



Solis 5G Series Export Power Manager

Installation and Operation Manual

Ver 1.1

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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 EPM, please find out the EPM S/N and contact us,
we will try to respond to your question ASAP.

Ginlong Technologies Co., Ltd.

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1. Introduction

1.1 Product Description

Solis 5G Series Export Power Manager can monitor and control the backflow power from the inverter to the grid thus providing export power control of inverters.

The export power manager is suitable for use with all solar PV grid tie inverters.

Model: Solis-EPM1-5G(for single phase system)

Solis-EPM3-5G-PRO(for three phase system).

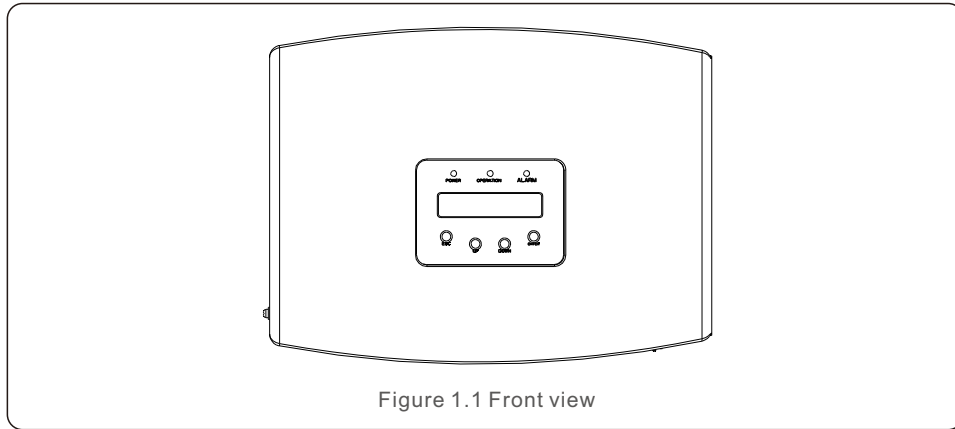


Figure 1.1 Front view

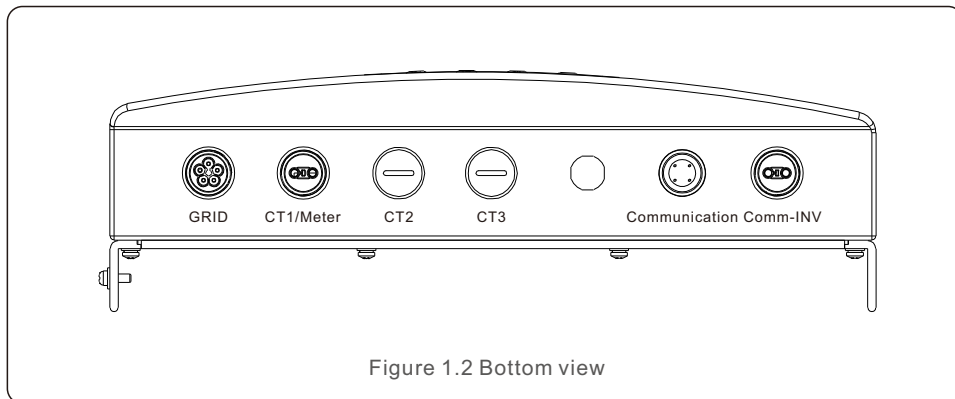


Figure 1.2 Bottom view



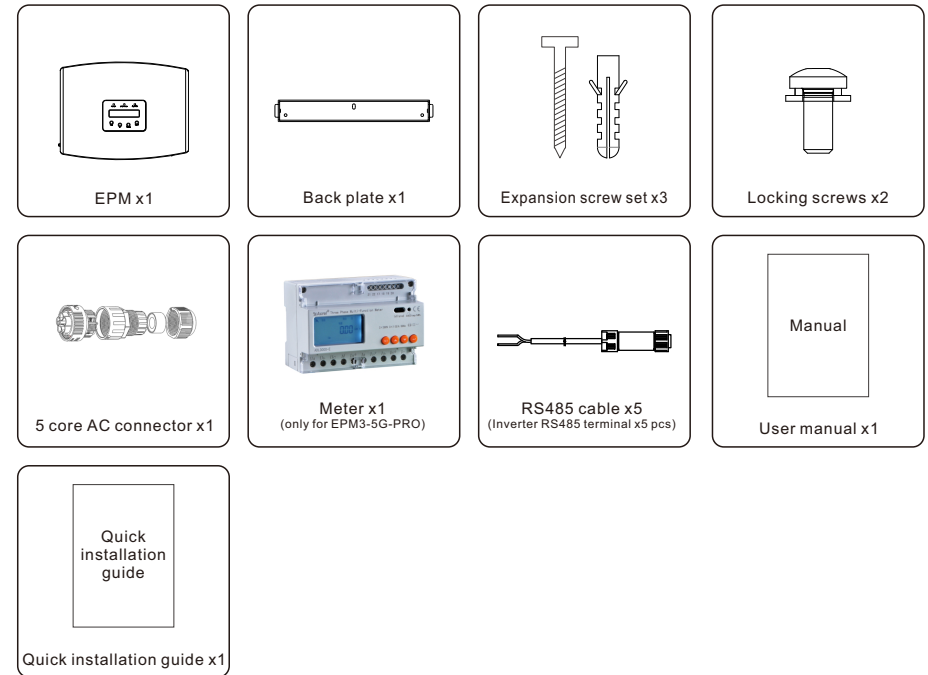
NOTE:

CT1 interface for EPM1-5G external CT connection.
CT1, CT2 and CT3 interfaces for EPM3-5G-PRO external CT connection.
Meter interface is for external meter connection.

1. Introduction

1.2 Packaging

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



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

2. Safety Instructions

2.1 Safety Symbols

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



WARNING:

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



NOTE:

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



CAUTION:

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



CAUTION:

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

2.2 General Safety Instructions



WARNING:

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



WARNING:

It is forbidden to insert or unplug the CT cable with power on. If accidentally disconnected the CT cable, please turn off the main AC switch and wait for 5 mins before reconnect the cable.



CAUTION:

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



CAUTION:

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

2. Safety Instructions

2.3 Notice For Use

The Export Power Manager has been constructed according to the applicable safety and technical guidelines.

Use the Export Device in installations that meet the following specification ONLY:

1. Permanent installation is required
2. The electrical installation must all the applicable regulations and standards.
3. The Export Power Manager must be installed according to the instructions stated in this manual.
4. The Export Power Manager must be installed according to correct technical specification.
5. To install the Export Device you should notice the phase of sampling voltage and the direction of sampling current, then you can connect sampling wires and CT (current transformer).

