Solis Three Phase Inverter

S6-GC(37.5-60)K Installation and Operation Manual

Ver 1.0

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Please adhere to the actual products in case of any discrepancies in this user manual.

If you encounter any problem on the inverter, please find out the inverter S/N
and contact us, we will try to respond to your question ASAP.

Ginlong Technologies Co., Ltd.

Contents

1. Introduction

1.1 Product Description

Solis Three phase Inverters covert DC power from the photovoltaic(PV) array into alternating current(AC) power that can satisfy local loads as well as feed the power distribution grid.

This manual covers the three phase inverter model listed below:

S6-GC3P40K04-NV-ND, S6-GC3P50K04-NV-ND, S6-GC3P60K05-NV-ND,
S6-GC3P50K04-HV-ND, S6-GC3P60K05-HV-ND, S6-GC3P23K03-LV-ND,
S6-GC3P25K04-LV-ND, S6-GC3P30K04-LV-ND, S6-GC3P36K04-LV-ND,

The following one model is specially supplied for Brazil market:

S6-GC3P37.5K04-NV-ND, S6-GC3P37.5K04-LV-ND

Figure 1.1 Front view

8pin COM Port   Data Logging Stick

DC Switch

AC output
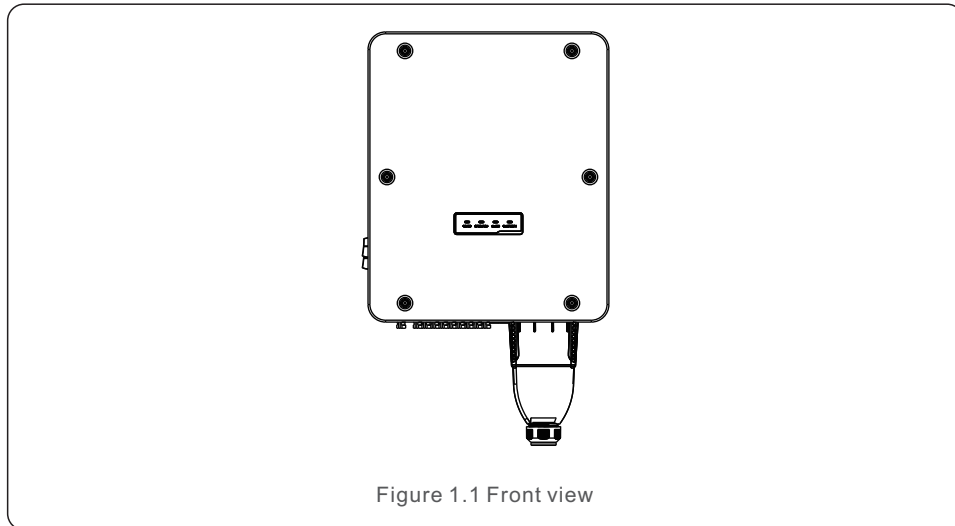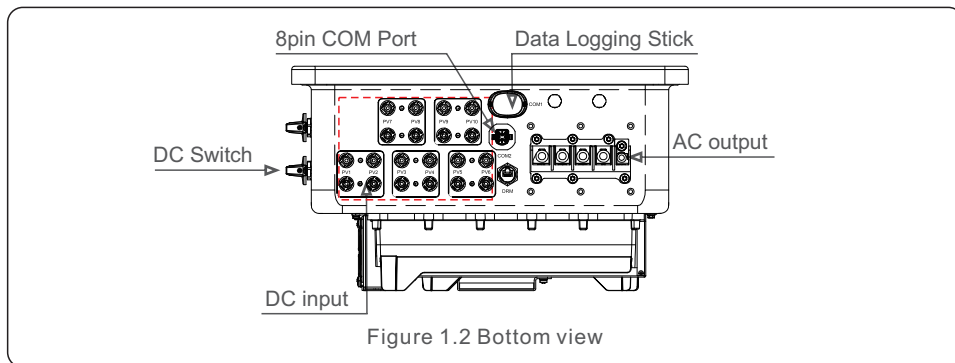
DC input

Figure 1.2 Bottom view

Some models may have a different number of DC inputs, please refer to datasheet/nameplate/actual product.

1.2 Unpacking and storage

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

Inverter x1

Back plate x1

Cross screws(M4*10) x1

Cross Recessed
Hexagon Bolt(M6*16) x6

16pin COM Connector x1
Unlocking tool x1

DC connectors x6 or x8 or x10
(On basis of actual string
number of inverter)

AC terminal cover x1

Manual

User manual x1
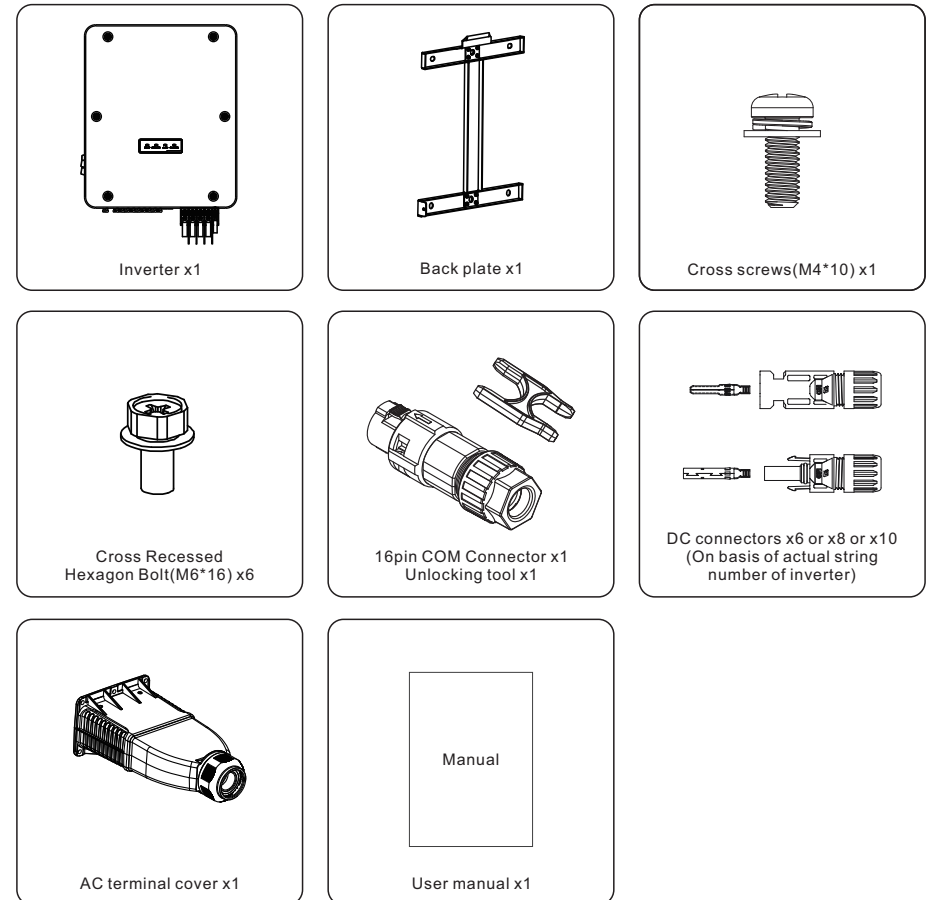
If anything is missing, please contact your local Solis distributor.

1. Introduction

1.3 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℃ and 70℃ and the humidity should be between 0 and 95% non-condensing.

- Stack no more than four (4) 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.

2. Safety Instructions

Improper use may result in electric shock hazards or burns. This product manual contains important instructions that are required to be followed during installation and maintenance. Please read these instructions carefully before use and keep them in an easily locatable place for future reference.

2.1 Safety symbols

Safety symbols used in this manual, which highlight potential safety risks and important safety information, are listed below:

WARNING
Symbol indicates important safety instructions, which if not correctly followed, could result in serious injury or death.

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

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

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

2.2 General safety instructions

WARNING
Do not connect PV array positive (+) or negative (-) to ground – doing so could cause serious damage to the inverter.

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

WARNING
To reduce the risk of fire, branch circuit over-current protective devices (OCPD) are required for circuits connected to the Inverter.

CAUTION
The PV array (solar panels) supplies a DC voltage when exposed to light.

2. Safety Instructions

<table>
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CAUTION

Risk of electric shock from energy stored in the inverter's capacitors.
Do not remove cover until five (5) minutes after disconnecting all sources
of supply have passed, and this can only be done by a service technician.
The warranty may be voided if any unauthorized removal of cover occurs.

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CAUTION

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

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WARNING

The inverter can only accept a PV array as a DC input. Using any other
type of DC source could damage the inverter.

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</table>

2.3 Notice for use

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

1). The inverter must be permanently installed.
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 system design must meet inverter specifications.
5). The inverter is for industrail/commercial application only.

To start-up the inverter, the Grid Supply Main Switch (AC) must be turned on, BEFORE the DC
Switch is turned on. To stop the inverter, the Grid Supply Main Switch (AC) must be turned off
before the DC Switch is turned off.

2.4 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 .
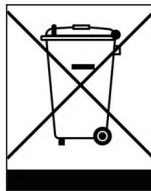
3. Installation

3.1 Environmental considerations

3.1.1 Select a location for the inverter

When selecting a location for the inverter, consider the following:

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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.

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</table>

● The temperature of the inverter heat-sink can reach 75℃.

● The inverter is designed to work in an ambient temperature range between -25 to 60℃.

● If multiple inverters are installed on site, a minimum clearance of 500mm should be kept between
  each inverter and all other mounted equipment. The bottom of the inverter should be at least 500mm
  above of the ground or floor (see Figure 3.1).

● The LED status indicator lights and the LCD located on the inverter's front panel should not be
  blocked.

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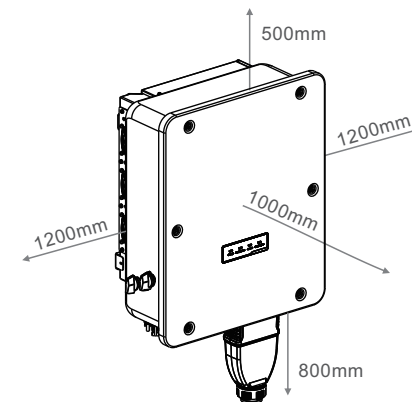

Figure 3.1 Distances required between inverters

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

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When you install multiple inverters, you are advised to install them in horizontal rows.
The horizontal installation distance is 1200mm.
If multiple inverters are stacked, the following figure shows the installation distance between inverters.
When the inverters are installed back-to-back, the distance between the two inverters must be at least 1200mm.
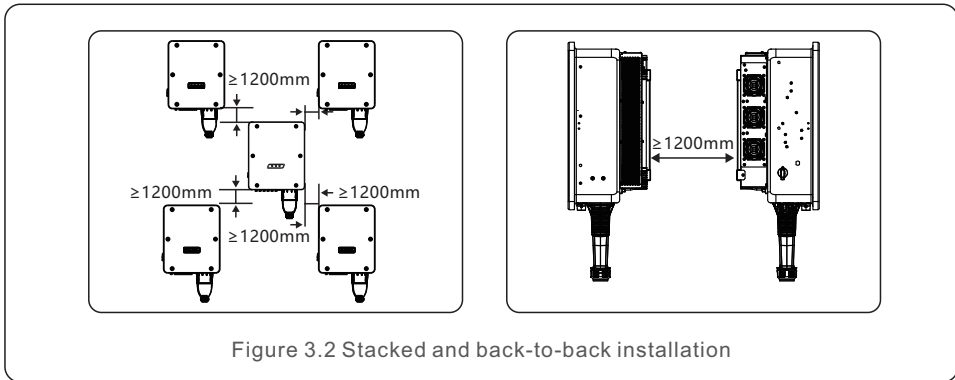

Figure 3.2 Stacked and back-to-back installation

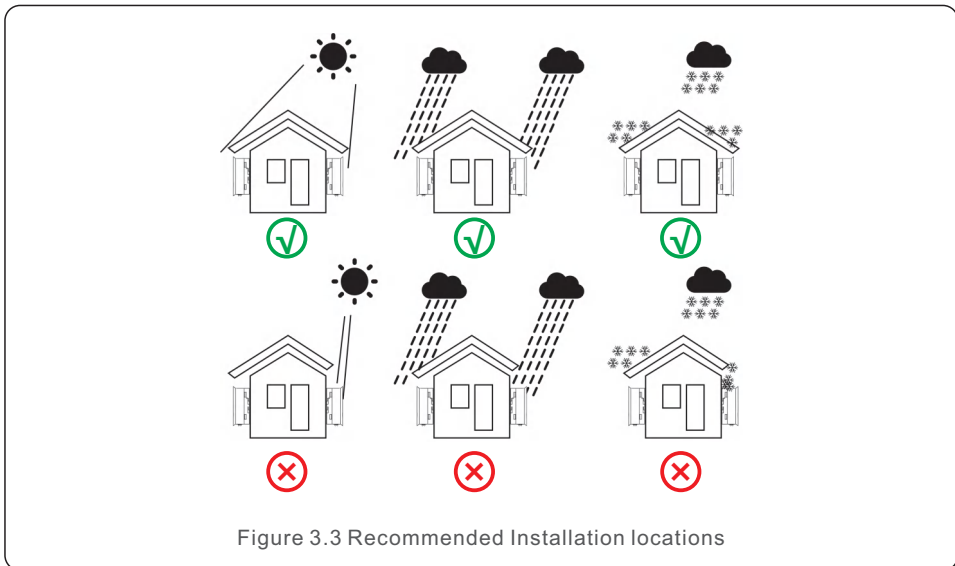3.1.1.1 Examples of correct and incorrect installations

Figure 3.3 Recommended Installation locations

3.1.2 Other environmental considerations

3.1.2.1 Consult technical data

Consult the specifications section (section 10) for additional environmental conditions (protection rating, temperature, humidity, altitude, etc.).

3.1.2.2 Avoiding direct sunlight

Installation of the inverter in a location exposed to direct sunlight should to be avoided.
Direct exposure to sunlight could cause:

● Power output limitation (with a resulting decreased energy production by the system).
● Premature wear of the electrical/electromechanical components.
● Premature wear of the mechanical components (gaskets) and user interface.

3.1.2.3 Air circulation

Do not install in small, closed rooms where air cannot freely circulate. To prevent overheating, always ensure that the air flow around the inverter is not blocked.

