



**HOPEWIND**

***HSHV Series***  
**String Inverter**  
(320K, 330K, 350K, 385K)

# User Manual

Version: V1.2

Shenzhen Hopewind Electric Co.,Ltd.



# HSHV Series String Inverter (320K, 330K, 350K, 385K) **User Manual**

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# About This Manual




## ➤ For Readers

This user manual is applicable to technicians who install, commission, use or maintain the inverter. Before operating the product, please read this manual carefully. Users are supposed to have basic knowledge of 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, machine configuration and product data.
3 System Installation	This chapter describes the receiving inspection, installation tools, installation environment, reserved space, fixing method and cable connection.
4 Commissioning Guide	This chapter describes how to check and commission the string inverter and how to power it on.
5 Maintenance and Troubleshooting	This chapter describes the daily maintenance methods and intervals and troubleshooting of the inverter.
6 Inverter Disposal	This chapter describes the basic requirements and precautions when removing, replacing and disposing the inverter.

## ➤ Warning Signs in This Manual

 <b>DANGER</b>	Major potential danger (especially refer to high voltage danger). Failure to observe the rules might cause severe personal injury or property loss.
 <b>WARNING</b>	Ordinary potential danger. Failure to observe the rules may cause personal injury or property loss.
 <b>CAUTION</b>	Ordinary potential danger. Failure to observe the rules may cause equipment damage or property loss.

## ➤ Glossaries and Abbreviations

Terms/Abbreviations	Description
MPPT	Maximum Power Point Tracking
PV string	Multiple solar cell arrays in parallel or series
EEPROM	Electrically Erasable Programmable Read-Only Memory
hopeCloud	Hopewind remote intelligent O&M cloud service platform



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# 1 Safety Precautions

This chapter describes the safety precautions to be observed during installation, operation and maintenance of inverter. Please carefully read them before any operation and follow them strictly, otherwise it may cause equipment damage or personal injury.

When operating the inverter, please pay particular attention to the following items:



1. Only qualified technicians can install, operate and maintain the inverter.
2. Do not incline or collide the inverter cabinet during transportation.
3. The inverter should be protected from liquids, sundries or debris as they may cause a short circuit inside.
4. The inverter must be isolated from external electrified devices before completion of installation and maintenance.
5. Related protective measures are required to avoid electric shock, fires or other accidents.



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

## 1.1 Transportation



1. Please keep the inverter well packed and upward to avoid strong vibration and collision during the transportation.
2. Please transport the inverter with package and operate in accordance with the signs and labels during transportation. For the meanings of the signs, please refer to **2.6 Labels on the Package**.
3. Please ensure that the transportation environment can meet relevant requirements in **2.10 Ambient Requirements**.

## 1.2 Storage



The storage environment should meet the corresponding requirements in **2.10 Ambient Requirements**.

### Long-term storage:

If the inverter has been in the no power supply state for over three weeks before or after installation and commissioning, it's regarded as in long-term storage. For long-term storage of the inverter, please pay attention to:

- Store the inverter in a well-ventilated environment and keep it away from stagnant water.
- Keep the inverter at least 2 meters away from explosives and inflammables.
- Protect the inverter from such harsh surroundings as quenching, sudden heat, collision, dust, etc. to avoid damage.
- Take regular inspections at least once a week. Check if the package is intact and immediately replace it if there is any damage.
- Do not store the inverter without package.

## 1.3 Installation



1. Before operation, confirm that the DC Switch of the string inverter and the AC side circuit breaker are disconnected, and the shell of the inverter is reliably grounded.
2. The inverter must be grounded as specified and the dimensions of grounding conductor must comply with safety regulations to ensure personal safety.
3. Do not place explosives and inflammables around the inverter.



1. The inverter should be installed in a well-ventilated environment without exposure to sunshine.
2. It is recommended to fix the inverter by four people to avoid mechanical damage. Please take safety measures to prevent injury during installation.
3. Prevent liquids, sundries and debris from entering the inverter during installation and maintenance as they may cause short circuit inside the inverter.
4. When connecting external cables, pay attention to the cable torque as 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. Terminals of power cables connected to the inverter must comply with national standard. Non-standard terminals will cause overheating. In severe cases, fire accidents will occur.
6. The installation site must meet requirements in **2.10 Ambient Requirements**.

## 1.4 Operation



**DANGER**

1. Keep the door panel of the inverter closed during operation to avoid electric shock and other personal injuries and to protect the inverter from salt spray, moisture, dust or other conductive materials.
2. Keep the inverter away from corrosives during operation.
3. Do not place explosive and inflammable substances within two meters from the inverter.
4. Do not touch the internal PCBAs, parts, cables and terminals when the inverter is powered on.
5. Please immediately switch off the DC Switch and the circuit breaker on the grid-connected cabinet of the AC side in case of any fault, strange smell or abnormal sound.



**WARNING**

1. The inverter can only be powered on when all installation is completed and cables are correctly connected.
2. Do not conduct any insulation resistance test or withstand voltage test as wrong tests will damage the inverter.
3. Wirings between the inverter and external devices must be disconnected during the insulation test and withstand voltage test on external devices.

## 1.5 Maintenance



**DANGER**

1. Please disconnect the circuit breaker on the AC side first, then disconnect the DC switch, and wait for at least 5 minutes before maintenance.
2. Please prevent irrelevant people from entering the site during maintenance.
3. Please maintain the inverter with proper tools and test devices after you are familiar with this manual.
4. Please wear insulating gloves and anti-smashing shoes for personal safety.



**WARNING**

Regularly inspect and maintain the inverter. Please refer to **5 Maintenance and Troubleshooting** for details.

--End of the chapter--



# 2 Product Description

## 2.1 Product Introduction

HSHV series three-phase string on-grid inverter is independently developed by Hopewind, and its main function is to convert the DC power generated by PV strings into AC power and feed it into the power grid.

HSHV320K-G01, HSHV330K-G01, HSHV350K-G01 and HSHV385K-G01 are string inverters with 32 input interfaces, which are only suitable for the LPVGS (Large Photovoltaic Grid System) with a 1500 V system and 800 V AC grid connection.

### 2.1.1 Schematic Diagram

HSHV320K-G01/HSHV330K-G01/HSHV350K-G01/HSHV385K-G01 is connected to the inverter through 32 PV strings, and there are 8 MPPT circuits inside the inverter to track the strings, and then the DC current is converted into three-phase AC current through the inverter circuit.

The schematic diagram of HSHV320K-G01/HSHV330K-G01/HSHV350K-G01/HSHV385K-G01 is shown in Figure 2-1.

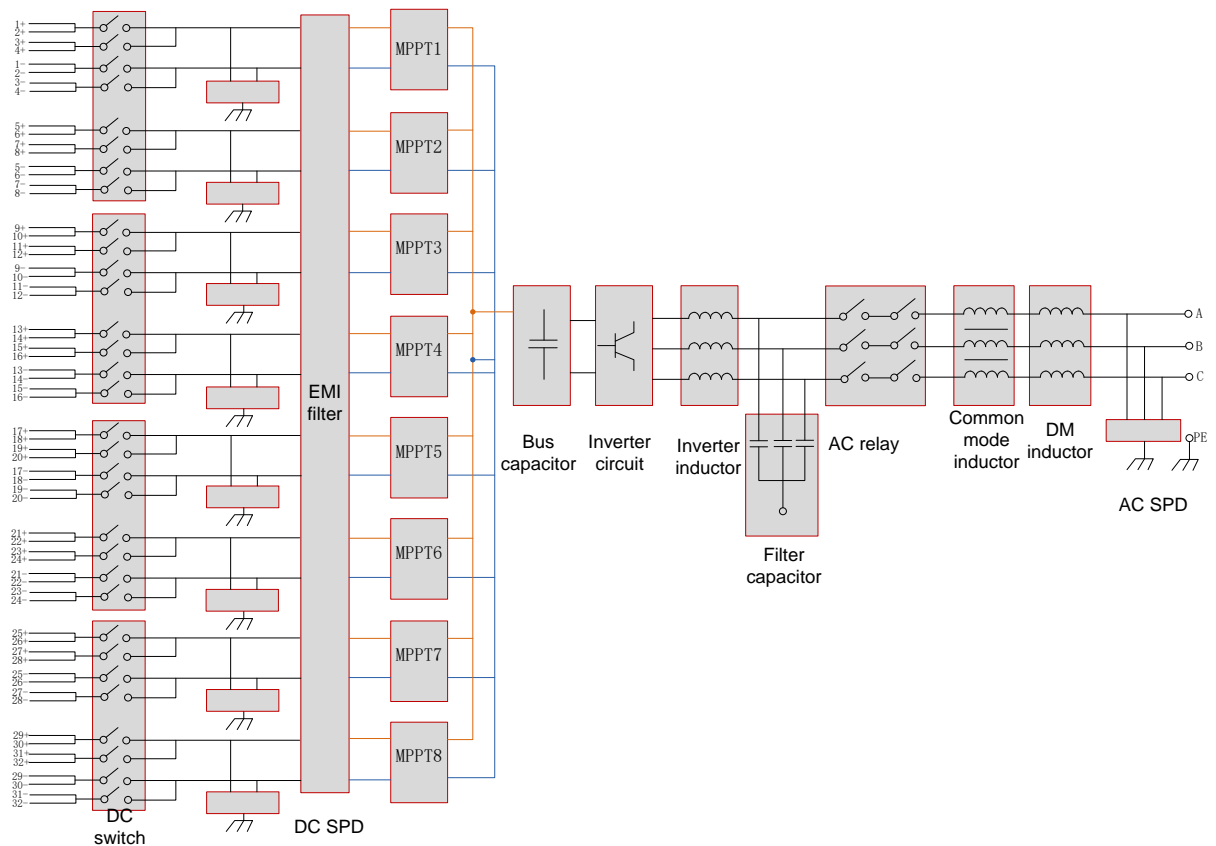


Figure 2-1 HSHV320K-G01/HSHV330K-G01/HSHV350K-G01/HSHV385K-G01 schematic diagram

## 2.1.2 Working Mode

HSHV three-phase string inverter includes three working modes: standby mode, operating mode and shutdown mode. The switching conditions for the three modes are shown in Figure 2-2.