3. Overview

3.1 Front Panel Display

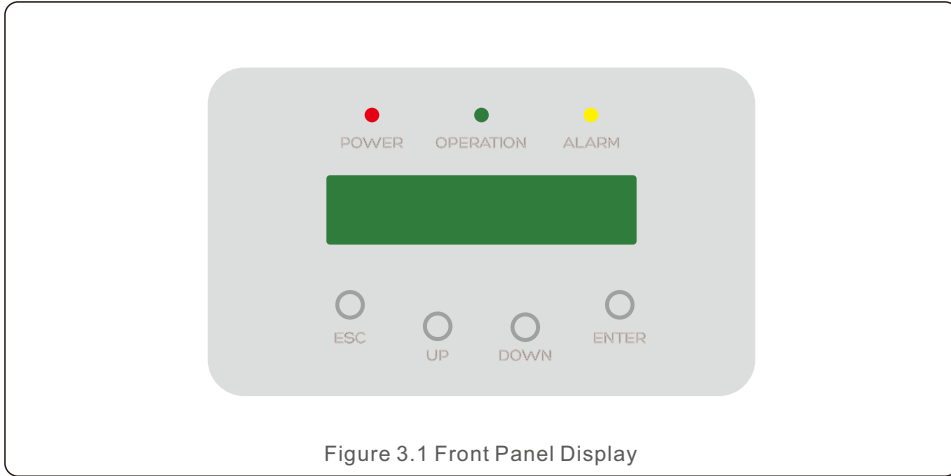


Figure 3.1 Front Panel Display

3.2 LED Status Indicator Lights

	Light	Status	Description
①	● POWER	ON	Export Device power on
		OFF	Export Device power off
②	● OPERATION	ON	Communication with inverter
		OFF	No communication with inverter
③	● ALARM	ON	Alarm
		OFF	No alarm

Table 3.1 Status Indicator Lights

3.3 Keypad

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

- Scrolling through the displayed options (the UP and DOWN keys);
- Access to modify the adjustable settings (the ESC and ENTER keys).

3.4 LCD

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

- Export Power Manager operation status and data;
- Service messages for operator;

4. Installation

4.1 Select a Location for the EPM

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

- The temperature of the EPM could up to 75°C.
- The EPM is designed to work in extreme temperature range is from -25°C to 60°C.
- The EPM should be kept minimum 300mm clearance from the other device.
- The EPM cannot be placed in direct sunlight.

4.2 Mounting the EPM

Please attach mounting plate on to wall horizontally where to install the product. Then mark A , B and C to fix mounting plate.(see Figure 4.1)

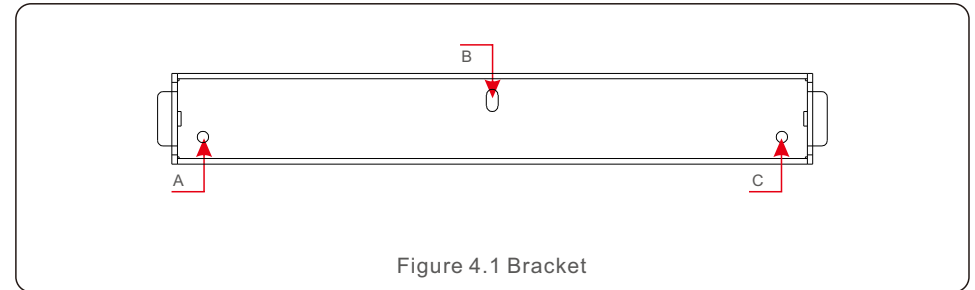


Figure 4.1 Bracket

Drill three $\phi 8$ holes and insert expandable shell into the holes which make the bracket alignment. After that fix the bracket on the wall.(see Figure 4.2)

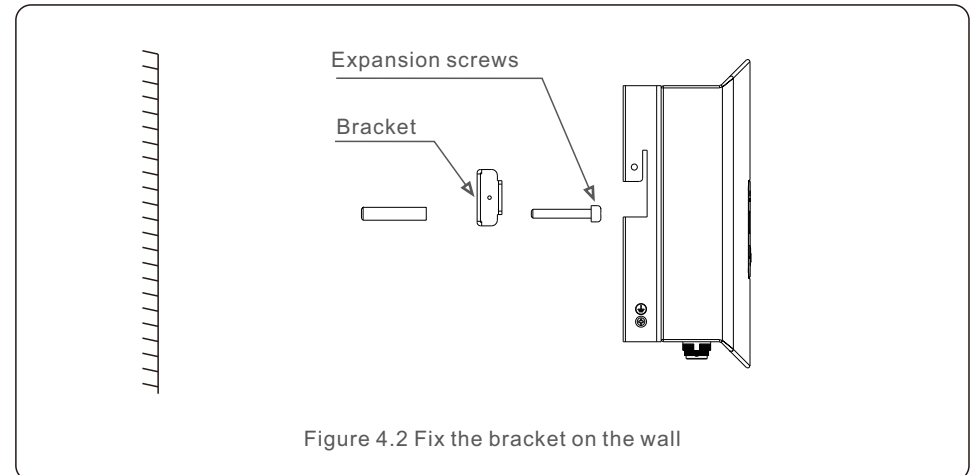
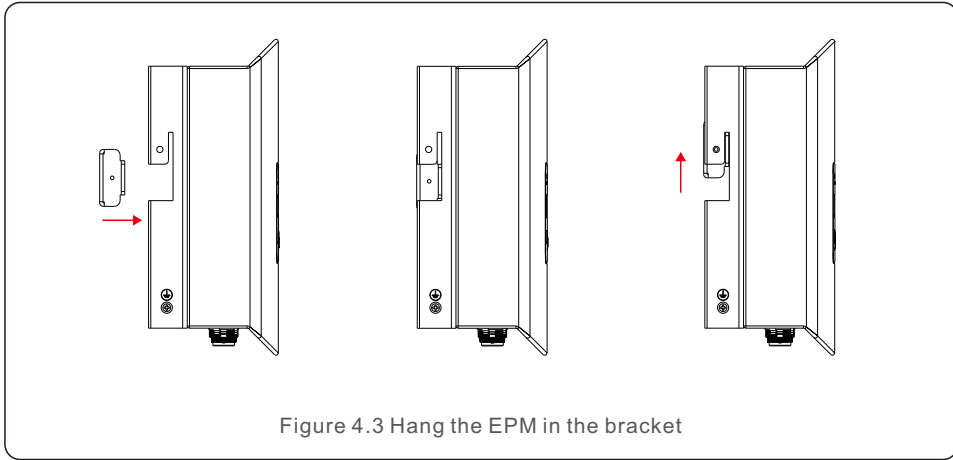


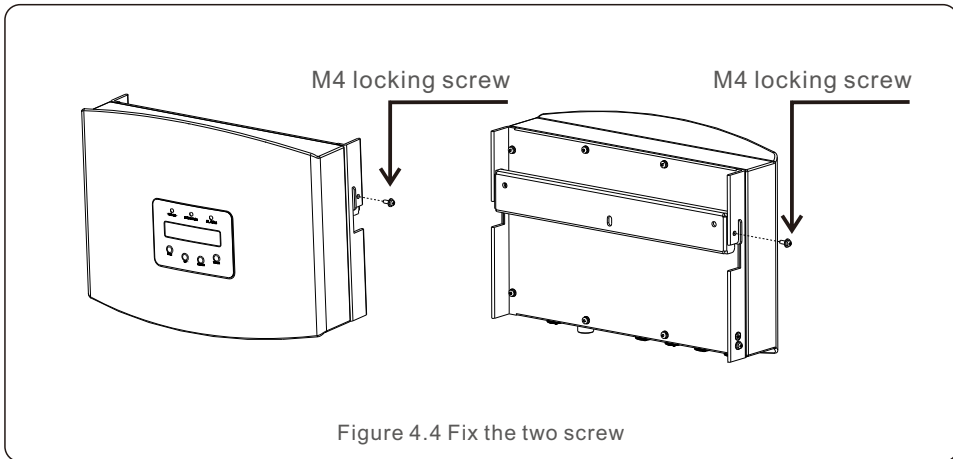
Figure 4.2 Fix the bracket on the wall

4. Installation

Hang the EPM in the bracket by the steps below .(see Figure 4.3)



Fix the two screw at the side of bracket.(see Figure 4.4)



4. Installation

4.3 Electrical Connections

The EPM is designed for electrical connection without removing the cover.
The meaning of the symbols located at bottom of the EPM is listed in Table 4.1.

