



UESR MANUAL FOR LEDVANCE GRID-CONNECTED PV INVERTER

APPLICABLE MODLES

LT-25~40K F2



CONTENTS

INTRODUCTION	1
Product Description	1
Packaging	2
SAFETY INSTRUCTIONS	3
Safety Symbols	3
General Safety Instructions	3
Notice For Use	4
Notice for Disposal	4
OVERVIEW	5
Front Panel Display	5
LED Status Indicator Lights	5
Keypad	5
LCD	5
PRODUCT HANDING AND STORAGE	6
Product handling	6
Product Storage	7
INSTALLATION	8
Select Location for the Inverter	8
Mounting the Inverter	10
Electrical Connections	12
START & STOP	25
Start the Inverter	25
Stop the Inverter	25
OPERATION	26
Main Menu	26
Information	26
Settings	28
Advanced Info.	29
Advanced Settings	32
AFCI function	43
MAINTENANCE	44
TROUBLESHOOTING	45
SPECIFICATIONS	47

INTRODUCTION

Product description

Solis three phase inverter is suitable for utility-scale PV projects . This manual covers the three phase inverter model listed below:

LT-25K F2, LT-30K F2, LT-33K F2, LT-36K F2, LT-40K F2

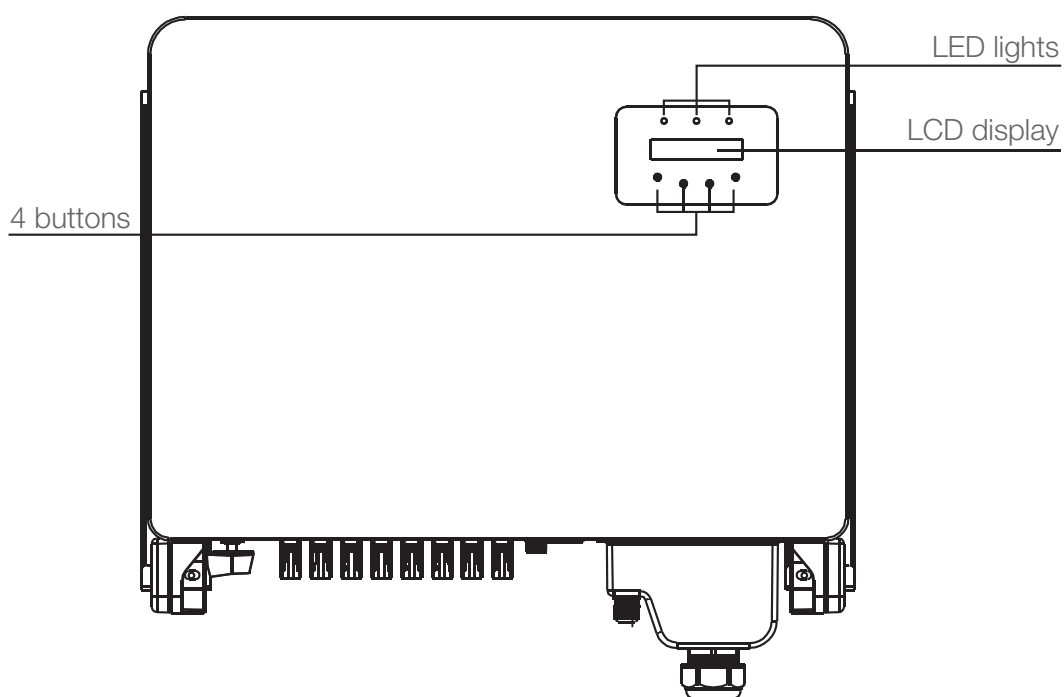


Figure 1.1 Front view

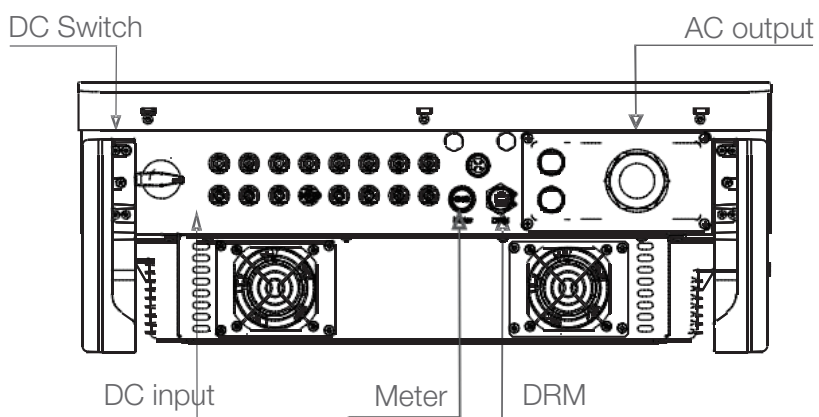
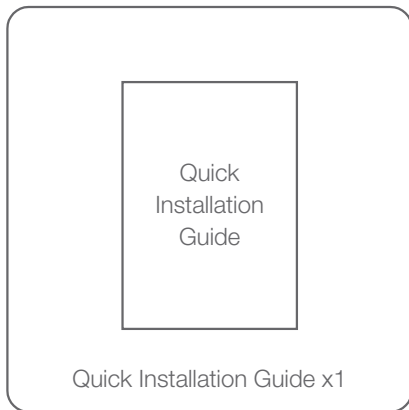
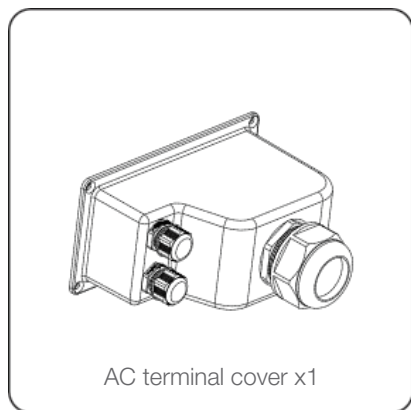
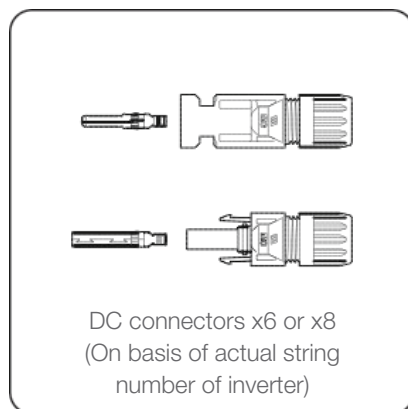
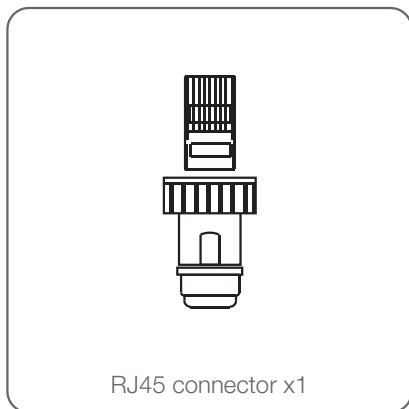
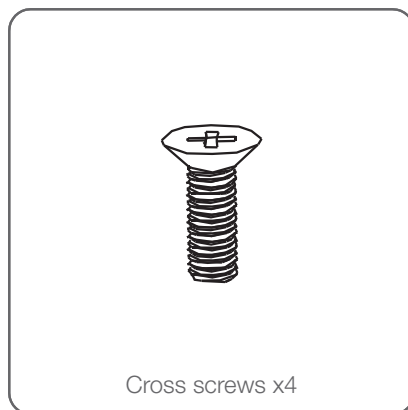
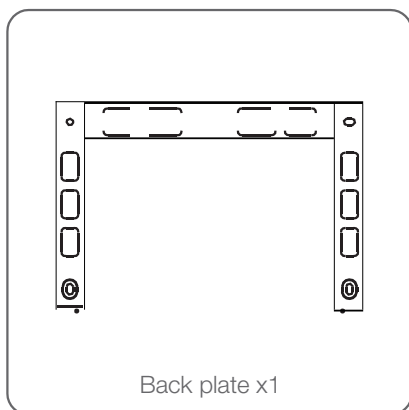
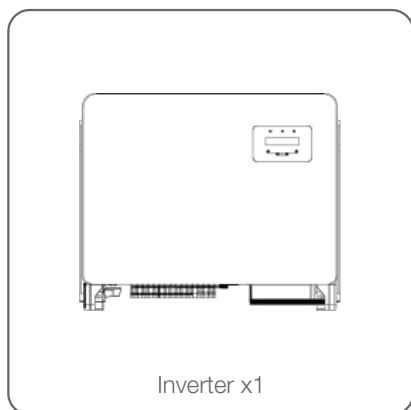


Figure 1.2 Bottom view

INTRODUCTION

Packaging

When you receive the inverter, please ensure that all the parts listed below are included:



If anything is missing, please contact your local Solis distributor.

SAFETY INSTRUCTIONS

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.

General safety instructions



WARNING

Please don't connect PV array positive(+) or negative(-) to 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 shall be installed per local requirements. All photovoltaic source and output circuit conductors shall have disconnects that comply with the NEC Article 690, Part II. All Solis three phase inverters feature an integrated DC switch.



CAUTION

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

SAFETY INSTRUCTIONS



CAUTION

The PV array (Solar panels) supplies a DC voltage when they are exposed to sunlight.



CAUTION

Risk of electric shock from energy stored in capacitors of the Inverter.

Do not remove cover for 5 minutes after disconnecting all power sources (service technician only).

Warranty may be voided if the cover is removed without unauthorized.



CAUTION

The surface temperature of the inverter can exceed 75°C (167°F).

To avoid risk of burns, DO NOT touch the surface when inverter is operating. The inverter must be installed out of reach of children.

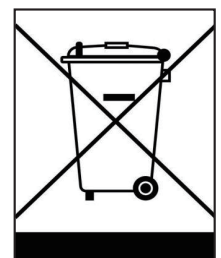
Notice for use

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

Notice for disposal

This product shall not be disposed of with household waste. They should be segregated and brought to an appropriate collection point to enable recycling and avoid potential impacts on the environment and human health. Local rules in waste management shall be respected .



