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340-00425-01

GOODWE
YOUR SOLAR ENGINE

SDT G2 SERIES USER MANUAL

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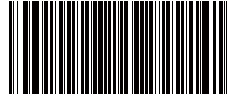
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GOODWE
YOUR SOLAR ENGINE

SOLAR INVERTER

Note: The information above is subject to change without prior notice, for details refer to
www.goodwe.com

1 Symbols

⚠	Failure to observe a warning indicated in this manual may result in injury.
♻	Recyclable materials
⚡	Danger of high voltage & electric shock
↑↑	This side up - The package must always have the arrows point up
🔥	Don't touch, hot surface!
6	No more than six (6) identical packages be stacked on each other.
🗑	Special disposal instructions
🍷	Fragile
☂	Keep Dry
📖	Refer to operation instructions
⚡🕐 5min	Wait at least 5 minutes after disconnecting the inverter before touching internal parts
CE	CE mark.

⚠ 2 Safety Measures & Warning

This manual contains important instructions for SDT G2 series of inverter which must be followed during installation.

The SDT G2 series inverter of Jiangsu GOODWE Power Technolgy Co., Ltd. (hereinafter referred to as GOODWE) strictly conforms to related safety rules in design and test. Safety regulation relevant to the location shall be followed during installation, commissioning, operation and maintenance. Improper operation may have a risk of electric shock or damage to equipment and property.(SDT G2: Dual-MPPT, Three - Phase.). Improper operation will cause serious harm to:

1. The life and well-being of the operators or a third party.

2. The inverter and other properties that belong to the operator or a third party.

Therefore the following safety instructions must be read and be always kept in mind prior to any work. All detailed work-related safety warnings and notes will be specified at the critical points in corresponding chapter. All installation and electrical work must only be performed by qualified personnel. They need to meet the standards as stated below:

• Been trained specially;

• Already completely read through and understood all related documents.

• Been familiar with safety requirements of electrical systems.

The inverter must be installed and maintained by professionals in compliance with local electrical standards, regulations and the requirements of local power authorities or companies.

• Improper handling of the device will pose a risk of injury.

• Always follow the instructions contained in the manual when moving or positioning the inverter.

• The weight of the equipment can cause injuries, serious wounds or bruise if improperly handled.

• Please install it where it is out of reach of children.

• Before installing and maintaining the inverter, it is crucial to make certain that the inverter is not electrically connected.

• Before maintaining the inverter, disconnect the connection between the AC grid and the inverter first, then disconnect the connection between the DC input and the inverter, the operator should wait at least 5 minutes after the disconnection in case of electric shock.

• All cables must be firmly attached, undamaged, properly insulated, and adequately dimensioned.

• The temperature of some parts of the inverter may exceed 60°C during operation. To avoid being burnt, do not touch the inverter during operation. Let it cool down before touching it.

• Without permission, opening of the inverter's front cover is not allowed. Users should not touch/replace any components of the inverter except the DC/AC connectors. Manufacturer assumes no responsibility for any damage to inverter or person caused by improper operation.

• The PV is not grounded under default configuration.

• Static electricity may damage electronic components. Appropriate measures must be adopted to prevent such damage to the inverter; otherwise the inverter may be damaged and the warranty will be annulled.

• Ensure that the output voltage of the proposed PV array is lower than the maximum rated input voltage of the inverter; otherwise the inverter may be damaged and the warranty will be annulled.

• If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

• 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.

• PV modules should have an IEC61730 class A rating.

• Prohibit inserting or pulling the AC or DC terminals when the inverter is working. Otherwise the inverter will be destroyed.

Only DC connectors provided by manufacturer are permitted for use, otherwise the inverter may be damaged and the warranty will be annulled.

• The inverter can exclude the possibility of DC residual currents to 6mA in the system, where an external RCD is required in addition to the built-in RCMU, and a type A RCD must be used to avoid tripping. (The residual current of the RCD is recommend less than 30 mA.)

• The default photovoltaic module is not grounded.

• If there are more than 3 PV strings on input side, an additional fuse installation will be suggested.
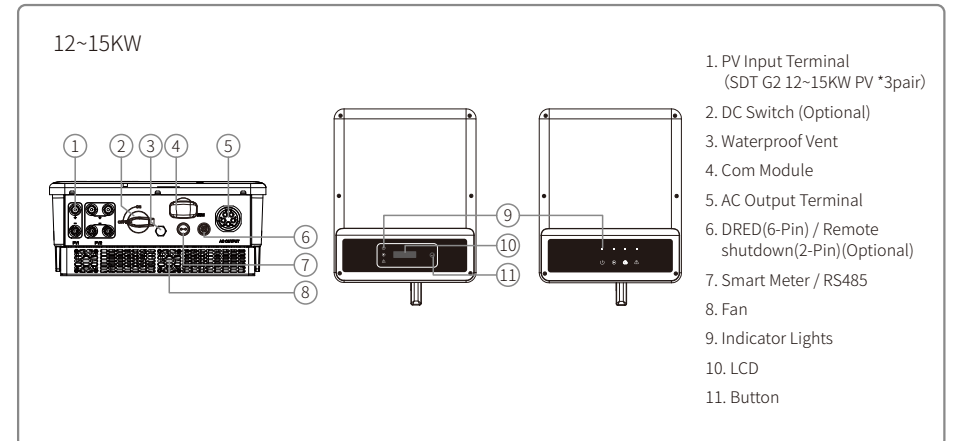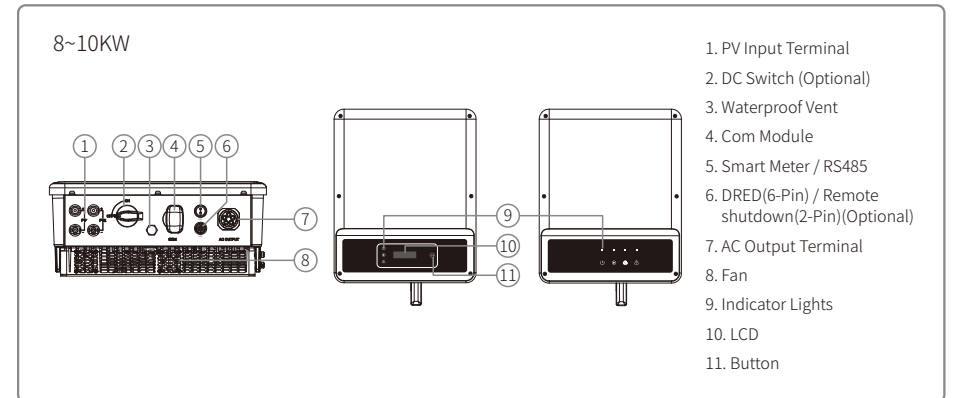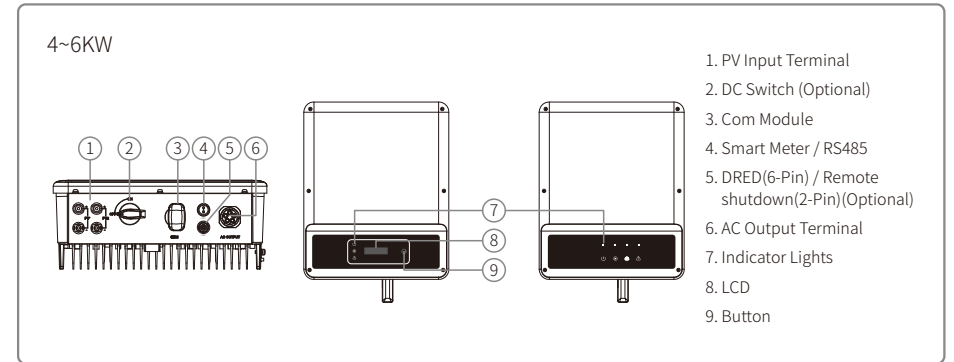
⚠ The IP65 premise is that the machine is completely sealed. Please install it within one day after unpacking, otherwise please block the unconnected port and do not open it to ensure that the machine is not exposed to water and dust.

To our inverter product, GOODWE provides standard manufacture warranty which comes with the product and prepaid warranty extension solution to our customer. You can find the details about the terms and solution from below linkage.

https://en.goodwe.com/warranty.asp

3 Product Introduction

3.1 Inverter Overview

4~6KW

1. PV Input Terminal
2. DC Switch (Optional)
3. Com Module
4. Smart Meter / RS485
5. DRED(6-Pin) / Remote shutdown(2-Pin)(Optional)
6. AC Output Terminal
7. Indicator Lights
8. LCD
9. Button

8~10KW

1. PV Input Terminal
2. DC Switch (Optional)
3. Waterproof Vent
4. Com Module
5. Smart Meter / RS485
6. DRED(6-Pin) / Remote shutdown(2-Pin)(Optional)
7. AC Output Terminal
8. Fan
9. Indicator Lights
10. LCD
11. Button

12~15KW

1. PV Input Terminal (SDT G2 12~15KW PV *3pair)
2. DC Switch (Optional)
3. Waterproof Vent
4. Com Module
5. AC Output Terminal
6. DRED(6-Pin) / Remote shutdown(2-Pin)(Optional)
7. Smart Meter / RS485
8. Fan
9. Indicator Lights
10. LCD
11. Button
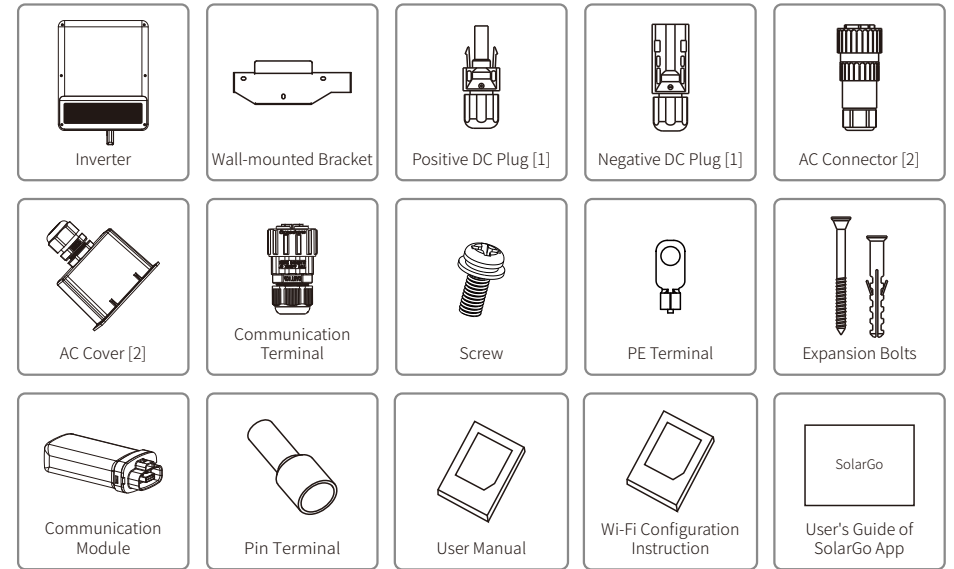
17~25KW

1. The DC switch
2. USB port (Optional)
3. Waterproof vent
4. PV input port (17/20kw PV 4 pairs, 25 KW PV 5 terminal)

5. Smart Meter / RS485
6. Com module
7. DRED(6-Pin) / Remote shutdown(2-Pin) (Optional)
8. AC output port

9. Fan
10. Indicator Lights
11. LCD
12. Button

Item	Name	Description
1	PV Input Terminal	For PV string connection
2	DC Switch (Optional)	During normal operation it is in "on" state, it can shut down the inverter after it is disconnected from the grid by the AC breaker.
3	USB Port (Optional)	This function only applies to the local firmware upgrade and parameter calibration for after-sales.
4	Waterproof Vent	Waterproof air permeable valve
5	Com module	For Wi-Fi or LAN communication
6	Smart Meter / RS485	For Smart Meter connection or RS485 communication
7	DRED / remote shutdown	For DRED communication or remote shutdown device connection
8	AC Output Terminal	For AC cable connection
9	Fans	There are two Fans to perform controlled force-air cooling.
10	Indicator light	Display the state of the inverter
11	LCD	Inverter operation data viewing and parameter configuration.
12	Buttons	For configuration and viewing parameters.

