PV Grid Tie Inverter

Solis Single Phase Inverter

-US version

Installation and Operation Manual

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Please record the serial number of your inverter and quote this when you contact us.

Ver 2.5

Contents

Contents

1. Introduction

1.1 Product Descriptions

Solis single phase US series inverters can transfer DC power from PV panels into AC power and feed into grid.

Solis single phase US series inverters contain 9 models which are listed below:

Solis-1K-2G-US **Solis-1.5K-2G-US** **Solis-2K-2G-US** **Solis-2.5K-2G-US**
Solis-3K-2G-US **Solis-3.6K-2G-US** **Solis-4K-2G-US** **Solis-4.6K-2G-US**
Solis-5K-2G-US
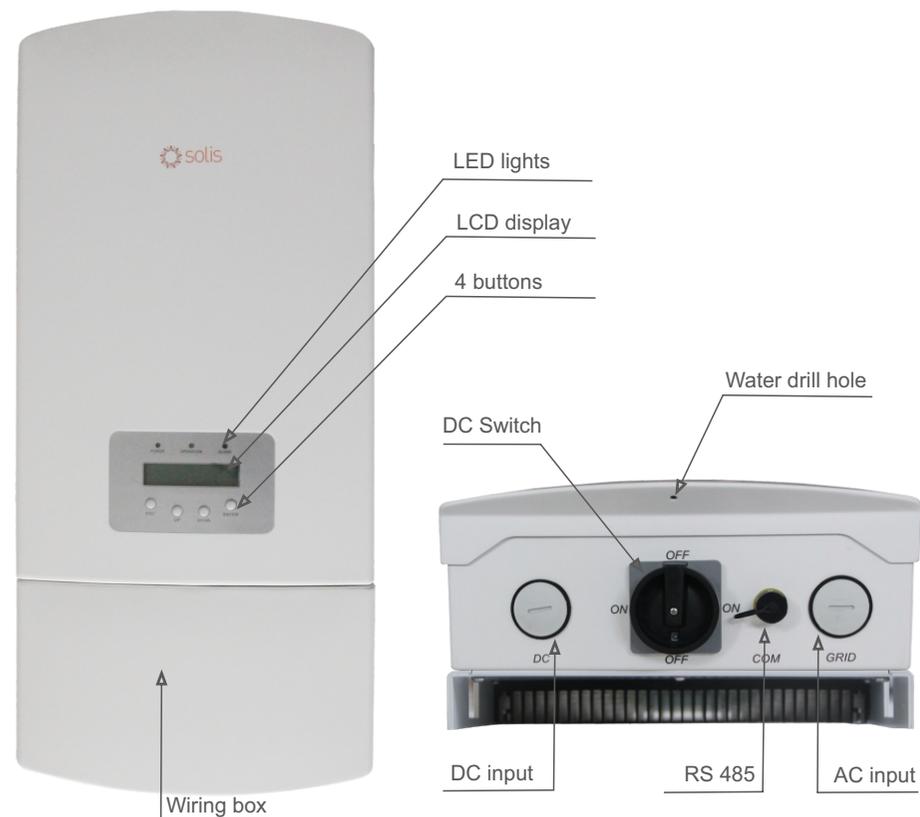
▲ Figure 1.1 Front side view

▲ Figure 1.2 Bottom side view

1. Introduction

1.2 Packaging

When you receive the inverter, please check if all the parts listed below are included:

Part NO.	Description	Number
1	PV grid tie inverter	1
2	Wall mounting bracket	1
3	Locking screws	2
4	Expansion screws	4
5	Manual	1

▲ Table 1.1 Accessory list

2.Safety 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.

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

CAUTION:
CAUTION, RISK OF ELECTRIC SHOCK symbol indicates important safety instructions, which if not correctly followed, could result in electric shock.

CAUTION:
CAUTION, HOT SURFACE symbol indicates safety instructions, which if not correctly followed, could result in burns.

2.2 General Safety Instructions

WARNING:
Please don't connect PV array positive(+) or negative(-) to the ground, it could cause serious damage to the inverter.

WARNING:
Electrical installations must be done in accordance with the local and national electrical safety standards.

WARNING:

To reduce the risk of fire, over-current protective devices (OCPD) are required for circuits connected to the Inverter.
The DC OCPD should be installed as local requirement. All photovoltaic source and output circuit conductors shall have disconnects complying with the NEC, Section 690, Part II. All single phase inverters areintegrate with DC switch.
The trip current for AC OCPD for 1-1.5kW models should be 10A, for 2-2.5kW models should be 15A, for 3-3.6kW should be 20A, for 4-5kW should be 25A.

CAUTION:

Risk of electric shock. Do not remove cover. There is no user serviceable parts inside. Refer servicing to qualified and accredited service technician.

CAUTION:

The PV array (Solar panels) supplies a DC voltage when it is exposed to light.

CAUTION:

Risk of electric shock from energy stored in capacitors of the Inverter. Do not remove cover until 5 minutes after disconnecting all sources of supply. Service technician only. Warranty may be voided if any unauthorized removal of cover.

CAUTION:

The surface temperature of the inverter can reach up to 75℃ (167 F).
To avoid risk of burns, do not touch the surface when inverter is operating.
Inverter must be installed out the reach of children.

2.3 Notice For Use

The inverter has been constructed according to the applicable safety and technical guidelines. Use the inverter in installations that meet the following sepcification ONLY:

1.Permanent installation is required.

