



# Grid-tied PV String Inverter

SUN-30K-G

SUN-33K-G

SUN-35K-G

SUN-40K-G

SUN-50K-G

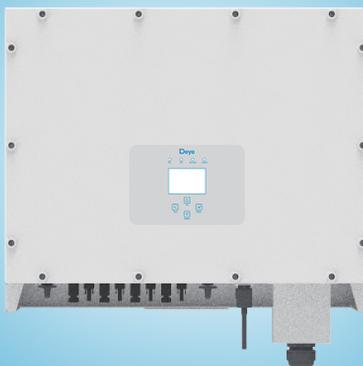
SUN-60K-G

SUN-70K-G

SUN-75K-G

SUN-80K-G

## User Manual



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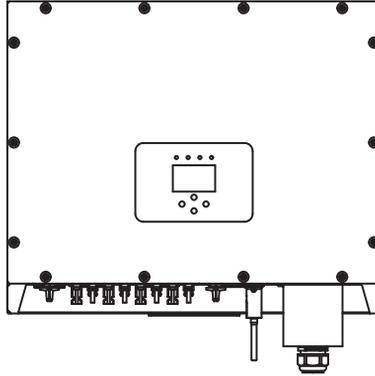
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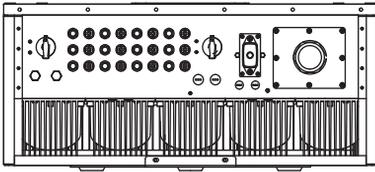
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# 1. Introduction

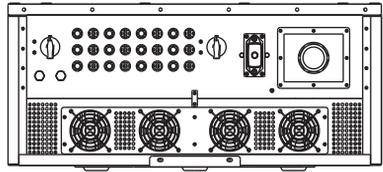
## 1.1 Appearance Introduction



Pic 1.1 Front view



30-50KW

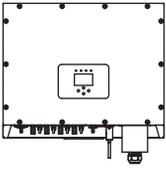


60-80KW

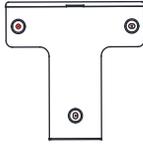
Pic 1.2 Bottom view

## 1.2 Parts list

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



1



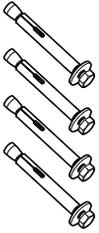
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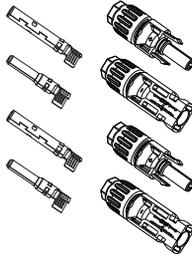
3



4



5



6



7



8

No	Description	Qty
1	Grid-tied PV String Inverter	1
2	Wall mounting bracket	1
3	Installation screws M4×12	10
4	wrench	1
5	expansion anchor bolt M12×80	3
6	DC power connectors	12pairs
7	instruction Manual	1
8	Installation screws M5×12	2

Table 1.1 Parts list

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## 2. Safety warnings and instructions

Improper use of the inverter will cause electric shock and burn. During the installation and maintenance. Please operate the unit strictly accordance with the user manual. Please read the user manual carefully before using the inverter. And please take care of the manual for afterwards use.

### 2.1 Safety signs

Safety signs are used to emphasize potential safety risk and important safety information. The manual includes below signs:



#### Warning :

Safety warning——Indifference of the signs in the manual may cause injure or even death.



#### Shock Hazard :

Shock warning sign——Incorrect follow of this sign may get shocked.



#### Safety Hint :

Prudent operation——Incorrect follow of the safety operation hints in this manual may cause inverter defective.



#### High Temperature Hazard :

Inverter' s local temperature may exceed 80℃ while under operating. Please do not touch the inverter's case

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## 2.2 Safety Guides



### Warning :

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



### Warning :

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



### Warning :

Inverter is non-isolated topology structure, hence must insure dc input and ac output are electrical isolated before operating the inverter. Strictly prohibit grounding the input positive and negative. Otherwise it will cause inverter malfunction.



### Shock Hazard :

Prohibit disassembling inverter case, existing shock hazard, cause severe injury or death, please ask qualified person to maintenance.



### Shock Hazard :

When solar array expose to sunshine, will generate high dc voltage on it, prohibit touching, existing shock hazard.



### Shock Hazard :

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

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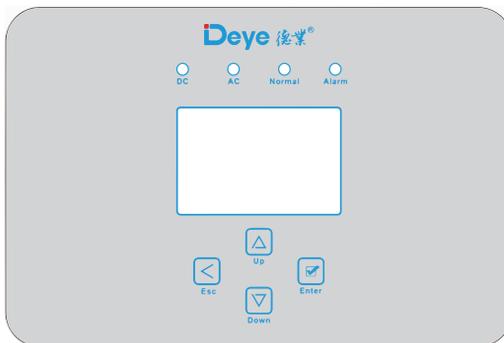
## 2.3. Notes for using

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 an 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 disconnecting, please at least waits for 5 mins to avoid shocking.
3. Local temperature of the inverter may exceed 80 C while under operating. Do not touch, avoid injury.
4. All electrical installation must be in accordance with local electrical standards, And achieved permission of local power company.
5. Please take appropriate anti-static measure.
6. Please install at the place where children can not touch.

## 3. Operation Interface

### 3.1 Interface View



Pic 3.1 Interface View

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### 3.2 Status Indicator

The inverter panel has 4 indicators, the left one is dc output indicators, green indicates normal dc input. Beside is the AC indicator, green indicating normal ac connection. Beside the AC indicator is the operating indicator, green indicating normal output. The right indicator is alarm. red indicates alarming.

Indicator	status	Explanation
● DC	on	Inverter detected input
	off	DC low 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

### 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

After you received the inverter and prepare to install it, please select a suitable location, which should consider below factors:

- Ventilation—must insure the air ventilation of the installation location; improper installation may cause overheating and affect the working efficiency and lifespan.
- Sun-shade—Exposing the inverter under sunshine will cause it overheating and effect the working efficiency.
- Shelter for rain and snow—Even though the inverter is waterproof. We still recommend install the inverter at the ventilate place where is sheltered for rain and snow. It can help extend the lifespan of the inverter.



Pic 4.1 Recommended installation place

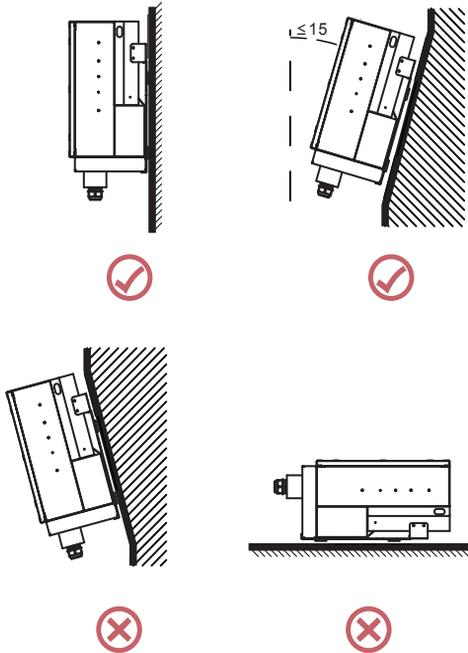
## 4.2 Recommended place

- Please select the wall with certain bearing capacity.
- When do the installation, vertical slope cannot exceed  $\pm 15^\circ$  , Make sure no lateral tilt Otherwise will affect the function of the heat sink and cause the output power lower than expected.
- If install more than one inverter must leave at least 500mm gap between each inverter. And each inverter must leave at least 500mm from above and below. And must install the inverter at the place where children can not touch.
- Consider whether the installation environment is helpful to see the LCD display and indicator status.
- Must offer a ventilate environment if inverter is installed in the airtight house.