3.1.2.4 Flammable substances

Do not install near flammable substances. Maintain a minimum distance of three (3) meters (10 feet) from such substances.

3.1.2.5 Living area

Do not install in a living area where the prolonged presence of people or animals is expected. Depending on where the inverter is installed (for example: the type of surface around the inverter, the general properties of the room, etc.) and the quality of the electricity supply, the sound level from the inverter can be quite high.

3.2 Product handling

Please review the instruction below for handling the inverter:

1. The red circles below denote cutouts on the product package.
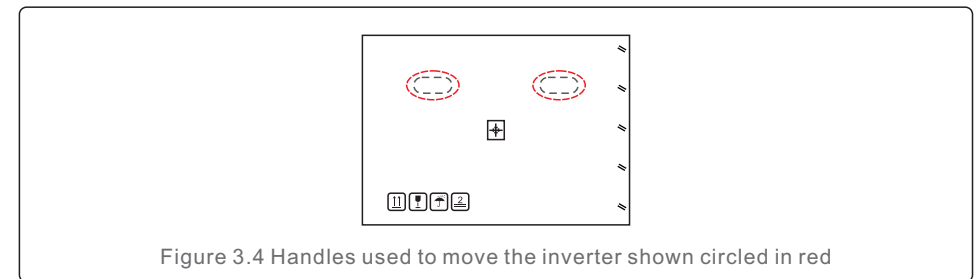Push in the cutouts to form handles for moving the inverter.

Figure 3.4 Handles used to move the inverter shown circled in red

2. Two people are required to remove the inverter from the shipping box. Use the handles integrated into the heat sink to remove the inverter from the carton.
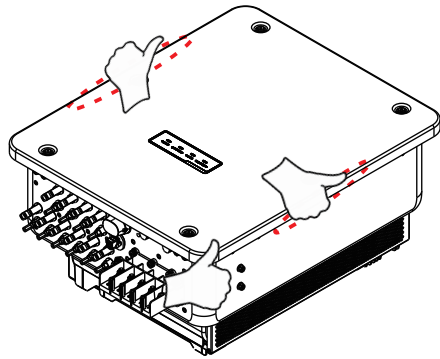
Figure 3.4 Inverter handles

WARNING

Due to the weight of the inverter, contusions or bone fractures could occur when incorrectly lifting and mounting the inverter. When mounting the inverter, take the weight of the inverter into consideration. Use a suitable lifting technique when mounting.

3.3 Mounting the Inverter

The inverter can be mounted to the wall or metal array racking. The mounting holes should be consistent with the size of the bracket or the dimensions shown in Figure 3.5.

255

365
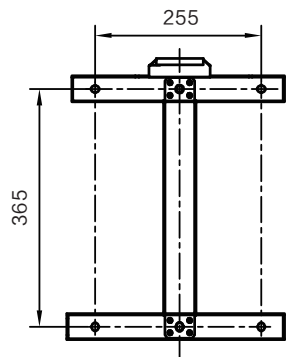
unit:mm

Figure 3.5 Inverter wall mounting

3.3.1 Wall mounting

Refer to figure 3.6 and figure 3.7 Inverter shall be mounted vertically.
The steps to mount the inverter are listed below.

1. Refer to Figure 3.6, drill holes for expansion bolt(M10*90) based on the hole diameter of bracket using a precision drill keeping the drill perpendicular to the wall. Max depth is 90mm.

2. Make sure the bracket is horizontal. And the mounting holes (in Figure 3.6) are marked correctly. Drill the holes into wall at your marks.

3. Use the suitable mounting screws to attach the bracket on the wall.

Torque: 30-35NM

Mounting Bracket
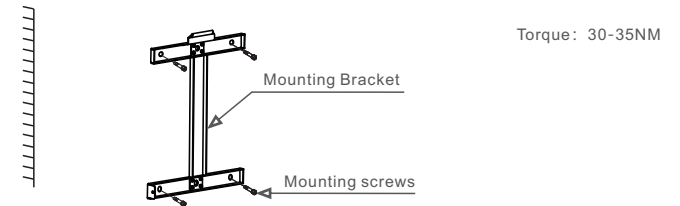
Mounting screws

Figure 3.6 Inverter wall mounting

4. Lift the inverter and hang it on the bracket, and then slide down to make sure they match perfectly.
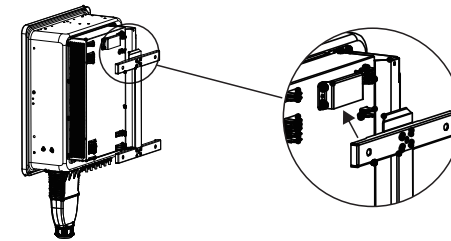
Figure 3.7 Install the inverter

5. Use screws in the packaging to fix the inverter to the mount bracket.

Torque: 1.7-2NM
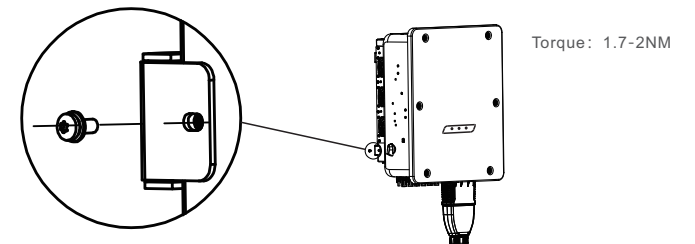
Figure 3.8 Fix the inverter

3.3.2 Rack mounting

The steps to mounted to the rack are listed below:

1. Select a location for the inverter

- With an IP66 protection rating,the inverter can be installed both outdoors and indoors.

- When the inverter is running, the temperature of the chassis and heat sink will be higher, Do not install the inverter in a location that you accidentally touch.

- Do not install the inverter in a place where it is stored in a flammable or explosive material.

2. Installation angle
   Please install the inverter vertically. If the inverter cannot be mounted vertically, it may be tilted backward to 15 degrees from vertical.

Vertical   Backward   ≤15°

Figure 3.9 Correct installation Angle

Upside down   Leaning forward

Figure 3.10 Wrong installation Angle
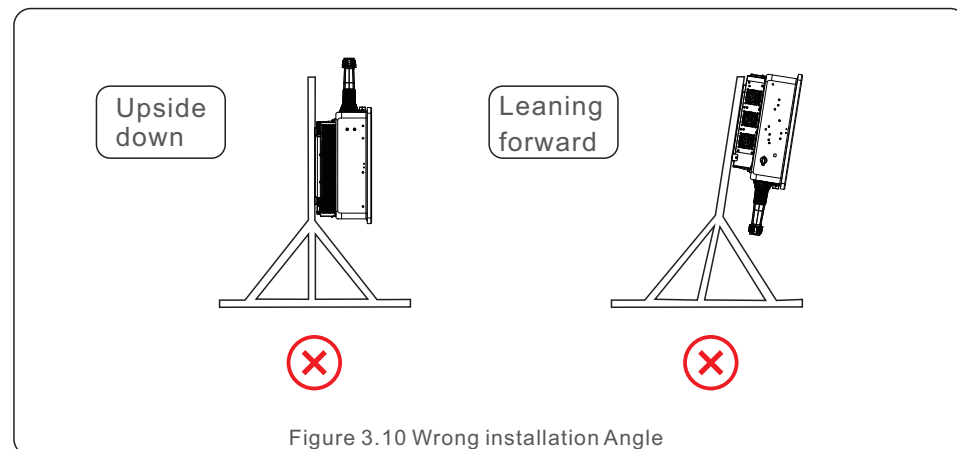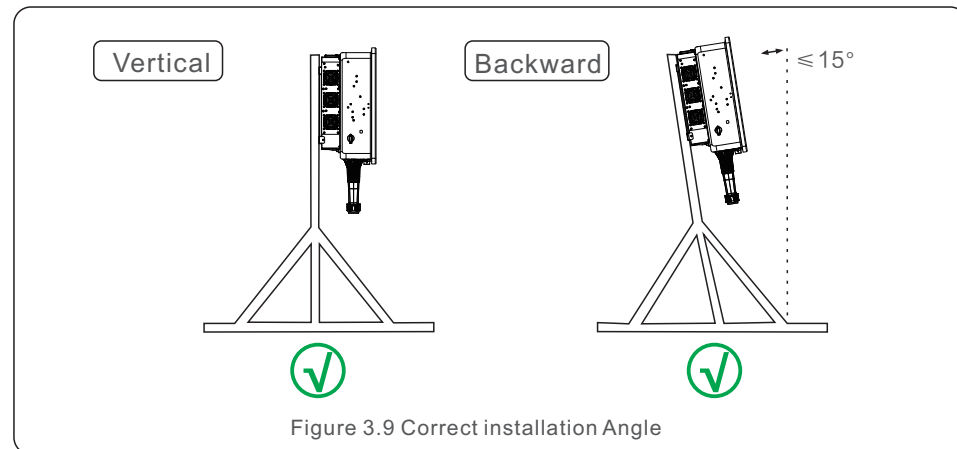
3. Install mounting plate

   1) Remove the bracket and fasteners from the packaging. Mark the position for hole, drilling according to the hole positions of the bracket.

Figure 3.11 Mark the position for hole
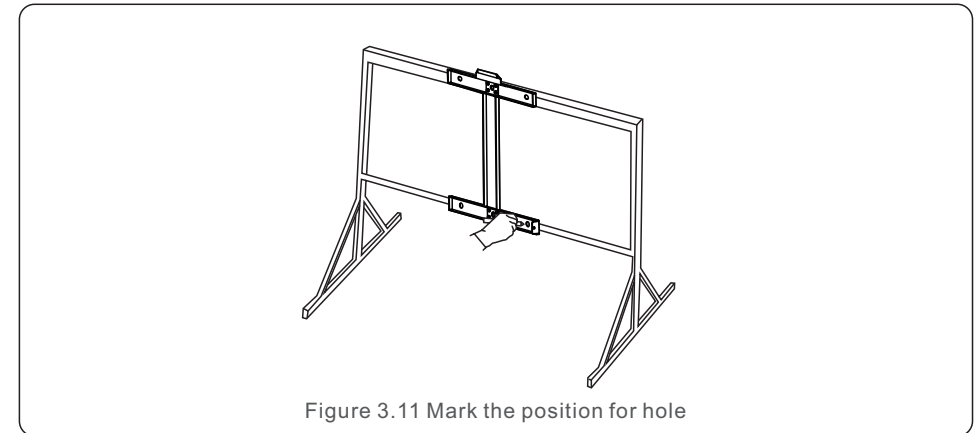
   2) Drill the marked holes. It is recommended to apply anti-corrosive paint at the hole for corrosion protection.

φ 12.5mm

Figure 3.12 Drill hole
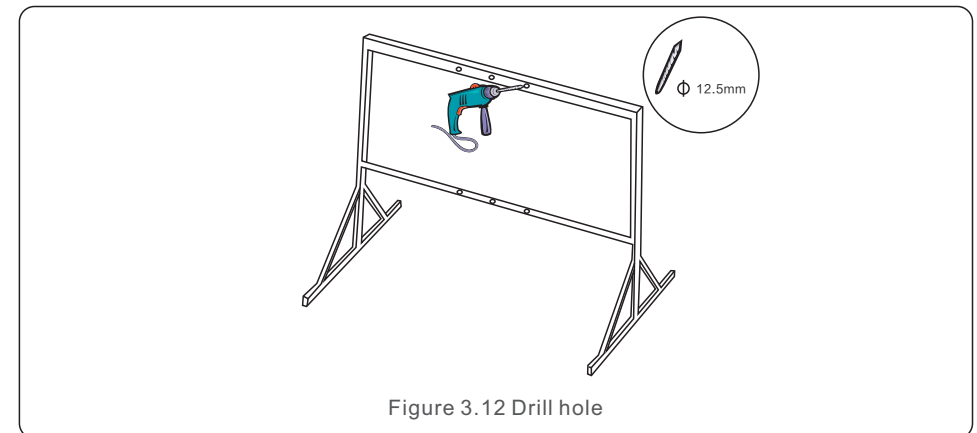
3) Align the mounting plate with the holes, Insert the hexagon bolt (M10X40)through the mounting plate into the hole. Secure the bracket to the metal frame firmly.
Torque the nut to 18-23N.m.
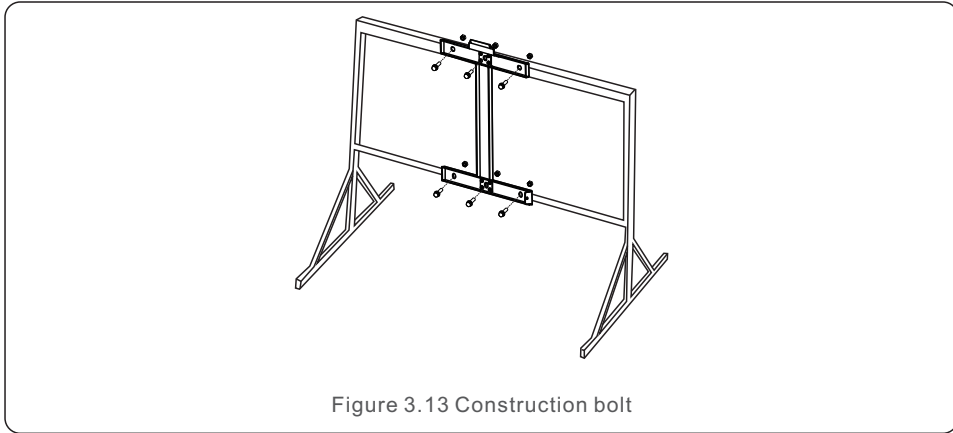
Figure 3.13 Construction bolt

4) Lift the inverter above the bracket and then slide down to make sure they match perfectly.
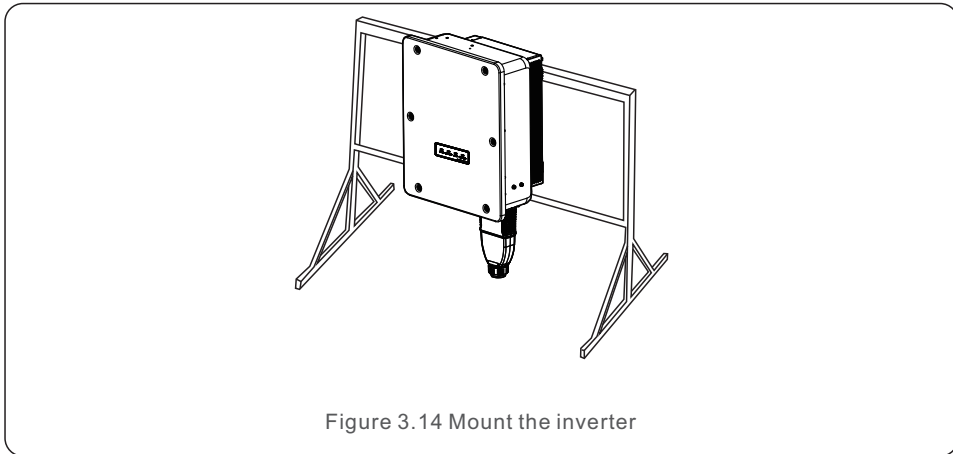
Figure 3.14 Mount the inverter

3.4 Electrical Connections

Inverter design uses PV style quick-connect terminal. The top cover needn't be opened during DC electrical connection. The labels located the bottom of the inverter are described below in table 3.1. All electrical connections are suitable for local or national standard.

