SUN2000-(175KTL-H0, 185KTL-INH0, 185KTL-H1)

User Manual

Issue	32
Date	2026-06-30

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About This Document

Purpose

This document describes the installation, electrical connections, commissioning, maintenance, and troubleshooting of the SUN2000-175KTL-H0, SUN2000-185KTL-INH0, and SUN2000-185KTL-H1 (also referred to as SUN2000). Before installing and operating the inverter, ensure that you are familiar with the features, functions, and safety precautions provided in this document.

Intended Audience

This document is intended for photovoltaic (PV) plant operators and qualified electricians.

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
DANGER	Indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
WARNING	Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
CAUTION	Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.
NOTE	Supplements the important information in the main text. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

Change History

Changes between document issues are cumulative. The latest document issue contains all the changes made in earlier issues.

Issue 32 (2026-06-30)

Updated **1.1 Personal Safety**.

Updated **4.3.1 Environment Requirements**.

Updated **4.5 Installing the Inverter**.

Updated **8 Maintenance**.

Updated **8.2 Power-Off for Maintenance**.

Issue 31 (2026-04-15)

Updated **8.7 Insulation Resistance Inspection During Reactive Power Output at Night**.

Issue 30 (2026-03-30)

Updated **1.2 Electrical Safety**.

Updated **2.2 Appearance**.

Updated **7.1.1 Downloading and Installing the App**.

Updated **7.1.2 Logging In to the App**.

Updated **8.7 Insulation Resistance Inspection During Reactive Power Output at Night**.

Deleted "Domain Name List of Management Systems."

Issue 29 (2025-12-30)

Updated **2.1 Product Overview**.

Updated **4.3.1 Environment Requirements**.

Updated **C Grid Codes**.

Issue 28 (2025-10-30)

Updated **3 Storage Requirements**.

Updated **4.3.1 Environment Requirements**.

Updated **4.3.2 Clearance Requirements**.

Updated **6.2 System Power-On**.

Updated **10 Technical Specifications**.

Issue 27 (2025-08-29)

Updated **4.3.2 Clearance Requirements**.

Updated **4.5 Installing the Inverter**.

Updated **5.6 Connecting AC Output Power Cables**.

Updated **5.7 Connecting DC Input Power Cables**.

Issue 26 (2025-06-20)

Updated **3 Storage Requirements**.

Updated **5.7 Connecting DC Input Power Cables**.

Issue 25 (2025-03-30)

Updated **2.2 Appearance**.

Added **4.6 (Optional) Installing a Protective Tray**.

Updated **7.1 App Operations**.

Updated **10 Technical Specifications**.

Updated **C Grid Codes**.

Issue 24 (2025-01-30)

Updated **5.7 Connecting DC Input Power Cables**.

Updated **7.1.3.2 Setting Protection Parameters**.

Updated **8.2 Power-Off for Maintenance**.

Updated **10 Technical Specifications**.

Issue 23 (2024-08-22)

Updated **10 Technical Specifications**.

Issue 22 (2024-06-20)

Updated **5.7 Connecting DC Input Power Cables**.

Issue 21 (2024-03-20)

Added **8.7 Insulation Resistance Inspection During Reactive Power Output at Night**.

Updated **C Grid Codes**.

Issue 20 (2024-01-30)

Updated **2.1 Product Overview**.

Updated **2.3.1 Enclosure Labels**.

Updated **3 Storage Requirements**.

Updated **4.3.1 Environment Requirements**.

Updated **4.3.2 Clearance Requirements**.

Updated **6.1 Checking Before Power-On**.

Updated **7.2 Upgrading the Inverter**.

Issue 19 (2023-12-20)

Updated **4.3.1 Environment Requirements**.

Updated **5.1 Precautions**.

Updated **5.6 Connecting AC Output Power Cables**.

Updated **5.7 Connecting DC Input Power Cables**.

Updated **8.5 Alarm Reference**.

Updated **E Contact Information**.

Added **F Digital Power Customer Service**.

Issue 18 (2023-08-31)

Added **2.5 Smart I-V Curve Diagnosis**.

Updated **5.7 Connecting DC Input Power Cables**. Changed "During DC input power cabling, leave at least 50 mm of slack." to "During DC input power cabling, leave at least 150 mm of slack."

Updated **A Securing Y-Branch Connectors**. Changed "During DC input power cabling, leave at least 50 mm of slack." in the figure to "During DC input power cabling, leave at least 150 mm of slack."

Issue 17 (2023-05-25)

Updated **2.1 Product Overview**.

Issue 16 (2023-03-30)

Updated **2.1 Product Overview**.

Issue 15 (2023-02-28)

Updated **1 Safety Information**.

Updated **2.1 Product Overview**.

Updated **4.2 Preparing Tools**.

Updated **4.5 Installing the Inverter**.

Updated **5.6 Connecting AC Output Power Cables**.

Updated **7.1 App Operations**.

Deleted the content about operations related to a USB flash drive.

Updated **8.5 Alarm Reference**.

Added **D Resetting Password**.

Added **E Contact Information**.

Issue 14 (2022-02-20)

Updated **2.2 Appearance**.

Updated **2.3.1 Enclosure Labels**.

Updated **4.3.1 Environment Requirements**.

Updated **6.2 System Power-On**.

Updated **8.3 Routine Maintenance**.

Updated **8.6 Resetting and Turning On the DC Switch**.

Issue 13 (2021-09-30)

Updated **2.2 Appearance**.

Updated **2.3.1 Enclosure Labels**.

Updated **5.3 Opening the Maintenance Compartment Door**.

Updated **5.4 (Optional) Replacing the Crimping Module**.

Updated **5.5 (Optional) Installing the Power Cable of the Tracking System**.

Updated **5.6 Connecting AC Output Power Cables**.

Updated **5.9 Closing the Maintenance Compartment Door**.

Updated **6.2 System Power-On**.

Updated **8.2 Power-Off for Maintenance**.

Added **8.6 Resetting and Turning On the DC Switch**.

Issue 12 (2021-07-08)

Updated **6.2 System Power-On**.

Updated **7.1 App Operations**.

Updated **8.5 Alarm Reference**.

Issue 11 (2021-05-21)

Updated **5.7 Connecting DC Input Power Cables**.

Issue 10 (2021-04-26)

Updated **5.7 Connecting DC Input Power Cables**.

Updated **A Securing Y-Branch Connectors**.

Issue 09 (2021-03-15)

Updated **4.2 Preparing Tools**.

Updated **5.7 Connecting DC Input Power Cables**.

Updated **8.5 Alarm Reference**.

Issue 08 (2021-01-22)

Updated **4.3.1 Environment Requirements**.

Updated **C Grid Codes**.

Issue 07 (2020-12-21)

Updated **5.6 Connecting AC Output Power Cables**.

Issue 06 (2020-11-30)

Updated **4.5 Installing the Inverter**.

Updated **6.2 System Power-On**.

Issue 05 (2020-08-30)

Updated **2.1 Product Overview**.

Updated **4.3.1 Environment Requirements**.

Updated **4.5 Installing the Inverter**.

Updated **6.2 System Power-On**.

Updated **7.1 App Operations**.

Updated **8.3 Routine Maintenance**.

Issue 04 (2020-03-03)

Updated **1 Safety Information**.

Updated **2.3.1 Enclosure Labels**.

Updated **5.8 Installing the Communications Cable**.

Updated **7.1 App Operations**.

Updated **10 Technical Specifications**.

Added **A Securing Y-Branch Connectors**.

Added "Domain Name List of Management Systems."

Issue 03 (2019-09-10)

Updated **5.7 Connecting DC Input Power Cables**.

Updated **8.5 Alarm Reference**.

Added **B String Access Detection**.

Issue 02 (2019-06-05)

Updated **2.1 Product Overview**.

Issue 01 (2019-05-15)

This issue is used for first office application (FOA).

Contents

1 Safety Information

Statement

Before transporting, storing, installing, operating, using, and/or maintaining the equipment, read this document, strictly follow the instructions provided herein, and follow all the safety instructions on the equipment and in this document. In this document, "equipment" refers to the products, software, components, spare parts, and/or services related to this document; "the Company" refers to the manufacturer (producer), seller, and/or service provider of the equipment; "you" refers to the entity that transports, stores, installs, operates, uses, and/or maintains the equipment.

The **DANGER**, **WARNING**, **CAUTION**, and **NOTICE** statements described in this document do not cover all the safety precautions. You also need to comply with relevant international, national, or regional standards and industry practices. **The Company shall not be liable for any consequences that may arise due to violations of safety requirements or safety standards concerning the design, production, and usage of the equipment.**

The equipment shall be used in an environment that meets the design specifications. Otherwise, the equipment may be faulty, malfunctioning, or damaged, which is not covered under the warranty. The Company shall not be liable for any property loss, personal injury, or even death caused thereby.

Comply with applicable laws, regulations, standards, and specifications during transportation, storage, installation, operation, use, and maintenance.

Do not perform reverse engineering, decompilation, disassembly, adaptation, implantation, or other derivative operations on the equipment software. Do not study the internal implementation logic of the equipment, obtain the source code of the equipment software, violate intellectual property rights, or disclose any of the performance test results of the equipment software.

The Company shall not be liable for any of the following circumstances or their consequences:

- Equipment damage due to force majeure such as earthquakes, floods, volcanic eruptions, debris flows, lightning strikes, fires, wars, armed conflicts, typhoons, hurricanes, tornadoes, and other extreme weather conditions
- Operation beyond the conditions specified in this document

- Installation or use in environments that do not comply with international, national, or regional standards
- Installation or use by unqualified personnel
- Failure to follow the operation instructions or safety precautions on the product or in this document
- Unauthorized modifications to the product or software code or removal of the product
- Damage caused during transportation by you or a third party authorized by you
- Storage conditions that do not meet the requirements specified in this document
- Failure to comply with local laws, regulations, or related standards due to the materials and tools prepared by you
- Damage caused by your or a third party's negligence, intentional breach, gross negligence, or improper operations or damage not caused by the Company

1.1 Personal Safety

DANGER

Ensure that power is off during installation. Do not install or remove a cable with power on. Transient contact between the core of the cable and the conductor will generate electric arcs or sparks, which may cause a fire or personal injury.

DANGER

Non-standard and improper operations on the energized equipment may cause fire, electric shocks, or explosion, resulting in property damage, personal injury, or even death.

DANGER

Before operations, remove conductive objects such as watches, bracelets, bangles, rings, and necklaces to prevent electric shocks.

DANGER

During operations, use dedicated insulated tools to prevent electric shocks or short circuits. The dielectric withstanding voltage level must comply with local laws, regulations, standards, and specifications.

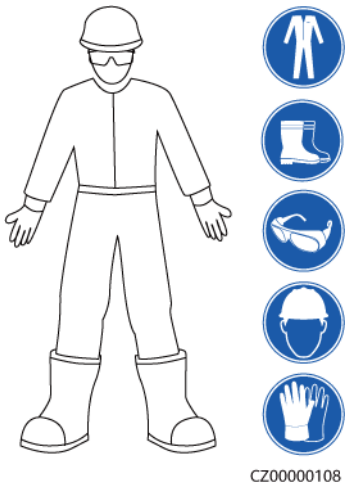
DANGER

In rare fault scenarios, flammable gas mixtures may be generated inside the product. In this condition, operating a switch may cause the product to catch fire or allow a serious fault to propagate.

WARNING

During operations, wear personal protective equipment such as protective clothing, insulated shoes, goggles, safety helmets, and insulated gloves.

Figure 1-1 Personal protective equipment



General Requirements

- Do not stop protective devices. Pay attention to the warnings, cautions, and related precautionary measures in this document and on the equipment.
- If there is a likelihood of personal injury or equipment damage during operations, immediately stop, report the case to the supervisor, and take feasible protective measures.
- Do not power on the equipment before it is installed or confirmed by professionals.
- Do not touch the power supply equipment directly or with conductors such as damp objects. Before touching any conductor surface or terminal, measure the voltage at the contact point to ensure that there is no risk of electric shock.
- Do not touch operating equipment because the enclosure is hot.
- Do not touch a running fan with your hands, components, screws, tools, or boards. Otherwise, personal injury or equipment damage may occur.
- In the case of a fire, immediately leave the building or the equipment area and activate the fire alarm or call emergency services. Do not enter the affected building or equipment area under any circumstances.

Personnel Requirements

- Only professionals and trained personnel are allowed to operate the equipment.
  - Professionals: personnel who are familiar with the working principles and structure of the equipment, trained or experienced in equipment operations and are clear of the sources and degree of various potential hazards in equipment installation, operation, maintenance
  - Trained personnel: personnel who are trained in technology and safety, have required experience, are aware of possible hazards on themselves in certain operations, and are able to take protective measures to minimize the hazards on themselves and other people
- Personnel who plan to install or maintain the equipment must receive adequate training, be able to correctly perform all operations, and understand all necessary safety precautions and local relevant standards.
- Only qualified professionals or trained personnel are allowed to install, operate, and maintain the equipment.
- Only qualified professionals are allowed to remove safety facilities and inspect the equipment.
- Personnel who will perform special tasks such as electrical operations, working at heights, and operations of special equipment must possess the required local qualifications.
- Only authorized professionals are allowed to replace the equipment or components (including software).
- Only personnel who need to work on the equipment are allowed to access the equipment.

1.2 Electrical Safety

DANGER

Before connecting cables, ensure that the equipment is intact. Otherwise, electric shocks or fires may occur.

DANGER

Non-standard and improper operations may result in fire or electric shocks.

DANGER

Prevent foreign matter from entering the equipment during operations. Otherwise, short circuits, equipment damage, load power derating, power failure, or personal injury may occur.

WARNING

For the equipment that needs to be grounded, install the ground cable first when installing the equipment and remove the ground cable last when removing the equipment.

WARNING

During the installation of PV strings and the inverter, the positive or negative terminals of PV strings may be short-circuited to ground if the power cables are not properly installed or routed. In this case, an AC or DC short circuit may occur and damage the inverter. The resulting device damage is not covered under any warranty.

CAUTION

Do not route cables near the air intake or exhaust vents of the equipment.

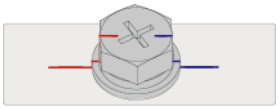
CAUTION

The components (such as power distribution boxes, circuit breakers, and cables) used for electrical connections shall comply with fire resistance and flame retardance standards (such as IEC 60670-1). The materials and structure shall meet fire safety requirements.

General Requirements

- Follow the procedures described in the document for installation, operation, and maintenance. Do not modify, retrofit, or alter the equipment without authorization (including, but not limited to, adding or removing components and cables), and do not change the installation sequence.
- Obtain approval from the national or local electric utility company before connecting the equipment to the grid.
- Observe the power plant safety regulations, such as the operation and work ticket mechanisms.
- Install temporary fences or warning ropes and hang "No Entry" signs around the operation area to keep unauthorized personnel away from the area.
- Before installing or removing power cables, turn off the switches of the equipment and its upstream and downstream switches.
- Before performing operations on the equipment, check that all tools meet the requirements and record the tools. After the operations are complete, collect all of the tools to prevent them from being left inside the equipment.
- Before installing power cables, check that cable labels are correct and cable terminals are insulated.

- When installing the equipment, use a torque tool of a proper measurement range to tighten the screws. When using a wrench to tighten the screws, ensure that the wrench does not tilt and the torque error does not exceed 10% of the specified value.
- Ensure that bolts are tightened with a torque tool and marked in red and blue after double-check. Installation personnel mark tightened bolts in blue. Quality inspection personnel confirm that the bolts are tightened and then mark them in red. (The marks must cross the edges of the bolts.)



- If the equipment has multiple inputs, disconnect all the inputs and wait until the equipment is completely powered off before performing operations on the equipment.
- Before maintaining a downstream electrical or power distribution device, turn off the output switch on the power supply equipment.
- During equipment maintenance, attach "No switching on" labels near the upstream and downstream switches or circuit breakers as well as warning signs to prevent accidental connection. The equipment can be powered on only after troubleshooting is complete.
- Do not open equipment panels.
- Check equipment connections periodically, ensuring that all screws are securely tightened.
- Only qualified professionals can replace a damaged cable.
- Do not scrawl, damage, or block any labels or nameplates on the equipment. Promptly replace labels that have worn out.
- Do not use solvents such as water, alcohol, or oil to clean electrical components inside or outside of the equipment.

Grounding

- Ensure that the grounding impedance of the equipment complies with local electrical standards.
- Ensure that the equipment is connected permanently to the protective ground. Before operating the equipment, check its electrical connection to ensure that it is reliably grounded.
- Do not operate the equipment in the absence of a properly installed ground conductor.
- Do not damage the ground conductor.

Cabling Requirements

- When selecting, installing, and routing cables, follow local safety regulations and rules.
- When routing power cables, ensure that there is no coiling or twisting. Do not join or weld power cables. If necessary, use a longer cable.
- Ensure that all cables are properly connected and insulated, and meet specifications.

- Ensure that the cables are protected from mechanical stress, overheating, and corrosion.
- Ensure that cables are not squeezed, torn, warped, or whitened.
- Ensure that the slots and holes for routing cables are free from sharp edges, and that the positions where cables are routed through pipes or cable holes are equipped with cushion materials to prevent the cables from being damaged by sharp edges or burrs.
- Ensure that cables of the same type are bound together neatly and straight and that the cable sheath is intact. When routing cables of different types, ensure that they are away from each other without entanglement and overlapping.
- Secure buried cables using cable supports and cable clips. Ensure that the cables in the backfill area are in close contact with the ground to prevent cable deformation or damage during backfilling.
- If the external conditions (such as the cable layout or ambient temperature) change, verify the cable usage in accordance with the IEC-60364-5-52 or local laws and regulations. For example, check that the current-carrying capacity meets requirements.
- When routing cables, reserve at least 30 mm clearance between the cables and heat-generating components or areas. This prevents deterioration or damage to the cable insulation layer.

1.3 Environment Requirements

DANGER

Do not expose the equipment to flammable or explosive gas or smoke. Do not perform any operation on the equipment in such environments.

DANGER

Do not store any flammable or explosive materials in the equipment area.

DANGER

Do not place the equipment near heat sources or fire sources, such as smoke, candles, heaters, or other heating devices. Overheating may damage the equipment or cause a fire.

WARNING

Install the equipment in an area far away from liquids. Do not install it under areas prone to condensation, such as under water pipes and air exhaust vents, or areas prone to water leakage, such as air conditioner vents, ventilation vents, or feeder windows of the equipment room. Ensure that no liquid enters the equipment to prevent faults or short circuits.

WARNING

To prevent damage or fire due to high temperature, ensure that the ventilation vents or heat dissipation systems are not obstructed or covered by other objects while the equipment is running.

General Requirements

- Store the equipment according to the storage requirements. Equipment damage caused by unqualified storage conditions is not covered under the warranty.
- Keep the installation and operating environments of the equipment within the allowed ranges. Otherwise, its performance and safety will be compromised.
- The operating temperature range provided in the equipment's technical specifications refers to the ambient temperatures in equipment's installation environment.
- Do not install, use, or operate outdoor equipment and cables (including but not limited to moving equipment, operating equipment and cables, inserting connectors to or removing connectors from signal ports connected to outdoor facilities, working at heights, performing outdoor installation, and opening doors) in harsh weather conditions such as lightning, rain, snow, and level 6 or stronger wind.
- Do not install the equipment in an environment with dust, smoke, volatile or corrosive gases, infrared and other radiations, organic solvents, or salty air.
- Do not install the equipment in an environment with conductive metal or magnetic dust.
- Do not install the equipment in an area conducive to the growth of microorganisms such as fungus or mildew.
- Do not install the equipment in an area with strong vibration, noise, or electromagnetic interference. The equipment shall be installed in an environment with a magnetic field strength less than 4 Gauss. If the magnetic field strength is greater than or equal to 4 Gauss, the equipment may fail to work properly. If the magnetic field strength is high, for example, in a smeltery, you are advised to use a gauss meter to measure the magnetic field strength of the equipment installation position when the smelting equipment is running normally.
- Ensure that the site complies with local laws, regulations, and related standards.
- Ensure that the ground in the installation environment is solid, free from spongy or soft soil, and not prone to subsidence. The site must not be located

in a low-lying land prone to water or snow accumulation, and the horizontal level of the site must be above the highest water level of that area in history.

- Do not install the equipment in a position that may be submerged in water.
- If the equipment is installed in a place with abundant vegetation, in addition to routine weeding, harden the ground underneath the equipment using cement or gravel (the area shall be greater than or equal to 3 m x 2.5 m).
- The equipment may become corroded if it is installed in a salt-affected area. Before installing the equipment outdoors in salt-affected areas, consult the Company. A salt-affected area refers to the region within 500 m of the coast or prone to sea breeze. Regions prone to sea breeze vary with weather conditions (such as typhoons and monsoons) or terrains (such as dams and hills).
- Before opening doors during the installation, operation, and maintenance of the equipment, clean up any water, ice, snow, or other foreign objects on the top of the equipment to prevent foreign objects from falling into the equipment.
- When installing the equipment, ensure that the installation surface is solid enough to bear the weight of the equipment.
- After installing the equipment, remove the packing materials such as cartons, foam, plastics, and cable ties from the equipment area.

1.4 Mechanical Safety

⚠ WARNING

Ensure that all necessary tools are ready and inspected by a professional organization. Do not use tools that have signs of scratches or fail to pass the inspection or whose inspection validity period has expired. Ensure that the tools are secure and not overloaded.

⚠ WARNING

Do not drill holes into the equipment. Doing so may affect the sealing performance and electromagnetic containment of the equipment and damage components or cables inside. Metal shavings from drilling may short-circuit boards inside the equipment.

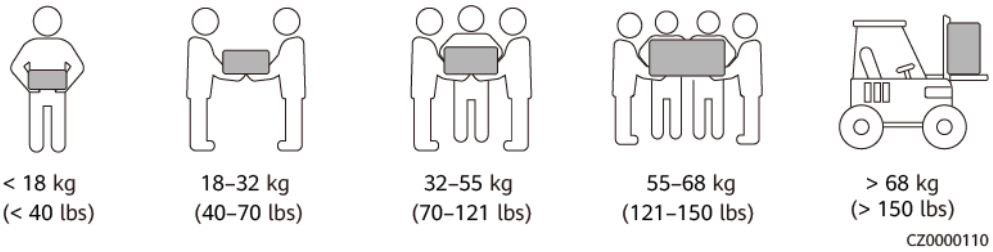
General Requirements

- Repaint any paint scratches caused during equipment transportation or installation in a timely manner. Equipment with scratches must not be exposed for an extended period of time.
- Do not perform operations such as arc welding and cutting on the equipment without evaluation by the Company.
- Do not install other devices on the top of the equipment without evaluation by the Company.

- When performing operations over the top of the equipment, take measures to protect the equipment against damage.
- Use correct tools and operate them in the correct way.

Moving Heavy Objects

- Be cautious to prevent injury when moving heavy objects.



- If multiple persons need to move a heavy object together, determine the manpower and work division with consideration of height and other conditions to ensure that the weight is equally distributed.
- If two persons or more move a heavy object together, ensure that the object is lifted and landed simultaneously and moved at a uniform pace under the supervision of one person.
- Wear personal protective gears such as protective gloves and shoes when manually moving the equipment.
- To move an object by hand, approach to the object, squat down, and then lift the object gently and stably by the force of the legs instead of your back. Do not lift it suddenly or turn your body around.
- Do not quickly lift a heavy object above your waist. Place the object on a workbench that is half-waist high or any other appropriate place, adjust the positions of your palms, and then lift it.
- Move a heavy object stably with balanced force at an even and low speed. Put down the object stably and slowly to prevent any collision or drop from scratching the surface of the equipment or damaging the components and cables.
- When moving a heavy object, be aware of the workbench, slope, staircase, and slippery places. When moving a heavy object through a door, ensure that the door is wide enough to move the object and avoid bumping or injury.
- When transferring a heavy object, move your feet instead of turning your waist around. When lifting and transferring a heavy object, ensure that your feet point to the target direction of movement.
- When transporting the equipment using a pallet truck or forklift, ensure that the tynes are properly positioned so that the equipment does not topple. Before moving the equipment, secure it to the pallet truck or forklift using ropes. When moving the equipment, assign dedicated personnel to take care of it.
- Choose sea, roads in good conditions, or airplanes for transportation. Do not transport the equipment by railway. Avoid tilt or jolt during transportation.

Using Ladders

- Use wooden or insulated ladders when you need to perform live-line working at heights.

- Platform ladders with protective rails are preferred. Single ladders are not recommended.
- Before using a ladder, check that it is intact and confirm its load bearing capacity. Do not overload it.
- Ensure that the ladder is securely positioned and held firm.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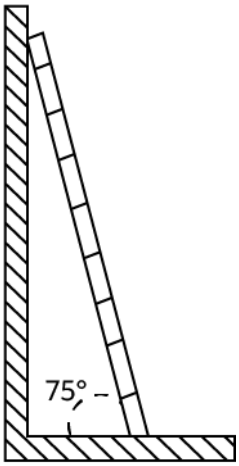
- When climbing up the ladder, keep your body stable and your center of gravity between the side rails, and do not overreach to the sides.
- When a step ladder is used, ensure that the pull ropes are secured.
- If a single ladder is used, the recommended angle for the ladder against the floor is 75 degrees, as shown in the following figure. A square can be used to measure the angle.



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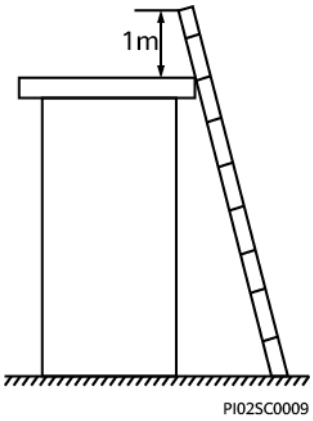
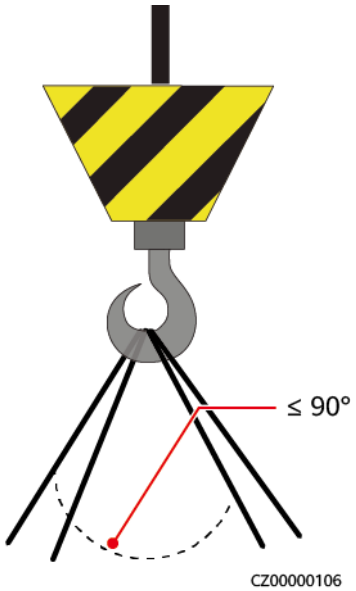
- If a single ladder is used, ensure that the wider end of the ladder is at the bottom, and take protective measures to prevent the ladder from sliding.
- If a single ladder is used, do not climb higher than the fourth rung of the ladder from the top.
- If you use a single ladder to climb up to a platform, ensure that the ladder is at least 1 m higher than the platform.



Hoisting

- Only trained and qualified personnel are allowed to perform hoisting operations.
- Install temporary warning signs or fences to isolate the hoisting area.
- Ensure that the foundation where hoisting is performed meets the load-bearing requirements.
- Before hoisting objects, ensure that hoisting tools are firmly secured onto a fixed object or wall that meets the load-bearing requirements.
- During hoisting, do not stand or walk under the crane or the hoisted objects.
- Do not drag steel ropes and hoisting tools or bump the hoisted objects against hard objects during hoisting.
- Ensure that the angle between two hoisting ropes is no more than 90 degrees, as shown in the following figure.



Drilling Holes

- Obtain consent from the customer and contractor before drilling holes.
- Wear protective equipment such as safety goggles and protective gloves when drilling holes.

- To avoid short circuits or other risks, do not drill holes into buried pipes or cables.
- When drilling holes, protect the equipment from shavings. After drilling, clean up any shavings.

2 Overview

2.1 Product Overview

Function

The SUN2000 is a three-phase grid-tied PV string inverter that converts the DC power generated by PV strings into AC power and feeds the power into the power grid.

Model

This document involves the following product models:

- SUN2000-175KTL-H0
- SUN2000-185KTL-INH0
- SUN2000-185KTL-H1

Figure 2-1 Model (SUN2000-185KTL-INH0 is used as an example)

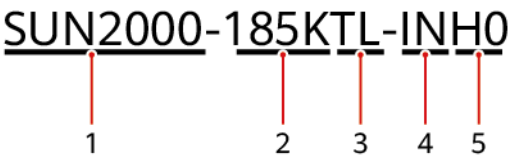


Table 2-1 Model description

No.	Meaning	Description
1	Product family identifier	SUN2000: three-phase grid-tied PV string inverter
2	Power level identifier	• 175K: The rated output power is 175 kW. • 185K: The maximum active power is 185 kW.

No.	Meaning	Description
3	Topology identifier	TL: transformerless
4	Region identifier	IN: India
5	Product series identifier	H0/H1: the product series with the 1500 V DC input voltage

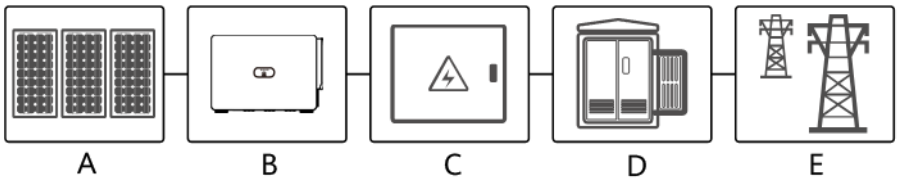
NOTE

- The SUN2000-175KTL-H0 is applicable only to the Chinese mainland. For other countries or regions, the Company does not provide quality assurance.
- The SUN2000-175KTL-H0, SUN2000-185KTL-INH0, and SUN2000-185KTL-H1 inverters described in this document must not be connected to a winding (of the transformer station) that has other models of inverters connected to it.

Networking Application

The SUN2000 applies to grid-tied PV systems for commercial rooftop projects and utility-scale plants. Typically, a grid-tied PV system consists of the PV string, SUN2000, AC power distribution unit, and step-up transformer.