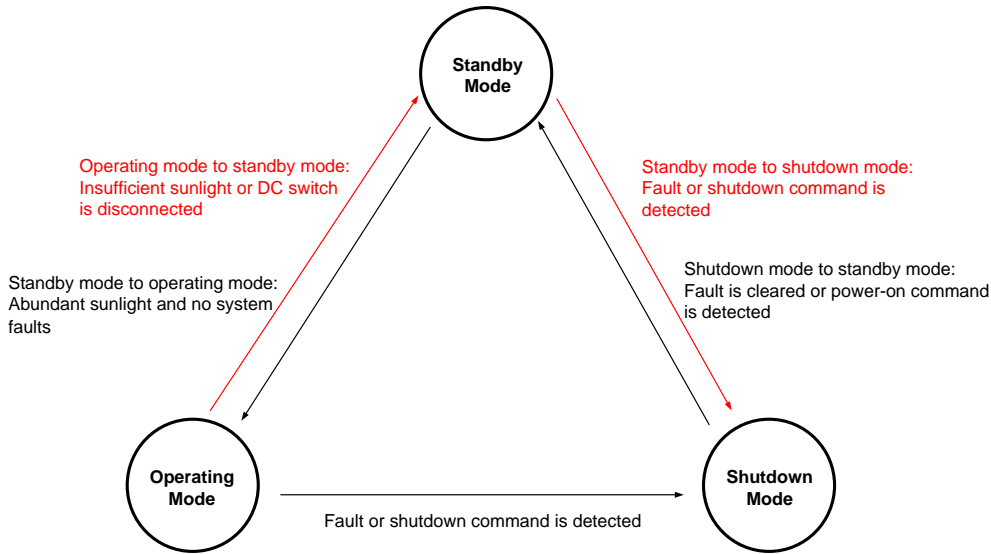


Figure 2-2 HSHV string inverter working mode

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 diagram of the string inverter; Figure 2-4 shows the networking design scheme of the utility-scale PV power plant; and Figure 2-5 shows the networking design scheme of the distributed PV power plant.

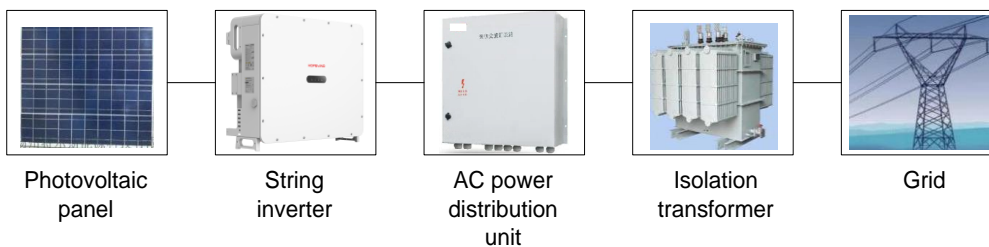


Figure 2-3 Networking application diagram of string inverters

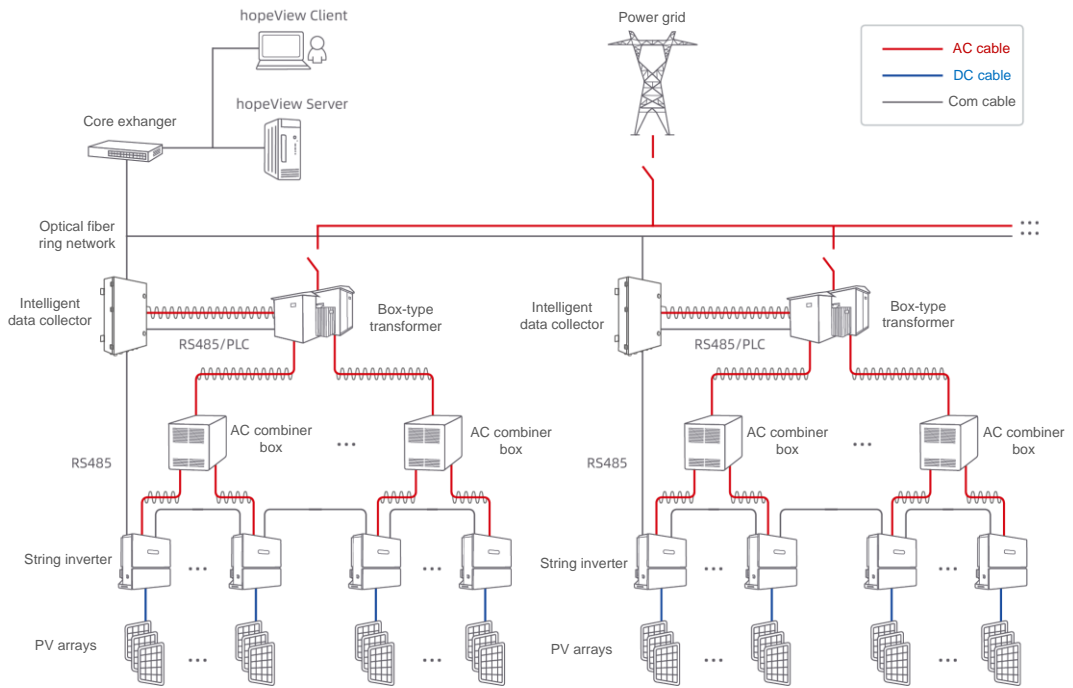


Figure 2-4 Networking design scheme of the utility-scale PV power plants

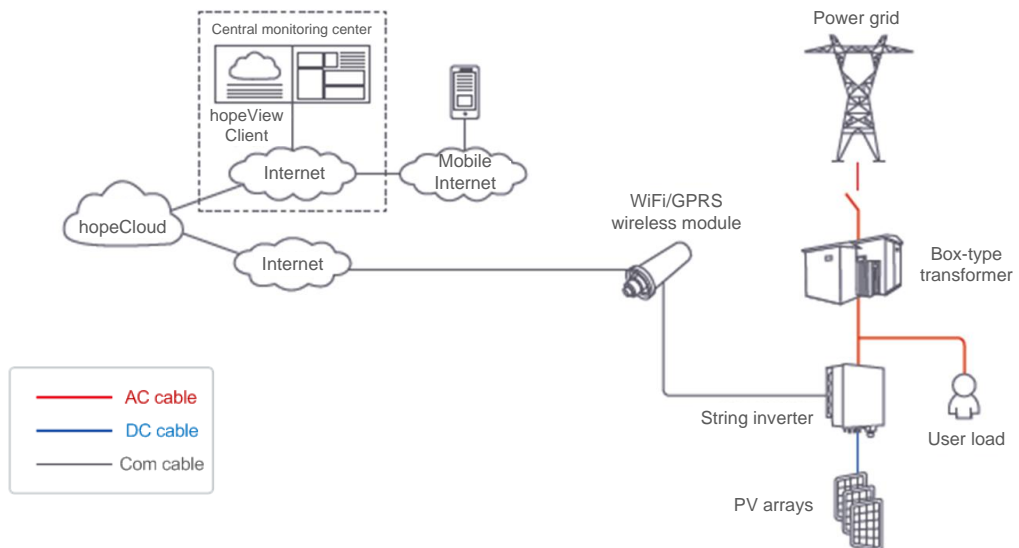


Figure 2-5 Networking design scheme of distributed PV power plants

### 2.2.2 Supported Power Grid Types

The power grid type supported by HSHV320K-G01, HSHV330K-G01, HSHV350K-G01 and HSHV385K-G01 is IT.

