

Deye®

PV Grid Tie Inverter

SUN-1K-G SUN-2K-G

SUN-3K-G

User manual



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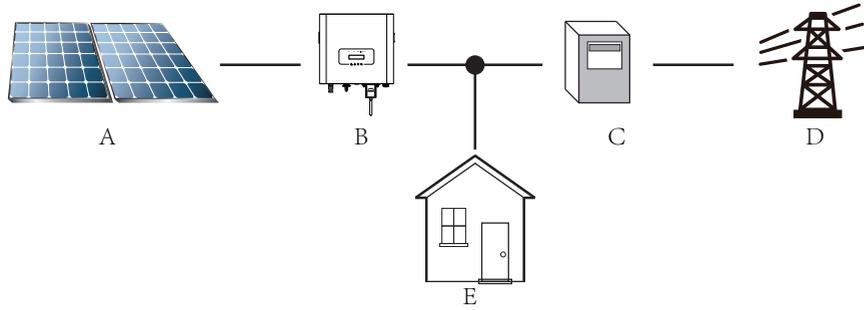
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Photovoltaic Grid-connected System



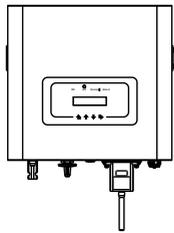
Application of inverter in photovoltaic power system

Serial number	Description
A	PV strings
B	Inverter
C	Metering device
D	Power grid
E	Family load

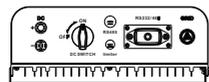
1. Introduction

1.1 Appearance Introduction

Single Phase String Power 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-1K-G、 SUN-2K-G and SUN-3K-G .The following is collectively referred to as ‘inverter’ .



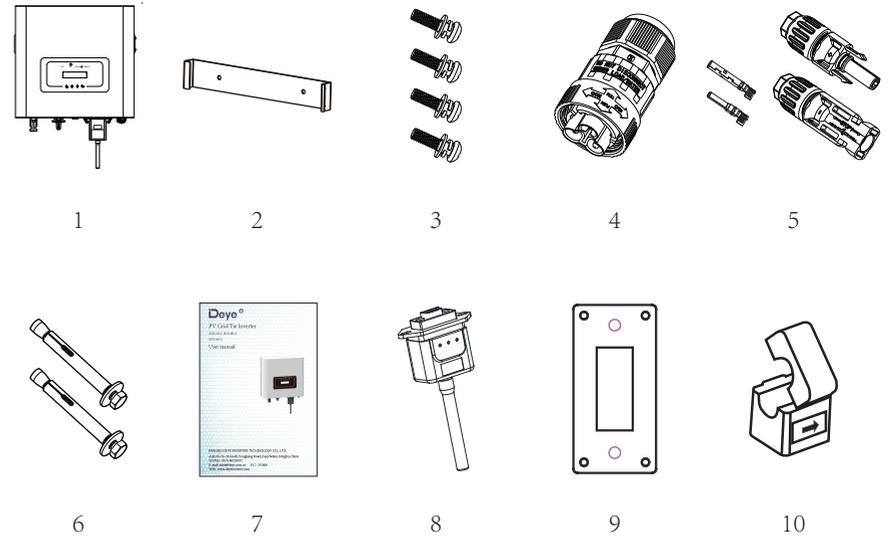
Pic1.1 Front view



Pic1.2 Bottom view

1.2 Parts list

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



Pic1.3 Accessories drawing

No	Description	Qty
1	Inverter	1
2	Wall mounting bracket	1
3	Mounting stainless steel screws M4×12	4
4	AC power connectors	1
5	DC power connectors (including Inserted spring)	1pairs
6	Stainless steel anti-collision bolt M6×80	2
7	Instruction book	1
8	Wi-Fi-Plug (For WIFI function)	1
9	Square hole sealing plate (For WIFI function)	1
10	Sensor Clamp(optional)	1

Table1.1 Parts list

2. Safety warnings and instructions

Improper use of the inverter will cause electric shock and burn. During the installation and maintenance, please operate the inverter in strict accordance with the user manual. Please read the user manual carefully before using the inverter. And please keep the instructions properly 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 injury 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 defect.



High Temperature Hazard:

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

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 wait 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.

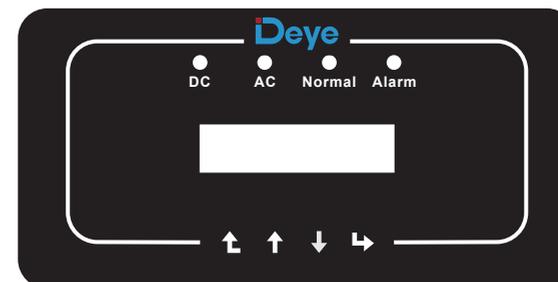
2.3 Notes for using

The single 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 80 °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 Panel

3.2 Status Indicator

The inverter panel has 4 indicators, the left one is DC output indicator, green indicates normal DC input. Beside is the AC indicator, green indicates normal AC connecting. Next is the operating indicator, green indicates normal output. The right indicator is alarm indicator, red indicates alarming.

