



Grid-tied PV String Inverter

SUN-10K-G03-LV

SUN-12K-G03-LV

SUN-15K-G03-LV

User Manual



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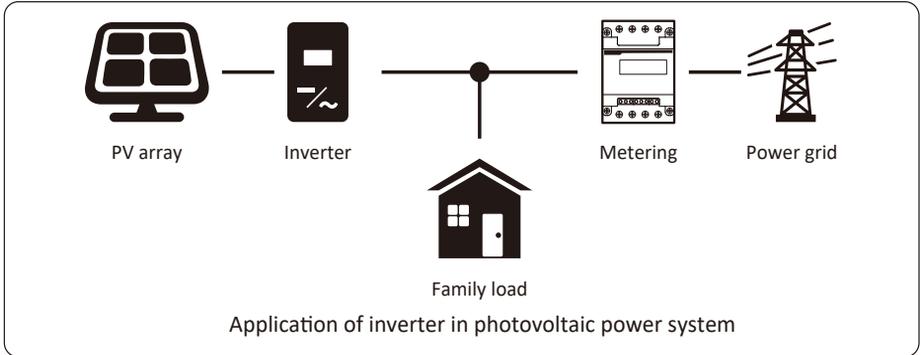
About This Manual

The manual mainly describes the product information, guidelines for installation, operation and maintenance. The manual cannot include complete information about the photovoltaic (PV) system.

How to Use This Manual

Read the manual and other related documents before performing any operation on the inverter. Documents must be stored carefully and be available at all times. **Contents may be periodically updated or revised due to product development. The information in this manual is subject to change without notice.** The latest manual can be acquired via service@deye.com.cn

Photovoltaic Grid-connected System

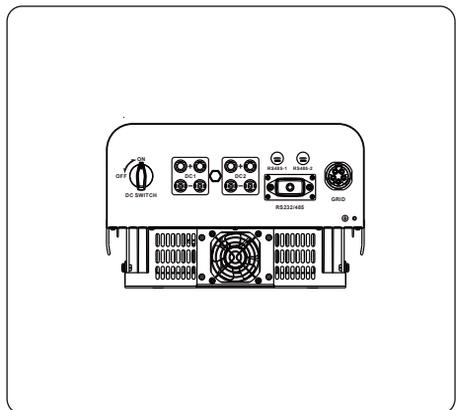
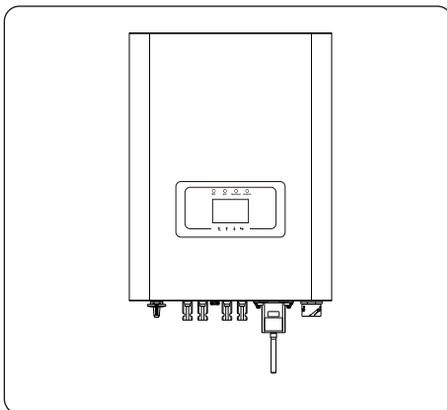


1. Introduction

1.1 Appearance Introduction

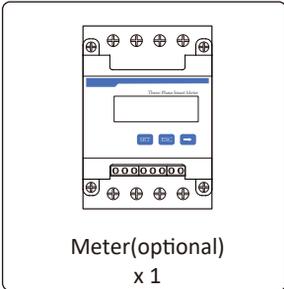
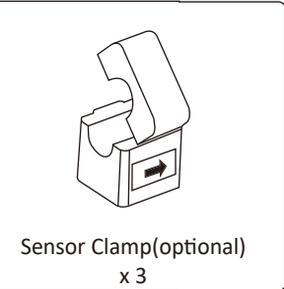
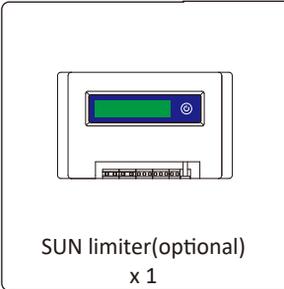
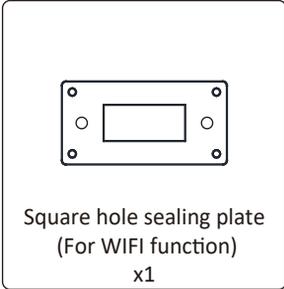
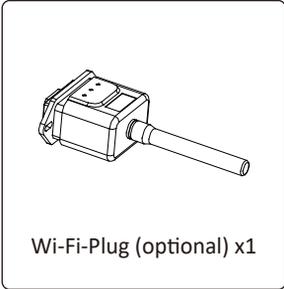
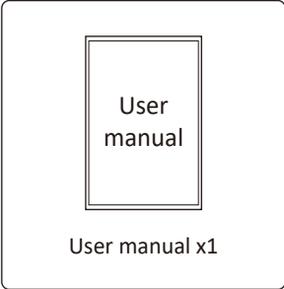
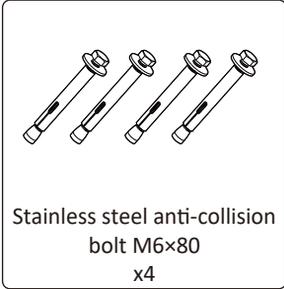
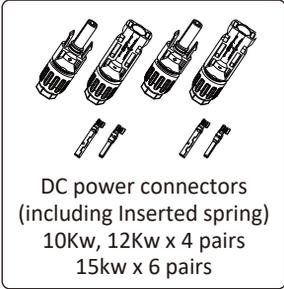
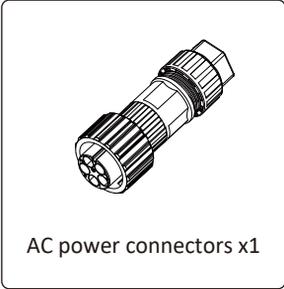
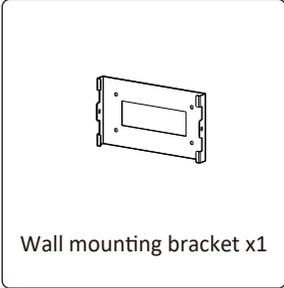
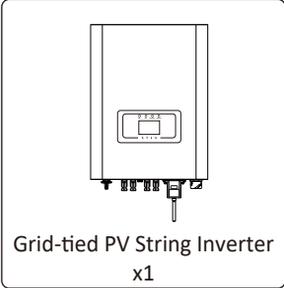
On-grid inverter can convert solar panel DC power into AC power which can directly input to the grid. Its appearance is shown below. These models contain SUN-10K-G03-LV, SUN-12K-G03-LV, SUN-15K-G03-LV.

The following is collectively referred to as “inverter”.



1.2 Parts list

Please check the following table, to see whether all the parts are included in the package :



2. Safety warnings and instructions

Improper use may result in potential electric shock hazards or burns. This manual contains important instructions that should be followed during installation and maintenance. Please read these instructions carefully before use and keep them for future reference.

2.1 Safety Symbols

Safety symbols used in this manual, which highlight potential safety risks and important safety information, are listed as follows:



Warning:

Warning symbol indicates important safety instructions, which if not correctly followed, could result in serious injury or death.



Shock Hazard:

Caution, risk of electric shock symbol indicates important safety instructions, which if not correctly followed, could result in electric shock.



Safety Hint:

Note symbol indicates important safety instructions, which if not correctly followed, could result in some damage or the destruction of the inverter.



High Temperature Hazard:

Caution, hot surface symbol indicates safety instructions, which if not correctly followed, could result in burns.

2.2 Safety instructions



Warning:

Electrical installation of the inverter must conform to the safety operation rules of the country or local area.



Warning:

Inverter adopts non-isolated topology structure, hence must insure DC input and AC output are electrical isolated before operating the inverter. Strictly prohibit grounding the positive and negative poles of the PV string. Otherwise it will damage the inverter.



Shock Hazard:

Prohibit disassembling inverter case, there existing shock hazard, which may cause serious injury or death, please ask qualified person to repair.



Shock Hazard:

When PV module is exposed to sunlight, the output will generate DC voltage. Prohibit touching to avoid shock hazard.



Shock Hazard:

While disconnect the input and output of the inverter for maintenance, please waits for at least 5 mins until the inverter discharge the remnant electricity.



High Temperature Hazard:

Local temperature of inverter may exceed 80°C while under operating. Please do not touch the inverter case.

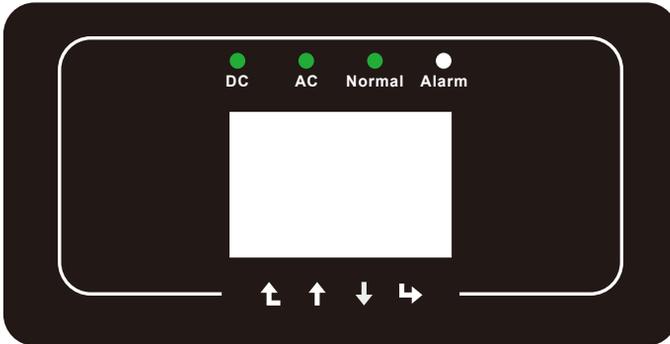
2.3 Notes for using

The three phase string power inverter is designed and tested under related safety regulations. It can ensure the personal safety of the user. But as a electric device, it may cause shock or injury by incorrect operation. Please operate the unit under below requirements:

1. Inverter should be installed and maintained by qualified person under local standard regulations.
2. Must disconnect the AC side first, then disconnect DC side while doing installation and maintenance, after that, please wait at least 5 mins to avoid getting shocked.
3. Local temperature of the inverter may exceed 60 °C while under operating. Do not touch to avoid getting injured.
4. All electrical installation must be in accord with local electrical standards, and after obtaining the permission of the local power supply department, the professionals can connect the inverter to the grid.
5. Please take appropriate anti-static measure.
6. Please install where children can not touch.
7. When starting the inverters, first close the circuit breaker at the grid side, then close the DC side; when closing the inverters, first disconnect the circuit breaker at the AC side, then disconnect the DC side.
8. Don't insert or remove AC and DC terminals when the inverter is in normal operation.
9. The DC input voltage of the inverter must not exceed the maximum value of the model.

3. Operation Interface

3.1 Interface View



Pic 3.1 Front panel display

3.2 Status Indicator

There are four LED status indicator lights in the front panel of the inverter. Please see table 3.1 for details.

Indicator	status	Explanation
● DC	on	Inverter detects DC input
	off	Low DC input voltage
● AC	on	Grid Connected
	off	Grid Unavailable
● NORMAL	on	Under normal operating
	off	Stop operating
● ALARM	on	Detected faults or report faults
	off	Under normal operating

Table 3.1 Status indicator lights

3.3 Buttons

There are four buttons on the inverter panel: Above is Up and increase button(UP), Below is down and decrease button(DOWN), Left is ESC button(ESC), Right is Enter button(ENTER). Achieving below functions by the four buttons:

- Page turning (use UP and DOWN button);
- Modify adjustable parameters (use ESC and ENTER button).



