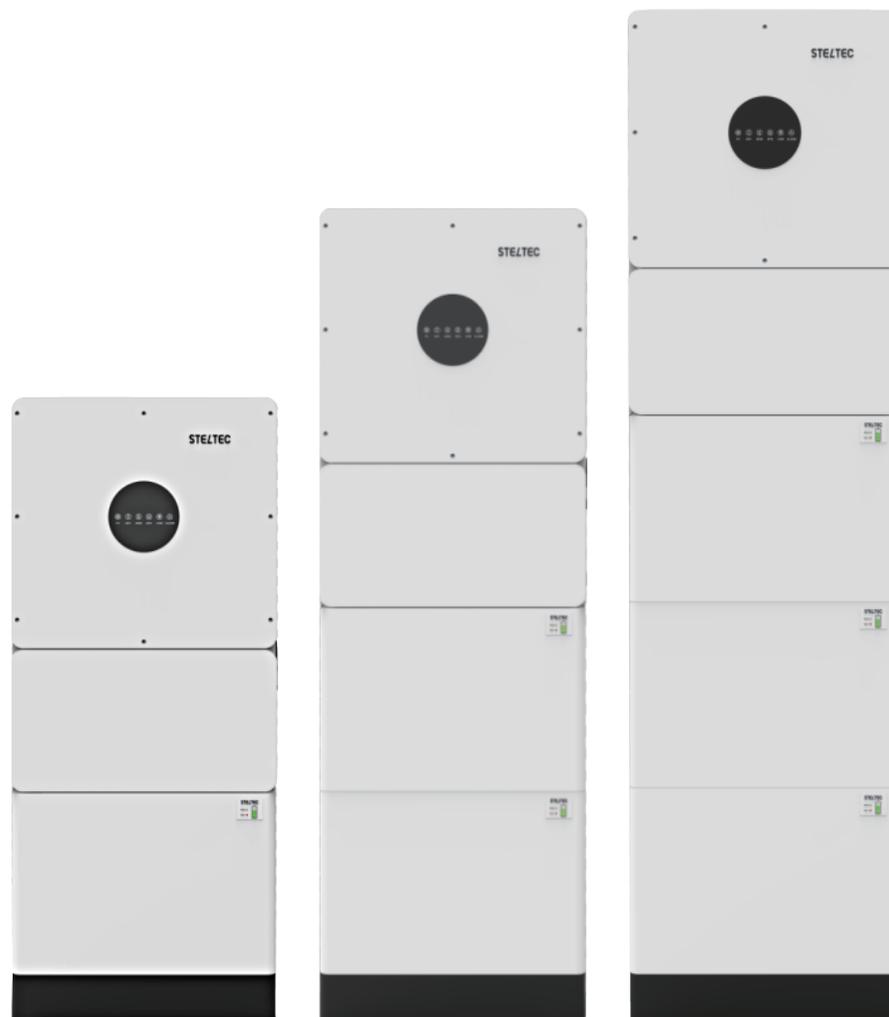




BPE[®]

BADGER POWER ELECTRONICS

www.BadgerPowerElectronics.com



Shanghai Steltec Energy Technology CO.,LTD

Address:Room J4986, Floor1, NO.185, Moyu Road , Anting Town,

Jiading District, Shanghai China

www.steltec-ess.com

V18.0 03/07/2023

BPE PowerDepot A1 Installation Guide

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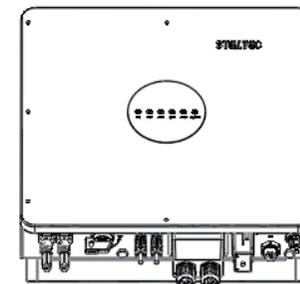
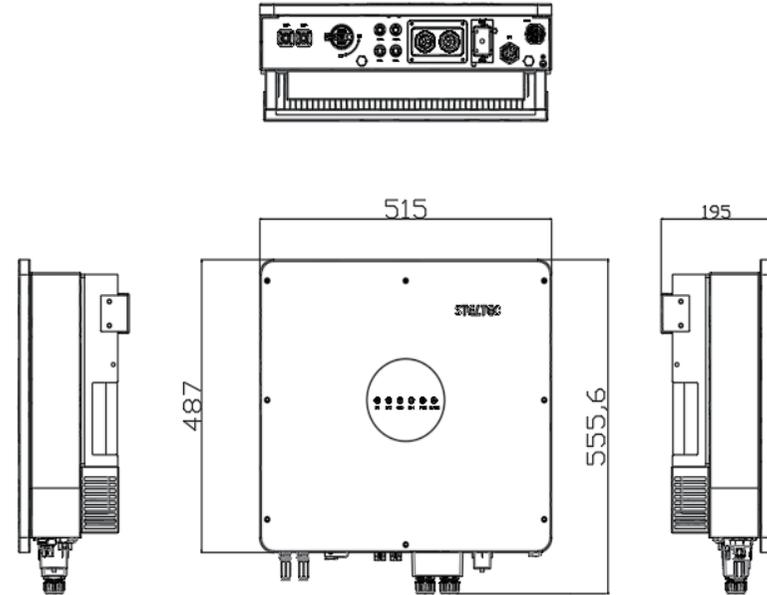
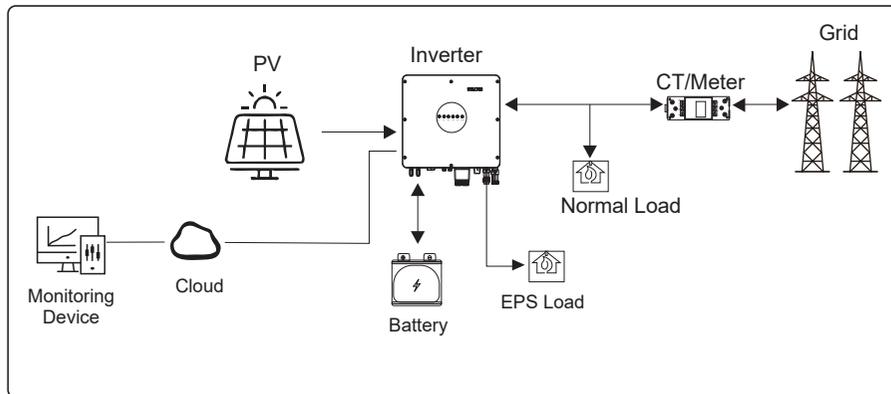
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1 Product Introduction

1.1 System Introduction

Our all-in-one Hybrid PV inverter combines Solar PV, Battery Charging and Emergency Backup Power together with an easy-to-use App to manage your home's complete power needs. The BPE PowerDepot A1 allows you to simply add on more storage as required and still maintains a slim and sleek looking design that will blend into any room in your property.

The Lithium Iron Phosphate batteries are scalable from 5.22kWh to 15.66kWh, allowing you to power your entire home for hours at a time.

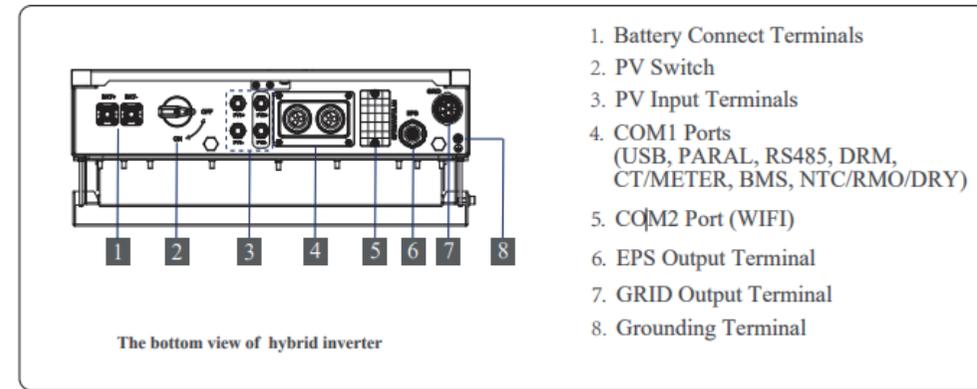


| Length(mm) | Height(mm) | Width(mm) |
|------------|------------|-----------|
| 515 | 487 | 195 |

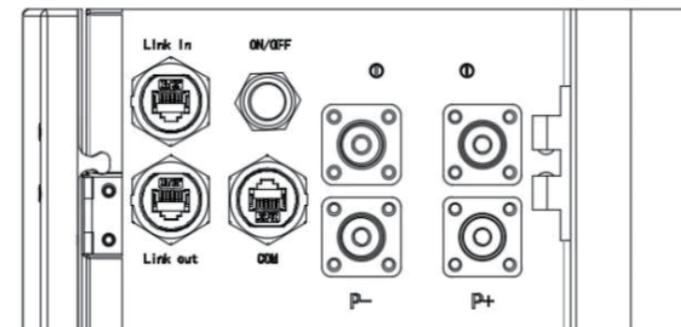
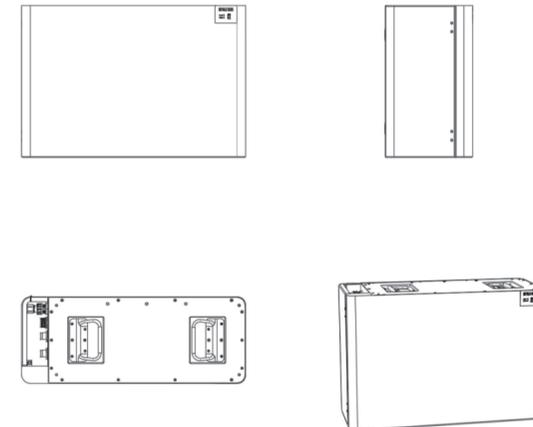
| |
|---------------------------|
| LED Indicators |
| PV BAT GRID EPS COM ALARM |

1.2 BPE-HI-SP-3.6/5.5K Datasheet

| Inverter Specification | STE-INV-HB50 | STE-INV-HB6000 |
|--|--|----------------|
| Efficiency | | |
| Max.Efficiency(PV to Grid) | 97.3% | |
| Input(PV) | | |
| Max.Input Voltage | 550V | |
| Max.Input Current | 15/15A | |
| Max.Short Circuit Current | 20/20A | |
| Start Input Voltage | 90V | |
| MPPT Operating Voltage Range | 200V-480V | 230V-480V |
| Max.Number of PV Strings | 2 | |
| No.of MPPTs | 1 | |
| Input(Battery) | | |
| Battery Type | Lithium-ion | |
| Nominal Battery Voltage | 48V | |
| Battery Voltage Range | 40-60V | |
| Max.Charge/Discharge Current | 120A | 120A |
| Lithium-ion Batter Charge Curve | Self-adaption to BMS | |
| Output(Grid) | | |
| Rated AC Active Power | 5000W | 6000W |
| Rated AC Voltage | 220V | |
| AC Voltage Range① | 150V-300V(Adjustable) | |
| Rated Grid Frequency | 50Hz/60Hz | |
| Grid Frequency Range② | 45-55Hz/55-65Hz(Adjustable) | |
| Max.AC Current Output to Utility Grid(A) | 25A | 27.2 |
| THDI | < 3%(Rated Power) | |
| Power Factor | > 0.99 Rated power(Adjustable 0.8 Leading-0.8 Lagging) | |
| Output(EPS) | | |
| Nominal Output Power | 5000VA | 6000VA |
| Nominal Output Voltage | 230V | |
| Nominal Output Frequency | 50Hz/60Hz | |
| THDV | < 3% @100% R Load | |
| Transfertime (ms) | 10(type)/20(max.) | |



1.3 BPE 5.22kWh Stackable Battery Information



BPE 5.22kWh Stackable Battery Datasheet

| Power module model | Number of battery Modules | Battery System Capacity | Cell Technology | Battery System Voltage | Operating Voltage Range | Dimension (W*D*H) | Net Weight |
|--------------------|---------------------------|-------------------------|-----------------|------------------------|-------------------------|--|----------------------|
| Focus-L1 | 1 | 5.22kWh | Li-ion(LFP) | 51.2V | 45.6-56.2V | 515*200*490(mm) 20.28*7.87*19.29(inch) | 56kg (123.46 lb) |
| | 2 | 10.44kWh | | 51.2V | 45.6-56.2V | 515*200*840(mm) 20.28*7.87*33.07(inch) | 102kg (224.87 lb) |
| | 3 | 15.66kWh | | 51.2V | 45.6-56.2V | 515*200*1190(mm) 20.28*7.87*46.85(inch) | 148kg (326.28 lb) |
| | 4 | 20.88kWh | | 51.2V | 45.6-56.2V | 515*200*1540(mm) 20.28*7.87*60.63(inch) | 194kg (427.7 lb) |

| Focus-L1 | Battery Base dimensions (W*D*H) | Battery Cover dimensions (W*D*H) | Battery Base Weight | Battery Cover Weight |
|----------|---|---|---------------------|----------------------|
| | 515*200*90 (mm) 20.28*7.87*3.54 (inch) | 515*200*50 (mm) 20.28*7.87*1.97 (inch) | 5kg (11.02lb) | 2.5kg (5.51lb) |

| Scalability | Installation | Depth of Discharge | Battery System Charge Current (recommend) | Battery System Charge Current (Max) | Battery System Discharge Current (recommend) | Battery System Discharge Current (Max) | Display | Certificates |
|--------------------|------------------|------------------------|---|-------------------------------------|--|--|---|--|
| Max 15 in parallel | Floor stand | 90% | 80A | 100A | 80A | 100A | The information of Battery, such as SOC, battery status | IEC62619 / IEC61000 / IEC62040 / CE / UN38.3 |
| Communication Port | Protection Class | Charging temperature | Discharge temperature | Humidity | Max. operating altitude | Warranty | Cooling | |
| RS232, RS485, CAN | IP54 | 0C~50C (32°F-122°F) | -20C~50C (-4°F-122°F) | 5%-95% | 2,000m (6,562ft.) | 10 years | Natural convection | |

| STE-BSG 5220 | Battery Cell Capacity | Configuration | Battery module dimensions (W*D*H) |
|--------------|-------------------------|------------------------|--|
| | 102Ah | 1P16S | 515*200*350(mm) 20.28*7.87*13.78 (inch) |
| | Battery module capacity | Battery Module Voltage | Battery Module Weight |
| | 5.22kWh | 51.2V | 46kg (101.41 lb) |

Powering the Batteries ON/OFF

ON:

When using only a single Battery module, press and hold (for more than 3 seconds) the ON/OFF button, the Normal LED will illuminate on the battery icon and the battery will begin to operate normally.

For multiple Battery modules in parallel, press and hold (for more than 3 seconds) the ON/OFF button on the Master battery (the module connected to the inverter), the normal LED will illuminate and the BMS will automatically encode and assign an ID to each slave battery.

Note: For multiple batteries in parallel, only the Master battery SOC LED will be on to show the whole system SOC level, slave battery SOC LEDs are off, but the Normal & Alarm LED will function as normal.

Link COM Port

The Link Com Port is the interface between the Master battery and the inverter. The inverter retrieves the battery data such as SOC, DOD, charge current via this connection.

