



SEMS Portal App



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GOODWE
YOUR SOLAR ENGINE

DT/SDT SERIES USER MANUAL



GOODWE
YOUR SOLAR ENGINE

SOLAR INVERTER

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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!
	No more than six (6) identical packages be stacked on each other.
	Special disposal instructions
	Fragile
	Keep Dry
	Refer to operation instructions
	Wait at least 5 minutes after disconnecting the inverter before touching internal parts
	CE mark.

2 Safety Measures & Warning

DT/Smart DT (hereinafter referred to as SDT) series inverter of Jiangsu GOODWE Power Supply Technology Co.,Ltd. (hereinafter referred to as GOODWE) strictly conforms to related safety rules in design and test. As electric and electronic equipment, safety regulation shall be followed during installation and maintenance. Improper operation may bring severe damage to the operator, the third party and other properties. (DT: Dual-MPPT, Three-Phase, covering 12KWLV / 15KWLV / 12KW / 20KW / 25KW; SDT Smart Dual-MPPT, Three-Phase, covering 4KL / 5KL / 6KL / 10KL / 4KW / 5KW / 6KW / 8KW / 10KW / 15KW).

- 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, both AC output and DC input of the inverter must be disconnected for at least 5 minutes before performing any installation or maintenance.
- The temperature of some parts of the inverter may exceed 60C during operation. To avoid being burnt, do not touch the inverter during operation. Let it cool before touching it.
- Keep children away from the inverter.
- Without permission, opening the front cover of the inverter is not allowed. Users should not touch/replace any of the components except for the DC/AC connectors. GOODWE will not bear any consequences caused by unauthorized actions which will lead to potential injury to people and damage to inverters.
- Static electricity may damage electronic components. Appropriate method must be adopted to prevent such damage to the inverter; otherwise the inverter may be damaged and the warranty will be annulled.
- Ensure 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 will generate very high voltage which will cause potential danger to people. Please strictly follow the instruction we have provided.
- PV modules should have an IEC61730 class A rating.
- If the equipment is used in a manner not specified by the GOODWE, the protection provided by the equipment's design may be impaired.
- To completely isolate the equipment : switch off the DC switch, disconnect the DC terminal, and disconnect the AC terminal or AC breaker.
- Prohibit inserting or pulling the AC and DC terminals when the inverter is working.
- Only DC connectors provided by GOODWE are permitted for use, otherwise the inverter may be damaged and the warranty will be annulled.

- Customers can access to inverter status through mobile phone and computer display please refers to chapter 3.4.4 and 3.4.5. and error code could be shown not only on inverter LCD display but also mobile phone App interface.
- 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 default photovoltaic module is not grounded.
- If there are more than 3 PV strings on input side, an additional fuse installation would be suggested.



To ensure IP64, inverters must be sealed well, please install the inverters within one day after unpacking, otherwise please seal all used terminals/holes, any unused terminals / holes are not allowed to be kept open, confirm that there is no risk of water or dust entering terminals / holes.

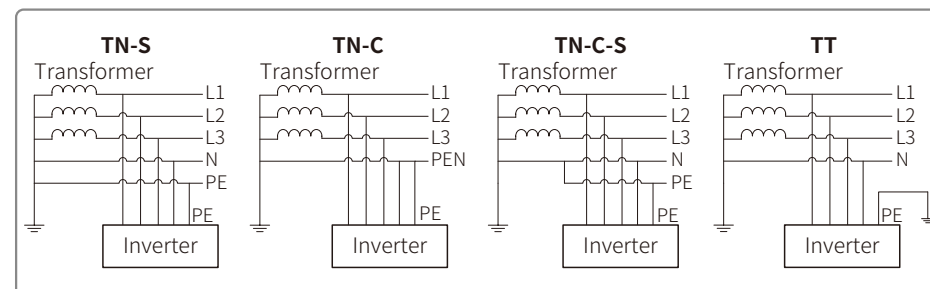
To our inverter product, GOODWE provides standard manufacture warranty which comes with the product and prepaid warranty extension solution to our customer. You can find the details about the terms and solution from below linkage.

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

3 Product Introduction

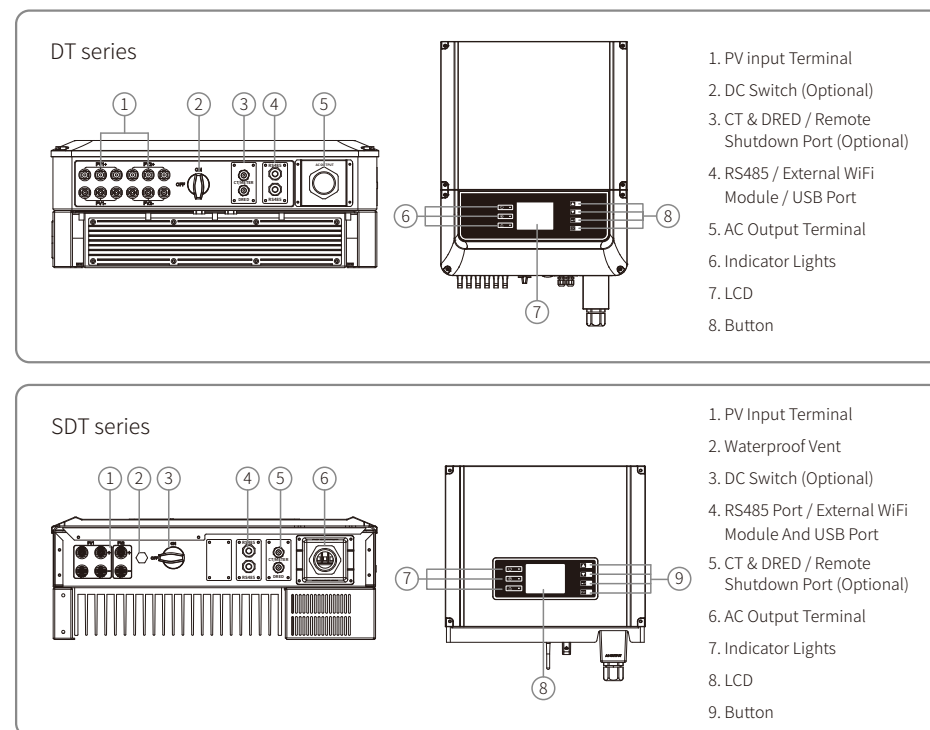
3.1 Grid Compatibility

DT series GW10KLV-DT ~ GW25K-DT and SDT series support four different types of grid.



Note: For TT grid structure, RMS voltage between neutral wire and earth wire must be less than 20V.

3.2 Inverter Overview



Note: The appearance of some SDT series inverters will be different.

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	Waterproof Vent	Waterproof air permeable valve
4	CT & DRED/Remote Shutdown Communication Port	For CT and DRED Communication
5	RS485 / External WiFi Module / USB Port	For RS485 / WiFi / USB communication
6	AC Output Terminal	For AC cable connection
7	Indicator Light	Display the state of the inverter
8	LCD	Inverter operation data viewing and parameter configuration.
9	Button	For configuration and viewing parameters.

[1] Positive & Negative DC plug:

DT15~20KW 4 pairs;

12KWLV 4 pairs;

15KWLV, 25KW 6 pairs;

SDT4~10KW 2 pairs:

SDT 15KW&10KL 3 pairs.

[2] 2-Pin terminal: SDT4~10KW:

1pcs for Anti-Current (optional);

SDT10KL&15KW: 2pcs for RS485 communication (optional), 1pcs for Anti-Current (optional);

DT: 2 pcs for RS485 communication (optional), 1pcs for Anti-Current (optional);

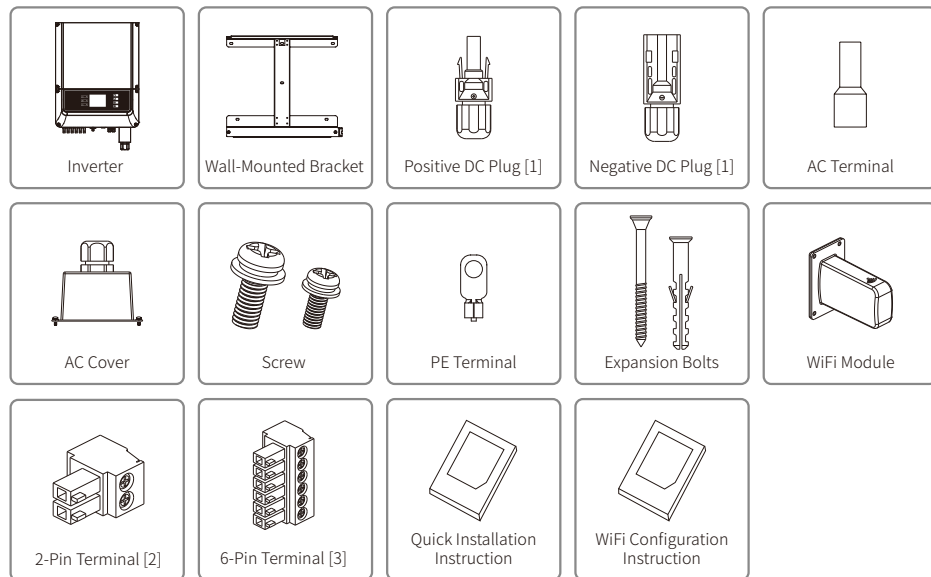
[3] 6-Pin terminal:

SDT4~10KW: 1pcs for RS485 communication (optional), 1pcs for DRED (optional);

SDT10KL&15KW: 1pcs for DRED (optional);

DT 1pcs for DRED (optional)

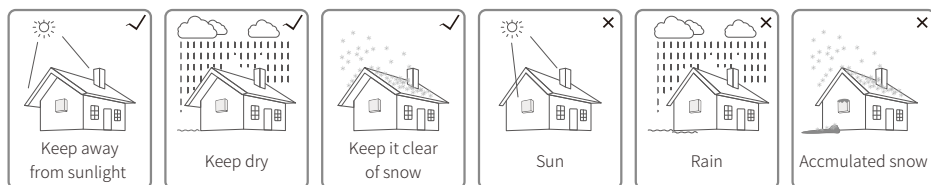
3.3 Package



4 Installation

4.1 Mounting Instructions

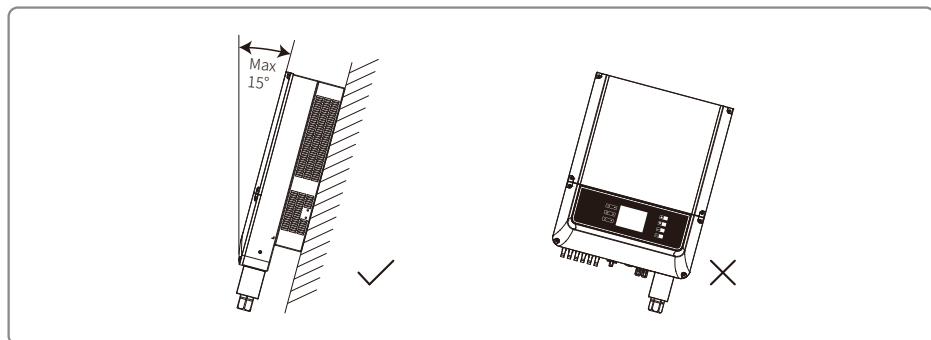
1. In order to achieve optimal performance, the ambient temperature should be lower than 45°C.
2. For easy maintenance, we suggest to install the inverter at eye level.
3. Inverters should not be installed near flammable and explosive items. Strong electro-magnetic charges should be kept away from installation site.
4. Product label and warning symbols should be placed at a location that is easy to read by the users.
5. Make sure to install the inverter at a place where it is protected from direct sunlight, rain and snow.