3.4 LCD Display

Three phase string inverter use 256*128 dot formation display, Display below content:

- Inverter operation status and information;
- Operating information
- Warning message and malfunction display.

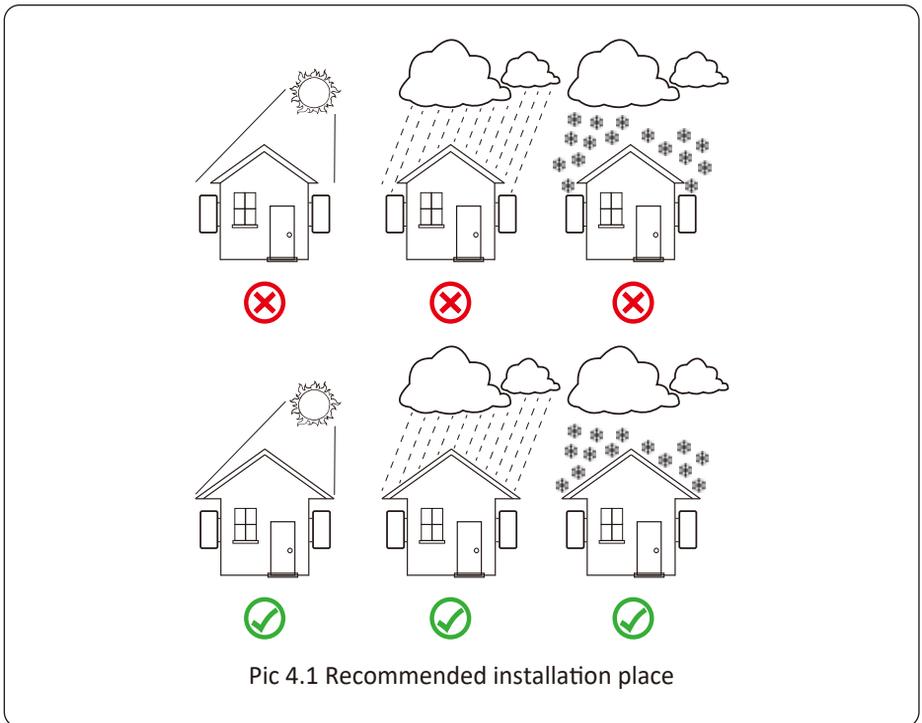
4. Product installation

4.1 Select installation location

To select a location for the inverter, the following criteria should be considered:

WARNING: Risk of fire

- Do not install the inverter in areas containing highly flammable materials or gases.
- Do not install the inverter in potentially explosive atmospheres.
- Do not install in small closed spaces where air can not circulate freely. To avoid overheating, always make sure the flow of air around the inverter is not blocked.
- Exposure to direct sunlight will increase the operational temperature of the inverter and may cause output power limiting. It is recommended that inverter installed to avoid direct sunlight or raining.
- To avoid overheating ambient air temperature must be considered when choosing the inverter installation location. It is recommended that using a sun shade minimizing direct sunlight when the ambient air temperature around the unit exceeds 100°F/40 C .

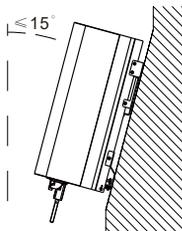
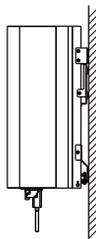
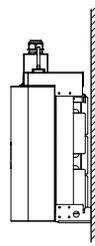
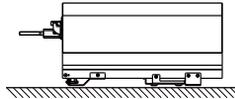
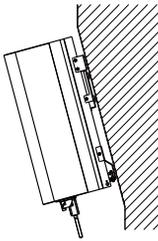


- Install on a wall or strong structure capable of bearing the weight.
- Install vertically with a maximum incline of $\pm 15^\circ$. If the mounted inverter is tilted to an angle greater than the maximum noted, heat dissipation can be inhibited, and may result in less than expected output power.
- If install more than one inverter, must leave at least 500mm gap between each inverter. And each inverter must be at least 500mm above and below. And must install the inverter at the place where children cannot touch. Please see picture 4.3.
- Consider whether the installation environment is helpful to see the inverter LCD display and indicator status clearly.
- Must offer a ventilate environment if inverter installed in the airtight house.

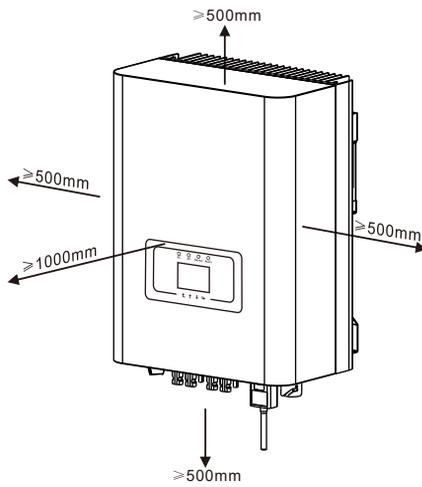


Safety Hint:

Do not place or store any items next to the inverter.



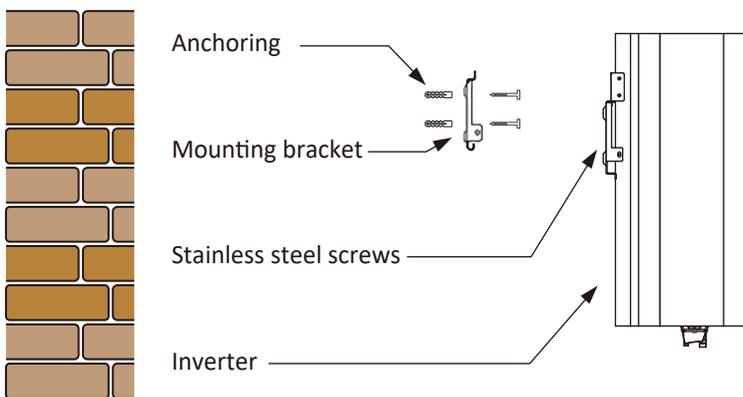
Pic 4.2 Installation Angle



Pic 4.3 Installation Gap

4.2 Inverter Installation

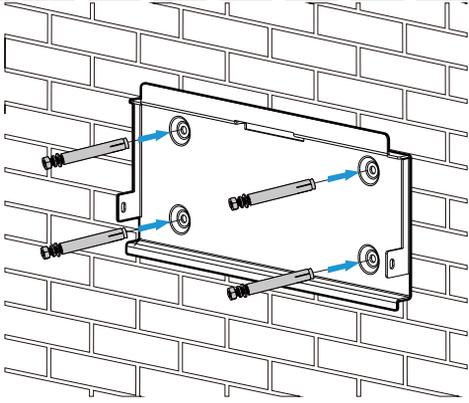
The inverter is designed according to the wall mounted type installation, please use the wall mounted (the brick wall of the expansion bolt) when installing.



Pic 4.4 Inverter Installation

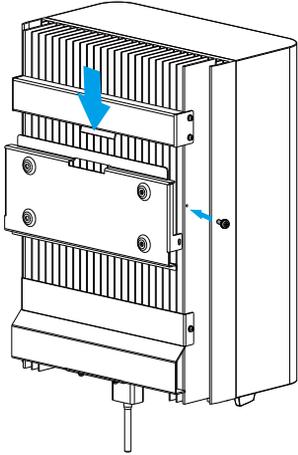
Procedure shows below:

1. Locate on the appropriate wall according to the bolt position on the mounting bracket, then mark the hole. On the brick wall, the installation must be suitable for the expansion bolt installation.



Pic 4.5 Inverter hanging plate installation

- 2. Ensure that the position of the installation holes on the wall is in accordance with the mounting plate, and the mounting rack is horizontally placed.
- 3. Hang the inverter to the top of the mounting rack and then use the M4 screw in the accessory to lock inverter heat sink to the hanging plate, to ensure that the inverter will not move.



Pic 4.6 Inverter installation

5 Electrical Connection

5.1 DC input terminal connection

1. Switch the Grid Supply Main Switch(AC)OFF.
2. Switch the DC Isolator OFF.
3. Assemble PV input connector to the inverter.



Safety Hint:

Please don't connect PV array positive or negative pole to the ground, it could cause serious damages to the inverter.



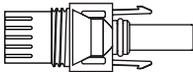
Safety Hint:

Before connection, please make sure the polarity of the output voltage of PV array matches the "DC+" and "DC-" symbols.

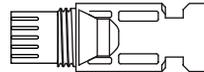


Safety Hint:

Before connecting inverter, please make sure the PV array open circuit voltage is within the **500V** of the inverter.



Pic 5.1 DC+connector (MC4)



Pic 5.2 DC-connector (MC4)



Safety Hint:

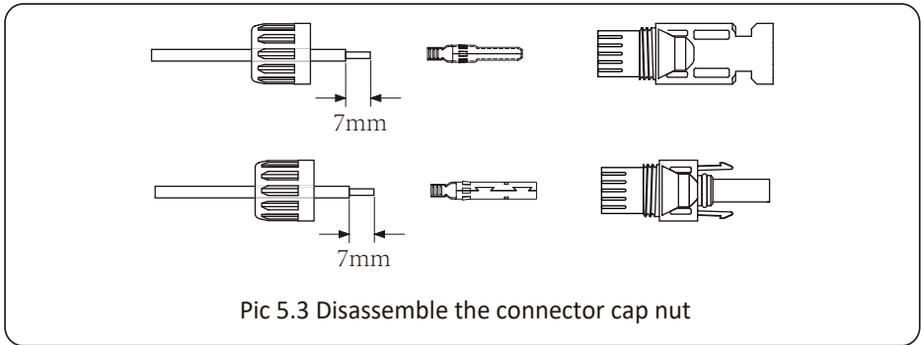
Please use approved DC cable for PV system.

