

HSNV Series
String Inverter
(100K-G01, 110K-G01)

User Manual

Version: V1.1

HSNV Series String Inverter (100K-G01, 110K-G01) **User Manual**

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Thank you for purchasing products developed and manufactured by Shenzhen Hopewind Electric Co., Ltd. (hereinafter referred to as "Hopewind"). We sincerely hope that our products and this manual can meet your demands. Any suggestion for improvement shall be appreciated.

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About This Manual




For Readers

This manual is helpful for technicians who install, debug, operate and maintain string inverters of Hopewind. Please read this manual carefully before operating the product. Readers are required to know the basic knowledge about electric components, wiring, signs and mechanical drawings.

Outlines

Chapter	Contents
1 Safety Precautions	This chapter describes the safety precautions when transporting, storing, installing, running and maintaining the Inverter.
2 Product Description	This chapter describes the basic principles, naming rules, product configuration and data.
3 System Installation	This chapter describes the unpacking inspection, installation tools, installation environment, reserved space, fixing method, cable connection.
4 Commissioning Guide	This chapter describes the inspection before startup, commissioning and startup of string inverter.
5 Maintenance and Troubleshooting	This chapter describes the daily maintenance methods, maintenance intervals and troubleshooting of the product.
6 Inverter Disposal	This chapter describes the basic requirements and precautions when removing, replacing, packing and disposing the inverter.

Warning Signs in This Manual

 DANGER	Major potential danger (especially refer to high voltage danger). Failure to observe the rules might cause severe personal injury or property loss.
 WARNING	Ordinary potential danger. Failure to observe the rules might cause personal injury or property loss.
 CAUTION	Ordinary potential danger. Failure to observe the rules might cause malfunction of the equipment or property loss.

Glossaries and Abbreviations

Glossaries/Abbreviations	Description
MPPT	Maximum Power Point tracking
MPP	Maximum Power Point
PV string	Multiple solar cell modules in series or parallel
EEPROM	Electrically erasable programmable read-only memory
hopeCloud	Hopewind remote intelligent O&M cloud service platform

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1 Safety Precautions

In this chapter, it describes the safety precautions that must be observed when installing, operating and maintaining the inverter. Please read them carefully before operation and follow them in operation process; otherwise it might cause damage to the inverter, the generator and related equipment or cause serious injury or loss of life.

When you use and operate the inverter, please take special attention to the following issues.



1. Only the qualified personnel are allowed to install, operate and maintain the inverters.
2. Do not incline or collide the product in transportation.
3. Do not make any liquid, sundries or rubbishes enter inside as they might cause short circuit inside the inverter.
4. Inverter must be disconnected with AC grid before completion of installation and maintenance.
5. Related protective measures are required to avoid electric shock or fire accident.



Please do not place inflammables and explosives around the inverter to ensure environmental safety.

1.1 Transportation



1. When transporting, it is necessary to ensure that the inverter is packaged properly and the cabinet is fixed upwards to avoid strong vibration and collision.
2. In order to keep the inverter in good condition during transportation, it is important to use packaged transport and operate according to the labels on the package. For the meaning of the logos, please refer to **2.6 Signs on Package**.
3. The transportation environment shall meet relevant requirements. For more details, please refer to **2.10 Ambient Requirements**.

1.2 Storage



The storage environment of the string inverter must meet the corresponding requirements. Please refer to **2.10 Ambient Requirements**.

About long-term storage:

Before or after the installation and commissioning, if the string inverter is in the no-power supply state for more than three weeks, it is regarded as long-term storage. Long-term storage of string inverters requires attention to the following issues:

- When storing equipment, pay attention to ventilation and moisture. Stagnant water is strictly forbidden in the storage environment.
- Pay attention to the harsh environment, such as quenching, sudden heat, collision, dust, etc., to avoid damage to the string inverter.
- Regular inspections are required, usually not less than once a week. Check whether the packaging is intact to avoid pest bites. If it is damaged, it needs to be replaced immediately.
- It is strictly forbidden to store the device without packaging.

1.3 Installation



1. Before operating the internals of the string inverter, it must be confirmed that the input switch DC Switch of the string inverter and the circuit breaker corresponding to the AC side of the inverter are in the off state, and the housing of the inverter is reliably guaranteed.
2. The string inverter must be grounded according to the specifications. The size of the grounding conductor must meet the requirements of safety regulations to ensure the safety of personnel.



1. During installation, it is necessary to ensure that the string inverter's installation environment is well ventilated and heat-dissipating, and the device should not be directly exposed to sunlight.
2. The fixing of the string inverter is recommended by two people working together to avoid mechanical damage. During the installation process, safety measures should be taken to prevent bruises.
3. During installation and maintenance, it is necessary to prevent liquid, dust or debris from entering the inside of the string inverter. Conductive liquids and debris may cause internal short circuit of the string inverter, resulting in equipment damage.
4. When connecting the wiring of the external cable to the string inverter, the installation torque of the power cable must be ensured. Excessive torque may cause fatigue damage of the screw while too small torque may cause the contact resistance to become large, resulting in overheating.
5. The power cable terminals connected to the string inverter must comply with national standards. If the terminals are not in accordance with the standards, the power cable may be overheated. In severe cases, a fire may occur.
6. The installation site must meet the requirements of the operating environment. Please refer to **2.10 Ambient Requirements**.

1.4 Operation



1. During the operation of the string inverter, it is necessary to ensure that the door panel of the string inverter is locked to prevent personal injury such as electric shock, and to prevent salt, moisture, dust or other conductive substances in the air from entering the string inverter.
2. When the string inverter is powered on, it is prohibited to touch the internal single boards, devices, cables and terminals of the string inverter and to plug and unplug the external terminals.
3. In case of any fault, abnormal smell or sound of the string inverter, please immediately switch off the DC Switch of the string inverter and the circuit breaker on the AC side of the inverter.



1. Power on the string inverter only after all installation work is completed and cables are not connected incorrectly.
2. It is prohibited to conduct any insulation resistance test or voltage withstand test on the string inverter. Wrong voltage withstand test will damage the string inverter.
3. When conducting insulation withstand voltage test on external equipment of the string inverter, the wiring between the string inverter and the external equipment must be disconnected.

1.5 Maintenance



1. Before maintenance work, you must first disconnect the AC output side circuit breaker, then disconnect the input switch DC Switch, and wait at least 5 minutes before operating the string inverter.
2. During the maintenance process, try to avoid irrelevant personnel from entering the maintenance site.
3. Please maintain the string inverter under the condition that you are familiar with and understand the contents of this manual, and have suitable tools and test equipment.
4. For personal safety, please wear insulating gloves and anti-smashing shoes.



The string inverter must be checked and maintained regularly. For details, refer to **5 Maintenance and Troubleshooting**.

--End of the chapter--

2 Product Description

2.1 Product Introduction

The HSNV series is three-phase grid-connected PV inverter independently researched and developed by Hopewind. Its main function is to convert the DC power generated by the PV string into AC power and feed it into the power grid.

Models described in this manual include HSNV100K-G01 and HSNV110K-G01. They have 20 input strings and are suitable for low-voltage grid-connected scenarios.

2.1.1 Schematic Diagram

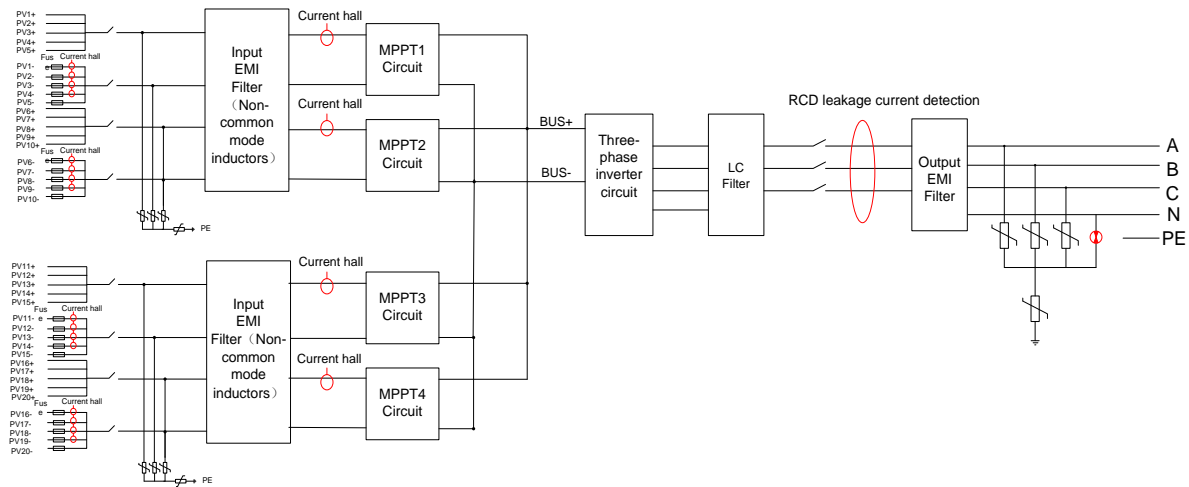


Figure 2-1 Schematic diagram

2.1.2 Working Mode

The HSNV series three-phase string inverter has three working modes: standby mode, operating mode, and shutdown mode. The switching conditions of the three modes are shown as follows.

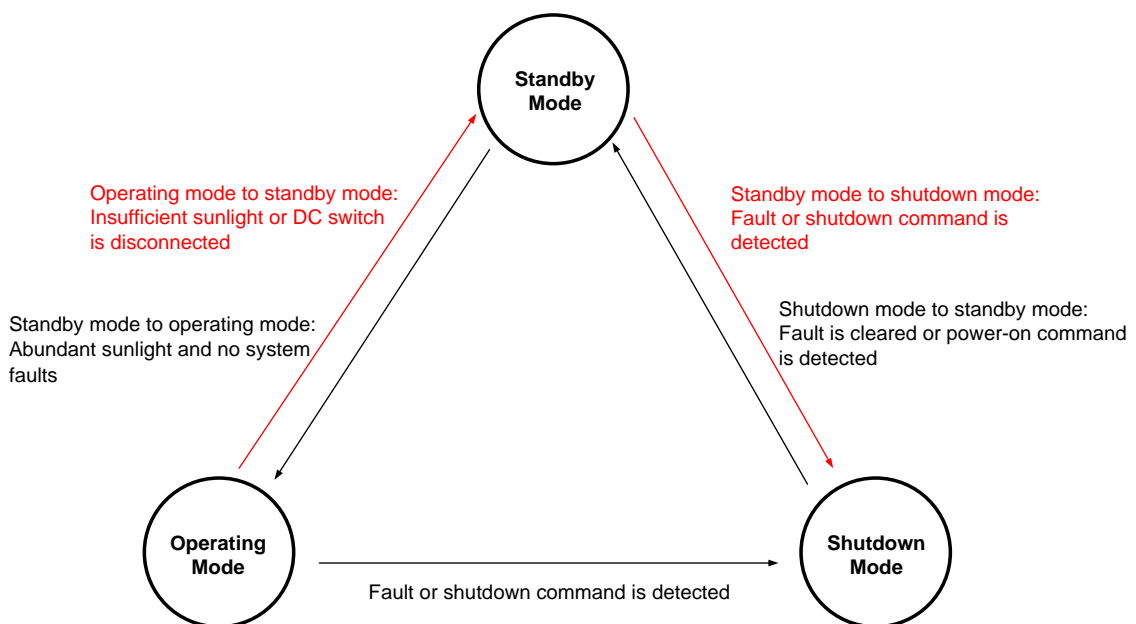


Figure 2-2 Working mode

Working mode	Description
Standby	1) Standby mode mainly means that the external environment does not meet the operating conditions of the inverter such as insufficient sunlight and the disconnection of DC input switch. In this mode, the inverter continuously self-tests and enters the operating mode once the operating conditions are met. 2) In the standby mode, if the inverter detects a shutdown command or finds a fault after the power-on test, it enters the shutdown mode.
Operating	In the operating mode, the inverter converts the DC power of the PV string into AC power and feeds it into the grid. The inverter performs MPPT operation to make the PV string output maximum power. If the inverter detects a fault or a shutdown command, it enters the shutdown mode. If it is detected that the input power of the PV string is lower than the grid-connected power generation condition, it enters the standby mode.
Shutdown	If the inverter detects a fault or a shutdown command during standby or operation, it switches to the shutdown mode. In the shutdown mode, if the inverter detects that the fault has been cleared or a power-on command, it enters the standby mode.

2.2 System Configuration and Networking Application

2.2.1 Networking Application

Figure 2-3 shows the networking application of the string inverter, and Figure 2-4 shows the networking design scheme of the distributed PV power station.