4.2 Equipment Installation

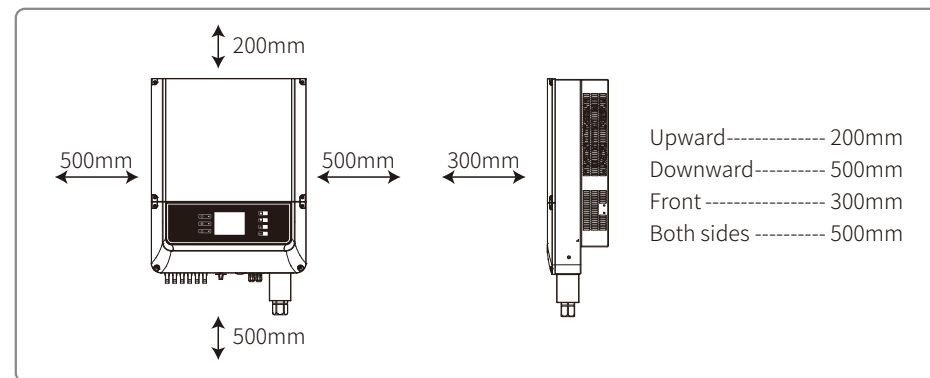
4.2.1 Select The Installation Location

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. Make sure the installation location is well ventilated.
4. Inverters should not be installed near flammable or explosive items. Any strong electro-mag-netic equipment should be kept away from installation site.
5. Install the unit at eye level to for convenient operation and maintenance.
6. Install the unit vertically or tilted backwards of no more than 15 degrees, and wiring area should be facing downwards.



For dissipation of heat and convenience of dismantling, clearances around the inverter must meet the standard as shown below :

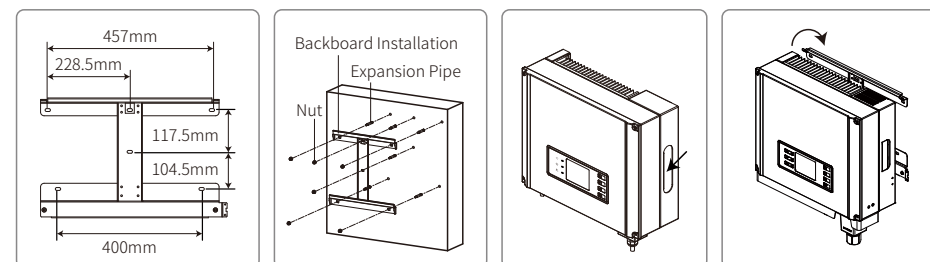
The installation position should not prevent access to the disconnection means.



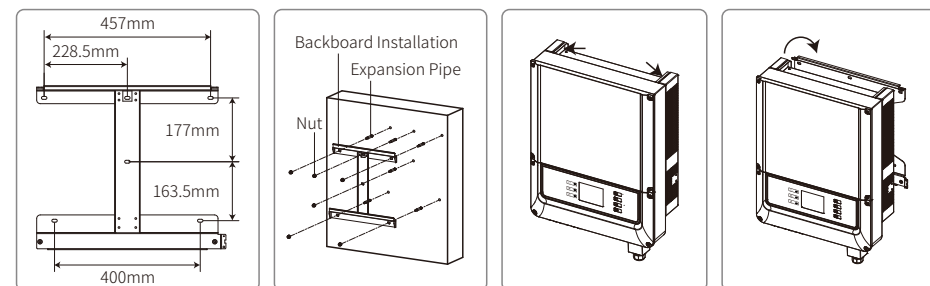
4.2.2 Mounting Procedure

1. Use the wall-mounted bracket as a template and drill 6 holes on the wall, 10 mm in diameter and 80 mm deep.
2. Fix the wall mounting bracket on the wall with six expansion bolts in accessory bag.
3. Hold the inverter by the groove on it.
4. Place the inverter on the wall-mounted bracket.

SDT series



DT series



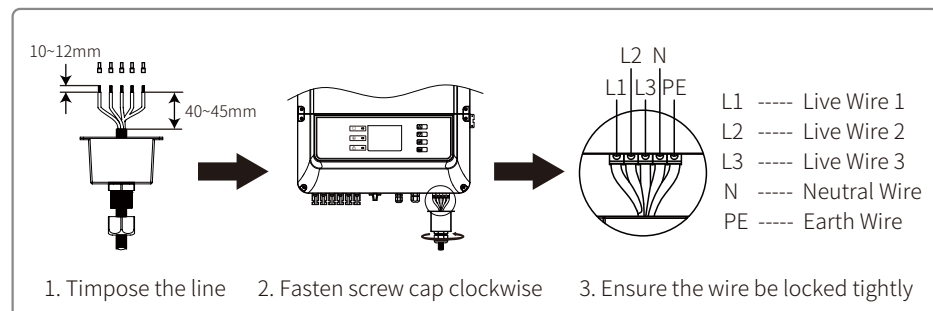
4.3 Electrical Connection

4.3.1 Connection To Grid (AC Side Connection)

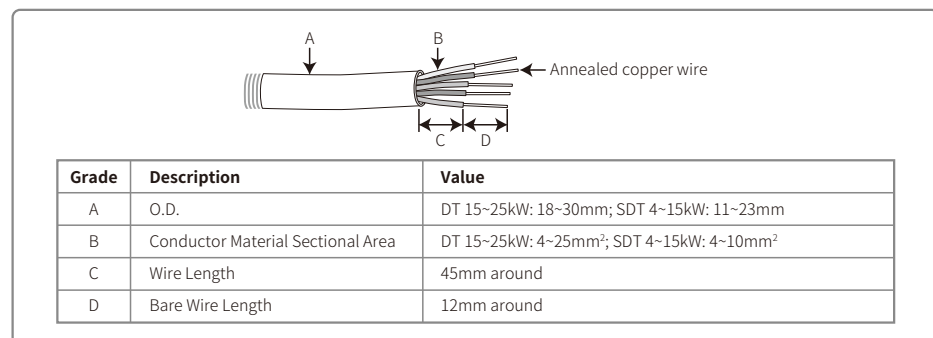
1. Measure the voltage and frequency of grid-connected access point, and make sure it is in accordance with the grid-connected standard of inverter.
2. It is recommended to add breaker or fuse to AC side. The specification should be more than 1.25 times of rated of AC output current.
3. The PE line of 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. Fix (Torque:6~8 N.m) the connector of AC cable to the corresponding terminals.
7. Neutral conductor shall be blue, line conductor shall be black or brown (preferred), protective earth bonding line shall be yellow-green.
8. The AC line construction shall be such that if the cord should slip from 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.



Cable specification of AC side .



Value of Conductor Material Sectional Area refer to the following table.

Model	Conductor Material Sectional Area	Model	Conductor Material Sectional Area
GW12KLV-DT	6~10mm ²	GW17K-DT	4~10mm ²
GW15KLV-DT	10~25mm ²	GW20K-DT	6~10mm ²
GW15KN-DT	4~10mm ²	GW25K-DT	10~25mm ²

4.3.3 Earth Terminal Connection

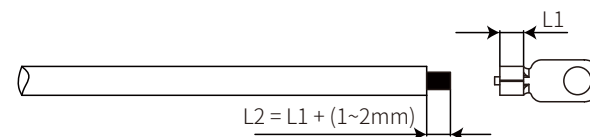
The inverter is equipped with earth terminal according to the requirement of EN 50178.

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.

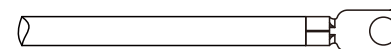
Step 1

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



Step 2

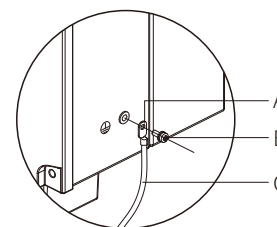
Insert the stripped wire into the terminal and compress it tightly by crimping pliers.



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	4mm ² / 10AWG

4.3.3 AC Circuit Breaker And Residual 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 circuit breaker to protect the inverter.

Inverter Model	Recommended Circuit Breaker Specifications
GW4000-DT GW5000-DT GW6000-DT	16A
GW8000-DT GW10KN-DT	25A
GW10KL-DT GW15KN-DT	32A
GW17K-DT	32A
GW20K-DT GW12KLV-DT	40A
GW25K-DT GW15KLV-DT	50A

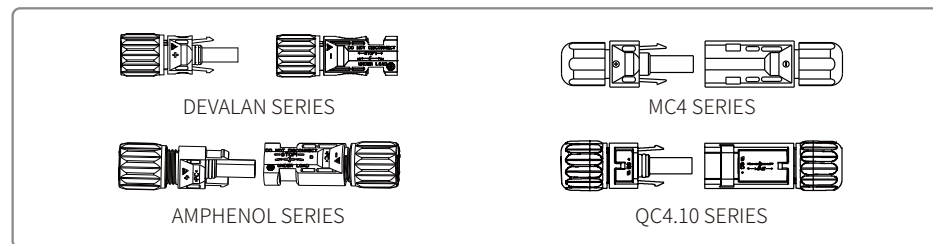
Note: Multiple inverters are not allowed to share a circuit breaker. Leakage current protector is not allowed to connect between the inverter and the circuit breaker.

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 externally, the action current should be 300mA or higher.

