

Hybrid Grid Tie Inverter

GCI-H-US Single Phase Inverter

Installation and Operation Manual



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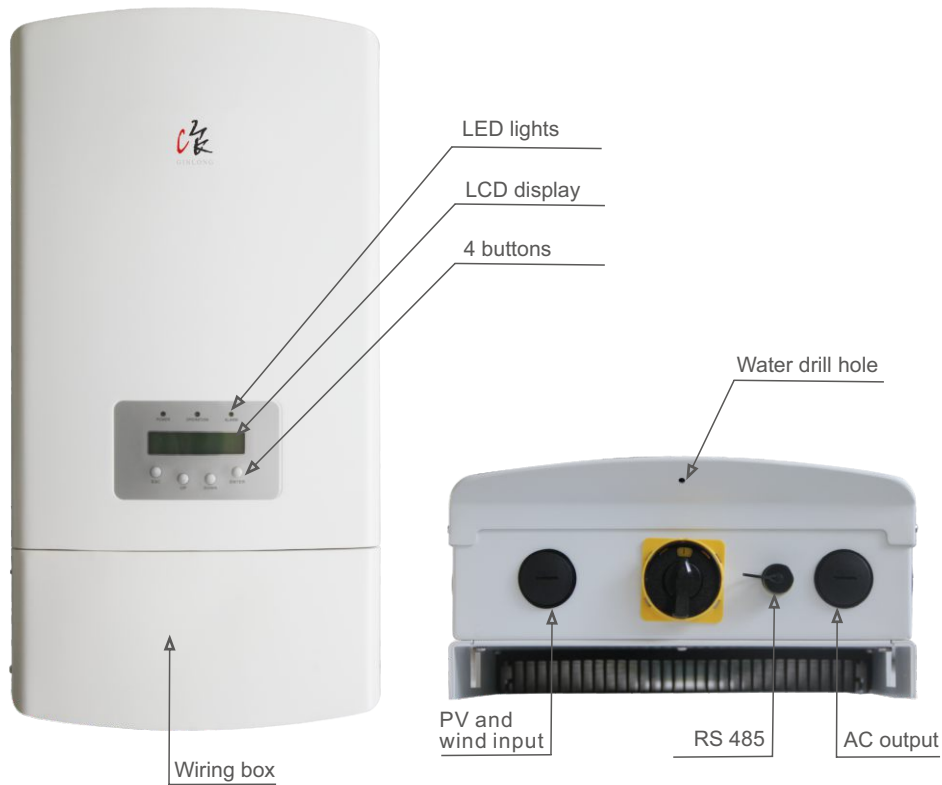
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1. Introduction

1.1 Product Descriptions

GCI single phase hybrid series inverters is used for both PV and wind system. The inverter has two different MPP trackers one for PV input and the other for wind input(from controller). The inverter can transfer DC power from PV panels and wind turbine into AC power and feed into grid. The inverter have brake function which can stop the wind turbine in high wind speed condition.

GCI single phase hybrid series inverters contain 4 models which are listed below:
GCI-1K-H-US-HY GCI-2K-H-US-HY GCI-3K-H-US-HY GCI-5K-H-US-HY



▲ Figure 1.1 Front side view

▲ Figure 1.1 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 Material 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

2.Safety Instructions



WARNING:

To reduce the risk of fire, branch-circuit over-current protective devices (OCPD) are required for circuits connected to the Inverter. The trip current for over current for AC and DC isolator is recommended to be 110%-125% of inverter rated current. The rated voltage OCPD should be higher than local grid voltage.



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:

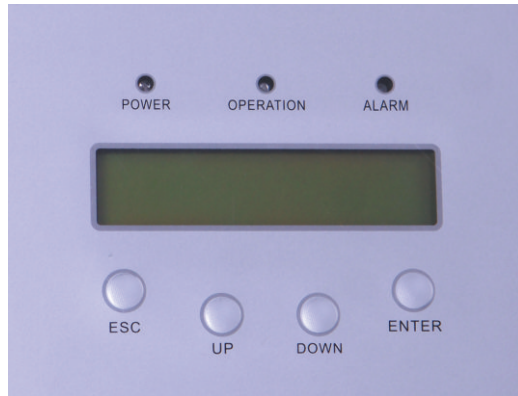
The surface temperature of the inverter can reach up to 75°C (167 F). To avoid risk of burns, do not touch the surface when inverter is operating. Inverter must be installed out the reach of children.