Grid	AC voltage sampling terminal
Meter	Connect to Meter RS485 interface
Comm_INV	Connect to solis inverters
Communication	Monitoring device or Upgrade Stick

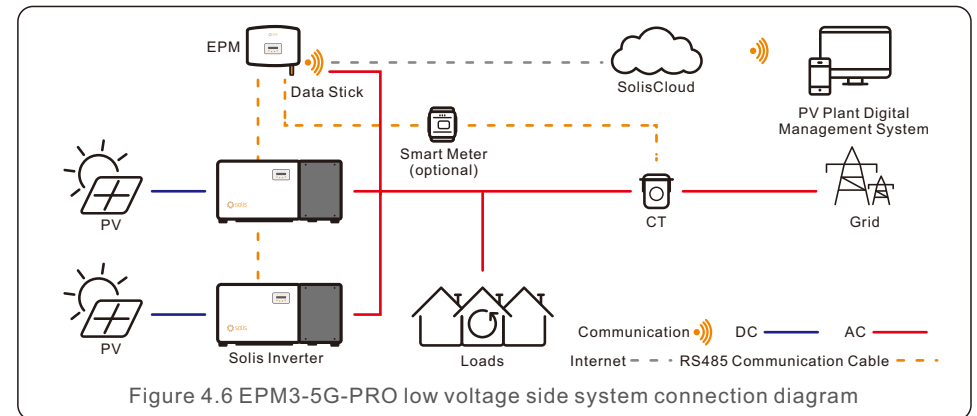
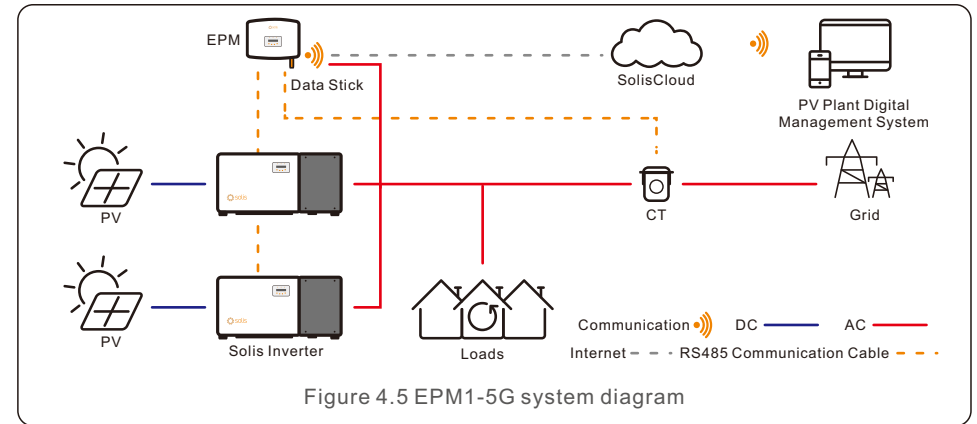
Table 4.1 The meaning of the symbols located at bottom of the EPM



NOTE:

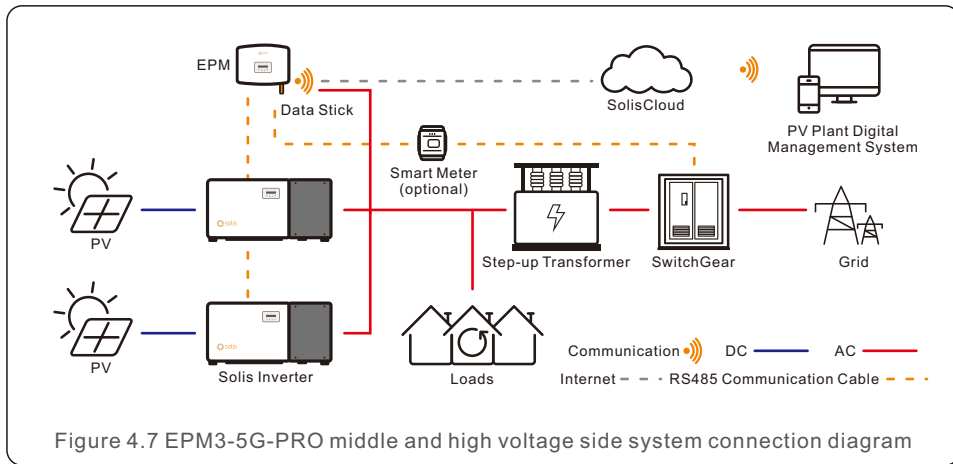
A 5A breaker is recommended between the EPM and AC power supply.

System connection diagram is as follows:



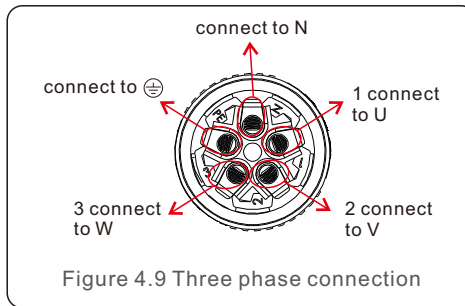
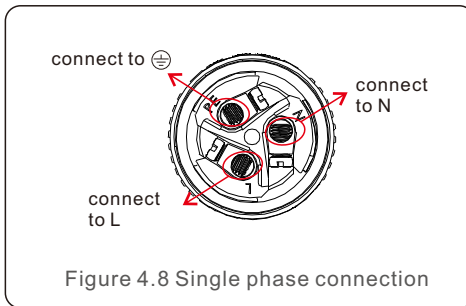
4. Installation

4. Installation

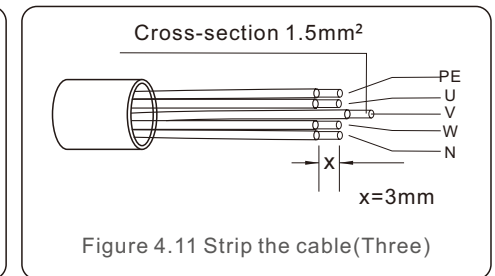
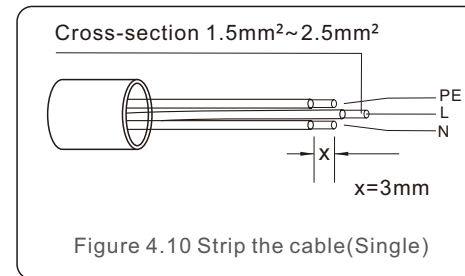