Figure 2-2 Networking application



(A) PV string (B) SUN2000 (C) AC power distribution unit

(D) Step-up transformer (E) Power grid

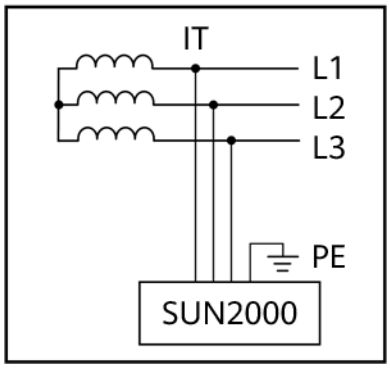
NOTE

- The SUN2000 is powered by a dedicated power transformer instead of connecting to low-voltage overhead power lines.
- This device is class A equipment of group 1.
  - Class A equipment: Class A equipment is the equipment suitable for use in all locations other than those allocated to residential environments and those directly connected to a low voltage power supply network which supplies buildings used for domestic purposes.
  - Group 1 equipment: Group 2 contains all industrial, scientific, and medical (ISM) RF equipment in which radio-frequency energy in the frequency range of 9 kHz to 400 GHz is intentionally generated and used or only used locally, in the form of electromagnetic radiation, inductive and/or capacitive coupling, for the treatment of material, for inspection/analysis purposes, or for transfer of electromagnetic energy. Group 1 contains all equipment which is not classified as group 2 equipment.

Supported Earthing Systems

The SUN2000 supports the IT earthing system.

Figure 2-3 Earthing system

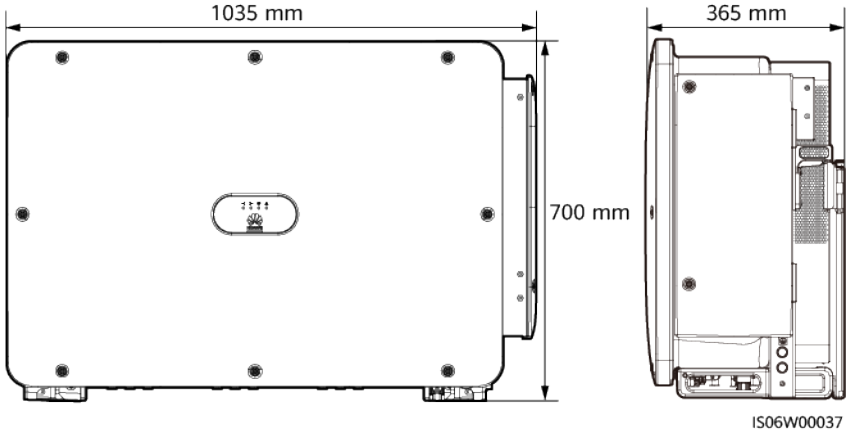


NOTE

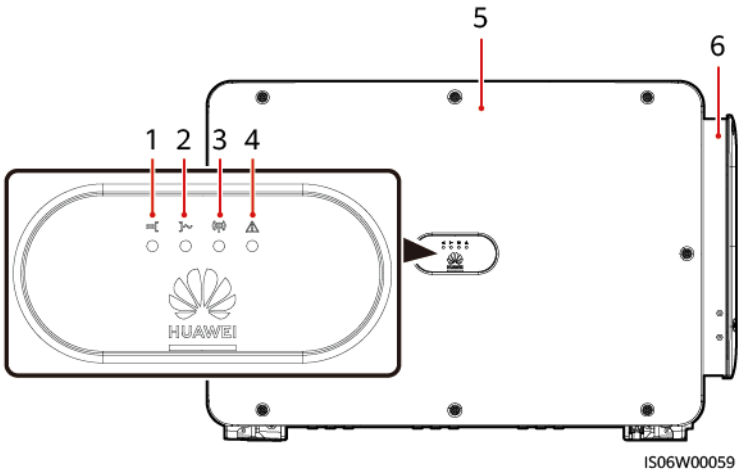
The SUN2000 supports the IT earthing system in PV-only scenarios. The use of the SUN2000 in other types of earthing systems, such as TT, TN-C, and TN-C-S, is not recommended. (If such an earthing system is encountered, contact the Company's engineers.)

2.2 Appearance

Dimensions

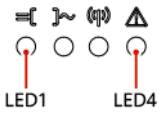
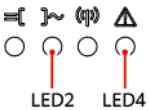


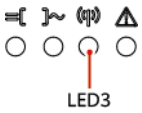
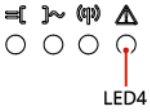
Front View



(1) PV connection indicator
(2) Grid connection indicator
(3) Communication indicator
(4) Alarm/Maintenance indicator
(5) Panel
(6) Maintenance compartment

Table 2-2 LED indicator description

Category	Indicator Status		Description
PV indication 	LED1	LED4	-
	Steady green	-	At least one PV string is properly connected, and the DC input voltage of the corresponding MPPT circuit is higher than or equal to 500 V.
	Blinking green fast	Red	An environmental fault occurred on the DC side.
	Off	-	The inverter disconnects from all PV strings, or the DC input voltages of all MPPT circuits are less than 500 V.
Grid connection indication 	LED2	LED4	-
	Steady green	-	The inverter is in grid-tied mode.
	Blinking green fast	Red	An environmental fault occurred on the AC side.
	Off	-	The inverter is not in grid-tied mode.

Category	Indicator Status	Description
Communication indication 	LED3	-
	Blinking green fast	The inverter receives data over RS485 or MBUS.
	Off	The inverter has not received data over RS485 or MBUS for 10 seconds.
Alarm/ Maintenance indication 	LED4	-
	Steady red	A major alarm was generated. If neither the PV connection indicator nor the grid connection indicator is blinking green fast, replace components or the inverter as instructed by the app.
	Blinking red fast	A minor alarm was generated.
	Blinking red slowly	A warning alarm was generated.
	Steady green	The local maintenance is successful.
	Blinking green slowly	The device is under local maintenance or shut down after receiving a command.
	Blinking green fast	The local maintenance failed.
	Off	There is no alarm, and no local maintenance operations are performed.

NOTE

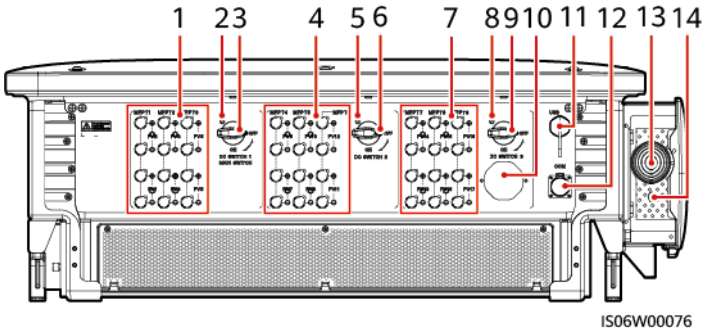
- Local maintenance refers to operations performed after a USB flash drive or USB data cable is inserted into the USB port of the inverter. For example, import and export configurations using a USB flash drive, or connect to the app using a USB data cable.
- If the alarming and the local maintenance happen concurrently, the alarm/maintenance indicator shows the local maintenance state first. After the USB flash drive or USB data cable is removed, the indicator shows the alarm state.
- iOS mobile phones do not support connection to the app using a USB data cable. You are advised to use the SmartLogger for O&M.

Bottom View

NOTE

- The inverter is equipped with either manual or automatic DC switches. The actual DC switches may vary.
- Only the models intended for use in Australia have DC switch locking screw holes.

Figure 2-4 Port illustration (manual DC switch)



(1) DC input terminals (controlled by DC SWITCH 1)

(2) DC switch locking screw hole 1

(3) DC switch 1 (DC SWITCH 1)

(4) DC input terminals (controlled by DC SWITCH 2)

(5) DC switch locking screw hole 2

(6) DC switch 2 (DC SWITCH 2)

(7) DC input terminals (controlled by DC SWITCH 3)

(8) DC switch locking screw hole 3

(9) DC switch 3 (DC SWITCH 3)

(10) Ventilation valve

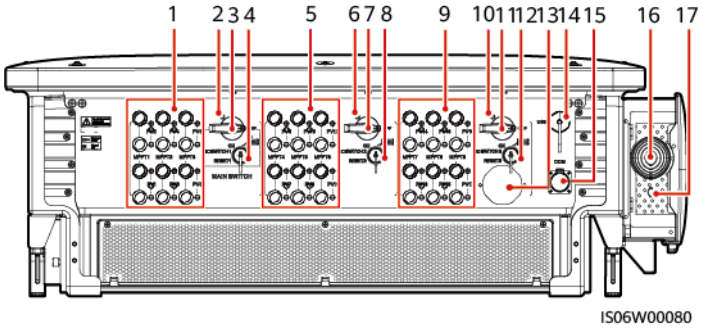
(11) USB port (USB)

(12) Communications port (COM)

(13) AC output power cable hole

(14) Tracking system power cable hole

Figure 2-5 Port illustration (automatic DC switch)



(1) DC input terminals (controlled by DC SWITCH 1)

(2) DC switch locking screw hole 1

(3) DC switch 1 (DC SWITCH 1)

(4) Reset button 1 (RESET 1)

(5) DC input terminals (controlled by DC SWITCH 2)

(6) DC switch locking screw hole 2

(7) DC switch 2 (DC SWITCH 2)

(8) Reset button 2 (RESET 2)

(9) DC input terminals (controlled by DC SWITCH 3)

(10) DC switch locking screw hole 3

(11) DC switch 3 (DC SWITCH 3)

(12) Reset button 3 (RESET 3)

(13) Ventilation valve

(14) USB port (USB)

(15) Communications port (COM)

(16) AC output power cable hole

(17) Tracking system power cable hole

DC Switch Description

DANGER

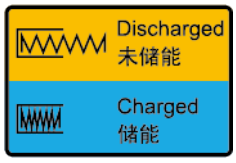
The DC switches automatically turn off if a fault occurs in the inverter (LED4 is steady red, and the three DC switches are off). In this case, contact technical support and do not turn on the DC switches by yourself.

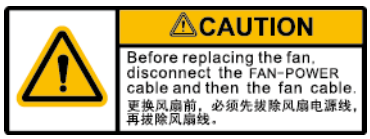
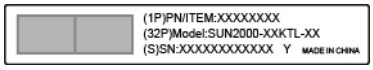
Table 2-3 DC switch description

Switch	Description	
DC SWITCH	**ON**	The DC switch is on and can be automatically turned off for protection.
		The DC switch is on but cannot be automatically turned off for protection.
	OFF	The DC switch is off.
RESET	• When the DC switch is automatically turned off for protection, the RESET button will be released. • If the RESET button is not pressed, the DC switch can only be turned to the marked position  and cannot be set to the **ON** position.	

2.3 Label Description

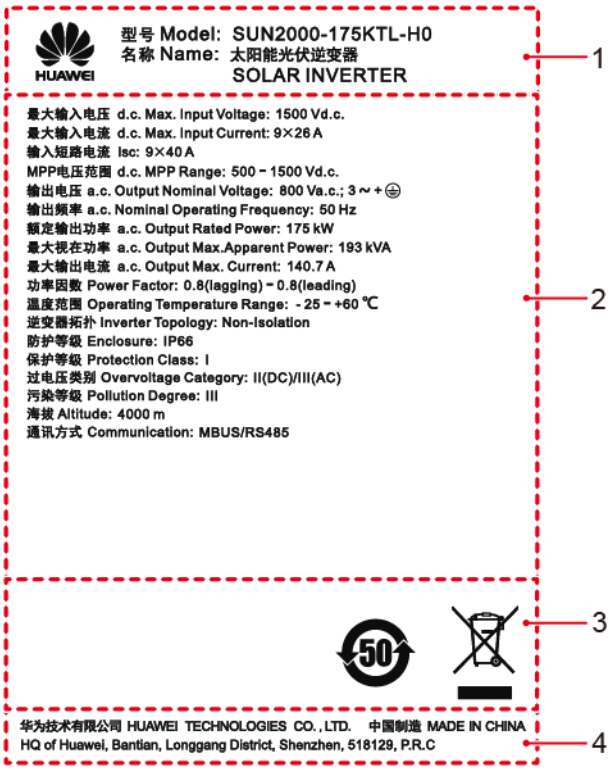
2.3.1 Enclosure Labels

Symbol	Name	Meaning
	Operation warning	Potential hazards exist after the inverter is powered on. Take protective measures when operating the inverter.
	High temperature hazard	Do not touch the inverter when it is running because its enclosure is hot.
	Electric shock hazard	Hazardous voltage exists after the device is powered on. Take protective measures during operation and maintenance (O&M).
	Delayed discharge	• High voltage exists after the inverter is powered on. Only qualified and trained electrical technicians are allowed to perform operations on the inverter. • Residual voltage exists after the inverter is powered off. It takes 15 minutes for the inverter to discharge to the safe voltage.
	Refer to documentation	Reminds operators to refer to the documentation for the device. Losses caused by operations that do not comply with the requirements of site selection, storage, or mounting specified in the user manual are not covered under the warranty.
	Grounding	Indicates the position for connecting the protective earthing (PE) cable.
	Operation warning	Do not remove the DC input connector when the inverter is running.
	Switch operation warning	If the energy of the DC switch is discharged, it may fail to switch off automatically.

Symbol	Name	Meaning
	Switch energy discharge warning	This position indicates that the energy of the DC switch is discharged. Do not set the DC switch to this position.
	Fan operation warning	High voltage exists after the inverter is powered on. Do not touch the fans when the inverter is working.
	Fan replacement warning	Before replacing the fan, disconnect its power connector.
	Inverter SN label	Indicates the inverter serial number.
	Weight label	The inverter needs to be carried by four persons or using a forklift.

2.3.2 Product Nameplate

Figure 2-6 Nameplate (SUN2000-175KTL-H0 is used as an example)



(1) Trademark and model

(2) Key technical specifications

(3) Compliance symbols

(4) Company name and country of manufacture

NOTE

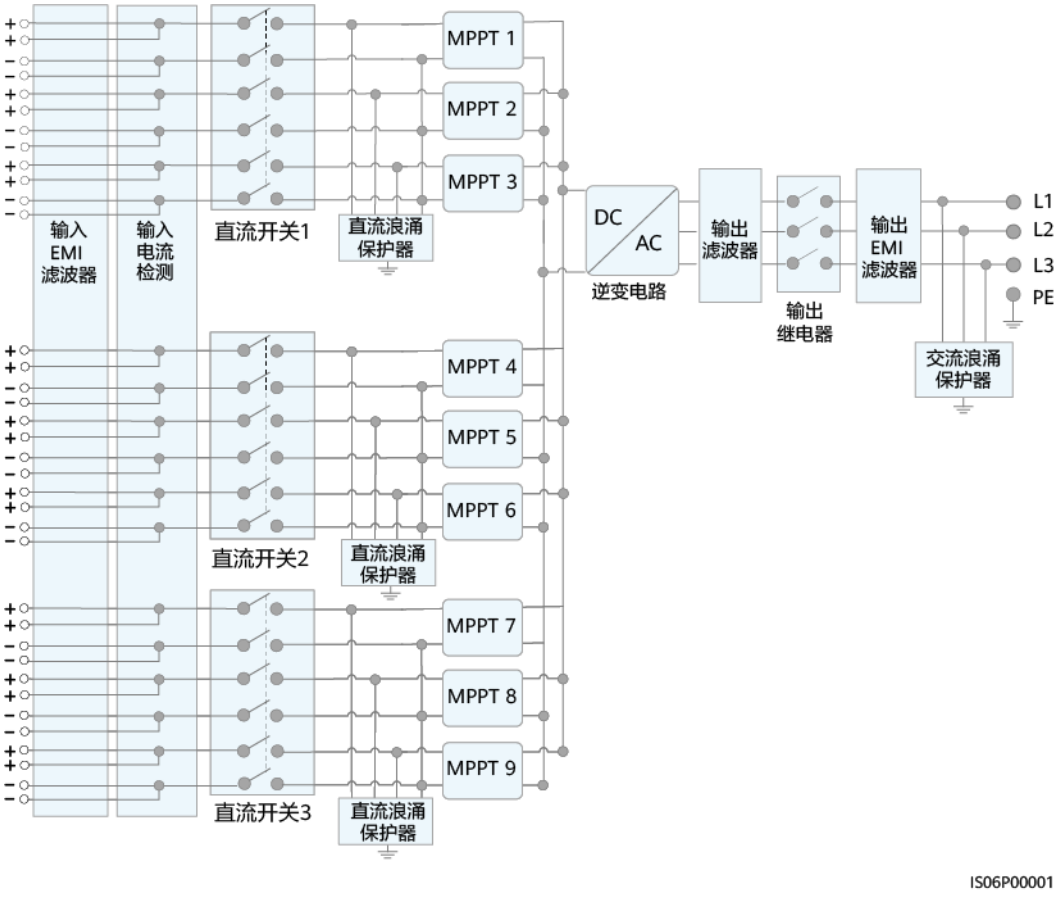
The nameplate figure is for reference only.

2.4 Working Principles

2.4.1 Circuit Diagram

The inverter receives inputs from 18 PV strings. Then the inputs are grouped into nine MPPT circuits inside the inverter to track the maximum power point of the PV strings. The DC power is then converted into three-phase AC power through an inverter circuit. Surge protection is supported on both the DC and AC sides.

Figure 2-7 SUN2000 conceptual diagram



2.4.2 Working Modes

The inverter has three working modes: standby, operating, and shutdown.

Figure 2-8 Working modes

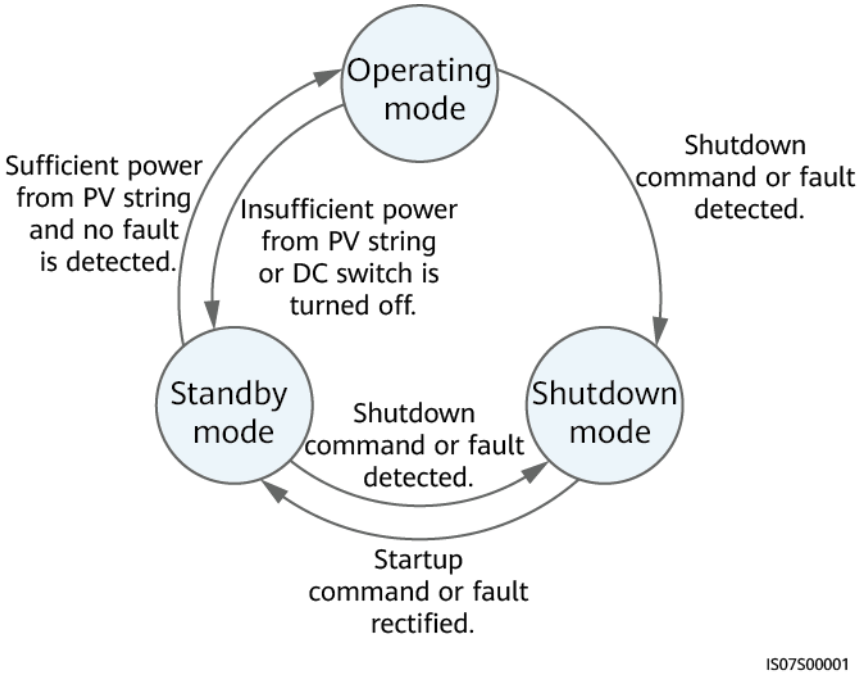


Table 2-4 Working mode description

Working Mode	Description
Standby	The inverter enters the standby mode when the external environment does not meet the operating requirements. In the standby mode: • The inverter continuously detects its operation status. Once the operation conditions are met, the inverter enters the operating mode. • If the inverter receives a shutdown command or detects a fault after startup, it enters the shutdown mode.
Operating	In the operating mode: • The inverter converts DC power received from PV strings into AC power and then feeds the power to the power grid. • The inverter tracks the maximum power point to maximize the PV string output power. • If the inverter receives a shutdown command or detects a fault, it enters the shutdown mode. • If the inverter detects that the output power of PV strings does not meet the requirements for grid-tied power generation, it enters the standby mode.

Working Mode	Description
Shutdown	• In the standby or operating mode, if the inverter receives a shutdown command or detects a fault, it enters the shutdown mode. • In the shutdown mode, if the inverter detects that the fault is rectified or receives a startup command, it enters the standby mode.

2.5 Smart I-V Curve Diagnosis

The inverter supports the Smart I-V Curve Diagnosis function. For details, see the **iMaster NetEco V600R023C00 Smart I-V Curve Diagnosis User Manual**.

3 Storage Requirements

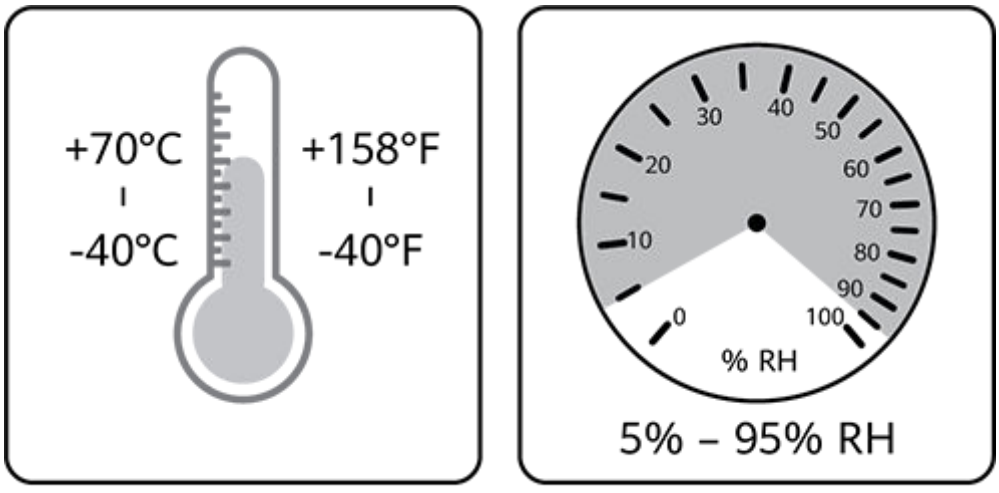
NOTICE

Store the device according to the storage requirements. Device damage caused by unqualified storage conditions is not covered under the warranty.

If inverters will not be put into use immediately, store them according to the requirements specified in this section. Device damage caused by unqualified storage conditions is not covered under the warranty.

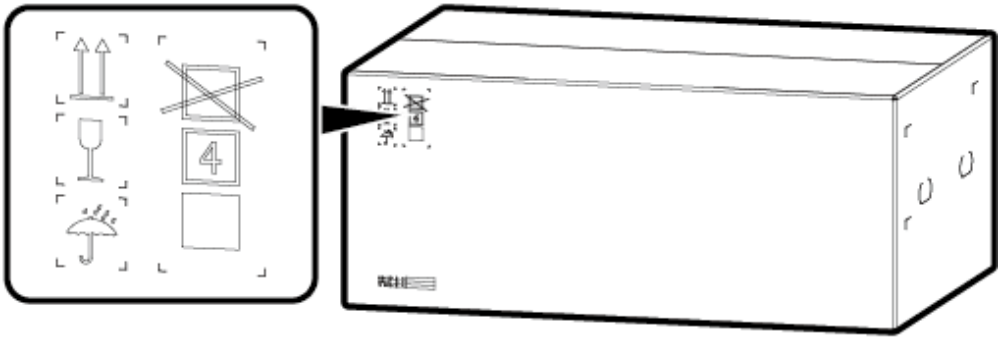
- Do not store the device without outer packaging.
- Do not remove the outer packaging. Check the packaging regularly (recommended: once every three months). Replace any packaging that is damaged during storage. If the inverter is unpacked but will not be used immediately, put it back to the original packaging with the desiccant, and seal with tape.
- Inverters must be stored in a clean and dry environment with appropriate temperature and humidity. The air must not contain corrosive or flammable gases.

Figure 3-1 Storage temperature and humidity



- When temporarily storing inverters outdoors, do not stack them on a pallet. Take rainproof measures such as using tarpaulins to protect inverters from rain and water.
- Do not tilt a packing case or place it upside down.
- To avoid personal injury or device damage, stack inverters with caution to prevent them from falling over.

Figure 3-2 Maximum number of stacking layers



- Do not store inverters for more than two years. If inverters have been stored for two years or longer, they must be checked and tested by professionals before being put into use.

  NOTE

  When first used after prolonged storage, the inverters will undergo an initialization phase upon startup. This process typically lasts for 1.5–3 hours. Once initialization is completed, the inverters will operate normally.

4 Installation

4.1 Checking Before Installation

Outer Packing Materials

Before unpacking the inverter, check the outer packing materials for damage, such as holes and cracks, and check the inverter model. If any damage is found or the inverter model is not what you requested, do not unpack the package and contact your supplier as soon as possible.

NOTE

You are advised to remove the packing materials within 24 hours before installing the inverter.

Package Contents

NOTICE

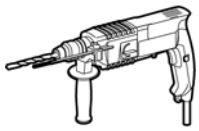
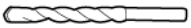
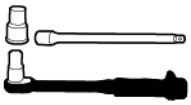
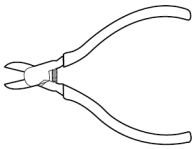
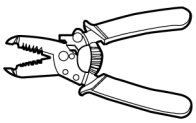
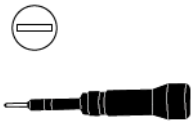
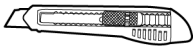
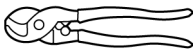
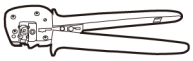
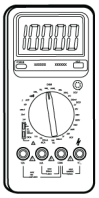
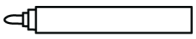
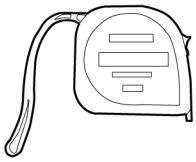
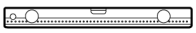
- After placing the equipment in the installation position, unpack it with care to prevent scratches. Keep the equipment stable during unpacking.

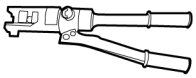
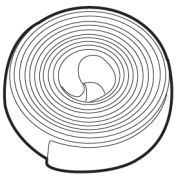
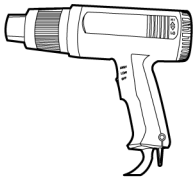
After unpacking the inverter, check that the contents are intact and complete. If any damage is found or any component is missing, contact your supplier.

NOTE

For details about the number of contents, see the *Packing List* in the packing case.

4.2 Preparing Tools

Type	Tool			
Installation tools	 Hammer drill	 Drill bit (Φ14 mm and Φ16 mm)	 Insulated torque socket wrench (including an extension bar)	 Diagonal pliers
	 Wire stripper	 Flat-head insulated torque screwdriver Head: 0.6 mm x 3.5 mm	 Rubber mallet	 Utility knife
	 Cable cutter	 Crimping tool Model: PV-CZM-41100; manufacturer: Staubli	 Removal wrench Model: 13001462; manufacturer: Staubli	 Vacuum cleaner
	 Multimeter DC voltage measurement range ≥ 1500 V DC	 Marker	 Measuring tape	 Bubble or digital level

Type	Tool			
	 Hydraulic pliers	 Heat shrink tubing	 Heat gun	 Cable tie
Personal protective equipment (PPE)	 Protective gloves	 Safety goggles	 Dust mask	 Safety boots
	 Insulated gloves	-	-	-

4.3 Determining the Installation Position

4.3.1 Environment Requirements

Basic Requirements

- Do not install the inverter in working or living areas to avoid personal injury or property loss caused by accidental contact by non-professionals or other reasons during device operation.
- Do not install the inverter in noise-sensitive areas (such as residential areas, office areas, and schools) to avoid complaints. If the preceding areas are unavoidable, the distance between the installation position and noise-sensitive areas must be greater than or equal to 40 m. Alternatively, use other low-noise models.
- If the inverter is installed in public places (such as parking lots, stations, and factories) other than working and living areas, install a protective net outside the device and set up a safety warning sign to isolate the device. This is to avoid personal injury or property loss caused by accidental contact by non-professionals or other reasons during device operation.
- If the inverter is installed in a place with abundant vegetation, in addition to routine weeding, harden the ground underneath the inverter using cement or gravel (the area shall be greater than or equal to 3 m x 2.5 m).

- Do not install the inverter in areas containing flammable materials (such as sulfur, phosphorus, liquefied petroleum gas, marsh gas, flour, and cotton) to avoid personal injury or property loss caused by fire or other reasons.
- Do not install the inverter in areas containing explosives (such as blasting agents, display shells, fireworks, and firecrackers) to avoid personal injury or property loss caused by explosion or other reasons.
- Do not install the inverter in areas with corrosive substances (such as sulfuric acid, hydrochloric acid, nitric acid, hydrogen sulfide, and chlorine) to avoid inverter failure caused by corrosion, which is not covered under the warranty.
- Do not install the inverter in an easily accessible place, because the voltage is high and its enclosure and heat sink are hot during device operation. This is to avoid personal injury or property loss caused by accidental contact by non-professionals or other reasons during device operation.
- Install the inverter in a well-ventilated environment to ensure good heat dissipation. The inverter provides self-protection in high-temperature environments. If the inverter is installed in a poorly ventilated environment, its energy yield may decrease or its failure rate may increase as the ambient temperature increases.
- Do not install the equipment in an area with strong vibration, noise, or electromagnetic interference. The equipment shall be installed in an environment with a magnetic field strength less than 4 Gauss. If the magnetic field strength is greater than or equal to 4 Gauss, the equipment may fail to work properly. If the magnetic field strength is high, for example, in a smeltery, you are advised to use a gauss meter to measure the magnetic field strength of the equipment installation position when the smelting equipment is running normally.
- If the inverter is installed in an enclosed environment, a heat dissipation device or ventilation device shall be installed. The indoor ambient temperature must not be higher than the outdoor ambient temperature. The inverter provides self-protection in high-temperature environments. Its energy yield may decrease or its failure rate may increase as the ambient temperature increases.
- Install the inverter in a sheltered place to prevent exposure to direct sunlight. The inverter provides self-protection in high-temperature environments. If the inverter is installed in a place subject to direct sunlight, its energy yield may decrease or its failure rate may increase as the temperature increases.
- The equipment may become corroded if it is installed in a salt-affected area. Before installing the equipment outdoors in salt-affected areas, consult the Company. A salt-affected area refers to the region within 500 m of the coast or prone to sea breeze. Regions prone to sea breeze vary with weather conditions (such as typhoons and monsoons) or terrains (such as dams and hills).
- The positive and negative DC PV string cables within 1.5 m of the inverter shall be routed in separate pipes to prevent cable damage and short circuits caused by improper operations during construction. (Refer to the figure "Cable routing in different pipes" in section 5.1.)
- The distance between each inverter and the AC combiner box or the low-voltage panel of the transformer station must be at least 10 m, or the total distances from two adjacent inverters to the AC combiner box or the low-voltage panel of the transformer station must be at least 20 m. The inverter

provides output resonance self-protection. Its energy yield may decrease if protection against resonance is triggered as the length of the inverter output cables decreases.