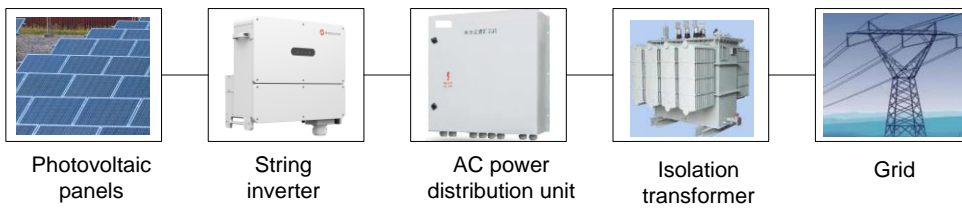


Figure 2-3 Networking application schematic diagram of string inverter

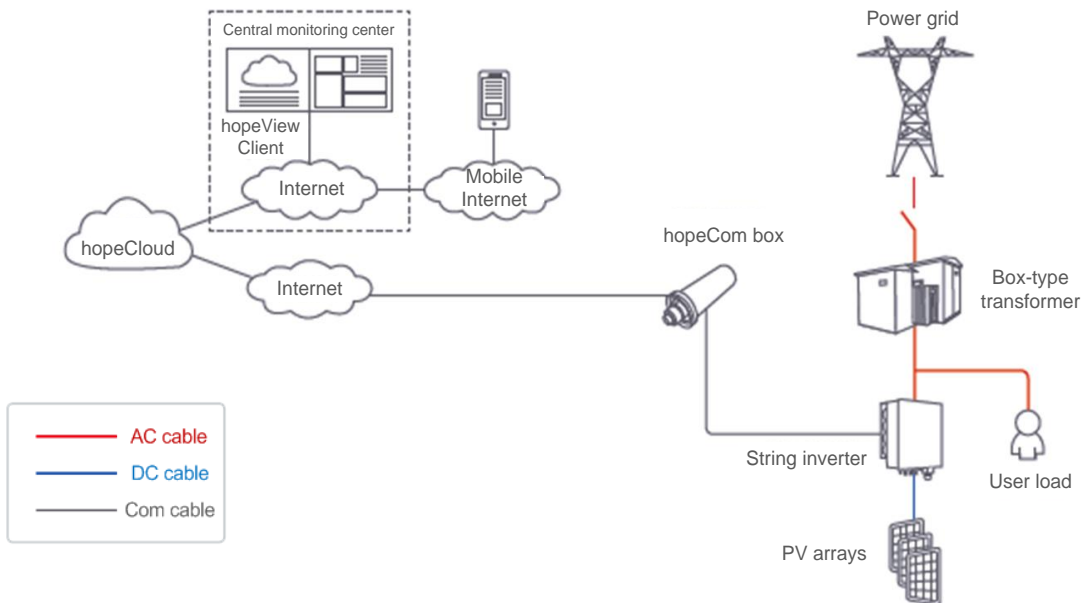


Figure 2-4 Networking scheme of distributed PV power station

2.2.2 Supported Power Grid Types

The power grid types supported by HSNV100K-G01 and HSNV110K-G01 include TN-S, TN-C, TN-C-S, TT and IT.

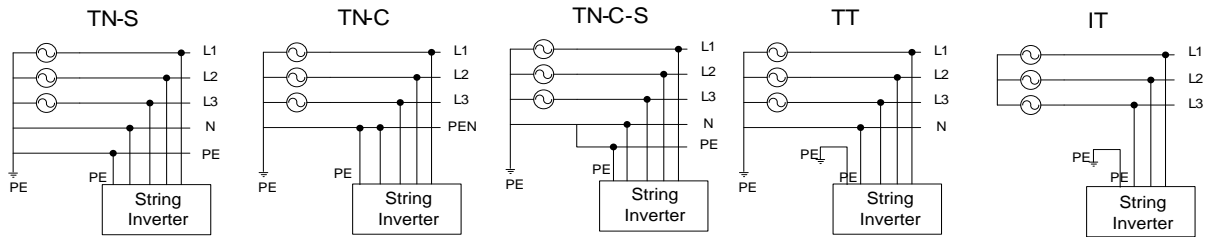


Figure 2-5 Schematic diagram of various power grid forms

2.3 Naming Rules

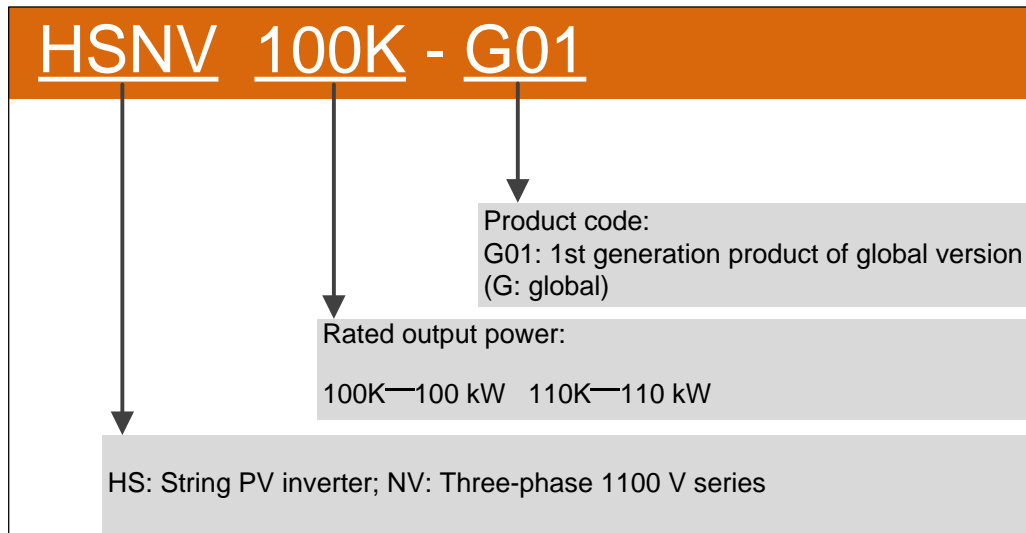


Figure 2-6 Naming rules

2.4 Nameplate

Hopewind GRID-CONNECTED PV INVERTER

Model: **HSNV100K-G01**

Serial No.: **Serial number label**

Max. Input Voltage: 1100Vd.c.
MPP Voltage Range: 200-1000Vd.c.
Max. Input Current: 65A/65A/65A/65A
Isc PV: 100A/100A/100A/100A **DC**

Rated Output Voltage: 230Va.c./400Va.c.;3P+N+PE
Rated Output Frequency: 50Hz/60Hz
Rated Output Power: 100kW
Max. Output Power: 110kW
Max. Output Current: 158.8A
Power Factor: 0.8leading ... 0.8lagging **AC**

Operating Ambient Temperature: -40°C ... +60°C
Ingress Protection: IP65
Protection Class: I
Overvoltage Category: III[AC], II[DC]


Shenzhen Hopewind Technology Co., Ltd.
www.hopewind.com **MADE IN CHINA**

Note:

1. The information in the nameplate is for reference only. The actual product and technical agreement shall prevail.
2. Shenzhen Hopewind Technology Co., Ltd. is a wholly-owned subsidiary of Shenzhen Hopewind Electric Co., Ltd.

2.5 Inverter Configuration

This section describes the appearance, relevant components and bottom interfaces of the inverter.

 CAUTION
<p>There are components on the board that are very sensitive to static electricity. Anti-static measures must be taken before touching the board.</p> <p>When touching the board, be careful not to scratch the electrical components.</p>

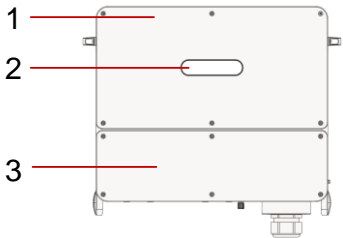




		
No.	Label	Device name
1		Upper door
2		LED indicator
3		Lower door

Figure 2-7 Front view of the inverter

The LED indicators from left to right are described as follows:

Table 2-1 LED Indicator Description

Indicator light	Meaning	Status	Meaning
 POWER	PV and grid connection	Blue light on	PV side and grid connected normally
		Blue light fast blinking	Grid connected normally while PV side connected abnormally
		Blue light slow blinking	PV side connected normally while grid connected abnormally
		Blue light off	PV side and grid connected abnormally
 RUN	Grid-connected operation	Blue light on	Inverter in grid-connected power-on state
		Blue light off	Inverter neither grid-connected nor powered on
 COM	Communication indication	Blue light fast blinking	Communication normal
		Blue light off	Communication abnormal
 ALARM	Alarm indication	Red light slow blinking	PID in operation
		Red light fast blinking	Normal alarm
		Red light solid on	Fault
Remarks: Slow blinking: 1 second on and 2 seconds off in cycles; Fast blinking: 0.5 seconds on and 0.5 seconds off in cycles.			

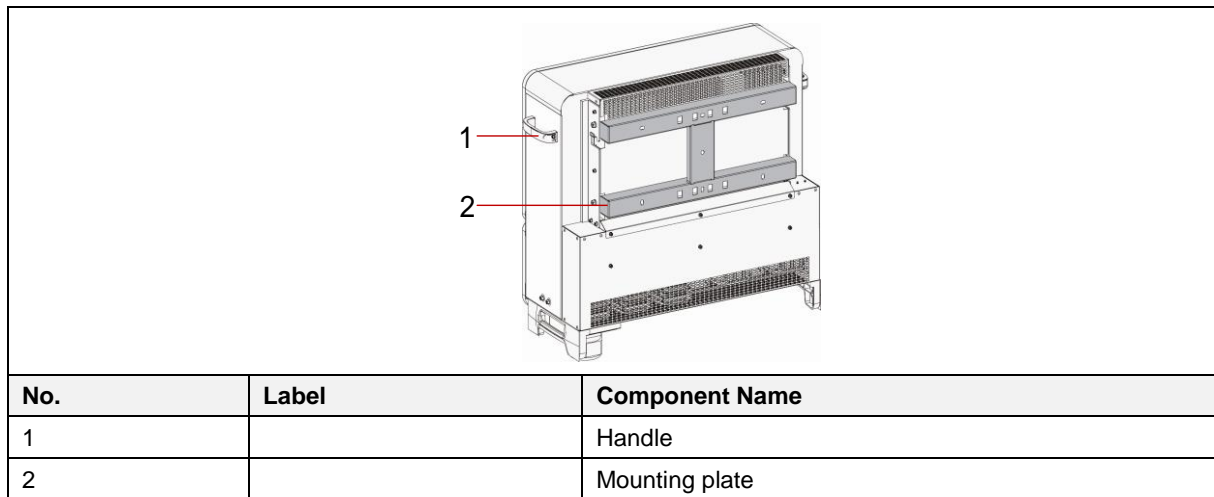


Figure 2-8 Back view of the inverter

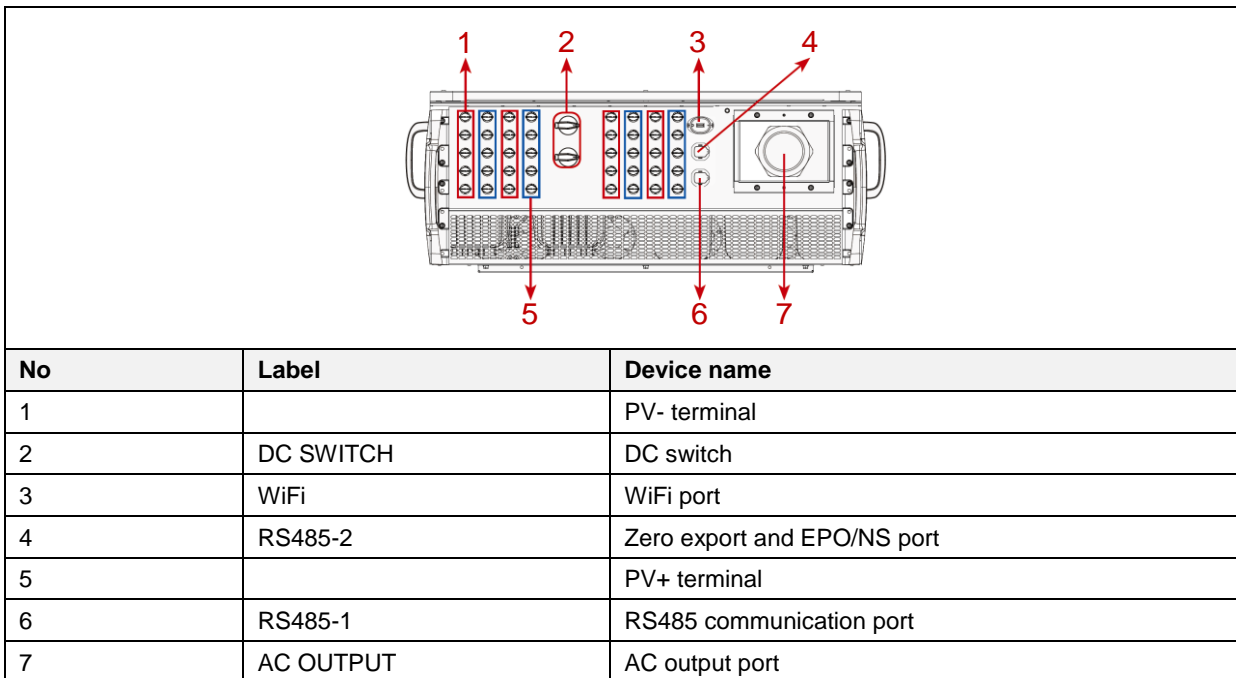


Figure 2-9 Bottom view of the inverter







2.6 Labels on the Package

On the outer packaging of the product, there are some labels to guide the user to transport and store the product. The meanings of the labels are as follows:

	No stacking		Handle with care. Avoid damage to the converter caused by intense collision and friction in the process of transportation and movement.
	Place vertically and no tilting		Keep dry. Prevent the inverter from getting wet or damp

2.7 Warning Signs on the Inverter

In order to ensure the personal and property safety of users when using this product and avoid accidents, the following warning labels may be placed inside and outside the string inverter to remind users of safety precautions during operation.

	PE: Grounding point indicating the position for connecting the PE cable.
	Danger: High voltage hazard. Failure to observe the rules might cause serious personal injury or property loss.
	Warning: Ordinary potential hazard. Failure to observe the rules might cause personal injury or property loss.
	Hot surface sign: Pay attention to the hot surface to prevent being burnt.
	Discharge sign: Do not touch the live parts until 5 minutes after disconnection from the power source to prevent electric shock.
	Refer to the user manual: Please refer to the user manual for detailed instructions.

