

# GOODWE



## User Manual

**Grid-Tied PV Inverter**

DNS Series

2.9-6kW

V1.1-2023-05-30

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**NOTICE**

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

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# 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 <https://en.goodwe.com>.

## 1.1 Applicable Model

This manual applies to the listed inverters below (DNS or Inverter for short):





Model	Nominal Output Power	Nominal Output Voltage
GW2900D-NS	2.9kW	127V
GW3000D-NS	3kW	220/230/240V
GW3600D-NS	3.6kW	
GW4200D-NS	4.2kW	
GW5000D-NS	5kW	
GW6000D-NS	6kW	
GW3000T-DS	3kW	
GW3600T-DS	3.6kW	
GW4200T-DS	4.2kW	
GW5000T-DS	5kW	
GW6000T-DS	6kW	
GW5KBD-NS	5kW	
GW6KBD-NS	6kW	

## 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:


Indicates a high-level hazard that, if not avoided, will result in death or serious injury.

Indicates a medium-level hazard that, if not avoided, could result in death or serious injury.

Indicates a low-level hazard that, if not avoided, could result in minor or moderate injury.

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 2022-12-15

- First Issue

### V1.1 2023-05-30

- Update 10 Technical Parameters.

## 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 user manual is subject to change due to product updates or other reasons. This guide cannot replace the product labels or the safety precautions in the user manual unless otherwise specified. All descriptions here are for guidance only.
- Before installations, read through the quick installation guide. For additional information, please see the user manual.
- 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, please visit <https://en.goodwe.com/warranty>.

### 2.2 DC Side

#### DANGER

Connect the DC cables using the delivered PV connectors. 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, securely and correctly.
- Measure the DC cable using the multimeter to avoid reverse polarity connection. Also, the voltage should be under the permissible range.









### 2.3 AC Side

#### WARNING

- The voltage and frequency at the connection point meet the inverter grid connection requirements
- Additional protective devices like circuit breakers or fuses are recommended on the AC side. Specification of the protective device should be at least 1.25 times the rated AC output rated current.
- Make sure that all the groundings are tightly connected.
- 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

 <b>DANGER</b>	
<ul style="list-style-type: none"> <li>Do not apply mechanical load to the terminals, otherwise the terminals can be damaged.</li> <li>All labels and warning marks should be visible after the installation. Do not scrawl, damage, or cover any label on the device.</li> <li>Inverters shall not be used in multiple inverter combinations for AS/NZS 4777.2:2020.</li> <li>Warning labels on the inverter are as follows.</li> </ul>	

	DANGER High voltage hazard. Disconnect all incoming power and turn off the product before working on it.		Delayed discharge. Wait 5 minutes after power off until the components are completely discharged.
	Read through the user manual before working on this device.		Potential risks exist. Wear proper PPE before any operations.
	High-temperature hazard. Do not touch the product under operation to avoid being burnt.		Grounding point.
	CE Mark		Do not dispose of the inverter as household waste. Discard the product in compliance with local laws and regulations, or send it back to the manufacturer.

## 2.5 Personal Requirements

<b>NOTICE</b>	
<ul style="list-style-type: none"> <li>Personnel who install or maintain the equipment must be strictly trained, learn about safety precautions and correct operations.</li> <li>Only qualified professionals or trained personnel are allowed to install, operate, maintain, and replace the equipment or parts.</li> </ul>	



## 2.6 EU Declaration of Conformity

GoodWe Technologies Co., Ltd. hereby declares that the inverter with wireless communication modules sold in the European market meets the requirements of the following directives:

- Radio Equipment Directive 2014/53/EU (RED)
- Restrictions of Hazardous Substances Directive 2011/65/EU and (EU) 2015/863 (RoHS)
- Waste Electrical and Electronic Equipment 2012/19/EU
- Registration, Evaluation, Authorization and Restriction of Chemicals (EC) No 1907/2006 (REACH)

GoodWe Technologies Co., Ltd. hereby declares that the inverter without wireless communication modules sold in the European market meets the requirements of the following directives:

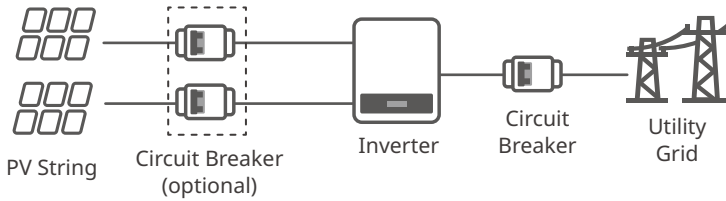
- Electromagnetic compatibility Directive 2014/30/EU (EMC)
- Electrical Apparatus Low Voltage Directive 2014/35/EU (LVD)
- Restrictions of Hazardous Substances Directive 2011/65/EU and (EU) 2015/863 (RoHS)
- Waste Electrical and Electronic Equipment 2012/19/EU
- Registration, Evaluation, Authorization and Restriction of Chemicals (EC) No 1907/2006 (REACH)

You can download the EU Declaration of Conformity on <https://en.goodwe.com>.

### 3 Product Introduction

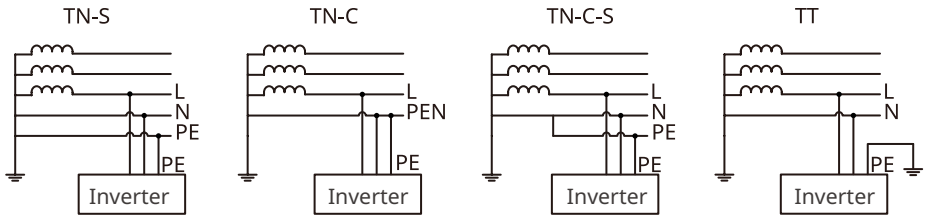
#### 3.1 Application Scenarios

The DNS inverter is a single-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:



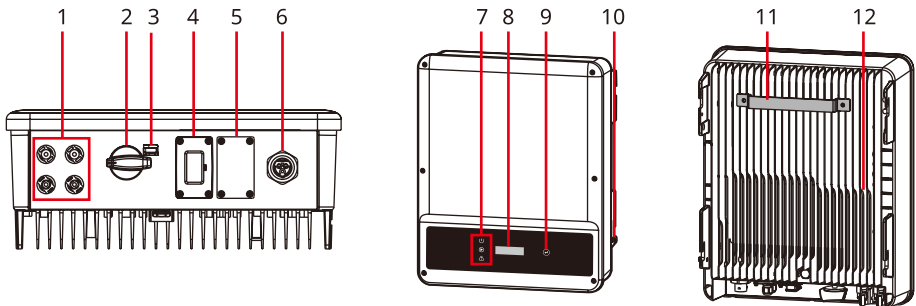
#### 3.2 Supported Grid Types

For the grid type with neutral wire, the N to ground voltage must be less than 10V.



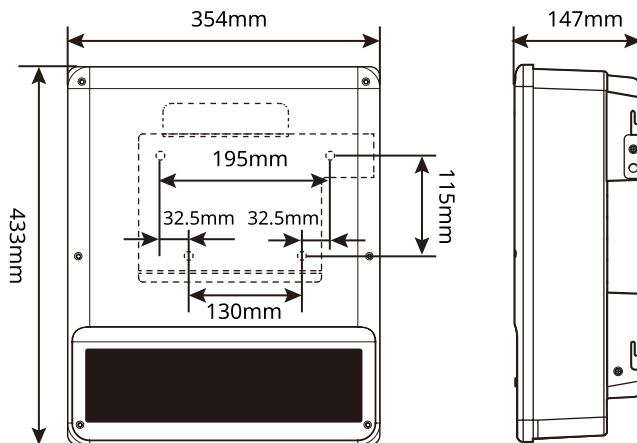
#### 3.4 Appearance

##### 3.4.1 Parts
















No.	Parts	Description
1	PV Input Terminal	Used to connect the PV module DC input cables.
2	DC Switch	Start or stop DC input.
3	DC Switch Lock	Only for Australia. Turn the DC switch to OFF and lock it to avoid electric shock when you have to work on the inverter.
4	WiFi/4G/LAN/GPRS Communication Module Port or RS485 Communication Cable Port	<ul style="list-style-type: none"> <li>Connect a communication module like WiFi, LAN, GPRS, 4G, etc. The module type may differ depending on actual needs.</li> <li>Connect the RS485 Communication Cable.</li> <li>Update the software version of the inverter using a USB flash driver.</li> </ul>
5	DRED/CT/Remote Shutdown Communication Cable Port	Used to connect the DRED or remote shutdown communication cable.
6	AC Output Terminal	Used to connect the AC output cable, which connects the inverter and the utility grid.
7	Indicator	Indicates working state of the inverter.
8	LCD	Used to check the parameters of the inverter.
9	Button	Used to select menus displayed on the screen.
10	PE Terminal	Used to connect the PE cable.
11	Mounting Plate	Used to install the inverter.
12	Heat Sink	Used to cool the inverter.

### 3.4.2 Dimensions



### 3.4.3 Indicators

Indicator	Status	Description
 Power		ON = WiFi is connected/active.
		BLINK 1 = WiFi system is resetting.
		BLINK 2 = WiFi not connect to the router.
		BLINK 4 = WiFi server problem
		BLINK = RS485 is connected.
		OFF = WiFi is not active.
 Operating		ON = The inverter is feeding power.
		OFF = The inverter is not feeding power at the moment.
 Faulty		ON = A fault has occurred.
		OFF = No fault.