OVERVIEW

Front panel display

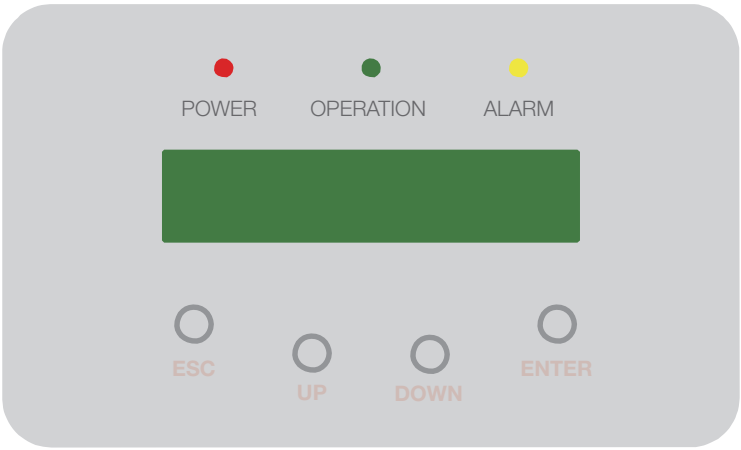


Figure 3.1 Front Panel Display

LED status indicator lights

	Light	Status	Description
①	● POWER	ON	The inverter can detect DC power.
		OFF	No DC power or low DC power.
②	● OPERATION	ON	The inverter is operating properly.
		OFF	The inverter has stopped to supply power.
		FLASHING	The inverter is initializing.
③	● ALARM	ON	Alarm or fault condition is detected.
		OFF	The inverter is operating without fault or a larm.

Table 3.1 Status Indicator Lights

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).

LCD

The two-line Liquid Crystal Display (LCD) is located on 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.

PRODUCT HANDLING AND STORAGE

Product handling

Please review the instruction below for handling the inverter:

- The red circles below denote cutouts on the product package.
Push in the cutouts to form handles for moving the inverter (see Figure 4.1).

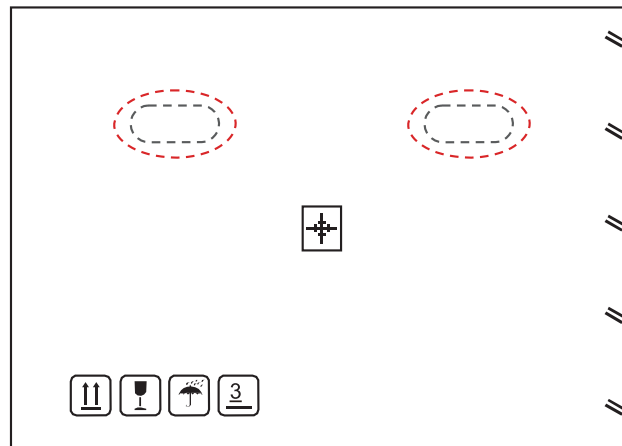


Figure 4.1 move the inverter

- Open the carton, then two people handle both sides of inverter through the area denoted dotted line. (see figure 4.2).

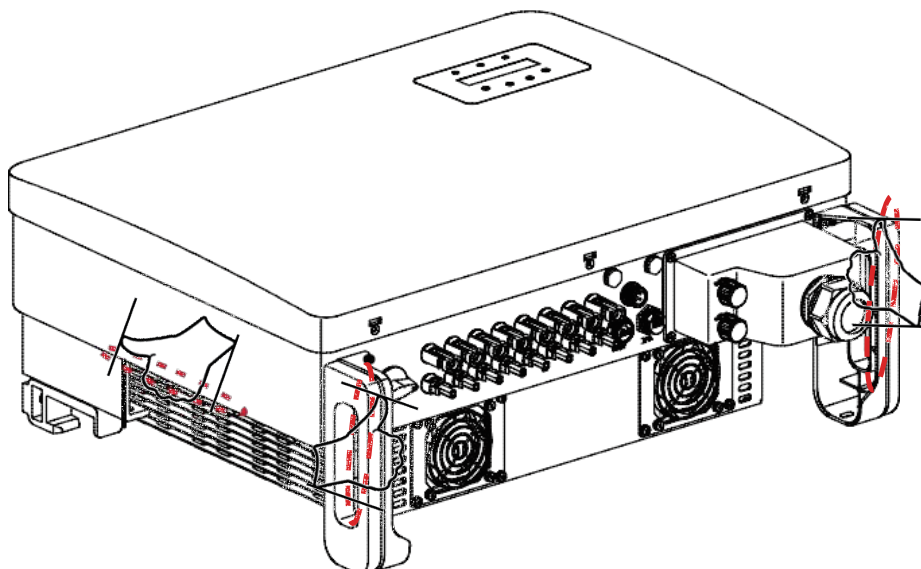


Figure 4.2 Inverter handles



NOTE

Be careful to lift the inverter. The weight is around 45kg.

PRODUCT HANDING AND STORAGE

Product storage

If the inverter is not to be installed immediately, storage instructions and environmental conditions are below:

- Use the original box to repackage the inverter, seal with adhesive tape with the desiccant inside the box.
- Store the inverter(s) in a clean and dry place, free of dust and dirt.
- Storage temperature must be between -40°C and 70°C and the humidity should be between 0 and 95% non-condensing.
- Stack no more than three (3) inverters high.
- Keep box(es) away from corrosive materials to avoid damage to the inverter enclosure.
- Inspect packaging regularly. If packaging is damaged(wet, pest damage, etc), repackage the inverter immediately.
- Store the inverter(s) on a flat, hard surface - not inclined or upside down.
- After long-term storage, the inverter needs to be fully examined and tested by qualified service or technical personnel before using.
- Restarting after a long period of non-use requires the equipment to be inspected and, in some cases, the removal of oxidation and dust that has settled inside the equipment will be required.

INSTALLATION

Select a location for the inverter

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



WARNING: Risk of fire

Despite careful construction, electrical devices can cause fires.

- Do not install the inverter in areas containing highly flammable materials or gases.
- Do not install the inverter in potentially explosive atmospheres.
- The mounting structure where the inverter is installed must be fireproof.

- Do not install in small closed spaces where air can not circulate freely. To avoid overheating, always make sure the flow of air around the inverter is not blocked.
- Exposure to direct sunlight will increase the operational temperature of the inverter and may cause output power limiting. Ginlong recommends inverter installed to avoid direct sunlight or raining.
- To avoid over heating ambient air temperature must be considered when choosing the inverter installation location. Ginlong recommends using a sun shade minimizing direct sunlight when the ambient air temperature around the unit exceeds 104°F/40°C.

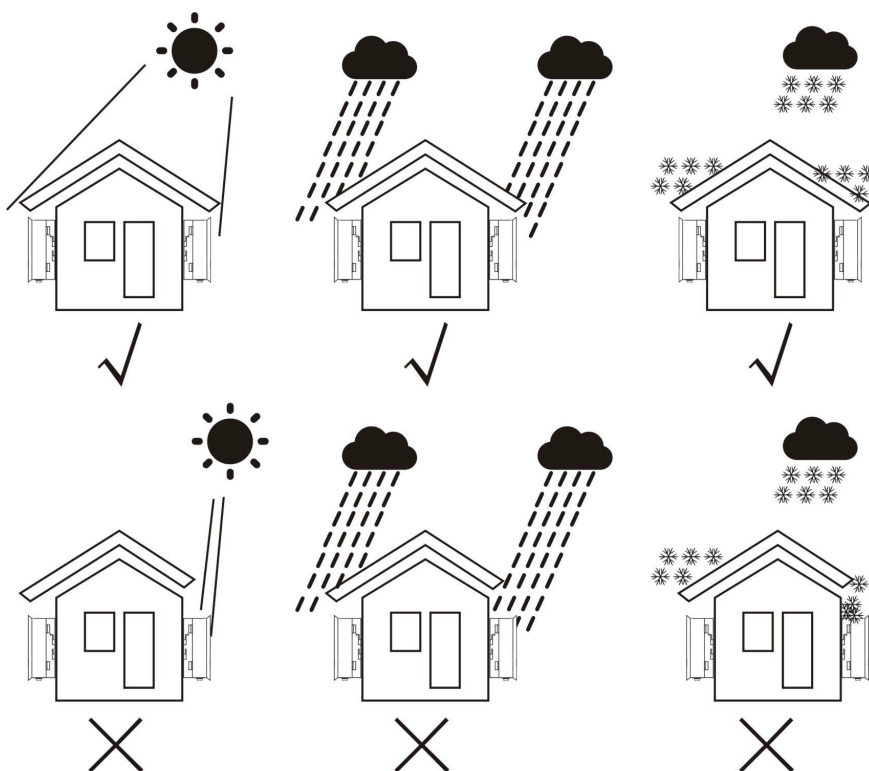


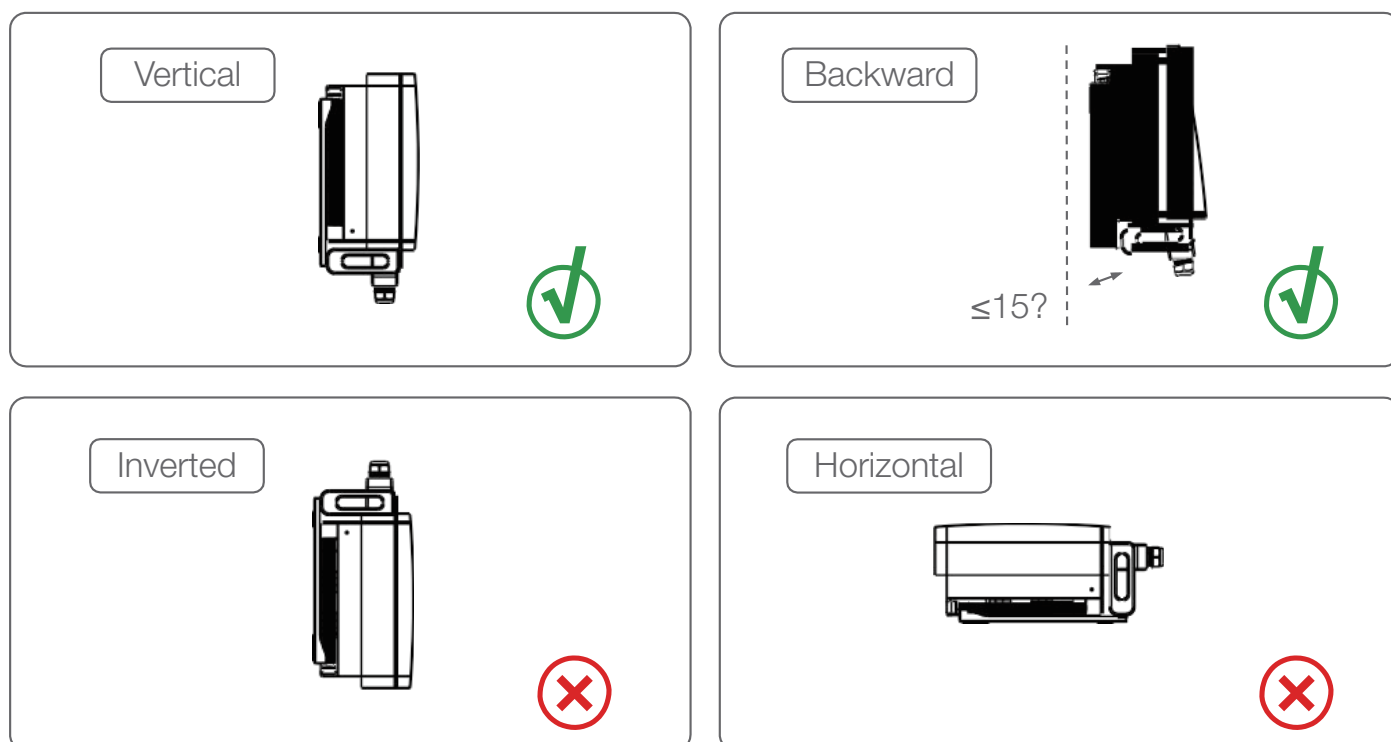
Figure 5.1 Recommended Installation locations



NOTE

Nothing should be stored on or placed against the inverter.