2.8 Technical Parameters

	Model	HSNV100K-G01	HSNV110K-G01
Input parameters	Maximum input voltage	1100 V	
	Minimum working voltage	180 V	
	Working voltage range	200–1000 V	
	MPPT full load working voltage range	550–850 V	
	Rated input voltage	600 V	
	Maximum input current per MPPT	65 A (13 * 5)	
	Maximum short circuit current per MPPT	100 A (20 * 5)	
	Maximum number of inputs	20	
	Number of MPPT	4	
Output parameters	Rated output power	100 kW	110 kW
	Maximum output apparent power	110 kVA	121 kVA
	Maximum active power	110 kW	121 kW
	Rated output voltage	3 * 230/400 V, 3 W + N + PE	
	Output voltage range	300–520 V	
	Rated output frequency	50 Hz/60 Hz	
	Rated output current	144.3 A	158.8 A
	Maximum output current	158.8 A	174.7 A
	Power factor	-0.8 to +0.8	
	Maximum total harmonic distortion	< 3%	
Efficiency	Maximum efficiency	98.60%	
	European efficiency	98.30%	
Protection	Input DC switch	Supported	
	DC polarity reverse protection	Supported	
	DC surge protection	Class 2	
	Insulation impedance test	Supported	
	AC short circuit protection	Supported	
	Output surge protection	Class 2	
	Protection against PID	Supported (night repair method)	
	RCD detection	Supported	
	Arcing detection	Supported	
	N to PE voltage detection	Supported	
EPO/NS	Supported		
Display and communication	Display	LED instructions; WLAN + APP	
	RS485 communication	Supported	
	Communication interface	WIFI/RS485 + APP	
General parameters	Dimensions (width * height * depth)	890 x 814 x 343 mm	
	Weight	84 kg	
	Working temperature	-40°C to +60°C	
	Maximum working altitude	4000 m (derating is required above 3000 m)	
	Noise index	≤ 70 dB	
	Cooling mode	Smart air-cooling	
	Protection rating	IP65	
topological structure	Transformerless		

	Model	HSNV100K-G01	HSNV110K-G01
	Input terminal	MC4 plugging terminal	
	Output terminal	Cable gland + OT terminal	
Technical indicators	Standard	IEC 62109, IEC 61000, IEC 61727, IEC 62116, IEC 60068, IEC 61683, EN 50549-1, EN 50549-2, VDE 4105, VDE 4110, VDE 4120	

2.9 Mechanical Parameters

➤ Dimension and Weight

Model	Width * height * depth (mm)	Net weight (kg)
HSNV100K-G01	890 x 814 x 343	84
HSNV110K-G01		

➤ Dimensions of the Inverter and Mounting Plate

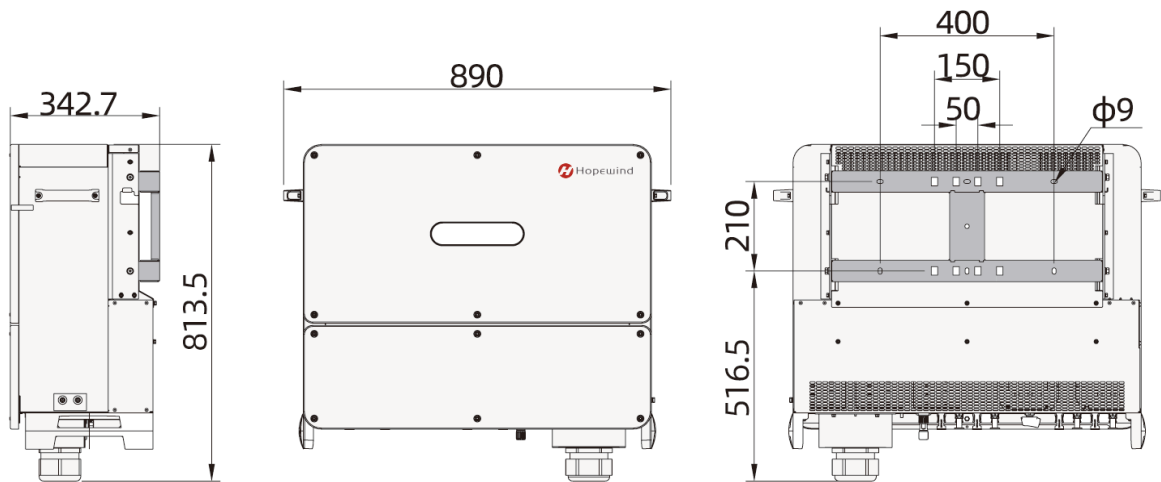


Figure 2-10 Dimensions of the inverter (unit: mm; dimension error: ± 10 mm)

2.10 Ambient Requirements

Transportation environment	Requirements
Type of shipping	Waterways, railways, highways, aviation, etc.
Ambient temperature	-40°C to $+70^{\circ}\text{C}$
Relative humidity	$\leq 95\%$ when the temperature is $+40^{\circ}\text{C}$
Mechanical condition	The vibration should not exceed the following limits: $2\text{ Hz} \leq f < 9\text{ Hz}$, displacement 7.5 mm ; $9\text{ Hz} \leq f < 200\text{ Hz}$, acceleration 20 m/s^2 ; $200\text{ Hz} \leq f < 500\text{ Hz}$, acceleration 40 m/s^2
Storage environment	Requirements
Storage place	Store the product in a warehouse with air circulation, no harmful gases, no flammable or explosive materials, and no corrosive materials. Avoid strong mechanical vibrations and shocks and stay away from strong magnetic fields.
Ambient temperature	-40°C to $+70^{\circ}\text{C}$
Relative humidity	$\leq 95\%$

Mechanical condition	The vibration should not exceed the following limits: 10 Hz ≤ f < 57 Hz, displacement 0.075 mm; 57 Hz ≤ f < 150 Hz, acceleration 10 m/s ² .	
Working environment	Requirements	
	Normal operation state	Shutdown state
Installation place	Do not install the inverter in an area where flammable or explosive materials are stored. The installation site can be indoors or outdoors, preferably in a well ventilated environment. Avoid direct sunlight, rain and snow to extend the life of the inverter. It is recommended to install it in a sheltered location. If it is not possible, install an awning.	
Ambient temperature	-40 °C to +60 °C (Derating is required while the temperature is above 45 °C)	-40°C to +70°C
Relative humidity	Relative humidity: 0%–100%, internal condensation is not allowed.	
Altitude	≤4000m; derating is required when the altitude is above 3000m.	
Mechanical condition	The vibration should not exceed the following limits: 10Hz≤f<57Hz, displacement 0.075mm; 57Hz≤f<150Hz, acceleration 10m/s ² .	

--End of the chapter--

3 System Installation

3.1 Receiving Inspection

After confirming that the outer packaging is intact, please carry out the unpacking inspection. Unpack the packaging box and check whether the appearance of the string inverter is in good condition. When opening the package, be careful to use the tool to avoid scratching the string inverter.

Although the inverter has been strictly tested and inspected before leaving factory, accidental damage might happen during transportation. Please inspect and check the product as soon as you receive it. If there is any damage or omission, please contact us and we will help you as soon as possible.

3.2 Installation Tools Preparation

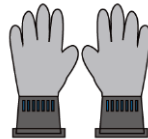
Please prepare installation tools including but not limited to the following recommended ones.



Dust mask



Insulated shoes



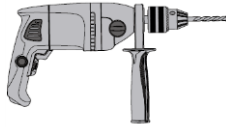
Protective gloves



Safety helmet



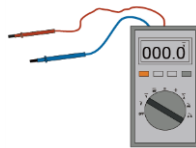
Goggles



Impact drill (10 mm)



Heat gun



Multimeter



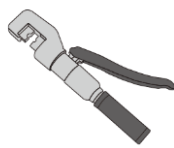
Phillips screwdriver



Heat shrink tubing



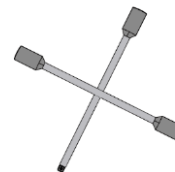
Crimping pliers



Hydraulic pliers



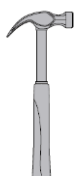
Wire cutter



Socket wrench
(10/13/16 mm)



Combination
pliers



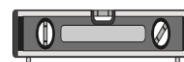
Hammer



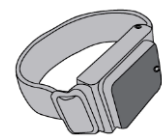
MC4 wrench



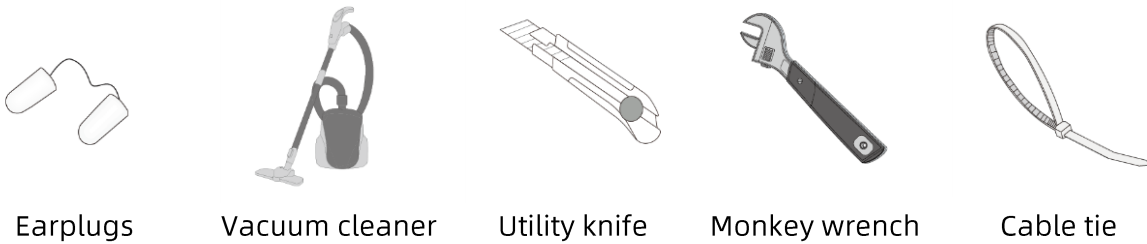
Marker



Spirit level



Wrist strap



3.3 Installation Environment Requirements

- The environmental requirements for the installation of string inverter are shown in **1 Safety Precautions**.
- The installation mode and position must be suitable for the weight and dimension of the string inverter. See **2.9 Mechanical Parameters**.
- The string inverter should be installed in a well ventilated environment to ensure good heat dissipation. Avoiding inverter direct sunlight, rain and snow can prolong the life of inverter. It is recommended to choose sheltered installation sites. If that cannot be satisfied, please set up a sun shading shelter.
- During the operation of the string inverter, the temperature of the housing and the radiator will be relatively high. Do not install the inverter in the position which will be touched unintentionally.

3.4 Installation Clearance Requirements

When installing the string inverter, the space around the string inverter must be reserved for heat dissipation and maintenance.

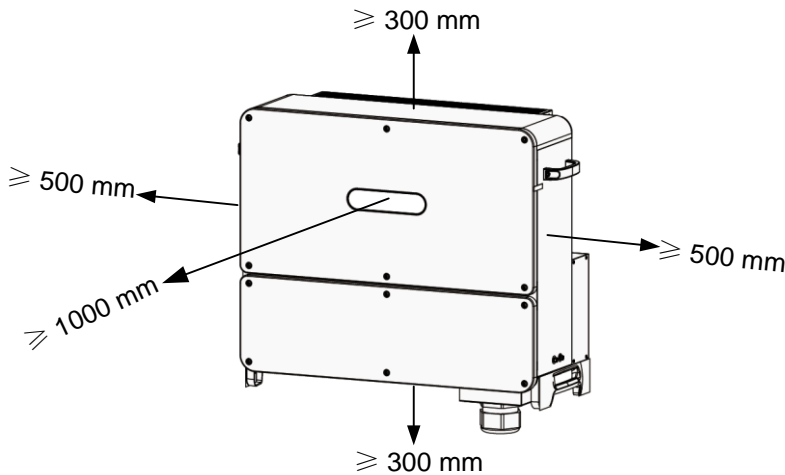



Figure 3-1 Installation space requirements

 Note: If installed in a sandy site or grass, take protective measures to prevent debris from entering the inverter.

When installing multiple inverters in a same surface, the horizontal installation mode is recommended.

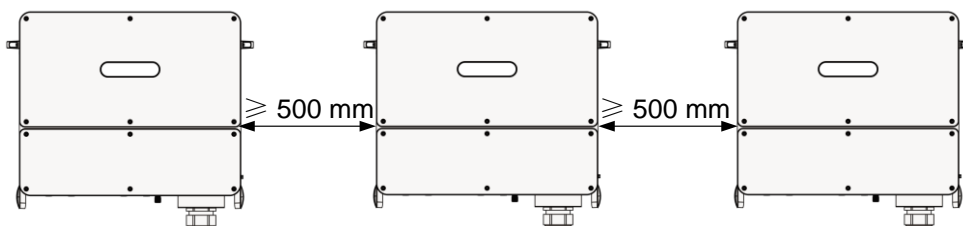


Figure 3-2 Horizontal installation mode

When installing multiple inverters in two lines, the triangle installation mode is recommended.

