



S5 EO Series Off-grid Inverter Instruction Manual

Ver 1.1

Ginlong Technologies Co., Ltd.
No. 188 Jinkai Road, Binhai Industrial Park, Xiangshan, Ningbo,
Zhejiang, 315712, P.R.China.
Tel: +86 (0)574 6578 1806
Fax: +86 (0)574 6578 1606
Email: info@ginlong.com
Web: www.ginlong.com

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

Ginlong Technologies Co., Ltd.

Smart O&M

In order to improve our products and provide you with higher quality services, this device has a built-in data logging module for collecting relevant information during operation (such as power generation data, fault data)

Commitment:

1. We will only collect, use and process your device information for the purpose of improving our products and services.
2. We will take all reasonable and feasible measures to ensure that no irrelevant information is collected and we will protect your device information.
3. We will not share, transfer or disclose the collected device information with any company, organization or individual.
4. When we stop operating products or services, we will stop collecting your device information in a timely manner.
5. If you do not want to provide such information, you can notify our company to turn off this function, which will not affect your normal use of other functions of the product.

1. Introduction	2
1.1 Product Description	2
1.2 System Description	3
1.3 Packaging	3
2. Safety & Warning	4
2.1 Safety	4
2.2 General Safety Instructions	4
2.3 Notice For Use	6
2.4 Notice for Disposal	6
3. Installation	7
3.1 Select a Location for the Inverter	7
3.2 Mounting the Inverter	8
3.3 Preparation	9
3.4 PV Input Terminal Assembly	10
3.5 Assembling the AC Connector	11
3.6 Grounding	13
3.7 Battery Terminal Components	14
3.8 Battery Communication	16
3.9 External Communication	17
3.10 Parallel Connection	18
3.11 External Communication Stick Connection	19
3.12 LED Indicates	19
4. Commissioning	20
4.1 Preparation of Commissioning	20
4.2 Commissioning Procedure	20
5. Operation	21
5.1 Startup Guide	21
5.2 Main Menu	21
5.3 Information	21
5.4 Settings	26
5.5 Advanced Information	28
5.6 Advanced Settings	32
6. Maintenance	42
7. Troubleshooting	43
8. Specifications	49

1. Introduction

1.1 Product Description

Solis EO series inverter is designed for off-grid systems.

This series of inverters is highly flexible and can work with or without the grid to provide power to the load. It has battery connections for low voltage batteries and up to 2 PV string inputs. It is able to charge the batteries through the PV, grid or onsite generator.

This manual covers the EO series inverter model list listed below:

S5-EO1P4K-48, S5-EO1P4K-48-P, S5-EO1P5K-48, S5-EO1P5K-48-P

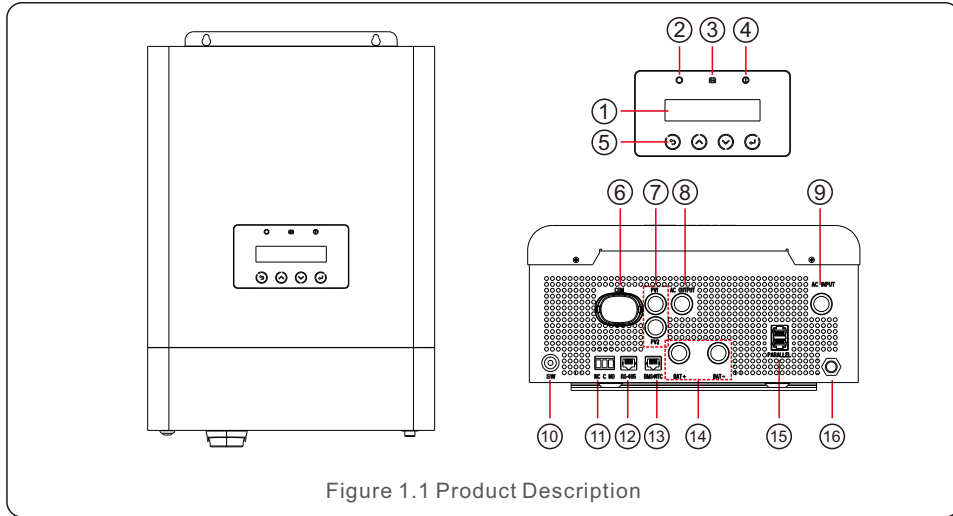


Figure 1.1 Product Description

NO.	Description	NO.	Description
1	LCD Display	9	AC Input
2	Status Indicator	10	Battery Wake-Up Switch
3	Battery Indicator	11	Dry Contact
4	Fault Indicator	12	RS-485 Communicaton Port
5	Function Buttons	13	BMS/NTC Port
6	COM Port	14	Battery Connections
7	PV Input	15	Parallel Communication Ports
8	AC Output	16	Circuit Breaker

Table 1.1 Product Description



NOTE:

Please refer to the specification of the battery before configuration.

1. Introduction

1.2 System Description

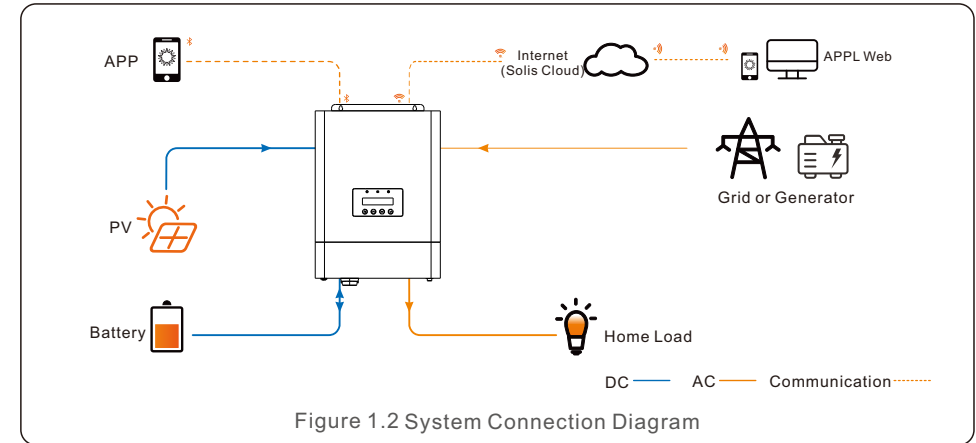
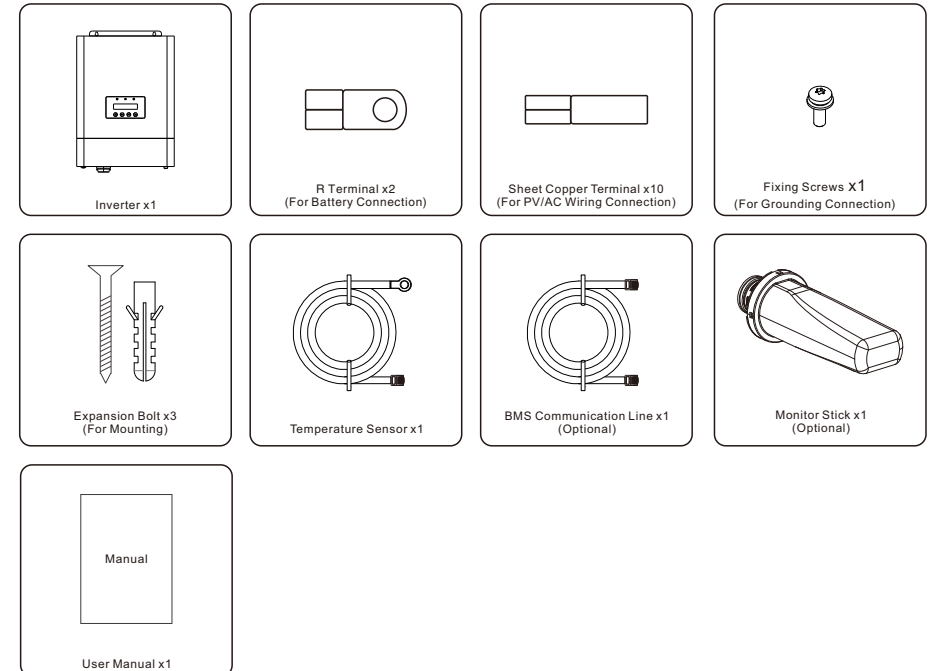


Figure 1.2 System Connection Diagram

1.3 Packaging

Please ensure that the following items are included in the packaging with your machine:



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

2. Safety & Warning

2.1 Safety

The following types of safety instructions and general information appear in this document as described below:



DANGER:

“Danger” indicates a hazardous situation which if not avoided, will result in death or serious injury.



WARNING:

“Warning” indicates a hazardous situation which if not avoided, could result in death or serious injury.



CAUTION:

“Caution” indicates a hazardous situation which if not avoided, could result in minor or moderate injury.



NOTE:

“Note” provides tips that are valuable for the optimal operation of your product.

2.2 General Safety Instructions



WARNING:

Only devices in compliance with SELV (EN 69050) may be connected to the RS485 and USB interfaces.



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:

Do not touch any inner live parts until 5 minutes after disconnection from the utility grid and the PV input.

2. Safety & Warning



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 isolators that comply with the NEC Article 690, Part II.



CAUTION:

Risk of electric shock, do not remove the upper cover (lower cover can be removed for connection). There is no user serviceable parts inside, refer servicing to qualified and accredited service technicians.



CAUTION:

The PV array 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 authorization .



CAUTION:

The surface temperature of the inverter can reach up to 60°C (140 °F). To avoid risk of burns, do not touch the surface of the inverter while it's operating. Inverter must be installed out of the reach of children.



NOTE:

PV module used with inverter must have an IEC 61730 Class A rating.



WARNING:

Operations below must be accomplished by licensed technician or Solis authorized person.



WARNING:

Operator must put on the technicians' gloves during the whole process in case of any electrical hazards.



WARNING:

For PV system, between the PV string and PV input of the inverter, it is required to install a DC isolator to meet local installation regulations.

2. Safety & Warning



WARNING:

Solis requires using two magneto-thermic automatic switches with an RCD module (with adequate voltage and current rating basing on the grid characteristics and on the output current of the inverter) with a sensitivity of 30mA, B-type. One switch with the RCD module needs to be installed on the AC input side, one RCD needs to be installed on the AC backup output side.