2.The electrical installation must meet all the applicable regulations and standards.

3.The inverter must be installed according to the instructions stated in this manual.

4.The inverter must be installed according to the correct technical specifications.

5.To startup the inverter, the Grid Supply Main Switch (AC) must be switched on, before the solar panel's DC isolator shall be switched on. To stop the inverter, the Grid Supply Main Switch (AC) must be switched off before the solar panel's DC isolator shall be switched off.

3.1 Front Panel Display
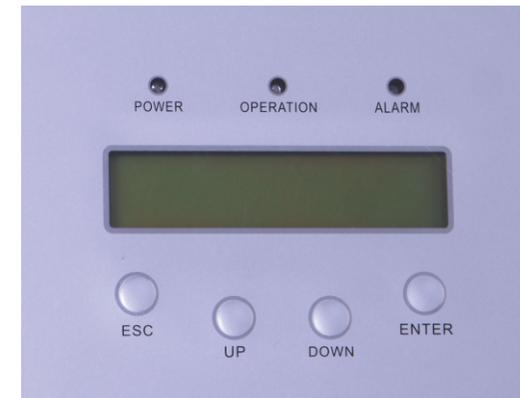
▲ Figure 3.1 Front Panel Display

3.2 LED Status Indicator Lights

There are three LED status indicator lights in the front panel of the inverter. Left LED: POWER LED (red) indicates the power status of the inverter. Middle LED: OPERATION LED (green) indicates the operation status. Right LED: ALARM LED (yellow) indicates the alarm status. Please see Table 3.1 for details

Light	Status	Description
● POWER	ON	The inverter can detect DC power
	OFF	No DC power or low DC power
● OPERATION	ON	The inverter is operating properly.
	OFF	The inverter has stopped to supply power.
	FLASHING	The inverter is initializing.
● ALARM	ON	Alarm or fault condition is detected.
	OFF	The inverter is operating properly.

▲ Table 3.1 Status Indicator Lights

3. Overview

3.3 Keypad

There are four keys in the front panel of the Inverter(from left to right):
ESC, UP, DOWN and ENTER keys. The keypad is used for:

● Scrolling through the displayed options (the UP and DOWN keys);

● Access to modify the adjustable settings (the ESC and ENTER keys).

3.4 LCD

The two-line Liquid Crystal Display (LCD) is located at the front panel of the Inverter, which shows the following information:

● Inverter operation status and data;

● Service messages for operator;

● Alarm messages and fault indications.

4.1 Select a Location for the Inverter

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

● Install on a wall or strong structure capable of bearing the weight.

● Install vertically with a maximum incline of +/- 5°. 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.

● The inverter is designed to work in extreme temperatures. The ambient operating temperature range is from -25℃ to 60℃.

● If there is more than 1 inverter installed together, A minimum 300mm clearance should be kept between each inverter. The bottom of the inverter should be 500mm clearance to the ground.

300mm   300mm   300mm   300mm   300mm

500mm   500mm
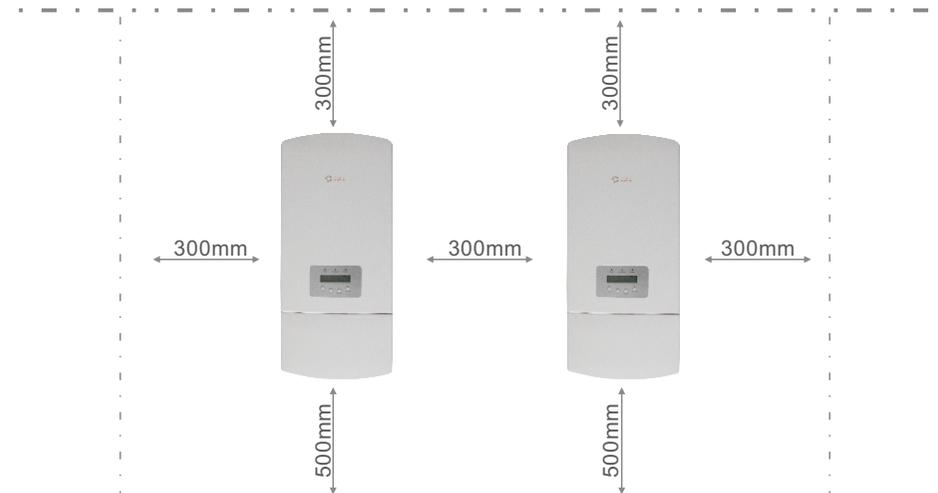
▲ Figure 4.1 Inverter Mounting clearance

● Visibility of the LED status indicator lights and the LCD located at the front panel of the inverter should be considered.

● Adequate ventilation must be provided if the inverter is to be installed in a confined space.

NOTE:
Nothing should be stored on or placed against the inverter.