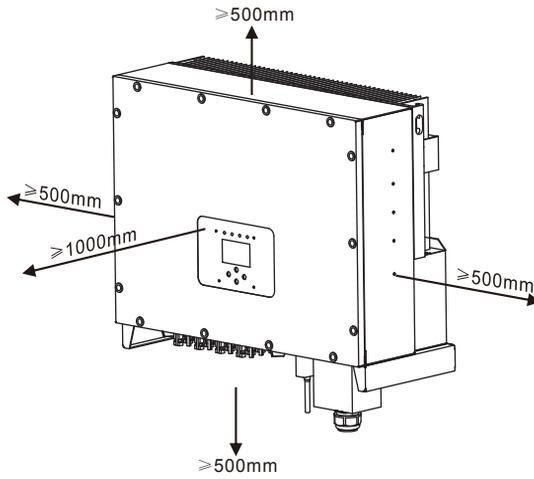


### Safety Hints :

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

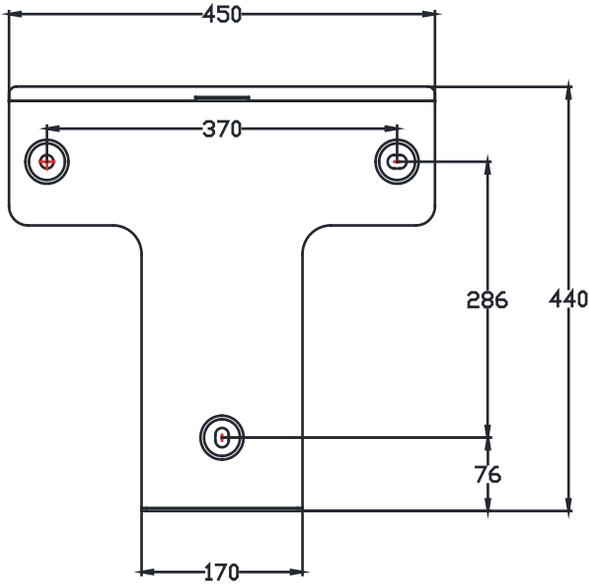


Pic 4.2 Installation Angle



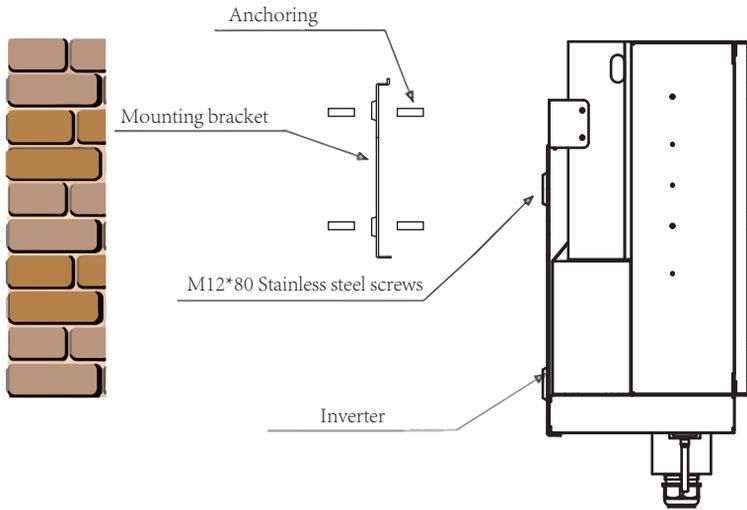
Pic 4.3 Installation Gap

### 4.3 Installation of inverter



Pic 4.4 Mounting bracket dimensions

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- The inverter should be mounted in a vertical position. The steps of mounting are as follows
1. For brick walls, the position of the holes should be suitable for the expansion bolts.
  2. Make sure the bracket is horizontal and the mounting holes are in the correct points.  
Drilling the holes on the wall according the marks.
  3. Using the expansion bolts to fix the bracket to the wall.

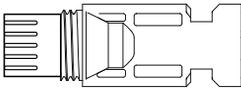


Pic 4.5 Inverter Installation

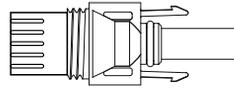
## 5 Electrical Connection

### 5.1 DC input connection

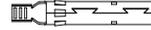
1. Switch AC off
2. Switch DC off
3. Connect the inverter to the grid.



Pic 5.1 DC - connector (MC4)

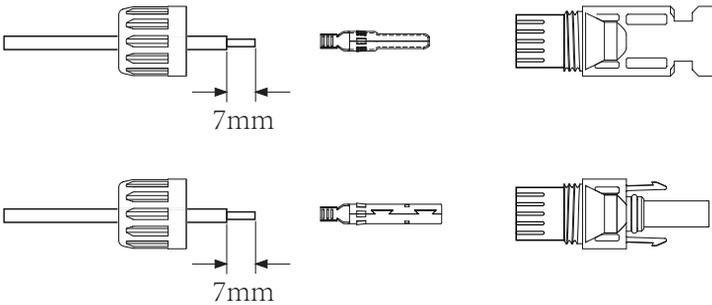


Pic 5.2 DC + connector (MC4)



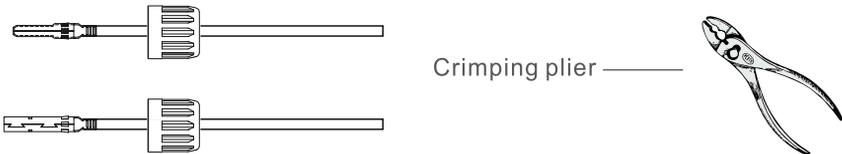
The steps of assembling the DC connector are listed as follows

- 1) Strip off the DC wire about 7mm, disassemble the connector cap nut(see figure 5.3)



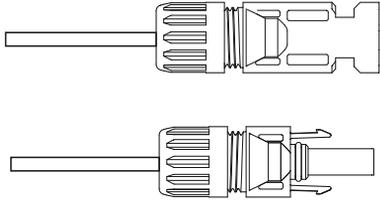
Pic 5.3 Disassemble the connector cap nut

- 2) Crimp the contact pin to the wire using a proper wire crimp tool as shown in 5.4



Pic 5.4 Crimp the contact pin to the wire

3) Insert the contact pin into the connector housing until it locks in place. Screw the cap nut onto the connector housing. Torque to 2.5-3Nm(as shown in figure 5.5)

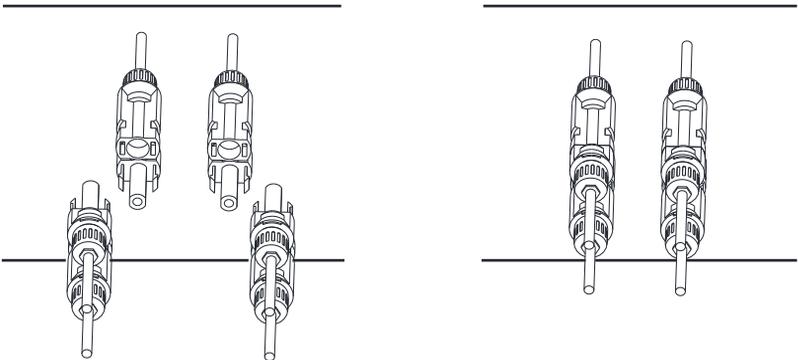


Pic 5.5 Cap nut screwed on

Cable type	Cross-sectional area (mm <sup>2</sup> )		Outside diameter of cable (mm)
	Range	Recommended size	
Industry generic PV cable (model;PV1-F)	4.0-6.0 (12-10AWG)	4.0(12AWG)	5.5-9.0

Table 5.1 Sepcification of AC cable

d).Connect the finished DC cable to the inverter.



Pic 5.6 DC input connection



**NOTE :** Panels will generate high voltage, after series connection can lead to life-threatening conditions. So the solar panel needs to be covered with opaque material before connect DC input line and ensure that the DC switch is 'OFF', otherwise, the high voltage of the inverter may lead to life-threatening conditions.