Cable type	Cross section (mm ²)	
	Range	Recommended value
Industry generic PV cable (model: PV1-F)	4.0~6.0 (12~10AWG)	4.0(12AWG)

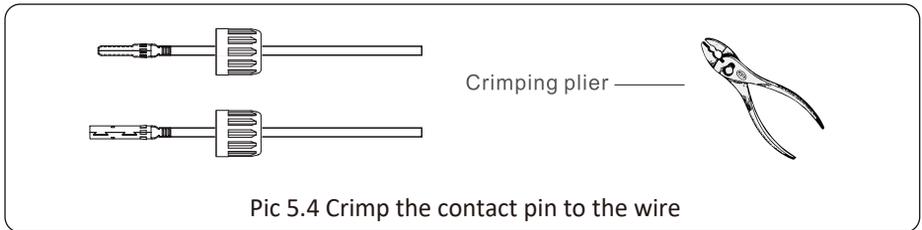
Table 5.1 DC Cable Specifications

The steps to assemble the DC connectors are listed as follows:

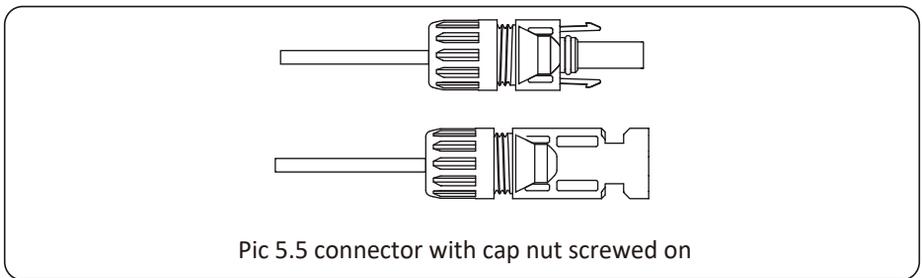
a) Strip off the DC wire about 7mm, disassemble the connector cap nut (see picture 5.3).



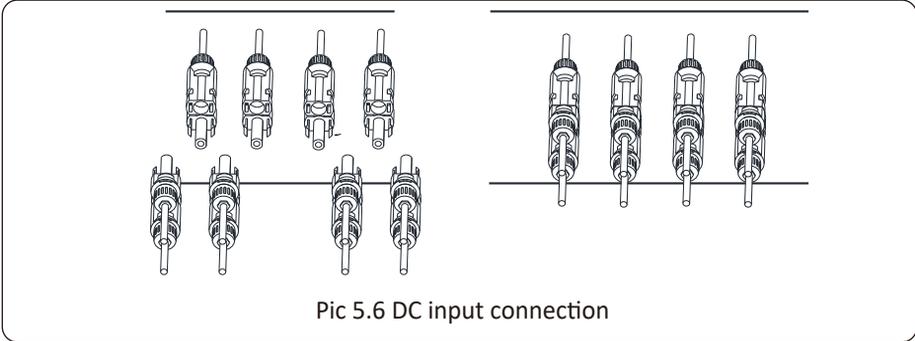
b) Crimping metal terminals with crimping pliers as shown in picture 5.4.



c) Insert the contact pin to the top part of the connector and screw up the cap nut to the top part of the connector. (as shown in picture 5.5).



d) Finally insert the DC connector into the positive and negative input of the inverter, shown as picture 5.6



Warning:

Sunlight shines on the panel will generate voltage, high voltage in series may cause danger to life. Therefore, before connecting the DC input line, the solar panel needs to be blocked by the opaque material and the DC switch should be 'OFF', otherwise, the high voltage of the inverter may lead to life-threatening conditions.

5.2 AC input terminal connection

Do not close the DC switch after the DC terminal is connected. Connect the AC terminal to the AC side of the inverter, the AC side is equipped with Three phase AC terminals that can be conveniently connected. Flexible cords are recommended for easy installation. The specifications are as shown in Table 5.2.



Warning:

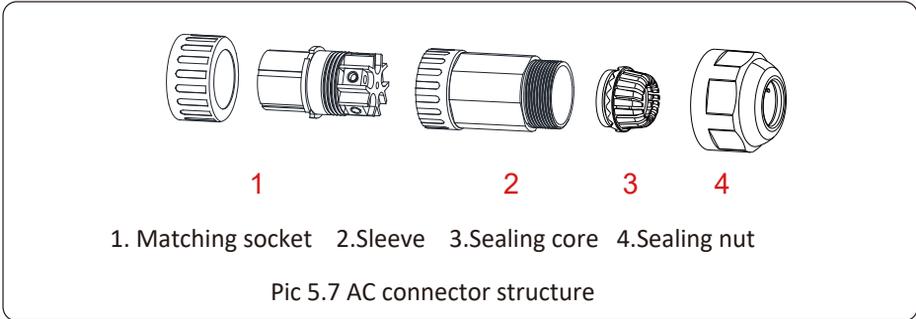
Prohibit using a single circuit breaker for multiple inverters, prohibit the connection of load between inverter circuit breakers.

Model	Cable CSA	Cable outer dia	AWG	Breaker	Max cable length
SUN-10K/12K/15K -G03-LV	10mm ²	15-18mm	8	50A/400V	Outside cable (3+N+PE)20m

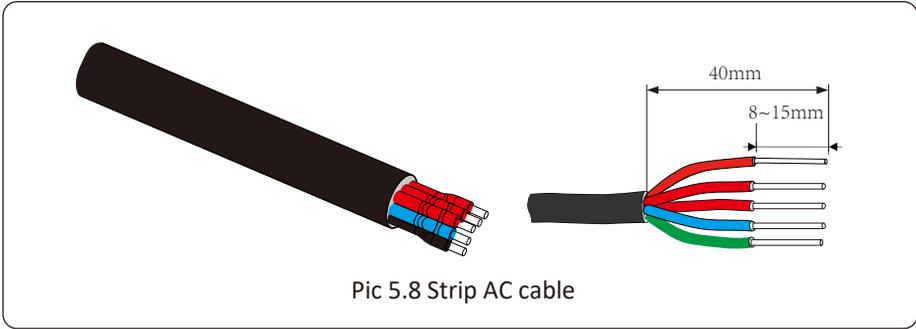
Table 5.2 Cable information

The AC output connector is divided into three parts: matching socket, sleeve and sealing-sleeve, as shown in picture 5.7, the steps are as follows:

- Step 1: Remove the cable sealing ring and sleeve in sequence from the AC connector.
- Step 2: Use strippers to strip the protective sheath and insulation layer of the AC cable to the right length, as shown in Picture 5.8.

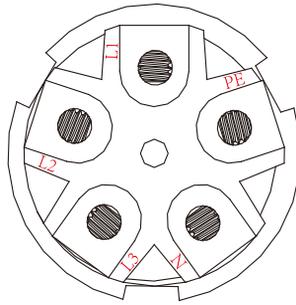


Step 3: Insert the cable (L1, L2, L3, N , PE) into the sealing sleeve.



Warning:
Be careful to distinguish the L1, L2,L3,N and PE of the AC cables.

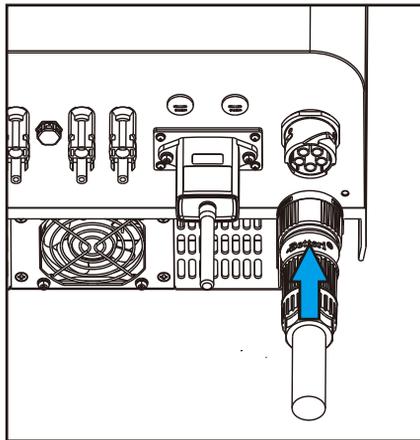
Step 4: Use the hexagon screwdriver, loosen the bolts of the socket in turn, and insert each cable core into the corresponding jack, and set each screw. The connection hole of AC connection terminal labeling is shown in Picture 5.9.



Pic 5.9 AC Connector Hole Pattern

Step 5 : Set the sleeve and sealing ring in place.

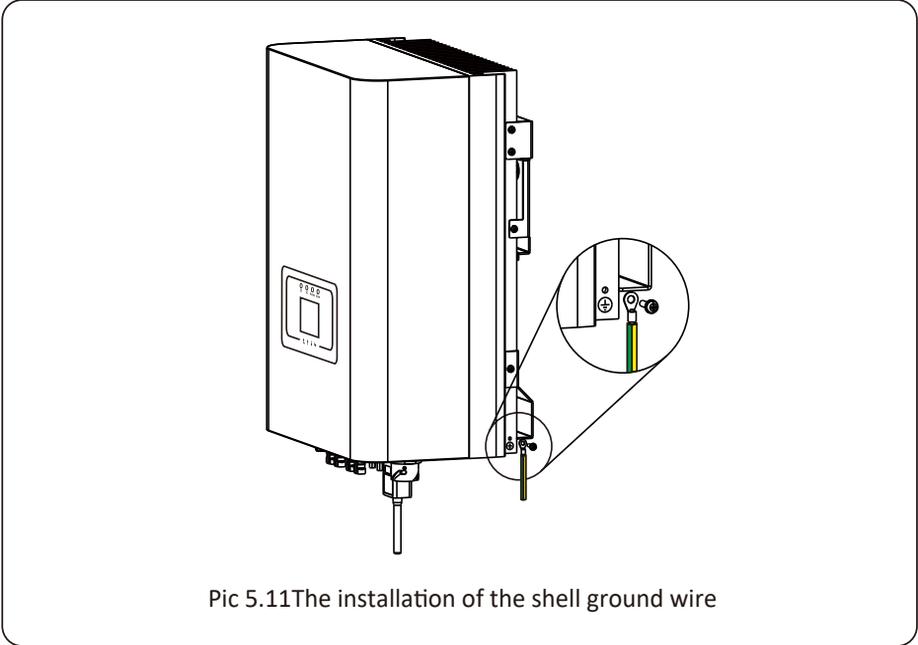
Step 6 :Connect the terminals to the inverter as shown in picture 5.10.



Pic 5.10 AC input connection

5.3 The connection of the ground line

Good grounding is good for resisting surge voltage shock and improving EMI performance. Therefore, before connecting AC, DC and communication cables, you need to ground the cable firstly. For a single system, just ground the PE cable. For multiple machine systems, all PE cables of the inverter need to be connected to the same grounding copper platoon to ensure the equipotential connection. The installation of the shell ground wire is shown as picture 5.11.



Warning:

Inverter has built-in leakage current detection circuit, If an external leakage current protection device is connected, its operating current must be greater than 300 mA or higher, otherwise inverter may not work properly.