### 3.4.4 Nameplate





The nameplate is for reference only.





GOODWE

**Product: Grid-Tied PV Inverter**  
**Model : \*\*\*\*\*\_\*\*\*\_\*\*\***

PV Input	UDCmax: **** Vd.c.
	UMPP: **.* Vd.c.
	IDC,max: ** Ad.c.
	ISC,PV: ** Ad.c.
Output	UAC,r: *** Va.c.
	fAC, r: ** Hz
	PAC,r: ** kW
	IAC,max: ** Aa.c.
	Sr: ** kVA
	Smax: ** kVA

P.F.: ~\*. \*\*cap.,\*\*ind  
 Toperating: ~\*~\* °C  
 Non-isolated, IP\*\*, protective Class I, OVC DCII/ACIII

S/N:
 

\*\*\*\*\* Co., Ltd.  
 E-mail: \*\*\*\*\*@\*\*\*\*\*.com  
 \*\*\*\*\*

S/N

GW 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

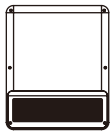
Check the following items before receiving the product.

1. Check the outer packing box for damage, such as holes, cracks, deformation, and other 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.

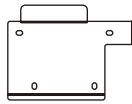
### 4.2 Deliverables

#### Notice

- Number of expansion bolts, spare screws, and 2PIN terminals are various depending on the different inverters. The actual accessories may differ.
- Communication module types: WiFi, LAN, GPRS, 4G, etc. The actual module delivered depends on the communication method of the selected inverter.
- 2PIN terminal is used to connect CT communication cable.



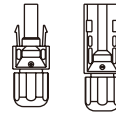
Inverter x 1



Mounting plate x 1



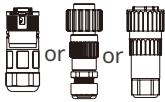
Expansion bolt  
x N



PV connector x 2



Documents x 1



AC connector x 1



Spare Screws  
x N



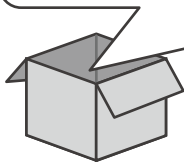
2PIN terminal  
x N



Communication  
Module x N



PE OT  
Terminal x 1



## 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.

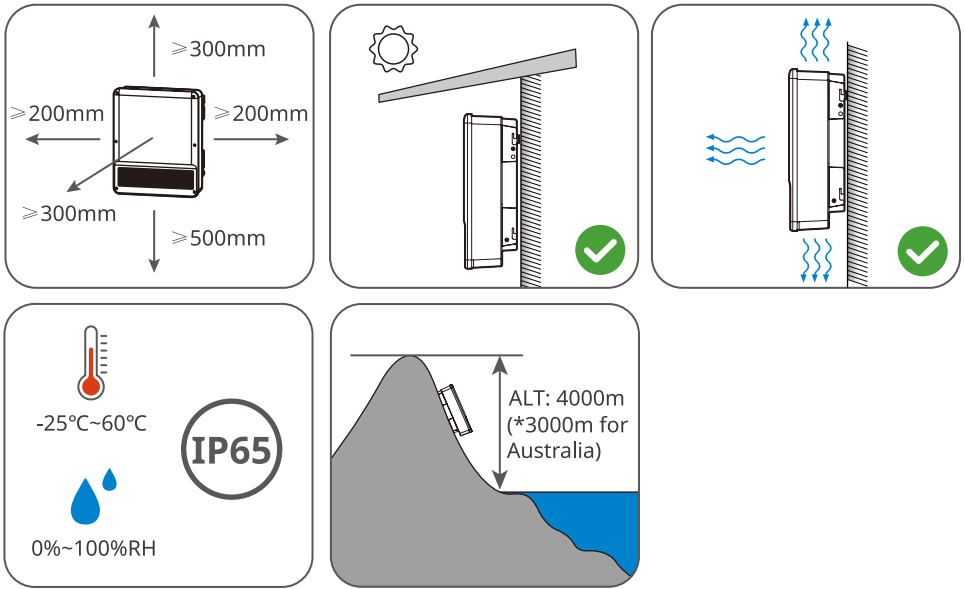
## 5 Installation

### 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. The altitude to install the inverter shall be lower than the maximum working altitude 4000m(3000m for Australia).
9. The inverter is easy to be corroded when installed in salt areas. Please consult the inverter manufacturer before installing it outdoors in salt areas. A salt area refers to the region within 1000m offshore or affected by the sea breeze. The area prone to the sea breeze varies depending on weather conditions (e.g. typhoon, monsoon) or terrain (such as dams and hills).
10. Install the inverter away from high magnetic field to avoid electromagnetic interference. If there is any radio or wireless communication equipment below 30MHz near the inverter, you have to:
  - Install the inverter at least 30m far away from the wireless equipment.
  - Add a low pass EMI filter or a multi winding ferrite core to the DC input cable or AC output cable of the inverter.



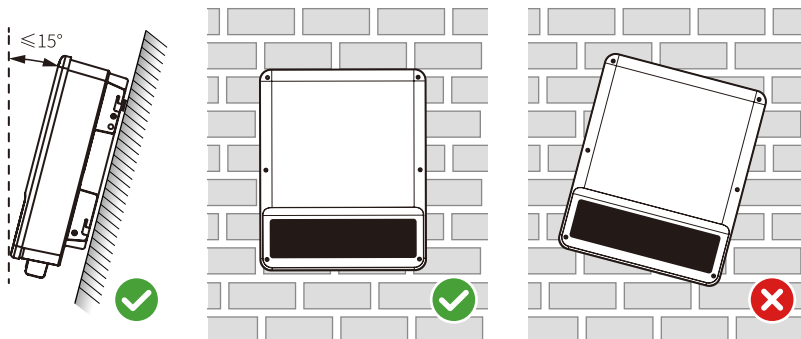


**Mounting Support Requirements**

- The mounting support shall be nonflammable and fireproof.
- Make sure that the support surface is solid enough to bear the product weight load.
- 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 maximum back tilt of 15 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.

 <p>Goggles</p>	 <p>Safety shoes</p>	 <p>Safety gloves</p>	 <p>Dust mask</p>	 <p>DC terminal crimping tool</p>
 <p>Diagonal pliers</p>	 <p>Wire stripper</p>	 <p>Hammer drill</p>	 <p>Heat gun</p>	 <p>DC wiring wrench</p>
 <p>Marker</p>	 <p>Level</p>	 <p>Heat shrink tube</p>	 <p>Rubber hammer</p>	 <p>Vacuum cleaner</p>
 <p>Multimeter</p>	 <p>Cable tie</p>	 <p>Torque wrench</p>		

## 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 to avoid falling down 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.
- The DC switch lock is prepared by the customer.

**Step 1** Put the mounting plate on the wall or the support horizontally and mark positions for drilling holes.

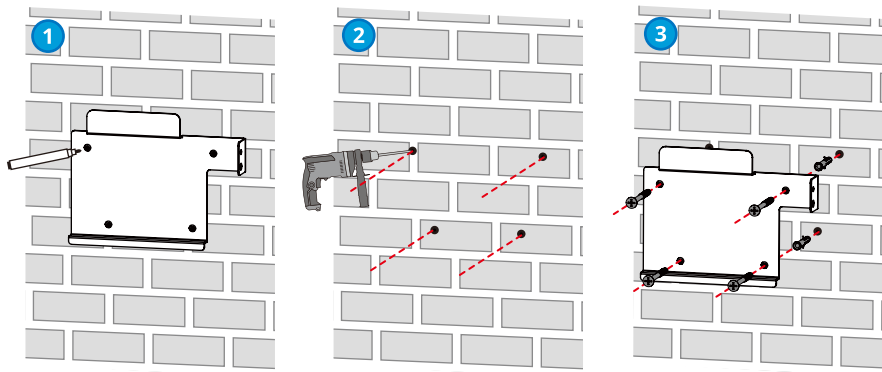
**Step 2** Drill holes to a depth of 80mm using the hammer drill. The diameter of the drill bit should be 10mm.

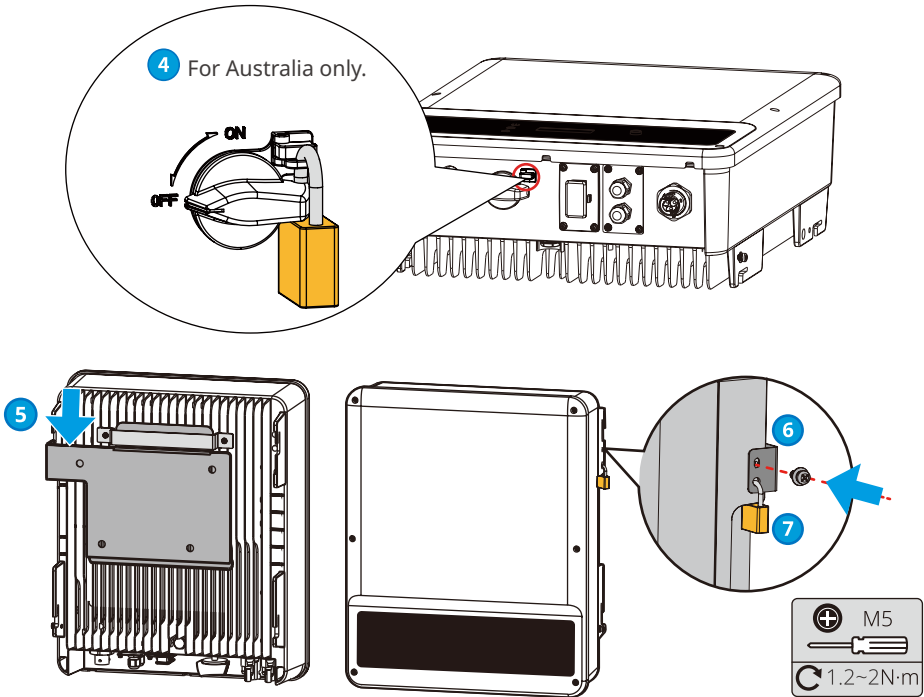
**Step 3** Secure the mounting plate using the expansion bolts.