## 5.2 AC input connection

AC connection can use 16-25mm<sup>2</sup>, 105 °C cable, please make sure the resistance of cable is lower than 1.5ohm. If the cable is longer than 20m, it's recommended to use 20-25mm<sup>2</sup> cables.



### Warning :

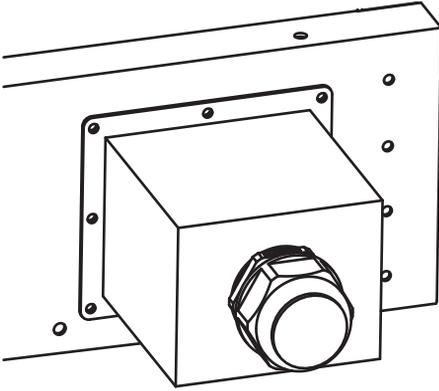
Be careful to distinguish the L1, L2, L3 and PE of the ac cables. The SUN - 60K/70K/75K/80K series doesn't involve N lines. The ground wire is connected by the connection hole on the right side of the inverter.

Cable specifications			Copper core cable	Copper cladaluminum/ aluminum alloy cable
30K- 50K	Conductor cross-sectional area (mm <sup>2</sup> )	Range	16-25	25-35
		Recommended number	25	35
30K- 50K	Cable outside diameter (mm <sup>2</sup> )	Range	22-32	
		Recommended	27	
60K- 80K	Conductor cross-sectional area (mm <sup>2</sup> )	Range	50-70	50-70
		Recommended number	50	70
60K- 80K	Cable outside diameter (mm <sup>2</sup> )	Range	35-50	
		Recommended	50	

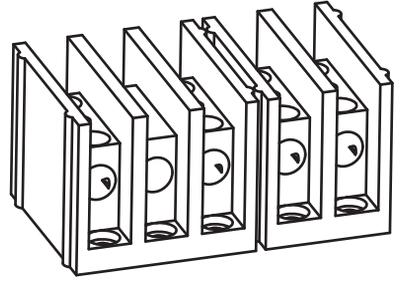
Table 5.2 Recommended cable specifications

AC wire installation method:

1) Remove the 8 fixing screws on the AC junction box of the inverter as shown in Pic 5.7. After removing the junction box, you can see the terminals of the inverter. The default is 5 digits as shown in Pic 5.8.

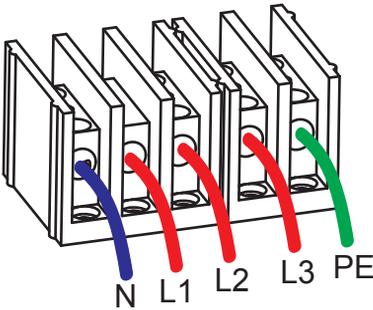


Pic 5.7 AC junction box

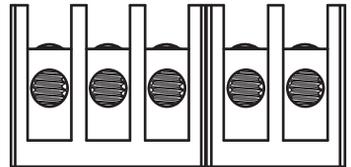


Pic 5.8 AC terminal

2) Connect the cable through the junction box, waterproof jacket, and insert into the terminal (The picture shows the connection mode of three phase lines connected to the junction box, ground wire screwed on the inverter shell) Pic5.13, and use hexagon screwdriver to presses the wiring harness to the connect terminal as shown in Pic5.10.

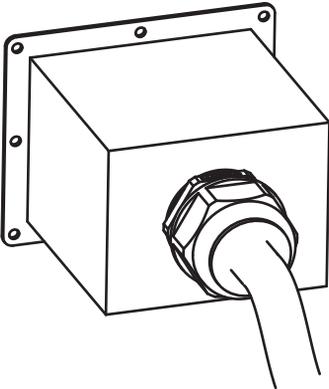


5.9 AC cable connected to the terminal



5.10 Tightening the AC connection cable

3) Screw the AC connection cover back to the shell and tighten all the screws to tighten the waterproof protection connector, as shown in Pic5.11



Pic 5.11 Tighten the AC junction box

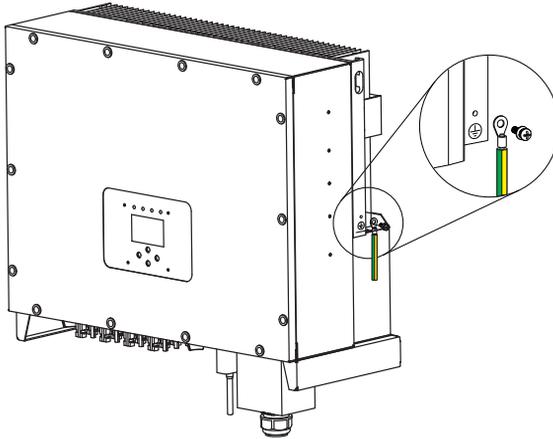
Inverter	Rated voltage	Rated output power (KW)	Current protection device (A)
SUN-30K	400	30	60
SUN-33K	400	33	70
SUN-35K	400	35	80
SUN-40K	400	40	80
SUN-50K	400	50	100
SUN-60K	400	60	120
SUN-70K	400	70	150
SUN-75K	400	75	150
SUN-80K	400	80	150

Table 5.3 Recommended current protector specifications

## 5.3 Other connections

### 5.3.1 The connection of the ground line

Good grounded is important for resist the surge voltage shock .improving EMI's performance, So before the connection of AC, DC, communication connections, need to ground first. 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 equipotent connection. The installation of the shell ground wire is shown as figure5.12.



Pic 5.12 Installation of the shell ground wire

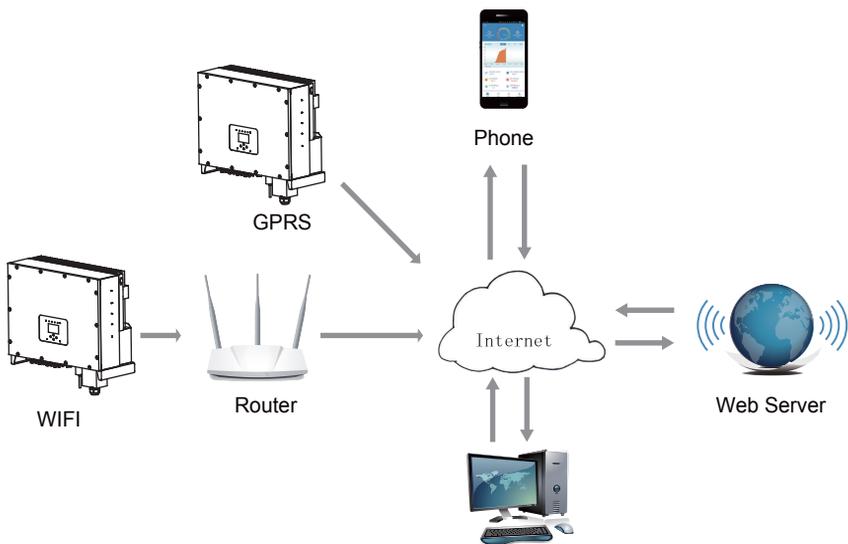


#### Warning :

Inverter has built-in leakage current detection circuit, if the external connect leakage current protection device, the current action must be greater than 300mA or higher, otherwise inverter may not work properly.

### 5.3.2 Inverter monitoring connection

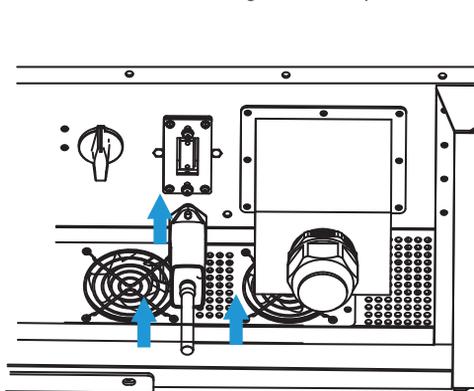
Inverter has the function of wireless remote monitoring inverter. The inverter has Wifi function and Wifi Plug in the accessories is used to realize the connection between the inverter and the network. The operation, installation, networking, APP download are detailed in the WIFI PLUG instructions. Figure 5.13 is the Internet monitoring solution.