5.4 Max. over current protection device

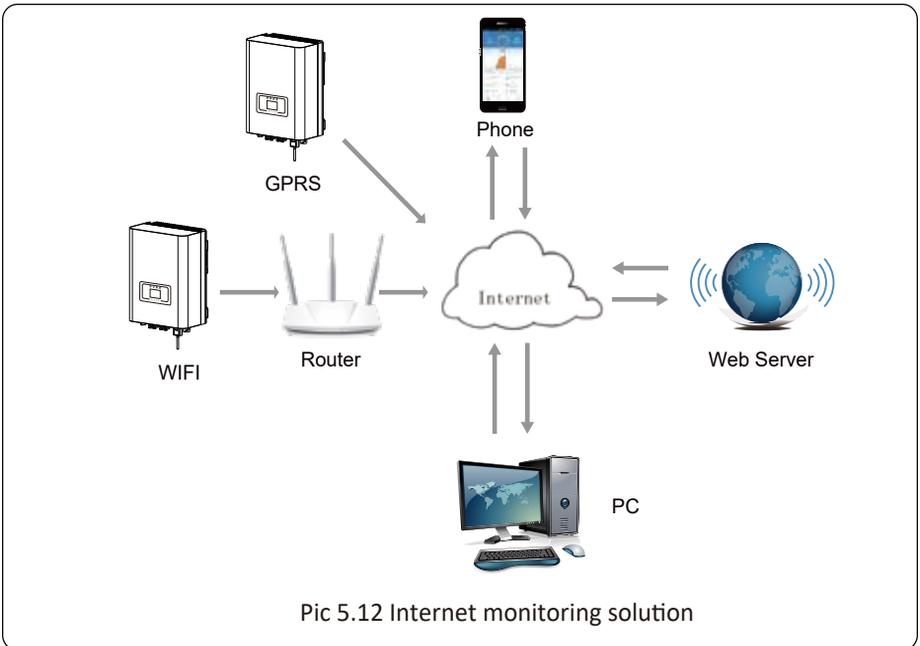
In order to protect the inverter AC connection, it is recommended to install a circuit breaker to prevent overcurrent. See table 5.3 below.

<i>Inverter</i>	<i>Rated output voltage(V)</i>	<i>Rated output current(A)</i>	<i>Current for protection device(A)</i>
SUN-10K-G03-LV	127	26.2	35
SUN-12K-G03-LV	127	31.5	40
SUN-15K-G03-LV	127	39.4	50

Table 5.3 Recommended current protector specifications

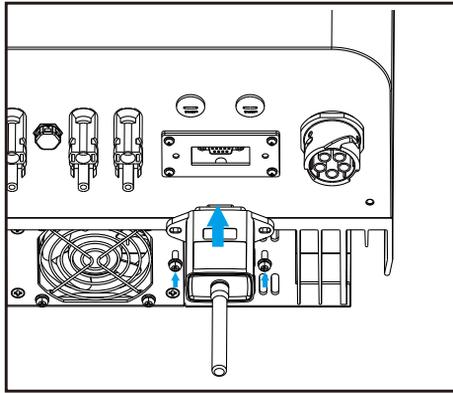
5.5 Inverter monitoring connection

Inverter has the function of wireless remote monitoring. The inverter with Wi-Fi function is equipped with Wi-Fi Plug to connect the inverter and network. Wi-Fi Plug's operation, installation, Internet access, APP downloading and other processes are detailed in the instructions.



5.6 Installation of Wi-Fi Plug

When the inverter is out of the factory, the installation location of WiFi plug is sealed by a sealed plate as shown in Picture 5.13. When installing the WiFi Plug, remove the sealing plate, replace it with the sealing plate with square hole in the accessories, and tighten the screws. Insert the WiFi Plug into the interface and fix it with a screw. The configuration of the WiFi Plug needs to be performed after various electrical connections have been completed and the inverter DC power on. When the inverter is on the DC power, it is determined whether the WiFi Plug is normally electrified (The LED light shines out of the shell).



Pic 5.13 Wifi Plug installation diagram

5.7 Configuration of Wi-Fi Plug

For the configuration of Wi-Fi Plug, please refer to illustrations of the Wi-Fi Plug.

6. Startup and Shutdown

Before starting the inverter, make sure that the inverter can meet the following conditions, otherwise it may result in fire or damage to the inverter. In this case, we do not undertake any responsibility. At the same time, to optimize the system configuration, it is recommended that the two inputs be connected to the same number of photovoltaic modules.

- a). The maximum open voltage of each set of photovoltaic modules shall not exceed 800Vdc under any conditions.
- b). Each input of the inverter better use the same type of photovoltaic module in series.
- c). Total output power of pv shall not exceed the maximum input power of inverter, each photovoltaic modules shall not exceed the rated power of each channel.

6.1 Start up the inverter

When start up the three phase string inverter, should follow below steps:

1. First switch on the AC breaker.
2. Turn on the DC switch of the photovoltaic module, and if the panel provides sufficient starting voltage and power, the inverter will start.
3. When the ac voltage and DC voltage are normal, the inverter start-up is ready to begin. The inverter will first check the internal parameters and the grid parameters, while the liquid crystal will show that the inverter is self-checking.
4. If the parameter is within acceptable range, the inverter will generate energy. NORMAL indicator light is on.

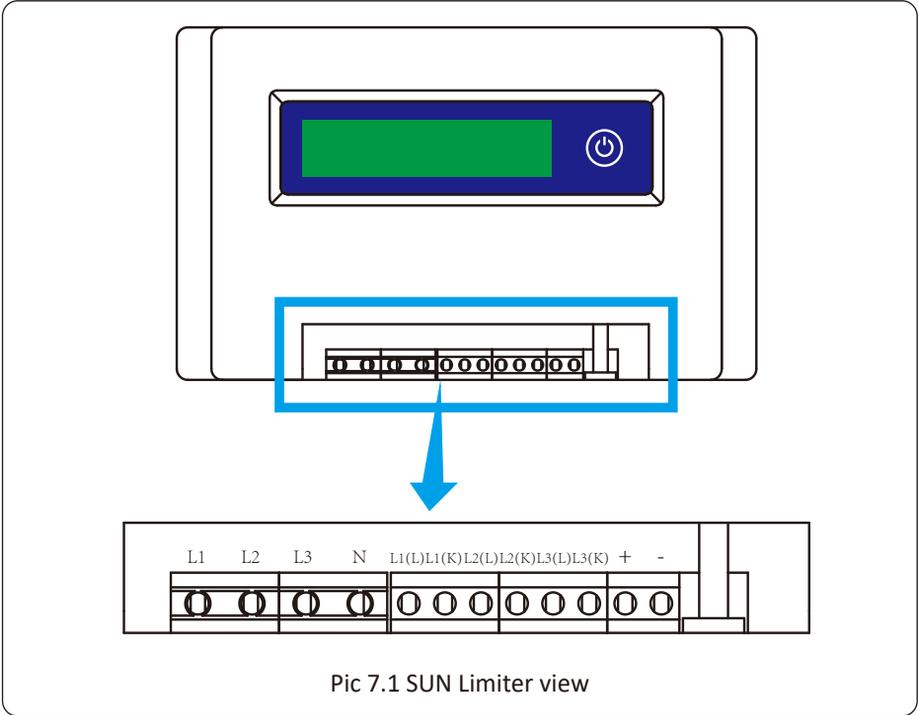
6.2 Inverter Shutdown

Must follow below steps while shutting down the inverter:

1. Switch off the AC breaker.
2. Wait for 30 seconds, turn off the DC switch (if any), or simply disconnect the DC input connector. The inverter will close the LCD and all LED within two minutes.

7 Zero export function via SUN limiter

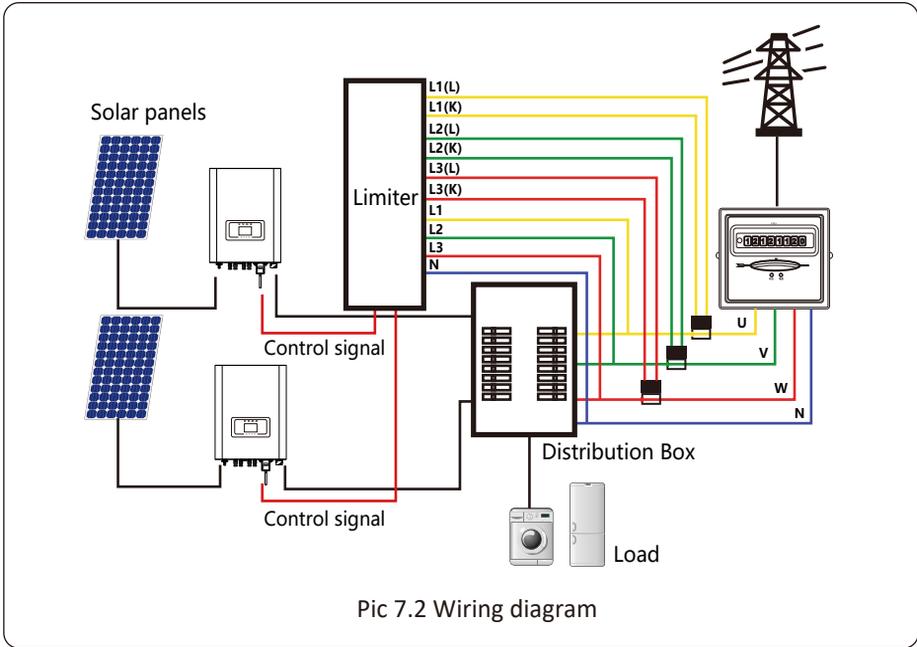
The inverter has external zero export function. This function is optional. It can collect counter-current power to control the output power of the inverter, so that the power of inverter and load can be offset, and the excess power will not be fed back to the grid. If you purchase the inverter with zero export function, an external zero export device (SUN limiter or energy meter) will be included in the package which is necessary for the function. The SUN limiter shows as Pic 7.1. You can see corresponding line mark next to the green interface. The green terminals on the left are the interface of three-phase AC line (L1, L2, L3) and N Line (N), and the right are the interface between three sets of current sensor and one set of control terminals. SUN limiter will collect voltage and current from these interfaces and send control signals to the inverter.



7.1 SUN Limiter function wiring diagram

When you are reading this, we believe that you have completed the connection according to the requirements of chapter 5, if you have been running your inverter, and you want to use the limiter function, please turn off AC and DC switch of the inverter, and wait for 5 minutes until the inverter completely discharged. In order to make it easier for you to use the limiter function, we have specifically given the wiring diagram, as shown in Picture 7.2, the red lines connected to the utility grid called wire (L), blue line shows the zero line (N), yellow green line shows the ground wire (PE).

We recommend installing an AC switch between the inverter outlet and the utility grid, the specs of the AC switch is determined by the load capacity. The AC switch we recommend to connect to the inverter output refer to Table 5.2.