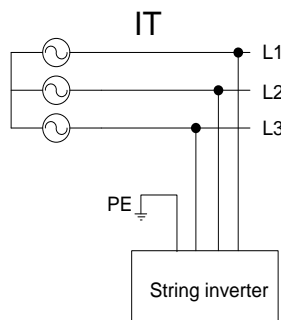


Figure 2-6 Schematic diagram of IT

## 2.3 Naming Rules

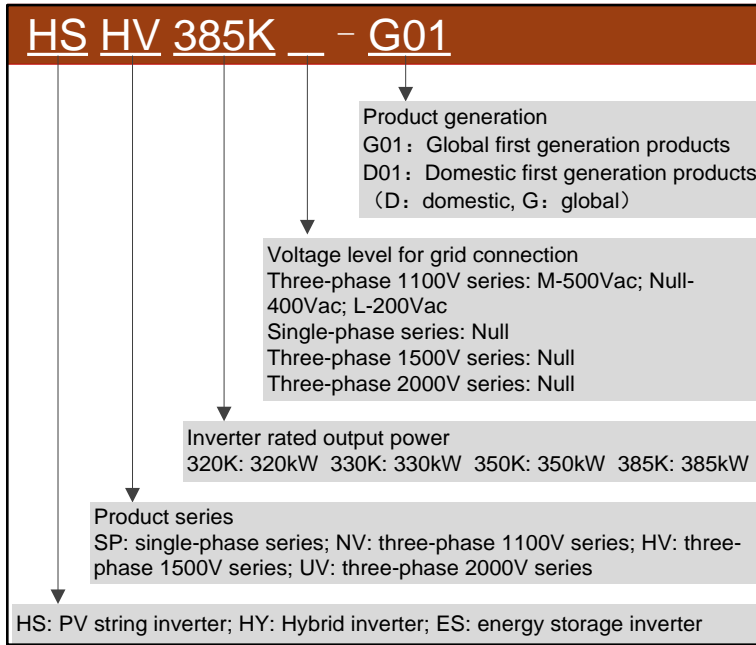


Figure 2-7 Naming rules

## 2.4 Nameplate

**HOPEWIND** GRID-CONNECTED PV INVERTER

Model: HSHV320K-G01

Serial No.: Serial number label

Max. Input Voltage: 1500Vd.c.  
MPP Voltage Range: 500-1500Vd.c.  
Max. Input Current: 8\*60A  
Isc PV: 8\*90A **DC**

Rated Output Voltage: 800Va.c. 3P+PE  
Rated Output Frequency: 50Hz/60Hz  
Rated Output Power: 320kW@50°C  
Max. Output Apparent Power: 320kW  
Max. Output Current: 230.9A  
Power Factor: 0.8leading ... 0.8lagging **AC**

Operating Ambient Temperature: -25°C ... +60°C  
Ingress Protection: IP66  
Protection Class: I  
Overvoltage Category: III[AC], II[DC]

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**HOPEWIND** GRID-CONNECTED PV INVERTER

Model: HSHV330K-G01

Serial No.: Serial number label

Max. Input Voltage: 1500Vd.c.  
MPP Voltage Range: 500-1500Vd.c.  
Max. Input Current: 8\*60A  
Isc PV: 8\*90A **DC**

Rated Output Voltage: 800Va.c. 3P+PE  
Rated Output Frequency: 50Hz/60Hz  
Rated Output Power: 320kW@50°C, 330kW@45°C  
Max. Output Apparent Power: 330kW  
Max. Output Current: 238.2A  
Power Factor: 0.8leading ... 0.8lagging **AC**

Operating Ambient Temperature: -25°C ... +60°C  
Ingress Protection: IP66  
Protection Class: I  
Overvoltage Category: III[AC], II[DC]

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**HOPEWIND** GRID-CONNECTED PV INVERTER

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**Model:** HSHV350K-G01

**Serial No.:** Serial number label

Max. Input Voltage: 1500Vd.c.  
 MPP Voltage Range: 500-1500Vd.c.  
 Max. Input Current: 8\*60A  
 Isc PV: 8\*90A

**DC**

Rated Output Voltage: 800Va.c. 3P+PE  
 Rated Output Frequency: 50Hz/60Hz  
 Rated Output Power: 320kW@50°C, 350kW@45°C  
 Max. Output Apparent Power: 350kW  
 Max. Output Current: 252.6A  
 Power Factor: 0.8leading ... 0.8lagging

**AC**

Operating Ambient Temperature: -25°C ... +60°C  
 Ingress Protection: IP66  
 Protection Class: I  
 Overvoltage Category: III[AC], II[DC]

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**HOPEWIND** GRID-CONNECTED PV INVERTER

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**Model:** HSHV385K-G01

**Serial No.:** Serial number label

Max. Input Voltage: 1500Vd.c.  
 MPP Voltage Range: 500-1500Vd.c.  
 Max. Input Current: 8\*60A  
 Isc PV: 8\*90A

**DC**

Rated Output Voltage: 800Va.c. 3P+PE  
 Rated Output Frequency: 50Hz/60Hz  
 Rated Output Power: 320kW@50°C, 385kW@40°C  
 Max. Output Apparent Power: 385kW  
 Max. Output Current: 277.9A  
 Power Factor: 0.8leading ... 0.8lagging

**AC**

Operating Ambient Temperature: -25°C ... +60°C  
 Ingress Protection: IP66  
 Protection Class: I  
 Overvoltage Category: III[AC], II[DC]

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**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.

 <b>CAUTION</b>
<p>There are components on the board that are sensitive to static electricity. Anti-static measures must be taken before touching the board.</p> <p>When touching the board, please be careful to avoid scratching the electrical components.</p>

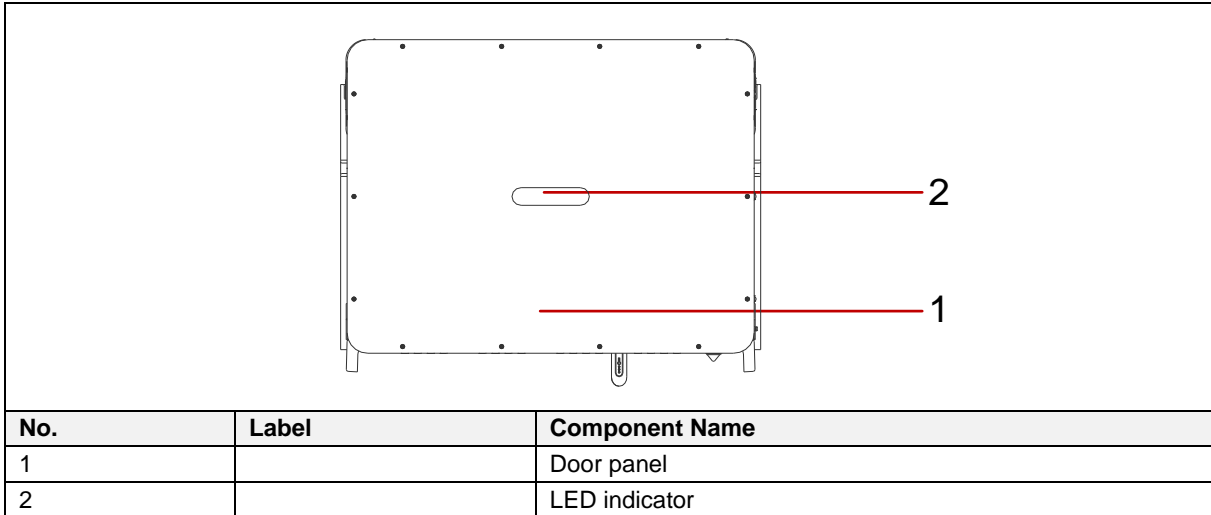






Figure 2-8 Front view of the inverter

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

Table 2-1 LED indicator description

Indicator light	Description	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	Alarm
		Red light solid on	Fault
Remarks: <b>Slow blinking:</b> 1 second on and 2 seconds off in cycles <b>Fast blinking:</b> 0.5 seconds on and 0.5 seconds off in cycles			

