GOODWE

User Manual

Grid-Tied PV Inverter

HT 1500V Series

V1.0-2022-05-04

Trademarks

GOODWE and other GoodWe trademarks are trademarks of GoodWe Company. All other trademarks or registered trademarks mentioned in this manual are owned by GoodWe Technologies Co., Ltd.

Notice

The information in this user manual is subject to change due to product updates or other reasons. This manual cannot replace the product labels or the safety precautions unless otherwise specified. All descriptions in the manual are for guidance only.

CONTENT

1 About This Manual

This manual describes the product information, installation, electrical connection, commissioning, troubleshooting, and maintenance. Read through this manual before installing and operating the product. All the installers and users have to be familiar with the product features, functions, and safety precautions. This manual is subject to update without notice. For more product details and latest documents, visit www.goodwe.com.

1.1 Applicable Model

This manual applies to the listed inverters below (HT for short):

Model	Nominal Output Power	Nominal Output Voltage
GW250K-HT	250kW	800, 3L/PE
GW250KN-HT	250kW	
GW225K-HT	225kW	
GW225KN-HT	225kW	

1.2 Target Audience

This manual applies to trained and knowledgeable technical professionals. The technical personnel has to be familiar with the product, local standards, and electric systems.

1.3 Symbol Definition

Different levels of warning messages in this manual are defined as follows:

DANGER
Indicates a high-level hazard that, if not avoided, will result in death or serious injury.
WARNING
Indicates a medium-level hazard that, if not avoided, could result in death or serious injury.
CAUTION
Indicates a low-level hazard that, if not avoided, could result in minor or moderate injury.
NOTICE
Highlight and supplement the texts. Or some skills and methods to solve product-related problems to save time.

1.4 Updates

The latest document contains all the updates made in earlier issues.

V1.0 2022-05-04

- First Issue

2 Safety Precaution

Notice

The inverters are designed and tested strictly complies with related safety rules. Read and follow all the safety instructions and cautions before any operations. Improper operation might cause personal injury or property damage as the inverters are electrical equipment.

2.1 General Safety

Notice

- The information in this document is subject to change due to product updates or other reasons. This manual cannot replace the product labels or the safety precaution unless otherwise specified. All descriptions here are for guidance only.
- Before installations, read through the user manual to learn about the product and the precautions.
- All installations should be performed by trained and knowledgeable technicians who are familiar with local standards and safety regulations.
- Use insulating tools and wear personal protective equipment when operating the equipment to ensure personal safety. Wear anti-static gloves, cloths, and wrist strips when touching electron devices to protect the inverter from damage.
- Strictly follow the installation, operation, and configuration instructions in this manual. The manufacturer shall not be liable for equipment damage or personal injury if you do not follow the instructions. For more warranty details, visit https://en.goodwe.com/warranty.asp.

2.2 DC Side:

⚠ DANGER

Connect the DC cables using the delivered DC connectors and terminals. The manufacturer shall not be liable for the equipment damage if other connectors or terminals are used.

⚠ WARNING

- Ensure the component frames and the bracket system are securely grounded.
- Ensure the DC cables are connected tightly and securely.
- Measure the DC cable using the multimeter to avoid reverse polarity connection. Also, the voltage should be under the permissible range.
- The PV modules used with the inverter must have an IEC61730 class A rating.
- If there are more than 3 PV strings on input side, an additional fuse installation will be suggested.
- When exposed to sunlight, the PV array will generate very high voltage which can cause electrical shock hazard. Please strictly follow the instruction we provided.

2.3 AC Side

WARNING

- The voltage and frequency at the connecting point should meet the on-grid requirements.
- An additional protective device like the circuit breaker or fuse is recommended on the AC side. Specification of the protective device should be at least 1.25 times the AC output rated current.
- You are recommended to use copper cables as AC output cables. Contact the manufacturer if you want to use other cables.

2.4 Inverter Installation

DANGER

- Terminals at the bottom of the inverter cannot bear much load. Otherwise, the terminals will be damaged.
- All labels and warning marks must be clear and distinct after the installation. Do not block, alter, or damage any label.
- Warning labels on the inverter are as follows.

	High voltage hazard. Power off the inverter before any operations.		Potential risks exist. Wear proper PPE before any operations.
	Read through the user manual before any operations.		Delayed discharge. Wait until the components are completely discharged after power off
	High-temperature hazard. Do not touch the equipment to avoid being hurt.		Do not dispose of the product as household waste. Discard the product in compliance with local laws and regulations, or send it back to the manufacturer.
	CE marking		Grounding point. Indicates the position for connecting the PE cable.

2.5 Personal Requirements

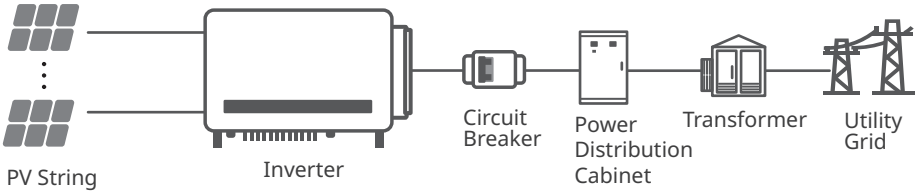
NOTICE

- Personnel who install or maintain the equipment must be strictly trained, learn about safety precautions and correct operations.
- Only qualified professionals or trained personnel are allowed to install, operate, maintain, and replace the equipment or parts.

3 Product Introduction

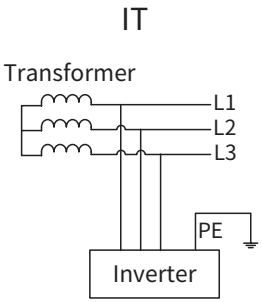
3.1 Application Scenarios

The HT inverter is a three-phase PV string grid-tied inverter. The inverter converts the DC power generated by the PV module into AC power and feeds it into the utility grid. The intended use of the inverter is as follows:



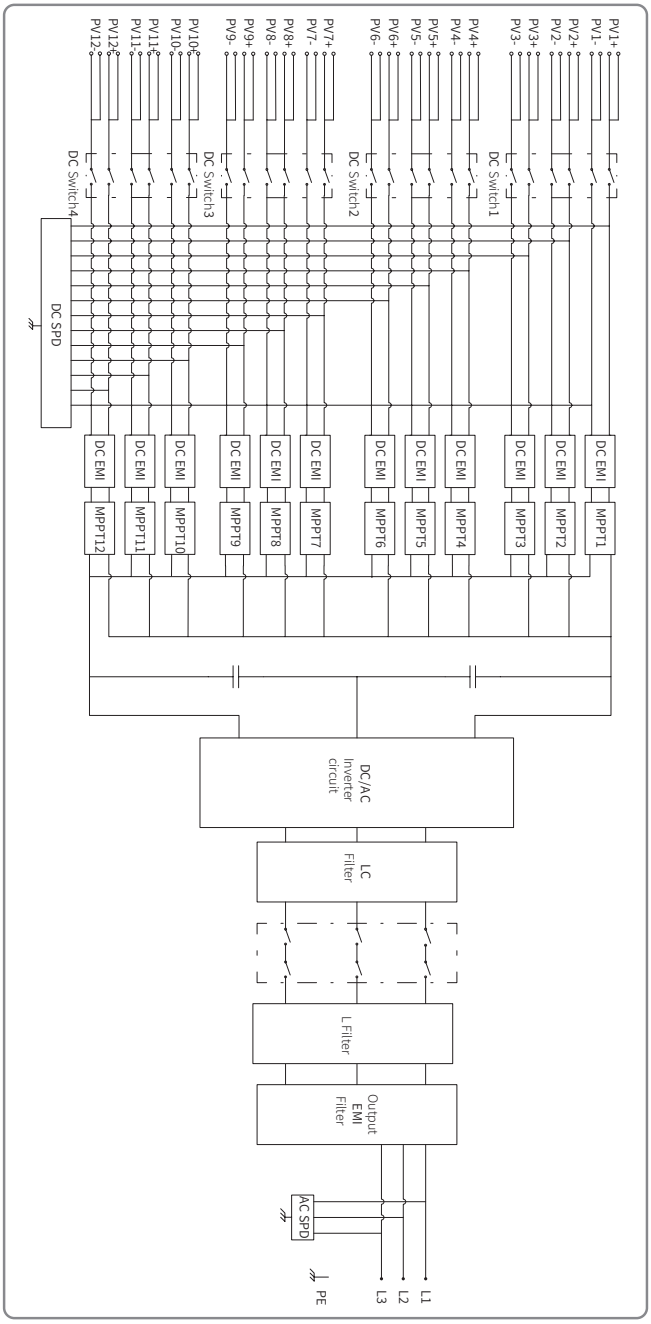
3.2 Supported Grid Types

The grid structures supported by HT series GW250K-HT, GW250KN-HT, GW225K-HT and GW225KN-HT are IT, as shown in the figure below:

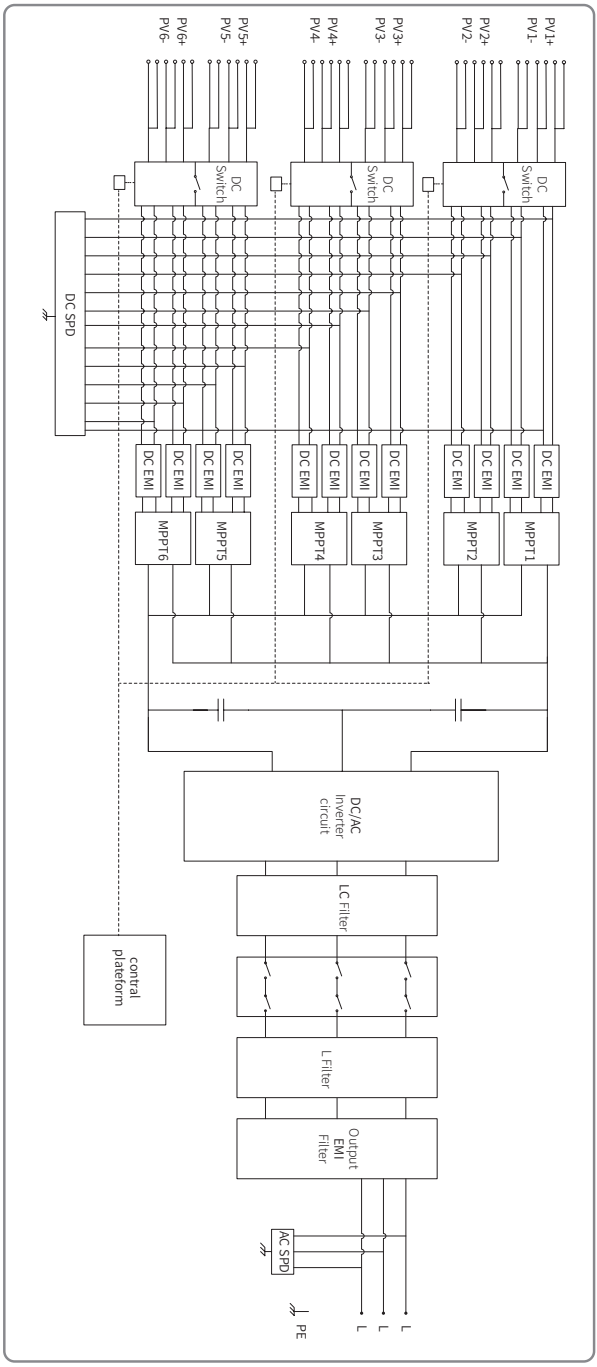


3.3 Circuit Diagram

The circuit diagram of GW250K-HT , and GW225K-HT are as follows.