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

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). The following functions can be achieved by the four buttons:

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

3.4 LCD Display

SUN-1K/2K/3K-G single-phase string inverters use a dot matrix display, mainly contains the following:

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

4. Product installation

4.1 Select installation location

When you receive 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 effect the working efficiency and lifespan.
- Sun-shade—Expose the inverter to sunshine will cause over heating and effect the working efficiency.
- Avoid rain and snow—Even if the inverter has IP65 protection. We still recommend installing the inverter at the ventilate place where can avoid rain and snow. It can help extend the lifespan of the inverter.



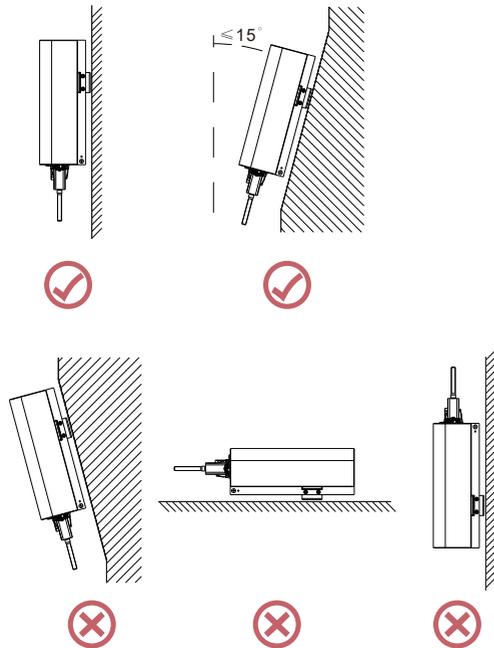
Pic4.1 Recommended installation place

- Please select the wall with certain bearing capacity.
- When doing the installation, vertical slope cannot exceed $\pm 15^\circ$, make sure no lateral tilt. Otherwise it will affect the function of the heat sink. 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 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.

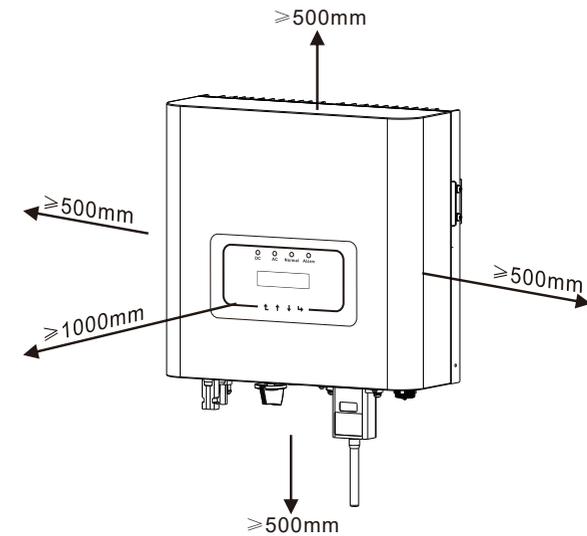


Safety Hints:

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



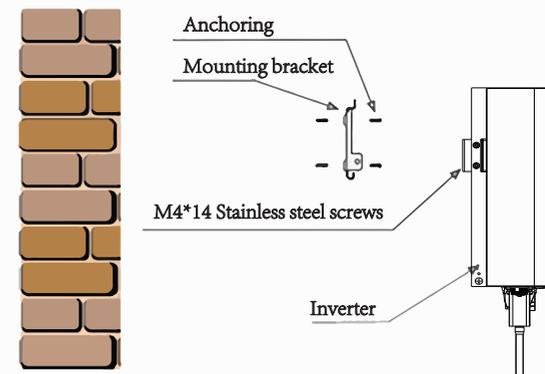
Pic4.2 Installation Angle



Pic4.3 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.