Pic 5.13 Internet monitoring solution

## 1) Installation of Wi-Fi Plug

When the inverter is out of the factory, the location of the installation of Wi-Fi plug is sealed by a sealed plate as shown in Picture 5.14. When installing the Wi-Fi Plug, remove the sealing plate, replace it with the sealing plate with square hole in the accessories, and tighten the screws. Insert the Wi-Fi Plug into the interface and fix it with a screw. The configuration of the Wi-Fi 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 Wi-Fi Plug is normally electrified (The LED light shines out of the shell).



Pic 5.14 WIFI installation diagram

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## 2) Configuration of Wi-Fi Plug

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

## 6. Start up and Shut off

Before start the inverter need to ensure that meet the following conditions, otherwise may cause fire or damage to the inverter without quality assurance, at the same time the situation on our company does 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 PV modules.

- a). The maximum open voltage of each set of PV modules shall not exceed 1000VDC under any conditions.
- b). Each input of the inverter must use the same type of PV module in series.
- c). Total output power of pv shall not exceed the maximum input power of inverter, each PV modules shall not exceed the rated power of each channel.
- d). The short circuit current of each series of PV modules cannot be greater than 18A at any time.

### 6.1 Start up the inverter

When start up the inverter, should follow below steps:

1. First switch on the AC breaker.
2. Turn on the dc switch of the PV 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 the normal grid. NORMAL indicator light is on.

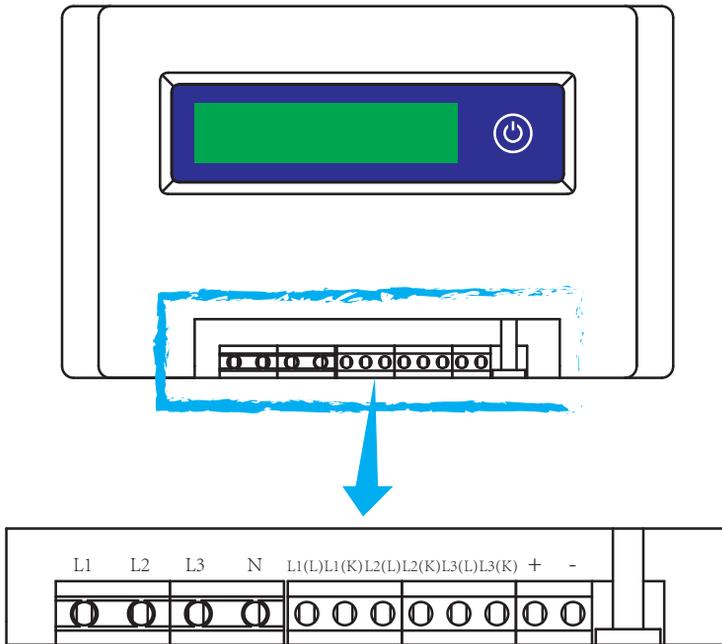
### 6.2 Shut off the inverter

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. Limiter function

The inverter has external limiter 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 limiter function, an external limiter and three current sensors will be included in the package which is necessary for the function. The external limiter is shown 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. Limiter will collect voltage and current from these interfaces and send control signals to the inverter.



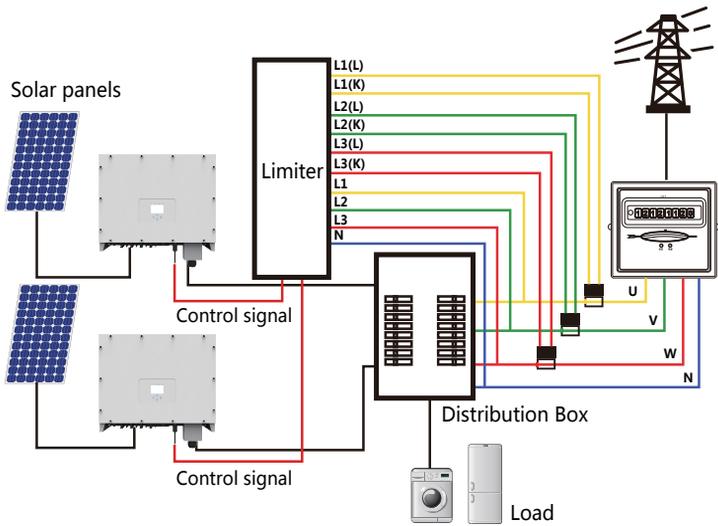
Pic 7.1 Limiter view

### 7.1 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 at this time, 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 of the inverter, 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.

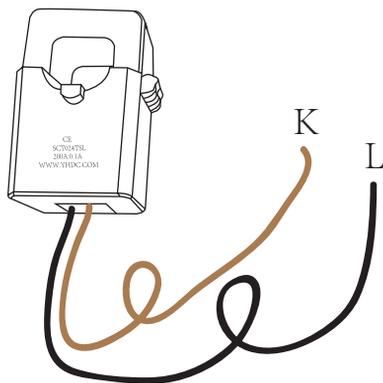


Pic 7.2 Wiring diagram

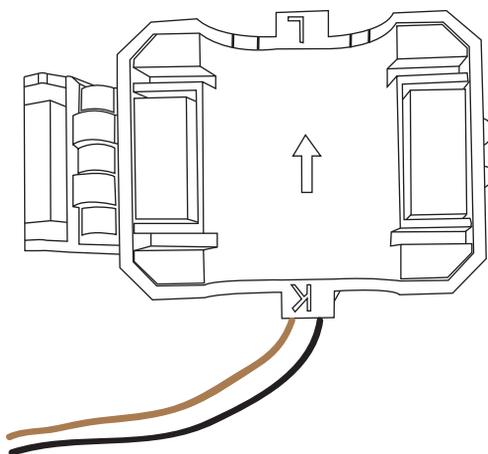
### 7.2 Connect the limiter to inverter

The 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 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 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 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 limiter and tighten the line with screwdriver. This is the whole installation process of one phase.



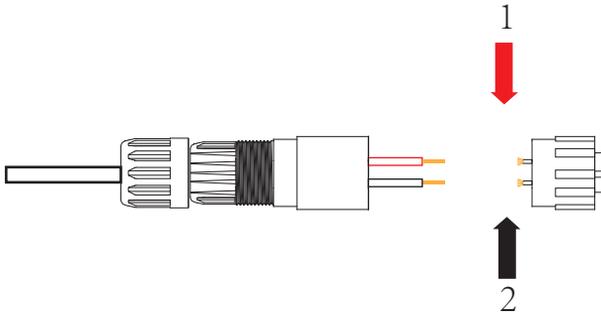
Pic7.3 Clamp Sensor



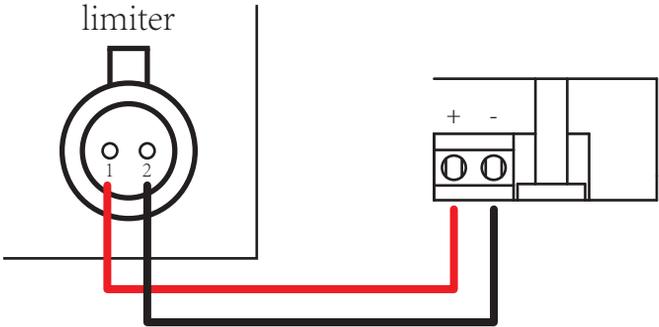
Pic7.4 Clamp Sensor internal arrow

(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.