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 specification ONLY:

- 1.Permanent installation is required.
- 2.The inverter must be connected to a separate grounded AC group, to which no other electrical equipment is connected.
- 3.The electrical installation must meet all the applicable regulations and standards.
- 4.The inverter must be installed according to the instructions stated in this manual.
- 5.The inverter must be installed according to the technical specifications.
- 6.To startup the inverter, the Grid Supply Main Switch (AC) must be switched on before the DC isolator switched on. To stop the inverter, the Grid Supply Main Switch (AC) must be switched off before the DC isolator 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

3.3 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.

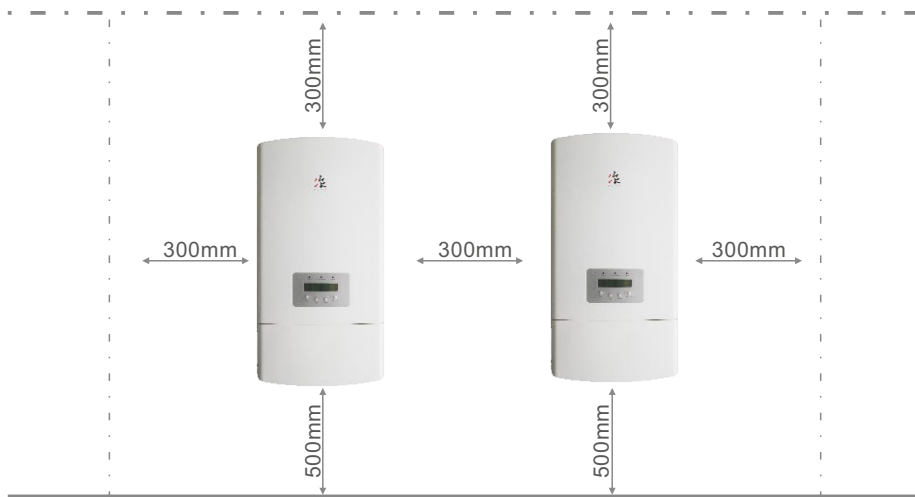
4. Installation

4. Installation

4.1 Select a Location for the Inverter

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

- The temperature of the inverter heat-sink could up to 75°C.
- The inverter is designed to work in extreme temperatures. The ambient operating temperature range is from -25°C to 60°C.
- 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.



▲ 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.

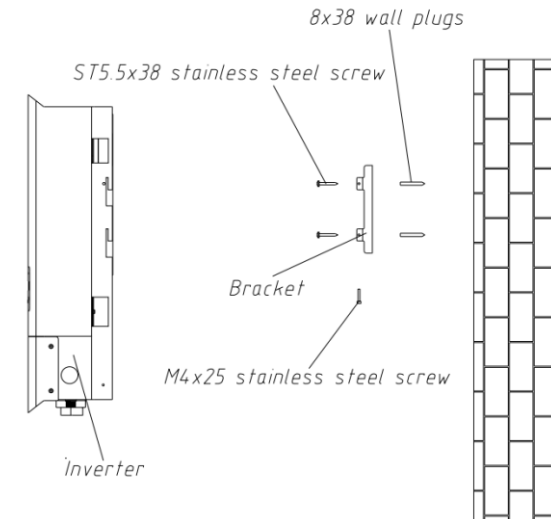


NOTE:

Nothing should be stored on or placed against the inverter.

4.2 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).

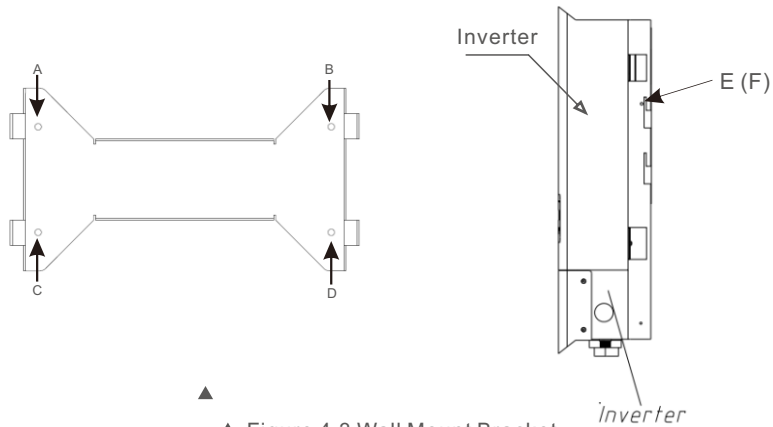


WARNING:

Bracket must be mounted vertically on a vertical wall surface.