4.3.1 Make the Grid input cable

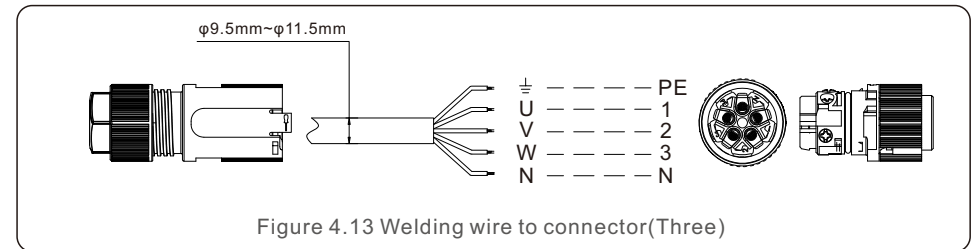
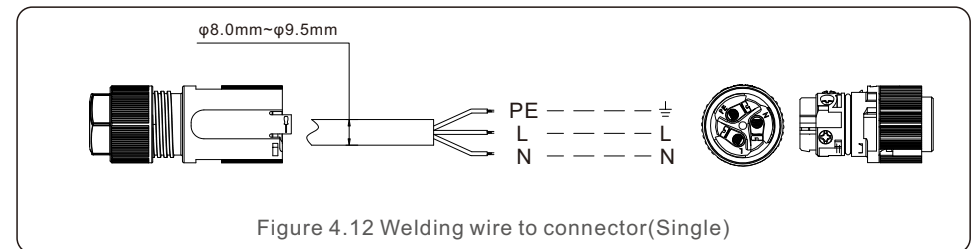
- Measure the distance from EPM to power distribution box. And find proper cable for grid input. 3 core cable for Solis-EPM1-5G and 5 core cable for Solis EPM3-5G-PRO.
- For single phase inverter installation connect L, N, PE to pin L, N, ⊕ (see figure 4.8).
- For three phase inverter installation connect U, V, W to pin1, 2,3 and connect N to pin4, connect PE to ⊕ (see figure 4.9).



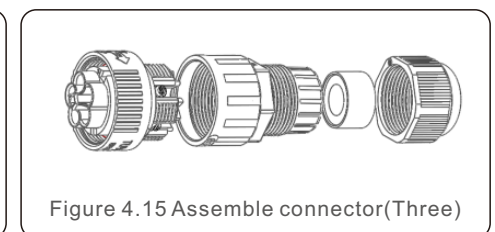
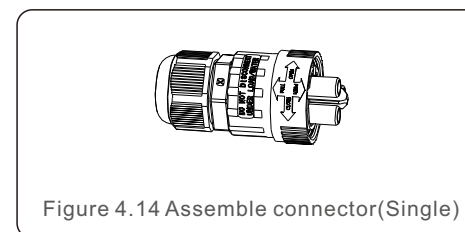
d. Strip the end of cable to 3mm.



e. Through the cable to the washer and use a suitable screw driver to fix the wire to the connector. (Torque 10N*M is recommended)



f. Assemble the connector. (Torque 10N*M is recommended)



4. Installation

4. Installation

4.3.2 Make RS485 cable(COMM-INV port)

- a. Refer to figure 4.16, the RS485 terminals for inverter and EPM are already assembled.
Tips:RS485 cable: preferred 0.5mm², max 1.0mm².

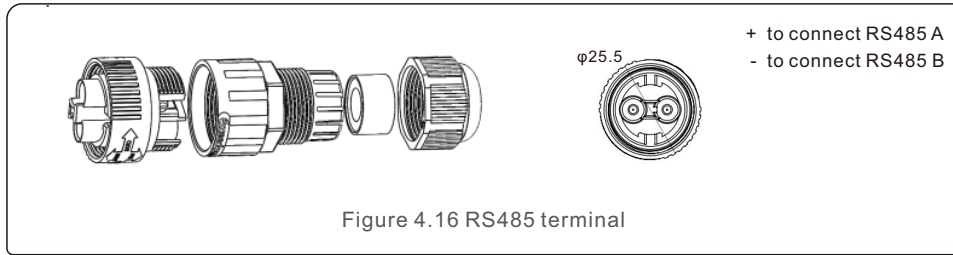


Figure 4.16 RS485 terminal

- b. Refer to figure 4.16, connect communication cable between inverter with EPM, and then measure the distance from EPM to inverter. Use proper cable for RS485 connection. (0.5mm²)

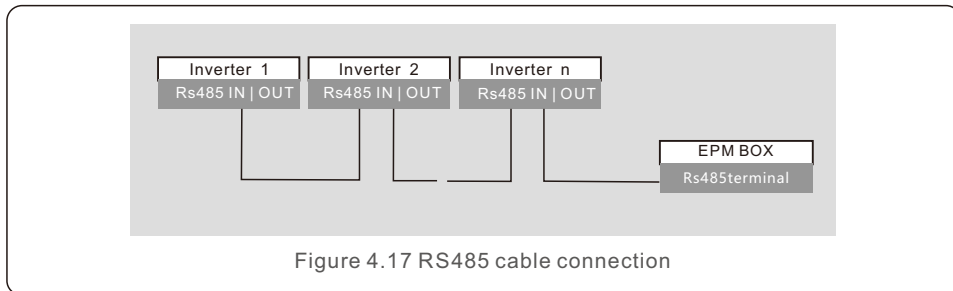


Figure 4.17 RS485 cable connection

- c. Follow step1 to assemble 2 connectors to each end of cable.

4.3.3 Meter connection (only for EPM3-5G-PRO)

Connection between EPM and meter

EPM3-5G-PRO needs to connect to the RS485 communication of the meter to read and display the power, voltage, and current data on the grid side.

