to multiple inverters. Otherwise, the inverters may be damaged.**

NOTICE

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

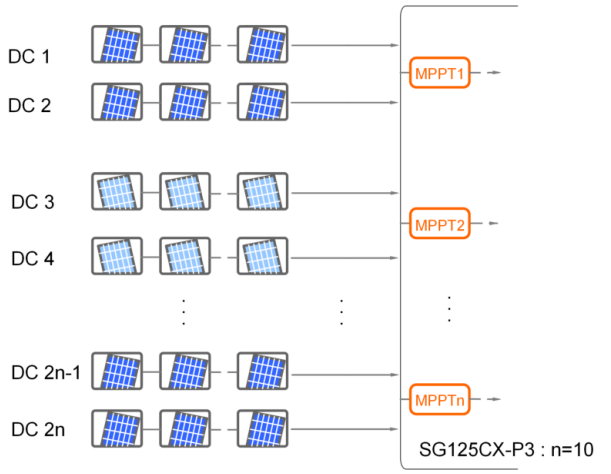
- **Mixed use of PV modules of different brands or models in one MPPT circuit, or PV modules of different orientation or inclination in a string may not damage inverter, but will cause system bad performance!**
- **The inverter enters standby state when the input voltage ranges between 1,000 V and 1,100 V. The inverter returns to running state once the voltage returns to the MPPT operating voltage range, namely, 180 V to 1,000 V.**

5.7.1 PV Input Configuration

As shown in the figure below, the inverter is provided with multiple PV inputs, and each PV input is designed with an MPP tracker.

Each PV input operates independently and has its own MPPT. In this way, string structures of each PV input may differ from each other, including PV module type, number of PV modules in each string, angle of tilt, and installation orientation.

A maximum of two PV strings can be connected to an MPPT controller. For the best use of PV power, the type, quantity, tilt, and orientation of PV modules connected to the same MPPT shall be the same.



Prior to connecting the inverter to PV inputs, the specifications in the following table should be met:

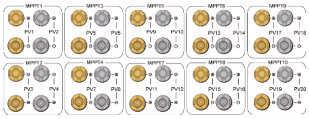
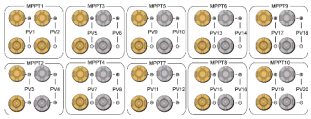
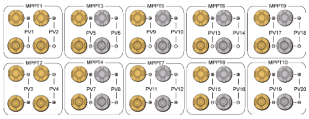
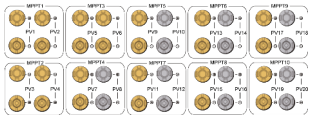
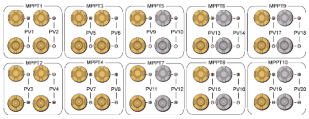
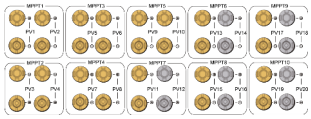
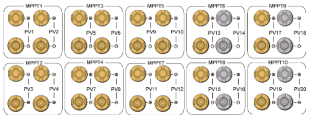
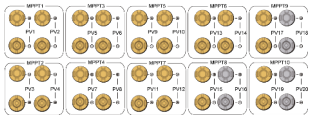
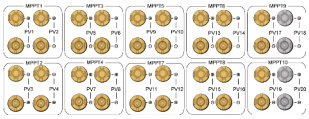
Open Circuit Voltage Limit	Max. Current for Input Connector
1100 V	30A

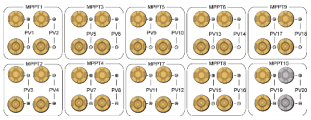
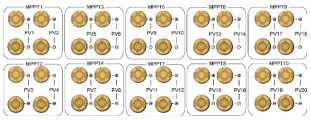
When using 210/210R modules, each PV terminal (+/-) is only allowed to connect to a single PV string. Parallel connection of multiple strings to the same terminal is strictly prohibited.

Wiring Instructions

If the number of PV strings is 10 to 20, it is recommended to perform DC input wiring by referring to the table below.

Number of PV Strings	DC PV Terminals	Number of PV Strings	DC PV Terminals
10	Connect to PV1, PV3, PV5, PV7, PV9, PV11, PV13, PV15, PV17, PV19	11	Connect to PV1, PV2, PV3, PV5, PV7, PV9, PV11, PV13, PV15, PV17, PV19

Number of PV Strings	DC PV Terminals	Number of PV Strings	DC PV Terminals
			
12	Connect to PV1, PV2, PV3, PV4□ PV5, PV7, PV9, PV11, PV13, PV15, PV17, PV19 	13	Connect to PV1, PV2, PV3, PV4□PV5, PV6, PV7, PV9, PV11, PV13, PV15, PV17, PV19 
14	Connect to PV1, PV2, PV3, PV4, PV5, PV6, PV7, PV8, PV9, PV11, PV13, PV15, PV17, PV19 	15	Connect to PV1, PV2, PV3, PV4, PV5, PV6, PV7, PV8, PV9, PV10, PV11, PV13, PV15, PV17, PV19 
16	Connect to PV1, PV2, PV3, PV4, PV5, PV6, PV7, PV8, PV9, PV10, PV11, PV12, PV13, PV15, PV17, PV19 	17	Connect to PV1, PV2, PV3, PV4, PV5, PV6, PV7, PV8, PV9, PV10, PV11, PV12, PV13, PV14, PV15, PV17, PV19 
18	Connect to PV1, PV2, PV3, PV4, PV5, PV6, PV7, PV8, PV9, PV10, PV11, PV12, PV13, PV14, PV15, PV16, PV17, PV19 	19	Connect to PV1, PV2, PV3, PV4, PV5, PV6, PV7, PV8, PV9, PV10, PV11, PV12, PV13, PV14, PV15, PV16,

Number of PV Strings	DC PV Terminals	Number of PV Strings	DC PV Terminals
			PV17, PV18, PV19 
20	Connect to PV1, PV2, PV3, PV4, PV5, PV6, PV7, PV8, PV9, PV10, PV11, PV12, PV13, PV14, PV15, PV16, PV17, PV18, PV19, PV20 		

- The inverter does not support the connection of strings connected in parallel externally.
- This product adopts a multi-channel MPPT optimized design to ensure optimal energy yield and operational safety under typical application conditions. When the system operates in non-typical modes (such as single-channel operation), certain functions (such as arc detection sensitivity and dynamic response rate) may perform below levels achieved under coordinated multi-channel operation due to inherent characteristics of the circuit topology. Users are therefore recommended to use the inverter in its standard configuration to obtain the full performance experience.

5.7.2 Assembling the PV Connectors

Prerequisite

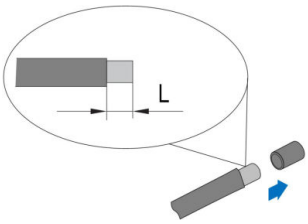
⚠ DANGER

High voltage may be present in the inverter!

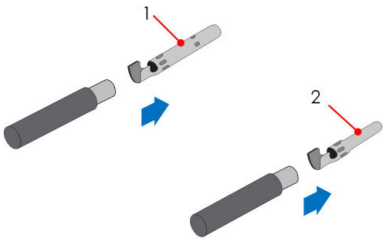
- **Ensure all cables are voltage-free before performing electrical operations.**
- **Do not connect the DC switch and AC circuit breaker before finishing electrical connection.**

To ensure IP65 protection, use only the supplied connector.

Step 1 Strip the insulation from each DC cable by about 7 mm.

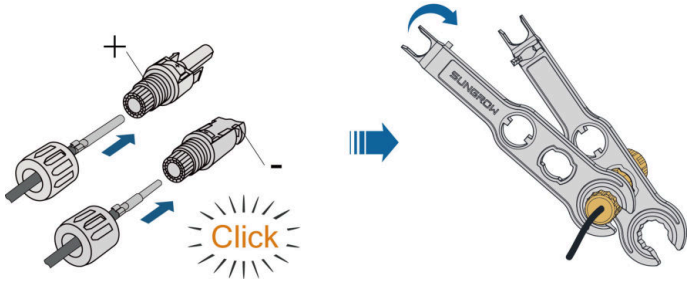


Step 2 Assemble the cable ends with the crimping pliers.



1: Positive crimp contact 2: Negative crimp contact

Step 3 Lead the cable through cable gland, and insert the crimp contact into the insulator until it snaps into place. Gently pull the cable backward to ensure firm connection. Tighten the cable gland and the insulator (torque 3.4 N.m to 3.5 N.m).



Step 4 Check for polarity correctness.

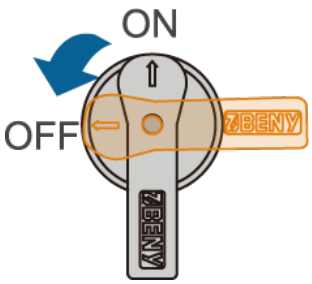
NOTICE

If the PV polarity is reversed, the inverter will be in a fault or alarm state and will not operate normally.

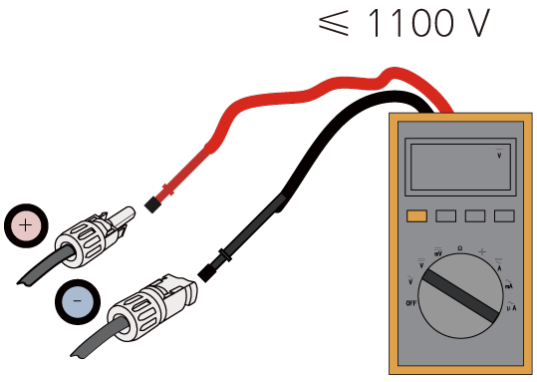
--End

5.7.3 Installing PV Connector

Step 1 Ensure that the DC switch is in "OFF" position. Otherwise, manually turn it to "OFF".



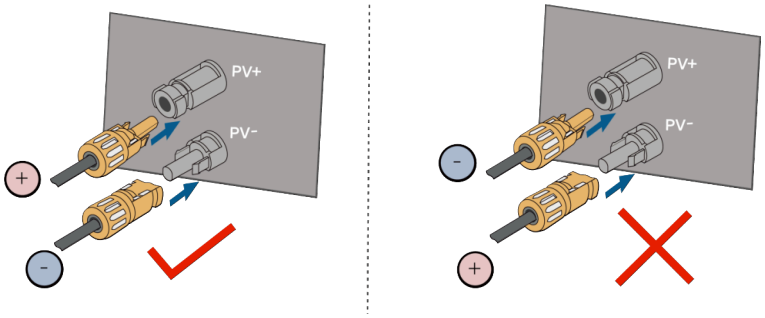
Step 2 Check the cable connection of the PV string for polarity correctness and ensure that the open circuit voltage in any case does not exceed the inverter input limit of 1,100 V.