- Take waterproof and insulation measures for unused DC power cables. High voltage may exist in unused DC power cables. Take measures to prevent personal injury or property damage caused by accidental contact with high voltage or other reasons.
- Cables must be vertically routed into combiner boxes and wiring terminals to avoid damage caused by horizontal stress on the terminals, which is not covered under the warranty.
- If an inverter has not been running for six months or longer after being mounted, it may have failed and must be checked and tested by professionals before being put into operation.
- To prevent the inverter from being corroded by moisture, PV terminals that will not be used for a long time must be sealed with dedicated PV terminal plugs. Inverter failure due to not using dedicated PV terminal plugs is not covered under the warranty.

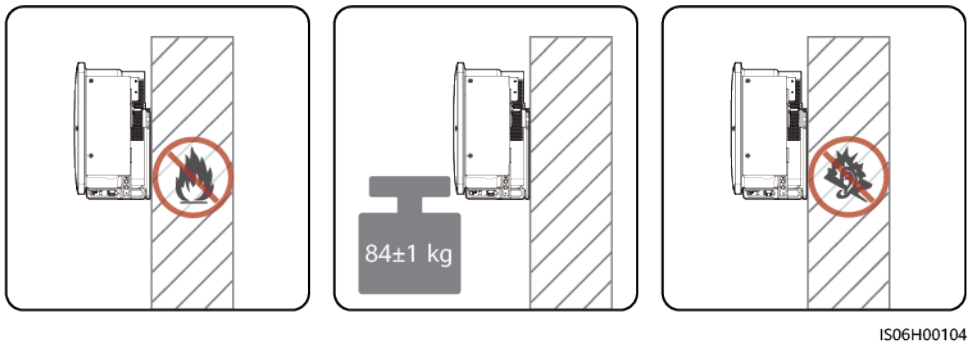
NOTE

- The inverter shall be physically separated from residential environments or radio receivers by distance greater than 30 m.
- Caution: This equipment is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.

Mounting Structure Requirements

- The mounting structure for the inverter must be fireproof. Do not install the inverter on flammable building materials to avoid personal injury or property loss caused by fire or other reasons.
- Do not install the inverter on flammable building materials.
- Ensure that the installation surface is solid enough to bear the weight of the inverter to avoid personal injury or property loss caused by the collapse of the mounting structure or other reasons.
- In residential areas, do not install the inverter on a drywall or wall made of similar materials which have a weak sound insulation performance because the inverter generates noise during operation.

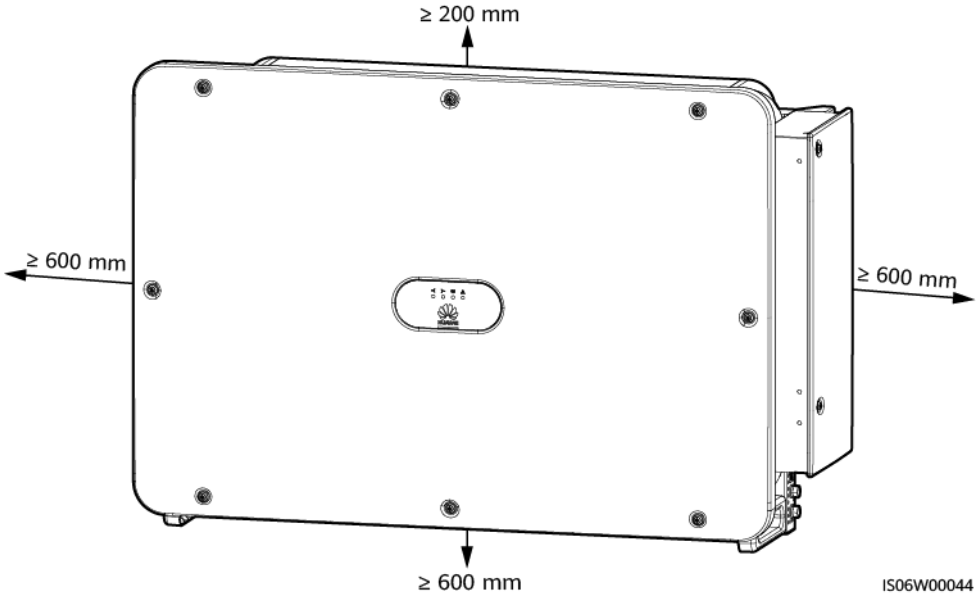
Figure 4-1 Mounting structure



4.3.2 Clearance Requirements

- Reserve sufficient clearance around the inverter for installation and heat dissipation. The inverter provides self-protection in high-temperature environments. The impact of environment changes on the clearance for heat dissipation needs be considered during design. The heat dissipation clearance around the inverter may become insufficient for reasons such as rotation axis change. The energy yield of the inverter may decrease or its failure rate may increase if heat cannot be effectively dissipated.

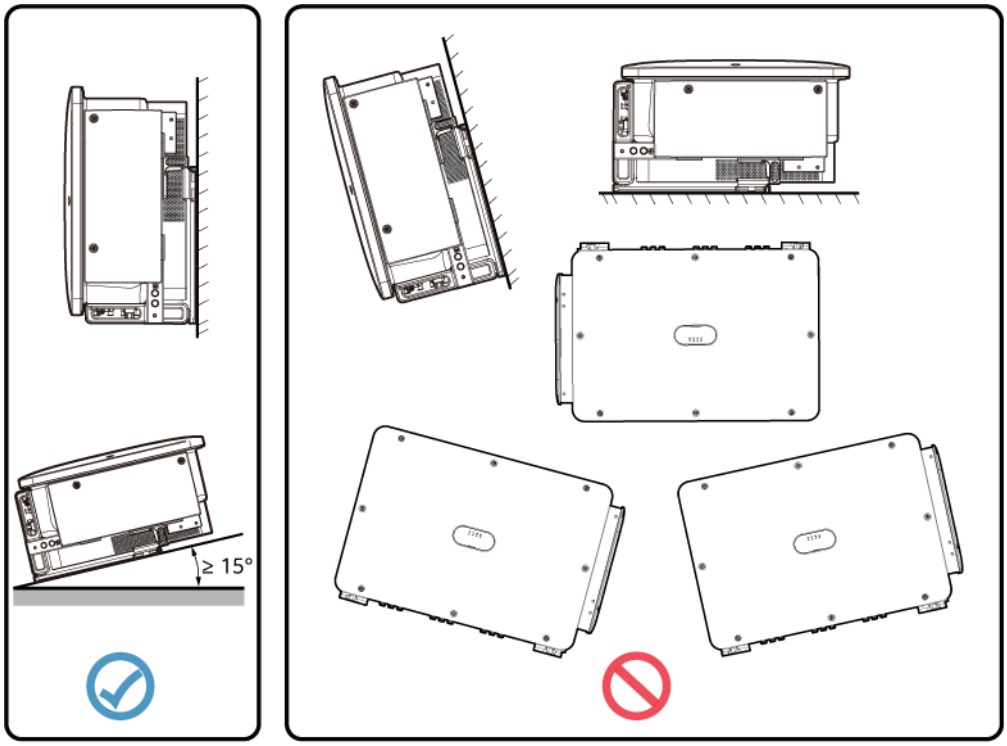
Figure 4-2 Clearance



NOTE

The clearance from the bottom must meet the requirements on the bending radius of the AC output power cables.

Figure 4-3 Installation angle



- When installing multiple SUN2000s, install them in horizontal mode if sufficient space is available and install them in triangle mode if no sufficient space is available. Stacked installation is not recommended.

Figure 4-4 Horizontal installation (recommended)

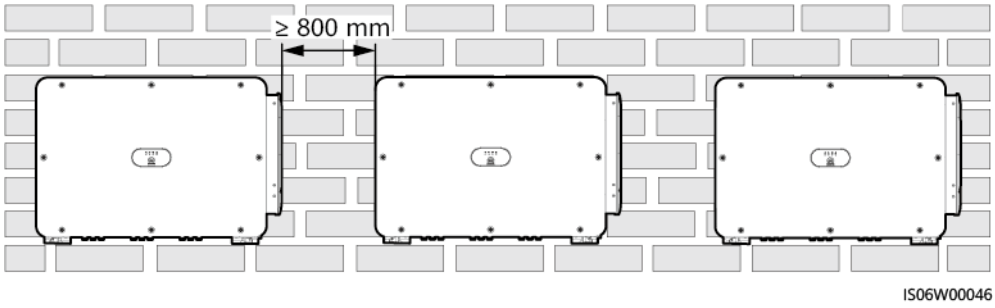


Figure 4-5 Triangle installation (recommended)

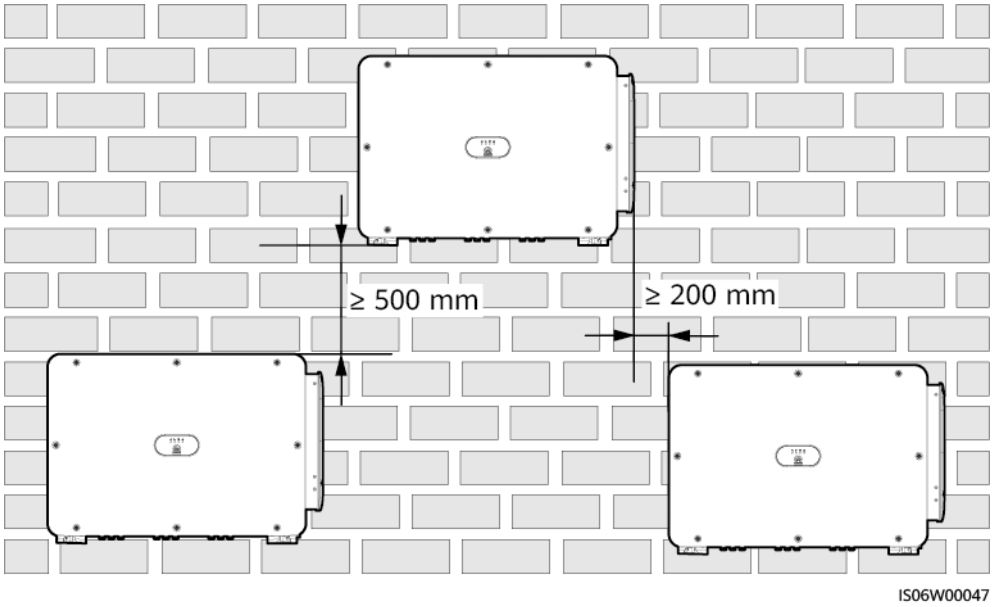
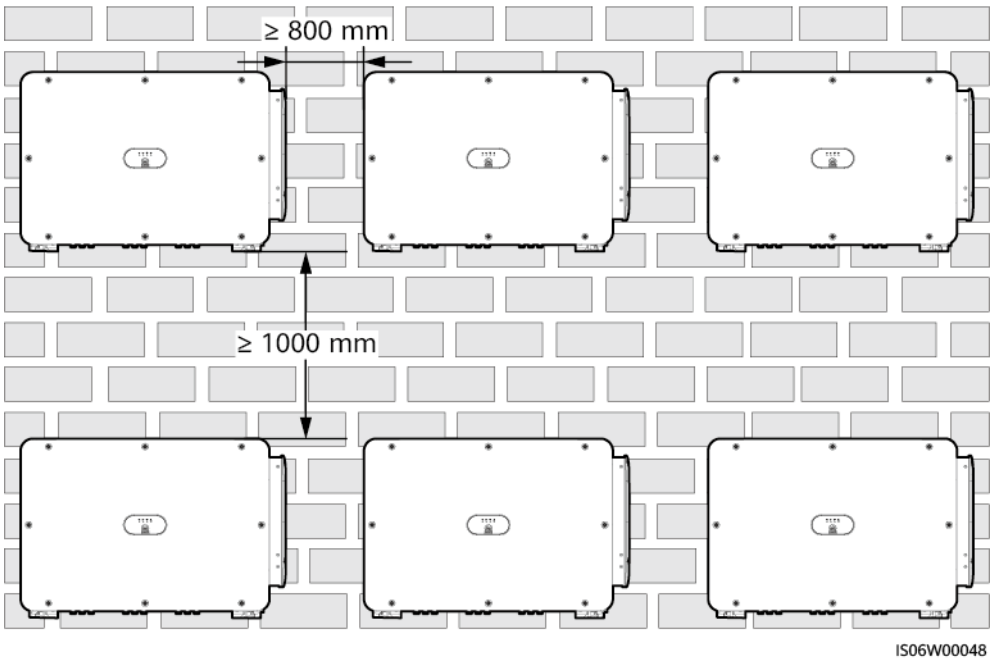


Figure 4-6 Stacked installation (not recommended)

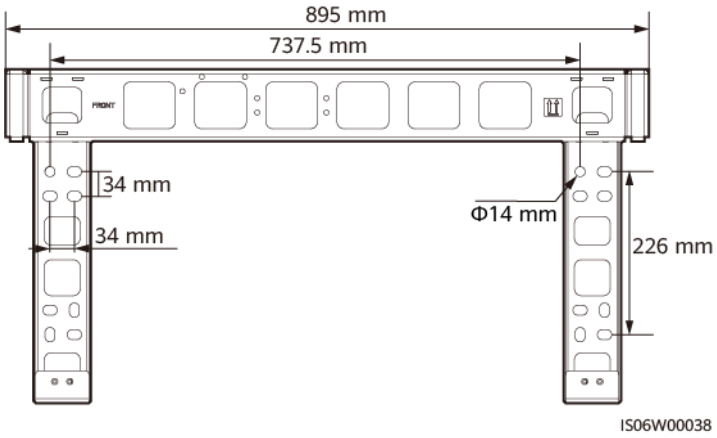


4.4 Installing the Mounting Bracket

Installation Precautions

Figure 4-7 shows the inverter mounting bracket dimensions.

Figure 4-7 Mounting bracket dimensions

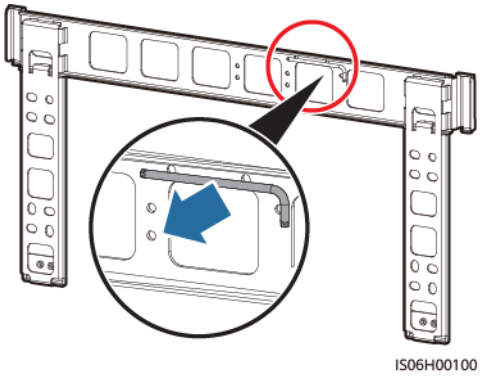


NOTE

The inverter mounting bracket has four groups of tapped holes, each group containing four tapped holes. Mark any hole in each group based on site requirements and mark four holes in total. The two round holes are recommended.

Before installing the mounting bracket, remove the security torx wrench from the mounting bracket and set it aside.

Figure 4-8 Removing a security torx wrench

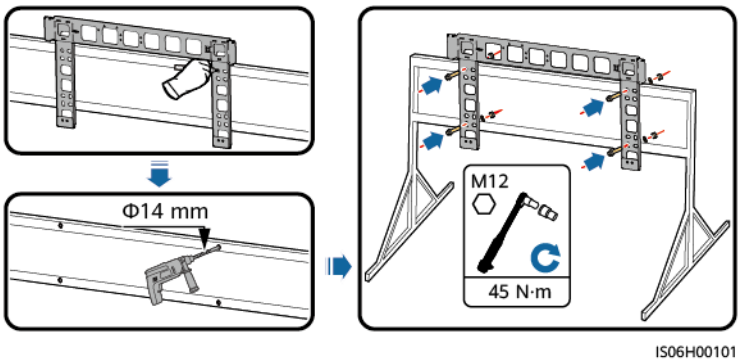


4.4.1 Support-mounted Installation

Support-mounted Installation

Step 1 Install the mounting bracket.

Figure 4-9 Installing the mounting bracket



NOTE

The M12x40 bolt assemblies are delivered with the SUN2000 (bound to the mounting bracket). If the bolt assembly length does not meet the installation requirements, prepare M12 bolt assemblies by yourself and use them together with the delivered M12 nuts.

----End

4.4.2 Wall-mounted Installation

Wall-mounted Installation

Step 1 Install the mounting bracket.

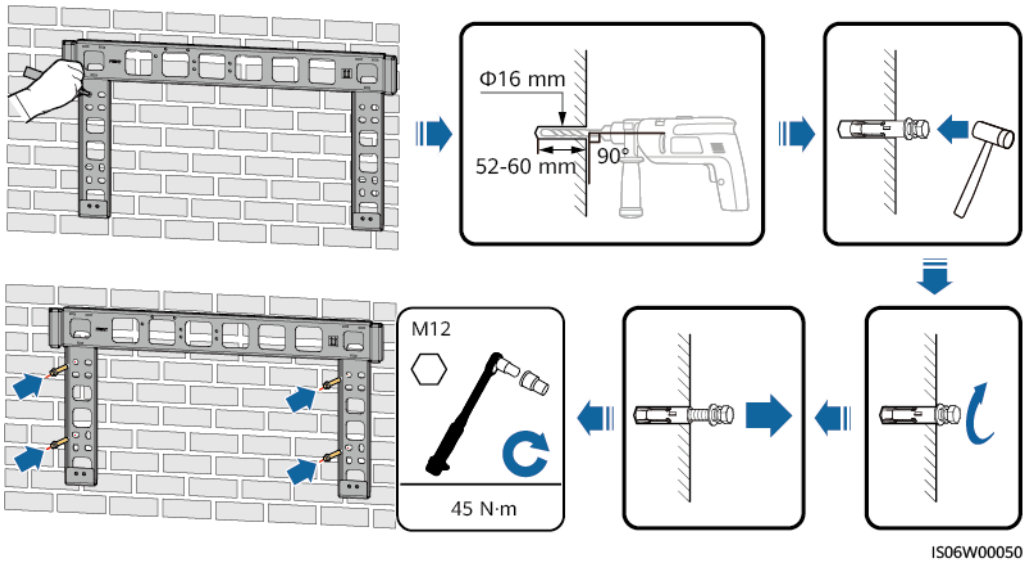
WARNING

Avoid drilling holes into the water pipes and power cables buried in the wall.

NOTICE

- To avoid inhaling dust and to prevent dust from falling into your eyes, wear safety goggles and a dust mask when drilling holes.
- Use a vacuum cleaner to clean up dust in and around the holes, and measure the spacing. If the holes are inaccurately positioned, drill the holes again in correct positions.
- After removing the bolt, spring washer, and flat washer, level the top of the expansion sleeve with the concrete wall so that the sleeve does not protrude from the wall. Otherwise, the mounting bracket will not be evenly installed on the concrete wall.

Figure 4-10 Securing the mounting bracket



----End

4.5 Installing the Inverter

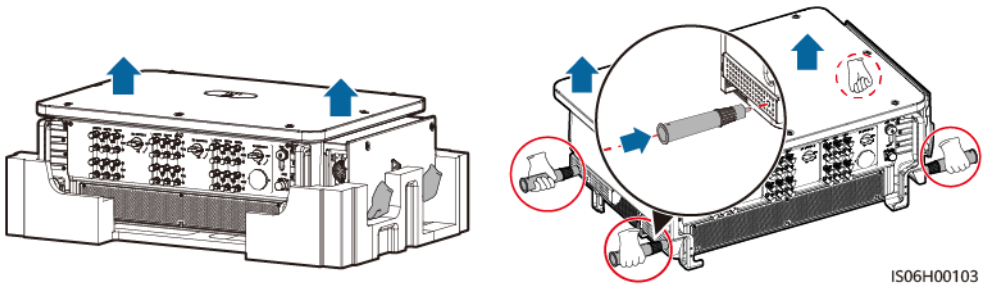
Preparations

Before installing the inverter, take it out from the packing case and move it to the installation position.

NOTE

- Handles are packed in a fitting bag and are not delivered with the inverter.
- Secure the lifting handles (with the steel washers of the lifting handles closely fitted to the inverter).
- If the stud of a lifting handle is bent, replace the lifting handle in time.

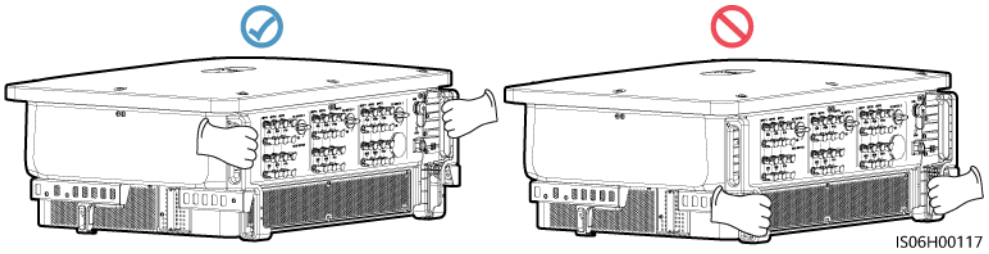
Figure 4-11 Taking out and moving the inverter



NOTICE

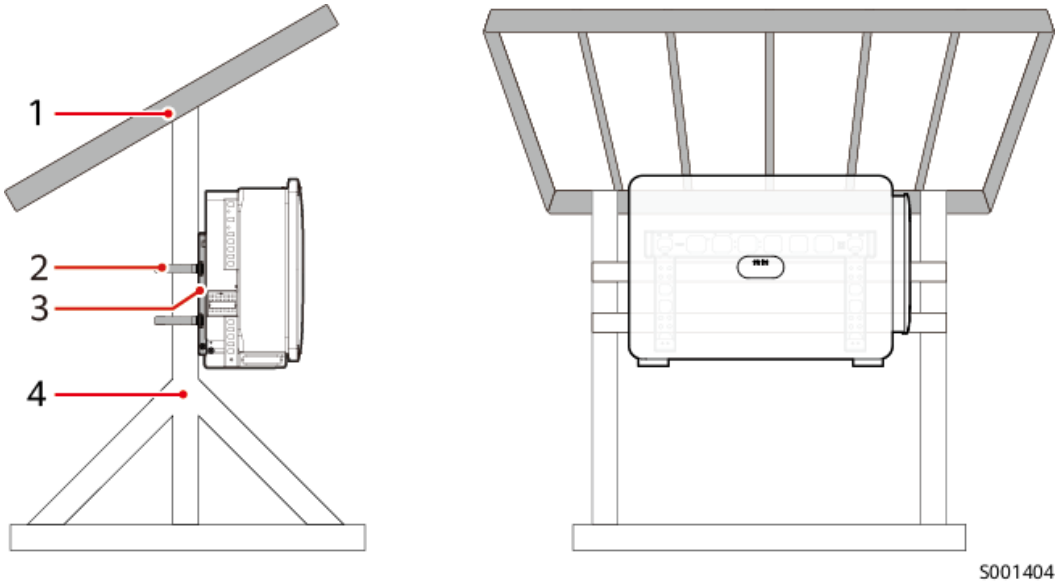
- Four persons or appropriate transportation tools are required to move the inverter.
- The connectors and wiring terminals at the bottom of the inverter must not bear any weight. Ensure that they do not come into direct contact with the ground or other supports.
- When you need to temporally place the inverter on the ground, use foam, cardboard, or other protection material to prevent damage to its enclosure.
- Do not lift or hoist the inverter using the bottom holes of the handles to prevent the handles from cracking.

Figure 4-12 Lifting positions



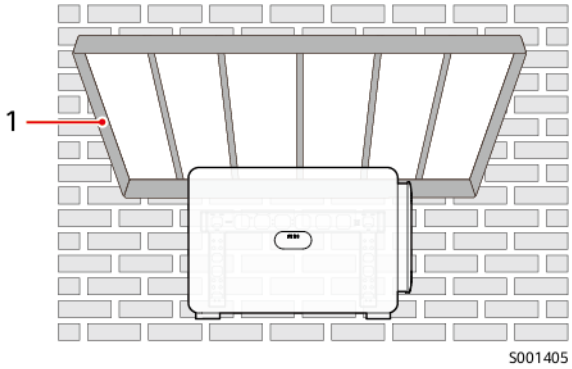
Installing the Inverter

Figure 4-13 Support mounting



(1) PV module or awning	(2) Bolt assembly	(3) Mounting bracket	(4) Support

Figure 4-14 Wall mounting



(1) PV module or awning

NOTE

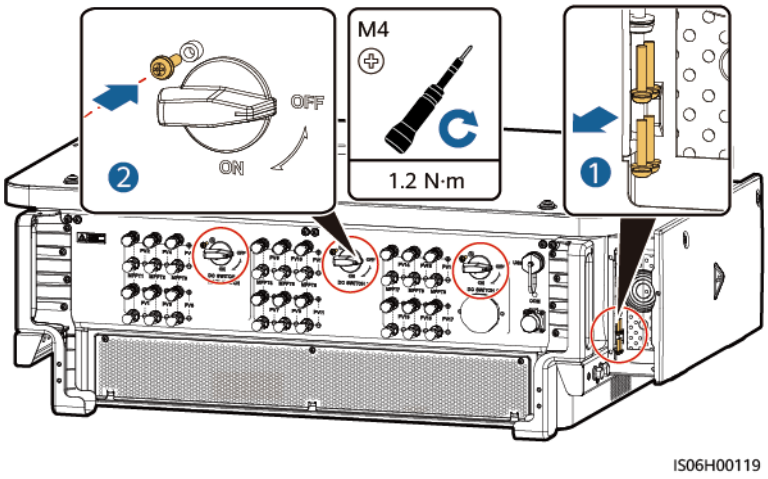
- The PV module or awning shown in the figure is for reference only. Factors such as the local sunlight angle and temperature must be considered during evaluation and design.
- The following describes the orientations of the PV module or awning and inverter:
  - If the local area is in the northern hemisphere, the front of the inverter shall face north, and the PV module or awning shall face south.
  - If the local area is in the southern hemisphere, the front of the inverter shall face south, and the PV module or awning shall face north.

Step 1 **Optional:** Install the DC switch locking screws.

NOTE

Perform this step for models used in Australia based on local standards.

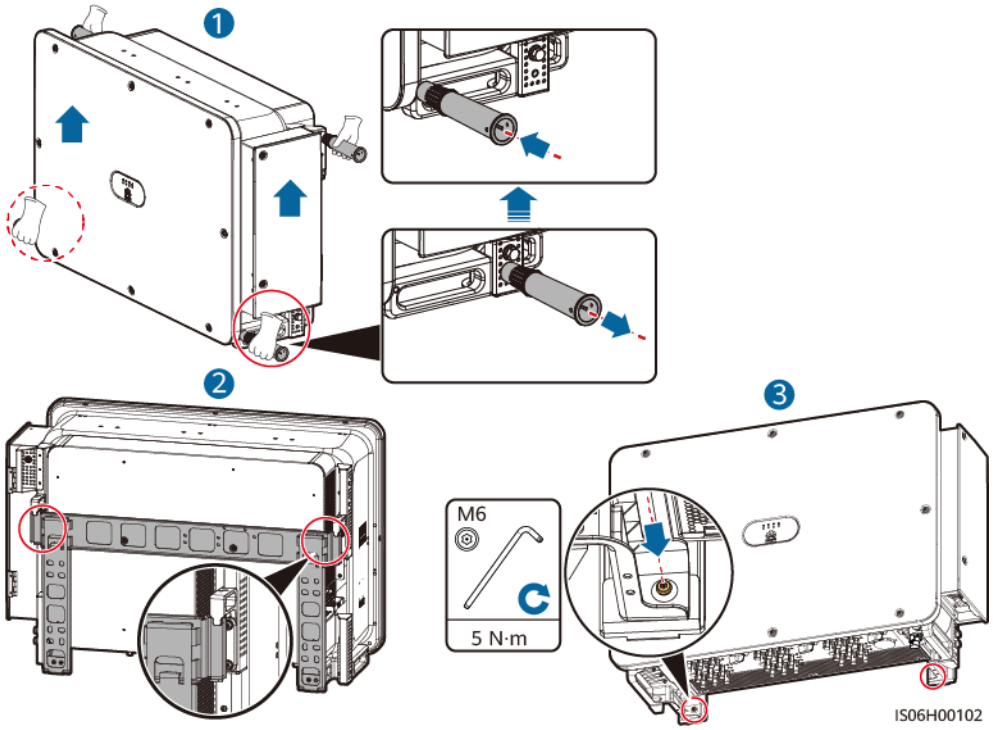
Figure 4-15 Installing the DC switch locking screws



Step 2 Mount the inverter onto the mounting bracket.

Step 3 Tighten the two screws at the bottom of the inverter.