INSTALLATION



- Install on a vertical surface or structure capable of bearing the weight.
- Please install the inverter vertically. If the inverter cannot be mounted vertically, it may be tilted backward to 15 degrees from vertical.
- For multiple inverters are installed on site, a minimum clearance of 500mm, should be kept between each inverter and any other mounted equipment. The bottom of the inverter must be be at least 500mm from the ground or floor. See figure 5.2.
- Visibility of the LED status indicator lights and LCD display screen should be considered.

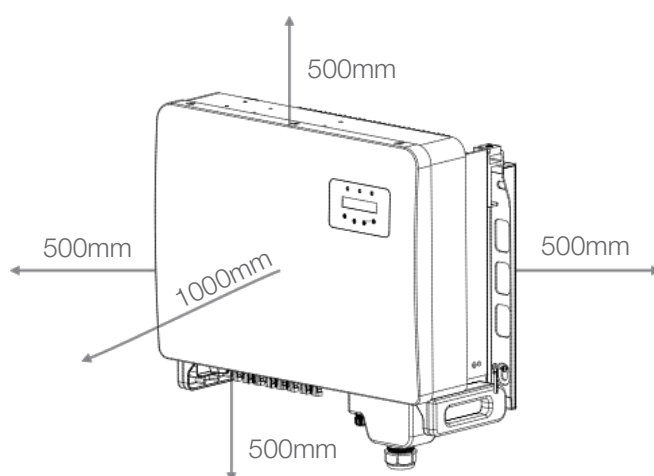


Figure 5.2 Inverter Mounting clearance

INSTALLATION

Mounting the inverter

Back hanging plate size:

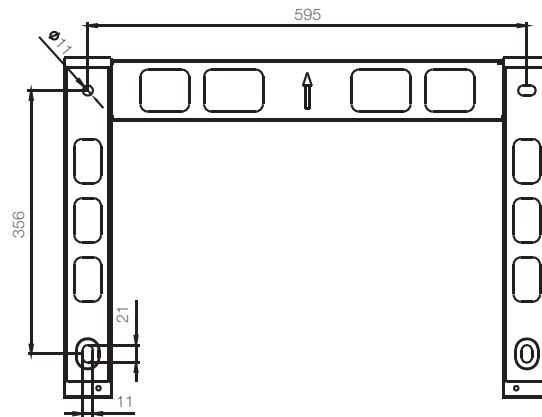


Figure 5.3 Inverter wall mounting

Refer to figure 5.4 and figure 5.5. Inverter shall be mounted vertically.

The steps to mount the inverter are listed below.

- Refer to Figure 5.4, the holes for expansion bolt based on the hole diameter of bracket (M10*70) , using the percussion drilling with the 10mm drill need to stay vertically on the wall. And the drill hole must be vertically on the wall. And all drill holes' depth is 60mm.
- Make sure the bracket is horizontal. And the mounting holes (in Figure 5.4) are marked correctly. Drill the holes
- into wall at your marks.

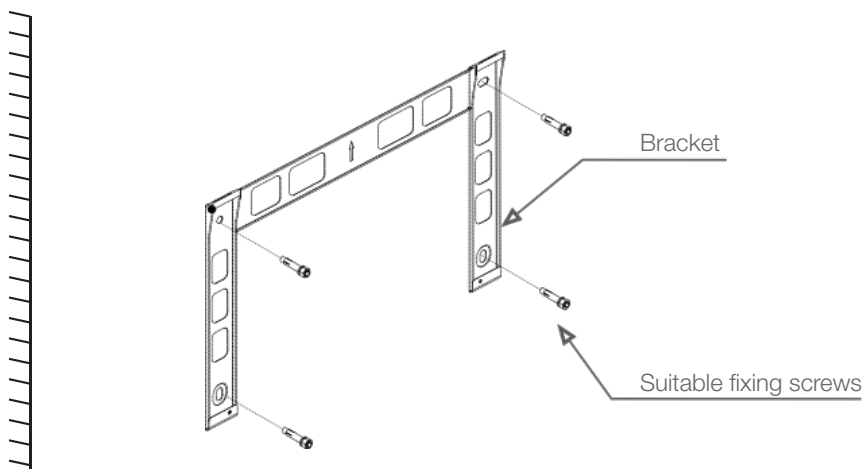


Figure 5.4 Inverter wall mounting

INSTALLATION



WARNING

The inverter must be mounted vertically.

- Lift the inverter and hang it on the bracket, and then slide down to make sure they match perfectly.

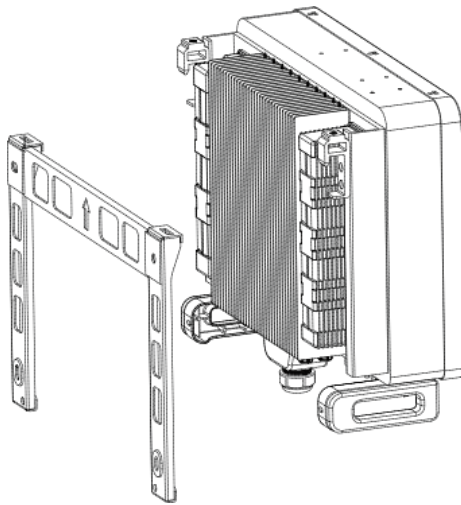


Figure 5.5 Install the inverter

- If the installation position is high, the inverter cannot be directly mounted on the mounting plate, and the hoisting rope is hoisted through the two lifting holes.
(The rope needs to meet the load-bearing requirements of this product).

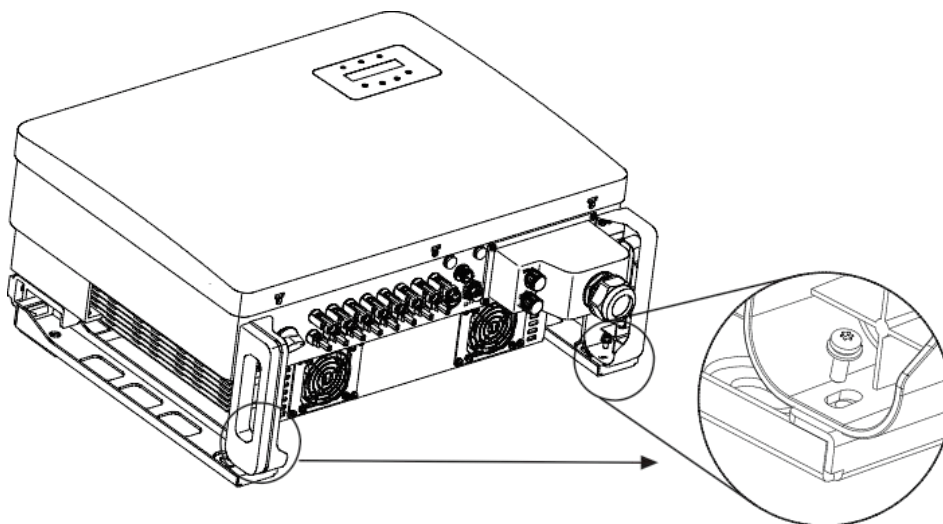


Figure 5.6

INSTALLATION

Electrical connections

Inverter designs quick-connect terminal, so top cover needn't open during electrical connection. The sign meaning located the bottom of inverter, as shown below in table 5.1. All electrical connections are suit for the local or national standard.

DC 1 ~ DC 8	DC input terminal
ON	Switch on the DC switch
OFF	Switch off the DC switch
COM1	COM port for monitoring
METER	COM port for Meter
DRM	COM port for DRM

Table 5.1 Electrical connection symbols

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

- Switch the Grid Supply Main Switch (AC) OFF.
- Switch the DC Isolator OFF.
- Connect the inverter to the grid.
- Assemble PV input connector to the Inverter.

Grounding

To effectively protect the inverter, two grounding methods must be performed. Connect the AC grounding cable (Please refer to section 5.3.3)

Connect the external grounding terminal.

To connect the grounding terminal on the heat sink, please follow the steps below:

- Prepare the grounding cable: recommend to use the $\geq 16\text{mm}^2$ outdoor copper-core cable.
- Prepare OT terminals: M6.



IMPORTANT

For multiple inverters in parallel , all inverters should be connected to the same ground point to eliminate the possibility of a voltage potential existing between inverter grounds.

INSTALLATION

- Strip the ground cable insulation to a suitable length(see Figure 5.7).

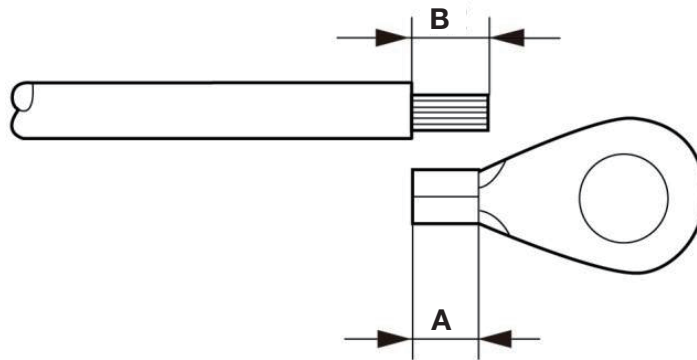


Figure 5.7 Suitable length



IMPORTANT

B (insulation stripping length) is 2mm~3mm longer than A (OT cable terminal crimping area) 2mm~3mm.