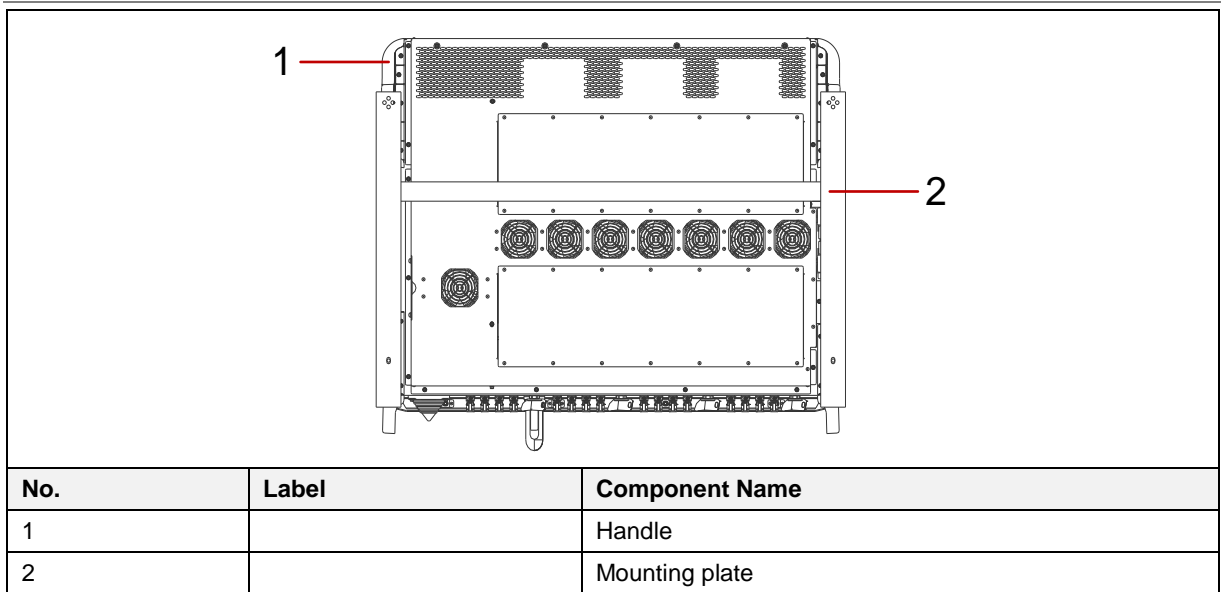


Figure 2-9 Back view of the inverter

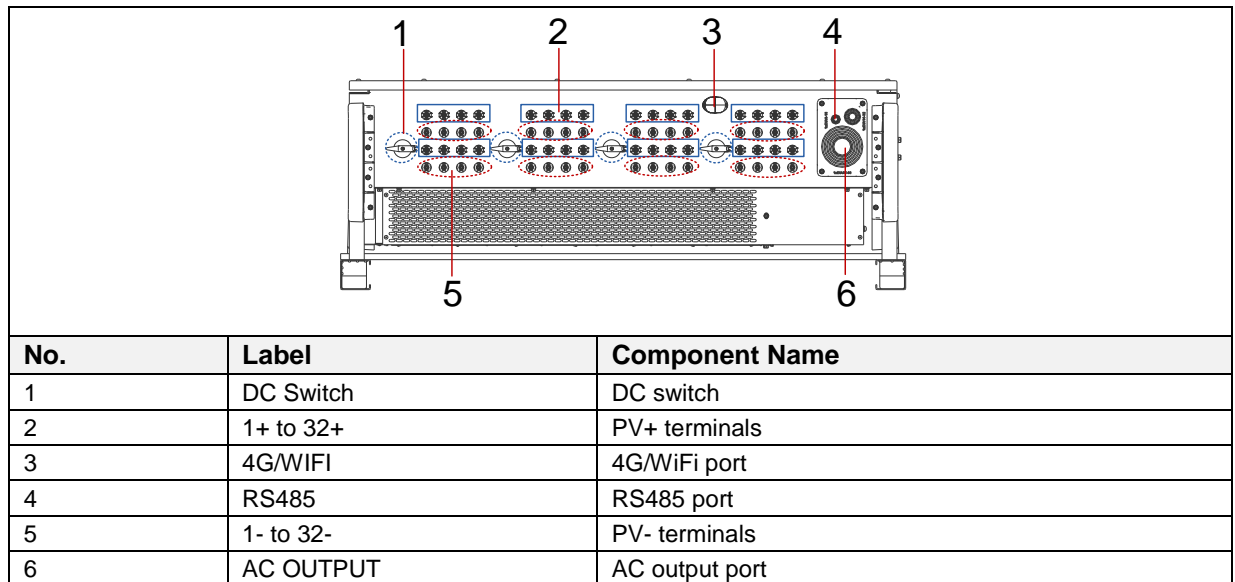
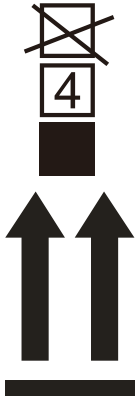





Figure 2-10 Bottom view of the inverter (Interface description)







## 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 inverter caused by intense collision and friction during transportation and moving
	Place vertically and no tilting		Keep dry. Prevent the inverter from getting wet or damp

## 2.7 Warning Signs on the Inverter

For personal and property safety, the following warning labels may be placed inside and outside the inverter.

	<b>PE:</b> Grounding point indicating the position for connecting the PE cable
	<b>Danger:</b> High voltage hazard. Failure to observe the rules might cause serious personal injury or property loss.
	<b>Warning:</b> Ordinary potential hazard. Failure to observe the rules might cause personal injury or property loss.
	<b>Hot surface sign:</b> Pay attention to the hot surface to prevent being burnt.
	<b>Refer to the user manual:</b> Please refer to the user manual for detailed instructions.
	<b>Discharge sign:</b> Do not touch the live parts until 10 minutes after disconnection from the power source to prevent electric shock.


## 2.8 Technical Parameters

	Model	HSHV320K-G01	HSHV330K-G01	HSHV350K-G01	HSHV385K-G01
Input parameters	Max. input voltage	1500 V			
	Starting voltage	550 V			
	MPPT voltage range	500–1500 V			
	MPPT range full load	860–1300 V			
	Rated input voltage	1080 V			
	Max. input current per MPPT	60 A			
	Max. short-circuit current	90 A			
	Number of DC inputs	8 x 4			
	Number of MPP trackers	8			
Output parameters	Rated output power	320 kW	330 kW	350 kW	385 kW
	Max.output apparent power	320 kVA	330 kVA	350 kVA	385 kVA
	Max.output power	320 kW	330 kW	350 kW	385 kW
	Rated output voltage	800 V (3P + PE)			
	Operating voltage range	640–920 V			
	Rated grid frequency	50 Hz/60 Hz			
	Rated output current	230.9 A	238.2 A	252.6 A	277.9 A
	Max. output current	230.9 A	238.2 A	252.6 A	277.9 A
	Power factor	> 0.99 (0.8 leading–0.8lagging)			
	Harmonic(THD)	< 3% (at rated power)			
Efficiency	Max. efficiency	99.01%			
	European efficiency	98.70%			
Protection	DC switch	Supported			
	DC polarity reverse protection	Supported			
	Insulation impedance detection	Supported			
	AC short circuit protection	Supported			
	PV string fault detection	Supported			
	RCD detection	Supported			
	Surge protection	DC type II/AC type II			
	Anti-islanding protection	Supported			
	Output overcurrent protection	Supported			
	Night SVG function	Optional			
PID recovery	Optional				
Display and communication	Display	LED, Wi-Fi/APP			
	Communication Protocols	Modbus TCP, IEC104			
	Communication interface	PLC; RS485			
Conventional parameters	Operating temperature range	-25°C to +60°C			
	Operating altitude	4000 m (derating is required above 3000 m)			4000 m (derating is required above 2000 m)
	Noise index	≤ 80 dB			
	Cooling system	Smart air cooling			
	Relative humidity	0–100%			
	Standby power consumption	< 20 W			
	Overvoltage category	DC II/ AC III			
	IP rating	IP66			
	Topology	Transformerless			
	DC connection type	MC4 plugging terminal (1500 V)			
AC connection type	OT/DT terminal (≤ 400 mm <sup>2</sup> )				
Technical indicators	Standard(more available upon request)	IEC 62109, IEC 61000, IEC 61727, IEC 62116, IEC 60068, IEC 61683, EN 50549-1, EN 50549-2, CEA, EN 50530, MEA (385K), PEA (385K)			

## 2.9 Mechanical Parameters

➤ Dimension and Weight

Model	W*H*D (mm)	Net weight (kg)
HSHV320K-G01	1100*868*418	≤ 135
HSHV330K-G01		
HSHV350K-G01		
HSHV385K-G01		

 Note: The dimension does not contain mounting lugs, handles, pads and so on. Dimension error: ±10 mm.

➤ Dimensions of the Inverter and the Mounting Plate

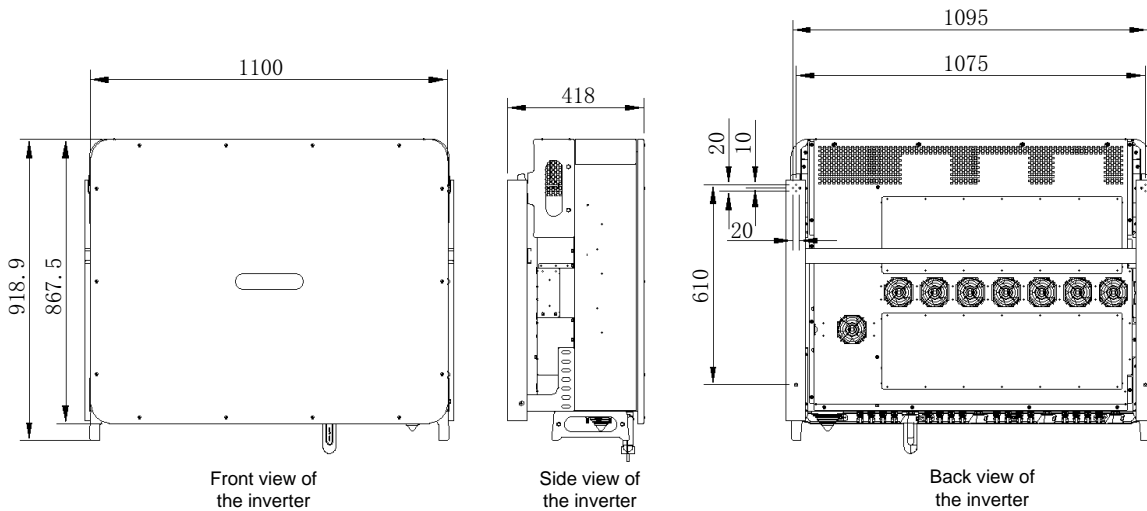


Figure 2-11 Dimensions of the inverter and the mounting plate (unit: mm)

## 2.10 Ambient Requirements

<b>Transportation environment</b>	<b>Requirements</b>
Type of shipping	Waterways, railways, highways, aviation, etc.
Ambient temperature	-40°C to +70°C
Relative humidity	≤ 95% when the temperature is +40°C
Mechanical conditions	The vibration should not exceed the following limits: 2 Hz ≤ f < 9 Hz, displacement 7.5 mm; 9 Hz ≤ f < 200 Hz, acceleration 20 m/s <sup>2</sup> ; 200 Hz ≤ f < 500 Hz, acceleration 40 m/s <sup>2</sup> .
<b>Storage environment</b>	<b>Requirements</b>
Storage place	Store in a warehouse with air circulation, no harmful gases, no flammables explosives and no corrosives. Avoid strong mechanical vibration and impact and stay away from strong magnetic fields.
Ambient temperature	-40°C to +70°C
Relative humidity	≤ 100%
Mechanical conditions	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 <sup>2</sup> ;
<b>Operation environment</b>	<b>Requirements</b>
	<b>Normal operating state</b>
Installation site	<ul style="list-style-type: none"> <li>Usually installed outdoors with the bottom of the PV string not exposed to direct sunlight.</li> <li>Do not install the inverter in areas where flammable and explosive substances are stored.</li> <li>Avoid direct sunlight, rain and snow to extend the life of the inverter. It is recommended to install it in a sheltered place. If it cannot be satisfied, please build a sunshade.</li> </ul>
Ambient temperature	-25°C to +60°C
Relative humidity	≤ 100%, internal condensation allowed
Altitude	≤ 4000 m. In addition, HSHV320K-G01, HSHV330K-G01 and HSHV350K-G01 requires derating at altitudes above 3000 m, and HSHV385K-G01 requires derating at altitudes above 2000 m.
Mechanical conditions	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 <sup>2</sup>

--End of the chapter--





# 3 System Installation

## 3.1 Receiving Inspection

After confirming that the outer packaging is intact, please perform unpacking inspection. Unpack the box and check whether the appearance of the string inverter is good. When opening the packing box, please use tools carefully to avoid scratches.