4. Installation

4. Installation

4.2 Mounting the Inverter

Please use suitable fixings for wall type (e.g. use dynabolts for brick, masonry, etc).
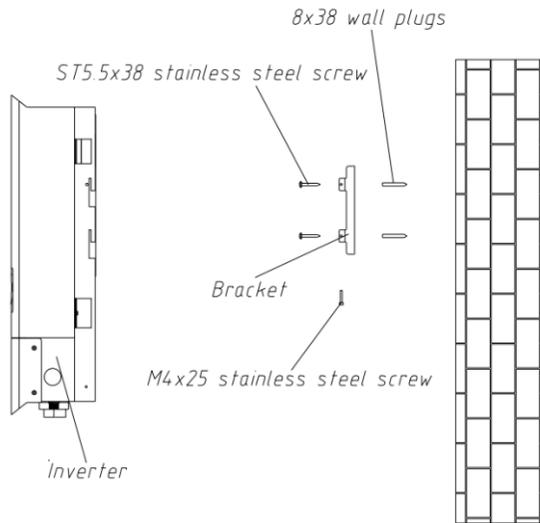
▲ Figure 4.2 Inverter Mounting

Inverter should be mounted in a vertical position as shown in Figure 4.2. The steps to mount the inverter on the wall are given as follows:

1. Locate the wall studs in the desired location and align the wall mount bracket over the studs. Mark the mounting holes. For masonry walls, the mounting holes should be for a suitable dynabolt type mounting system.

2. MAKE SURE BRACKET IS horizontal. Ensure that the A, B, C, and D mounting holes (in Figure 4.3) are aligned with the wall's most secure points (e.g. wall studs in case of clad building materials).

⚠ **WARNING:**
Bracket must be mounted vertically on a vertical wall surface.

3. Carefully hang the inverter on the upper part of the wall mount bracket by fitting the hooks into the slot of the bracket. Use M4×25 stainless steel screws and washers at holes E and F (in Figure 4.2) to secure the mounting hooks to the rear of the inverter.
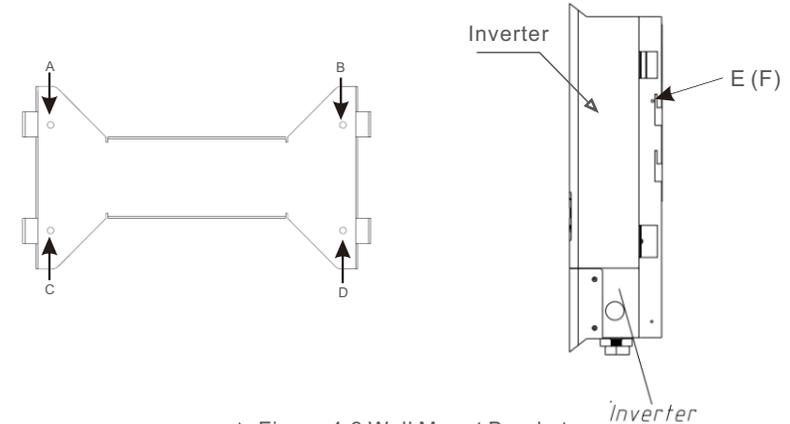
▲ Figure 4.3 Wall Mount Bracket

4.3 Electrical Connections

Before connection the wire, please unscrew the four screws on both side of wiring box, then open the cover.

⚠ Please press the cover of wiring box while loose the screw. Otherwise it could break the screw thread.

▲ Figure 4.4 Bottom side of inverter

.10.

.11.

Before electrical connection Please make sure below steps are strictly followed:

a. Switch the Grid Supply Main Switch (AC) OFF.

b. Switch the DC Switch OFF.

Terminal connections:

▲ Figure 4.5 Connection area of inverter(**Fuse type**)

Terminal A

Terminal B

▲ Figure 4.6 Connection area of inverter(**Non-Fuse type**)

Fuse type connection:

Strip the end of wire about 10mm, loose the screw on the terminal, then insert the wire into the terminal. Tight the screws with the torque of 5Nm.

Non-Fuse type connection:

Strip the end of wire about 18mm. Use a slotted screwdriver, insert to the end of the terminal A and insert the wire into the terminal B. Loose the screwdriver, the cable will be fixed in the terminal.

Connect PV side of inverter:

Warning

Before connecting inverter, please make sure the PV array open circuit voltage is within the limit of the inverter. Otherwise the inverter could be damaged. The maximum allowable input short circuit current limit of the photovoltaic array for each MPPT input channel is 10Adc for the 1-3.6kW models and it is 15Adc for the 4-5kW models.

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

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

Please use qualified DC cable for PV system.

Note:
Damage to the DC Disconnect due to enlarged knockouts.
Enlarged knockouts enable moisture to penetrate the DC Disconnect which could damage electronic components in the DC Disconnect.

Please refer figure 4.5 and 4.6 to connect the DC1 and DC2 in the DC terminal of inverter, then connect the array mounting bonding conductor to two "PE" terminal of DC side. The DC wire connected to DC terminals (shown in Figure 4.5 and 4.6) is recommended AWG12-8. For fuse type inverter KLM-20 of Cooper Bussmann or the same type, only professional can replace it.

Connect grid side of inverter:

WARNING:
For fuse type: Damage to the inverter through the use of fuses as disconnecting units in the output circuit of the inverter.

The inverter is suitable for 208V and 240V grid. Please see table 4.1 to connect cable to inverter terminals. Due to inverter monitors voltage between L1 and L2, Neutral could be either connected or not for 240V grid. Ground must be connect to the PE terminal. The cable for grid connection to AC terminals ("L1", "L2", "N" and "PE") is recommended for AWG 4-8. For fuse type inverter, KLM-30 of Cooper Bussmann or the same type could be used, only professional can replace it.
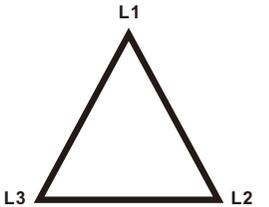
GRID STANDARD	L1 ▲ L3 L2			L1 • N L2		
	208V~ 3PH–△–3W			240V~ SPLIT–PHASE		
TERMINAL	L1	L2	N	L1	L2	N
Connection requiement	Yes	Yes	No	Yes	Yes	Optional

▲ Table 4.1 Grid terminal connection

Inverter monitoring Connection:

The inverter can be monitored by Wi-Fi or GPRS functions. All the communication functions are optional (Figure 4.6), please refer to communication connection instructions.