Figure 4-16 Installation



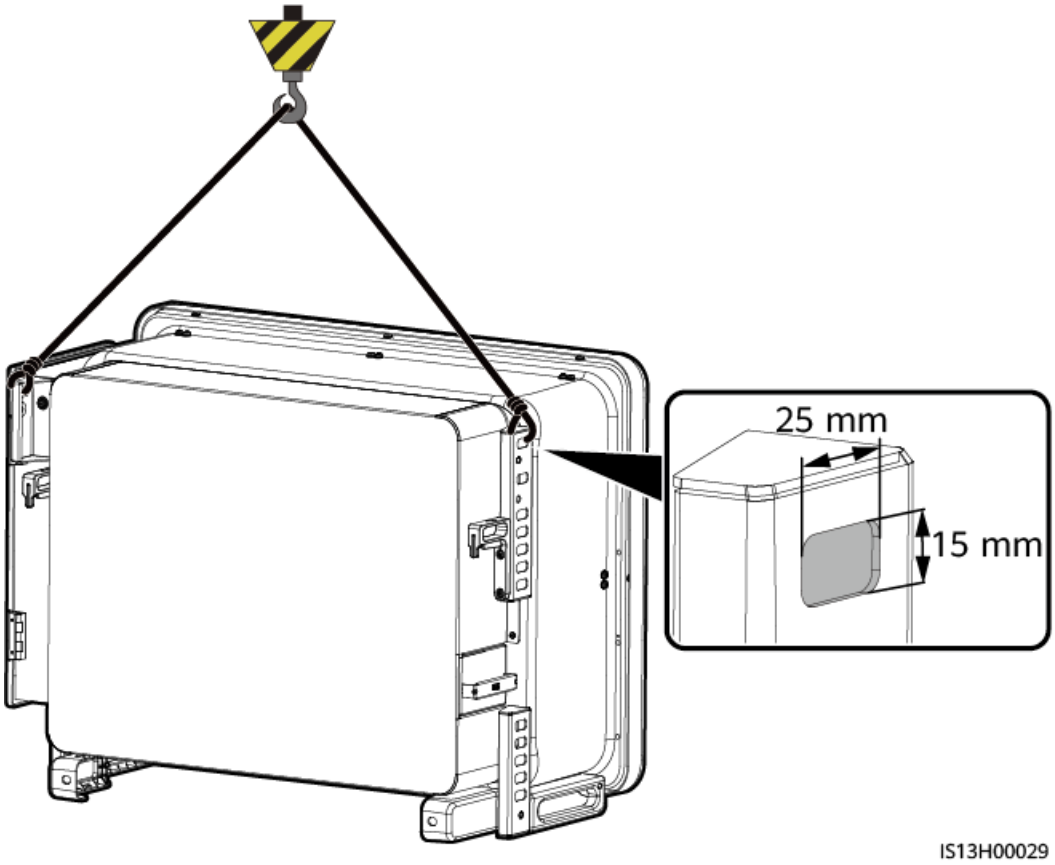
Step 4 Install an awning (optional if the inverter is installed under a PV module).

----End

Additional Information

If the installation position is high, you can hoist the inverter.

Figure 4-17 Hoisting



4.6 (Optional) Installing a Protective Tray

Preparations

NOTICE

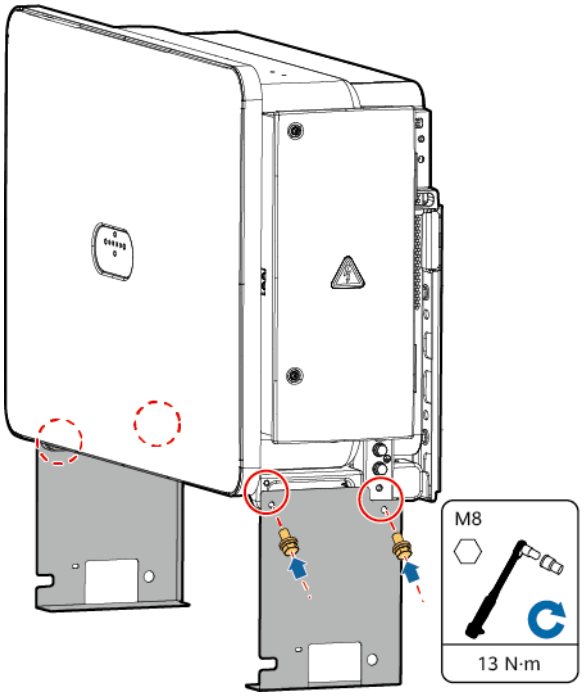
- If the ground under the inverter cannot be hardened, it is recommended that a protective tray be installed.
- The protective tray needs to be purchased by the customer. Contact the Company's service engineers to obtain the dimensions drawing.
- The protective tray is not recommended for wall-mounted installation.

- The inverter needs to be powered off if it has been powered on before you install the tray.
- The clearance under the inverter must be at least 600 mm to ensure sufficient space for installation and heat dissipation.

Procedure

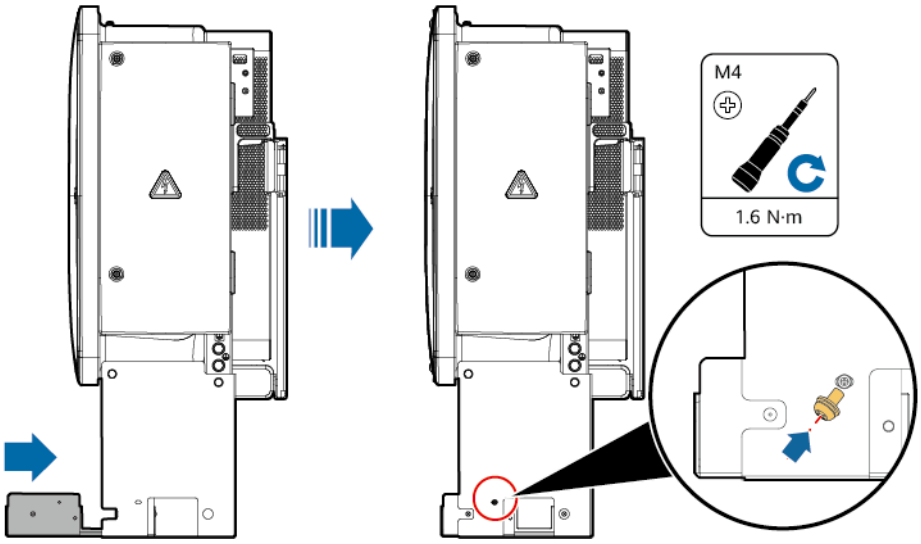
Step 1 Install the left and right side panels for the inverter.

Figure 4-18 Installing the side panels



Step 2 Install and secure the bottom panel.

Figure 4-19 Installing the bottom panel



----End

Cable Binding

Cables can be routed through the slots reserved on the tray and bound using the holes around the slots. 300 mm x 3.6 mm cable ties are recommended.

5 Electrical Connections

5.1 Precautions

DANGER

When exposed to sunlight, the PV arrays supply DC voltage to the inverter. Before connecting cables, ensure that all **DC SWITCH** on the inverter are OFF. Otherwise, the high voltage of the inverter may result in electric shocks.

DANGER

- The site must be equipped with qualified fire fighting facilities, such as fire sand and carbon dioxide fire extinguishers.
- Wear personal protective equipment and use dedicated insulated tools to avoid electric shocks or short circuits.

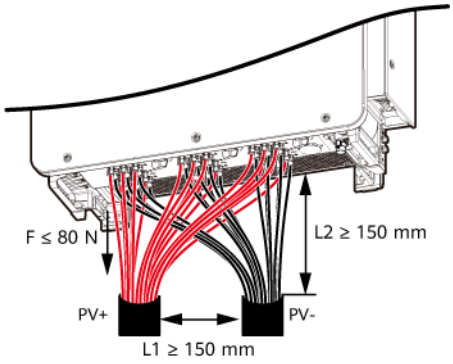
WARNING

- The equipment damage caused by incorrect cable connections is beyond the warranty scope.
- Only certified electrician can perform electrical terminations.
- Operation personnel must wear PPE when connecting cables.
- Before connecting cables to ports, leave enough slack to reduce the tension on the cables and prevent poor cable connections.

CAUTION

- Stay away from the equipment when preparing cables to prevent cable scraps from entering the equipment. Cable scraps may cause sparks and result in personal injury and equipment damage.
- The positive and negative DC PV string cables within 1.5 m of the inverter shall be routed in separate pipes to prevent cable damage and short circuits caused by improper operations during construction.

Figure 5-1 Cable routing in different pipes



NOTE

The cable colors shown in the electrical connection diagrams provided in this section are for reference only. Select cables in accordance with local cable specifications (green-and-yellow cables are only used for protective earthing).

5.2 Crimping an OT or DT Terminal

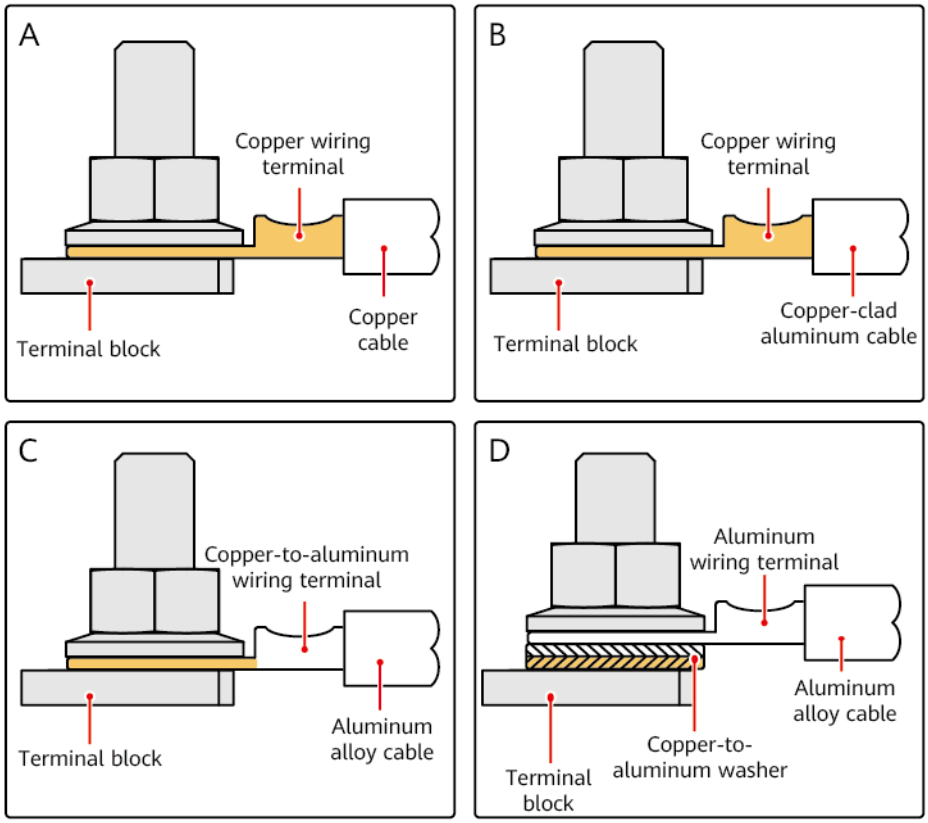
Requirements on an OT or DT Terminal

- If a copper cable is used, use copper wiring terminals.
- If a copper-clad aluminum cable is used, use copper wiring terminals.
- If an aluminum alloy cable is used, use copper-to-aluminum wiring terminals, or aluminum wiring terminals along with copper-to-aluminum washers.

NOTICE

- Do not connect aluminum wiring terminals to the terminal block. Otherwise electrochemical corrosion may occur, affecting the reliability of cable connections.
- Comply with the IEC 61238-1 requirements when using copper-to-aluminum wiring terminals, or aluminum wiring terminals along with copper-to-aluminum washers.
- Do not mix up the aluminum and copper sides of a copper-to-aluminum washer. Ensure that the aluminum side of the washer contacts the aluminum wiring terminal, and that the copper side contacts the terminal block.

Figure 5-2 Requirements on an OT or DT terminal

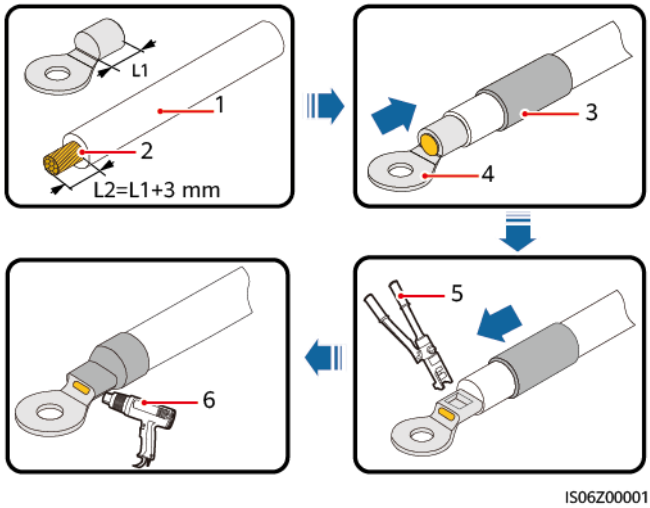


Crimping an OT or DT Terminal

NOTICE

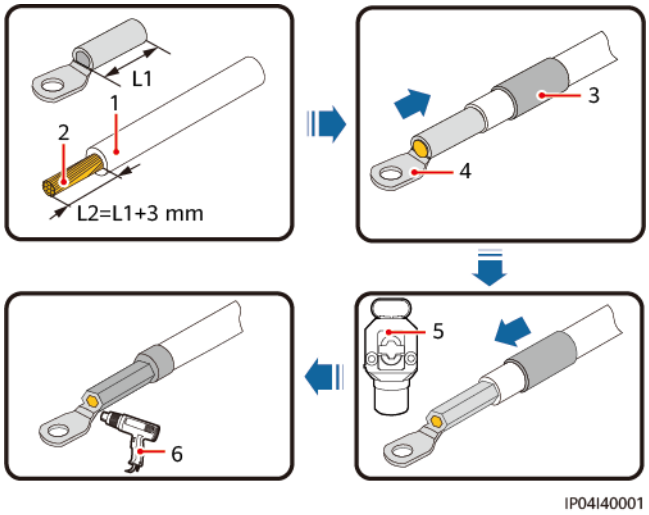
- Avoid scratching the core wire when stripping a cable.
- The cavity formed after the conductor crimp strip of the OT or DT terminal has been crimped must wrap around the core wire completely. The core wire must make close contact with the OT or DT terminal.
- Wrap the wire crimping area with heat shrink tubing, cold shrink tubing, or insulation tape. The heat shrink tubing is used as an example.
- Use a heat gun carefully to avoid heat damage to the equipment.

Figure 5-3 Crimping an OT terminal



(1) Cable
(2) Core wire
(3) Heat shrink tubing
(4) OT terminal
(5) Hydraulic pliers
(6) Heat gun

Figure 5-4 Crimping a DT terminal



(1) Cable
(2) Core wire
(3) Heat shrink tubing
(4) DT terminal
(5) Hydraulic pliers
(6) Heat gun

5.3 Opening the Maintenance Compartment Door

Precautions

NOTICE

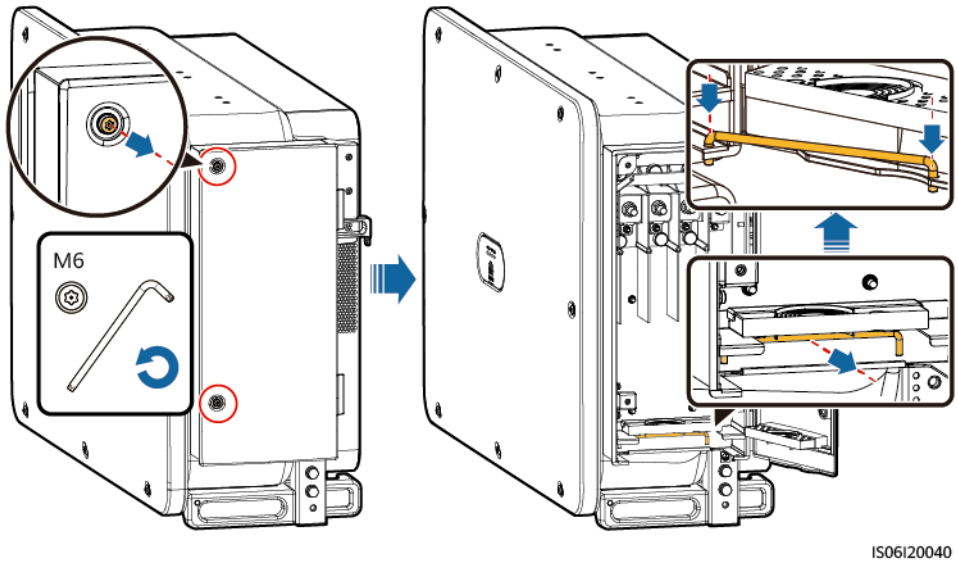
- Do not open the host panel cover of the inverter.
- Before opening the maintenance compartment door, ensure that no electrical connections are made for the inverter on the AC or DC side.
- If you need to open the maintenance compartment door in rainy or snowy days, take protective measures to prevent rain or snow entering the maintenance compartment. If unavoidable, do not open the maintenance compartment door.
- Do not leave unused screws in the maintenance compartment.

Procedure

Step 1 Partially loosen the two screws on the maintenance compartment door.

Step 2 Open the maintenance compartment door and install a support bar.

Figure 5-5 Opening the maintenance compartment door

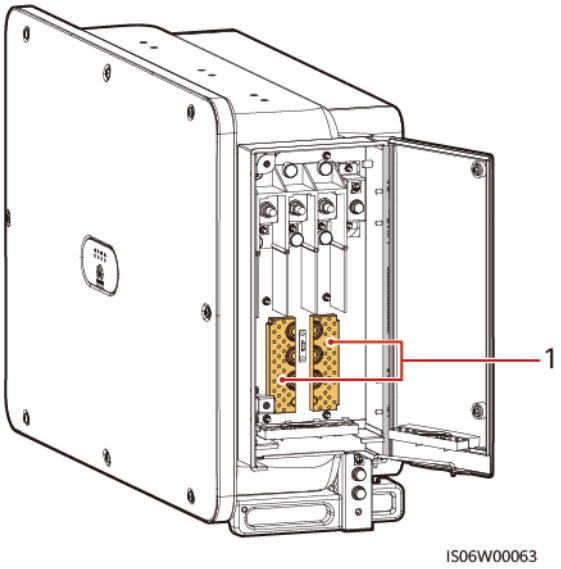


Step 3 Remove the accessories that are bound in the maintenance compartment for future use.

NOTE

For some models, a three-hole rubber plug is bound in the maintenance compartment. After removing the rubber plug, save it properly for future use.

Figure 5-6 Removing the accessories from the maintenance compartment



(1) Crimping modules

----End

5.4 (Optional) Replacing the Crimping Module

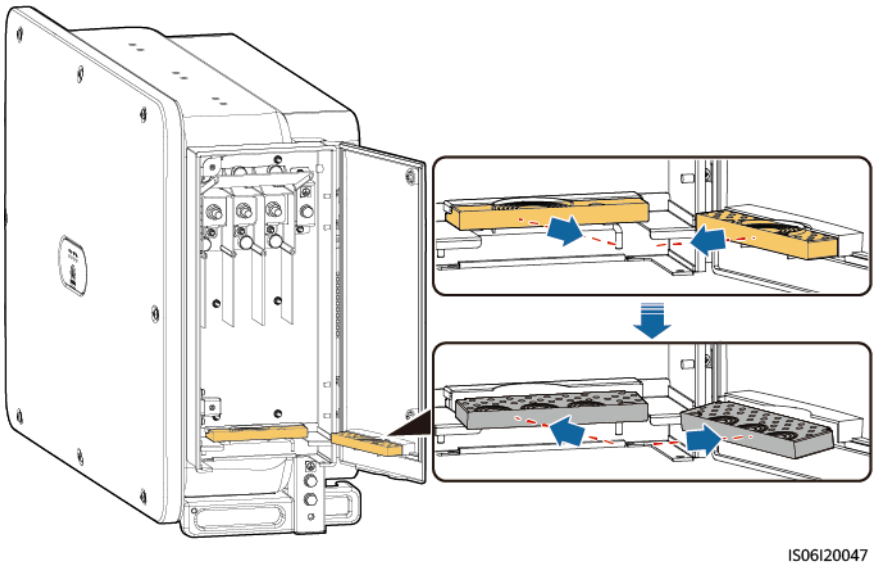
Procedure

NOTE

If the AC output power cable has a single core, replace the crimping module.

Step 1 Replace the crimping module.

Figure 5-7 Replacing the crimping module



----End

5.5 (Optional) Installing the Power Cable of the Tracking System

Precautions

NOTICE

- A switch-disconnector-fuse or fuse-switch-disconnector with a voltage of no less than 800 V, current of 16 A, and protection type of gM needs to be installed between the inverter and the tracker controller for protection.
- The cable between the wiring terminal on the power cable and the switch-disconnector-fuse or fuse-switch-disconnector should be less than or equal to 2.5 m.
- Connect the power cable of the tracking system before the AC output power cable. Otherwise, reworking will be caused.

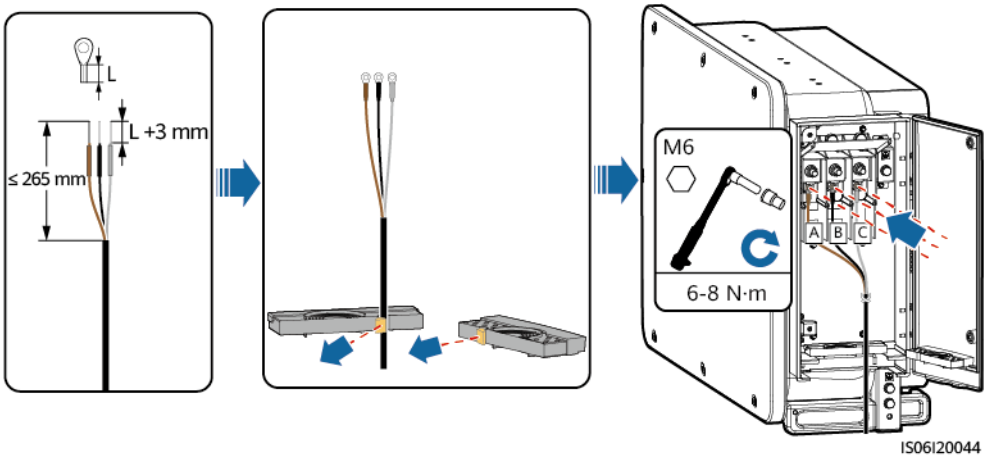
Cable Specifications

Recommended: dual-layer three-core outdoor copper cable with a conductor cross-sectional area of 10 mm^2 and a cable outer diameter of 15–18 mm.

Procedure

Step 1 Connect the power cable of the tracking system to the terminal block.

Figure 5-8 Cable connection



----End

5.6 Connecting AC Output Power Cables

Precautions

A three-phase AC switch shall be installed on the AC side of the inverter. To ensure that the inverter can safely disconnect itself from the power grid when an exception occurs, select a proper overcurrent protection device in compliance with local power distribution regulations.

WARNING

- Do not connect loads between an inverter and an AC switch that directly connects to the inverter. Otherwise, the switch may trip by mistake.
- If an AC switch is used with specifications beyond local standards, regulations, or the Company's recommendations, the switch may fail to turn off in a timely manner in case of exceptions, causing serious faults.

CAUTION

Each inverter shall be equipped with an AC output switch. Multiple inverters shall not connect to the same AC switch.

The inverter is integrated with a comprehensive residual current detection unit to distinguish fault current from residual current. Upon detecting that the residual current exceeds the threshold, the inverter immediately disconnects from the power grid.

Cable Connection Requirements

NOTICE

- The cable outer diameter can be measured using the ruler sticker in the maintenance compartment.
- Ensure that the cable jacket is in the maintenance compartment.
- Ensure that the AC output power cables are connected securely. Otherwise, the inverter may fail to operate, or become overheated in operation due to an unreliable connection, which will damage the terminal block.

- You are advised to connect the PE cable to the PE point on the inverter enclosure.
- The PE point in the maintenance compartment is used for connecting to the PE wire of a multi-core AC power cable.
- There are two PE points on the inverter enclosure, one of which is a spare PE point.

- It is recommended that the inverter be connected to a nearby PE point. For a system with multiple inverters connected in parallel, connect the PE points of all inverters to ensure equipotential bonding between PE cables.

Cable Specifications

- If you connect a PE cable to the PE point on the inverter enclosure, you are advised to use a three-core (L1, L2, L3) outdoor cable or three single-core outdoor cables.
- If you connect a PE wire to the PE point in the maintenance compartment, you are advised to use a four-core (L1, L2, L3, PE) outdoor cable.
- You need to prepare the OT or DT terminals that match the cable specifications.

Table 5-1 AC power cable specifications

Cable Type	Conductor Cross-Sectional Area	Cable Outer Diameter	OT/DT Terminal Specifications
Copper cable	50–240 mm^2	• Multi-core cable: 24–66 mm • Single-core cable: 14–32 mm[1]	M10 (PE) M12 (L1/L2/L3)
Copper-clad aluminum or aluminum alloy cable	• Multi-core cable: 70–240 mm^2 • Single-core cable: 70–240 mm^2[2]		
Note [1]: For some models, the outer diameter of a single-core cable ranges from 14 mm to 36 mm. For details about the outer diameter, see the label in the maintenance compartment. Note [2]: For some models, when the OT/DT terminal is crimped as shown in the following figure and the rubber baffle plate of the AC wiring terminal is 112 mm, the maximum conductor cross-sectional area of the single-core cable can be 400 mm^2.			

Figure 5-9 Specifications of the crimped OT/DT terminal

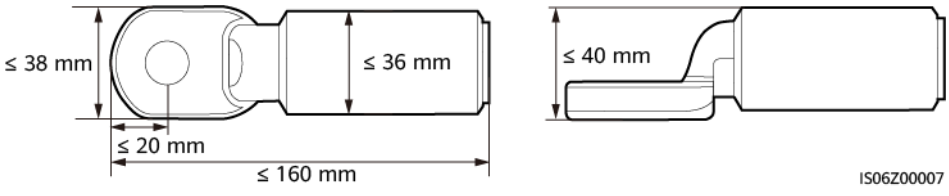
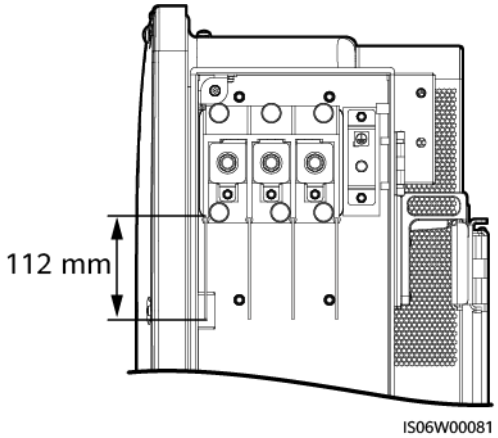


Figure 5-10 Specification of the rubber baffle plate



NOTE

- The cable size must comply with local cable standards. The factors that affect cable selection include the rated current, cable type, routing mode, ambient temperature, and maximum expected line loss.
- If MBUS is used for communication, you are advised to use multi-core cables with the maximum communication distance of 1000 m. To use other types of AC power cables, contact Huawei technical support.

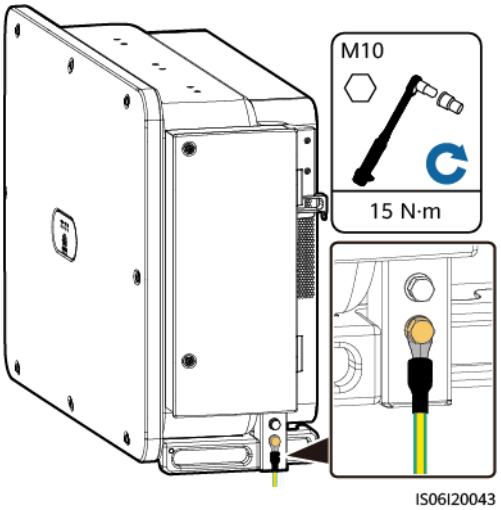
Table 5-2 PE cable specifications

AC Power Cable Conductor Cross-Sectional Area S (Unit: mm^2)	PE Cable Conductor Cross-Sectional Area S_P (Unit: mm^2)	OT/DT Terminal Specifications
S > 35	$S_P \geq S/2$	M10
The specifications in this table are valid only if the conductors of the PE cable and AC power cables are made of the same material. If the materials are different, ensure that the conductor cross-sectional area of the PE cable produces a conductance equivalent to that specified in this table. The specifications of the PE cable are subject to this table or calculated according to IEC 60364-5-54.		

Connecting a PE Cable

Step 1 Secure the PE cable using the screw at the PE point. To enhance the corrosion resistance of a ground terminal, apply silicone grease or paint on it after connecting the PE cable to the ground point on the enclosure.