The string inverter has been rigorously tested and inspected before ex-work, but accidental damage may occur during transportation, so please check the string inverter immediately after receiving it. If there is any damage or omissions, please contact Hopewind as soon as possible and our staff will serve you.

## 3.2 Installation Tools Preparation

Tool or equipment	Purpose	Remarks
Phillips screwdriver (PH2)	Loosen/tighten the screws on the baffles of the output terminals.	Bolt spec: M5
Tube terminal crimping pliers	Crimp the communication cable terminal.	/
Socket wrench	Connect the ground cable and AC side cables and install the mounting plate in the wall-mounted mode.	Ground connection bolt: M6; Expansion bolt: M8; AC wiring fixing bolt: M12
MC4 Terminal crimping pliers	Crimp MC4 terminal	The input cable needs to be crimped into the MC4 terminal before it can be connected to the PV+ / PV-terminal on the string inverter.
MC4 Removal tool	Remove MC4 terminal	/
Wire stripper	Strip wires	/
Multimeter	Measure voltage to ensure safety during wiring and installation	The max value of DC volt must be larger than 1500 V DC.
Safety protective equipment	Labor protection necessary for construction	Insulation shoes, gloves, etc.
Drilling equipment	Wall-mounted installation	/

## 3.3 Installation Environment Requirements

- Please refer to **1 Safety Precautions** for the environmental requirements for installing the string inverter.
- The installation method and position must be suitable for the weight and size of the string inverter. For more details, please refer to **2.9 Mechanical Parameters**.
- The string inverter should be installed in a well-ventilated environment. Protecting the inverter from direct sunlight, rain and snow can extend the life of the inverter. It is recommended to choose a sheltered installation site. If it cannot be satisfied, please build a sunshade.
- Do not install the inverter in a location within easy reach as the temperature of the chassis and heat sink will be high during operation.

### 3.4 Installation Clearance Requirements

During installation, enough space must be reserved around the string inverter for heat dissipation and maintenance.

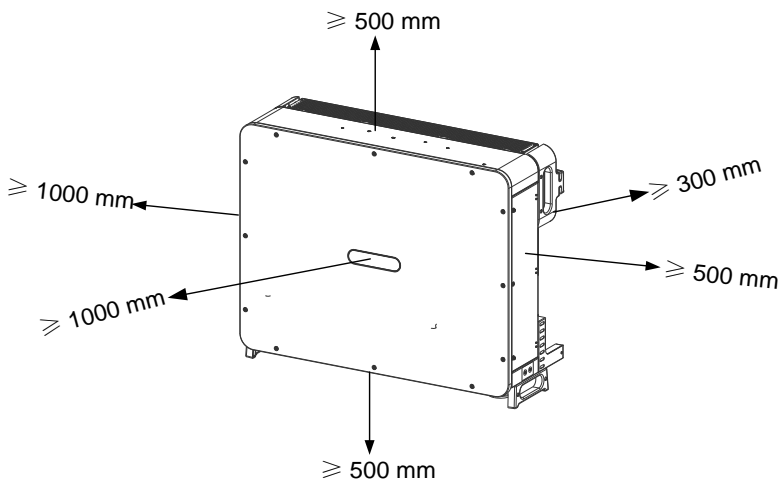


Figure 3-1 Installation space of the string inverter



Note:

- 1) If installed in a sandy site or grass, take protective measures to prevent debris from entering the inverter.
- 2) Wall-mounted installation is not allowed as enough clearance should be reserved on the back.

Please install the string inverter vertically, and the backward inclination angle should not exceed  $15^\circ$  to ensure heat dissipation.

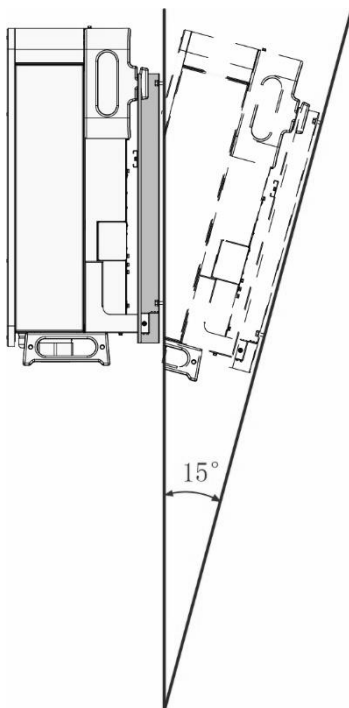


Figure 3-2 Installation inclination angle of the string inverter

## 3.5 Installation Method

Please install and fix the mounting plate first and then hang and fix the inverter on the mounting plate. Choose bracket installation according to actual installation environment.



### WARNING

1. Please refer to **1 Safety Precautions** for installation precautions and **3.3 Installation Environment Requirements** for installation environment requirements.
2. During installation, it must be confirmed that the on-site installation position can bear the total weight of the inverter and accessories to avoid falling.
3. It is recommended that four people work together to fix the inverter to avoid mechanical injury. During installation, safety measures should be taken to prevent damage.
4. Please install it vertically or tilt it up to 15° backward to facilitate heat dissipation. Do not install the inverter at an angle (tilt forward, tilt backward > 15°, roll), horizontally, or upside down.
5. Wall-mounted installation is not allowed as enough clearance should be reserved on the back.

#### ➤ Bracket Installation

Note: Before hanging the inverter, please ensure that the installation surface is hard enough to bear the inverter.

#### ➤ Installation steps

1. Take out the inverter and the mounting plate from the package and assemble the mounting plate first with the screws.
2. Confirm the dimensions of the holes for the mounting plate and drill holes on the bracket, and then install the mounting plate on the bracket with 6pcs M8 combination screws (inverter accessories).
3. Hang the inverter on the mounting plate.
4. Fix the inverter on the mounting plate with 2pcs M6 screws (inverter accessories) on both sides.

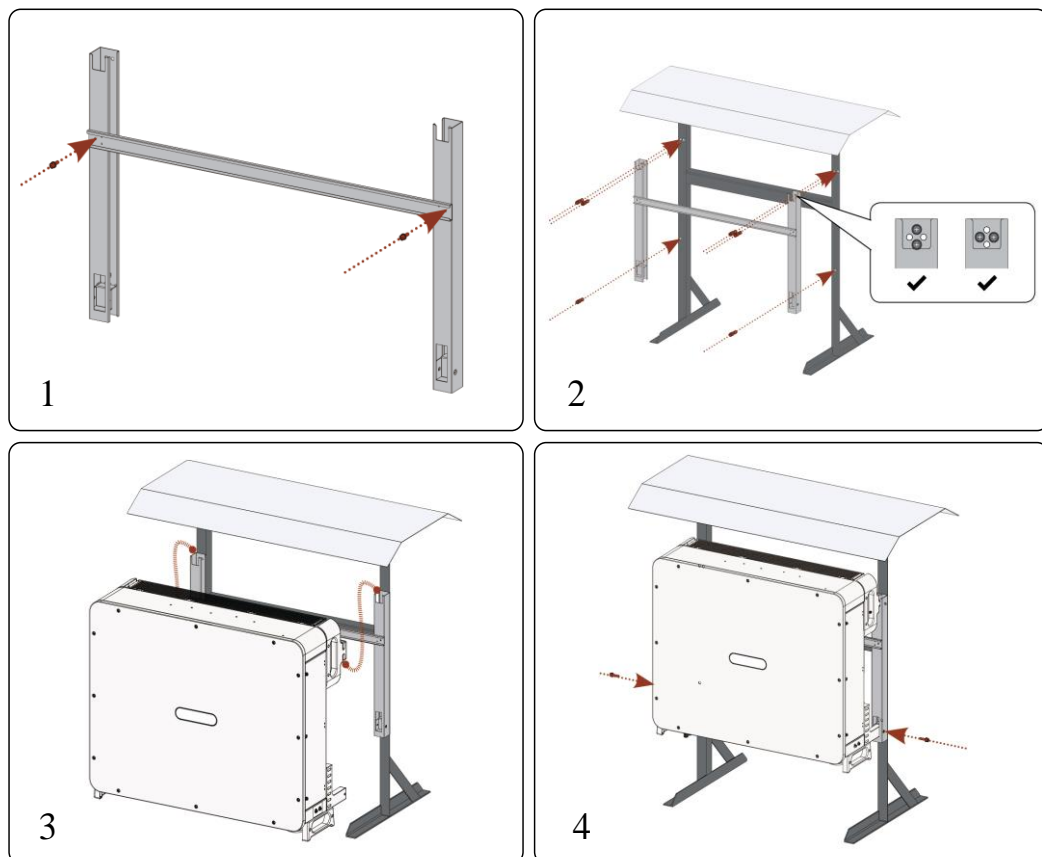


Figure 3-3 Bracket installation

### 3.6 Electrical Connections

#### 3.6.1 Cable Requirements

The cables should meet relevant national standards and can meet the load requirements.