**Step 4 (Only for Australia.)** Install the DC switch lock.

**Step 5-6** Install the inverter on the mounting plate.

**Step 7** Install the anti-theft lock.





## 6 Electrical Connection

### 6.1 Safety Precaution

 **DANGER**

- Disconnect the DC switch and the AC output switch of the inverter to power off the inverter 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 cable bears too much tension, the connection may be poor. Reserve a certain length of the cable before connecting it to the inverter cable port.

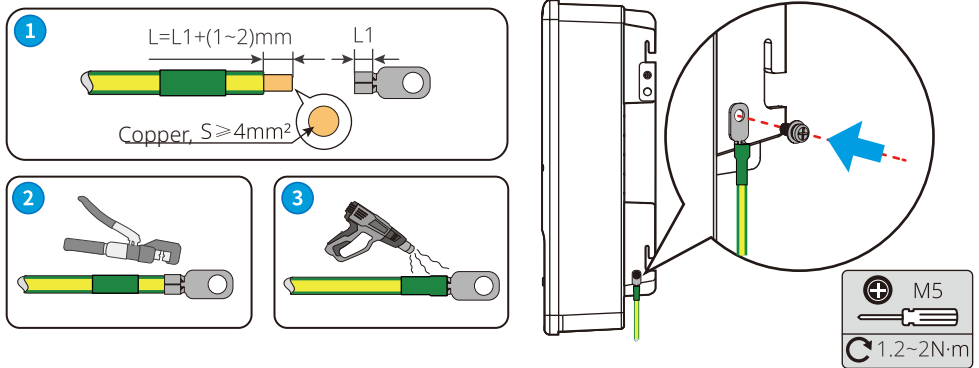
**NOTICE**

- 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 shall meet local laws and regulations.

## 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. Make sure that both of the two PE cables are 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, you are recommended to apply silica gel or paint on the ground terminal after installing the PE cable.
- The PE cable is prepared by the customer. Recommended specifications:
  - Type: single-core outdoor copper cable
  - Conductor cross-sectional area:  $\geq 4\text{mm}^2$



## 6.3 Connecting the PV Input Cable

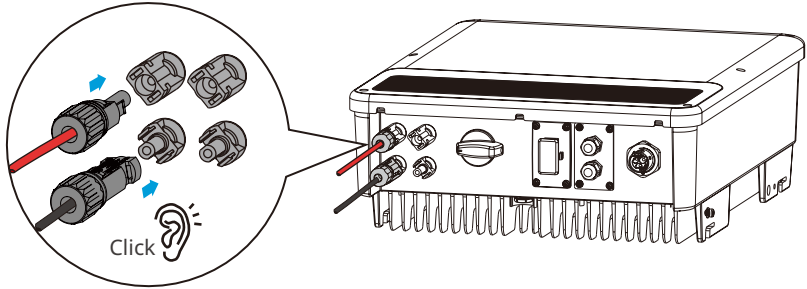
### ⚠ DANGER

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 is prepared by the customer. Recommended specifications:
  - Type: the outdoor photovoltaic cable that meets the maximum input voltage of the inverter.
  - Conductor cross-sectional area: 2.5~4mm<sup>2</sup> (Devalan) or 4~6mm<sup>2</sup> (MC4).



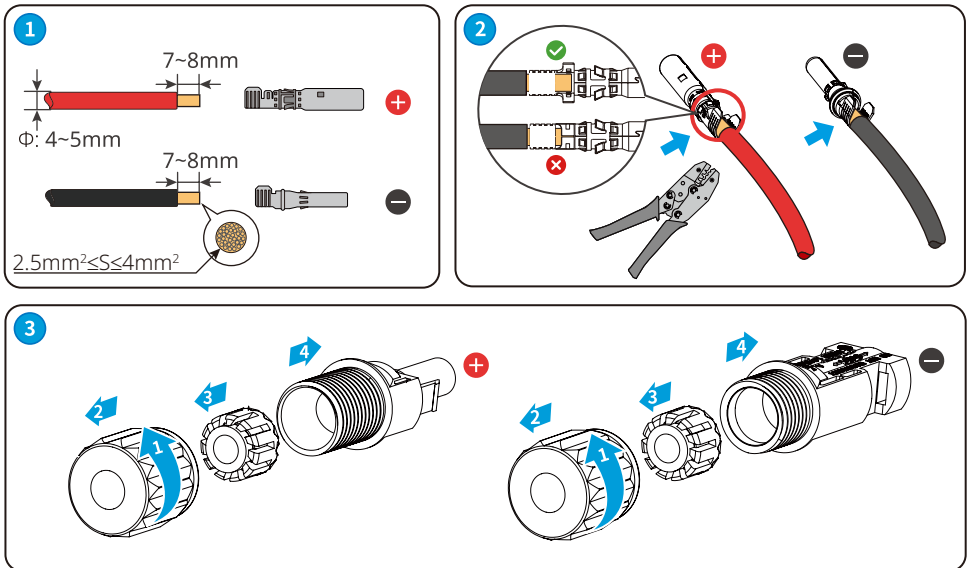
**NOTICE**

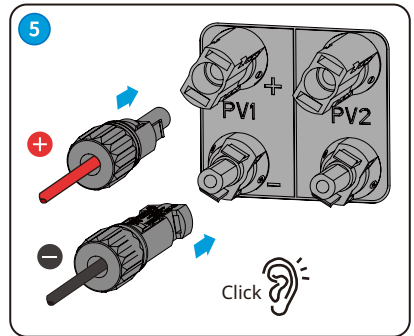
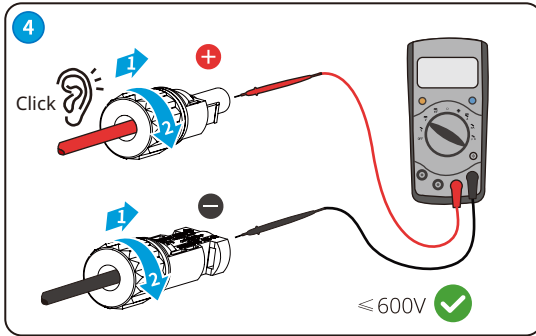
Seal the PV input terminals using waterproof covers when they are not to be used. Otherwise, the ingress protection rating will be influenced.

**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 PV connector**





### 6.4 Connecting the AC Output Cable

**⚠ WARNING**

- Do not connect loads between the inverter and the AC switch directly connected to the inverter.
- The Residual Current Monitoring Unit (RCMU) is integrated into the inverter. The inverter will disconnect the utility grid rapidly once it detects any leak current over the permissible range.

An AC circuit breaker shall be installed on the AC side to make sure that the inverter can safely 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
GW2900D-NS	30A
GW3000D-NS	20A
GW3600D-NS	
GW4200D-NS	25A
GW5000D-NS	30A
GW6000D-NS	35A
GW3000T-DS	20A
GW3600T-DS	
GW4200T-DS	25A
GW5000T-DS	30A
GW6000T-DS	35A
GW5KBD-NS	30A
GW6KBD-NS	35A

Select and Install RCD depending on local laws and regulations. Type A RCDs (Residual Current Monitoring Device) can be connected to the outside of the inverter for protection when the DC component of the leakage current exceeds the limit value. The following RCDs are for reference:

Model	RCD specifications
GW2900D-NS	300mA
GW3000D-NS	
GW3600D-NS	
GW4200D-NS	
GW5000D-NS	
GW6000D-NS	
GW3000T-DS	
GW3600T-DS	
GW4200T-DS	
GW5000T-DS	
GW6000T-DS	
GW5KBD-NS	
GW6KBD-NS	

#### NOTICE

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

#### WARNING

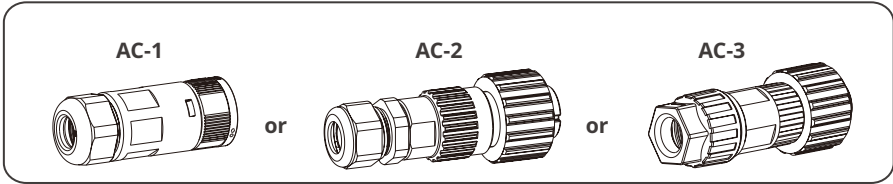
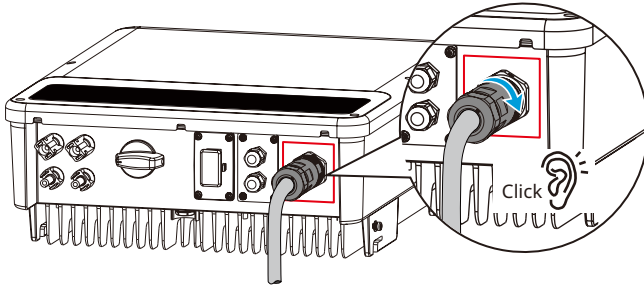
- Pay attention to the silkscreens L, N, PE on the AC terminal. Connect the AC cables to the corresponding terminals. The inverter may be damaged if the cables are connected inappropriately.
- Make sure that the whole cable cores are inserted into the AC terminal holes. No part of the cable core can 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.