- Insert the stripped wire into the OT terminal crimping area and use the hydraulic clamp to crimp the terminal to the wire (see Figure 5.8).

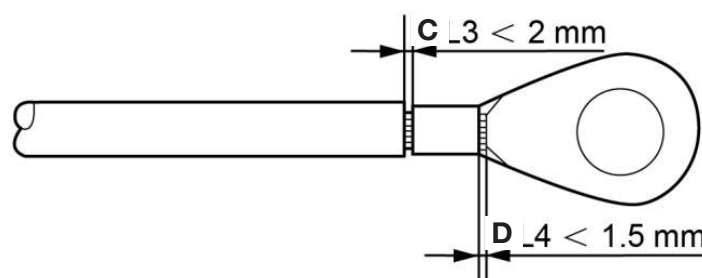


Figure 5.8 Strip wire



IMPORTANT

After crimping the terminal to the wire, inspect the connection to ensure the terminal is solidly crimped to the wire.

INSTALLATION

- Remove the screw from the heat sink ground point.
- Connect the grounding cable to the grounding point on the heat sink, and tighten the grounding screw, Torque is 3-4Nm(see figure 5.9).

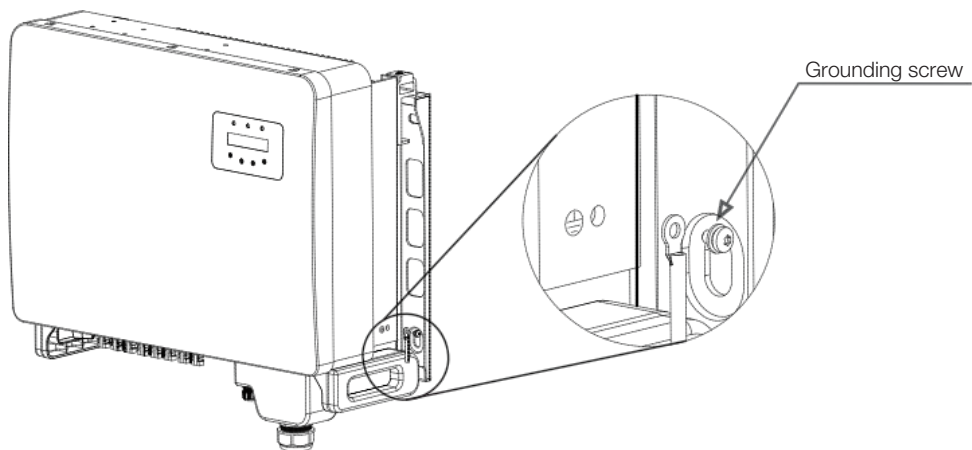


Figure 5.9 Fixed cable



IMPORTANT

For improving anti-corrosion performance, after ground cable installed, apply silicone or paint is preferred to protect.

INSTALLATION

Connect PV side of inverter



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



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

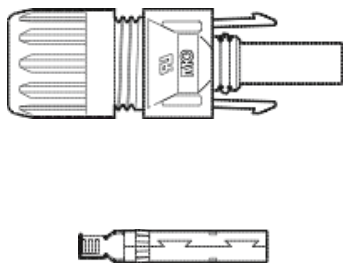


Figure 5.10 DC+ Connector

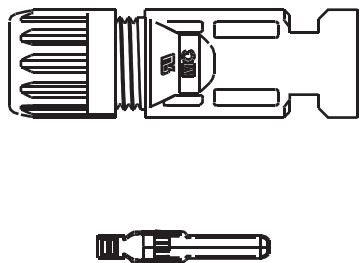


Figure 5.11 DC- Connector



Please use appropriate DC cable for PV system.

Cable type	Cross section(mm²)	
	Range	Recommended value
Industry generic P V cable (model: PV1-F)	4.0~6.0 (12~10AWG)	4.0 (12AWG)

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

- Strip off the DC wire for about 7mm, disassemble the connector cap nut. (see Figure 5.12)
- Insert the wire into the connector cap nut and contact pin. (see Figure 5.13)
- Crimp the contact pin to the wire using a proper wire crimper. (see Figure 5.14)
- Insert metal connector into top of connector, and tighten nut with torque 3-4 Nm (see figure 5.15).
- Measure PV voltage of DC input with multimeter, verify DC input cable polar (see figure 5.16), and ensure each string of PV voltage in range of inverter operation. Connect DC connector with inverter until hearing a slight clicking sound indicates connection succeed. (see figure 5.17)

INSTALLATION

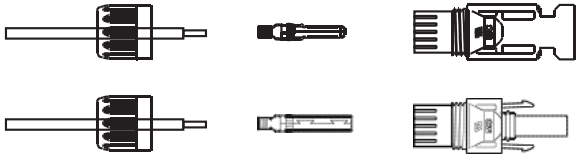


Figure 5.12 Disassemble the Connector Cap nut

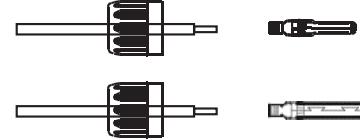


Figure 5.13 Insert the Wire into the Connector Cap nut and contact pin

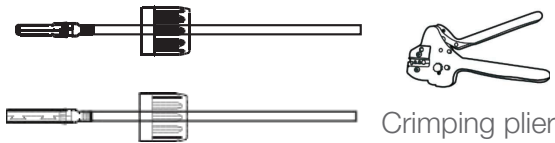


Figure 5.14 Crimp the contact pin to the wire

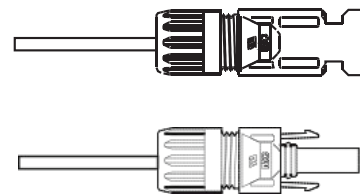


Figure 5.15 Connector with Cap nut Screwed on

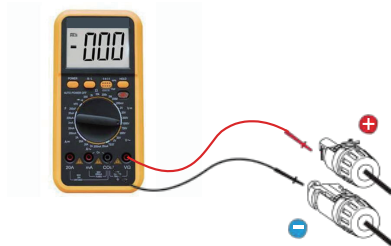


Figure 5.16 Multimeter measurement

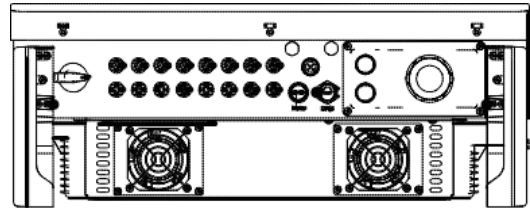


Figure 5.17 Connect the DC Connectors to the Inverter



CAUTION

If DC inputs are accidentally reversely connected or inverter is faulty or not working properly, it is NOT allowed to turn off the DC switch. Otherwise it may cause DC arc and damage the inverter or even lead to a fire disaster.

The correct actions are:

- Use a clip-on ammeter to measure the DC string current.
- If it is above 0.5A, please wait for the solar irradiance reduces until the current decreases to below 0.5A.
- Only after the current is below 0.5A, you are allowed to turn off the DC switches and disconnect the PV strings.
- In order to completely eliminate the possibility of failure, please disconnect the PV strings after turning off the DC switch to avoid secondary failures due to continuous PV energy on the next day.


Please note that any damages due to wrong operations are not covered in the device warranty.

INSTALLATION

Connect grid side of inverter

For the AC connection, 10-35mm² cable is required to be used.
Please make sure the resistance of cable is lower than 1.5ohm.

Cable specification		Copper-cored cable
Traverse cross sectional area (mm ²)	Range	10~35
	Recommended	25
Cable outer diameter (mm)	Range	22~32
	Recommended	27



NOTE

For reliable connection, recommend customer select corresponding Euro type connectors based on wiring specification to connect the terminal.

The steps to assemble the A C grid terminals are listed as follows:

- Strip the end of AC cable insulating jacket about 80mm then strip the end of each wire. (as shown in figure 5.18)

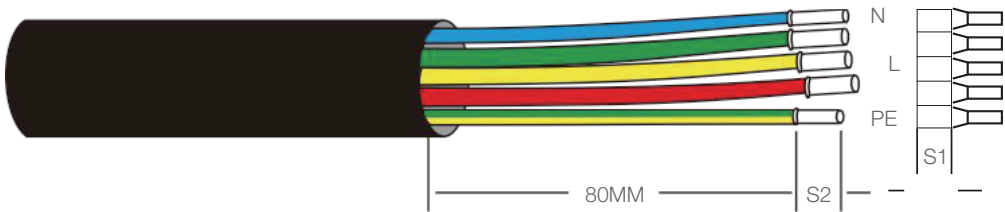



Figure 5.18 Strip AC cable



NOTE

S2 (insulation stripping length) should be as long as S1 (AC terminal cable compression area).

- Strip the insulation of the wire past the cable crimping area of the OT terminal, then use a hydraulic crimp tool to crimp the terminal. The crimped portion of the terminal must be insulated with heat shrinkable tube or insulating tape.
- Leave the AC breaker disconnected to ensure it does not close unexpectedly.
- Remove the 4 screws on the inverter junction box and remove the junction box cover .
- Insert the cable through the nut, sheath, and AC terminal cover. Connect the cable to the AC terminal block in turn, using a socket wrench. Tighten the screws on the terminal block. The torque is 3~4Nm (as shown in Figure 5.19).

INSTALLATION

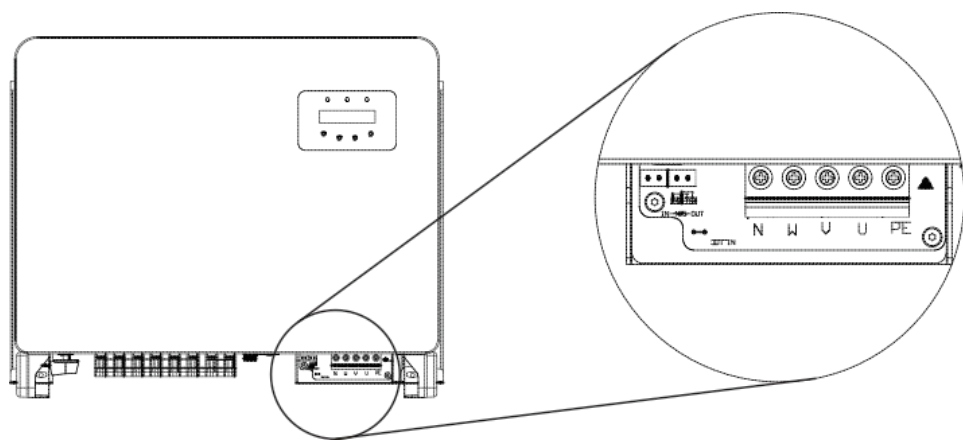



Figure 5.19 wiring



NOTE

Solis three phase inverters integrate neutral connection point. However, with or without neutral connected won't affect the normal operation of inverter itself. Please refer to the local grid requirement if need neutral cable connected.