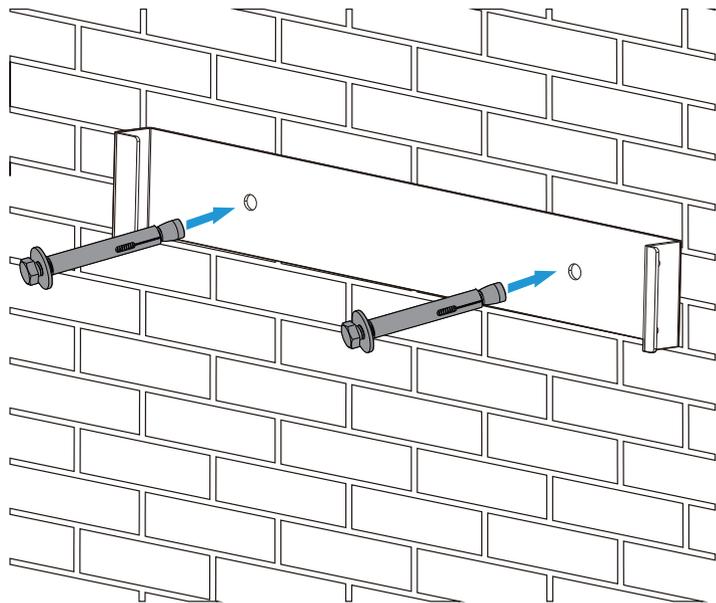


Pic4.4 Inverter Installation

Inverter should be installed vertically installed, as shown in picture 4.4, installation.

Procedure shows below:

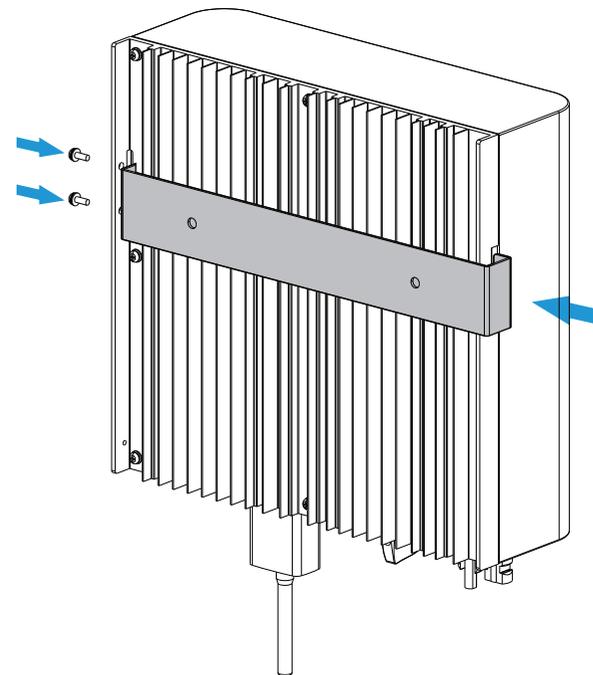
Locate on the appropriate wall according to the bolt position on the mounting bracket, then mark the hole. On the brick wall, the installation must be suitable for the expansion bolt installation.



Pic4.5 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.

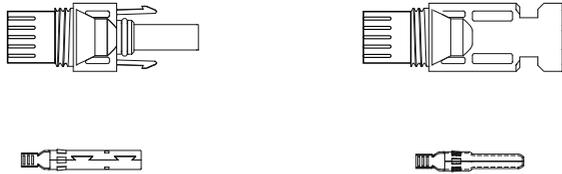
3. Hang the inverter to the top of the mounting rack and then use the M4 screw in the accessory to lock inverter heat sink to the hanging plate, to ensure that the inverter will not move.



5 Electrical Connection

5.1 DC input terminal connection

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

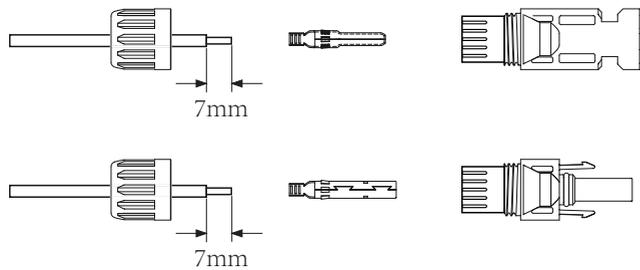


Pic5.1 DC+connector (MC4)

Pic5.2 DC-connector (MC4)

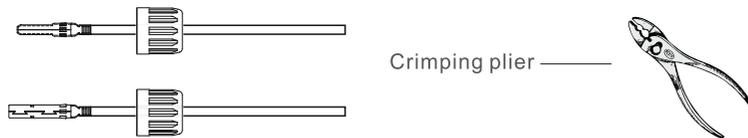
The steps of assembling the DC connector are listed as follows:

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



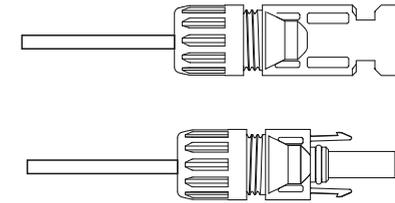
Pic5.3 Disassemble the connector cap nut

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



Pic5.4 Crimp the contact pin to the wire

- c) 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 picture 5.5).