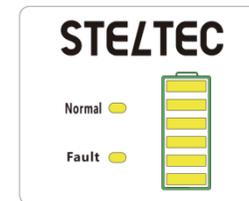
Connect this port to the BMS port on the inverter using the included BMS cable. If you need to extend or create your own BMS cable, use this wiring guide for your RJ45 terminal wiring:

| PIN | Definition |
|-------|----------------------------|
| Pin 1 | RS485-B (to PCS, reserved) |
| Pin 2 | RS485-A (to PCS, reserved) |
| Pin 3 | GND_2 |
| Pin 4 | CAN H (to PCS) |
| Pin 5 | CAN L (to PCS) |
| Pin 6 | RS232_TX |
| Pin 7 | RS232_RX |
| Pin 8 | RS232_GND |

Link In/Link Out Port:

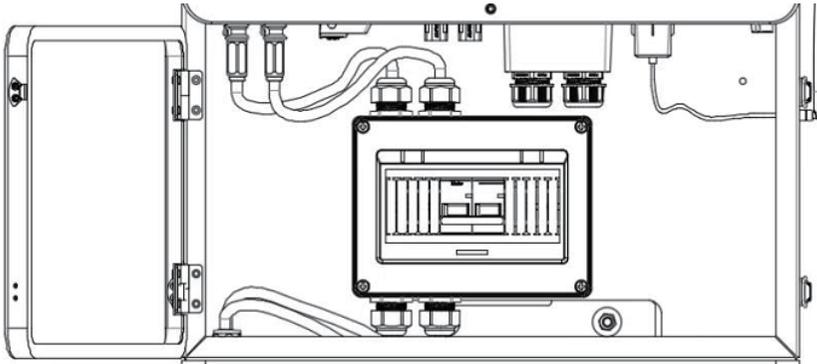
The Link In/Link Out ports are used for the communication between the battery modules.

LED Indicator Description:



| Status | Normal | Fault | Battery Level Indicator | | | | | | | Descriptions | |
|-----------|--------------|---------|--------------------------------|--------------------------------|-------|-------|-------|-------|-------|---|---|
| | L8 | L7 | L6 | L5 | L4 | L3 | L2 | L1 | | | |
| Shut down | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | All OFF | |
| Standby | Flash 1 | OFF | According to the battery level | | | | | | | Indicates Standby | |
| Charging | Normal | Light | OFF | According to the battery level | | | | | | | The highest capacity indicator LED flashes(flash 2),others lighting |
| | Full Charged | Light | OFF | Light | Light | Light | Light | Light | Light | Turn to standby status when charger off | |
| | Protection | OFF | Light | OFF | OFF | OFF | OFF | OFF | OFF | Stop charging | |
| Discharge | Normal | Flash 3 | OFF | According to the battery level | | | | | | | |
| | UVP | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | Stop charging | |
| | Protection | OFF | Light | OFF | OFF | OFF | OFF | OFF | OFF | Stop discharge | |
| Fault | OFF | Light | OFF | OFF | OFF | OFF | OFF | OFF | OFF | Stop charging and Discharge | |

1.4 System Enclosure Information



There is a 125A DC breaker between battery and inverter located inside of the System Enclosure. This allows you to safely work on the batteries while they are isolated from the inverter.

2 Installation

2.1 Installation Site Requirements

2.1.1 General

The BPE PowerDepot A1 is designed to be installed indoors to make the most use of its all-in-one sleek design.

The PowerDepot A1 is naturally ventilated and the location should therefore be kept clean, dry and adequately ventilated. The mounting location must allow for easy access to the unit for installation and maintenance purposes, and the battery compartment doors must not be blocked.

The following location are no suitable for installation:

- Habitable rooms;
- In loft spaces that are not specifically considered suitable;
- Access/exit areas or near emergency exit areas;
- In rooms that reach below zero degrees C;
- Seismic areas- additional security measures are required;
- Sites higher than 2000 meters above sea level;
- Places with an explosive atmosphere;
- Locations with direct sunlight or a large change in the ambient temperature
- Within 60 cm of any exit;
- Within 60 cm of any window or ventilation opening;
- Within 90 cm of any electrical outlets;

The PowerDepot A1 must not be installed near any explosive or flammable gases or materials.

If the E-home is mounted at a wall or at a distance of 300mm from the wall or structure separating it from the habitable space, the distances to other structures or objects must be increased. The following distances must then remain free:

- (i) 600 mm beside the E-home;
- (ii) 600 mm above the E-home;
- (iii) 600 mm before the E-home.

If the distance between the E-home and the ceiling or any object above the system is less than 600 mm, the ceiling or structural surface above the system must be made of non-combustible material within a radius of 600 mm around the system.

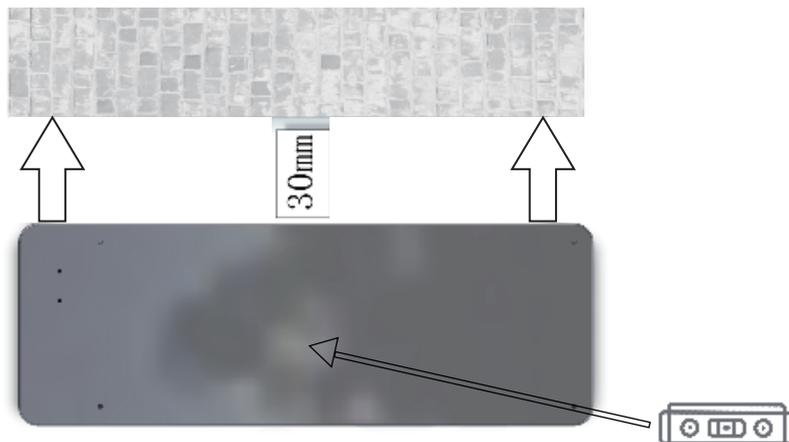
The E-home must be mounted so that the highest point is not more than 2.2m above the ground or the platform.

2.2 Installation steps

Step 1

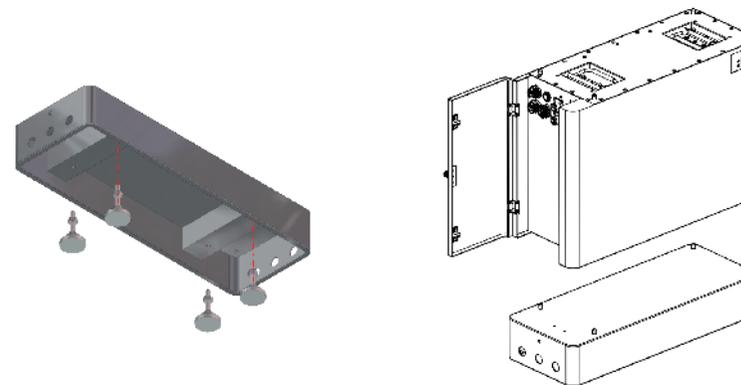
Placed the base against the wall, the distance between the base and the wall is 30mm as followed.

Note: Levelness of the base is less than 2mm.



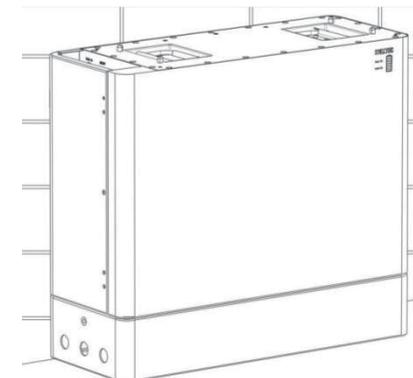
Step 2

Screw the locating pin into the base and put the first battery pack on the base.



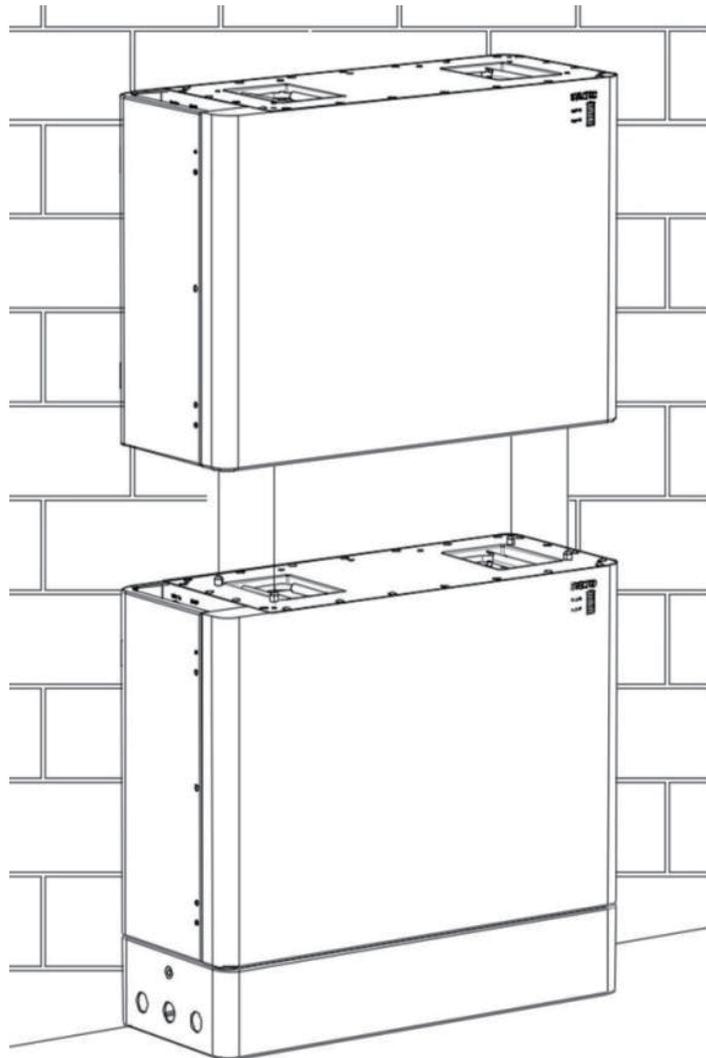
Step 3

Secure the battery module to the base with the L-shape plate



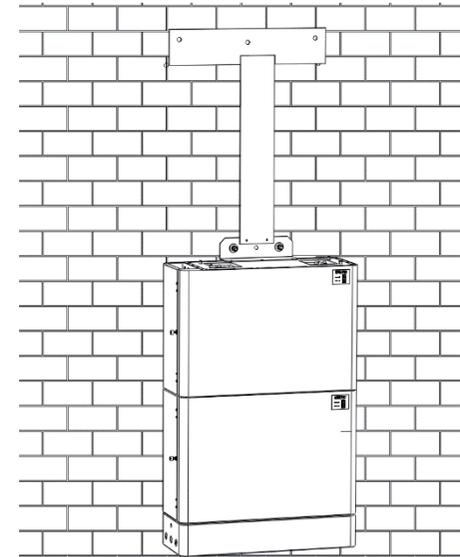
Step 4

Place the next battery module on top of the first battery module and secure the battery modules with the fixing plate. Repeat this step until all battery modules have been installed.



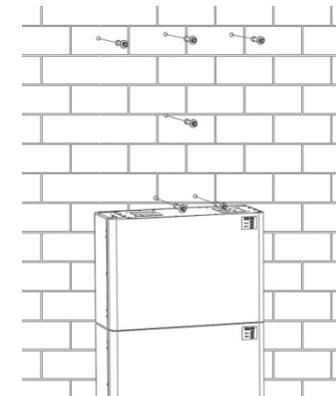
Step 5

Fix the mounting plate as below, confirm the position where to drill a hole in the wall.



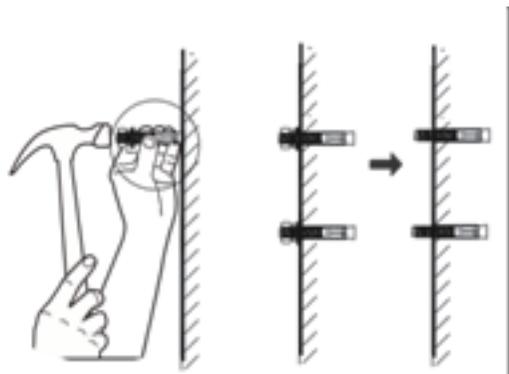
Step 6

Take off the L shape metal and the mounting plate and drill hole on the wall. Position the battery parallel to the wall and use a $\Phi 10\text{mm}$ drill to drill holes at a depth of about 45mm in the wall for subsequent fixation of the mounting plates.



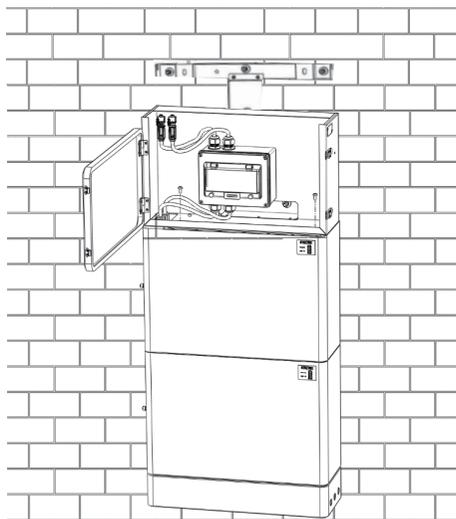
NOTE: Place a cover (paper, foil, cloth etc.) over the battery while drilling into the wall to protect it from dust. In addition, at the place of installation, the slope of the ground on a horizontal plane may not exceed 3°.

Knock the expansion screw kit into the hole together with a hammer. After tightening 2-3 buckles, the expansion bolts are tight and not loose, and then unscrew the bolts, spring washer, gasket. Refer to Figure below.



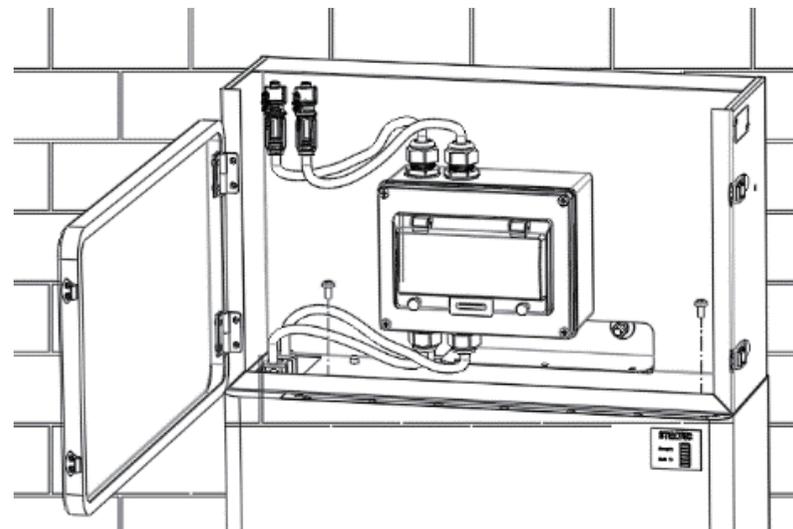
Step 7

Remove the debris baffle and install the system box on the top battery. Install and fix the mounting bracket on the wall.