Parts	Connection	Cable size	Torque
DC terminal	PV strings	4-6mm²	NA
Ground terminal	AC ground	16-25mm²	6-10N.m
Grid terminal	Grid	25-50mm²	6-10N.m
16pin COM Port	Communication cable	0.75-3mm²	NA
4pin COM Port	Datalogging Stick	NA	NA

Table 3.1 Electrical connection symbols

The electrical connection of the inverter must follow the steps listed below:
1. Switch the Grid Supply Main Switch (AC) OFF.
2. Switch the DC Isolator OFF.
3. Connect the inverter to the grid.
4. Assemble PV connector and connect to the Inverter.

3.4.1 Grounding

To effectively protect the inverter, two grounding methods must be performed.
Connect the AC grounding cable (Please refer to section 3.4.3)
Connect the external grounding terminal.

To connect the grounding terminal on the heat sink, please follow the steps below:
1) Prepare the grounding cable: recommend to use the outdoor copper-core cable.
The grounding wire should be at least half size of the hot wires.
2) Prepare OT terminals: M10.

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.

3) Strip the ground cable insulation to a suitable length(see Figure 3.15).
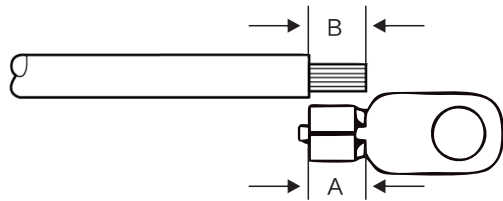
Figure 3.15 Suitable length

Important:

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

4) Insert the stripped wire into the OT terminal crimping area and use the hydraulic clamp to crimp the terminal to the wire (see Figure 3.16).

C L3 < 2 mm

D L4 < 1.5 mm
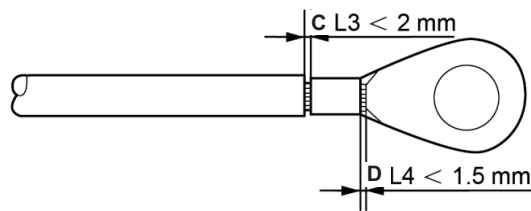
Figure 3.16 Strip wire

Important:

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

5) Remove the screw from the heat sink ground point.

6) Connect the grounding cable to the grounding point on the heat sink, and tighten the grounding screw, Torque is 6-10Nm(see figure 3.17).

Grounding Screw

Torque：6-10NM
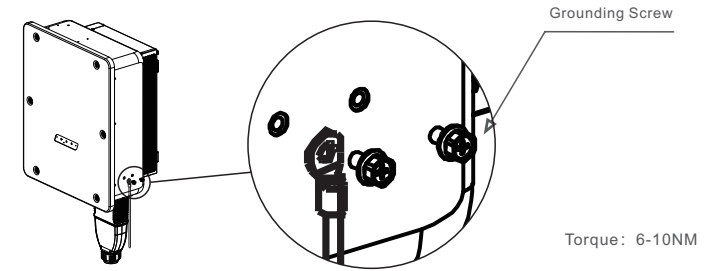
Figure 3.17 Fixed cable

Important:

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

Cu-Al Transfer Terminals Dimensional Requirements:

8.5mm
12mm
18mm
75mm
7.4mm
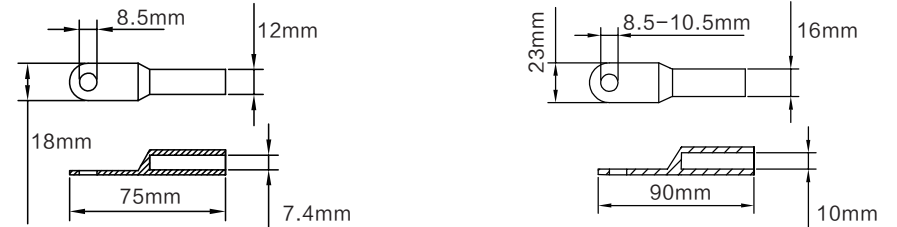
DTL-25 Ground Cu-Al Transfer Terminals

23mm
8.5−10.5mm
16mm
90mm
10mm

DTL-50 AC Cu-Al Transfer Terminals

Aluminum cables use 50mm² terminals for AC and 25mm² terminals for ground.

8.5mm
10−11mm
15.8−18mm
68−70mm
6.5−7.4mm
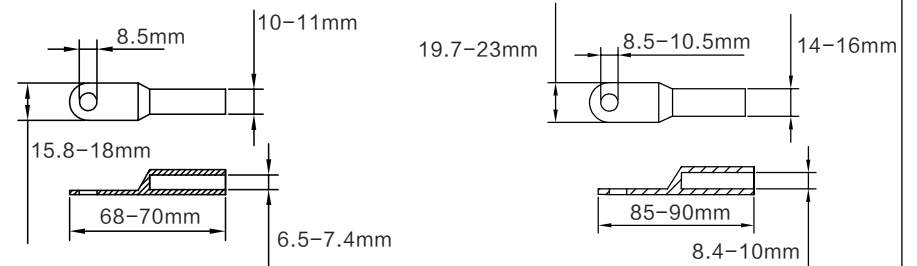
DT-16&DT-25 Cu terminals

19.7−23mm
8.5−10.5mm
14−16mm
85−90mm
8.4−10mm

DT-35&DT-50 AC Cu-Al Transfer Terminals

Copper cables are suitable for 35-50mm² terminals for AC and 16-25mm² terminals for ground.

3.4.2 Connect PV side of inverter

WARNING

Before connecting the inverter, make sure the PV array open circuit voltage is within the limit of the inverter. Otherwise, the inverter could be damaged.

WARNING

DO NOT connect the PV array positive or PV array negative cable to ground. This can cause serious damage to the inverter!

WARNING

MAKE SURE the polarity of the PV array output conductors matches the DC- and DC+ terminal labels before connecting these conductors to the terminals of the inverter.

Please see table 3.1 for acceptable wire size for DC connections.Wire must be copper only.

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

1. Strip off the DC wire for about 7mm, Disassemble the connector cap nut.

2. Insert the wire into the connector cap nut and contact pin.
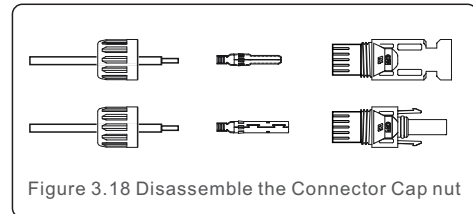
Figure 3.18 Disassemble the Connector Cap nut
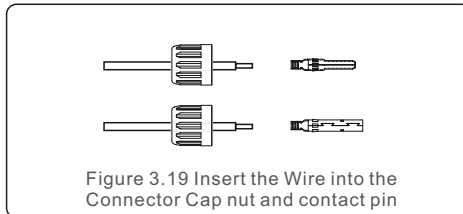
Figure 3.19 Insert the Wire into the Connector Cap nut and contact pin

3. Crimp the contact pin to the wire using a proper wire crimper.

4. Insert metal connector into top of connector, and tighten nut with torque 3-4 Nm.

Crimping plier
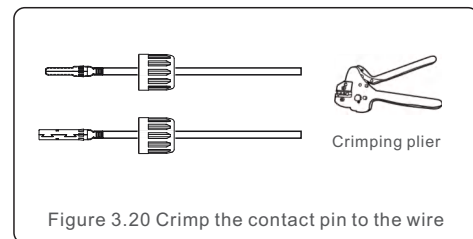
Figure 3.20 Crimp the contact pin to the wire
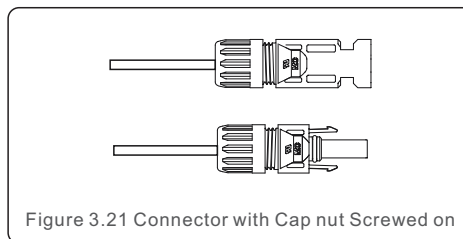
Figure 3.21 Connector with Cap nut Screwed on

5. Measure PV voltage of DC input with multimeter, verify DC input cable polarity (see figure 3.22), and ensure each string voltage is in range of inverter operation. Connect DC connector with inverter until hearing a slight clicking sound indicating successful connection. (see figure 3.23)
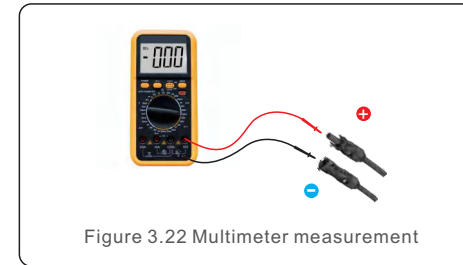
Figure 3.22 Multimeter measurement
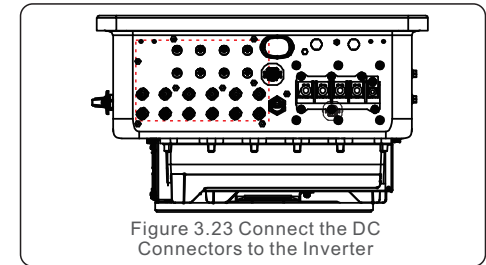
Figure 3.23 Connect the DC Connectors to the Inverter

Cable type	Traverse area（mm²）		Outside diameter of cable（mm）
	Range	Recommended value	
Industry generic PV cable (model:PV1-F)	4.0~6.0 (12~10AWG)	4.0 (12AWG)	5.5~9.0

CAUTION

If DC inputs are accidently 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 aviod 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.

Requirements for the PV modules per MPPT input:

- All PV modules must be of the same type and power rating.
- Please ensure the PV strings are evenly connected to the inverter and try to utilize all the MPPT trackers.
- All PV modules must be aligned and tilted identically.
- The open-circuit voltage of the PV array must never exceed the maximum input voltage of the inverter, even at the coldest expected temperature. (see section 10 "Specifications" for input current and voltage requirements)
- Each string connected to a single MPPT must consist of the same number of series-connected PV modules.

3.4.2.1 DC connection high voltage danger notice

CAUTION
RISK OF ELECTRIC SHOCK

Do not touch an energized DC conductor. There are high voltages present when PV modules are exposed to light causing a risk of death due to an electric shock from touching a DC conductor!
Only connect the DC cables from the PV module to the inverter as described in this manual.

CAUTION
POTENTIAL DAMAGE TO THE INVERTER DUE TO OVERVOLTAGE

The DC input voltage of the PV modules must not exceed the maximum rating of the inverter. (see section 10 "Specifications")
Check the polarity and the open-circuit voltage of the PV strings before connecting the DC cables to the inverter.
Confirm proper string length and voltage range before connecting DC cable to the inverter.

3.4.3 Connect grid side of inverter

WARNING
An over-current protection device must be used between the inverter and the grid.

1). Connect the three (3) AC conductors to the three (3) AC terminals marked "L1", "L2" and "L3".Refer to local code and voltage drop tables to determine the appropriate wire size and type.
2). Connect the grounding conductor to the terminal marked "PE" (protective earth, the ground terminal).

Over-Current Protection Device (OCPD) for the AC side
To protect the inverter's AC connection line, we recommend installing a device for protection against over-current and leakage, with the following characteristics noted in Table 3.2:

NOTE
Use AL-CU transfer (bi-metallic) terminal or anti-oxidant grease with aluminum cables and terminals.

Inverter	Rated voltage(V)	Rated output current (Amps)	Current for protection device (A)
S6-GC3P40K04-NV-ND	220/380,230/400	60.8/57.7	80
S6-GC3P50K04-NV-ND	220/380,230/400	76.0/72.2	100
S6-GC3P60K05-NV-ND	220/380,230/400	91.2/86.6	125
S6-GC3P50K04-HV-ND	480	60.1	80
S6-GC3P60K05-HV-ND	480	72.2	100
S6-GC3P23K03-LV-ND	220/230	60.4/57.7	80
S6-GC3P25K04-LV-ND	220/230	65.6/62.8	100
S6-GC3P30K04-LV-ND	220/230	78.7/75.3	100
S6-GC3P36K04-LV-ND	220/230	94.5/90.4	125
S6-GC3P37.5K04-NV-ND	220/380	57.0	80
S6-GC3P37.5K04-LV-ND	220	98.4	125

Table 3.2 Rating of grid OCPD

3.4.3.1 Connecting the inverter to the utility grid

All electrical installations must be carried out in accordance with the local standards and the National Electrical Code® ANSI/NFPA 70 or the Canadian Electrical Code® CSA C22.1. The AC and DC electric circuits are isolated from the enclosure. If required by section 250 of the National Electrical Code®, ANSI/NFPA 70, the installer is responsible for grounding the system.
The grid voltage must be within the permissible range. The exact operating range of the inverter is specified in section 10 "Specifications".

3.4.3.2 Wiring procedure

CAUTION
RISK OF ELECTRIC SHOCK. Prior to starting the wiring procedure, ensure that the three-pole circuit breaker is switched off and cannot be reconnected.

NOTE
Damage or destruction of the inverter's electronic components due to moisture and dust intrusion will occur if the enclosure opening is enlarged.

