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SDT SERIES USER MANUAL



340-00220-01

prior notice,details refer to www.goodwe.com.cn.



SOLAR INVERTER

光伏并网逆变器

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1 Symbols

	There is a risk of injury due to improperly handle the device.		Component of product can be recycled
	Danger of high voltage and electric shock.		This surface is upward, and it should not be tilted and upended.
	Danger of hot surface! Do not touch the hot surface when the device is running.		No more than eight (8) identical packages be stacked on each other.
	Product should not be disposed as normal house hold waste.		The package/product should be handled carefully and never be tipped over or slung.
	Refer to the operating instructions		Keep Dry

 This symbol indicates that you should wait at least 5mins after disconnecting the inverter from the utility grid and from the PV panel before touch any inner live parts

 CE mark.

2 Safety

The SDT 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: Dual-MPPT, Three - Phase.)

- Installation, maintenance and connection of inverters must be performed by qualified personnel, in compliance with local electrical standards, regulations and the requirements of local power authorities and/or companies.
- To avoid electric shock, DC input and AC output of the inverter must be disconnected and wait at least 5 minutes before performing any installation or maintenance.
- 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 before touching it.
- Keep children away from inverter.
- Do not open the front cover of the inverter. Apart from performing work at the wiring terminal (as instructed in this manual), touching or changing components without authorization may cause injury to people, damage to inverters and annulment of the warranty.
- Static electricity may damage electronic components. Appropriate method must be adopted to prevent such damage to the inverter, otherwise the inverter may be damage to inverter and annulment of the warranty.
- 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.
- When exposed to sunlight, the PV array generate dangerous high DC voltage, Please operate according to our instructions, or it will result in danger to life.
- PV modules should have an IEC61730 class A rating.

- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- Completely isolate the equipment should: switch off the DC switch, disconnect the DC terminal, and disconnect the AC terminal or AC breaker.
- Prohibit inserting or pulling the AC or DC terminals when the inverter is electrified.
- If there are more than 3 PV strings on input side, an additional fuse installing will be suggested.
- An earthing photovoltaic system need to connect an Arc fault detecotr on DC side.
- 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, type A RCD must be used to avoid tripping.
- The PV is not grounded as default configuration.

 To ensure IP65, inverters must be sealed well, please install the inverters in one day after unpacking, otherwise please seal all unused terminals/holes, not allowed to keep any terminals/holes open, confirm there is no risk to have water&dust in.

3 Installation

3.1 Mounting Instruction

- In order to achieve optimal performance, the ambient tperature should be lower than 45°C.
- For the convenience maintenance activities, please install the inverter at eye level.
- Inverters should NOT be installed near inflammable and explosive items. Any strong electro-magnetic should be kept away from installation site.
- Product lable and warning symbol shall be clear to read after installation.
- Please install inverter in the place where is not exposed to direct sunlight, rain and snow.



3.2 Inverter Overview and Package

Check the scope of delivery for completeness and any visible damage.

3.2.1 Inverter Overview

SDT4~6KW Refer to Figure3.2.1-1, SDT8~15KW Refer to Figure3.2.1-2.

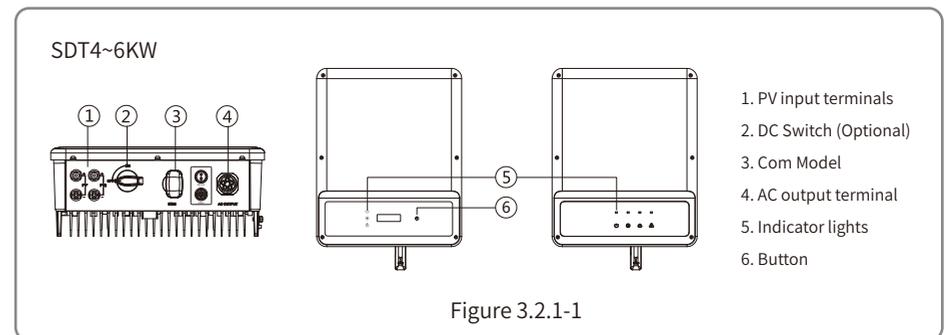
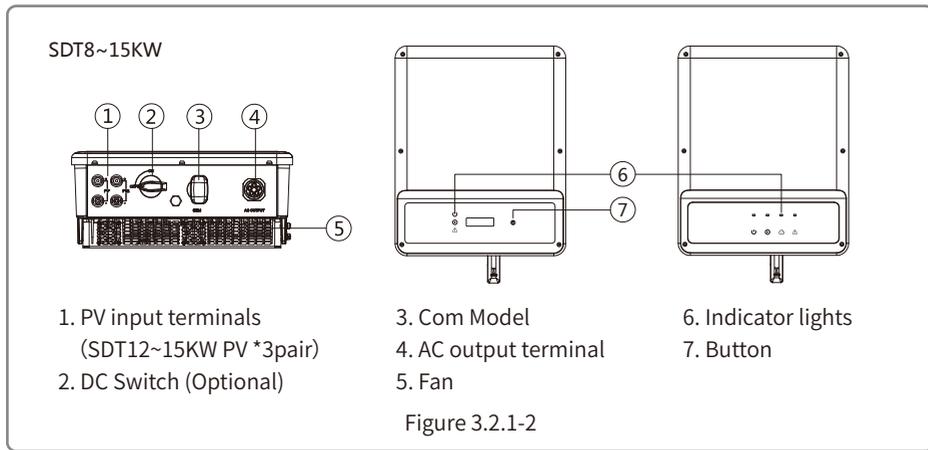
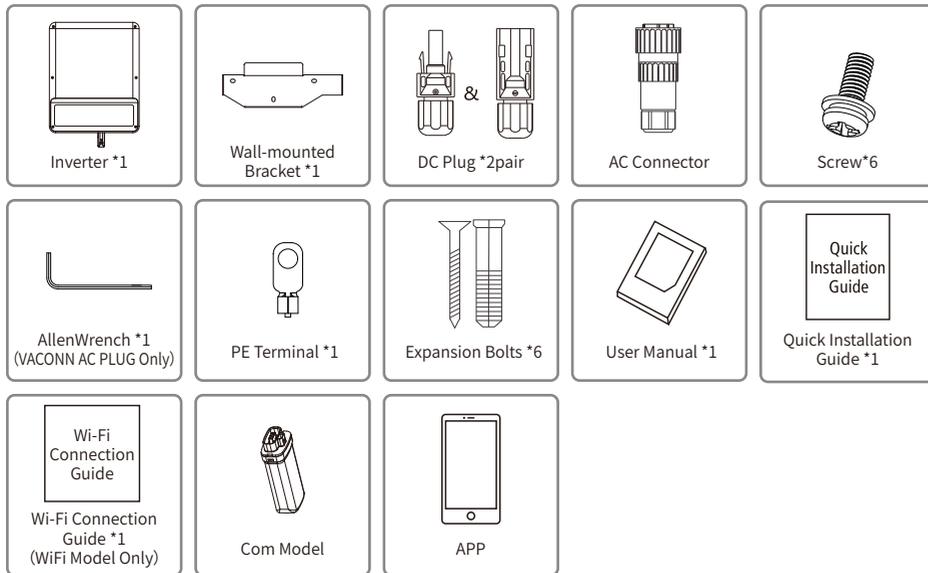