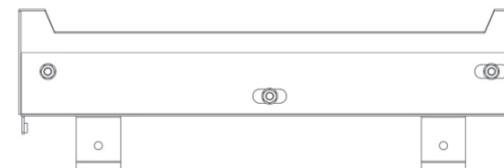
Step 8

Fix the system box to the battery using screw M5*8 (from the system box)



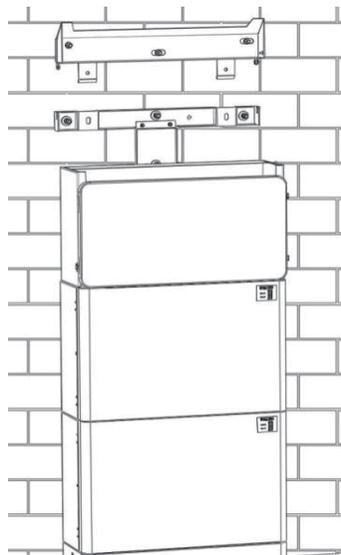
Step 9

Fix the inverter bracket (from inverter packaging box) with the hanging board (from the system box) using hex screw M6*10 as below:



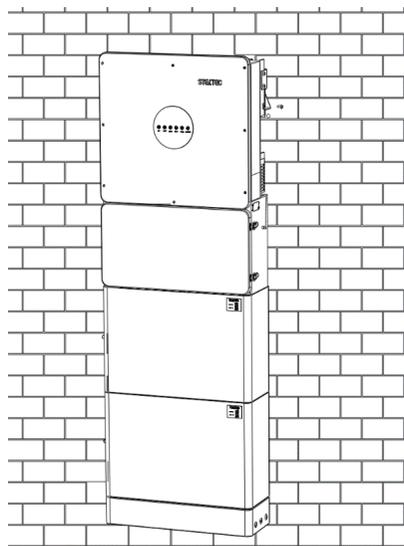
Step 10

Insert the bracket into the mounting plate as below:



Step 11

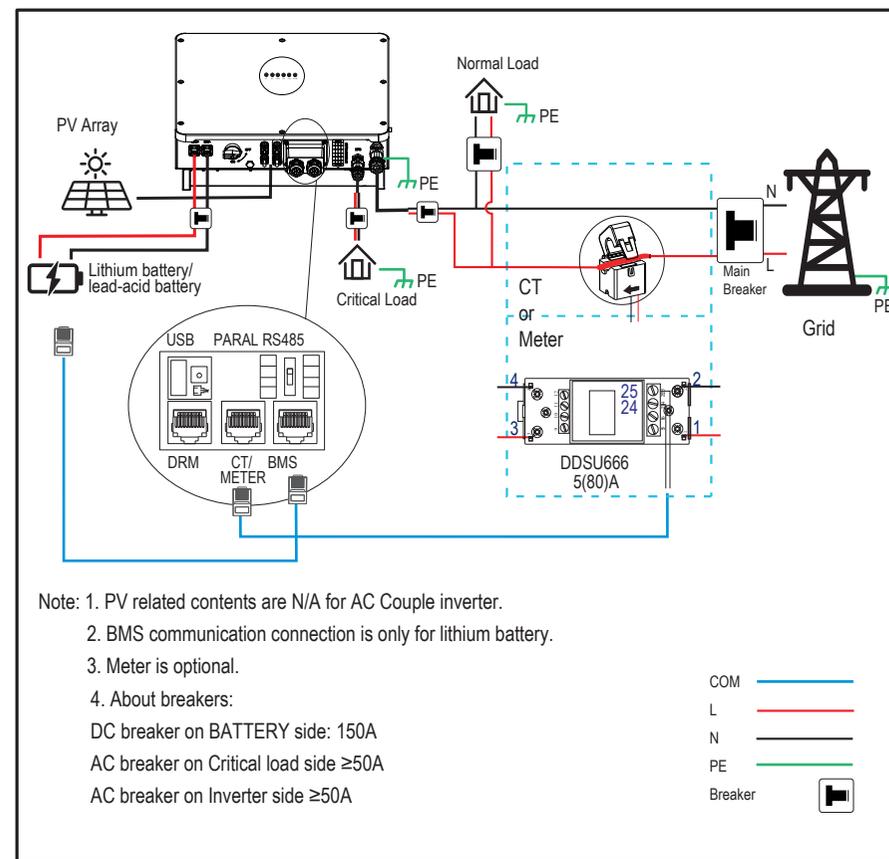
Install the inverter on the mounting bracket. Then lock the inverter using the security screw M6 (from inverter packaging box).



3 Electrical Connection

This chapter shows the details connection of ESS inverter. And PV connection is N/A for AC couple inverters. The following illustration only uses the hybrid inverters as an example.

ESS inverter system connection diagram:
Non-parallel connection mode

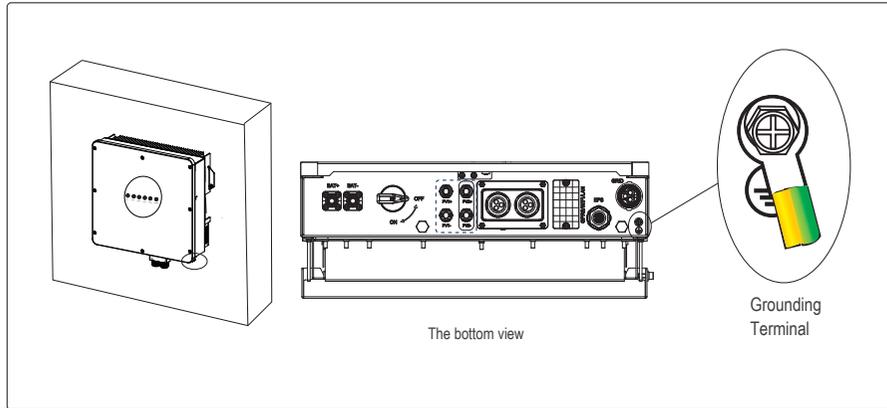


DANGER

Ensure that inverter and all cables to be installed are completely powered off during whole installation and connection. Otherwise, fatal injury can occur due to the high voltage.

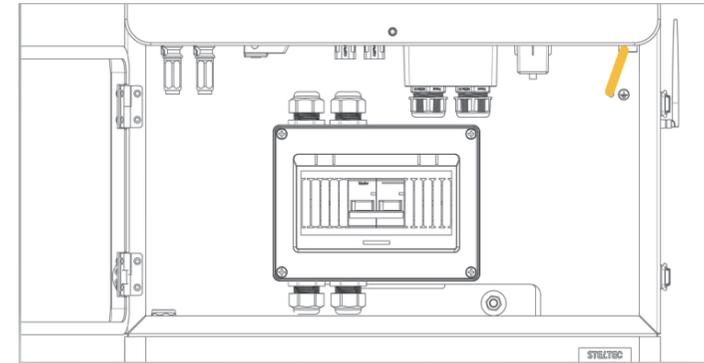
3.1 Grounding

a. Connect to the ground between inverter and system box using M5 hexagon nuts with flange

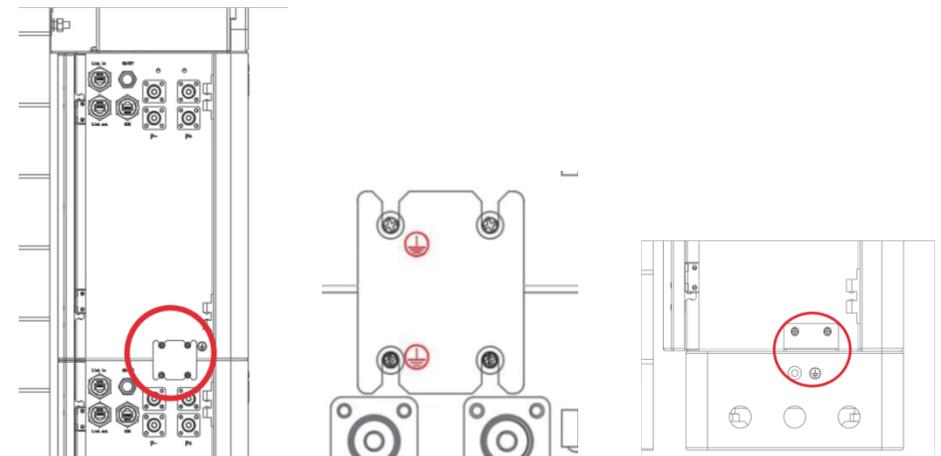


WARNING The inverter must be grounded; otherwise, there may be electric shock risk.

CAUTION If the positive pole or negative pole of the PV array is required to be grounded, then the inverter output (to AC grid) must be isolated by transformer in accordance with IEC62109-1, -2 standards.

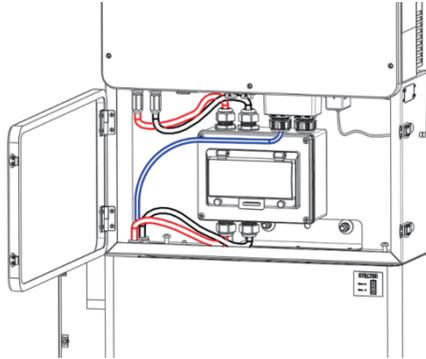


b. Connect the battery to ground with a small metal plate using screw M4*8(from the system box) as follows and there is a 1.5m GND cable to fix the base

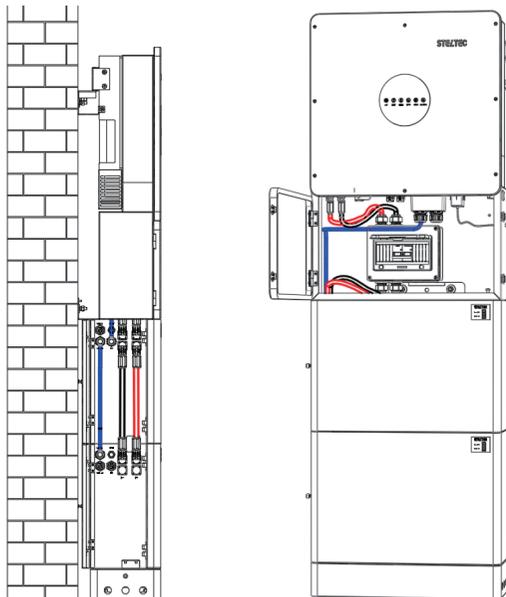


3.2 Battery power and communication cable connection

a. Connect the battery power cable in the down side of the breaker in the system box to the upper battery which is the master battery. Connect the battery power cable in the up side of the breaker in the system box to the inverter battery ports. Connect the battery in parallel using power cable and communication cable as follow.



b. connect the BMS cable to the inverter BMS port directly through the system box



a Unscrew the waterproof cover and loosen the rubber nut on waterproof cover.

c ① Insert RJ45 terminals into corresponding ports.
② Screw the waterproof cover back to inverter firmly with 4 x M4 screws(1.2N.m).
③ Install the seal into the threaded sleeve, fasten the rubber nut.

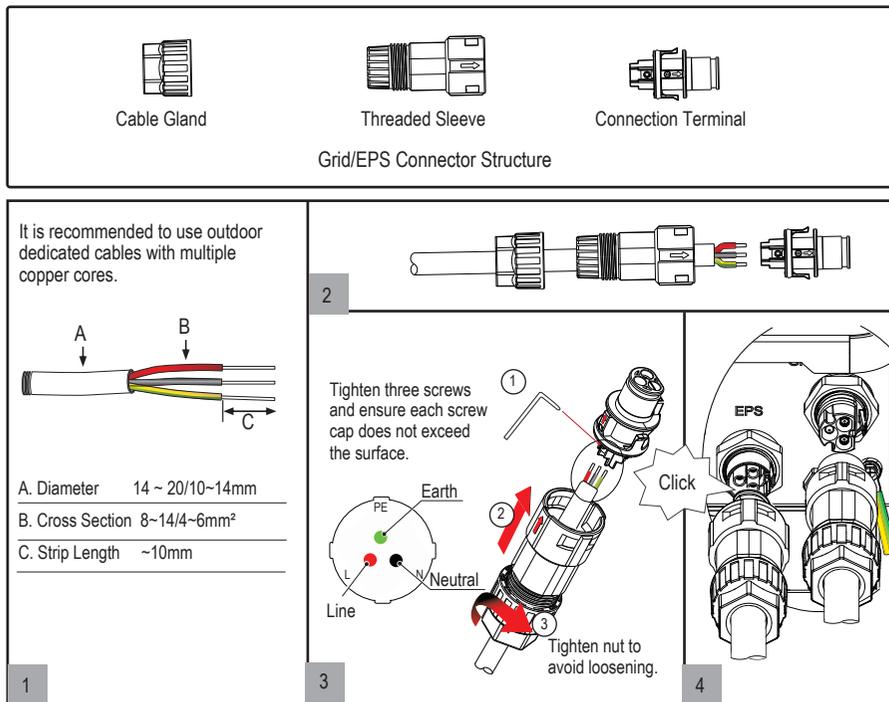
b Make the RJ45 terminal according to above function description of each Pin definition. Lead the BMS cable through the rubber nut, seal and waterproof cover in turn.

! Don't cut off any communication cables.

Press the BMS cable in the seal via the side incisions.

3.3 Grid/EPS Connection

Grid/EPS connection please refer to below.



An AC breaker should be installed between inverter and the grid/EPS.

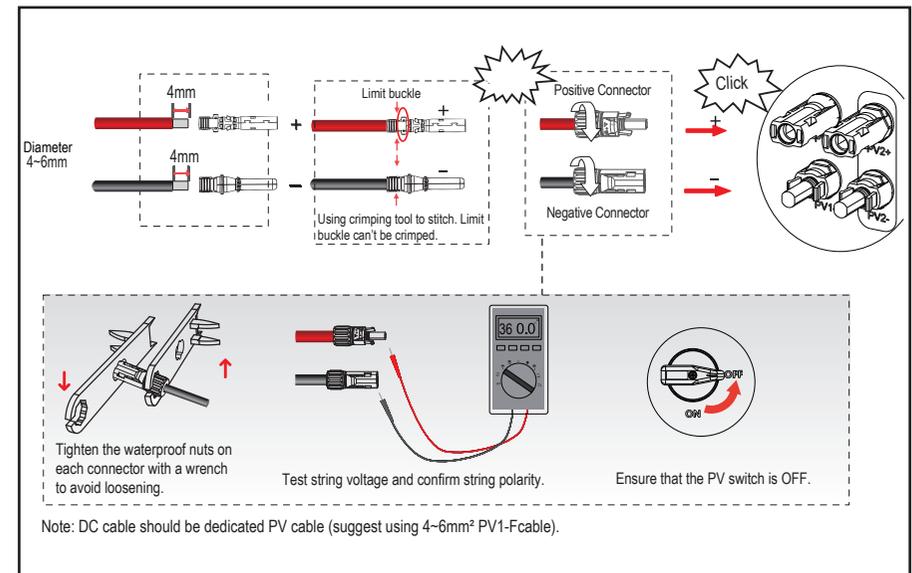
- Before connecting the AC cable from inverter to AC breaker, you should confirm the AC breaker is working normally. Turn off the AC breaker and keep the status.
- Connect the PE conductor to grounding electrode, and connect the N and L conductors to AC breaker.
- Connect the AC breakers to the grid/EPS grid.

NOTICE

Multiple inverters are not allowed to share a circuit breaker.
Load is not allowed to connect between the inverter and the AC breaker.

To ensure that the inverter can be safely and reliably disconnected from the grid, a AC breaker ($\geq 50A$) should be installed only for inverter GRID/EPS port.