NOTICE

The multimeter must have a DC voltage range of at least 1100 V. If the voltage is a negative value, the DC input polarity is incorrect. Please correct the DC input polarity. If the voltage is greater than 1100 V, too many PV modules are configured to the same string. Please remove some PV modules.

Step 3 Connect the PV connectors to corresponding terminals until there is an audible click.



Step 4 Follow the foregoing steps to connect PV connectors of other PV strings.

Step 5 Seal any unused PV terminal with a terminal cap.

--End

NOTICE

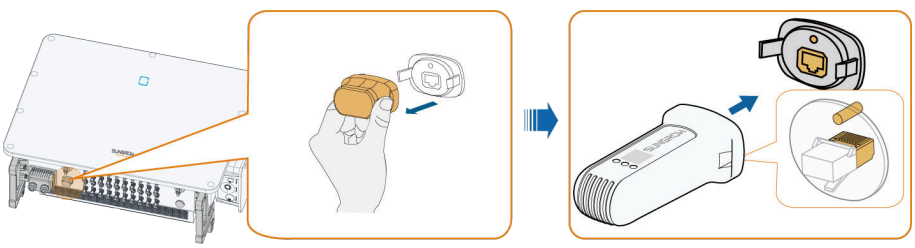
- **After the PV string is connected to the input terminal on the inverter, please turn on the corresponding DC switch.**
- **Only when the DC switch is set to "ON", the DC Type II is able to provide effective protection against electrical surges.**

5.8 Communication Connection

5.8.1 Wireless Communication Module Connection(optional)

This device supports 4G/WLAN communication via EyeM4, WiFi-P2, or EyeS4-EU wireless modules. Users must select the appropriate module based on application scenarios and regional availability.

Install the wireless communication module to the communication interface with a silk screen of COM1 at the bottom of the inverter.



*The image shown here is for reference only. The actual product you receive may differ.

NOTICE

Once the communication module is in use, do not connect the inverter to a 3rd party data logger at the same time via RS485.

For details on module installation and configuration, refer to the manual delivered together with the module.

5.8.2 WiNet-S2 Connection (optional)

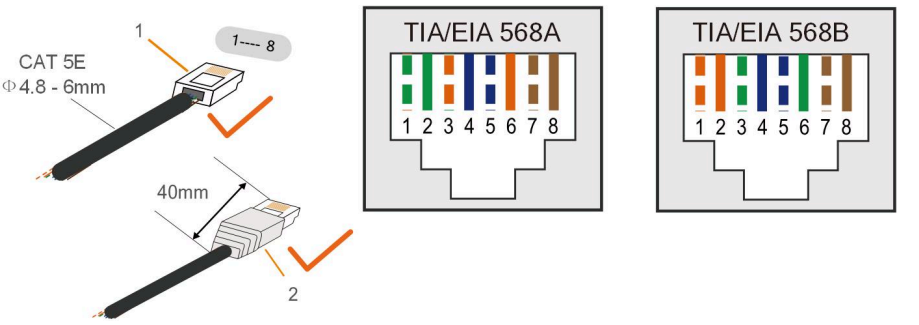
The WiNet-S2 module supports Ethernet communication and WLAN communication. It is not recommended to use both communication methods at the same time.

For details, see the quick guide for the WiNet-S2 module. Scan the following QR code for the quick guide.

WiNet-S2

5.8.2.1 Ethernet Communication

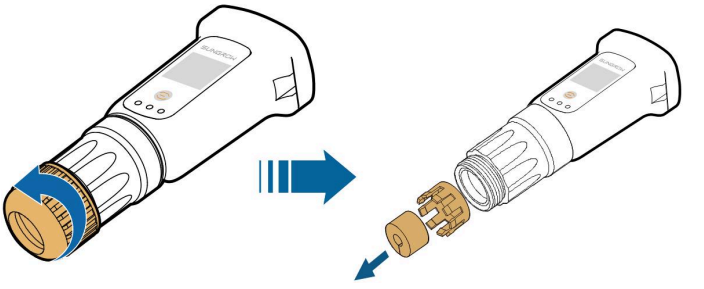
Step 1 **(Optional)** Strip the insulation layer of the communication cable with an Ethernet wire stripper, and lead the corresponding signal cables out. Insert the stripped communication cable into the RJ45 plug in the correct order, and crimp it with a crimper.



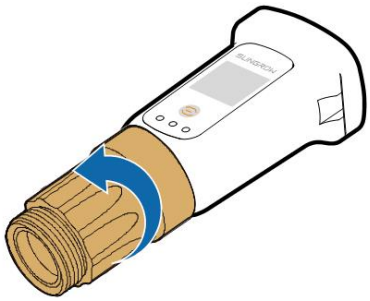
1: RJ45 plug 2: Protective cap

Skip this step if a standard network cable with RJ45 plug is prepared.

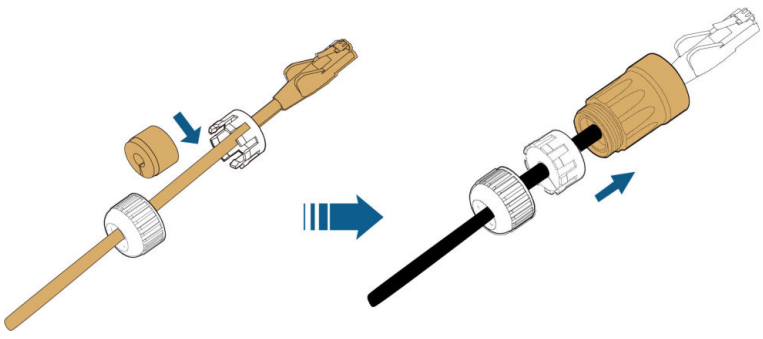
Step 2 Unscrew the swivel nut from the communication module and take out the inner sealing ring.



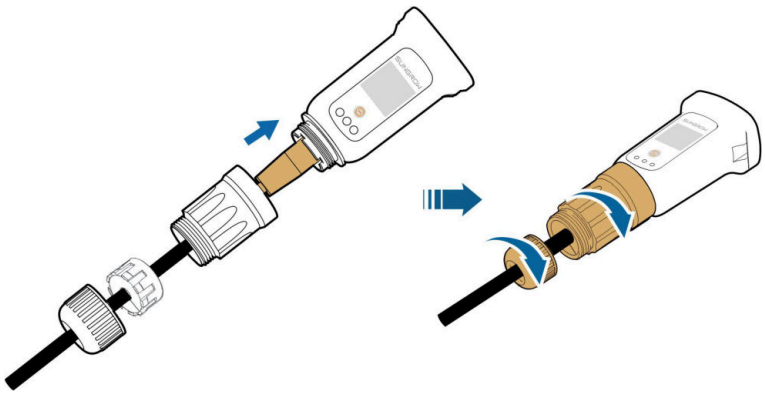
Step 3 Unscrew the housing from the communication module.



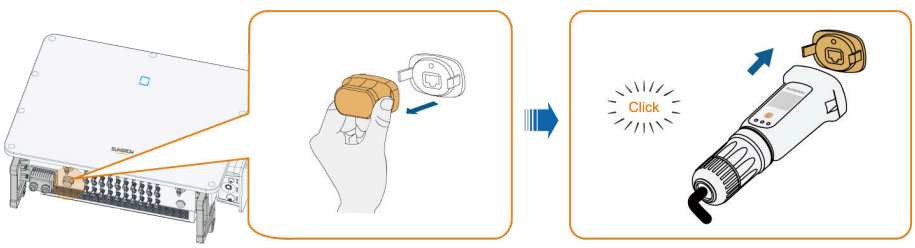
Step 4 Thread the network cable through the swivel nut and gasket. Afterwards, route the cable into the opening of the sealing. Finally, insert the cable through the housing.



Step 5 Insert the RJ45 plug into the front plug connector until there is an audible click and tighten the housing. Install the gasket and fasten the swivel nut.



Step 6 Remove the waterproof lid from the **COM1** terminal and install WiNet-S.



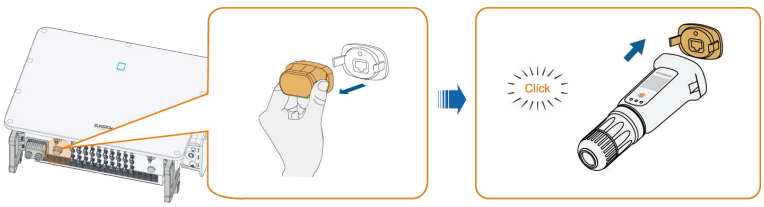
Step 7 Slightly shake it by hand to determine whether it is installed firmly.

--End

5.8.2.2 WLAN Communication

Step 1 Remove the waterproof lid from the **COM1** terminal.

Step 2 Install the module. Slightly shake it by hand to determine whether it is installed firmly, as shown below.



Step 3 Refer to the guide delivered with the module for the set-up.

--End

5.8.3 Communication Wiring Board

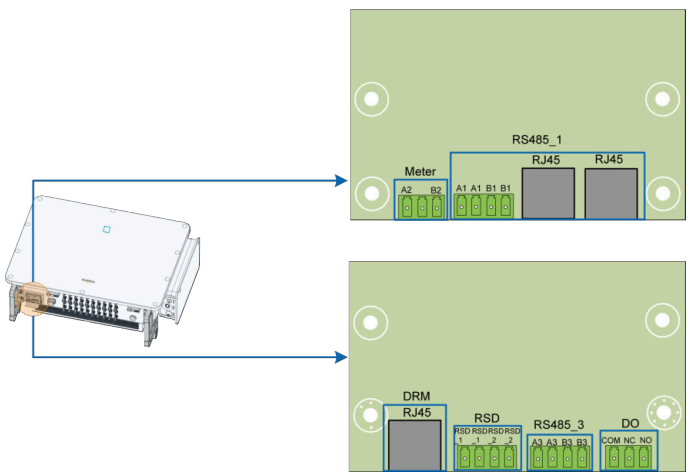


Table 5-3 Port description

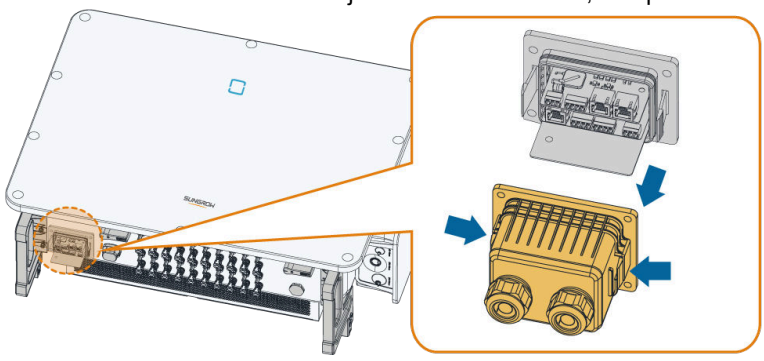
Label	Description
Meter	Used to connect the external meter.
RS485_1	• Used to connect an external intelligent communication box (COM100D) for data interaction with the upper computer or other monitoring devices. • Used for multiple inverters in the daisy chain to communicate.
DRM	Controls the inverter's start/stop function and the output of active power.
RSD	Emergency stop.