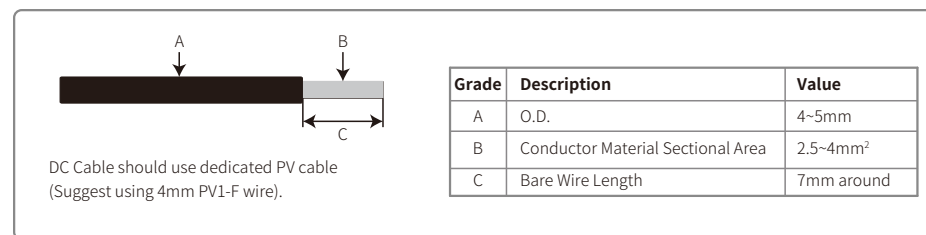
4.3.4 DC Side Connection

1. Make sure the DC switch is turned off before connecting PV string to the inverter.
2. Make sure PV string polarity confirms with DC connector. Otherwise, it will cause damage to inverter.
3. Make sure the maximum open circuit voltage (Voc) of each PV string does not exceed the maximum input voltage of the inverter under any condition.
4. Do not connect positive or negative pole of PV string to earth (PE terminal). Otherwise, it will permanently destroy the inverter.
5. Positive cable should be red, negative cable should be black.
6. The minimum insulation resistance to ground of the PV panels must exceed 33.3kΩ ($R = 1000/30$ mA), there is a risk of shock hazard if the requirement of minimum resistance is not met.

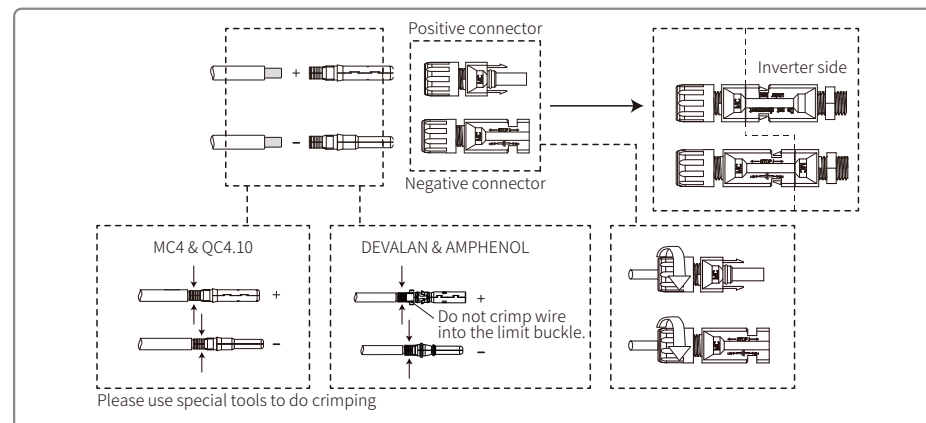
There are four types of DC connectors, DEVALAN, MC4, AMPHENOL H4 and QC4.10 series.



DC Cable specification.



Installation instruction of DC connector.



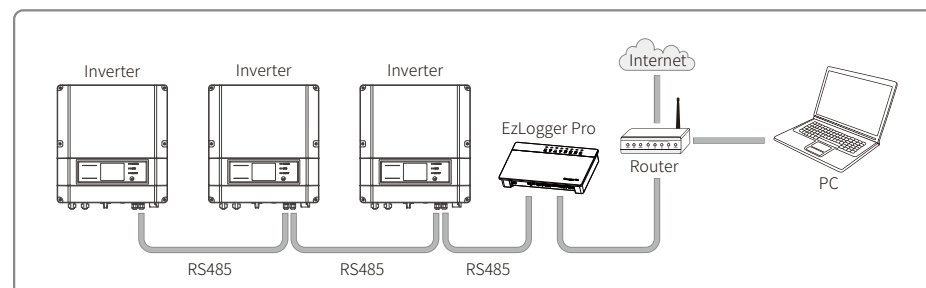
4.4 Communication Connection

4.4.1 RS485 Communication

This function only applies to the inverter with RS485 ports.

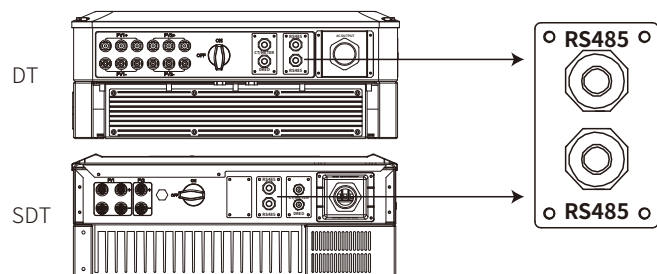
The RS485 port of inverter is used to connect the EzLogger Pro, and the total length of connecting cable should not exceed 1000m.

Communication lines must be separated from other power lines to prevent interference to the communication. RS485 connection are shown as below.



1. The connection steps of RS485 communication of DT/SDT series inverter are as follows:

Step 1: Screw this plate off from inverter.

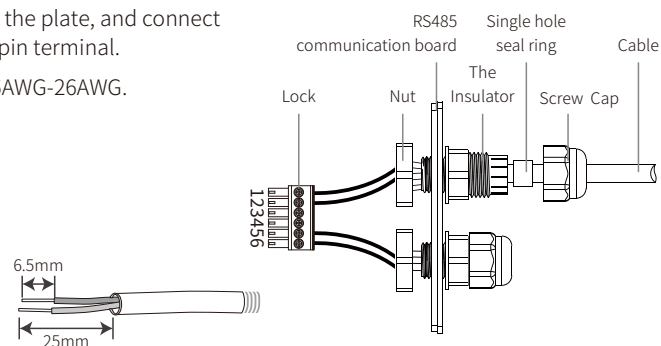


Step 2:

Put the cable through the plate, and connect RS485 cable on the 4-pin terminal.

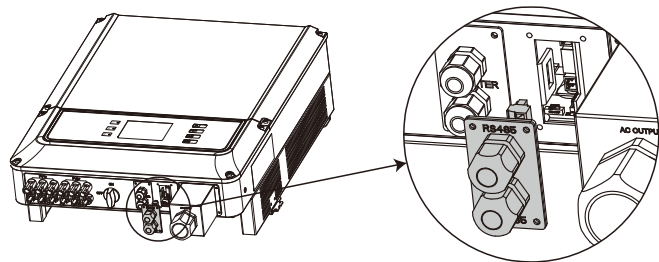
Advise to use cable 16AWG-26AWG.

No.	Function
1	RS485+
2	RS485-
3	Reserved
4	Reserved
5	RS485+
6	RS485-



Step 3:

Connect the terminal to the right position onto the inverter and screw the plate.



2. Connect the inverter to EzLogger Pro with RS485 cable, and EzLogger Pro to switch or router with CAT5E STP cable.

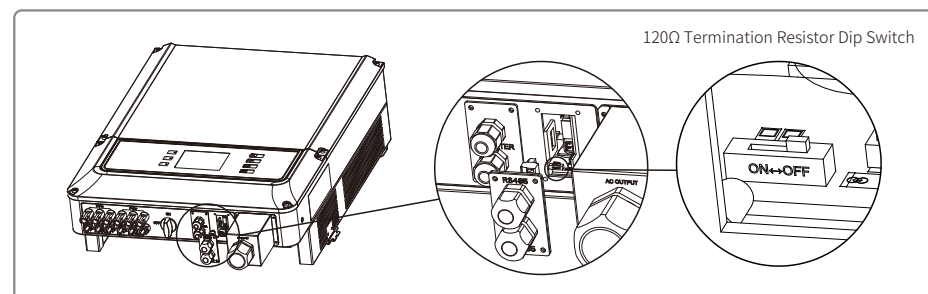


Note:

The requirement of RS485 communication cable: standard RS485 cable.

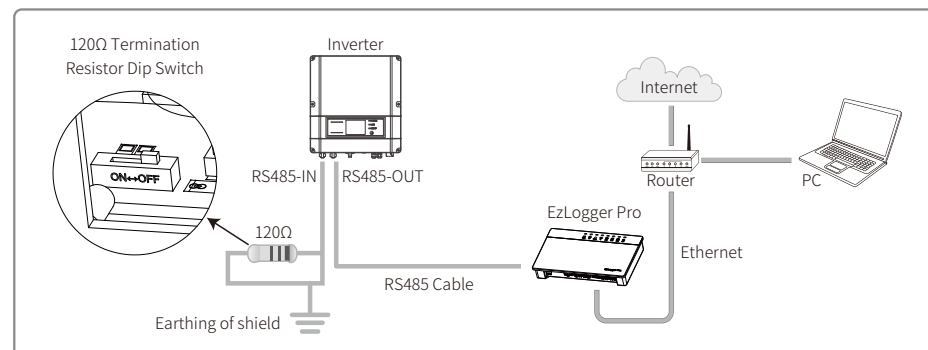
3. The choice of 120 ohm termination resistor dip switch (DT series only).

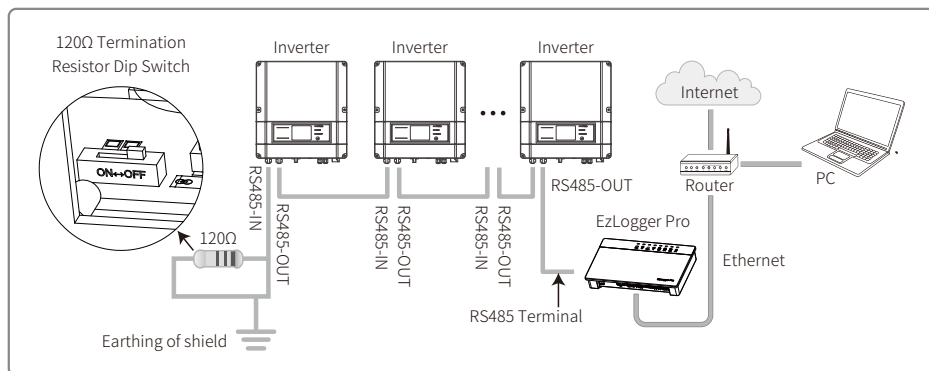
- If there is single DT series inverter, RS485 connection cable with waterproof terminal can realize the connection
- For single inverter communication, choose one among the two terminals. Please use a waterproof cover to cover the port which is not used.
- 120 ohms termination resistor is controlled by dip switch. "ON" means connected, and "OFF" means disconnected.
- For single inverter communication, put on the dip switch near the terminal (default is OFF). Then shielding layer of communication cable is single point grounding.
- If there are several PV inverters, their connection can be realized by RS485 communication cables in a daisy chain connection.
- For the last inverter in the daisy chain, put on the dip switch near the terminal (default is OFF). Then shielding layer of communication cable is single point groundin.



4. RS485 communication method

- DT series inverter can be connected with EzLogger pro separately for data acquisition and monitoring.
- The connection method of single DT inverters, EzLogger pro and PC terminal.