CAUTION
Risk of fire if two conductors are connected to one terminal. If a connection of two conductors to a terminal is made, a fire can occur.
NEVER CONNECT MORE THAN ONE CONDUCTOR PER TERMINAL.

NOTE
Use M8 crimp terminals(M6 for PE) to connect to the inverter AC terminals.

Cable specification		Copper cable	Aluminum cable
Traverse cross sectional area (mm^2)	Range	35-50	50-70
	Recommended	35	50
Cable outer diameter (mm)	Range	37-44	37-46
	Recommended	37	37

1. Strip the end of AC cable insulating jacket about 125-150mm then strip the end of each wire.
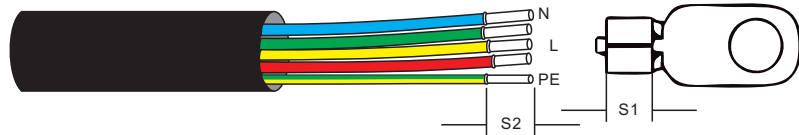
Figure 3.24 Strip AC cable

NOTE
S2 (insulation stripping length) is 2mm-3mm longer than S1.
(OT cable terminal crimping area)

2. Leave the AC breaker disconnected to ensure it does not close unexpectedly.

3. Remove the 4 screws on the inverter junction box, and then remove the AC cable cover.

4. Unscrew the nut and route the cable through the nut, sheath, and AC terminal cover.

5. Strip off the insulation layer of the cable and pass through the cable crimping area of the OT terminal. Crimp the terminal using a hydraulic crimping tool (OT terminal M8 ,torque 6-10Nm). The crimped part of the terminal must be insulated with a heat shrink tube or insulation tape.
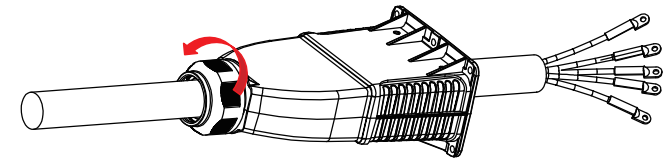
NOTE
If aluminum cables are used, use Cu-Al Transfer Terminals to prevent direct contact between copper bars and aluminum cables
(The Cu-Al Transfer Terminals is configured according to the selected cable).

6. Secure the cable connection to the AC terminal using a socket wrench. Tighten the screws on the junction box.
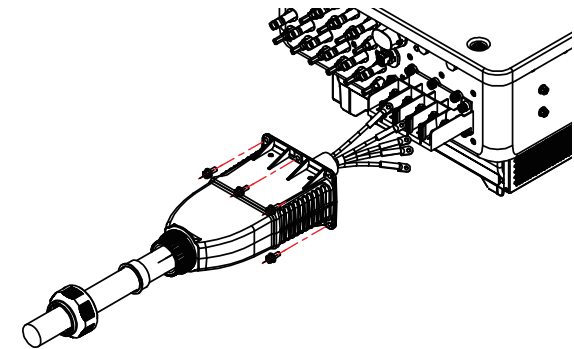
Figure 3.25 Inverter AC terminal

OT Terminal specification: M8

OT Terminal torque: 6-10Nm

L1 L2 L3 N
L1 L2 L3 N PE

Copper terminal of cable
Spring washer
Nut
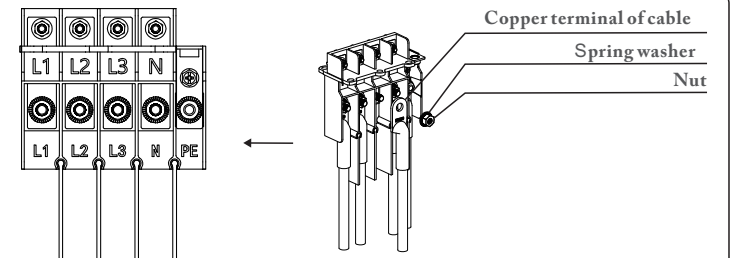
Figure 3.26 Copper aluminum transfer terminal

7. Tighten the screws on the junction box.

There are 2 communication ports on the inverter.
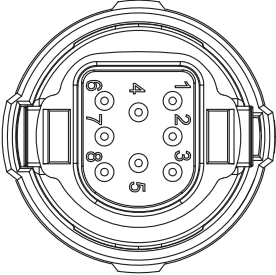
One is a USB COM port and the other is a 8-Pin COM port.

The USB COM port is used to connect Solis datalogging sticks

(Please refer to manuals of Solis datalogging sticks for details).

The 8-Pin COM port is used for multiple inverter daisy chain connection/DRM connection/Logic Interface Connection/Meter connection.

The inverter package will include a 8-Pin COM connector to be used on this 8-Pin COM port. The Pin definition is shown below. Facing the connector, Pin 1 is on the left of the first row. The rest polarity is showing in below diagram.

Pin	Definition
1	COM1 485-A
2	COM1 485-B
3	\
4	COM2 485-A
5	COM2 485-B
6	\
7	Meter -A
8	Meter -B

Figure 4.1 8pin COM Connector

The following is the assembly diagram of the 8-Pin COM connector.
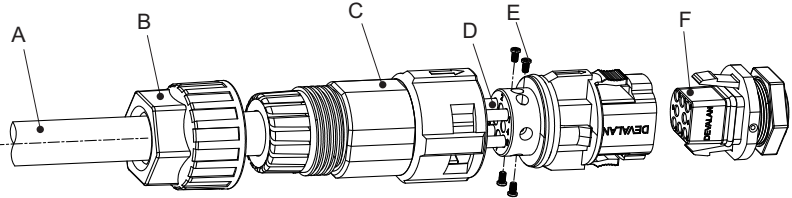
Figure 4.2

A-Main cable (Diameter: 4-6mm)

B-Locking Nut (Torque: 3.5-4N.m)

C- Sleeve

D-COM Wire (Dimension: 0.75-3mm², stripping length: 10-12mm)

E-Locking Screw (Torque: 0.4-0.6N.m)

F-Connector

Connect Steps:

1. Lead the main cable through the locking nut and the sleeve.

2. Strip the COM wires and insert into corresponding pin terminals. Then fasten the locking screws for the pin terminals.

3. Push the sleeve onto the connector and fasten the locking nut on the end of the sleeve.

4. Connect the connector to the 8-Pin COM port at the bottom of the inverter.

Figure 4.3
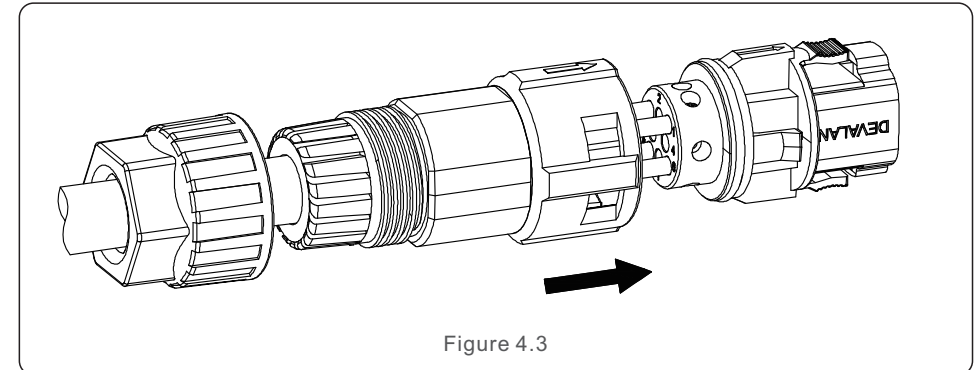
Disconnect Steps:

1. Press the button on both sides of the connector and pull the connector to disconnect from the COM port.
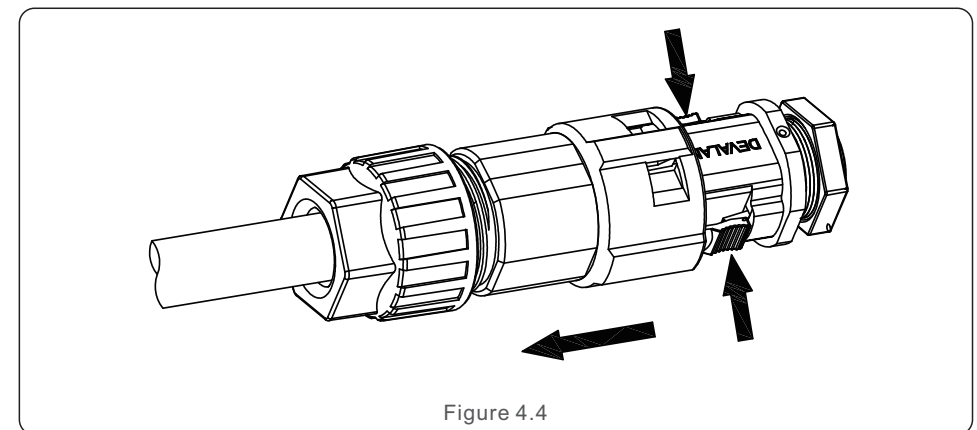
Figure 4.4

2. Use the unlock tool to insert into the groove on the sleeve and pull the sleeve to disconnect from the connector.
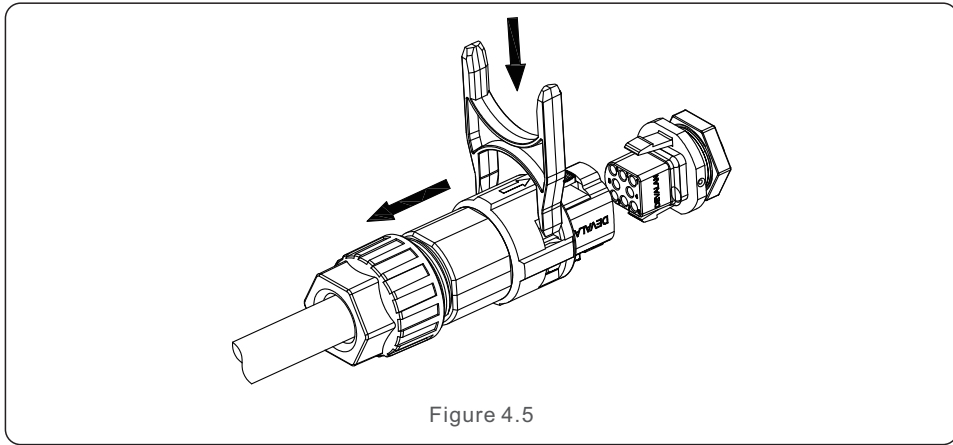
Figure 4.5

4.1 Inverter monitoring connection

Solis can provide optional accessories such as one-to-one datalogging sticks including WiFi stick, GPRS stick and LAN stick for the monitoring of a single inverter or one-to-multiple datalogging boxes including WiFi box and GPRS Box for the monitoring of multiple inverters. Please refer to corresponding manuals for details.

4.1.1 Monitoring for a single inverter

Every inverter can connect a Solis one-to-one datalogging stick for remote monitoring purpose. The datalogging stick should be directly connected to the USB COM port at the bottom of the inverter. It is a simple plug and play design with fast installation time. Details and the rest configuration process please refer to the datalogging stick manual.

4.1.2 Monitoring for multiple inverters

When multiple inverters need to run daisy chain communication together, Pin3/4 and Pin6/7 of the 8-Pin COM Port can be used.
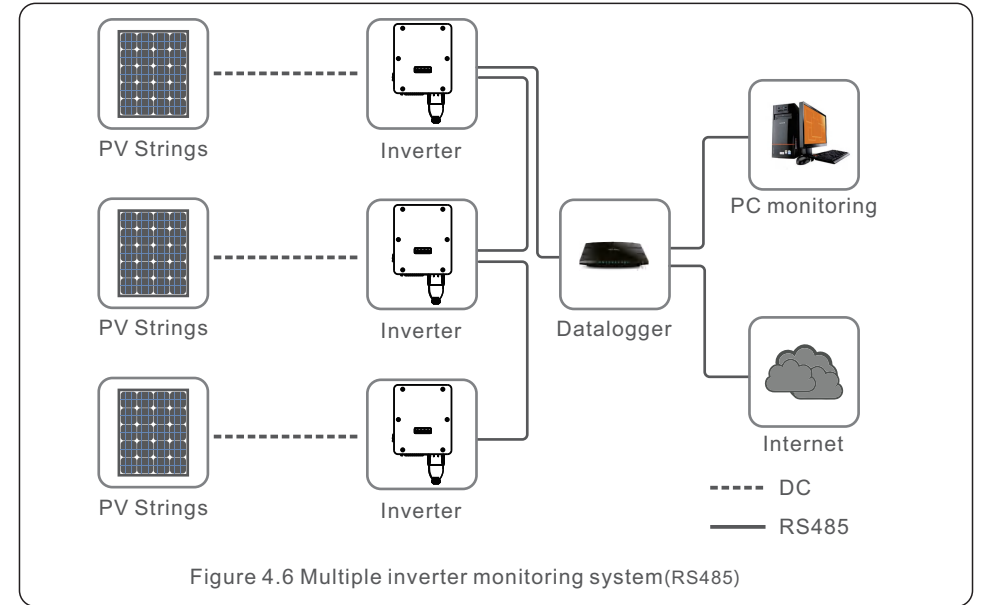
Figure 4.6 Multiple inverter monitoring system(RS485)

Pin	Definition	Definition
1	COM1 485-A	RS485 IN A
2	COM1 485-B	RS485 IN B
4	COM2 485-A	RS485 OUT A
5	COM2 485-B	RS485 OUT B
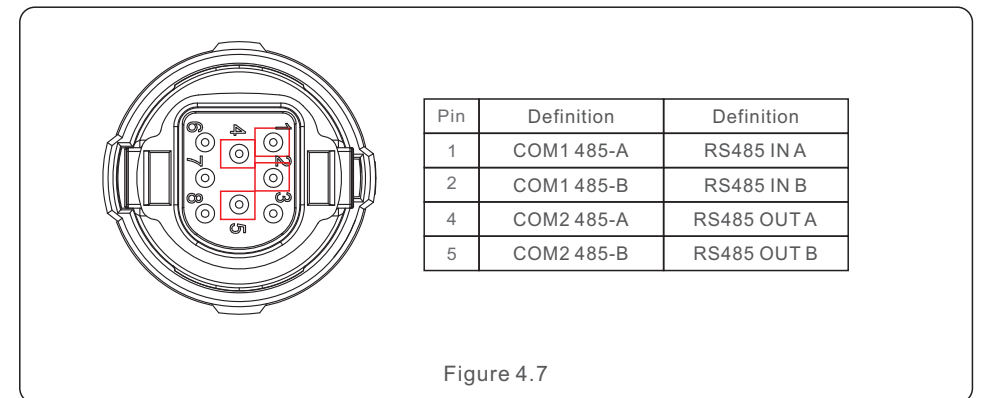
Figure 4.7

The bus RS485 cable can run into a Solis one-to-multiple datalogging box or any compatible 3rd party monitoring devices, PPC or plant SCADA.