Label	Description
RS485_3	Used for communication with third-party communication devices.
DO	Used to connect LED indicators or other devices to indicate whether the inverter is in the faulty state.

5.8.4 Communication Junction Box

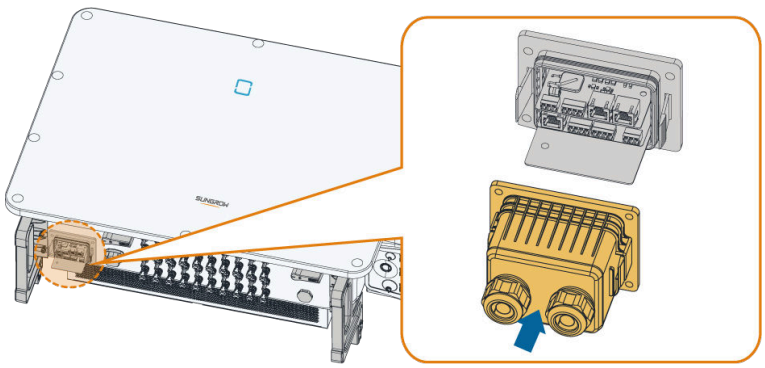
Remove the Communication Junction Box

Squeeze both sides of the communication junction box with force, and pluck it out.



Install the Communication Junction Box

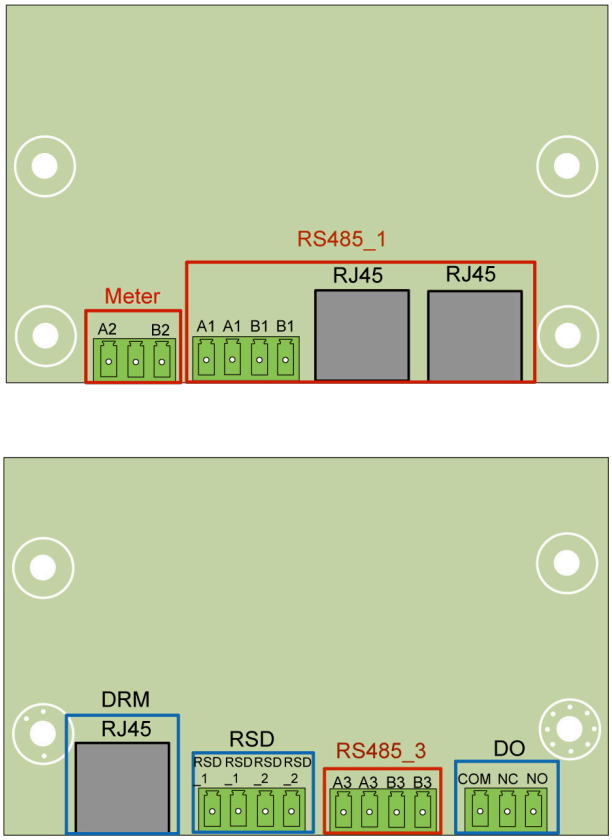
Put the junction box back and ensure a firm connection.



5.8.5 RS485 Connection

5.8.5.1 Interface Description

The RS485 communication wiring board of the inverter is shown below.



The following is the description of terminals.

Table 5-4 Meter interface (terminal block) description

No.	Description
A2	RS485_2 differential signal (+)
B2	RS485_2 differential signal (-)

Table 5-5 RS485_1 interface (terminal block) description

No.	Description
A1	RS485_1 differential signal (+)
A1	RS485_1 differential signal (+)
B1	RS485_1 differential signal (-)
B1	RS485_1 differential signal (-)

Table 5-6 RS485_1 interface (RJ45) description

No.	Description
PIN 1 ~ 4	RS485_1 differential signal (-)
PIN 5 ~ 8	RS485_1 differential signal (+)

Table 5-7 RS485_3 terminal description

No.	Description
A3	RS485_3 differential signal (+)
A3	RS485_3 differential signal (+)
B3	RS485_3 differential signal (-)
B3	RS485_3 differential signal (-)

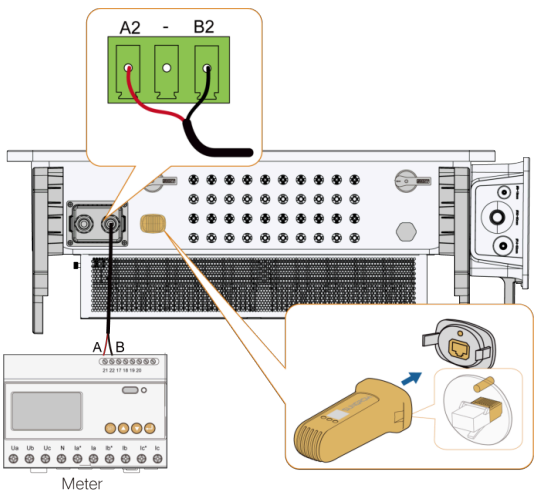
NOTICE

RJ45 and terminal block are two types of RS485_1 interface with same functions and different wiring methods. Choose one of the interfaces for wiring.

5.8.5.2 RS485 Communication System

Single-inverter Communication System

A single inverter typically uses communication modules (EyeM4/WiFi-P2/EyeS4-EU/WiNet-S2) for 4G/WLAN/Ethernet communication. Select modules and methods based on application scenarios and regional availability. Using EyeM4 as an example, the connection diagram is as follows:



For details, refer to 5.8.1 Wireless Communication Module Connection(optional) and 5.8.2 WiNet-S2 Connection (optional).

Multi-inverter Communication System

In case of multiple inverters, all the inverters in the daisy chain can be connected via RS485 cables for communication. Using COM100D/E as an example, the connection diagram is as follows:

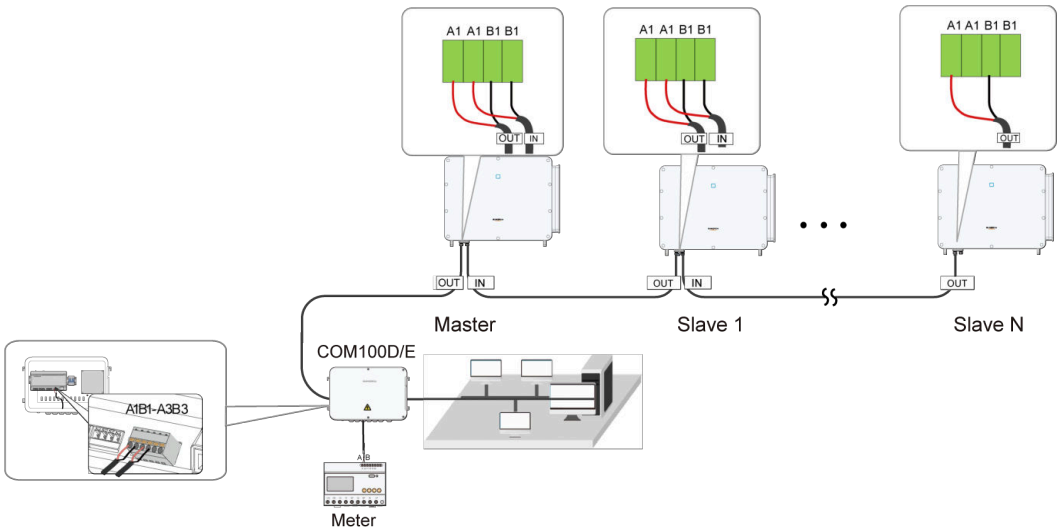


Figure 5-5 Multi-inverter Communication System【RS485_1 interface (terminal block)】

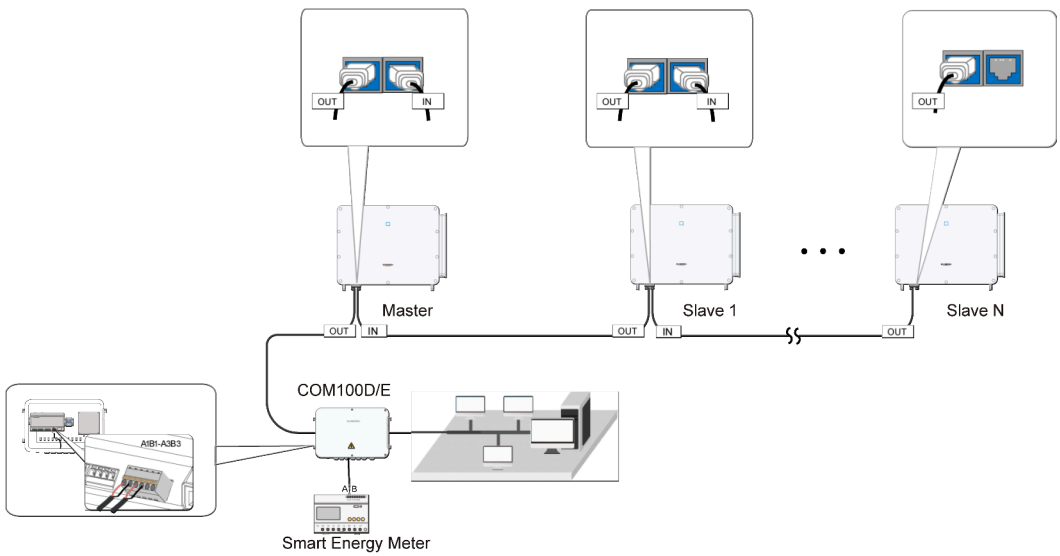


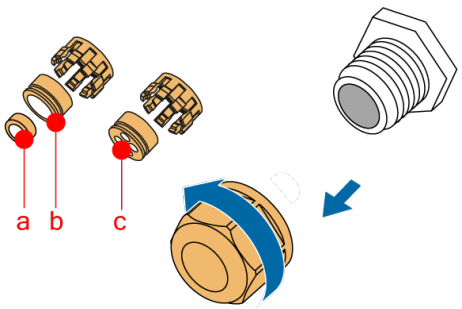
Figure 5-6 Multi-inverter Communication System【RS485_1 interface (RJ45)】

- The length of an RS485 cable cannot exceed 1200m.
- If multiple inverters communicate via the smart communication box, the number of permissible daisy chains and the number of devices allowed to be connected should meet the requirements (refer to the user manual of the smart communication box).
- When daisy-chained inverters ≤10, EyeM4 can be used for communication. Select devices based on application scenarios and regional availability.