Inverter monitoring connection

The inverter can be monitored via Wi-Fi or GPRS. All Solis communication devices are optional (Figure 5.20). For connection instructions, please refer to the Solis Monitoring Device installation manuals.

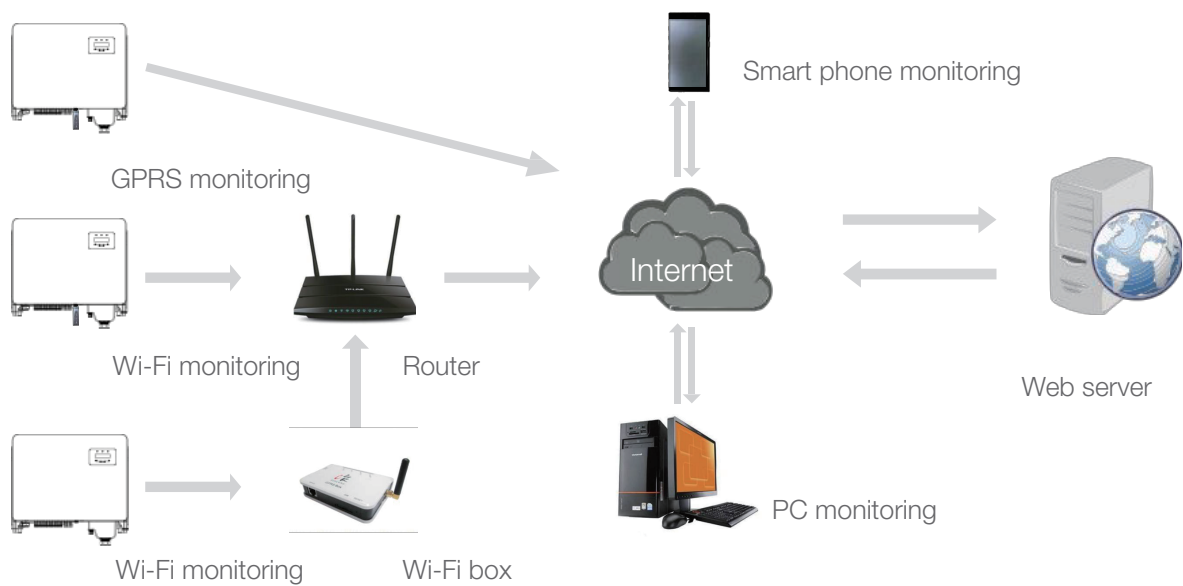
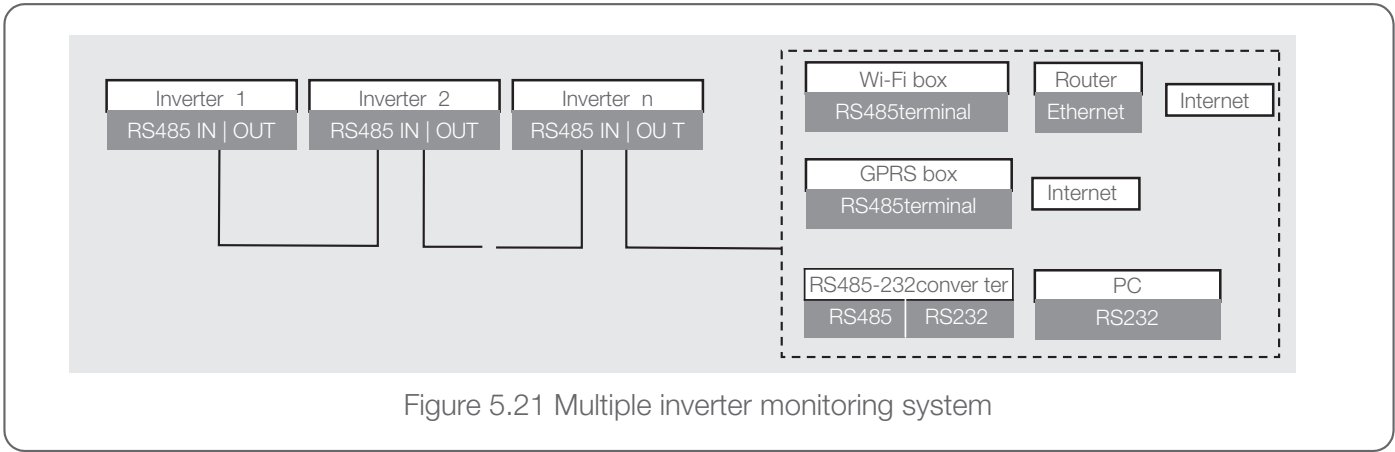


Figure 5.20 Wireless communication function

INSTALLATION

Monitoring system for multiple inverters

Multiple inverters can be monitored by RS-485 daisy chain configuration. (See figure 5.26).



RS485 Connection

Install the RS485 communication cables through the terminal block as shown in Figure 5.22. Recommended cable cross sectional area is 0.2 - 1.5mm², the cable outer diameter is 5mm -10mm.

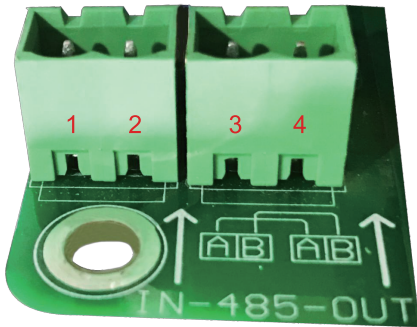


Figure 5.22 RS485 Terminal Definition

NO.	Port definition	Description
1	RS485A1 IN	RS485A1, RS485 differential signal+
2	RS485B1 IN	RS485B1, RS485 differential signal-
3	RS485A2 OUT	RS485A2, RS485 differential signal+
4	RS485B2 OUT	RS485B2, RS485 differential signal-

Table 5.2 Port definition

INSTALLATION

Terminal block connection

- Use a wire stripper to peel off the insulation layer of the communication cables to a certain length as shown in Figure 5.23.
- Screw off the covers of "COM2" and "COM3" on the inverter as shown in Figure 5.24.

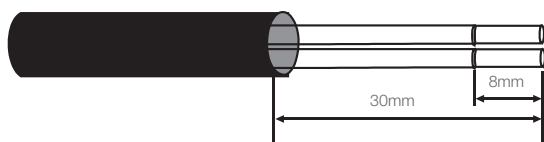


Figure 5.23

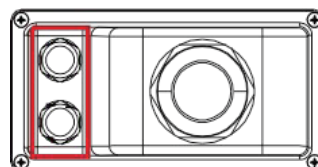


Figure 5.24

- Insert the communication cables into the "COM2" and "COM3" ports.
- Fasten the cables onto the pluggable terminals provided in the accessory package.
- Match the pluggable terminals to the terminal block in the inverter and press to fasten it. After cable installation, please remember to fasten the screws of the AC terminal cover in case of water damage.

Max. over current protection device (OCPD)

To protect the inverter's AC grid connection conductors, Solis recommends installing breakers that will protect against overcurrent. The following table defines OCPD ratings for the inverters.

Inverter	Rated voltage(V)	Rated output current (Amps)	Current for protection device (A)
LT-25K F2	220/380,230/400	38.0/36.1	50
LT-30K F2	220/380,230/400	45.6/43.3	63
LT-33K F2	220/380,230/400	50.1/47.6	63
LT-36K F2	220/380,230/400	54.7/52.0	80
LT-37.5K F2	220/380,230/400	57.0/54.1	80
LT-40K F2	220/380,230/400	60.8/57.7	80
LT-HV-40K F2	480	48.1	63
LT-HV-50K F2	480	60.1	80
LT-LV-15K F2	220	39.4	63
LT-LV-20K F2	220	52.5	80
LT-LV-23K F2	220	60.4	80
LT-BE-30K F2	220/380,230/400	45.6/43.3	63

Table 5.3 Rating of grid OCPD

INSTALLATION

Meter Connection(optional)

The inverter can work with a three phase smart meter to achieve Export Power Management function and/or 24hour consumption monitoring function.



NOTE

To achieve Export Power Management function, the smart meter can be installed on either grid side or load side.

To achieve 24hour consumption monitoring function, the smart meter can only be installed on grid side.

Two types of meters are supported:

Direct Insert Type Meter - Max input current 80A(DTSD1352-Direct Insert Type).

External CT Type Meter - 150A/5A CTs are supplied(DTSD1352-External CT Type).

Customer can place the order for a suitable meter from Solis Sales Reps.

Below are the connection diagrams of different meters connecting to different locations.

Detailed settings please refer to Section 7.5.12

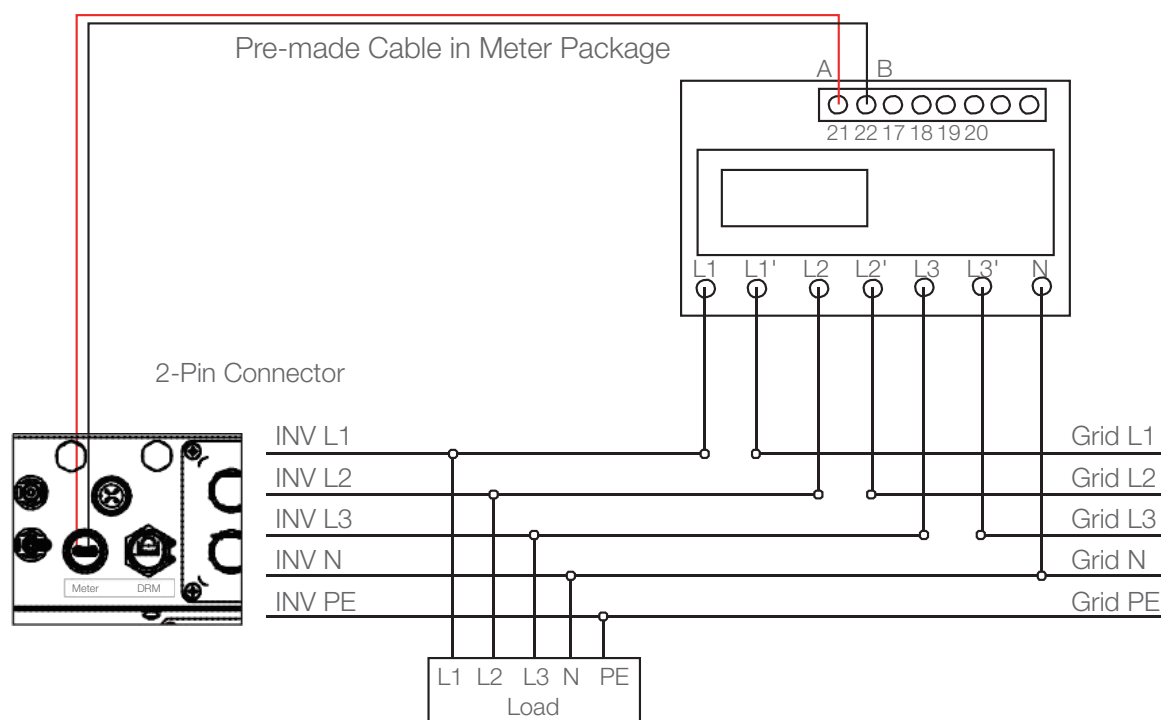


Figure 5.25 Direct Insert Type Meter - "Meter in Grid"