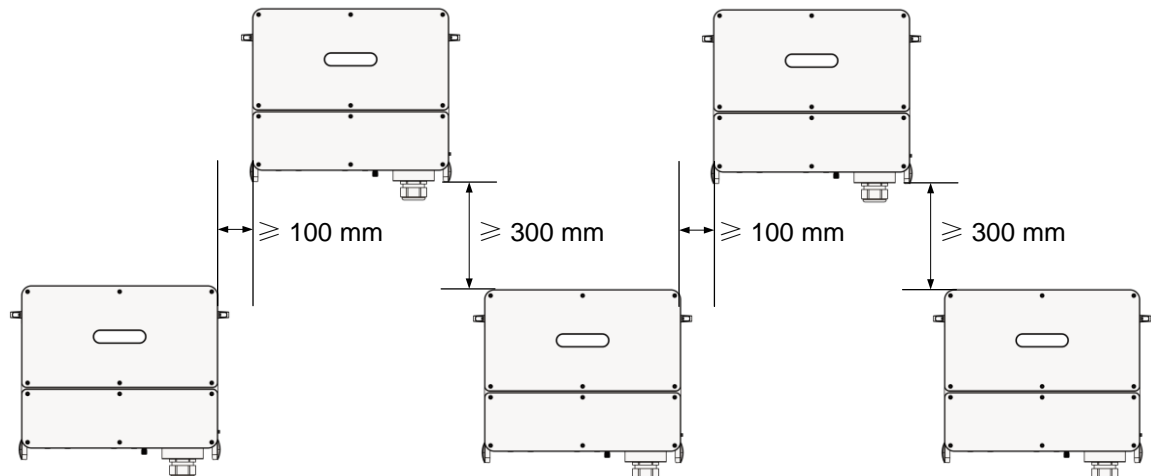
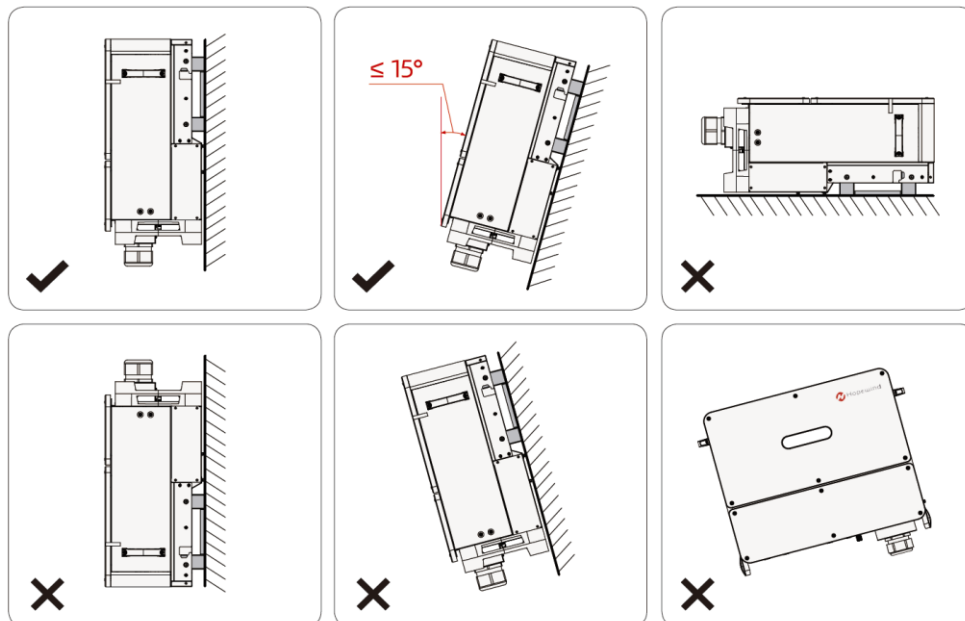


Figure 3-3 Triangle installation mode

3.5 Installation Angle



3.6 Installation Method

To install the inverter, please install the mounting plate first, and then hang the inverter to the mounting plate and fix it. You can mount the inverter on the wall or the bracket according to the actual requirements.



WARNING

1. Please refer to **1 Safety Precautions** for precautions during inverter installation. For installation environment requirements, please refer to **3.3 Installation Environment Requirements**.
2. During installation, it must be confirmed that the site installation position can bear the total weight of the inverter and accessories to avoid falling during installation or use.
3. It is recommended that two people work together to fix the inverter to avoid mechanical injury. During installation, safety measures shall be taken to prevent injuries.
4. Please install it vertically or tilt it back 15° at most to facilitate heat dissipation of the machine. Do not tilt the inverter (tilt forward, tilt back too much, roll), horizontally or upside down.
5. If it is impossible to avoid direct sunlight, please add a sunscreen.

Installation steps

1. Remove the 4 fixing screws on the back of the inverter and take down the mounting plate.

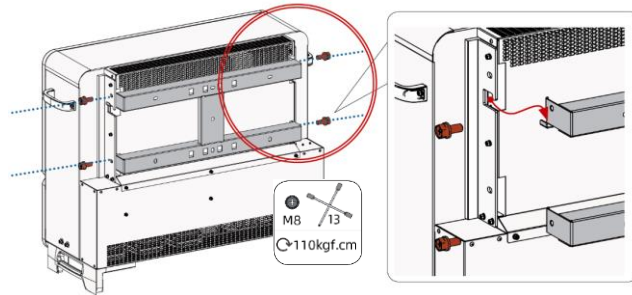


Figure 3-4 Removing the 4 fixing screws

2. Choose one of the following two ways to install the mounting plate.

- 1) Mounting on the wall

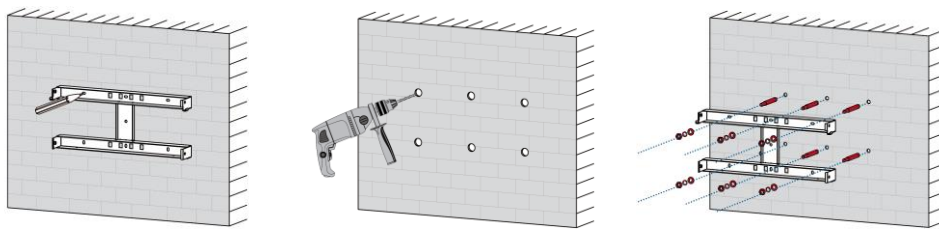


Figure 3-5 Wall-mounting mode

- 2) Mounting on the bracket

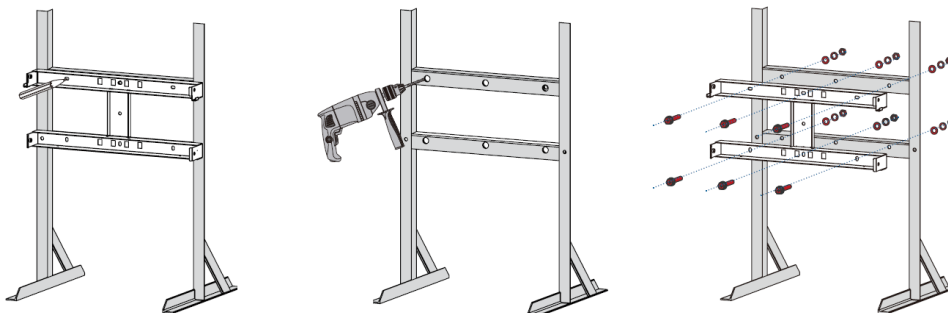


Figure 3-6 Bracket-mounting mode

3. Align the holes and then hang the inverter on the mounting plate.

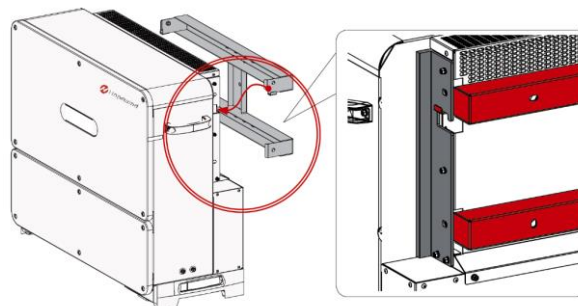


Figure 3-7 Hanging the inverter on the mounting plate

- Secure the inverter with 4 fixing screws.

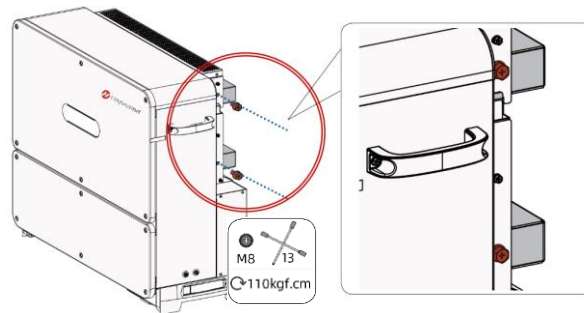


Figure 3-8 Securing the inverter with screws

3.7 Electrical Connections



- Do not open the upper panel of the inverter. Any damage due to failure to observe this rule will not be covered by the warranty.
- During AC cable connection, please open the lower panel of the inverter.
- If it is windy and dusty during installation, please close the lower panel timely to protect the internal components from being damaged by wind, sand, and other debris.

3.7.1 Cable Requirements

The choice of cable should comply with relevant national standards and meet the load requirements.

Power cable requirements

Refer to the electrical data in the product data, and then consider the ambient temperature, current, margin and other factors to select the cable.

Communication cable requirements

Since weak communication signals are susceptible to external interference, it is necessary to adopt communication cables with shielding layers, and the shielding layer should be grounded reliably.

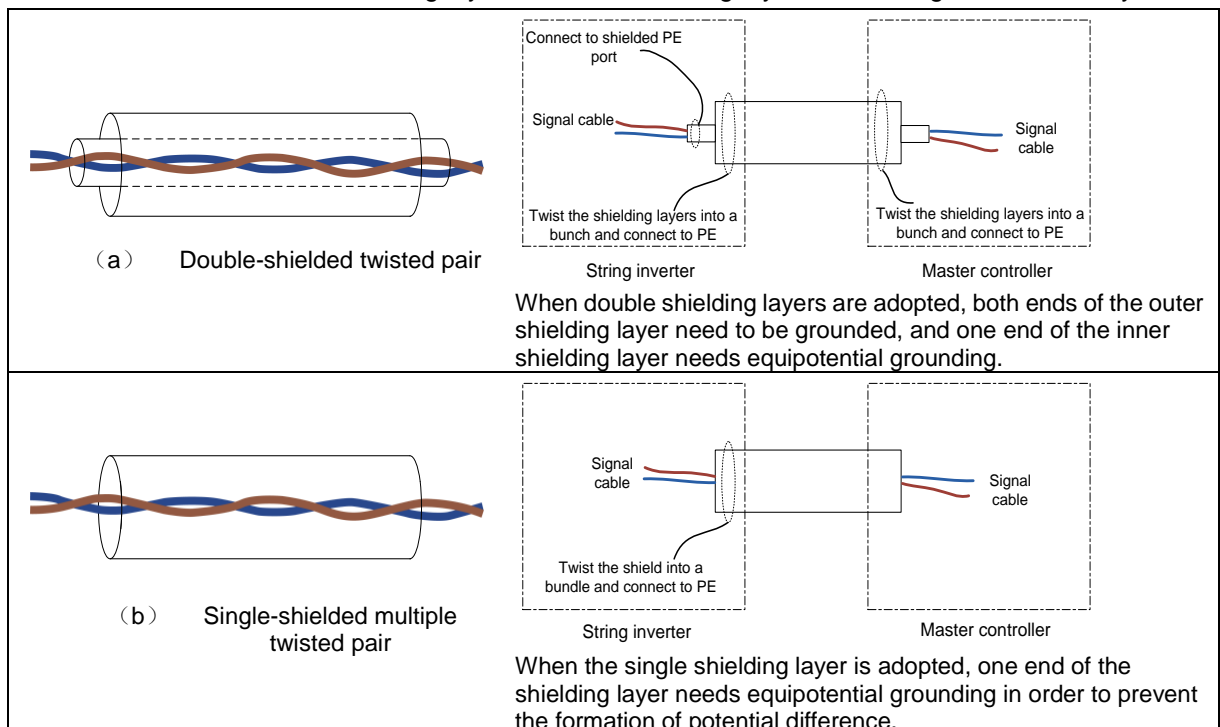


Figure 3-9 Twisted pair with shielding layer

3.7.2 Cable Selection

Name	Label	Recommended Cable Specifications	Note
PV input cable		Industry general PV cable: cross-sectional area: 4.0 mm ² –6.0 mm ²	/
AC output cable	A, B, C, N	Outdoor cable, cross-sectional area: 70 mm ² –120 mm ²	Outer diameter: ≤ 70 mm
RS485 communication cable		Outdoor shielded twisted pair cable meeting local standards with a total length of ≤ 1000 m	/
PE cable	PE	Cross-sectional area: ≥1/2 of that of the AC output cable	/

3.7.3 Torque Requirements


When tightening the cable connections, the torque the screws needs to meet the requirements of the table below.

Table 3-1 Torque requirements for cable connection

Thread specification	Performance level 4.8		Performance level 8.8		Unit
	General connection	High-tightness connection	General connection	High-tightness connection	
M3	6	8			kgf.cm
M4	12	14			kgf.cm
M5	25	30			kgf.cm
M6	50	60			kgf.cm
M8			110	150	kgf.cm
M10			300	390	kgf.cm
M12			550	650	kgf.cm
M16			1600	2000	kgf.cm

Note: The performance rating for all the bolts with a nominal external thread diameter of 8 mm and above used by Hopewind’s string inverters is 8.8.

3.7.4 Preparation before Operation

 DANGER	
<ol style="list-style-type: none"> 1. When connecting cables, do not operate when the product is energized and please follow the relevant requirements in 1 Safety Precautions. 2. Before connecting the cables, please complete the following preparations to avoid personal injury. <ol style="list-style-type: none"> 1) Before electrical connections, please make sure that the "DC SWITCH" of the inverter is in the "OFF" state, otherwise the high voltage of the inverter may cause a shock hazard. 2) Determine the positive and negative poles of the input cable and mark them, and make sure that the input cable is disconnected from the PV string. 3) Please confirm that the open circuit voltage of the PV string does not exceed the specified limit. 3. When connecting the input cable, please make sure that the positive and negative poles of the input cable correspond to that of the inverter PV terminals. 	

3.7.5 Connecting PE Cables

Please connect the inverter to the grounding bar through the PE cable to achieve the grounding protection. The PE mark is affixed to the PE terminal. The cross-sectional area of the PE cable (copper wire) is not less than 16 mm² and the bolt specification is M6.

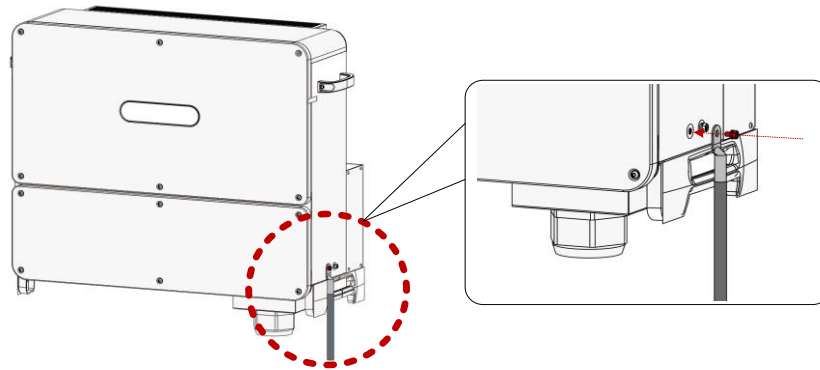


Figure 3-10 PE connection

For the grounding of multiple string inverters, use single-point grounding instead of winding the ground wire into a ring shape as shown below.