4. Installation

- 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 open the four screw on both right and left side of connection box, then open the cover.



Figure 4.4 Bottom side of inverter

4. Installation

The electrical connection of the inverter must follow the steps listed below:

- Switch the Solar Supply Main Switch (AC) OFF.
- Switch the Isolator OFF (If there are any).
- Connect PV and wind input of the Inverter.

Connect PV and input of the Inverter:



Before connecting inverter, please make sure the maximum input voltage is within the limit of the inverter.

Maximum 500Voc for
GCI-1K-H-US GCI-2K-H-US

Maximum 600Voc for
GCI-3K-2G-H-US GCI-5K-2G-H-US



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



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



Please use qualified DC cable for installation.



For for 3-5kW models it is maximum to connect 3kW wind turbine. Otherwise the inverter could be broken!

4. Installation

Before connect the cable, strip the end of wire about 18mm. Use a small straight screw driver, insert to the end of the terminal A and insert the wire into the terminal B. Loose the screw driver, the cable will be fixed in the terminal.

Connect grid side of inverter:

The inverter is suitable for both 208V and 240V grid. Please connect the L1, L2 and N in the AC terminal, and connect the ground on the ground terminal. The AC wire connected to AC terminals ("L1", "L2" shown in Figure 4.5) is recommended AWG 8.

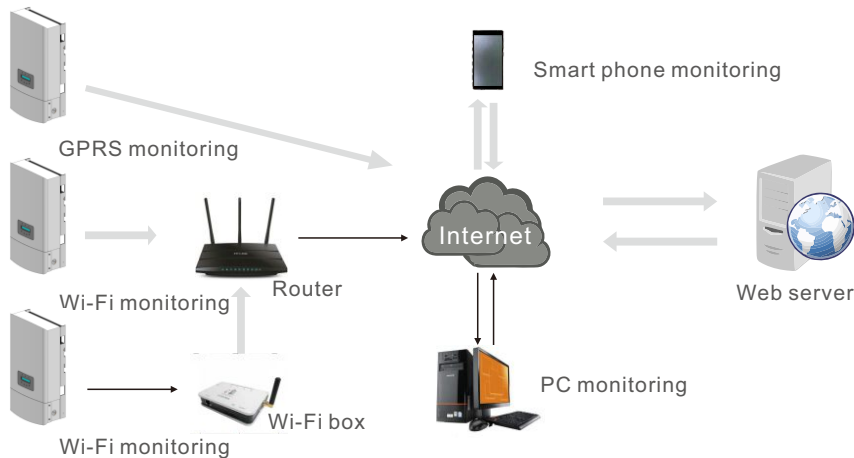


WARNING:

There are "L1", "L2", "N" and "⏏" symbols marked inside the connector (see Figure 4.5), the Line wire must be connected to "L1" and "L2" terminals; the Neutral wire must be connected to "N" terminal; the Earth of grid must be connected to "⏏" (see Figure 4.5).

Inverter monitoring Connection.

The inverter can be monitored by Wi-Fi or GPRS functions. All the communication functions are optional (Figure 4.17), please refer to communication connection instructions.



▲ Figure4.17 Wi-Fi communication function

5. Start & Stop

5.1 Start the Inverter

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

1. Turn off the DC switch.



NOTE:

The DC switch is used for manually brake, please keep it OFF in normal status. Turn ON DC switch will start to brake the turbine.

2. Switch the grid main switch (AC) ON first. The power LED (red) will light, and the LCD shows the company's name and the inverter model name.

Ginlong
GCI-3K-2G-H-US

▲ Figure 5.1 Company Name and Inverter Model on LCD

The inverter will start to check both its internal parameters and the parameters of the AC and DC input. If all parameters are within the acceptable limits. If the DC input voltage is higher than start up voltage. The green LED will flash and the LCD displays the information of INITIALIZING.