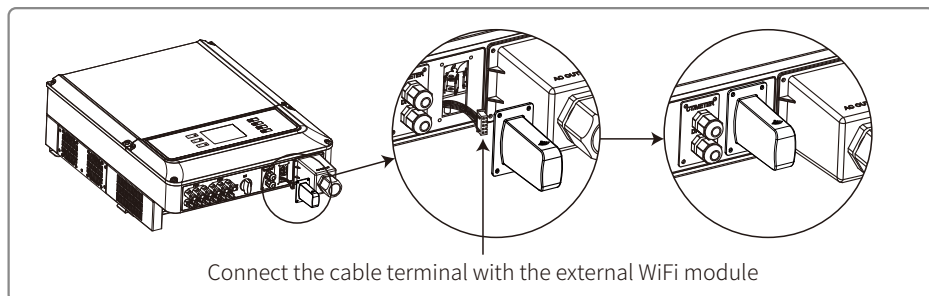
If several DT inverters linked together with Ezlogger Pro, the inverter number in daisy chain could be 20 at most.

4.4.2 Wi-Fi Communication

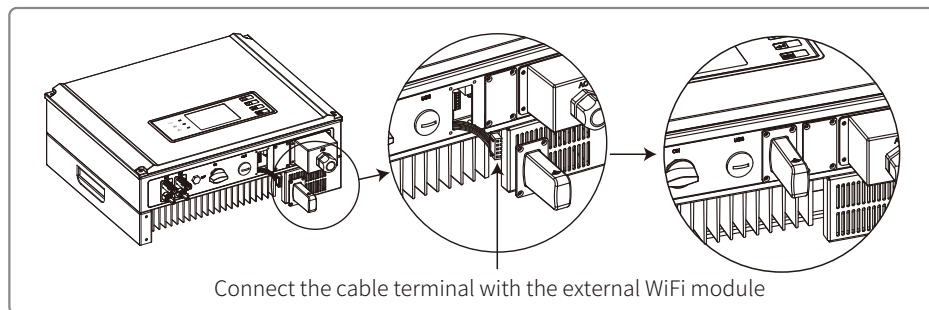
The Wi-Fi Communication function is only applied for WiFi Module, for detailed configuration instruction refer to "Wi-Fi Configuration Instruction" in the accessory box.

After configuration, please browse the monitoring portal website to create PV station

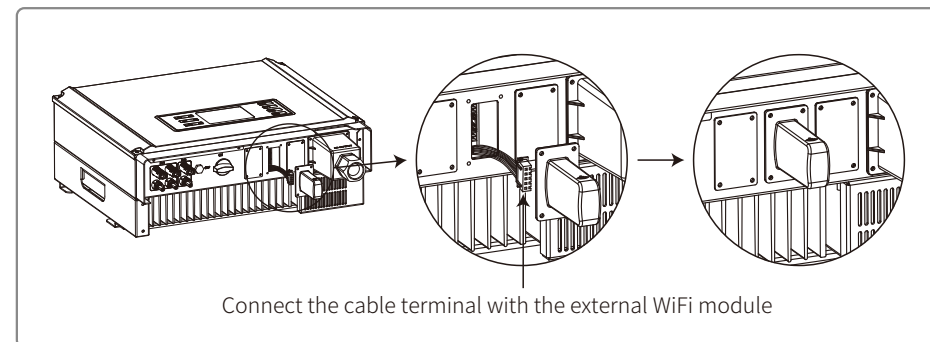
The WiFi module installation of DT series are shown as below.



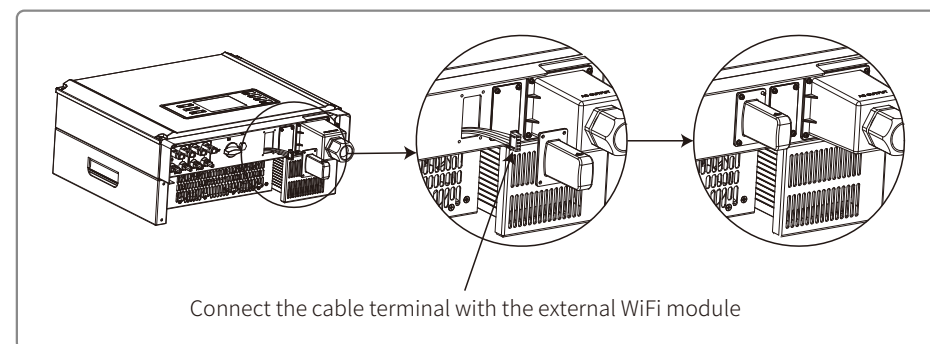
The WiFi module installation of SDT 4-10KW are shown as below.



Installation of SDT 10KL / 12-15KW external Wi-Fi module

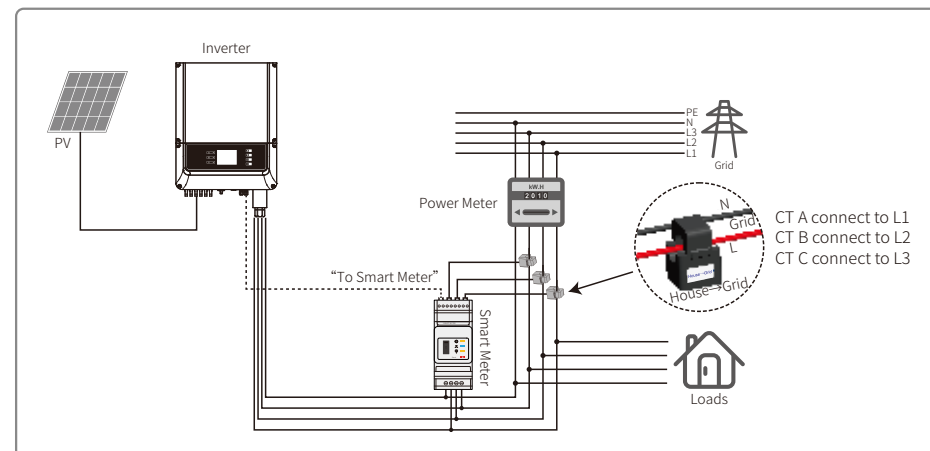


Installation of SDT 17-20KW external Wi-Fi module



4.4.4 Export Power Limit Connection Diagram

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



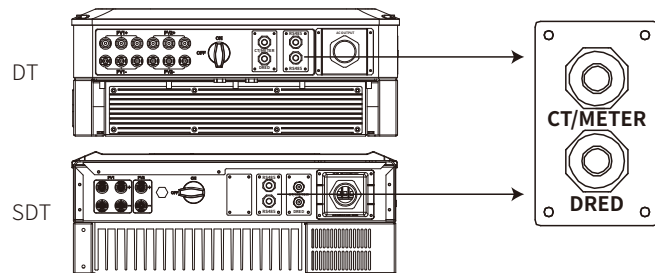
4.4.5 DRED / Remote Shutdown / Smart Meter(Power Limiting Device) Connection

DRED (Demand response enabling device) is only for Australian and New Zealand installations, in compliance with Australian and New Zealand safety requirements. And DRED is not provided by manufacturer.

Remote shutdown is only for Europe installations, in compliance with European safety requirements. And Remote shutdown device is not provided by manufacturer.

Detailed operation is shown as below:

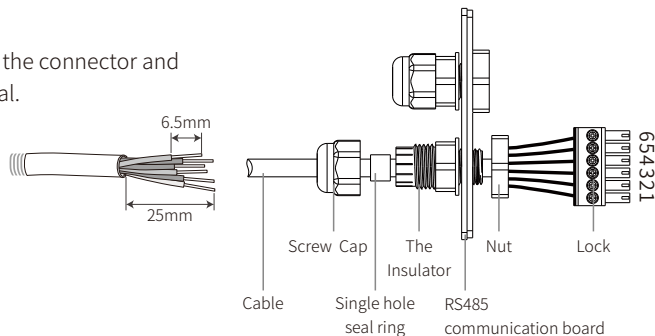
Step 1: Screw this plate off from inverter.



Step 2-1 For DRED:

Put the cable through the connector and connect to the terminal.

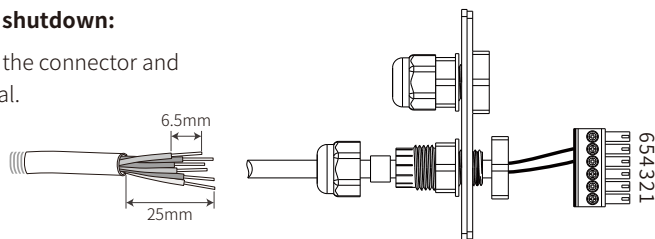
No.	Function
1	DRM1/5
2	DRM2/6
3	DRM3/7
4	DRM4/8
5	REFGEN
6	COM/DRM0



Step 2-2 For remote shutdown:

Put the cable through the connector and connect to the terminal.

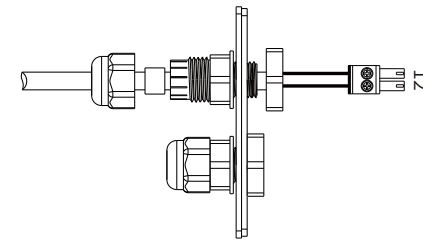
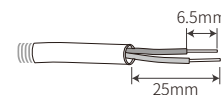
No.	Function
4	DRM4/8
5	REFGEN



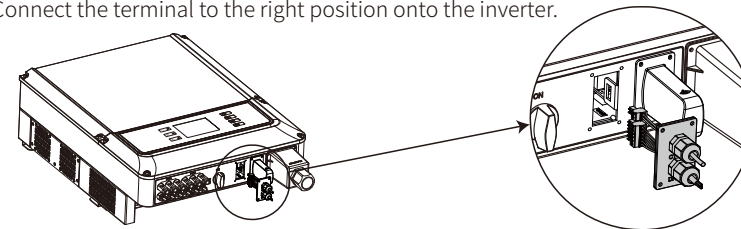
Step 2-3 For Smart Meter:

Put the cable through the connector and connect to the terminal.

No.	Function
1	RS485+
2	RS485-



Step 3: Connect the terminal to the right position onto the inverter.



Note:

1. Meter is a non-standard accessory, please contact sales manager if you need.
2. Supported DRM command: DRM0, DRM5, DRM6, DRM7, DRM8.
3. Please refer to meter instruction guide.
4. DRED connection is only available for Australia and New Zealand.
5. Meter is required for the implementation of export power limiting function. After installation, you need to enable "Power Limit" function and set export power limiting value on the LCD via buttons according to "4.2 User Interface And System Operation".

4.4.6 Earth Fault Alarm

In compliance with the section 13.9 of IEC62109-2, the DT/SDT 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 inverters with Wi-Fi communication, the system sends an email with the fault notification to the customer. For inverters 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).

4.4.7 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 Portal.