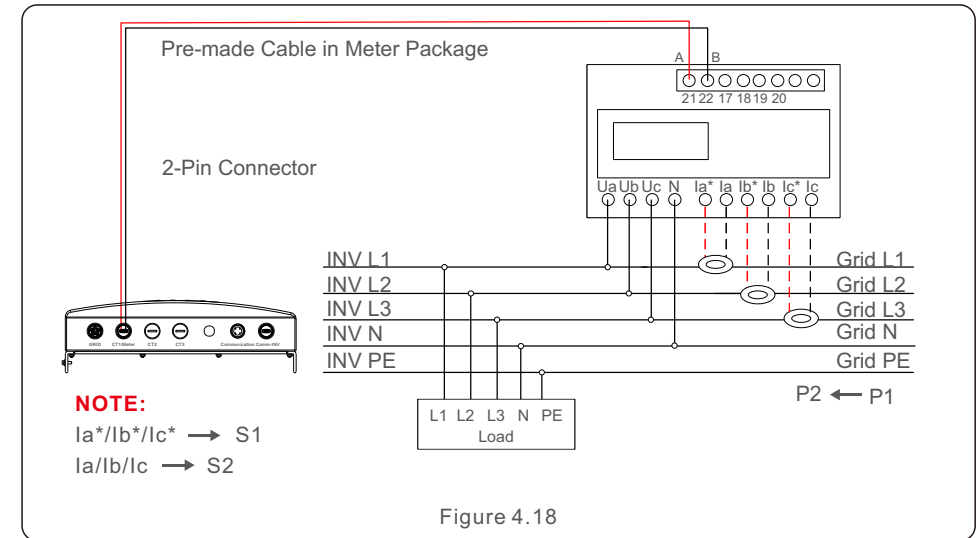


Figure 4.18

Wiring and installation of meter

1. Specification of electricity meter
 - 1.1 Dimension Drawings

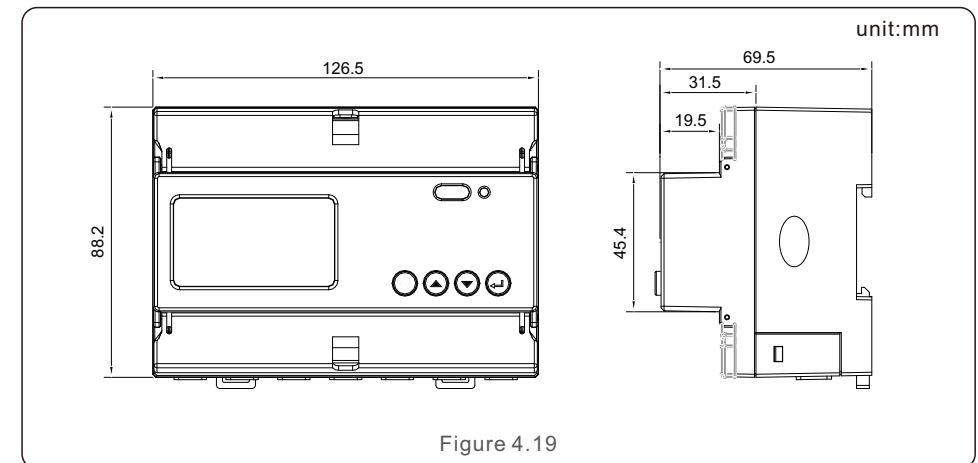


Figure 4.19

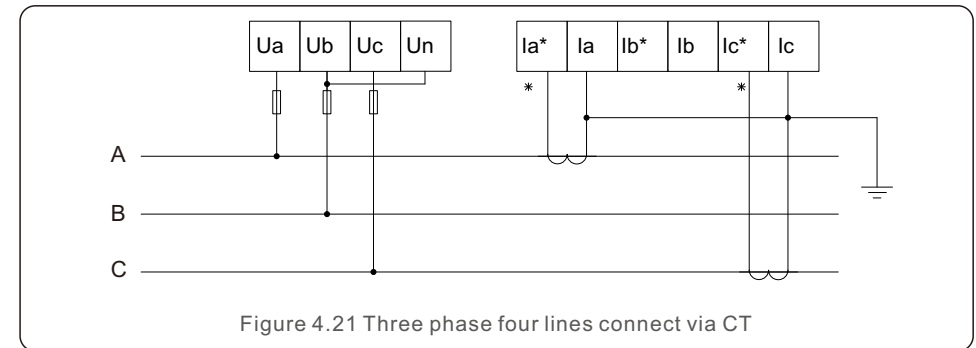
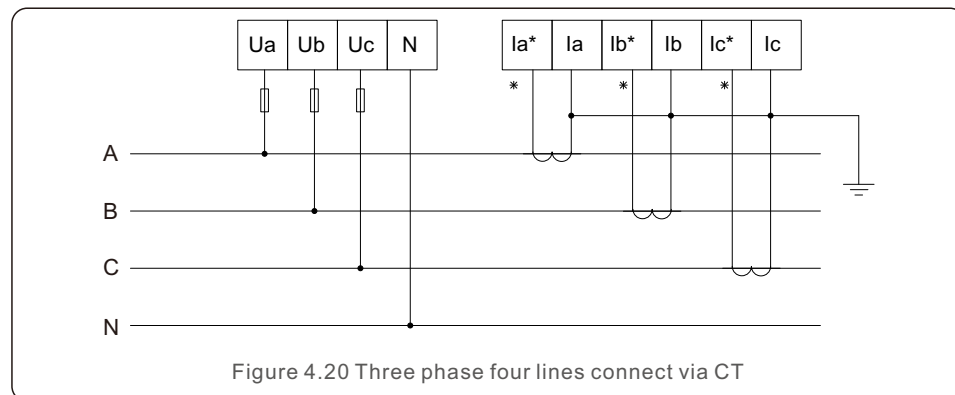
4. Installation

4. Installation

1.2 Meter specification

Specification		3 phase 3 wires, 3 phase 4 wires
Voltage	Reference voltage	3-110V, 3-400V, 3-480V, 3-66/115V, 3-230/400V, 3-277/480V
	Input voltage fluctuation	0-120%
	Consumption	<10VA(Single phase)
	Impedance	>2MΩ
	Accuracy class	Error±0.2%
Current	Input current	3-1(6)A
	Consumption	<1VA(Single phase rated current)
	Accuracy class	Error±0.2%
Power	Active, reactive, apparent power, error±0.5%	
Frequency	45~65Hz, Error±0.2%	
Energy	Active energy(Accuracy class:0.5, 1), reactive energy(Accuracy class 2)	
Energy pulse output	1 active optocoupler output, Resistive load(Voltage is not more than 24V, current is not more than 5mA)	
Switching input	1 optocoupler input,Maximum allowed voltage: ~ 220V, OVC III	
Width of pulse	80±20ms	
Pulse constant	400imp/kWh	
Interface and communication	RS485 : Modbus RTU	
Range of communication address	Modbus RTU:1~ 247;	
Baud rate	1200bps~19200bps	
Working temperature	-25°C~+55°C	
Relative humidity	≤95%(No condensation)	
Altitude	≤ 2000m	
Installation environment	Indoor use	
Pollution degree	Class 3	

1.3 Wiring and Installing



4.3.4 Connect and fix the CT

To detect the backflow power, the CTs need to be installed at the PCC (Point of Common Coupling), instead of the load branch circuit.



NOTE:

For three phase system, CT must be installed on U, V and W with correct sequence, otherwise EPM can not detect the correct data.
“The CT cable outer diameter is 6.5mm-7.5mm, cross-sectional area 1.5mm²”.

- Switch off the main switch, disconnect the line cables.
- Insert the cables through the CT, make sure the P1 on CT is towards grid and P2 is towards the inverter.
- Reconnect the line cables.



NOTE:

If the CT is installed in the wrong direction, the EPM can't work normally.



NOTE:

The CT must be grounded on the secondary side.

4. Installation

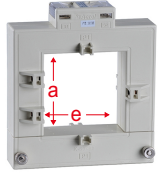
Specification	Dimensions(mm) W x H x D	Hole size(mm) a x e	CT Ratio	AKH-0.66K
CT-30×20-100A	90 x 114 x 40	22 x 32	100:5A	
CT-60×40-300A	114 x 140 x 36	42 x 62	300:5A	
CT-80×40-600A	122 x 162 x 40	42 x 82	600:5A	
CT-80×40-1000A	122 x 162 x 40	42 x 82	1000:5A	
CT-160×80-2000A	184 x 254 x 52	82 x 162	2000:5A	
CT-160×80-3000A	184 x 254 x 52	82 x 162	3000:5A	

Table 4.2 CT Ratio



NOTE:

Solis recommends customers to purchase suitable current transformers from local suppliers according to the max possible current in different projects. As long as the secondary current is 5A, no matter what the primary current is, it will not affect the warranty of the EPM devices and inverters. Solis can also provide above current transformers as an optional accessory. Customers can contact Solis sales rep to place the order based on their project requirements.