Figure 3.2.1-1



3.2.2 Package

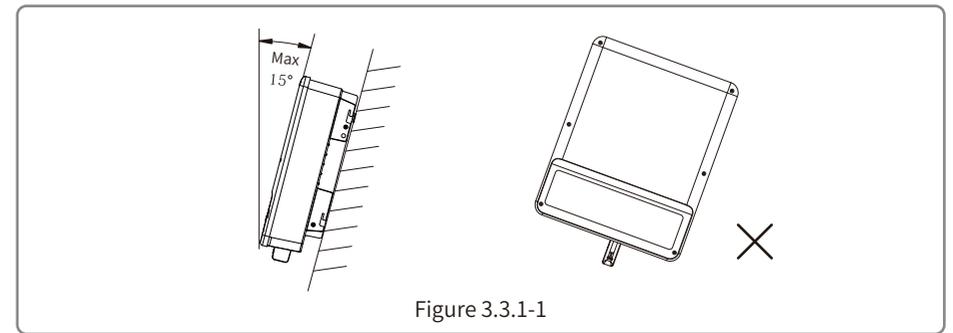


3.3 Inverter Installation

3.3.1 Selecting the installation location

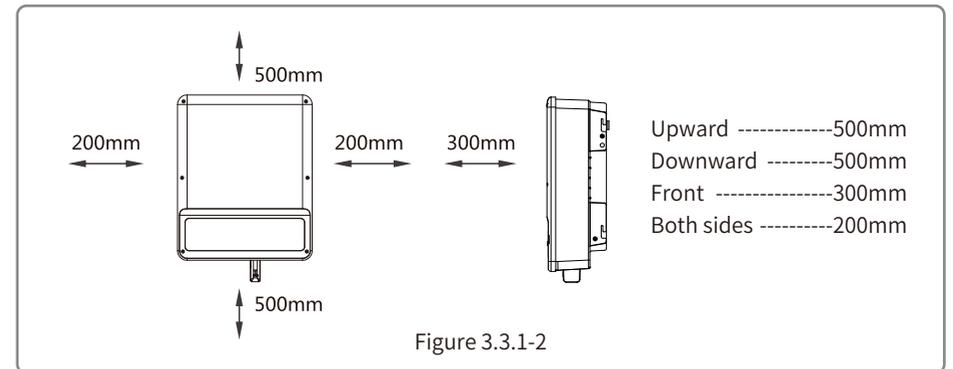
The following must be considered when selecting the best location for an inverter:

- The mount and installation method must be appropriate for the inverter's weight and dimensions.
- The location must be well ventilated and sheltered from direct sunlight.
- The inverter must be installed vertical or with a backward tilt less than 15°. No sideways tilt is allowed. The connection area must point downwards. Refer to Figure 3.3.1-1.



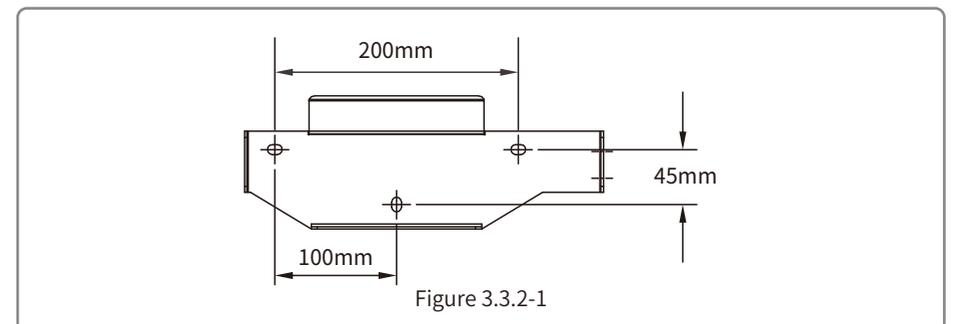
To allow dissipation of heat, and for convenience of dismantling, clearances around the inverter must be at least:

The installation position shall not prevent access to the disconnection means.



3.3.2 Mounting Procedure

- (1) Use the wall-mounted bracket as a template and drill holes in the wall, 10 mm in diameter and 80mm deep. SDT referred Figure 3.3.2-1.
- (2) Fix the wall mounting bracket on the wall using the expansion bolts in the accessories bag.
- (3) Hold the inverter by the side groove as Figure 3.3.2-2.
- (4) Install the inverter on the wall-mounted bracket. SDT referred to Figure 3.3.2-3.



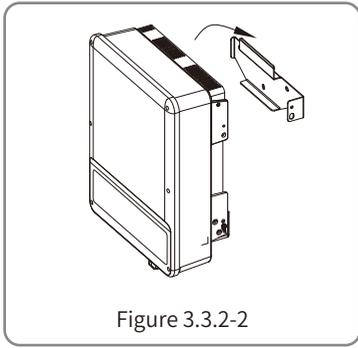


Figure 3.3.2-2

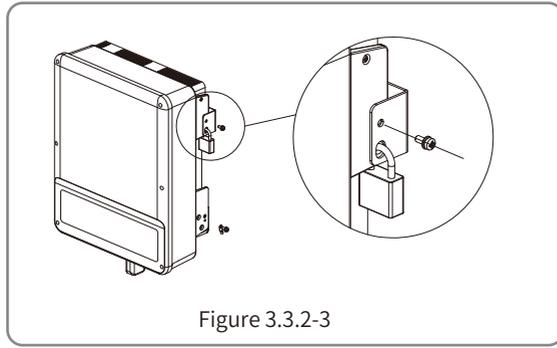


Figure 3.3.2-3

3.4 Electrical Connection

3.4.1 Connection to grid (AC side Connection)

- (1) Check the grid voltage and frequency if it can comply with the required voltage and frequency of inverter connection.
- (2) Add breaker or fuse to AC side, the specification should be more than 1.25 times of rated AC output current.
- (3) The PE line of inverter should be connected the earth, make sure the impedance of neutral wire and earth wire less than 10ohm.
- (4) Disconnect the breaker or fuse between the inverter and the utility.
- (5) Connect the inverter to the grid as follows: There are two AC connector brands for inverter, VACONN and WIELAND. Please refer to Figure 3.4.1-1.
- (6) The AC line construction shall be such that if the cord should slip in its anchorage, placing a strain on conductors, the protective earthing conductor will be the last to take the strain. such as the PE line is longer than L and N.