2.3 Notice For Use

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

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 Select a Location for the Inverter

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

- Exposure to direct sunlight may cause the output power to decrease. It must install the inverter indoors and avoid direct sunlight and rain.
- This inverter is IP21 rated and it can be used indoors with environmental pollution level II. Please install it indoors to avoid rain, spraying water or splashing water.
- It is recommended that the inverter is installed in a cooler ambient which doesn't exceed 131°F/55°C.



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.
- Install on a wall or strong structure capable of bearing the weight of the machine (14kg).
- Install vertically with a maximum incline of +/- 5 degrees, exceeding this may cause output power derating.
- To avoid overheating, always make sure the flow of air around the inverter is not blocked. A minimum clearance of 200mm should be kept between inverters or objects and 500mm clearance between the bottom of the machine and the ground.

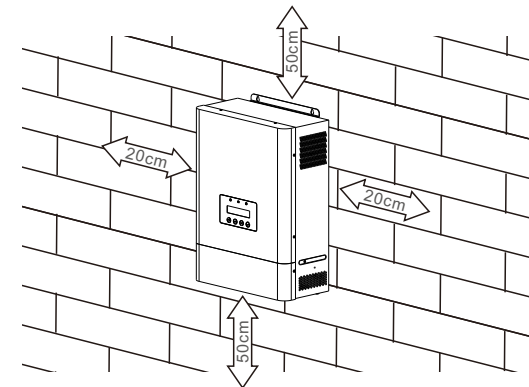


Figure 3.1 Inverter Mounting Clearance

- Visibility of the LEDs and LCD should be considered.
- Adequate ventilation must be provided.



NOTE:

Nothing should be stored on or placed against the inverter.

3. Installation

3.2 Mounting the Inverter



WARNING:

The inverter must be mounted vertically.

Select the mounting height of the inverter and mark the mounting holes. It's recommended to install the inverter tighten by using two M5 screws.

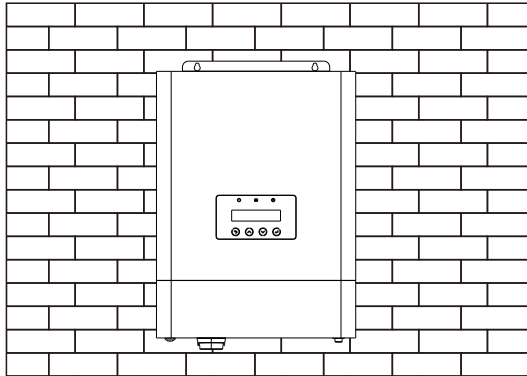


Figure 3.2 Wall Mount Inverter

Fix the two holes on the top of the machine and one hole in the box with screws.

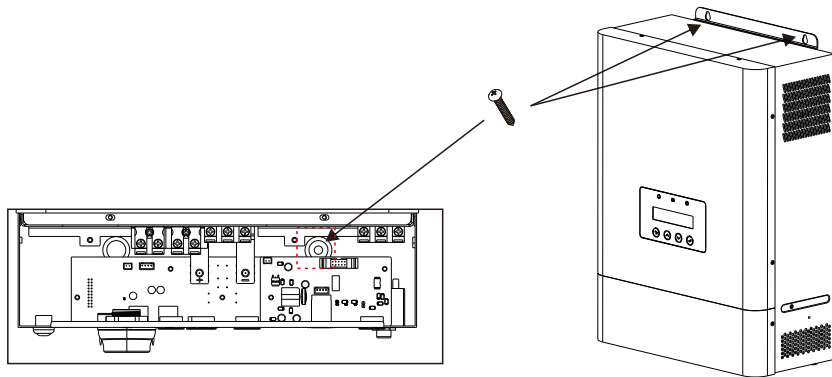


Figure 3.3 Fix inverter on the wall

3. Installation

3.3 Preparation

Before connecting all wiring, please take off the bottom cover by removing the screws as shown below.

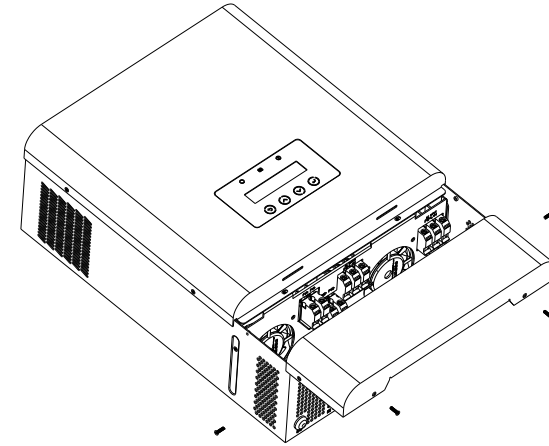


Figure 3.4 Remove the Junction Box Cover

3. Installation

3.4 PV Input Terminal Assembly

Please ensure the following before connecting the inverter:

- Make sure the voltage of the PV string will not exceed the max DC input voltage (550Vdc). Violating this condition will void the warranty.
- Make sure the polarity of the PV connectors are correct.
- Make sure the battery, AC Input, and AC Output are all in their off-states.
- Make sure the PV resistance to ground is higher than 20K ohms.
- Before connecting to PV modules, please install separately a DC circuit breaker between inverter and PV modules.

PV wire diameter requirements: 12AWG(3.3mm²) .

1. Remove insulation sleeve 10mm for positive and negative conductors.
2. Insert the wire into the sleeve and use a suitable crimping tool for crimping.

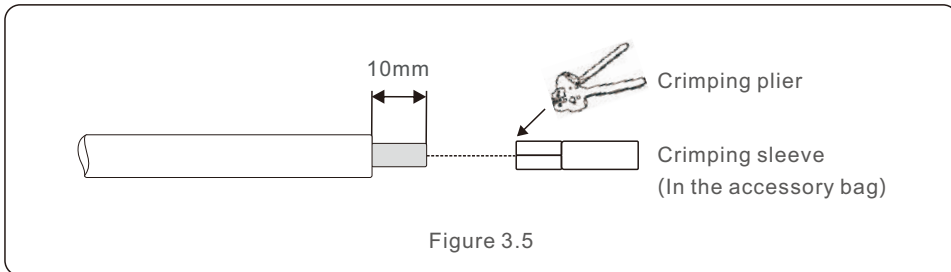


Figure 3.5

3. Please ensure the secure and correct polarity connection between PV modules and PV input connectors or the system will be damaged. Connect the positive pole (+) of the connection cable to the positive pole (+) of the PV input connector. Connect the negative pole (-) of the connection cable to the negative pole (-) of the PV input connector.

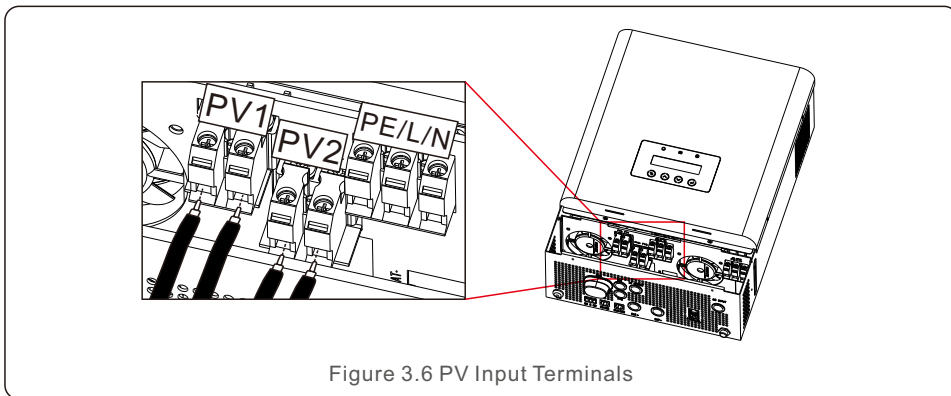


Figure 3.6 PV Input Terminals

3. Installation

3.5 Assembling the AC Connector

To protected from over current of AC input, Solis recommends installing a separate AC breaker between the inverter and the AC input power source.

This AC breaker should be at least 32A.

1. Ensure the cables are within the suitable specifications as shown in the table below:

	Item	Cable Size (AWG)	Cable Size (Cross Section)	Torque
AC Input	PE	10	5.3mm ²	1.2-1.6Nm
	L	10	5.3mm ²	1.2-1.6Nm
	N	10	5.3mm ²	1.2-1.6Nm
AC Output	PE	10	5.3mm ²	1.2-1.6Nm
	L	10	5.3mm ²	1.2-1.6Nm
	N	10	5.3mm ²	1.2-1.6Nm

Table 3.1 AC Wire Specification

2. Remove the 10mm insulation sleeve for the positive and negative conductors.
3. Insert the wire into the sleeve and use a suitable crimping tool for crimping. (see Figure 4.6)
4. Insert the AC input wires according to polarities indicated on terminal block and tighten the terminal screws. Ensure that the PE protective conductor is connected first. The connection sequence should be PE/L/N.

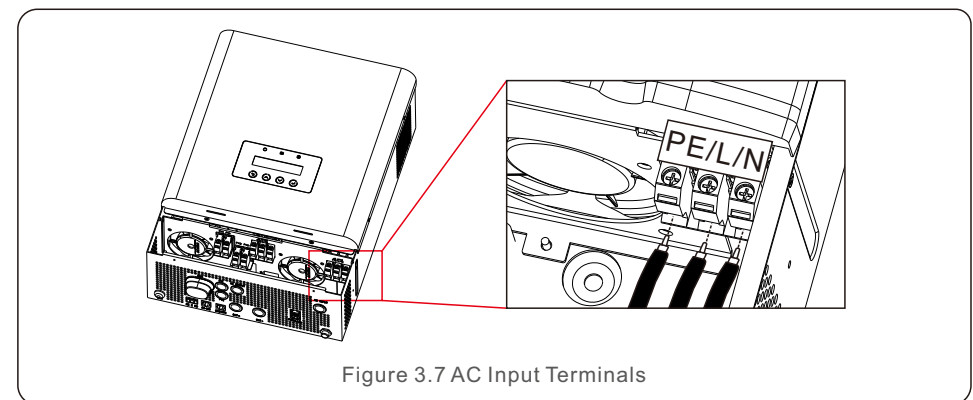


Figure 3.7 AC Input Terminals

3. Installation

5. The dry contact is used for an onsite generator.

Description	Signal Name	Pin
NC	RELAY1_NC	1
COM	RELAY1_COM	2
NO	RELAY1_NO	3

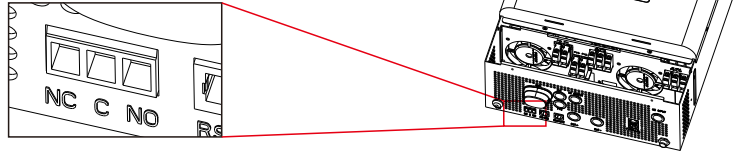


Figure 3.8 Dry Contact

6. Insert AC output wires according to polarities indicated on terminal block and tighten terminal screws with the torque of 1.2-1.6Nm. The connection sequence should be PE-L-N.