**Step 1** Make the AC output cable.

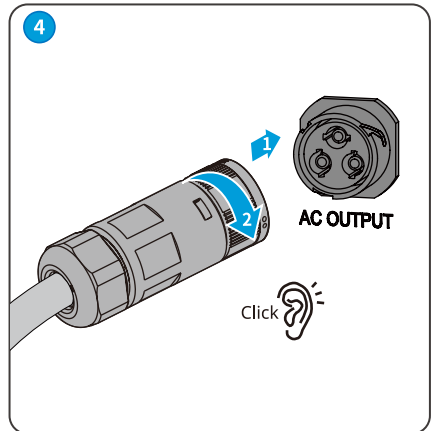
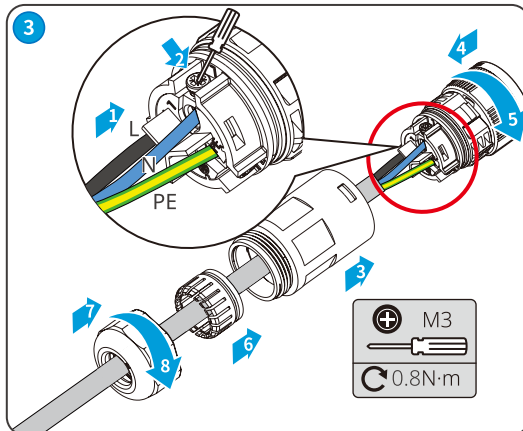
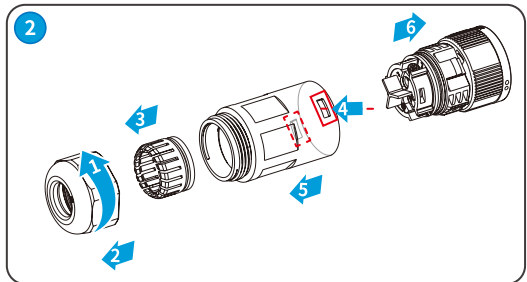
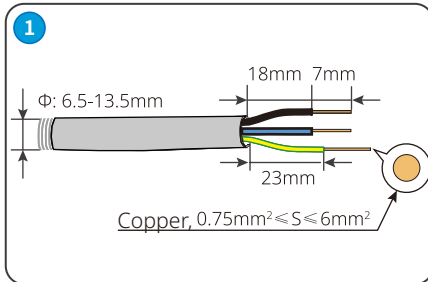
**Step 2** Disassemble the AC connector.

**Step 3** Insert the AC output cable into the AC connector.

**Step 4** Plug the AC connector into the inverter.

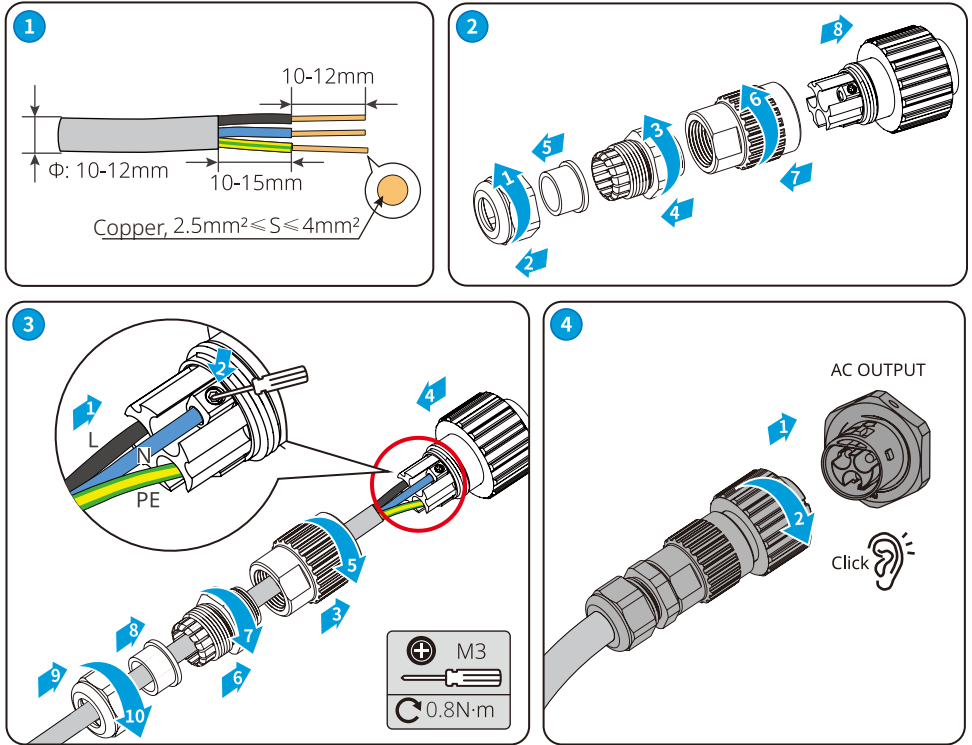


### AC-1 Connector

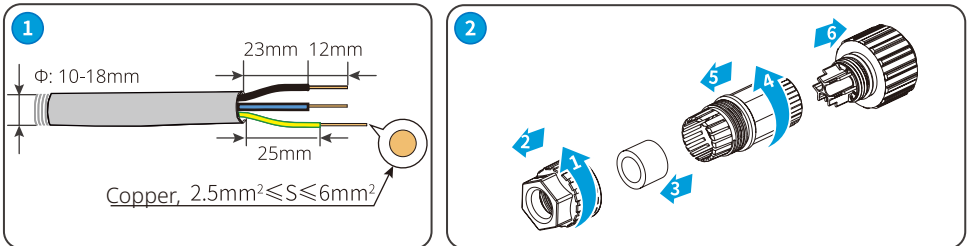


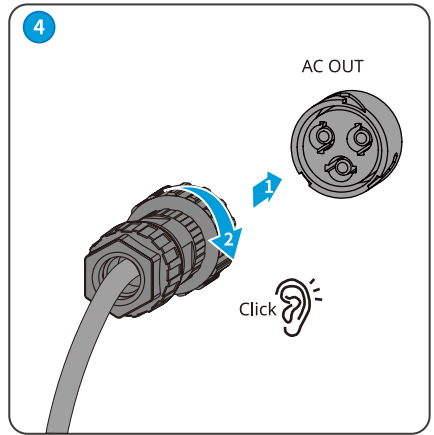
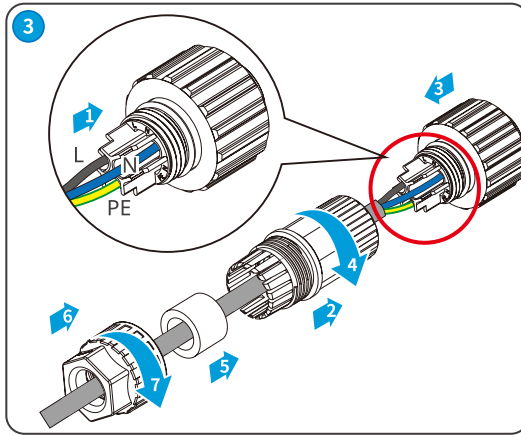


## AC-2 Connector



## AC-3 Connector





**NOTICE**

- Make sure that the cable is connected correctly and securely. Clear the debris after completing the connection.
- Seal the AC output terminal to ensure the ingress protection rating.

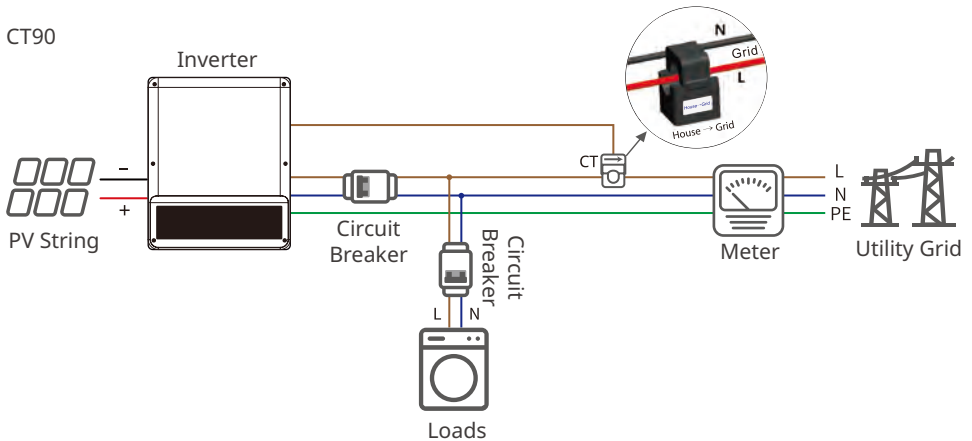
## 6.5 Communication

### 6.5.1 Communication Network Introduction

#### Power Limit Network

The PV station generates power for self-consumption, but the electric equipment cannot consume all the generated power. The inverter can monitor the on-grid electric data in real-time and adjust the output power via a smart meter to avoid the residual current feeding back to the utility grid.