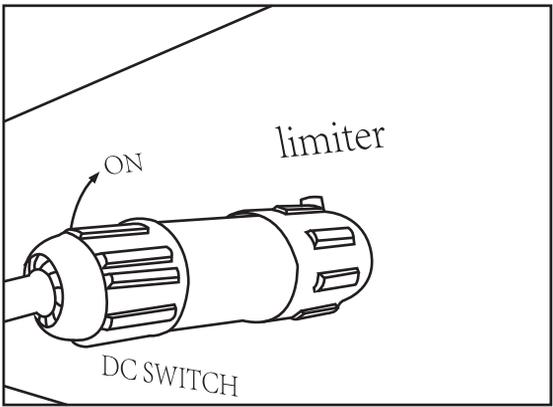
(4)Connect the control line. There are two numbers 1 and 2 on the interface of limiter, and the same on the waterproof terminal of the inverter. Twist the waterproof terminal and connect the red line to number 1 and black line to number 2 shown as the picture. After that connect the terminal to the interface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



Pic7.5 Waterproof terminal



Pic7.6 Connect limiter to inverter



Pic7.7 Connect terminal to inverter

### 7.3 Debugging Limiter

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

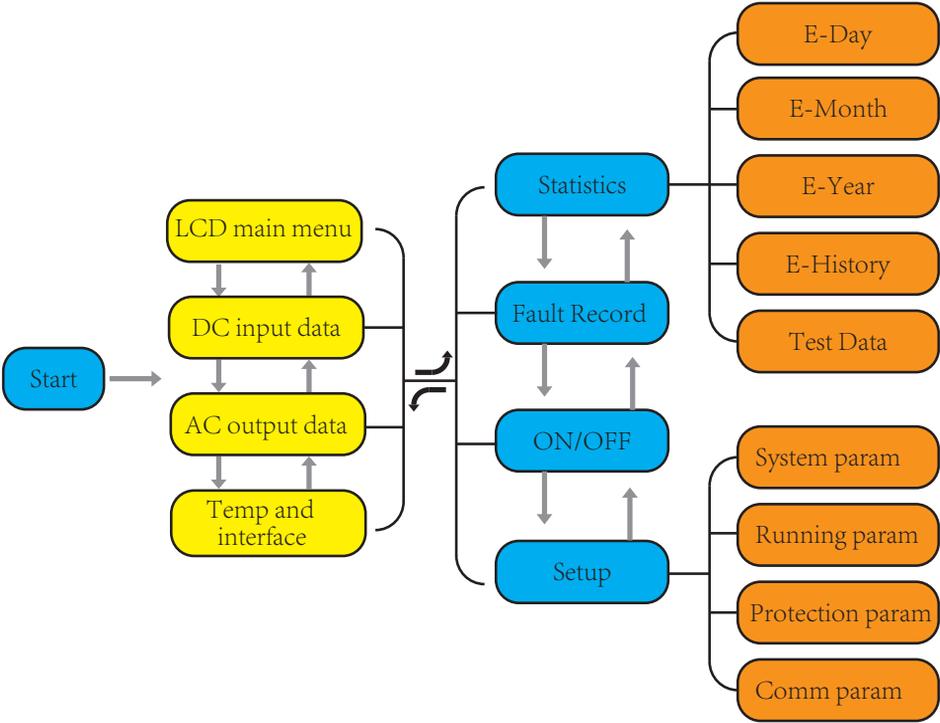
MENU» Setup» Run Param			
ActiveP	0%	Island	OFF
Reactive	0%	Fun_GFDI	OFF
PF	-1.000	Limiter	OFF
Fun_ISO	OFF	PowerWH	
Fun_RCD	OFF	Factor	0.00
SelfCheck	OS	MPPT Num	0
	OK	Cancel	

Pic7.8 Limiter function setting interface

Press the button of the limiter to the setting interface. Long press the button to switch the anti-backflow mode. Limiter has two anti-backflow modes, the minimum mode and the average mode. In the minimum mode, 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, 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.

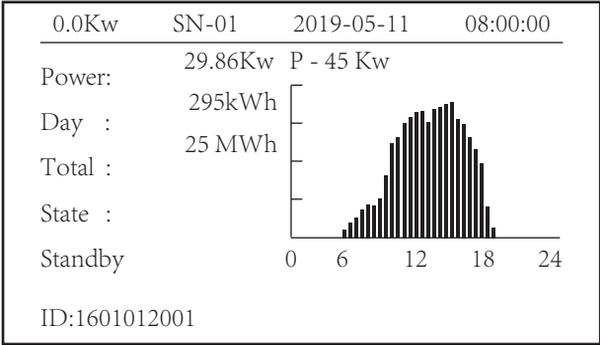
# 8. General Operation

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.



## 8.1 The initial interface

From the initial interface, you can check power, day power, total power, inverter ID, model and time.



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.

RUN	Input
PV1 V : 649.7V	I : 16.9A
PV2 V : 649.8V	I : 17.0A

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.

<u>RUN</u>	<u>Grid</u>
Ua : 231.5V	Ia : 42.4A
Ub : 231.5V	Ib : 42.4A
Uc : 229.9V	Ic : 42.4A
Grid Freq : 50.00Hz	

Pic 8.3 AC running state information

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

<u>RUN</u>	<u>Temperature</u>
Inside Temp. : 25.5°C	
Ver0142 Ver1400	● ●

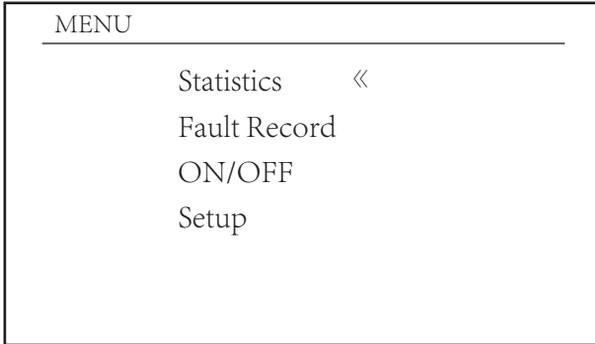
Pic 8.4 Temperature and software version

You can check the inverter inside temp, LCD software Ver137 and inverter software Ver1400. 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.

---

### 8.1.1 Main Menu

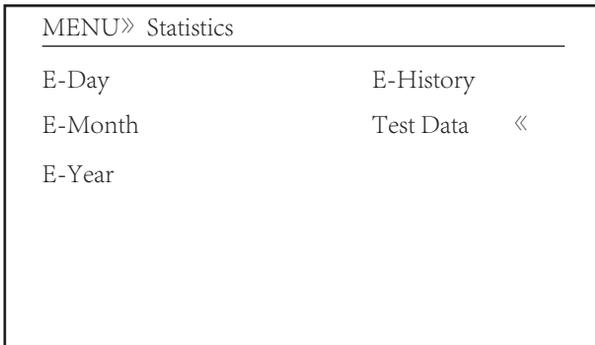
There are four submenu in the Main Menu.



Pic 8.5 Main Menu

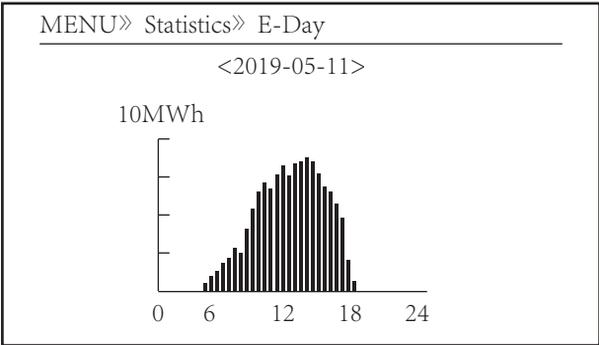
### 8.2 Statistics information

There are five submenu in the statistics.