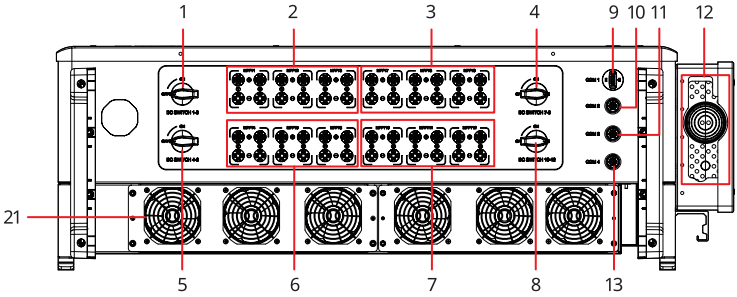


The circuit diagram of GW225KN-HT, and GW250KN-HT are as follows.

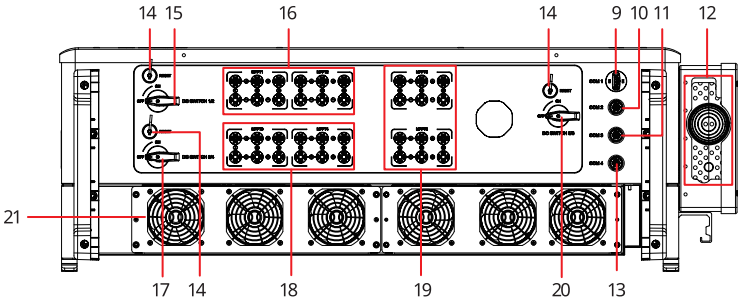


3.4 Appearance

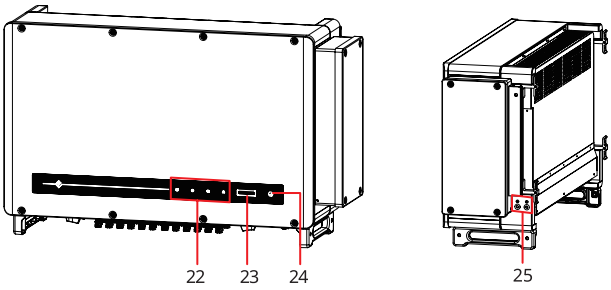
3.4.1 Parts



GW250K-HT , and GW225K-HT



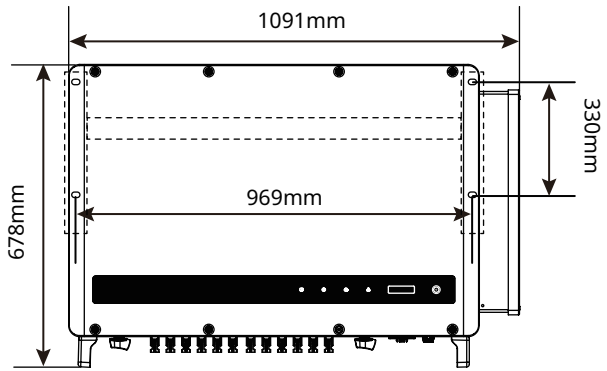
GW225KN-HT, and GW250KN-HT

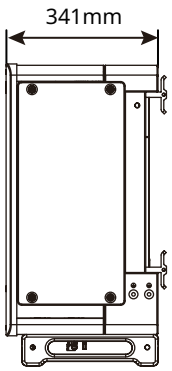


No.	Parts	Description
1	DC Switch 1-3	Control PV input terminal 1-3, to connect or disconnect the PV string.
2	PV Input Terminal 1-3 (Controlled by DC Switch 1-3)	Used to connect the PV strings.
3	PV Input Terminal 7-9 (Controlled by DC Switch 7-9)	Used to connect the PV strings.
4	DC Switch 7-9	Control PV input terminal 7-8, to connect or disconnect the PV string.
5	DC Switch 4-6	Control PV input terminal 4-6, to connect or disconnect the PV string.
6	PV Input Terminal 4-6 (Controlled by DC Switch 4-6)	Used to connect the PV strings.
7	PV Input Terminal 10-12(Controlled by DC Switch 10-12)	Used to connect the PV strings.
8	DC Switch 10-12	Control PV input terminal 10-12, to connect or disconnect the PV string.
9	USB Port (Bluetooth)	Used to connect the Bluetooth communication module.
10	Communication Port (RS485)	Used to connect the RS485 communication cable.
11	Meter COM Port	Used to connect the Meter cable.
12	AC Cable Outlet Hole	To connect AC cables.
13	Communication Port (Remote Shutdown / Emergency Power Off)	Used to connect the Remote Shutdown communication cable.
14	DC Reset Switch	Reset the DC switch if it is tripped due to the inverter fault. Press the RESET button using the reset tool and turn the switch from OFF to ON.
15	DC Switch 1/ 2	Control PV input terminal 1-2, to connect or disconnect the PV string.
16	PV Input Terminal 1-2	Used to connect the PV strings.
17	DC Switch 3/ 4	Control PV input terminal 3-4, to connect or disconnect the PV string.
18	PV Input Terminal 3-4	Used to connect the PV strings.
19	PV Input Terminal 5-6	Used to connect the PV strings.
20	DC Switch 5/ 6	Control PV input terminal 5-6, to connect or disconnect the PV string.

No.	Parts	Description
21	External Fan	Used to cool the inverter.
22	Indicator	Indicates working state of the inverter.
23	LCD (optional)	Optional. Used to check the parameters of the inverter.
24	Button (optional)	Optional. Used to control contents displayed on the screen.
25	Grounding Point	Used to connect the PE cable.

3.4.2 Dimensions





3.4.3 Indicators

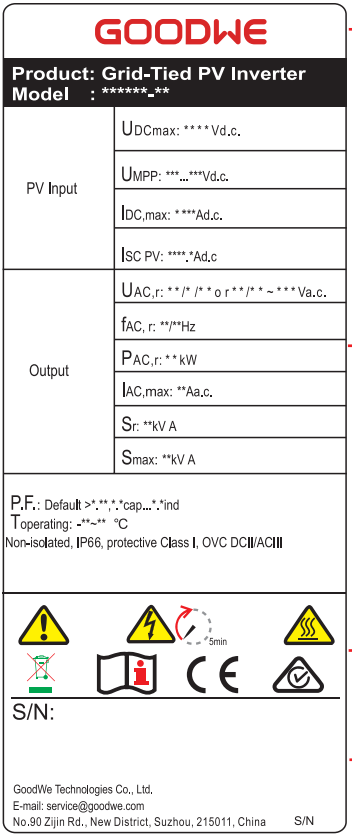
Model without LCD

Model with LCD

Indicator	Status	Description
		ON = EQUIPMENT POWER ON
		OFF = EQUIPMENT POWER OFF
		ON = THE INVERTER IS FEEDING POWER
		OFF = THE INVERTER IS NOT FEEDING POWER
		SINGLE SLOW FLASH = SELF CHECK BEFORE CONNECTING TO THE GRID
		SINGLE FLASH = CONNECTING TO THE GRID
		ON = WIRELESS IS CONNECTED/ACTIVE
		BLINK 1 = WIRELESS SYSTEM IS RESETTING
		BLINK 2 = WIRELESS ROUTER PROBLEM
		BLINK 4 = WIRELESS SERVER PROBLEM
		BLINK = RS485 IS CONNECTED
		OFF = WIRELESS IS NOT ACTIVE
		ON = A FAULT HAS OCCURRED
		OFF = NO FAULT

3.4.4 Nameplate

The nameplate is for reference only.



Goodwe trademark, product type, and product model

Technical parameters

Safety symbols and certification marks

Contact information and serial number

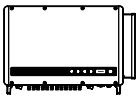
4 Check and Storage

4.1 Check Before Receiving

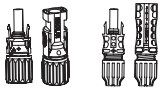
Check the following items before receiving the product.

1. Check the outer packing box for damage, such as holes, cracks, deformation, and others signs of equipment damage. Do not unpack the package and contact the supplier as soon as possible if any damage is found.
2. Check the inverter model. If the inverter model is not what you requested, do not unpack the product and contact the supplier.
3. Check the deliverables for correct model, complete contents, and intact appearance. Contact the supplier as soon as possible if any damage is found.

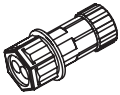
4.2 Deliverables

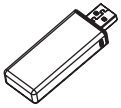

Inverter x1

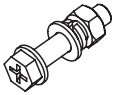

Mounting plate x1


PV connector xN


Screw xN


Communication Connector xN


Bluetooth xN


Expansion bolts x4


PIN terminal xN


Documents x1


Screwdriver x1


RS485-USB Cable x1


Unlock Tool x1


Allen Wrench x1

NOTICE

- The number of PV connectors and the PV terminals in the inverter is the same.
- The type and number of the communication connector are decided by the selected communication method.
- Communication module types: Bulethooth, etc. The actual module delivered depends on the communication method of the selected inverter.
- The number of expansion bolts, screws, pin terminals are various depending on different inverters. The actual accessories may differ.
- The tool will only be delivered in Korea.
- The RS485-USB cable will only be delivered in Brazil.