3.2 Package

Inverter	Wall-mounted Bracket	Positive DC Plug [1]	Negative DC Plug [1]	AC Connector [2]
AC Cover [2]	Communication Terminal	Screw	PE Terminal	Expansion Bolts
Communication Module	Pin Terminal	User Manual	Wi-Fi Configuration Instruction	User's Guide of SolarGo App

[1]Positive & Negative DC plug:

GW4K-DT / GW4KL-DT / GW5K-DT / GW6K-DT / GW6KL-DT / GW8K-DT / GW10KT-DT 2 pairs.

GW12KT-DT / GW15KT-DT 3 pairs.

GW17KT-DT / GW20KT-DT 4 pairs.

GW25KT-DT 5 pairs.

[2] AC connection of GW4K-DT / GW4KL-DT / GW5K-DT / GW6K-DT / GW6KL-DT / GW8K-DT / GW10KT-DT / GW12KT-DT / GW15KT-DT are use AC connector.

[3] AC connection of GW17KT-DT / GW20KT-DT / GW25KT-DT are use AC cover.
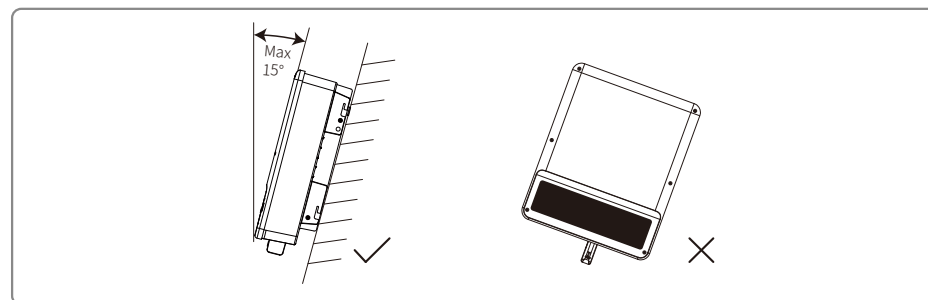
4 Installation

4.1 Mounting Instructions

1. In order to achieve optimal performance, the ambient temperature should be lower than 45°C.

2. For easy maintenance, we suggest to install the inverter at eye level.

3. inverter should not be installed near flammable and explosive items. Strong electro-magnetic charges should be kept away from installation site.

4. Strong electro-magnetic charges and obstructions should be kept away from installation site to ensure signal strength.

5. Product label and warning symbols should be placed at a location that is easy to read by the users.

6. Make sure to install the inverter at a place where it is protected from direct sunlight, rain and snow.

| Keep away from sunlight | Keep dry | Keep it clear of snow | Sun | Rain | Accmulated snow |
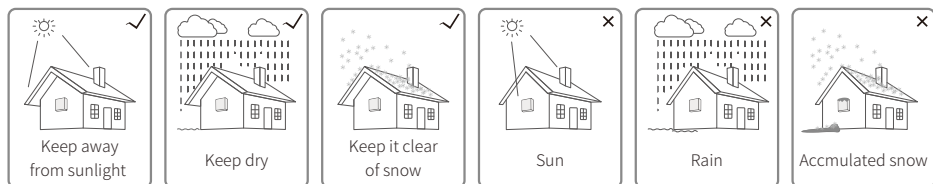
4.2 Equipment Installation

4.2.1 Select the Installation Location

1. Take the bearing capacity of the wall into account. The wall (such as concrete walls and metal structures)should be strong enough to hold the weight of the inverter over a long period of time.

2. Install the unit where it is accessible to service or do the electrical connection.

3. Do not install the unit on the wall of flammable material.

4. Make sure the installation location is well ventilated.

5. inverter should not be installed near flammable or explosive items. Any strong electro-magnetic equipment should be kept away from installation site.

6. Install the unit at eye level to for convenient operation and maintenance.

7. Install the unit vertically or tilted backwards of no more than 15 degrees, no lateral tilt is allowed. And wiring area should be facing downwards. Horizontal installation requires more than 250mm off the ground.

For dissipation of heat and convenience of dismantling, clearnaces around the inverter must meet the standard as shown below :
The installation position should not prevent access to the disconnection means.

Upward ------------500mm
Downward ---------500mm
Front ----------------300mm
Both sides ----------200mm
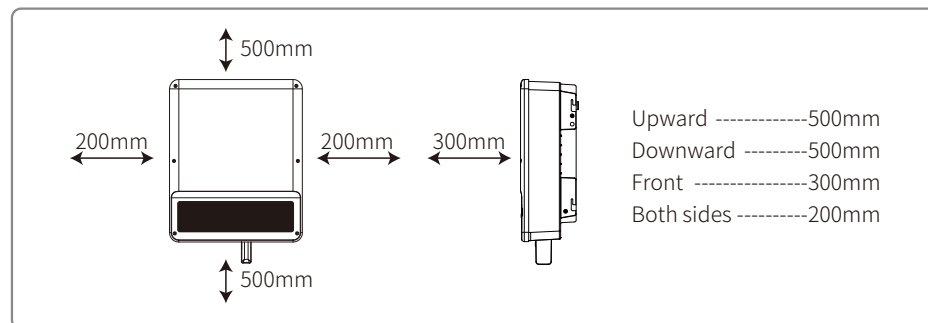
4.2.2 Mounting Procedure

1. Use the wall-mounted bracket as a template and drill holes in the wall, 10 mm in diameter and 80mm deep.

2. Fix the wall-mounted bracket on the wall by using the expansion bolts in the accessories bag.

3. Hold the inverter by the side groove.

4. Install the inverter on the wall-mounted bracket.

Installation method of SDT G2 4~15KW inverter:
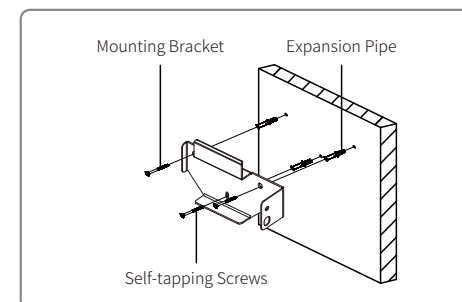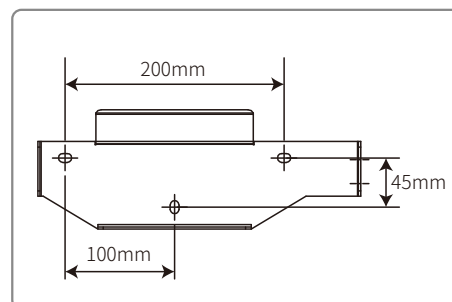
Installation method of SDT G2 17~25KW inverter:

110mm 120mm

45mm

An Anti-theft lock can be used for individual requirements.
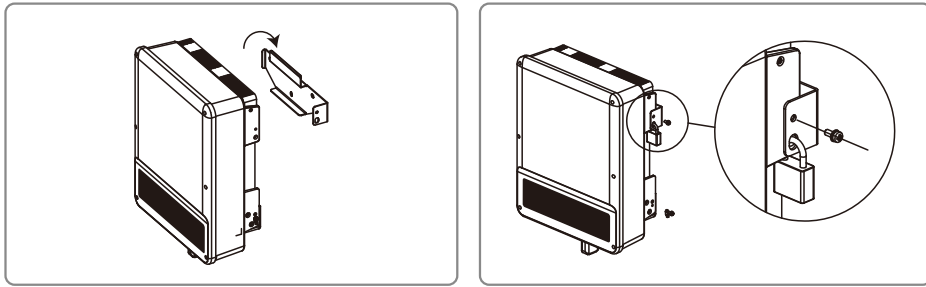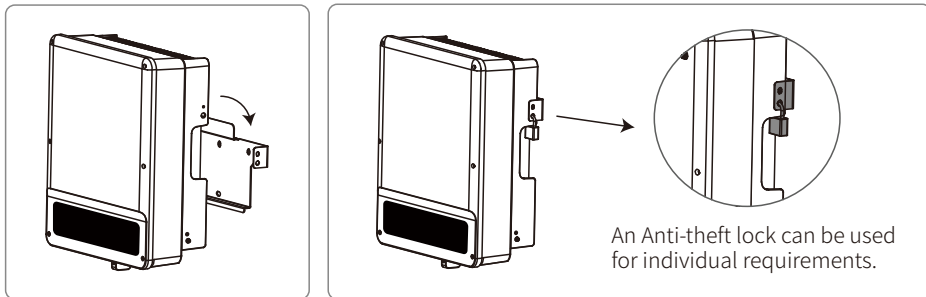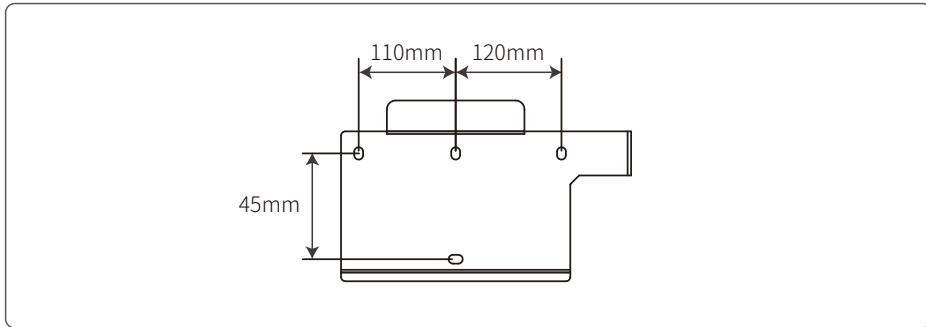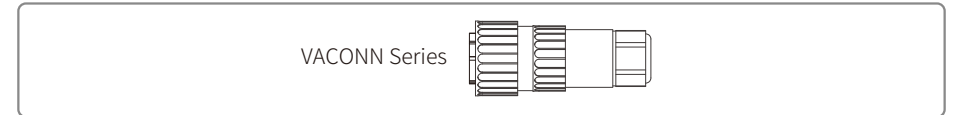
4.3 Electrical Connection

4.3.1 Connection to Grid (AC Side Connection)

1. Measure the voltage and frequency of grid-connected access point, and make sure it is in accordance with the grid-connected standard of inverter.

2. It is recommended to add breaker or fuse to AC side. The specification should be more than 1.25 times of rated of AC output current.

3. The PE line of inverter should be connected to the earth, make sure that the impedance between the neutral wire and earth wire is less than 10 ohm.