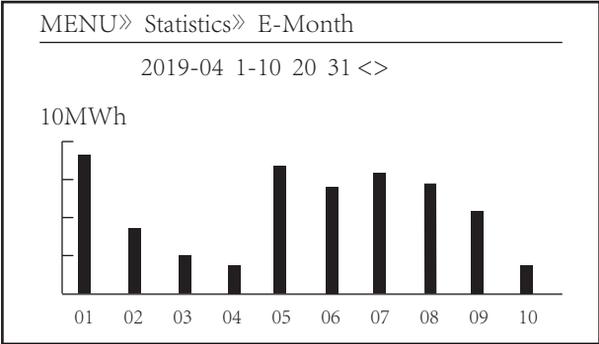


Pic 8.6 Statistics

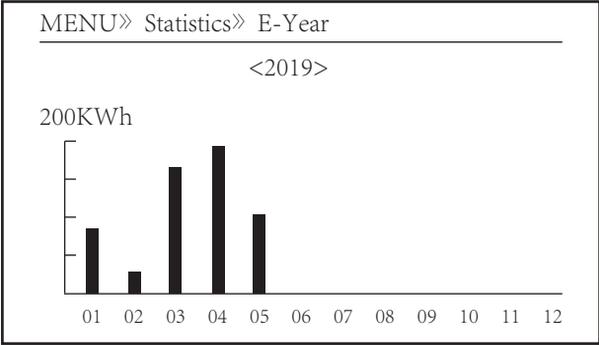
Into each submenu through cursor.



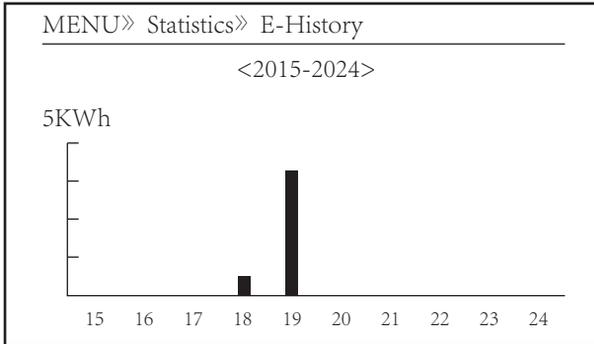
Pic 8.7 E-Day



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 8.11Test 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	
<hr/>	
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

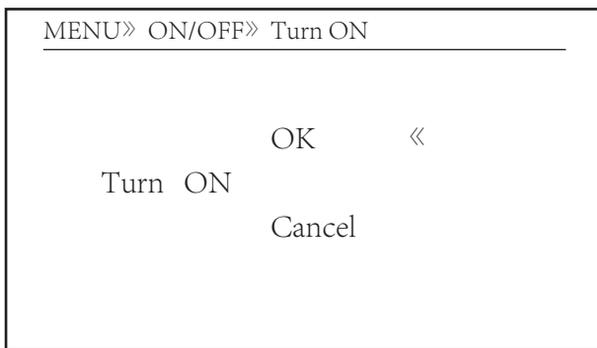
Pic 8.12 Fault Record

### 8.4 ON/OFF setting

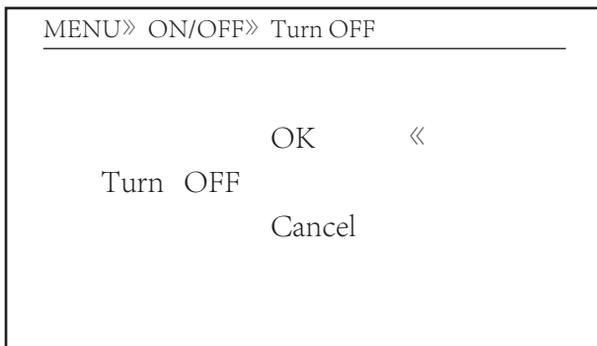
MENU» ON/OFF	
<hr/>	
Turn ON	
Turn OFF <<	

Pic 8.13 ON/OFF setting

Into each submenu through cursor.



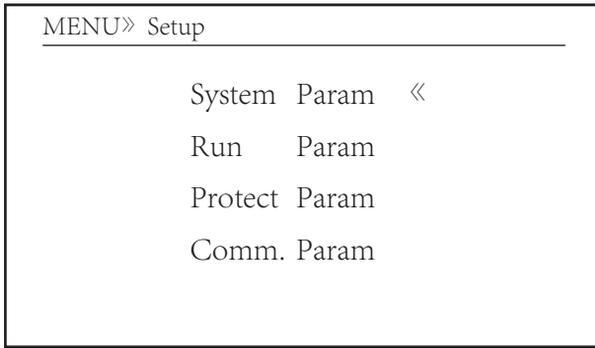
Pic 8.14 ON set



Pic 8.15 OFF set

## 8.5 Parameter setting

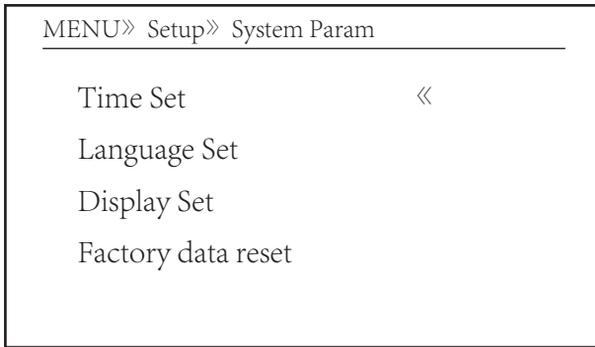
Setting include system param, run param, protect param, comm.. param. All of these information for maintenance reference.