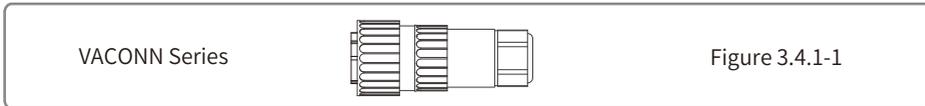


Figure 3.4.1-1

Installation instruction of VACONN series please refer to figure 3.4.1-2.

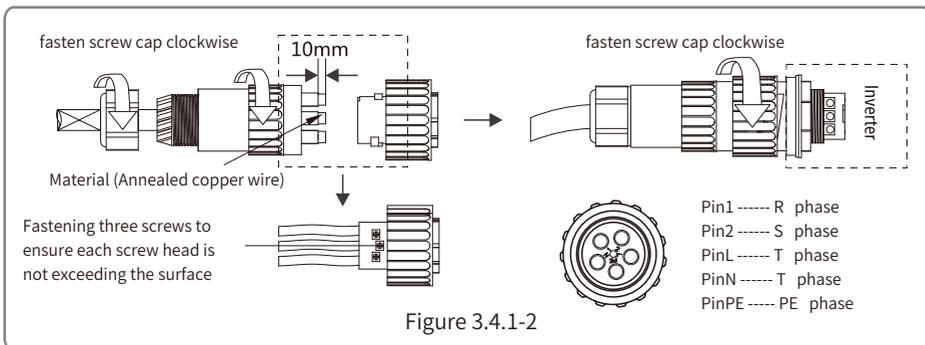


Figure 3.4.1-2

Cable specification of AC side please refer to Figure 3.4.1-3.

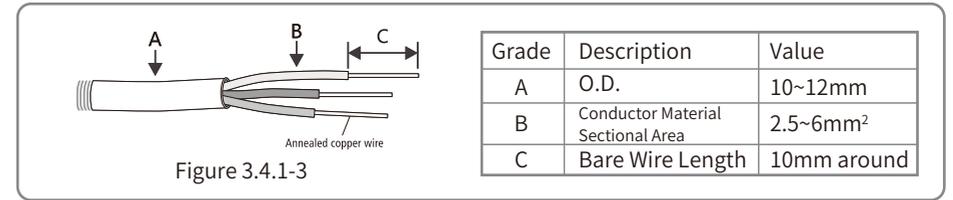


Figure 3.4.1-3

*Neutral conductor shall be blue, line conductor shall be black or brown (preferred, protective earth bonding line shall be yellow-green.

*Fix (moment:0.6N.m) the connector of AC cable to the corresponding terminals.

3.4.2 AC circuit breaker and leakage current protection device

In order to ensure that the inverter can be safe and reliable to disconnect 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 / GW10K-DT	25A
GW12K-DT / GW15K-DT	32A

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 with the grid, If the leakage current protection device is installed externaly, the action current should be 300mA or higher.

3.4.3 DC Side Connection

- (1) Before connecting the PV strings, please ensure 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 us are permitted to use.
- (4) The positive and negative pole is forbid to connect PE wire (Ground wire) , otherwise, it will damage the unit.
- (5) Don't connect positive or negative pole of PV string to PE wire. Otherwise , it will cause damage to inverter.
- (6) Positive shall be red, negative shall be black.
- (7) The minimum insulation resistance to ground of the PV panels for SDT series must exceed 33.4KΩ (R=1000/30mA) , there is a risk of shock hazard if the requirement of minimum resistance is not met.

There are three types of DC connectors, SUNCLIX/MC4 and AMPHENDL H4 series. Please refer to Figure 3.4.3-1.

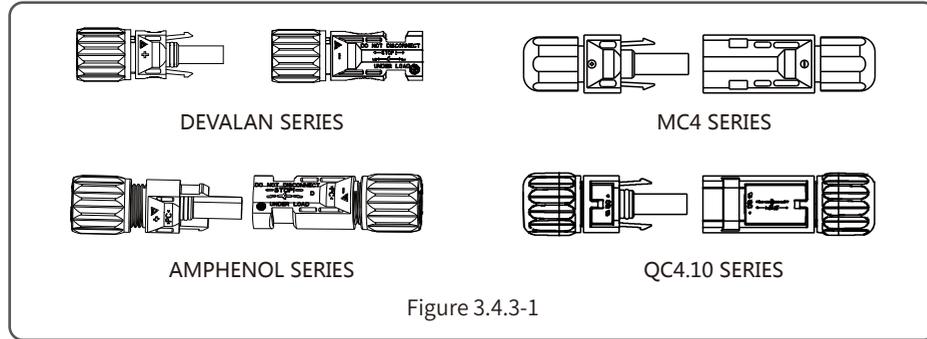


Figure 3.4.3-1

DC Cable specification is shown as Figure 3.4.2-2.

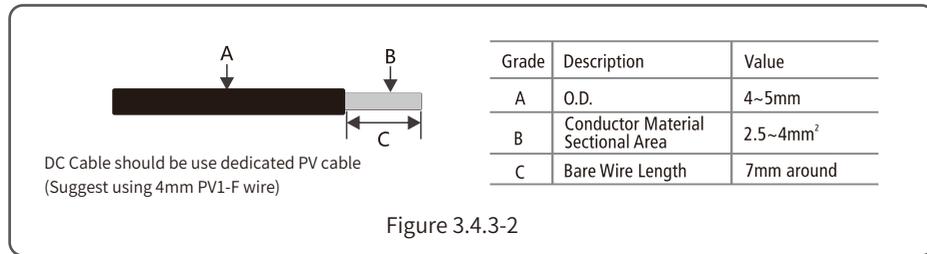


Figure 3.4.3-2

Installation instruction of SUNCLIX please refer to Figure 3.4.3-3.