Figure 5-11 Cable connection



----End

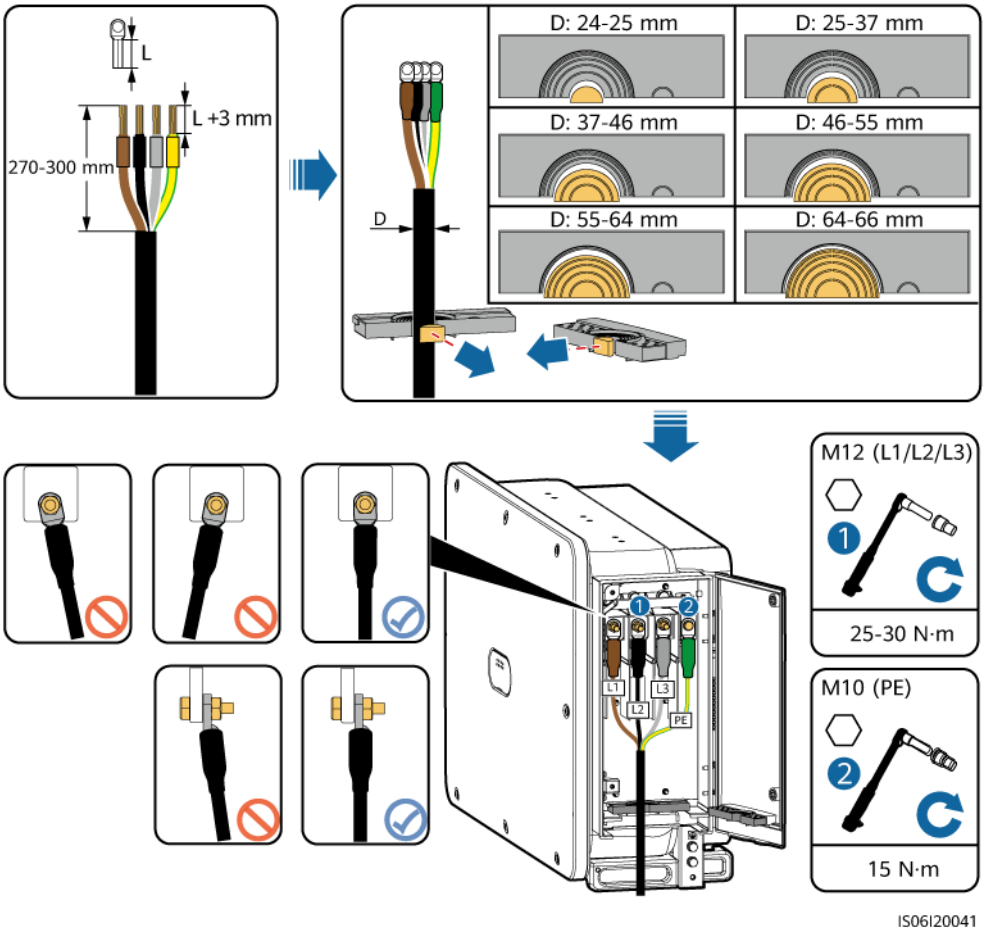
Connecting an AC Output Power Cable (Multi-Core)

Step 1 Connect the AC power cable to the terminal block.

NOTICE

Reserve sufficient slack for the PE wire to ensure that the PE wire is the last cable bearing the force when the AC output power cable is subject to a pulling force due to force majeure.

Figure 5-12 Cable connection



----End

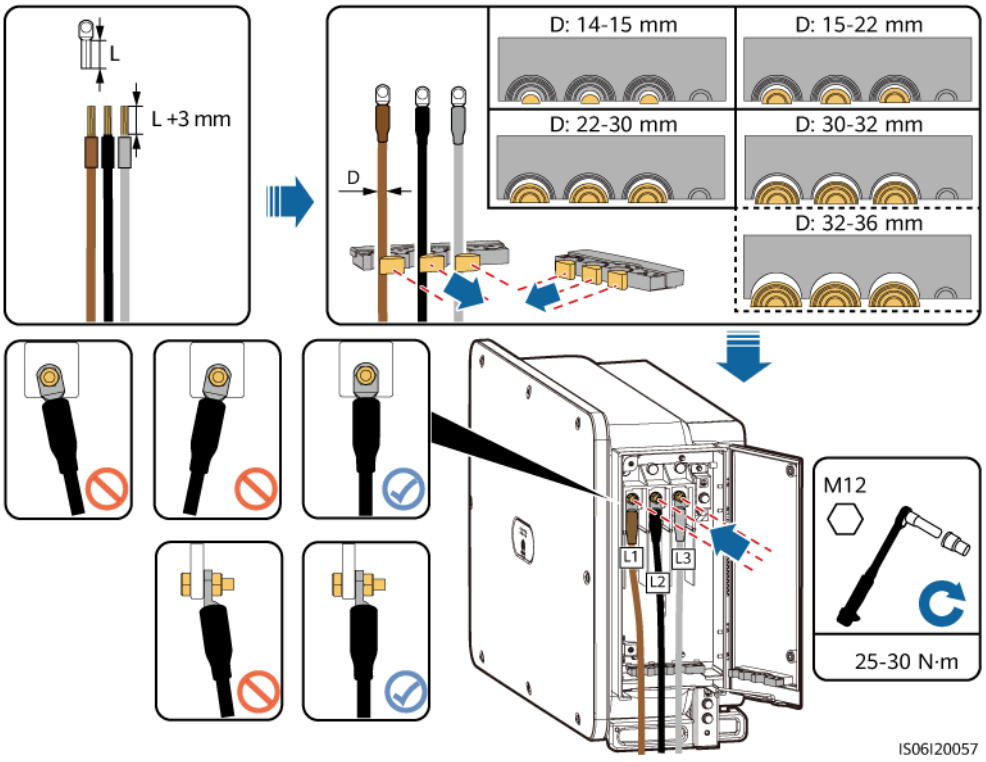
Connecting AC Output Power Cables (Single-Core)

Step 1 Connect the AC power cables to the terminal block.

NOTE

The cable outer diameter ranges from 32 mm to 36 mm only for some models. For details about the outer diameter, see the label on the product.

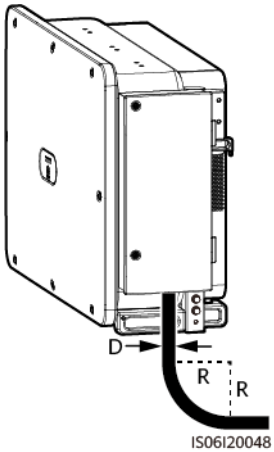
Figure 5-13 Cable connection



----End

Bending Radius Requirements

Figure 5-14 Bending radius



Multi-Core Cable		Single-Core Cable	
Unarmored	Armored	Unarmored	Armored
R ≥ 15D	R ≥ 12D	R ≥ 20D	R ≥ 15D
R indicates the bending radius, and D indicates the outer diameter of the cable.			

NOTE

The AC power cable must be routed vertically into the maintenance compartment.

5.7 Connecting DC Input Power Cables

Precautions

DANGER

- Before connecting the DC input power cables, ensure that the DC voltage is within the safe range (lower than 60 V DC) and that the three DC switches (**DC SWITCH**) on the inverter are **OFF**. Otherwise, the high voltage may result in electric shocks.
- In the scenario where the installation is complete but the inverter is not connected to the power grid, the three DC switches (**DC SWITCH**) must be turned on if DC input power cables are connected to the inverter. After turning on the switches, check the inverter status. If any fault occurs, rectify it in a timely manner.
- When the inverter operates in grid-tied mode, do not perform maintenance or operations on the DC input power cables, such as connecting or disconnecting a PV string or a PV module in the PV string. Otherwise, electric shocks or arcing (which may cause fire) may occur.

WARNING

Ensure that the following conditions are met. Otherwise, the inverter may be damaged or even a fire may occur.

- The maximum open-circuit voltage of each PV string must be lower than or equal to 1500 V DC under any circumstances.
- The polarities of electrical connections must be correct on the DC input side. The positive and negative terminals of a PV string must be connected to corresponding positive and negative DC input terminals of the inverter.

WARNING

During the installation of PV strings and the inverter, the positive or negative terminals of PV strings may be short-circuited to ground if the power cables are not properly installed or routed. In this case, an AC or DC short circuit may occur and damage the inverter. The resulting device damage is not covered under any warranty.

NOTICE

- Ensure that the PV module output is well insulated to ground.
- The PV strings connecting to the same MPPT circuit shall use the same model and quantity of PV modules.
- The inverter does not support full parallel connection for PV strings (full parallel connection: PV strings connect to one another in parallel outside the inverter and then connect to it separately).

Checking the Length of Each PV String (Number of PV Modules Connected in Series)

Determine the maximum open-circuit voltage of each PV string based on the local actual irradiance and low temperature situations.

1. The maximum open-circuit voltage of each PV string must not exceed the maximum input voltage of the inverter. The upper limit of PV string length can be calculated.
2. The full-power operating voltage of each PV string (corresponding to the full-power working condition of the inverter) must be within the full-power MPPT voltage range of the inverter. The upper and lower limits of PV string length under full-power conditions can be calculated.
3. Determine an appropriate PV string length based on the upper and lower limits of PV string length calculated above.

Assume that the lowest temperature is –25°C. If common 182 mm PV modules are used, each PV string consists of about 26 PV modules when Voc is 49.9 V at STC and the capacity ratio is 1.1. If common 210 mm modules are used, each PV string consists of about 32 modules when Voc is 41.3 V at STC and the capacity ratio is 1.1.

The length of each PV string can be adjusted based on the PV module specifications and the local actual irradiance and temperature situations. The device can be put into operation only after being checked and tested by professionals.

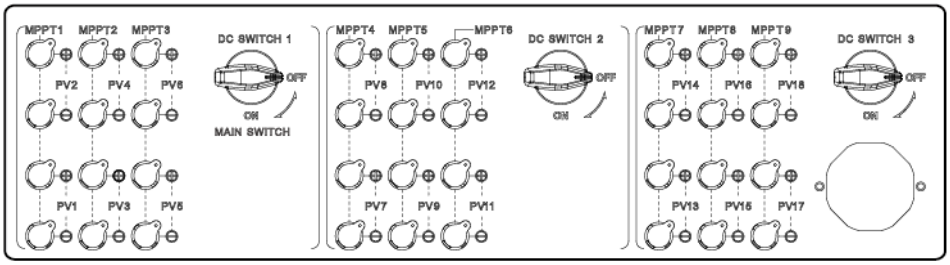
NOTE

Voc is the open-circuit voltage. Standard test conditions (STC): irradiance 1000 W/m^2, cell temperature 25°C, and air mass 1.5

Terminal Description

The inverter provides 18 DC input terminals, which are controlled by its three DC switches. DC SWITCH 1 controls DC input terminals 1–6, DC SWITCH 2 controls DC input terminals 7–12, and DC SWITCH 3 controls DC input terminals 13–18.

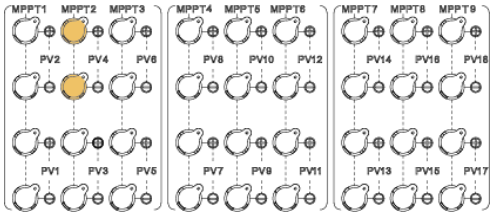
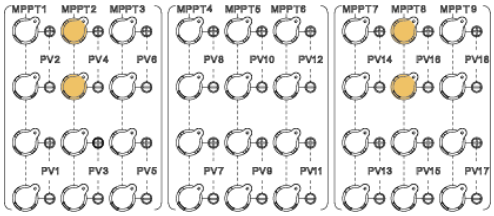
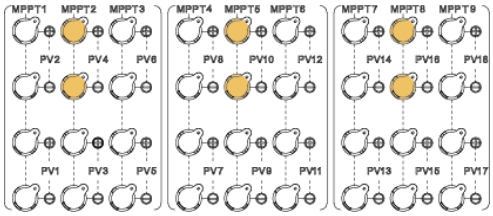
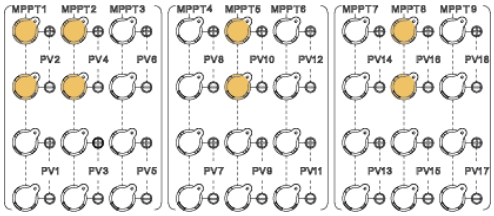
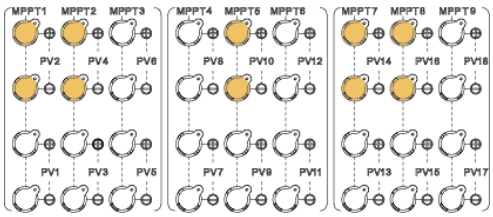
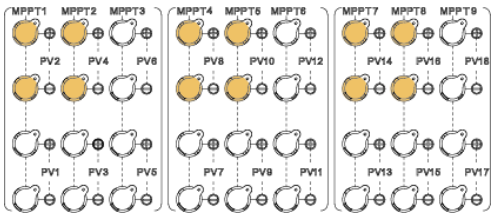
Figure 5-15 DC terminals

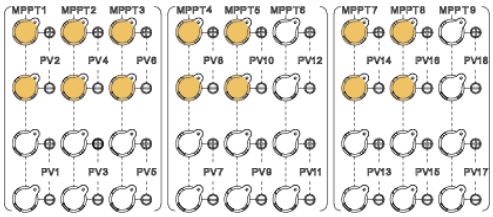
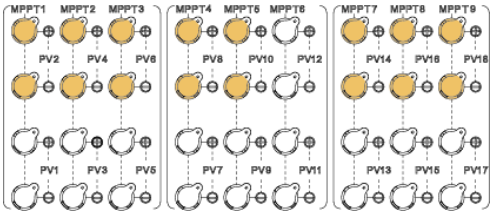
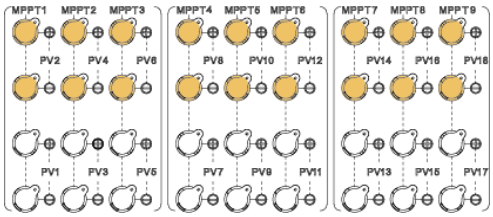
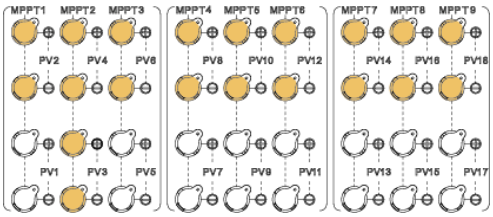
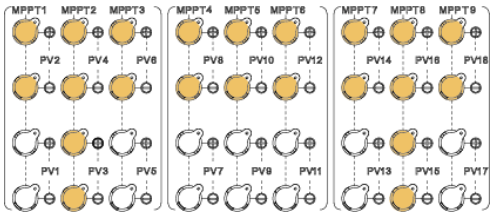
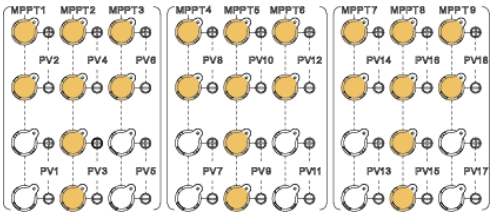
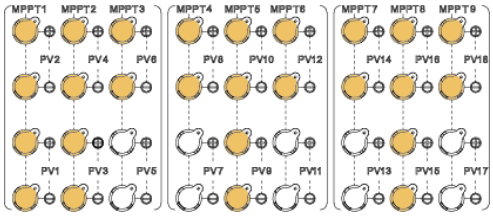
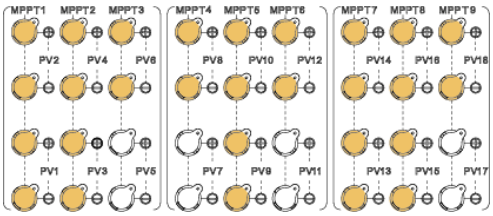
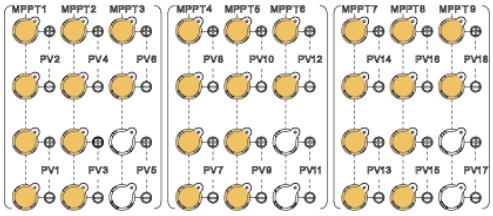
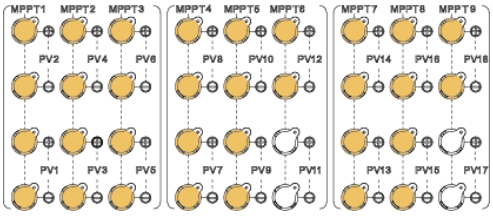


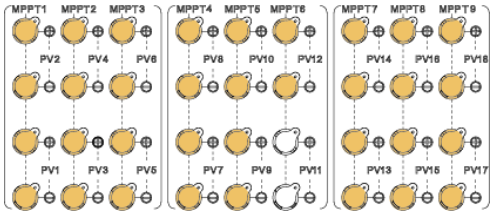
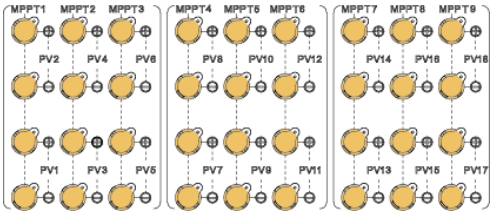
Requirements for selecting DC input terminals:

1. Ensure that PV strings are evenly connected to MPPT circuits.
2. You are advised to connect PV strings to PV2, PV4, PV8, PV10, PV14, and PV16 preferentially.
3. To facilitate onsite operations, preferentially connect even-numbered PV input terminals for the same MPPT circuit (the even-numbered PV input terminals are located on the outer side).

If the number of inputs ranges from 1 to 18, you are advised to connect PV input terminals as follows.

Number of PV Strings	Terminal Selection	Number of PV Strings	Terminal Selection
1	PV4 	2	PV4, PV16 
3	PV4, PV10, PV16 	4	PV2, PV4, PV10, PV16 
5	PV2, PV4, PV10, PV14, PV16 	6	PV2, PV4, PV8, PV10, PV14, PV16 

Number of PV Strings	Terminal Selection	Number of PV Strings	Terminal Selection
7	PV2, PV4, PV6, PV8, PV10, PV14, PV16 	8	PV2, PV4, PV6, PV8, PV10, PV14, PV16, PV18 
9	PV2, PV4, PV6, PV8, PV10, PV12, PV14, PV16, PV18 	10	PV2, PV3, PV4, PV6, PV8, PV10, PV12, PV14, PV16, PV18 
11	PV2, PV3, PV4, PV6, PV8, PV10, PV12, PV14, PV15, PV16, PV18 	12	PV2, PV3, PV4, PV6, PV8, PV9, PV10, PV12, PV14, PV15, PV16, PV18 
13	PV1, PV2, PV3, PV4, PV6, PV8, PV9, PV10, PV12, PV14, PV15, PV16, PV18 	14	PV1, PV2, PV3, PV4, PV6, PV8, PV9, PV10, PV12, PV13, PV14, PV15, PV16, PV18 
15	PV1, PV2, PV3, PV4, PV6, PV7, PV8, PV9, PV10, PV12, PV13, PV14, PV15, PV16, PV18 	16	PV1, PV2, PV3, PV4, PV5, PV6, PV7, PV8, PV9, PV10, PV12, PV13, PV14, PV15, PV16, PV18 

Number of PV Strings	Terminal Selection	Number of PV Strings	Terminal Selection
17	PV1, PV2, PV3, PV4, PV5, PV6, PV7, PV8, PV9, PV10, PV12, PV13, PV14, PV15, PV16, PV17, PV18 	18	PV1, PV2, PV3, PV4, PV5, PV6, PV7, PV8, PV9, PV10, PV11, PV12, PV13, PV14, PV15, PV16, PV17, PV18 

Wiring Description of Y-branch Connectors

NOTICE

- Y-branch connectors can be purchased from Huawei or other manufacturers: If the rated current of the fuse of the Y-branch connector is 15 A, the recommended model is 904095944 (Luxshare) or A040959443039 (Comlink); if the rated current of the fuse of the Y-branch connector is 20 A, the recommended model is 904095945 (Luxshare) or A040959453039 (Comlink).
- When connecting cables to recommended Y-branch connectors, ensure that the connectors to be paired match each other and are from the same manufacturer. Otherwise, the contact resistance of the connectors may exceed the allowed value. In this case, the connectors may be heated and oxidized, which may cause faults.
- Ensure that the locking nuts of all connectors are tightened.
- Do not bind more than three fuse enclosures together. Otherwise, the fuses and their enclosures may be damaged due to overheating. It is recommended that a clearance of 10 mm or more be reserved between fuse enclosures. You are advised not to bind the fuse enclosures with other heat emitting conductors.
- Do not place the Y-branch connector harness on the ground. A safe distance must be reserved between the Y-branch connector harness and the ground to avoid impact caused by water on the ground.
- It is recommended that the Y-branch connectors be connected from the PV string side and tied to the PV trackers.
- The DC input terminals of the inverter are prone to damage under stress. When Y-branch connectors are connected to the inverter, the connectors must be bound and secured to reduce the stress on DC input terminals. For details, see **A Securing Y-Branch Connectors**.

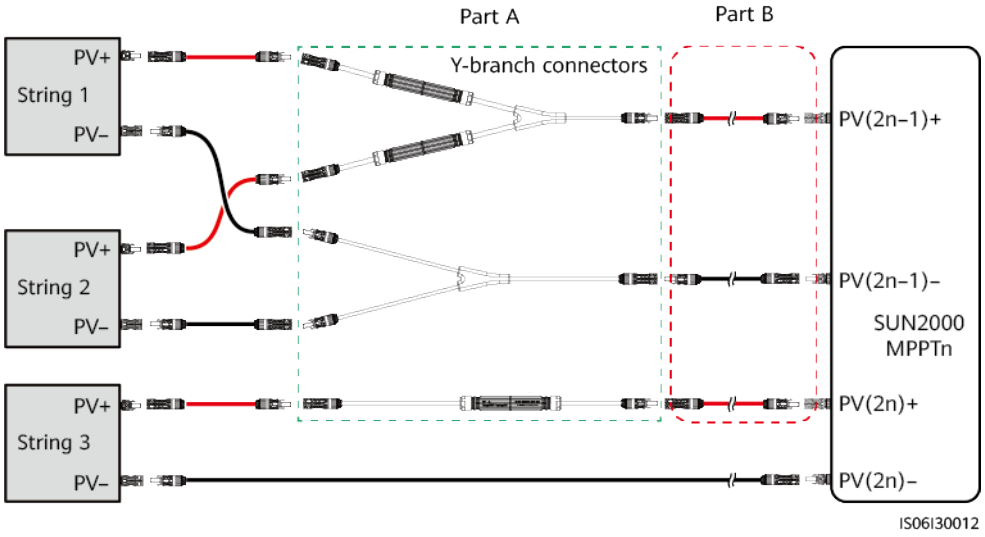
Wiring rules:

1. The PV+ on the string side must be connected to the PV+ on the inverter side, and the PV– on the string side must be connected to the PV– on the inverter side.

2. Y-branch connectors shall be evenly distributed on the DC input terminals controlled by the three DC switches.

Number of Y-branch Connector Sets	Recommended MPPT to Be Connected	Number of Y-branch Connector Sets	Recommended MPPT to Be Connected
1	MPPT2	2	MPPT2, MPPT8
3	MPPT2, MPPT5, MPPT8	4	MPPT1, MPPT2, MPPT5, MPPT8
5	MPPT1, MPPT2, MPPT5, MPPT7, MPPT8	6	MPPT1, MPPT2, MPPT4, MPPT5, MPPT7, MPPT8
7	MPPT1, MPPT2, MPPT3, MPPT4, MPPT5, MPPT7, MPPT8	8	MPPT1, MPPT2, MPPT3, MPPT4, MPPT5, MPPT7, MPPT8, MPPT9
9	MPPT1, MPPT2, MPPT3, MPPT4, MPPT5, MPPT6, MPPT7, MPPT8, MPPT9	-	-

Figure 5-16 Y-branch connector solution



Scenario	Model of Y-branch Connector (Part A)	Connection Description
Connecting Y-branch connectors to the PV strings (recommended)	All models	Use the DC terminals delivered with the inverter to connect part B to the inverter.
Connecting Y-branch connectors to the inverter	Models recommended by Huawei	Part A can be directly connected to the inverter, and part B is not needed.
	Models other than those recommended by Huawei	To ensure that the terminals of part A match the DC terminals of the inverter, part B is needed to connect part A to the inverter. Use the DC terminals delivered with the inverter to connect part B to the inverter.

Cable Specifications

Cable Type	Conductor Cross-Sectional Area (Unit: mm^2)	Cable Outer Diameter (Unit: mm)
1500 V copper multi-strand twisted PV cable	4–6	4.7–6.4

NOTICE

- Cables with high rigidity, such as armored cables, are not recommended, because poor contact may be caused by the bending of cables.
- Do not connect aluminum or aluminum alloy DC power cables directly to the DC terminals of the inverter.
- The 1500 V PV cables must comply with IEC 62930 or EN 50618.

Procedure

NOTICE

- Use the MC4 EVO2 PV connectors delivered with the inverter. If the PV connectors are lost or damaged, purchase the connectors of the same model. The device damage caused by incompatible PV connectors is not covered under any warranty.
- For models of the crimping tool and removal wrench, use the recommended model or contact the Staubli vendor.

Step 1 Connect DC input power cables.

NOTICE

- The DC voltage measurement range of the multimeter must be at least 1500 V.
- If the voltage is a negative value, the DC input polarity is incorrect. Rectify the connection.
- If the voltage is greater than 1500 V, too many PV modules are connected to the same string. Remove some PV modules.
- Connect the connectors on the PV strings to the connectors on the inverter, and pull back the connectors on the PV strings along the axial direction to check whether the connectors are securely installed.
- Ensure that the connectors are properly connected. Any connector damage due to improper connection is not covered under any warranty.

Figure 5-17 Cable connection

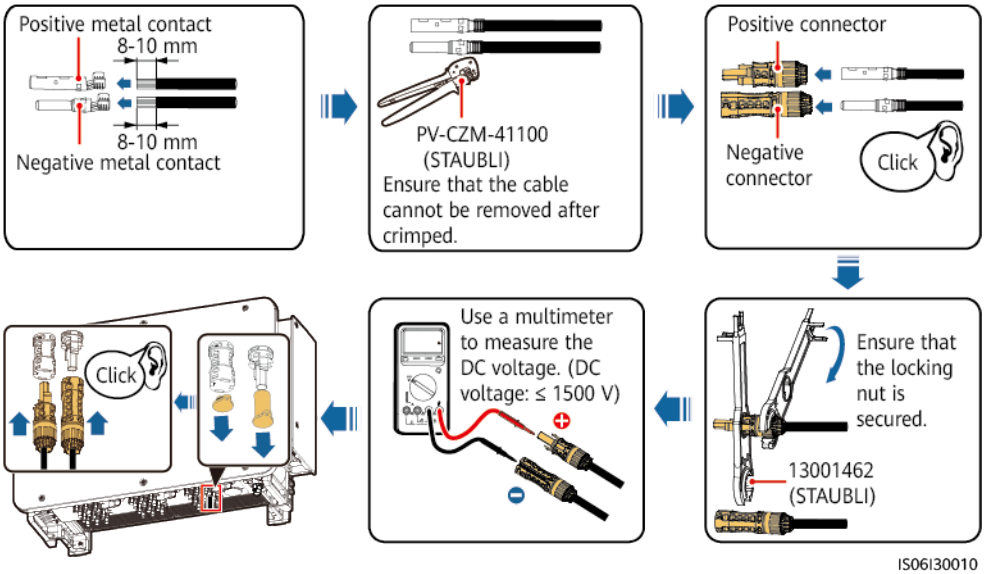
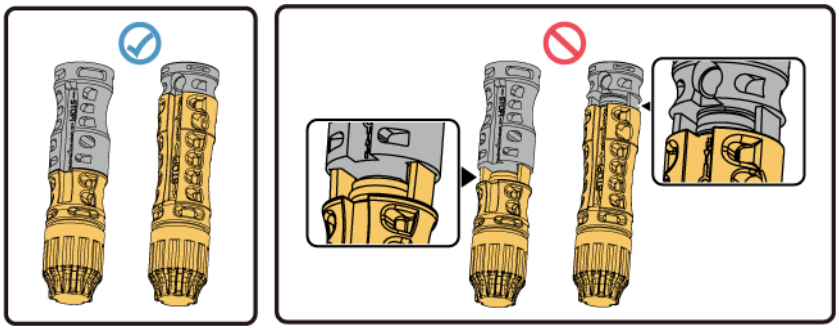


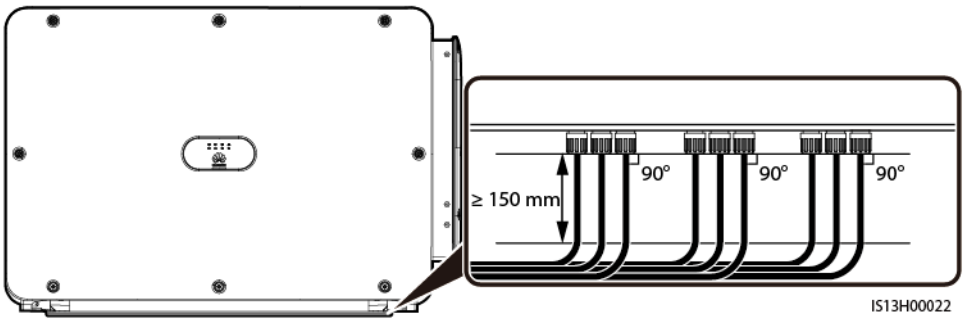
Figure 5-18 Connector connection

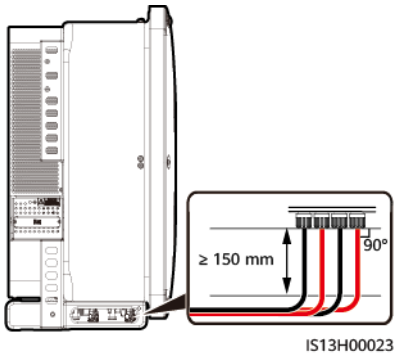


NOTICE

When installing DC input power cables, leave at least 150 mm of slack. The axial tension on PV connectors must not exceed 80 N. Radial stress or torque must not be generated on PV connectors.

Figure 5-19 DC input power cabling requirement





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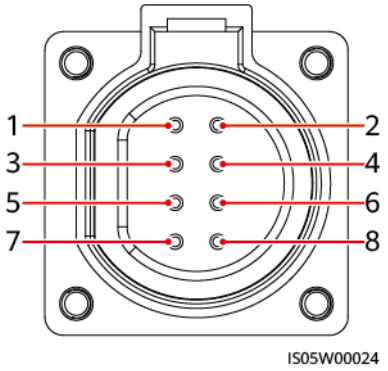
5.8 Installing the Communications Cable

Precautions

When routing communications cables, separate communications cables from power cables to prevent communication from being affected.