Pic 8.16 Setting

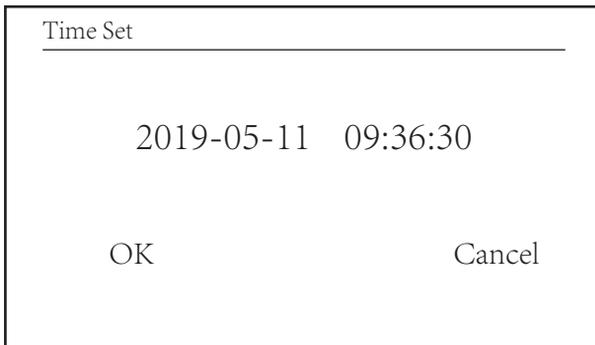
### 8.5.1 System Param

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



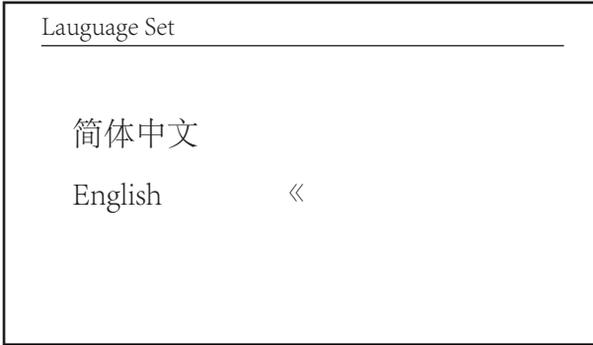
Pic 8.17 System Param

#### 8.5.1.2 Time set



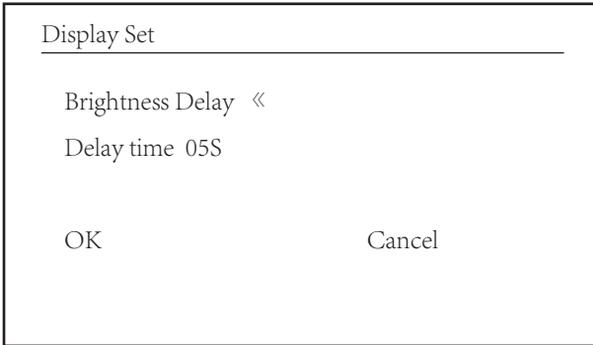
Pic8.18 System Param

### 8.5.1.3 Language set



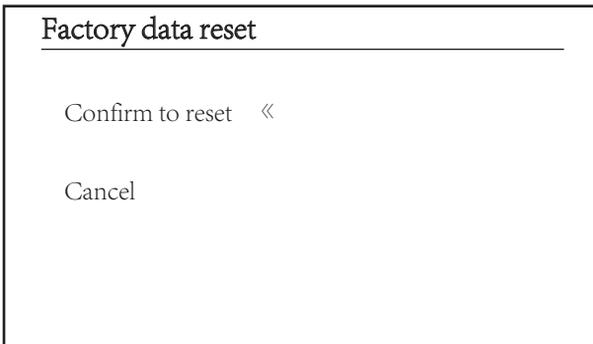
Pic 8.19 Language set

### 8.5.1.4 Display Set



Pic 8.20 Display set

### 8.5.1.5 Factory data reset



Pic 8.21 Factory data reset set

## 8.5.2 Running Param



**NOTE :**

Password required-restricted access-authorized engineer only. Unauthorized access may void the warranty. The initial password is 1234 .



Pic 8.22 Password

MENU» Setup» Run Param			
ActiveP	0%	Island	OFF
Reactive	0%	Fun_GFDI	OFF
PF	-1.000	Limiter	OFF
Fun_ISO	OFF	PowerWH	
Fun_RCD	OFF	Factor	0.00
SelfCheck	OS	MPPT Num	0
	OK	Cancel	

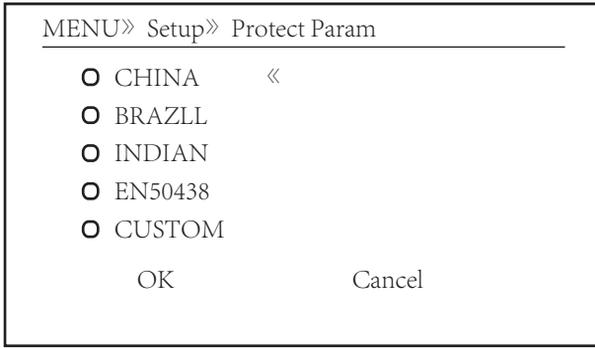
Pic 8.23 Running Param



**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 8.4.2 Running param.

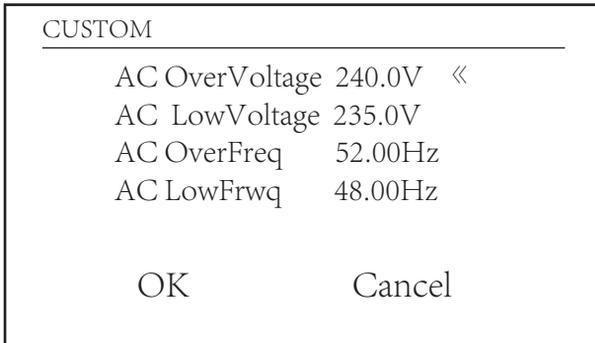


Pic 8.24 Protect Param



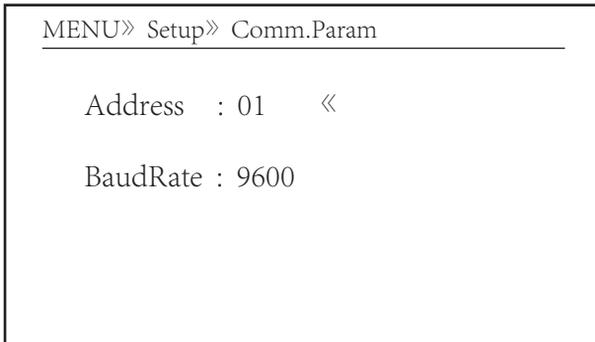
**NOTE :**

Engineer Only.



Pic 8.25 “CUSTOM”

### 8.5.4 Comm. Param



Pic8.26 Communication param

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## 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 down, then you can clean and maintain.



### Warning :

When cleaning any part of the inverter, no solvent, abrasive materials or corrosive materials shall be used for cleaning.

## 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

In the case of 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	Solutions
F10	Auxiliary switch power supply failure	<ol style="list-style-type: none"> <li>1. Turn off DC/AC switch, and turn on DC/AC switch 10mins later;</li> <li>2. If the fault still exists, please contact us for help.</li> </ol>
F13	Reserved	<ol style="list-style-type: none"> <li>1. Loss of one phase or AC voltage detection part failure or relays not closed;</li> <li>2. Seek help from us, if can't go back to normal state.</li> </ol>
F15	AC firmware over current	<ol style="list-style-type: none"> <li>1. Restart inverter and check whether it is in normal;</li> <li>2. Seek help from us, if can't go back to normal state.</li> </ol>
F16	GFCI(RCD) Ac leakage current fault	<ol style="list-style-type: none"> <li>1. Check PV module connection;</li> <li>2. Turn off the DC/AC switch and then wait 1~2 minute, then turn on the DC/AC switch again;</li> <li>3. Seek help from us, if can't go back to normal state.</li> </ol>
F18	AC over current fault of hardware	<ol style="list-style-type: none"> <li>1. Restart inverter and check whether it is in normal;</li> <li>2. Seek help from us, if can't go back to normal state.</li> </ol>
F20	DC over current fault of the hardware	<ol style="list-style-type: none"> <li>1. Check DC input power is within the allowed range;</li> <li>2. Restart inverter and check whether it is in normal;</li> <li>3. Seek help from us, if can't go back to normal state.</li> </ol>
F23	AC leakage current is transient over current	<ol style="list-style-type: none"> <li>1. Please wait for a while and check whether it is normal;</li> <li>2. If still same, and turn off the DC switch and AC switch and wait for one minute and then turn on the DC/AC switch;</li> <li>3. Seek help from us, if can't go back to normal state.</li> </ol>
F24	DC insulation impedance failure	<ol style="list-style-type: none"> <li>1. Check PV panels connection and restart inverter. This problem is caused by the PV side usually;</li> <li>2. If the fault still exists, please contact us for help.</li> </ol>
F30	AC main contactor failure	<ol style="list-style-type: none"> <li>1. Turn off the DC/AC switch and then wait 1~2 minutes, then turn on the DC/AC switch again;</li> <li>2. If the fault still exists, please contact us for help.</li> </ol>
F35	No AC grid	<ol style="list-style-type: none"> <li>1. Check AC grid voltage;</li> <li>2. Check whether the AC output connection is in good condition;</li> <li>3. If the fault still exists, please contact us for help.</li> </ol>
F39	AC over current (one cycle) Grid voltage fault	<ol style="list-style-type: none"> <li>1. Wait for inverter to return to normal;</li> <li>2. Disconnect DC switch and AC switch, and reconnect DC switch and AC switch 10min later to restart the inverter;</li> <li>3. If the fault still exists, please contact us for help.</li> </ol>