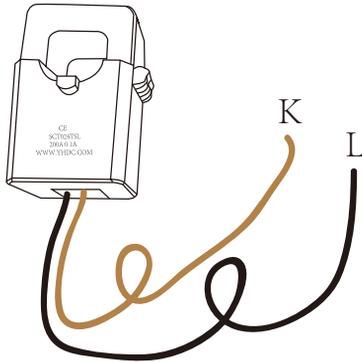


Pic 7.2 Wiring diagram

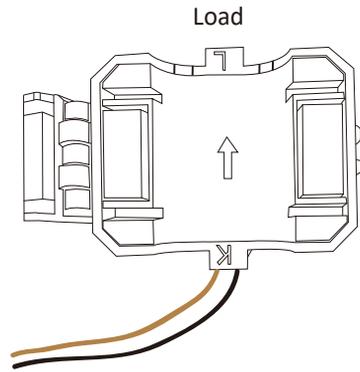
7.2 Connect the SUN limiter to inverter

The SUN limiter will measure the voltage and current of three phases separately, and this manual only introduces the installation steps of one phase, the other two phases are the same. The specific installation steps are as follows:

- (1) Connect SUN limiter to the grid. Connected to the grid is to measure the voltage of grid. Before connect to the grid, please turn off the switch to avoid the risk of electric shock. Choose one wire from the bottom of the three-phase DC switch. (any phase of U,V,W) to connect with L1 terminal, then tighten the line with a screwdriver.
- (2) Connect SUN limiter to clamp sensor. Clamp sensor can measure the current of the AC side, it should be connected to the front side of the load (domestic appliance ect.) to achieve this function. Only when the SUN limiter collects the voltage and current of the same phase can it judge the power of the phase. So the clamp sensor should be connected to the same phase as the before. Open the side buckle of the clamp sensor, then clamp the sensor to the AC line on the DC switch, the arrow direction on the sensor should towards that of the load. The clamp sensor has two lines (shown as below), and the white line corresponds to K terminal, black line corresponds to L terminal. Connect the white line to the L1(L) and L1(K) terminal refer to the line mark of the SUN limiter and tighten the line with screwdriver. This is the whole installation process of one phase.



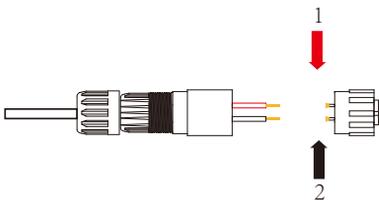
Pic 7.3 Clamp Sensor



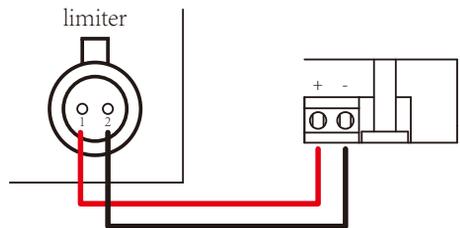
Pic 7.4 Clamp Sensor internal arrow

(3) After you finish the installation in process 1 and 2, connect the N line (N) to the N terminal of the limiter and tighten the line.

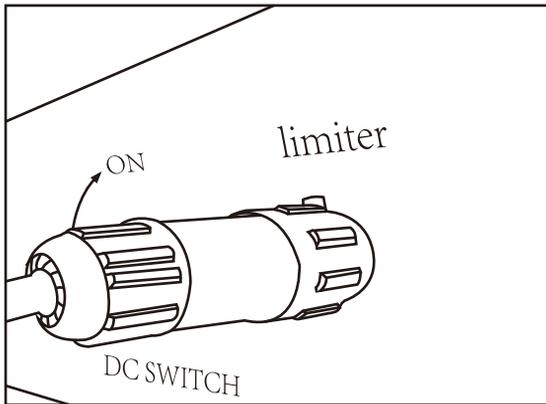
(4) Connect the control line. There are two numbers 1 and 2 on the interface of SUN limiter, and the same on the waterproof terminal of the inverter. Twist the waterproof terminal and connect the red line to number 1 and black line to number 2 shown as the picture. After that connect the terminal to the interface of the SUN limiter. The other side of the line should be connected to the control terminal.



Pic 7.5 Waterproof terminal



Pic 7.6 Connect limiter to inverter



Pic 7.7 Connect terminal to inverter

7.3 Debugging SUN Limiter

Turn on the anti-backflow function of the inverter refer to the manual, then turn on the SUN limiter's power supply, next close the DC switch, and last turn on the inverter.

MENU» Setup» Run Param			
ActiveP	100%	Island	OFF
ReactiveP	0.0%	Meter	OFF
PF	1.000	Limiter	ON
Fun_ISO	OFF	E_Coef	0.00
Fun_RCD	OFF	Meter_CT	0
SelfCheck	10S	MPPT Num	2
	OK		Cancel

Pic 7.8 Zero-export function via SUN limiter setting interface

Press the button of the SUN limiter to the setting interface. Long press the button to switch the anti-backflow mode. SUN limiter has two anti-backflow modes, the minimum mode and the average mode. In the minimum mode, SUN limiter will control the power of the inverter according to the phase with the lowest power to ensure that no reverse current will occur in each phase. In average mode, SUN limiter controls the output of the inverter according to the average of the total power of the three-phase load, which may cause single backflow. The controller is produced in the minimum mode to ensure no anti-backflow happens to the customers.

7.4 Zero-export function (Option)

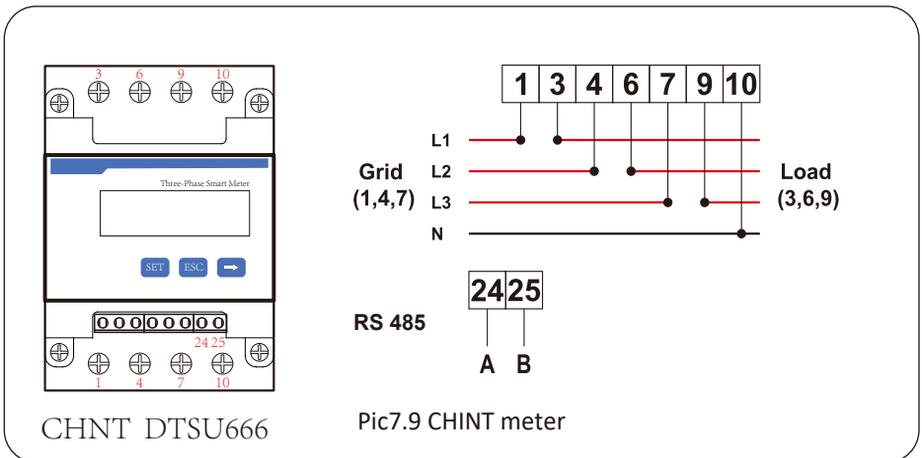
The string inverter supports zero-export function via Energy meter / SUN-Limiter. Based on continuously data communication, once the Limiter or energy meter detects power export to the grid, it will send the information to the inverter and then inverter can instruct the inverter to ramp down its active power according to the load demand and achieve zero export. The Zero-export function is optional. If you buy the inverter with zero-export function via energy meter, energy meter will be included in the package which is necessary for zero-export function.

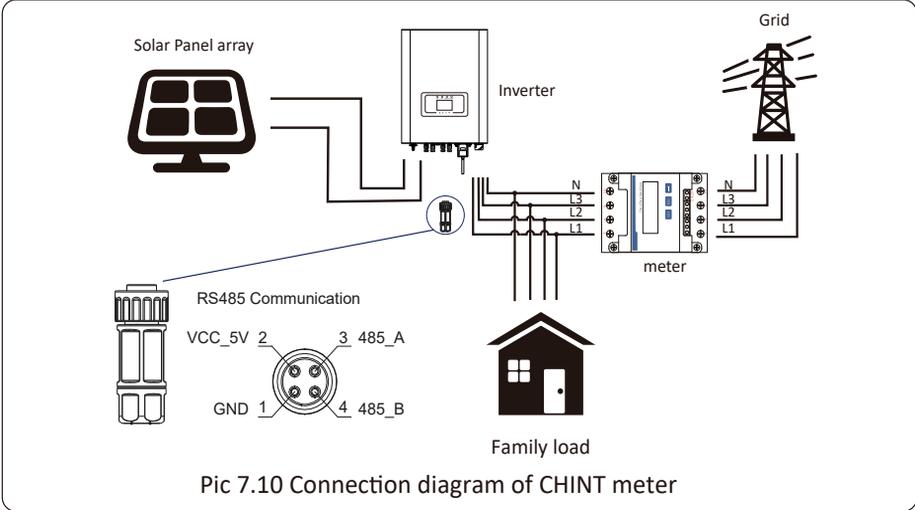
7.4.1 Zero-export function via energy meter

When you are reading this, we believe that you have completed the connection according to the requirements of chapter 5, if you have been running your inverter at this time, and you want to use the zero-export function, please turn off AC and DC switch of the inverter, and wait for 5 minutes until the inverter completely discharged. Please follow below Picture 7.9 to connect the energy meter.

For system wiring diagram, the red line refers to L line (L1, L2, L3), the black line refers to the neutral line (N). Connecting energy meter RS485 cable to inverter's RS485 port. It's recommended to install an AC switch between the inverter and the utility grid, the specs of the AC switch are determined by the power of load.

If there is no integrated DC switch inside the inverter you purchased, we commend you to connect the DC switch. The voltage and current of the switch depend on the PV array you access.





 **Warning:**
 Ensuring grid input cables connect 1/4/7/10 port of energy meter, and inverter AC output cables connect 3/6/9/10 port of energy meter when connecting.

7.4.2 Debugging energy meter

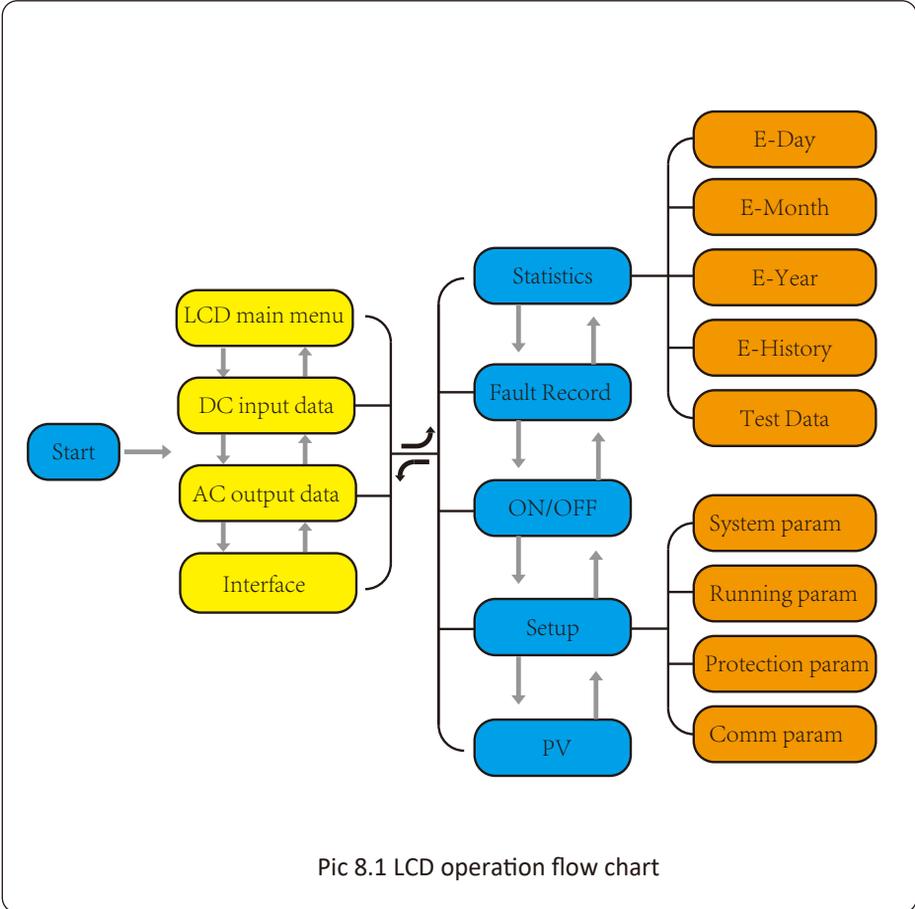
Turn on the anti-backflow function of the inverter refer to the manual, next close the DC switch, and last turn on the inverter.