3.4 PV Connection



NOTICE

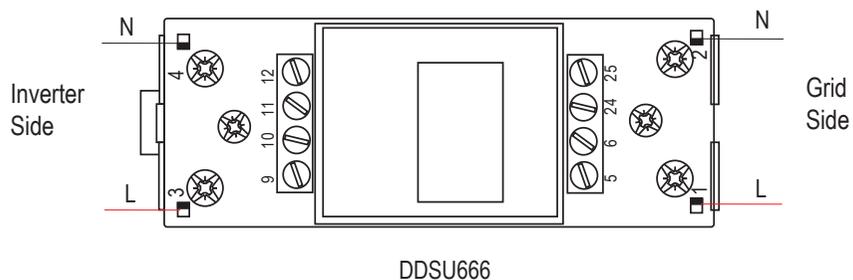
- Before connection the PV panels, ensure the plug connector has the correct polarity. Incorrect polarity could permanently damage the inverter.
- PV array shouldn't be connected to the grounding conductor.
- The minimum insulation resistance to ground of the PV panels must exceed 18.33k Ω , there is a risk of shock hazard if the requirement of minimum resistance is not met.

3.5 Meter/CT Connection

You can monitor usage with a meter or a CT. The meter and CT can't be installed at the same time. The meter is optional while CT is standard.

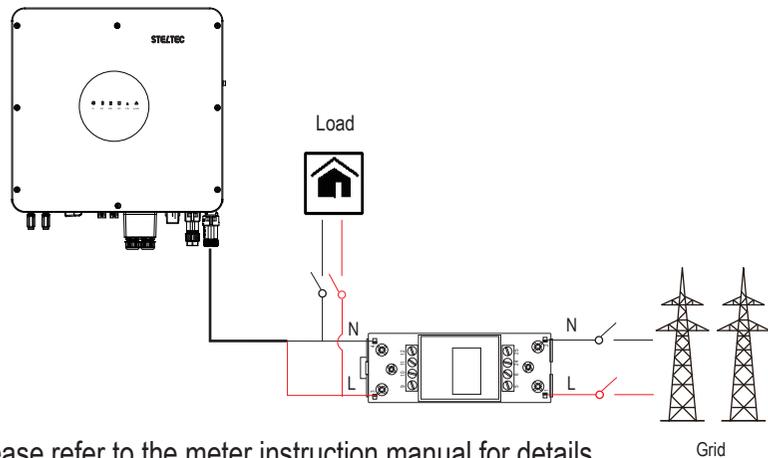
Meter Connection

HB5000/6000 inverter only supports the meter: CHNT-DDSU666 meter.



Before connecting to Grid, please install a separate AC breaker ($\geq 60A$; not equipped) between meter and Grid. This ensure the inverter can be security disconnected during maintenance.

The connection diagram of power cable of meter is as shown in the figure below:

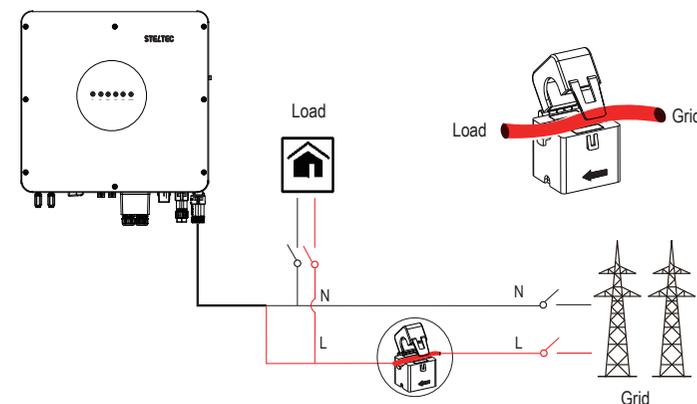


Please refer to the meter instruction manual for details.

CT Connection

Before connecting to Grid, please install a separate AC breaker ($\geq 60A$; not equipped) between CT and Grid. This ensure the inverter can be security disconnected during maintenance.

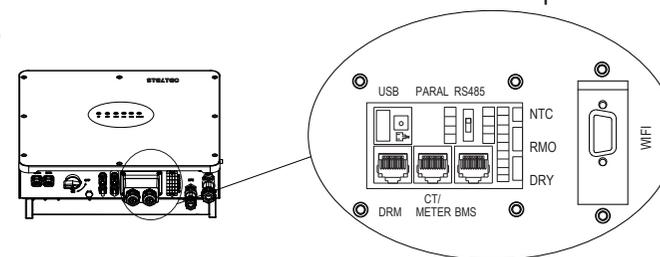
The connection diagram of power cable of CT is as shown in the figure below:



Please attention to the Current interchanger (CT) connection. The arrow on the CT indicates the current flow from grid to inverter. And lead the live line through the detection hole of CT.

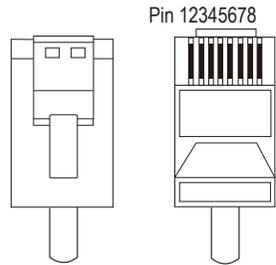
3.6 Communication Connection

There are communication interfaces in the communication port on the bottom of the inverter.



| Interface | Descriptions |
|-----------|--|
| USB | For fast firmware upgrade. |
| PARAL | 4-Pins interface for parallel communication |
| | A matched resistance switch for parallel communication |
| RS485 | 4-Pins interface for RS485 communication |
| DRM | Demand response mode for Australia application |
| CT/METER | For Meter communication or Grid current sense. |
| BMS | Lithium battery communication interface |
| 9-Pins | NTC Temperature sensor terminal of lead-acid battery |
| | RMO Remote off control |
| | DRY DO control |
| WIFI | For WIFI communication. |

BMS Connection (Inverter BMS port definition)



| | | | | |
|----------------------|---------|---------|-------|-------|
| PIN | 1 | 2 | 3 | 4 |
| Function Description | RS485_A | RS485_B | GND_S | GND_S |
| PIN | 5 | 6 | 7 | 8 |
| Function Description | GND_S | GND_S | CAN_L | CAN_H |

a Unscrew the waterproof cover and loosen the rubber nut on waterproof cover.

c ① Insert RJ45 terminals into corresponding ports.
② Screw the waterproof cover back to inverter firmly with 4 x M4 screws(1.2N.m).
③ Install the seal into the threaded sleeve, fasten the rubber nut.

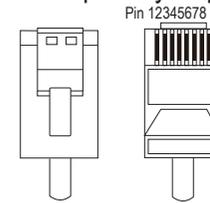
b Make the RJ45 terminal according to above function description of each Pin definition. Lead the BMS cable through the rubber nut, seal and waterproof cover in turn.

Don't cut off any communication cables.

Press the BMS cable in the seal via the side incisions.

DRMs Connection

DRMs is a shortened form for “inverter demand response modes”. It is a compulsory requirements for inverters in Australia.



| | | | | |
|----------------------|--------|-----------|--------|--------|
| PIN | 1 | 2 | 3 | 4 |
| Function Description | DRM1/5 | DRM2/6 | DRM3/7 | DRM4/8 |
| PIN | 5 | 6 | 7 | 8 |
| Function Description | REF | DRM 0/COM | NC | NC |

Refer to the following steps:

a Unscrew the waterproof cover and loosen the rubber nut on waterproof cover.

c ① Insert RJ45 terminals into corresponding ports.
② Screw the waterproof cover back to inverter firmly with 4 x M4 screws(1.2N.m).
③ Install the seal into the threaded sleeve, fasten the rubber nut.

b Make the RJ45 terminal according to above function description of each Pin definition. Lead the BMS cable through the rubber nut, seal and waterproof cover in turn.

Don't cut off any communication cables.

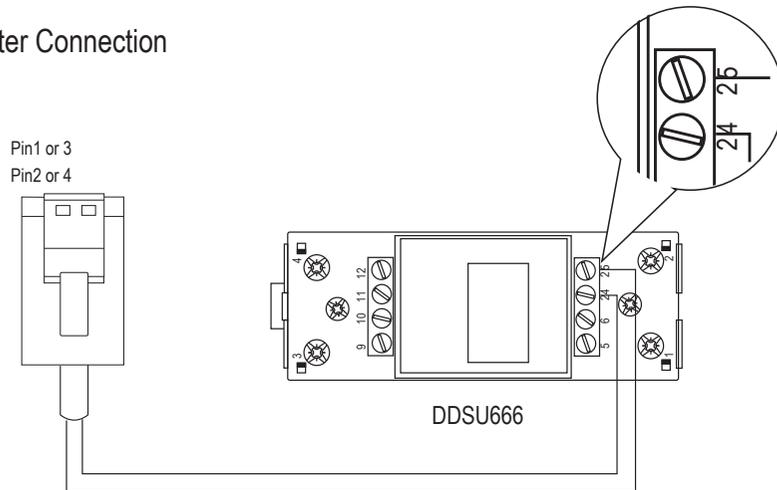
Press the DRM's cable in the seal via the side incisions.

3.7 Meter/CT Communication Connection

RJ45 Terminal Configuration of Meter/CT Communication

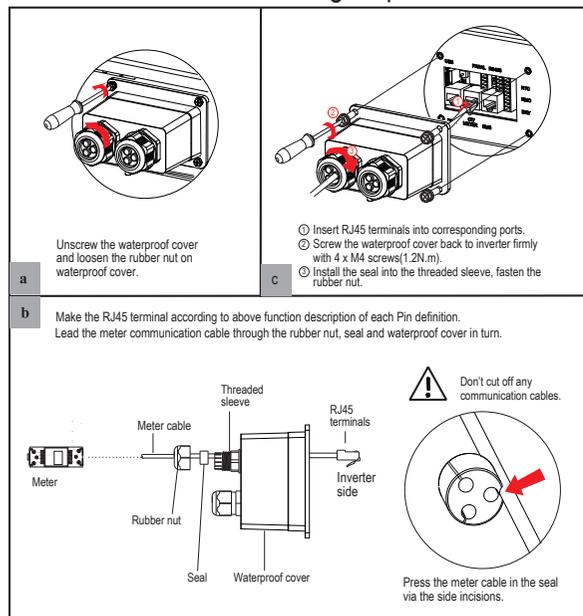
| | | | | | | | | |
|----------------------|---------|---------|---------|---------|-----|-----|----|----|
| PIN | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Function Description | RS485_A | RS485_B | RS485_A | RS485_B | CT+ | CT- | NC | NC |

Meter Connection



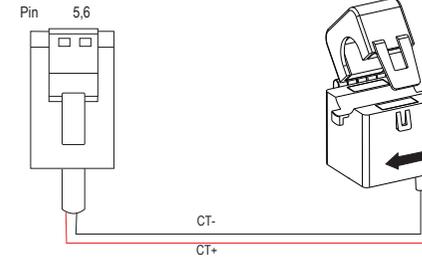
| Inverter | Meter |
|-----------------------|-------|
| Pin1 or Pin3(RS485_A) | Pin24 |
| Pin2 or Pin4(RS485_B) | Pin25 |

Connect meter. Refer to the following steps:



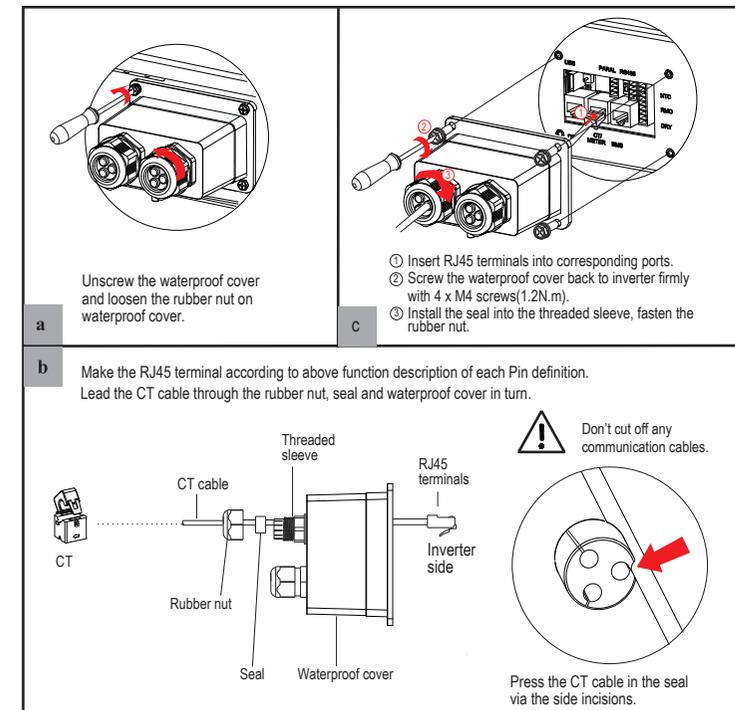
CT Connection

CT cable connection overview



| Inverter | CT |
|-----------|-------|
| Pin5(CT-) | Black |
| Pin6(CT+) | Red |

Connect CT. Refer to the following steps:



3.8 RS485 Connection

RJ45 Terminal Configuration of RS485 Communication



| PIN | A | B | PE | PE |
|----------------------|---------|---------|----|----|
| Function Description | RS485_A | RS485_B | PE | PE |

Connect RS485. Refer to the following steps:

a Unscrew the waterproof cover and loosen the rubber nut on waterproof cover.

b Make the 4-Pins terminal according to above function description of each Pin definition. Lead the RS485 cable through the rubber nut, seal and waterproof cover in turn.

c Insert 4-Pins terminal into corresponding ports.
 ② Screw the waterproof cover back to inverter firmly with 4 x M4 screws(1.2N.m).
 ③ Install the seal into the threaded sleeve, fasten the rubber nut.

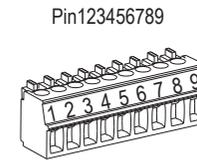
Don't cut off any communication cables.

Press the RS485 cable in the seal via the side incisions.