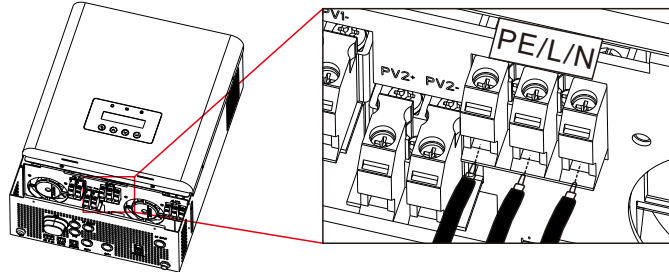


Figure 3.9 AC Output Terminals

7. Ensure the wires are securely connected.



WARNING:

Be sure to connect AC wires with correct polarity. If L and N wires are connected in reverse, it may cause utility short-circuit when inverters are working in the parallel operation.



NOTE:

An automatic disconnect device which complies with EN62109-2 standard should be installed on the outside of the AC input port.

3. Installation

3.6 Grounding

To effectively protect the inverter, a grounding methods must be performed. Connect the external grounding terminal.

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

1. Remove insulation sleeve 10 mm for positive and negative conductors.
2. Insert the wire into the sleeve and use a suitable crimping tool for crimping.
3. Connect the grounding cable to the grounding point on the heat sink and tighten the grounding screw. The torque rating is 1.0-1.2Nm.

Item	Cable Size (AWG)	Cable Size (Cross Section)	Torque
PE	12	3.3mm ²	1.0-1.2Nm

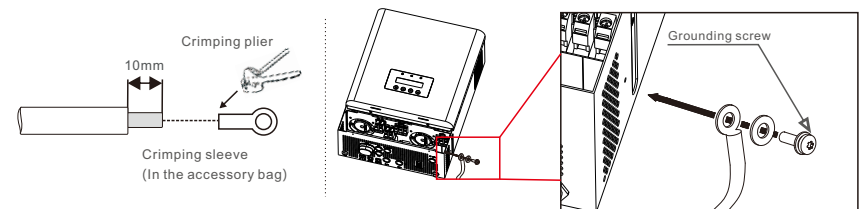
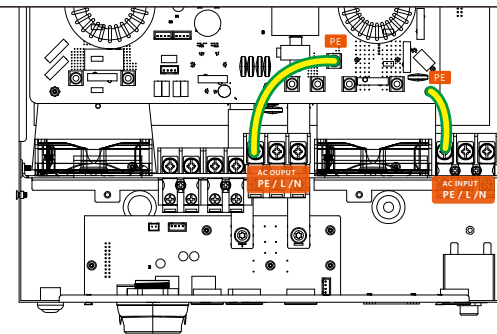


Figure 3.10 Grounding connection

Note: The PCB of the inverter has been grounding shown as below.



IMPORTANT:

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

3. Installation

3.7 Battery Terminal Components

3.7.1 Lead-acid Battery

If you choose a lead-acid battery, the allowed battery types are AGW-type, flooded-type and Gel-type. The battery voltage to connect with the inverter is 48V. Considering the installation environment and operation safety, please pay attention to the following points:

- The natural surrounding ventilation of a Lead-acid battery should be sufficient and the environment temperature is within 25±10°C.
- Fix the bolts of the wire terminal ensure a good connection and to prevent the battery from sparking. The battery should avoid direct sunlight.
- Do not put the batteries in an environment with excessive radiation, infrared radiation, ultraviolet radiation, organic solvent gas, and corrosive gas.
- Batteries with different capacity and functionality can't be interconnected with each other.
- Check the battery voltage and polarity before connecting it to the inverter and turning on the system.
- Ensure the installation site has enough PV generation to support the battery system.

3.7.2 Lithium Battery

If you choose a lithium battery, you are allowed to use Pylontech, BYD and Dyness. Other batteries are available but please check the battery compatibility document available on www.solisinverters.com

Considering the installation and operation safety, please pay attention to the following points:

- Before completing the final DC connection or closing DC breaker, please ensure the correct polarity of the battery connection and positive (+) must be connected to BAT (+) and negative (-) must be connected to BAT (-).
- Please carefully read the user manual of the battery and strictly follow the precautions in the battery manual.



NOTE:

Please note it is integrated with a 70 Vdc, 150A fuse (non-delay) on the battery input side to protect electrical equipment from overcurrent.

3. Installation

3.7.3 Battery Connection

To avoid DC Arcs, Solis recommends installing a DC switch between the battery(s) and inverter.

Ensure the cables within the suitable specifications as shown in the table below.

	Item	Colour	Cable Size (AWG)	Cable Size (Cross Section)	Torque
Battery	BAT+	Red	4	21.2mm ²	2.0-3.0Nm
	BAT-	Black	4	21.2mm ²	2.0-3.0Nm

Table 3.2 Battery Power Cable Requirement

Insert the ring terminal of the battery cable flat onto battery connector of the inverter and ensure the bolts are tightened with a torque rating of 2.0-3.0Nm.

Ensure the polarity at both the battery and the inverter are correctly connected and the ring terminals are tightly screwed to the battery terminals.

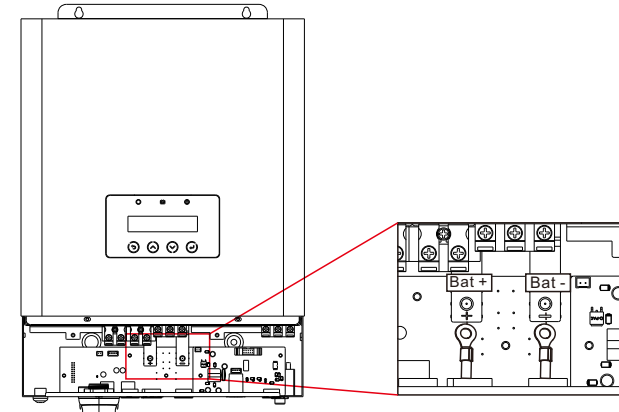


Figure 3.12 Battery Fuse Terminal Connections



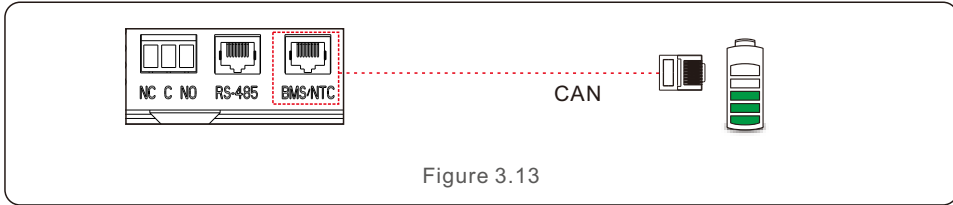
NOTE:

Before connecting the battery, please carefully read the user manual of the battery and perform the installation exactly as the battery manufacturer requests.

3. Installation

3.8 Battery Communication

The EO Series inverter uses RS485 cable to communicate with BMS/NTC port to communicate with the BMS of Lithium and NTC of Lead-acid battery.



NOTE:

NTC temperature sensor should be attached to the surface of the lead-acid battery for detecting the temperature in real time.

Procedure for Connecting the BMS Cable or NTC Cable:

If it is connected to a lithium battery, please take out the BMS communication cable from the accessory package. Connect one side of the cable to the battery and the other side to the BMS/NTC port;

If it is connected to a lead-acid battery, please take out the NTC communication cable from the accessory package. Connect the RJ45 side of the cable to the BMS/NTC port, and put the other side with the ring near the negative pole of the battery.

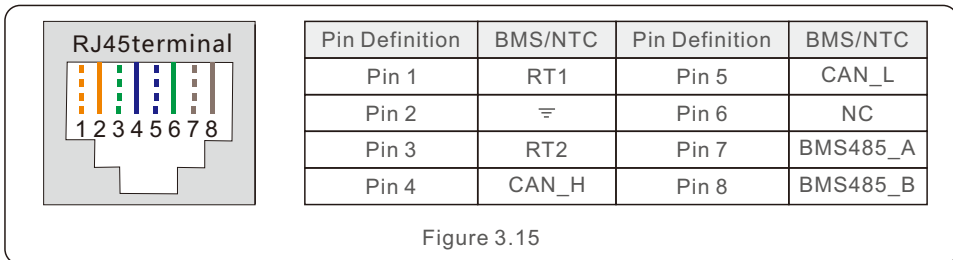


NOTE:

Lead-Acid and other older-technology battery types require experienced and precise design, installation and maintenance to work effectively. For lead-acid battery, battery SOC calculation may not be accurate according to battery in conformity between cells, battery aging or other specifications of lead-acid battery etc.

BMS/NTC PIN Definition

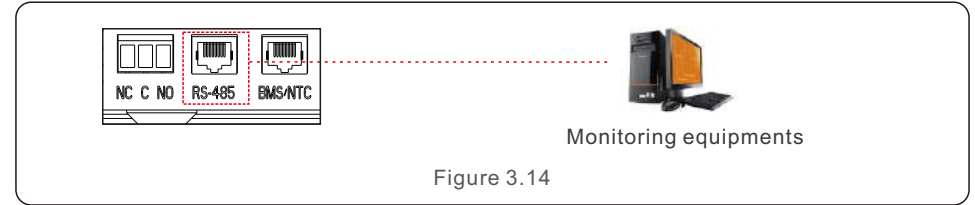
Communication interface between inverter and battery is RS485 with a RJ45 connector.