4.3 Storage

If the equipment is not to be installed or used immediately, please ensure that the storage environment meets the following requirements:

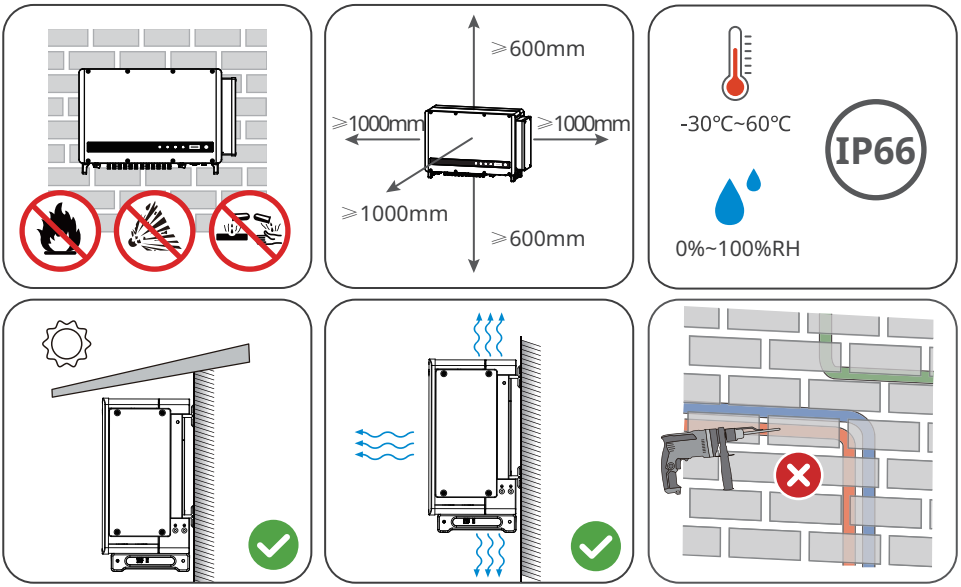
1. Do not unpack the outer package or throw the desiccant away.
2. Store the equipment in a clean place. Make sure the temperature and humidity are appropriate and no condensation.
3. The height and direction of the stacking inverters should follow the instructions on the packing box.
4. The inverters must be stacked with caution to prevent them from falling.
5. If the inverter has been long term stored, it should be checked by professionals before being put into use.

5 Installation

5.1 Installation Requirements

Installation Environment Requirements

1. Do not install the equipment in a place near flammable, explosive, or corrosive materials.
2. Install the equipment on a surface that is solid enough to bear the inverter weight.
3. Install the equipment in a well-ventilated place to ensure good dissipation. Also, the installation space should be large enough for operations.
4. The equipment with a high ingress protection rating can be installed indoors or outdoors. The temperature and humidity at the installation site should be within the appropriate range.
5. Install the equipment in a sheltered place to avoid direct sunlight, rain, and snow. Build a sunshade if it is needed.
6. Do not install the equipment in a place that is easy to touch, especially within children's reach. High temperature exists when the equipment is working. Do not touch the surface to avoid burning.
7. Install the equipment at a height that is convenient for operation and maintenance, electrical connections, and checking indicators and labels.
8. Install the equipment away from electromagnetic interference.

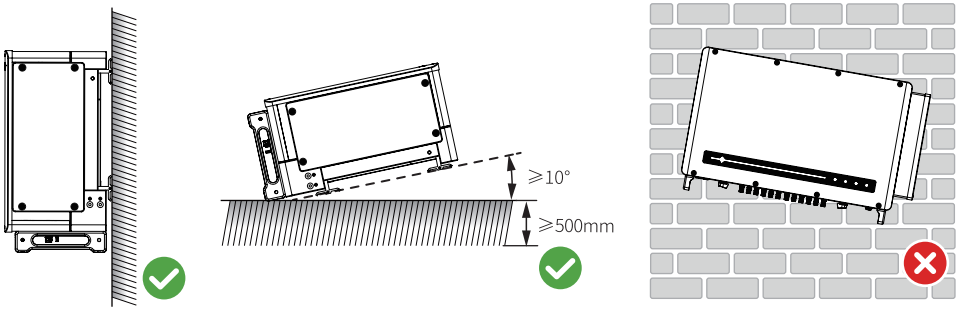


Mounting Support Requirements

1. The mounting support shall be nonflammable and fireproof.
2. Make sure that the support surface is solid enough to bear the product weight load.
3. Do not install the product on the support with poor sound insulation to avoid the noise generated by the working product, which may annoy the residents nearby.

Installation Angle Requirements

- Install the inverter vertically or at a minimum back tilt of 10 degrees.
- Do not install the inverter upside down, forward tilt, back forward tilt, or horizontally.



Installation Tool Requirements

The following tools are recommended when installing the equipment. Use other auxiliary tools on site if necessary.

5.2 Inverter Installation

5.2.1 Moving the Inverter

⚠ CAUTION

Move the inverter to the site before installation. Follow the instructions below to avoid personal injury or equipment damage.

1. Consider the weight of the equipment before moving it. Assign enough personnel to move the equipment to avoid personal injury.
2. Wear safety gloves to avoid personal injury.
3. Keep balance when moving the equipment.

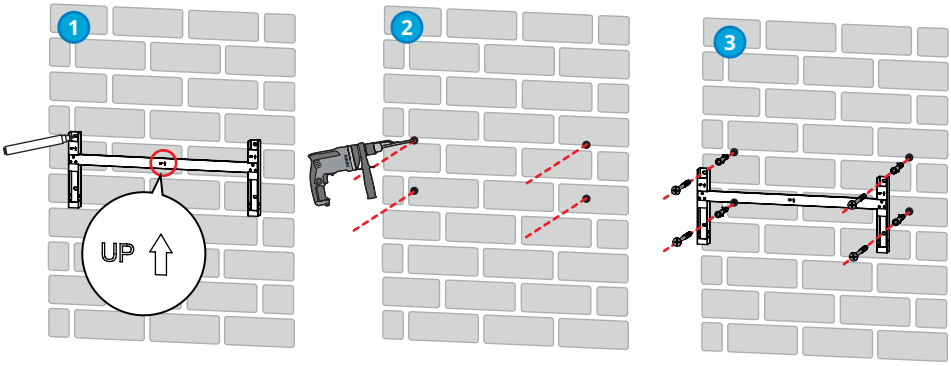
5.2.2 Installing the Inverter

NOTICE

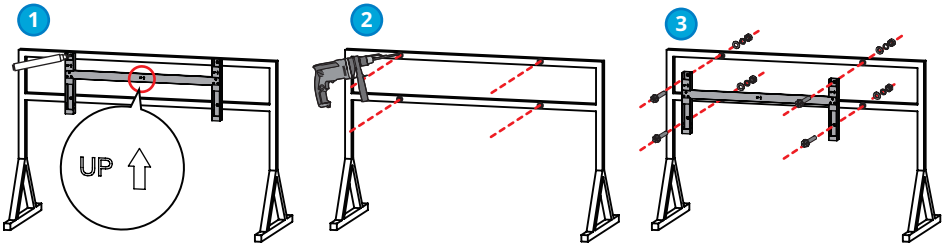
- Avoid the water pipes and cables buried in the wall when drilling holes.
- Wear goggles and a dust mask to prevent the dust from being inhaled or contacting eyes when drilling holes.

Step 1 Put the mounting plate on the wall horizontally and mark positions for drilling holes.
Step 2 Drill holes to a depth of 65mm using the hammer drill. The diameter of the drill bit should be 13mm.
Step 3 Fix the mounting plate on the wall or the bracket.
Step 4 Install the handles or the hoisting rings.
Step 5 Grab the handles to lift the inverter or hoist the inverter to place it on the mounting plate.
Step 6 Tighten the nuts to secure the mounting plate and the inverter.