3.9 NTC/RMO/DRY Connection(s)

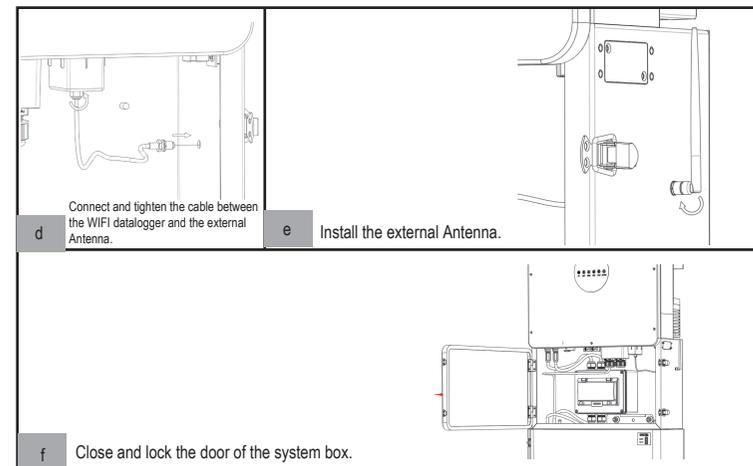
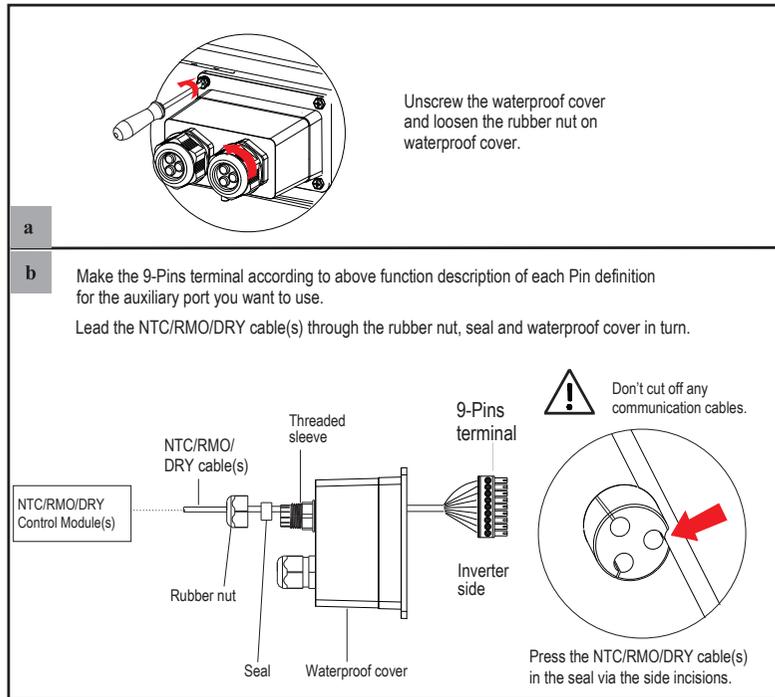
9-Pins Terminal Configuration of Auxiliary Communication

| PIN | Function Description |
|-----|----------------------|
| 1 | NO1 (Normal Open) |
| 2 | N1 |
| 3 | NC1 (Normal Close) |
| 4 | NC2 (Normal Close) |
| 5 | N2 |
| 6 | NC2 (Normal Close) |
| 7 | REMO OFF |
| 8 | GND S (NTC BAT) |
| 9 | NTC BAT+ |



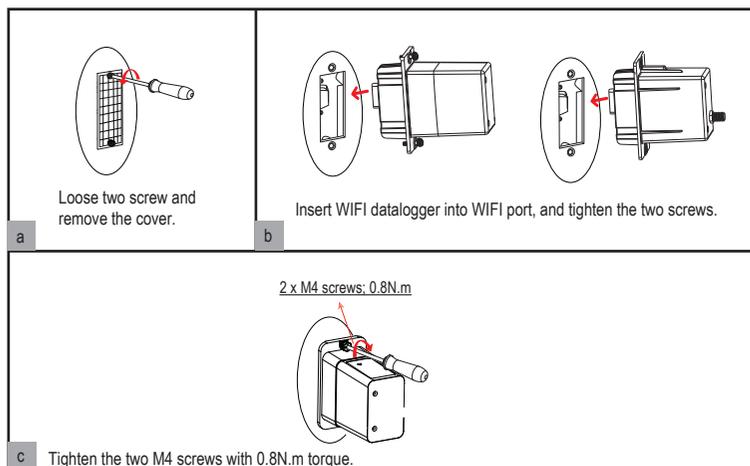
c Insert its 9-Pins terminal into the corresponding NTC/RMO/DRY port on the ESS inverter. Install the seal into the threaded sleeve, fasten the rubber nut and screw the waterproof cover back to inverter firmly with 4 x M4 screws; 1.2N.m.

| Pin | Function |
|-----|----------|
| 9 | NTC |
| 8 | RMO |
| 7 | |
| 6 | |
| 5 | |
| 4 | |
| 3 | DRY |
| 2 | |
| 1 | |



3.10 WiFi Datalogger Connection

The appearance of datalogger may be slightly different. The figure shown here is only for reference.



4 System Operation

4.1 Inverter Working Mode

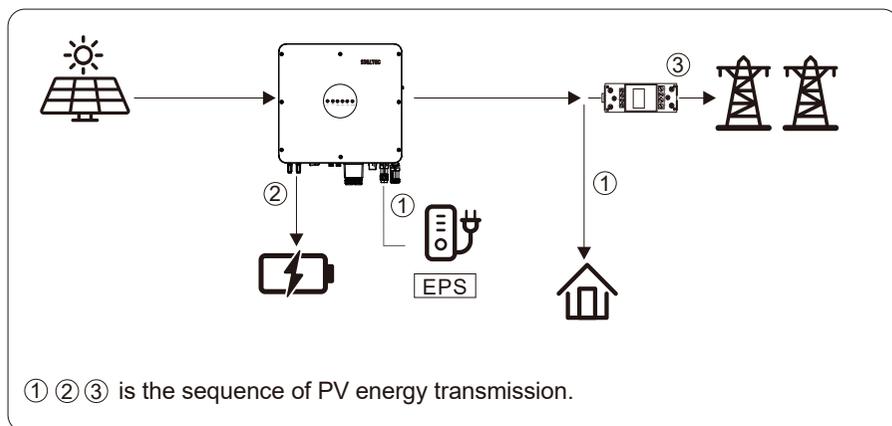
The inverter supports several different working modes.

4.1.1 Self Used Mode

Go to the "Hybrid work mode" menu, and select the "Self used mode" working mode. Under Self Used mode, the priority of PV energy will be Load > Battery > Grid, that means the energy produced by PV gives priority to local loads, excess energy is used for charging the battery, and the remaining energy is fed into the grid. This is the default mode to increase self-consumption rate. There are several situations of Self used working mode based on PV energy.

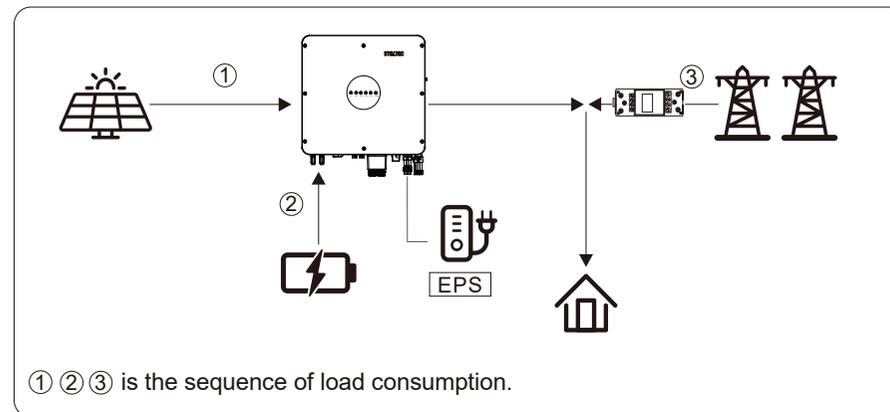
a) Wealthy PV Energy

When PV energy is wealthy, the PV energy will be first consumed by loads, the excess energy will be used to charge the battery. then the remaining energy will be fed into the grid.



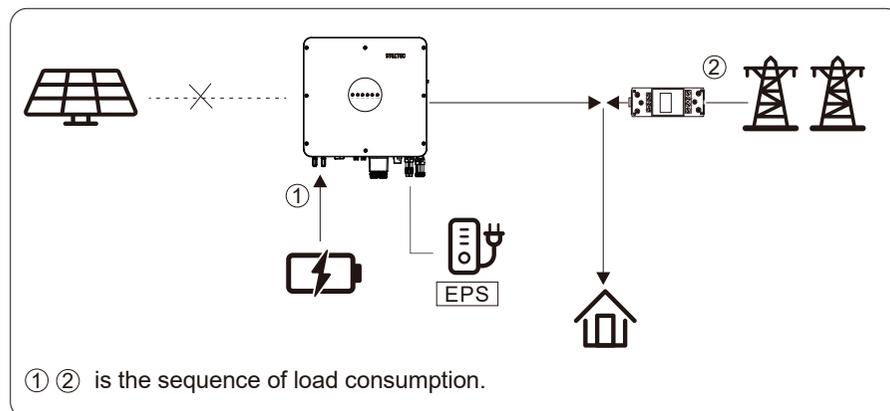
b) Limited PV power

When the PV energy is not enough to cover all the loads, all the PV energy will be used for load, and the insufficient part will be supported by battery. Then still insufficient parts will be supported by grid.



c) No PV Input

The inverter will first discharge the battery energy for home load consuming when no PV input (such as in the evening or some cloudy or rainy days). If the demand is not met then will consume the grid energy.

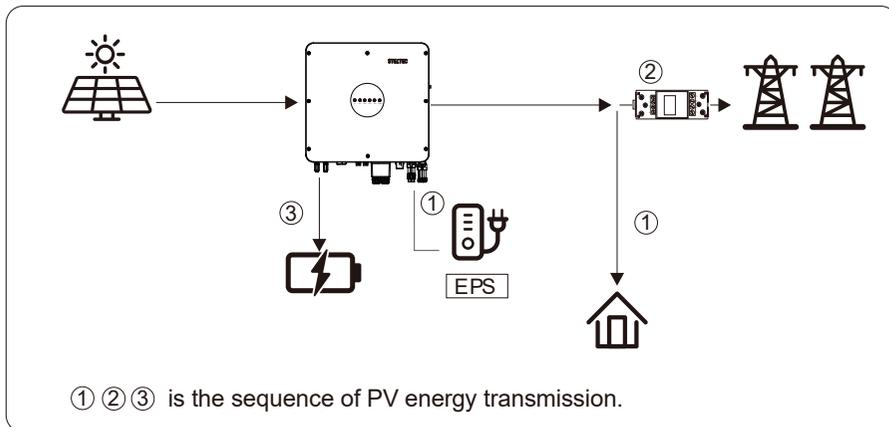


4.1.2 Feed-in Priority Mode

Go to the "Hybrid work mode" menu, and select the "Feed-in priority mode" working mode. Under this mode, the priority of PV energy will be Load > Grid > Battery, that means the energy produced by PV gives priority to local loads, excess energy is fed into the grid, and the remaining energy is used for charging the battery.

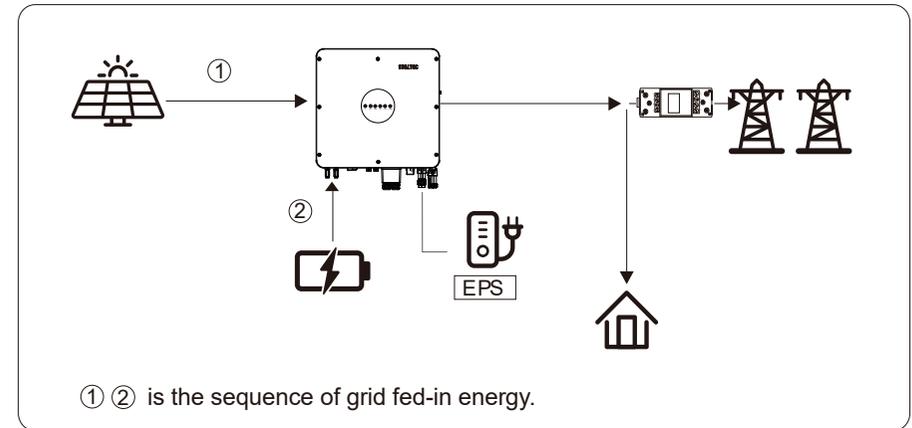
a) Wealthy PV Energy

When PV energy is wealthy, the PV energy will be first consumed by loads, if there is excess PV power, then the excessive power will be fed into grid. If there is still PV energy rested after load consuming and grid feeding, then the rested PV power will be used to charge the battery.



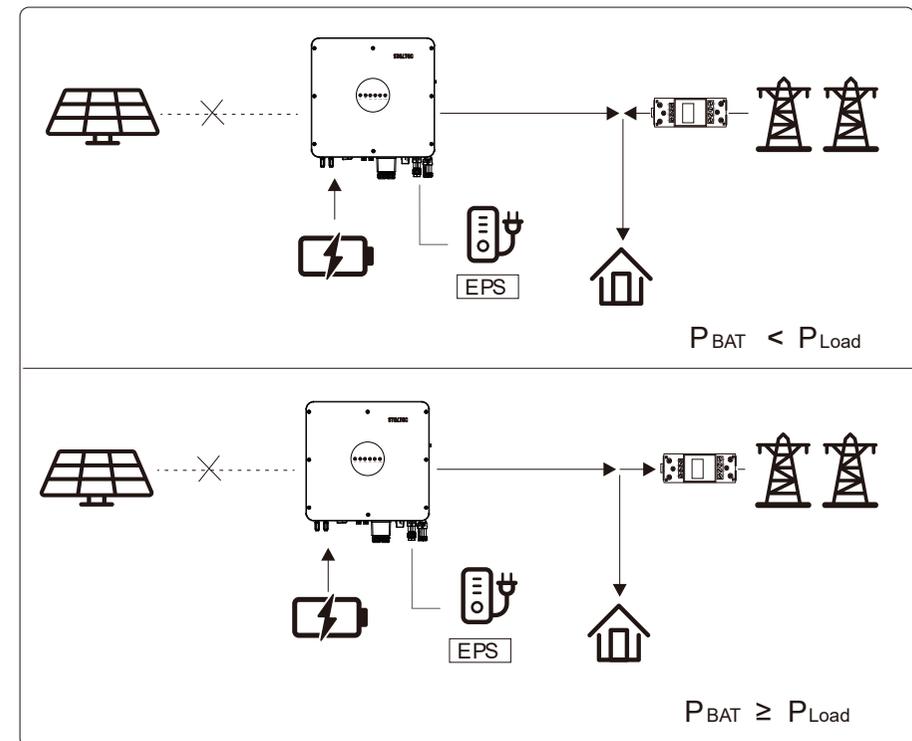
b) Limited PV Energy

When PV energy is limited and can not meet the feed-in grid power, the battery will discharge to meet it.



c) No PV Input

The inverter will first discharge the battery energy for home load consuming when no PV input (such as in the evening or some cloudy or rainy days). If the demand is not met then will consume the grid energy.



4.1.3 Time-Based Control Mode

Go to the "Hybrid work mode" menu, and select the "Time-based Control" working mode. Under this mode, you can control the charging and discharging of the inverter. You can set the following parameters based on your requirements:

- Charge and discharge frequency: one time or daily
- Charging start time: 0 to 24 hours
- Charging end time: 0 to 24 hours
- Discharge start time: 0 to 24 hours
- Discharge end time: 0 to 24 hours

You can also choose whether to allow the grid to charge the battery, which is prohibited by default. If the user enables the "Grid charge function", the "Maximum grid charger power" and "Capacity of grid charger end" can be set. When the battery capacity reaches the set value of "Capacity of grid charger end", the grid will stop charging the battery.

4.1.4 Back-up Mode

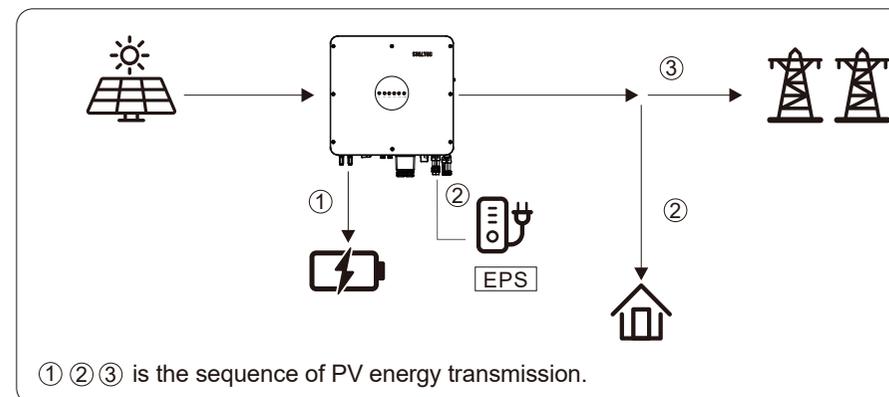
Go to the "Hybrid work mode" menu, and select the "Back-up Mode" working mode. Under this mode, the priority of PV energy will be Battery > Load > Grid. This mode aims at charging the battery quickly, and at the same time, you can choose whether to allow grid to charge the battery.