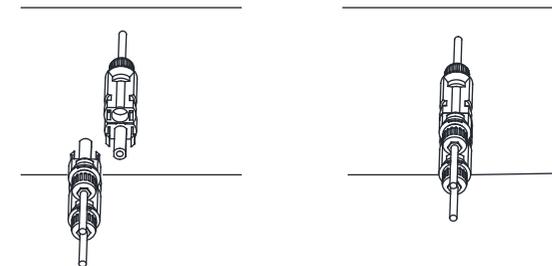


Pic5.5 connector with cap nut screwed on

Cable type	Traverse area (mm ²)		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 DC Cable Specifications

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



Pic5.6 DC input connection



NOTE:

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 single-phase AC terminals that can be conveniently connected. Flexible cords are recommended for easy installation. The specifications are as shown in Table 5.2.

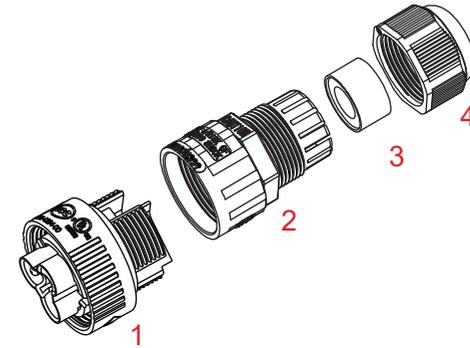


Warning:

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

	Cable CSA	Cable outer dia	AWG	Cable CSA	Cable outer dia	AWG	Cable CSA	Cable outer dia	AWG
Specification	2.5mm ²	15-18mm	12	2.5mm ²	15-18mm	12	2.5mm ²	15-18mm	12
Model	SUN-1K-G			SUN-2K-G			SUN-3K-G		
Breaker	10A/400V			16A/400V			20A/400V		
Max cable length	Outside cable(2+PE)20m								

Table 5.2 Cable information

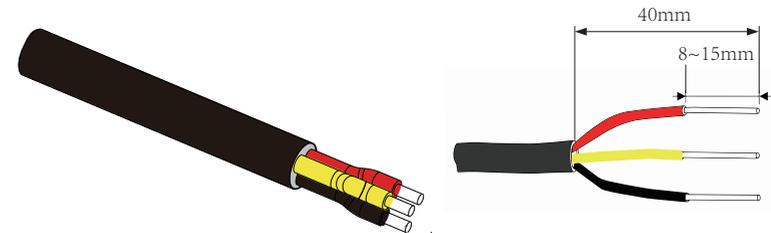


1. Matching socket 2.Sleeve 3.Sealing core 4.Sealing nut

Pic5.7 AC connector structure

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: Separate the sleeve from the matching socket, as shown in picture 5.7, the connector body has two locking holes, and press the locking valve in the hole inward to separate the matching socket from the sleeve.
- Step 3: Use strippers to strip the protective sheath and insulation layer of the AC cable to the right length, as shown in Picture 5.8.



Pic5.8 Strip AC cable

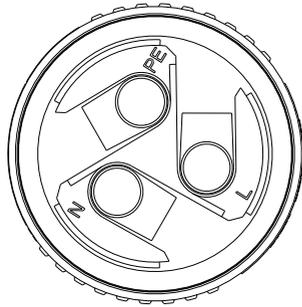


Warning:

Be careful to distinguish the L, N and PE of the AC cables.

Step 4: Insert the cable (L, N, PE) into the sealing sleeve and sleeve.

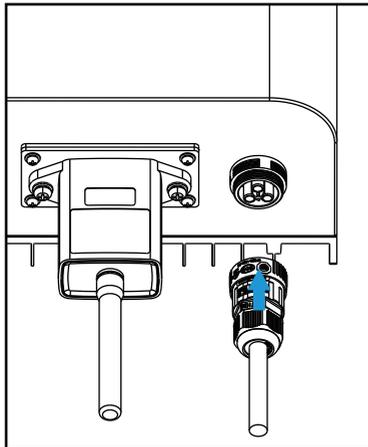
Step 5: Use the hexagon screwdriver, loosen the bolts of the socket in turn, and insert each cable core into the corresponding jack, and set each screw. The connection hole of AC connection terminal labeling is shown in picture 5.9.



Pic5.9 AC Connector Hole Pattern

Step 6: Set the sleeve and sealing ring in place.

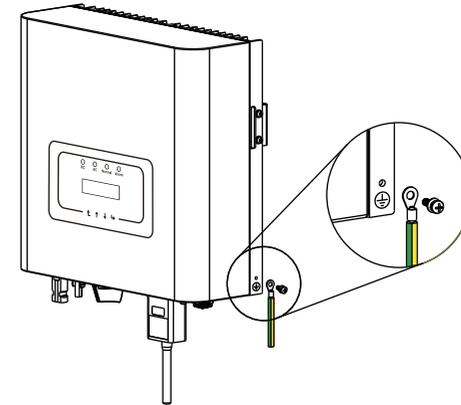
Step 7: Connect the terminals to the inverter as shown in picture 5.10.