3. Installation

3.9 External Communication

RS-485 is one standard communication interface which can transmit the real data from inverter to PC or other monitoring equipments.

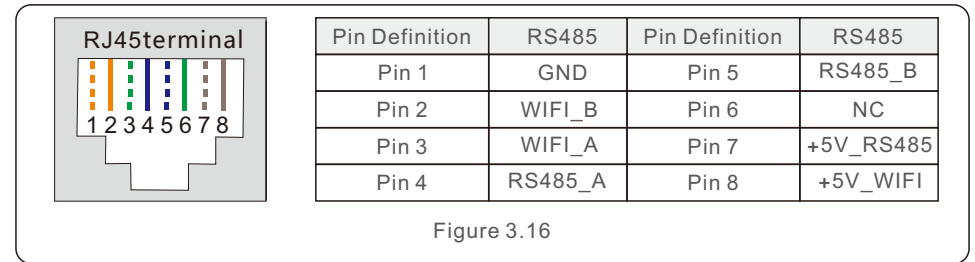


Procedure for Connecting the RS485 Cable:

User can use the RS-485 port for external communication. User should prepare the Comm-cable by themselves according to the pin-definition sheet shown as below. The insert terminal need to use the RJ45 plug. Insert one side of the cable into the RS-485 port of the inverter, and insert another side into PC or other monitoring device.

RS485 PIN Definition

Communication interface between inverter and external device is RS485 with a RJ45 connector.



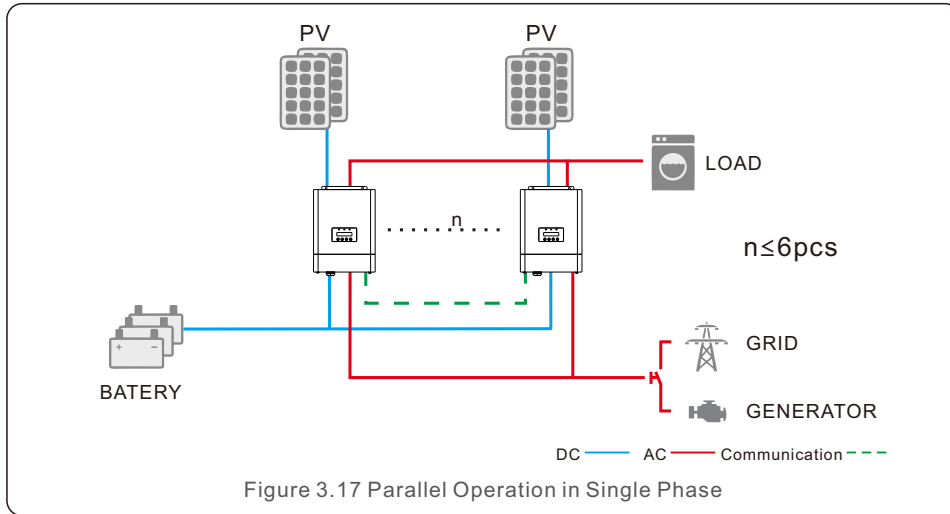
3. Installation

3.10 Parallel Connection

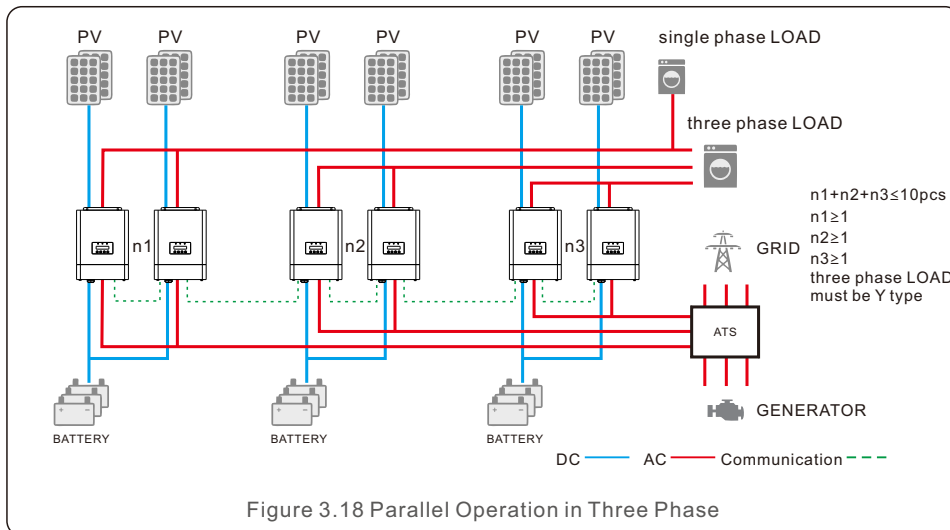
The "-P" type in the EO series inverter has the parallel capability and can be operated in parallel.

This inverter can be used in parallel with two different operation modes.

1. Parallel operation in single phase with up to 6 units.



2. Maximum 10 units work together to support 3-phase equipment.



For specific information, please refer to 《Parallel Quick Installation Guide》.

3. Installation

3.11 External Communication Stick Connection

Inverter provides a Monitoring port which can collect data from inverter and transmit it to monitoring-website via an external monitoring data collector.

For details please refer to WiFi Stick Data logger Quick installation guide.

3.12 LED Indicates

There are three LED indicators on the EO series inverter which indicate the working status.

Light	Color	Status	Description
STATUS	Green	FLASHING	The inverter is in standby(Slow flashing for 3S). The inverter is in self-test(Fast flashing for 0.5S).
		ON	The inverter is normal operation. Or The inverter is operating normally.
		OFF	The inverter is deenergized.
BATTERY	Green/Yellow	GREEN FLASHING	Battery is charging.
		GREEN CONSTANT	Battery is discharging.
		OFF	Battery is not installed or in the off position.
		YELLOW CONSTANT	Battery failure.
ALARM	Yellow/Red	YELLOW CONSTANT	There is an alarm but system is operational.
		RED CONSTANT	There is an alarm and the system has stopped.
		OFF	No Alarm.

Table 3.3 Status Indicator Lights

4. Commissioning

4.1 Preparation of Commissioning

- Ensure all the devices are accessible for operation, maintenance and service. Check and confirm that the inverter is firmly installed.
- Ensure space for ventilation is sufficient for one inverter or multiple inverters.
- Ensure Nothing is left on top of the inverter or battery module.
- Ensure inverter and accessories are correctly connected.
- Ensure cables are routed in a safe location or protected against mechanical damage.
- Ensure warning signs and labels are suitably affixed and durable.

4.2 Commissioning Procedure

If all the items mentioned above meet the requirements, proceed as follows to start up the inverter for the first time.

1. Switch on the AC-Output and AC-Input.
2. Refer to "Part 5" to configure the parameters. Ensure to run through the Startup Wizard.
3. Switch on the DC circuit breaker between inverter and battery.
 - a. If the battery equipped is Pylon Li-ion Battery, actuate the switch on the battery manually. The relay will make 'clicking' sounds and it will take a short-time to work automatically.
4. Verify the system is working properly.
5. Proceed to setup the systems communication and refer to the datalogger manual.
 - a. All manuals can be found at www.solisinverters.com



NOTE:

When the loads are only supported by the battery and there is no PV and AC power, after turning on the battery breaker, please long press on the SW button at the bottom side of the inverter (see Figure 4.1), till the screen light up.

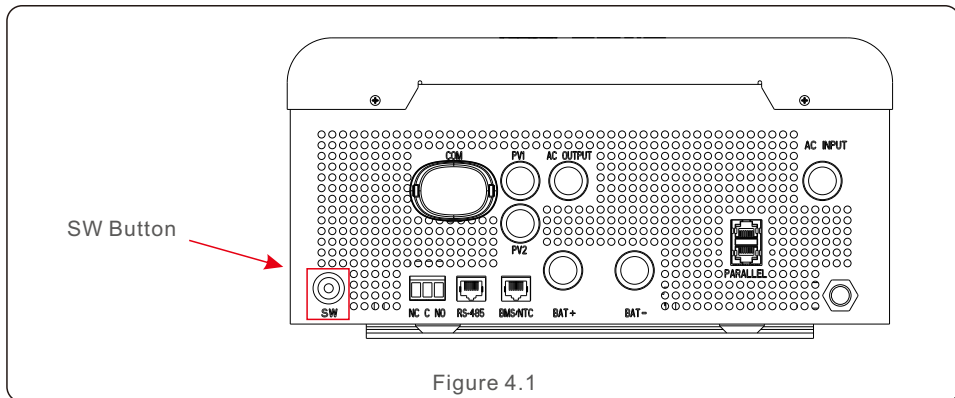


Figure 4.1

5. Operation

5.1 Startup guide

Please follow the steps to complete the initial setup process.

Steps:

Start-up Wizard Language > Time > Connect battery? > Battery Type > Connect generator? > Back up setting > Setting successfully

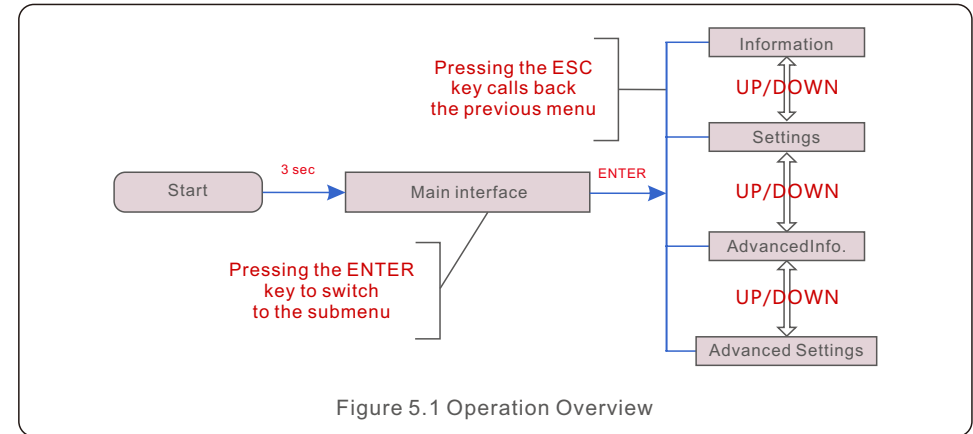


Figure 5.1 Operation Overview

5.2 Main Menu

There are four submenu in the Main Menu (see Figure 5.1):

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

5.3 Information

In the information section, operating data and information data can be viewed.