4.2 Meter Connection

The inverter can work with a three phase smart meter to achieve Export Power Management function and/or 24hour consumption monitoring function.
The Pin 7 and Pin 8 of the 8-Pin COM port are used for Meter communication.

Pin	Definition
7	Meter -A
8	Meter -B

Figure 4.8

Pin 7&8 on the 8-Pin Connector

CT Arrow ➝ Grid
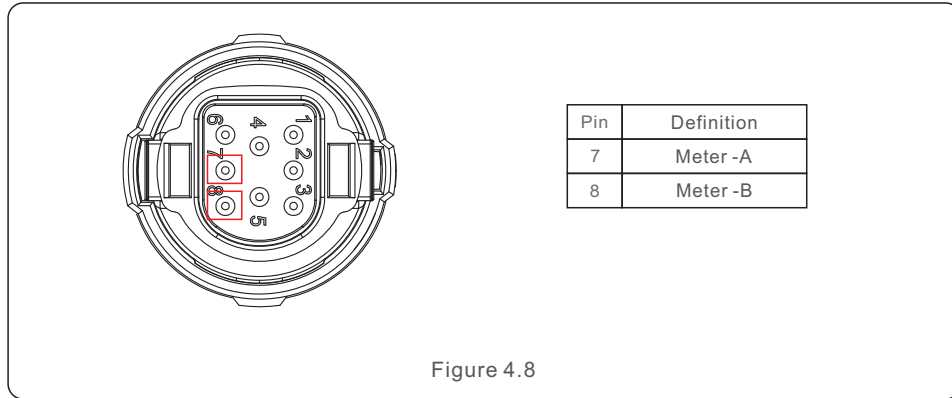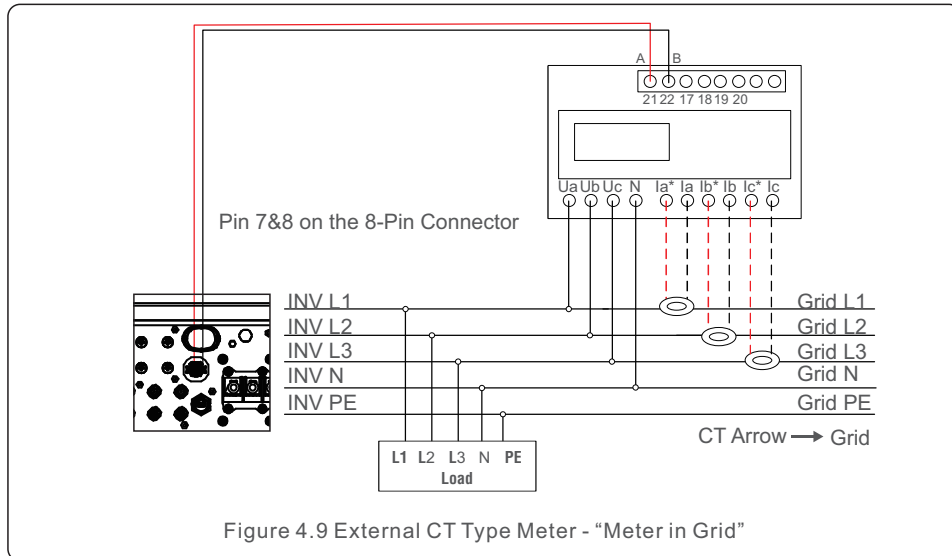
Figure 4.9 External CT Type Meter - "Meter in Grid"

Pin 7&8 on the 8-Pin Connector

INV L1	Grid L1
INV L2	Grid L2
INV L3	Grid L3
INV N	Grid N
INV PE	Grid PE

CT Arrow ➝ Grid
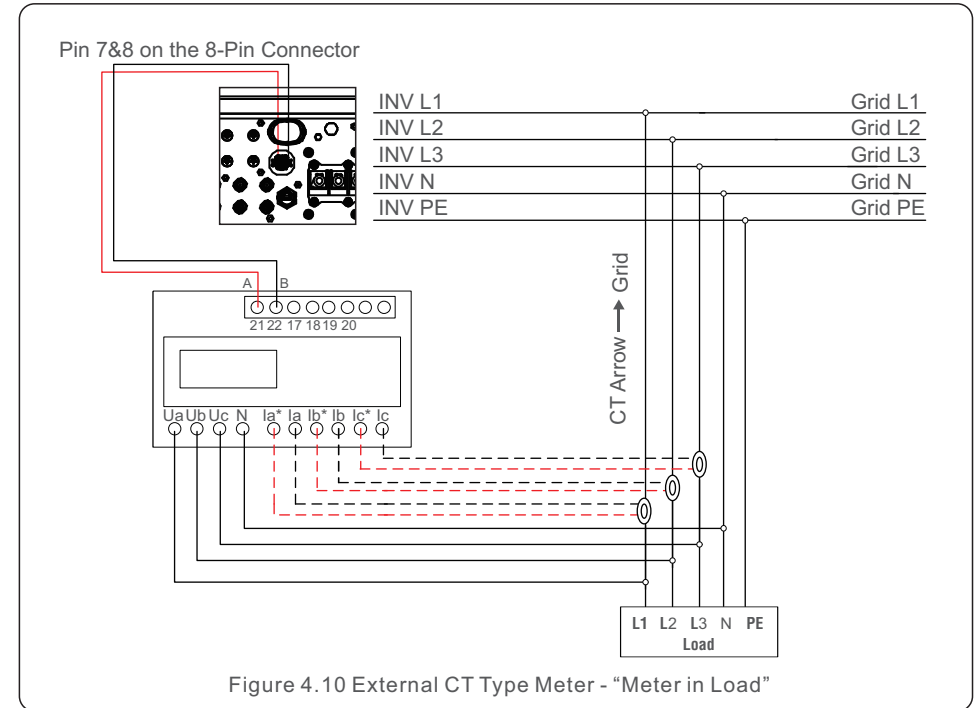
Figure 4.10 External CT Type Meter - "Meter in Load"

4.3 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 RJ45 terminal is used for the logic interface connection.

Please follow below steps to assemble RJ45 connector.
1.Insert the network cable into the communication connection terminal of RJ45.
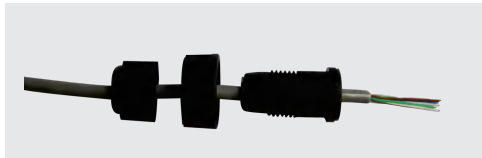
Figure 4.11 RJ45 communication connection terminals

2.Use the network wire stripper to strip the insulation layer of the communication cable. According to the standard line sequence of figure 4.12 connect the wire to the plug of RJ45, and then use a network cable crimping tool to make it tight.

Rj45 plug 1--8
Rj45terminal
1 2 3 4 5 6 7 8
1 2 3 4 5 6 7 8
Switch_input1   Switch_input2
DRM(logic interface)
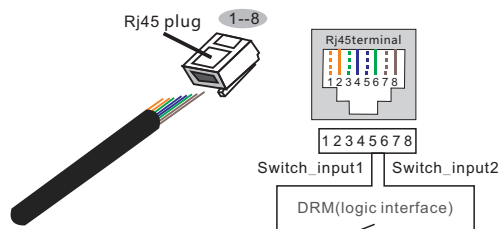
Correspondence between the cables and the stitches of plug, Pin5 and Pin6 of RJ45 terminal is used for the logic interface, other Pins are reserved.
Pin 1: Reserved; Pin 2: Reserved
Pin 3: Reserved; Pin 4: Reserved
Pin 5: Switch_input1; Pin 6: Switch_input2
Pin 7: Reserved; Pin 8: Reserved

Figure 4.12 Strip the insulation layer and connect to RJ45 plug

3.Connect RJ45 to DRM (logic interface) .

5.1 Preparation

- Ensure all the devices are accessible for operation, maintenance and service.
- Check and confirm that the inverter is firmly installed.
- Space for ventilation is sufficient for one inverter or multiple inverters.
- Nothing is left on the top of the inverter.
- Inverter and accessories are correctly connected.
- Cables are routed in safe place or protected against mechanical damage.
- Warning signs and labels are suitably affixed and durable.
- An Android or IOS mobile phone with Bluetooth function is available.
- Measure DC voltage of PV strings and ensure the polarity is correct.
- Measure AC voltage and frequency and ensure they are within local standard.

Measure DC voltage of PV strings and battery

Measure AC voltage and frequency
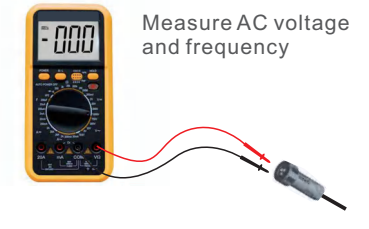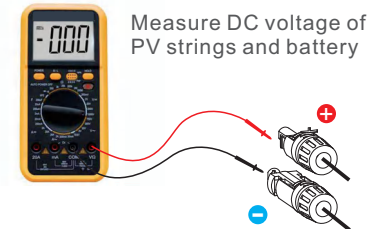
5.2 APP Download

Users need to download the APP before installing it for the first time.
There are three ways to download and install the latest APP:
1. You can visit **www.soliscloud.com** to download the latest version APP.
2. You can search "**Soliscloud**" in Google Play or App Store.
3. You can scan this QR code below to download "**Soliscloud**".

5.3 Local Connection via APP

Step 1: **Rotate the inverter DC switch from OFF to ON.**

Step 2: **APP Bluetooth connection with inverter.**

Turn on Bluetooth switch on your mobile phone and then open the Soliscloud APP.

Click "More Tools"->"Local Operation"->"Connect with Bluetooth"
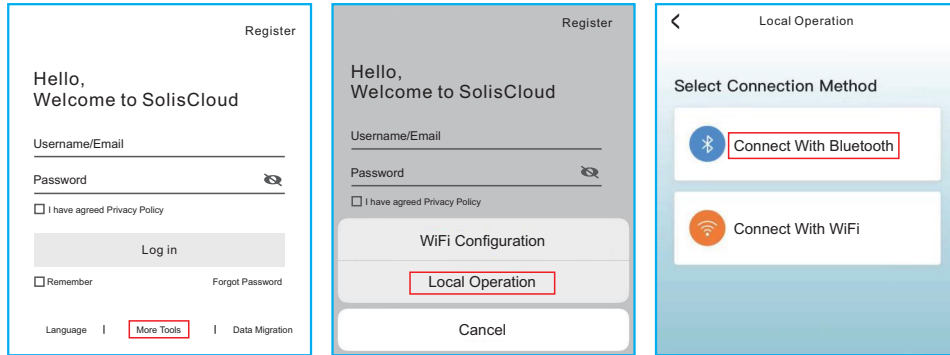
Select the Bluetooth signal from the inverter. (Bluetooth Name: INV-Inverter SN)
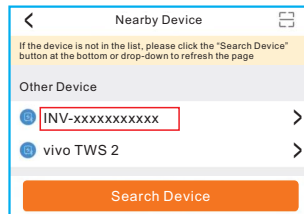
Step 3: **Login account.**

If you are the installer, please select the account type as Installer. If you are the plant owner, please select the account type as owner. Then set your own initial password for control verification. (The first log-in must be finished by installer in order to do the initial set up)
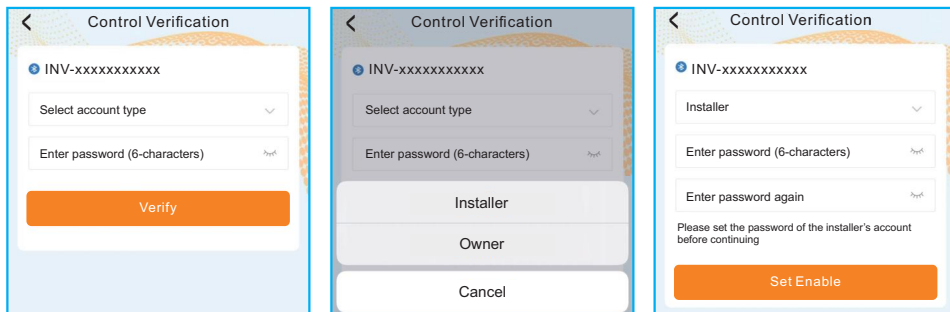
Step 4: **Grid Code Setting.**

After login in, the grid code setting will pop up.

Select "Confirm" will automatically choose the "Custom50" by default.
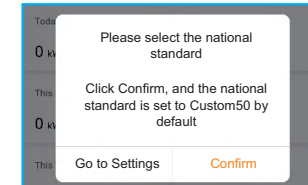
If the default standard doesn't meet the local grid requirement:

Select **"Settings->Grid Parameter Setting->Grid Code Setting->Grid Code"**, choose the applicant standard according to the installation and save.
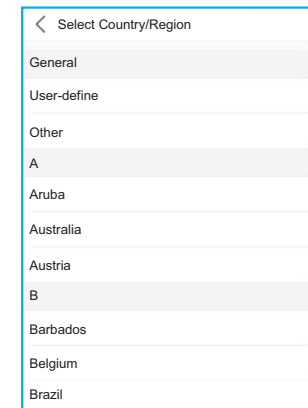
The specific parameters can be set at Grid Code Setting page.

Mention that the grid parameters modification should be permissible by utility grid company or the power distribution supplier.