SEMS Portal App

5 System Operation

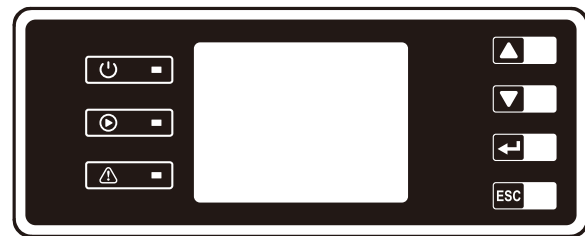
5.1 LCD Panel

5.1.1 Indicator Lights

DT series.



SDT series.



Yellow / green / red light respectively corresponds to: / /

Indicator	Status	Explanation
 Power		ON = WiFi connected/active
		BLINK 1 = WiFi system resetting
		BLINK 2 = Not connect to router
		BLINK 3 = WiFi server problem
		BLINK = RS485 connected
		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

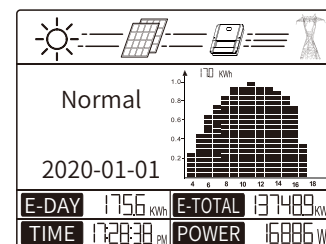
5.2 User Interface And System Configuration

5.2.1 Set safety country

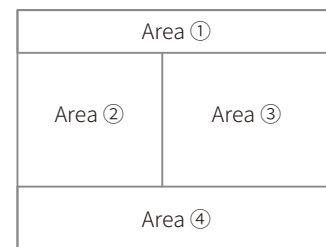
If display shows "Configure Safety", then long press the button to enter the second level menu. Short press to browse the safety country list available. Choose suitable safety country according to the location of installation. The inverter will store the chosen safety country after 20 seconds if no further operation is performed.

5.2.2 LCD

The figure of LCD display screen is shown as follow:



Display area is divided as follows:



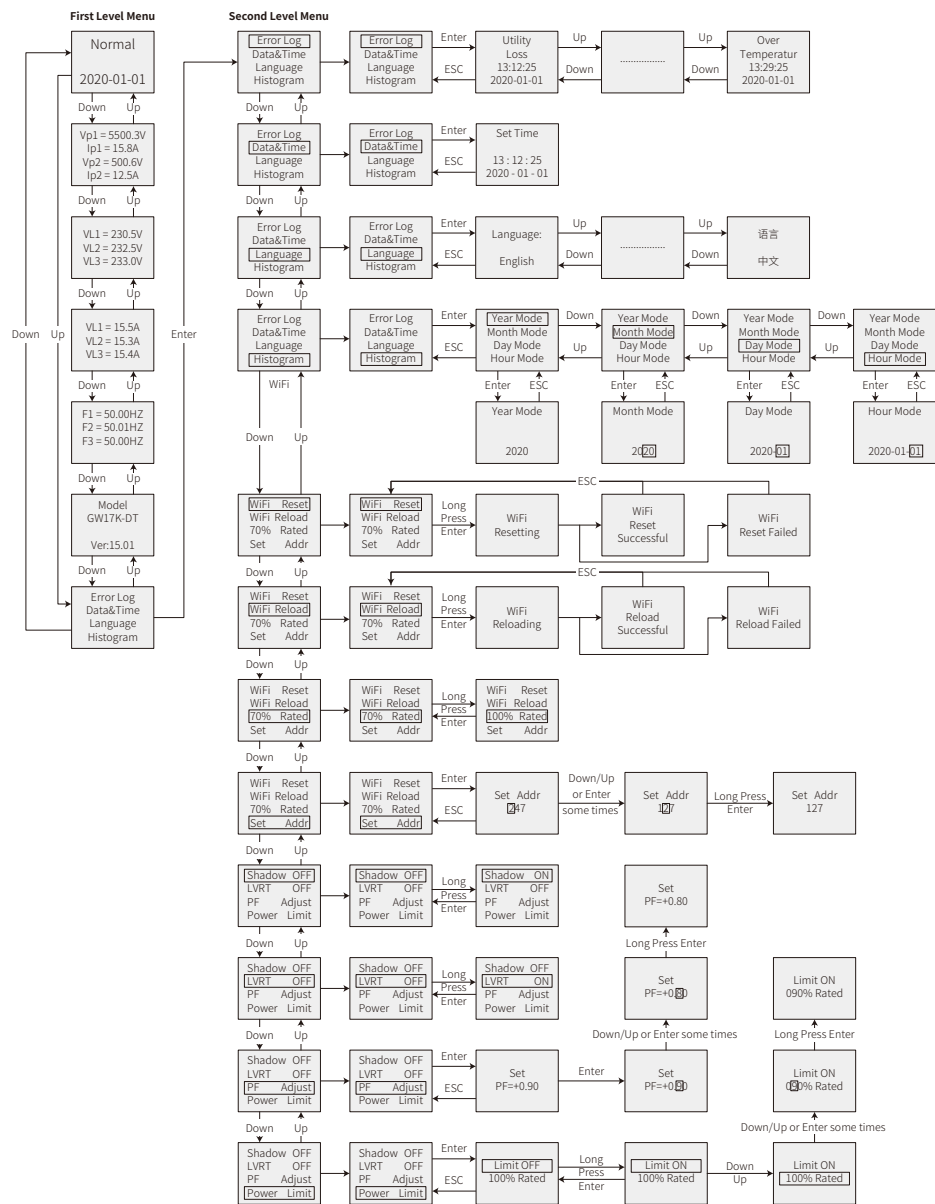
Area①—Flow of Power Generated:

Area① indicates the flow of energy. Full line(—)between inverter and the grid means the grid is available but inverter is not yet feeding power at the time. Flashing dashed lines(---)mean inverter is feeding power to grid. No line means grid is not available. Flashing dashed lines between the sun, modules and inverter means there is energy from the PV to modules and then from modules to inverter.

Area②-Status Information:

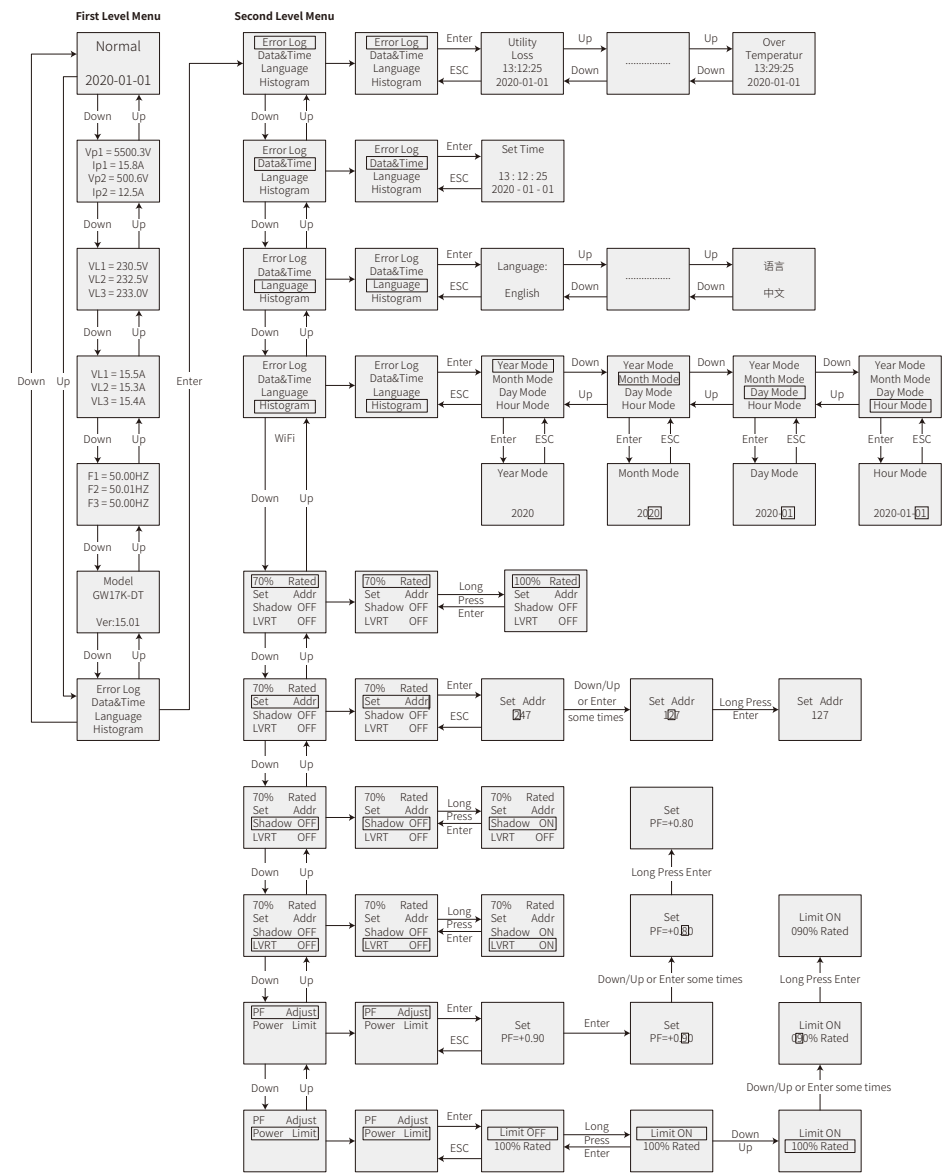
Area② displays inverter power generation status. Different inverter status like languages & time settings, error logs, historical power information etc could all be switched and displayed here through button operations.

Area② has 3 levels of menu. Please refer to the diagram below.



WiFi Model

*For SDT series there is no "Shadow OFF""LVRT OFF"



WiFi Model

*For SDT series there is no "Shadow OFF""LVRT OFF"

Area③ -Histogram Display:

Area③ uses histogram to demonstrate the average power generation at each hour from 4:00am to 8:00pm on one day. Each columnar points 20 scale, the left top area shows the maximum rated power generation each hour for inverter.

This area can display information in different modes, there are 5 display modes in total: real-time mode, hour mode, day mode month mode, year mode.

Real-time mode: display hourly power generation from 4:00am to 8:00pm;

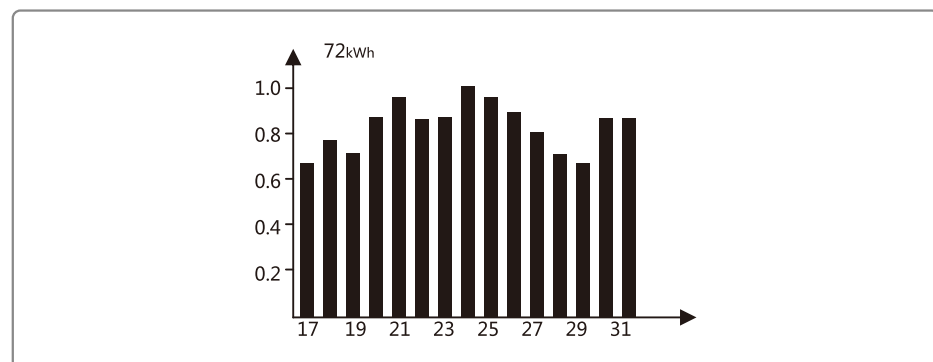
Hour mode: display the hourly power generation in a specific day from the recent 14 days;

Day mode: display the daily power generation in a specific month from the recent 6 months;

Month mode: display the monthly power generation for 12 months in specific year;

Year mode: display annual power generation for recent 10 years.