3. After 30-180 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.

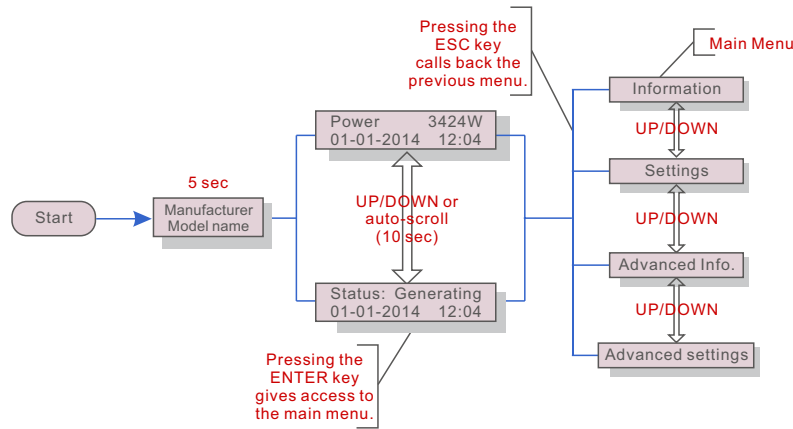
5.2 Stop the Inverter

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

1. Switch the Solar Supply Main Switch (AC) OFF.
2. Wait 30 seconds. Switch the DC switch ON. All the LEDs of the inverter will be off in a minute.
3. Disconnect the input and output cable.

6. Operation

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.

6. Operation

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 50.06Hz	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. Operation

6. Operation

6.3 Settings

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

- 1.Set Time
- 2.Set Address
- 3.Restore Settings

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.

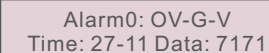
Select "Advanced Info." from the Main Menu to display a screen and be able to access to the following information.

- 1.Alarm Message
- 2.Temperature
- 3.STD No. & Curve 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 6.9). 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 6.9 Alarm Message

6.4.2 Temperature

The screen shows the temperature inside the inverter (see Figure 6.10).



```
Temperature
046.6°C
```

▲ Figure 6.10 Temperature inside the Inverter

6.4.3 STD No. & Curve No.

The screen shows the reference standard and power curve NO. of the Inverter (see Figure 6.11).

Standard: 83/2
Power curve NO.: 01

▲ Figure 6.11 Standard of the Inverter

6.4.4 Version

The screen shows the model version and the software version of the Inverter (see Figure 6.12).

Model: 08
Software Version: D20001

▲ Figure 6.12 Model Version and Software Version

6.4.5 Communication Data

The screen shows the internal data of the Inverter (see Figure 6.13), which is for service technicians only.

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

▲ Figure 6.13 Communication Data

6.5 Advanced Settings - Technicians Only



NOTE:

To access to this area is for fully qualified and accredited technicians only.
For Technicians only.

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

1. Select Standard
2. Grid ON/OFF
3. Power Curve
4. Set V_Brake

6.5.1 Select Standard



NOTE:

The inverter is customized according to the local standard before shipping to the customer. The "User-Def" function can be only used by the service engineer and must to be allowed by the local energy supplier.



NOTE:

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



NOTE:

This function is for technicians use only.

This function is used to select the grid's reference standard (see Figure 6.14).

YES=<ENT> NO=<ESC>
Standard: G83/2

▲ Figure 6.14

Press the UP/DOWN keys to select the standard (AS4777, VDE4105, UL1741, G83/2 (for 1-3.6kW models), G59/3 (for 4-5kW models) and "User-Def" function). Press the ENTER key to confirm the setting. Press the ESC key to cancel changes and returns to previous menu.

Selecting the "User-Def" menu will access to the following submenu (see Figure 6.15),

→ OV-V: 262V
UN-V: 210V

▲ Figure 6.15

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: 50.3---52.0Hz(60.3—62.0Hz)

UN-G-F: 47.0---49.5Hz(57.0—59.5Hz)

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 6.16).



▲ Figure 6.16 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 Power Curve

Select the Power Curve menu to display the following submenu:

- Set power Curve
- Select Power Curve



NOTE:
Please strictly follow below steps to set power curve or the setting could be failed.

A) Set Power Curve

This function use for customizing the power curve.