5.8.5.3 Connection Procedure (Terminal Block)

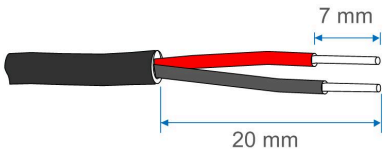
Step 1 Remove the communication junction box, referring to Remove the Communication Junction Box.

Step 2 Unscrew the swivel nut of the junction box and select the sealing ring according to the cable diameter.

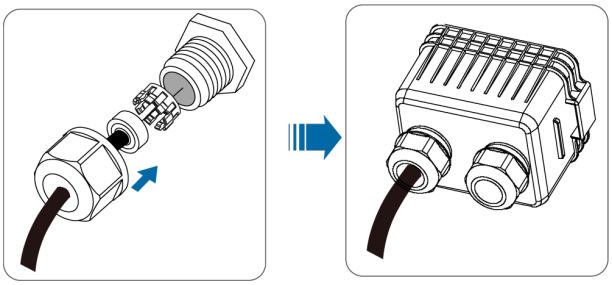


Outer Diameter D(mm)	Sealing Rings
4.5 ~ 6	c
6 ~12	a + b
12 ~ 18	b

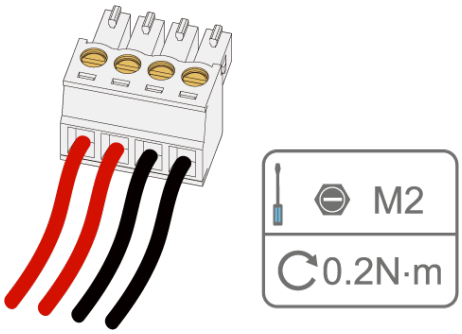
Step 3 Strip off the protective layer and insulation layer of proper length.



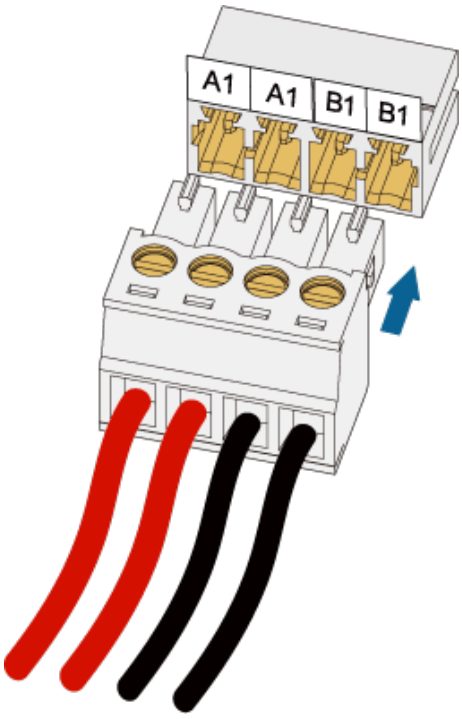
Step 4 Lead the cable through the swivel nut, the sealing ring and the junction box in sequence.



Step 5 Connect cables to the terminal socket.



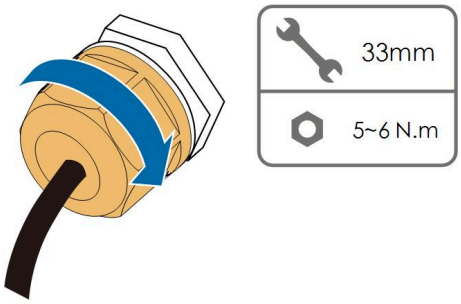
Step 6 Insert the terminal socket into the corresponding terminal block.



Step 7 If other cables should be connected to the communication circuit board, skip the subsequent steps and continue wiring. Otherwise, perform as follows.

Step 8 Install the communication junction box, referring to Install the Communication Junction Box。

Step 9 Pull slightly the cable backward and screw the swivel nut clockwise.

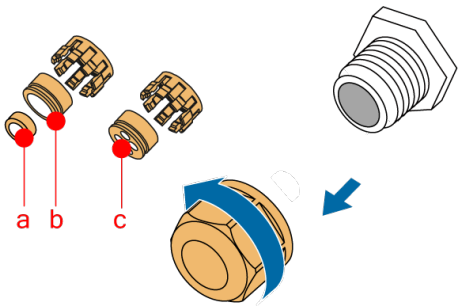


--End

5.8.5.4 Connection Procedure (RJ45 Interface)

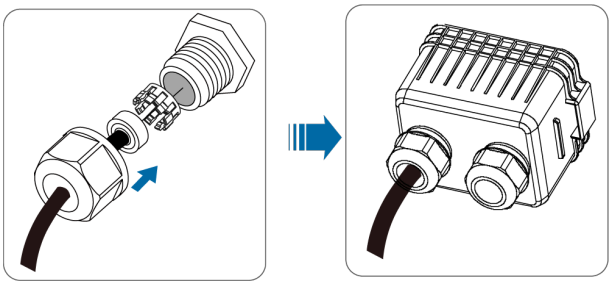
Step 1 Remove the communication junction box, referring to Remove the Communication Junction Box.

Step 2 Unscrew the swivel nut of the junction box and select the sealing ring according to the cable diameter.

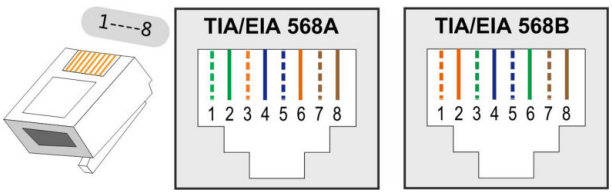


Outer Diameter D(mm)	Sealing Rings
4.5 ~ 6	c
6 ~ 12	a + b
12 ~ 18	b

Step 3 Lead the cable through the swivel nut, the sealing ring and the junction box in sequence.

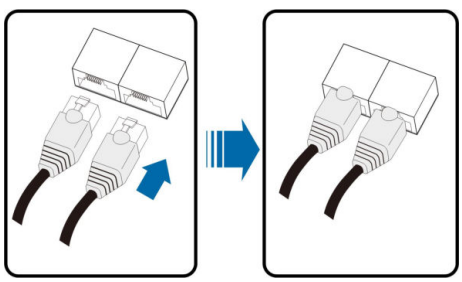


Step 4 Strip the insulation layer of the Ethernet cable with a stripper, lead out the signal wire, and insert it into the RJ45 connector (pins 3 and 6 are used for communication). Use the RJ45 crimping tool to crimp the RJ45 connector.



Pins 1 and 2 supply power to the SUNGROW communication module. Do not connect or use these two pins when making an RS485 communication cable. Otherwise, the inverter or other devices connected through the communication cable may be damaged.

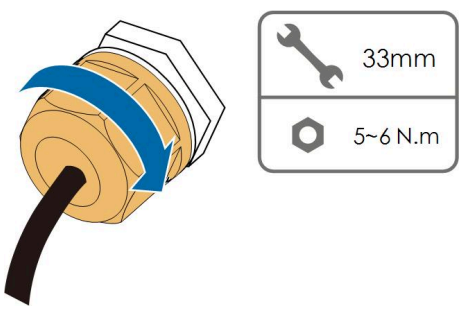
Step 5 Insert the RJ45 connector into the RJ45 jack.



Step 6 If other cables should be connected to the communication circuit board, skip the subsequent steps and continue wiring. Otherwise, perform as follows.

Step 7 Install the communication junction box, referring to Install the Communication Junction Box.

Step 8 Pull slightly the cable backward and screw the swivel nut clockwise.



--End

5.8.5.5 Smart Energy Meter Connection

The inverter can provide export control but will require the use of a external smart meter. The export control functionality has not been tested to AS/NZS 4777.2:2020.

The inverter is equipped with the feed-in power limit function, so as to meet the requirements of some national standards or grid standards for the output power at the grid connection point.

> Contact SUNGROW to ensure that the Smart Energy Meter model is available locally.
> This section mainly describes the cable connections on the inverter side. Refer to the quick guide delivered with the Smart Energy Meter for the connections on the meter side.

Procedure

For detailed connection description of the Smart Energy Meter cable, refer to the section 5.8.5.2 RS485 Communication System.

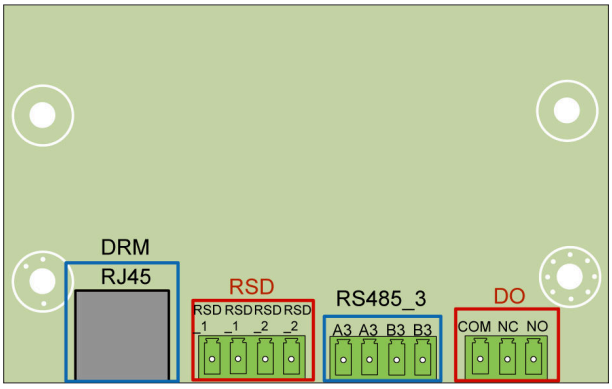
NOTICE

The energy meter is mainly used to detect the direction and magnitude of the current. And the energy meter data may not be used for billing purposes.
In the scenario where the meter is directly connected to the inverter, if the meter needs to be replaced midway, it is suggested to choose a new, unused meter. Otherwise, the statistics of meter energy data given by the inverter may be abnormal.

5.8.6 Dry Contact Connection

5.8.6.1 Dry Contact Function

The configuration circuit board is provided with fault output dry contact and emergency stop dry contact, as shown in the figure below.



DO terminal (fault output dry contact)

The relay can be set to output fault alarms, and user can configure it to be a normally open contact (COM&NO) or a normally closed contact (COM&NC).

The relay is initially at the NC contact, and it will trip to another contact when a fault occurs. When alarm occurs, signal status change will not be triggered.