Forbid grid charging

In this mode, the battery can be charged only with PV power, and the charging power varies with PV power.

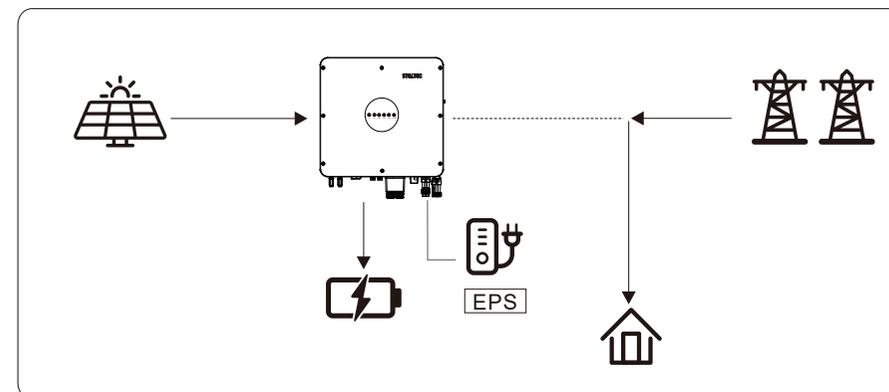
a) Wealthy PV power

When PV energy is wealthy, PV charges the battery first, then meets the load, and the rest is fed into the grid.



b) Limited PV power

When PV energy is limited, PV gives priority to charging the battery, and the grid directly meets the load demand.

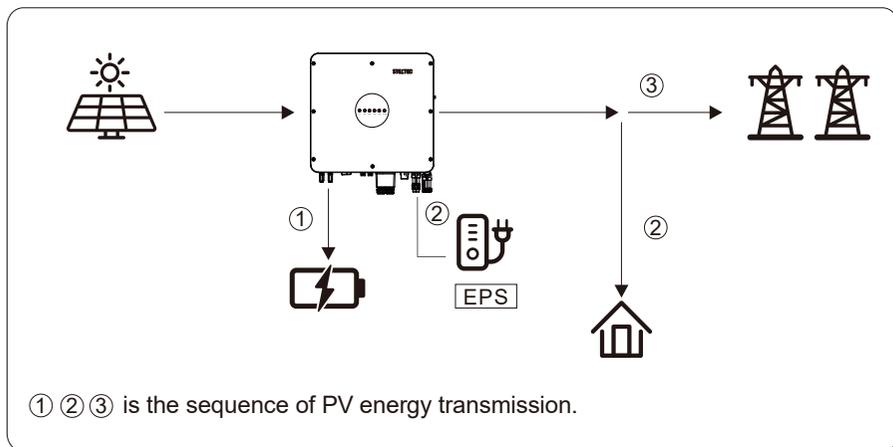


Allow grid charging

In this situation, the battery can be charged both with PV and grid.

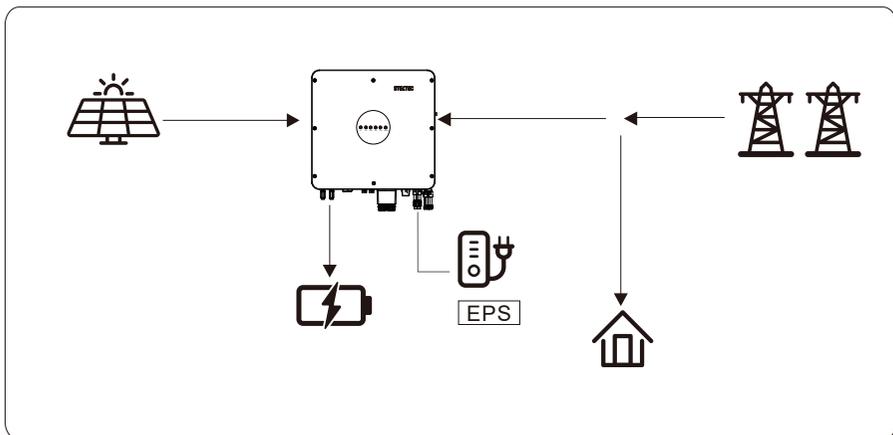
a) Wealthy PV power

When PV energy is wealthy, PV charges the battery first, then meets the load, and the rest is fed into the grid.



b) Limited PV power

When the PV energy is not enough to charge the battery, the grid energy will charge the battery as supplement. Meanwhile, the grid energy is consumed by loads.

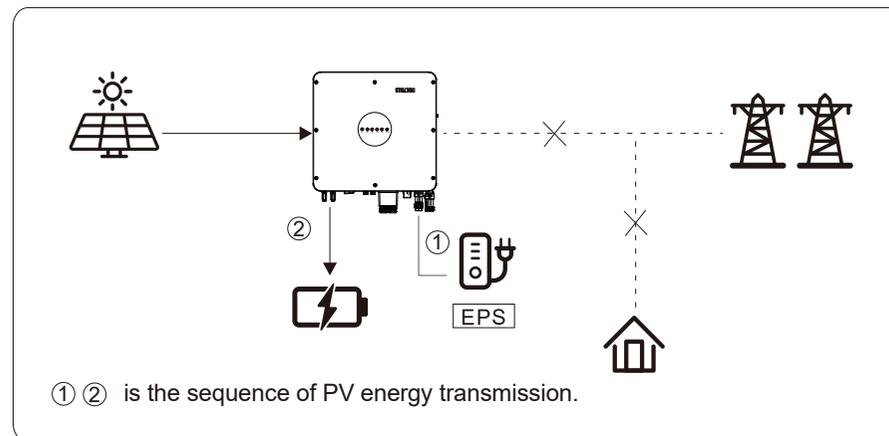


4.1.5 Off Grid Mode

When the power grid is cut off, the system automatically switches to Off Grid mode. Under off-grid mode, only critical loads are supplied to ensure that important loads continue to work with grid cut-off. Under this mode, the inverter can't work without the battery.

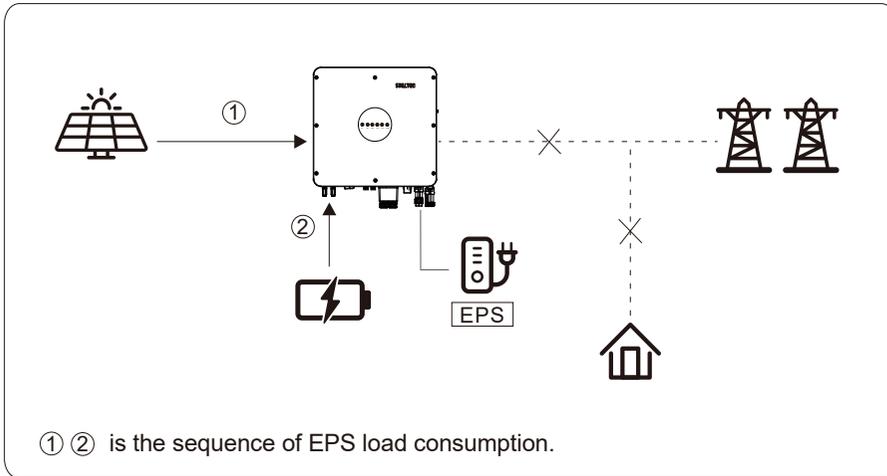
a) Wealthy PV power

When PV energy is wealthy, the PV power will be first consumed by critical load, charges battery then EPS load.



b) Limited PV power

When PV energy is limited, EPS loads are first powered by PV and then supplemented by battery.



! NOTICE

Under this mode, please complete the output voltage and frequency settings.
 It is better to choose the battery capacity larger than 100Ah to ensure EPS function work normally. If EPS output loads are inductive or capacitive loads, to make sure the stability and reliability of system, it is recommended to configure the power of these loads to be within 50% EPS output power range.

4.2 Start up the System

Check and confirm the installation is secure and strong enough and that the system grounding is OK. Then confirm the connections of AC, battery, PV etc. are correct. Confirm the parameters and configurations conform to relevant requirements.

| | |
|------------------------|--------------------------|
| AC Frequency 50/60Hz | PV Voltage 90~530V |
| Battery Voltage 42~60V | Grid AC Voltage 180~270V |

Make sure all the above aspects are right, then follow the procedure to start up the inverter:

- 1) Power on PV.
- 2) Power on the Battery.
- 3) Power on the AC.
- 4) Power on the EPS.
- 5) Connect the cell phone App via Bluetooth. Please refer to Section 7.2 for details.
- 6) Click the Power ON in the App for the first time. Please refer to Section 7.2 for details.

4.3 Shutdown Procedure

According to actual situation, if there is a must to shut-down the running system, please follow below procedure:

- 1) Connect the cell phone App via Bluetooth. Please refer to Section 7.2 for details.
- 2) Click the Power OFF on the App. Please refer to Section 7.2 for details.
- 3) Power off the EPS.
- 4) Power off the AC.
- 5) Power off the Battery.
- 6) Power off the PV.
- 7) If you need to disconnect the inverter cables, please wait at least 10 minutes before touching these parts of inverter.

5 Commissioning and Inspection

5.3 Commissioning

It is necessary to make a complete commissioning of the E-home system. This will essentially protect the system from fire, electric shock or other damages or injuries.

5.3.1 Inspection

Before commissioning, the operator or installer (qualified personnel) must inspect the system carefully and make sure:

- 1.The system is firmly installed correctly following the contents and notifications of this manual, and there are enough spaces for operation, maintenance and ventilation.
- 2.All the terminals and cables are in good status without any damages.
- 3.No items are left on the inverter or within the required clearance section.
- 4.The PV, battery pack is working normally, and grid is normal.

5.3.2 Commissioning Procedure

After the inspection and make sure status is right, then start the commissioning of the system.

- 1.Power on the system by referring to the Startup section 4.2.
- 2.Setting the parameters on the App according to user's requirement.
- 3.Finish commissioning.

6 User Interface

6.1 LED

| | | | | | | |
|--|--------|---------|----------|---------|---------|-----------|
| <p>This section describes the LED panel. LED indicator includes PV, BAT, GRID, EPS, COM, ALARM indicators. It includes the explanation of indicator states and summary of indicator states under the running state of the machine.</p> | PV | BAT | GRID | EPS | COM | ALARM |
|--|--------|---------|----------|---------|---------|-----------|

| LED Indicator | Status | Description |
|---------------|--------|---|
| PV | On | PV input is normal. |
| | Blink | PV input is abnormal. |
| | Off | PV is unavailable. |
| BAT | On | Battery is charging. |
| | Blink | Battery is discharging. Battery is abnormal. |
| | Off | Battery is unavailable. |
| GRID | On | GRID is available and normal. |
| | Blink | GRID is available and abnormal. |
| | Off | GRID is unavailable. |
| COM | On | Communication is ok. |
| | Off | Power supply is unavailable. |
| EPS | On | EPS power is available. |
| | Blink | EPS output is abnormal. |
| | Off | EPS power is unavailable. |
| ALARM | On | Fault has occurred and inverter shuts down. |
| | Blink | Alarms has occurred but inverter doesn't shut down. |
| | Off | No fault. |

| Details | Code | PV LED | Grid LED | BAT LED | EPS LED | COM LED | ALARM LED |
|-------------------------------------|------|--------|----------|---------|---------|---------|-----------|
| PV normal | | ● | ◎ | ◎ | ◎ | ◎ | ○ |
| No PV | | ○ | ◎ | ◎ | ◎ | ◎ | ○ |
| PV over voltage | B0 | | | | | | |
| PV under voltage | B4 | | | | | | |
| PV irradiation weak | B5 | ★ | ◎ | ◎ | ◎ | ◎ | ○ |
| PV string reverse | B7 | | | | | | |
| PV string abnormal | B3 | | | | | | |
| On grid | | ◎ | ● | ◎ | ◎ | ◎ | ○ |
| Grid over voltage | A0 | | | | | | |
| Grid under voltage | A1 | | | | | | |
| Grid absent | A2 | | | | | | |
| Grid over frequency | A3 | ◎ | ★ | ◎ | ◎ | ◎ | ○ |
| Grid under frequency | A4 | | | | | | |
| Grid abnormal | A6 | | | | | | |
| Grid over mean voltage | A7 | | | | | | |
| Neutral live wire reversed | A8 | | | | | | |
| Battery in charge | | ◎ | ◎ | ● | ◎ | ◎ | ○ |
| Battery absent | D1 | ◎ | ◎ | ○ | ◎ | ◎ | ○ |
| Battery in discharge | | ◎ | ◎ | ★★★ | ◎ | ◎ | ○ |
| Battery under voltage | D3 | | | | | | |
| Battery over voltage | D2 | | | | | | |
| Battery discharge over current | D4 | ◎ | ◎ | ★ | ◎ | ◎ | ○ |
| Battery over temperature | D5 | | | | | | |
| Battery under temperature | D6 | | | | | | |
| Communication loss (Inverter - BMS) | D8 | | | | | | |
| EPS output active | | ◎ | ◎ | ◎ | ● | ◎ | ◎ |
| EPS output inactive | | ◎ | ◎ | ◎ | ○ | ◎ | ◎ |
| EPS short circuit | DB | | | | | | |
| EPS over load | DC | | | | | | |
| EPS output voltage abnormal | D7 | ◎ | ◎ | ◎ | ★ | ◎ | ○ |
| EPS over dc-bias voltage | CP | | | | | | |

| Details | Code | PV LED | Grid LED | BAT LED | EPS LED | COM LED | ALARM LED |
|----------------------------------|------|--------|----------|---------|---------|---------|-----------|
| RS485/DB9/BLE/USB | | ◎ | ◎ | ◎ | ◎ | ● | ◎ |
| Inverter over temperature | C5 | | | | | | |
| Fan abnormal | C8 | | | | | | |
| Inverter in power limit state | CL | | | | | | |
| Data logger lost | CH | ◎ | ◎ | ◎ | ◎ | ◎ | ★ |
| Meter lost | CJ | | | | | | |
| Remote off | CN | | | | | | |
| PV insulation abnormal | B1 | | | | | | |
| Leakage current abnormal | B2 | | | | | | |
| Internal power supply abnormal | C0 | | | | | | |
| Inverter over dc-bias current | C2 | | | | | | |
| Inverter relay abnormal | C3 | | | | | | |
| GFCI abnormal | C6 | | | | | | |
| System type error | C7 | | | | | | |
| Unbalance Dc-link voltage | C9 | | | | | | |
| Dc-link over voltage | CA | ◎ | ◎ | ◎ | ◎ | ◎ | ● |
| Internal communication error | CB | | | | | | |
| Internal communication loss(E-M) | D9 | | | | | | |
| Internal communication loss(M-D) | DA | | | | | | |
| Software incompatibility | CC | | | | | | |
| Internal storage error | CD | | | | | | |
| Boost abnormal | CG | | | | | | |
| Dc-dc abnormal | CU | | | | | | |

Remark: ● Light on ○ Light off ◎ Keep original status
 ★ Blink 1s and off 1s ★★ Blink 2s and off 1s

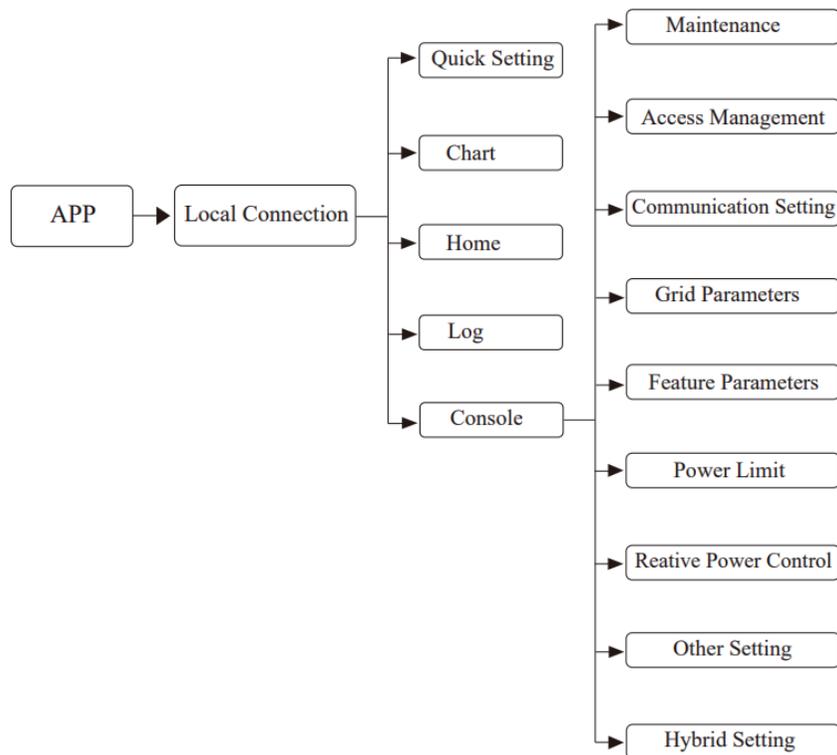
6.2 App Setting Guide

6.2.1

Download “SolarHope” from the Apple Store or Google Play.
The APP should access some permissions such as device’s location. You need to grant all access rights in all pop-up windows when installing the APP or setting your phone.