Error code	Description	Solutions
F41	AC Line W, U over voltage Generally, the inverter will reconnect to grid after grid returns to normal. If this fault occurs repeatedly then check as follow:	<ol style="list-style-type: none"> <li>1. Measure the actual grid voltage and compare with inverter set value. if the grid voltage measured is higher than set value, and then ask help from local electrically company for solution;</li> <li>2. Check whether voltage protection parameters are appropriate via LCD or monitoring platform;</li> <li>3. Check whether the cross-sectional area of AC cable meets the requirements;</li> <li>4. If the fault is not caused by foregoing reasons and still exists, please contact us for help.</li> </ol>
F42	AC Line W, U low voltage Generally, the inverter will reconnect to grid after grid returns to normal. If this fault occurs repeatedly then check as follow:	<ol style="list-style-type: none"> <li>1. Measure the actual grid voltage and compare with inverter set value. if the grid voltage measured is lower than set value, and then ask help from local electrically company for solution;</li> <li>2. Check whether voltage protection parameters are appropriate via LCD or monitoring platform;</li> <li>3. If the fault is not caused by foregoing reasons and still exists, please contact us for help.</li> </ol>
F43	AC Line V, W over voltage	1. Refer to F41.
F44	AC Line V, W low voltage	1. Refer to F42.
F45	AC Line U, V over voltage	1. Refer to F41.
F46	AC Line U, V low voltage	1. Refer to F42.
F47	AC Over frequency Generally, the inverter will reconnect to grid after grid returns to normal. If this fault occurs repeatedly then check as follow:	<ol style="list-style-type: none"> <li>1. Measure the actual grid frequency and compare with inverter set value. if the grid frequency measured is higher than set value, and then ask help from local electrically company for solution;</li> <li>2. Check whether frequency protection parameters are appropriate via LCD or monitoring platform;</li> <li>3. If the fault is not caused by foregoing reasons and still exists, please contact us for help.</li> </ol>
F48	AC lower frequency Generally, the inverter will reconnect to grid after grid returns to normal. If this fault occurs repeatedly then check as follow:	<ol style="list-style-type: none"> <li>1. Measure the actual grid frequency and compare with inverter set value. if the grid frequency measured is lower than set value, and then ask help from local electrically company for solution;</li> <li>2. Check whether frequency protection parameters are appropriate via LCD or monitoring platform;</li> <li>3. If the fault is not caused by foregoing reasons and still exists, please contact us for help.</li> </ol>
F55	DC busbar voltage is too high	<ol style="list-style-type: none"> <li>1. Check PV input voltage and Ubus voltage via LCD or monitoring platform;</li> <li>2. Disconnect DC switch and AC switch, and reconnect DC switch and AC switch 10min later to restart the inverter;</li> <li>3. Check whether the inverter works in export control mode. If so, decreasing PV panel number in series;</li> <li>4. If the fault still exists, please contact us for help.</li> </ol>

Error code	Description	Solutions
F56	DC busbar voltage is too low	<ol style="list-style-type: none"> <li>1. Check PV input voltage and Ubus voltage via LCD or monitoring platform;</li> <li>2. Disconnect DC switch and AC switch, and reconnect DC switch and AC switch 10min later to restart the inverter;</li> <li>3. If the fault still exists, please contact us for help.</li> </ol>
F64	IGBT heat sink high temperature Heat sink temperature is too high	<ol style="list-style-type: none"> <li>1. Check whether the work environment temperature is too high;</li> <li>2. Turn off the inverter for 10mins and restart;</li> <li>3. Seek help from us, if can't go back to normal state.</li> </ol>



### Note:

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 description of problem (include LCD's error code and LED status indicator lights)
5. Your contact details.

## 11. Specifications

Model	SUN-30K-G	SUN-33K-G	SUN-35K-G	SUN-40K-G	SUN-50K-G
Energy source	Grid-connected PV				
Max.DC Power(kW)	36	36	39.6	52	65
Max.DC Input Voltage(V)	1000				
Start-up DC Input Voltage(V)	250				
MPPT Operating Range(V)	200~850				
Max.DC Input Current(A)	30+30	30+30	30+30+30	30+30+30	30+30+30+30
Number of MPPT/ Strings per MPPT	2/3	2/3	3/3	3/3	4/3
Rated Output Power(kW)	30	33	35	40	50

Max.Active Power(kW)	33	36.3	38.5	44	55
Rated AC Grid Voltage(V)	380/400				
AC Grid Voltage Range(V)	277~460				
Rated Grid Frequency(Hz)	50/60(Optional)				
Operating Phase	Three phase				
Rated AC Grid Output Current(A)	43.5	48	50.7	58	72.4
Max.AC Output Current(A)	47.85	52.8	55.8	63.8	79.64
Output Power Factor	>0.99				
Grid Current THD	<3%				
DC Injection Current(mA)	<0.5%				
Grid Frequency Range	47-52 or 57-62 (optional)				
Max.Efficiency	98.7%				
Euro Efficiency	98.3%				
MPPT Efficiency	>99%				
Protection	DC reverse-polarity protection; AC short circuit protection; AC output overcurrent protection;Output overvoltage protection;Insulation resistance protection;Ground fault monitoring;Surge protection;Islanding protection; Temperature protection; Integrated DC Switch (Optional);				
Size(mm)	700W × 575H × 297D				
Weight(kg)	54				
Topology	Transformerless				
Internal consumption	<1W(Night)				
Operating temperature	-25 ~ 60 °C				
Ingress protection	IP65				
Noise Emission(Typical)	<30dB				
Cooling Concept	Intelligent cooling				
Max.Operating Altitude Without Derating	2000m				
Designed Lifetime	>20Years				
Grid Connection Standard	EN50438;IEC61727;VDE4105;NB/T32004(CQC);IEC62109-1-2				
Operation surrounding humidity	0~100%				
Stafty EMC / Standard	IEC62109-1/-2,AS3100,EN61000-6-1				
DC Connection	MC-4 mateable				
AC Connection	IP65 rated plug				
Display	LCD 240 × 160				
Interface	RS485/RS232				

Model	SUN-60K-G	SUN-70K-G	SUN-75K-G	SUN-80K-G
Max.DC Power(kW)	78	91	97.5	96
Max.DC Input Voltage(V)	1000			
Start-up DC Input Voltage(V)	250			
MPPT Operating Range(V)	200~850			
Max.DC Input Current(A)	30+30+30+30	40+40+40+40	40+40+40+40	40+40+40+40
Number of MPPT/ Strings per MPPT	4/3	4/4	4/4	4/4
Rated Output Power(kW)	60	70	75	80
Max.Active Power(kW)	66	77	82.5	88
Rated AC Grid Voltage(V)	380/400			
AC Grid Voltage Range(V)	277~460			
Rated Grid Frequency(Hz)	50/60(Optional)			
Operating Phase	Three phase			
Rated AC Grid Output Current(A)	87.8	101.5	108.7	115.9
Max.AC Output Current(A)	95.7	111.6	119.6	127.5
Output Power Factor	>0.99			
Grid Current THD	<3%			
DC Injection Current(mA)	<0.5%			
Grid Frequency Range	47-52 or 57-62 (optional)			
Max.Efficiency	98.9%			
Euro Efficiency	98.3%			
MPPT Efficiency	>99%			
Protection	DC reverse-polarity protection; AC short circuit protection; AC output overcurrent protection;Output overvoltage protection;Insulation resistance protection;Ground fault monitoring;Surge protection;Islanding protection; Temperature protection; Integrated DC Switch (Optional);			
Size(mm)	700W×575H×297D			
Weight(kg)	60			
Topology	Transformerless			
Internal consumption	<2W(Night)			
Operating temperature	-25 ~ 60 C			
Ingress protection	IP65			
Noise Emission(Typical)	<30dB			
Cooling Concept	Intelligent cooling			
Max.Operating Altitude Without Derating	2000m			

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Designed Lifetime	>20Years
Grid Connection Standard	EN50438;IEC61727;VDE4105;NB/T32004(CQC);IEC62109-1-2
Operation surrounding humidity	0~100%
Staffy EMC / Standard	IEC62109-1/-2,AS3100,EN61000-6-1
DC Connection	MC-4 mateable
AC Connection	IP65 rated plug
Display	LCD 240×160
Interface	RS485/RS232

## NINGBO DEYE INVERTER TECHNOLOGY CO., LTD.

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E-mail: [wutz@deye.com.cn](mailto:wutz@deye.com.cn)

Web: [www.deyeinverter.com](http://www.deyeinverter.com)

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