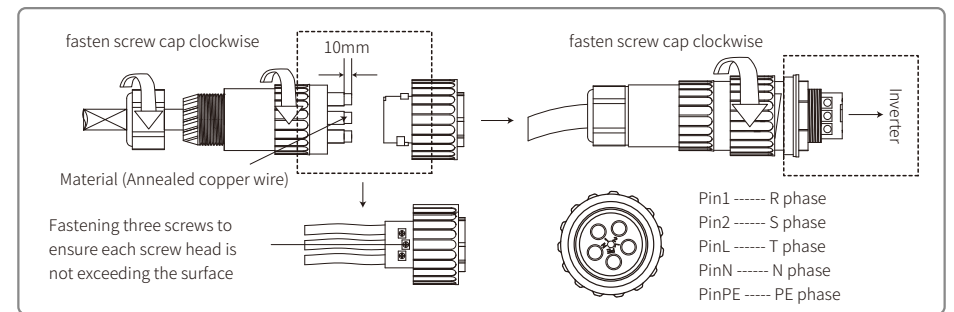4. Disconnect the breaker or fuse between the inverter and the utility.

5. Connect the inverter to the grid as follows: The wiring installation method on the AC output side is shown as below.

6. The AC line construction shall be such that if the cord should slip from its anchorage, placing a strain on condutors, the protective earthing conductor will be the last to take the strain,such as the PE line is longger than L and N.

SDT G2 4~15KW connection:

There is only one type of AC connector, VACONN Series.

VACONN Series

The installation instruction of VACONN series.

fasten screw cap clockwise   10mm   fasten screw cap clockwise

Inverter

Material (Annealed copper wire)

Fastening three screws to ensure each screw head is not exceeding the surface

Pin1 ------ R phase
Pin2 ------ S phase
PinL ------ T phase
PinN ------ N phase
PinPE ----- PE phase

Cable specification of AC side .

A

B

C

Annealed copper wire

Grade	Description	Value
A	Outer diameter	10~18mm
B	Conductor Material Sectional Area	4~6mm^2
C	Bare Wire Length	10mm around
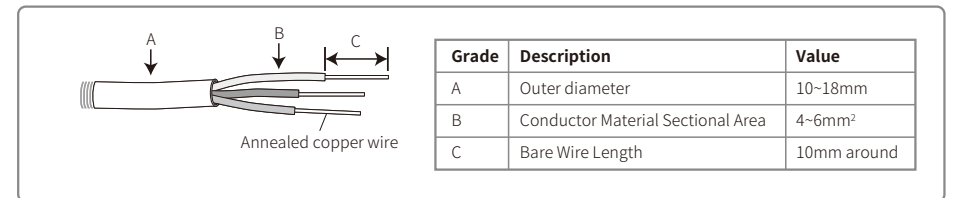
* Neutral conductor shall be blue, line conductor shall be black or brown（preferred), protective earth bonding line shall be yellow-green.
* Fix the connector of the AC cable to the corresponding terminals (tightening torque: 0.6 N·m)

SDT G2 17~25KW connection:

If the line used is small, please use the attached fire mud to block, ensure the AC terminal waterproof grade.

Step 1: Cross the AC cables through the AC wiring hood one by one.

Nut
AC cable
Single hole seal ring
Ac wiring hood
Isulator
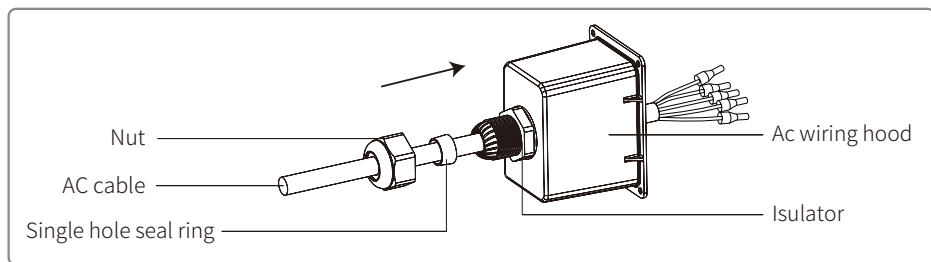
Step 2: pinch the connectors of 5 cables to ensure that the cable sheath does not stick to the pinhole terminal

Step 3: Connect the AC cable to the AC terminal, and then tighten the screws (torque 2.3 N·m) to ensure the correct connection. Then close the AC wiring hood and tighten the screw.

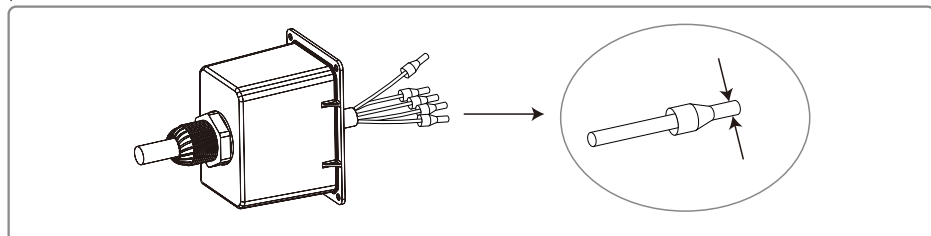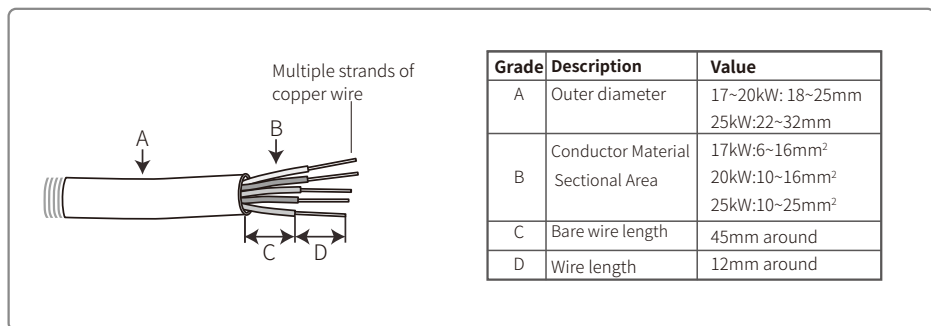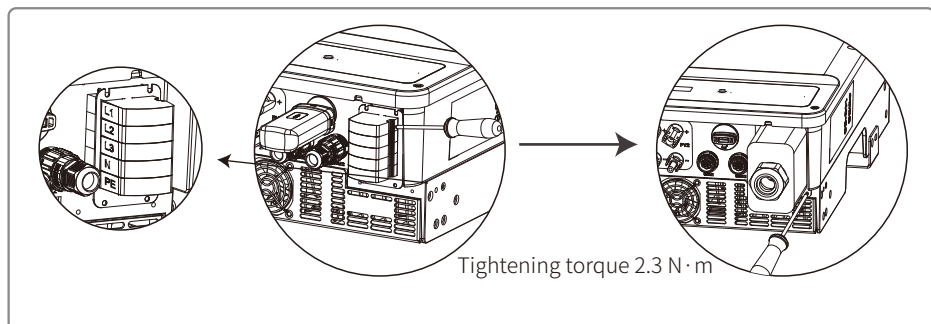Tightening torque 2.3 N·m

Multiple strands of copper wire

Grade	Description	Value
A	Outer diameter	17~20kW: 18~25mm 25kW:22~32mm
B	Conductor Material Sectional Area	17kW:6~16mm² 20kW:10~16mm² 25kW:10~25mm²
C	Bare wire length	45mm around
D	Wire length	12mm around

4.3.2 AC Circuit Breaker and Leakage Current Protection Device

In order to ensure that the inverter can be safely and reliably disconnected from the power grid, please install an independent two pole circuit breaker to protect the inverter.

Inverter model	Recommended circuit breaker specifications
GW4K-DT / GW5K-DT / GW6K-DT	16A
GW8K-DT / GW8KAU-DT / GW10KT-DT / GW10KAU-DT	25A
GW12KT-DT / GW12KAU-DT / GW15KT-DT / GW15KAU-DT / GW17KT-DT / GW17KAU-DT	32A
GW20KT-DT / GW20KAU-DT	40A
GW25KT-DT	50A

Note: Multiple inverters are not allowed to share a circuit breaker.

The integrated leakage current detection device of the inverter can detect external leakage current in real time. When the detected leakage current exceeds the limit value, inverter will quickly disconnect from the grid, If the leakage current protection device is installed externally, the action current should be 300mA or higher.

4.3.3 DC Side Connection

1. Before connecting the PV strings, please ensure that the plug connectors have the correct polarity. Incorrect polarity could permanently damage the unit.

2. The open circuit voltage of the PV strings cannot exceed the maximum input voltage of the inverter.

3. Only DC connectors provided by manufacturer are permitted for use.

4. The positive and negative pole are not allowed to connect to the PE wire （Ground wire).Otherwise, it will damage the unit.

5. Do not connect positive or negative pole of PV string to PE wire. Otherwise , it will cause damage to inverter.

6. Positive cable shall be red, negative cable shall be black.

7. The minimum insulation resistance to ground of the PV panels for SDT G2 series must exceed 33.4KΩ(R=1000/30mA).There is a risk of shock hazard if the requirements of minimum resistance are not met.

There are four types of DC connectors, DEVALAN, SUNCLIX/MC4, AMPHENDL H4 and QC4.10 series.

DEVALAN SERIES

MC4 SERIES

AMPHENOL SERIES

QC4.10 SERIES
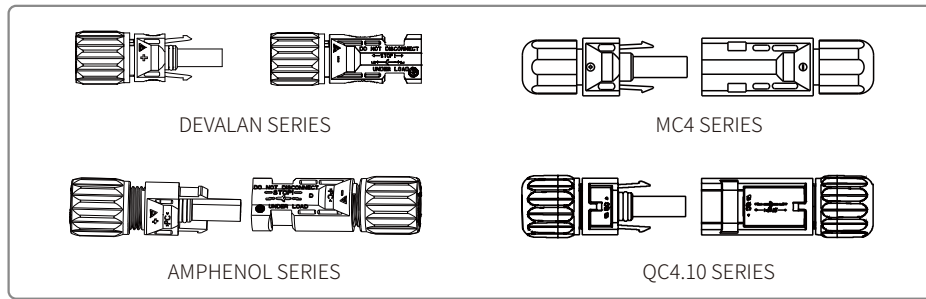
DC Cable specification.

DC Cable should use dedicated PV cable
(Suggest using 4mm PV1-F wire).

Grade	Description	Value
A	O.D.	4~5mm
B	Conductor Material Sectional Area	2.5~4mm²
C	Bare Wire Length	7mm around

The installation method of DC connector.

Positive connector

Inverter side

Negative connector

MC4 & QC4.10

DEVALAN & AMPHENOL

Do not crimp wire
into the limit buckle.

Please use special tools to do crimping

4.3.3 Earth Terminal Connection

The inverter is equipped with earth terminal according to the requirement of EN 50178.

All non-current carrying exposed metal parts of the equipment and other enclosures in the PV power system must be grounded.

Please follow the steps below to connect "PE" cable to ground.

Step 1

Strip the wire insulation sheet of a suitable length with a wire stripper.

L1

$L2 = L1 + (1\sim2mm)$
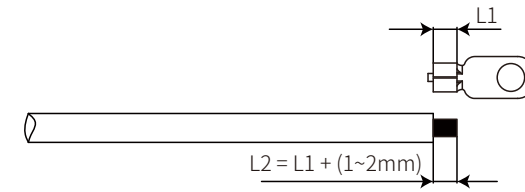
Step 2

Insert the stripped wire into the terminal and compress it tightly by crimping pliers.
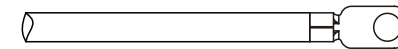
Step 3

Fix the earth wire on the machine.

In order to improve the corrosion resistance of the terminal, it is recommended to apply silica gel on the earth terminal for corrosion protection after the grounding cable assembly is completed.

NO.	Name	Explanation
A	Cold-pressed terminal	
B	Screw	M5*14 (1~1.5Nm)
C	Green & Yellow Cable	4mm²/ 10AWG

4.4 Communication Connection

4.4.1 Wi-Fi Communication

The Wi-Fi communication function is only applicable if the inverter has a Wi-Fi module.The detailed configuration instruction please refer to "Wi-Fi Configuration Instruction" in the accessory box.