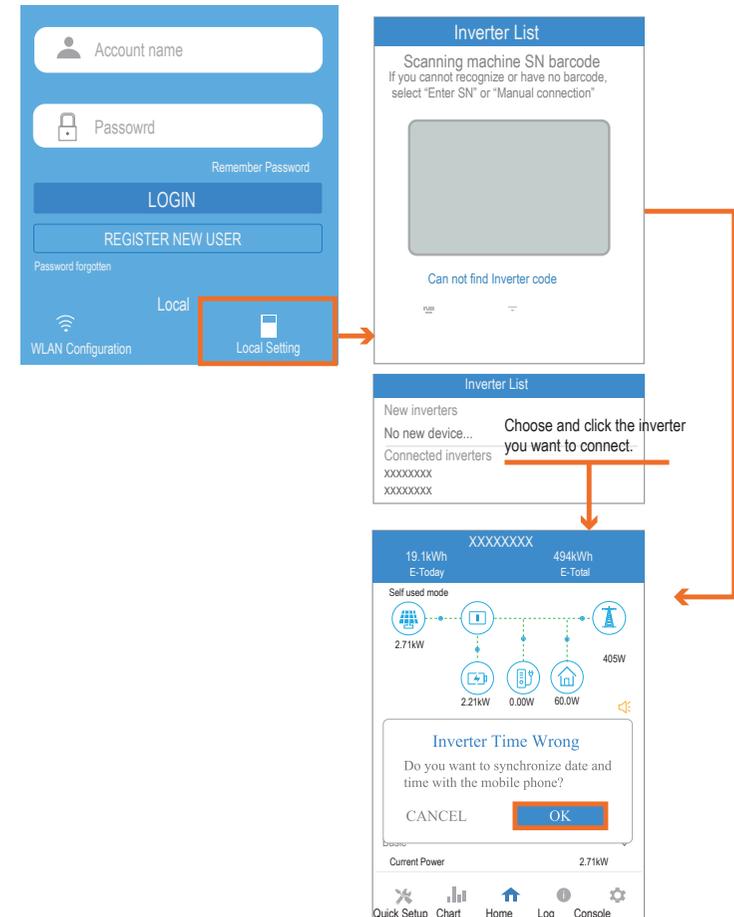
6.2.2 App Architecture

Local connection: APP reads data from inverter through Bluetooth connection with Modbus protocol to display and configure inverter parameter.



6.2.3 Local Setting

- Access Permission
Before using the local setting, “SolarHope” APP should access some permissions. (You need to grant all access rights in all pop-up windows when installing the APP or setting your phone.) When the APP asks for permission, please click Allow.
- Connect Inverter
Firstly, open the Bluetooth on your own phone, then open “SolarHope” APP. Press Local Setting to go to the connect page. This page shows the inverters which you can connect or you have connected. (As shown below) Press the inverter’s name to connect it.

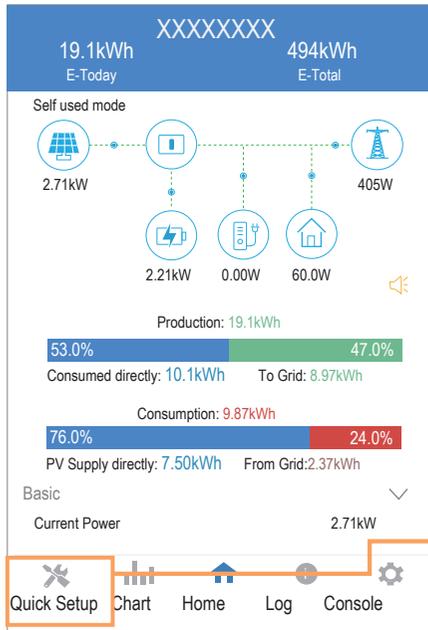


■ Quick Setting

1. Connect to the router.

Step 1 Go to Quick Setting page.

Step 2 Click each item to enter the information, then click Next.



XXXXXXX

1 2 3 4 5

Step1 Set parameters the inverter to connect to the router.

SSID Password

Click each item to enter the information.

WiFi SSID
WiFi PASSWORD

Next

2. Set parameters of power grid

Step 1 Click each item to enter the parameters of power grid.

Step 2 Click Next .

Step 3 Click Previous back to the previous page.

XXXXXXX

1 2 3 4 5

Step2 Set parameters for the inverter to connect to the power grid.

Standard Code
Nominal Voltage(V)
Nominal frequency (Hz)
Date and Time

Click each item to enter the information.

Previous Next

3. Set parameters of power limit

Step 1 Click each item to enter the parameters of power limit.

Step 2 Click Next .

Step 3 Click Previous back to the previous page.

XXXXXXX

Step3 Set parameters for the inverter to connect to the power limit.

Power control
Meter location
Meter Type
Power flow direction
Digital meter modbus address
Maximum feed in grid power(W)

Click each item to enter the information.

Previous Next

4. Set parameters of work mode

Step 1 Click each item to enter the information of work mode.

Step 2 Click Next .

Step 3 Click Previous back to the previous page.

XXXXXXX

1 2 3 4 5

Step4 Set parameters for the inverter to connect to the workmode.

Hybrid work mode
Battery type selection
EPS Output

Click each item to enter the information.

Previous Next

5. Start Inverter

Step 1 Click  .

Step 2 Click Previous back to the previous page.

XXXXXXX

1 2 3 4 5

Step5 Please click the button below to start the inverter.

Click it to start. 

Previous

APP Power Chart

The power chart is showed by Day, Month and Year in our APP. For each exhibition method, it includes both Production and Consumption. We use different icons and colors for different power messages. The icon and color definition as below:

- 

Color: Blue
Definition: Load consumption only from PV
- 

Color: Red
Definition: Battery charge power with PV or AC
- 

Color: Red
Definition: Battery discharge power for load consumption or feed-in grid
- 

Color: Purple
Definition: Consumption power from grid
- 

Color: Purple
Definition: Feed-in grid power from PV or battery
- 

Color: Orange
Definition: Loadower
- 

Color: Orange
Definition: PV generating power

1. Query (Daily) Data

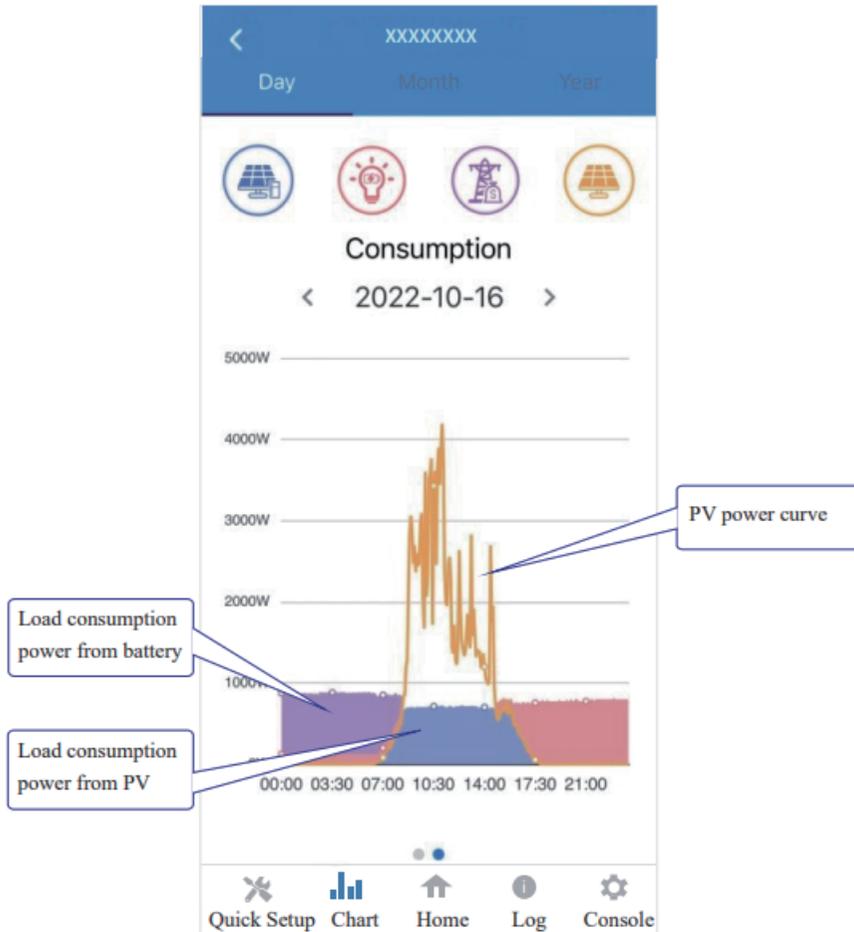
Go to Chart > Day page. It will show the Daily Production or Consumption Curve in this page. You can swipe the screen left and right to switch the graph.

Day Chart--Production



The above combination day chart shows the PV production power distributed with three parts: load consumption power (Blue) battery charge power (Red) feed-in grid power (Purple)

Day Chart--Consumption

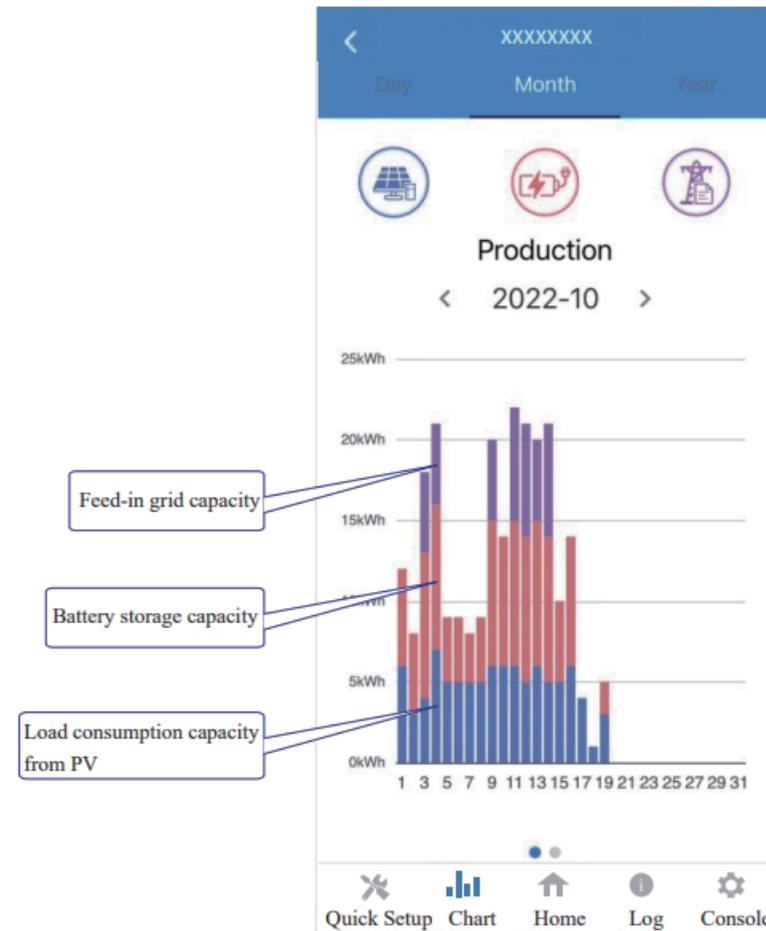


The above combination day chart shows the load consumption power from three parts:
 PV generation power (Blue)
 battery discharge power (Red)
 grid power (Purple)
 Power supported by PV + power supported by battery + power supported by grid = Load consumption power.

2. Query (Monthly) Data

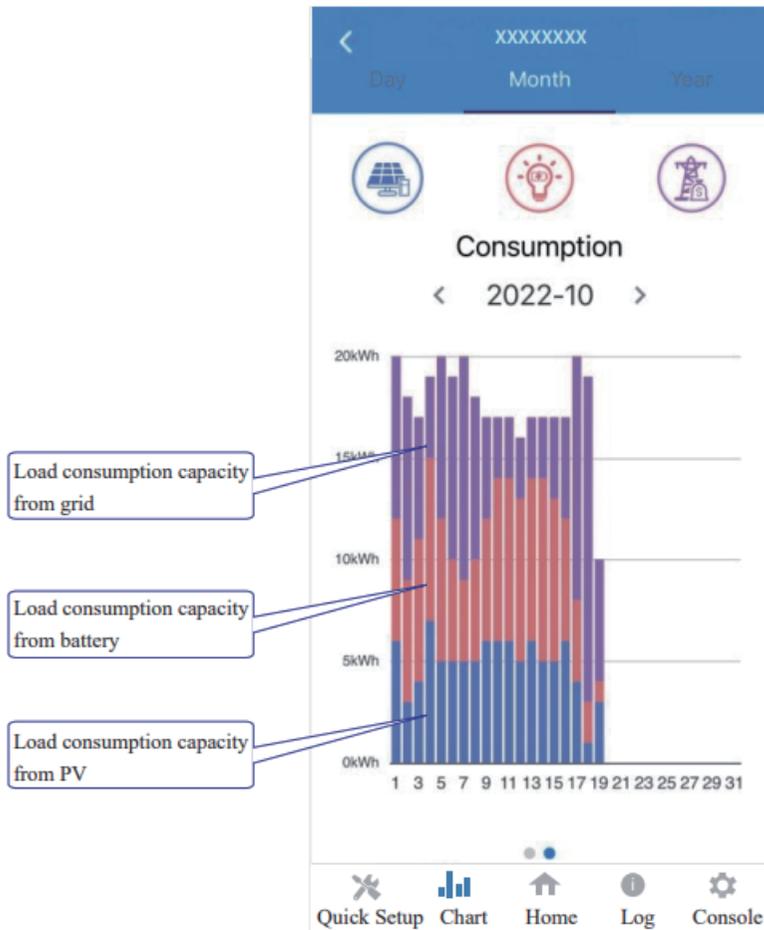
Go to Chart > Month page. It will show the Monthly Production or Consumption Curve in this page. You can swipe the screen left and right to switch the graph.