GPRS monitoring

Wi-Fi monitoring

Router

Internet

Smart phone monitoring

Web server

PC monitoring

Wi-Fi box

Wi-Fi monitoring
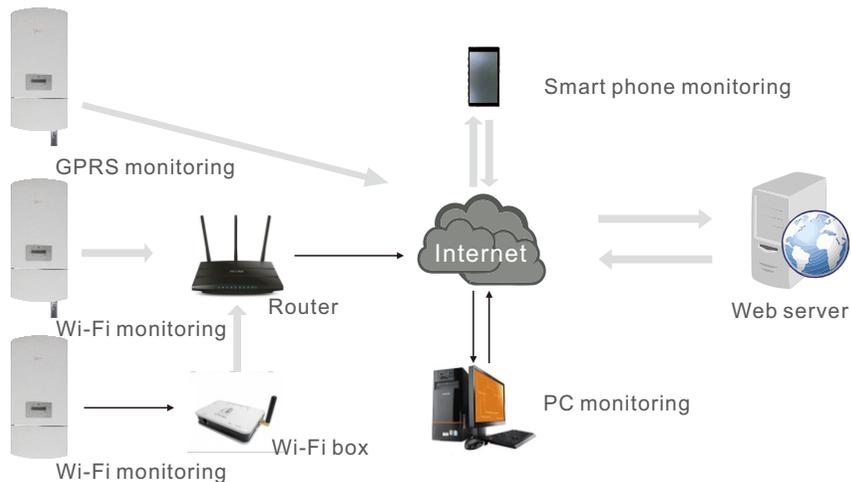
▲ Figure4.6 Wi-Fi communication function

5.1 Start the Inverter

To start up the Inverter, it is important that the following steps are strictly followed:

1. Switch the grid supply main Switch (AC) ON first.

2. Switch the DC switch ON. If the voltage of PV arrays are higher than start up voltage, the inverter will turn on. The red LED power will light, and the LCD shows the company's name and the inverter model.

Ginlong
Solis-5K-2G-US

▲ Figure 5.1 Company Name and Inverter Model on LCD

3. When both the DC and the AC sides supply to the inverter, it will be ready to generate power. Initially, the inverter will check both its internal parameters and the parameters of the AC grid, to ensure that they are within the acceptable limits. At the same time, the green LED will flash and the LCD displays the information of INITIALIZING.

4. After 30-300 seconds (depending on local requirement), the inverter will start to generate power. The green LED will be on continually and the LCD displays GENERATING.

⚠ **WARNING:**
Do not touch the surface when the inverter is operating. It may be hot and cause burns.

5.2 Stop the Inverter

To stop the Inverter, the following steps must be strictly followed:

1. Switch the Supply Main Switch (AC) OFF.

2. Wait 30 seconds. Switch the DC Switch OFF. All the LEDs of the inverter will be off in one minute.

During normal operation, the display alternately shows the power and the operation status with each screen lasting for 10 seconds (see Figure 6.1). Screens can also be scrolled manually by pressing the UP and DOWN keys. Press the ENTER key to access to the Main Menu.
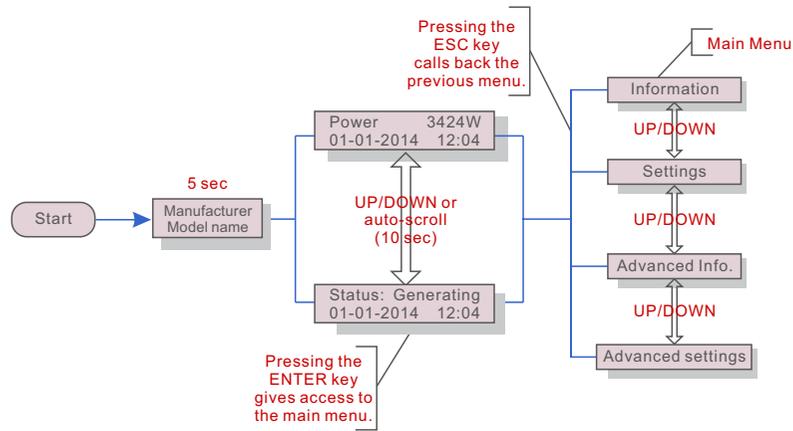
▲ Figure 6.1 Operation Overview

6.1 Main Menu

There are four submenus in the Main Menu (see Figure 6.1):

1. Information
2. Settings
3. Advanced Info.
4. Advanced Settings

6.2 Information

The Solis Single Phase Inverter main menu provides access to operational data and information. The information is displayed by selecting "Information" from the menu and then by scrolling up or down.