After configuration, please browse http://www.goodwe-power.com to create PV station.

The Wi-Fi module installation of SDT G2 series are shown as below.

The communication module must be inserted vertically into the communication terminal, otherwise the communication module and the communication terminal may be damaged.

4.4.2 USB Communication Connection

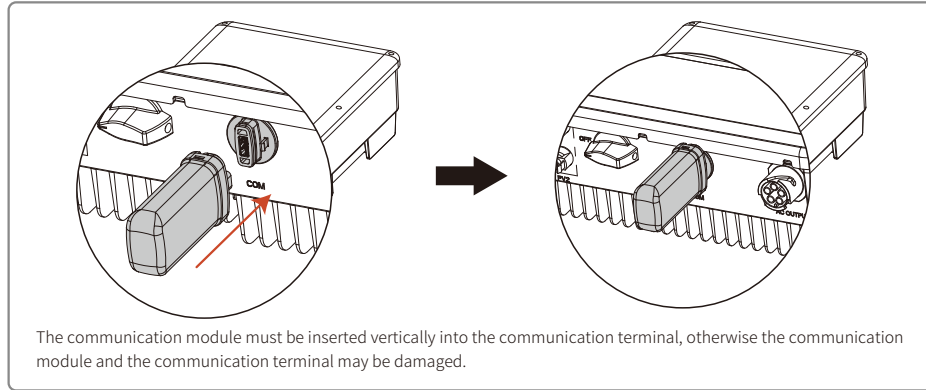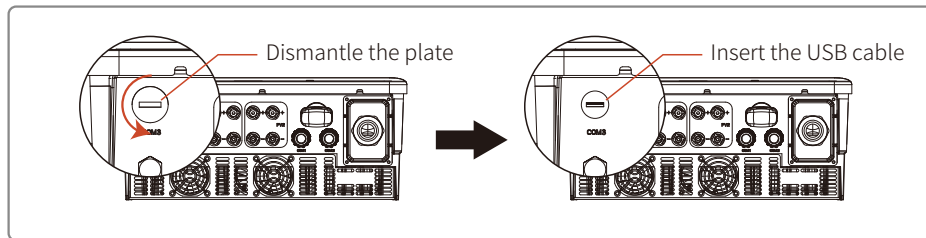This function only applies to the local firmware upgrade and parameter calibration for after-sales.

Dismantle the plate

Insert the USB cable

4.4.3 Export Power Limit Connection Diagram

The methods of connecting the Power Limiting device is shown below.

Inverter

PV

PE
N
L3
L2
L1
Grid

Power Meter

kW·H
2010

N
Grid
L

CT A connect to L1
CT B connect to L2
CT C connect to L3

"To Smart Meter"

Smart Meter

House→Grid

Loads
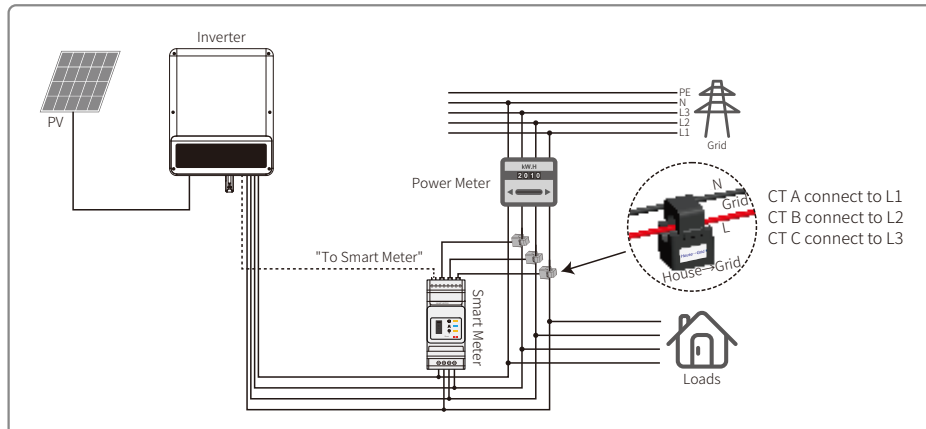
4.4.3 DRED / Remote shutdown / Smart Meter (Power Limit Device) /RS485 Connection

DRED (Demand Response Enabling Device) is available only for installation in Australia and New Zealand, in compliance with local safety regulations. The connection port from inverter is reserved but the device shall not be provided as standard component by inverter manufacturer.

Remote shutdown is required in some countries such as Germany and India, in compliance with safety regulations in Europe. The connection port from inverter is reserved but the device shall not be provided as standard component by inverter manufacturer.

DRED should be connected to the COM port with 6-Pin and remote shutdown to the COM port with 2-Pin as illustrated below.

SDT G2 4~10KW

Meter or RS485

DRED (Optional)

Meter or RS485

Remote Shutdown (Optional)

SDT G2 12~15KW

Meter or RS485

DRED (Optional)

Meter or RS485

Remote Shutdown (Optional)

SDT G2 17~25KW

DRED (Optional)

Meter or RS485

Remote Shutdown
(Optional)

Meter or RS485
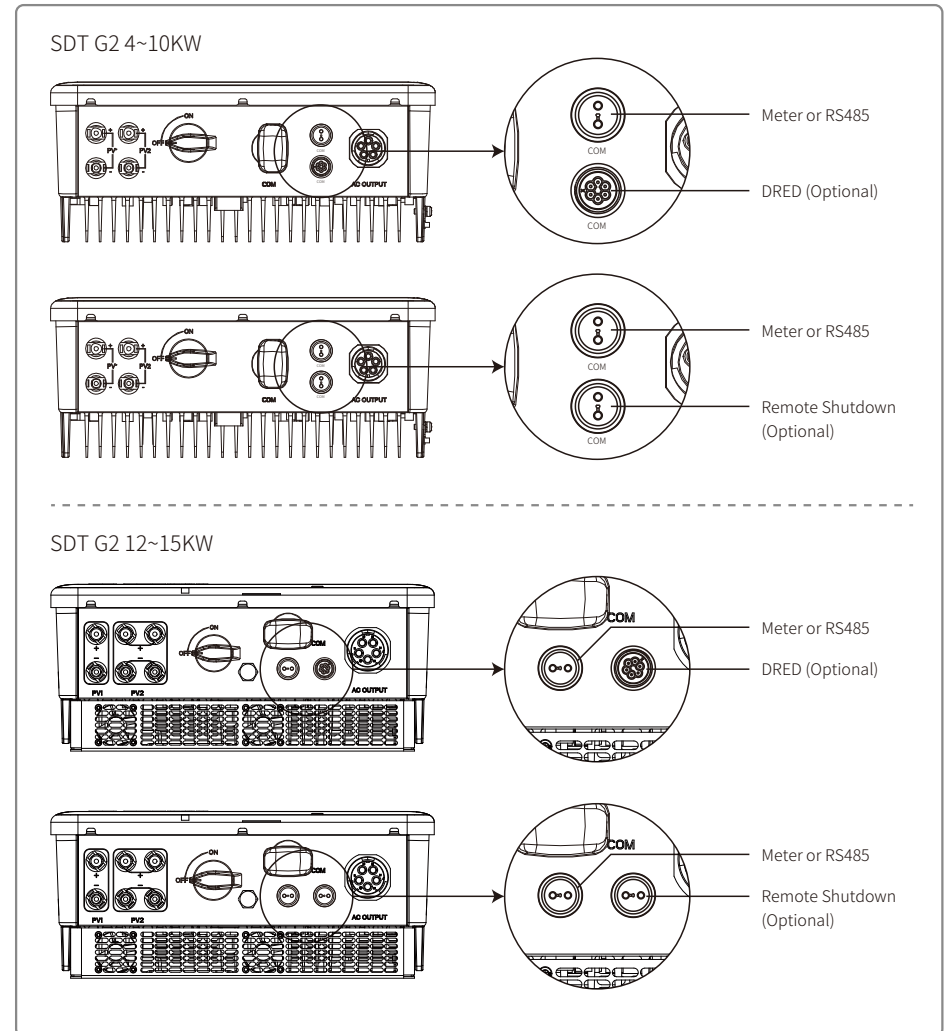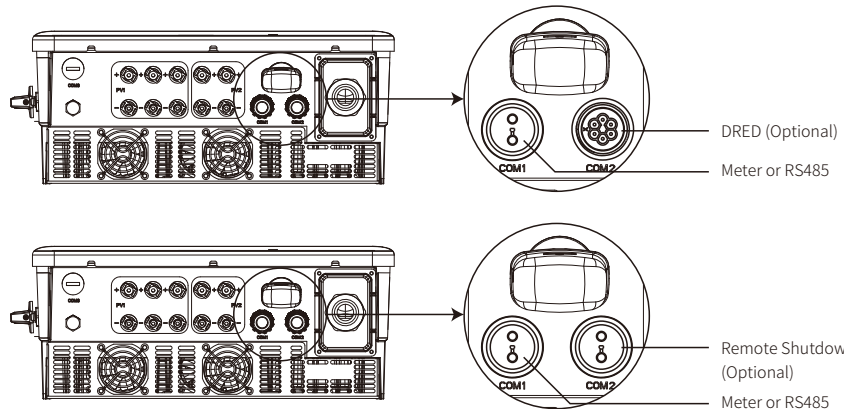
Please follow the steps below to complete the connection.

Step 1:
Unplug the terminal.

SDT G2 4~10KW
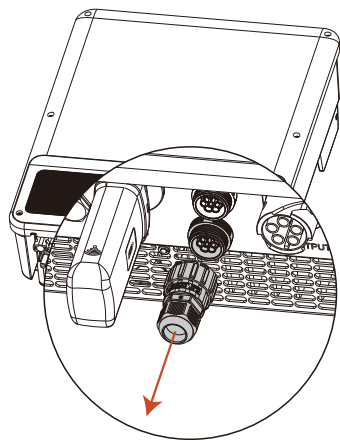
SDT G2 12~15KW
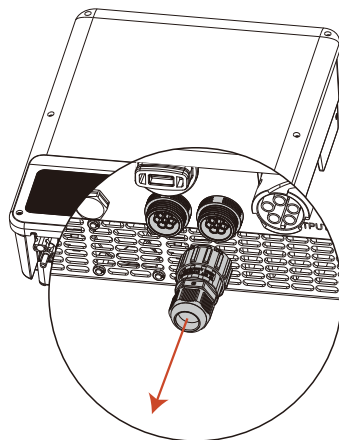
SDT G2 17~25KW
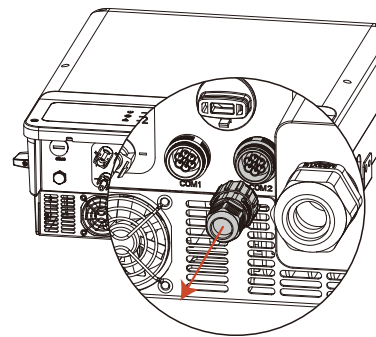
Step 2:
Dismount the terminal.
Note: There is an 2-Pin terminal in the accessory box.