Pic5.10 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.



Pic5.11 The installation of the shell ground wire

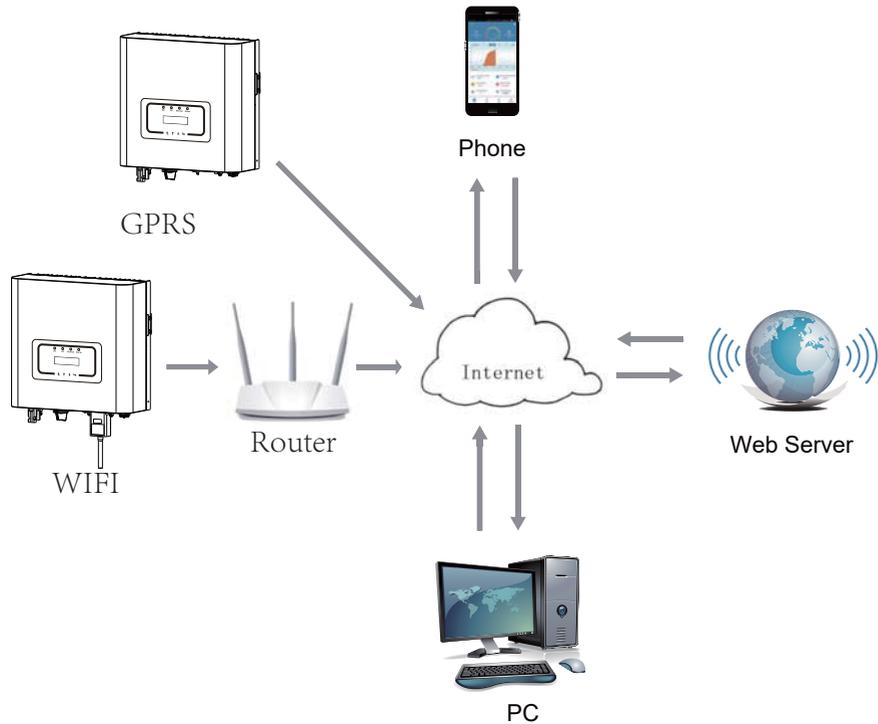


Warning:

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 Inverter monitoring connection

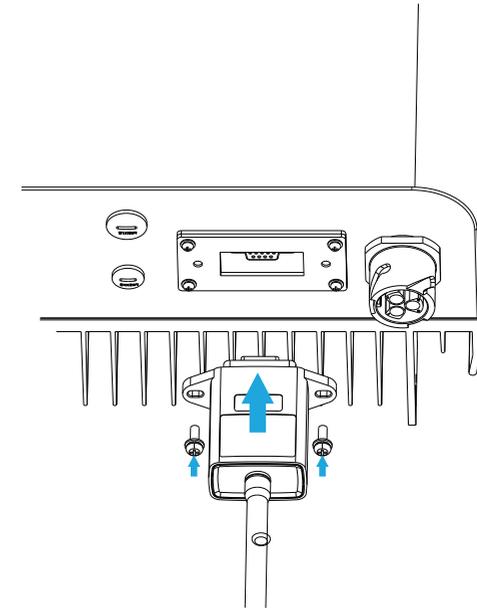
Inverter has the function of wireless remote monitoring. The inverter with Wi-Fi function is equipped with Wi-Fi Plug to connect the inverter and network. Wi-Fi Plug's operation, installation, Internet access, APP downloading and other processes are detailed in the instructions. Picture 5.12 is the Internet monitoring solution.



Pic5.12 Internet monitoring solution

5.4.1 Installation of Wi-Fi Plug

When the inverter is out of the factory, the installation location of Wi-Fi plug is sealed by a plate as shown in Picture 5.13. 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).



Pic5.13 Wi-Fi Plug installation diagram

5.4.2 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. 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 600VDC 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 10A at any time.

6.1 Start up the inverter

When start up the single phase string 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 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 Inverter Shutdown

Must follow below steps while shutting down the inverter:

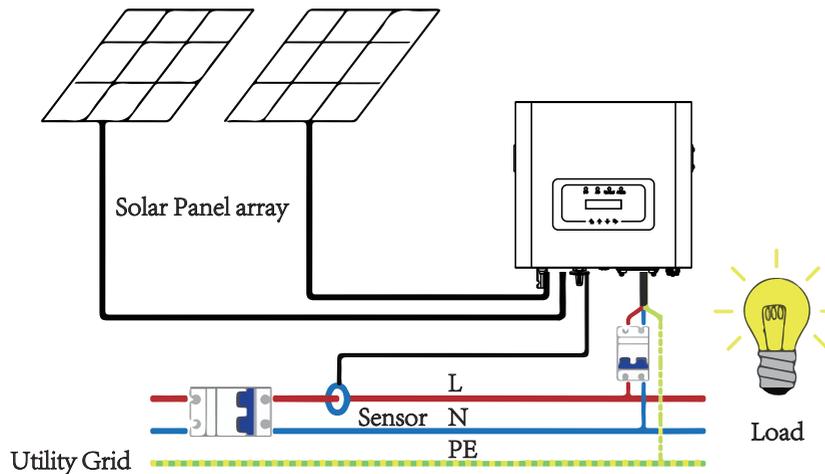
1. Switch off the AC breaker.
2. Wait for 30 seconds, turn off the DC switch (if any), or simply disconnect the DC input connector. The inverter will close the LCD and all led within two minutes.