INSTALLATION

Pre-made Cable in Meter Package

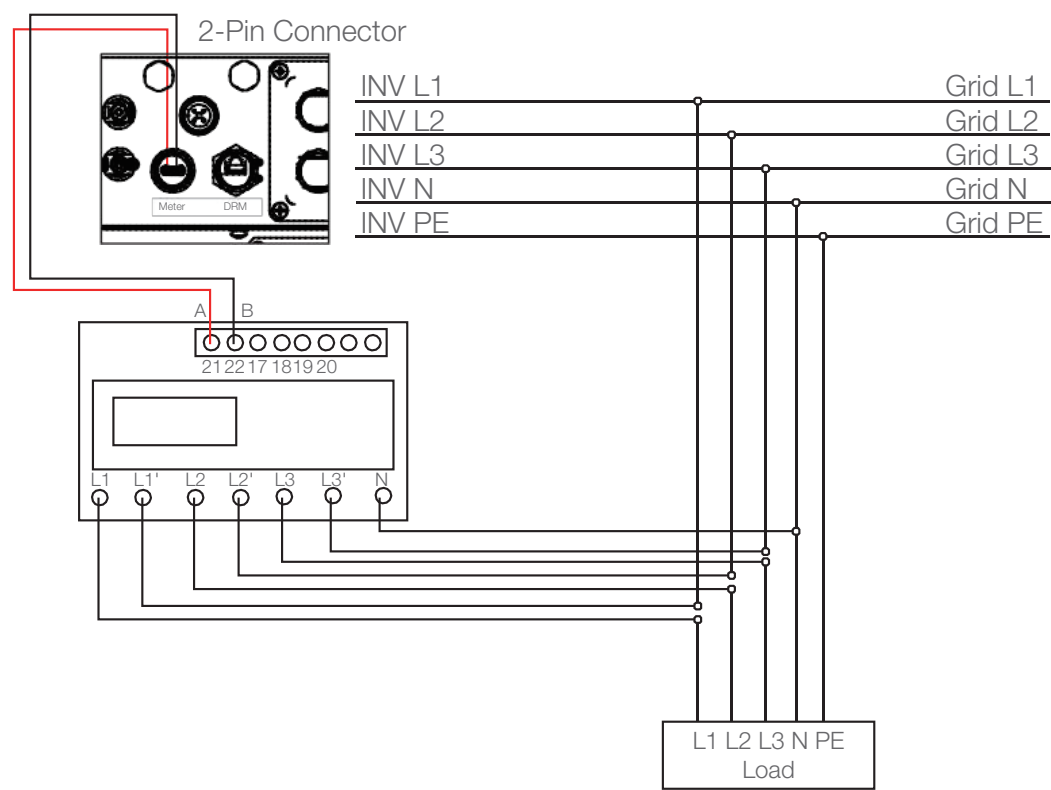


Figure 5.26 Direct Insert Type Meter - "Meter in Load"

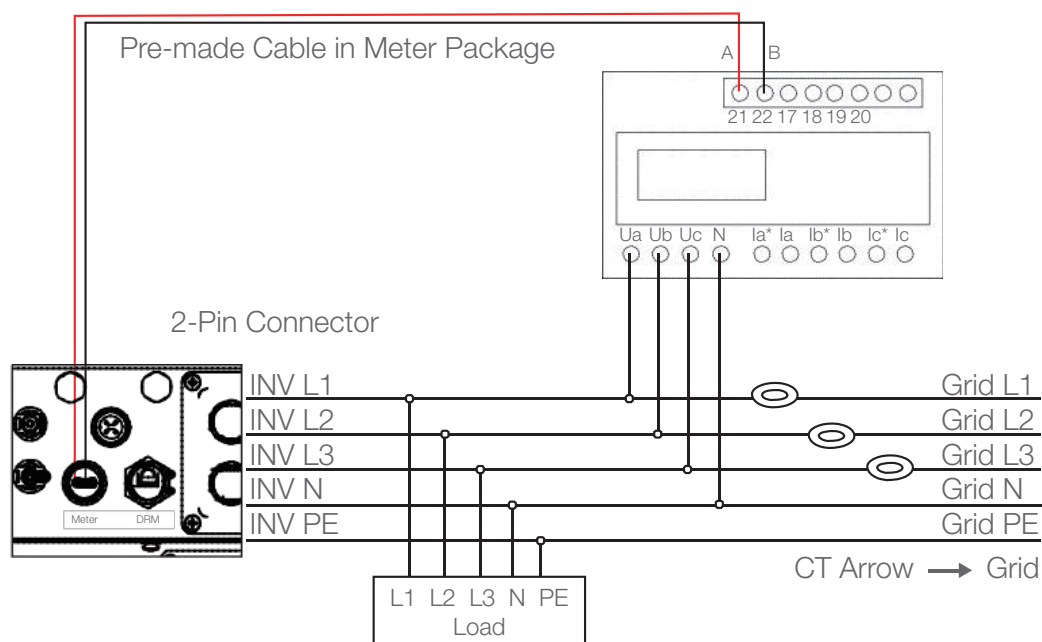


Figure 5.27 External CT Type Meter - "Meter in Grid"

INSTALLATION

Pre-made Cable in Meter Package

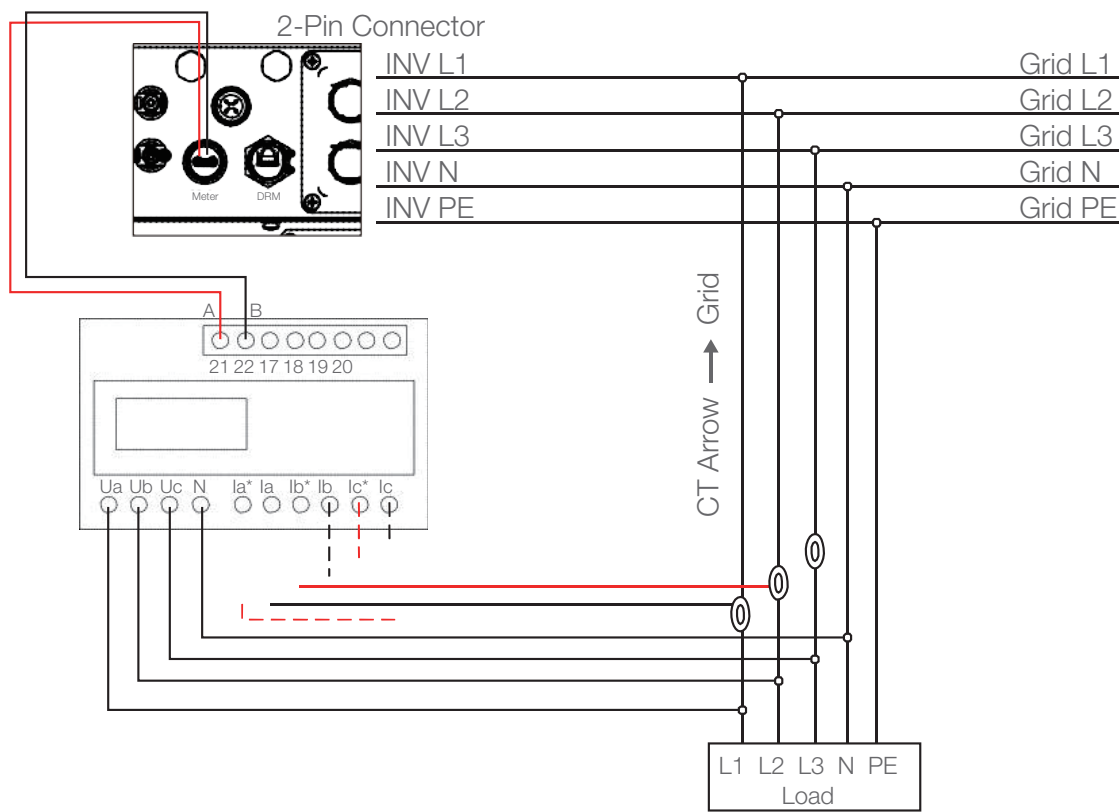


Figure 5.28 External CT Type Meter - "Meter in Load"

INSTALLATION

Logic interface connection

Logic interface is required by some local regulations that can be operated by a simple switch or contactor (Not available in South Africa).

When the switch is closed the inverter can operated normally. When the switch is opened, the inverter will reduce it's output power to zero within 5s.

Pin5 and Pin6 of R J45 terminal is used for the logic interface connection.

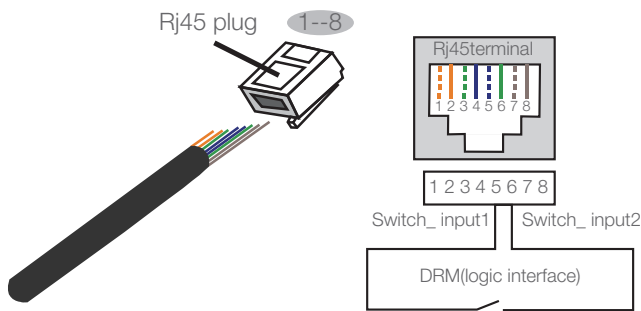
Please follow below steps to assemble RJ45 connector.

- Insert the network cable into the communication connection terminal of RJ45.



Figure 5.29 RJ45 communication connection terminals

- Use the network wire stripper to strip the insulation layer of the communication cable. According to the standard line sequence of figure 5.30 connect the wire to the plug of RJ45, and then use a network cable crimping tool to make it tight.



Correspondence between the cables and the stitches of plug, Pin5 and Pin6 of R J45 terminal is used for the logic interface, other Pins are reserved.