4.3.5 Muti inverter connection

Please follow the previous system diagrams to connect multiple inverters. EPM can control max 60 inverters (Different models are allowed). The system can ONLY has one grid connection point.

4.3.6 Monitoring

Inverters that connected to EPM can be monitored by Ginlong Monitoring device. (WiFi/Cellular/LAN stick)



NOTE:

When inverter connected to EPM, no other monitoring device is allowed to be connected to the inverter.

5. Commission and decommission

5.1 Commissioning

1. Switch off all the AC breakers and DC breakers in the system.
2. Complete AC and DC wirings for inverters by following inverter manuals.
3. Connect AC cables to the Grid terminal on the EPM.
4. Install the CTs to the grid connection side with correct direction as mentioned in EPM manual.
5. Connect RS485 communication cables between inverters and EPM Comm-INV port.
6. Switch on the DC breakers for Inverters and set the inverters to "OFF" in LCD and Set "External EPM Set"- "5G EPM" -"Failsafe: ON". Then assign slave addresses accordingly in inverters.
7. Switch on all the AC breakers for inverters and EPM
8. Set EPM settings including "Inverter Qty Set", "Backflow Power", "Set CT Ratio" and "Set Capacity" based on the actual system configuration.
9. Turn on some loads and check the power flow data on EPM. Negative power indicates taking power from grid and CT direction is correct. Positive power indicates export power to grid and the CT direction is reversed (Change the CT direction accordingly).
10. If the CT direction is confirmed correct and EPM is not reporting any alarms, set all inverters to ON in inverter LCD.
11. Commissioning Completed.

5.2 Decommissioning

In order to avoid the backflow power to grid, please stop the inverter before stop the EPM.

1. Turn off the inverter output AC breaker.
2. Turn off inverter input DC breaker or pull out PV cable to stop inverter.
3. Turn off the grid input breaker of EPM.
4. Disconnect all cable of EPM, disassemble EPM after 5mins.

6. Operation

During normal operation, the display alternately shows the power of grid side and the operation Status .Screens can also be scrolled manually by pressing the UP and DOWN keys. Press the ENTER key to access to the Main Menu.

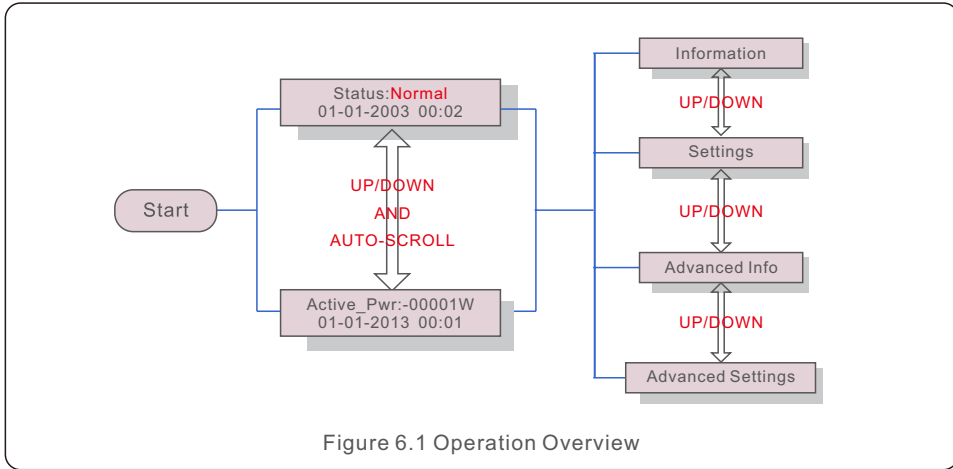


Figure 6.1 Operation Overview

There are 4 status:

Normal: The system works normally

RS485 AllFail: EPM has lost communication with ALL inverters

CT-Failsafe: Current Sensor failed

RS485Fail: EPM has lost communication with one or some of the inverters

6.1 Main Menu

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

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

6.2 Information

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

6. Operation

Display	Description
VacA_Grid: 000.0V IacA_Grid: 000.0A	Vac_Grid: Grid voltage and current.
VacB_Grid: 000.0V IacB_Grid: 000.0A	
VacC_Grid: 000.0V IacC_Grid: 000.0A	
Load_Pwr: 0000.0KW Total_PINV: 0000.0KW	Load_Pwr: Load Power. Total_PINV: Total output power of inverters.
Export Limited: 000% Frequency: 00.00Hz	Export Limited: Inverter output power percentage. Frequency: Grid frequency.
Active_APwr: +00000W Active_BPwr: +00000W	Active_Pwr: Power of the power grid.
Active_CPwr: +00000W Active_TPwr: +00000W	Active_Pwr: Power of the power grid. Active_TPwr: :Power flows through CTs.
Inverter SN: XXXXXXXXXXXXXXXX	Series number of the inverter.

Table 6.1 Information list

6.2.1 Lock screen

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

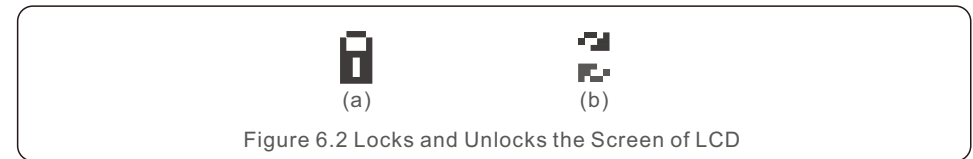


Figure 6.2 Locks and Unlocks the Screen of LCD

6. Operation

6.3 Settings

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

- 1.Set Time
- 2.Set Address

6.3.1 Set Time

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



```
NEXT=<ENT> OK=<ESC>
01-01-2016 16:37
```

Figure 6.3 Set Time

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

6.3.2 Set Address

This function is used to set the address when multi inverters are connected to three monitor. The address number can be assigned from "01" to "99"(see Figure 6.4). The default address number is "01".



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

Figure 6.4 Set Address

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

6. Operation

6.4 Advanced Info - Technicians Only



NOTE:

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

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



```
YES=<ENT> NO=<ESC>
Password:0010
```

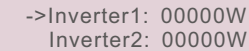
Figure 6.5 Enter password

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

- 1. Inverter Power
- 2. CT Connect Status
- 3. Version
- 4. Model Inverter
- 5. Communication Data
- 6. Energy Info

6.4.1 Inverter Power

The screen shows the information of Inverter Power for each inverter which connected to the EPM.

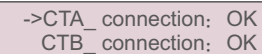


```
->Inverter1: 00000W
Inverter2: 00000W
```

Figure 6.6 Inverter Power

6.4.2 CT Connect Status

The position of three-phase CT installation and direction of current detection refer to 4.3, P1 on CT is towards grid and P2 is towards the inverter, the CT connect status only works when you switch to "grid off" mode and when the load is large enough for EPM to detect an import, then EPM detection will display OK, as shown in figure 6.7. Otherwise, the status will display "NG" which indicates wrong CT direction.



```
->CTA_connection: OK
CTB_connection: OK
```

Figure 6.7 CT Connect Status

6. Operation

6.4.3 Version

The screen shows the model version and the software version of the Inverter.