➤ Power cables

Select the cable specifications based on the electrical data of the inverter and such factors as environmental temperature, current and margin.

➤ Communication cables

As weak communication signal is susceptible to external interference, the communication cable should be equipped with shielding layers, and the shielding layers should be grounded, as shown in the following figure. You can also refer to the relevant document *GB 50217-2007 Code for design of cables of electric engineering*.

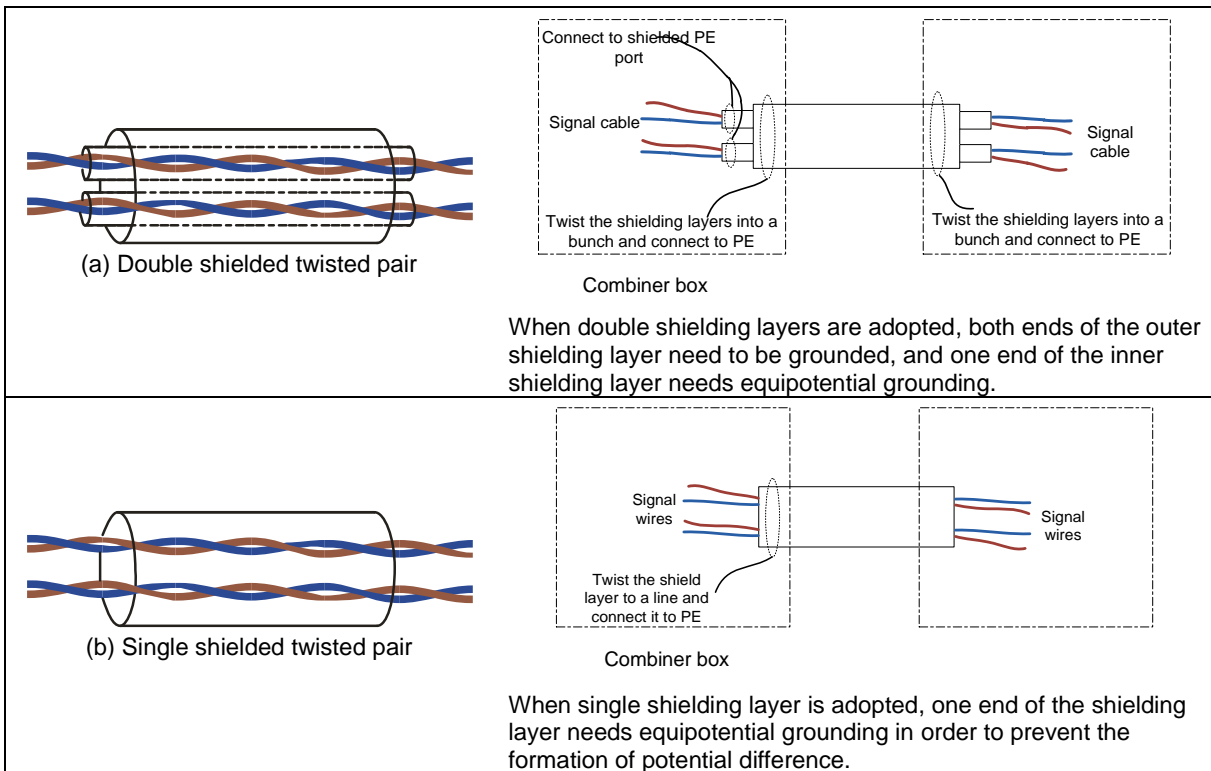


Figure 3-5 Shielded twisted pair

#### 3.6.2 Cable Selection

Name	Tag No.	Recommended Cable Specifications	Remarks
PV input cable	1+ to 32+ 1- to 32-	Industry general PV cable, model: PV1-F, cross-sectional area: 4.0 mm <sup>2</sup> –6.0 mm <sup>2</sup>	None
AC output cable		3-core (A, B, C) outdoor cable, cross-sectional area: copper: 80 mm <sup>2</sup> –185 mm <sup>2</sup> aluminum: 185 mm <sup>2</sup> –400 mm <sup>2</sup>	Outer diameter: 65 mm–70 mm
RS485 communication cable		Special communication cable or 4-core/2-core shielded twisted pair with a cross-sectional area of ≥ 0.75 mm <sup>2</sup>	Outer diameter: 18 mm–25 mm
PE cable	PE	At least 1 special PE cable, cross-sectional area: 1/2 of that of the AC output cables	None

### 3.6.3 Torque Requirements


When fastening the cable connection, the tightening torque must meet the requirements in the following table. "General connection (GC)" refers to the non-electrical connection for fixing; "High-tightness connection (HC)" refers to the connection that needs to ensure sealing, heat dissipation, shielding, conduction and other occasions.

Table 3-1 Torque requirements for cable connection

Thread spec	Copper bar				Aluminum bar or copper clad aluminum bar				Unit
	Performance rating 4.8		Performance rating 8.8		Performance rating 4.8		Performance rating 8.8		
	GC	HC	GC	HC	GC	HC	GC	HC	
M3	0.6	0.8			0.3	0.5			N.m
M4	1.2	1.4			0.6	1			N.m
M5	2.5	3			1.5	2			N.m
M6	5	6			2	3			N.m
M8			11	15			9	10	N.m
M10			30	39			18	22	N.m
M12			55	65			32	39	N.m
M16			160	200			52	60	N.m

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.

### 3.6.4 Preparation before Operation

 <b>DANGER</b>	
<ol style="list-style-type: none"> <li>1. Please observe relevant requirements in <b>1 Safety Precautions</b> and do not connect cables when the inverter is live.</li> <li>2. Before connecting the cables, please complete the following preparations to avoid personal injury.               <ol style="list-style-type: none"> <li>1) Make sure that the "DC SWITCH" of the inverter is in the "OFF" state, otherwise the high voltage of the inverter may cause electric shock.</li> <li>2) Confirm the positive and negative poles of the input cable and mark them well. Make sure that the input cable is disconnected from the PV string (make sure that the cable is not live when crimping the input MC4 terminal).</li> <li>3) Confirm that the open circuit voltage of the PV array does not exceed the specified limit.</li> </ol> </li> <li>3. When connecting the input cable, make sure that the positive and negative poles of the input cable correspond to the positive and negative poles of the PV terminals of the string inverter.</li> </ol>	

### 3.6.5 Connecting PE Cables

Connect the inverter to the ground bar by connecting the PE cable to the ground point. The ground point is labeled with a PE mark. The cross-sectional area of the PE cable (copper) shall not be less than 1/2 of that of the AC output cable, and the bolt specification is M6.

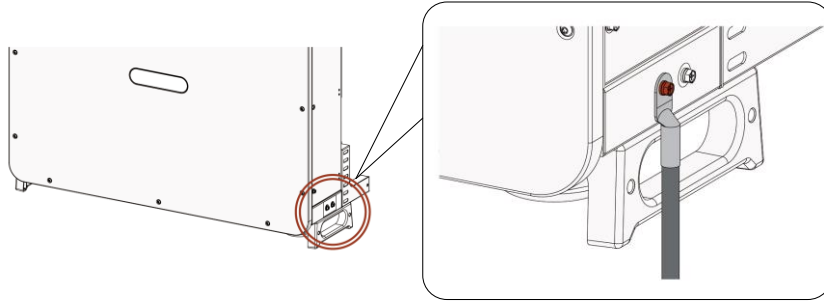


Figure 3-6 Protective earthing

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

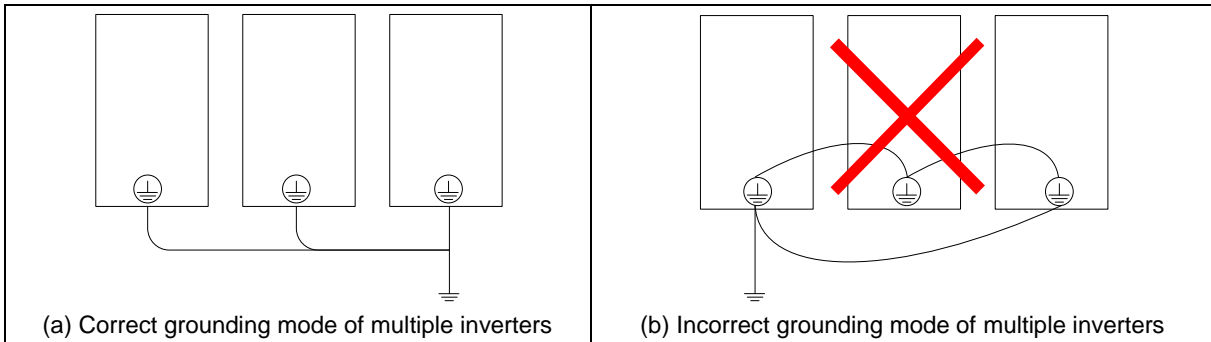


Figure 3-7 Grounding of multiple string inverters

### 3.6.6 Connecting DC Input Cables

To make full use of the DC input power, the PV strings of the same input MPPT should be identical in structure in terms of model, number of panels, inclination angle and azimuth angle.