- -

For 6-Pin terminal

Single Hole Seal Ring

Screw Cap   The Insulator

- -

For 2-Pin terminal

Single Hole Seal Ring

Screw Cap   The Insulator
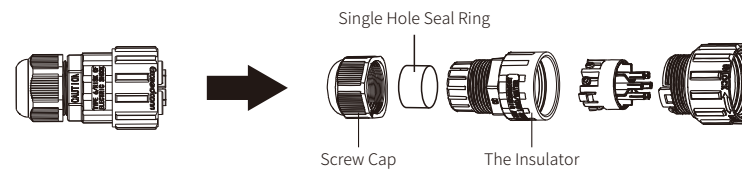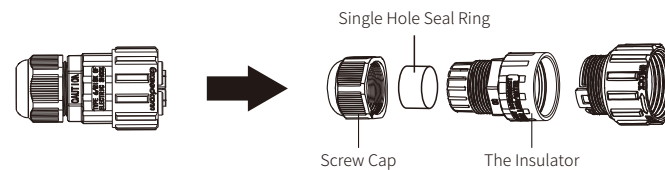
Step 3:
Dismantle the resistor or shortcircuit cable.
Note: The figure shown is 6-Pin termianl.

Resistor
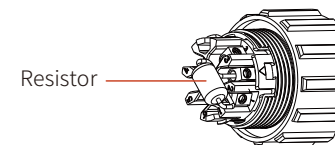
Step 4:

Put the cable through the plate.

Different cable and connection method should be applied for different functions. Please follow the connection steps in accordance to the function in need.

Connection of DRED

Please connect the cables in order as shown in the right table.
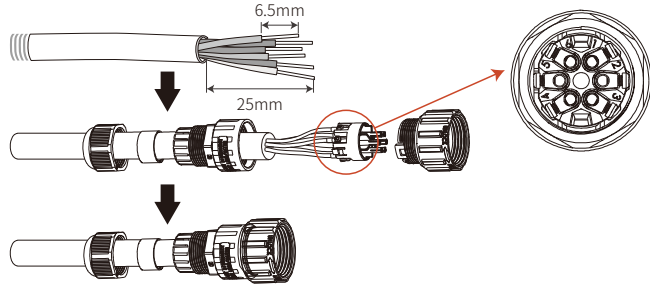
NO.	Function
1	DRM1/5
2	DRM2/6
3	DRM3/7
4	DRM4/8
5	REFGen
6	Com/DRM0

Connection of Remote shutdown

Please connect the cables in order as shown in the right table.
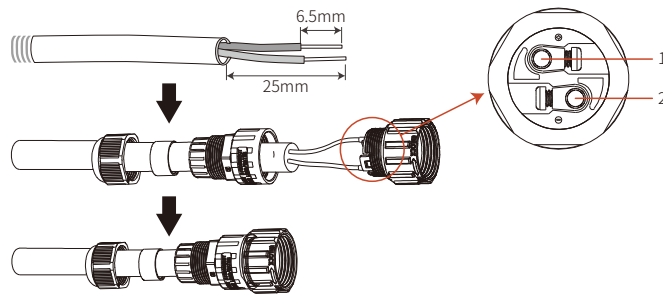
Remote shutdown	
NO.	Function
1	DRM4/8
2	REFGen

Connection of RS485 & Smart Meter.

Please connect the cables in order as shown in the right table.
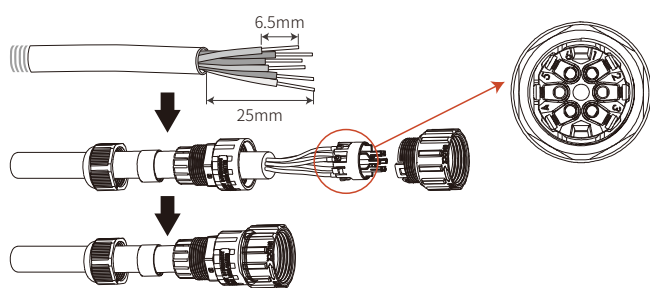
RS485	
NO.	Function
1	RS485 B
2	RS485 B
3	RS485 A
4	RS485 A

Smart Meter	
NO.	Function
5	Meter +
6	Meter −

Step 5:

Connect the terminal to the right position onto the inverter.
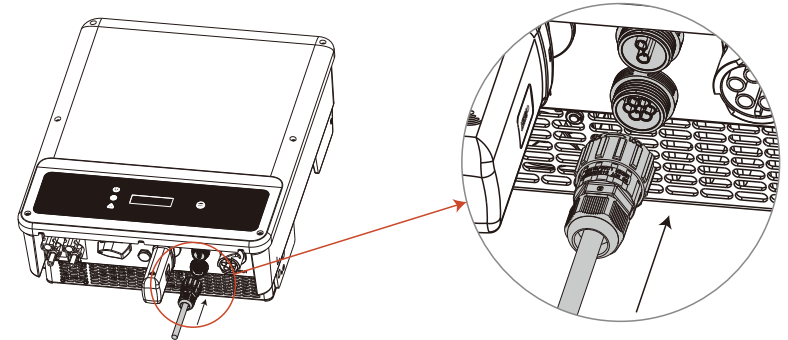
Note:

1. Meter is not a standard accessory for grid-tied inverter. You may contact sales if meter is in need.

2. The compatible DRM commands are DRM0, DRM5, DRM6, DRM7, DRM8.

3. You may refer to guidance in Smart Meter User Manual if meter is required.

4. DRED option is available only for Australia and New Zealand.

5. To implement export power limitation, meter is required to install in the system. The function should be enabled and threshold value set on local LCD or SolarGo by following the steps at section "5.2 User Interface and System Operation".

4.4.4 Earth Fault Alarm

In compliance with the section 13.9 of IEC62109-2, the SDT G2 series inverter is equipped with an earth fault alarm. When earth fault occurs, the fault indicator at the front LED screen will light up. On inverter with Wi-Fi communication, the system sends an email with the fault notification to the customer. For inverter without Wi-Fi, the buzzer of the inverter will keep ringing for one minute and ring again after half an hour until the fault is resolved. (This function is only available in Australia and New Zealand).

4.4.5 SEMS Portal

SEMS Portal is an online monitoring system. After completing the installation of communication connection, you can access www.semsportal.com or download the App by scanning the QR code to monitor your PV plant and device.

Please contact the after-sales for more operation of SEMS Protal.

SEMS Portal App

5 System Operation

5.1 LCD Panel and LED

As a human-computer interaction interface, LCD display panel comprises of LED indicators, buttons and LCD display on the front panel of the inverter.LED indicates the working status of the inverter.Buttons and LCD are used for configuration and viewing parameters.

Button

Inverter with LCD, indicator lights in Yellow/Green/Red correspondently refer to ⏻ / ▶ / ⚠

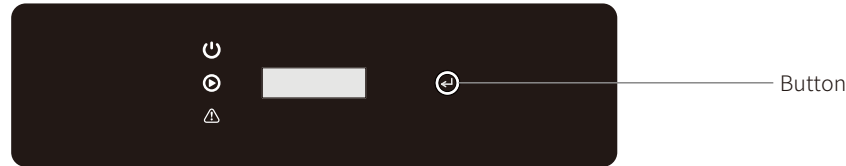| Indicator	Status	Explanation
⏻ Power	▬▬▬	ON = Wi-Fi connected/active
	▮▮▮▮▮▮▮	BLINK 1 = Wi-Fi system resetting
	▮▮ ▬ ▮▮	BLINK 2 = Not connect to router
	▮▮▮▮ ▮▮▮	BLINK 3 = Wi-Fi server problem
	▬▬ ▬▬	BLINK = RS485 connected
	___	OFF = Wi-Fi not active
▶ Run	▬▬▬	On = Inverter is feeding power
	___	OFF = Inverter is not feeding power at the moment
⚠ Fault	▬▬▬	On = Fault occurred
	___	OFF = No fault
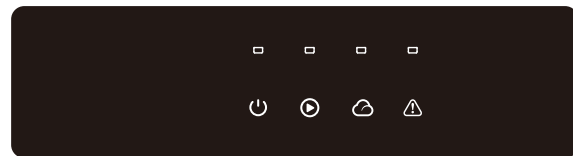
For inverter without LCD, indicator lights in Green/Green/Green/Red correspondently refer to ⏻ / ▶ / ☁ / ⚠

Indicator	Status	Explanation
⏻ Power	▬▬▬	ON = Equipment power-on
	___	OFF= Equipment power-off
▶ Run	▬▬▬	ON = Inverter is feeding power
	___	OFF= Inverter is not feeding power

Indicator	Status	Explanation
▶ Run	▬ ▬	SINGLE SLOW FLASH = Self check before grid connect
	▮▮▮▮▮▮▮▮	SINGLE FALSH = Will connect with grid
☁ SEMS	▬▬▬	ON = Wi-Fi connected / active
	▮▮▮▮▮	BLINK 1 = Wireless system resetting
	▮▮ ▬ ▮▮	BLINK 2 = Wireless routre problem
	▮▮▮▮ ▮▮▮	BLINK 4 = Wireless server problem
	___	OFF = Wireless not active
⚠ Fault	▬▬▬	ON = Fault occurred
	___	OFF = No fault

SolarGo APP

NOTE:
Download SolarGo App from Google Play Store or Apple App Store to complete the system operation if the inverter has no LCD. You can also scan the QR code to download it.

5.2 User Interface And Syetem Configuration

5.2.1 Operation Method

There are two modes of button operation: Short press the button and long press the button.

In all levels of menu, if no action is taken, the backlight of the LCD display will switch off, the display will automatically revert to the first item of the first level menu, and any modifications made to the data will be stored into internal memory.

5.2.2 Set Safety Country

If display shows "GW6K-DT Pac=6000.0W", then long press the button to enter the second level menu. Short press to browse the countries available. Please wait after choosing the suitable country's safety setting, the display will show "setting..." and skip to "Set OK" or "Set Fail".

5.2.3 Display

A schematic of the display screen is shown as below:

Normal
Pac=6000.0W

Display area is divided as follows:

Line 1
Line 2

5.2.4 Display Area

Line 1---Working status information

This area displays the status information. "Waiting Pac=0.0W" indicates the inverter is standing by for power generation; "Checking**S Pac=0.0W" (checking time is based on safety, and varies from country to country) indicates the inverter is self-checking, counting down and preparing for power generation. "Normal Pac=6000.0W" indicates the inverter is generating power. If any condition of the system is abnormal, the screen will display an error message.

Through Button operation, the screen can display different information such as operation parameters and power generation status in this area. There are two levels of menus, and the flow chart of first level menu is shown as the diagram.

5.2.5 Use of LCD

The display allows accessing the configuration of the basic parameters. All the language, time and country settings can be configured by buttons. The menu, shown in the LCD displays area has two levels of menu. Short or long press the button will take you between menus and through each menu. Items in the first level menu that have no second level are locked. For these items, when the button is pressed for two seconds, the LCD will display the word "Lock" followed by data relating to the first level menu item. The locked menu can only be unlocked under system mode switching, fault occurrence or button operation.

5.2.6 Menu Introduction

• When the PV panel is feeding power to the inverter, the screen will show the first-level menu.

• The initial display is the the first item of the first level menu, and the interface displays the current status of the system, It shows "Waiting Pac=0.0W" in the initial state; it shows "Normal Pac=6000.0W" during power generation mode; if there is something wrong with the system, an error message is shown.

The way to view PV voltage, PV current, grid voltage, current and frequency:

• Short press the button to enter the E-Today menu which displays the total power generation for today.

• Short press the button to enter the E-Total menu which displays the total power generation up to today.

• Short press the button to enter the Vpv menu which displays the PV voltage in "V".

• Short press the button to enter the Ipv menu which display sthe PV current in "A".

• Short press the button to enter the Vac menu which displays the grid voltage in "V".

• Short press the button to enter the Iav menu which displays the grid current in "A".