Take day mode for example:



72kWh means the maximum power generation of recent 16 days. The unit on the left corner sometimes turns to "MWh" from "kWh", it depends on Maximum power generation. 0.0—1.0 on the left is scale factor, which is fixed display content; 17-31 are based on current mode which shows the bar chart label.

Area④ Displays total power generation, daily power generation, real-time power generation and time information, described as follow:

Area	Description
E-DAY	Dailly power generation
E-TOTAL	Gross power generation after first time use of inverter. The initial unit is "kWh"; When power generation exceeds 999.9kWh, the unit changes to "MWh".
TIME	Current system time
POWER	Real-time power Generation of the system

5.2.3 Use Of The LCD

The buttons near the LCD screen are mainly used for inverter information display, setting of time, language selection and histogram information display.

The menu in LCD display area has three levels; In the first level menu, first 6 interfaces displays inverter status, model, PV voltage and current, grid voltage and current, line frequency. Pressing button "Enter" to lock current menu interfaces in order to check specific parameter. In the meanwhile, backlight will turn on for 1 min; Press "Enter" to unlock the interface for information display, the backlight will be kept on for 30S and then switch back to default initial interface.

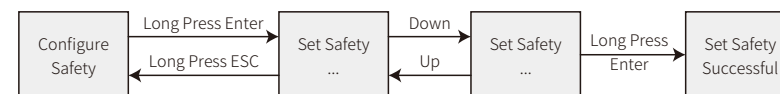
The last interface (including error Log, time and data, language setting and historical electricity generation) can be entered by pressing "Enter" to according Second Level menu.

In second level menu, move the cursor to the setting area through "Down" and "Up" button operation. For the second level menu which has three level menus, press "Enter" to get in and change the figures at cursor location through "Down" and "Up" button operation, in addition the cursor location can be changed by pressing "Enter"

In all levels of menu, it will automatically enter the first item of the first level menu if no action is taken within 30S, meanwhile, the modified data will be stored into internal memory.

5.2.4 Menu Introduction

Long press "Enter" in the Configure Safety interface, there will be set safety interface, press "Down" or "Up" to choose the safety you need and then long press "Enter" to confirm your option.

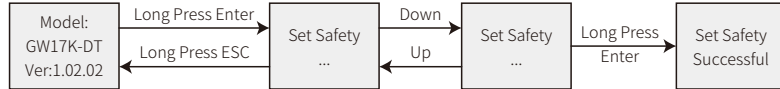


- When PV panel is feeding power to the inverter, the screen shows the first interface of first level menu. The interface displays current state of the system. It shows "Waiting" in the initial state; it shows "Normal" during power generation mode; if there is something wrong with the system, error message is shown. Please referred to "5.4 Error Message".
- Press any button once to turn on the LCD backlight when it is off; if the backlight is on, press "Down" button to enter the next menu displaying data of Vpv and Ipv; press "Enter" to lock the current interface.
- In the first level menu, the displayed information can be switched through "Down" and "Up" button operation, there are 7 interfaces in total, which are circulatory. The second level menu can only be selected through "Enter" from the seventh interface.
- In the second level menu, short press "Error Log" to enter the historical error message interface, press "Up" and "Down" to inquire the first 5 historical error message, press "Esc" to return.
- In the second level menu, short press "Date&Time" to enter the time setting interface, press "Up" and "Down" to change the data, short press "Enter" to move cursor, long press "Enter" to save the settings.

- In the second level menu, choose "Language" and press "Enter" to enter language setting interface, the LCD will flash, press "Up" or "Down" to change language, long press "Enter" to save the settings, when it stops flashing, press "Esc" to return.
- In the second level menu, choose "Histogram", short press "Enter" to enter the level 3 menu to inquire the historical power generation, in the level 3 menu, press "Up" or "Down" to inquire power generation data in Year Mode, Month Mode, Day Mode and Hour Mode, short press "Enter" to show the historical power generation, press "Esc" back to main menu.
- In the second level, the Menu after "Histogram" is communication selection interface, if it is a WiFi model, please choose "WiFi Reset" or "WiFi Reload" and long pressing "Enter" will reset or reload the inverter WiFi mode. Wait for 20 seconds, operation result will show on display.
- In the second level menu, the Menu after "Histogram" is communication selection interface, if it is GPRS model, It shows as "RSSI :XXX %" (000%—100%). It cannot be choose.
- In the second level menu, short press "Set Addr" to get an added menu "Set Addr:247". Press "Down" to choose "Set Addr: 247" and short press "Enter" to enter Modbus address interface. Press "Up" or "Down" to set the address long press "Enter" to save the address.

⚠ This function is used for special requirements.

- Long press "Enter" in the model type interface, there will be set safety interface, press "Down" or "Up" to select the safety you need and then long press "Enter", the chosen safety will be setted. If there is no exact proper country code, please choose "50Hz Grid Default" or "60Hz Grid Default" accordingly.



⚠ This function is used for special requirements.

- In the second level menu, choose "Shadow OFF" (if shadow mode has not been turned on), long press "Enter", it shows "Shadow ON" indicating shadow mode has been successfully turned on. (Only available for DT series.)

This function is used for special requirements.

- In the second level menu, choose "70% Rated", at this time, the inverter is 100% output power, long press "Enter", it becomes "100% Rated", then the output power will be limited to 70%. The function is only for using with VDE AR-N 4105 standard or used in France, and only for service personnel. Misuse will cause the inverter to derate. This menu is not shown for other standards.

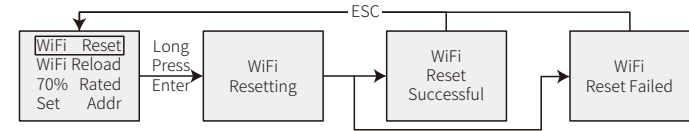
5.2.5 Operation Of LCD When Commissioning

- When the input voltage reaches inverter turn-on voltage, LCD displays "Waiting". If the grid is accessible, "Checking xxx Sec" (The time is decided by the grid connection standards from different country) will show up in 5sec, while counting, the inverter is selfchecking, when it shows "00Sec" you can hear the relay triggers, LCD displays "Normal" afterwards. The instant power output will be shown at the right bottom of LCD.

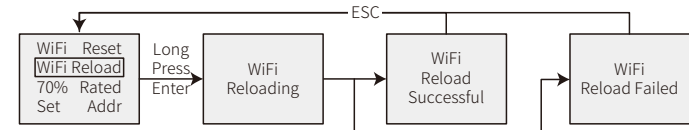
5.3 WiFi Reset & WiFi Reload

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

Select "WiFi Reset" and press "Enter" to enter the second level menu. Long press "Enter" to reset inverter WiFi module; Wait for a while, operation result will show on display, the function can be applied when inverter is unable to connect to router or monitor server.

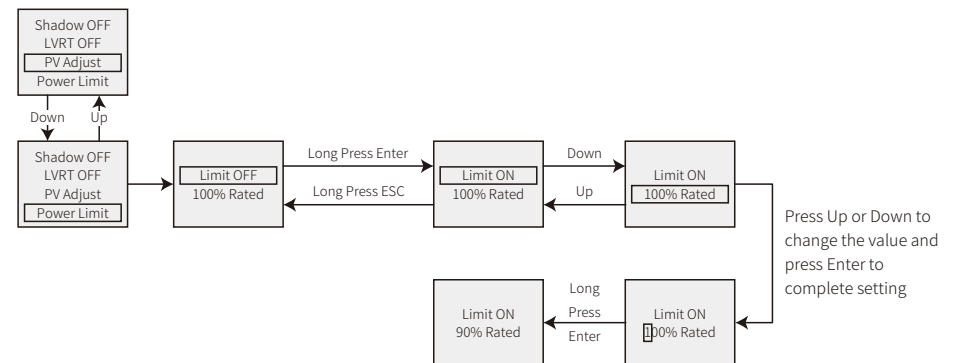


Select "WiFi Reload" and press "Enter" to enter the second level menu. Long press "Enter" button to reload the inverter WiFi model to initial setting. Wait for a while, operation result will show up on display, the function can be applied when inverter is unable and cannot connect to WiFi module. Once WiFi model restore initial setting, WiFi module needs be reset again.



5.4 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.

5.5 Error Message

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

Error Code	Error message	Description
01	SPI Failure	Internal communication failure
02	EEPROM R/W Failure	Memory chip failure
03	Fac Failure	Grid frequency out of range
07, 25	Relay Check Failure	Relay self-checking failure
13	DC Injection High	Overhigh DC injection
14	Isolation Failure	Ground insulation impedance is too low
15	Vac Failure	Grid voltage out of range
16	EFan Fault	External fan failure
17	PV Over Voltage	Overvoltage at DC input
19	Over Temperature	Overtemperature on the case
20	IFan Fault	Internal fan failure
21	DC Bus High	Overhigh BUS voltage
22	Ground I Failure	Overhigh ground leakage current
23	Utility Loss	Grid disconnection/fault
30	Ref 1.5V Failure	1.5V reference voltage failure
31, 24	AC HCT Failure	Output current sensor failure
32, 26	GFCI Failure	Detection circuit of ground leakage current failure
Others	Device Failure	Internal device failure

5.6 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.

5.7 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 instruction manual of using the software can be downloaded from official website or contacts with after sales.

6 Troubleshooting

If the Inverter is not able to work properly, please refer to the following instructions before contacting your local service. If any problems arise, the red (FAULT) LED indicator on the front panel will light up and the LCD screen will display relevant information. Please refer to the following table for a list of error message and associated solutions.

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	
	SCI Failure	
	SPI Failure	
	DC BUS High	
	BUS Unbalance	
	GFCI Failure	
	Ifan Fault	
	Efan Fault	
	Afan Fault	
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.
	Wi-Fi module fail to connect to network	1. If the Wi-Fi module fail to connect to network after choosing the right router hotspot and entering the right passwords, it's possible that there are special characters not supported by module in the hotspot passwords. Please modify the password to consist of only Arabic numerals or uppercase / lowercase letters. 2. If the problem still exists, contact local service office for help.

Note:

When sunlight is insufficient, the PV Inverter may continuously start up and shut down automatically due to insufficient power generation by the PV panel.