Sub-sections include:

1. General Information
2. System Information
3. Energy Records
4. BMS information

5. Operation

5.3.1 General Information

The example displays are shown in the following figures.
 The user can view it by pressing the up and down keys.
 Values are for reference only.

Display	Description
Inverter SN: 00000000000000	Shows the inverter serial number.
Model. : S5-E01P5K-48	Shows the model of the device.
SoftVer. : 040000	Shows the DSP and ARM version of the inverter.
Mute State: OFF	Show the mute status of the device.

Figure 5.2 General Information

5.3.2 System Information

The example displays are shown in the following figures.
 The user can view it by pressing the up and down keys.
 Values are for reference only.

Display	Description
V_DC: 000.0V I_DC: 000.0A	Shows the voltage on DC side. Shows the current on DC side.
V_AC: 000.0V I_AC: 000.0A	Shows the voltage on AC side. Shows the current on AC side.
Grid Frequency: 00.00Hz	Shows the grid frequency value.
Battery V: 000.0V Battery I: 000.0A	Shows the battery voltage. Shows the battery current.
Backup V: 000.0V Backup P: 00.0kW	Shows the voltage on backup. Shows the power on backup.
Charge P: 00.0kW DisCharge P: 00.0kW	Shows the charging power. Shows the discharging power.

Figure 5.3 System Information

5. Operation

5.3.3 Energy Records

Sub-sections of the Yield information section include:

1. **Battery Yield**
2. **Grid Yield**
3. **Load Yield**

The example displays are shown in the following figures.
 Values are for reference only.

Display	Description
BattChgE Total: 000000kWh	Shows the total battery charged energy.
BattChgE Today: 000.0kWh	Shows today's battery charged energy.
BattChgE Lastday: 000.0kWh	Shows yesterday's battery charged energy.
BattDisChgE Total: 000000kWh	Shows the total battery discharged energy.
BattDisChgE Today: 000000kWh	Shows today's battery discharged energy.
BattDisChgE Lastday: 000000kWh	Shows yesterday's battery discharged energy.

Figure 5.4 Battery Yield

Display	Description
GridGetE Total: 000000kWh	Shows the total energy received from the grid.
GridGetE Today: 000.0kWh	Shows today's energy received from the grid.
GridGetE Lastday: 000.0kWh	Shows yesterday's energy received from the grid.

Figure 5.5 Grid Yield

Display	Description
LoadE Total: 000000kWh	Shows total load energy.
LoadE Today: 000.0kWh	Shows today's load energy.
LoadE Lastday: 000.0kWh	Shows yesterday's load energy.

Figure 5.6 Load Yield

Display	Description
PVE Total: 000.0kWh	Shows total energy received from PV.
PVE Today: 000.0kWh	Shows today's energy received from PV.
PVE Lastday: 000.0kWh	Shows yesterday's energy received from PV.

Figure 5.7 PV Yield

5.3.4 BMS Information

The example displays are shown in the following figures.

The user can view it by pressing the up and down keys.

Values are for reference only.

Display	Description
Battery V: 00.00V Battery I: +00.00A	Battery V: Shows battery voltage(From BMS). Battery I: Shows battery current(From BMS).
ChargeLmt: 000.0A DischargeLmt: 000.0A	ChargeLmt: Shows battery charge limit(Current). DischargeLmt: Shows battery discharge limit(Current).
ChargeVLmt: 000.0A DischargeVLmt: 000.0A	ChargeLmt: Shows battery charge limit(Voltage). DischargeLmt: Shows battery discharge limit(Voltage).
SOC Value: 000% SOH Value: 000%	SOC value: Shows battery state of charge. SOH value: Shows battery state of health..
BMS Status: CAN Fail	Shows that Battery BMS communication status.
BMS Version: 0.0	Shows that Battery BMS version.

Figure 5.8 BMS Information

BMS ONLY support CAN communication not RS485, and all the data will display "0" when the battery has been selected as Lead-acid battery which is monitored by NTC in CAN/NTC port.

5. Operation

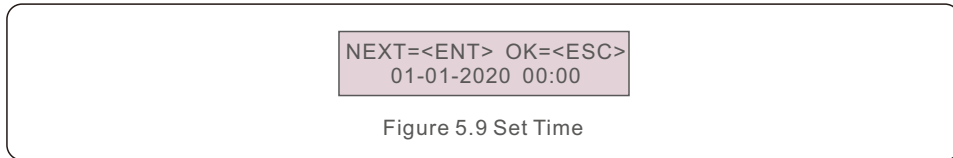
5.4 Settings

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

1. Set Time/Date
2. Set Address
3. Set Mute
4. Mode Settings

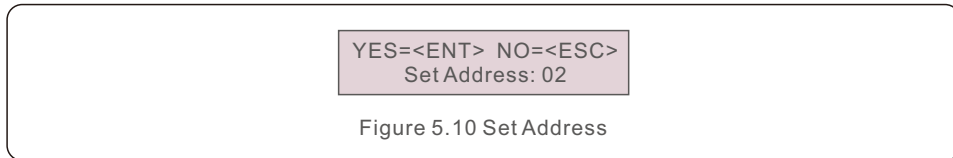
5.4.1 Set Time/Date

This function allows time and date setting. When this function is selected, the LCD will display a screen as shown in Figure 5.9.



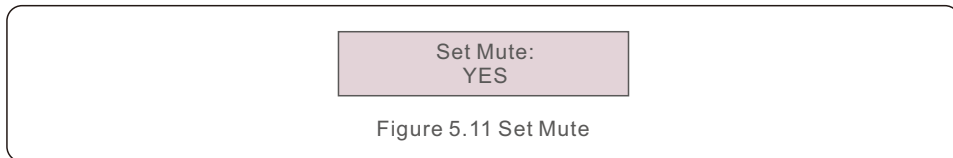
5.4.2 Set Address

This function is used to set inverter address for data logger connection/modbus communication/parallel connection.



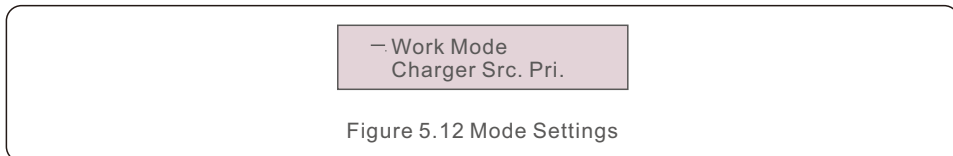
5.4.3 Set Mute

This function allows you to turn on/off the keypad tone and buzzer sound. Select YES to disable the sound and select NO to enable the sound. Default is "YES".



5.4.4 Mode Settings

Inverter work mode and charge source priority can be set in this section.



5. Operation

5.4.4.1 Work Mode

This section describes the working logic of each work mode of the inverter.

Display	Description
Work Mode: Batt Reserve	<ul style="list-style-type: none"> * PV supports the loads at first priority. * If there is excess PV power, it will charge the battery, * If PV is not sufficient to support the loads, battery discharges. * If battery reaches the Batt Low Volt (Lead-acid) or Min SOC Set (Lithium), PV will provide power to the battery and Grid will support loads. * When there is no PV input, the battery will stop discharging and use the grid power to support the loads in order to reserve a higher battery capacity.
Work Mode: Back up	<ul style="list-style-type: none"> * Grid supports the loads at first priority. * When Grid is available, battery will not discharge in order to keep a higher battery capacity. * When Grid is not available, battery will discharge.
Work Mode: Self Use	<ul style="list-style-type: none"> * PV supports the loads at first priority. * If there is excess PV power, it will charge the battery, * If PV is not sufficient to support the loads, battery discharges. * If battery reaches the Batt Low Volt (Lead-acid) or Min SOC Set (Lithium), PV will provide power to the battery and Grid will support loads.

Figure 5.13 Work Mode

5.4.4.2 Charger Source Priority

Charge source priority settings are shown in the following figure.

Display	Description
Charger Src. Pri. PV&Grid	Both PV and Grid are allowed to charge the battery.
Charger Src. Pri. PV Only	Only PV is allowed to charge the battery.

Figure 5.14 Charger Source Priority

5. Operation

5.5 Advanced Information



NOTE:

This area is for fully qualified and accredited technicians only.

Enter the password 0010 to access to the following sections.

1. Alarm Message
2. Warning Message
3. Running Status
4. Communication data
5. Yield Profile

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

Figure 5.15 Enter Password

The screen can be scrolled 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.

5.5.1 Alarm Message

The display shows the 500 latest alarm messages.
Screens can be scrolled by pressing the UP/ DOWN keys.

Alm000: NO-Grid
T:01-01 00:02 D:0000

Figure 5.16 Alarm Message

Press the ESC key to return to the previous menu.
Press the ENTER key to return to the next menu.
The example displays are shown in the following figures.
Values are for reference only.

5. Operation

5.5.2 Warning Message

The display shows the warning messages appeared on screen, can store in total 500pcs.
Press the ESC key to return to the previous menu.

Msg000:
T:01-01 00:02 D:0000

Figure 5.17 Warning Message

5.5.3 Running Status

This section is for maintenance personnel to view the running information (Values are for reference only).

— General Status
Advanced Status

Figure 5.18 Running Status

Display	Description
DC Bus Voltage: 0.0V	Shows DC bus voltage.
Power Factor: +0.000	Shows power factor of the inverter.
Power Limit%: 000%	Shows the power output percentage of the inverter.
Inverter Temp: +0.0degC	Shows heat sink temperature of the inverter.
Grid Standard:	Shows grid standard.
Flash State: 11111111	Shows the data migration time.

Figure 5.19 General Status



NOTE:

The advanced status is reserved for Solis technicians.

Display	Description
Ground Voltage: 000.0V	Shows the voltage to the ground.
Relay-Fault Func.: RUN	Shows the status of the relay.
GRID-INTF.02 Func.: RUN	Shows the interference status from the grid.