CT90



**Notice**

After completing cable connections, set related parameters via LCD or SolarGo app to enable export power limit control or output power limit control.

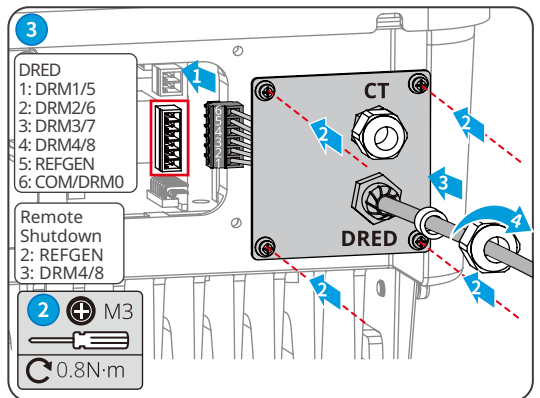
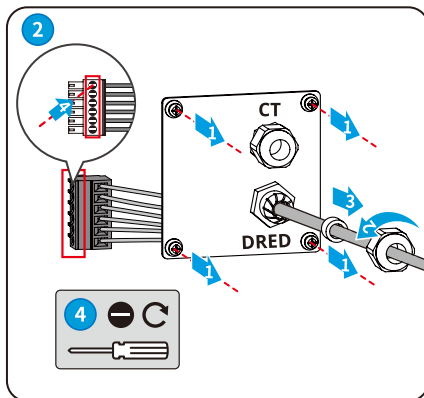
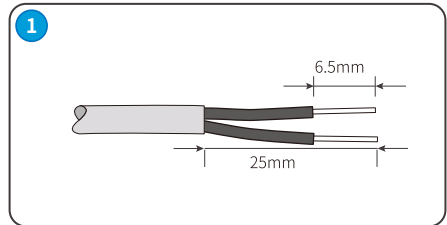
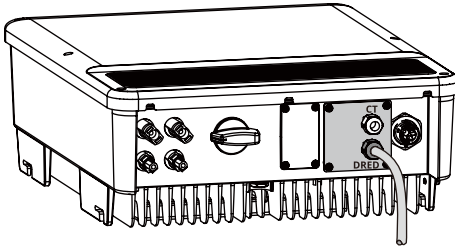
### 6.5.2 Connecting the Communication Cable (optional)

#### Notice

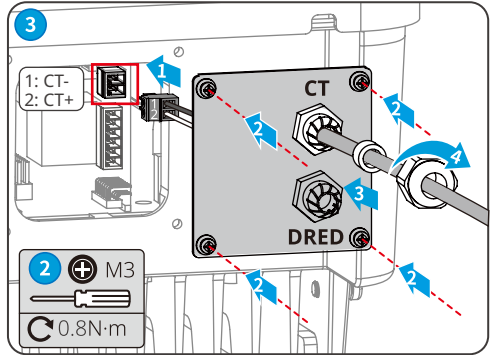
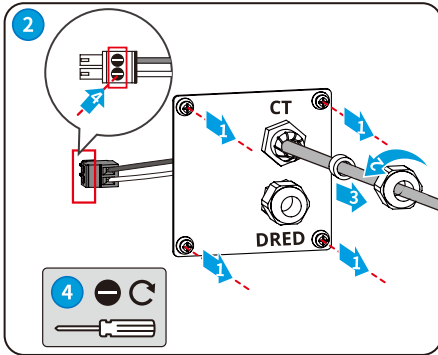
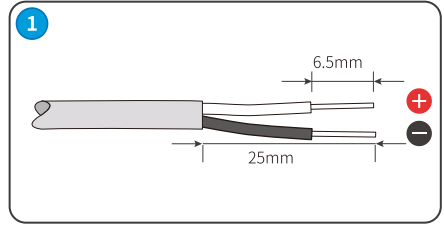
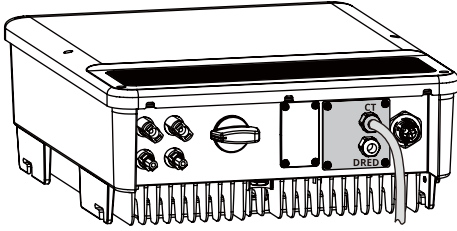
- Make sure that the communication device is connected to the right terminal. Route the communication cable far away from any interference source or power cable to prevent the signal from being influenced.
- Connect the CT cable using a 2PIN communication terminal.
- Connect the DRED cable, RS485 cable, and remote shutdown cable using a 6PIN communication terminal.
- DRED (Demand response enabling device) is only for Australian and New Zealand installations, in compliance with Australian and New Zealand safety requirements.
- Contact the after-sales service to get the DRED terminal if you need to use DRED function.
- DRED function is off by default. Start this function via SolarGo App if it's needed.
- Remote shutdown is only for Europe installations, in compliance with European safety requirements. And Remote shutdown device is not provided by GOODWE.
- Remote shutdown function is off by default. Start this function via SolarGo App if it's needed.

#### DRED/Remote Shutdown Communication Cable

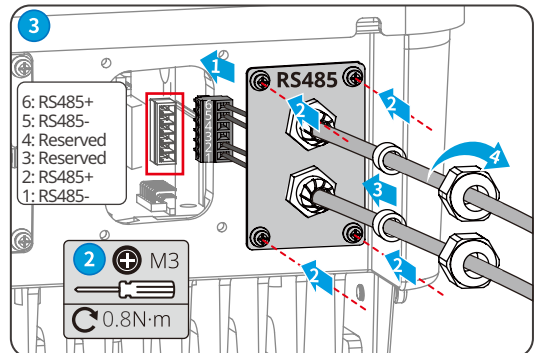
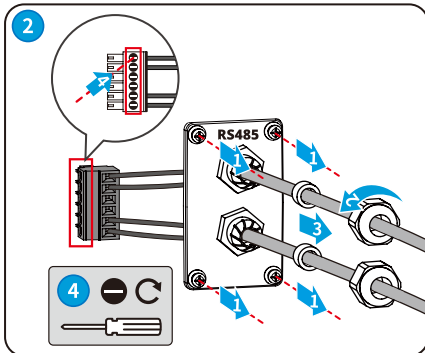
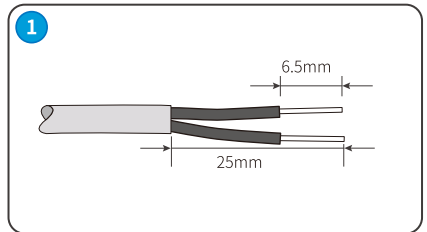
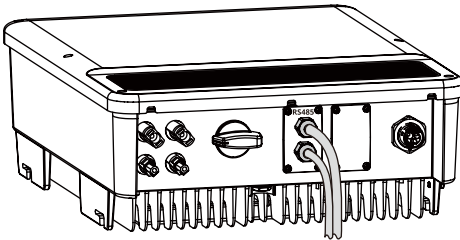
- DRED: Australia
- Remote Shutdown: Europe



CT Communication Cable



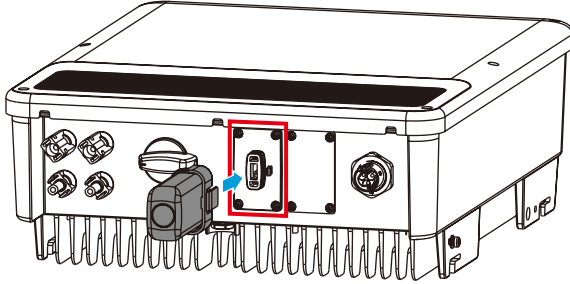
RS485 Communication Cable



### 6.5.3 Installing the Communication Module (optional)

Plug a communication module into the inverter to establish a connection between the inverter and the smartphone or web pages. The communication module can be a WiFi module, LAN module, GPRS module, or 4G module. Set inverter parameters, check running information and fault information, and observe system status in time via the smartphone or web pages.

WiFi kit, LAN kit, 4G kit, GPRS module: optional.



#### Notice

Refer to the delivered communication module user manual to get more introduction to the module. For more detailed information, visit <https://en.goodwe.com>.