Use LED indicators or other equipment to indicate whether the inverter is in the faulty state. The following Figures show the typical applications of normally open contact and normally closed contact:

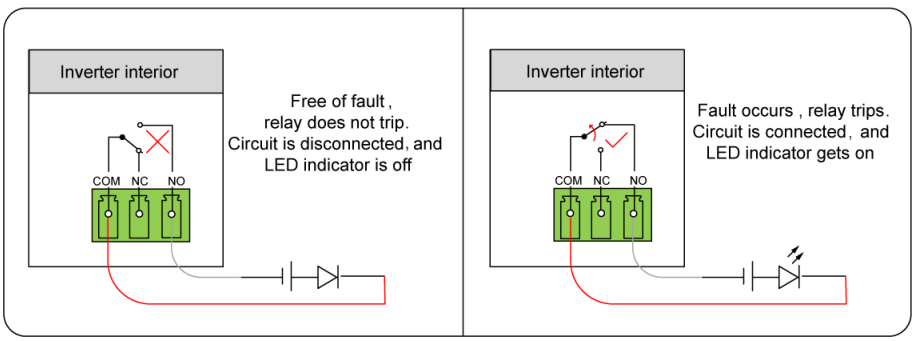


Figure 5-7 Normally open contact

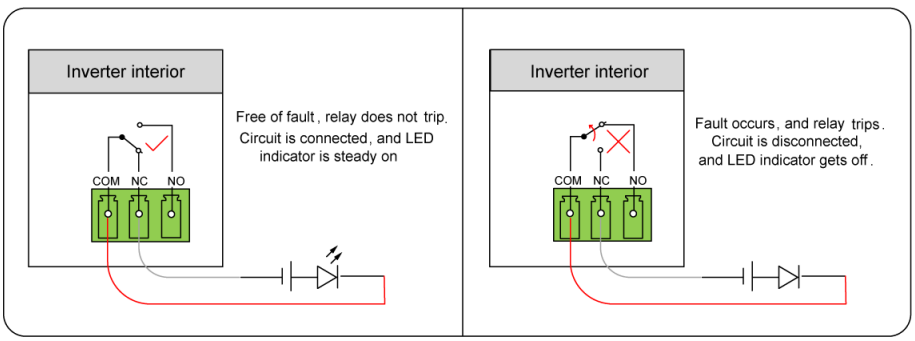


Figure 5-8 Normally closed contact

Devices connected to the relay should comply with related requirements:

AC-Side Requirements	DC-Side Requirements
Max. voltage: 230 Vac Max. current: 3 A	Max. voltage: 24 Vdc Max. current: 3 A

DI terminal (emergency stop dry contact)

The dry contact can be configured to be an emergency stop contact.

When the RSD_1 contact and RSD_2 contact are shorted by external controlled switch (The external switch can be configured as normally open contact or normally closed contact), the inverter will immediately shutdown.

NS Protection

NS Protection is used for German market currently. For a plant with an installed power over 30kW, an external NS Protection Relay is connected to inverters that are connected to each other with NS Protection terminals. When the grid runs abnormally, the status of the relay's dry contact changes, and the inverters are emergently shut down.

NS Protection(including Passive Valid) can be set. When NS Protection is enabled on the iSolarCloud, the inverters will operate normally when RSD_1 contact and RSD_2 contact are shorted by external controlled switch, and the inverters will emergently stop when RSD_1 contact and RSD_2 contact are disconnected.

> The dry contacts only support passive switch signal input.

The following figure shows the typical application of local stop dry contact.

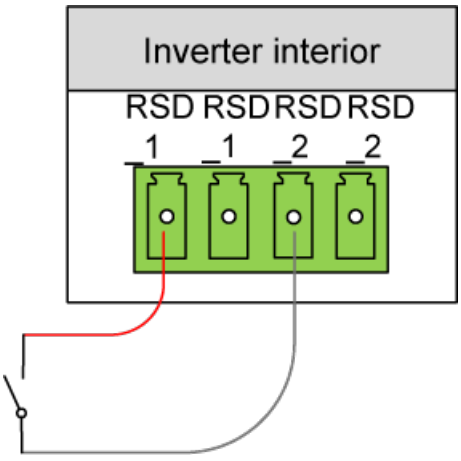


Figure 5-9 RSD contact

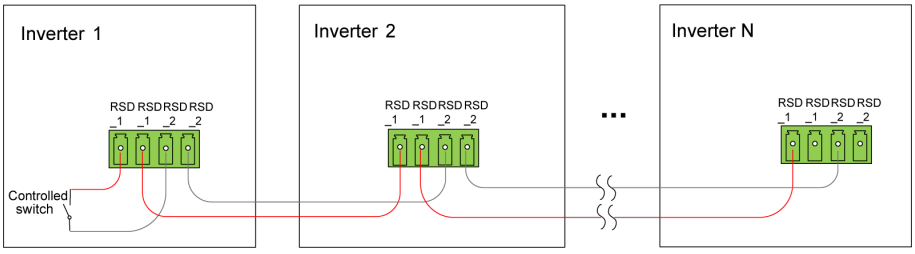


Figure 5-10 Daisy chain topology

When wiring DI dry contacts, ensure that the maximum wiring distance meet the requirements in 10.2 Wring Distance of DI Dry Contact.

5.8.6.2 Wiring Procedure

Connection method of the dry contacts is similar to that of the RS485 terminal block.

Refer to the wiring of terminal block described in chapter 5.8.5.3 Connection Procedure (Terminal Block) to implement fault output, emergency shutdown and NS protection.

5.8.7 DRM Connection

5.8.7.1 DRM Function

DRM

The inverter supports the demand response modes as specified in the standard AS/NZS 4777. The inverter has integrated a terminal for connecting to a DRED. After the connection, the method of asserting DRMs as specified in the follow table.

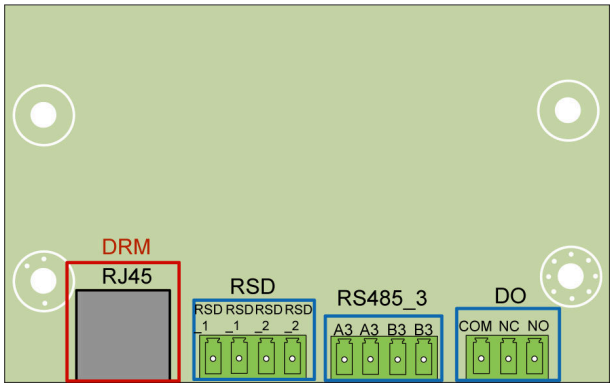


Table 5-8 Method of Asserting DRMs

Mode	Method of Asserting
DRM0	Asserted by shorting pins 5 and 6
	Asserted when the impedance between pins 5 and 6 is detected to be above 20 kΩ

Enable the DRM function through the iSolarCloud App. If there are any problems, contact your distributor first. If the problem persists, contact SUNGROW.
The DRM function is only applicable to devices for Australia and New Zealand.

Only DRM0 is supported by the inverter.

Ripple Control

In Germany, the grid company uses the Ripple Control Receiver to convert the grid dispatching signal and send it as a dry contact signal.

Wiring of the ripple control receiver dry contact cables is shown in the figure below:

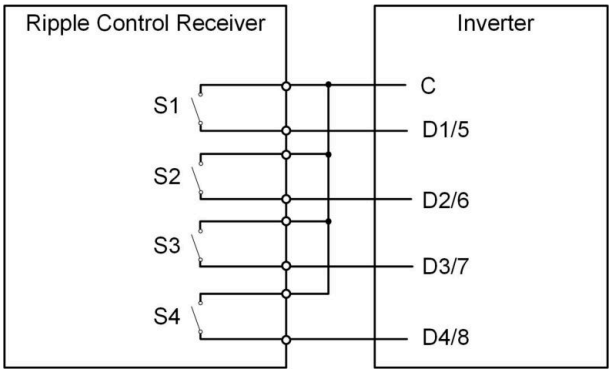


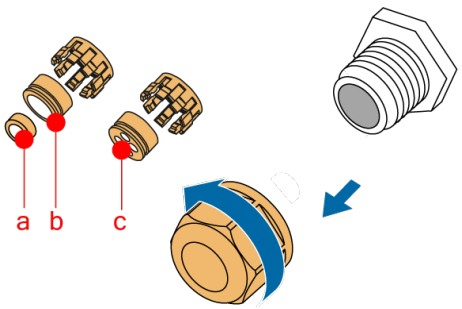
Table 5-9 Method of Asserting DI Mode

S1	S2	S3	S4	Switch Operation on External RCR	Output power (in % of the Max. AC output power)
0	0	0	0	None	100%
1	0	0	0	Close S1	100%
0	1	0	0	Close S2	60%
0	0	1	0	Close S3	30%
1	1	0	0	Close S1 and S2	0% (disconnect from grid)

5.8.7.2 Connection Procedure

Step 1 Remove the communication junction box, referring to Remove the Communication Junction Box.

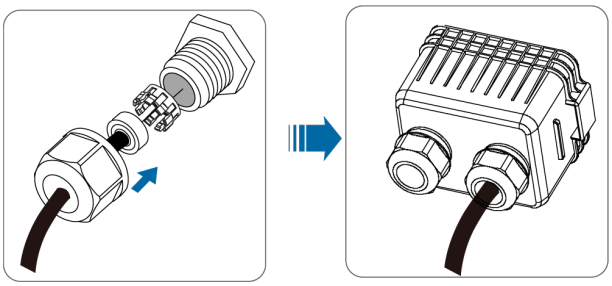
Step 2 Unscrew the swivel nut of the junction box and select the sealing ring according to the cable diameter.



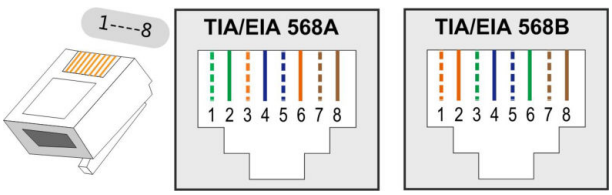
Outer Diameter D(mm)	Sealing Rings
4.5 ~ 6	c
6 ~ 12	a + b

Outer Diameter D(mm)	Sealing Rings
12 ~ 18	b

Step 3 Lead the cable through the swivel nut, the sealing ring and the junction box in sequence.

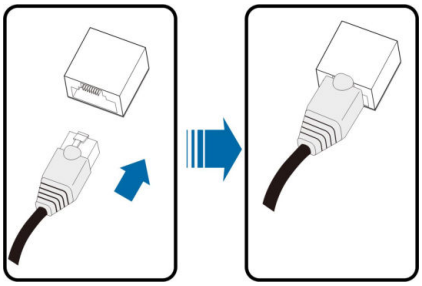


Step 4 Strip the insulation layer of the Ethernet cable with a wire stripper, and insert the signal wires to the RJ45 connector. Crimp the RJ45 connector with a crimping tool.



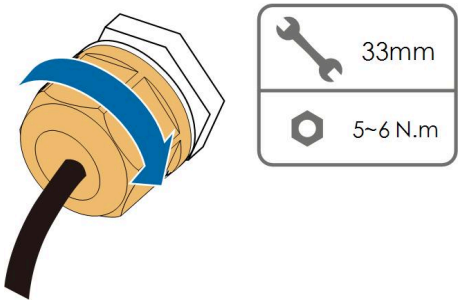
Pin	Assignment for inverters capable of both charging and discharging
1	DRM 1/5
2	DRM 2/6
3	DRM 3/7
4	DRM 4/8
5	RefGen
6	Com/DRM0
7	V+
8	V-

Step 5 Insert the RJ45 connector to the RJ45 jack.



Step 6 Install the communication junction box, referring to Install the Communication Junction Box.

Step 7 Pull slightly the cable backward and screw the swivel nut clockwise.



--End

6 iSolarCloud App

6.1 About iSolarCloud

The iSolarCloud App is a mobile application used for power plant management. The App provides plant operation analysis service and enables intelligent mobile O&M. It is designed with functions such as plant operation data display, rapid plant access, parameter setting, quick fault location and notification, and power yield and revenue analysis. With iSolarCloud, convenient and efficient end-to-end plant O&M is allowed.