Display	Duration	Description
V_DC1 350.8V I_DC1 5.1A	10 sec	V_DC1: Shows input 01 voltage value. I_DC1: Shows input 01 current value.
V_DC2 350.8V I_DC2 5.1A	10 sec	V_DC2: Shows input 02 voltage value. I_DC2: Shows input 02 current value.
V_Grid 230.4V I_Grid 8.1A	10 sec	V_Grid: Shows the grid's voltage value I_Grid: Shows the grid's current value.
Status: Generating Power: 1488W	10 sec	Status: Shows instant status of the Inverter. Power: Shows instant output power value.
Grid Frequency F_Grid 60.06Hz	10 sec	F_Grid: Shows the grid's frequency value.
Total Energy 0258458 kwh	10 sec	Total generated energy value
This Month: 0123kwh Last Month: 0123kwh	10 sec	This Month: Total energy generated this month. Last Month: Total energy generated last month.
Today: 15.1kwh Yesterday: 13.5kwh	10 sec	Today: Total energy generated today. Yesterday: Total energy generated yesterday.

▲ Table 6.1 Information list

Pressing the ESC key returns to the Main Menu. Pressing the ENTER key locks (Figure 6.2(a)) or unlocks (Figure 6.2 (b)) the screen.

(a)   (b)

▲ Figure 6.2 Locks and Unlocks the Screen of LCD

6.3 Settings

The following submenus are displayed when the Settings menu is selected:

1.Set Time

2.Set Address

6.3.1 Set Time

This function allows time and date setting. When this function is selected, the LCD will display a screen as shown in Figure 6.3.

> NEXT=<ENT> OK=<ESC>
> 01-01-2010 16:37

▲ Figure 6.3 Set Time

Press the UP/DOWN keys to set time and data. Press the ENTER key to move from one digit to the next (from left to right). Press the ESC key to save the settings and return to the previous menu.

6.3.2 Set Address

This function is used to set the address when the inverter is connected to the PC. The address number can be assigned from "01"to "99"(see Figure 6.4). The default address number of Solis Single Phase Inverter is "01".

> YES=<ENT> NO=<ESC>
> Set Address: 02

▲ Figure 6.4 Set Address

Press the UP/DOWN keys to set the address. Press the ENTER key to save the settings. Press the ESC key to cancel the change and return to the previous menu.

6.4 Advanced Info - Technicians Only

NOTE:
To access to this area is for fully qualified and accredited technicians only. Please enter the password to "Advanced Info." and "Advanced setting"

Select "Advanced Info." from the Main Menu. The screen will require the password as below

> YES=<ENT> NO=<ESC>
> Password:0000

▲ Figure 6.5 Enter password

The default password is "0010". Please press "down" to move the cursor, press "up" to select the number.

After enter the correct password the Main Menu will display a screen and be able to access to the following information.

1.Alarm Message

2.Temperature

3.Standard No.

4.Version

5.Communication Data

The screen can be scrolled manually by pressing the UP/DOWN keys. Pressing the ENTER key gives access to a submenu. Press the ESC key to return to the Main Menu.

6.4.1 Alarm Message

The display shows the 10 latest alarm messages (see Figure 6.6). Screens can be scrolled manually by pressing the UP/ DOWN keys. Press the ESC key to return to the previous menu.
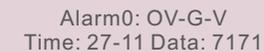
> Alarm0: OV-G-V
> Time: 27-11 Data: 7171

▲ Figure 6.6 Alarm Message

6.4.2 Temperature

The screen shows the temperature inside the inverter (see Figure 6.7).

```
Temperature
046.6℃
```

▲ Figure 6.7 Temperature inside the Inverter

6.4.3 Standard No.

The screen shows the reference standard of the Inverter (see Figure 6.8).

```
Standard: UL-240V-A
```

▲ Figure 6.8 Example of Standard of the Inverter

6.4.4 Version

The screen shows the model version and the software version of the Inverter (see Figure 6.9).

```
Model: 08
Software Version: D20001
```

▲ Figure 6.9 Model Version and Software Version

6.4.5 Communication Data

The screen shows the internal data of the Inverter (see Figure 6.10), which is for service technicians only.

```
01-05: 01 25 E4 9D AA
06-10: C2 B5 E4 9D 55
```

▲ Figure 6.10 Communication Data

6.5 Advanced Settings - Technicians Only

NOTE:
To access to this area is for fully qualified and accredited technicians only. Please follow 6.4 to enter password to access this menu.

Select Advanced Settings from the Main Menu to access the following options:

1.Select Standard   2.Grid ON/OFF
3.New Password   4.Calibrate Energy

6.5.1 Selecting Standard

This function is used to select the grid's reference standard (see Figure 6.11).

```
YES=<ENT> NO=<ESC>
Standard:UL-240V-A
```

▲ Figure 6.11

NOTE:
Before to using this function, please set "GRID OFF" to stop inverter (refer to Section 6.5.2).

Press the UP/DOWN keys to select the standard (AS4777, VDE4105, VDE0126, UL-240V-A, UL-208V-A, UL-240V, UL-208V, MEX-CFE, G83/2 (for 1-3.6kW models), G59/3 (for 4-5kW models), EN50438 DK, EN50438 IE, EN50438 NL and "User-Def" function). Press the ENTER key to confirm the setting. Press the ESC key to cancel changes and returns to previous menu.

There are 4 settings for USA and CSA market, UL-240V and UL-208V are the settings for inverter without AFCI module, UL-240V-A and UL-208V-A are the settings for inverter integrate with AFCI module.

NOTE:
The default setting is 240V split phase "UL-240V" or "UL-240V-A", if it's different please select 208V single phase "UL-208V" or "UL-208V-A" or 220V split phase "MEX-CFE". Other standards are for 50Hz grid, please don't select.