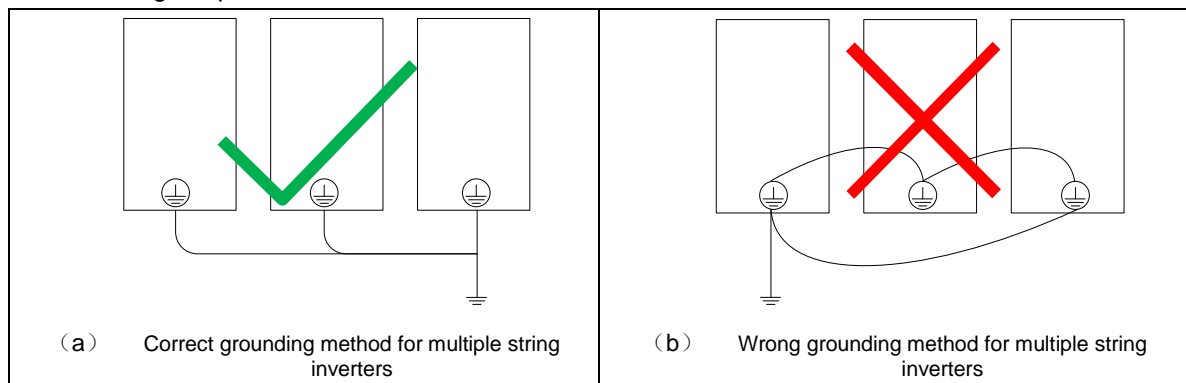


Figure 3-11 PE connection of multiple string inverters

3.7.6 Connecting AC Output Cables

Precautions

- An independent three-phase circuit breaker is required outside the AC side of each inverter to ensure reliable disconnection between the inverter and the power grid. And the specification of the circuit breaker shall meet the technical requirements.
- It is forbidden to share one circuit breaker for multiple inverters.
- It is forbidden to connect the load between the inverter and the circuit breaker.
- Users must prepare the OT terminal by themselves.
- For better EMC performance, armoured cables shall be used on the AC side.

Operation steps

- 1) Make the AC output cable.

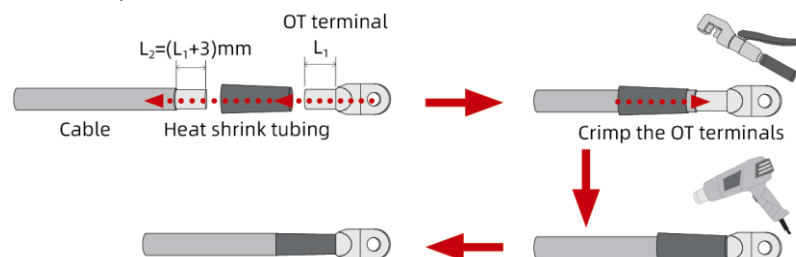


Figure 3-12 Making the AC output cable

- 2) Remove the lower door panel.

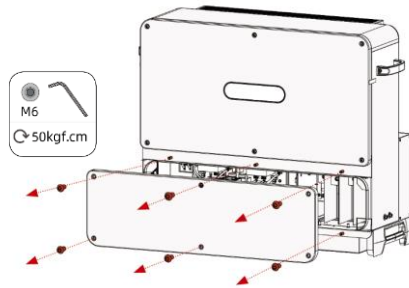


Figure 3-13 Removing the lower panel

- 3) Install the cable gland, unscrew the locking cap, and then thread the cables through the locking cap and the gland in turn.

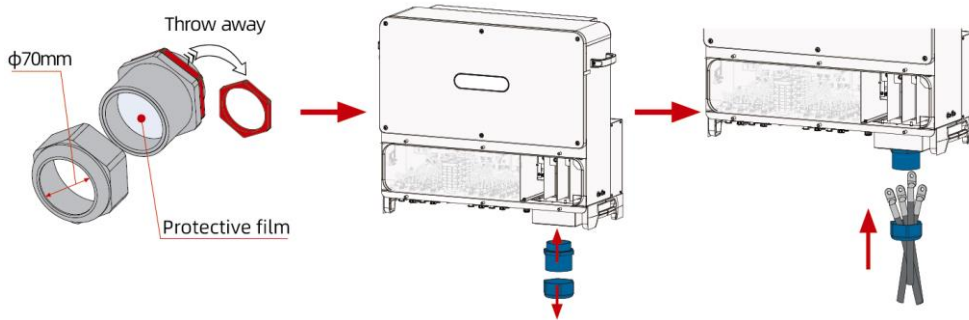


Figure 3-14 Threading the AC cables

- 4) Connect the AC cables to the A, B, C and N of the wiring terminal bar, fix the wiring terminals, then tighten the locking cap and reinstall the door panel.

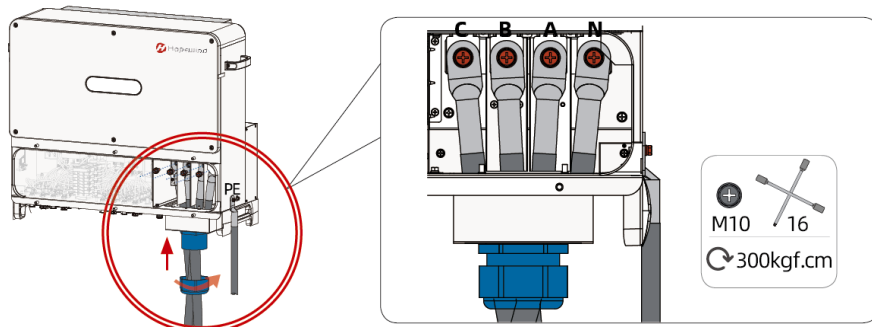


Figure 3-15 Connecting the AC cables to the terminal bar

3.7.7 Connecting RS485 Communication Cables

RS485 communication cable making

- 1) Strip the communication cable.

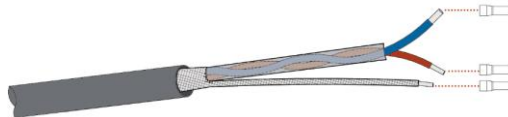


Figure 3-16 Striping the communication cable

- 2) Crimp the cable with the wiring terminal.



Figure 3-17 Crimping the communication cable

Cable connection

The inverter can be connected to the communication equipment (such as a data collector or a PC) through the RS485 communication cable. The zero export function of the inverter can prevent the energy of the PV panel from flowing to the grid. The RS485 port and the zero export port are located at the bottom of the inverter (Note: The RS485-1 port is used for multi-inverter networking and zero export. Pins 1–4 of the RS485-2 port are used for single-inverter zero export, and pins 5–8 are used for EPO/NS.), as shown in the figure below.

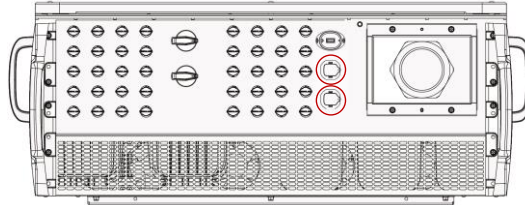


Figure 3-18 RS485-1 and RS485-2

Table 3-2 RS485-1 8-PIN terminal

PIN	Definition	PIN	Definition
1	RS485-1+	5	Terminal Resistor
2	PE	6	RS485-1+
3	RS485-1-	7	PE
4	Terminal Resistor	8	RS485-1-

The connection of multiple inverters is suggested to be connected in series, as shown in the figure below.

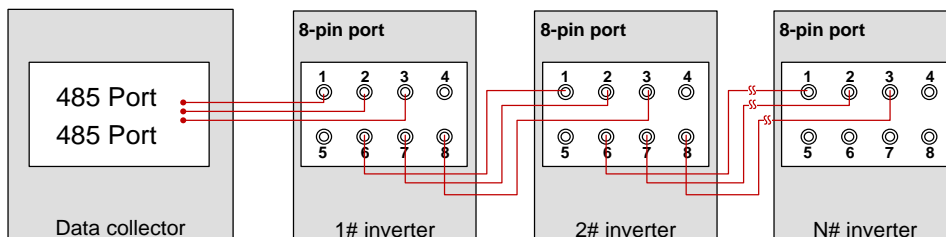


Figure 3-19 Following this mode to enable functions of RS458-1

Note: If the communication distance exceeds 300m or the field communication quality is poor, the terminal matching resistors of the last inverter shall be short-circuited by short-circuiting the PIN4 and PIN5 of the last inverter’s communication terminal.

EPO protection function

When the inverters are connected in series (in a daisy chain) as shown in the figure below, users can close the EPO switch for emergency shutdown of all inverters.

Table 3-3 RS485-2 8-PIN terminal

PIN	Definition	PIN	Definition
1	RS485-2+	5	GND
2	PE	6	EPO/NS
3	RS485-2-	7	EPD/NS
4	Terminal Resistor	8	GND

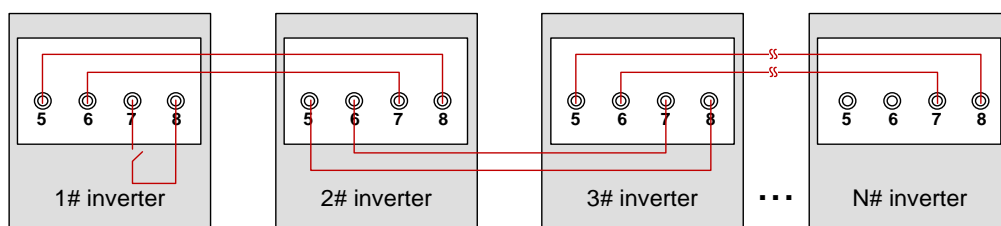




Figure 3-20 Following this mode to enable EPO function of RS458-2

3.7.8 Connecting DC Input Cables

Note: In order to make full use of the DC input power, the PV strings of the same input MPPT should be identical in structure, including the same model, the same number of panels, the same tilt angle, and the same azimuth.


DANGER

- 1) When the sun shines on the battery panel, it will generate voltage which may cause life-threatening dangers. Therefore, if the DC input cable is connected under light conditions, you need to ensure that the input cable is not charged (you can cover the panel with an opaque cloth and then proceed operating).
2. Before connecting the input cable, make sure that the DC side voltage is within the safe voltage range (within 60 V DC), and the DC switch is in the "OFF" state, otherwise the high voltage generated may cause a shock hazard.
3. When the inverter is in on-grid operation, it is forbidden to perform maintenance operations on the DC input cable, otherwise it will cause electric shock hazard.
4. If you want to remove the positive and negative connectors, make sure that DC switch has been placed in the "OFF" state and there is no current output from the PV branch.


WARNING

Please ensure that the following conditions are met, otherwise it may cause a fire hazard.

- Each component of the string in series is of the same specification.
- The maximum opening voltage of each PV string cannot be greater than 1100 V DC under any circumstances.
- The maximum short circuit current of each PV string shall not exceed 30 A under any conditions.
- Please ensure that the polarity of the DC input side is connected correctly, that is, the positive pole of the PV module is connected to the positive pole of the DC input terminal of the inverter, and the negative pole is connected to the negative pole of the DC input terminal of the inverter.

Precautions for grounding the PV string

If the inverter is connected to the grid in which the N cable is connected to the PE cable, the positive or negative pole of the PV string is prohibited from being grounded, otherwise the inverter will not be able to work normally.

Selection of DC input terminal

Number of input channels	Combiner box DC input terminal
1	PV1
2	PV1, PV2
3	PV1, PV2, PV3
.....
20	PV1–PV19, PV20

Steps to crimp MC4 terminal

The input cable needs to be crimped into the MC4 terminal for connection to the PV+/PV- terminals of the inverter. Before operation, ensure that **3.7.4 Preparation before Operation** has been completed.

Note: Please do not judge the positive and negative poles according to the cable color in this manual. Be sure to take the actual measurement as the standard.

- 1) Strip the DC cable.

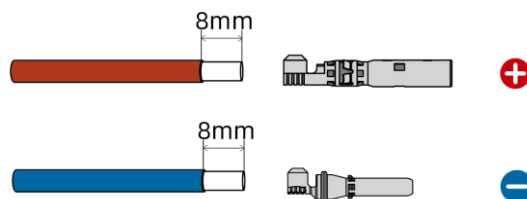


Figure 3-21 Stripping the DC cable

- 2) Crimp the cable with the metal terminal of the DC connector.

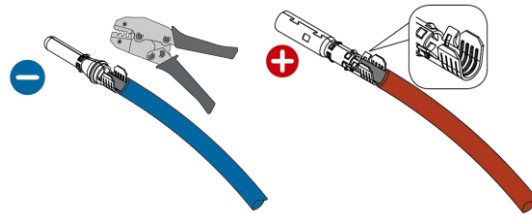


Figure 3-22 Crimping the terminal

- 3) Disassemble the DC connector.

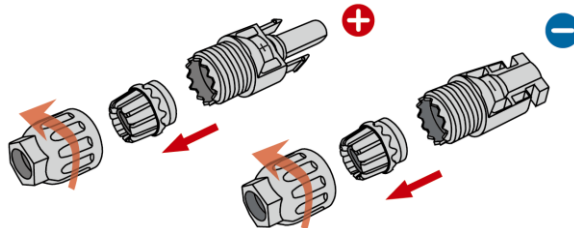


Figure 3-23 Disassembling the DC connector

- 4) Thread the cable through the connector then reassemble the connector.