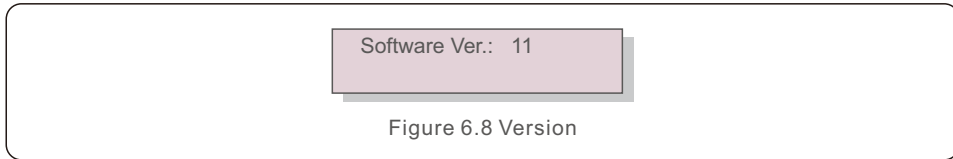


Figure 6.8 Version

6.4.4 Model Inverter

The screen shows the Rated power of inverters that are connected to the EPM.

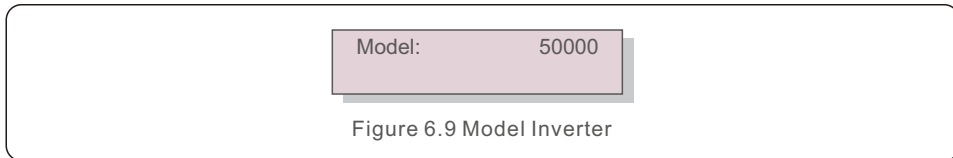


Figure 6.9 Model Inverter

6.4.5 Communication Data

The screen shows the internal communication data of the Inverter, for service technicians only.

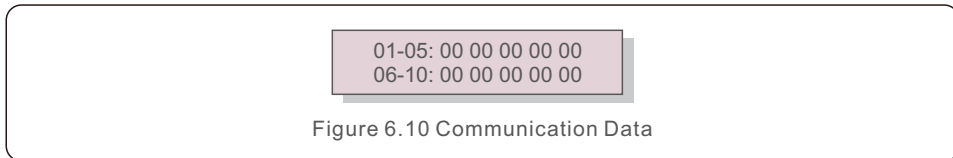


Figure 6.10 Communication Data

6.4.6 Energy Info

This shows the energy records on the EPM.

1.Load Total E. 2.INV Send Total E. 3.Send Grid Total E. 4.Get Grid Total E.

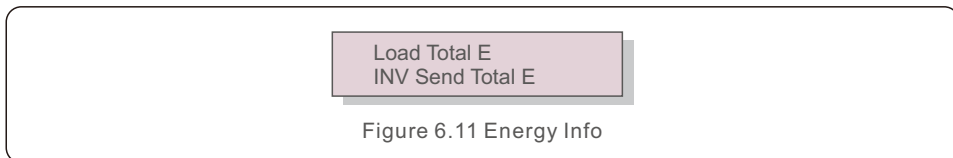


Figure 6.11 Energy Info

6. Operation

6.5 Advanced Settings - Technicians Only



NOTE:

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

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

1. Inverter Qty. Set
2. Backflow Power
3. Set CT Ratio
4. FailSafe ON/OFF
5. Backflow Work Mode
6. PELD ON/OFF
7. Transmit ON/OFF
8. System Update
9. Reset Password
10. Restore settings
11. Set Capacity

6.5.1 Inverter Qty. Set

This submenu is used for setting inverter number.

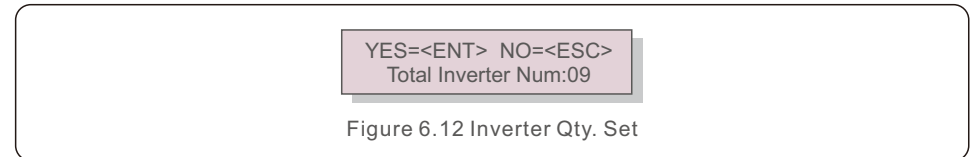


Figure 6.12 Inverter Qty. Set

Enter the screen ,it shows all the number of inverters which conected to the EPM.

The number(01~99) can be select by pressing the UP/ DOWN keys.

Press the ENTER key to set the inverter number ESC key to return to the previous menu.

6.5.2 Backflow Power

This submenu is used for setting allowed power that inverter can generate to grid.

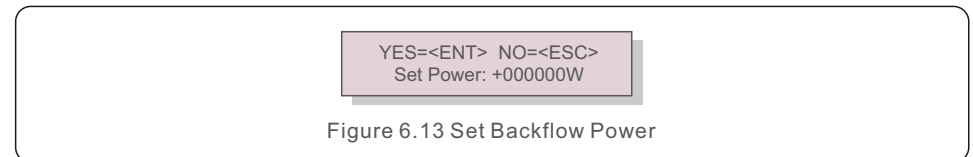


Figure 6.13 Set Backflow Power

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

Then press UP/DOWN keys to change the number(the times of 100).

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

6. Operation

6.5.3 Set CT Ratio

This is used to set the CT ratio for the current transformer.
 Setting range is from 20:1 to 9900:1 with 10:1 interval.
 For example, if 1000:5A current transformer is used, please set the ratio as 200:1

YES=<ENT> NO=<ESC>
 Set Para:0030:1

Figure 6.14 Set Meter CT

Press the UP/DOWN keys to set data. Press the ENTER key to set CT Para.
 Press the ESC key to save the settings and return to the previous menu.

6.5.4 FailSafe ON/OFF

The submenu is used for setting fail Safe ON/OFF.
 Fail Safe indicates the communication status between EPM and inverters.
 The default setting is "Run". DON'T change it without technicians.

YES=<ENT> NO=<ESC>
 FailSafe: RUN

Figure 6.15 FailSafe ON/OFF

When the Fail Safe is set as "Run". If some of inverters lost communication with EPM , EPM's LCD screen will display "RS485 fail"; if all inverters lost communication with EPM, then the LCD screen of EPM will display "fail safe". And The inverter stops output power.

When the Fail Safe is set as "Stop", communication lost between EPM and inverters will not affect the output of inverters.

6.5.5 Backflow Work Mode

This submenu is used for set backflow work mode: 01, 02. "01" is the default mode.

YES=<ENT> NO=<ESC>
 Mode:01

Figure 6.16 Backflow Work Mode

6. Operation

Mode "01", As shown in the figure 6.17, the average limiting mode, the output power of each phase is the average of the three-phase load power, and it is more than the phase of the lowest power in three phases.

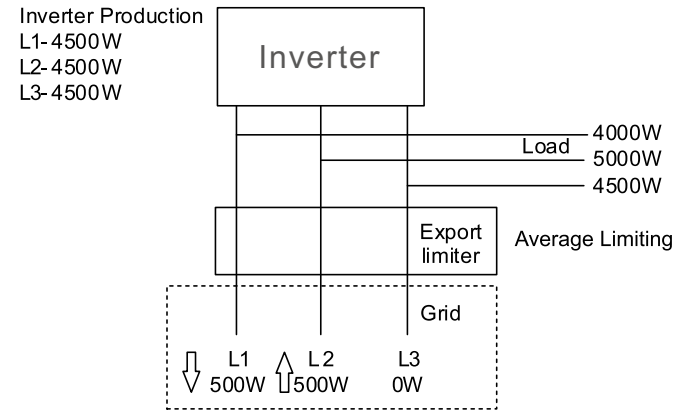


Figure 6.17

Mode "02", As shown in the figure 6.18 the per phase limiting mode, the inverter only generate the power that equals to one of three-phase load power that is the lowest load power of a certain phase.