NOTE:
This function is for technicians use only.

Selecting the "User-Def" menu will access to the following submenu (see Figure 6.12),

> —> OV-V: 262V
> UN-V: 210V

▲ Figure 6.12

NOTE:
The " User-Def" function can be only used by the service engineer and must be allowed by the local energy supplier.

Below is the setting range for "User-Def". Using this function, the limits can be changed manually.

> OV-V: 240---270V
> UN-V: 180---210V
> OV-G-F: 60.3—62.0Hz(50.3---52.0Hz)
> UN-G-F: 57.0—59.5Hz(47.0---49.5Hz)

Press the UP/DOWN keys to scroll through items. Press the ENTER key to edit the highlighted item. Press the UP/DOWN keys again to change the setting. Press the ENTER key to save the setting. Press the ESC key to cancel changes and returns to the previous menu.

NOTE:
Please, set "Grid ON" to start up the inverter after the settings (refer to Section 6.5.2). Otherwise the inverter won't start up.

6.5.2 Grid ON/OFF

This function is used to start up or stop the power generation of Solis Single Phase Inverter (see Figure 6.13).

> —> Grid ON
> Grid OFF

▲ Figure 6.13 Set Grid ON/OFF

Screens can be scrolled manually by pressing the UP/DOWN keys. Press the ENTER key to save the setting. Press the ESC key to return to the previous menu.

6.5.3 New Password

This function is used to set the new password for menu "Advanced info." and "Advanced information" (see Figure 6.14).

> YES=<ENT> NO=<ESC>
> Password: 0000

▲ Figure 6.14 Set new password

Enter the right password before set new password. Press the DOWN key to move the cursor, Press the UP key to revise the value. Press the ENTER key to execute the setting. Press the ESC key to return to the previous menu.

6.5.4 Calibrate Energy

Maintenance or replacement could clear or cause a different value of total energy. Use this function could allow user to revise the value of total energy to the same value as before. If the monitoring website is used the data will be synchronous with this setting automatically. (see Figure 6.15).

> YES=<ENT> NO=<ESC>
> Energy:0000000kWh

▲ Figure 6.15 Calibrate energy

Press the DOWN key to move the cursor, Press the UP key to revise the value. Press the ENTER key to execute the setting. Press the ESC key to return to the previous menu.

6.6 Arc fault(for AFCI version)

Solis Single Phase Inverter can integrate with AFCI module which can detect the arc in DC circuit. If arc fault happen, it can only be removed manually.
During start up inverter will check AFCI module. If the check is OK, inverter will start normally. If the check is fail, LCD will show below:

> AFCI Check Fail
> Restart<ESC>

▲ Figure 6.16 AFCI check fail

Press <ESC> for 3 seconds, the inverter will restart. If the fault happen again, please turn off inverter to restart. If the fault still happen, please contact us.

6. Operation

During normal operation, If arc fault happen in DC circuit, the inverter will stop output and LCDshow below:

```
ARC-Fault
Restart<ESC>
```

▲ Figure 6.17 Arc fault

Please check DC cables and connections to identify the source of possible arcing. Then **press <ESC> for 3 seconds**, the inverter will restart.

7. Maintenance

Solis Single Phase Inverter does not require any regular maintenance. However, cleaning the dust on heat-sink will help the inverter to dissipate the heat and increase its life time. The dust can be removed with a soft brush.

CAUTION:
Do not touch the inverter's surface when it is operating. Some parts of the inverter may be hot and cause burns. Turn off the inverter (refer to Section 5.2) and wait for a cool-down period before before any maintenance or cleaning operation.

The LCD and the LED status indicator lights can be cleaned with a damp cloth if they are too dirty to be read.

NOTE:
Never use any solvents, abrasives or corrosive materials to clean the inverter.

8. Trouble Shooting

The inverter is designed in accordance with the most important international grid-tied standards and 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.

In case of failure, the LCD screen will display an alarm message. In this case, the inverter may stop feeding into the grid. The failure descriptions and their corresponding alarm messages are listed in Table 8.1:

Alarm Message	Failure description
OV-G-V	Over grid voltage
UN-G-V	Under grid voltage
OV-G-F	Over grid frequency
UN-G-F	Under grid frequency
G-IMP	High grid impedance
NO-GRID	No grid voltage
OV-DC	Over DC voltage
OV-BUS	Over DC bus voltage
UN-BUS	Under DC bus voltage
GRID-INTF.	Grid interference
INI-FAULT	Initialization system fault
OV-TEM	Over Temperature
GROUND-FAULT	Ground fault
ILeak-FAULT	High Grid leakage current
Relay-FAULT	Relay check fault
DCinj-FAULT	High DC injection current
AFCI Check FAULT	AFCI module self check fault
ARC-FAULT	ARC detected in DC circuit

▲ Table 8.1 Fault message and description

NOTE:
If the inverter displays any alarm message as listed in Table 8.1; please turn off the inverter (refer to Section 5.2 to stop your inverter) and wait for 5 minutes before restarting it (refer to Section 5.1 to start your inverter). If the failure persists, please contact your local distributor or the service center. Please keep ready with you the following information before contacting us.