Figure 5.20 Advanced Status

5.5.4 Communication data

This section shows the communication data between HMI and DSP.
For Solis engineers ONLY.

01-05: 00 00 00 00 00 06-10: 00 00 00 00 00
--

Figure 5.21 Communication Data

5.5.5 Yield Profile

5.5.5.1 Energy Battery

Shows the battery charge & discharge energy.

Display	Description
Battery Charge	Shows the battery charge energy.
Battery Discharge	Shows the battery discharge energy.

Figure 5.22 Battery Charge

5.5.5.2 Grid Energy

Energy received from the grid. or Energy from the grid.

Display	Description
Energy Received	Shows the energy received from the grid.

Figure 5.23 Energy Received from Grid

5.5.5.3 Energy Backup

Energy provided from backup port.

Display	Description
Daily Energy	Shows the daily energy.
Monthly Energy	Shows the monthly energy.
Yearly Energy	Shows the yearly energy.

Figure 5.24 Energy Backup

5.6 Advanced Settings



NOTE:

This area is for fully qualified and accredited technicians only.

Enter the password 0010 to access to the following sections.

1. **Output Settings**
2. **Battery Settings**
3. **Special Settings**
4. **Equalizer Settings**
5. **Password Settings**

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

Figure 5.25 Enter Password

The screen can be scrolled 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.

5.6.1 Output Settings

Output Settings are to set the parameters for the AC output port.

1. **Backup ON/OFF**

When you select ON, AC output port is enabled.

When you select OFF, AC output port is disabled.

2. **Backup Settings**

Set the AC output port voltage and frequency based on load specification.

Backup ON/OFF

Set Backup:
OFF

Figure 5.26 Backup ON/OFF

Display	Description
Backup Voltage: 220.0V-230.0V	Shows the backup voltage.
Backup Frequency: 50.0Hz or 60.0Hz	Shows the backup frequency.

Figure 5.27 Backup Settings

5.6.2 Battery Settings

The section has 4 parts:

1. **Battery Select**
2. **Battery Wakeup**
3. **Quick Charge**
4. **Advanced Battery Settings**

5.6.2.1 Battery Select

This EO series is compatible with both lithium-ion and lead acid batteries below is the compatibility list. For more compatible batteries please reference our Battery Compatibility Document at www.solisinverters.com that is updated frequently.

Brand	Model	Setting
BYD	PREMIUM LVS, PREMIUMLVL, Box Pro 2.5-13.8	Select "B-BOX"
Pylontech	US2000/US3000	Select "Pylon"
Dyness	Powerdepot/Powerbox/B4850	Select "Dyness"

Table 5.1 Battery Select

EO Series inverters can work with several kinds of lead acid batteries such as flooded type, AGM type, GEL Type.

When working with lead acid batteries, set capacity type accordingly.

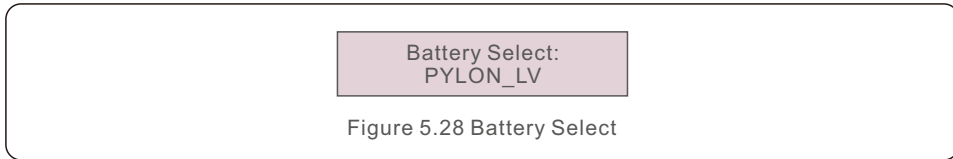


Figure 5.28 Battery Select

5.6.2.2 Battery Wakeup

The battery wake-up button will put low voltage on the battery port to wake up the battery. After the wake-up command succeeds, the battery will continue to be charged according to the normal charging logic.

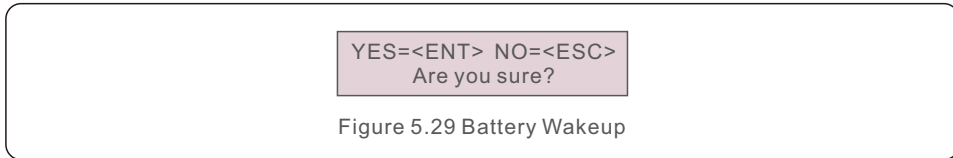


Figure 5.29 Battery Wakeup

5.6.2.3 Quick Charge

This function can quickly fully charge the battery. This function is only effective when grid is available. After activated, the grid and PV will quickly charge the battery at the max current. For Lead-acid battery, it will charge until the battery voltage reaches "Floating Chg voltage". For Lithium battery, it will charge until the battery SOC reaches "Max SOC Set".

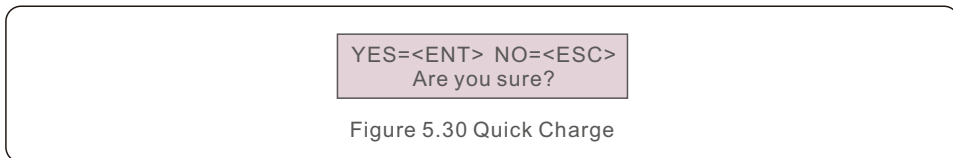


Figure 5.30 Quick Charge

5.6.2.4 Advanced Battery Settings

The following is the setting of battery parameters. For different lithium batteries, the inverter has been set with the optimal battery configuration, and it is recommended that customers do not modify it without authorization. For lead-acid batteries, the installer should set it according to the battery type. For lithium batteries, these are the following settings:

Display	Description
Max Charge Curr	Max Charge Current.
Max Grid Chg Cur	Max Charge Current from Grid.
Force Curr.Set	Force Charge Current Setting. When battery is discharged to "Force SOC Set", force charge logic activated and inverter will charge the battery at this current rate to prevent battery entering sleep mode.
Min SOC Set	The minimum SOC Setting. Default 20%, adjustable from 10-40%. When Grid is available, inverter will stop discharging the battery at this SOC level. If there is load, PV charges battery and grid supports the load. If charge source is set with "PV&Grid", grid will also charge the battery. It will charge the battery until Max SOC Set or start to discharge when there is a need of discharging battery.
Max SOC Set	Max Charge SOC.
Force SOC Set	Force Charge SOC Setting. Default 10%, adjustable from 5% - Min SOC Set. It is the SOC level to trigger the force charge stage to prevent battery entering sleep mode. It will charge the battery until battery SOC reaches Min SOC set.
Batt under Volt	The lowest discharge voltage. If grid is not available, battery may be continuously discharged until it reaches Batt Under Volt. It will reports alarm if load is larger than PV power. If there is no PV, the battery will still provide power for the inverter screen and communication circuit until it reaches (Batt Under Volt - 2V) and triggers the mechanical protection.
Batt over Volt	The highest charge protection voltage. If battery voltage reaches over this value, it will stop battery charging and give alarm.

Figure 5.31 For Lithium Batteries

For lead acid batteries, these are the following settings:

Display	Description
Max Charge Curr	Max Charge Current.
Max Grid Chg Cur	Max Charge Current from Grid.
Force Curr.Set	Force Charge Current Setting. When battery is discharged to "Force SOC Set", force charge logic activated and inverter will charge the battery at this current rate to prevent battery entering sleep mode.
Batt Low Volt	The minimum voltage Setting. When Grid is available, inverter will stop discharging the battery at this voltage level. If there is load, PV charges battery and grid supports the load. If charge source is set with "PV&Grid", grid will also charge the battery. It will charge the battery until Batt High Volt or start to discharge when there is a need of discharging battery.
Batt High Volt	Max Charge Voltage.
Force Volt Set	Force Charge Voltage Setting. It is the voltage level to trigger the force charge stage to prevent battery entering sleep mode. It will charge until battery voltage reaches Batt Low Volt.
Floating Chg.Volt	Floating Charge Stage Voltage. It is the second stage of charging with a constant voltage. Any discharge needs can exit this stage.
Bulk chg. Volt	Bulk Charge Stage Voltage. It is the first stage of charging. If the time interval between charging starts and battery voltage reaches Bulk Chg. Volt is T. And the system is able to maintain the charging with Bulk Chg. Volt for 10*T. The inverter will enter the second stage of Floating charge. Any discharge needs can exit this stage.

Figure 5.32 For Lead Acid Batteries

Display	Description
Batt under Volt	The lowest discharge voltage. If grid is not available, battery may be continuously discharged until it reaches Batt Under Volt. It will reports alarm if load is larger than PV power. If there is no PV, the battery will still provide power for the inverter screen and communication circuit until it reaches (Batt Under Volt - 2V) and triggers the mechanical protection.
Batt over Volt	The highest charge protection voltage. If battery voltage reaches over this value, it will stop battery charging and give alarm.
Temp Compensation	Lead acid battery temperature compensation. Default is 72mV per degree.

Figure 5.33 For Lead Acid Batteries

5.6.3 Special Settings



These functions are for maintenance personnel only. Misuse of these functions could lead to equipment damage, inverter function or reduced inverter production.

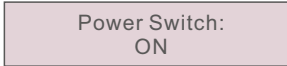
The section has 7 parts:

1. Power Switch
2. Batt Line ZO
3. Mppt CV Mode
4. ISO Set
5. AC Input Type Set
6. On-Grid PV Gen.
7. No-Batt PV Gen.
8. Clear Energy
9. Restore Settings

5. Operation

5.6.3.1 Power Switch

When choose On. Inverter will generate power (default)
When choose Off ,inverter stops generating.



Power Switch:
ON

Figure 5.34 Power Switch Setting

5.6.3.2 Batt Line ZO

Batt Line ZO is the battery line impedance setting. The purpose is to compensate the resistance loss of the battery line. The default value is 10mΩ, 0-99mΩ can be set.



Batt Line ZO:
10mΩ

Figure 5.35 Battery Line ZO Setting

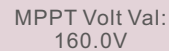
5.6.3.3 MPPT CV Mode

MPPT CV Mode is MPPT constant voltage setting. The inverter can keep the DC input voltage at a fixed value. The voltage range is adjustable from 100-450Vdc.

Select "Enable" to turn on this function.
Select "Disable" to turn off this function.
The default selection is "Disable".



MPPT CV Mode:
Enable



MPPT Volt Val:
160.0V

Figure 5.36 MPPT CV Mode

5. Operation

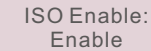
5.6.3.4 ISO Set

ISO set is the monitoring of insulation resistance to ground. The PV+/- input has an equivalent impedance value to ground, and ISO limit is the protection threshold setting of the impedance value.