7 Technical Parameters & Block Diagram

7.1 Technical Parameters

Technical Data	GW4000-DT	GW5000-DT	GW6000-DT	GW8000-DT
PV String Input Data				
Max. DC Input Power (W)	5200	6500	7800	9600
Max. DC Input Voltage (V)	1000	1000	1000	1000
MPPT Range (V)	200~800	200~800	200~800	200~850
Start-up Voltage (V)	180	180	180	180
Min. Feed-in Voltage(V)	210	210	210	210
Nominal DC Input Voltage (V)	620	620	620	620
Max. Input Current (A)	11/11	11/11	11/11	11/11
Max. Short Current (A)	13.8/13.8	13.8/13.8	13.8/13.8	13.8/13.8
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 [1]	5000 [1]	6000 [1]	8000 [1]
Max. Output Apparent Power (VA)	4000	5000	6000	8000
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)	8.5	8.5	10	12.1
Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)			
Output THDi (@Nominal Output)	<2%	<2%	<2%	<2%
Efficiency				
Max. Efficiency	98.0%	98.0%	98.0%	98.3%
Europe Efficiency	>97.5%	>97.5%	>97.5%	>98.0%
Protection				
PV String Current Monitoring	Integrated			
Anti-islanding Protection	Integrated			
Input Reverse Polarity Protection	Integrated			
Insulation Resistor Detection	Integrated			
Residual Current Monitoring Unit	Integrated			
Output Over Current Protection	Integrated			
Output Short Protection	Integrated			
Output Over Voltage Protection	Integrated			
DC SPD Protection	Integrated (Type III)			
AC SPD Protection	Integrated (Type III)			
General Data				
Operating Temperature Range (°C)	-25~60			
Relative Humidity	0~100%			
Operating Altitude (m)	≤4000			
Cooling	Natural Convection			
Noise (dB)	<30			
User Interface	LCD & LED			
Communication	RS485 or WiFi or LAN			
Weight (kg)	24			
Size (Width*Height*Depth mm)	516*415*192			
Protection Degree	IP65			
Night Self Consumption (W)	<1			
Topology	Transformerless			
Certifications & Standards				
Grid Regulation	Access main website to search the information			
Safety Regulation				
EMC				

Technical Data	GW10KN-DT	GW12KN-DT	GW15KN-DT	GW17KN-DT	GW20KN-DT
PV String Input Data					
Max. DC Input Power (W)	12000	16800	19500	22100	26000
Max. DC Input Voltage (V)	1000	1000	1000	1000	1000
MPPT Range (V)	200~850	200~800	200~800	200~950	200~950
Start-up Voltage (V)	180	180	180	180	180
Min. Feed-in Voltage(V)	210	210	210	210	210
Nominal DC Input Voltage (V)	620	620	620	600	600
Max. Input Current (A)	11/11	22/11	22/11	22/22	22/22
Max. Short Current (A)	13.8/13.8	27.6/13.8	27.6/13.8	27.5/27.5	27.5/27.5
No. of MPP Trackers	2	2	2	2	2
No. of Input Strings per Tracker	1/1	2/1	2/1	2/2	2/2
AC Output Data					
Nominal Output Power (W)	10000 [1]	12000	15000	17000	20000
Max. Output Apparent Power (VA)	10000	14000	16500	19000	22000
Nominal Output Voltage (V)	400, 3L/N/PE	400, 3L/N/PE;	400, 3L/N/PE	400, 3L/N/PE or 3L/PE	
Nominal Ouput Frequency (Hz)	50/60	50/60	50/60	50/60	50/60
Max. Output Current (A)	15.2	21.5	24	28.8	31.9
Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)				
Output THDi (@Nominal Output)	<2%	<2%	<2%	<3%	<3%
Efficiency					
Max. Efficiency	98.3%	98.3%	98.3%	98.6%	98.6%
Europe Efficiency	>98.0%	>98.0%	>98.0%	>98.1%	>98.1%
Protection					
PV String Current Monitoring	Integrated				
Anti-islanding Protection	Integrated				
Input Reverse Polarity Protection	Integrated				
Insulation Resistor Detection	Integrated				
Residual Current Monitoring Unit	Integrated				
Output Over Current Protection	Integrated				
Output Short Protection	Integrated				
Output Over Voltage Protection	Integrated				
DC SPD Protection	Integrated (Type III)				
AC SPD Protection	Integrated (Type III)				
General Data					
Operating Temperature Range (°C)	-25~60				
Relative Humidity	0~100%				
Operating Altitude (m)	≤4000				
Cooling	Natural Convection	Natural Cooling		Fan Cooling	
Noise (dB)	<30	<40	<40	45	45
User Interface	LCD & LED	LCD & LED	LCD & LED	LCD & LED	LCD & LED
Communication	RS485 or WiFi or LAN	RS485 or WiFi	RS485 or WiFi	RS485 or WiFi	RS485 or WiFi
Weight (kg)	24	26	26	26	26
Size (Width*Height*Depth mm)	516*415*192	516*455*192	516*455*192	516*455*220	516*455*220
Protection Degree	IP65				
Night Self Consumption (W)	<1				
Topology	Transformerless				
Certifications & Standards					
Grid Regulation	Visit homepage to achieve the information				
Safety Regulation					
EMC					

[1] For CEI 0-21 Nominal Output Power GW4000-DT is 3605 , GW5000-DT is 4550 , GW6000-DT is 5450 , GW8000-DT is 7250 , GW9000-DT is 8150 , GW10KN-DT is 9050.

Technical Data	GW4000L-DT	GW5000L-DT	GW6000L-DT	GW10KL-DT
PV String Input Data				
Max. DC Input Power (W)	5200	6500	7800	9600
Max. DC Input Voltage (V)	600	600	600	600
MPPT Range (V)	200~550	200~550	200~550	200~550
Start-up Voltage (V)	180	180	180	180
Min. Feed-in Voltage(V)	210	210	210	210
Nominal DC Input Voltage (V)	480	480	480	480
Max. Input Current (A)	11/11	11/11	11/11	11/11
Max. Short Current (A)	13.8/13.8	13.8/13.8	13.8/13.8	13.8/13.8
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	10000
Max. Output Apparent Power (VA)	4000	5000	6000	10000
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)	8.5	8.5	10	15.2
Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)			
Output THDi (@Nominal Output)	<2%	<2%	<2%	<2%
Efficiency				
Max. Efficiency	98.0%	98.0%	98.0%	98.3%
Europe Efficiency	>97.5%	>97.5%	>97.5%	>98.0%
Protection				
PV String Current Monitoring	Integrated			
Anti-islanding Protection	Integrated			
Input Reverse Polarity Protection	Integrated			
Insulation Resistor Detection	Integrated			
Residual Current Monitoring Unit	Integrated			
Output Over Current Protection	Integrated			
Output Short Protection	Integrated			
Output Over Voltage Protection	Integrated			
DC SPD Protection	Integrated (Type III)			
AC SPD Protection	Integrated (Type III)			
General Data				
Operating Temperature Range (°C)	-25~60			
Relative Humidity	0~100%			
Operating Altitude (m)	≤4000			
Cooling	Natural Convection			
Noise (dB)	<30			
User Interface	LCD & LED			
Communication	RS485 or WiFi or LAN			
Weight (kg)	24			
Size (Width*Height*Depth mm)	516*415*192			
Protection Degree	IP65			
Night Self Consumption (W)	<1			
Topology	Transformerless			
Certifications & Standards				
Grid Regulation	Visit homepage to achieve the information			
Safety Regulation				
EMC				

Technical Data	GW15K-DT	GW17K-DT	GW20K-DT	GW25K-DT
PV String Input Data				
Max. DC Input Power (W)	19500	22100	26000	32500
Max. DC Input Voltage (V)	1000	1000	1000	1000
MPPT Range (V)	260~850	260~850	260~850	260~850
Start-up Voltage (V)	250	250	250	250
Min. Feed-in Voltage(V)	280	280	280	280
Nominal DC Input Voltage (V)	620	620	620	620
Max. Input Current (A)	22/22	22/22	22/22	27/27
Max. Short Current (A)	27.5/27.5	27.5/27.5	27.5/27.5	33.8/33.8
No. of MPP Trackers	2	2	2	2
No. of Input Strings per Tracker	2	2	2	3
AC Output Data				
Nominal Output Power (W)	15000	17000	20000	25000
Max. Output Apparent Power (VA)	15000	17000	20000	25000
Nominal Output Voltage (V)	3W/N/PE 380/400	3W/N/PE 380/400	3W/N/PE 380/400	3W/N/PE 380/400
Nominal Ouput Frequency (Hz)	50/60	50/60	50/60	50/60
Max. Output Current (A)	25	25	30	37
Rated Output Current (A)	25	25	30	37
Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)			
Output THDi (@Nominal Output)	<1.5%	<1.5%	<1.5%	<1.5%
Efficiency				
Max. Efficiency	98.2%	98.2%	98.4%	98.4%
Europe Efficiency	>97.7%	>97.7%	>98.1	>98.1%
Protection				
Anti-islanding Protection	Integrated			
Input Reverse Polarity Protection	Integrated			
Insulation Resistor Detection	Integrated			
DC SPD Protection	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)	-25~60			
Relative Humidity	0~100%			
Operating Altitude (m)	≤4000			
Cooling	Fan Cooling			
User Interface	LCD & LED			
Communication	RS485 or WiFi			
Weight (kg)	39			
Size (Width*Height*Depth mm)	516*650*203			
Protection Degree	IP65			
Protective Class	class I			
Overvoltage Category (OVC)	PV input: II Grid Output: III			
Night Self Consumption (W)	<1			
Topology	Transformerless			