Pin 1: Reserved; Pin 2: Reserved
Pin 3: Reserved; Pin 4: Reserved
Pin 5: Switch_input1; Pin 6: Switch_input2
Pin 7: Reserved; Pin 8: Reserved

Figure 5.30 Strip the insulation layer and connect to RJ45 plug

- Connect RJ45 to DRM (logic interface) .
After wire connection, please refer chapter 7.5.9.1 to enable the logic interface function.

START&STOP

Start the inverter

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

- Switch the grid supply main Switch (AC) ON first.
- Switch the DC switch ON. If the voltage of PV arrays are higher than start up voltage, the inverter will initialize. The red LED power will light.
- 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.
- 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.

Stop the inverter

To stop the inverter, it is mandatory that the steps below are followed in the exact order outlined.

- Select "Grid Off" in the Advanced Setting of Inverter LCD.
- Turn off the AC Switch between Solis inverter and Grid.
- Wait approximately 30 seconds (during this time, the AC side capacitors are dissipating energy). If the inverter has DC voltage above the start-up threshold, the red POWER LED will be lit. Switch the DC switch OFF.
- Confirm all LED's switch OFF (~one (1) minute).

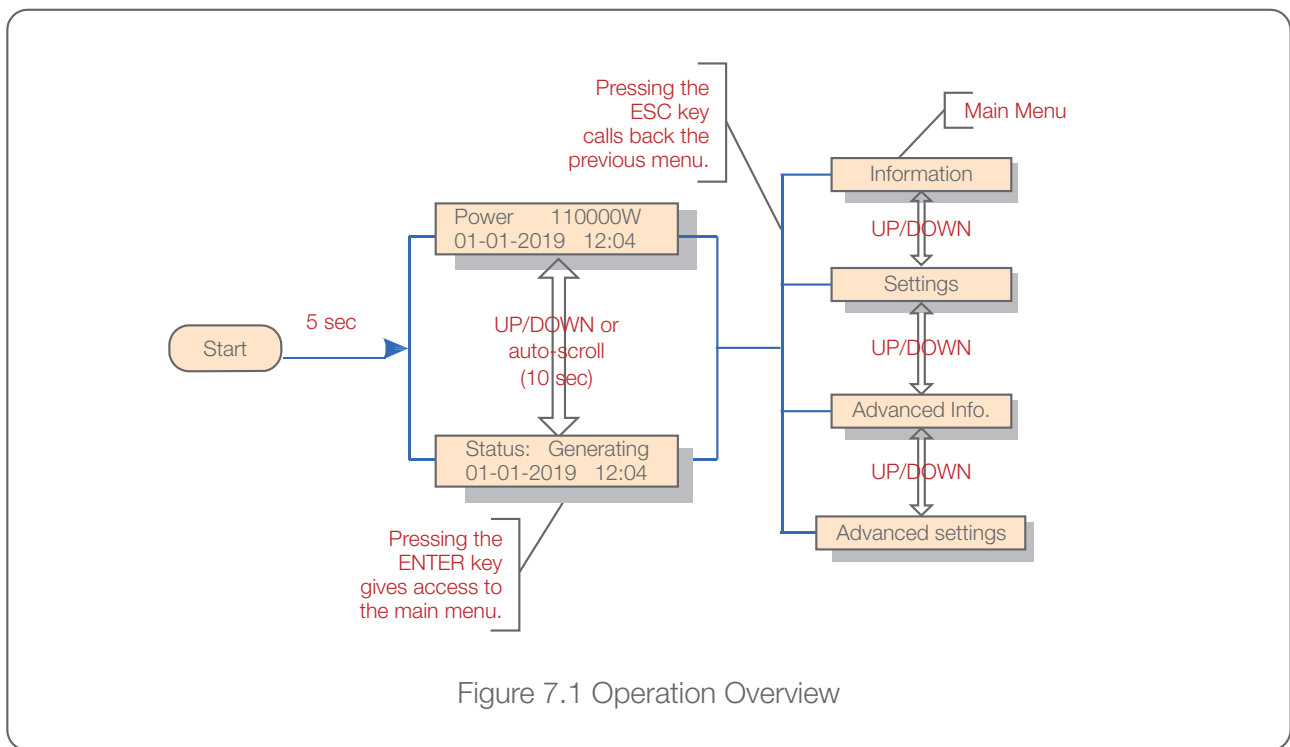


CAUTION

Although the inverter DC disconnect switch is in the OFF position and all the LED's are OFF, operators must wait five (5) minutes after the DC power source has been disconnected before opening the inverter cabinet. DC side capacitors can take up to five (5) minutes to dissipate all stored energy.

OPERATION

In normal operation, LCD screen alternatively shows inverter power and operation status (see Figure 7.1). The screen can be scrolled manually by pressing the UP/DOWN keys. Pressing the ENTER key gives access to Main Menu.



Main Menu

There are four submenus in the Main Menu (see Figure 7.1):

- Information
- Settings
- Advanced Info.
- Advanced Settings

Information

The Solis three 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.

OPERATION

Display	Duration	Description
V_DC01: 0000.0V i_DC01: 0000.0A	10 sec	V_DC01: Shows input DC voltage. I_DC01: Shows input DC current.
V_A: 000.0V I_A: 000.0A	10 sec	V_A: Shows the grid's voltage value. I_A: Shows the grid's current value.
V_C: 000.0V I_C: 000.0A	10 sec	V_C: Shows the grid's voltage value. I_C: Shows the grid's current value.
Status: Generating Power: 0000W	10 sec	Status: Shows instant status of the Inverter. Power: Shows instant output power value.
Rea_Power: 0000Var App_Power: 0000VA	10 sec	Rea_Power: Shows the reactive power of the inverter. App_Power: Shows the apparent power of the inverter.
Grid Frequency F_Grid 00.00Hz	10 sec	F_Grid: Shows the grid's frequency value.
Total Energy 0000000 kwh	10 sec	Total generated energy value.
This Month: 0000kwh Last Month: 0000kwh	10 sec	This Month: Total energy generated this month. Last Month: Total energy generated last month.
Today: 00.0kwh Yesterday: 00.0kwh	10 sec	Today: Total energy generated today. Yesterday: Total energy generated yesterday.
Inverter SN 0000000000000000	10 sec	Display series number of the inverter.
Work Mode: NULL DRM NO.: 08	10 sec	DRM NO.: Shows DRM Number.
I_PV01: +05.0A I_PV02: +04.9A ... I_PV08: +05.2A	10 sec	I_PV01 : Shows input 01 current value. I_PV02 : Shows input 02 current value. ... I_PV08 : Shows input 08 current value.

Table 7.1 Information list

OPERATION

Lock screen

Pressing the ESC key returns to the Main Menu. Pressing the ENTER key locks (Figure 7.2(a)) or unlocks (Figure 7.2 (b)) the screen.



(a)



(b)

Settings

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

1. Set Time
2. Set Address

– Set Time

This function allows time and date setting. When this function is selected, the LCD will display a screen as shown in Figure 7.3.

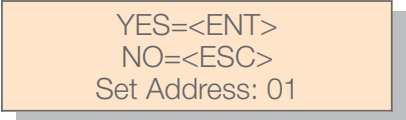


01-01-2019 16:37

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.

– Set Address

This function is used to set the address when muti inverters are connected to three monitor. number of Solis Three Phase Inverter is "01".



YES=<ENT>
NO=<ESC>
Set Address: 01

Figure 7.4 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.

OPERATION

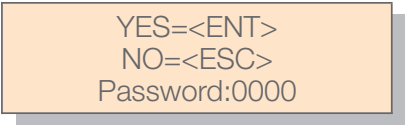
Advanced Info - Technicians Only



NOTE

To access to this area is for fully qualified and accredited technicians only. Enter menu “Advanced Info.” and “Advanced settings” (need password).

Select “Advanced Info.” from the Main Menu. The screen will require the password as below:



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

Figure 7.5 Enter password

The default password is “0010”.

Please press “down” to move the cursor, press “up” to select the number.

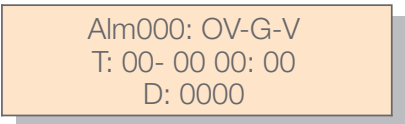
After enter the correct password the Main Menu will display a screen and be able to access to the following information.

1. Alarm Message
2. Running message
3. Version
4. Daily Energy
5. Monthly Energy
6. Yearly Energy
7. Daily Records
8. Communication Data
9. Warning Message

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.

– Alarm Message

The display shows the 100 latest alarm messages (see Figure 7.6). Screens can be scrolled manually by pressing the UP/ DOWN keys. Press the ESC key to return to the previous menu.



Alm000: OV-G-V
T: 00- 00 00: 00
D: 0000

Figure 7.6 Alarm Message

– Running Message

This function is for maintainece person to get running message such as internal temperature, Standard No.1,2,etc.

Screens can be scrolled manually by pressing the UP/DOWN keys.

– ersion

The screen shows the model version of the inverter. And the screen will show the software ver by pressing the UP and DOWN at the same time.(see Figure 7.7).

OPERATION

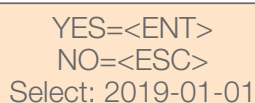


Model: 08
Software Version: D20001

Figure 7.7 Model Version and Software Version

– Daily Energy

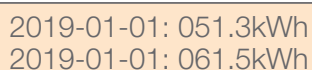
The function is for checking the energy generation for selected day.



YES=<ENT>
NO=<ESC>
Select: 2019-01-01

Figure 7.8 Select date for daily energy

Press DOWN key to move the cursor to day, month and year, press UP key to change the digit. Press Enter after the date is fixed.



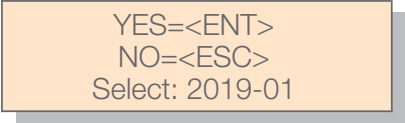
2019-01-01: 051.3kWh
2019-01-01: 061.5kWh

Figure 7.9 Daily energy

Press UP/DOWN key to move one date from another.

– Monthly Energy

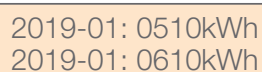
The function is for checking the energy generation for selected month.



YES=<ENT>
NO=<ESC>
Select: 2019-01

Figure 7.10 Select month for monthly energy

Press DOWN key to move the cursor to day and month, press UP key to change the digit. Press Enter after the date is fixed.



2019-01: 0510kWh
2019-01: 0610kWh

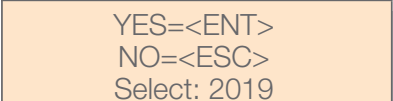
Figure 7.11 Month energy

Press UP/DOWN key to move one date from another.