MENU» Setup» Run Param			
ActiveP	100%	Island	OFF
ReactiveP	0.0%	Meter	ON
PF	1.000	Limiter	OFF
Fun_ISO	OFF	E_Coef	0.00
Fun_RCD	OFF	Meter_CT	0
SelfCheck	10S	MPPT Num	2
OK	Cancel		

Pic 7.8 Zero-export function via energy meter

8. General Operation

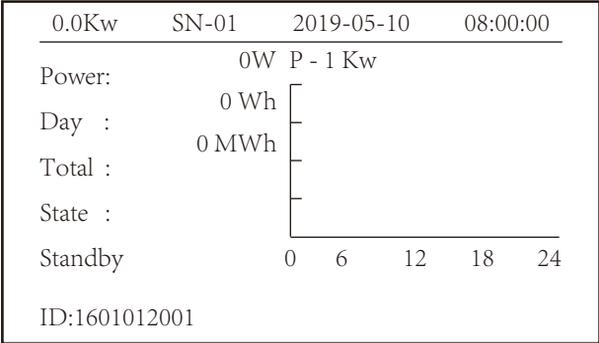
During normal operation, the LCD shows the current status of the inverter, including the current power, total generation, a bar chart of power operation and inverter ID, etc. Press the Up key and the Down key to see the current DC voltage, DC current, AC voltage, AC current, inverter radiator temperature, software version number and Wifi connection state of the inverter.



Pic 8.1 LCD operation flow chart

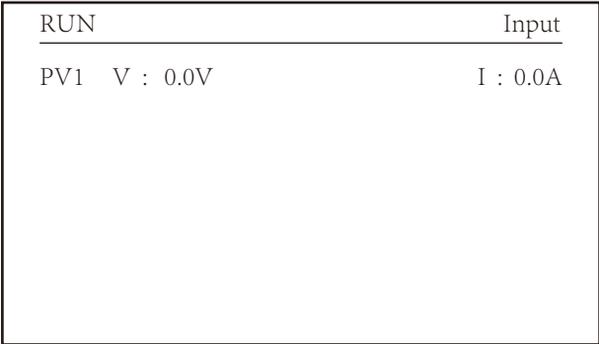
8.1 The initial interface

From the initial interface, you can check the current working state and product current power, today's power generation, total power generation of inverter. And can view today's power generation trend, the ID number of the inverter and the current power model of the inverter through the graph.



Pic 8.1 The initial interface

Press UP or Down you can check inverter DC voltage, DC current, AC voltage, AC current, inverter temperature, software version information.



Pic 8.2 PV input and DC current information

You can check the PV information, the number of strings input, MPPT voltage and MPPT current.

RUN	Grid
Ua : 134.5V	Ia : 0.0A
Grid Freq : 60.00Hz	

Pic 8.3 AC running state information

You can check the three phase voltage, current, and grid frequency.

RUN	
Ver :	0166
Ver :	1860

Pic 8.4 Inverter firmware version

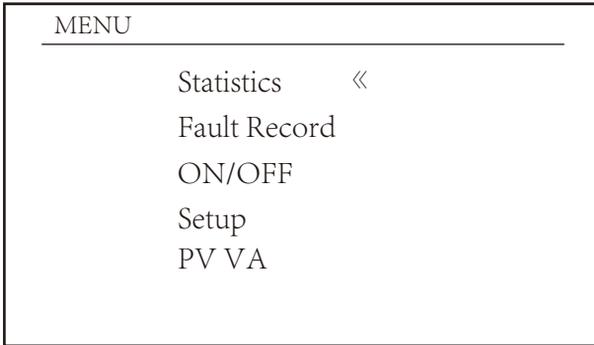
You can check the inverter LCD software Ver0166 and Control Software Version Ver1860. There are two black spot in the bottom right corner. The first flash means inverter is communicating with LCD. The second flash means LCD is communicating with wifi plug.

PARAMETR	Meter
	SN: 0
Meter Power:	0W
Load Power:	0W
Day	Total
ImpEp : 0.00kWh	0.00kWh
ExpEp : 0.00kWh	0.00kWh
LoadEp : 0.00kWh	0.00kWh

Pic 8.5 Meter power and load power

8.1.1 Main Menu

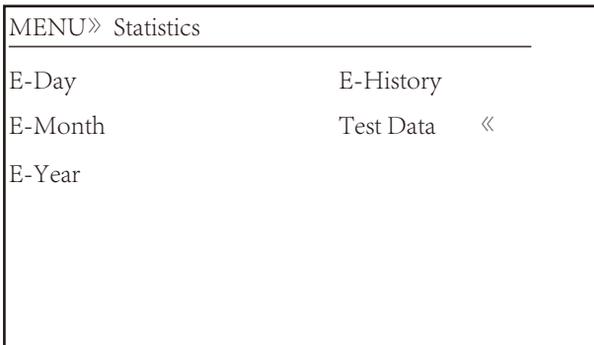
There are four sub menu in the Main Menu.



Pic 8.5 Main Menu

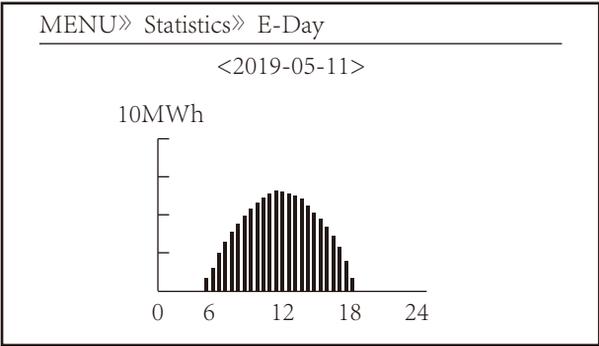
8.2 Statistics information

There are five sub menu in the statistics.

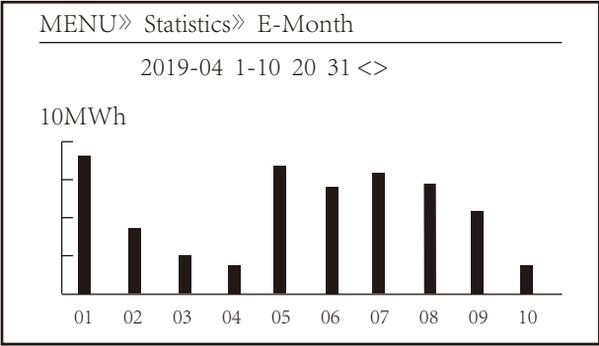


Pic 8.6 PV input and DC current information

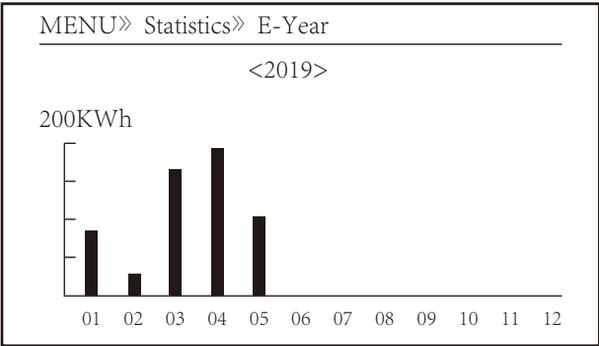
Into each submenu through cursor.



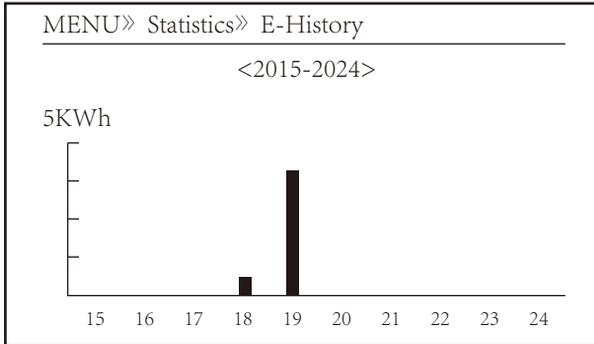
Pic 8.7 E-Day



Pic 8.8 E-Month



Pic 8.9 E-Year



Pic 8.10 E-History

This information is for technician's reference.

PV1 :	19186	1k3 :	11126	ofC :	2057
PV2 :	19198	1k4 :	11140	137 :	2145
HV :	19152	1k5 :	16666	138 :	2248
GFD :	9119	1k6 :	2927	139 :	1497
DiL :	36	vHV :	24362	140 :	0
AVL :	-2	BSn :	12218		
126 :	287	ofA :	2065		
1k2 :	6	ofB :	2653		

Pic 8.11 Test Data

8.3 Fault Record

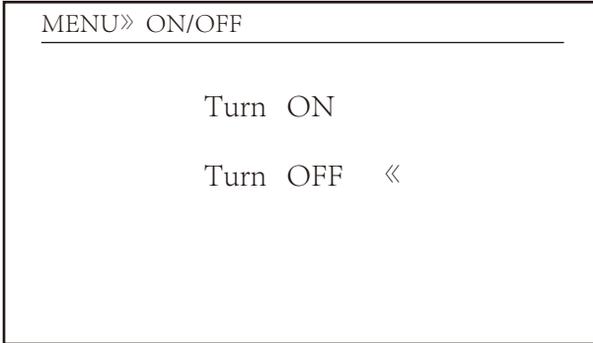
Only can keep four fault record in the menu include time, customer can deal with it depends on the error code.