Connection Methods

Users can log in to the App via remote connection or local access for plant monitoring.

Login by Establishing a Direct Connection (Local)

Establish communication between the mobile phone and the WiFi wireless communication module or the inverter's built-in Bluetooth module to enable mobile maintenance of the inverter. After logging into the App, users can check the information about and set parameters for the inverter.



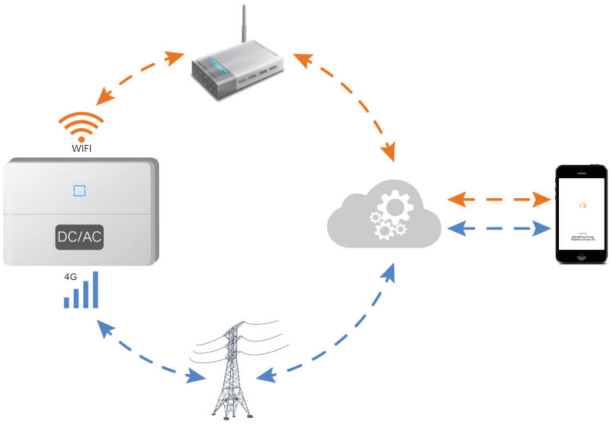
Direct Login (Local)

Login via Bluetooth connection is applicable only for SUNGROW inverters with built-in Bluetooth modules. Please consult your retailer/installer about whether the inverter is equipped with a Bluetooth module.

Login with an Account (Remote)

Establish communication between the communication module and the home router or base station to enable data exchange between the inverter and the cloud server. After logging

into the App, users can check the inverter data or send commands to control the inverter on the App.



Login Via Account and Password (Remote)

6.2 Install iSolarCloud

Prerequisite

This section introduces how to download and install the iSolarCloud App.

Procedure

Step 1 Search for **iSolarCloud** in App Store, Google Play or other App stores, or scan the QR code below with a mobile phone and download the App by following the onscreen instructions.

Step 2 Tap the downloaded installation package and follow the onscreen instructions to complete the installation. The icon of iSolarCloud will then appear on the screen.



--End

6.3 User Roles

After logging into the iSolarCloud App with different roles, users will have varying levels of access to device operations. The default accounts and passwords corresponding to different user roles can be found in **iSolarCloud App User Manual** **Device Commissioning (V2.1.6.20250218or Later) > Device Connection > Device Connection via WLAN > Identity Verification**.

For account security purposes, please refer to the **Identity Verification** section to change your password promptly after logging into the iSolarCloud App.

6.4 Device Commissioning

For device commissioning operations, please refer to the **Device Commissioning** in the **iSolarCloud App User Manual**. Alternatively, you can scan the QR code below to access the **Device Commissioning** section of the manual.

7 Commissioning

7.1 Inspection Before Commissioning

Check the following items before starting the inverter:

- All equipment has been reliably installed.
- DC switch(es) and AC circuit breaker are in the "OFF" position.
- The ground 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 are sealed.
- No foreign items, such as tools, are left on the top of the machine or in the junction box (if there is).
- The AC circuit breaker is selected in accordance with the requirements of this manual and local standards.
- All warning signs & labels are intact and legible.

> If the inverter has been mounted but remains non-operational for more than three months, it must be inspected and tested by qualified personnel before being put into operation.

7.2 Commissioning Procedure

Prerequisite

If all of the items mentioned above meet the requirements, proceed as follows to start up the inverter for the first time.

Step 1 Rotate one DC switch of the inverter to the "ON" position. When the indicator blinks blue slowly, turn the other DC switches to the “ON” position.

NOTICE

- **Strictly follow the preceding sequence. Otherwise, the product may be damaged, and the loss caused is not covered by the warranty.**
- **If the DC side is powered up while the AC side is not, the inverter will report a fault named "Grid Power Outage" (the fault information can be viewed on the iSolarCloud App, see "Records" for details). The fault is automatically cleared when the AC circuit breaker between the inverter and the grid is closed.**
- **Before closing the AC circuit breaker between the inverter and the power grid, use a multimeter that is set to the AC gear to ensure that the AC voltage is within the specified range. Otherwise, the inverter may be damaged.**

Step 2 Close the AC circuit breaker between the inverter and the grid.

Step 3 Install the iSolarCloud App, see 6.2 Install iSolarCloud for details.

Step 4 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.

Step 5 The home page is automatically displayed when the setting is completed. The indicator is steady blue, and the inverter is in grid-connected operation.

⚠ WARNING

It is strictly forbidden to close the DC switch if the inverter is in grid-connected status. Otherwise, the inverter may be damaged due to the lack of insulation impedance detection, and the loss caused is not covered by the warranty.

--End

8 System Decommissioning

8.1 Disconnecting the Inverter

⚠ CAUTION

Danger of burns!
Even if the inverter is shut down, it may still be hot and cause burns. Wear protective gloves before operating the inverter after it cools down.

For maintenance or other service work, the inverter must be switched off. Proceed as follows to disconnect the inverter. Lethal voltages or damage to the inverter will follow if otherwise.

Step 1 Disconnect the external AC circuit breaker and prevent it from inadvertent reconnection.

Step 2 Rotate the DC switch to the "OFF" position for disconnecting all of the PV string inputs.

Step 3 Wait about 5 minutes until the capacitors inside the inverter completely discharge.

Step 4 Ensure that the DC cable is current-free with a current clamp.

--End

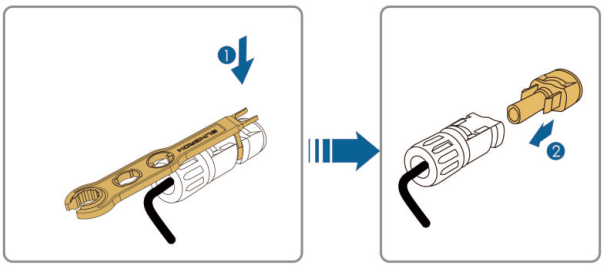
8.2 Dismantling the Inverter

⚠ CAUTION

Risk of burn injuries and electric shock!
After the inverter is powered off for 5 minutes, measure the voltage and current with professional instrument. Only when there is no voltage nor current can operators who wear protective equipment operate and maintain the inverter.

- Before dismantling the inverter, disconnect the inverter from both AC and DC power sources.
- 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 cardboard box suitable for the weight and size of this inverter and seal it properly.

Step 1 Refer to 5 Electrical Connection, for the inverter disconnection of all cables in reverse steps. In particular, when removing the DC connector, use an MC4 wrench to loosen the locking parts and install waterproof plugs.



Step 2 Refer to 4 Mechanical Mounting, to dismantle the inverter in reverse steps.

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

Step 4 If the inverter will be used again in the future, please refer to 3.2 Inverter Storage for a proper conservation.

--End

8.3 Disposal of Inverter

Users take the responsibility for the disposal of the inverter.

⚠ WARNING

Please scrap the inverter in accordance with relevant local regulations and standards to avoid property losses or casualties.

NOTICE

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

9 Troubleshooting and Maintenance

9.1 Troubleshooting

Once the inverter fails, the fault information is displayed on the App interface. If the inverter is equipped with an LCD screen, the fault information can be viewed on it.

The fault codes and troubleshooting methods of all PV inverters are detailed in the table below, and only some of the faults may occur to the model you purchased. When a fault occurs, you can check the fault information according to the fault code on the mobile app.

Fault Code	Fault Name	Troubleshooting Method
2, 3, 14, 15	Grid Overvoltage	Generally, the inverter will be reconnected to the grid after the grid returns to normal. If the fault occurs repeatedly: 1. Measure the actual grid voltage, and contact the local electric power company for solutions if the grid voltage is higher than the set value. 2. Check whether the protection parameters are appropriately set via the App or the LCD. Modify the overvoltage protection values with the consent of the local electric power operator. 3. Contact Sungrow Customer Service if the preceding causes are ruled out and the fault persists.
4, 5	Grid Undervoltage	Generally, the inverter will be reconnected to the grid after the grid returns to normal. If the fault occurs repeatedly: 1. Measure the actual grid voltage, and contact the local electric 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 cable is firmly in place. 4. Contact Sungrow Customer Service if the preceding causes are ruled out and the fault persists.

Fault Code	Fault Name	Troubleshooting Method
8	Grid Overfrequency	Generally, the inverter will be reconnected to the grid after the grid returns to normal. If the fault occurs repeatedly: 1. Measure the actual grid frequency, and contact the local electric power company for solutions if the grid frequency is beyond the set range. 2. Check whether the protection parameters are appropriately set via the App or the LCD. 3. Contact Sungrow Customer Service if the preceding causes are ruled out and the fault persists.
9	Grid Underfrequency	
10	Grid Power Outage	Generally, the inverter will be reconnected to the grid after the grid returns to normal. If the fault occurs repeatedly: 1. Check whether the grid supplies power reliably. 2. Check whether the AC cable is firmly in place. 3. Check whether the AC cable is connected to the correct terminal (whether the live wire and the N wire are correctly in place). 4. Check whether the AC circuit breaker is connected. 5. Contact Sungrow Customer Service if the preceding causes are ruled out and the fault persists.
12	Excess Leakage Current	1. The fault can be caused by poor sunlight or damp environment, and generally the inverter will be reconnected to the grid after the environment is improved. 2. If the environment is normal, check whether the AC and DC cables are well insulated. 3. Contact Sungrow Customer Service if the preceding causes are ruled out and the fault persists.
13	Grid Abnormal	Generally, the inverter will be reconnected to the grid after the grid returns to normal. If the fault occurs repeatedly:

Fault Code	Fault Name	Troubleshooting Method
		1. Measure the actual grid, and contact the local electric power company for solutions if the grid parameter exceeds the set range. 2. Contact Sungrow Customer Service if the preceding causes are ruled out and the fault persists.
17	Grid Voltage Imbalance	Generally, the inverter will be reconnected to the grid after the grid returns to normal. If the fault occurs repeatedly: 1. Measure the actual grid voltage. If grid phase voltages differ greatly, contact the electric 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 imbalance parameter through the App or the LCD. 3. Contact Sungrow Customer Service if the preceding causes are ruled out and the fault persists.
28, 29, 208, 212, 448-479	PV Reserve Connection Fault	1. Check whether the corresponding string is of reverse polarity. If so, disconnect the DC switch and adjust the polarity when the string current drops below 0.5 A. 2. Contact Sungrow Customer Service if the preceding causes are ruled out and the fault persists. *The code 28 to code 29 are corresponding to PV1 to PV2 respectively. *The code 448 to code 479 are corresponding to string 1 to string 32 respectively.
532-547, 564-579	PV Reverse Connection Alarm	1. Check whether the corresponding string is of reverse polarity. If so, disconnect the DC switch and adjust the polarity when the string current drops below 0.5 A. 2. Contact Sungrow Customer Service if the preceding causes are ruled out and the alarm persists. *The code 532 to code 547 are corresponding to string 1 to string 16 respectively. *The code 564 to code 579 are corresponding to string 17 to string 32 respectively.