Select "Enable" to turn on the detection function. When it detects that the actual impedance value is less than the limit setting value, the inverter will report "I-Leak" and stop generating.

Select "Disable" to turn off the detection function.

The default selection is "Enable". ISO limit is adjustable from 20KΩ-1000KΩ



ISO Enable:
Enable



ISO Limit:
200.0KΩ

Figure 5.37 ISO Setting

5.6.3.5 AC Input Type Set

This section is to select the AC input type, can choose from grid or generator..



AC Input Type:
Grid

Figure 5.38 AC Input Type Set

5.6.3.6 On-Grid PV Gen

This function is only applicable for the "Backup" Work mode.

When select "Disable", PV charges battery and Grid supports loads.

When select "Enable", PV charges battery and if there are excess PV power, excess PV and Grid support loads.

Default is "Disable".



On-Grid PV Gen:
Disable

Figure 5.39 On-Grid PV Generation Setting

5. Operation

5.6.3.7 No-Batt PV Gen

This function is to allow PV to support loads when there is no battery. When select "Disable", loads are supported fully by the grid when battery is not available, PV will not work. When select "Enable", loads are supported both by PV and Grid when battery is not available. Default is "Disable".

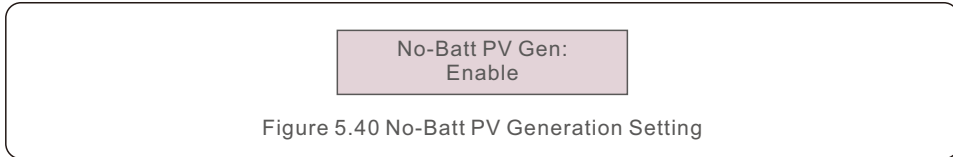
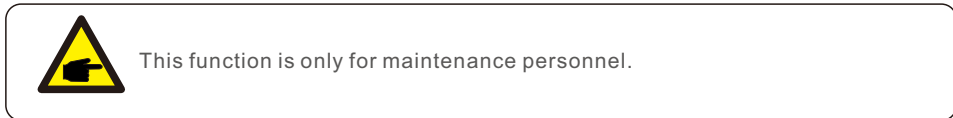


Figure 5.40 No-Batt PV Generation Setting

5.6.3.8 Clear Energy

Clear Energy will reset the historical yield of the inverter.



5.6.3.9 Restore Settings

This section allows you to reset all the settings and bring the settings back to default values.

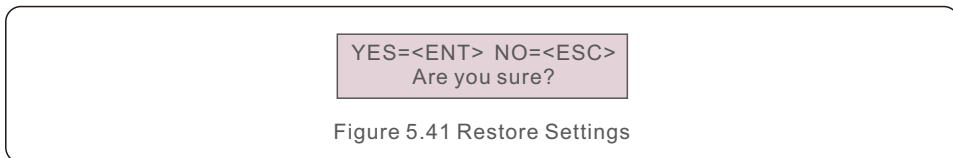


Figure 5.41 Restore Settings

5. Operation

5.6.4 Equalizer Settings

This function is designed to realize the equalizing charging stage for the batteries. The battery voltage may be unbalanced due to the difference in the cells. In order to avoid the deterioration, it is necessary to increase the charging voltage to activate the battery. If the battery charging remains in Floating charge stage for "Equalized interval", inverter will activate the equalizing charging by increasing the charging voltage to "Equalized Volt". If the battery voltage reaches "Equalized Volt" within "Equalized Time", equalizing charging succeeds and exits. If the time reaches "Equalized Time" but battery voltage doesn't reach "Equalized Volt", inverter will enter the second equalizing stage. If the second equalizing stage remains for "Equalized Timeout" but battery voltage still doesn't reach "Equalized Volt", equalizing charging fails.

Display	Description
Batt equalization	Whether to turn on this function, default is off.
Equalized volt.	Equalizing Charging Voltage.
Equalized time	Equalizing Charging Time Period.
Equalized timeout	Second Equalizing Charging Time Period.
Equalized interval	Interval between equalizing charging.
Active immediately	To immediately activate the equalization function.

Figure 5.42 Equalizer Settings

5.6.5 Password Settings

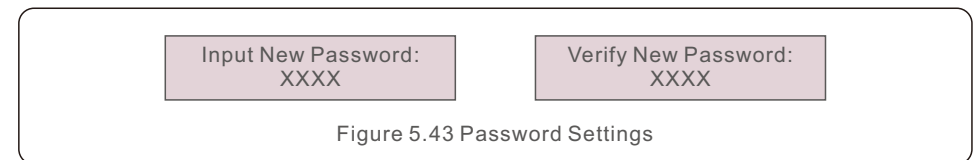


Figure 5.43 Password Settings

6. Maintenance

Solis EO series inverters do not require any regular maintenance. However, cleaning the heatsink will help the inverter dissipate heat and increase the lifespan. The dirt on the inverter can be cleaned with a soft brush.



CAUTION:

Do not touch the surface when the inverter is operating. Some parts may be hot and cause burns.

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



NOTE:

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

7. Troubleshooting

The inverter has been designed in accordance with international interconnection standards for safety and electromagnetic compatibility requirements.

Before delivering to the customer the inverter has been subjected to several test to ensure optimal operation and reliability.

In case of a failure the LCD screen will display an alarm message.

The alarm descriptions and their corresponding alarm messages are listed in Table 7.1:

When a fault occurs, the "Fault" state will be shown on the main screen.

Follow the steps below to check the fault status.

Steps: Enter → Down → Advanced Information → Enter Password → Enter → Down → Warning Message.



Settings
– Advanced Info.

Figure 7.1 Advanced Information



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

Figure 7.2 Enter Password

Press DOWN to select Warning Message, the press ENTER.



Error Logs
– Warning Message

Figure 7.3 Warning Messages

7. Troubleshooting

Alarm Message	Failure description	Solution
G_AB Over Volt G_BC Over Volt G_CA Over Volt G_AB Over Volt2 G_BC Over Volt2 G_CA Over Volt2 G_AB Trans Ov_V G_BC Trans Ov_V G_AB 10min Ov_V G_BC 10min Ov_V G_CA 10min Ov_V Grid Trans Ov_V	Grid Overvoltage	1. Resistant of AC cable is too high, Change AC cable for larger size. 2. Adjust the protection limit if it's allowed by electrical company.
G_AB Under Volt G_BC Under Volt G_CA Under Volt G_AB Under Volt2 G_BC Under Volt2 G_CA Under Volt2	Grid Undervoltage	1. Adjust the protection limit In user define setting if it's allowed by electrical company.
Grid Over Freq. Grid Over Freq.2	Grid Overfrequency	1. Adjust the protection limit In user define setting if it's allowed by electrical company.
Grid Under Freq. Grid Under Fre.2	Grid Underfrequency	1. Adjust the protection limit In user define setting if it's allowed by electrical company.
Grid Over Imp.	Grid Impedance is too large	1. Adjust the protection limit In user define setting if it's allowed by electrical company.
No Grid	NO Grid Voltage	1. Check connection and grid switch. 2. Check grid voltage on the inverter terminals.
Grid Unbalance	Grid voltage is unbalanced	1. Restart inverter or contact installers.
Grid Freq. Spark	Grid frequency is sparking	1. Check whether Grid is abnormal. 2. Confirm connection of AC cable is normal. 3. Restart System and ensure whether the fault is existing.
Grid A Over Curr Grid B Over Curr Grid C Over Curr Phase Over Curr	Grid overcurrent	1. Restart inverter. 2. Change power board.
Ig Tracking Err	Grid current tracking fail	1. Restart inverter or contact installers.
Pv1 Over Volt PV2 Over Volt PV3 Over Volt PV4 Over Volt	DC Overvoltage	1. Reduce the module number in series.
Bus Over Volt	DC Bus overvoltage	1. Check inductor connection of inverter. 2. Check driver connection.
Vbus Unbalance	DC Bus is unbalanced voltage	1. Restart System and ensure whether the fault is existing.

7. Troubleshooting

Alarm Message	Failure description	Solution
Bus Under Volt	DC Bus is undervoltage	1. Restart System and ensure whether the fault is existing.
Vbus Unbalance2	DC Bus is unbalanced voltage 2	1. Restart System and ensure whether the fault is existing.
Pv1 Over Curr	Pv1 overcurrent	1. Restart inverter. 2. Identify the fault and remove the strings from fault MPPT. 3. Change power board.
Pv2 Over Curr	Pv2 overcurrent	
PV Input Disturb	DC input disturbs	1. Restart inverter. 2. Change power board.
PV Connect Err	DC polarity reverse fault	1. Check whether the polarity of PV cable has reversed connection.
PV Mid Iso	PV midpoint grounding fault	1. Check whether PV strings have trouble in insulation.
Pv1 Under Volt	Pv1 undervoltage	1. Check whether the DC cable is damaged. 2. Restart system and ensure whether the fault is existing.
Pv2 Under Volt	Pv2 undercurrent	1. Check whether the DC cable is damaged. 2. restart system and ensure whether the fault is existing.
Vbus Sample Err	Bus voltage sampling fault	1. Restart System and ensure whether the fault is existing.
Boost Over Curr	Boost overcurrent	1. Restart System and ensure whether the fault is existing.
Grid Disturb	Gird disturbing	1. Restart inverter. 2. Change power board.
Dsp Init Err	DSP initializing protection	1. Restart inverter or contact installers.
Module Over Temp System Over Temp	Over temperature protection	1. Check whether the environment around inverter is poor heat dissipation. 2. Confirm whether inverter installation is satisfied with requirements.
PV Iso Pro	PV isolation protection	1. Remove all DC inputs then restart and reconnect to inverter one by one. 2. Identify the faulty string and check the string isolation.
Ig Leak Pro1 Ig Leak Pro2 Ig Leak Pro3 Ig Leak Pro4	Leakage current protection	1. Check AC and DC connection. 2. Check the connections inside the inverter.
Input Relay Err	Realy fault	1. Restart inverter or contact installers.
Dsp B Fault	Communication fault between main DSP and slave DSP	1. Restart inverter or contact installers.
Ig DC Err	DC component fault	1. Restart inverter or contact installers.