Technical Data		GW12KLN-DT	GW12KLV-DT	GW15KLV-DT
DC Input Data				
Max. PV Power (W)		21600	15600	19500
Max. DC Input Voltage (V)		800	800	800
MPPT Range (V)		200~650	260~650	260~650
Start-up Voltage (V)		200	250	250
Min. Feed-in Voltage(V)		210	280	280
Nominal DC Input Voltage (V)		370	370	370
Max. Input Current (A)		22/22	22/22	27/27
Max. Short Current (A)		27.5/27.5	27.5/27.5	33.8/33.8
No. of MPP Trackers		2	2	2
No. of Input Strings per Tracker		2/2	2/2	3/3
AC Output Data				
Nominal Output Power (W)		12000	12000	15000
Max. Output Power (W)	208VAC	11300	11300	14200
	220VAC	12000	12000	15000
	240VAC	13200	13000	16000
Max. Output Apparent Power (VA)		13200	13000	16000
Nominal Output Voltage (V)		400, 3L/N/PE	150~300	150~300
Nominal Ouput Frequency (Hz)		50/60	50/60	50/60
Max. Output Current (A)		31.9	31.5	39.5
Output Power Factor		~1 (Adjustable from 0.8 leading to 0.8 lagging)		
Output THDi (@Nominal Output)		<3%	<3%	<3%
Efficiency				
Max. Efficiency		98.5%	98.4%	98.4%
Europe Efficiency		>98.1%	98.1%	98.1%
Protection				
PV String Current Monitoring		Integrated		
Anti-islanding Protection		Integrated		
Input Reverse Polarity Protection		Integrated		
Insulation monitoring		Integrated		
DC fuse		NA		
Anti-PID Function for Module		NA		
DC SPD Protection		Integrated (Type III)		
AC SPD Protection		Integrated (Type III)		
Residual Current Monitoring Unit		Integrated		
AC Over Current Protection		Integrated		
AC Short Protection		Integrated		
AC Over Voltage Protection		Integrated		
General Data				
Ambient Temperature Range (°C)		-25~60		
Relative Humidity		0~100%		
Operating Altitude (m)		≤4000		
Cooling		Fan Cooling		
User Interface		LCD & LED		
Communication		RS485 or WiFi		
Weight (kg)		26	39	39
Dimension (Width*Height*Depth mm)		516*455*220	516*650*203	516*650*203
Protection Degree		IP65		
Night Self Consumption (W)		<1		
Topology		Transformerless		
Certifications & Standards				
Grid Regulation		Visit homepage to achieve the information		
Safety Regulation				
EMC				

Zerf:

1. SDT4~10KW/SDT4KL~10KL:

RA = 0.24; XA = j 0.15 at 50Hz; RN = 0.16; XN = j 0.10 at 50 Hz.

2. DT15KW~25KW/SDT15KW/DT12KLV&15KLV

RA = 0.15; XA = j 0.15 at 50Hz; RN = 0.10; XN = j 0.10 at 50 Hz.

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°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 from 4% to 100%, applied to PD3.

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

Indoor conditioned: the ambient air temperature is 0~40 °C. 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.

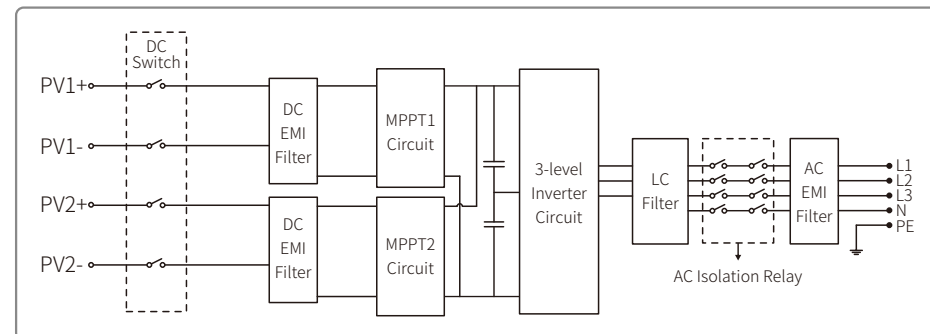
Pollution degree 2: Normally only non-conductive pollution occurs. However, a temporary conductivity occasionally caused by condensation must be expected.

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

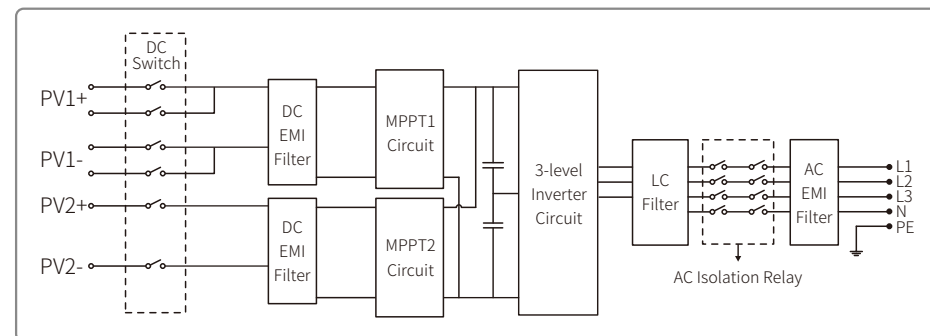
Pollution degree 4: Persistent conductive pollution occurs. For example, the pollution cause by conductive dust, rain and snow.

7.2 Block Diagram

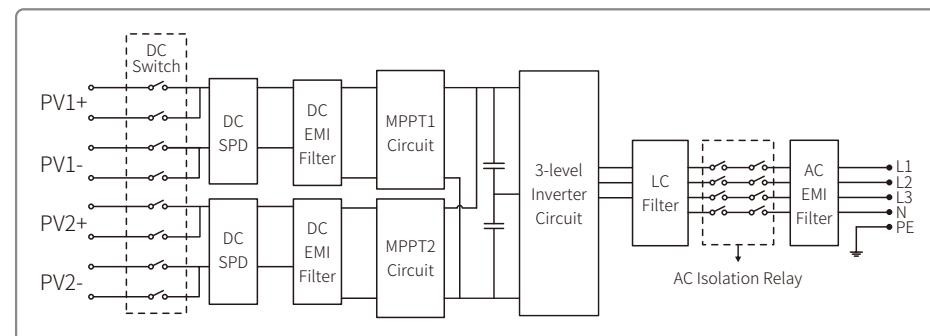
SDT4~10KW main circuit.

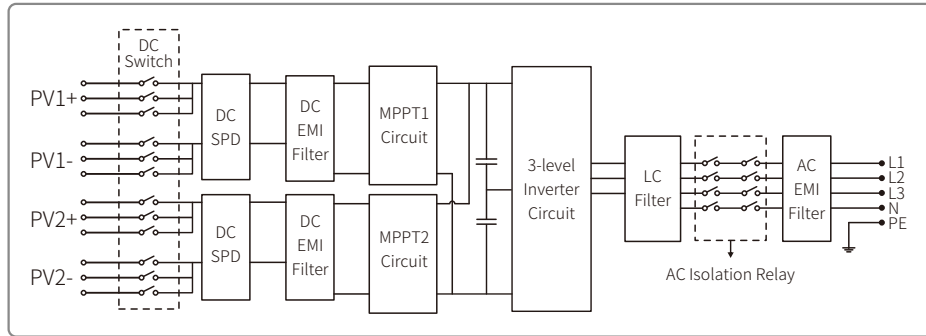


SDT10KL / SDT15KW main circuit.



GW12KLV-DT / GW17K-DT / GW20K-DT main circuit.





8 Caution

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

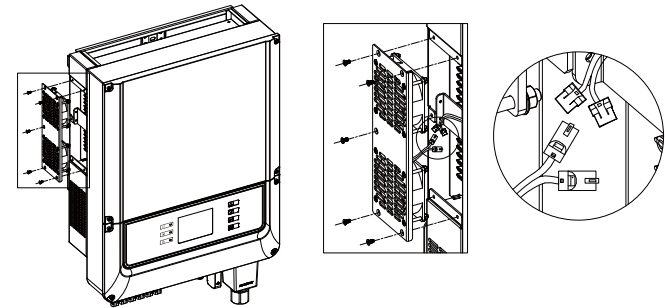
Caution: Before maintenance, please disconnect the AC breaker first and then disconnect DC breaker. Wait 5 minutes until the residual voltage has been released.

8.1 Clearing The Fan

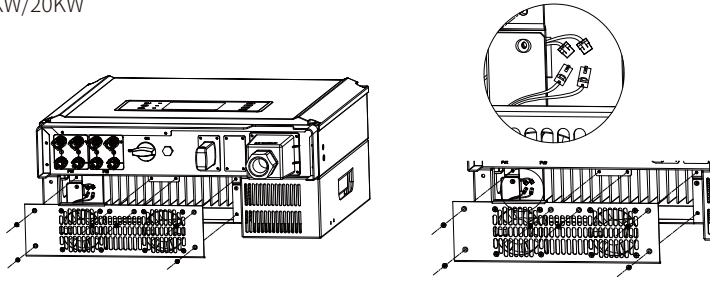
DT series inverter is equipped with three fans on its left side. The fan intakes and handle covers should be cleaned yearly with a vacuum cleaner. For more thorough cleaning, completely remove the fans.

1. Disconnect the AC breaker first and then disconnect DC breaker.
2. Wait 5 minutes until the residual voltage has been released and the fans are no longer running.
3. Disassemble the fans (Refer to the below figure).
 - Loosen the five screws with a crosshead screwdriver, then remove the fans out of the cabinet about 50mm slowly.
 - Open the lockers of the three fans connectors and remove them from housing, then take the fans away.
4. Clean the ventilation grid and the fan with soft brush, paint brush, or compressed air.
5. Reassemble the fans into the cabinet.
6. Please use towel to clean the heat-sink once a year.

DT Series



SDT17KW/20KW



8.2 Checking The DC Switch

DC switch does not require any maintenance

Though unnecessary, maintenance as below is still recommended:

- Check the DC switch regularly.
- Activate the DC switch 10 times in a row once a year.

Operating the switch will clean the switch and will extend the life of the DC switch.

Boot order:

1. Turn on the breaker on AC side.
2. Turn on the DC switch.
3. Turn on the breaker on DC side.

Note: If there's no switch, only need to do step 1 and step 3 (please skip step 2).

Shutdown order:

1. Turn off the breaker on AC side.
2. Turn off the DC switch.
3. Turn off the breaker on DC side.

Note: If there's no switch, only need to do step 1 and step 3 (please skip step 2).

8.3 Checking The Electrical Connection

1. Check if the AC or DC wire is loose.
2. Check if the earth wire is reliably grounded.
3. Check if the waterproof covers of RS485 and USB port are fastened.

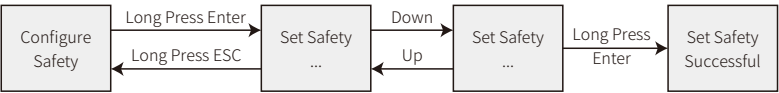
Note: Maintenance cycle is once every half a year.

5.2 Syetem Configuration

5.2.1 Set Safety County:

Short press the button until LCD displays "Configure Safety", and long press "Enter" to enter the second level menu. Press the "Up" or "Down" to browse the safety country available. Select suitable safety country according to the location of installation. The chosen safety will be setted and saved with long pressing "Enter".

If there is no exact proper country code, please choose "50Hz Grid Default" or "60Hz Grid Default" accordingly.



5.2.2 Set time

Short press "Up" or "Down" to select "Data&Time", and press "Enter" to enter the second level menu. Short press the button to increase the number in current location, and press "Enter" to move the cursor to next position. The setting will be setted with long pressing "Enter". The new time will be setted and saved with long pressing "Enter".