Fault Code	Fault Name	Troubleshooting Method
548-563, 580-595	PV Abnormal 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. Check if the DC fuse is damaged. If so, replace the fuse. 4. Contact Sungrow Customer Service if the preceding causes are ruled out and the alarm persists. *The code 548 to code 563 are corresponding to string 1 to string 16 respectively. *The code 580 to code 595 are corresponding to string 17 to string 32 respectively.
37	Excessively High Ambient Temperature	Generally, the inverter will resume operation when the internal or module temperature returns to normal. If the fault persists: 1. Check whether the ambient temperature of the inverter is too high; 2. Check whether the inverter is in a well-ventilated place; 3. Check whether the inverter is exposed to direct sunlight. Shield it if so; 4. Check whether the fan is running properly. Replace the fan if not; 5. Contact Sungrow Power Customer Service if the fault is due to other causes and the fault persists.
43	Excessively Low Ambient Temperature	Stop and disconnect the inverter. Restart the inverter when the ambient temperature rises within the operation temperature range.
39	Low System Insulation Resistance(Eart h Fault)	Wait for the inverter to return to normal. If the fault occurs repeatedly: 1. Check whether the ISO resistance protection value is excessively high via the app or the LCD, and ensure that it complies with the local regulations.

Fault Code	Fault Name	Troubleshooting Method
		2. Check the resistance to ground of the string and DC cable. Take corrective measures in case of 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 there are batteries, check whether battery cables are damaged and whether terminals are loose or in poor contact. If so, replace the damaged cable and secure terminals to ensure a reliable connection. 5. Contact Sungrow Customer Service if the preceding causes are ruled out and the fault persists.
106	Grounding Cable Fault	1. Check whether the AC cable is correctly connected. 2. Check whether the insulation between the ground cable and the live wire is normal. 3. Contact Sungrow Customer Service if the preceding causes are ruled out and the fault persists.
88	Electric Arc Fault	1. Disconnect the DC power supply, and check whether any DC cable is damaged, the connection terminal or fuse is loose or there is a weak contact. If so, replace the damaged cable, fasten the terminal or fuse, and replace the burnt component. 2. After performing step 1, reconnect the DC power supply, and clear the electric arc fault via the App or the LCD, after that the inverter will return to normal. 3. Contact Sungrow Customer Service if the fault persists.
84	Reverse Connection Alarm of the Meter/CT	1. Check if the meter is wrongly connected. 2. Check if the input and output wiring of the meter is reversed. 3. If the existing system is enabled, please check if the rated power setting of the existing inverter is correct.

Fault Code	Fault Name	Troubleshooting Method
514	Meter Communication Abnormal Alarm	1. Check whether the communication cable and the terminals are abnormal. If so, correct them to ensure reliable connection. 2. Reconnect the communication cable of the meter. 3. Contact Sungrow Customer Service if the preceding causes are ruled out and the alarm persists.
323	Grid Confrontation	1. Check whether the output port is connected to actual grid. Disconnect it from the grid if so. 2. Contact Sungrow Customer Service if the preceding causes are ruled out and the fault persists.
75	Inverter Parallel Communication Alarm	1. Check whether the communication cable and the terminals are abnormal. If so, correct them to ensure reliable connection. 2. Reconnect the communication cable of the meter. 3. Contact Sungrow Customer Service if the preceding causes are ruled out and the alarm persists.
71	AC-side SPD Failure	Check the AC SPD andreplace the control board assembly.
72	DC-side SPD Failure	1.Check whether the connection between the control board and the main power board isreliable. 2.Check the DC SPD and replace the main power boardassembly. 3.If the fault is not cleared after the main power board isreplaced, replace the control board.
7, 11, 16, 19–25, 30–34, 36, 38, 40–42, 44–50, 52–58, 60–69, 85, 87, 92, 93, 100–105, 107–114, 116–124,	System Fault	Wait for the inverter to return to normal. If the fault occurs repeatedly: 1. Wait for the inverter to return to normal. 2. Disconnect the AC and DC switches, and disconnect the battery side switches if there are batteries. Close the AC and DC switches in turn 15 minutes later and restart the system.

Fault Code	Fault Name	Troubleshooting Method
200–211, 248–255, 300–322, 324–328, 401–412, 600–603, 605, 608, 612, 616, 620, 622–624, 800, 802, 804, 807, 1096–1118, 681		3. Contact Sungrow Customer Service if the preceding causes are ruled out and the fault persists.
59, 70–74, 76–83, 89, 216–218, 220–233, 432–434, 500–513, 515–518, 635–638, 900, 901, 910, 911, 996	System Alarm	1. The inverter can continue running. 2. Check whether the related wiring and terminal are abnormal, check whether there are any foreign materials or other environmental abnormalities, and take corresponding corrective measures when necessary. 3. If the fault persists, please contact Sungrow Power Customer Service.
264-283	MPPT Reverse Connection	1. Check whether the corresponding string is of reverse polarity. If so, disconnect the DC switch and adjust the polarity when the string current drops below 0.5 A. 2. Contact Sungrow Customer Service if the preceding causes are ruled out and the fault persists. *The code 264 to code 279 are corresponding to string 1 to string 20 respectively.
332-363	Boost Capacitor Overvoltage Alarm	1. The inverter can continue running. 2. Check whether the related wiring and terminals are abnormal, check whether there are any foreign materials or other environmental abnormalities, and take corresponding corrective measures when necessary. If the fault persists, please contact Sungrow Power Customer Service.

Fault Code	Fault Name	Troubleshooting Method
364-395	Boost Capacitor Overvoltage Fault	1. Disconnect the AC and DC switches, and disconnect the battery side switches if there are batteries. Close the AC and DC switches in turn 15 minutes later and restart the system. 2. If the fault persists, please contact Sungrow Power Customer Service.
1548-1579	String Current Reflux	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.
1600 - 1615, 1632 - 1655	PV Grounding Fault	1. When the fault occurs, it is forbidden to directly disconnect the DC switch and unplug PV terminals when the direct current is greater than 0.5 A; 2. Wait until the direct current of the inverter falls below 0.5 A, then disconnect the DC switch and unplug the faulty strings; 3. Do not reinsert the faulty strings before the grounding fault is cleared; 4. If the fault is not caused by the foregoing reasons and still exists, contact Sungrow Customer Service.
1328	PV cable-to-ground short circuit	1. Check the impedance-to-ground of PV arrays and PV cables. If poor insulation or a short circuit is found, rectify the fault. 2. If the fault persists or cannot be automatically cleared, contact Sungrow Customer Service.
1616	System Hardware Fault	1. It is prohibited to disconnect the DC switch when the DC current is greater than 0.5 A when the fault occurs.

Fault Code	Fault Name	Troubleshooting Method
		2. Disconnect the DC switch only when the inverter DC side current drops below 0.5 A. 3. It is prohibited to power up the inverter again. Please contact Sungrow Customer Service.

- Contact the dealer if the measures listed in the “Troubleshooting Method” column have been taken but the problem persists. Contact SUNGROW if the dealer fails to solve the problem.

9.2 Maintenance

9.2.1 Maintenance Notices

⚠ DANGER

Risk of inverter damage or personal injury due to incorrect service!

- **Be sure to use special insulation tools when perform high-voltage operations.**
- **Before maintenance, disconnect the AC circuit breaker on the grid side and then the DC switch. If a fault that may cause personal injury or device damage is found before maintenance, disconnect the AC circuit breaker and wait until the night before operating the DC switch. Otherwise, a fire inside the product or an explosion may occur, causing personal injuries.**
- **Turn the DC switch from ON to OFF and continue to turn it 20 degrees counterclockwise, the DC switch can be locked here.(For countries “AU” and “NZ”)**
- **After the inverter is powered off for 5 minutes, measure the voltage and current with professional instrument. Only when there is no voltage nor current can operators who wear protective equipment operate and maintain the inverter**
- **Even if the inverter is shut down, it may still be hot and cause burns. Wear protective gloves before operating the inverter after it cools down.**

⚠ DANGER

When maintaining the product, it is strictly prohibited to open the product if there is an odor or smoke or if the product appearance is abnormal. If there is no odor, smoke, or obvious abnormal appearance, repair or restart the inverter according to the alarm corrective measures. Avoid standing directly in front of the inverter during maintenance.

⚠ CAUTION

- **To prevent misuse or accidents caused by unrelated personnel: Post prominent warning signs or demarcate safety warning areas around the inverter to prevent accidents caused by misuse.**
- **For maintenance purposes,all tasks such as manual operation, function checks, and maintenance performed with the enclosure open (using toolsorkeys) must be carried out by service personnel who are aware of the electric shock risks.**

NOTICE

- **Restart the inverter only after removing the fault that impairs safety performance.**
- **As the inverter contains no component parts that can be maintained, never open the enclosure, or replace any internal components.**
- **To avoid the risk of electric shock, do not perform any other maintenance operations beyond this manual. If necessary, contact your distributor first. If the problem persists, contact SUNGROW. Otherwise, the losses caused is not covered by the warranty.**

NOTICE

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

- **Do not touch the circuit board unnecessarily.**
- **Observe the regulations to protect against electrostatic and wear an anti-static wrist strap.**

9.2.2 Quick Shutdown

The PV system can perform a quick shutdown, reducing the output voltage of strings to below 30 V within 30 s.

Triggering methods of quick shutdown:

- Method 1: Turn off the AC circuit breaker between the inverter and the grid.
- Method 2: Connect RSD_1 and RSD_2 in COM2&COM3 port to trigger quick shutdown. Disconnect RSD_1 and RSD_2 in COM2&COM3 port to exit the quick shutdown mode.
- Method 3: Connect the rapid shutdown button to any DI port (except DI5) on the Logger1000.Then, log in to the Logger1000 web system and configure the DI port parameters. After this, rapid shutdown can be triggered by pressing the rapid shutdown button.
- Method 4: Enable "AFCI-Triggered Rapid Shutdown" manually. Then, in case of an arc fault in the inverter, a "rapid shutdown" signal will be sent to the optimizer and

the inverter will execute the "press to shut down" and "rapid shutdown" commands simultaneously.