NOTE:
The power curve must be suitable for the wind turbine, it must be set by professionals!

The steps to set power curve are listed as follows:

Step1: Set Grid OFF first (refer to 6.5.1).

Step2: Enter Set Power Curve submenu(see Figure.6.17)



▲ Figure 6.17

Step3: Choose the power curve No.
Press up or down to choose the power curve No. which is from 01 to 03 (see Figure 6.18). Press ENTER to power curve setting page.



▲ Figure 6.18



NOTE:
The 01,02,03 power curve is for customer edit; the 04 power curve is the default value and could not be changed.

Step4: Set power curve
Pressing UP/DOWN keys to set power curve. Pressing ENTER key to move the selected digit to the next (from left to right). Press the ESC key to save the power curve point (see Figure 6.19).

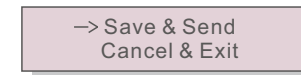


▲ Figure 6.19 example of set power curve



NOTE:
Please calculate the current of each point to the make sure it is not higher than the Max. input current of the inverter.

After finish all points of the power curve, press ESC to return to previous menu (see fig. 6.20), then press ENTER to select <Save & Send>. Pressing ESC key to cancel the setting and back to pervious menu(see Figure 6.19).



▲ Figure 6.20

Step5: Select corresponding power curve.
Enter select power curve, select the power curve No. you want to execute.



NOTE:
After the set power curve, please select power curve to see if the selected power curve No. is the right one!

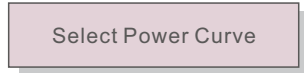
Step6: Set to GRID-ON to start the inverter (refer to 6.5.1).

B) Select Power Curve:

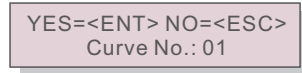
Please follow below steps to select power curve:

Step1: Set Grid OFF before use this function (refer to 6.5.1).

Step2: Select the Power Curve menu to display the following (refer to figure 6.21 & 6.22):



▲ Figure 6.21



▲ Figure 6.22

Press the ENTER to save power curve. Pressing ESC key to cancel previous setting and back to previous menu.



NOTE:

The 01,02,03 power curve is the user edit ; the 04 power curve is the default value and could not be changed.

Step3: Set GRID ON to start the inverter. (refer to 6.5.1).

6.5.4 Set V_Brake



NOTE:

The power curve must be suitable for the wind turbine, it must be set by professionals!

There are two functions to brake the wind turbine.

- Manually brake
- Automatically brake

A Manually brake

In normal operation the DC switch is in OFF position. Turn on the DC switch the inverter will start to brake the wind turbine.

B Automatically brake

The function is used for set the DC brake voltage(after rectifier) of the inverter. When the input voltage(after rectifier) is higher than setting value, the inverter will brake automatically.

Step1: Set Grid OFF before use this function (refer to 6.5.1).

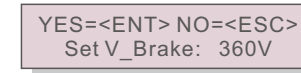
Step2: ENTER Set V_Brake submenu



▲ Figure 6.23

Step3: Set the brake voltage

Press UP and DOWN to set the brake voltage. Press ENTER to save the change, press ESC to cancel the change and back to previous menu. The range of brake voltage is 100-400V. The step of change is 10V.



▲ Figure 6.22 Example of set brake voltage

Step4: Set GRID ON to start the inverter. (refer to 6.5.1).



NOTE:

The inverter which is not HY model do not have this function.

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 any maintenance or cleaning operation.

The LCD and the LED status indicator lights can be cleaned with a damp cloth.



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

▲ Table 8.1 Failure Scenarios

8. Trouble Shooting



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 the Inverter;
2. The distributor/dealer of the 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. System design for the solar PV array configuration (e.g. number of panels, capacity of panels, number of strings, etc.);
6. Your contact details.