1. Serial number of Solis Single Phase Inverter;

2. The distributor/dealer of Solis Single Phase Inverter (if available);

3. Installation date.

4. The description of problem (i.e. the alarm message displayed on the LCD and the status of the LED status indicator lights. Other readings obtained from the Information submenu (refer to Section 6.2) will also be helpful.);

5. The PV array configuration (e.g. number of panels, capacity of   panels, number of strings , etc.);

6. Your contact details.

Model	Solis-1K-2G-US	Solis-1.5K-2G-US
The max DC input voltage	500Vdc	
MPPT operation range	70~400Vdc	100~400Vdc
The max DC input current	10A	
Number of MPPT /strings per MPPT	1/1	
Rating output power	1kW	1.5kW
The transient max power	1.1kW	1.7kW
Rating grid voltage	208V/240V	
The grid voltage range	183~228(for208V rated)/211~264(for240V rated)	
Operation phase	Single phase	
Rating grid output current	4.3A	6.5A
Output power factor	>0.99	
Grid current THD	THD<3%	
The DC injection current	<20mA	
Rating grid frequency	60Hz	
Efficiency	>96.8%	
Protection	DC reverse-polarity protection; AC short circuit protection; islanding protection; temperature protection. Etc.	
Size(mm)	339W∗657H∗164D mm(13.3W∗25.9H∗6.5D inch)	
Weight	9.8kg/21.6lb	
Topology	Transformerless	
DC Switch	Optional	
Internal consumption	<1W(Night)	
Running temperature	-13°F~140°F	
Ingress protection	NEMA 4X	
Interface	RS485 WIFI GPRS(Optional)	
Design lifetime	>20years	
Operating Range Utility Frequency	47-52 or 57-62Hz(adjustable)	
Utility Monitoring	CAN/CSAC22.2 N107.1, UL1741, UL1998, UL1699B, FCC part 15, Class B	
Operation Surroundings Humidity	0-100%	
Noise emission(typical)	<30 dBA	
EMC	EN61000-6-1:2007 EN61000-6-3:2007	

Model	Solis-2K-2G-US	Solis-2.5K-2G-US
The max DC input voltage	500Vdc	600Vdc
MPPT operation range	100~400Vdc	100~500Vdc
The max DC input current	10Adc	10+10Adc
Number of MPPT /strings per MPPT	1/1	2/2
Rating output power	2kW	2.5kW
The transient max power	2.2kW	2.8kW
Rating grid voltage	208V/240V	
The grid voltage range	183~228(for208V rated)/211~264(for240V rated)	
Operation phase	Single phase	
Rating grid output current	8.7A	10.9A
Output power factor	>0.99	
Grid current THD	THD<3%	
The DC injection current	<20mA	
Rating grid frequency	60Hz	
Efficiency	>96.8%	>97.5%
Protection	DC reverse-polarity protection; AC short circuit protection; islanding protection; temperature protection. Etc.	
Size(mm)	339W∗657H∗164D mm (13.3W∗25.9H∗6.5D inch)	339W∗657H∗172.5D mm (13.3W∗25.9H∗6.8D inch)
Weight	9.8kg/21.6lb	15kg/33.1lb
Topology	Transformerless	
DC Switch	Optional	
Internal consumption	<1W(Night)	
Running temperature	-13°F~140°F	
Ingress protection	NEMA 4X	
Interface	RS485 WIFI GPRS(Optional)	
Design lifetime	>20years	
Operating Range Utility Frequency	47-52 or 57-62Hz(adjustable)	
Utility Monitoring	CAN/CSAC22.2 N107.1, UL1741, UL1998, UL1699B, FCC part 15, Class B	
Operation Surroundings Humidity	0-100%	
Noise emission(typical)	<30 dBA	
EMC	EN61000-6-1:2007 EN61000-6-3:2007	

Model	Solis-3K-2G-US
The max DC input voltage	600Vdc
MPPT operation range	100~500Vdc
The max DC input current	10+10Adc
Number of MPPT /strings per MPPT	2/2
Rating output power	3kW
The transient max power	3.3kW
Rating grid voltage	208V/240V
The grid voltage range	183~228(for208V rated)/211~264(for240V rated)
Operation phase	Single phase
Rating grid output current	13.0A
Output power factor	>0.99
Grid current THD	THD<3%
The DC injection current	<20mA
Rating grid frequency	60Hz
Efficiency	>97.5%
Protection	DC reverse-polarity protection; AC short circuit protection; islanding protection; temperature protection. Etc.
Size(mm)	339W∗657H∗172.5D mm(13.3W∗25.9H∗6.8D inch)
Weight	15kg/33.1lb
Topology	Transformerless
DC Switch	Optional
Internal consumption	<1W(Night)
Running temperature	-13°F~140°F
Ingress protection	NEMA 4X
Interface	RS485 WIFI GPRS(Optional)
Design lifetime	>20years
Operating Range Utility Frequency	47-52 or 57-62Hz(adjustable)
Utility Monitoring	CAN/CSAC22.2 N107.1, UL1741, UL1998, UL1699B, FCC part 15, Class B
Operation Surroundings Humidity	0-100%
Noise emission(typical)	<30 dBA
EMC	EN61000-6-1:2007 EN61000-6-3:2007