NOTICE

- **Please check regularly whether the quick shutdown function is normal.**
- **Rapid shutdown cannot be achieved by turning off the inverter's DC switch.**

9.2.3 Routine Maintenance

Item	Method	Period
Device clean	Check whether the air outlet and heat sink are blocked by dust and other objects. Check if the air inlet and outlet are normal. Clean the air inlet and outlet, if necessary.	Six months to a year (depend on the dust contents in air)
Fans	Check whether there is a fan alarm on the App. Check whether there is any abnormal noise when the fan is rotating. Clean or replace the fans if necessary (see the following section).	Once a year
Cable entry	Check whether the cable entry is insufficiently sealed or the gap is excessively large, and reseal the entry when necessary.	Once a year
Electrical connection	Check whether cables are loose or fall off. Check whether the cable is damaged, especially the part in contact with the metal enclosure.	Six months to a year

9.2.4 Fan Maintenance

⚠ WARNING

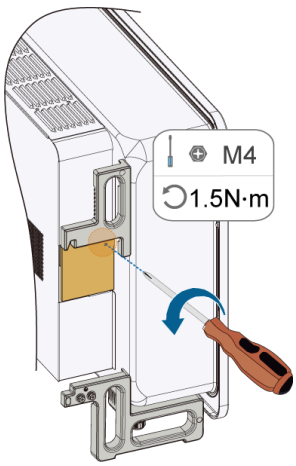
- **Power off the inverter and disconnect it from all power supplies before maintaining fans.**
- **After the inverter is powered off for 10 minutes, measure the voltage and current with professional instrument. Only when there is no voltage nor current can operators who wear protective equipment operate and maintain the inverter.**
- **Fan maintenance must be performed by professionals.**

Fans inside the inverter are used to cool the inverter 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.

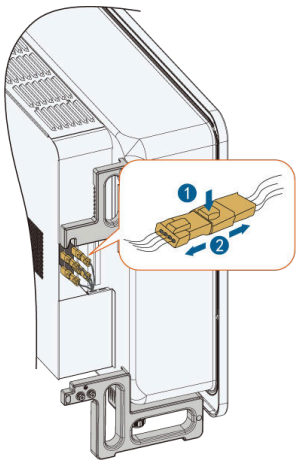
The operation procedure is as follows:

Step 1 Stop the inverter (see8.1 Disconnecting the Inverter).

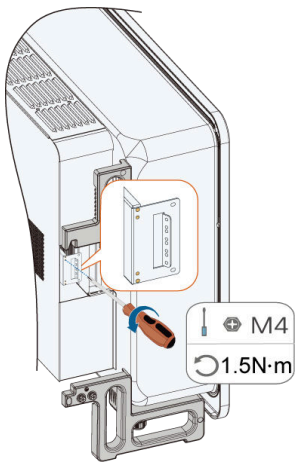
Step 2 Loosen the screw on the sealing plate of the fan module.



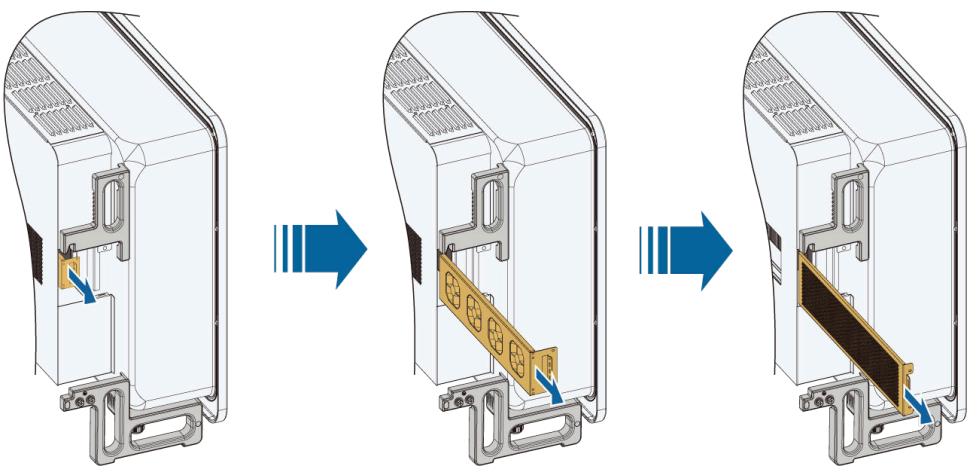
Step 3 Press the tab of the latch hook, unplug the cable connection joint outwards, and loosen the screw on the fan holder.



Step 4 Loosen screws on the side of the fan module.



Step 5 Pull out the fans. Clean them with a soft brush or vacuum cleaner, and replace them when necessary.



--End

9.2.5 Cleaning Air Inlet and Outlet

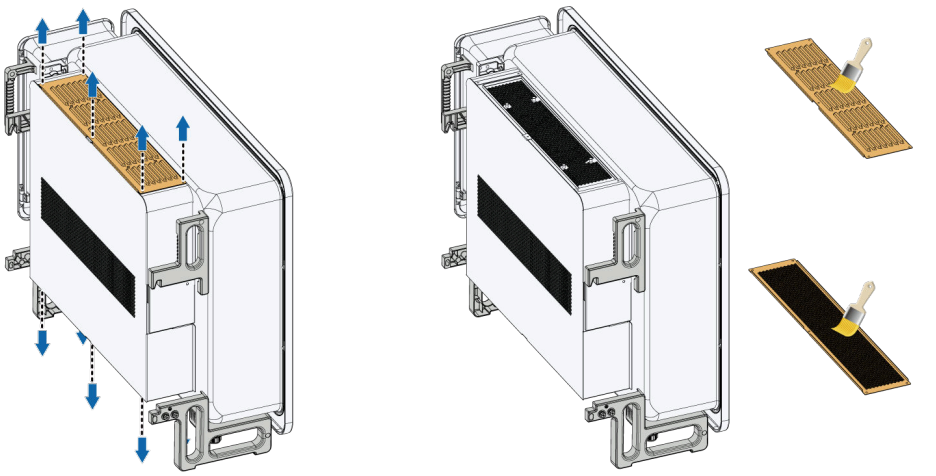
A significant amount of heat is generated when the inverter is working.

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

Clean the air inlet and outlet with soft brush or vacuum cleaner if necessary.

After shutting down the inverter, remove the upper inlet grille and the lower outlet grille.

Clean the inlet grilles, outlet grilles with a soft brush, vacuum cleaner, or blower. After cleaning, reinstall all components in the correct order.



10 Appendix

10.1 Technical Data

Parameters	SG125CX-P3
Input (DC)	
Recommended max. PV input power	198 kW
Max. PV input voltage(1)	1100 V
Min. PV input voltage / Startup input voltage	180 V / 200 V
Rated PV input voltage	600 V
MPPT voltage range	180 – 1000 V
MPP voltage range for rated power	550 – 850 V
No. of independent MPP inputs	10
No. of PV strings per MPPT	2
Max. PV input current	400 A (40A*10)
Max.DC Short-circuit current	500 A (50 A*10)
Max. current for DC connector	30 A
Output (AC)	
Rated AC output power	125 kW
Max. AC output apparent power	125 kVA
Max. AC output current	189.9 A
Rated AC voltage	3 / N / PE, 220V/380V; 230V / 400 V
AC voltage range	320 V - 480 V
Rated grid f requency	50 Hz / 60Hz
Grid frequency range	45 Hz – 55 Hz / 55Hz-65Hz
Harmonic (THD)	< 2% (at rated power)

Parameters	SG125CX-P3
Power factor at rated power / Adjustable power factor	> 0.99 / 0.8 leading – 0.8 lagging
Feed-in phases /AC connection	3 / 3-N-PE
Efficiency	
Max. efficiency	98.5 %
Protection	
Grid monitoring	Yes
DC reverse polarity protection	Yes
AC short circuit protection	Yes
Leakage current protection	Yes
Surge protection	DC Type I+ II / AC Type II
Ground fault monitoring	Yes
DC switch	Yes
PV String current monitoring	Yes
PID recovery function	Yes
Arc fault circuit interrupter (AFCI)	Yes
General Data	
Dimensions (W*H*D)	1025mm * 795mm* 360 mm
Weight	≤88 kg
Mounting method	Wall-mounting bracket
Topology	Transformerless
Degree of protection	IP66
Corrosion	C5
Night power consumption	< 8 W
Operating ambient temperature range	-30 to 60 ℃
Allowable relative humidity range (non-condensing)	0%-95 %

Parameters	SG125CX-P3
Cooling method	Smart forced air cooling
Max. operating altitude	3000 m
Display	LED, Bluetooth+APP
Communication	RS485 / WLAN(Optional) / Ethernet (Optional)
DC connection type	MC4 (Max. 6 mm²)
AC connection type	OT / DT terminal (Max.240 mm²)
AC cable specification	Outside diameter 30~60mm
Grid compliance	IEC 62109-1/2, EN/IEC 61000-6-1/2/3/4, IEC 61727, IEC 62116, EN 50549-1/2/10, IEC 63027, IEC 61000-3, IEC 61683 IEC 60068 EN 50530, IEC 62093, IEC 62910, IEC61920, IEC 60529, EN 300 328, EN301489, EN 62311, UTE C15-712-1, VDE V 0126-1-1, VDE-AR-N 4105:2018, VFR 2019, NC RfG, G99, UNE 217002, NTS, CEI 0-21 2019, CEI 0-16 2019, NRS-097-2-1, TOR typeA+B and OVE R25, DEWA, VDE 4110 4120, IRR-DCC-MV, PSE 2018, UNE 217001, PEA, MEA
Grid Support	Q at night function, LVRT, HVRT,active & reactive power control and power ramp rate control

Note(1): Input voltage exceeding the MPPT operating voltage range triggers inverter protection

10.2 Wring Distance of DI Dry Contact

The wiring distance between DI dry contact terminals must meet the requirements in the table below. The wiring distance L is the total length of all DI signal cables.

$$L = 2\sum_{k=1}^{n} L_k$$

L_K refers to the cable length in one direction between the DI dry contact terminal of the k^{th} inverter and the corresponding terminal of the $(k-1)^{th}$ inverter.

Table 10-1 Correspondence Between Inverter Quantity and Maximum Wiring Distance

Number of Inverter	Maximum Wiring Distance(unit:m)	
	16AWG / 1.31mm^2	17AWG / 1.026mm^2
1	13030	10552
2	6515	5276
3	4343	3517
4	3258	2638
5	2606	2110
6	2172	1759
7	1861	1507
8	1629	1319
9	1448	1172
10	1303	1055
11	1185	959
12	1086	879
13	1002	812
14	931	754
15	869	703
16	814	660
17	766	621
18	724	586
19	686	555
20	652	528
21	620	502
22	592	480
23	567	459
24	543	440

Number of Inverter	Maximum Wiring Distance(unit:m)	
	16AWG / 1.31mm^2	17AWG / 1.026mm^2
25	521	422

NOTICE

In case the specification of the cable used is not included in the table above, when there is only one inverter, ensure that the line impedance of the input node is less than 300Ω; and when there are multiple inverters connected in the daisy chain, ensure that the impedance is less than 300Ω/number of inverter.

10.3 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.

10.4 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