Mounting on the wall



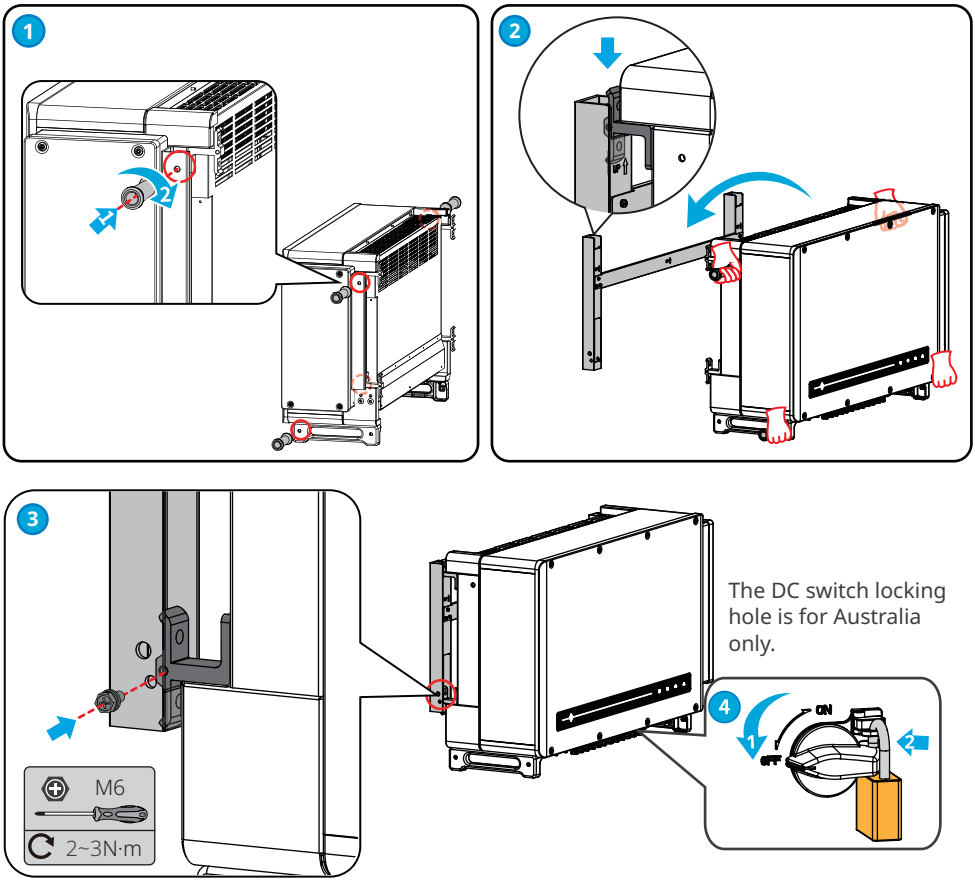
Mounting on the plate



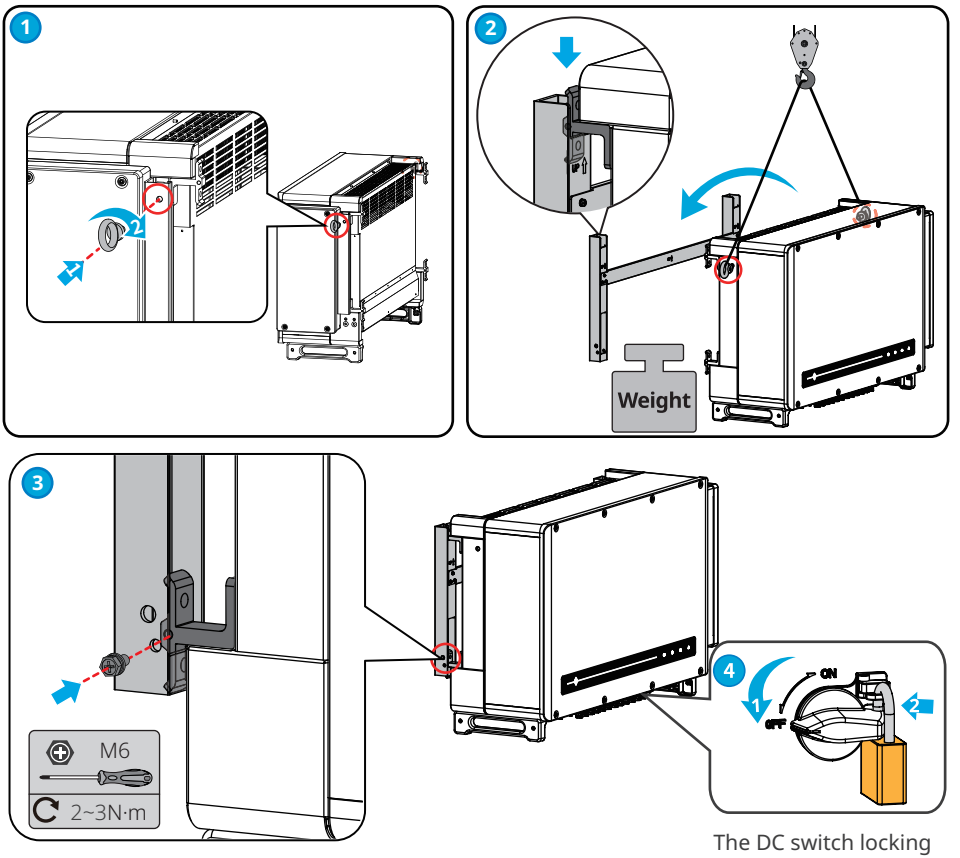
NOTICE

- Contact the dealer or the after sales center to purchase the handle if it is needed.
- The hoist ring should be prepared by customers.

Lifting the Inverter



Hoisting the Inverter



The DC switch locking hole is for Australia only.

6 Electrical Connection

6.1 Safety Precautions

DANGER

- Disconnect the DC switch and the AC output switch of the inverter to power off the equipment before any electrical connections. Do not work with power on. Otherwise, an electric shock may occur.
- Perform electrical connections in compliance with local laws and regulations. Including operations, cables, and component specifications.
- If the tension is too large, the cable may be poorly connected. Reserve a certain length of the cable before connecting it to the inverter cable port.

NOTICE

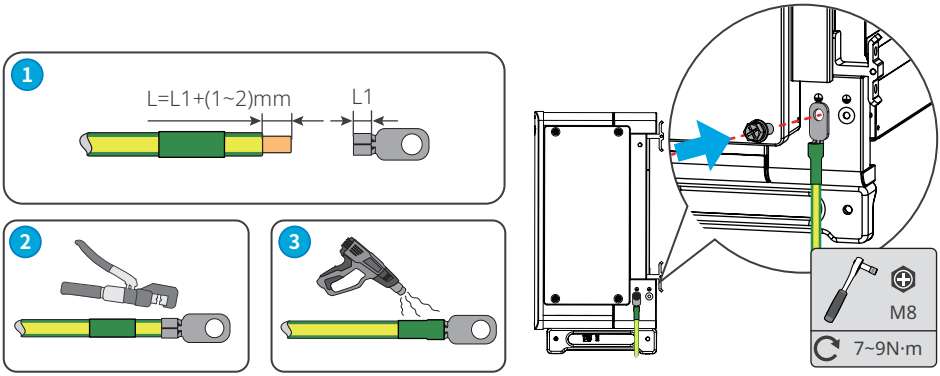
- Wear personal protective equipment like safety shoes, safety gloves, and insulating gloves during electrical connections.
- All electrical connections should be performed by qualified professionals.
- Cable colors in this document are for reference only. The cable specifications should meet local laws and regulations.

No.	Cable	Type	Cable Specification
1	PE cable	Outdoors Cable	Cross sectional area $S_{PE} \geq S/2$. S is the cross sectional area of the output phase wire.
2	DC cable	PV standard cable that meets 1500V standard.	• Conductor cross-sectional area: 4~6mm^2 • Cable outer diameter: 5.5mm~8mm
3	AC cable (multi-core)	Multi-core outdoor cable	• Cable outer diameter: 22mm~67mm • Copper cable conductor cross sectional Area: $70 \leq S \leq 240$mm^2 • Aluminum alloy cable or copper-clad aluminum cable conductor cross sectional area: $95 \leq S \leq 240$mm^2
4	AC Cable (single-core)	Single-core outdoor cable	• Cable outer diameter: 11mm~35mm • Copper cable conductor cross sectional Area: $70 \leq S \leq 240$mm^2 • Aluminum alloy cable or copper-clad aluminum cable conductor cross sectional area: $95 \leq S \leq 240$mm^2 • PE conductor cross sectional area $S_{PE} \geq S/2$
5	RS485 communication cable	Outdoor shielded twisted pair. The cable should meet local requirements.	Cable length ≤ 1000m
6	Remote shutdown cable	Outdoor shielded twisted pair. The cable should meet local requirements.	N/A
Note: The values in this table are valid only if the external protective earthing conductor is made of the same metal as the phase conductors. Otherwise, the cross-sectional area of the external protective earthing conductor is to be determined in a manner which produces a conductance equivalent to that which results from the application of this table.			

6.2 Connecting the PE Cable

WARNING

- The PE cable connected to the enclosure of the inverter cannot replace the PE cable connected to the AC output port. Both of the two PE cables must be securely connected.
- Make sure that all the grounding points on the enclosures are equipotential connected when there are multiple inverters.
- To improve the corrosion resistance of the terminal, it is recommended to apply silica gel or paint on the ground terminal after installing the PE cable.
- The PE cable should be prepared by customers.



6.3 Connecting the PV Input Cable

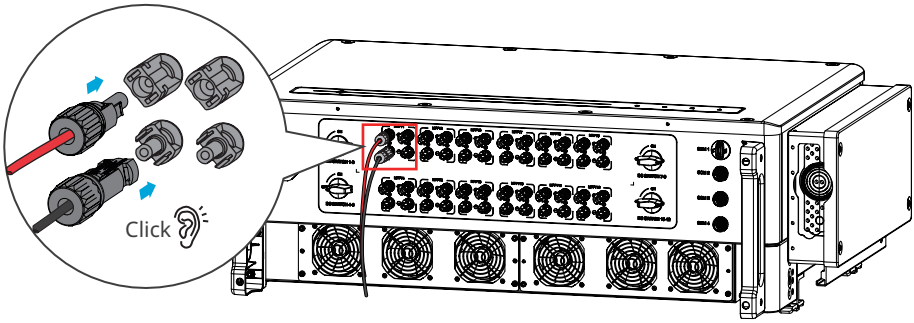
DANGER

Confirm the following information before connecting the PV string to the inverter. Otherwise, the inverter may be damaged permanently or even cause fire and cause personal and property losses.

1. Make sure that the max short circuit current and the max input voltage per MPPT are within the permissible range.
2. Make sure that the positive pole of the PV string connects to the PV+ of the inverter. And the negative pole of the PV string connects to the PV- of the inverter.

WARNING

- Connect the DC cables using the delivered PV connectors. The manufacturer shall not be liable for the damage if other connectors are used.
- The PV strings cannot be grounded. Ensure the minimum isolation resistance of the PV string to the ground meets the minimum isolation resistance requirements before connecting the PV string to the inverter.
- The DC input cable should be prepared by customers.



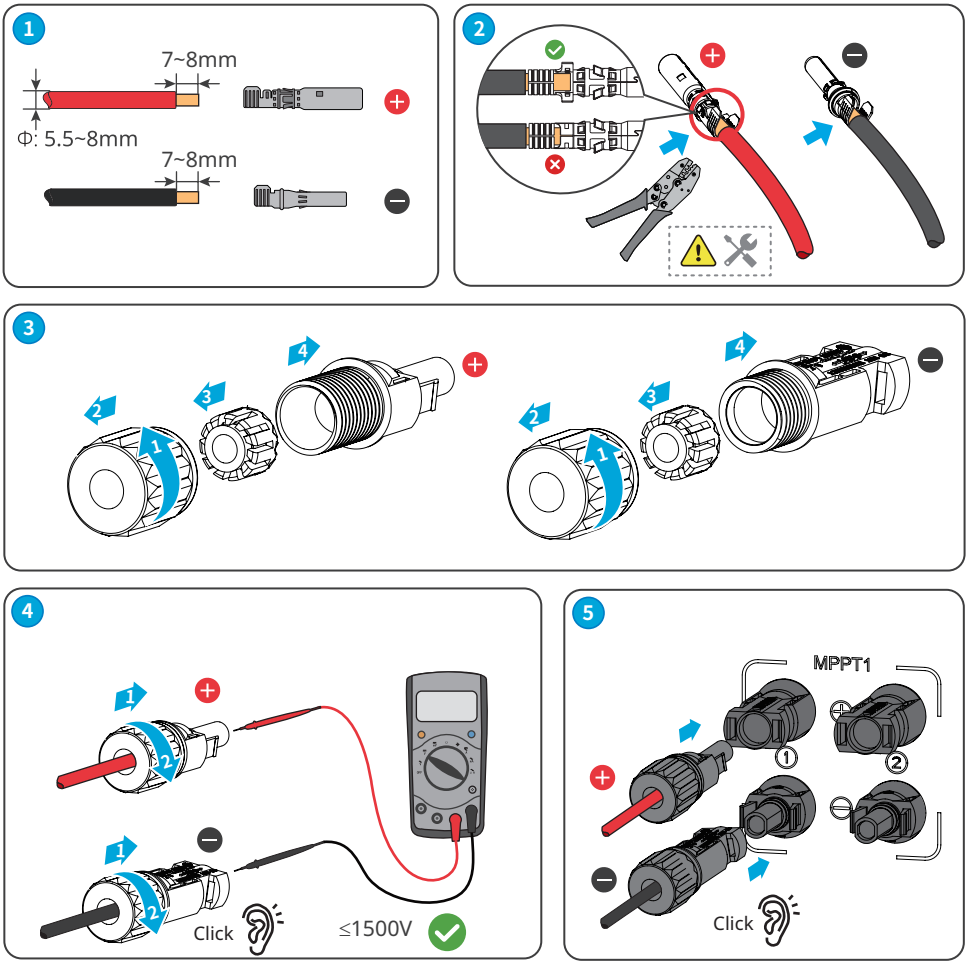
NOTICE

Seal the PV input terminals using waterproof covers when they are not to be used. Otherwise, the ingress protection rating will be influenced.