7. Limiter function

The SUN-1K/2K/3K-G inverter has integrated export limitation function. The function is to adjust the output of inverter quickly according to the power of the user and solar panels, prevent the output of the inverter from being fed to the power grid. This limiter function is optional. If you buy the inverter with limiter, a current sensor will be included in the package which is necessary for limiter function.

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. Then connect the current sensor to the inverter limiter interface. Make sure they are reliably connected, and the current sensor should clamp to the live wire of the incoming line. In order to make it easier for you to use the built-in limiter function of the SUN-1K/2K/3K-G, we have specifically given the wiring diagram, as shown in Picture 7.1, the red lines connected to the utility grid said wire (L), blue line shows the zero line (N), yellow green line shows the ground wire (PE). We recommend installing a AC switch between the inverter outlet and the utility grid, the specs of the AC switch is determined according to the load capacity. The AC switch we recommend to connect to the inverter output can refer to Table 5.1. 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 depends on the PV array you access.



Pic7.1 Connection diagram of limiter

7.2 Use of limiter function

When the connection is completed, the following steps should be referenced to use this function:

1. Turn on the AC switch.
2. Turn on the DC switch, waiting for the inverter LCD lighting up.
3. Press Enter button on the LCD panel in the main interface into the menu options, select [parameter setting] to enter setup submenu, and then select [running parameters] as shown in picture 7.2, at this time please input the default password 1234 through pressing the button [up down, confirm], enter the operation parameter setting interface, shown as picture 7.3.



Pic 7.2 parameter setting



Pic 7.3 Limit switch

4. Operate the button [up down], move setting cursor to limiter function and press the button [enter]. At this time you can turn on or turn off the limiter function by choosing [up down] button, please press [enter] button to confirm when setting done.
5. Move the cursor to [confirm], press ENTER to save the settings and exit the running parameters page, otherwise the settings are invalid.
6. If set up successfully, you can return to the menu interface, and display the LCD to [output data] by press the [up down] button. If it displayed as [grid power], the limiter function settings will be completed. Shown as picture 7.4



Pic 7.4 Limiter function turn on

7. [grid power] showing positive means grid power is consuming energy, and there is no backflow. If [grid power] shows negative, it means there is no backflow. If [grid power] shows negative, it means backflow to the grid or current transformer direction error has occurred. Please read more on chapter 7.3.
8. After properly connection is done, wait for inverter starting. If the power of the PV array meets the current power consumption, the inverter will maintain a certain output to counteract the power of the grid without backflow.

7.3 Notes while using limiter function

For your safety and the operation of limiter function of the inverter, we put forward the following suggestions and precautions:



Warning:

Under limiter function we strongly recommend that the two PV arrays are formed by the same number of PV panels of the same size, which will make the inverter more responsive to limit the power.



Shock Hazard:

When using limiter function, you need to ensure that the opening voltage of PV input is no more than 450V, otherwise it may cause inverter malfunction. Do not have this limitation if inverter is not working under limiter function.



Safety Hint

While the grid power is negative and inverter has no output power, that means the orientation of the current sensor is wrong, please turn off the inverter and change orientation of the current sensor.



High Temperature Hazard:

The current sensor of limiter function needs to be clamped on the fire line of the grid connected to the inverter, otherwise inverter cannot able to normal operate.