9. Specifications

Model	GCI-1K-H-US	
Energy source	Wind channel	+ PV channel
The Max. input voltage	350Vac	500Vdc
MPPT operation range	30-400Vdc	70-400Vdc
Max. braking current	30Aac	
The max DC input current	10Adc	
Number of MPPT /strings per MPPT	1/1	
Rating output power	1kW(PV and Wind in total)	
The transient max power	1.1kW	
Rating grid voltage	230Vac	
The grid voltage range	180~270Vac(adjustable)	
Operation phase	Single phase	
Rating grid output current	4.3A	
Output power factor	>0.99	
Grid current THD	<4%(Total THd)	
The DC injection current	<20mA	
Rating grid frequency	50/60Hz	
Efficiency	>96%	
Protection	DC reverse-polarity protection; AC short circuit protection; islanding protection; temperature protection. Etc.	
Size(mm)	339W*565H*164D(mm)	
Weight	11.0kg	
Topology	Transformerless	
DC Switch	Optional	
Internal consumption	<6W(No Wind)	
Running temperature	-25~60℃	
Ingress protection	IP65	
Interface	RS485 WiFi/GPRS(Optional)	
Design lifetime	>20years	
Operating Range Utility Frequency	47-52 or 57-62Hz(adjustable)	
Utility Monitoring	Islanding protection V_{AC} , F_{AC} in accordance with UL 1741, G83/2, AS4777, VDE 0126-1-1	
Operation Surroundings Humidity	0~95%	
Noise emission(typical)	<30 dBA	
EMC	EN61000-6-1:2007 EN61000-6-3:2007	

9. Specifications

Model	GCI-2K-H-US	
Energy source	Wind channel	+ PV channel
The Max. input voltage	350Vac	500Vdc
MPPT operation range	30-400Vdc	100-400Vdc
Max. braking current	30Aac	
The max DC input current	10Adc	
Number of MPPT /strings per MPPT	1/1	
Rating output power	2kW(PV and Wind in total)	
The transient max power	2.2kW	
Rating grid voltage	230Vac	
The grid voltage range	180~270Vac(adjustable)	
Operation phase	Single phase	
Rating grid output current	8.7A	
Output power factor	>0.99	
Grid current THD	<4%(Total THd)	
The DC injection current	<20mA	
Rating grid frequency	50/60Hz	
Efficiency	>96.5%	
Protection	DC reverse-polarity protection; AC short circuit protection; islanding protection; temperature protection. Etc.	
Size(mm)	339W*565H*164D(mm)	
Weight	11.0kg	
Topology	Transformerless	
DC Switch	Optional	
Internal consumption	<6W(No Wind)	
Running temperature	-25~60°C	
Ingress protection	IP65	
Interface	RS485 WiFi/GPRS(Optional)	
Design lifetime	>20years	
Operating Range Utility Frequency	47-52 or 57-62Hz(adjustable)	
Utility Monitoring	Islanding protection V_{AC} , F_{AC} in accordance with UL 1741, G83/2, AS4777, VDE 0126-1-1	
Operation Surroundings Humidity	0~95%	
Noise emission(typical)	<30 dBA	
EMC	EN61000-6-1:2007 EN61000-6-3:2007	

9. Specifications

Model	GCI-3K-H-US	
Energy source	Wind channel	+ PV channel
The Max. input voltage	400Vac	600Vdc
MPPT operation range	30-540Vdc	100-500Vdc
Max. braking current	60Aac	
The max DC input current	10Adc	
Number of MPPT /strings per MPPT	1/1	
Rating output power	3kW(PV and Wind in total)	
The transient max power	3.3kW	
Rating grid voltage	230Vac	
The grid voltage range	180~270Vac(adjustable)	
Operation phase	Single phase	
Rating grid output current	13A	
Output power factor	>0.99	
Grid current THD	<4%(Total THd)	
The DC injection current	<20mA	
Rating grid frequency	50/60Hz	
Efficiency	>97%	
Protection	DC reverse-polarity protection; AC short circuit protection; islanding protection; temperature protection. Etc.	
Size(mm)	339W*565H*172.5D(mm)	
Weight	14.5kg	
Topology	Transformerless	
DC Switch	Optional	
Internal consumption	<6W(No Wind)	
Running temperature	-25~60°C	
Ingress protection	IP65	
Interface	RS485 WiFi/GPRS(Optional)	
Design lifetime	>20years	
Operating Range Utility Frequency	47-52 or 57-62Hz(adjustable)	
Utility Monitoring	Islanding protection V_{AC} , F_{AC} in accordance with UL 1741, G83/2, AS4777, VDE 0126-1-1	
Operation Surroundings Humidity	0~95%	
Noise emission(typical)	<30 dBA	
EMC	EN61000-6-1:2007 EN61000-6-3:2007	