**DANGER**

1. The sunlight shining on the battery panel will generate voltage, so when connecting the DC input line under light conditions, it is necessary to ensure that the input cable is not charged (the battery panel can be covered with an opaque cloth before operation), otherwise it will cause a risk of electric shock.
2. Before connecting the input cable, make sure that the DC side voltage is within the safe voltage range (less than 60 V DC), and the DC switch is in the “OFF” state. Otherwise, the high voltage generated may cause an electric shock hazard.
3. When the inverter is in on-grid operation, it is forbidden to maintain the DC input cable, otherwise it will cause an 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**

Before connecting the PV panels/strings to the inverter, please ensure that the following conditions are met, otherwise it may cause a fire hazard:

- Each component of the string connected in series is of the same specification and model.
- The maximum opening voltage of each PV string cannot exceed 1500 V DC under any circumstances.
- The maximum short-circuit current of each PV string shall not exceed 90 A under any conditions.
- Please ensure that the poles of the DC input side (PV) is correctly connected, that is, the positive pole of

the PV module is connected to that (PV+) of the inverter DC input terminal, and the negative pole is connected to that (PV-) of the inverter DC input terminal.


➤ Recommended DC Input Terminals

Input number	DC input terminal
1	PV1
2	PV1,PV2
3	PV1,PV2,PV3
.....	.....
32	PV1~PV32

➤ Crimping MC4 Terminals

The input cable needs to be crimped into MC4 terminals to connect with the PV+/PV- terminals of the string inverter. Before operation, make sure that **3.6.4 Preparation before Operation** is completed.

1. Make sure the positive and negative polarities of the input cable have been confirmed and marked.

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

2. Strip the cable with a wire stripper

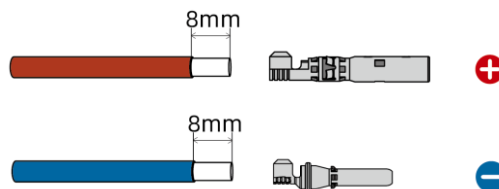


Figure 3-8 Strip the cable

3. Crimp the cable with the metal terminal according to correct polarities.

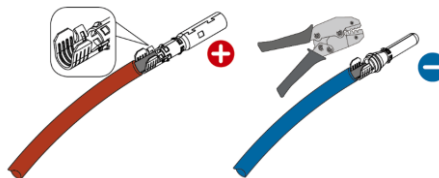


Figure 3-9 Crimp the terminal

4. Disassemble the connector anticlockwise.

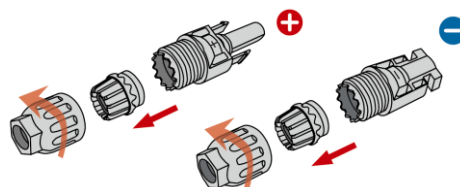


Figure 3-10 Disassemble the connector

5. Insert the crimped cable into the MC4 connector and then reassemble the connector clockwise.

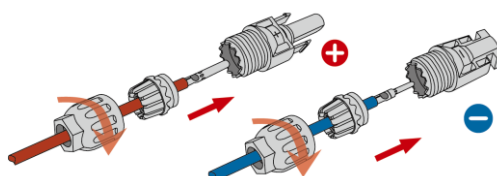


Figure 3-11 Reassemble the connector

6. Measure the DC voltage and check the polarities of the connectors.

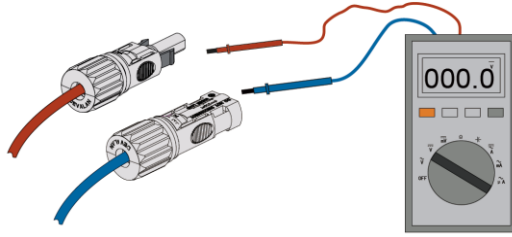


Figure 3-12 Check the polarities of the connectors

➤ Inserting MC4 Terminals

Insert the positive and negative connectors into the positive and negative DC input terminals of the inverter respectively until you hear a “click”, indicating that the terminal is stuck in place.

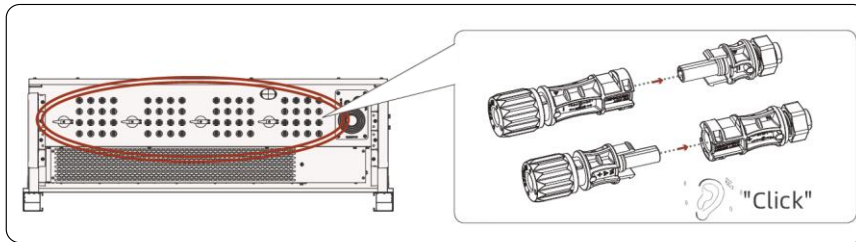


Figure 3-13 Inserting MC4 terminals



**CAUTION**

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

### 3.6.7 Connecting AC Output Cables

➤ Precautions

- An independent three-phase circuit breaker must be configured outside the AC side of each inverter to ensure that the inverter is reliably disconnected from the power grid. And the circuit breaker specifications should meet the technical requirements.
- It is forbidden for multiple inverters to share a circuit breaker.
- It is forbidden to connect the load between the inverter and the circuit breaker.
- Users need to prepare AC cables by themselves. For more details, please refer to **3.6.2 Cable Selection**.

➤ Operation steps

1. Open the right door panel of the inverter, remove screws fixing the cable crossing board and cut the sealing coils to appropriate length based on the outside diameter.
2. Pass the AC cables through the sealing coils, connect the cables to A, B, C on the AC wiring terminal block respectively and tighten the screws.
3. Reinstall the cable crossing board to the inverter, close the right door panel and tighten the screws.



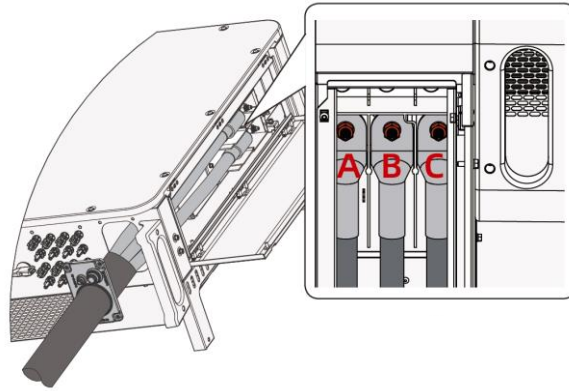


Figure 3-8 AC output cable connection

### 3.6.8 Connecting Communication Cables

- Communication mode selection  
The inverter supports RS485 communication.
- Cable connection

Connect the RS485 interfaces of inverters with the communication cables and check whether they are tightly connected. Then check if there is a gap at the connection point. If there is, seal the gap with fireproof mud.

-- End of the chapter--



# 4 Commissioning Guide

## 4.1 Check before Power-On



- Before power-on, please read **1 Safety Precautions** carefully and inspect the items listed in the table below.
- Use a multimeter or other instruments to detect the voltage between the metal parts in the inverter with the shell (protective ground) of the inverter.

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 ambient environment meets corresponding requirements.
- Check if there are any foreign objects left inside and on the top of the inverter cabinet.
- Ensure that there is enough space in the surroundings for maintenance and heat dissipation.
- Ensure that cables are marked clearly and correctly.
- Make sure that there is no condensation inside the string inverter. If found, remove it with a heating tool.
- Make sure that all wiring screws are tightened according to torque requirements.

### **Electrical inspection**

- Make sure that the wiring of the string inverter is reliable and the polarity is correct.
- Ensure that all power cables and signal cables are in conformity with the electrical safety regulations.
- Ensure that both signal cables and power cables are connected with matching terminals.
- Ensure that an isolation area and warning signs have been set up around the inverter to avoid misoperation or proximity.

## 4.2 System Power-On

After ensuring that the electrical connection is completed, power on the inverter.

**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.

## 4.3 System Power-Off

➤ Precautions

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

**Step 1:** Issue a 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.

--End of the chapter--

# 5 Maintenance and Troubleshooting


## 5.1 Maintenance Items and Cycles

	
1.	Before maintenance, please read <b>1 Safety Precautions</b> carefully, and use a multimeter 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 on 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 maintenance, close the DC input switch of the inverter and the circuit breaker between the inverter and the grid.

The string inverter needs regular maintenance. The common maintenance items and cycles are shown in the table below.


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

Parts	Items	Content	Solutions	Inspection cycle
Overall inspection	Appearance	Observe whether the appearance of the inverter is damaged or deformed.	Please replace it in time if it is damaged or deformed seriously.	Once every 6 months to one year
	System cleaning	Check whether there are foreign objects and dust on the surface of the inverter.	Remove foreign objects, clean dust.	
		Check whether the heat sink is obstructed or dirty.	Remove the blocker and clean the dust.	
System running	Operating status	Check whether the inverter has abnormal noise during operation.	Please replace it in time if the noise is loud.	Once every 6 months to one year
	Operating parameters	Check whether each parameter is set correctly during operation.	Troubleshoot the exception settings.	
Connecting parts	Loose or dropping	Check if the cables fall off or get loose.	Tighten the connection according to regulations.	Half a year after the first commissioning, then once every half a year to once a year
	Damage	Check whether the cable is damaged, especially whether the surface of the cable that contacts the metal surface has cuts.	Please replace it in time if the cable is damaged seriously.	
	Terminals	Check whether the waterproof covers of unused terminals are locked.	Seal the unused terminals.	

 Note: Before wiping the heat sink, turn off the inverter normally, then disconnect the circuit breaker between the inverter and the grid, and 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

### ➤ Maintaining the DC Switch

 CAUTION	
1.	Do not place obstacles to block the rotation of the DC switch when the system is powered on or running. Otherwise, the DC switch cannot be automatically disconnected. Damages caused by failure to do this will not be covered under any warranty.
2.	Ensure sufficient space around the DC switch so that it can be turned on with specialized rotating tools after it is automatically disconnected.