• Short press the button to enter the Frequency menu which displays the grid frequency in HZ.

• View error message.

Short press the button once more to enter the "Error Message History" menu.
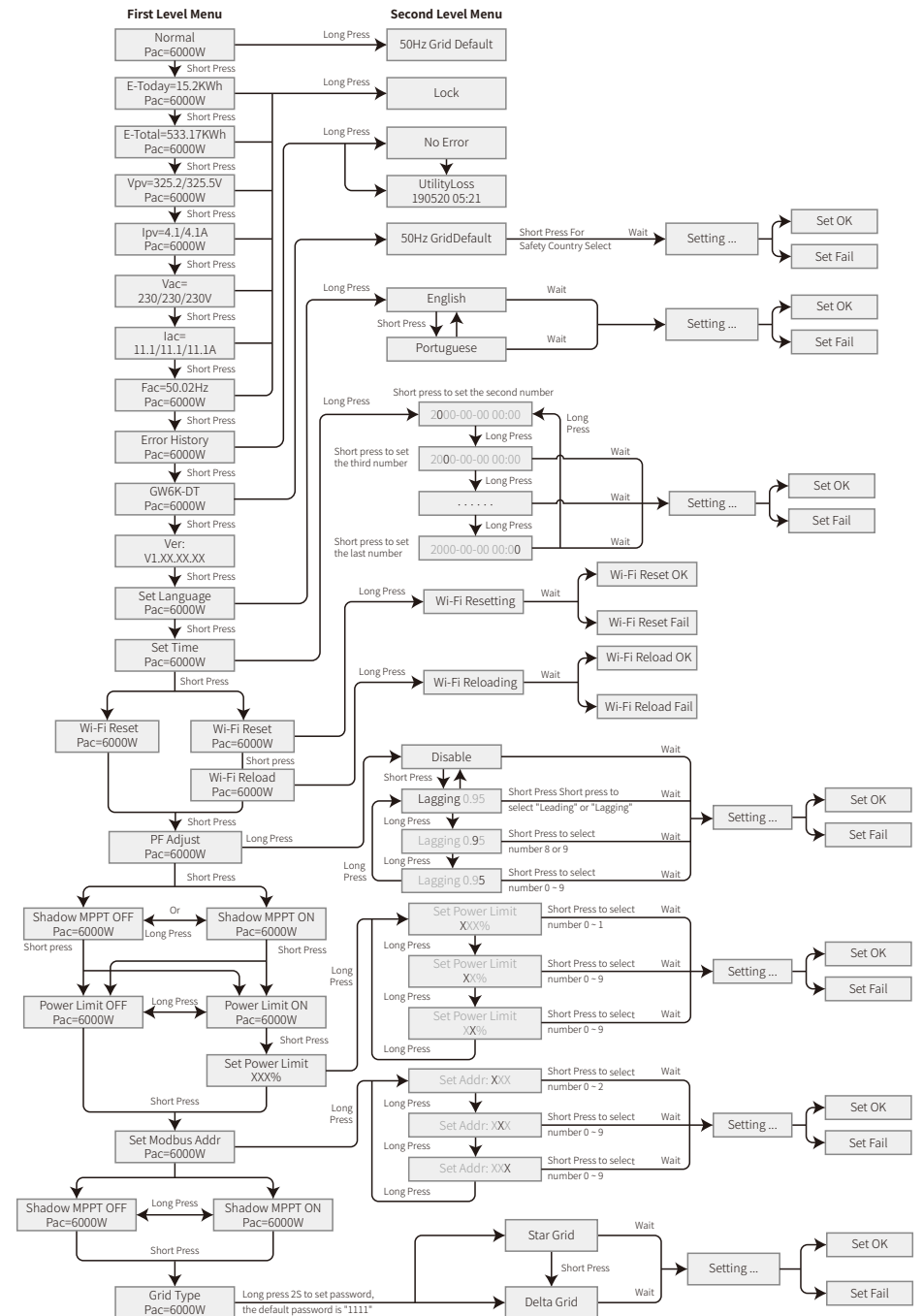
Long press the button to enter the second level menu of error detection. The newest three inverter error message will be shown by short pressing the button in this second level menu. The records include error message and error times (190520 15:30).

• The way to view model name and reconfigure safety country:

From the error message history item in the first level menu, short press the button to check the model name.

If you want to change the safety country setting , please long press the button to enter the second level menu.

In the second level menu, you can change the safety country with short pressing the button. If you change the safety country, the dispaly will show: "Setting...". Then the display will show: "Set Fail" or "Set OK" 10 seconds later. If you do nothing in second level menu and without pressing button, the backlight of display will power off and return to the first level menu.

• View software version

From the model name item in the first level menu, short press the button once to see software version.

The current software version can be shown in this menu.

5.2.7 Bassic Setting

• Set language:

Short press the button to enter the "Set Language" menu. Long press the button to enter the second level menu. Short press the button to browse the languages available.

• Set time:

From the first level "Set Language" menu, short press the button to enter the "Set Time" menu.

Long press the button to enter the second level menu. The initial display is "2000-00-00 00:00", in which the first four numbers represent the year (e.g. 2000~2099); the fifth and sixth numbers represent the month (e.g. 01~12); the seventh and the eighth numbers represent the date (e.g. 01~31). The remaining numbers represent the time.

Short press the button to increase the number in current location, and press to move the cursor to next position.

• Set protocol:

This function is only opened for service personnel, setting a wrong protocol could lead to communication failure.

From the first level Set Time menu, short press the Button once to enter protocol display menu. Press the Button for 2s to enter submenu. The circulatory submenu that includes two protocols can be found. The protocol can be chosen by short pressing the Button. The inverter will store the chosen protocol if there is no input for 10 seconds and LCD display will automatically return to main menu and the backlight will be turned off.

• MPPT function for Shadow:

The default setting for shadow optimizer is disabled.

Please do not enable the function when there is no shadow on panel. Otherwise it could lead to generating less power.

Press the Button to enter Shadow Optimize menu. When it shows "Shadow MPPT OFF", it means the shadow optimizer is on. Press the Button for 2s to disable the function.

5.2.8 Power Limiting Function Setting

The Operations of the ON/OFF power limiting function (the default is OFF) and the power limiting settings (the default is 2% rated) are shown as below.
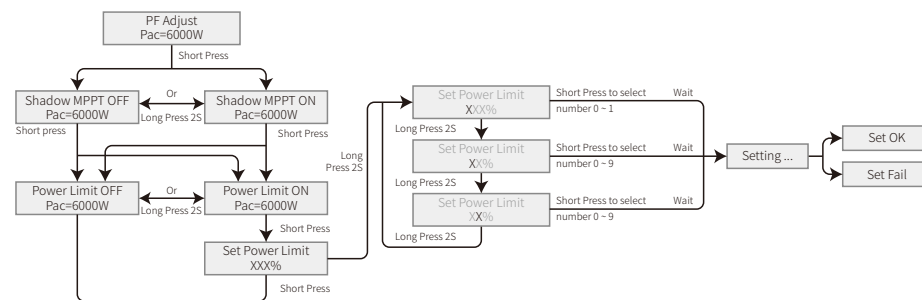
such as a CT/Meter or the power limiting device is not working.

You need to enter a password before being able to set the power limit. . The default password is "1111".(only for Australian security regulations)

5.2.9 Operation of Display When Commissioning.

When the input voltage reaches the inverter's turn-on voltage, the LCD starts to work, the yellow light is turned on and the LCD displays "Waiting". More information will be displayed within a few second. If the inverter is connected to the grid, "Checking XXs" will be displayed and a countdown will commence from 30 seconds. When it shows "00S", you will hear the relay be triggered 4 times. Then the LCD will display "Normal". The instant power output will be shown at the bottom left of the LCD.

5.3 Wi-Fi Reset & Wi-Fi Reload

These functions are only available for Wi-Fi model inverter.

Wi-Fi reload function is used to change the Wi-Fi configuration to default value. Please configure the Wi-Fi again after using the function.

Short press the button until the LCD displays "Wi-Fi Reset", then long press the button until the LCD displays "Wi-Fi Resetting…". Stop pressing and wait for the screen to display "Wi-Fi Reset OK"

or "Wi-Fi Reset Failed".

Press the Button until the LCD displays "Wi-Fi Reload", then long press until the LCD displays "Wi-Fi Reloading...". Stop pressing and wait for the screen showing "Wi-Fi Reloading OK" or "Wi-Fi Reloading Failed".
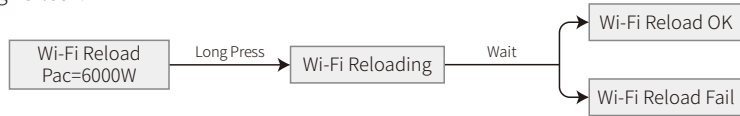
5.4 Error Message

An error message will be displayed on the LCD if a fault occurs.

Error message	Description
Fac Fail	Grid frequency out of pemissible range.
Isolation Fail	Ground insulation impedance is too low.
Vac Fail	Grid voltage out of permissible range.
PV Over Voltage	Overvoltage at DC input.
Over Temperature	Over temperature on the case.
Utility Loss	Utility is unavailable.

5.5 Precaution for Initial Startup

1. Make sure the AC circuit is connected and AC breaker is turned off.

2. Make sure the DC cable between inverter and PV string is connected, and the PV voltage is normal.

3. Turn on the DC switch, and set safety according to the local regulation.

4. Turn on the AC breaker. Check the inverter work normal.

5.6 Special Adjustable Setpoints

The inverter has a field where the user could set functions, such as trip point, trip time, time of reconnection, active and inactive of QU curve and PU curve. Fuctions can be adjusted through special software. If insterested, please contact After-Sales. The software instructions are available on the offical website. Alternatively, please contact after-sales for more information.

5.5 Special Adjustable Setpoints

The inverter has a field in which the user can set functions, such as trip points, trip times, reconnect times, active and inactive QU curves and PU curves. It is adjustable through special software. If needed, please contact after-sales. To obtain software manuals, you can download them from the official website or contact after-sales.

5.5.1 PF Power Curve Mode

PF power curve mode can be modified by Modbus communication method, specifically according to the machine Modbus address and Modbus register value, according to the set range to set the corresponding value.
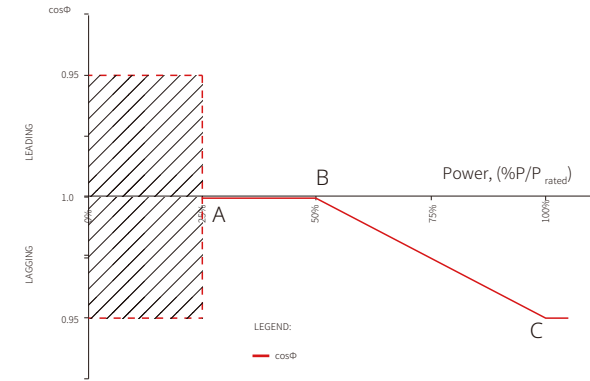
PF Power Curve Mode				
Function	Default value (Australia)	Default value (New Zealand)	Setting range	Register
PF curve mode enable or disable	0	0	"0"or"1"	40600
B power factor	50 (50%)	50 (50%)	30~80	40603
C power factor	90 (90%)	90 (90%)	90~100	40606

5.5.2 PU Curve Mode

The PU curve mode can be modified by Modbus communication method, specifically according to the machine Modbus address and Modbus register value, according to the set range to set the corresponding value.
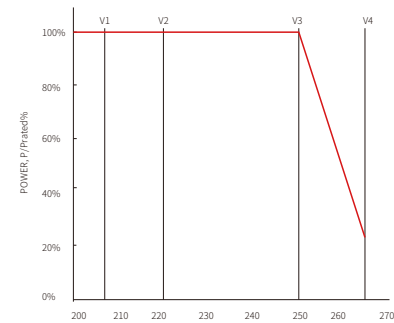
Example curve for a volt-watt response mode (Australia)

Example curve for a volt-watt response mode (New Zealand)

PU curve Mode				
Function	Default value (Australia)	Default value (New Zealand)	Setting range	Register
PU curve mode enable or disable	1	1	""0"or"1"	40680
V1 voltage ratio	900 (207V)	900 (207V)	0~2000	40683
P1 power ratio	1000 (100%*Pn)	1000 (100%*Pn)	0~1500	40684
V2 voltage ratio	956 (220V)	956 (220V)	0~2000	40685
P2 power ratio	1000 (100%*Pn)	1000 (100%*Pn)	0~1500	40686
V3 voltage ratio	1087 (250V)	1061 (244V)	0~2000	40688
P3 power ratio	1000 (100%*Pn	1000 (100%*Pn	0~1500	40689
V4 voltage ratio	1152 (265V)	1109 (255V)	0~2000	40690
P4 power ratio	200 (20%*Pn)	200 (20%*Pn)	0~1500	40691

Example: set the ratio of V1 voltage to 1100, corresponding to the rated voltage of 230 v, V1 = 230 * 110% = 253V.