Pin Definitions of Communications Ports

Figure 5-20 Communications ports

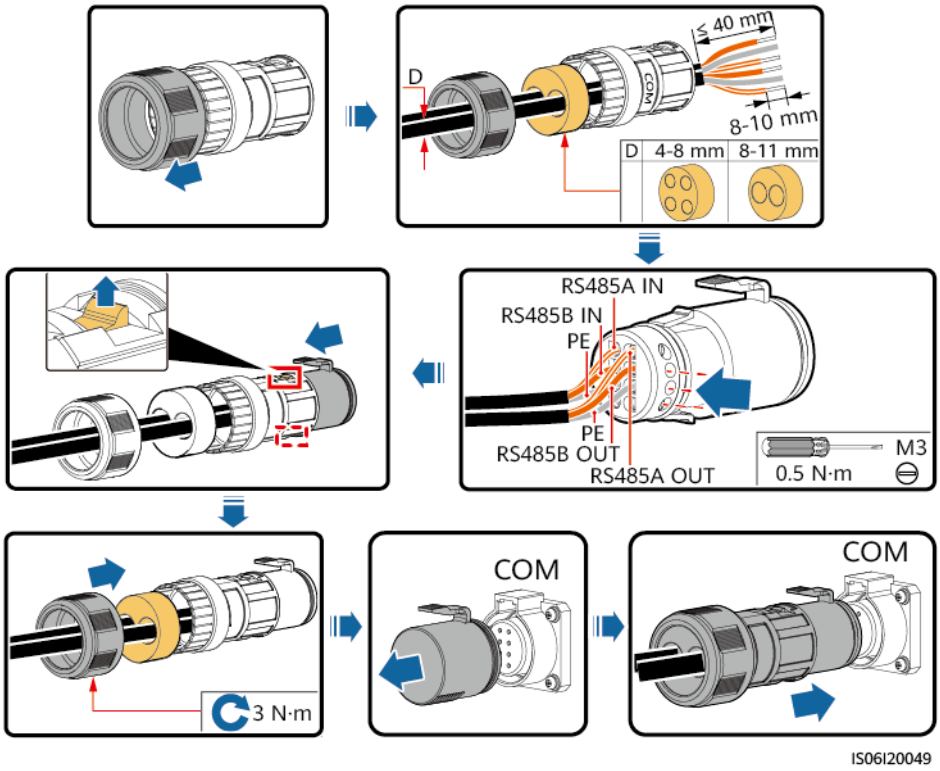


Port	Pin	Definition	Pin	Definition	Description
RS485-1	1	RS485A IN, RS485 differential signal+	2	RS485A OUT, RS485 differential signal+	Used for cascading inverters or connecting to devices such as the SmartLogger.
	3	RS485B IN, RS485 differential signal–	4	RS485B OUT, RS485 differential signal–	
PE	5	PE, shielding ground	6	PE, shielding ground	-
RS485-2	7	RS485A, RS485 differential signal+	8	RS485B, RS485 differential signal–	Used for connecting to RS485 slave devices.

Procedure

Step 1 Install the communications cable.

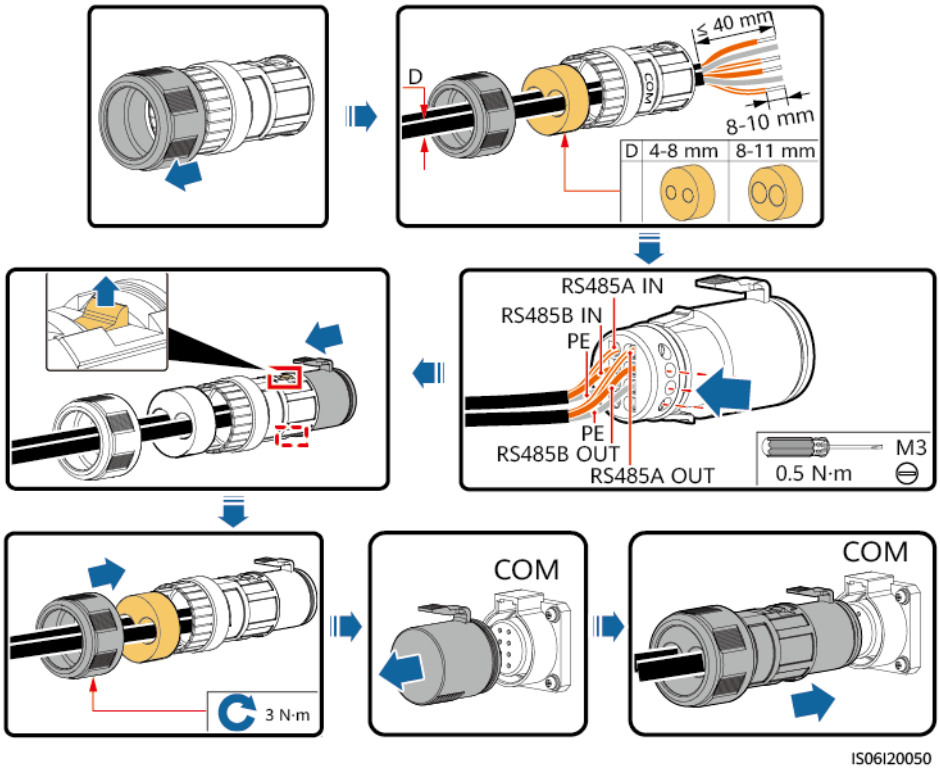
Figure 5-21 Cable connection (4–8 mm four-hole rubber plug)



NOTICE

Block unused cable holes using plugs and tighten cable glands.

Figure 5-22 Cable connection (4–8 mm two-hole rubber plug)



NOTICE

- If three communications cables are to be connected, use the three-hole rubber plug that is bound in the maintenance compartment.
- Block unused cable holes using plugs and tighten cable glands.

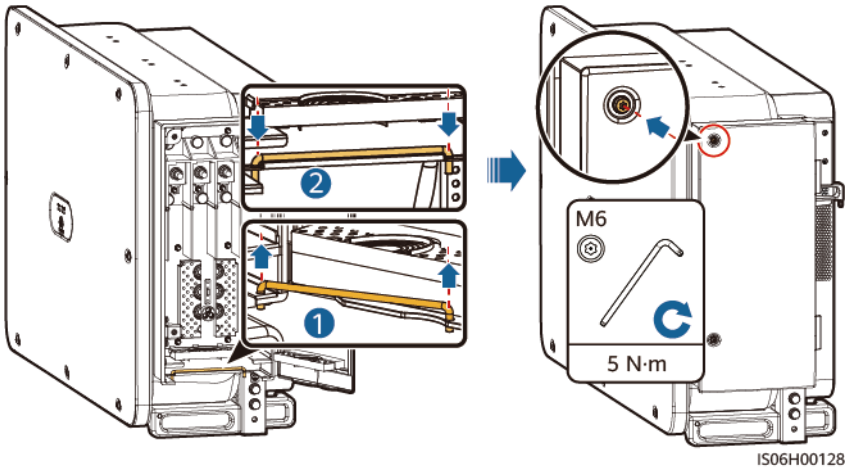
----End

5.9 Closing the Maintenance Compartment Door

Procedure

Step 1 Adjust the support bar, close the maintenance compartment door and tighten the two screws on the door.

Figure 5-23 Closing the door



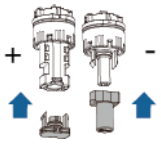
----End

6 System Commissioning

6.1 Checking Before Power-On

1. Check that the inverter is installed correctly and securely.
2. Check that the DC switches and downstream AC output switch are OFF.
3. Check that all ground cables are connected securely and reliably.
4. Check that all AC output power cables are connected correctly and securely, without open circuits or short circuits.
5. Check that all DC input power cables are connected correctly and securely, without open circuits or short circuits.
6. Check that the communications cables are connected correctly and securely.
7. Check that the maintenance compartment interior is clean and tidy, without foreign matter.
8. Check that the maintenance compartment door is closed and that the door screws are tightened.
9. If there are DC input terminals that are not connected to PV strings, use sealing plugs with snap-fits (models: CT75A-FJB6/HY024-FHG-3 and CT75AFJB5/HY024-FHG-4) to seal the terminals. Device damage caused by the absence of sealing plugs is not covered by warranty.

   Figure 6-1 Sealing plugs with snap-fits

10. Check that idle USB ports are plugged with waterproof plugs.

6.2 System Power-On

Precautions

DANGER

- Wear personal protective equipment and use dedicated insulated tools to avoid electric shocks or short circuits.

WARNING

- When LED2 is steady green (the inverter is connected to the power grid), do not turn on the DC switches. Otherwise, the inverter may be damaged because insulation resistance detection is not performed.
- If the inverter is powered on for the first time after long-term storage, it will enter the initialization phase that lasts for 1.5 to 3 hours. If the PV connection indicator is off during this process, this is normal. Do not turn off DC SWITCH 1, DC SWITCH 2, or DC SWITCH 3. Otherwise, the inverter may break down.

NOTICE

- Before the equipment is put into operation for the first time, ensure that the parameters are set correctly by professional personnel. Incorrect parameter settings may result in noncompliance with local grid connection requirements and affect the normal operations of the equipment.
- Before turning on the AC switch between the inverter and the grid, check that the AC voltage is within the specified range using a multimeter.
- If an inverter has not been running for six months or longer after being mounted, it must be checked and tested by professionals before being put into operation.
- Do not set the DC switches to the position labeled  .
- When the system is powered on or running, ensure that there are no obstacles in path of travel of the DC switch handles (for example, the handles are not stuck by cables or mistakenly held by hands) to ensure that the handles can move freely. Otherwise, the DC switches cannot automatically turn off.

Procedure

Step 1 Turn on the AC switch between the inverter and the power grid.

NOTICE

If you perform **step 2** before **step 1**, the inverter reports **Shutdown: Fault**. You can start the inverter only after the fault is automatically rectified.

Step 2 Set the DC SWITCH 1 (MAIN SWITCH) at the bottom of the inverter to ON. When you hear a click, the switch is completely turned on.

Step 3 Check the status of LED1. If it is steady green, set DC SWITCH 2 and DC SWITCH 3 to ON.

----End

7 Human-Machine Interaction

7.1 App Operations

Statement

NOTICE

- The configurable parameters of the inverter vary with the grid code.
- Changing the grid code may restore some parameters to factory defaults. Check whether the previously set parameters are affected.
- Sending a reset, factory reset, shutdown, or upgrade command to the inverter may cause power grid connection failure, which affects the energy yield.
- Before the device is put into operation for the first time, ensure that the parameters are set correctly by professional personnel. Incorrect parameter settings may result in noncompliance with local grid connection requirements and affect the normal operations of the device.
- The parameter names, value ranges, and default values are subject to change.

7.1.1 Downloading and Installing the App

NOTICE

The mobile phone operating system must be Android 8.0, iOS 13.0, or later. (iPhone 6 or later is supported for the iOS version.)

Scan the following QR code to download and install the app.

NOTE

If you select **Download via the Browser** and a security warning message is displayed indicating that the app is from an external source, tap **ALLOW**.

7.1.2 Logging In to the App

1. On the mobile device, tap the app icon to access the login screen.
2. On the app login screen, enter the account information and tap **Log In**.

NOTE

- If a new user logs in to the app for the first time or a user logs in to the app for the first time after the password is reset, change the login password as prompted.
- If a user enters incorrect passwords for five consecutive times within 5 minutes, the account will be locked for 30 minutes. The user can log in again after the lockout period expires or contact the installer or administrator to unlock the account.
- To ensure account security, protect the password by changing it periodically, and keep it secure. Your password might be stolen or cracked if it is left unchanged for extended periods. In these cases, the Company shall not be liable for any loss.

7.1.3 Operations Related to the Advanced User

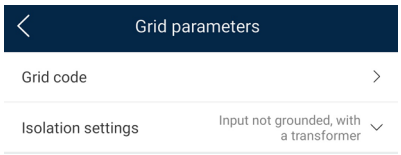
If you log in to the app as **Advanced User**, you can set grid parameters, protection parameters, and feature parameters for the SUN2000.

7.1.3.1 Setting Grid Parameters

Procedure

Step 1 Choose **Function Menu** > **Settings** > **Grid Parameters** to access the parameters setting screen.

Figure 7-1 Grid parameters (advanced user)



----End

Parameters

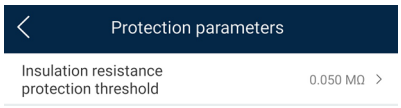
No.	Parameter	Description
1	Grid Code	Set this parameter based on the grid code of the country or region where the inverter is used and the inverter application scenario.
2	Isolation settings	Set the working mode of the inverter based on the grounding status at DC side and the connection to the power grid.

7.1.3.2 Setting Protection Parameters

Procedure

Step 1 Choose **Function Menu** > **Settings** > **Protection parameters** to access the parameters setting screen.

Figure 7-2 Protection parameters (advanced user)



----End

Parameters

No.	Parameter	Description
1	Insulation resistance protection threshold (MΩ)	To ensure device safety, the inverter detects the insulation resistance of the input side with respect to ground when it starts a self-check. If the detected value is less than the preset value, the inverter does not connect to the grid.

NOTE

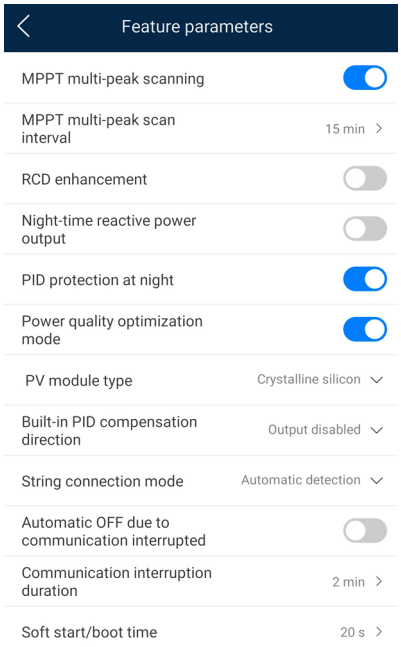
The insulation resistance protection threshold of the inverter must be set to a value in the range of 0.05 to 1.5.

7.1.3.3 Setting Feature Parameters

Procedure

Step 1 Choose **Function Menu** > **Settings** > **Feature Parameters** to access the settings screen.

Figure 7-3 Feature parameters (advanced user)



----End

Parameters

No.	Parameter	Description	Remarks
1	MPPT multi-peak scanning	When the inverter is used in scenarios where PV strings are greatly shaded, set this parameter to **Enable**, and then the inverter will perform MPPT scanning at regular intervals to locate the maximum power.	-
2	MPPT multi-peak scan interval (min)	Specifies the MPPT scanning interval.	This parameter is displayed when **MPPT multi-peak scanning** is set to **Enable**.
3	RCD enhancement	RCD refers to the residual current of the inverter to the ground. To ensure device and personal safety, RCD should be limited to the specified value in the standard. If an AC switch with a residual current detection function is installed outside the inverter, this function should be enabled to reduce the residual current generated when the inverter is running, thereby preventing the AC switch from misoperations.	-

No.	Parameter	Description	Remarks
4	Night-time reactive power output	In some specific application scenarios, a power grid company requires that the inverter can perform reactive power compensation at night to ensure that the power factor of the local power grid meets requirements.	This parameter is displayed when **Isolation settings** is set to **Input ungrounded, with TF**.
5	PID protection at night	When the inverter outputs reactive power at night and this parameter is set to **Enable**, the inverter will shut down automatically if it detects abnormal status of the PID compensation.	-
6	Power quality optimization mode	If this parameter is set to **Enable**, the inverter output current harmonics will be optimized.	-
7	PV module type	This parameter is used to set different types of PV modules and the shutdown time of the concentration PV module. If the concentration PV modules are shaded, the power drops drastically to 0 and the inverter shuts down. The energy yield would be affected since it takes too long for the power to resume and inverter to restart. The parameter does not need to be set for crystalline silicon and filmy PV modules.	• If this parameter is set to **Crystalline silicon** or **Film**, the inverter automatically detects the power of PV modules when they are shaded and shuts down if the power is too low. • When concentration PV modules are used: – If this parameter is set to **CPV 1**, the inverter can quickly restart in 60 minutes if the input power of PV modules drops drastically due to shading. – If this parameter is set to **CPV 2**, the inverter can quickly restart in 10 minutes if the input power of PV modules drops drastically due to shading.

No.	Parameter	Description	Remarks
8	Built-in PID compensation direction	When the external PID module compensates the PID voltage for the PV system, set **Built-in PID compensation direction** to the actual compensation direction of the PID module so that the inverter can output reactive power at night.	-
9	String connection mode	Specifies the connection mode of PV strings.	• When PV strings connect to the inverter separately (All PV strings separated), there is no need to set this parameter. The inverter can automatically detect the connection mode of the PV strings. • When PV strings connect to one another in parallel outside the inverter and then connect to it independently (All PV strings connected), set this parameter to **All PV strings connected**.
10	Automatic OFF due to communication interrupted	The standards of certain countries and regions require that the inverter must shut down after the communication is interrupted for a certain time.	If **Automatic OFF due to communication interrupted** is set to **Enable** and the inverter communication is interrupted for a specified time (set by **Communication interruption duration**), the inverter will automatically shut down.
11	Automatic ON due to communication resumed	If this parameter is set to **Enable**, the inverter automatically starts after communication recovers. If this parameter is set to **Disable**, the inverter needs to be started manually after communication recovers.	This parameter is displayed when **Automatic OFF due to communication interrupted** is set to **Enable**.
12	Communication interruption duration (min)	Specifies the duration for determining communication interruption. Used for automatic shutdown for protection in case of communication interruption.	-
13	Soft start/boot time (s)	Specifies the duration for the power to gradually increase when the inverter starts.	-

No.	Parameter	Description	Remarks
14	Shutdown gradient (%/s)	Specifies the power change speed when the inverter shuts down.	-
15	Night-time hibernation	The inverter monitors PV strings at night. If this parameter is set to **Enable**, the monitoring function of the inverter will hibernate at night to reduce power consumption.	-
16	MBUS communication	For inverters that support RS485 communication and MBUS communication, you are advised to set this parameter to **Disable** to reduce power consumption.	-
17	Delay upgrade	This parameter is mainly used in the upgrade scenarios where the PV power supply is disconnected at night due to no sunlight or unstable at dawn or dusk due to poor sunlight.	After the inverter starts to upgrade, if **Delay upgrade** is set to **Enable**, the upgrade package is loaded first. After the PV power supply recovers and the activation conditions are met, the inverter automatically activates the upgrade.
18	RS485-2 communication	If this parameter is set to **Enable**, the RS485-2 port can be used. If the port is not used, you are advised to set this parameter to **Disable** to reduce power consumption.	-
19	Duration for determining short-time grid disconnection (ms)	The standards of certain countries and regions require that the inverter should not disconnect from the power grid if the power grid experiences a short-time failure. After the fault is rectified, the inverter output power needs to be quickly restored.	-

7.1.4 Operations Related to the Special User

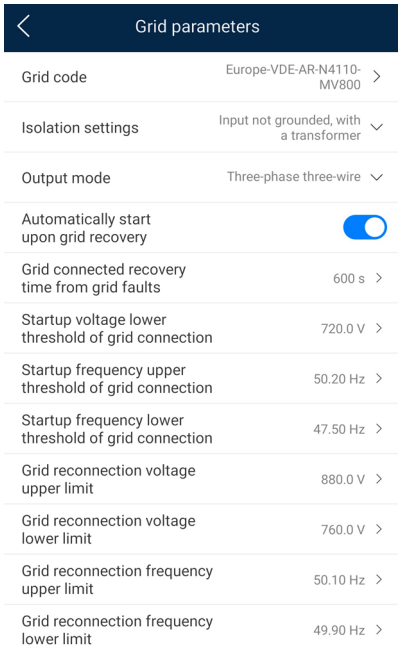
If you log in to the app as **Special User**, you can set grid parameters, protection parameters, feature parameters, and power adjustment parameters for the SUN2000.

7.1.4.1 Setting Grid Parameters

Procedure

Step 1 Choose **Function Menu** > **Settings** > **Grid Parameters** to access the parameters setting screen.

Figure 7-4 Power grid parameters (special user)



----End

Parameters

No.	Parameter	Description
1	Grid Code	Set this parameter based on the grid code of the country or region where the inverter is used and the inverter application scenario.
2	Isolation settings	Set the working mode of the inverter based on the grounding status at DC side and the connection to the power grid.
3	Output mode	Specifies whether the inverter output has a neutral wire based on the application scenario.
4	Automatically start upon grid recovery	Specifies whether to allow the inverter to automatically start after the power grid recovers.
5	Grid connected recovery time from grid faults (s)	Specifies the time after which the inverter begins restarting after the power grid recovers.

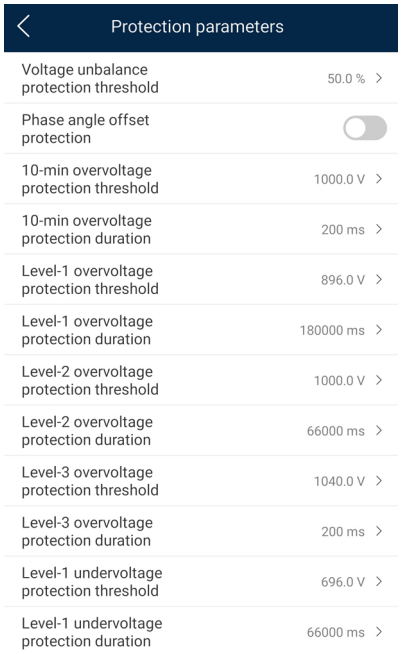
No.	Parameter	Description
6	Startup voltage lower threshold of grid connection (V)	According to the standards of certain countries and regions, after the inverter is powered on for the first time for grid connection, if the power grid voltage is lower than **Startup voltage lower threshold of grid connection**, the inverter is not allowed to connect to the grid.
7	Startup frequency upper threshold of grid connection (Hz)	According to the standards of certain countries and regions, after the inverter is powered on for the first time for grid connection, if the power grid voltage is higher than **Startup frequency upper threshold of grid connection**, the inverter is not allowed to connect to the grid.
8	Startup frequency lower threshold of grid connection (Hz)	According to the standards of certain countries and regions, after the inverter is powered on for the first time for grid connection, if the power grid voltage is lower than **Startup frequency lower threshold of grid connection**, the inverter is not allowed to connect to the grid.
9	Grid reconnection voltage upper limit (V)	The standards of certain countries and regions require that after the inverter shuts down for protection due to a fault, if the power grid voltage is higher than **Grid reconnection voltage upper limit**, the inverter is not allowed to reconnect to the grid.
10	Grid reconnection voltage lower limit (V)	The standards of certain countries and regions require that after the inverter shuts down for protection due to a fault, if the power grid voltage is lower than **Grid reconnection voltage lower limit**, the inverter is not allowed to reconnect to the grid.
11	Grid reconnection frequency upper limit (Hz)	The standards of certain countries and regions require that after the inverter shuts down for protection due to a fault, if the power grid frequency is higher than **Grid reconnection frequency upper limit**, the inverter is not allowed to reconnect to the grid.
12	Grid reconnection frequency lower limit (Hz)	The standards of certain countries and regions require that after the inverter shuts down for protection due to a fault, if the power grid frequency is lower than **Grid reconnection frequency lower limit**, the inverter is not allowed to reconnect to the grid.
13	Reactive power compensation (cosϕ-P) trigger voltage (%)	Specifies the voltage threshold for triggering reactive power compensation based on the cosϕ-P curve.
14	Reactive power compensation (cosϕ-P) exit voltage (%)	Specifies the voltage threshold for exiting reactive power compensation based on the cosϕ-P curve.

7.1.4.2 Setting Protection Parameters

Procedure

Step 1 Choose **Function Menu** > **Settings** > **Protect Parameters** to go to the parameter setting screen.

Figure 7-5 Protection parameters (special user)



----End

Parameters

No.	Parameter	Description
1	Voltage unbalance protection threshold (%)	Specifies the inverter protection threshold when the power grid voltage is unbalanced.
2	Phase angle offset protection	The standards of certain countries and regions require that the inverter needs to be protected when the phase angle offset of the power grid three phases exceeds a certain value.
3	10-min overvoltage protection threshold (V)	Specifies the 10-minute overvoltage protection threshold.
4	10-min overvoltage protection duration (ms)	Specifies the 10-minute overvoltage protection duration.
5	Level-N overvoltage protection threshold (V)	Specifies the level-N grid overvoltage protection threshold.
6	Level-N overvoltage protection duration (ms)	Specifies the level-N grid overvoltage protection duration.

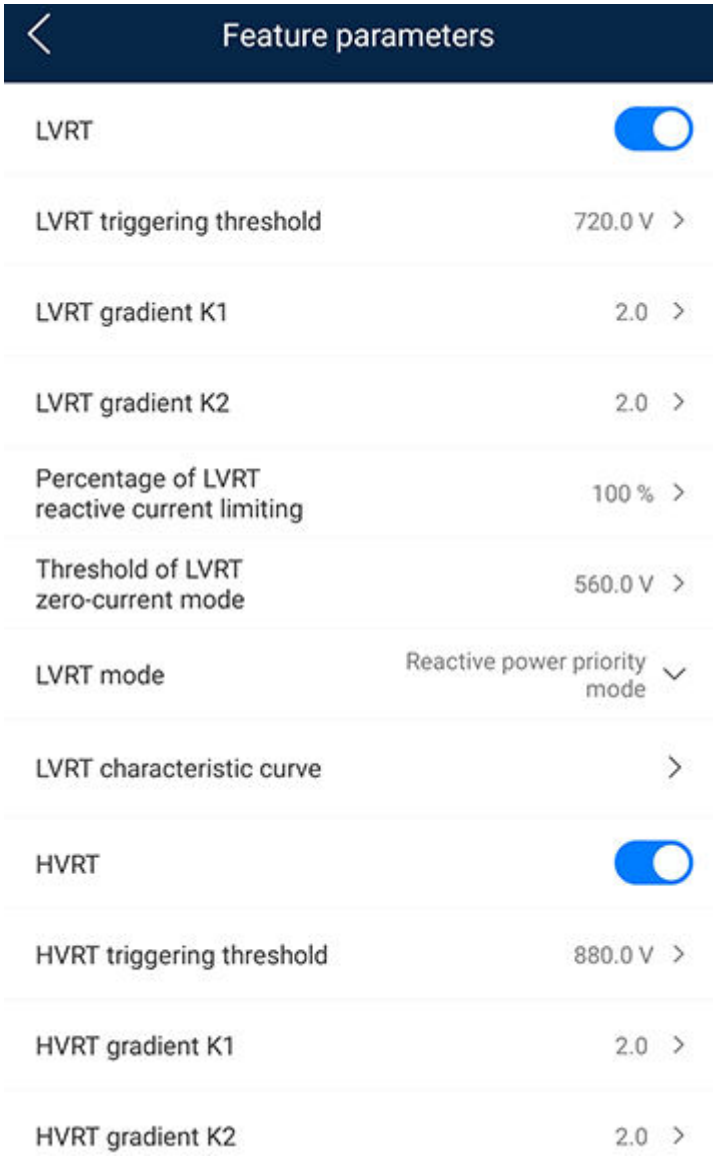
No.	Parameter	Description
7	Level-N undervoltage protection threshold (V)	Specifies the level-N grid undervoltage protection threshold.
8	Level-N undervoltage protection duration (ms)	Specifies the level-N grid undervoltage protection duration.
9	Level-N overfrequency protection threshold (Hz)	Specifies the level-N grid overfrequency protection threshold.
10	Level-N overfrequency protection duration (ms)	Specifies the level-N grid overfrequency protection duration.
11	Level-N underfrequency protection threshold (Hz)	Specifies the level-N grid underfrequency protection threshold.
12	Level-N underfrequency protection duration (ms)	Specifies the level-N grid underfrequency protection duration.

7.1.4.3 Setting Feature Parameters

Procedure

Step 1 Choose **Function Menu** > **Settings** > **Feature Parameters** to access the settings screen.

Figure 7-6 Feature parameters (special user)



----End

Parameters

No.	Parameter	Description	Remarks
1	LVRT	LVRT is short for low voltage ride-through. When the grid voltage is abnormally low for a short time, the inverter cannot disconnect from the power grid immediately and has to work for some time.	-
2	Threshold for triggering LVRT (V)	Specifies the threshold for triggering LVRT. The threshold settings should meet the local grid standard.	This parameter is displayed when **LVRT** is set to **Enable**.