9. Specifications

Model	GCI-5K-H-US	
Energy source	Wind channel	+ PV channel
The Max. input voltage	400Vac	600Vdc
MPPT operation range	30-540Vdc	100-500Vdc
Max. braking current	60Aac	
The max DC input current	15Aac	
Number of MPPT /strings per MPPT	1/1	
Rating output power	5kW	
The transient max power	5kW	
Rating grid voltage	230Vac	
The grid voltage range	180~270Vac(adjustable)	
Operation phase	Single phase	
Rating grid output current	21.7A	
Output power factor	>0.99	
Grid current THD	<4%(Total THd)	
The DC injection current	<20mA	
Rating grid frequency	50/60Hz	
Efficiency	>96.5%	
Protection	DC reverse-polarity protection; AC short circuit protection; islanding protection; temperature protection. Etc.	
Size(mm)	339W*565H*172.5D(mm)	
Weight	15.5kg	
Topology	Transformerless	
DC Switch	Optional	
Internal consumption	<6W(No Wind)	
Running temperature	-25~60℃	
Ingress protection	IP65	
Interface	RS485 WiFi/GPRS(Optional)	
Design lifetime	>20years	
Operating Range Utility Frequency	47-52 or 57-62Hz(adjustable)	
Utility Monitoring	Islanding protection V_{AC} , F_{AC} in accordance with UL 1741, G59/3, AS4777, VDE 0126-1-1	
Operation Surroundings Humidity	0~95%	
Noise emission(typical)	<30 dBA	
EMC	EN61000-6-1:2007 EN61000-6-3:2007	

10. Warranty

Warranty Conditions

Unless Ningbo Ginlong Technologies Co., Ltd. otherwise agree in writing to a longer period, GCI three phase inverter offer five years standard warranty.

The warranty covers the agreed period beginning at the date of purchase of the product, subject to the conditions listed below, if Ginlong receives a written claim which shows the product becomes defective within the valid warranty period in a reasonable circumstances, the product will be, at Ginlong' s option,

- repaired at Ginlong, or
- repaired on-site, or
- repaired by an appointed service partner, or
- exchanged for a replacement product of equivalent value accordingly(The remainder of the warranty entitlement will be transferred to the replacement product).

The following proofs are required for the warranty claim: purchase invoice, serial number of the device, the commissioning log(transfer date, commissioning date, or report from the power supply company)or such other proof as Ginlong may accept. To ensure that the above mentioned warranty services will be provided by Ginlong, the procedure for a warranty claim must be observed.

Provided that Ginlong direct an accredited service provider to attend the customer's premises and repair the defect, the customer will be liable for any freight costs, fees, charges or levies(including the costs of travel and accommodation of Ginlong personnel for on-site repairs)Ginlong or the appointed service partner may incur as a result of fulfilling its obligations of this Product Warranty.

10. Warranty

Provided that Ginlong direct the customer to return the product to Ginlong so that Ginlong may repair or provide a replacement product of equivalent value free of charge, the customer will be required to pay the necessary freight charges and other relevant costs.

Any product replaced or repaired under this Product Warranty will be covered by the product's remaining warranty period. If the product or any part thereof is replaced by Ginlong under this Product Warranty, all of the right, title and interest in and to the replaced product or part shall vest in Ginlong upon it being replaced.

Warranty Exceptions

The factory warranty does not cover damages that occur due to the following reasons:

- Damage during device transport
- Improper installation or commissioning
- Failure to observe operating instructions, installation instructions or maintenance instructions
- Modifications, changes, or repair attempts
- Incorrect use or operation
- Insufficient ventilation of the device
- No-compliance with the applicable safety standards or regulations
- Act of God(e.g., flood, lightning, overvoltage, storm, fire)

Also, for normal wear and tear or any other fault which does not affect the basic performance of the product, notwithstanding any external scratch or stain, or natural mechanical wearing which does not represent a defect.

Limitation of Liability

Except for the Product Warranty set out above, and except for any liability in connection with the supply of goods imposed on Ginlong by state and territory legislation locally(including for breach of implied conditions and warranties)which cannot, or which can only to a limited extent, be lawfully excluded, all liability of, and conditions and warranties relating to the supply of the products by Ginlong are hereby expressly excluded.

Ningbo Ginlong Technologies Co., Ltd.