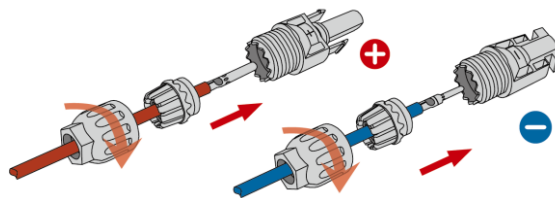


Figure 3-24 Reassembling the connector

- 5) Measure the DC voltage and check the polarity of the connectors.

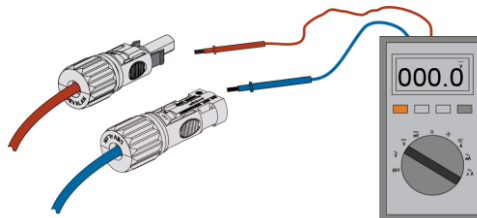


Figure 3-25 Checking the polarity of the connectors

- 6) Remove the sealing plugs of the DC terminals.

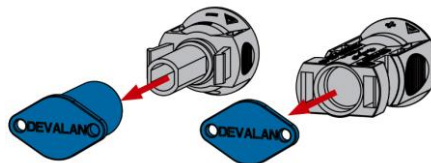


Figure 3-26 Removing the sealing plugs

- 7) Connect the connectors to the DC terminals of the inverter.

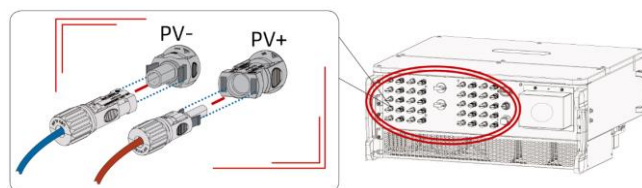


Figure 3-27 Connecting the connectors



Please use the MC4 terminals configured in the delivery accessories of the inverter. Device damage due to incompatible MC4 terminals is not covered by the warranty.

After the cable connection of the string inverter is completed, check if there is gap at the cable gland. If there is a gap in the cable gland, use a fireproof mud to block the gap. If there are unconnected input terminals, seal the unconnected input terminals.

3.7.9 Connecting the WiFi Module

Users can connect the inverter to **hopeCloud** through the communication module, which makes it convenient for users to remotely view or set the relevant parameters of the device, and timely understand the system status.

For specific installation and operation instructions of the WiFi module, please refer to the *Quick Installation Guide* delivered with the product, or scan the QR code below to obtain the electronic file.

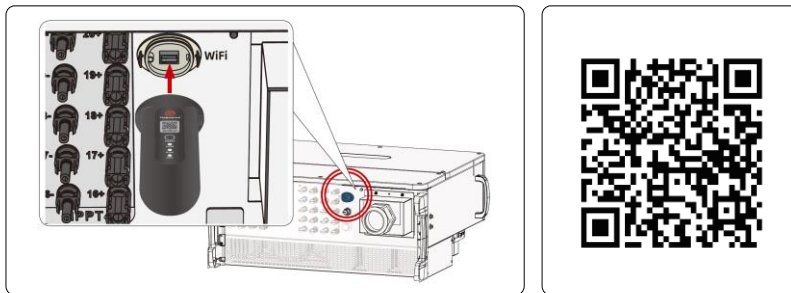


Figure 3-28 Connecting the WiFi module

--End of the chapter--

4 Commissioning Guide

4.1 Check before Power-On



- Please read **1 Safety Precautions** carefully and do a detailed check according to the table below before power on.
- Before operating or maintaining the internal metal parts, please use multimeter to measure their voltage to the enclosure first in order to avoid any danger.

Once the string inverter is installed, the following items need to be checked carefully before power on.

Mechanical inspection

- Please read **1 Safety Precautions** carefully.
- Ensure that the environmental safety of the string inverter.
- Check if there are any foreign objects left inside and on the top of the string inverter cabinet.
- Ensure that the string inverter has enough space reserved around for maintenance and heat dissipation.
- The cables are marked clearly and correctly.
- Check if there any condensation inside the string inverter. If there is, remove it with heating tools.
- Ensure that all wiring screws are tightened according to torque requirements.
- Ensure that RS485 wiring is correct and reliable.
- Make sure there is no gap between the input terminal and the cable gland.

Electrical inspection

- Ensure that the connection of the string inverter is reliable and the polarity is correct.
- The power cables and signal lines are all in conformity with the electrical safety regulations.
- Signal terminals and power lines are properly matched with terminals.
- The isolation area and warning signs have been set up around the string inverter to prevent others from misoperation or proximity.

4.2 System Power-On

After ensuring that the electrical connection is completed, the power on operation can be performed and the inverter will be turned on.

Step 1: Set the DC SWITCH of the inverter to the “ON” state.

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

If the system does not have any faults and all the startup requirements are met after all the above steps, the inverter will start automatically. The starting process will take a few minutes, please wait patiently.

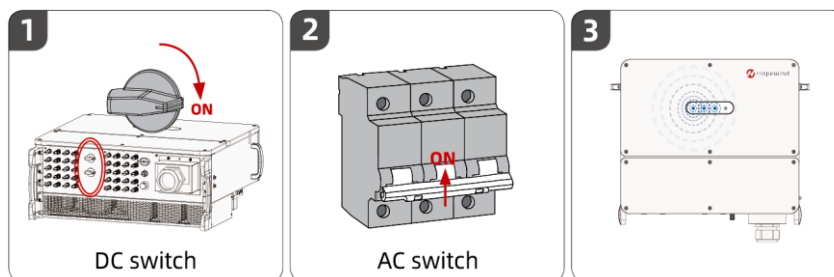


Figure 4-1 Powering on the inverter

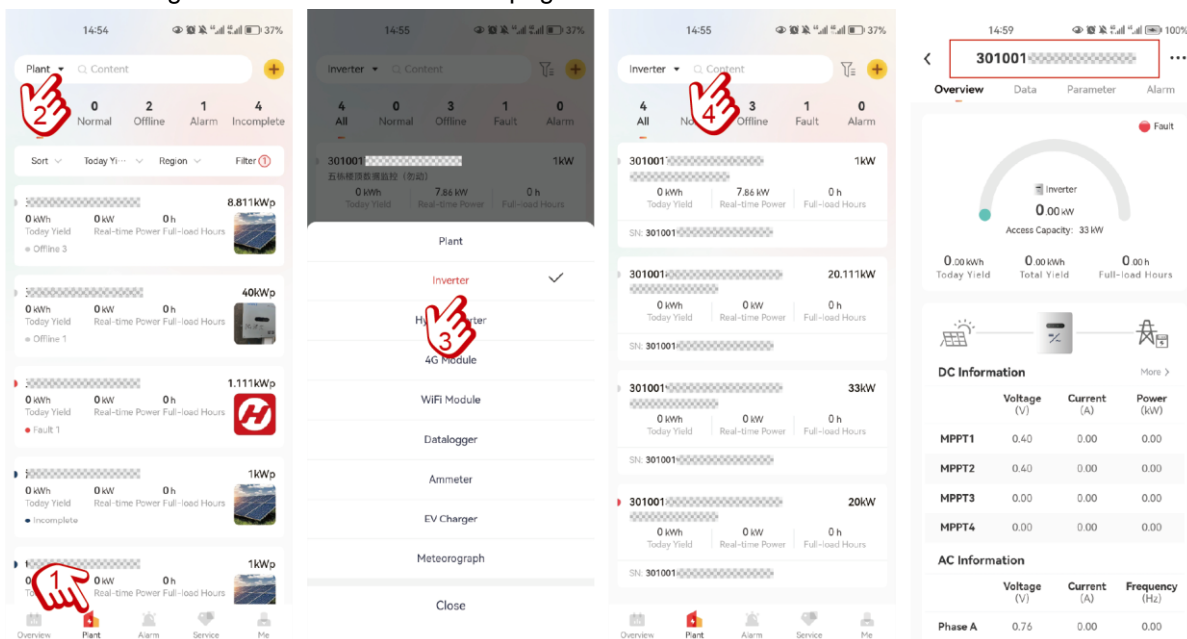
4.3 Commissioning through hopeCloud

Before commissioning, please ensure that the WiFi module has been connected and hopeCloud has been downloaded and installed (including registration, creation of the power station, addition of devices and network configuration). Please refer to **3.7.9 Connecting the WiFi Module** for more details.

After network configuration, please use hopeCloud to set relevant parameters.

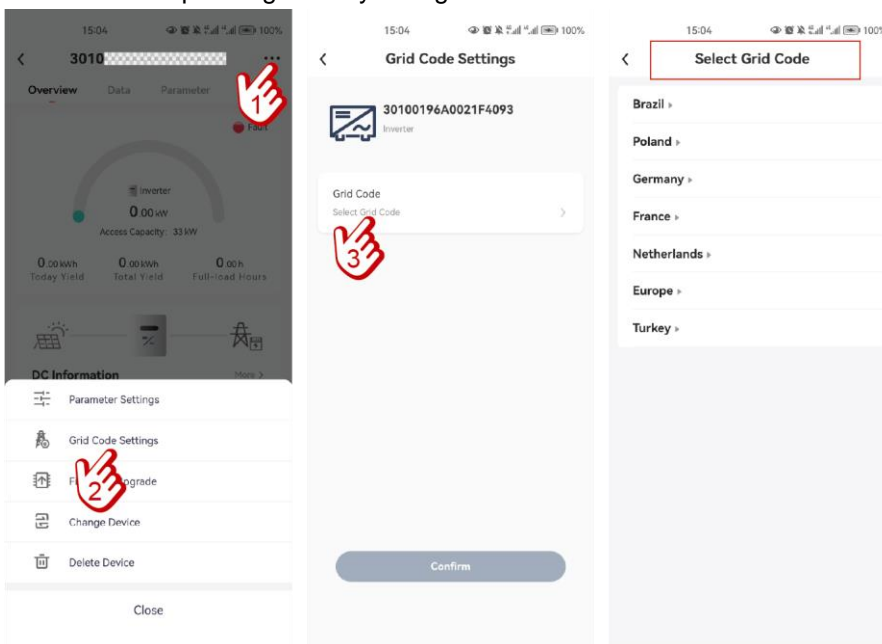
Operation steps

1. Log in to hopeCloud.
2. Click **Plant** > **Inverter** to enter the device list page.
3. Click the target device to enter the detail page.



4. Grid code settings

- 1) Click **Grid Code Settings** to enter the setting page.
- 2) Click **Grid Code** to enter the detail page and select the standard grid code matched with the local power grid of the corresponding country or region.



5. Function settings

- 1) Click **...** > **Parameter Settings** to enter the setting page.
- 2) Select and set corresponding parameters according to on-site requirements by referring to the table below.

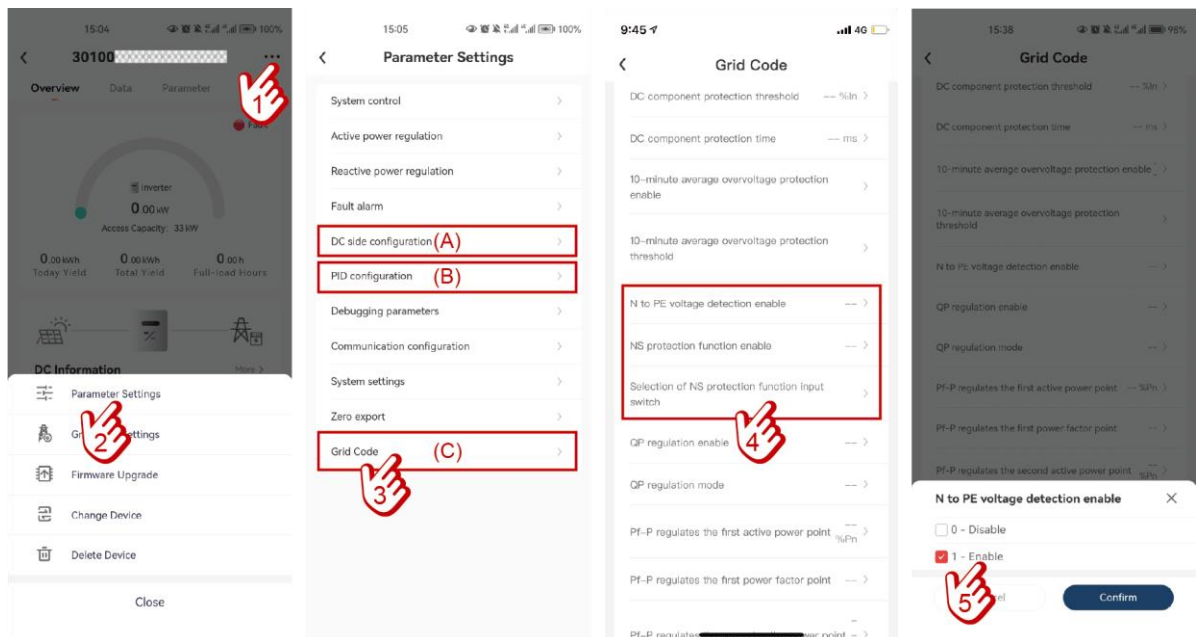
Table 4-1 Parameter list

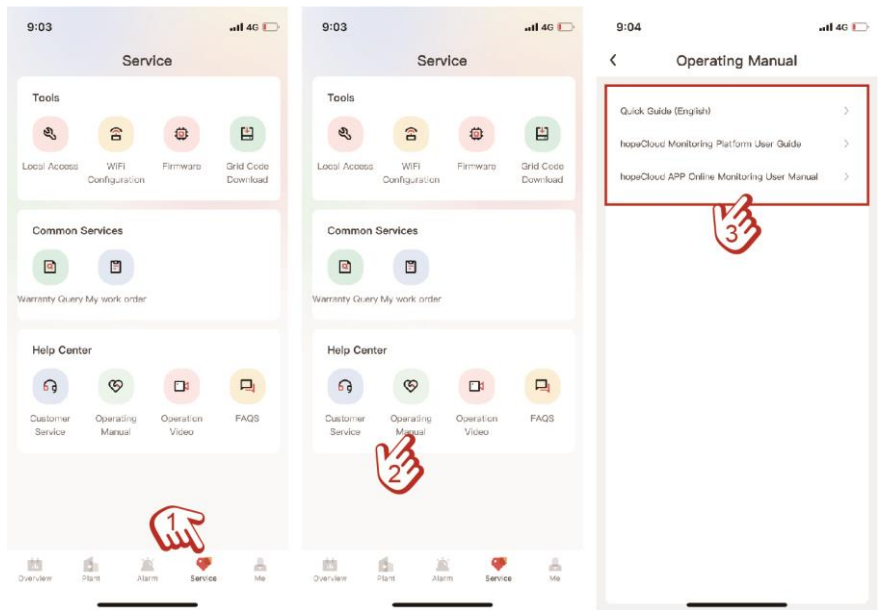
Parameter	Function
(A) DC side configuration	Arcing detection enable
	IV scan enable
	MPPT mutual learning enable
(B) PID configuration	PID enable
(C) Grid Code	N to PE voltage detection enable
	EPO/NS protection function enable
(D) Zero export	Single-machine zero export enable/Zero export enable