No.	Parameter	Description	Remarks
3	LVRT gradient K1	During LVRT, the solar inverter needs to generate positive-sequence reactive power to support the power grid. This parameter is used to set the positive-sequence reactive power generated by the solar inverter. For example, if you set **LVRT gradient K1** to **2**, the increment of positive-sequence reactive current generated by the solar inverter is 20% of the rated current when the AC voltage decreases by 10% during LVRT.	
4	LVRT gradient K2	During LVRT, the solar inverter needs to generate negative-sequence reactive power to support the power grid. This parameter is used to set the negative-sequence reactive power generated by the solar inverter. For example, if you set **LVRT gradient K2** to **2**, the increment of negative-sequence reactive current generated by the solar inverter is 20% of the rated current when the AC voltage decreases by 10% during LVRT.	
5	Percentage of LVRT reactive current limiting	During LVRT, the solar inverter needs to limit the reactive current. For example, if you set **Percentage of LVRT reactive current limiting** to **50**, the reactive current upper limit of the solar inverter is 50% of the rated current during LVRT.	
6	Threshold of LVRT zero-current mode	When **Zero current due to power grid fault** is enabled, if the power grid voltage is less than the value of **Threshold of LVRT zero-current mode** during LVRT, the zero current mode is used. Otherwise, the mode configured in **LVRT mode** is used.	
7	LVRT mode	Sets LVRT mode. The options are **Zero-current mode**, **Constant current mode**, **Reactive power priority mode**, and **Active power priority mode**.	
8	LVRT characteristic curve	Specifies the low voltage ride-through capability of the inverter.	
9	HVRT	HVRT is short for high voltage ride-through. When the grid voltage is abnormally high for a short time, the inverter cannot disconnect from the power grid immediately and has to work for some time.	-

No.	Parameter	Description	Remarks
10	Threshold for triggering HVRT (V)	Specifies the threshold for triggering HVRT. The threshold settings should meet the local grid standard.	This parameter is displayed when **HVRT** is set to **Enable**.
11	HVRT gradient K1	During HVRT, the solar inverter needs to generate positive-sequence reactive power to support the power grid. This parameter is used to set the positive-sequence reactive power generated by the solar inverter. For example, if you set **HVRT gradient K1** to **2**, the increment of positive-sequence reactive current generated by the solar inverter is 20% of the rated current when the AC voltage increases by 10% during HVRT.	
12	HVRT gradient K2	During HVRT, the solar inverter needs to generate negative-sequence reactive power to support the power grid. This parameter is used to set the negative-sequence reactive power generated by the solar inverter. For example, if you set **HVRT gradient K2** to **2**, the increment of negative-sequence reactive current generated by the solar inverter is 20% of the rated current when the AC voltage increases by 10% during HVRT.	
13	Grid voltage protection shield during VRT	Specifies whether to shield the undervoltage protection function during LVRT or HVRT.	This parameter is displayed when **LVRT** or **HVRT** is set to **Enable**.
14	VRT exit hysteresis threshold	Specifies the LVRT/HVRT recovery threshold.	• This parameter is displayed when **LVRT** or **HVRT** is set to **Enable**. • LVRT recovery threshold = Threshold for triggering LVRT + VRT exit hysteresis threshold • HVRT recovery threshold = Threshold for triggering HVRT - VRT exit hysteresis threshold

No.	Parameter	Description	Remarks
15	Grid voltage jump triggering threshold (%)	Specifies the LVRT or HVRT threshold for triggering a transient voltage jump of a power grid. A transient voltage jump indicates that the inverter cannot immediately disconnect from the power grid when the power grid is abnormal due to transient changes.	-
16	Zero current due to power grid fault	Certain countries and regions have requirements on the output current during high/low voltage ride-through. In this case, set this parameter to **Enable**. After this parameter is set to **Enable**, the output current is less than 10% of the rated current during high/low voltage ride-through.	This parameter is displayed when **LVRT** or **HVRT** is set to **Enable**.
17	Active islanding protection	Specifies whether to enable the active islanding protection function.	-
18	Automatic OFF due to communication interrupted	The standards of certain countries and regions require that the inverter must shut down after the communication is interrupted for a certain time.	-
19	Automatic ON due to communication resumed	If this parameter is set to **Enable**, the inverter automatically starts after communication recovers. If this parameter is set to **Disable**, the inverter needs to be started manually after communication recovers.	-
20	Communication interruption duration (min)	Specifies the duration for determining communication interruption. Used for automatic shutdown for protection in case of communication interruption.	-
21	Soft start/ boot time (s)	Specifies the duration for the power to gradually increase when the inverter starts.	-
22	Soft start time after grid failure (s)	Specifies the time for the power to gradually increase when the inverter restarts after the power grid recovers.	-
23	TCP heartbeat interval (s)	Specifies the TCP link timeout period for the solar inverter to connect to the management system.	-
24	TCP frame length	Specifies the maximum length of the TCP frame sent by the northbound device to the solar inverter.	-

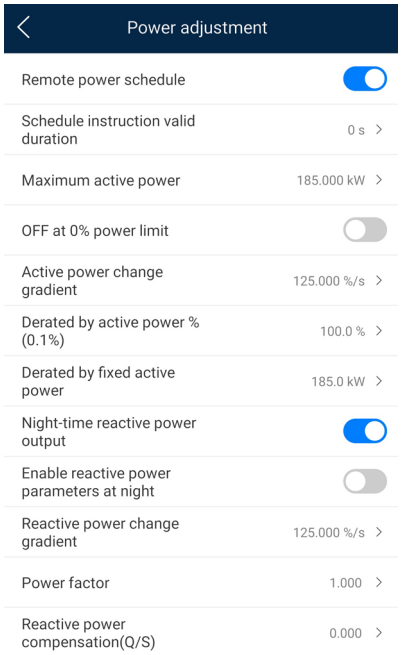
No.	Parameter	Description	Remarks
25	Heartbeat period at application layer (min)	Specifies the timeout period for the solar inverter to connect to the management system.	-

7.1.4.4 Setting Power Adjustment Parameters

Procedure

Step 1 Choose **Function Menu** > **Settings** > **Power Adjustment** to go to the parameter setting screen.

Figure 7-7 Power adjustment parameters (special user)



----End

Parameters

No.	Parameter	Description	Remarks
1	Remote power schedule	If this parameter is set to **Enable**, the inverter responds to the scheduling instruction from the remote port. If this parameter is set to **Disable**, the inverter does not respond to the scheduling instruction from the remote port.	-

No.	Parameter	Description	Remarks
2	Schedule instruction valid duration (s)	Specifies the time for maintaining the scheduling instruction.	When this parameter is set to 0, the scheduling instruction takes effect permanently.
3	Maximum active power (kW)	Specifies the output upper threshold for the maximum active power to adapt to different market requirements.	-
4	OFF at 0% power limit	If this parameter is set to **Enable**, the inverter shuts down after receiving the 0% power limit command. If this parameter is set to **Disable**, the inverter does not shut down after receiving the 0% power limit command.	-
5	Active power change gradient (%/s)	Specifies the change speed of the inverter active power.	-
6	Derated by fixed active power (kW)	Adjusts the active power output of the inverter by fixed value.	-
7	Derated by active power % (%)	Adjusts the active power output of the inverter by percentage.	If this parameter is set to **100**, the inverter outputs based on the maximum output power.
8	Night-time reactive power output	In some specific application scenarios, a power grid company requires that the inverter can perform reactive power compensation at night to ensure that the power factor of the local power grid meets requirements.	-
9	Enable reactive power parameters at night	When this parameter is set to **Enable**, the inverter outputs reactive power based on the setting of **Reactive power compensation at night**. Otherwise, the inverter executes the remote scheduling command.	This parameter is displayed when **Night-time reactive power output** is set to **Enable**.
10	Night-time reactive power compensation (kVar)	During the reactive power compensation at night, the reactive power is scheduled by fixed value.	This parameter is displayed when **Night-time reactive power output** and **Enable reactive power parameters at night** are set to **Enable**.

No.	Parameter	Description	Remarks
11	Reactive power change gradient (%/s)	Specifies the change speed of the inverter reactive power.	-
12	Plant active power gradient (min/100%)	Specifies the rate of active power rise due to sunlight changes.	-
13	Average active power filtering time (ms)	Specifies the period of active power rise due to sunlight changes. This parameter is used with **Plant active power gradient**.	-
14	Power factor	Specifies the power factor of the inverter.	-
15	Reactive power compensation (Q/S)	Specifies the reactive power output by the inverter.	-
16	Overfrequency derating	If this parameter is set to **Enable**, the active power of the inverter will be derated according to a certain slope when the grid frequency exceeds the frequency that triggers overfrequency derating.	-
17	Frequency for triggering overfrequency derating (Hz)	The standards of certain countries and regions require that the output active power of inverters be derated when the power grid frequency exceeds a certain value.	• This parameter is displayed when **Overfrequency derating** is set to **Enable**. • When setting this parameter, ensure that the following condition is met: **Frequency for exiting overfrequency derating** ≤ **Frequency for triggering overfrequency derating** < **Cutoff frequency of overfrequency derating**.
18	Frequency for exiting overfrequency derating (Hz)	Specifies the frequency threshold for exiting overfrequency derating.	
19	Cutoff frequency of overfrequency derating (Hz)	Specifies the frequency threshold for cutting off overfrequency derating.	
20	Cutoff power of overfrequency derating (%)	Specifies the power threshold for cutting off overfrequency derating.	
21	Power recovery gradient of overfrequency derating (%/min)	Specifies the recovery rate of the overfrequency derating power.	
22	PF (U) voltage detection filtering time (s)	Specifies the time for filtering the grid voltage in the PF-U curve.	-

No.	Parameter	Description	Remarks
23	Apparent power baseline (kVA)	Adjust the apparent output baseline of the inverter.	-
24	Active power baseline (kW)	Adjusts the active output baseline of the inverter.	-
25	Power percentage for triggering Q-U scheduling	Specifies the reference apparent power, in percentage. When the actual apparent power of the inverter is greater than the value of this parameter, the Q-U characteristic curve scheduling function is enabled.	-
26	Q-U characteristic curve	The inverter adjusts Q/S (the ratio of the output reactive power to apparent power) in real time based on U/Un(%) (the ratio of the actual power grid voltage to the rated power grid voltage).	-
27	Q-P characteristic curve	The inverter adjusts Q/Pn (the ratio of the output reactive power to the rated active power) in real time based on P/Pn(%) (the ratio of the actual active power to the rated active power).	-
28	Cosϕ-P/Pn characteristic curve	The inverter adjusts the output power factor cosϕ in real time based on P/Pn(%).	-

7.2 Upgrading the Inverter

Before upgrading the inverter, ensure that the DC side is powered on.

NOTE

Contact the Company's engineers to obtain the software package for upgrade, or log in to the **FusionSolar Software Download** website and download the latest inverter software version.

Using an App to Upgrade the Inverter

If you use an app to upgrade the inverter, see the section about device upgrade in the app device commissioning guide.

Using a SmartLogger to Upgrade the Inverter

If you use a SmartLogger to upgrade the inverter, see section **Software Upgrade** in the *SmartLogger3000 User Manual*.

Using a Management System to Upgrade the Inverter

If you use a management system to upgrade the inverter, see the section about device upgrade management in the management system user manual.

8 Maintenance

DANGER

- Wear personal protective equipment and use dedicated insulated tools to avoid electric shocks or short circuits.
- Do not stay in front of the inverter for a long time. Do not approach the inverter unless necessary.
- If you need to operate an inverter switch, insert or remove a USB flash drive, replace a fan, or commission the inverter, you are advised to stand beside the inverter or behind it and take safety measures in strict accordance with the requirements in the user manual.

WARNING

- Before performing maintenance, power off the equipment, follow the instructions on the delayed discharge label, and wait for a period of time as specified to ensure that the equipment is not energized.

8.1 Shutdown and Power-Off

Precautions

WARNING

- If two inverters share the same AC switch on the AC side, power off the system of the two inverters.
- After the inverter system is powered off, the remaining electricity and heat on the enclosure may cause electric shocks or burns. Therefore, wait for at least 15 minutes after inverter system power-off and wear PPE before working on the inverter.

Procedure

Step 1 Send a shutdown command on the app, SmartLogger, or management system.

For details, see the user manual of the corresponding product.

Step 2 Turn off the AC switch between the inverter and the power grid.

Step 3 Set the three DC switches (**DC SWITCH**) to **OFF**.

----End

8.2 Power-Off for Maintenance

Context

To prevent personal injury and equipment damage, perform the following procedure to power off the inverter for troubleshooting or replacement.

CAUTION

- If the inverter is faulty, do not stand in front of it if possible.
- If the LED1 indicator on the inverter is off and the DC switches are **OFF**, do not operate the DC switches. For details, see **Step 4**.
- Do not operate the DC switches on the inverter before you perform **Step 3** to **Step 5**.
- When the inverter detects a fault, it triggers automatic DC disconnection protection. Do not turn on the DC switches before the fault is rectified.
- If the AC switch between the inverter and the power grid has been turned off automatically, do not turn it on before the fault is rectified.
- Before power-off for maintenance, do not touch the energized components of the inverter. Otherwise, electric shocks or arcs may occur.

Procedure

Step 1 Wear proper PPE.

Step 2 If the inverter does not shut down due to a fault, send a shutdown command on the SUN2000 app, SmartLogger, or management system. If the inverter has shut down due to a fault, go to the next step.

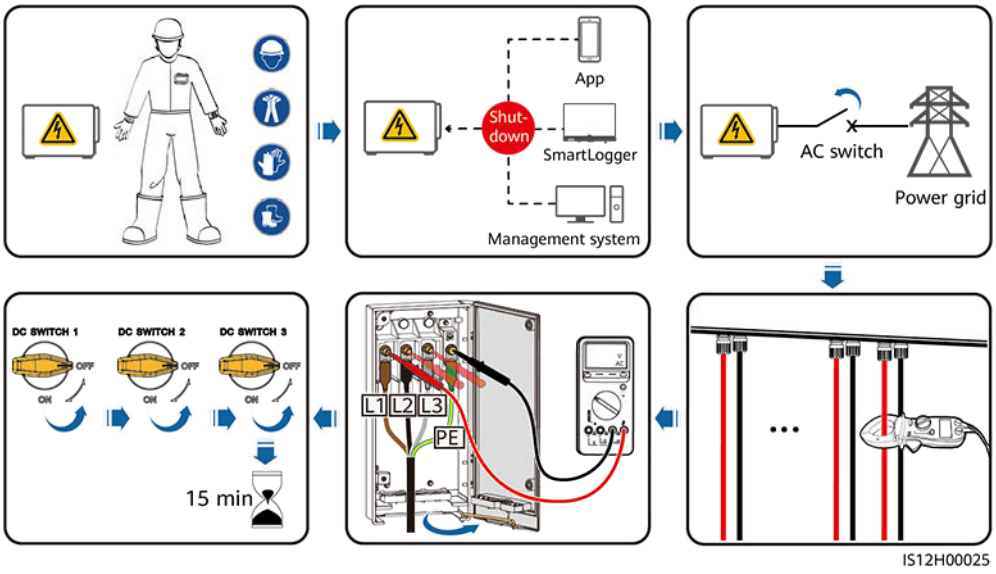
Step 3 Turn off the AC switch between the inverter and the power grid.

Step 4 Use a clamp meter to measure the DC current of each PV string input to the inverter.

- If the current is less than or equal to 0.01 A, go to the next step.
- If the current is higher than 0.01 A, wait until the solar irradiance decreases and the PV string current decreases below 0.01 A at night, and then go to the next step.

Step 5 Open the maintenance compartment door, install a support strut, and use a multimeter to check the voltage between the AC terminal block and the ground. Ensure that the AC side of the inverter is powered off.

Step 6 Set all DC switches of the inverter to OFF. If the DC switches are automatically turned off, go to the next step.



Step 7 Wait for 15 minutes and troubleshoot or repair the inverter.

WARNING

If a serious fault occurs in an internal circuit of the inverter, do not stay in front of the inverter. Perform operations according to the following instructions. Improper operations may cause a fire inside the inverter or allow a serious fault to propagate, which may endanger personal safety.

- If the inverter emits abnormal smell or smoke. catches fire, or has obvious exceptions, handle the situation according to the *Smart PV Inverter Emergency Plan*.
- If the inverter does not emit abnormal smell or smoke, catch fire, or have obvious exceptions:
  - If an alarm is generated, perform operations on the faulty inverter according to the **Inverter Alarm Reference**. If any of the alarms with IDs 2064-1, 2064-10, 2064-11, 2064-12, 2064-20, 2064-29, and 2064-30 is generated, handle it first.
  - If the inverter does not generate an alarm but the AC switch trips and the DC indicator on the inverter is off, follow these instructions:
    - Ensure that the AC switch is OFF. Do not turn it on again.
    - Ensure that there are no flammable materials under the inverter.
    - Handle the inverter at night when the DC side is completely de-energized.
  - In other cases, wait for the inverter to recover automatically. If the inverter fails to recover, contact your vendor or technical support.

----End

8.3 Routine Maintenance

Maintenance Items

To ensure that the inverter can operate properly for a long term, you are advised to perform routine maintenance on it as described in this section.

CAUTION

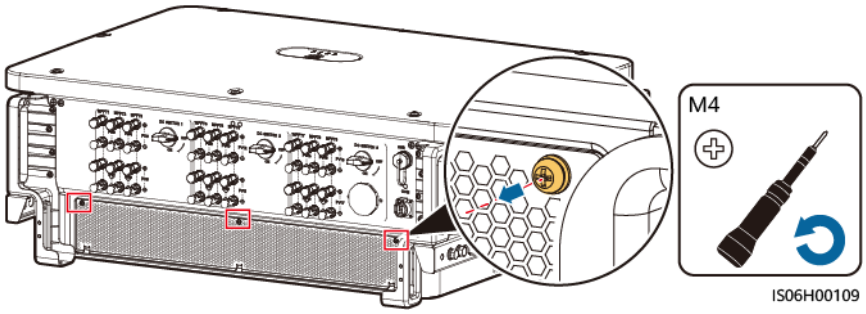
- Before cleaning the inverter, connecting cables, and checking the grounding reliability, power off the inverter and ensure that each **DC SWITCH** on the inverter is set to **OFF**.
- If you need to open the maintenance compartment door on rainy or snowy days, take protective measures to prevent rain or snow from entering the maintenance compartment. If protective measures cannot be taken, do not open the maintenance compartment door.

Table 8-1 Maintenance checklist

Check Item	Check Method	Maintenance Interval
• Cleanness of air intake and exhaust vents • Fans	• Check whether there is dust on the air intake and exhaust vents. If necessary, remove the baffle plates from the vents and clean up dust. • Check whether the fans generate abnormal noise during operation.	Once every 6 to 12 months
System running status	• Check whether the inverter is damaged or deformed. • Check whether the inverter generates abnormal sounds during operation. • Check whether all inverter parameters are correctly set during operation.	Once every 6 months
Electrical connections	• Check whether cables are securely connected. • Check whether cables are damaged, especially whether the cable sheath that contacts a metal surface is damaged. • Check whether the sealing plugs of unused DC input terminals fall off. • Check whether the unused COM and USB ports are locked by waterproof caps.	6 months after the first commissioning and once every 6 to 12 months after that
Grounding reliability	Check whether ground cables are securely connected.	6 months after the first commissioning and once every 6 to 12 months after that
Vegetation around the inverter	• Perform inspection and weeding as required. • Clean the site promptly after weeding.	Based on the local wilting season

Removing the Baffle Plate from the Air Intake Vent

Figure 8-1 Removing the baffle plate



8.4 Replacing a Fan

CAUTION

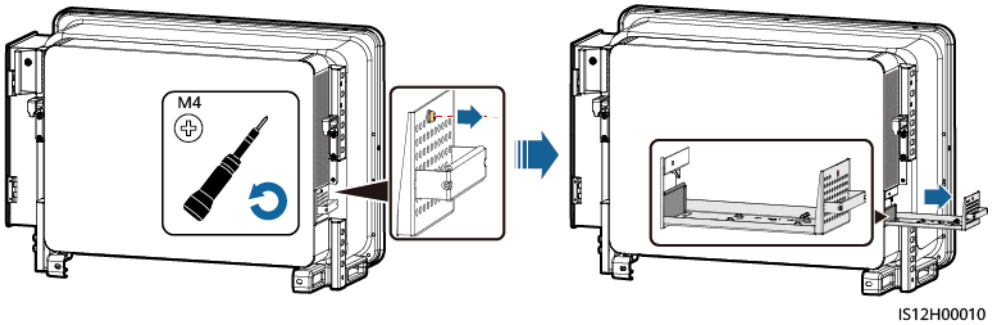
- Before replacing a fan, power off the inverter.
- When replacing a fan, use insulation tools and wear personal protective devices.

NOTE

If the fan tray gets stuck when being pulled or pushed, slightly lift it.

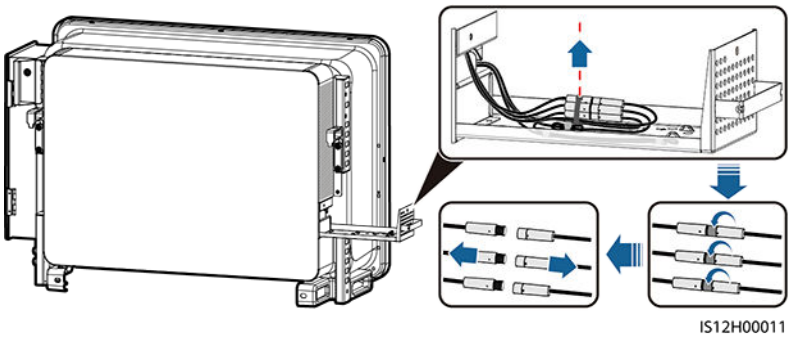
Step 1 Remove the screw on the fan tray and save it. Pull out the fan tray until the fan baffle plate aligns with the inverter chassis.

Figure 8-2 Pulling out fan tray (1)



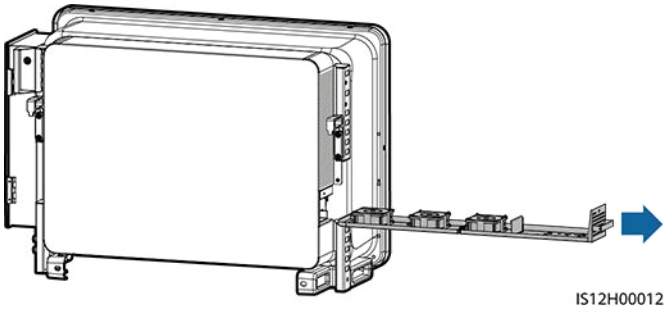
Step 2 Remove the cable ties shared by the cables, unscrew the connectors, and disconnect the cables.

Figure 8-3 Disconnecting cables



Step 3 Pull out the fan tray.

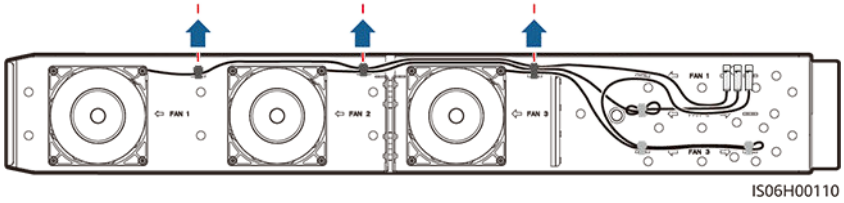
Figure 8-4 Pulling out fan tray (2)



Step 4 Remove cable ties from the faulty fan.

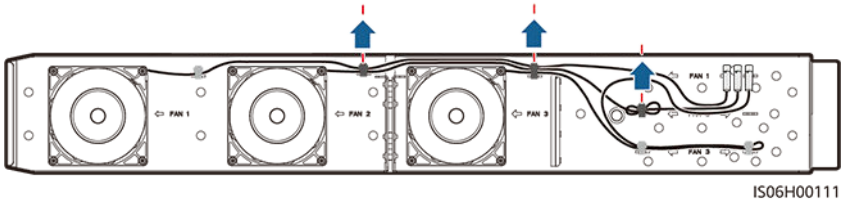
- FAN 1 Faulty

  Figure 8-5 Removing the FAN 1 cable ties

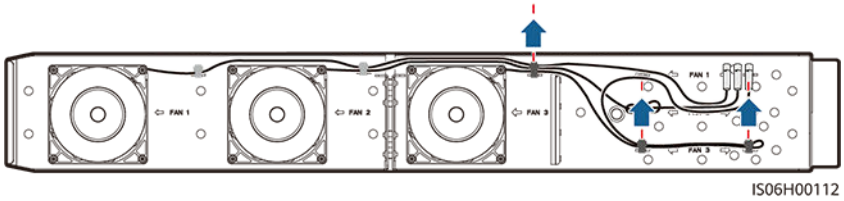
- FAN 2 Faulty

  Figure 8-6 Removing the FAN 2 cable ties

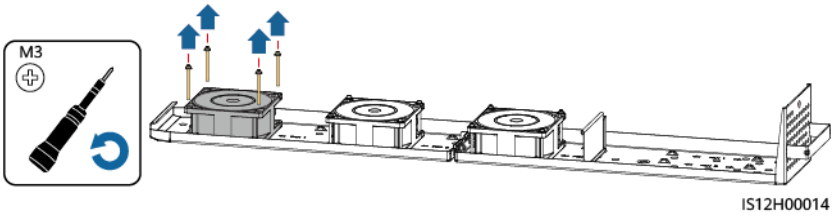
- FAN 3 Faulty

Figure 8-7 Removing the FAN 3 cable ties



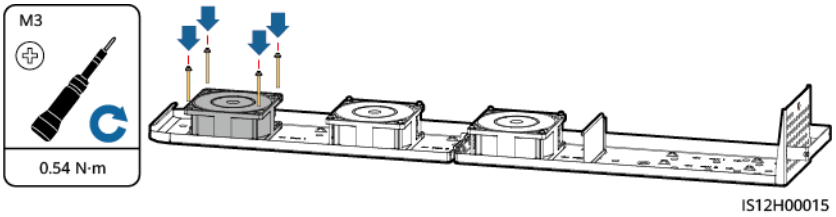
Step 5 Remove the faulty fan (FAN 1 is used as an example).

Figure 8-8 Removing the fan



Step 6 Install the new fan (FAN 1 is used as an example).

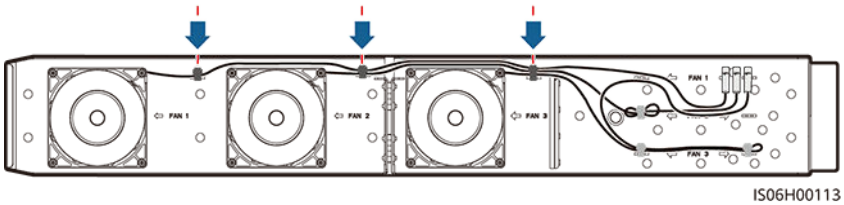
Figure 8-9 Installing a new fan



Step 7 Bind the fan cables.

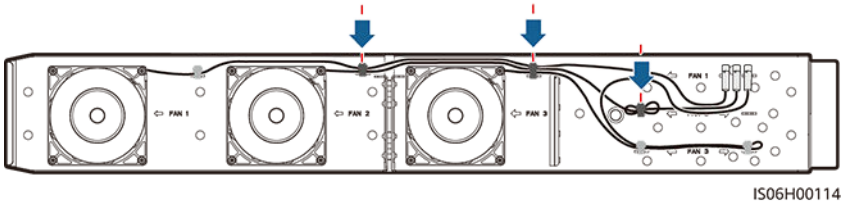
- Binding positions for fan 1

  Figure 8-10 Binding the FAN 1 cables

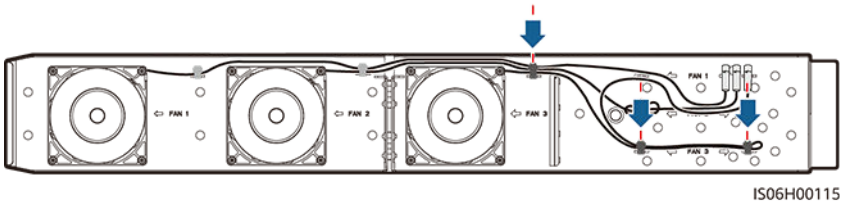
- Binding positions for fan 2

  Figure 8-11 Binding the FAN 2 cables

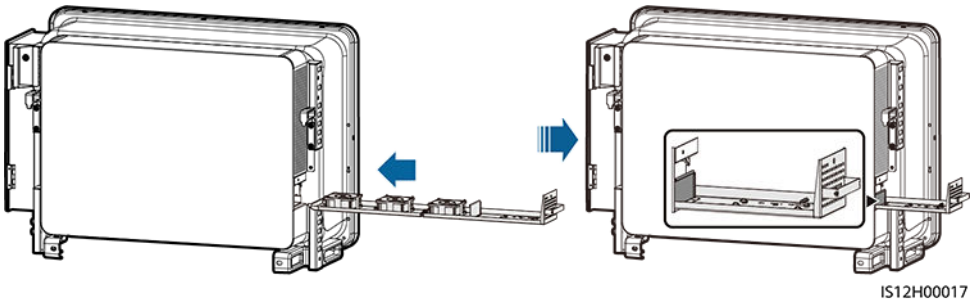
- Binding positions for fan 3

Figure 8-12 Binding the FAN 3 cables



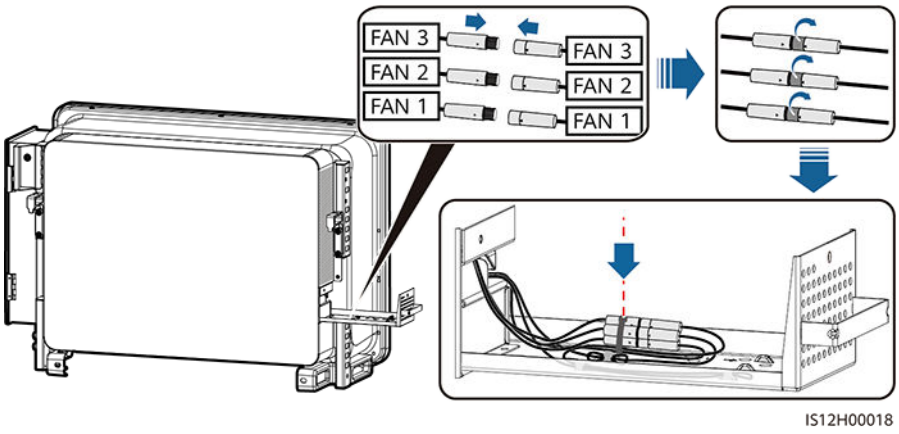
Step 8 Push the fan tray into the slot until the fan baffle plate aligns with the inverter chassis.