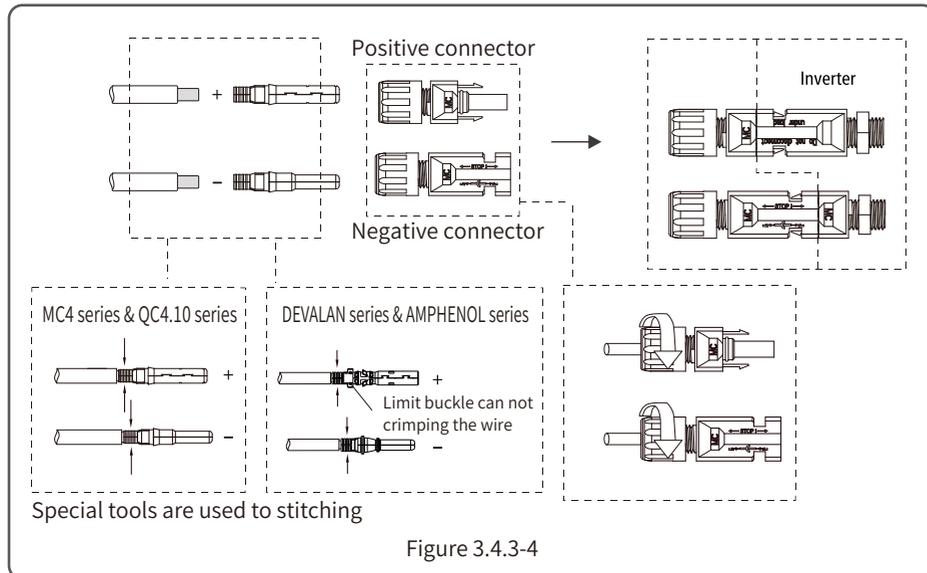


Figure 3.4.3-4

3.4.4 Earth Terminal Connection

The inverter is added earth terminal according to the requirement of EN 50178. It is must that installation person should connect the terminal to earthing wire.

Position of earth terminal as Figure 3.4.3-1.

The earth connecting terminal is on the side of inverter, illustrated as Figure 3.4.4-1. The customer should select to grounding base on site condition.

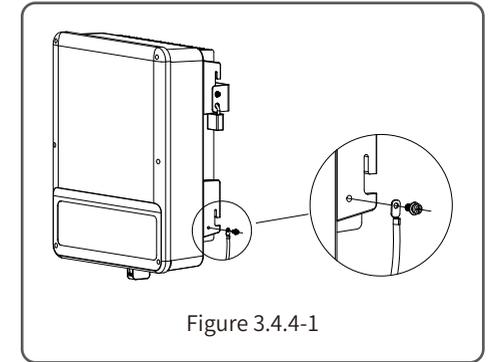


Figure 3.4.4-1

3.4.5 Wi-Fi Communication

The Wi-Fi communication function is only applied to WiFi BOX, the detailed configuration instruction can be referred to Wi-Fi Configuration in the accessory box.

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

3.4.6 Power Limiting Device & DRED Installation

Connection method of Power Limiting device Meter please refer to Figure 3.4.6-1.

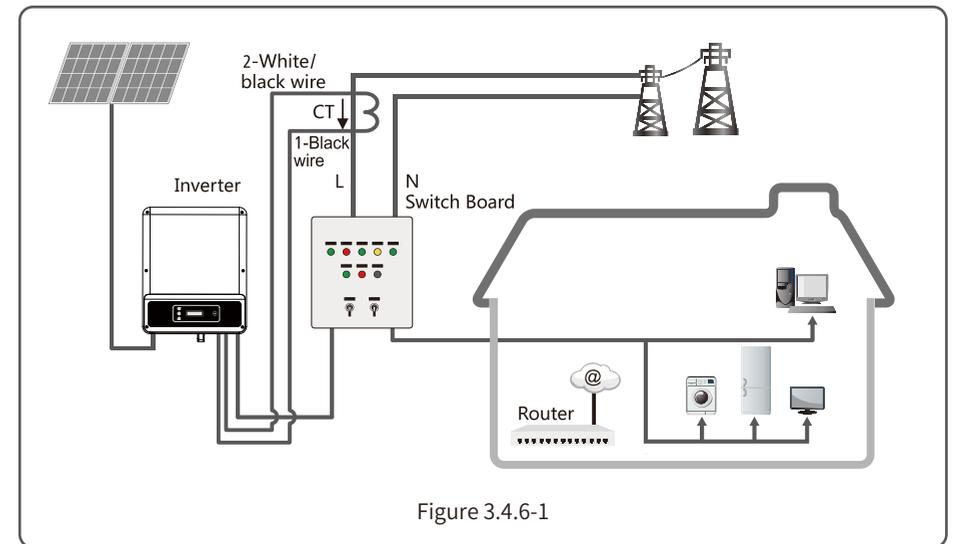


Figure 3.4.6-1

Remote shutdown and DRED:

You need to connect 5 and 6 pins with a resistor to use "DRED " function (for Australia) or connecting 4 and 5 pins to use "Remote Shutdown" function (for Europe) , you can't use both of them at the same time. You can only choose one of them.

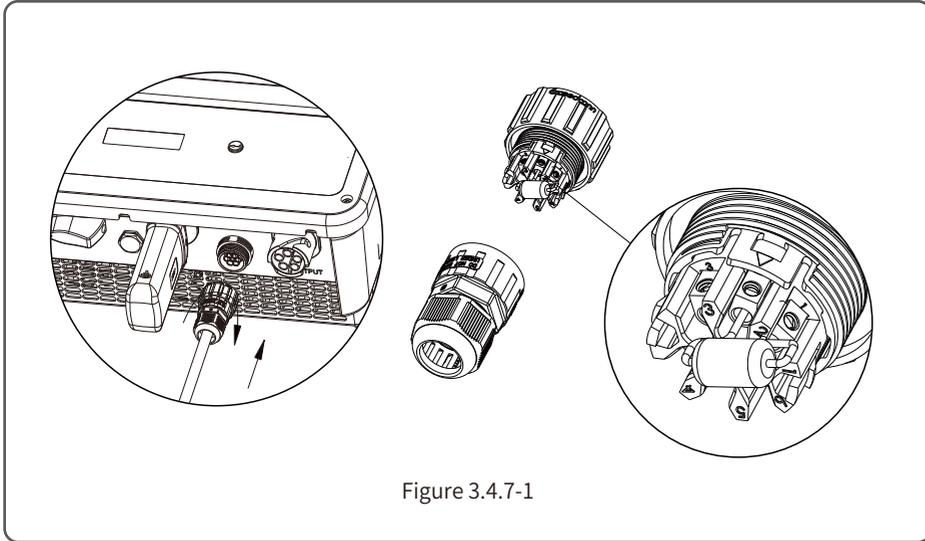


Figure 3.4.7-1

Note:

Make sure " DRED "function or "Remote Shutdown" function is connected to the machine, otherwise the machine will not work properly.