Grid Code Setting	
Grid Code	EN50549 >
OV-G-V 01	276V >
OV-G-T 01	5.0s >
UN-G-V 01	184V >
UN-G-T 01	3.0s >
OV-G-F 01	51.5Hz >
OV-G-F-T 01	0.5s >
UN-G-F 01	47.5Hz >
UN-G-F-T 01	0.5s >
OV-G-V 02	287V >

OV-G-V 01

Current Value: 276V

Input set value   V

Cancel   Save
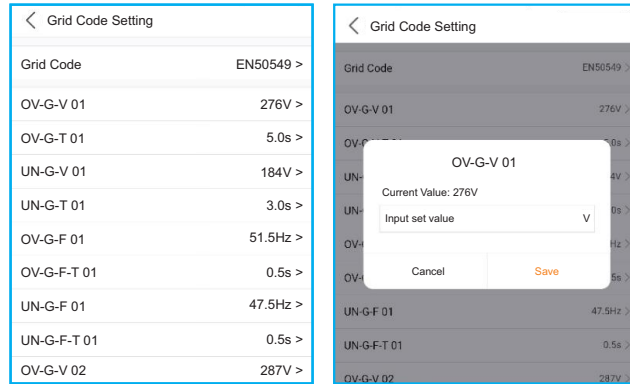
Step 5: **Turn on the AC switch between the inverter and Grid, wait till the inverter start generating.**

5.4 Stop the Inverter

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

1. Select "Power OFF" in the APP.

2. Turn off the AC Switch between Solis inverter and Grid.

3. 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.

4. 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.

The APP interface contains 4 sections:

1. Home
2. Info
3. Alarm
4. Settings

6.1 Home Page

The home page contains the power and energy data of the inverter. The PV data and AC data are also available under this section.

	1801151232210002 NO-grid	
Total PV Input Power		Today Yield
0 w		3.6 kWh
Yesterday Yield		This Month Yield
0.0 kWh		3 kWh
Last Month Yield		This Year Yield
0 kWh		3 kWh
Last Year Yield		Total Yield
0 kWh		3 kWh

	Voltage	Current	Power
PV1	400.9V	0.0A	0.00W
PV2	21.3V	0.0A	0.00W
PV3	0.0V	0.0A	0.00W
PV4	0.0V	0.0A	0.00W

AC Voltage	0.0V
AC Current	0.0A

| Home | Info | Alarm | Settings |
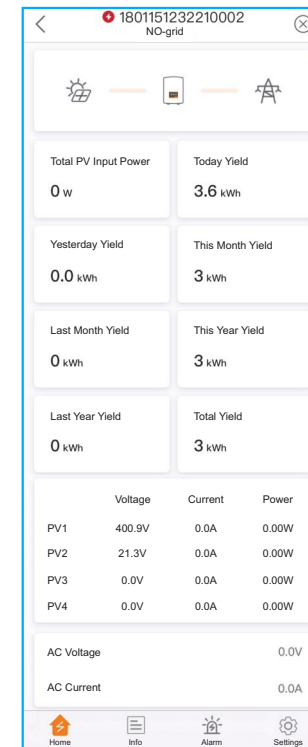
6.2 Info Page

Info page displays the general information of the inverter such as inverter serial number, firmware version, grid code, etc.

Inverter SN	1801151232210002
Output Power	0W
Inverter Time	2023-03-14 14:55:58
Work Mode	No response mode
Rated Power	– –
Model Number	115
DSP Firmware Version	V3A
HMI Firmware Version	V1
DRM Number	8
Grid Code	68

Advanced Information >
DSP Communication Data >
Running Information >

Home Info Alarm Settings
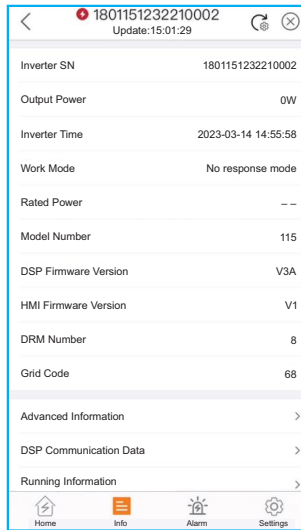
6.3 Alarm Page

Alarm page contains the alarm code of the inverter and its corresponding troubleshooting methods.

1801151232210002
Update:15:01:29

Alarm Message: NO-Grid

Alarm Code: 1015

Alarm Grade: Hint

Solving Methods: 1. Verify that the grid is properly connected.
2. Check if the connected power grid is normal.
3. If the mains connection is normal, you need to contact our maintenance staff member.

Home Info Alarm Settings
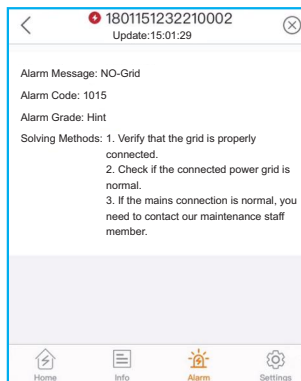
6.4 Setting Page

Setting page contains all the setting options of the inverter.

Functions	Setting Path
Switch on/off the inverter	Settings -> "Power ON" & "Power OFF"
Change inverter time setting	Settings -> Inverter Setting-> Inverter Parameter Setting -> Inverter Time Setting
Change inverter output power percentage or power factor	Settings -> Inverter Setting-> Inverter Power Setting
Set grid code and protection parameters	Settings -> Grid Parameter Setting -> Grid Code Setting
Set Export Power control	Settings -> EPM Setting
Set grid code related working modes	Settings -> Inverter Work Mode Setting -> Work Mode

1801151232210002

Power ON   Power OFF

Inverter Setting >
Grid Parameter Setting >
EPM Setting >
Inverter Work Mode Setting >
Frequency Derating Setting >
VRT Setting >

Home Info Alarm Settings
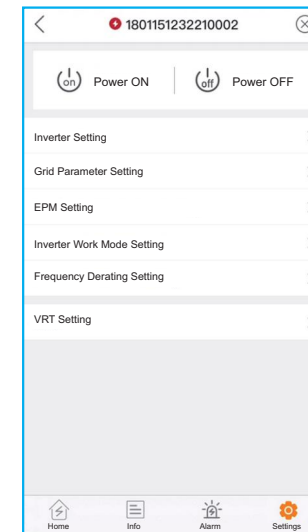
NOTE:
The inverter is by default setting with grid code which complies with local requirements. If there is need to modify the protection limits, please consult and approve by your local grid operator.

6.4.1 Start up and Stop the inverter

1. Select "Settings -> Power ON" to start up the inverter.
2. Select "Settings -> Power OFF" to stop the inverter.

6.4.2 Inverter Setting

Inverter Setting	
Inverter Function Setting	>
Inverter Parameter Setting	>
Inverter Power Setting	>
Inverter Special Function Setting	>
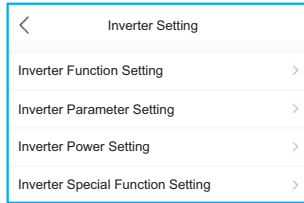
6.4.2.1 Inverter Function Setting

1. AFCI Setting

Setting	Description
AFCI Protect	Set the inverter AFCI function ON/OFF.
Arc-Fault Manual Reset	When Arc-Fault error happens more than 5 times, inverter will stop generating. Users have to check the inverter connection is OK and make a manual reset operation using this switch.

2. 24-Hour Load Monitoring

Turn on this switch to enable 24-Hour Load Monitoring function. Please refer to 6.4.4.1 Built-in EPM Setting for details.

3. MPPT Multi-peak Scanning Setting

Setting	Description
MPPT Multi-peak Scanning Switch	Set the function ON/OFF.
MPPT Multi-peak Scan Interval	The inverter will carry out Multi-peak MPPT scanning 1 time every scan interval.

4. Logical Interface Setup

Setting	Description
Logic Interface(DRM) Switch	Set the function ON/OFF.
P_Limit DI 1 ~ P_Limit DI 4	Set the AC output power under different DI.

6.4.2.2 Inverter Parameter Setting

Setting	Description
Time	Set the inverter time and date according to local time zone.
Slave Address	Set the inverter address when multiple inverters are installed.
Generation Calibration	Calibrate the inverter daily, monthly, annual and total yield.

6.4.2.3 Inverter Power Setting

Setting	Description
Output Power Setting	Set the inverter maximum AC output power.
PF Curve	Set the inverter power factor.
Power Limit	Set the power control slope, power rise control slope, power down control slope, EN 50549 power change gradient after fault trip restart, EN 50549 gradient limit for power-on change.

6.4.2.4 Load-shed mode setting

Basing on the different sensitivity of noise level to customer, customer can choose the loadshed mode of controlling fan to reduce noise.
Select"Inverter setting -> inverter special function setting -> loadshed fan control".

LoadShed Mode Set	
○ Silent Mode	
● Normal Mode	
○ Performance Mode	
Cancel	Save
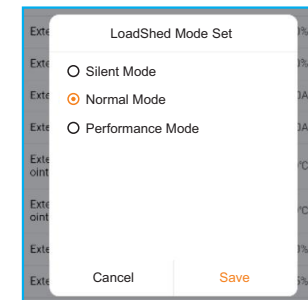
Noisy level(from max to min): Performance>normal>silent

6.4.3 Grid Parameter Setting

See Chapter 5.3 for details.

6.4.4 EPM Setting

Built-in EPM is for PV plant with only 1 inverter, while External EPM for multiple inverters.

6.4.4.1 Built-in EPM Setting

Select "Settings -> EPM Setting -> Built-in EPM Setting" to make the settings.
The Built-in EPM includes 2 functions related to the smart meter or smart sensor.

NOTE:

Function 1: Export Power Management Function
1. Inverters can work with a smart meter OR a smart sensor to dynamically limit the export power of the system.
2. Zero injection can be achieved.
3. Smart meter can be installed either on the grid side OR the load side. Smart sensor can only be installed on the grid side.

Function 2: 24-Hour Load Monitoring Function
1. Only applicable if Solis monitoring system is used.
2. Inverters can work with a smart meter OR smart sensor to monitor the load consumption data for the whole day and the data will be displayed on the Solis monitoring system.
3. Smart meter or smart sensor 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
Using a Smart Meter:
Step 1: Refer to Section 4.3.7 to connect the smart meter on the grid side or load side.
Step 2: Select the corresponding meter model in the **Meter Selection**.
Step 3: Choose **Meter in Grid Mode** or **Meter in Load Mode** in the **Built-in EPM mode selection** accordingly.
Step 4: Configure the **System Export Power Limit Value** to set the allowed backflow power.
Step 5: Configure the **Built-in EPM Failsafe Switch** to enable the failsafe function (If necessary).
Using a Smart Sensor:
Step 1: Refer to Section 4.3.8 to connect the smart sensor on the grid side.
Step 2: Select the **CT Sensor Mode** in the **Built-in EPM mode selection**.
Step 3: Configure the **CT Ratio** and **CT Direction** at the "**Settings -> EPM Setting -> CT Setting**". (If necessary).
Step 4: Configure the **System Export Power Limit Value** to set the allowed backflow power.
Step 5: Configure the **Built-in EPM Failsafe Switch** to enable the failsafe function (If necessary).

NOTE:

Please refer to below instructions for different user scenarios.
Scenario 2. Only Function 2 is required
Using a Smart Meter:
Step 1: Refer to Section 4.3.7 to connect the smart meter on the grid side or load side.
Step 2: Select the corresponding meter model in the **Meter Selection**.
Step 3: Choose **Meter 24-Hour Monitoring Mode** in the **Built-in EPM mode selection** accordingly.
Step 4: Enable the **24-Hour Load Monitoring** function at "**Settings -> Inverter Setting -> Inverter Function Setting**".
Using a Smart Sensor:
Step 1: Refer to Section 4.3.8 to connect the smart sensor on the grid side.
Step 2: Select the **CT load Monitoring Mode** in the **Built-in EPM mode selection**.
Step 3: Configure the **CT Ratio** and **CT Direction** at the "**Settings -> EPM Setting -> CT Setting**". (If necessary).
Step 4: Enable the **24-Hour Load Monitoring** function at "**Settings -> Inverter Setting -> Inverter Function Setting**".

NOTE:

Please refer to below instructions for different user scenarios.
Scenario 3. Both Function 1 and 2 are required
Using a Smart Meter:
Step 1: Refer to Section 4.3.7 to connect the smart meter on the grid side or load side.
Step 2: Select the corresponding meter model in the **Meter Selection**.
Step 3: Choose **Meter in Grid Mode** or **Meter in Load Mode** in the **Built-in EPM mode selection** accordingly.
Step 4: Configure the **System Export Power Limit Value** to set the allowed backflow power.
Step 5: Configure the **Built-in EPM Failsafe Switch** to enable the failsafe function (If necessary).
Step 6: Enable the **24-Hour Load Monitoring** function at "**Settings -> Inverter Setting -> Inverter Function Setting**".
Using a Smart Sensor:
Step 1: Refer to Section 4.3.8 to connect the smart sensor on the grid side.
Step 2: Select the **CT Sensor Mode** in the **Built-in EPM mode selection**.
Step 3: Configure the **CT Ratio** and **CT Direction** at the "**Settings -> EPM Setting -> CT Setting**". (If necessary).
Step 4: Configure the **System Export Power Limit Value** to set the allowed backflow power.
Step 5: Configure the **Built-in EPM Failsafe Switch** to enable the failsafe function (If necessary).
Step 6: Enable the **24-Hour Load Monitoring** function at "**Settings -> Inverter Setting -> Inverter Function Setting**".

```
< Built-in EPM Setting

Built-in EPM mode selection      EPM ALL OFF >

System Export Power Limit Value        2000W >

Built-in EPM Failsafe Switch              ON >

Meter Selection          ACR10RD16TE-Acrel 1P Meter >

G100V2 Control Switch                    OFF >

G100V2 Backflow Current               16.00A >

G100V2 Alarm Clear                         >

G100V2 Alarm Clear Type        Non-Domestic >
```

Setting	Description
Built-in EPM mode	6 built-in EPM mode is optional. Choose the appropriate mode needed.
System Export Power Limit Value	Set the permissible PV plant export power to the gird.
Built-in EPM Failsafe Switch	When G100 standard is used, this switch is enabled by default.
Meter Selection	Select the meter model according to the actual installation.
G100V2 Control Switch	When new G100 standard is used, enable this switch. Select the meter or CT mode according to the actual installation.
G100V2 Backflow Current	Set the backflow current of the PV plant to the grid. Only meaningful when G100V2 switch is on.
G100V2 Alarm Clear	Use this function to clear a fault status according to new G100 standard. Only meaningful when G100V2 switch is on.
G100V2 Alarm Clear Type	Select the Domestic or Non-domestic according to the actual installation. Only meaningful when G100V2 switch is on.