OPERATION

– Yearly Energy

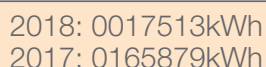
The function is for checking the energy generation for selected year.



YES=<ENT>
NO=<ESC>
Select: 2019

Figure 7.12 Select year for yearly energy

Press DOWN key to move the cursor to day and year, press UP key to change the digit. Press Enter after the date is fixed.



2018: 0017513kWh
2017: 0165879kWh

Figure 7.13 Yearly energy

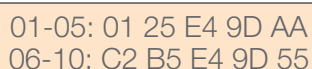
Press UP/DOWN key to move one date from another.

– Daily Records

The screen shows history of changing settings. Only for maintenance personnel.

– Communication Data

The screen shows the internal data of the Inverter (see Figure 7.14), which is for service technicians only.

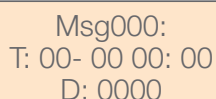


01-05: 01 25 E4 9D AA
06-10: C2 B5 E4 9D 55

Figure 7.14 Communication Data

– Warning Message

The display shows the 100 latest warn messages (see Figure 7.15). Screens can be scrolled manually by pressing the UP/ DOWN keys. Press the ESC key to return to the previous menu.




Msg000:
T: 00- 00 00: 00
D: 0000

Figure 7.15 Warning Message

OPERATION

Advanced Settings - Technicians Only



NOTE

To access to this area is for fully qualified and accredited technicians only. Please follow 7.4 to enter password to access this menu.

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

- | | | |
|---------------------|-----------------------|----------------------|
| 1. Select Standard | 8. Special Settings | 15. Debug Parameter |
| 2. Grid ON/OFF | 9. STD. Mode Settings | 16. Fan Text |
| 3. 24H Switch | 10. Restore Settings | 17. DSP Update |
| 4. Clear Energy | 11. HMI Update | 18. Compensation Set |
| 5. Reset Password | 12. Internal EPM Set | 19. I/V Curve |
| 6. Power Control | 13. External EPM set | |
| 7. Calibrate Energy | 14. Restart HMI | |

- Selecting Standard
This function is used to select the grid's reference standard (see Figure 7.16).

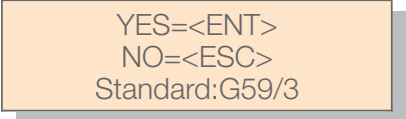


Figure 7.16

Press the UP/DOWN keys to select the standard (G59/3, UL-480V, VDE0126, AS4777-15, AS4777-02, CQC380A, ENEL, UL-380V, MEX-CFE, C10/11 and “User-Def” function).
Press the ENTER key to confirm the setting.
Press the ESC key to cancel changes and returns to previous menu.



NOTE

This function is for technicians use only.

Selecting the “User-Def” menu will access to the following submenu (see Figure 7.17),

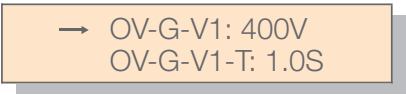



Figure 7.17



NOTE

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

OPERATION

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

OV-G-V1: 220---374V	OV-G-F1: 50.1-65Hz
OV-G-V1-T: 0.01---300S	OV-G-F1-T: 0.01---300S
OV-G-V2: 220---374V	OV-G-F2: 50.1-65Hz
OV-G-V2-T: 0.01---300S	OV-G-F2-T: 0.01---300S
UN-G-V1: 110---277V	UN-G-F1: 45-59.9Hz
UN-G-V1-T: 0.01---300S	UN-G-F1-T: 0.01---300S
UN-G-V2: 110---277V	UN-G-F2: 45-59.9Hz
UN-G-V2-T: 0.01---300S	UN-G-F2-T: 0.01---300S
Startup-T: 10-600S	Restore-T: 10-600S

Table 7.2 Setting ranges for User-Def (L-N)

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

For different countries, the grid standard needs to be set as different according to local requirements. If there is any doubt, please consult Solis service technicians for details.

– Grid ON/OFF

This function is used to start up or stop the power generation of Solis Inverter.

Grid ON Grid OFF

Figure 7.18 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.

OPERATION

– 24H Switch

This function controls the 24H hours consumption function enable or disable.

An orange rectangular LCD screen with the text "Enable Disable" in black, centered.

Figure 7.19 Set 24H ON/OFF



NOTE

When this is enabled, the inverter LCD will still be alive at night with the power LED light on. If the grid is in malfunction at night, the system can't recover even after the grid is back to normal but the consumption data will still be recorded in the meter. Until the sunrise, the system will start to work again while the meter data can be uploaded to the Solis monitoring system to calibrate the load consumption data.

– Clear Energy

Clear Energy can reset the history yield of inverter



These two functions are applicable by maintenance personnel only, wrong operation will prevent the inverter from working properly.

– Reset Password

This function is used to set the new password for menu “Advanced info.” and “Advanced information” (see Figure 7.20).

An orange rectangular LCD screen with the text "YES=<ENT>", "NO=<ESC>", and "Password: 0000" in black, centered.

Figure 7.20 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.

OPERATION

– Power control

Active and reactive power can be set through power setting button.

There are 5 item for this sub menu:

1. Set output power
2. Set Reactive Power
3. Out_P With Restore
4. Rea_P With Restore
5. Select P F Curve



This function is applicable by maintenance personnel only, wrong operation will prevent the inverter from reaching maximum power.

– 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.

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

Figure 7.21 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.

– Special Settings



This function is applicable by maintenance personnel only, wrong operation will prevent the inverter from reaching maximum power.

– STD Mode settings

There are 6 setting under STD. Mode settings.

1. Working Mode Set
2. Power Rate Limit
3. Freq Derate Set
4. 10mins Voltage Set
5. Power Priority
6. Initial Settings



This function is applicable by maintenance personnel only, wrong operation will prevent the inverter from reaching maximum power.

OPERATION

– Enable logic interface settings

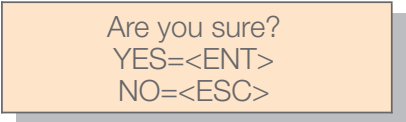
When select G98 or G99 standard to use the logic interface function, please follow below settings to enable the DRM. DRM default setting is “OFF” , if DRM set “ON”, but the logic interface un-connected to the switch or the switch is open, the inverter HMI will display “Limit by DRM” and the inverter output power will be limited to zero.

1. Select **Initial Settings**
2. Select **DRM** and set it “ON”

– Restore Settings

There are 5 items in initial setting submenu.

Restore setting could set all item in 7.5.8 special setting to default. The screen shows as below:



Are you sure?
YES=<ENT>
NO=<ESC>

Figure 7.22 Restore Settings

Press the Enter key to save the setting after setting grid off.

Press the ESC key to return the previous mean.

– HMI Update

This function is used for updating the LCD program.



This function is applicable by maintenance personnel only, wrong operation will prevent the inverter from reaching maximum power.

OPERATION

– Internal EPM Set



NOTE

This section includes two functions related to the smart meter. Please refer to section 5.3.6 for detailed connection diagrams.

Function 1: Internal Export Power Management Function

Inverters can work with a smart meter to dynamically limit the export power of the system. Zero injection can be achieved.

Smart meter can be installed either on the grid side OR the load side.

Function 2: 24 Hour Consumption Monitoring Function

Only applicable if Solis monitoring system is used.

Inverters can work with a smart meter to monitor the load consumption data for the whole day and the data will be displayed on the Solis monitoring system. Smart meter can only be installed on the grid side.



NOTE

Please refer to below instructions for different user scenarios.

Scenario 1. Only Function 1 is required

Step 1: Refer to Section 5.3.6 to connect the smart meter on the grid side or load side.

Step 2: Select the Section 7.5.12.1 Mode Select as Option 2(Meter in Load) or Option 3 (Meter in Grid) accordingly.

Step 3: Configure the Section 7.5.12.2 to set the allowed backflow power.

Step 4: Configure the Section 7.5.12.3 to enable the failsafe function (If necessary).

Step 5: Configure the Section 7.5.12.4 to modify the work mode (If necessary).

Scenario 2. Both Function 1 and 2 are required

Using a Smart Meter:

Step 1: Refer to Section 5.3.6 to connect the smart meter on the grid side.

Step 2: Select the Section 7.5.12.1 Mode Select as Option 3(Meter in Grid).

Step 3: Select the Section 7.5.3 24H Switch as "Enable".

Step 4: Configure the Section 7.5.12.2 to set the allowed backflow power.

Step 5: Configure the Section 7.5.12.3 to enable the failsafe function (If necessary).

Step 6: Configure the Solis monitoring system (Please refer to the manual of monitoring device).

If customer does not want to enable the export power control function, please change the "backflow power" to the max output power of the inverter in Step 4 OR simply select the mode as "consumption monitor" in Step 2 and skip Step 4-5.

OPERATION

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

1. Mode Select 2. Backflow Power 3. Fail safe ON/OFF 4. Backflow Work Mode

– Mode Select

There are 4 settings in this menu as below:

1. OFF 2. Meter in Load 3. Meter in Grid 4. Consumption Monitor

OFF: Functions are disabled

Meter in Load: Solis Smart Meter is connected in the load branch circuit.

Meter in Grid: Solis Smart Meter is connected in the grid connection point (The backflow power is default as 0W).

Consumption Monitor: Solis Smart Meter is connected in the grid connection point (The backflow power setting is not applicable).

– Backflow Power

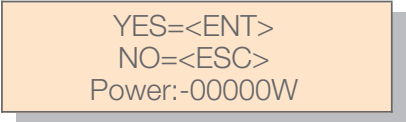
The setting is used to define the allowed export power into the grid.

The setting range is between 00000W to 29900W.



->Set Backflow Power

Figure 7.23 Set the backflow power



YES=<ENT>
NO=<ESC>
Power:-00000W

Figure 7.24

Press the UP/DOWN keys to set data. Press the ENTER key to set backflow power.

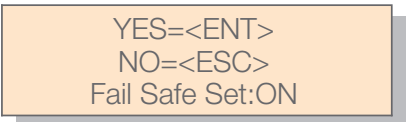
Then press DOWN keys to move the cursor, press UP to change the number.

Press the ESC key to save the settings and return to the previous menu.

– Fail safe ON/OFF

This setting is used to give out an alarm (stop inverter generation as well) when the Meter connection is lost during operation.

It can prevent potential backflow power into the grid when the system loses control.



YES=<ENT>
NO=<ESC>
Fail Safe Set:ON

Figure 7.25 Set the Fail Safe ON/OFF