Connection Procedure:

- Put the cable through the components in this order: screw cap, one-hole sealing ring, insulation body and sheet metal parts.
- Pull out the 6-pin terminal from the socket in the cabinet and take off the resistor which is fixed in it.
Cable should be connected as Figure 3.4.8-2.
- Insert the green terminal into the corresponding interior terminal of the inverter. Pull cable softly to maintain the cable not to be pulled out.
- Lock the sheet metal parts onto the box and tighten the screw cap.

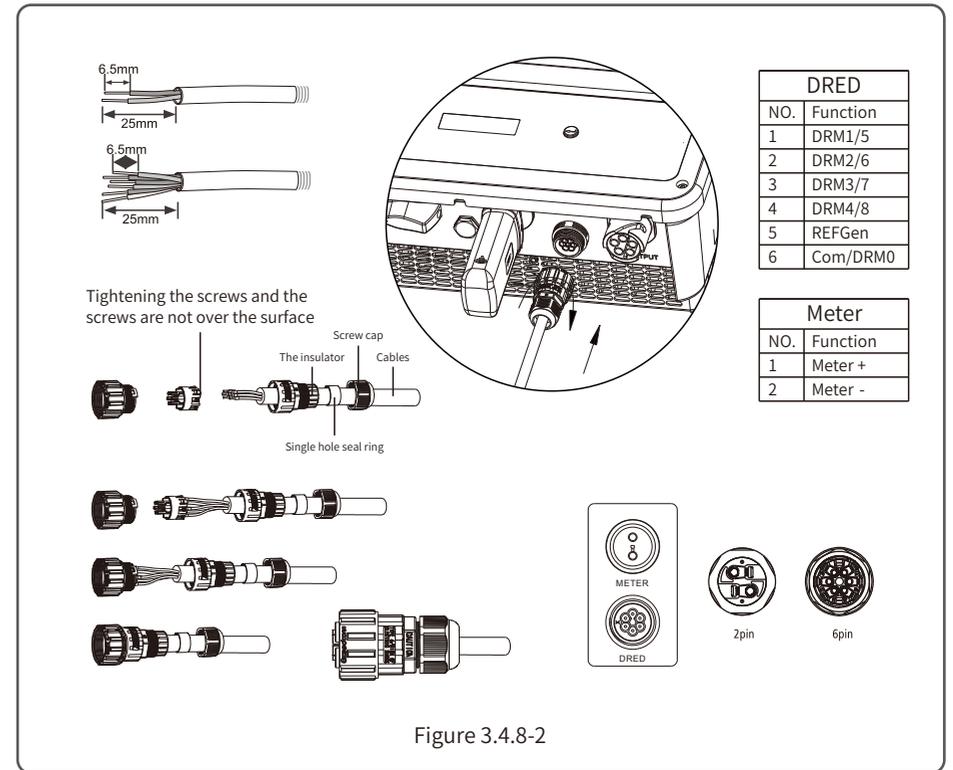


Figure 3.4.8-2

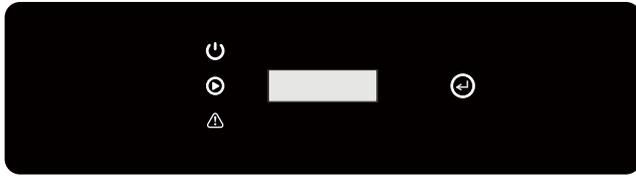
1. DRED connection is only available for Australia and New Zealand.
2. Supported DRED command: DRM0, DRM5, DRM6, DRM7, DRM8.
3. After installation is completed, please set up power limiting referring to section 4.2 (6) .
4. Pay attention to the direction of Meter when wiring. Meter clip should be locked tight.
White/Black cable should connect Line 2, black cable should connect Line 1. Tighten them with screwdriver. Make sure Meter cables connected to the right output phase lines of inverter when in use.

3.4.7 Earth Fault Alarm

The inverter complies with IEC62109-2 chapter 13.9. When earth fault occurs, the fault indicator LED on front cover will light up, and, for non wifi inverter, the buzzer in inverter will keep ringing 1 minute and ring again after half an hour unless the fault is resolved (This function is only available to Australia/ New Zealand).

4 System Operation

4.1 Indicator Lights



Indicator lights in Yellow/Green/Red correspondently refer to / /

 POWER		ON = WiFi CONNECTED / ACTIVE
		BLINK 1 = WiFi SYSTEM RESETING
		BLINK 2 = WiFi ROUTER PROBLEM
		BLINK 4 = WiFi SERVER PROBLEM
		OFF = WiFi NOT ACTIVE
 RUN		ON = INVERTER IS FEEDING POWER
		OFF= INVERTER IS NOT FEEDING POWER AT THE MOMENT
 FAULT		ON = FAULT OCCURRED
		OFF = NO FAULT

4.2 User interface and use of the display

Set Safety Country:

If display shows “GW6K-DT Pac=6000.0W”, then long press (2S) the key to enter the second level menu. Short press to browse the safety country available. Please waiting for 10s after choose suitable safety country, then display will show “setting...” and jump to “Set OK” or “Set Fail”.

(1) A schematic of the display screen is shown as below:

Normal
Pac=6000.0W

Display area is divided as follows:

Line 1
Line 2

(2) Display area

Line 1---Working status information

This area displays the status information. “Waiting Pac=0.0W” indicates the inverter is standby 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. Refer to Table 4.3.

Through key 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 below:

(3) Use of the display

There are 2 modes of button operation: short press and long press.