## 7 Equipment Commissioning

### 7.1 Check Before Power ON

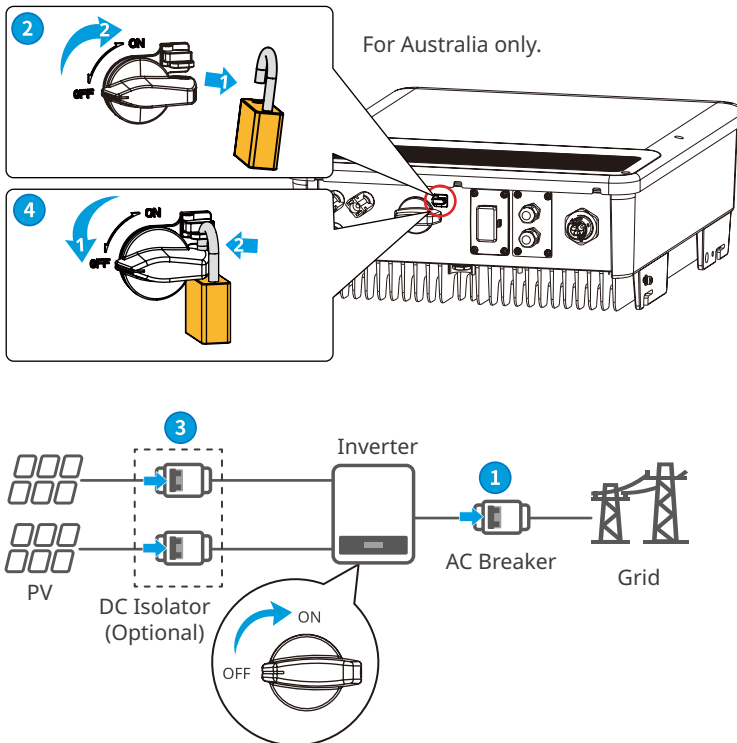
No.	Check Item
1	The product is firmly installed at a clean place that is well-ventilated and easy to operate.
2	The PE, DC input, AC output, and communication cables are connected correctly and securely.
3	Cable ties are intact, routed properly and evenly.
4	Unused ports and terminals are sealed.
5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

### 7.2 Power On

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














**Step 2 (optional)** Turn on the DC switch between the inverter and the PV string.

**Step 3** Turn on the DC switch of the inverter.



## 8 System Commissioning

### 8.1 Indicators and Buttons

Indicator	Status	Description
 Power		ON = WiFi is connected/active.
		BLINK 1 = WiFi system is resetting.
		BLINK 2 = WiFi not connect to the router.
		BLINK 4 = WiFi server problem
		BLINK = RS485 is connected.
		OFF = WiFi is not active.
 Operating		ON = The inverter is feeding power.
		OFF = The inverter is not feeding power at the moment.
 Faulty		ON = A fault has occurred.
		OFF = No fault.

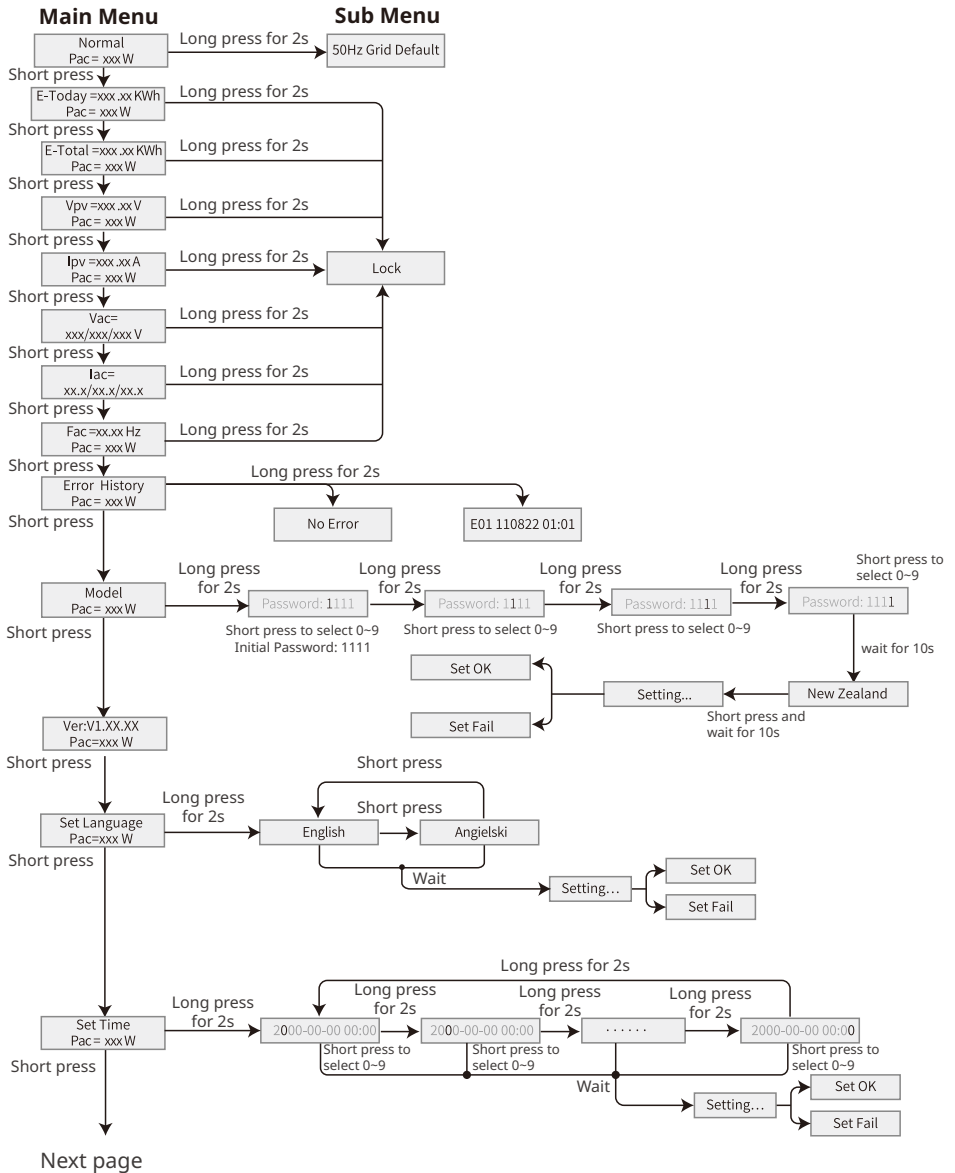
### 8.2 Setting Inverter Parameters via LCD

#### NOTICE

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

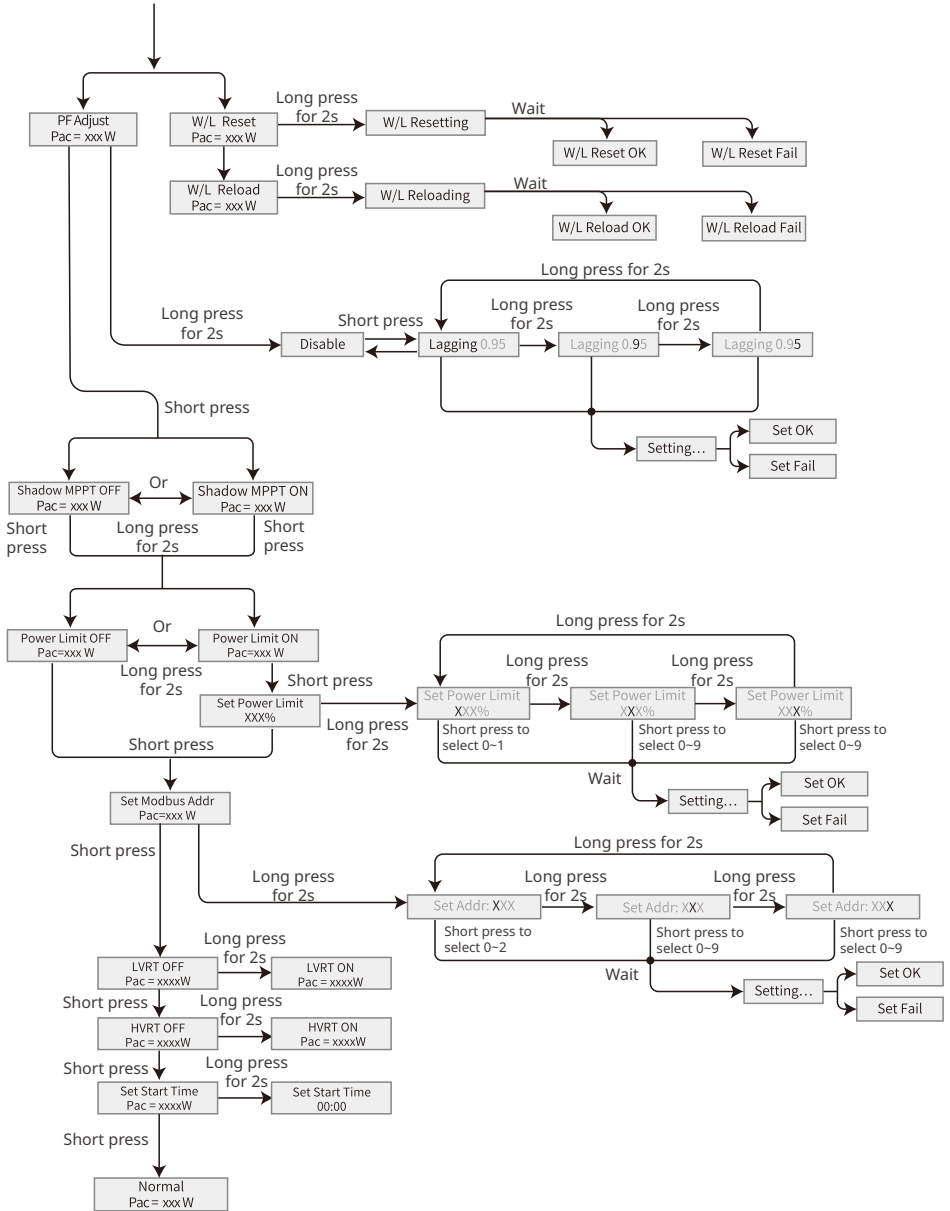
#### LCD Button Description

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





Previous page



## 8.2.1 Inverter Parameter Introduction

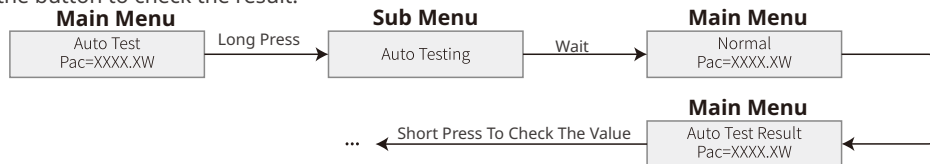
Parameters	Description
Normal	Home page. Indicates the real-time power of the inverter. Long press for 2s to check the current safety code.
E-Today	Check the generated power of the system for that day.
E-Total	Check the total generated power of the system.
Vpv	Check the DC input voltage of the inverter.
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.
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.
Shadow MPPT	Enable the shadow scan function if the PV panels are shadowed.
Power Limit	<b>Soft limit:</b> Set the power feed into the utility grid according to local requirements and standards. <b>Hard limit:</b> The inverter and the utility grid will automatically disconnect when the power feeds into the grid exceeds 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.
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.
Set Start time	Set the time for the inverter to connect with the grid.