➤ Function description

1. Functions (A) to (C)

- 1) The above functions are disabled by default. Please enable them as needed.
- 2) The neutral to ground voltage detection function is inapplicable to grids in the form of TI. When the inverters are connected to TI-from grid and this function is enabled, the inverter will report a fault alarm and stops grid-connected operation.
- 3) The EPO/NS protection function can be realized through installing a normally open or closed switch. The switch is set to normally open by default. If the normally closed type is needed, users can set it in hopeCloud APP.
- 4) The EPO/NS protection function is inapplicable to HSNV100~110-G01 inverters whose SN is 30081527C001XXXXXXXXXXXX or 30081527C002XXXXXXXXXXXX.
- 5) The figure below shows how to set the above functions in hopeCloud APP. For detailed operations, click **Service** on the navigation bar and select **Operating Manual** to refer to corresponding instructions.





2. Function (D)

1) Zero export principle

A zero export meter is installed on the main line of the house-service wire, through which the real-time power and current level and direction are collected. When the data collector detects that there is current flowing to the grid, it sends a command to adjust the inverter output power. The inverter then limits the power until the inverter and the grid supply power to the loads at the same time.

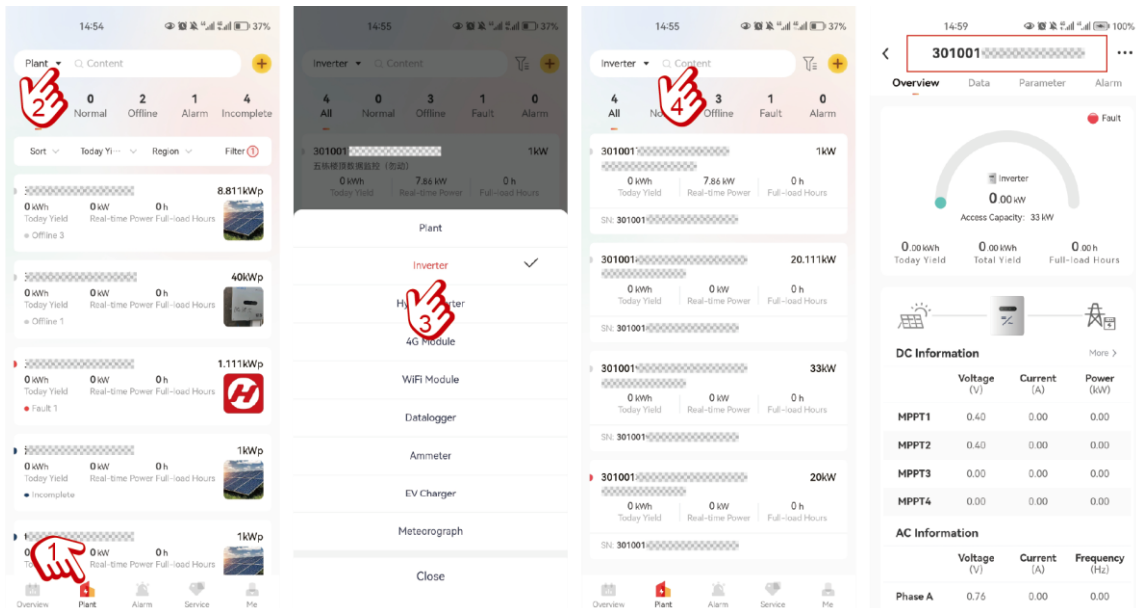
HSNV inverters support zero export for both single and multiple inverters.

2) Operation steps

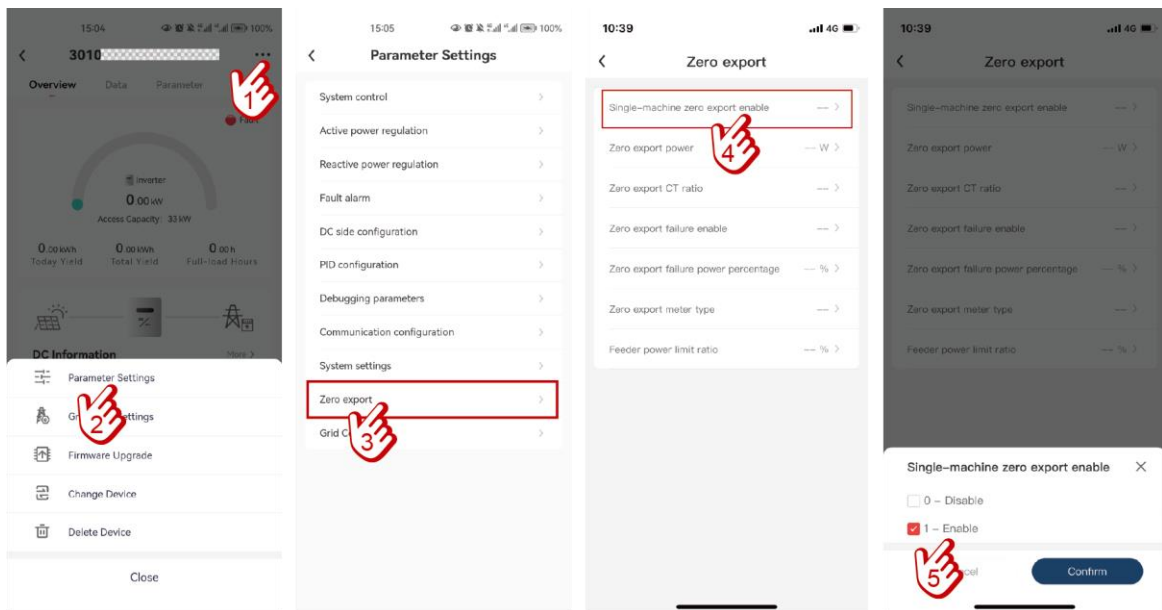
● Zero export for single inverter

Users can follow the steps below if using the hopeCloud APP to set the zero export function.

1. Open the APP and tap **...** > **Server** > **International Server**. Enter the account and password, check “I have read and agreed to Service Terms and Privacy Policy” and tap **Login**.
2. Select **Plant** on the home page and tap **...** > **Inverter**. Search the SN of the inverter in the search box and tap **Search**.



3. After entering the detail page of the inverter, tap **...** > **Parameter Settings** > **Zero export**.
4. Choose **Single-machine zero export enable** > **1-Enable** and tap **Confirm**.

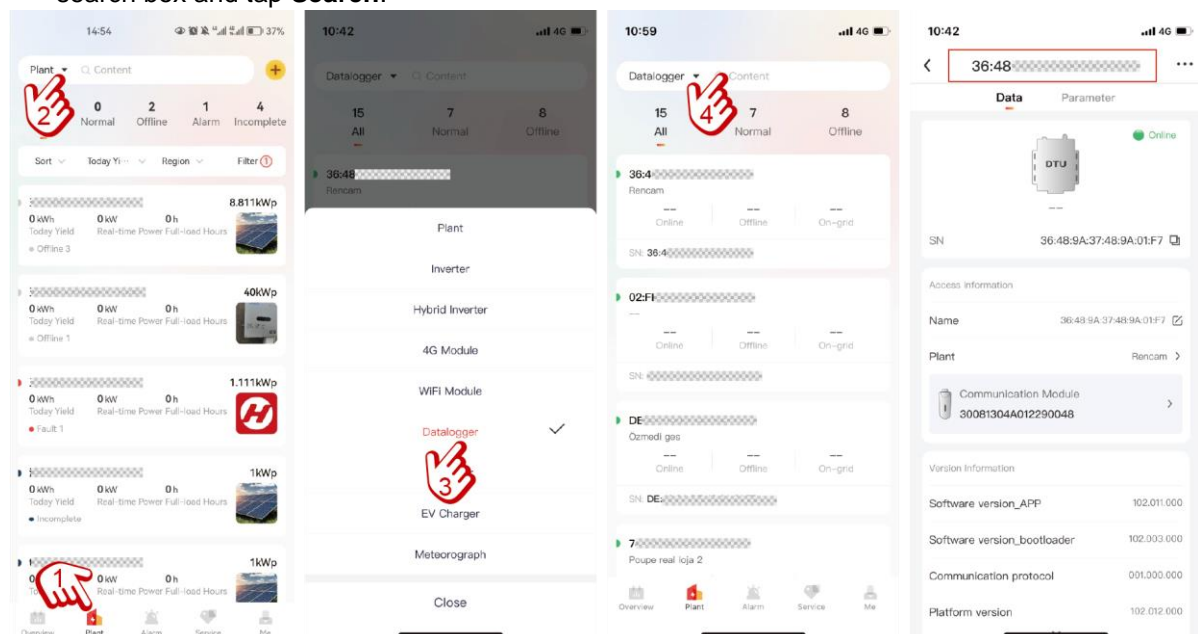


5. Choose **Zero export power**, input the power value and tap **Confirm**.
 6. Choose **Zero export CT ratio**, input the ratio value and tap **Confirm**.
- Note: The zero export power and CT transformation ratio should be set according to the onsite conditions.

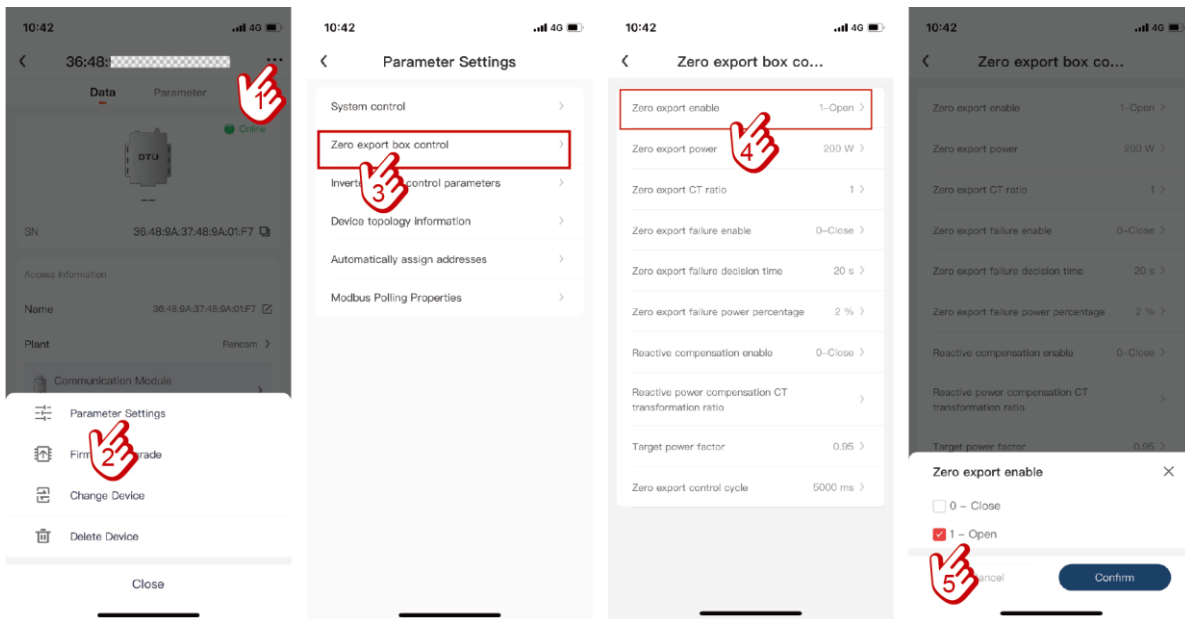
- Zero export for multiple inverters


Users can follow the steps below if using the hopeCloud APP to set the zero export function.

1. Open the APP and tap **...** > **Server** > **International Server**. Enter the account and password, check “I have read and agreed to Service Terms and Privacy Policy” and tap **Login**.
2. Select **Plant** on the home page and tap **▼** > **Datalogger**. Search the SN of the datalogger in the search box and tap **Search**.



3. After entering the detail page of the inverter, tap **...** > **Parameter Settings**.
4. Choose **Zero export box control** > **Zero export enable** > **1-Open** and tap **Confirm**.



5. Choose **Zero export power**, input the power value and tap **Confirm**.
 6. Choose **Zero export CT ratio**, input the ratio value and tap **Confirm**.
-  **Note:** The zero export power and CT transformation ratio should be set according to the onsite conditions.

➤ **DRM Function**

According to AS NZS 4777.2-2015, inverters shall support the demand response modes (DRMs). HSNV inverters support the mandatory DRM0 by providing the EPO protection function and other optional demand response modes can be realized when inverters communicate with the data collector through RS485 communication.