Example: set P1 power ratio to 900 and the corresponding power to 0.9* rated power.

5.5.3 QU Curve Mode

QU curve mode can be modified by Modbus communication, specifically according to the machine Modbus address and Modbus register value, according to the set range to set the corresponding value.
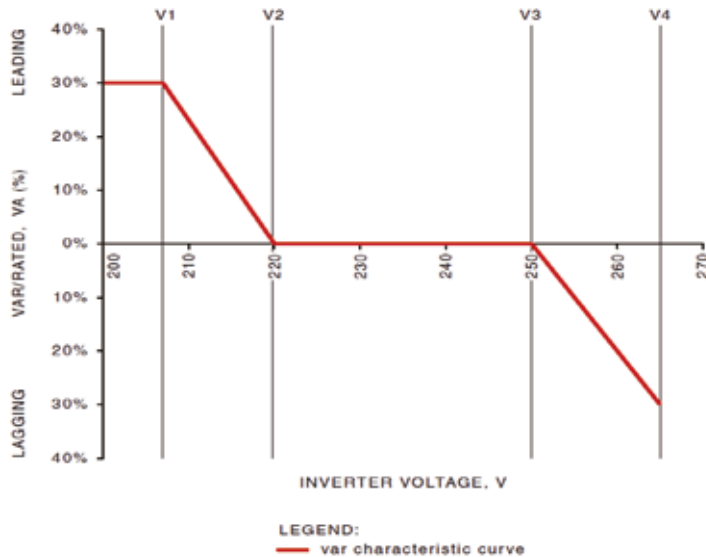
QU curve Mode				
Function	Default value (Australia)	Default value (New Zealand)	Setting range	Register
QU curve mode enable or disable	0	0	"0"or"1"	40650
V1 voltage ratio	900 (207V)	900 (207V)	0~2000	40653
Q1 reactive power ratio	300 (30%*Pn)	300 (30%*Pn)	0~600	40654
V2 voltage ratio	957 (220V)	957 (220V)	0~2000	40655
Q2 reactive power ratio	300 (30%*Pn)	300 (30%*Pn)	0~1500	40656
V3 voltage ratio	1087 (250V)	1061 (244V)	0~2000	40657
Q3 reactive power ratio	300 (30%*Pn)	300 (30%*Pn)	0~1500	40658
V4 voltage ratio	1152 (265V)	1109 (255V)	0~2000	40659
Q4 reactive power ratio	300 (30%*Pn)	300 (30%*Pn)	0~600	40660

Example: set the ratio of V1 voltage to 1100, corresponding to the rated voltage of 230 v, V1 = 230 * 110% = 253V.

Example: set Q1 reactive power ratio to 300, corresponding reactive power Q1=30%* rated power.

5.5.4 Power Recovery Rate

The power recovery rate can be modified by Modbus communication, specifically according to the machine Modbus address and Modbus register value, according to the set range to set the corresponding value.

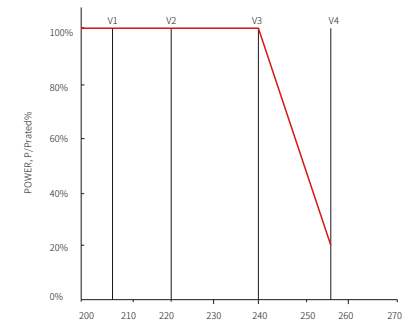| Function	The default value (Australia & New Zealand)	Setting range	Register
Power recovery rate Settings	167 (16.7%Pn/min)	50~1000	40536

If you need to change the above Settings, please contact our after-sales service.

6 Troubleshooting

In most situations, the inverter requires few maintenance. However, if the inverter is not working properly, please try the following troubleshooting solutions;

• When a problem occurs, the red (fault) LED indicator on the front panel will light up and the LCD screen will display the type of the fault. The following table lists error messages and the solutions for associated faults.

Type of fault		Troubleshooting
System Failure	Isolation Failure	1. Check the impedance between Ground and PV (+) & PV (-) . The impedance value must be greater than 100kΩ. Make sure the inverter is earthed. 2. Contact local service office for help if the problem still persist..
	Ground I Failure	1. The ground current is too high. 2. Unplug the inputs from the PV generator and check the peripheral AC system. 3. When the problem is cleared, reconnect the PV panel and check the Inverter status. 4. Contact local service office for help if the problem still persist.
	Vac Failure	1. The PV Inverter will automatically restart within 5 minutes if the grid returns to normal. 2. Make sure grid voltage conforms with the specification. 3. Make sure neutral (N) wire and PE wire are connected well. 4. Contact local service office for help if the problem still persist.
	Fac Failure	1. Grid is not connected. 2. Check grid connection cables. 3. Check availability of grid.
	Utility Loss	1. Not connect to the grid. 2. Check if the power grid is connected to cable. 3. Check the availability of power grid.
	PV Over Voltage	1. Check if the PV open circuit voltage is higher or too close to the maximum input voltage or not. 2. If the problem still persist when PV voltage is less than the maximum input voltage, contact local service office for help.
	Over Temperature	1. The internal temperature is higher than normal value specified. 2. Reduce ambient temperature. 3. Move the inverter to a cool place. 4. If the problem still exists, contact local service office for help.

Type of fault		Troubleshooting
Inverter Failure	Relay-Check Failure	1. Turn off DC switch of the inverter. 2. Wait till the inverter's LCD light is off. 3. Turn on DC switch and make sure it is connected. 4. If the problem still exists, contact local service office for help.
	DCI Injection High	
	EEPROM R/W Failure	
	SPI Failure	
	DC BUS High	
	GFCI Failure	
Others	No display	1. Turn off DC switch, take off DC connector, measure the voltage of PV array. 2. Plug in DC connector, and turn on DC switch. 3. If PV array voltage is lower than 250V, please check configuration of inverter module. 4. If voltage is higher than 250V, please contact local office.

Note:

When sunlight is insufficient, the PV inverter may continuously start up and shut down automatically due to insufficient power generation by the PV panels, which would not lead to inverter damage. If the problem still exists, please call the local service office.

7 Technical Parameters

Technical Data	GW4K-DT	GW4KL-DT	GW5K-DT	GW5KL-DT
PV Input Data				
Max. DC Input Power (W)	6000	6000	7500	7500
Max. DC Input Voltage (V) [1]	1000	600	1000	600
MPPT Range (V)	180~850	180~550	180~850	180~550
Start-up Voltage (V)	160	160	160	160
Min. Feed-in Voltage(V)	210	210	210	210
Nominal DC Input Voltage (V)	620	480	620	480
Max. Input Current (A)	12.5/12.5	12.5/12.5	12.5/12.5	12.5/12.5
Max. Short Current (A)	15.6/15.6	15.6/15.6	15.6/15.6	15.6/15.6
No. of MPP Trackers	2	2	2	2
No. of Input Strings Per MPP Tracker	1/1	1/1	1/1	1/1
AC Output Data				
Nominal Output Power (W)	4000	4000	5000	5000
Max. Output Apparent Power (VA) [1]	4400	4400	5500	5500
Nominal Output Voltage (V)	400, 3L/N/PE	400, 3L/N/PE;	400, 3L/N/PE	400, 3L/N/PE
Nominal Ouput Frequency (Hz)	50/60	50/60	50/60	50/60
Max. Output Current (A)	6.4	6.4	8	8
Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)			
Output THDi (@Nominal Output)	<3%	<3%	<3%	<3%
Efficiency				
Max. Efficiency	98.2%	98.0%	98.2%	98.0%
Europe Efficiency	97.6%	97.5%	97.6%	97.5%
Protection				
Anti-islanding Protection	Integrated			
Input Reverse Polarity Protection	Integrated			
Insulation Resistor Detection	Integrated			
DC Surge Protectioin	Integrated（Type III)			
AC Surge Protectioin	Integrated（Type III)			
Residual Current Monitoring Unit	Integrated			
Output Over Current Protection	Integrated			
Output Short Protection	Integrated			
Output Over Voltage Protection	Integrated			
General Data				
Operating Temperature Range (°C)	-30~60			
Relative Humidity	0~100%			
Operating Altitude (m)	≤4000			
Cooling	Natural Cooling			
User Interface	LED or LCD			
Communication	WiFi or LAN or RS485			
Weight (kg)	15			
Size (Width*Height*Depth mm)	354*433*147			
Protection Degree	IP65			
Night Self Consumption (W)	<1			
Topology	Transformerless			
Certifications & Standards				
Grid Regulation				
Safety Regulation	Visit homepage to achieve information.			
EMC				

[1] For Belgium Max. Output Apparent Power (VA), GW4K-DT is 4000; GW5K-DT is 5000;

Technical Data	GW6K-DT	GW6KL-DT	GW8K-DT	GW10KT-DT
PV Input Data				
Max. DC Input Power (W)	9000	9000	12000	15000
Max. DC Input Voltage (V) [1]	1000	600	1000	1000
MPPT Range (V)	180~850	180~550	180~850	180~850
Start-up Voltage (V)	160	160	160	160
Min. Feed-in Voltage(V)	210	210	210	210
Nominal DC Input Voltage (V)	620	480	620	620
Max. Input Current (A)	12.5/12.5	12.5/12.5	12.5/12.5	12.5/12.5
Max. Short Current (A)	15.6/15.6	15.6/15.6	15.6/15.6	15.6/15.6
No. of MPP Trackers	2	2	2	2
No. of Input Strings Per MPP Tracker	1/1	1/1	1/1	1/1
AC Output Data				
Nominal Output Power (W)	6000	6000	8000	10000
Max. Output Apparent Power (VA) [1]	6600	6600	8800	11000
Nominal Output Voltage (V)	400, 3L/N/PE	400, 3L/N/PE	400, 3L/N/PE;	400, 3L/N/PE
Nominal Ouput Frequency (Hz)	50/60	50/60	50/60	50/60
Max. Output Current (A)	9.6	9.6	12.8	16
Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)			
Output THDi (@Nominal Output)	<3%	<3%	<3%	<3%
Efficiency				
Max. Efficiency	98.2%	98.0%	98.2%	98.3%
Europe Efficiency	97.6%	97.5%	97.6%	97.7%
Protection				
Anti-islanding Protection	Integrated			
Input Reverse Polarity Protection	Integrated			
Insulation Resistor Detection	Integrated			
DC Surge Protectioin	Integrated（Type III)			
AC Surge Protectioin	Integrated（Type III)			
Residual Current Monitoring Unit	Integrated			
Output Over Current Protection	Integrated			
Output Short Protection	Integrated			
Output Over Voltage Protection	Integrated			
General Data				
Operating Temperature Range (°C)	-30~60			
Relative Humidity	0~100%			
Operating Altitude (m)	≤4000			
Cooling	Natural Cooling		Fan Cooling	
User Interface	LCD&LED			
Communication	WiFi or LAN or RS485			
Weight (kg)	15		16	
Size (Width*Height*Depth mm)	354*433*147		354*433*155	
Protection Degree	IP65			
Night Self Consumption (W)	<1			
Topology	Transformerless			
Certifications & Standards				
Grid Regulation				
Safety Regulation	Visit homepage to achieve information.			
EMC				