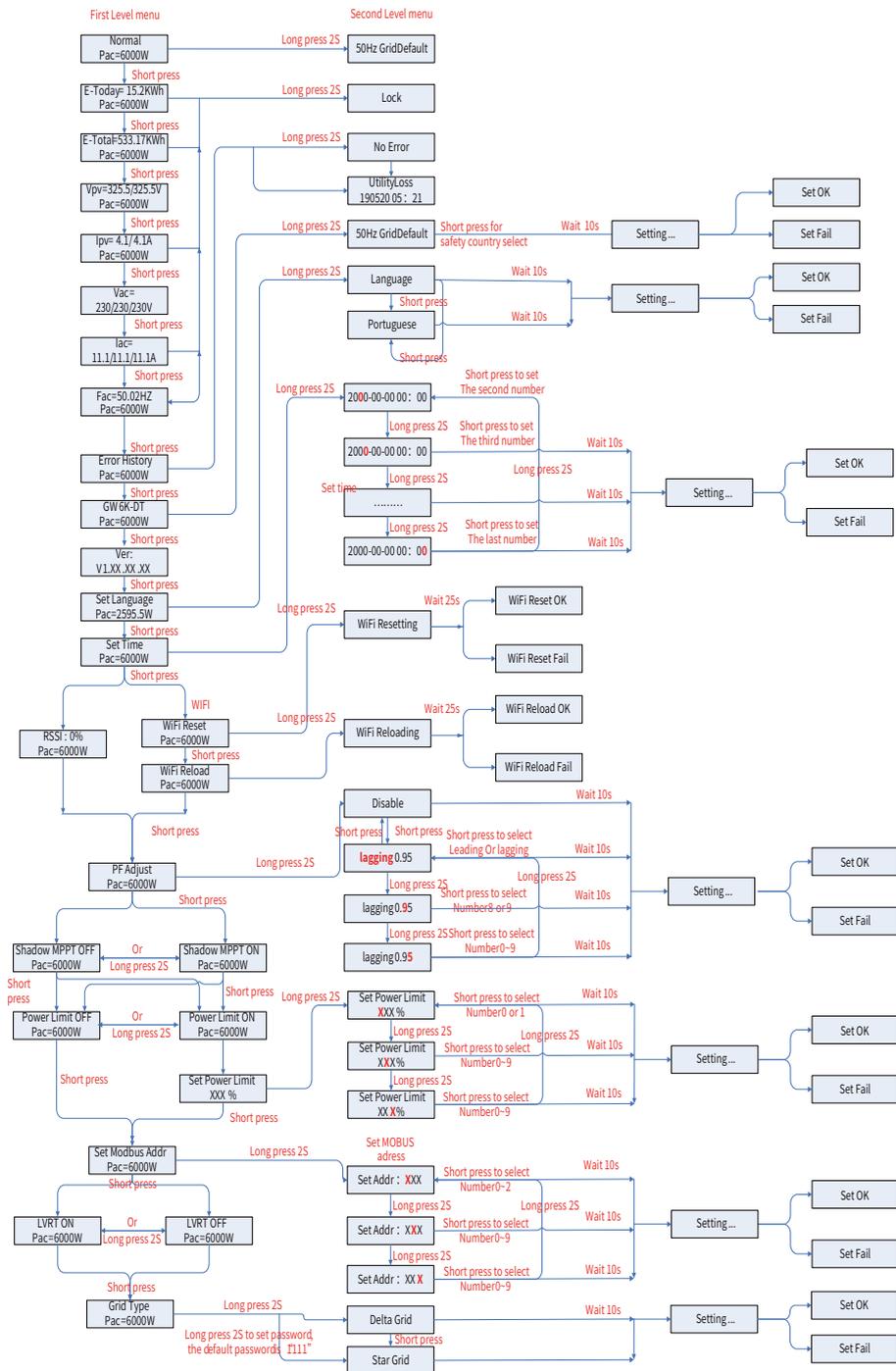
(4) Use of the display and LCD display

The display allows accessing the configuration of the basic parameters. All the language, All the language, time and country setting can be configured by buttons. The menu, shown in the LCD display area has two levels of menu. Short and long key presses 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 key is pressed for two second, 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 key operation.

In all levels of menu, If no action is taken for 20 seconds, 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) Menu Introduction

- When the PV panel is feeding power to the inverter, the screen shows 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. Please refer to chapter 5. View PV voltage, PV current, grid voltage, current and frequency:
- Short press the key to enter the E-Today menu which display the total power generation for today.
- Short press the key to enter the E-Total menu which display the total power generation for Until today.
- Short press the key to enter the Vpv menu which display the PV voltage in “V”.
- Short press the key to enter the Ipv menu which display the PV current in “A”.
- Short press the key to enter the Vac menu which display the grid voltage in “V”.
- Short press the key once more to enter the lav menu which display the grid current in “A”.
- Short press the key once more to enter the Frequency menu which display the grid frequency in HZ.
- View Error message
Short press the key once more to enter the Error Message History menu.
Long press (2s) the key to enter the second level menu of error detection. The last three inverter error message will be shown by short pressing the key in this second level menu.



The records include error message and error times (190520 15: 30) . Error message can be Found in Table 4.3.

- View model name and reconfigure safety country:

From the error message history item in the first level menu, short press the key once to see model name.

If you want to change the safety country, please hold the key for 2 seconds, then the LCD screen will go to the second level menu.

In the second level menu, short press the key can change the safety country. If you change nothing in second level menu and without pressing button in 20 seconds, then the backlight of LCD will power off and return to the first level menu. If you change the safety country, the LCD screen will show: **“Setting...”** after 10 seconds then show: **“Set Fail”** or **“Set OK”**.

- View software version

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

The current software version can be shown in this menu.

Setting:

- Set language:

Short press the button to enter the Set Language menu. Long press (2s) the key to enter the second level menu. Short press to browse the languages available. If you change nothing in second level menu and without pressing button in 20 seconds, then the backlight of LCD will power off and screen return to the first level menu. If you change the Language, the LCD screen will show: **“Setting...”** after 10 seconds then show: **“Set OK”** or **“Set Fail”**.

- Set time:

From the first level Set language menu, short press the key to enter the Set Time menu. Long press (2s) the key to enter the second level menu. The initial display is **“2019-00-00 00:00”**, in which the first four numbers represent the year (e.g 2000-2099); the fifth and sixth number represent the month (e.g 01-12); the seventh and the eighth numbers represent the data (e.g 01-31). The remaining number represent the time.

Short press increase the number in current location, and long press to move the cursor to next position. The inverter will store the time the time after 20 seconds without any key operation, and the LCD will automatically return to the main menu and the backlight will switch off.