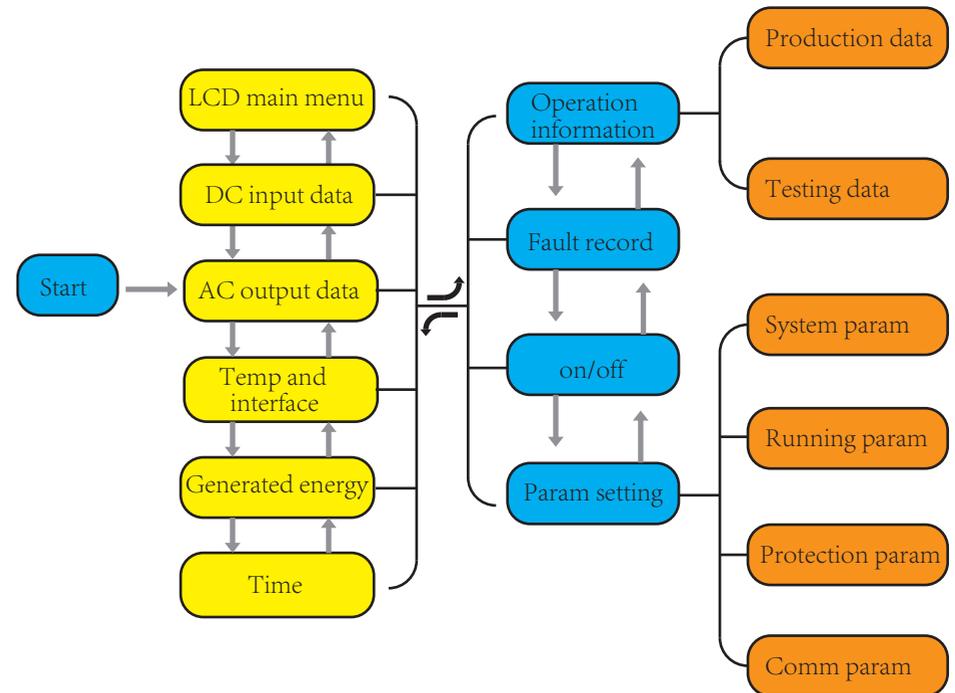


Warning:

Do not change the operating parameters if non-professional when setting the limiter function switch, otherwise inverter cannot be normal operated.

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.



Pic8.1 LCD operation flow chart

8.1 The initial interface

From the initial interface, you can check power and the inverter current status. The status of the inverter include stand by, self check, normal and error.



Power: 108W
State: Normal

Pic8.2 The initial interface

Press UP or Down, you can check inverter DC voltage, DC current, AC voltage, AC current and inverter temperature.



PV1: 276.2V 0.6A

Pic8.3 PV input and DC current information

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



Grid: 240V 0.5A
Freq: 50.03Hz

Pic8.4 AC running state information

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



Temp: 35.3 °C

Pic8.5 Temperature

In this interface, you can see the temperature of the inverter. It indicates the temperature of the radiator.
There are four submenus in the Main Menu.



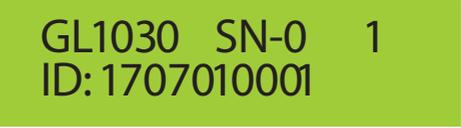
ON/OFF Setup <<

Pic8.6 Main Menu

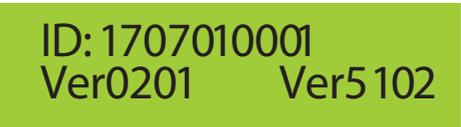
8.2 Device information



Device Info <<
Fault Record



GL1030 SN-0 1
ID: 1707010001



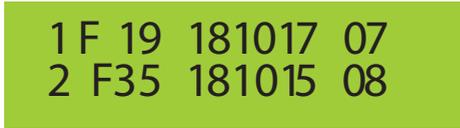
ID: 1707010001
Ver0201 Ver5102

Pic8.7 Device information

You can see the LCD software Ver0201 and inverter software Ver5102. In this interface, there are parameters such as rated power communication addresses.

8.3 Fault Record

It can keep four fault records in the menu including time, customer can deal with it depends on the error code.



Pic8.8 Fault Record

8.4 ON/OFF setting



Pic8.9 ON/OFF setting

When the inverter is turned off, it stops immediately and does not work until its turning on.

8.5 Parameter setting

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



Pic8.10 Setting

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



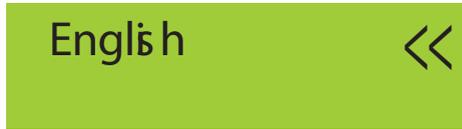
Pic8.11 System Param

8.5.1.1 Time set



Pic8.12 Time set

8.5.1.2 Language set



Pic8.13 Language set

8.5.2 Running Param

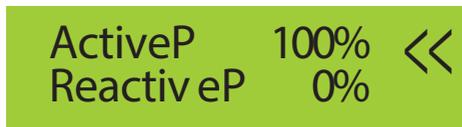


Note:

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



Pic8.14 Password



Pic8.15 Running Param

8.5.3 Protect 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 8.5.2 Running param



Pic8.16 Protect Param



Note:

Engineer only.



AC OverFreq
51.50Hz <<

AC LowFreq
47.50Hz <<

Pic8.17 “CUSTOM”

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

Single-phase string inverters are designed according to grid-connected operating standards. It meets safety requirements and electromagnetic compatibility.

requirements. Before leaving the factory, the inverter has undergone several rigorous tests to ensure that it can be operated reliably and permanently.