### Fault phenomenon

The DC switches support automatic disconnection. Reverse polarity or inverter internal fault will trigger automatic disconnection of DC switches.

### Solution

When the PV string reverse connection or inverter internal fault are reported by hopeCloud or remote monitoring system and the DC switch is in the “OFF” state, the DC switch is automatically disconnected. And then you can troubleshoot according to the fault information.

- If the automatic disconnection of the DC switch is due to PV string reverse connection, adjust the PV string polarity, and then switch on the DC switch.
- If it is due to other faults, contact Hopewind for solutions. Device damages caused by the forced switch-on will not be covered under any warranty.

When the DC switch in the automatic disconnected state cannot be reset by manual rotation, you can switch it on using specialized rotating tools. DC switch set to “ON” indicates that it is closed.

### ➤ 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. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	2	Output hardware overvoltage	The output voltage exceeds the protection threshold specified by the hardware.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	3	Hardware overcurrent (secondary)	The MPPT inductor current is too large.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	4	MPPT hardware overcurrent	MPPT experiences overcurrent and reaches the hardware CBC time.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
Fault word 2	2	EEPROM parameters back to default values	EEPROM read/write fails.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	3	Historical faults storage failed	Historical faults fail to be stored.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	12	Reverse input	The input polarity is	Check if the connection is reversed.

Fault word	ID	Fault/alarm name	Fault/alarm reason	Troubleshooting
		polarity	reversely connected.	
	13	Abnormal insulation of positive busbar to ground	The insulation impedance of the positive busbar to ground is abnormal.	Check whether there are grounding faults.
	14	Abnormal insulation of negative busbar to ground	The insulation impedance of the negative busbar to ground is abnormal.	Check whether there are grounding faults.
Alarm word 1	0	SPD alarm	The SPD is faulty or is in a wrong state.	Please contact Hopewind technical staff.
	6	Boost-side open circuit alarm	An open circuit occurs inside the boost.	Please contact Hopewind technical staff.
	7	Boost-side short circuit alarm	A short circuit occurs inside the boost.	Please contact Hopewind technical staff.
	8	Battery string abnormal alarm	The battery string is abnormal.	1. check whether the PV string configuration is abnormal. 2. Check whether the battery panel access is abnormal.

➤ 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. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	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. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	2	EEPROM read/write failed	EEPROM read/write fails.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	3	FPGA version mismatch	The FPGA version does not match with that of DSP	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	4	Historical faults storage failed	Historical faults fail to be stored.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	5	Internal communication fault	Internal communication fails.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
Hardware fault status word	0	Hardware overcurrent (secondary)	The current peak of inductor exceeds the hardware protection threshold.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	3	A-phase hardware overcurrent	A-phase inductor current triggers CBC protection.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.

Fault word	ID	Fault/alarm name	Fault/alarm reason	Troubleshooting
	4	B-phase hardware overcurrent	B-phase inductor current triggers CBC protection.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	5	C-phase hardware overcurrent	C-phase inductor current triggers CBC protection.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	6	Bus hardware overvoltage	The bus voltage exceeds the hardware overvoltage threshold.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	7	Busbar neutral-point overvoltage	The bus neutral-point voltage exceeds the hardware overvoltage threshold.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
Grid fault status word	0	Uab overvoltage	Uab exceeds the overvoltage protection threshold specified by the system.	1. Confirm whether the inverter's grid voltage sampling is normal. 2. Confirm whether there is a fault such as a box transformer tripped on the AC side at the fault time. 3. Confirm whether the inverter has HVRT.
	1	Ubc overvoltage	Ubc exceeds the overvoltage protection threshold specified by the system.	1. Confirm whether the inverter's grid voltage sampling is normal. 2. Confirm whether there is a fault such as a box transformer trip on the AC side at the fault time. 3. Confirm whether the inverter has HVRT.
	2	Uca overvoltage	Uca exceeds the overvoltage protection threshold specified by the system.	1. Confirm whether the inverter's grid voltage sampling is normal. 2. Confirm whether there is a fault such as a box transformer trip on the AC side at the fault time. 3. Confirm whether the inverter has HVRT.
	3	Uab undervoltage	Uab is lower than the undervoltage protection threshold specified by the system.	1. Confirm whether the inverter's grid voltage sampling is normal. 2. Confirm whether 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.	1. Confirm whether the inverter's grid voltage sampling is normal. 2. Confirm whether 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.	1. Confirm whether the inverter's grid voltage sampling is normal. 2. Confirm whether 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 connected grid is the nominal grid of the inverter. 2. Confirm whether the power grid is connected.



Fault word	ID	Fault/alarm name	Fault/alarm reason	Troubleshooting
	7	Grid voltage imbalance threshold exceeded	The grid voltage imbalance exceeds the system threshold.	Confirm whether the power grid is abnormal.
	8	Grid overfrequency	The grid frequency exceeds the overfrequency protection threshold specified by the system.	1. Confirm whether there is a fault such as box transformer trip on the AC side through fault and event records. 2. Confirm whether the frequency range and time setting are reasonable.
	9	Grid underfrequency	The grid frequency is lower than the underfrequency protection threshold specified by the system.	1. Confirm whether there is a fault such as box transformer trip on the AC side through fault and event records. 2. Confirm whether the frequency range and time setting are reasonable.
	10	Reverse grid phase sequence	The phase sequence of the power grid is reversed.	1. Check whether the grid three-phase power cable is connected correctly. 2. Check whether the grid voltage sampling cable is connected correctly.
	11	Anti-islanding protection	The grid experiences voltage loss.	Check for the cause of grid voltage loss, such as box transformer trip, etc.
	13	Grid voltage abnormal	The grid experiences voltage sudden change.	Confirm whether the power grid is normal.
	14	LVRT protection	The grid voltage exceeds the LVRT protection threshold.	Confirm whether the power grid is normal.
	15	HVRT protection	The grid voltage exceeds the HVRT protection threshold.	Confirm whether the power grid is normal.
Invert fault status word	0	Module A-phase software overcurrent	The effective value of the inductor current exceeds the protection threshold.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	1	Module B-phase software overcurrent	The effective value of the inductor current exceeds the protection threshold.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	2	Module C-phase software overcurrent	The effective value of the inductor current exceeds the protection threshold.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	3	Module current imbalance	Three-phase current imbalance exceeds the threshold.	Confirm whether the power grid is normal.
	5	Module overtemperature	The temperature of the radiator is higher than the protection threshold.	Confirm whether the outer fan works normally.
	6	Internal overtemperature	The ambient temperature is higher than the protection temperature.	Confirm whether the outer fan works normally.
	9	Residual current abnormal	The residual current exceeds the threshold.	1. If it happens by accident, it may be caused by accidental abnormality of the external lines, and the inverter will operate again after the fault is cleared without manual intervention. 2. If it appears frequently or cannot be recovered for a long time, please check whether the impedance of the PV string to the ground is too low.

<b>Fault word</b>	<b>ID</b>	<b>Fault/alarm name</b>	<b>Fault/alarm reason</b>	<b>Troubleshooting</b>
	11	Inverter overtemperature	The inverter experiences startup overtemperature and load shedding.	Confirm whether the outer fan is normal.
Bus fault word status	1	Bus short circuit	The bus voltage dip exceeds the threshold.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	5	Bus overvoltage	The bus voltage exceeds the specified threshold.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	6	Bus undervoltage	The bus voltage is lower than the specified threshold.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	7	Bus voltage imbalance	The voltage imbalance of the positive and negative busbars exceeds the specified threshold.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	8	High DC input voltage	The DC input voltage exceeds the specified threshold.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	9	Low DC input voltage	The DC input voltage is lower than the specified threshold.	Check if the switch is disconnected.
Other	0	AC relay fault	The relay status is wrong.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	3	AC SPD alarm	The AC side SPD feedback status is wrong.	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.
	4	Internal fan fault	Fan fails or the feedback signal is abnormal	1. Reset and check if the inverter works normally. 2. If it appears frequently, please contact Hopewind technical staff.

--End of the chapter --

# 6 Inverter Disposal

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## 6.1 Removing the Inverter

Before operation, please make sure that the circuit breaker between the inverter and the power grid has been disconnected and the DC SWITCH is set to "OFF" state.

- 1) Disconnect all electrical connections of the inverter, including AC output cables, communication cables, DC input cables, and PE cables.
- 2) Remove the inverter from the back panel.

## 6.2 Replacing the Inverter

If you need to replace the inverter, follow the operation steps in chapters 3 and 4.

## 6.3 Packing the Inverter

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

## 6.4 Disposing the Inverter

When the service life of the inverter expires or the inverter is replaced due to faults, please dispose it according to the local rules for electrical equipment waste disposal or hand over it 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 fault arising from the following conditions are not covered by the warranty:

- Dismantlement of the product without our permission or maintenance in a wrong way
- Out-of-warranty machine or components
- Product used out of the application scope stipulated in relevant international standard
- Product damage caused by failure to install and operate according to the user manual
- Product damage caused by non-natural environment
- Use of non-standard components/software or those not provided by our company
- Damage to the power supply due to failure of external devices
- Any accidental damage arising from users' own dismantlement or maintenance

When the client requires repair service for above mentioned faults, we will offer paid repair service upon Hopewind service agency's approval. Please contact us in advance if repair or alteration service is needed.

## ➤ Contact Information

Shenzhen Hopewind Electric Co., Ltd.

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