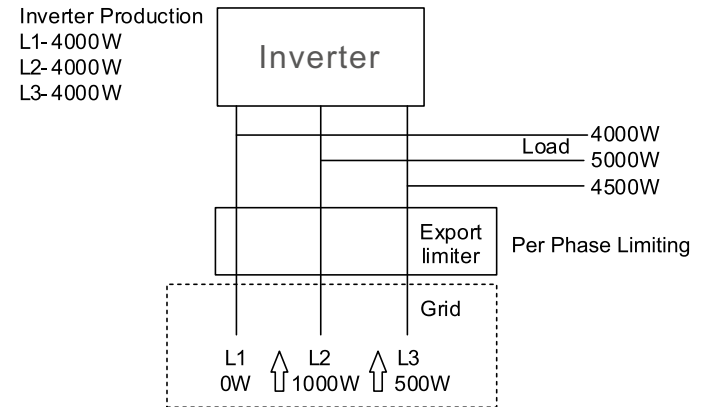


Figure 6.18

6. Operation

6.5.6 Transmit ON/OFF

This is a setting for Solis technician use only.
Please keep the switch as OFF for normal use.

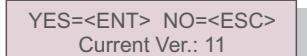


YES=<ENT> NO=<ESC>
Switch:OFF

Figure 6.19 Transmit ON/OFF

6.5.7 System Update

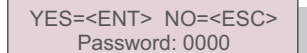
The upgrade of EPM's system can realize by external wire.
Please consult our technical engineer for more details.



YES=<ENT> NO=<ESC>
Current Ver.: 11

Figure 6.20 System Update

6.5.8 Reset Password



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

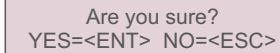
Figure 6.21 Reset Password

Firstly, input the origin password and press Enter button;
Second, input the new password, press Enter button to save it. UP/DOWN button can be used to move the cursor.
Third, Press ESC button to get to the previous page.

6. Operation

6.5.9 Restore Settings

When Restore Settings is selected, the LCD will display as shown in Figure 6.22.




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

Figure 6.22 Restore Settings

Press the ENTER key to execute the setting.
Press the ESC key to return to the previous menu.

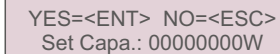
6.5.10 Set Capacity

This item is used to set the sum of the capacities of the connected inverters.



->Capacity Setting

Figure 6.23



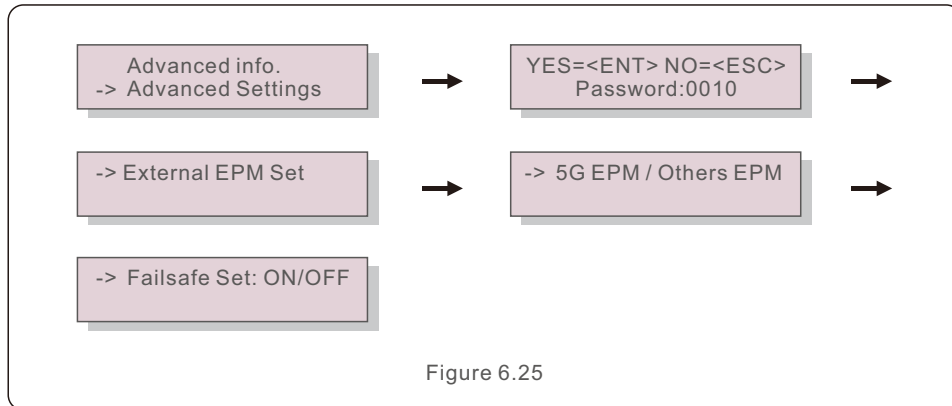
YES=<ENT> NO=<ESC>
Set Capa.: 00000000W

Figure 6.24

6. Operation

6.6 Inverter Set

EPM has two versions: EPM-2G, EPM-5G. While inverter is working with EPM, please be reminded to change the inverters settings as below:



NOTE:

If you are using EPM-5G, please choose “5G EPM”, and set it “Failsafe Set: ON”, if you are using EPM-2G. Please choose “Others EPM”, and set it “Failsafe Set: ON”, only one setting needs to be set.



NOTE:

If “5G EPM” is chosen, for inverters produced before Nov 30th 2019 (SN: XXXXXX19B30XXXX) need to update the firmware, please contact with Solis local service center or service@ginlong.com for instructions on firmware update.

7. Trouble Shooting

The EPM is designed in accordance with the most important international safety and EMC requirements. Before delivering to the customer, the EPM has been subjected to several tests to ensure its optimal operation and reliability.

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

The EPM can show Alarm it self or alarm from inverter. There are 3 alarm can be showed on LCD:

1. Backflow

There are backflow current to grid, customer need to stop inverter. and check the connections for the RS485 cable between EPM and inverter.

2. INV. fault

There are fault alarm in inverter, need to check inverter status.

3. Fail safe

RS485 AllFail: EPM has lost communication with ALL inverters

CT-Failsafe: Current Sensor failed

RS485Fail: EPM has lost communication with one or some of the inverters

8. Specifications

Model	Solis-EPM1-5G
AC Input	
Rated voltage	1/N/PE, 230V
Input voltage range	100V-300V (L-N)
Voltage fluctuation	±20%
Maximum input current	0.5A
Input frequency range	45-65Hz
Communication	
Inverter communication	Modbus
Communication with inverter	RS485 (Wired)
Maximum communication distance	1000m
Maximum communication inverter numbers	10 pcs
Monitoring	WiFi/4G/LAN Stick (Optional)
General data	
Installation environment	Indoor
Ambient temperature	-25°C~+60°C
Relative humidity	5%~95%
Max. operation altitude	2000m
Ingress protection	IP65
Pollution degree	PD 2(Inside), PD3(Outside)
Overvoltage category	III
Self power consumption	< 6W
Dimensions(W*H*D)	364mm*276mm*114mm
Weight	2.1kg (without CT, Meter)
AC connection	Quick connection terminal
Display	LCD, 2*20Z
Smart meter	No
CT connection	Plug terminal
CT specification	Optional (Secondary current is 5A)
Power control accuracy	1%
Features	
Failsafe function	Yes
Remote upgraded	Yes
PF adjustment	No
Control time	5s
Warranty	2 years

8. Specifications

Model	Solis-EPM3-5G-PRO
AC Input	
Rated voltage	3/N/PE, 230V/400V
Input voltage range	175V-519V (L-L)
Voltage fluctuation	±20%
Maximum input current	0.5A
Input frequency range	45-65Hz
Communication	
Inverter communication	Modbus
Communication with inverter	RS485 (Wired)
Maximum communication distance	1000m
Maximum communication inverter numbers	60 pcs
Monitoring	WiFi/4G/LAN Stick (Optional)
General data	
Installation environment	Indoor
Ambient temperature	-25°C~+60°C
Relative humidity	5%~95%
Max. operation altitude	2000m
Ingress protection	IP65
Pollution degree	PD 2(Inside), PD3(Outside)
Overvoltage category	III
Self power consumption	< 6W
Dimensions(W*H*D)	364mm*276mm*114mm
Weight	2.1kg (without CT, Meter)
AC connection	Quick connection terminal
Display	LCD, 2*20Z
Smart meter	Yes
CT connection	Plug terminal
CT specification	Optional (Secondary current is 5A)
Power control accuracy	1%
Features	
Failsafe function	Yes
Remote upgraded	Yes
PF adjustment	Yes
Control time	5s
Warranty	2 years