There are 6 modes for Built-in EPM.
1. EPM ALL OFF. Built-in EPM function is disabled.
2. CT Sensor Mode. Solis Smart Sensor is connected in the grid connection point (The **System Export Power Limit Value** setting is applicable, default value is 0W).
3. Meter in Grid Mode. Solis Smart Meter is connected in the grid connection point (The **System Export Power Limit Value** setting is applicable, default value is 0W).
4. Meter in Load Mode. Solis Smart Meter is connected in the load branch circuit (The **System Export Power Limit Value** setting is applicable, default value is 0W).
5. Meter 24-Hour Monitoring Mode. Solis Smart Meter is connected in the grid connection point(used for 24h load monitoring only, the **System Export Power Limit Value** setting is not applicable).

6. CT load Monitoring Mode. Solis Smart Sensor is connected in the grid connection point (used for 24h load monitoring only, the **System Export Power Limit Value** setting is not applicable).

6.4.4.2 External EPM Setting

Select "**Settings -> EPM Setting -> External EPM Setting**".
External EPM Failsafe Swtich should be turned ON when external EPM device is used.

6.4.5 Inverter Work Mode Setting

Select "Settings -> Inverter Work Mode Setting".

```
< Inverter Work Mode Setting

No response mode                          >

Volt-watt                             OFF >

Volt-var                              OFF >

Fixed power factor                    OFF >

Fix reactive power                    OFF >

Power-PF                              OFF >
```
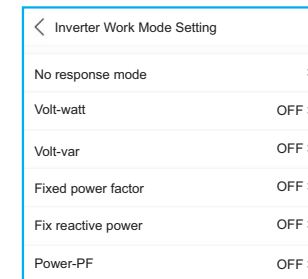
1. No response mode
Use this switch to close all response mode.
2. Volt-watt Mode
The volt-watt mode varies the active power output level of the inverter in response to the voltage at its grid-interactive port.
3. Volt-var Mode
The volt-var mode varies the reactive power absorbed or supplied by the inverter in response to the voltage at its grid-interactive port.
4. Fixed power factor Mode
The fixed power factor mode is for control of power factor over the range of inverter output.
5. Fixed reactive power Mode
The fixed reactive power mode is for control of reactive power over the range of inverter output.
6. Power-PF Mode
The Power-PF mode varies the active power output level of the inverter in response to its power factor.

Solis Three 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 6.2) 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 if they are too dirty to be read.

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

7.1 Night Time PID-Recovery Function

Solis Three phase Inverters integrates optional Night Time PID-Recovery module and it can recover the PID effect during night thus protect the PV system from degradation.
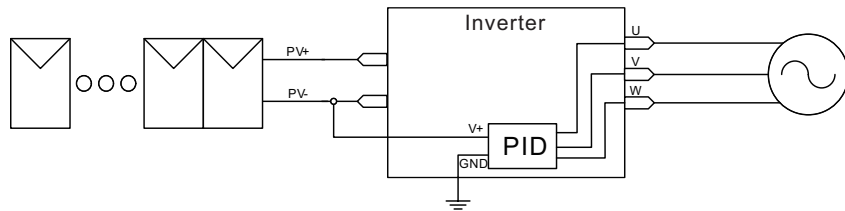
Figure 7.1

The Night Time PID-Recovery module repairs the PID effect of the PV model at night. When operating, the inverter LCD screen displays " PID-repairing " information, and the red light is on. The Night Time PID-Recovery function is always ON when AC is applied. If maintenance is required and turn off the AC switch can disable the Night Time PID-Recovery function.

WARNING :
The PID function is automatic. When the DC bus voltage is lower than 260Vdc, the PID module will start creating 650 Vdc between PV- and ground.
No need any control or settings

NOTE:
If you need to maintain the inverter at night, please turn off the AC switch first, then turn off the DC switch, and wait 5 minutes before you do other operations.

7.2 Fan Maintenance

If the fan does not work properly, the inverter will not be cooled effectively. and it may affect the effective operation of the inverter .
Therefore, it is necessary to clean or replace a broken fan as follows:
1. Turn off the "Grid ON/OFF" switch on the inverter LCD.
2. Disconnect the AC power.
3. Turn the DC switch to "OFF" position.
4. Wait for 15 minutes at least.
5. Remove the 8 screws on the fan plate and pull out the fan assembly slowly.
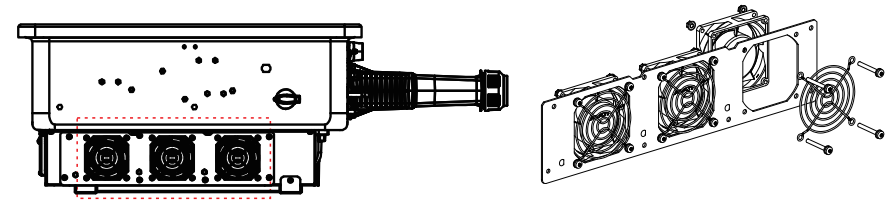
Figure 7.2

6. Disconnect the fan connector carefully and take out the fan.
7. Clean or replace the fan. Assemble the fan on the rack.
8. Connect the electrical wire and reinstall the fan assembly. Restart the inverter.

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	Solution
No power	Inverter no power on LCD	1.Check PV input connections 2.Check DC input voltage (single phase >120V, three phase >350V) 3.Check if PV+/− is reversed

LCD show initializing all the time	Can not start-up	1.Check if the connector on main
		   board or power board are fixed.
		2.Check if the DSP connector to
		   power board are fixed.

OV-G-V01/02/03/04	Over grid voltage	1.Resistant of AC cable is too high.
		   Change bigger size grid cable
		2.Adjust the protection limit if it's
		   allowed by electrical company.

UN-G-V01/02	Under grid voltage	1.Use user define function to adjust the protection limit if it's allowed by electrical company.
OV-G-F01/02	Over grid frequency	
UN-G-F01/02	Under grid frequency	
G-IMP	High grid impedance	
NO-GRID	No grid voltage	1.Check connections and grid switch. 2.Check the grid voltage inside inverter terminal.
OV-DC01/02/03/04	Over DC voltage	1.Reduce the module number in series
OV-BUS	Over DC bus voltage	1.Check inverter inductor connection 2.Check driver connection
UN-BUS01/02	Under DC bus voltage	
GRID-INTF01/02	Grid interference	1.Restart inverter 2.Change power board
OV-G-I	Over grid current	
IGBT-OV-I	Over IGBT current	
DC-INTF OV-DCA-I	DC input overcurrent	1.Restart inverter 2.Identify and remove the string to the fault MPPT 2.Change power board
IGFOL-F	Grid current tracking fail	1.Restart inverter or contact installer.
IG-AD	Grid current sampling fail	
OV-TEM	Over Temperature	1.Check inverter surrounding ventilation. 2.Check if there's sunshine direct on inverter in hot weather.

Alarm Message	Failure description	Solution
INI-FAULT	Initialization system fault	1.Restart inverter or contact installer.
DSP-B-FAULT	Comm. failure between main and slave DSP	
12Power-FAULT	12V power supply fault	

PV ISO-PRO 01/02	PV isolation protection	1.Remove all DC input, reconnect and
		   restart inverter one by one.
		2.Identify which string cause the fault and
		   check the isolation of the string.

ILeak-PRO 01/02/03/04	Leakage current protection	1.Check AC and DC connection 2.Check inverter inside cable connection.
RelayChk-FAIL	Relay check fail	1.Restart inverter or contact installer.
DCinj-FAULT	High DC injection current	
AFCI self-detection (model with AFCI module)	AFCI module self-detect fault	1.Restart inverter or connect technician.
Arcing protection (model with AFCI module)	Detect arc in DC circuit	1. Check inverter connection whether arc exists and restart inverter.
Reve-DC	One of the DC string is reversely connected	1. Please check the inverters' PV string polarity, if there are strings reversely connected wait for the night when the solar irradiance is low and the PV string current down below 0.5A. Turn off the two DC switches and fix the polarity issue.

Screen OFF with DC applied	Inverter internally damaged	1.Do not turn off the DC switches as it will
		   damage the inverter.
		2.Please wait for the solar irradiance reduces
		   and confirm the string current is less than
		   0.5A with a clip-on ammeter and then turn
		   off the DC switches.
		3.Please note that any damages due to wrong
		   operations are not covered in the device
		   warranty.

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 and wait for 15 minutes before restarting it . 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 Three Phase Inverter;

2. The distributor/dealer of Solis Three 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 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	S6-GC3P40K04-NV-ND
Max. DC input voltage (Volts)	1100
Rated DC voltage (Volts)	600
Start-up voltage (Volts)	180
MPPT voltage range (Volts)	180...1000
Max. input current (Amps)	4*40
Max short circuit input current (Amps)	4*50
MPPT number/Max input strings number	4/8
Rated output power (Watts)	40000
Max. output power (Watts)	40000
Max. apparent output power (VA)	40000
Rated grid voltage (Volts)	3/N/PE, 220/380, 230/400
Rated grid output current (Amps)	60.8/57.7
Max. output current (Amps)	60.8/57.7
Power Factor (at rated output power)	0.8leading~0.8lagging
THDi (at rated output power)	<3%
Rated grid frequency (Hertz)	50/60
Max.efficiency	98.6%
EU efficiency	98.1%
Dimensions (W*H*D)	515*672*287.5mm
Weight	34.9kg
Topology	Transformerless
Self consumption (night)	< 1W
Operating ambient temperature range	-25℃...+60℃
Relative humidity	0~100%
Ingress protection	IP66
Noise emission {Typical}	≤60 dB (A)
Cooling concept	Intelligent redundant cooling
Max.operation altitude	4000m
Grid connection standard	G98 or G99, VDE-AR-N 4105 / VDE V 0124, EN 50549-1, VDE 0126 / UTE C 15 / VFR:2019, RD 1699 / RD 244 / UNE 206006 / UNE 206007-1, CEI 0-21, C10/11, NRS 097-2-1, TOR, EIFS 2018.2, IEC 62116, IEC 61727, IEC60068, IEC 61683, EN 50530
Safty/EMC standard	IEC/EN 62109-1/-2, IEC/EN 61000-6-1/-2/-3/-4
DC connection	MC4 connector
AC connection	OT Terminal
Display	LED + APP
Communication connections	RS485, Optional: Wi-Fi, GPRS
Warranty	5 years (extend to 20 years)

Model	S6-GC3P50K04-NV-ND
Max. DC input voltage (Volts)	1100
Rated DC voltage (Volts)	600
Start-up voltage (Volts)	180
MPPT voltage range (Volts)	180…1000
Max. input current (Amps)	4*40
Max short circuit input current (Amps)	4*50
MPPT number/Max input strings number	4/8
Rated output power (Watts)	50000
Max. output power (Watts)	50000
Max. apparent output power (VA)	50000
Rated grid voltage (Volts)	3/N/PE, 220/380, 230/400
Rated grid output current (Amps)	76.0/72.2
Max. output current (Amps)	76.0/72.2
Power Factor (at rated output power)	0.8leading~0.8lagging
THDi (at rated output power)	<3%
Rated grid frequency (Hertz)	50/60
Max.efficiency	98.6%
EU efficiency	98.1%
Dimensions (W*H*D)	515*672*287.5mm
Weight	35.8kg
Topology	Transformerless
Self consumption (night)	< 1W
Operating ambient temperature range	-25℃...+60℃
Relative humidity	0~100%
Ingress protection	IP66
Noise emission {Typical}	≤60 dB (A)
Cooling concept	Intelligent redundant cooling
Max.operation altitude	4000m
Grid connection standard	G98 or G99, VDE-AR-N 4105 / VDE V 0124, EN 50549-1, VDE 0126 / UTE C 15 / VFR:2019, RD 1699 / RD 244 / UNE 206006 / UNE 206007-1, CEI 0-21, C10/11, NRS 097-2-1, TOR, EIFS 2018.2, IEC 62116, IEC 61727, IEC60068, IEC 61683, EN 50530
Safty/EMC standard	IEC/EN 62109-1/-2, IEC/EN 61000-6-1/-2/-3/-4
DC connection	MC4 connector
AC connection	OT Terminal
Display	LED + APP
Communication connections	RS485, Optional: Wi-Fi, GPRS
Warranty	5 years (extend to 20 years)

Model	S6-GC3P60K05-NV-ND
Max. DC input voltage (Volts)	1100
Rated DC voltage (Volts)	600
Start-up voltage (Volts)	180
MPPT voltage range (Volts)	180…1000
Max. input current (Amps)	5*40
Max short circuit input current (Amps)	5*50
MPPT number/Max input strings number	5/10
Rated output power (Watts)	60000
Max. output power (Watts)	60000
Max. apparent output power (VA)	60000
Rated grid voltage (Volts)	3/N/PE, 220/380, 230/400
Rated grid output current (Amps)	91.2/86.6
Max. output current (Amps)	91.2/86.6
Power Factor (at rated output power)	0.8leading~0.8lagging
THDi (at rated output power)	<3%
Rated grid frequency (Hertz)	50/60
Max.efficiency	98.6%
EU efficiency	98.1%
Dimensions (W*H*D)	515*672*287.5mm
Weight	38.6kg
Topology	Transformerless
Self consumption (night)	< 1W
Operating ambient temperature range	-25℃...+60℃
Relative humidity	0~100%
Ingress protection	IP66
Noise emission {Typical}	≤60 dB (A)
Cooling concept	Intelligent redundant cooling
Max.operation altitude	4000m
Grid connection standard	G98 or G99, VDE-AR-N 4105 / VDE V 0124, EN 50549-1, VDE 0126 / UTE C 15 / VFR:2019, RD 1699 / RD 244 / UNE 206006 / UNE 206007-1, CEI 0-21, C10/11, NRS 097-2-1, TOR, EIFS 2018.2, IEC 62116, IEC 61727, IEC60068, IEC 61683, EN 50530
Safty/EMC standard	IEC/EN 62109-1/-2, IEC/EN 61000-6-1/-2/-3/-4
DC connection	MC4 connector
AC connection	OT Terminal
Display	LED + APP
Communication connections	RS485, Optional: Wi-Fi, GPRS
Warranty	5 years (extend to 20 years)