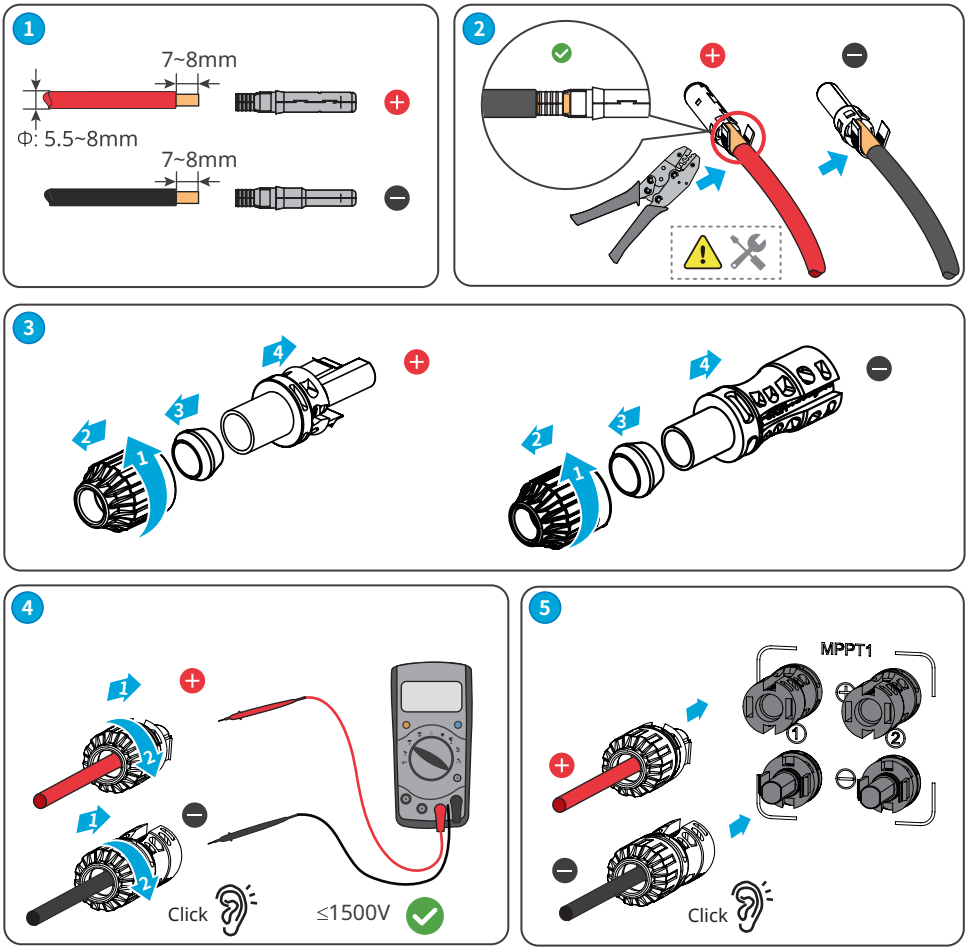
Connecting the DC Input Cable

Step 1 Prepare DC cables.
Step 2 Crimp the crimp contacts.
Step 3 Disassemble the PV connectors.
Step 4 Make the DC cable and detect the DC input voltage.
Step 5 Plug the PV connectors into the PV terminals.

Devalan DC Connector



MC4 DC Connector



6.4 Connecting the AC Output Cable

⚠ WARNING

Do not connect loads between the inverter and the AC switch directly connected to it.

Where an external RCD (Residual Current Device) is required in addition to the built-in RCMU (Residual Current Monitoring Unit), and a type A RCD must be used to avoid tripping.

Inverter model	Recommended RCD specifications
GW250K-HT, GW250KN-HT, GW225K-HT, GW225KN-HT	2500mA or higher

An AC circuit breaker should be installed on the AC side to make sure that the inverter can safety disconnect the grid when an exception happens. Select the appropriate AC circuit breaker in compliance with local laws and regulations. Recommended AC circuit breakers:

Inverter model	AC circuit breaker
GW250K-HT, GW250KN-HT, GW225K-HT, GW225KN-HT	250A

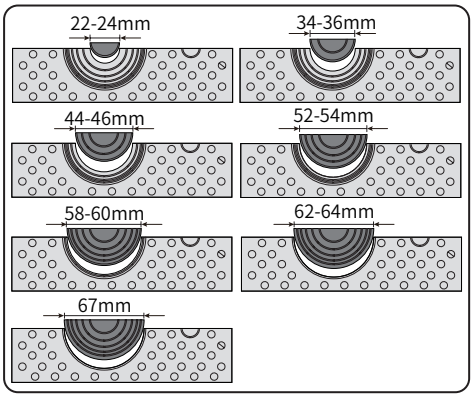
NOTICE

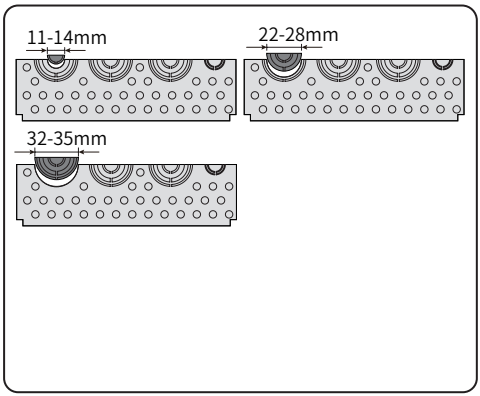
Install one AC circuit breaker for each inverter. Multiple inverters cannot share one AC circuit breaker.

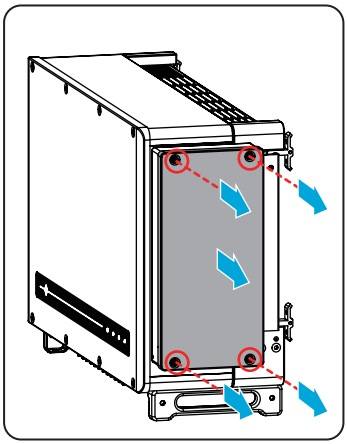
⚠ WARNING

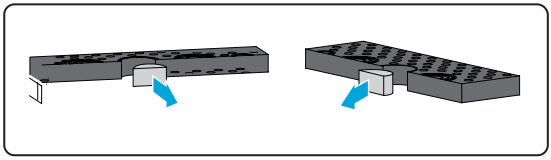
- Pay attention to the silkscreens L1, L2, L3, N, PE on the AC terminal. Connect the AC cables to the corresponding terminals. The inverter may be damaged if the cables are connected inappropriately.
- Make sure that the whole cable cores are inserted into the AC terminal holes. No part of the cable core can be exposed.
- Make sure that the cables are connected securely. Otherwise, the terminal may be too hot to damage the inverter when the inverter is working.
- The AC terminals can be connected in three-phase four-wire or three-phase five-wire. The actual wiring method may be different. The figure below takes the three-phase five-wire as an example.
- Reserve certain length of PE cable. Make ensure that the PE cable is the last one to bear the stress when the AC output cable is under tension.

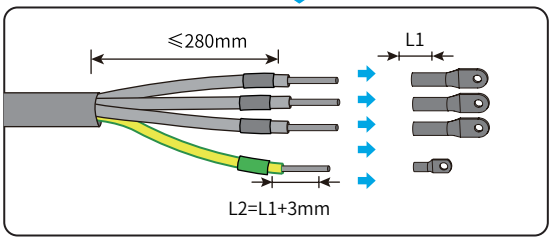
Step 1 Make the AC output cable.
Step 2 Dismantle the AC cover and take out the rubber ring.
Step 3 Cut the rubber ring to right size.
Step 4 Crimp the AC cable OT terminal
Step 5 Connect the AC output cables and install the cover.

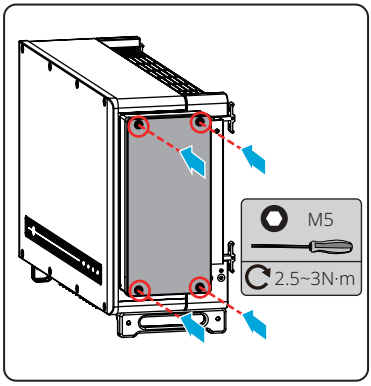


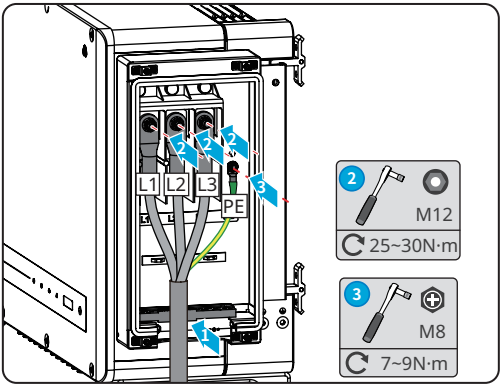












NOTICE

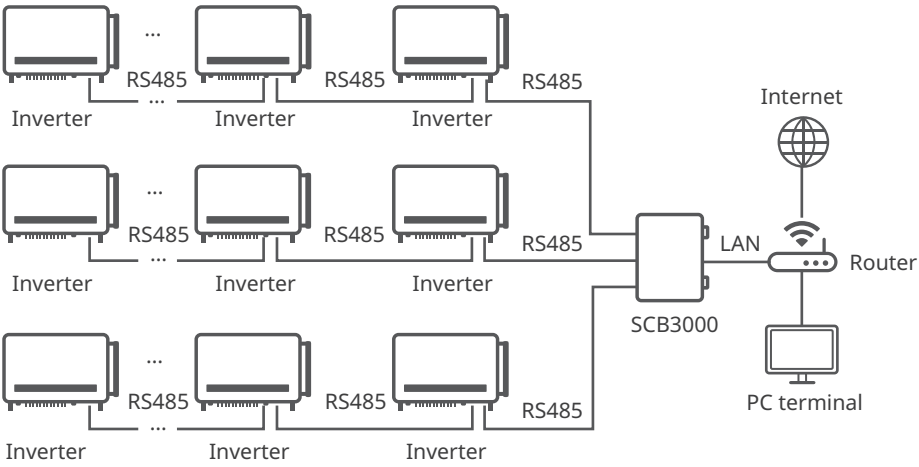
- Make sure that the cables are connected correctly and firmly after connections. Clean all the debris in the maintenance compartment.
- Seal the AC output terminal to ensure the Ingress Protection Rating.