[1] For Belgium Max. Output Apparent Power (VA), GW6K-DT is 6000; GW8K-DT is 8000; GW10KT-DT is 10000;

Technical Data	GW12KT-DT	GW15KT-DT
PV Input Data		
Max. DC Input Power (W)	18000	22500
Max. DC Input Voltage (V) [1]	1000	1000
MPPT Range (V)	180~850	180~850
Start-up Voltage (V)	160	160
Min. Feed-in Voltage(V)	210	210
Nominal DC Input Voltage (V)	620	620
Max. Input Current (A)	12.5/25	12.5/25
Max. Short Current (A)	15.6/31.2	15.6/31.2
No. of MPP Trackers	2	2
No. of Input Strings Per MPP Tracker	1/2	1/2
AC Output Data		
Nominal Output Power (W)	12000	15000
Max. Output Apparent Power (VA)	14000	16500
Nominal Output Voltage (V)	400, 3L/N/PE	400, 3L/N/PE
Nominal Ouput Frequency (Hz)	50/60	50/60
Max. Output Current (A)	20.3	24
Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)	
Output THDi (@Nominal Output)	<3%	<3%
Efficiency		
Max. Efficiency	98.3%	98.3%
Europe Efficiency	97.7%	97.7%
Protection		
Anti-islanding Protection	Integrated	
Input Reverse Polarity Protection	Integrated	
Insulation Resistor Detection	Integrated	
DC Surge Protectioin	Integrated (Type III)	
AC Surge Protectioin	Integrated (Type III)	
Residual Current Monitoring Unit	Integrated	
Output Over Current Protection	Integrated	
Output Short Protection	Integrated	
Output Over Voltage Protection	Integrated	
General Data		
Operating Temperature Range (°C)	-30~60	
Relative Humidity	0~100%	
Operating Altitude (m)	≤4000	
Cooling	Fan Cooling	
User Interface	LCD&LED	
Communication	WiFi or LAN or RS485	
Weight (kg)	18	
Size (Width*Height*Depth mm)	354*433*155	
Protection Degree	IP65	
Night Self Consumption (W)	<1	
Topology	Transformerless	
Certifications & Standards		
Grid Regulation		
Safety Regulation	Visit homepage to achieve information.	
EMC		

[1] For Belgium Max. Output Apparent Power (VA), GW12KT-DT is 12000; GW15KT-DT is 15000;

Technical Data	GW17KT-DT	GW20KT-DT	GW25KT-DT
PV Input Data			
Max. DC Input Power (W)	25500	30000	37500
Max. DC Input Voltage (V)	1100	1100	1100
MPPT Range (V)	200~950	200~950	200~950
Start-up Voltage (V)	180	180	180
Min. Feed-in Voltage(V)	210	210	210
Nominal DC Input Voltage (V)	620	620	620
Max. Input Current (A)	25/25	25/25	37.5/25
Max. Short Current (A)	31.2/31.2	31.2/31.2	46.8/31.2
No. of MPP Trackers	2	2	2
No. of Input Strings Per MPP Tracker	2/2	2/2	3/2
AC Output Data			
Nominal Output Power (W)	17000	20000	25000
Max. Output Apparent Power (VA)	19000	22000	27500
Nominal Output Voltage (V)	400, 3L/N/PE	400, 3L/N/PE;	400, 3L/N/PE
Nominal Ouput Frequency (Hz)	50/60	50/60	50/60
Max. Output Current (A)	28.8	31.9	40.8
Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)		
Output THDi (@Nominal Output)	<3%	<3%	<3%
Efficiency			
Max. Efficiency	98.40%	98.40%	98.40%
European Efficiency	＞97.7%	＞97.7%	＞97.7%
Protection			
Anti-islanding Protection	Integrated		
Input Reverse Polarity Protection	Integrated		
Insulation Resistor Detection	Integrated		
DC Surge Protectioin	Type III (Type II optional)		
AC Surge Protectioin	Type III		
Residual Current Monitoring Unit	Integrated		
Output Over Current Protection	Integrated		
Output Short Protection	Integrated		
Output Over Voltage Protection	Integrated		
General Data			
Operating Temperature Range (°C)	-30~60		
Relative Humidity	0~100%		
Operating Altitude (m)	≤4000		
Cooling	Fan Cooling		
User Interface	LCD & LED		
Communication	Wi-Fi or LAN or RS485(Optional)		
Weight (kg)	25		
Size (Width*Height*Depth mm)	415*511*175		
Protection Degree	IP65		
Night Self Consumption (W)	<1		
Topology	Transformerless		
Certifications & Standards			
Grid Regulation			
Safety Regulation	Visit homepage to achieve information		
EMC			

[1] For Belgium Max. Output Apparent Power (VA), GW17K-DT is 17000; GW20K-DT is 20000; GW25KT-DT is 25000;

Technical Data	GW8KAU-DT	GW10KAU-DT	GW12KAU-DT
PV Input Data			
Max. DC Input Power (W)	10640	13300	15960
Max. DC Input Voltage (V)	1100	1100	1100
MPPT Range (V)	200~950	200~950	200~950
Start-up Voltage (V)	180	180	180
Max. Input Current (A)	25/25	25/25	25/25
Max. Short Current (A)	31.2/31.2	31.2/31.2	31.2/31.2
No. of MPP Trackers	2	2	2
No. of Input Strings Per MPP Tracker	2/2	2/2	2/2
AC Output Data			
Nominal Output Power (W)	8000	10000	12000
Max. Output Apparent Power (VA)	8800	11000	13200
Nominal Output Voltage (V)	400, 3L/N/PE	400, 3L/N/PE	400, 3L/N/PE
Nominal Output Frequency (Hz)	50/60	50/60	50/60
Max. Output Current (A)	12.8	16	19.2
Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)		
Output THDi (@Nominal Output)	<3%	<3%	<3%
Efficiency			
Max. Efficiency	98.4%	98.4%	98.4%
European Efficiency	97.5%	97.5%	97.5%
Protection			
Anti-islanding Protection	Integrated		
Input Reverse Polarity Protection	Integrated		
Insulation Resistor Detection	Integrated		
DC Surge Protection	Type II		
AC Surge Protection	Type II		
Residual Current Monitoring Unit	Integrated		
Output Over Current Protection	Integrated		
Output Short Protection	Integrated		
Output Over Voltage Protection	Integrated		
AFCI	Optional		
General Data			
Operating Temperature Range (℃)	-30~60		
Relative Humidity	0~100%		
Operating Altitude (m)	≤4000		
Cooling	Fan Cooling		
User Interface	LCD&LED		
Communication	RS485；WiFi or LAN （optional）		
Weight (kg)	25		
Size (Width*Height*Depth mm)	415*511*175		
Protection Degree	IP65		
Night Self Consumption (W)	<1		
Topology	Transformerless		
Certifications & Standards			
Grid Regulation			
Safety Regulation	Visit homepage to achieve information		
EMC			

Technical Data	GW15KAU-DT	GW17KAU-DT	GW20KAU-DT
PV Input Data			
Max. DC Input Power (W)	19950	22610	26600
Max. DC Input Voltage (V)	1100	1100	1100
MPPT Range (V)	200~950	200~950	200~950
Start-up Voltage (V)	180	180	180
Max. Input Current (A)	25/25	25/25	25/25
Max. Short Current (A)	31.2/31.2	31.2/31.2	31.2/31.2
No. of MPP Trackers	2	2	2
No. of Input Strings Per MPP Tracker	2/2	2/2	2/2
AC Output Data			
Nominal Output Power (W)	15000	17000	20000
Max. Output Apparent Power (VA)	16500	19000	22000
Nominal Output Voltage (V)	400, 3L/N/PE	400, 3L/N/PE	400, 3L/N/PE
Nominal Output Frequency (Hz)	50/60	50/60	50/60
Max. Output Current (A)	24	28.8	31.9
Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)		
Output THDi (@Nominal Output)	<3%	<3%	<3%
Efficiency			
Max. Efficiency	98.4%	98.4%	98.4%
European Efficiency	97.5%	97.5%	97.5%
Protection			
Anti-islanding Protection	Integrated		
Input Reverse Polarity Protection	Integrated		
Insulation Resistor Detection	Integrated		
DC Surge Protection	Type II		
AC Surge Protection	Type II		
Residual Current Monitoring Unit	Integrated		
Output Over Current Protection	Integrated		
Output Short Protection	Integrated		
Output Over Voltage Protection	Integrated		
AFCI	Optional		
General Data			
Operating Temperature Range (℃)	-30~60		
Relative Humidity	0~100%		
Operating Altitude (m)	≤4000		
Cooling	Fan Cooling		
User Interface	LCD&LED		
Communication	RS485；WiFi or LAN （optional）		
Weight (kg)	25		
Size (Width*Height*Depth mm)	415*511*175		
Protection Degree	IP65		
Night Self Consumption (W)	<1		
Topology	Transformerless		
Certifications & Standards			
Grid Regulation			
Safety Regulation	Visit homepage to achieve information		
EMC			

Note：

Overvoltage Category Definition

Category I: applies to equipment connected to a circuit where measures have been taken to reduce transient overvoltage to a low level.

Category II: applies to equipment not permanently connected to the installation. For example, appliances, portable tools and other plug-connected equipment;

Category III: applies to fixed downstream equipment, including the main distribution board. For example,switchgear and other equipment in an industrial installation;

Category IV: applies to equipment permanently connected at the origin of an installation (upstream of the main distribution board).For example, electricity meters, primary overcurrent protection equipment and other equipment connected directly to outdoor open lines.

Moisture Location Category Definition

Moisture parameters	Level		
	3K3	4K2	4K4H
Temperature Range	0~+40℃	-33~+40℃	-20~+55℃
Humidity Range	5%～85%	15%～100%	4%～100%

Environment Category Definition

Outdoor : the ambient air temperature is -20~50℃. Relative humidity range is from 4% to 100%, applied to PD3.

Indoor unconditioned: the ambient air temperature is -20~50 ℃. Relative humidity range is from 5% to 95%, applied to PD3.

Indoor conditioned: the ambient air temperature is 0~40 ℃. Relative humidity range is from 5% to 85%, applied to PD2.

Pollution Degree Definition

Pollution degree 1: No pollution or only dry, non-conductive pollution occurs. The pollution has no influence.

Pollution degree 2: Normally only non-conductive pollution occurs. However, a temporary conductivity occasionally caused by condensation must be expected.

Pollution degree 3: Conductive pollution occurs. Or dry, non-conductive pollution becomes conductive due to condensation, which is expected.

Pollution degree 4: Persistent conductive pollution occurs. For example, the pollution cause by conductive dust, rain and snow.