Figure 8-13 Pushing the fan tray in



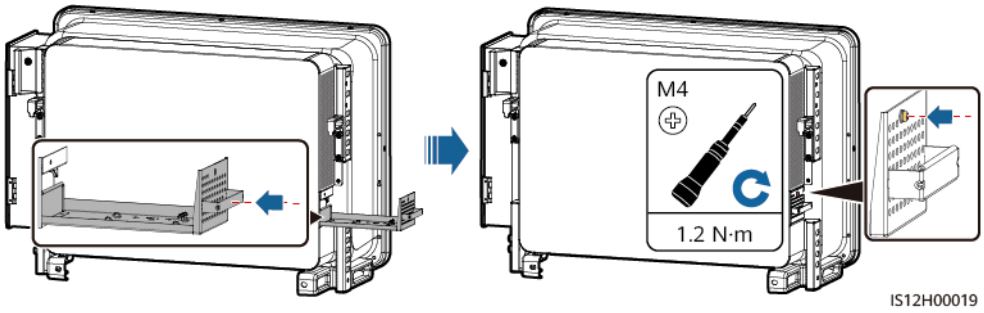
Step 9 Connect the cables correctly according to the cable labels and bind the cables.

Figure 8-14 Reconnecting and binding the cables



Step 10 Push the fan tray into the slot and tighten the screw.

Figure 8-15 Reinstalling the fan tray



----End

8.5 Alarm Reference

For details about alarms, see the **Inverter Alarm Reference**.

8.6 Resetting and Turning On the DC Switch

Prerequisites

If internal inverter fault is displayed on the mobile app or remote monitoring system and the DC switch is OFF, the DC switch of the inverter has been automatically turned off. In this case, rectify the fault based on the alarm handling suggestions before turning on the DC switch.

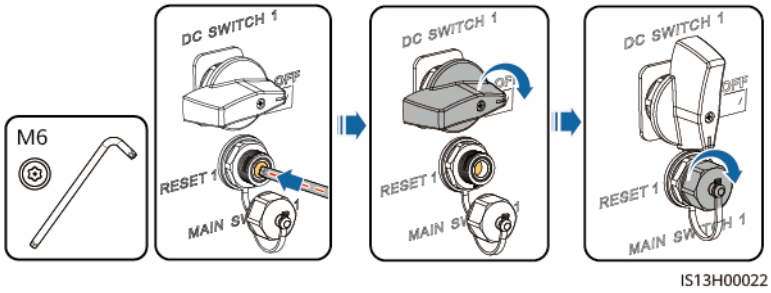
Procedure

Step 1 Loosen the caps of the RESET buttons for the three DC switches, and press the RESET buttons inwards until you cannot go any further.

Step 2 Set the DC switches to **ON**.

Step 3 Tighten the caps of the RESET buttons.

Figure 8-16 Resetting and Turning On the DC Switch (DC SWITCH 1 is used as an example)



----End

8.7 Insulation Resistance Inspection During Reactive Power Output at Night

The inverter supports insulation resistance detection:

- If reactive power output at night is enabled for the inverter, log in to the SmartLogger WebUI, choose **Monitoring** > **Inverter** > **Running Param.** > **Power Adjustment** and set **Insulation resistance inspection during reactive power output at night** to **Enable**. Then, the inverter will perform insulation resistance detection once a day. (This parameter can be set only for SUN2000HA V300R001C00SPC145, SmartLogger V300R023C10SPC550, and later versions.)

- If reactive power output at night is disabled, the inverter performs insulation resistance detection by default when it is started.

9 Inverter Handling

9.1 Removing the SUN2000

NOTICE

Before removing the SUN2000, disconnect both AC and DC connections.

Perform the following operations to remove the SUN2000:

1. Disconnect all cables from the SUN2000, including RS485 communications cables, DC input power cables, AC output power cables, and PGND cables.
2. Remove the SUN2000 from the mounting bracket.
3. Remove the mounting bracket.

9.2 Packing the SUN2000

- If the original packing materials are available, put the SUN2000 inside them and then seal them by using adhesive tape.
- If the original packing materials are not available, put the SUN2000 inside a suitable cardboard box and seal it properly.

9.3 Disposing of the SUN2000

If the SUN2000 service life expires, dispose of it according to the local disposal rules for electrical equipment waste.

10 Technical Specifications

Efficiency

Item	SUN2000-175KTL-H0	SUN2000-185KTL-INH0	SUN2000-185KTL-H1
Maximum efficiency	≥ 99.0%	≥ 99.0%	≥ 99.0%
Chinese efficiency	≥ 98.4%	-	-
European efficiency	-	≥ 98.6%	≥ 98.6%

Input

Item	SUN2000-175KTL-H0	SUN2000-185KTL-INH0	SUN2000-185KTL-H1
Maximum input voltage	1500 V		
Maximum input current (per MPPT)	26 A		
Maximum short-circuit current (per MPPT)	40 A		
Maximum backfeed current to the PV array	0 A		
Minimum operating voltage/ startup voltage	500 V/550 V		

Item	SUN2000-175KTL-H0	SUN2000-185KTL-INH0	SUN2000-185KTL-H1
Operating voltage range	500–1500 V		
Full-power MPPT voltage range	880–1300 V		
Rated input voltage	1080 V		
Number of inputs	18		
Number of MPPT circuits	9		

Output

Item	SUN2000-175KTL-H0	SUN2000-185KTL-INH0	SUN2000-185KTL-H1
Rated active power	175 kW	160 kW	175 kW
Maximum apparent power	193 kVA	185 kVA	185 kVA
Maximum active power (cosϕ = 1)	193 kW	185 kW	185 kW
Rated output voltage	800 V AC, 3W+PE		
Rated output current	126.3 A	115.5 A (160 kW) 126.3 A (175 kW)	108.3 A (150 kW) 121.3 A (168 kW) 126.3 A (175 kW)
Supported power grid frequency	50 Hz	50 Hz/60 Hz	50 Hz/60 Hz
Maximum output current	140.7 A	134.9 A	134.9 A
Power factor	0.8 leading to 0.8 lagging		
Maximum total harmonic distortion (rated power)	< 3%		

Protection

Item	SUN2000-175KTL-H0	SUN2000-185KTL-INH0	SUN2000-185KTL-H1
Input DC switch	Supported		
Anti-islanding protection	Supported		
Output overcurrent protection	Supported		
Input reverse connection protection	Supported		
PV string fault detection	Supported		
DC surge protection	Type II		
AC surge protection	Type II		
Insulation resistance detection	Supported		
Residual current monitoring unit (RCMU)	Supported		
Overvoltage category	PV II/AC III		

Typical Noise Value

Item	SUN2000-175KTL-H0	SUN2000-185KTL-INH0	SUN2000-185KTL-H1
Typical noise value	65 dB(A)		

NOTE

- The typical noise value is the test result obtained under typical working conditions in a lab. To avoid complaints, do not install the inverter in a noise-sensitive area.
- The typical working conditions are as follows: room temperature 25°C; rated input voltage 1080 V DC, rated output voltage 800 V AC/50 Hz; rated power, and grid voltage THDu ≤ 0.5%.

Display and Communication

Item	SUN2000-175KTL-H0	SUN2000-185KTL-INH0	SUN2000-185KTL-H1
Display	LED indicator; USB data cable + App		
RS485	Supported		
MBUS	Supported		
USB	Supported		

General Specifications

Item	SUN2000-175KTL-H0	SUN2000-185KTL-INH0	SUN2000-185KTL-H1
Dimensions (W x H x D)	1035 mm x 700 mm x 365 mm		
Net weight	84 kg±1 kg		
Operating temperature	–25°C to +60°C		
Cooling mode	Smart air cooling		
Maximum operating altitude	5000 m (derated when the altitude is greater than 4000 m)		
Relative humidity	0%–100% RH		
Input terminal	MC4 EVO2		
Output terminal	Waterproof terminal+OT/DT terminal		
IP rating	IP66		
Topology	Transformerless		

A Securing Y-Branch Connectors

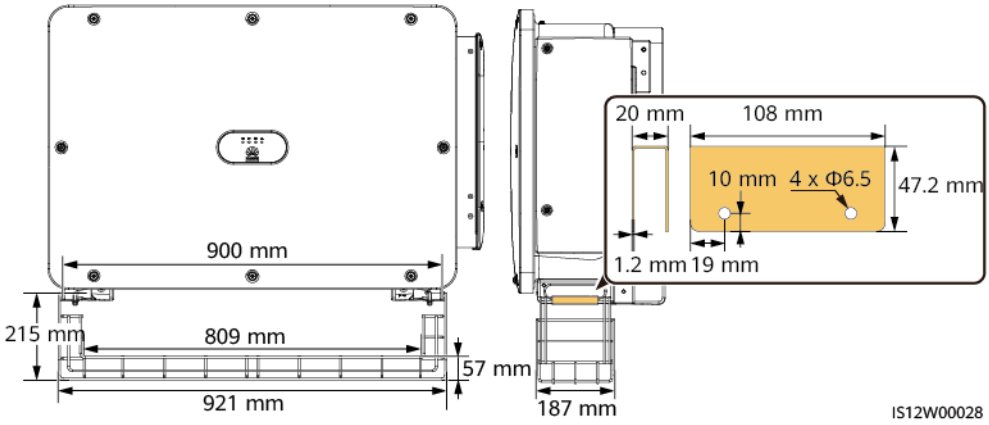
The DC input terminals of the solar inverter are prone to damage under stress. When Y-branch connectors are connected to the solar inverter, bind and secure the connectors to prevent the DC input terminals from bearing stress. You are advised to install a tray or beam to secure the Y-branch connectors.

Method 1: Using a Tray

Prepare a tray based on the base size of the solar inverter and the cabling of the Y-branch connectors.

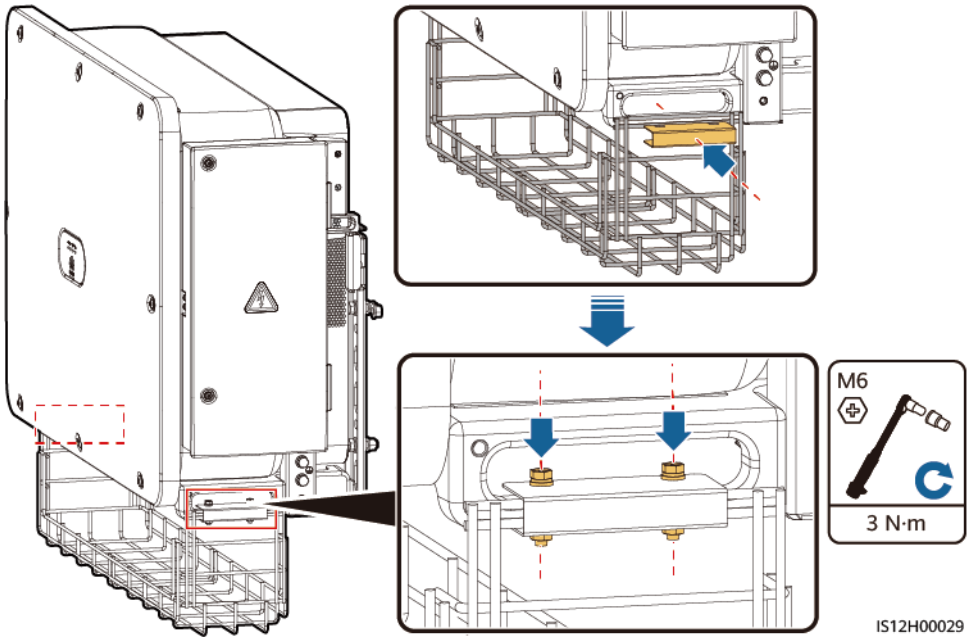
- Material: outdoor corrosion-resistant material
- Bearing capacity: ≥ 10 kg

Figure A-1 Recommended dimensions



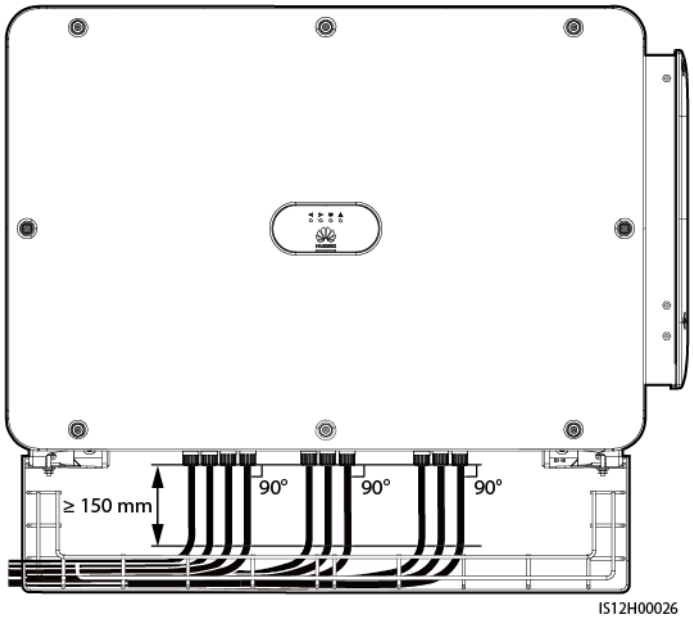
Step 1 Install a tray.

Figure A-2 Installing a tray



Step 2 Place the Y-branch connectors on the tray.

Figure A-3 Placing Y-branch connectors



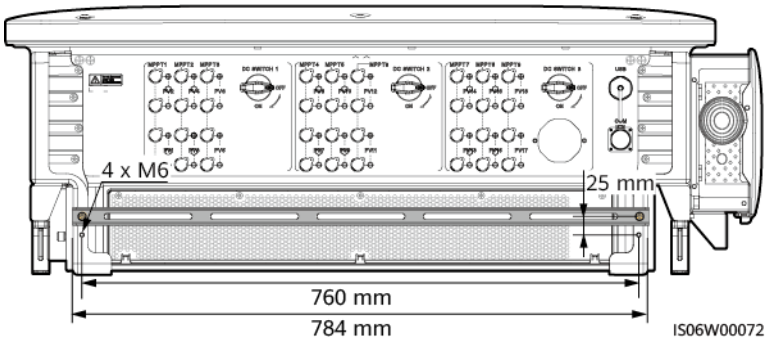
----End

Method 2: Using a Beam

Prepare a beam based on the base size of the solar inverter and the cabling of the Y-branch connectors.

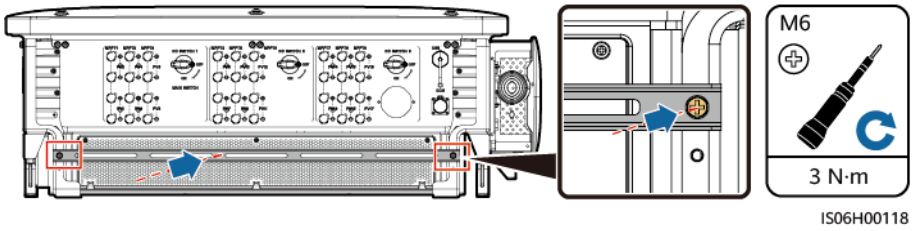
- Material: outdoor corrosion-resistant material
- Bearing capacity: ≥ 10 kg

Figure A-4 Recommended dimensions



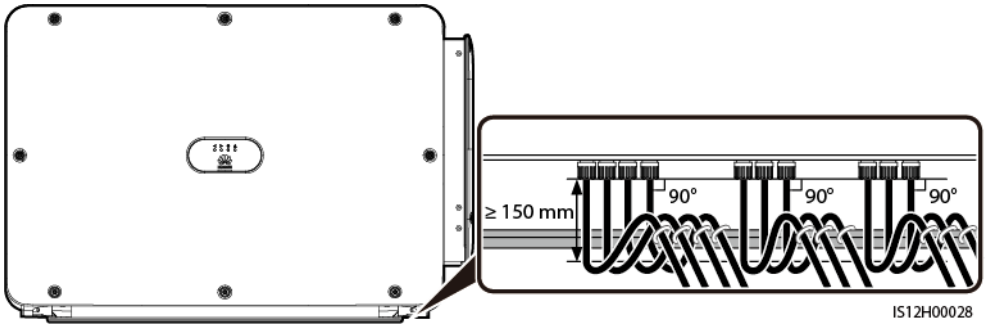
Step 1 Install a beam.

Figure A-5 Installing a beam



Step 2 Bind the Y-branch connectors on the beam.

Figure A-6 Binding Y-branch connectors



----End

B String Access Detection

Function Description

- Applies to large-scale commercial ground PV plants with PV strings facing the same direction.
- In AC or DC power limiting scenarios:
  - If the PV string access type is not identified, the value of **PV Status** will keep being displayed as **Not connected**. The PV string access type can be identified only when the inverters restore to the non-power limiting state and the current of all connected PV strings reaches the startup current.
  - If the PV string access type has been identified, when some PV strings connected to the 2-in-1 terminals are lost, no alarm will be generated. If some PV strings connected to the 2-in-1 terminals are restored, the access type cannot be identified. It can be determined whether all the 2-in-1 PV strings are restored only when the string current reaches **Startup current for 2 in 1 detection**.

Procedure

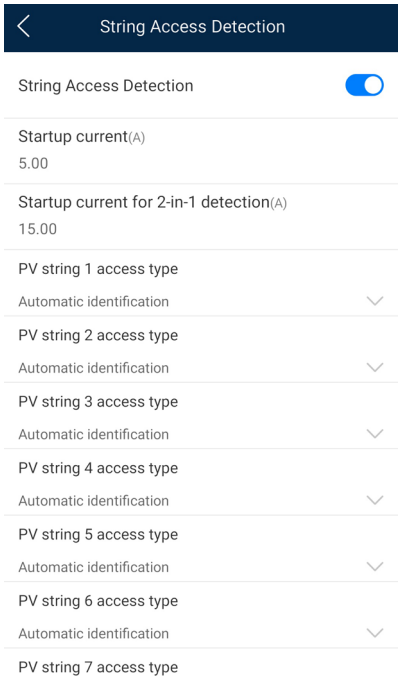
Step 1 Log in to the SUN2000 app as **Advanced User**. The initial password is **00000a**.

NOTE

Use the initial password upon first power-on and change it immediately after login. To ensure account security, change the password periodically and keep the new password in mind. Not changing the initial password may cause password disclosure. A password left unchanged for a long period of time may be stolen or cracked. If a password is lost, devices cannot be accessed. In these cases, the user is liable for any loss caused to the PV plant.

Step 2 Choose **Function Menu** > **Maintenance** > **String Access Detection** to go to the parameter setting screen.

Figure B-1 String Access Detection



----End

Parameters

No.	Parameter	Description	Remarks
1	String Access Detection	The default value is **Disable**. After the inverter is connected to the power grid, you can set **String Access Detection** to **Enable**.	-
2	Startup current	When the current of all connected PV strings reaches the preset value, the PV string connection detection function is enabled. **NOTE** Startup current setting rules: • Startup current = I_{sc} (S_{tc}) × 0.6 (rounded up). For details about I_{sc} (S_{tc}), see the PV module nameplate. • Default startup current (5 A): applicable to the scenarios where the short-circuit current I_{sc} (S_{tc}) is greater than 8 A for the monocrystalline and polycrystalline PV modules.	This parameter is displayed only when **String Access Detection** is set to **Enable**.
3	Startup current for 2 in 1 detection	When the current of a PV string reaches **Startup current for 2 in 1 detection**, the PV string is automatically identified as **2 in 1**. You are advised to use the default value.	

No.	Parameter	Description	Remarks
4	PV string N access type **NOTE** *N* is the DC input terminal number of the inverter.	Set this parameter based on the type of the PV string connected to DC input terminal *N* of the inverter. Currently, the options are as follows: **Automatic identification** (default value), **Disconnection**, **Single PV string**, and **2 in 1**. You are advised to retain the default value. If the value is incorrectly set, the PV string access type may be incorrectly identified and alarms may be generated by mistake for the PV string connection status.	

C Grid Codes

NOTE

The grid codes are subject to change. The listed codes are for reference only.

No.	Grid Code	Description	SUN2000-175KTL-H0	SUN2000-185KTL-INH0	SUN2000-185KTL-H1
1	CHINA-MV800	China medium-voltage power grid	Supported	-	-
2	G59-England-MV800	G59 medium-voltage power grid	-	-	Supported
3	AS4777-MV800	Australia medium-voltage power grid	-	-	Supported
4	INDIA-MV800	India medium-voltage power grid	-	Supported	-
5	IEC61727-MV800	IEC 61727 medium-voltage power grid (50 Hz)	-	Supported	Supported
6	ABNT NBR 16149-MV800	Brazil medium-voltage power grid	-	Supported	Supported
7	UTE C 15-712-1-MV800	France medium-voltage power grid	-	-	Supported
8	Chile-MV800	Chile medium-voltage power grid	-	-	Supported
9	Mexico-MV800	Mexico power grid	-	-	Supported
10	EN50438-TR-MV800	Türkiye medium-voltage power grid	-	-	Supported
11	TAI-PEA-MV800	Thailand PEA medium-voltage power grid	-	-	Supported

No.	Grid Code	Description	SUN2000-175KTL-H0	SUN2000-185KTL-INH0	SUN2000-185KTL-H1
12	Philippines-MV800	Philippines medium-voltage power grid	-	-	Supported
13	Malaysian-MV800	Malaysia medium-voltage power grid	-	-	Supported
14	NRS-097-2-1-MV800	South Africa medium-voltage power grid	-	-	Supported
15	SA_RPPs-MV800	South Africa RPPs medium-voltage power grid	-	-	Supported
16	Jordan-Transmission-MV800	Jordan power transmission network medium-voltage power grid	-	-	Supported
17	Jordan-Distribution-MV800	Jordan power distribution network medium-voltage power grid	-	-	Supported
18	Egypt ETEC-MV800	Egypt medium-voltage power grid	-	-	Supported
19	DUBAI-MV800	Dubai medium-voltage power grid	-	-	Supported
20	SAUDI-MV800	Saudi Arabia medium-voltage power grid	-	-	Supported
21	EN50438_IE-MV800	Ireland medium-voltage power grid	-	-	Supported
22	EN50549-MV800	Ireland power grid	-	-	Supported
23	Northern Ireland-MV800	Northern Ireland medium-voltage power grid	-	-	Supported
24	CEI0-21-MV800	Italy medium-voltage power grid (CEI0-21)	-	-	Supported
25	IEC 61727-MV800-60HZ	General medium-voltage power grid	-	Supported	Supported
26	Pakistan-MV800	Pakistan medium-voltage power grid	-	-	Supported
27	BRASIL-ANEEL-MV800	Brazil medium-voltage power grid	-	-	Supported
28	Israel-MV800	Israel power grid	-	-	Supported

No.	Grid Code	Description	SUN2000-175KTL-H0	SUN2000-185KTL-INH0	SUN2000-185KTL-H1
29	CEI0-16-MV800	Italy medium-voltage power grid	-	-	Supported
30	ZAMBIA-MV800	Zambia medium-voltage power grid	-	-	Supported
31	KENYA_ETHIOPIA_MV800	Kenya low-voltage and Ethiopia medium-voltage power grid	-	-	Supported
32	NAMIBIA_MV800	Namibia medium-voltage power grid	-	-	Supported
33	Cameroon-MV800	Cameroon medium-voltage power grid	-	-	Supported
34	NIGERIA-MV800	Nigeria medium-voltage power grid	-	-	Supported
35	ABUDHABI-MV800	Abu Dhabi medium-voltage power grid	-	-	Supported
36	LEBANON-MV800	Lebanon medium-voltage power grid	-	-	Supported
37	ARGENTINA-MV800	Argentina medium-voltage power grid	-	-	Supported
38	Jordan-Transmission-HV800	Jordan high-voltage and medium-voltage power grid	-	-	Supported
39	TUNISIA-MV800	Tunisia medium-voltage power grid	-	-	Supported
40	AUSTRALIA-NER-MV800	Australia NER standard medium-voltage power grid	-	-	Supported
41	VDE-AR-N4120_HV800	VDE 4120 standard medium-voltage power grid	-	Supported	Supported
42	Nicaragua-MV800	Nicaragua medium-voltage power grid	-	-	Supported
43	Custom-MV800-50Hz	Reserved	-	-	Supported
44	RD1699/661-MV800	Spain medium-voltage power grid	-	-	Supported
45	PO12.3-MV800	Spain medium-voltage power grid	-	-	Supported
46	Vietnam-MV800	Vietnam medium-voltage power grid	-	-	Supported

No.	Grid Code	Description	SUN2000-175KTL-H0	SUN2000-185KTL-INH0	SUN2000-185KTL-H1
47	CHILE-PMGD-MV800	Chile PMGD medium-voltage power grid (800 V)	-	-	Supported
48	GHANA-MV800	Ghana medium-voltage power grid (800 V)	-	-	Supported
49	TAIPOWER-MV800	Taiwan Power medium-voltage power grid (800 V)	-	-	Supported
50	OMAN-MV800	Oman medium-voltage power grid	-	-	Supported
51	KUWAIT-MV800	Kuwait medium-voltage power grid	-	-	Supported
52	BANGLADESH-MV800	Bangladesh medium-voltage power grid	-	-	Supported
53	BAHRAIN-MV800	Bahrain medium-voltage power grid	-	-	Supported
54	KAZAKHSTAN-MV800	Kazakhstan medium-voltage power grid	-	-	Supported
55	Oman-PDO-MV800	Oman PDO medium-voltage power grid	-	-	Supported
56	TAI-MEA-MV800	Thailand medium-voltage power grid	-	-	Supported
57	C10/11-MV800	Belgium medium-voltage power grid	-	-	Supported
58	G99-TYPEB-HV-MV800	UK G99-TYPEB-HV medium-voltage power grid	-	-	Supported
59	G99-TYPEC-HV-MV800	UK G99-TYPEC-HV medium-voltage power grid	-	-	Supported
60	G99-TYPED-MV800	UK G99-TYPED medium-voltage power grid	-	-	Supported
61	CEA-MV800	India CEA power grid	-	Supported	-
62	VDE-AR-N4110-MV800	Germany medium-voltage power grid (800 V)	-	Supported	Supported
63	Panama-MV800	Panama medium-voltage power grid (800 V)	-	-	Supported
64	Macedonia-MV800	North Macedonia medium-voltage power grid (800 V)	-	-	Supported

No.	Grid Code	Description	SUN2000-175KTL-H0	SUN2000-185KTL-INH0	SUN2000-185KTL-H1
65	SINGAPORE-MV800	Singapore medium-voltage power grid	-	-	Supported
66	Cambodia-MV800	Cambodia medium-voltage power grid	-	-	Supported
67	GREG060-MV800	Colombia medium-voltage power grid	-	-	Supported
68	PERU-MV800	Peru medium-voltage power grid	-	-	Supported
69	PORTUGAL-MV800	Portugal medium-voltage power grid	-	-	Supported
70	NTS-MV800	Spain medium-voltage power grid	-	-	Supported
71	KOREA-MV800	South Korea medium-voltage power grid (800 V)	-	-	Supported
72	Israel-HV800	Israel high-voltage power grid (161 kV)	-	-	Supported
73	AUSTRIA-MV800	Austria medium-voltage power grid (type B)	-	-	Supported
74	AUSTRIA-HV800	Austria medium-voltage power grid (type D)	-	-	Supported
75	POLAND-EN50549-MV800	Poland medium-voltage power grid	-	-	Supported
76	IRELAND-EN50549-MV800	Ireland power grid	-	-	Supported
77	DENMARK-EN50549-MV800	Denmark power grid	-	-	Supported
78	FRANCE-RTE-MV800	France RTE power grid	-	-	Supported
79	AUSTRALIA-AS4777_A-MV800	Australia power grid	-	-	Supported
80	UZBEKISTAN-MV800	Uzbekistan power grid	-	-	Supported
81	CZECH-EN50549-MV800	Czech Republic power grid	-	-	Supported
82	CHINA-GBT19964-MV800	China GB/T 19964 standard power grid	Supported	-	-

No.	Grid Code	Description	SUN2000-175KTL-H0	SUN2000-185KTL-INH0	SUN2000-185KTL-H1
83	CHINA-GBT29319-MV800	China GB/T 29319 standard power grid	Supported	-	-
84	AUSTRIA-TYPEC-MV-800	Austria medium-voltage power grid (type C)	-	-	Supported
85	SRI LANKA-800	Sri Lanka medium-voltage power grid	-	-	Supported

D Resetting Password

Step 1 Check that the AC and DC sides of the inverter are both powered on, and indicators and are steady green or blinking slowly for more than 3 minutes.

Step 2 Turn off the AC switch, set the DC SWITCH at the bottom of the inverter to OFF, and wait until all LED indicators on the inverter panel turn off.

Step 3 Complete the following operations within 4 minutes:

1. Turn on the AC switch and wait for about 90s or until the inverter indicator blinks.
2. Turn off the AC switch and wait about 30s or until all LED indicators on the inverter panel turn off.
3. Turn on the AC switch and wait for about 90s or until the inverter indicator blinks.

Step 4 Log in to the app and reset the password within 10 minutes. (If no operation is performed within 10 minutes, all parameters of the inverter remain unchanged.)

----End

NOTICE

- SUN2000HA V300R001C00SPC133 and later versions support password reset.
- You are advised to reset the password in the morning or at night when the solar irradiance is low.

E Contact Information

If you have any questions about this product, please contact us.

https://digitalpower.huawei.com

Path: **About Us** > **Contact Us** > **Global Service Hotlines**

To ensure faster and better services, we kindly request your assistance in providing the following information:

- Model
- Serial number (SN)
- Software version
- Alarm ID or name
- Brief description of the fault symptom

NOTE

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F Digital Power Customer Service

https://digitalpower.huawei.com/robotchat/

G Acronyms and Abbreviations

C	
CEC	California Energy Commission
CPV	Concentrated Photovoltaics technology
L	
LED	light emitting diode
M	
MBUS	monitoring bus
MPP	maximum power point
MPPT	maximum power point tracking
P	
PID	potential induced degradation
PV	photovoltaic

R

RCMU	residual current monitoring unit

W

WEEE	waste electrical and electronic equipment