6.5 Communication

6.5.1 Connecting the Communication Cable

NOTICE
Make sure that the communication device is connected to the right COM port. Route the communication cable far away from any interference source or power cable to prevent the signal from being influenced.

RS485 networking scenario



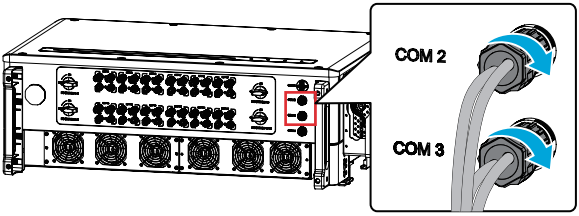
Connect the RS485 port of the inverter to the Data Logger. The total length of the connection cable is less than 1000m.
Keep the communication cable away from power cables to prevent the communication from being interrupted.
If more than 2 inverters are connected and also connected to the data logger, at most 20 inverters are allowed on the daisy chain.

Connecting the RS485 Communication Cable

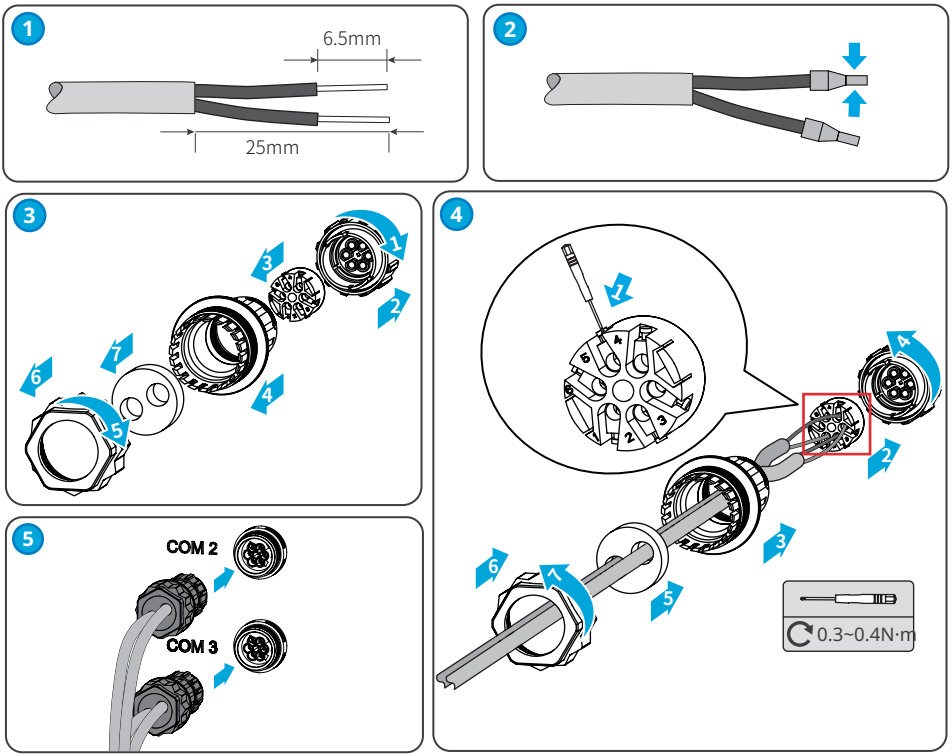
Communication Type	COM Port	Port Definition	Function Description
RS485	COM2	1: RS485 A 2: RS485 B 3: RS485 A 4: RS485 B 5: Grounding 6: Grounding	Used to connect the inverter to other inverters or the RS485 port on the data logger. You can refer to SCB3000 User Manual. Visit https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_SCB3000_User%20Manual-EN.pdf to get the user manual.
Reserved	COM3	-	-

NOTICE

Connect the RS485 cable using a 6PIN communication terminal as follows.

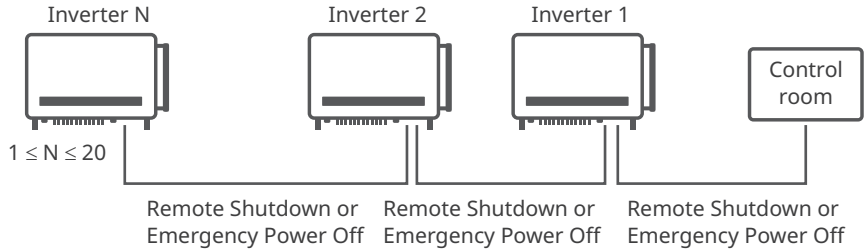


No.	COM2 (RS485)
1	RS485-A
2	RS485-B
3	RS485-A
4	RS485-B
5	Grounding
6	Grounding



Remote Shutdown and Emergency Power Off networking scenario

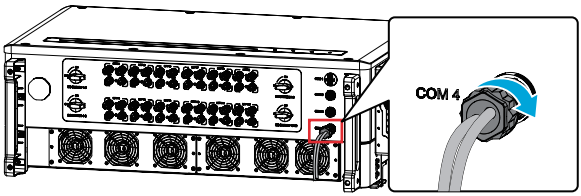
Remote Shutdown: For Europe only.
Emergency Power Off: For India only.

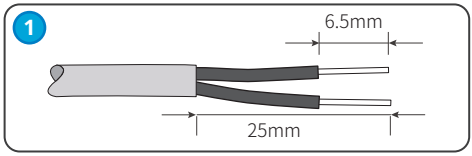


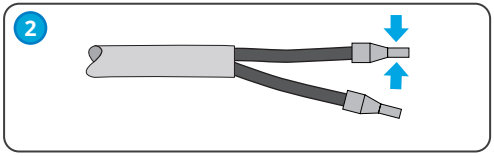
Connecting the Remote Shutdown and Emergency Power Off Communication Cable

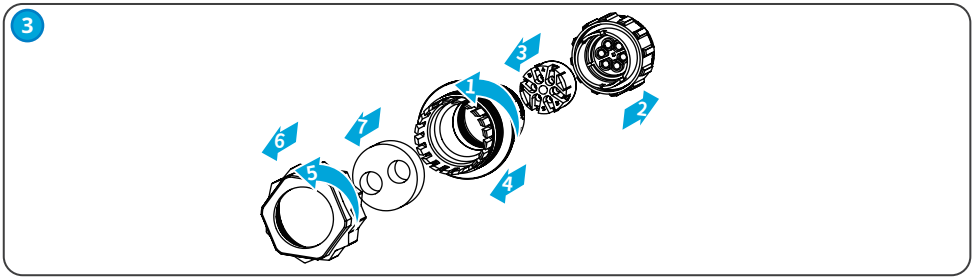
Communication Type	COM Port	Port Definition	Function Description
Remote Shutdown or Emergency Power Off	COM3	1: +24V 2: SHUTOFF1 3: Reserved 4: Reserved 5: +24V 6: SHUTOFF2	• The remote shutdown port is reserved to meet the safety regulations in Europe. Related devices have to be prepared by customers. • The Emergency Power Off port is reserved to meet the safety regulations in India. Related devices have to be prepared by customers.

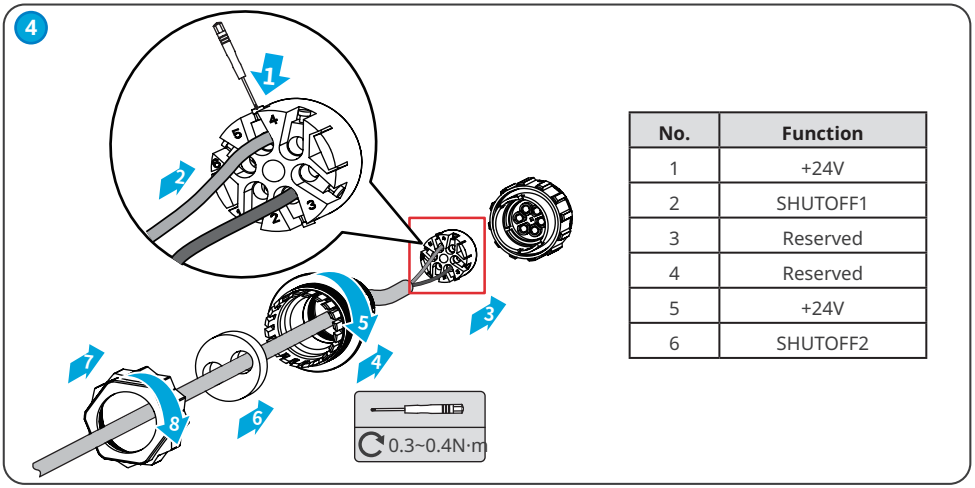
NOTICE
Connect the RS485 cable using a 6PIN communication terminal as follows.



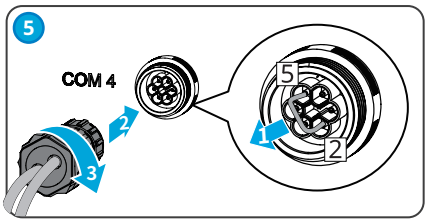








No.	Function
1	+24V
2	SHUTOFF1
3	Reserved
4	Reserved
5	+24V
6	SHUTOFF2

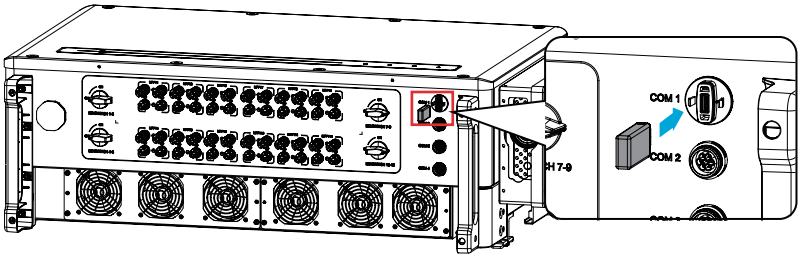


NOTICE

The Remote Shutdown communication port is installed with a short circuit wire. Remove the short circuit wire and keep it properly when enabling the Remote Shutdown function. Install the short circuit wire in PIN2 and PIN5 of the COM4 port when disabling the Remote Shutdown function.