4.4 System Power-Off

➤ Precautions

- After the inverter is powered off, there will be residual electricity and residual heat on the enclosure, which may cause electrical shock or burns. Therefore, please wait at least 5 minutes before you operate the inverter.
- When powering off the system, please follow the sequence of operation instructions and safety regulations in this chapter.

Step 1: Issue the shutdown command to the inverter through the data collector or near-end APP software.

Step 2: Disconnect the AC circuit breaker between the inverter and the power grid.

Step 3: Set the DC SWITCH of the inverter to the “OFF” state.

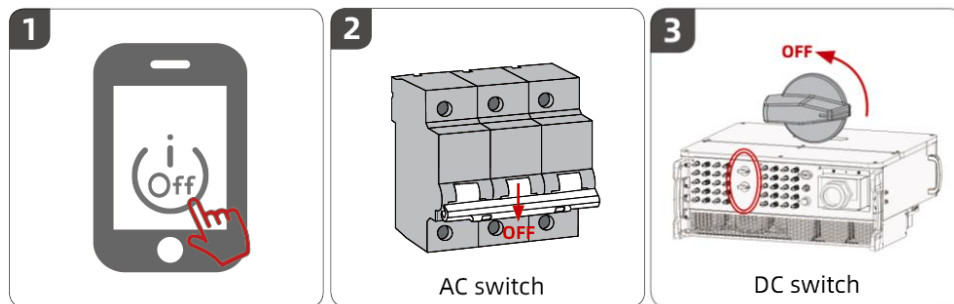



Figure 4-2 Powering off the inverter

--End of the chapter--

5 Maintenance and Troubleshooting


5.1 Maintenance Items and Cycles

 DANGER	
1.	Please read 1 Safety Precautions carefully before maintenance, and use a multimeter and other relevant instruments to detect the voltage between the metal parts that need to be or maybe touched and the grounding copper bars so as to avoid electric shock.
2.	During maintenance, please pay attention to the warning labels of the string inverter to avoid personal injury due to high voltage.
3.	During maintenance, please make sure that the DC Switch is in off state, and the circuit breaker between the inverter and the grid is disconnected.
4.	After the maintenance, close the DC input switch of the inverter and the circuit breaker between the inverter and the grid.

String inverters need to be regularly maintained. Common maintenance items and cycles are shown in the table below.

Table 5-1 Maintenance items and cycles of the string inverters

Parts	Item	Description	Solutions	Maintenance Cycle
Overall inspection	Appearance	Observe whether the inverter appearance is damaged or deformed.	Please replace it in time when it is serious.	Once every six months to one year
	System cleaning	Check if there are dusts and foreign matters on the surface of the inverter.	Clean up the foreign matters and dusts.	
		The heat sink is covered with dust and dirt.	Remove occlusion and clean dusts	
System running	Operating state	Check if there is any abnormal noise while the inverter is running.	If the problem is serious, please replace it in time.	Once every six months to one year
	Operating parameters	When the inverter is running, check whether the parameters are set correctly.	Troubleshoot abnormal settings	
Connection parts	Fall off or loose	Check if the cable connection is disconnected or loose.	Tighten connections as specified	Once every six months to one year
	Damage	Check if there is any damage on the cable. Especially check the surface of the cable that is in contact with the metal surface for traces.	If the problem is serious, please replace it in time.	
	Terminal	Check if the waterproof covers of the unused RS485, RJ45 or other terminals are locked tightly	Ensure that they are sealed well.	

 **Note:** Before wiping the heat sink, turn off the inverter normally, then disconnect the circuit breaker between the inverter and the grid, and then set the DC switch of the inverter into the OFF state. After powering off, wait at least 5 minutes before wiping the heat sink so as to avoid accidents.

5.2 Troubleshooting

Boost side

Fault word	ID	Fault/alarm name	Fault/alarm reason	Troubleshooting
Fault word 1	0	Auxiliary power fault	The voltage of the ± 12 V auxiliary power is abnormal.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
	2	Output hardware overvoltage	The output voltage exceeds the protection threshold specified by the hardware.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
	3	Hardware overcurrent (secondary)	The MPPT inductor current is too large.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
	4	MPPT1 hardware overcurrent	MPPT1 experiences overcurrent and reaches the hardware CBC time.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
	5	MPPT2 hardware overcurrent	MPPT2 experiences overcurrent and reaches the hardware CBC time.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
	6	MPPT3 hardware overcurrent	MPPT3 experiences overcurrent and reaches the hardware CBC time.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
	7	MPPT4 hardware overcurrent	MPPT4 experiences overcurrent and reaches the hardware CBC time.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
Fault word 2	2	EEPROM parameters back to default values	EEPROM read/write fails.	Fault reset or power off
	3	Historical fault storage failed	Historical faults fail to be stored.	Fault reset or power off
	12	Reverse input polarity	The input polarity is reversely connected.	Check whether the polarity of the connection is reversed.
	13	Abnormal insulation of positive busbar to ground	The insulation impedance of the positive busbar to ground is abnormal.	Check whether the positive busbar has grounding fault.
	14	Abnormal insulation of negative busbar to ground	The insulation impedance of the negative busbar to ground is abnormal.	Check whether the negative busbar has grounding fault.
Alarm word 1	0	SPD alarm	The SPD is faulty or is in a wrong state.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
	6	Boost-side open circuit alarm	An open circuit occurs inside the boost.	Please contact the Hopewind technician.
	7	Boost-side short circuit alarm	A short circuit occurs inside the boost.	Please contact the Hopewind technician.
	8	Battery string abnormal alarm	Battery string is abnormal.	1. Check whether the battery string configuration is abnormal. 2. Check whether the access of the battery board is abnormal. 3. Check whether the current sampling

Fault word	ID	Fault/alarm name	Fault/alarm reason	Troubleshooting
				of the battery string is abnormal.
	9	Positive busbar to ground insulation alarm	The insulation impedance of the positive busbar to ground is abnormal.	Find out the cause of abnormal impedance.
	10	Negative busbar to ground insulation alarm	The insulation impedance of the negative busbar to ground is abnormal.	Find out the cause of abnormal impedance.

Inverter side

Fault word	ID	Fault/alarm name	Fault/alarm reason	Troubleshooting
System fault status word	0	RAM self-test failed	RAM chip read/write fails.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
	1	EEPROM parameters back to default values	The EEPROM parameter list is newly added and the code is re-upgraded. The default value after initialization is different from that in EEPROM.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
	2	EEPROM read/write failed	EEPROM read/write fails.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
	3	FPGA version mismatch	FPGA version does not match with that of DSP	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
	4	Historical faults storage failed	Historical faults fail to be stored.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
	5	Internal communication fault	Internal communication fails.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
Hardware fault status word	0	Hardware overcurrent (secondary)	The current peak of inductor exceeds the hardware protection threshold.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
	3	A-phase hardware overcurrent	A-phase inductor current triggers CBC protection.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
	4	B-phase hardware overcurrent	B-phase inductor current triggers CBC protection.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
	5	C-phase hardware overcurrent	C-phase inductor current triggers CBC protection.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
	6	Busbar hardware overvoltage	The bus voltage exceeds the hardware overvoltage threshold.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.

Fault word	ID	Fault/alarm name	Fault/alarm reason	Troubleshooting
	7	Busbar neutral-point overvoltage	The bus neutral-point voltage exceeds the hardware overvoltage threshold.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
Grid fault status word	0	Uab overvoltage	Uab exceeds the overvoltage protection threshold specified by the system.	1. Confirm whether there is a fault such as a box transformer tripped on the AC side at the fault time. 2. Confirm whether the inverter has HVRT.
	1	Ubc overvoltage	Ubc exceeds the overvoltage protection threshold specified by the system.	1. Confirm whether there is a fault such as a box transformer tripped on the AC side at the fault time. 2. Confirm whether the inverter has HVRT.
	2	Uca overvoltage	Uca exceeds the overvoltage protection threshold specified by the system.	1. Confirm whether there is a fault such as a box transformer tripped on the AC side at the fault time. 2. Confirm whether the inverter has HVRT.
	3	Uab undervoltage	Uab is lower than the undervoltage protection threshold specified by the system.	Confirm whether the phase loss of the inverter occurs and whether the box transformer contacts are suitable, etc.
	4	Ubc undervoltage	Ubc is lower than the undervoltage protection threshold specified by the system.	Confirm whether the phase loss of the inverter occurs and whether the box transformer contacts are suitable, etc.
	5	Uca undervoltage	Uca is lower than the undervoltage protection threshold specified by the system.	Confirm whether the phase loss of the inverter occurs and whether the box transformer contacts are suitable, etc.
	6	Grid abnormal	The grid frequency or voltage exceeds the system allowed range.	1. Confirm whether the access to the grid is the nominal grid of the inverter. 2. Confirm whether the grid is connected.
	7	Grid voltage imbalance threshold exceeded	The grid voltage imbalance exceeds the system threshold.	Check whether the grid is abnormal.
	8	Grid overfrequency	The grid frequency exceeds the overfrequency protection threshold specified by the system.	1. Confirm whether the box transformer tripping and other faults occur on the AC side of the inverter through fault recording and event recording. 2. Confirm whether the frequency range and the time setting is reasonable.
	9	Grid underfrequency	The grid frequency is lower than the underfrequency protection threshold specified by the system.	1. Confirm whether the box transformer tripping and other faults occur on the AC side of the inverter through fault recording and event recording. 2. Confirm whether the frequency range and the time setting is reasonable.
	11	Anti-islanding protection	The grid experiences voltage loss.	Detect the causes of grid voltage loss, such as box transformer tripping, etc.
13	Grid voltage abnormal	The grid experiences voltage sudden change.	Check if the grid is normal.	

Fault word	ID	Fault/alarm name	Fault/alarm reason	Troubleshooting
	14	LVRT protection	The grid voltage exceeds the LVRT protection threshold.	Check if the grid is normal.
	15	HVRT protection	The grid voltage exceeds the HVRT protection threshold.	Check if the grid is normal.
Inverter fault status word	0	Module A-phase software overcurrent	The effective value of the inductor current exceeds the protection threshold.	Reset the fault.
	1	Module B-phase software overcurrent	The effective value of the inductor current exceeds the protection threshold.	Reset the fault.
	2	Module C-phase software overcurrent	The effective value of the inductor current exceeds the protection threshold.	Reset the fault.
	3	Module current imbalance	Three-phase current imbalance exceeds the threshold.	Reset the fault.
	5	Module overtemperature	The temperature of the radiator is higher than the protection threshold.	Check whether the spoiler fan is normal.
	6	Internal overtemperature	The ambient temperature is higher than the protection temperature.	Check whether the spoiler fan is normal.
	9	Residual current abnormal	The residual current exceeds the threshold.	1. If it happens accidentally, it may be caused by the accidental abnormality of the external line. After the fault is cleared, it will resume work without manual intervention. 2. If it occurs frequently or cannot be recovered for a long time, please check whether the ground impedance of the PV string is too low.
Bus fault status word	1	Bus short circuit	The bus voltage dip exceeds the threshold.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
	5	Bus overvoltage	The bus voltage exceeds the specified threshold.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
	6	Bus undervoltage	The bus voltage is lower than the specified threshold.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
	7	Bus voltage imbalance	The voltage imbalance of the positive and negative busbars exceeds the specified threshold.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
	8	High DC input voltage	The DC input voltage exceeds the specified threshold.	1. Check whether the components are over matched. 2. Check whether the input voltage detection circuit is normal.
	9	Low DC input voltage	The DC input voltage is lower than the specified threshold.	Check whether the switch is disconnected.
Other	0	AC relay fault	The relay status is wrong.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.

Fault word	ID	Fault/alarm name	Fault/alarm reason	Troubleshooting
	3	AC SPD alarm	The AC side SPD feedback status is wrong.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
	4	Internal fan fault	Fan fails or the feedback signal is abnormal.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.
	5	External fan fault	Fan fails or the feedback signal is abnormal.	1. Check whether it can work normally after reset. 2. If it occurs frequently, please contact the Hopewind technician.

--End of the chapter--

6 Inverter Disposal

6.1 Removing the Inverter

Before operating, make sure that the circuit breaker between the inverter and the grid is disconnected, and the DC switch is placed in the OFF state.

- 1) Disconnect all electrical connections to the inverter, including the AC output cables, RS485 communication cables, DC input cables and PE cables.
- 2) Remove the inverter from the mounting plate.

6.2 Replacing the Inverter

After disassembling the old inverter, if it is necessary to replace it with a new one, please follow the operation instructions in **Chapter 3** and **4**.

6.3 Packing the Inverter

- If you still keep the original package of the inverter, please put it into the original package and firmly seal the package with tape.
- If you can't find the original package, please use a hard carton suitable for the weight and dimension of the inverter to firmly package it.

6.4 Disposing the Inverter

When the service life of the inverter expires or the inverter is replaced due to failure, it can be disposed according to the applicable electrical waste disposal laws of the place where the inverter is installed, or it can be handed over to Hopewind customer service personnel.

--End of the chapter--

Warranty

If the product has any fault in the warranty period, we will provide cost-free repair or replacement service.

Any faults arising from the following conditions shall be out of the warranty:

- Dismantle the product without our permission or maintain in wrong way;
- Out of the warranty period;
- Use the product out of the application scope stipulated in related international standard;
- Fail to install and operate the product according to the user manual;
- Use the product in improper environment;
- Use non-standard or those components/software not provided by our company;
- Damaged due to the failure of external devices;
- Any accidental damage arising from personal dismantlement or maintenance by yourself.

When the client requires repair service for above mentioned faults, we will offer paid repair service after it's determined by our service department. Please contact us in advance if you want repair or alteration service.

Contact Us

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