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 in Table 10.1

Error code	Description
F01	DC input polarity reverse fault
F02	DC insulation impedance permanent fault
F03	DC leakage current fault
F04	Ground fault GFDI (battery and grounding)
F05	Read the memory error
F06	Write the memory error
F07	GFDI blown fuse
F08	GFDI grounding touch failure
F09	IGBT damaged by excessive drop voltage
F10	Auxiliary switch power supply failure
F11	Ac main contactor errors
F12	AC auxiliary contactor errors
F13	Reserved
F14	DC firmware over current
F15	AC firmware over current
F16	GFCI(RCD) Ac leakage current fault
F17	Three phase current, over-current fault
F18	AC over current fault of hardware
F19	All hardware failure synthesis
F20	DC over current fault of the hardware
F21	DC leakage flow fault
F22	Crash stop (if there is a stop button)
F23	AC leakage current is transient over current
F24	DC insulation impedance failure
F25	DC reverse irrigation failure
F26	The DC busbar is unbalanced
F27	DC end insulation error

F28	Inverter 1 DC high fault
F29	AC load switch failure
F30	AC main contactor failure
F31	AC secondary contactor failure
F32	Inverter 2 dc high fault
F33	AC over current
F34	AC current over load
F35	No AC grid
F36	AC grid phase error
F37	AC three-phase voltage imbalance failure
F38	AC three-phase current imbalance failure
F39	AC over current
F40	DC over current
F41	AC Line W,U over voltage
F42	AC Line W,U low voltage
F43	AC Line V,W over voltage
F44	AC Line V,W low voltage
F45	AC Line U,V over voltage
F46	AC Line U,V low voltage
F47	AC Over frequency
F48	AC lower frequency
F49	U phase grid current DC over current
F50	V phase grid current DC over current
F51	W phase grid current DC over current
F52	AC inductor A, phase current DC current high
F53	AC inductor B, phase current DC current high
F54	AC inductor C, phase current DC current high
F55	DC busbar voltage is too high
F56	DC busbar voltage is too low
F57	AC reverse irrigation
F58	AC grid U over current
F59	AC grid V over current
F60	AC grid W over current
F61	Reactor A phase over current
F62	Reactor B phase over current

F63	Reactor C phase over current
F64	IGBT heat sink high temperature

Table10.1 Error code

10.2 Troubleshooting

F41~F48	Grid voltage exceed the nomal working range
F35	Grid Failure
F55 F56	Solar over voltage or low voltage
F26	Loss one phase or poor connection or inverter hardware damage
F15 F18	Grid have some surge load
F23	Ground error or PV + or - short to the Ground
F24	PV+ or PV- to the Ground resistance too low .

Table10.2 Troubleshooting



Note:

If your SUN-1K/2K/3KW 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 aailable);
- 3、 Installation date;
- 4、 The discription of problem(include LCD'error code and LED starus indicator lights);
- 5、 Your contact details.

11.Specification

Model	SUN-1K-G	SUN-2K-G	SUN-3K-G
Energy source	Grid-connected PV		
Input Side			
Max.DC Power(kW)	1.3	2.6	3.6
Max.DC Input Voltage(V)	500		
Start-up DC Input Voltage(V)	80	120	120
MPPT Operating Range(V)	70~500	100~500	100~500
Max.DC Input Current(A)	10		
Number of MPPT/ Strings per MPPT	1/1		
Output Side			
Rated Output Power(kW)	1	2	3
Max.Active Power(kW)	1.1	2.2	3.3
Rated AC Grid Voltage(V)	230		
AC Grid Voltage Range(V)	160~300		
Rated Grid Frequency(Hz)	50/60(Optional)		
Operating Phase	Single phase		
Rated AC Grid Output Current(A)	4.3	8.7	13.1
Max.AC Output Current(A)	4.7	9.6	14
Output Power Factor	>0.99		
Grid Current THD	<3%		
DC Injection Current(mA)	<0.5%		
Grid Frequency Range	47-52 or 57-62 (optional)		
Efficiency			
Max.Efficiency	97.3%	97.3%	97.5%
Euro Efficiency	97.1%	97.1%	97.3%
MPPT Efficiency	>99%		
Protection	DC reverse-polarity protection; AC short circuit protection; AC output overcurrent protection;Output over-voltage protection;Insulation resistance protection;Ground fault monitoring;Surge protection;Islanding protection; Temperature protection; Integrated DC Switch (Optional);		

General Data	
Size(mm)	330W × 347.5H × 127D
Weight(kg)	7
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%
Staffy EMC / Standard	IEC62109-1/-2,EN61000-6-1,EN61000-6-3
Features	
DC Connection	MC-4 mateable
AC Connection	IP65 rated plug
Display	LCD1602
Interface	RS485/RS232

Table11.1 Specification