6.5.2 Installing the Communication Module

Plug a Bluetooth module into the inverter to establish a connection between the inverter and the smartphone or web pages. Set inverter parameters, check running information and fault information, and observe system status in time via the smartphone or web pages.



NOTICE

- Refer to the delivered communication module user manual to get more introduction to the module. For more detailed information, visit www.goodwe.com.
- Remove the communication module using the unlock tool. The manufacturer shall not be liable for the port damage if the module is removed without the unlock tool.

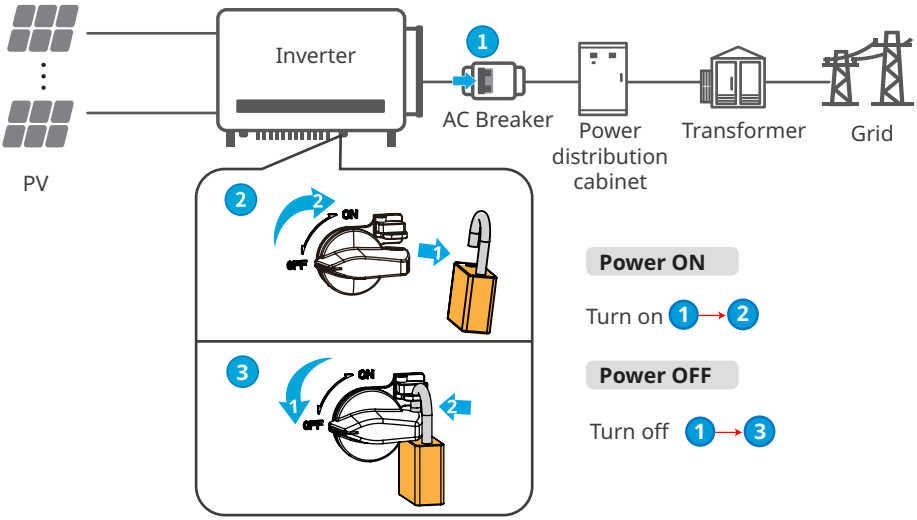
7 Equipment Commissioning

7.1 Check Items Before Switching Power ON

No.	Check Item
1	The inverter is firmly installed in a clean place where is well-ventilated and easy to operate.
2	The PE cable, DC input cable, AC output cable, and communication cable are connected correctly and securely.
3	Cable ties are routed properly and evenly, and no burrs.
4	Unused ports and terminals are sealed.
5	The voltage and frequency at the connection point meet the on-grid requirements.

7.2 Power On

Step 1 Turn on the AC switch between the inverter and the utility grid.
Step 2 Turn on the DC switch of the inverter.



The DC switch locking hole is for Australia only.

8 System Commissioning

8.1 Indicators and Button

Model without LCD

Model with LCD

Indicator	Status	Description
		ON = EQUIPMENT POWER ON
		OFF = EQUIPMENT POWER OFF
		ON = THE INVERTER IS FEEDING POWER
		OFF = THE INVERTER IS NOT FEEDING POWER
		SINGLE SLOW FLASH = SELF CHECK BEFORE CONNECTING TO THE GRID
		SINGLE FLASH = CONNECTING TO THE GRID
		ON = WIRELESS IS CONNECTED/ACTIVE
		BLINK 1 = WIRELESS SYSTEM IS RESETTING
		BLINK 2 = WIRELESS ROUTER PROBLEM
		BLINK 4 = WIRELESS SERVER PROBLEM
		BLINK = RS485 IS CONNECTED
		OFF = WIRELESS IS NOT ACTIVE
		ON = A FAULT HAS OCCURRED
		OFF = NO FAULT

LCD Button Description

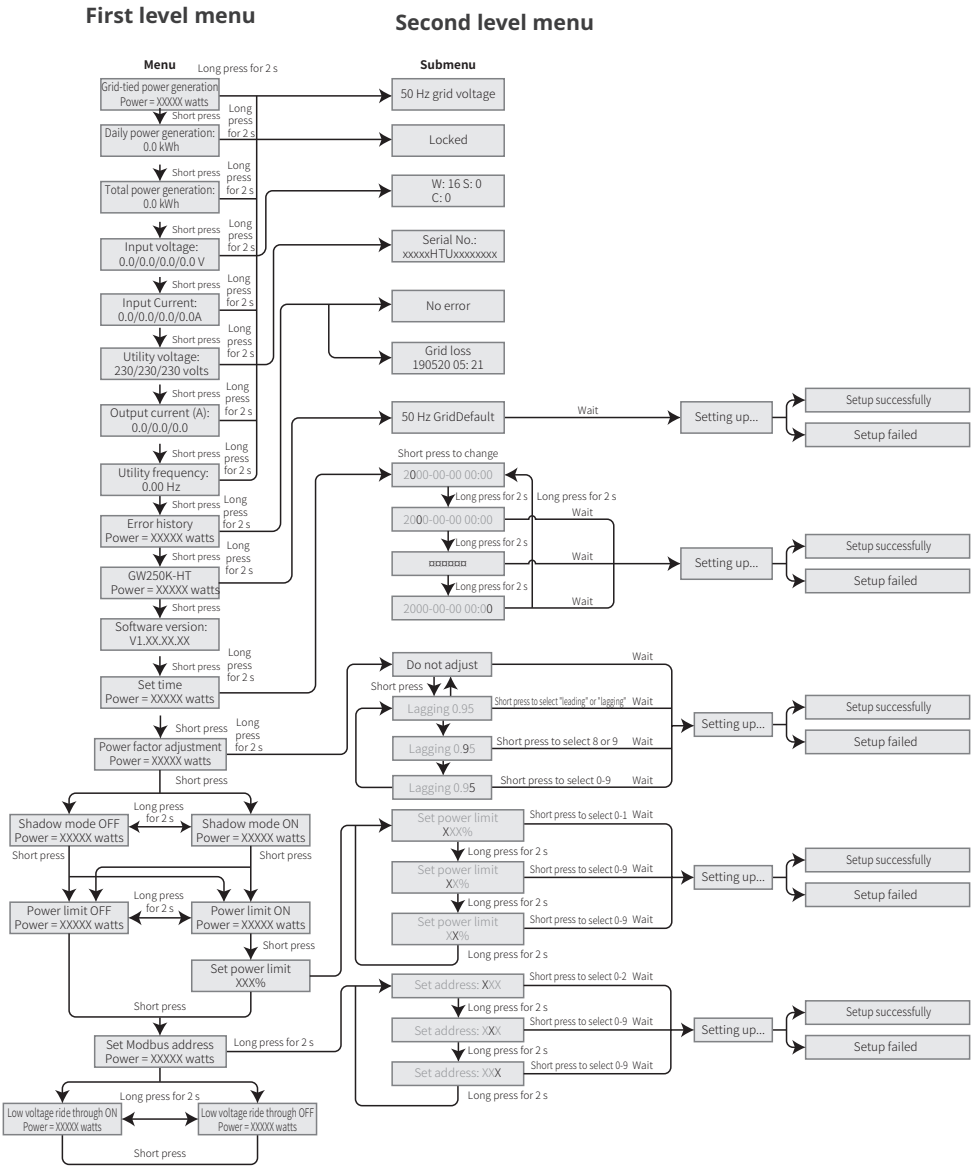
Stop pressing the button for a period in any page, the LCD will get dark and go back to the initial page, which means the parameter in that page has been saved successfully.

8.2 Setting Inverter Parameters via LCD

NOTICE
• Inverter software version shown in this document is V1.00.00.13. The screen shots are for reference only. The actual display may differ. • The name, range, and default value of the parameters is subject to change or adjust. The actual display prevails. • the power parameters should be set by professionals to prevent the generating capacity from being influenced by wrong parameters.

8.2.1 LCD Menu Introduction

This part describes the menu structure, allowing you view inverter information and set parameters more conveniently.



8.2.2 Inverter Parameter Introduction

Parameters	Description
Normal	Home page. Indicates the real-time power of the inverter. Long press for 2s to check the current safety code.
E-Today	Check the generated power of the system for that day.
E-Total	Check the total generated power of the system.
Vpv	Check the DC input voltage of the inverter.
Ipv	Check the DC input current of the inverter.
Vac	Check the voltage of the utility grid.
Iac	Check the AC output current of the inverter.
Fac	Check the frequency of the utility grid.
Error History	Check historical error message records of the inverter.
Model	Indicates the specific inverter model. Long press for 2s to set the safety code. Set the safety country in compliance with the local grid standards and application scenario of the inverter.
Ver	Check the software version.
Set Language	Set language accordingly. Languages: English, Portuguese, Spanish
Set Time	Set time according to the actual time in the country/region where the inverter is located.
RSSI	Indicates the received signal strength of the GPRS module and 4G module.
W/L Reset	Power off and restart the WiFi module.
W/L Reload	Restore the factory settings of the WiFi module. Reconfigure the WiFi module network parameters after restoring the factory settings,
PF Adjust	Set the power factor of the inverter according to actual situation.
Time Interval	Set Time Interval according to actual needs.
Shadow MPPT	Enable the shadow scan function if the PV panels are shadowed.
Power Limit	**Soft limit**: Set the power feed into the utility grid according to local requirements and standards. **Hard limit**: The inverter and the utility grid will automatically disconnect when the power feeds into the grid excesses the required limit.
Set Power Limit	Set the power feed back into the utility grid according to the actual situation.
Set Modbus Addr	Set the actual Modbus address.

Parameters	Description
LVRT	With LVRT on, the inverter will stay connected with the utility grid when a short-term utility grid low voltage exception occurs.
HVRT	With HVRT on, the inverter will stay connected with the utility grid when a short-term utility grid high voltage exception occurs.
Grid Type	Set the grid type according to the actual grid type. Supported grid type: star grid and delta grid.
Set ARC	ARC is optional and off by default. Enable or disable ARC accordingly.
Fault Clear	Clear ARC alarm records.
Self Check	Check whether ARC can work normally.
USB Mode Select	Reserved for troubleshooting by after-sales service staff.

8.3 Setting Inverter Parameters via App

SolarGo is an application used to communicate with the inverter via Bluetooth module, WiFi module, Wi-Fi/LAN module, 4G module, or GPRS module. Commonly used functions:

1. Check the operating data, software version, alarms of the inverter, etc.
2. Set grid parameters and communication parameters of the inverter.
3. Maintain the equipment.

For more details, refer to the SolarGo APP User Manual. Scan the QR code or visit https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_SolarGo_User%20Manual-EN.pdf to get the user manual.