Model	S6-GC3P50K04-HV-ND
Max. DC input voltage (Volts)	1100
Rated DC voltage (Volts)	720
Start-up voltage (Volts)	180
MPPT voltage range (Volts)	180…1000
Max. input current (Amps)	4*40
Max short circuit input current (Amps)	4*50
MPPT number/Max input strings number	4/8
Rated output power (Watts)	50000
Max. output power (Watts)	50000
Max. apparent output power (VA)	50000
Rated grid voltage (Volts)	3/PE, 480
Rated grid output current (Amps)	60.1
Max. output current (Amps)	60.1
Power Factor (at rated output power)	0.8leading~0.8lagging
THDi (at rated output power)	<3%
Rated grid frequency (Hertz)	50/60
Max.efficiency	98.7%
EU efficiency	98.1%
Dimensions (W*H*D)	515*672*287.5mm
Weight	34.4kg
Topology	Transformerless
Self consumption (night)	< 1W
Operating ambient temperature range	-25℃...+60℃
Relative humidity	0~100%
Ingress protection	IP66
Noise emission {Typical}	≤60 dB (A)
Cooling concept	Intelligent redundant cooling
Max.operation altitude	4000m
Grid connection standard	G98 or G99, VDE-AR-N 4105 / VDE V 0124, EN 50549-1, VDE 0126 / UTE C 15 / VFR:2019, RD 1699 / RD 244 / UNE 206006 / UNE 206007-1, CEI 0-21, C10/11, NRS 097-2-1, TOR, EIFS 2018.2, IEC 62116, IEC 61727, IEC60068, IEC 61683, EN 50530
Safty/EMC standard	IEC/EN 62109-1/-2, IEC/EN 61000-6-1/-2/-3/-4
DC connection	MC4 connector
AC connection	OT Terminal
Display	LED + APP
Communication connections	RS485, Optional: Wi-Fi, GPRS
Warranty	5 years (extend to 20 years)

Model	S6-GC3P60K05-HV-ND
Max. DC input voltage (Volts)	1100
Rated DC voltage (Volts)	720
Start-up voltage (Volts)	180
MPPT voltage range (Volts)	180…1000
Max. input current (Amps)	5*40
Max short circuit input current (Amps)	5*50
MPPT number/Max input strings number	5/10
Rated output power (Watts)	60000
Max. output power (Watts)	60000
Max. apparent output power (VA)	60000
Rated grid voltage (Volts)	3/PE, 480
Rated grid output current (Amps)	72.2
Max. output current (Amps)	72.2
Power Factor (at rated output power)	0.8leading~0.8lagging
THDi (at rated output power)	<3%
Rated grid frequency (Hertz)	50/60
Max.efficiency	98.7%
EU efficiency	98.1%
Dimensions (W*H*D)	515*672*287.5mm
Weight	37.4kg
Topology	Transformerless
Self consumption (night)	< 1W
Operating ambient temperature range	-25℃...+60℃
Relative humidity	0~100%
Ingress protection	IP66
Noise emission {Typical}	≤60 dB (A)
Cooling concept	Intelligent redundant cooling
Max.operation altitude	4000m
Grid connection standard	G98 or G99, VDE-AR-N 4105 / VDE V 0124, EN 50549-1, VDE 0126 / UTE C 15 / VFR:2019, RD 1699 / RD 244 / UNE 206006 / UNE 206007-1, CEI 0-21, C10/11, NRS 097-2-1, TOR, EIFS 2018.2, IEC 62116, IEC 61727, IEC60068, IEC 61683, EN 50530
Safty/EMC standard	IEC/EN 62109-1/-2, IEC/EN 61000-6-1/-2/-3/-4
DC connection	MC4 connector
AC connection	OT Terminal
Display	LED + APP
Communication connections	RS485, Optional: Wi-Fi, GPRS
Warranty	5 years (extend to 20 years)

Model	S6-GC3P23K03-LV-ND
Max. DC input voltage (Volts)	1100
Rated DC voltage (Volts)	400
Start-up voltage (Volts)	180
MPPT voltage range (Volts)	180…1000
Max. input current (Amps)	3*40
Max short circuit input current (Amps)	3*50
MPPT number/Max input strings number	3/6
Rated output power (Watts)	23000
Max. output power (Watts)	23000
Max. apparent output power (VA)	23000
Rated grid voltage (Volts)	3/PE, 220/230
Rated grid output current (Amps)	60.4/57.7
Max. output current (Amps)	60.4/57.7
Power Factor (at rated output power)	0.8leading~0.8lagging
THDi (at rated output power)	<3%
Rated grid frequency (Hertz)	50/60
Max.efficiency	97.8%
EU efficiency	97.3%
Dimensions (W*H*D)	515*672*287.5mm
Weight	32.6kg
Topology	Transformerless
Self consumption (night)	< 1W
Operating ambient temperature range	-25℃...+60℃
Relative humidity	0~100%
Ingress protection	IP66
Noise emission {Typical}	≤60 dB (A)
Cooling concept	Intelligent redundant cooling
Max.operation altitude	4000m
Grid connection standard	G98 or G99, VDE-AR-N 4105 / VDE V 0124, EN 50549-1, VDE 0126 / UTE C 15 / VFR:2019, RD 1699 / RD 244 / UNE 206006 / UNE 206007-1, CEI 0-21, C10/11, NRS 097-2-1, TOR, EIFS 2018.2, IEC 62116, IEC 61727, IEC60068, IEC 61683, EN 50530
Safty/EMC standard	IEC/EN 62109-1/-2, IEC/EN 61000-6-1/-2/-3/-4
DC connection	MC4 connector
AC connection	OT Terminal
Display	LED + APP
Communication connections	RS485, Optional: Wi-Fi, GPRS
Warranty	5 years (extend to 20 years)

Model	S6-GC3P25K04-LV-ND
Max. DC input voltage (Volts)	1100
Rated DC voltage (Volts)	400
Start-up voltage (Volts)	180
MPPT voltage range (Volts)	180…1000
Max. input current (Amps)	4*40
Max short circuit input current (Amps)	4*50
MPPT number/Max input strings number	4/8
Rated output power (Watts)	25000
Max. output power (Watts)	25000
Max. apparent output power (VA)	25000
Rated grid voltage (Volts)	3/PE, 220/230
Rated grid output current (Amps)	65.6/62.8
Max. output current (Amps)	65.6/62.8
Power Factor (at rated output power)	0.8leading~0.8lagging
THDi (at rated output power)	<3%
Rated grid frequency (Hertz)	50/60
Max.efficiency	97.8%
EU efficiency	97.3%
Dimensions (W*H*D)	515*672*287.5mm
Weight	35.9kg
Topology	Transformerless
Self consumption (night)	< 1W
Operating ambient temperature range	-25℃...+60℃
Relative humidity	0~100%
Ingress protection	IP66
Noise emission {Typical}	≤60 dB (A)
Cooling concept	Intelligent redundant cooling
Max.operation altitude	4000m
Grid connection standard	G98 or G99, VDE-AR-N 4105 / VDE V 0124, EN 50549-1, VDE 0126 / UTE C 15 / VFR:2019, RD 1699 / RD 244 / UNE 206006 / UNE 206007-1, CEI 0-21, C10/11, NRS 097-2-1, TOR, EIFS 2018.2, IEC 62116, IEC 61727, IEC60068, IEC 61683, EN 50530
Safty/EMC standard	IEC/EN 62109-1/-2, IEC/EN 61000-6-1/-2/-3/-4
DC connection	MC4 connector
AC connection	OT Terminal
Display	LED + APP
Communication connections	RS485, Optional: Wi-Fi, GPRS
Warranty	5 years (extend to 20 years)

9. Specifications

Model	S6-GC3P30K04-LV-ND
Max. DC input voltage (Volts)	1100
Rated DC voltage (Volts)	400
Start-up voltage (Volts)	180
MPPT voltage range (Volts)	180…1000
Max. input current (Amps)	4*40
Max short circuit input current (Amps)	4*50
MPPT number/Max input strings number	4/8
Rated output power (Watts)	30000
Max. output power (Watts)	30000
Max. apparent output power (VA)	30000
Rated grid voltage (Volts)	3/PE, 220/230
Rated grid output current (Amps)	78.7/75.3
Max. output current (Amps)	78.7/75.3
Power Factor (at rated output power)	0.8leading~0.8lagging
THDi (at rated output power)	<3%
Rated grid frequency (Hertz)	50/60
Max.efficiency	97.8%
EU efficiency	97.3%
Dimensions (W*H*D)	515*672*287.5mm
Weight	35.9kg
Topology	Transformerless
Self consumption (night)	< 1W
Operating ambient temperature range	-25℃...+60℃
Relative humidity	0~100%
Ingress protection	IP66
Noise emission {Typical}	≤60 dB (A)
Cooling concept	Intelligent redundant cooling
Max.operation altitude	4000m
Grid connection standard	G98 or G99, VDE-AR-N 4105 / VDE V 0124, EN 50549-1, VDE 0126 / UTE C 15 / VFR:2019, RD 1699 / RD 244 / UNE 206006 / UNE 206007-1, CEI 0-21, C10/11, NRS 097-2-1, TOR, EIFS 2018.2, IEC 62116, IEC 61727, IEC60068, IEC 61683, EN 50530
Safty/EMC standard	IEC/EN 62109-1/-2, IEC/EN 61000-6-1/-2/-3/-4
DC connection	MC4 connector
AC connection	OT Terminal
Display	LED + APP
Communication connections	RS485, Optional: Wi-Fi, GPRS
Warranty	5 years (extend to 20 years)

Model	S6-GC3P36K04-LV-ND
Max. DC input voltage (Volts)	1100
Rated DC voltage (Volts)	400
Start-up voltage (Volts)	180
MPPT voltage range (Volts)	180…1000
Max. input current (Amps)	4*40
Max short circuit input current (Amps)	4*50
MPPT number/Max input strings number	4/8
Rated output power (Watts)	36000
Max. output power (Watts)	36000
Max. apparent output power (VA)	36000
Rated grid voltage (Volts)	3/PE, 220/230
Rated grid output current (Amps)	94.5/90.4
Max. output current (Amps)	94.5/90.4
Power Factor (at rated output power)	0.8leading~0.8lagging
THDi (at rated output power)	<3%
Rated grid frequency (Hertz)	50/60
Max.efficiency	97.8%
EU efficiency	97.3%
Dimensions (W*H*D)	515*672*287.5mm
Weight	36.2kg
Topology	Transformerless
Self consumption (night)	< 1W
Operating ambient temperature range	-25℃...+60℃
Relative humidity	0~100%
Ingress protection	IP66
Noise emission {Typical}	≤60 dB (A)
Cooling concept	Intelligent redundant cooling
Max.operation altitude	4000m
Grid connection standard	G98 or G99, VDE-AR-N 4105 / VDE V 0124, EN 50549-1, VDE 0126 / UTE C 15 / VFR:2019, RD 1699 / RD 244 / UNE 206006 / UNE 206007-1, CEI 0-21, C10/11, NRS 097-2-1, TOR, EIFS 2018.2, IEC 62116, IEC 61727, IEC60068, IEC 61683, EN 50530
Safty/EMC standard	IEC/EN 62109-1/-2, IEC/EN 61000-6-1/-2/-3/-4
DC connection	MC4 connector
AC connection	OT Terminal
Display	LED + APP
Communication connections	RS485, Optional: Wi-Fi, GPRS
Warranty	5 years (extend to 20 years)

Model	S6-GC3P37.5K04-NV-ND
Max. DC input voltage (Volts)	1100
Rated DC voltage (Volts)	600
Start-up voltage (Volts)	180
MPPT voltage range (Volts)	180…1000
Max. input current (Amps)	4*40
Max short circuit input current (Amps)	4*50
MPPT number/Max input strings number	4/8
Rated output power (Watts)	37500
Max. output power (Watts)	37500
Max. apparent output power (VA)	37500
Rated grid voltage (Volts)	3/N/PE, 220/380
Rated grid output current (Amps)	57.0
Max. output current (Amps)	57.0
Power Factor (at rated output power)	0.8leading~0.8lagging
THDi (at rated output power)	<3%
Rated grid frequency (Hertz)	50/60
Max.efficiency	98.6%
EU efficiency	98.1%
Dimensions (W*H*D)	515*672*287.5mm
Weight	34.9kg
Topology	Transformerless
Self consumption (night)	< 1W
Operating ambient temperature range	-25℃...+60℃
Relative humidity	0~100%
Ingress protection	IP66
Noise emission {Typical}	≤60 dB (A)
Cooling concept	Intelligent redundant cooling
Max.operation altitude	4000m
Grid connection standard	portaria N140&515
Safty/EMC standard	IEC 62109-1, IEC 62109-2
DC connection	MC4 connector
AC connection	OT Terminal
Display	LED + APP
Communication connections	RS485, Optional: Wi-Fi, GPRS
Warranty	5 years (extend to 20 years)

Model	S6-GC3P37.5K04-LV-ND
Max. DC input voltage (Volts)	1100
Rated DC voltage (Volts)	400
Start-up voltage (Volts)	180
MPPT voltage range (Volts)	180…1000
Max. input current (Amps)	4*40
Max short circuit input current (Amps)	4*50
MPPT number/Max input strings number	4/8
Rated output power (Watts)	37500
Max. output power (Watts)	37500
Max. apparent output power (VA)	37500
Rated grid voltage (Volts)	3/PE, 220
Rated grid output current (Amps)	98.4
Max. output current (Amps)	98.4
Power Factor (at rated output power)	0.8leading~0.8lagging
THDi (at rated output power)	<3%
Rated grid frequency (Hertz)	50/60
Max.efficiency	97.8%
EU efficiency	97.3%
Dimensions (W*H*D)	515*672*287.5mm
Weight	36.6kg
Topology	Transformerless
Self consumption (night)	< 1W
Operating ambient temperature range	-25℃...+60℃
Relative humidity	0~100%
Ingress protection	IP66
Noise emission {Typical}	≤60 dB (A)
Cooling concept	Intelligent redundant cooling
Max.operation altitude	4000m
Grid connection standard	portaria N140&515
Safty/EMC standard	IEC 62109-1, IEC 62109-2
DC connection	MC4 connector
AC connection	OT Terminal
Display	LED + APP
Communication connections	RS485, Optional: Wi-Fi, GPRS
Warranty	5 years (extend to 20 years)