MENU» Fault Record

Fault :	F352019-05-05 08:38
History :	1 F352019-05-05 08:37
	2 F352019-04-24 18:47
	3 F352019-04-24 17:54
	4 F352019-04-24 17:53

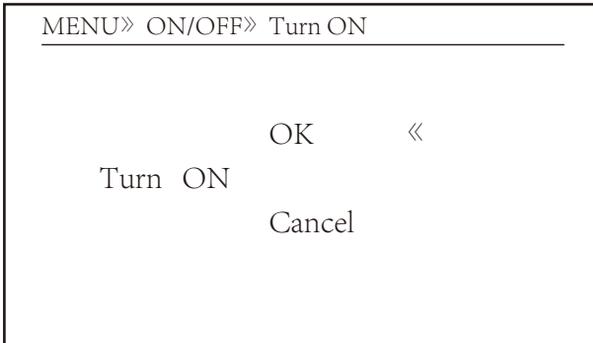
Pic 8.12 Fault Record

8.4 ON/OFF setting

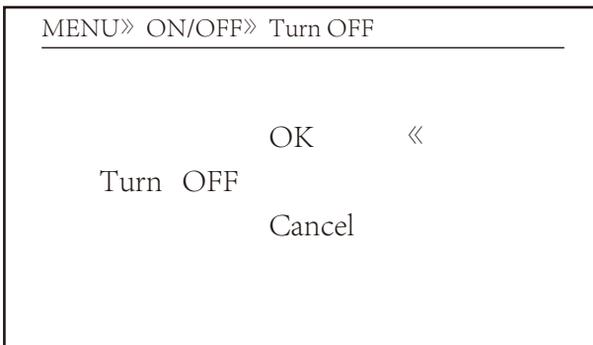


Pic 8.13 ON/OFF setting

Into each submenu through cursor.



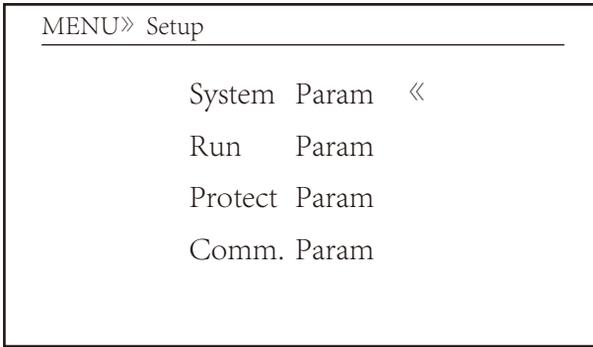
Pic 8.14 ON set



Pic 8.15 OFF set

8.5 Parameter setting

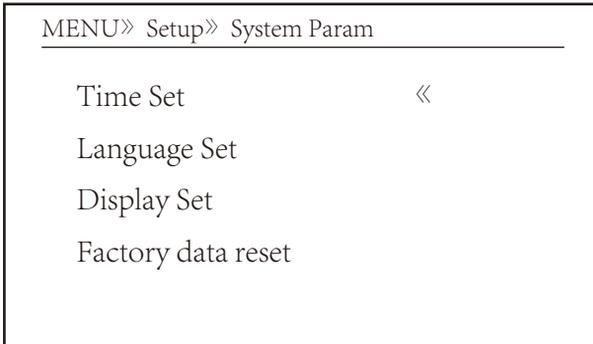
Setting include system param, run param, protect param, comm.. param. All of these information for maintenance reference.



Pic 8.16 setting

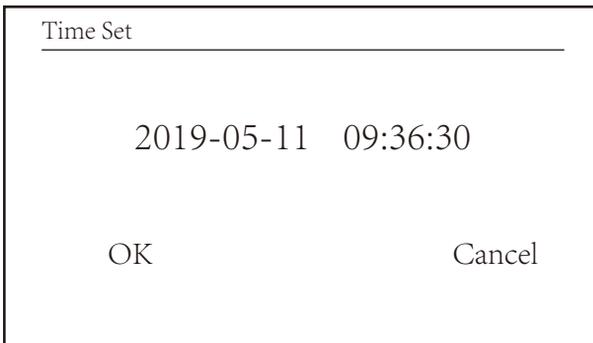
8.5.1 System Param

System Param includes time set, language set, display set and factory date reset.



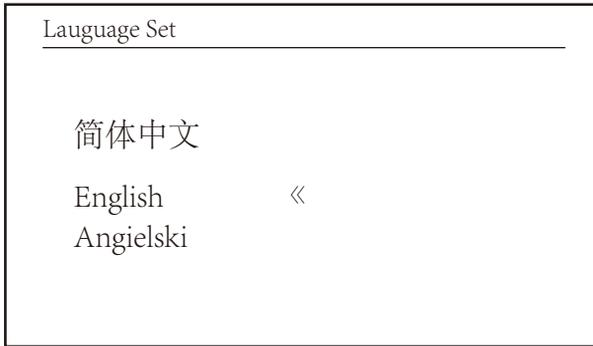
Pic 8.17 System Param

8.5.1.1 Time set



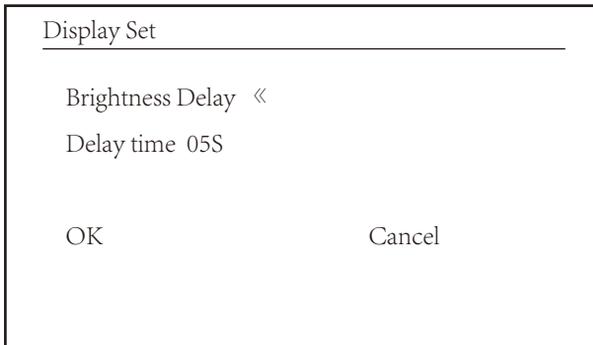
Pic 8.18 System Param

8.5.1.2 Language set



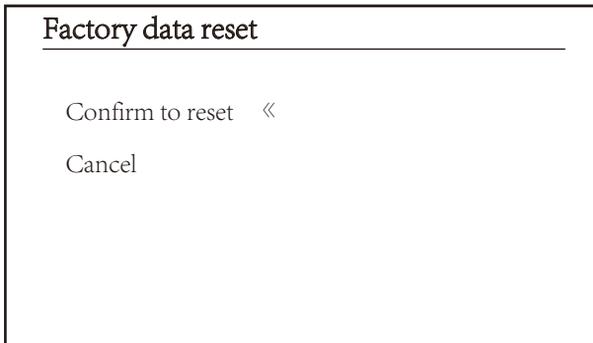
Pic 8.19 language set

8.5.1.3 Display Set



Pic 8.20 Display set

8.5.1.4 Factory data reset



Pic 8.21 Factory data reset set

8.5.2 Running Param



Note:

Password required-- only for access-authorized engineer. Un-authorized access may avoid the warranty. The initial password is 1234.



Pic 8.22 Password

MENU» Setup» Run Param			
ActiveP	100%	Island	ON
ReactiveP	0.0%	Meter	OFF
PF	1.000	Limiter	OFF
Fun_ISO	ON	E_Coef	0.00
Fun_RCD	ON	Meter_CT	0
SelfCheck	10S	MPPT Num	2
	OK		Cancel

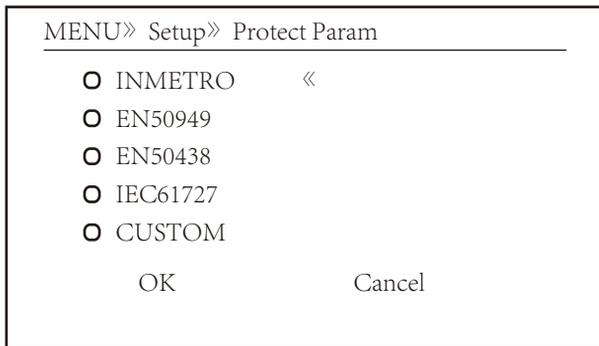
Pic 8.23 Running Param



Note:

Engineer Only.

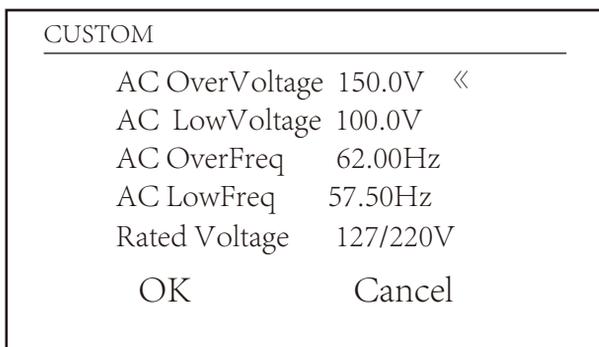
We will set the param depends on the safety requirements, so customers don't need to reset it. The password is same as 8.4 Running param



Pic 8.24 Protect Param

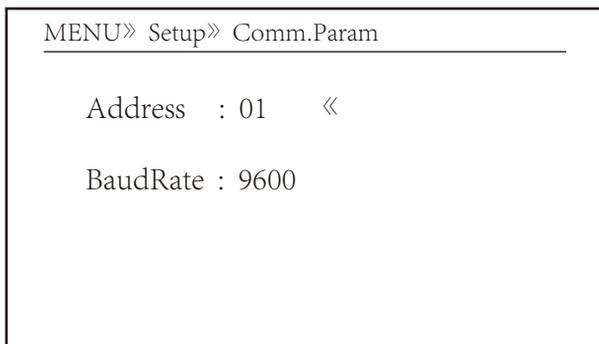


Note:
Engineer only.



Pic 8.25 "CUSTOM"

8.5.4 Comm. Param



Pic 8.26 Communication param

9. Repair and Maintenance

String type inverter doesn't need regular maintenance. However, debris or dust will affect heat sink's thermal performance. It is better to clean it with a soft brush. If the surface is too dirty and affect the reading of LCD and LED lamp, you can use wet cloth to clean it up.



Warning:

When the device is running, the local temperature is too high and the touch can cause burns. Turn off the inverter and wait for it cooling, then you can clean and maintain.



Warning:

No solvent, abrasive materials or corrosive materials can be used for cleaning any parts of the inverter.

10. Error information and processing

Inverter has been designed in accordance with international grid tied standards for safety, and electromagnetic compatibility requirements. Before delivering to the customer the inverter has been subjected to several tests to ensure its optimal operation and reliability.

10.1 Error code

If there is any failure, the LCD screen will display an alarm message. In this case, the inverter may stop feeding energy into the grid. The alarm description and their corresponding alarm messages are listed Table 10.1.