Model	Solis-3.6K-2G-US
The max DC input voltage	600Vdc
MPPT operation range	100~500Vdc
The max DC input current	10+10Adc
Number of MPPT /strings per MPPT	2/2
Rating output power	3.6kW
The transient max power	4kW
Rating grid voltage	208V/240V
The grid voltage range	183~228(for208V rated)/211~264(for240V rated)
Operation phase	Single phase
Rating grid output current	15.7A
Output power factor	>0.99
Grid current THD	THD<3%
The DC injection current	<20mA
Rating grid frequency	60Hz
Efficiency	>97.5%
Protection	DC reverse-polarity protection; AC short circuit protection; islanding protection; temperature protection. Etc.
Size(mm)	339W∗657H∗172.5D mm(13.3W∗25.9H∗6.8D inch)
Weight	15kg/33.1lb
Topology	Transformerless
DC Switch	Optional
Internal consumption	<1W(Night)
Running temperature	-13°F~140°F
Ingress protection	NEMA 4X
Interface	RS485 WIFI GPRS(Optional)
Design lifetime	>20years
Operating Range Utility Frequency	47-52 or 57-62Hz(adjustable)
Utility Monitoring	CAN/CSAC22.2 N107.1, UL1741, UL1998, UL1699B, FCC part 15, Class B
Operation Surroundings Humidity	0-100%
Noise emission(typical)	<30 dBA
EMC	EN61000-6-1:2007 EN61000-6-3:2007

Model	Solis-4K-2G-US
The max DC input voltage	600Vdc
MPPT operation range	100～500Vdc
The max DC input current	10+18Adc
Number of MPPT /strings per MPPT	2/(1 and 2)
Rating output power	4kW
The transient max power	4.4kW
Rating grid voltage	208V/240V
The grid voltage range	183~228(for208V rated)/211~264(for240V rated)
Operation phase	Single phase
Rating grid output current	17.4A
Output power factor	>0.99
Grid current THD	THD<3%
The DC injection current	<20mA
Rating grid frequency	60Hz
Efficiency	>97.8%
Protection	DC reverse-polarity protection; AC short circuit protection; islanding protection; temperature protection. Etc.
Size(mm)	339W*657H*172.5D mm(13.3W*25.9H*6.8D inch)
Weight	17kg/33.1lb
Topology	Transformerless
DC Switch	Optional
Internal consumption	<1W(Night)
Running temperature	-13°F~140°F
Ingress protection	NEMA 4X
Interface	RS485 WIFI GPRS(Optional)
Design lifetime	>20years
Operating Range Utility Frequency	47-52 or 57-62Hz(adjustable)
Utility Monitoring	CAN/CSAC22.2 N107.1, UL1741, UL1998, UL1699B, FCC part 15, Class B
Operation Surroundings Humidity	0-100%
Noise emission(typical)	<30 dBA
EMC	EN61000-6-1:2007 EN61000-6-3:2007

Model	Solis-4.6K-2G-US
The max DC input voltage	600Vdc
MPPT operation range	100～500Vdc
The max DC input current	10+18Adc
Number of MPPT /strings per MPPT	2/(1 and 2)
Rating output power	4.6kW
The transient max power	5kW
Rating grid voltage	208V/240V
The grid voltage range	183~228(for208V rated)/211~264(for240V rated)
Operation phase	Single phase
Rating grid output current	20A
Output power factor	>0.99
Grid current THD	THD<3%
The DC injection current	<20mA
Rating grid frequency	60Hz
Efficiency	>97.8%
Protection	DC reverse-polarity protection; AC short circuit protection; islanding protection; temperature protection. Etc.
Size(mm)	339W*657H*172.5D mm(13.3W*25.9H*6.8D inch)
Weight	17kg/33.1lb
Topology	Transformerless
DC Switch	Optional
Internal consumption	<1W(Night)
Running temperature	-13°F~140°F
Ingress protection	NEMA 4X
Interface	RS485 WIFI GPRS(Optional)
Design lifetime	>20years
Operating Range Utility Frequency	47-52 or 57-62Hz(adjustable)
Utility Monitoring	CAN/CSAC22.2 N107.1, UL1741, UL1998, UL1699B, FCC part 15, Class B
Operation Surroundings Humidity	0-100%
Noise emission(typical)	<30 dBA
EMC	EN61000-6-1:2007 EN61000-6-3:2007

9. Specifications

Model	Solis-5K-2G-US
The max DC input voltage	600Vdc
MPPT operation range	100~500Vdc
The max DC input current	10+18Adc
Number of MPPT /strings per MPPT	2/(1 and 2)
Rating output power	5kW
The transient max power	5kW
Rating grid voltage	208V/240V
The grid voltage range	183~228(for208V rated)/211~264(for240V rated)
Operation phase	Single phase
Rating grid output current	21.7A
Output power factor	>0.99
Grid current THD	THD<3%
The DC injection current	<20mA
Rating grid frequency	60Hz
Efficiency	>97.8%
Protection	DC reverse-polarity protection; AC short circuit protection; islanding protection; temperature protection. Etc.
Size(mm)	339W∗657H∗172.5D mm(13.3W∗25.9H∗6.8D inch)
Weight	17kg/33.1lb
Topology	Transformerless
DC Switch	Optional
Internal consumption	<1W(Night)
Running temperature	-13°F~140°F
Ingress protection	NEMA 4X
Interface	RS485 WIFI GPRS(Optional)
Design lifetime	>20years
Operating Range Utility Frequency	47-52 or 57-62Hz(adjustable)
Utility Monitoring	CAN/CSAC22.2 N107.1, UL1741, UL1998, UL1699B, FCC part 15, Class B
Operation Surroundings Humidity	0-100%
Noise emission(typical)	<30 dBA
EMC	EN61000-6-1:2007 EN61000-6-3:2007