SolarGo App

SolarGo App User Manual

8.4 Monitoring via SEMS Portal

SEMS Portal is an monitoring platform used to manage organizations/users, add plants, and monitor plant status.
For more details, refer to the SEMS Portal User Manual. Scan the QR code or visit https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_SEMS%20Portal-User%20Manual-EN.pdf to get the user manual.

SEMS Portal

SEMS Portal User Manual

9 Maintenance

9.1 Power Off the Inverter

DANGER

- Power off the inverter before operations and maintenance. Otherwise, the inverter may be damaged or electric shocks may occur.
- Delayed discharge. Wait until the components are discharged after power off.

Step 1 (optional) Send shutdown command to the inverter,
Step 2 Turn off the AC switch between the inverter and the utility grid.
Step 3 Turn off the DC switch of the inverter.

9.2 Removing the Inverter

⚠ WARNING

- Make sure that the inverter is powered off.
- Wear proper PPE before any operations.

Step 1 Disconnect all the cables, including DC cables, AC cables, communication cables, the communication module, and PE cables.
Step 2 Handle or hoist the inverter to take it down from the wall or the bracket.
Step 3 Store the inverter properly. If the inverter needs to be used later, ensure that the storage conditions meet the requirements.

9.3 Disposing of the Inverter

If the inverter cannot work any more, dispose of it according to the local disposal requirements for electrical equipment waste. Do not dispose of it as household waste.

9.4 Troubleshooting

Perform troubleshooting according to the following methods. Contact the after-sales service if these methods do not work.
Collect the information below before contacting the after-sales service, so tha the problems can be solved quickly.

1. Inverter information like serial number, software version, installation date, fault time, fault frequency, etc.
2. Installation environment, including weather conditions, whether the PV modules are sheltered or shadowed, etc. It is recommended to provide some photos and videos to assist in analyzing the problem.
3. Utility grid situation.

No.	Fault	Cause	Solutions
2	Utility Loss	1. Utility grid power failure. 2. The AC circuit or the AC breaker is disconnected.	1. Check whether other electrical devices under the same grid connection point is working normally and whether the main supply is normal. 2. Make sure that the upstream switches of the inverter are connected. 3. Make sure that the phase sequence of the AC cables are connected correctly, and the neutral wire and PE cable are connected properly and firmly.

No.	Fault	Cause	Solutions
4	Fac Fail	The utility grid frequency is out of the allowed range.	1. Check whether other electrical devices under the same grid connection point is working normally, and whether the main supply is normal. 2. Make sure that the grid frequency is within the allowed range. 3. Make sure that the phase sequence of the AC cables are connected correctly, and the neutral wire and PE cable are connected properly and firmly. 4. Pay attention to the frequency of the fault. If it happens occasionally, the fault may be caused by the instantaneous utility grid frequency change and does not need to be handled.
5	Isolation Fail	1. The PV system is short-circuited to the ground. 2. The PV system is in a moist environment and the circuit is not well insulated to the ground.	1. Check whether the PV input cables are broken. 2. Check whether the module frames and the metal bracket are securely grounded. 3. Check whether the AC side is properly grounded
6	DC inject High	DC injection exceeds the allowed range.	1. Check whether the software version is the latest one. 2. Restart the inverter and check whether the inverter can work properly.
7	Ground I Fail	The input insulation impedance to the ground decreases when the inverter is operating.	1. Check whether the working environment of the inverter meets the requirements. For example, the fault may occur due to high humidity on rainy days 2. Make sure that the components are properly grounded and the AC side is properly grounded.
8	PV Over Voltage	Excess PV modules are connected in the series, and the open-circuit voltage is higher than the operating voltage.	1. Check whether the PV string input voltage consistent with the value displayed on the LCD. 2. Check whether the PV string voltage meets the maximum input voltage requirements.

No.	Fault	Cause	Solutions
14	DC Bus High	Inverter internal fault.	1. Make sure that the software version is the latest one. 2. Restart the inverter to check whether the inverter can work properly.
17	AC HCT Fail		
18	GFCI Fail		
19	Relay Check Fail		
20	EEPROM R/W Fail		

9.5 Routine Maintenance

Maintaining Item	Maintaining Method	Maintaining Period
System Clean	Check the heat sink, air intake, and air outlet for foreign matter or dust.	Once 6-12 months
Fan	Check the fan for proper working status, low noise, and intact appearance.	Once a year
DC Switch	Turn the DC switch on and off ten consecutive times to make sure that it is working properly.	Once a year
Electrical Connection	Check whether the cables are securely connected. Check whether the cables are broken, or whether there is any exposed copper core.	Once 6-12 months
Sealing	Check whether all the terminals and ports are properly sealed. Reseal the cable hole if it is not sealed or too big.	Once a year

10 Technical Parameters

Technical Data	GW250K-HT	GW225K-HT	GW250KN-HT	GW225KN-HT
Input				
Max.Input Power (kW)	400	400	400	400
Max.Input Voltage (V)	1500	1500	1500	1500
MPPT Operating Voltage Range (V)	500~1500	500~1500	500~1500	500~1500
Start-up Voltage (V)	550	550	550	550
Nominal Input Voltage (V)	1160	1160	1160	1160
Max. Input Current per MPPT (A)	30	30	60	60
Max. Short Circuit Current per MPPT (A)	50	50	90	90
Max. Backfeed Current to The Array (A)	0	0	0	0
Number of MPP Trackers	12	12	6	6
Number of Strings per MPPT	2	2	3	3
Output				
Nominal Output Power (kW)	250	225	250	225
Nominal Output Apparent Power (kVA)	250	225	250	225
Max. AC Active Power (kW)	250	247.5	250	247.5
Max. AC Apparent Power (kVA)	250	247.5	250	247.5
Nominal Power at 40℃ (kW)	250	225	250	225
Max Power at 40℃ (Including AC Overload) (kW)	250	247.5	250	247.5
Nominal Output Voltage (V)	800, 3L/PE			
Output Voltage Range (V)	640~920			
Nominal AC Grid Frequency (Hz)	50 / 60			
AC Grid Frequency Range (Hz)	45~55/55~65			
Max. Output Current (A)	180.5	178.7	180.5	178.7
Nominal Output Current (A)	180.5	162.4	180.5	162.4

Technical Data	GW250K-HT	GW225K-HT	GW250KN-HT	GW225KN-HT
Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)			
Max. Total Harmonic Distortion	<3%			
Maximum Output Overcurrent Protection (A)	258			
Efficiency				
Max. Efficiency	99.0%	99.0%	99.0%	99.0%
European Efficiency	98.5%	98.5%	98.7%	98.7%
CEC Efficiency	98.5%	98.5%	98.8%	98.8%
Protection				
PV String Current Monitoring	Integrated			
Internal Humidity Detection	Integrated			
PV Insulation Resistance Detection	Integrated			
Residual Current Monitoring	Integrated			
PV Reverse Polarity Protection	Integrated			
Anti-islanding Protection	Integrated			
AC Overcurrent Protection	Integrated			
AC Short Circuit Protection	Integrated			
AC Overvoltage Protection	Integrated			
DC Switch	Integrated			
DC Surge Protection	Type II			
AC Surge Protection	Type II			
AFCI	Optional			
Emergency Power Off	Optional			
Remote Shutdown	Optional			
Anti-PID	Optional			
PID Recovery	Optional			
Reactive Power Compensation at Night	Integrated			
Power Supply at Night	Integrated			
General Data				

Technical Data	GW250K-HT	GW225K-HT	GW250KN-HT	GW225KN-HT
Operating Temperature Range (℃)	-30 ~ 60(60 °C for outdoor unconditioned with solar effects.)			
Relative Humidity	0~100%			
Max. Operating Altitude (m)	5000 (>4000 derating)			
Cooling Method	Smart Fan Cooling			
Display	LED (LCD optional), Bluetooth + APP			
Communication	RS485 or PLC			
Communication protocols	Modbus RTU			
Weight (Kg)	111			
Dimension (W×H×Dmm)	1091×678×341			
Noise Emission (dB)	< 70			
Topology	Non-isolated			
Self-consumption at Night (W)	< 18			
Tracker Communication Interface	Integrated			
Tracker Power Interface	Integrated			
Ingress Protection Rating	IP66			
Anti-corrosion Class	C5 (Optional)			
DC Connector	MC4-Evo2 (4~6 mm^2)			
AC Connector	OT / DT terminal (Max. 300 mm^2)			
Environmental Category	4K4H			
Pollution Degree	III			
Overvoltage Category	DC II/AC III			
Protective Class	I			
The Decisive Voltage Class (DVC)	PV: C AC: C COM: A			
Active Anti-islanding Method	AQDPF			
Country of Manufacture	China			

Overvoltage levels:
Overvoltage I: Devices connected to the circuit which can limit instantaneous overvoltage to a relatively low level.
Overvoltage II: Energy-consuming devices powered by fixed power distribution equipment, including appliances, portable tools, and other household and similar equipment. Overvoltage III is also applicable if there are special requirements for the reliability and applicability of the equipment.
Overvoltage III: Devices apply to fixed distribution equipment, including switches in the fixed power distribution equipment and industrial equipment permanently connected to fixed power distribution equipment. The reliability and applicability of the equipment have to meet special requirements.
Overvoltage IV: Devices apply to the power distribution equipment, such as measuring instruments and prepositioned overcurrent protection devices, etc.

Humidity Levels:

Environmental Parameters	Level		
	3K3	4K2	4K4H
Temperature range	0°C - +40°C	-33°C - +40°C	-20°C - +55°C
Humidity range	5% to 85%	15% to 100%	4% to 100%

Environmental levels:
Outdoor inverter: The ambient temperature range is -25°C - +60°C, suitable for an environment with pollution of level 3;
Indoor type II inverter: The ambient temperature range is -25°C - +40°C, suitable for an environment with pollution of level 3;
Indoor type I inverter: The ambient temperature range is 0°C - +40°C, suitable for an environment with pollution of level 2;

Pollution levels:
Pollution level 1: No pollution or dry and non-conductive pollution only;
Pollution level 2: Usually non-conductive pollution only, but there may be temporary conductive pollution caused by condensation;
Pollution level 3: Conductive pollution or non-conductive pollution turns to conductive pollution due to condensation;
Pollution level 4: Persistent conductive pollution, such as pollution caused by conductive dust or rain and snow.

GoodWe Website

GoodWe Technologies Co., Ltd.

No. 90 Zijin Rd., New District, Suzhou, 215011, China

www.goodwe.com

service@goodwe.com

Local Contacts