**Auto-Test**

The auto test function is disabled by default and is available in Italy only. Short press the button until LCD displays "Auto Test", and long press the button to start this function.

if auto test is finished, short press the button until LCD displays "Auto Test Result", and long press

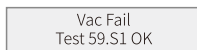
the button to check the result.



Choose auto test type between "Remote" and "Local" before starting the test. Under "Remote" mode, the default setting is 1 and cannot be modified. Under "Local" mode, the default setting is 0 and can be set to 0 or 1 by calibrating the software. If it is 1 under "Local" mode, the testing order will be 59.S1, 59.S2, 27.S1, 81>S1, 81<S1. Otherwise, the testing order will be 59.S1, 59.S2, 27.S1, 81>S2, 81<S2.

Connect AC, then the auto test will start after the inverter relay breaks off successfully: output power is zero and LCD shows the information about testing.

If sub test finishes and LCD displays "Test \*\*\*\*\* Ok", the inverter relay will break off and reconnect to grid automatically according to CEI 0-21 requirement. Then the next test starts.



If sub test fails, the inverter relay breaks off and enter wait mode. To retry, the inverter needs to be totally powered off and be restarted.

**8.3 Upgrading the Firmware Via USB Flash Disk**

**Step 1** Contact the after-sales service to obtain the upgrade package.

**Step 2** Save the upgrade package in the USB flash drive.

**Step 3** Insert the USB flash drive into the USB port, and upgrade the software version of the inverter following the prompts.

**8.4 Setting Inverter Parameters via SolarGo App**

SolarGo app is a mobile application that communicates with the inverter via Bluetooth module, WiFi module or GPRS module. Commonly used functions are as follows:

1. Check the operating data, software version, alarms, etc.
2. Set grid parameters, communication parameters, etc.
3. Equipment maintenance.

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](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

## 8.5 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](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** Grab the handles or hoist the inverter to remove the inverter from the mounting plate.

**Step 3** Remove the mounting plate.

**Step 4** 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 anymore, dispose of it according to the local disposal requirements for electrical equipment waste. The inverter cannot be disposed of together with 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 that 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.

Fault		Troubleshooting
System Failure	Isolation Failure	<ol style="list-style-type: none"> <li>1. Check the impedance between the ground and PV (+) &amp; PV (-). The impedance value must be greater than 100kΩ. Make sure the inverter is grounded.</li> <li>2. Contact local service office for help if the problem still persist. Inverters for the Australian and New Zealand markets can also be alerted in the following ways in the event of insulation impedance failure:                             <ol style="list-style-type: none"> <li>1. The inverter is equipped with the buzzer: the buzzer sounds continuously for 1 minute in case of failure; If the fault is not resolved, the buzzer sounds every 30 minutes.</li> <li>2. Add the inverter to the monitoring platform, and set the alarm reminder, the alarm information can be sent to the customer by emails.</li> </ol> </li> </ol>
	Ground I Failure	<ol style="list-style-type: none"> <li>1. The ground current is too high.</li> <li>2. Unplug the inputs from the PV generator and check the peripheral AC system.</li> <li>3. When the problem is solved, reconnect the PV panel and check the Inverter status.</li> <li>4. Contact local service office for help if the problem still persist.</li> </ol>
	Vac Failure	<ol style="list-style-type: none"> <li>1. The PV Inverter will automatically restart within 5 minutes if the grid returns to normal.</li> <li>2. Make sure grid voltage conforms with the specification.</li> <li>3. Make sure neutral (N) wire and PE cable are connected well.</li> <li>4. Contact local service office for help if the problem still persist.</li> </ol>
	Fac Failure	<ol style="list-style-type: none"> <li>1. Not connected to the grid.</li> <li>2. Check if the power grid is connected to cable.</li> <li>3. Check the availability of power grid.</li> </ol>
	Utility Loss	<ol style="list-style-type: none"> <li>1. Not connected to the grid.</li> <li>2. Check if the power grid is connected to cable.</li> <li>3. Check the availability of power grid.</li> </ol>
	PV Over Voltage	<ol style="list-style-type: none"> <li>1. Check if the PV open circuit voltage is higher than or too close to the maximum input voltage.</li> <li>2. If the problem still persist when PV voltage is less than the maximum input voltage, contact local service office for help.</li> </ol>
	Over Temperature	<ol style="list-style-type: none"> <li>1. The internal temperature is higher than normal.</li> <li>2. Decrease ambient temperature.</li> <li>3. Move the inverter to a cool place.</li> <li>4. If the problem still exists, contact local service office for help.</li> </ol>

Inverter Failure	Relay-Check Failure	<ol style="list-style-type: none"> <li>1. Turn off DC switch of the inverter.</li> <li>2. Wait till the LCD light is off.</li> <li>3. Turn on the DC switch and make sure it is connected.</li> <li>4. If the problem still exists, contact local service office for help.</li> </ol>
	DCI Injection High	
	EEPROM R/W Failure	
	SPI Failure	
	DC BUS High	
	GFCI Failure	
Others	No display	<ol style="list-style-type: none"> <li>1. Turn off the DC switch and unplug the DC connector, then measure the voltage of the PV array.</li> <li>2. Plug in the DC connector, and turn on the DC switch.</li> <li>3. If PV array voltage is lower than 250V , please check configuration of inverter module.</li> <li>4. If voltage is higher than 250V , please contact local service office for help.</li> </ol>
AFCI-Fault		<ol style="list-style-type: none"> <li>1. Turn off the DC switch of the inverter.</li> <li>2. Ensure the DC connector is the right model and is properly connected.</li> <li>3. Turn on the DC switch and make sure it is connected.</li> <li>4. If the problem still exists, contact local service office for help.</li> </ol>

## 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
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	GW2900D-NS	GW3000D-NS	GW3600D-NS	GW4200D-NS	GW5000D-NS	GW6000D-NS
<b>Input</b>						
Max. Input Power (W) <sup>*18</sup>	4000	3900	4680	5460	6500	7200
Max. Input Voltage (V)	535	600	600	600	600	600
MPPT Operating Voltage Range (V)	80 - 435	80 - 550	80 - 550	80 - 550	80 - 550	80 - 550
MPPT Voltage Range at Nominal Power (V)	N/A	150 - 550	180 - 550	210 - 550	240 - 550	280 - 550
Start-up Voltage (V)	80	80	80	80	80	80
Nominal Input Voltage (V)	230	360	360	360	360	360
Max. Input Current per MPPT (A)	12.5	11	11	11	11	11
Max. Short Circuit Current per MPPT (A)	15.6	13.8	13.8	13.8	13.8	13.8
Max. Backfeed Current to The Array (A)	0	0	0	0	0	0
Number of MPPT	2	2	2	2	2	2
Number of Strings per MPPT	1	1	1	1	1	1
<b>Output</b>						
Nominal Output Power (W) <sup>*23</sup>	2900	3000	3680	4200	5000	6000
Nominal Output Apparent Power (VA) <sup>*4</sup>	2900	3000	3680	4200	5000	6000
Max. AC Active Power (W) <sup>*7</sup>	2900	3000	3680	4200	5000	6000
Max. AC Apparent Power (VA) <sup>*7</sup>	2900	3000	3680	4200	5000	6000
Nominal Power at 40°C (W)(For Brazil only)	2900	3000	3680	4200	5000	6000
Max Power at 40°C (Including AC Overload) (W)(For Brazil only)	2900	3000	3680	4200	5000	6000
Nominal Output Voltage (V)	127	220/230	220/230	220/230	220/230	220/230
Nominal AC Grid Frequency (Hz)	60	50/60	50/60	50/60	50/60	50/60
Max. Output Current (A)	22.9	13.6	16.0	19.0	22.8	27.3
Nominal Output Current (A)	22.9	13.6/13.0	16.0/15.6	19.0/18.2	22.8/21.7	27.3/26.1
Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)					
Max. Total Harmonic Distortion	<3%	<3%	<3%	<3%	<3%	<3%