7. Troubleshooting

Alarm Message	Failure description	Solution
12V Power Err	12V power undervoltage	1. Restart System and ensure whether the fault is existing.
Leak Sensor Err	Leakage self-detection fault	1. Restart System and ensure whether the fault is existing.
Under Temp	Undertemperature protection	1. Check the environment temperature around inverter. 2. Restart System and ensure whether the fault is existing.
AFCI Check Err	Arc self-detection fault	1. Check whether there is arc in PV connection and restart inverter.
AFCI Err	Arc protection	1. Restart inverter or contact installers.
Dsp Ram Err	Abnormal SRAM of DSP board	1. Restart inverter or contact installers.
Dsp Flash Err	Abnormal FLASH of DSP board	1. Restart inverter or contact installers.
Dsp PC Err	Abnormal PC pointer of DSP board	1. Restart inverter or contact installers.
Dsp Reg Err	Abnormal key register of DSP	1. Restart inverter or contact installers.
Grid Disturb2	Grid disturbing 02	1. Restart inverter. 2. Change power board.
Ig AD Err	Abnormal sampling of Grid current	1. Restart inverter or contact installers.
Output Short Circuit	IGBT overcurrent	1. Restart inverter. 2. Change power board.
Grid Resonance	Grid resonance	1. Restart inverter or contact installers.
Trans Ov-Ig	Transient overcurrent of AC side	1. Restart inverter. 2. Return to factory for repairing.
Hw Ov-Vbatt	Battery overvoltage and firmware fault	1. Restart the battery and contact battery manufacture for handling if the fault still exists.
LLC Over Curr	LLC firmware overcurrent	1. Restart inverter. 2. Return to factory for repairing.
Batt Over Volt	Battery overvoltage detection	1. Check whether battery breaker has tripped. 2. Check whether battery is damaged. 3. Check whether battery parameter settings are reasonable.
Batt Under Volt	Battery undervoltage detection	1. Check whether battery breaker has tripped. 2. Check whether battery is damaged. 3. Check whether battery parameter settings are reasonable.
No Battery	Battery module is not connected	1. Check whether the power line of battery is connected correctly. 2. Check whether the output voltage of battery is correct.

7. Troubleshooting

Alarm Message	Failure description	Solution
Backup Over Volt	Bypass overvoltage fault	1. Check whether Backup port wire is normal. 2. Restart system and confirm whether the fault is existing.
Dsp SelfCk Err	Abnormal self-detection of DSP	1. Restart inverter or contact installers.
Backup Over Curr	Bypass overcurrent fault	1. Restart inverter or contact installers.
Soft Start Err	Soft start failure	1. Restart inverter. 2. Return to factory for repairing.
Nbus Earthing Err	Impedance of N-Ground fault	1. Check whether the Grounding line is connected correctly.
Pbus Earthing Err	Impedance of L-Ground fault	1. Check whether the Grounding line is connected correctly.
Eeprom Init Err	Eeprom initializing fault	1. Restart inverter or contact installers.
Bus & Batt Over Volt	Overvoltage fault of Bus and battery	1. Restart System and ensure whether the fault is existing.
Ig AD Check Err	Abnormal self-detection of Grid current	1. Restart inverter or contact installers.
BMS Over Volt	Battery overvoltage of BMS	1. Restart the battery and contact battery manufacture for handling if the fault still exists.
BMS Under Volt	Battery undervoltage of BMS	
BMS Over Temp	Battery overtemperature of BMS	
BMS Under Temp	Battery undertemperature of BMS	
BMS Dischg. Ov_C	Discharge overcurrent of BMS	
BMS Chg. Ov_C	Charge overcurrent of BMS	
BMS Internal	External fault of BMS	
BMS Imbalance	Battery unbalance of BMS	
Fail safe	CT or Meter failure	
Meter Comm Fail	Meter communication fault	1. Check whether the communication cable of meter is damaged. 2. Confirm whether DRM cable connection is reliable. 3. Check whether meter is damaged.
Can Comm Fail	Battery communication fault	1. Check whether the communication cable of meter is damaged.

7. Troubleshooting

Alarm Message	Failure description	Solution
Dsp Comm Fail	DSP communication fault	1. Restart DSP to ensure whether the fault is existing.
BMS Alarm	Alarm fault of BMS	1. Restart the Battery to ensure whether the fault is existing.
Batt Name Err	Uncorrespondence of battery select	1. Confirm whether the selected battery brand in inverter is consistent with the actual battery.
Heatsink Ntc Err	External temperature sensor failure	1. Check whether temperature sensor has been installed in the Lead-acid battery. 2. Check whether the NTC cable is connected to the inverter correctly. 3. Restart system and confirm whether the fault still exists.
Buck Boost Ov_C	Buckboost overcurrent	1. Restart system and confirm whether the fault still exists.
AC Reverse	AC connected reversely	1. Check the cable polarity of AC side.
Lead-acid batt UTP	Undertemperature of lead-acid battery	1. Check whether the environment temperature of Lead-acid is in the normal range.
Lead-acid batt OTP	Overttemperature of lead-acid battery	1. Check whether the environment temperature of Lead-acid is in the normal range.

Table 7.1 Fault Message and Description



NOTE:

If the inverter displays any alarm message as listed in Table 7.1; please turn off the inverter and wait for 5 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 Inverter;
2. The distributor/dealer of Solis Inverter (if available);
3. Installation date.
4. The description of problem (i.e. the alarm message displayed on the LCD and the status of the LED status indicator lights. Other readings obtained from the Information submenu (refer to Section 3.10) 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.

8. Specifications

Model	S5-EO1P4K-48	S5-EO1P4K-48-P
Parallel Capability	No	Yes,max. 6 units
Battery		
Battery Type	Lithium/ Lead-acid	
Rated Battery Voltage	40-60V	
Max. Charge / Discharge Current	100A	
Inverter Output		
Rated Output Power(accuracy)	4kVA/4kW(1%)	
Max. Output Power(accuracy)	4kVA/4kW(1%)	
Rated Output Voltage	230V±1%	
Rated Frequency	50Hz/60Hz±0.1%	
Max. Output Current	20A	
Surge Capacity(transient load)	8kVA	
Output Voltage Waveform	Pure sine wave	
Transfer Time	10ms typical, 20ms Max	
THDv (@linear load)	<3%	
Peak Efficiency(PV-AC)	93%~95%	
Solar Charger		
Solar Chager Type	MPPT	
Recommended Max. PV Power	5kW	
Max. Input Voltage	500V	
MPPT Voltage Range	90-480V	
Full Load MPPT Voltage Range	171-480V	
MPPT Number / Max. Input Strings Number	1/2	
Max. Input Current per MPPT	26A*	
Max. Solar Charge Current	100A	
AC Charger		
Rated Input Voltage	230V	
Selectable Voltage Range	90-280V	
AC Frequncece Range	50Hz/60Hz(Auto sensing)	
Max. Input Current	26A	
Max. Input Power	6000W	
Max. AC Charge Current	60A	

8. Specifications

Model	S5-EO1P4K-48	S5-EO1P4K-48-P
Protection		
Output Over Voltage Protection	Yes	
Outout Over Current Protection	Yes	
Short Circuit Protection	Yes	
Surge Protection	Yes	
Temperature Compensation Protection	Yes	
General Data		
Dimension(H*W*D)	450*335*160mm	
Net Weight	14kg	
Relative Humidity	5% to 95% (Non-condensing)	
Operation Temperature Range	-10°C-60°C	
Storage Temperature Range	-25°C-60°C	
Ingress Protection	IP21	
Max. Operation Altitude	2000m	
Features		
DC Connection	Terminal Connectors	
AC Connection	Terminal Connectors	
Display	LCD	
Communication Interface	CAN, BMS, RS485, Dry-contact, Bluetooth, Optional: Wifi/GPRS	

8. Specifications

Model	S5-EO1P5K-48	S5-EO1P5K-48-P
Parallel Capability	No	Yes,max. 6 units
Battery		
Battery Type	Lithium/ Lead-acid	
Rated Battery Voltage	40-60V	
Max. Charge / Discharge Current	100A	
Inverter Output		
Rated Output Power(accuracy)	5kVA/5kW(1%)	
Max. Output Power(accuracy)	5kVA/5kW(1%)	
Rated Output Voltage	230V±1%	
Rated Frequency	50Hz/60Hz±0.1%	
Max. Output Current	25A	
Surge Capacity(transient load)	10kVA	
Output Voltage Waveform	Pure sine wave	
Transfer Time	10ms typical, 20ms Max	
THDv (@linear load)	<3%	
Peak Efficiency(PV-AC)	93%~95%	
Solar Charger		
Solar Chager Type	MPPT	
Recommended Max. PV Power	5.5kW	
Max. Input Voltage	500V	
MPPT Voltage Range	90-480V	
Full Load MPPT Voltage Range	215-480V	
MPPT Number / Max. Input Strings Number	1/2	
Max. Input Current per MPPT	26A*	
Max. Solar Charge Current	100A	
AC Charger		
Rated Input Voltage	230V	
Selectable Voltage Range	90-280V	
AC Frequncece Range	50Hz/60Hz(Auto sensing)	
Max. Input Current	30A	
Max. Input Power	7000W	
Max. AC Charge Current	80A	

8. Specifications

Model	S5-EO1P5K-48	S5-EO1P5K-48-P
Protection		
Output Over Voltage Protection	Yes	
Outout Over Current Protection	Yes	
Short Circuit Protection	Yes	
Surge Protection	Yes	
Temperature Compensation Protection	Yes	
General Data		
Dimension(H*W*D)	450*335*160mm	
Net Weight	14kg	
Relative Humidity	5% to 95% (Non-condensing)	
Operation Temperature Range	-10°C-60°C	
Storage Temperature Range	-25°C-60°C	
Ingress Protection	IP21	
Max. Operation Altitude	2000m	
Features		
DC Connection	Terminal Connectors	
AC Connection	Terminal Connectors	
Display	LCD	
Communication Interface	CAN, BMS, RS485, Dry-contact, Bluetooth, Optional: Wifi/GPRS	