- Set protocol:

The function is only used for service personnel, set wrong protocol could lead to communication failure.

From the first level Set Time menu, short press the key once to enters protocol display menu. Press the Key for 25 to enter submenu. The circulatory submenu including two protocols can be found. The protocol can be chosen by short pressing the key. The inverter will store the chosen protocol without any action within 25s and LCD display will automatically return to main menu when the backlight is off.

- MPPT function for Shadow:

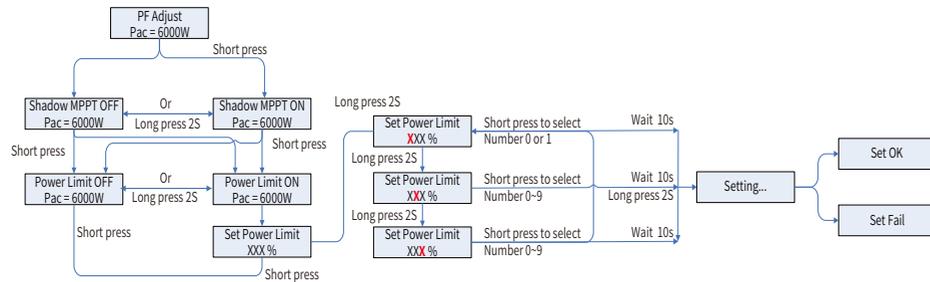
The default setting for shadow optimizer is disabled.

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

Press the key until enter Shadow Optimize menu. When it shows “ **Shadow MPPT OFF** ” , it means the shadow optimizer is on. Press the key 25 to disable the function.

(6) Power limiting function setting

The Operations that the ON/OFF of power limiting function (the default is OFF) and the power limiting settings (the default is 2% rated) are shown below:



Note:

If the power limiting function is ON, the maximum output power of the inverter will be limited at the power limiting setting value while the inverter is without the power limiting device (such as a CT/Meter) or the power limiting device is out of work.

You need to enter a password before setting up power limit . The default password is “1111” .(only for Australian security regulations)

(7) Operation of Display when commissioning.

When the input voltage reaches the inverter turn-on voltage, the LCD starts to work, the yellow light is on and the LCD displays “ **Waiting** ”. More information will be displayed within a few second. If the inverters 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 triggered 4 times. The LCD will then display “ **Normal** ”. The instant power output will be shown at the left bottom of the LCD.

4.3 Error message

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

Error mess	Description
Fac Fail	Grid frequency out of permissible range
Isolation Fail	Grund 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

4.4 Wi-Fi Reset & Wi-Fi Reload

The two functions are only available for Wi-Fi model inverters.

Wi-Fi reload function is used to change the Wi-Fi configuration to default value.

Please configure the Wi-Fi again as 3.4.5 after using the function.

Press the key until the LCD displays “ **Wi-Fi Reload** ” , then long press (2S) until the LCD displays "Wi-Fi Resetting...". Stop pressing and wait for the screen showing “ **Wi-Fi Reset OK** ” or “ **Wi-Fi Reset Failed** ” .

Press the key until the LCD displays “ **Wi-Fi Reload** ” , then long press (2S) until the LCD displays “ **Wi-Fi Reloading...** ” . Stop pressing and wait for the screen showing “ **Wi-Fi Reloading OK** ” or “ **Wi-Fi Reloading Failed** ” .

4.5 Special Adjustable Setpoints

The inverter has field adjustable function,such as trip points,trip times, reconnect times,active and invalid of QU curve,PU curve.

It is adjustable through special software ,if you want to use it ,please contact with after sales.

The methods document of using the software can download from goodwe website or contact with after sales.

5 Troubleshooting

In most situations, the inverter requires very little 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 fault, The following table lists error messages and the solutions for associated faults.

Display		Troubleshooting
System failure	Isolation Fail	<ol style="list-style-type: none"> 1. Disconnect DC switch, take off DC connector, Check the impedance between PV (+) & PV (-) to earth. 2. If impedance is less than 100KΩ, please check the insulation of PV string wiring to the earth. 3. If impedance is larger than 100KΩ, please contact local service office. 4. Take off AC connector, measure the impedance between neutral and PE. If it is larger than 10 KΩ, please check AV wiring.
	Ground I Fail	<ol style="list-style-type: none"> 1. Disconnect DC switch, check the insulation of PV string wiring to earth. 2. Reconnect the DC switch again. 3. If te problem still exits, please call the local service office.
	Vac Fail	<ol style="list-style-type: none"> 1. Disconnect DC switch, taking off AC connector, measuring the voltage between line and neutral in connector, make sure if it conforms to the grid-connected specification of inverter. 2. If it does not, please check grid wiring. 3. If it does, please connect AC connector, reconnect DC switch, inverter will connect grid automatically. If the problem still exits, please call the local service office.
System failure	Fac Fail	<ol style="list-style-type: none"> 1.The PV inverter will automatically restart if the Fac returns to normal. 2.If the problem still exits, please call the local service office.
	Utility Loss	<ol style="list-style-type: none"> 1. Disconnect the DC switch, taking off AC connector, measure the voltage between line and neutral no connector, make sure if it conforms to the grid-connected specification of inverter. 2. If it does not, please check if the distribution switch is connected and the grid is normal. 3. If it does, reconnect AC connector and DC connector; If the problem still exits, please call the local service office.
	PV Over Voltage	<ol style="list-style-type: none"> 1. Disconnect the DC switch , take off DC connector, check PV string voltage, make sure if it exceeds the input voltage in inverter specification. 2. If it does, please reconfigure PV panel string. 3. If the problem still exits, please call the local service office.
	Over Temperature	<ol style="list-style-type: none"> 1. Please check if installation position conforms to the specification. 2. Try to lower the surrounding temperature. 3. Move the inverter to vents or alter the installation position. 4. If the problem still exits, please call the local service office.
Inverter failure	Relay-Check Fail	<ol style="list-style-type: none"> 1. Disconnect the DC connector. 2. Reconnect the DC connector. 3. If the problem still exits, please call the local service office.
	DCI High	
	EEPROM R/W Fail	
	SPI Fail	<ol style="list-style-type: none"> 1. Disconnect the DC connector. 2. Reconnect the DC connector. 3. If the problem still exits, please call the local service office.
	DC Bus High	
GFCI Fail		
Others	No display	<ol style="list-style-type: none"> 1. Disconnect the DC switch, take off DC connector, measure the voltage of PV string. 2. Plug in DC connector, and reconnect DC switch. 3. If the voltage is less than 70V, please check the PV string configuration. 4. If the voltage is higher than 125V and still no display, please contact local service office.