Maximum Output Overcurrent Protection (A)	42	42	42	42	42	50
<b>Efficiency</b>						
Max. Efficiency	96.0%	97.8%	97.8%	97.8%	97.8%	97.8%
European Efficiency	95.6%	97.5%	97.5%	97.5%	97.5%	97.5%
<b>Protection</b>						
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	Optional					
DC Surge Protection	Type III(Type II Optional)	Type III	Type III	Type III	Type III	Type III
AC Surge Protection	Type III					
Emergency Power Off	Optional					
Remote Shutdown	Optional					
<b>General Data</b>						
Operating Temperature Range (°C)	-25 - +60					
Relative Humidity	0 - 100%					
Max. Operating Altitude (m) <sup>*5</sup>	4000					
Cooling Method	Natural Convection					
User Interface	LED,LCD,WLAN+APP					
Communication	WiFi,RS485 or 4G or 2G or LAN (Optional)					
Weight (kg)	13.0	13.0	13.0	13.0	13.0	13.5
Dimension (W×H×D mm)	354×433×147					
Noise Emission (dB)	< 25	< 25	< 25	< 25	< 25	< 50
Topology	Non-isolated					
Self-consumption at Night (W)	<1					
Ingress Protection Rating	IP65					

Anti-corrosion Class	C4
DC Connector	MC4
AC Connector	Plug and play connector
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	AFDPF + AQDPF *6
Country of Manufacture (For Australia only)	China

Technical Data	GW3000T-DS	GW3600T-DS	GW4200T-DS	GW5000T-DS	GW6000T-DS
<b>Input</b>					
Max. Input Power (W) <sup>*1*8</sup>	3900	4680	5460	6500	7200
Max. Input Voltage (V)	600	600	600	600	600
MPPT Operating Voltage Range (V)	80 - 550	80 - 550	80 - 550	80 - 550	80 - 550
MPPT Voltage Range at Nominal Power (V)	130 - 550	150 - 550	170 - 550	200 - 550	240 - 550
Start-up Voltage (V)	80	80	80	80	80
Nominal Input Voltage (V)	360	360	360	360	360
Max. Input Current per MPPT (A)	13	13	13	13	13
Max. Short Circuit Current per MPPT (A)	16.3	16.3	16.3	16.3	16.3
Max. Backfeed Current to The Array (A)	0	0	0	0	0
Number of MPP Trackers	2	2	2	2	2
Number of Strings per MPPT	1	1	1	1	1
<b>Output</b>					
Nominal Output Power (W) <sup>*2*3</sup>	3000	3680	4200	5000	6000
Nominal Output Apparent Power (VA) <sup>*4</sup>	3000	3680	4200	5000	6000
Max. AC Active Power (W) <sup>*7</sup>	3000	3680	4200	5000	6000
Max. AC Apparent Power (VA) <sup>*7</sup>	3000	3680	4200	5000	6000
Nominal Power at 40°C (W)(For Brazil only)	3000	3680	4200	5000	6000

Max Power at 40°C (including AC overload)(W)(For Brazil only)	3000	3680	4200	5000	6000
Nominal Output Voltage (V)	220/230	220/230	220/230	220/230	220/230
Nominal AC Grid Frequency (Hz)	50/60	50/60	50/60	50/60	50/60
Max. Output Current (A)	13.6	16.0	19.0	22.8	27.3
Max. Output Fault Current (Peak and Duration) (A)	35	35	35	35	35
Inrush Current (Peak and Duration) (A)	60	60	60	60	80
Nominal Output Current (A)	13.6/13.0	16.0/15.6	19.0/18.2	22.8/21.7	27.3/26.1
Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)				
Max. Total Harmonic Distortion	<3%	<3%	<3%	<3%	<3%
Maximum Output Overcurrent Protection (A)	42	42	42	42	50
<b>Efficiency</b>					
Max. Efficiency	97.8%	97.8%	97.8%	97.8%	97.8%
European Efficiency	97.5%	97.5%	97.5%	97.5%	97.5%
<b>Protection</b>					
PV String Current Monitoring	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	Optional				
DC Surge Protection	Type III(Type II Optional)				
AC Surge Protection	Type III				
AFCI	Optional				
Emergency Power Off	Optional				
Remote Shutdown	Optional				
<b>General Data</b>					
Operating Temperature Range (°C)	-25 - +60				
Relative Humidity	0 - 100%				
Max. Operating Altitude (m) <sup>5</sup>	4000				
Cooling Method	Natural Convection				

User Interface	LED, LCD, WLAN+APP				
Communication	WiFi, RS485 or 4G or 2G or LAN (Optional)				
Weight (kg)	13	13	13	13	13.5
Dimension (W×H×D mm)	354×433×147				
Noise Emission (dB)	< 25	< 25	< 25	< 25	< 50
Topology	Non-isolated				
Self-consumption at Night (W)	<1				
Ingress Protection Rating	IP65				
Anti-corrosion Class	C4				
DC Connector	MC4				
AC Connector	Plug and play connector				
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	AFDPF + AQDPF <sup>16</sup>				
Country of Manufacture (For Australia only)	China				

Technical Data	GW5KBD-NS	GW6KBD-NS
<b>Input</b>		
Max. Input Power (W) <sup>11*8</sup>	6500	7200
Max. Input Voltage (V)	600	600
MPPT Operating Voltage Range (V)	80 - 550	80 - 550
MPPT Voltage Range at Nominal Power (V)	200 - 550	240 - 550
Start-up Voltage (V)	80	80
Nominal Input Voltage (V)	360	360
Max. Input Current per MPPT (A)	13	13
Max. Short Circuit Current per MPPT (A)	16.3	16.3
Max. Backfeed Current to The Array (A)	0	0
Number of MPP Trackers	2	2
Number of Strings per MPPT	1	1
<b>Output</b>		
Nominal Output Power (W) <sup>12*3</sup>	5000	6000

Nominal Output Apparent Power (VA) <sup>*4</sup>	5000	6000
Max. AC Active Power (W) <sup>*7</sup>	5000	6000
Max. AC Apparent Power (VA) <sup>*7</sup>	5000	6000
Nominal Power at 40°C (W)(For Brazil only)	5000	6000
Max Power at 40°C (including AC overload)(W)(For Brazil only)	5000	6000
Nominal Output Voltage (V)	220	220
Nominal AC Grid Frequency (Hz)	60	60
Max. Output Current (A)	22.8	27.3
Max. Output Fault Current (Peak and Duration) (A)	35	35
Inrush Current (Peak and Duration) (A)	60	80
Nominal Output Current (A)	22.7	27.3
Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)	
Max. Total Harmonic Distortion	<3%	<3%
Maximum Output Overcurrent Protection (A)	42	50
<b>Efficiency</b>		
Max. Efficiency	97.8%	97.8%
European Efficiency	97.5%	97.5%
<b>Protection</b>		
PV String Current Monitoring	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	Optional	
DC Surge Protection	Type III	
AC Surge Protection	Type III	
AFCI	Optional	
Remote Shutdown	Optional	
<b>General Data</b>		
Operating Temperature Range (°C)	-25 - +60	
Relative Humidity	0 - 100%	
Max. Operating Altitude (m) <sup>*5</sup>	4000	

Cooling Method	Natural Convection	
User Interface	LED, LCD, WLAN+APP	
Communication	WiFi, RS485 or 4G or 2G or LAN (Optional)	
Weight (kg)	13.0	13.5
Dimension (W×H×D mm)	354×433×147	
Noise Emission (dB)	< 25	< 50
Topology	Non-isolated	
Self-consumption at Night (W)	<1	
Ingress Protection Rating	IP65	
Anti-corrosion Class	C4	
DC Connector	MC4	
AC Connector	Plug and play connector	
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	AFDPF + AQDPF *6	
Country of Manufacture (For Australia only)	China	

\*1. For Australia or New Zealand Max. Input Power (W) GW3000D-NS or GW3000T-DS is 4000, GW3600D-NS or GW3600T-DS is 4800, GW4200D-NS or GW4200T-DS is 5600, GW5000D-NS or GW5000T-DS is 6667

\*2. For CEI 0-21 Nominal Output Power GW3000T-DS or GW3000D-NS is 2700, GW3600T-DS or GW3600D-NS is 3350, GW4200T-DS or GW4200D-NS is 3800, GW5000T-DS or GW5000D-NS is 4540, GW6000T-DS or GW6000D-NS is 5450

\*3. For Australia or New Zealand Nominal Output Power (W) GW5000D-NS is 4999

\*4. For Australia or New Zealand Nominal Output Apparent Power (VA) GW5000D-NS is 4999

\*5. For Australia Max. Operating Altitude (m) is 3000

\*6. AFDPF: Active Frequency Drift with Positive Feedback, AQDPF: Active Q Drift with Positive Feedback

\*7.For Chile Max. AC Active Power (W) & Max.Output Apparent Power(VA) : GW3000T-DS is 3000, GW3600T-DS is 3600, GW4200T-DS is 4200, GW5000T-DS is 5000, GW6000T-DS is 6000

\*8. For Brazil Max. Input Power (W), GW2900D-NS is 5220, GW3000D-NS is 5400, GW3600D-NS is 6624, GW4200D-NS is 7560, GW5000D-NS is 9000, GW6000D-NS is 10800, GW3000T-DS is 5400, GW3600T-DS is 6624, GW4200T-DS is 7560, GW5000T-DS is 9000, GW6000T-DS is 10800, GW5KBD-NS is 9000, GW6KBD-NS is 10800



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