Error code	Description	Ongrid - Three Phase (LV Model)
F01	DC input polarity reverse fault	Check the PV in put polarity.
F02	DC insulation impedance permanent fault	Check the grounding cable of inverter.
F03	DC leakage current fault	Hardly appear the code. Never ever happened so far.
F04	Ground fault GFDI	Check the solar panel output connection.
F05	Read the memory error	Failure in reading memory (EEPROM). Restart the inverter if the fault still exists, contact your installer or Deye service.
F06	Write the memory error	Failure in writing memory (EEPROM). Restart the inverter if the fault still exists, contact your installer or Deye service.
F07	GFDI blown fuse	Hardly appear the code. Never ever happened so far.
F08	GFDI grounding touch failure	Hardly appear the code. Never ever happened so far.
F09	IGBT damaged by excessive drop voltage	Hardly appear the code. Never ever happened so far.
F10	Auxiliary switch power supply failure	1. It tells the DC 12V is not existed. 2. Restart the inverter, if the fault still exists, please contact your installer.
F11	AC main contactor errors	Hardly appear the code. Never ever happened so far.
F12	AC auxiliary contactor errors	Hardly appear the code. Never ever happened so far.
F13	Working mode changed/Grid mode changed	1. Lost of one phase or AC voltage detection circuit or relays not closed (old inverter not have relays detection function). 2. Restart the inverter, if the error still exists, please contact your installer or Deye service.
F14	DC firmware over current	Hardly appear the code. Never ever happened so far.
F15	AC firmware over current	1. The internal AC sensor or detection circuit on control board or connection wire may loose. 2. Restart the inverter, if the error still exists, please contact your installer or Deye service.
F16	GFCI(RCD) Ac leakage current fault	1. This fault means the average leakage current is over 300mA. Check whether DC power supply or solar panels is ok, then check 'Test data'-> 'dil' value is about 40; Then check the leakage current sensor or circuit(the following picture). Checking test data needs using big LCD. 2. Restart the inverter, if the error still exists, please contact your installer or Deye service.
F17	Three phase current, over-current fault	Hardly appear the code. Never ever happened so far.
F18	AC over current fault of hardware	1. Check AC sensor or detection circuit on control board or connection wire. 2. Restart the inverter or factory reset, if the error still exists, please contact your installer or Deye service.
F19	All hardware failure synthesis	Hardly appear the code. Never ever happened so far.
F20	DC over current fault of the hardware	1. Check whether solar panel output current is within the allowed range. 2. Check DC current sensor and its detection circuit. 3. Check if the inverter FW version is suitable for the hardware. 4. Restart the inverter, if the error still exists, please contact your installer or Deye service.

Error code	Description	Ongrid - Three Phase (LV Model)
F21	DC leakage flow fault	Hardly appear the code. Never ever happened so far.
F22	Crash stop (if there is a stop button)	Contact your installer for help.
F23	AC leakage current is transient over current	<ol style="list-style-type: none"> 1. This fault means the leakage current is above 30mA suddenly. Check whether DC power supply or solar panels is ok, then check 'Test data'-> 'dil' value is about 40; Then check the leakage current sensor or circuit. Check test data needs using big LCD. 2. Restart the inverter, if the fault still exists, contact your installer or Deye service.
F24	DC insulation impedance failure	<ol style="list-style-type: none"> 1. Check Vpe resistance on main board or detection on control board. Check PV panels is OK. Many times this issue is the PV problem. 2. Check whether the PV panel (aluminum frame) is grounded well and inverter is grounded well. Open the cover of inverter and then check the inside ground cable is fixed well on the shell. 3. Check if the AC/DC cable, terminal block are shorted to ground or the insulation is damaged. 4. Restart the inverter, if the fault still exists, contact your installer or Deye service.
F25	DC feedback fault	Hardly appear the code. Never ever happened so far.
F26	The DC busbar is unbalanced	<ol style="list-style-type: none"> 1. Check whether the 'BUSN' cable or driver board power supply cable is loose. 2. Restart the inverter, if the fault still exists, contact your installer or Deye service.
F27	DC end insulation error	Hardly appear the code. Never ever happened so far.
F28	Inverter 1 DC high fault	Hardly appear the code. Never ever happened so far.
F29	AC load switch failure	Hardly appear the code. Never ever happened so far.
F30	AC main contactor failure	<ol style="list-style-type: none"> 1. Check relays and AC voltage of relays. 2. Check relays driver circuit. Check if the software is not suitable for this inverter. (Old inverter not have relays detection function) 3. Restart the inverter, if the fault still exists, contact your installer or Deye service.
F31	Dc boost soft start	<ol style="list-style-type: none"> 1. At least one Relay can't be closed. Check relays and its driver signal. (Old inverter not have relays detection function) 2. Restart the inverter, if the fault still exists, contact your installer or Deye service.
F32	Inverter 2 dc high fault	Hardly appear the code. Never ever happened so far.
F33	AC over current	Hardly appear the code. Never ever happened so far.
F34	AC current over load	Hardly appear the code. Never ever happened so far.
F35	No AC grid	<ol style="list-style-type: none"> 1. Check AC grid voltage. Check AC voltage detection circuit. Check if the AC connector in good condition. Check whether the AC grid is normal in voltage. 2. Restart the inverter, if the fault still exists, contact your installer or Deye service.
F36	AC grid phase error	Hardly appear the code. Never ever happened so far.
F37	AC three-phase voltage unbalance failure	Hardly appear the code. Never ever happened so far.
F38	AC three-phase current unbalance failure	Hardly appear the code. Never ever happened so far.

Error code	Description	Ongrid - Three Phase (LV Model)
F39	AC over current(one cycle)	1. Check AC current sensor and its circuit. 2. Restart the inverter, if the fault still exists, contact your installer or Deye service.
F40	DC over current	Hardly appear the code. Never ever happened so far.
F41	AC Line W,U over voltage	Check the AC voltage protection setting. And Check if the AC cable is too thin.Check the voltage difference between LCD and meter.
F42	AC Line W,U low voltage	Check the AC voltage protection setting. Check the voltage difference between LCD and meter. Also need to check whether AC cables are all firmly and correctly connected.
F43	AC Line V,W over voltage	Check the AC voltage protection setting.And Check if the AC cable is too thin.Check the voltage difference between LCD and meter.
F44	AC Line V,W low voltage	Check the AC voltage protection setting. Check the voltage difference between LCD and meter. Also need to check whether AC cables are all firmly and correctly connected.
F45	AC Line U,V over voltage	Check the AC voltage protection setting.And Check if the AC cable is too thin.Check the voltage difference between LCD and meter.
F46	AC Line U,V low voltage	Check the AC voltage protection setting.
F47	AC Over frequency	Check the frequency protection setting.
F48	AC lower frequency	Check the frequency protection setting.
F49	U phase grid current DC component over current	Hardly appear the code. Never ever happened so far.
F50	V phase grid current DC component over current	Hardly appear the code. Never ever happened so far.
F51	W phase grid current DC component over current	Hardly appear the code. Never ever happened so far.
F52	AC inductor A, phase current DC current high	Hardly appear the code. Never ever happened so far.
F53	AC inductor B, phase current DC current high	Hardly appear the code. Never ever happened so far.
F54	AC inductor C, phase current DC current high	Hardly appear the code. Never ever happened so far.
F55	DC busbar voltage is too high	1. Check PV voltage and Ubus voltage and its detection circuit. If the PV input voltage exceeds the limit, please reduce the number of solar panels in series. 2. For Ubus voltage, please check the LCD display.
F56	DC busbar voltage is too low	1. It tells the PV input voltage is low and it always happens in the early morning. 2. Check PV voltage and Ubus voltage. When inverter is running, then showing F56, maybe Loss of driver or need update firmware. 3. Restart the inverter, if the fault still exists, contact your installer or Deye service.
F57	AC reverse irrigation	AC reverse irrigation.
F58	AC grid U over current	Hardly appear the code. Never ever happened so far.

Error code	Description	Ongrid - Three Phase (LV Model)
F59	AC grid V over current	Hardly appear the code. Never ever happened so far.
F60	AC grid W over current	Hardly appear the code. Never ever happened so far.
F61	Reactor A phase over current	Hardly appear the code. Never ever happened so far.
F62	Reactor B phase over current	Hardly appear the code. Never ever happened so far.
F63	Reactor C phase over current	Hardly appear the code. Never ever happened so far.
F64	IGBT heat sink high temperature	<ol style="list-style-type: none"> 1. Check temperature sensor. Check if firmware is suitable for the hardware. Check if the inverter is its right model. 2. Restart the inverter, if the fault still exists, contact your installer or Deye service.

Table10.1 Error codes and their solutions



Note:

If your string inverter has any of the fault information shown in Table 10-1, and when you reset the machine and still don't solve the problem, please contact our distributor and provide the below details:

1. Serial number of the inverter;
2. The distributor/dealer of the inverter(if available);
3. Installation date;
4. The discription of problem(include LCD'error code and LED status indicator lights);
5. Your contact details.

11.Specification

<i>Model</i>	<i>SUN-10K-G03-LV</i>	<i>SUN-12K-G03-LV</i>	<i>SUN-15K-G03-LV</i>
Input Side			
Max.DC Power(kW)	13	15.6	19.5
Max.DC Input Voltage(V)		800	
Start-up DC Input Voltage(V)		250	
MPPT Operating Range(V)		200~700	
Max.DC Input Current(A)	25+25	25+25	30+30
Number of MPPT/Strings per MPPT	2/2+2	2/2	2/3
Output Side			
Rated Output Power(kW)	10	12	15
Max.Active Power(kW)	11	13.2	16.5
Rated AC Grid Voltage(V)		127/220	
AC Grid Voltage Range(V)		176~242 (this may vary with grid standards)	
Rated Grid Frequency(Hz)		60 / 50 (Optional)	
Operating Phase		Three phase	
Rated AC Grid Output Current(A)	26.2	31.5	39.4
Max.AC Output Current(A)	28.9	34.6	43.3
Output Power Factor		0.8 leading~0.8 lagging	
Grid Current THD		<2%	
DC Injection Current(mA)		<0.5%	
Grid Frequency Range		47-52 or 57-62 (optional)	
Efficiency			
Max.Efficiency		98.6%	
Euro Efficiency		97.8%	
MPPT Efficiency		>99%	
General Data			
Size(mm, W×H×D)		400×520×240.5	
Weight(kg)		28	
Topology		Transformerless	
Internal consumption		<1W(Night)	
Operating temperature		-25 ~ 65 C	
Ingress protection		IP65	
Noise Emission(Typical)		<45dB	
Cooling Concept		Smart cooling	
Max. operation altitude		2000m	
Designed Lifetime		>20 Years	
Grid Connection Standard		EN50549, IEC61727, VDE 0126-1-1, IEC62109-1-2	
Operation surrounding humidity		0~100%	
Stafy EMC / Standard		IEC62109-1/-2,EN61000-6-1,EN61000-6-3	
General Data			
DC Connection		MC-4 mateable	
AC Connection		IP65 rated plug	
Display		LCD 240×160	
Interface		RS485/RS232/Wifi/LAN	

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