Note:

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

6 Technical Parameters

Technical Data	GW4K-DT	GW5K-DT	GW6K-DT	GW8K-DT
PV Input Data				
Max. DC Power (W)	6000	7500	9000	12000
Max. DC Input Voltage (V) ^{DC}	1000	1000	1000	1000
MPPT Range (V)	180~850	180~850	180~850	180~850
Starting Voltage (V)	160	160	160	160
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 Tracker	1/1	1/1	1/1	1/1
AC Output Data				
Nominal Output Power (W)	4000	5000	6000	8000
Max. Output Apparent Power (VA)	4400	5500	6600	8800
Nominal Output Voltage (V)	400, 3L/N/PE	400, 3L/N/PE	400, 3L/N/PE	400, 3L/N/PE
Nominal Output Frequency (Hz)	50/60	50/60	50/60	50/60
Max. Output Current (A)	6.4	8	9.6	12.8
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%	98.2%	98.2%	98.2%
Europe Efficiency	>97.6%	>97.6%	>97.6%	>97.6%
Protection				
Anti-islanding Protection	Integrated	Integrated	Integrated	Integrated
Input Reverse Polarity Protection	Integrated	Integrated	Integrated	Integrated
Insulation monitoring	Integrated	Integrated	Integrated	Integrated
DC Surge Protection	Integrated (Type III)	Integrated (Type III)	Integrated (Type III)	Integrated (Type III)
AC Surge Protection	Integrated (Type III)	Integrated (Type III)	Integrated (Type III)	Integrated (Type III)
Residual Current Monitoring Unit	Integrated	Integrated	Integrated	Integrated
AC Over Current Protection	Integrated	Integrated	Integrated	Integrated
AC Short Protection	Integrated	Integrated	Integrated	Integrated
AC Over Voltage Protection	Integrated	Integrated	Integrated	Integrated
General Data				
Operating Temperature Range (°C)	-30~60	-30~60	-30~60	-30~60
Relative Humidity	0~100%	0~100%	0~100%	0~100%
Operating Altitude (m)	≤4000	≤4000	≤4000	≤4000
Cooling	Natural Cooling	Natural Cooling	Natural Cooling	Fan Cooling
noise (dB)	<30	<30	<30	<30
User Interface	LED or LCD	LED or LCD	LED or LCD	LED或LCD
Communication	WiFi or LAN(Optional)	WiFi or LAN(Optional)	WiFi or LAN(Optional)	WiFi or LAN(Optional)
Weight (kg)	15	15	15	16
Size (Width*Height*Depth mm)	354*433*147	354*433*147	354*433*147	354*433*155
Protection Degree	IP65	IP65	IP65	IP65
Night Self Consumption (W)	<1	<1	<1	<1
Topology	Transformerless	Transformerless	Transformerless	Transformerless

Technical Data	GW10KT-DT	GW12KT-DT	GW15KT-DT
PV Input Data			
Max. DC Power (W)	15000	18000	22500
Max. DC Input Voltage (V) ^[1]	1000	1000	1000
MPPT Range (V)	180~850	180~850	180~850
Starting Voltage (V)	160	160	160
Max. Input Current (A)	12.5/12.5	12.5/25	12.5/25
Max. Short Current (A)	15.6/15.6	15.6/31.2	15.6/31.2
No. of MPP Trackers	2	2	2
No. of Input Strings per Tracker	1/1	1/2	1/2
AC Output Data			
Nominal Output Power (W)	10000	12000	15000
Max. Output Apparent Power (VA)	11000	14000	16500
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)	16	20.3	24
Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)		
Output THDi (@Nominal Output)	<3%	<3%	<3%
Efficiency			
Max. Efficiency	98.3%	98.3%	98.3%
Europe Efficiency	>97.7%	>97.7%	>97.7%
Protection			
Anti-islanding Protection	Integrated	Integrated	Integrated
Input Reverse Polarity Protection	Integrated	Integrated	Integrated
Insulation monitoring	Integrated	Integrated	Integrated
DC Surge Protection	Integrated (Type III)	Integrated (Type III)	Integrated (Type III)
AC Surge Protection	Integrated (Type III)	Integrated (Type III)	Integrated (Type III)
Residual Current Monitoring Unit	Integrated	Integrated	Integrated
AC Over Current Protection	Integrated	Integrated	Integrated
AC Short Protection	Integrated	Integrated	Integrated
AC Over Voltage Protection	Integrated	Integrated	Integrated
General Data			
Operating Temperature Range (°C)	-30~60	-30~60	-30~60
Relative Humidity	0~100%	0~100%	0~100%
Operating Altitude (m)	≤4000	≤4000	≤4000
Cooling	Fan Cooling	Fan Cooling	Fan Cooling
Noise(dB)	<30	<30	<30
User Interface	LED or LCD	LED or LCD	LED或LCD
Communication	GPRS or LAN (Optional)	GPRS or LAN (Optional)	GPRS or LAN (Optional)
Weight (kg)	16	18	18
Size (Width*Height*Depth mm)	354*433*155	354*433*155	354*433*155
Protection Degree	IP65	IP65	IP65
Night Self Consumption (W)	<1	<1	<1
Topology	Transformerless	Transformerless	Transformerless

[1]Please make sure the voltage of PV string will not exceed the Max. DC voltage.

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. Examples are appliances, portable tools and other plug-connected equipment;

Category III: applies to fixed equipment downstream of and including, the main distribution board. Examples are 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)

Example are 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°C	-33~+40°C	-20~+55°C
Humidity Range	5%~85%	15%~100%	4%~100%

Environment category definition

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

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

Indoor conditioned: the ambient air temperature is 0~40 °C, Relative humidity range is 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. Occasionally, however, a temporary conductivity caused by condensation must be expected.

Pollution degree 3: Conductive pollution occurs, or, dry, non-conductive pollution occurs which 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.

7 Certificates



IEC62109-1/-2

VDE-AR-N 4105

VDE0126-1-1

EN50549 AS4777.2 IEC62116 IEC61727

8 Maintenance

Regular maintenance ensures a long operating life and optimal efficiency of the entire PV plant.

Caution: Before maintains please disconnect the AC breaker firstly and then disconnect DC breaker. Wait 5 minutes until the residual voltage has been drained.