Month Chart--Production



The above combination day chart shows the load consumption power from three parts:
 load consumption capacity (Blue)
 battery storage capacity (Red)
 feed-in grid capacity (Purple)

Month Chart--Consumption

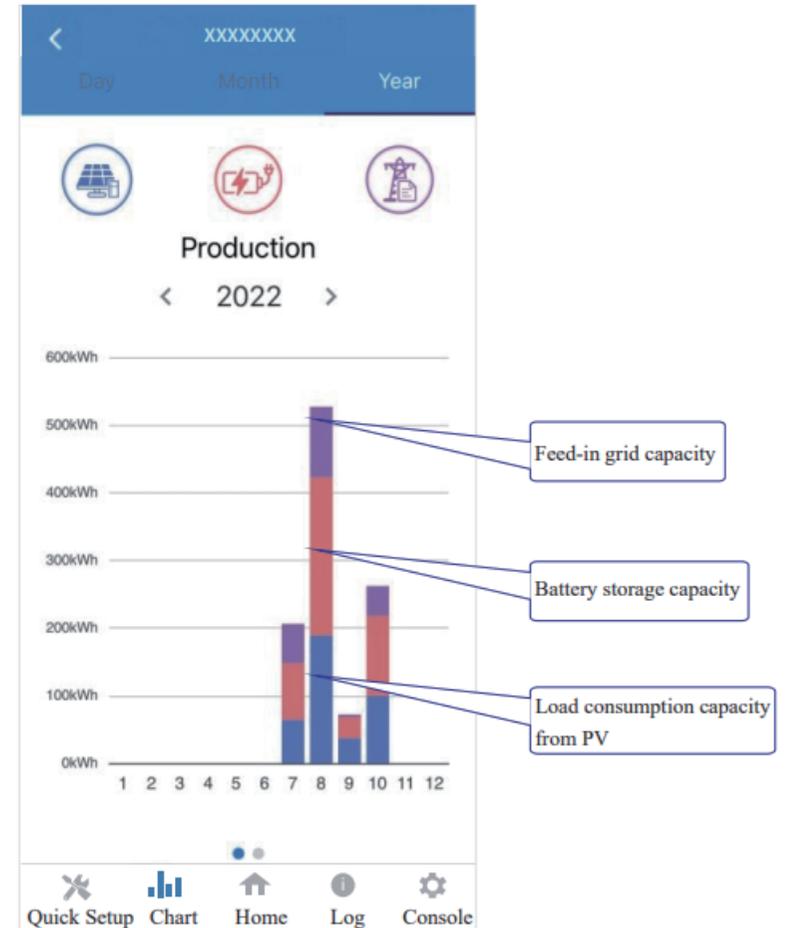


The above combination month chart shows the load consumption capacity from three parts:
 PV generation capacity (Blue)
 battery discharge capacity (Red)
 grid capacity (Purple)

Query (Yearly) Data

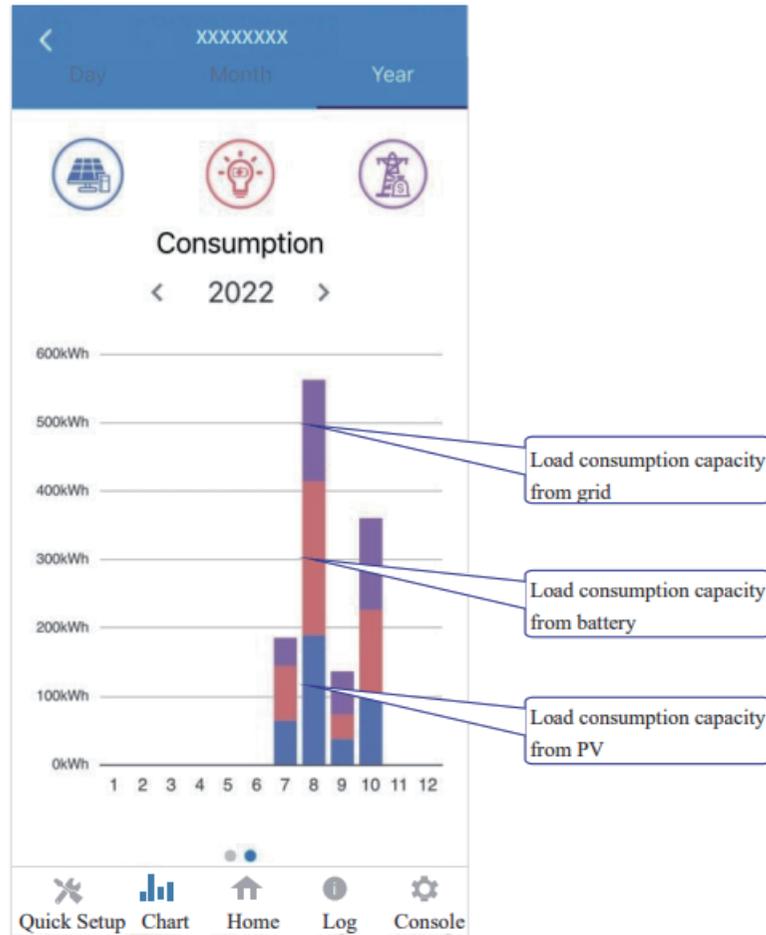
Go to Chart > Year page. It will show the Annually Production or Consumption Curve in this page. You can swipe the screen left and right to switch the graph.

Year Chart--Production



The above combination year chart shows the distribution of PV production capacity with three parts:
 load consumption capacity (Blue)
 battery storage capacity (Red)
 feed-in grid capacity (Purple)

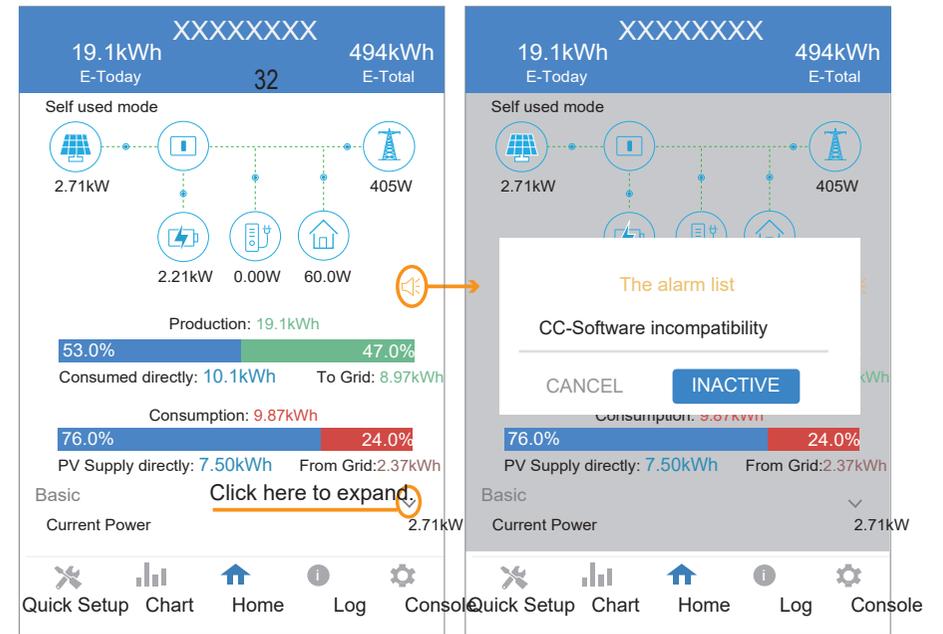
Year Chart--Consumption



The above combination year chart shows the load consumption capacity from three parts:
 PV generation capacity (Blue)
 battery discharge capacity (Red)
 grid capacity (Purple)

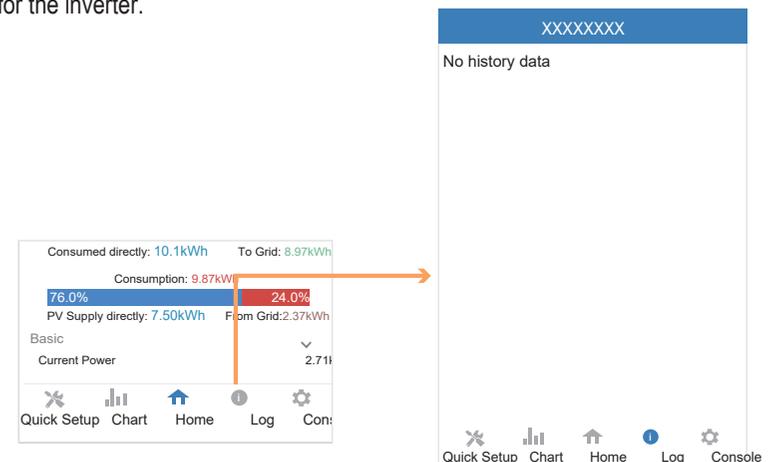
2. Local Setting Homepage

This page shows the basic information of inverter. Click to display the warning message.

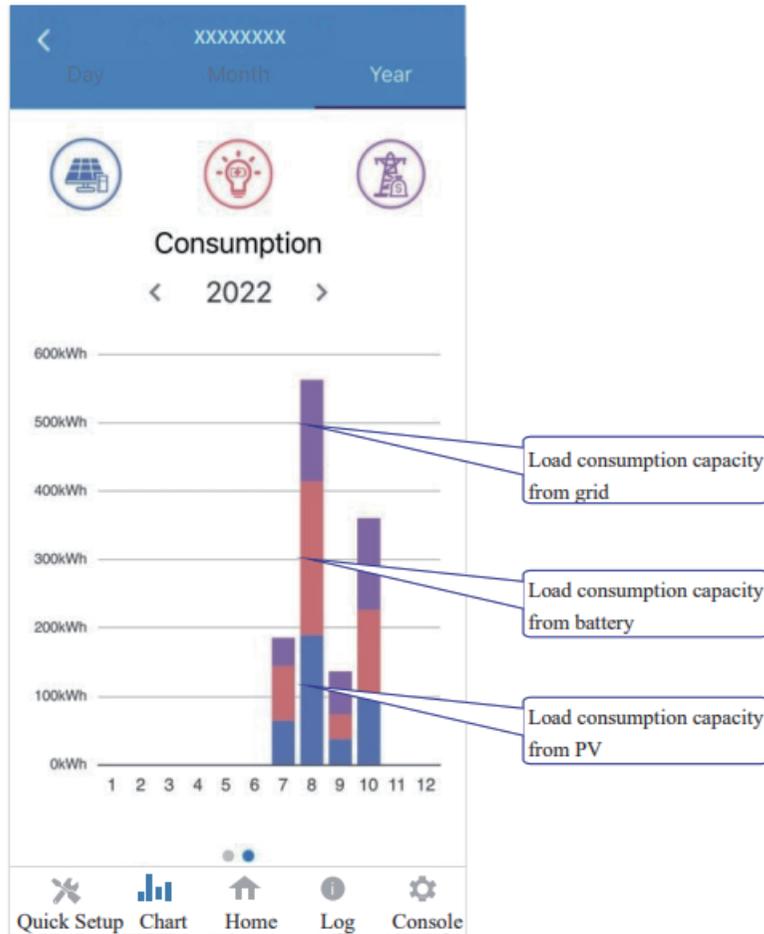


History Log

Press Log at the bottom and then go to the history logpage (as shown below). It contains all the logs for the inverter.



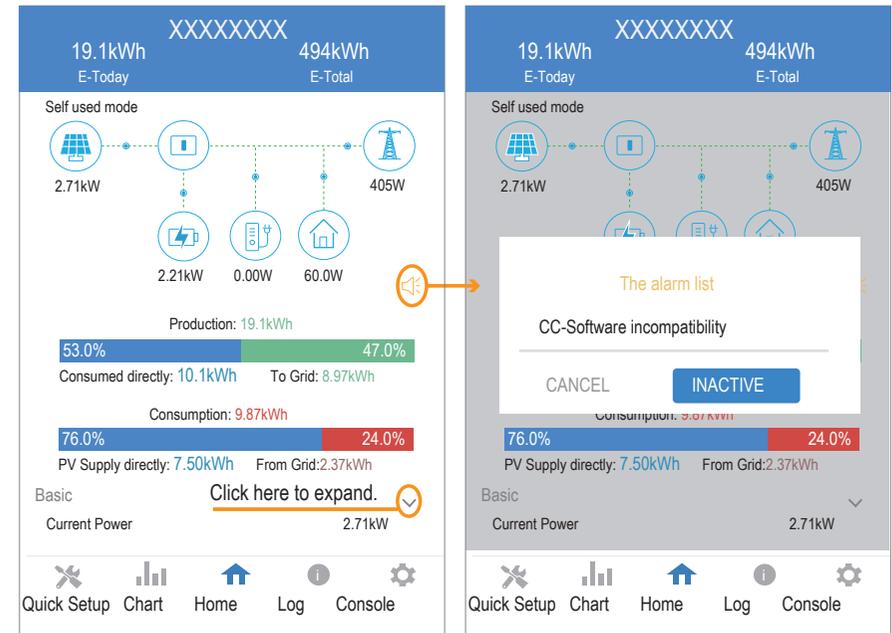
Year Chart--Consumption



The above combination year chart shows the load consumption capacity from three parts:
 PV generation capacity (Blue)
 battery discharge capacity (Red)
 grid capacity (Purple)

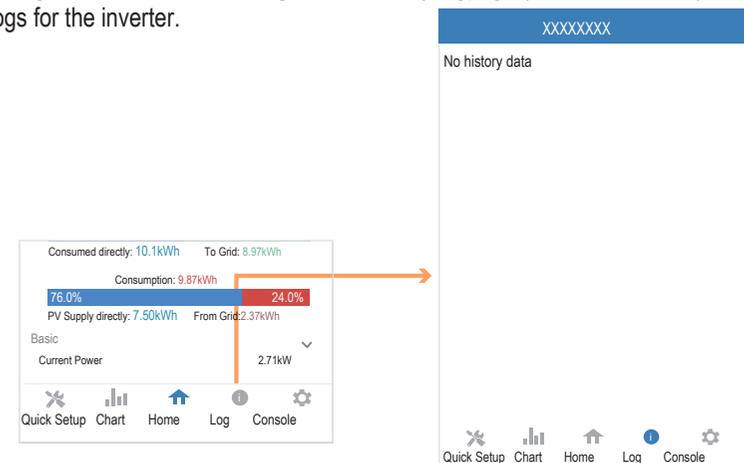
2. Local Setting Homepage

This page shows the basic information of inverter. Click to display the warning message.



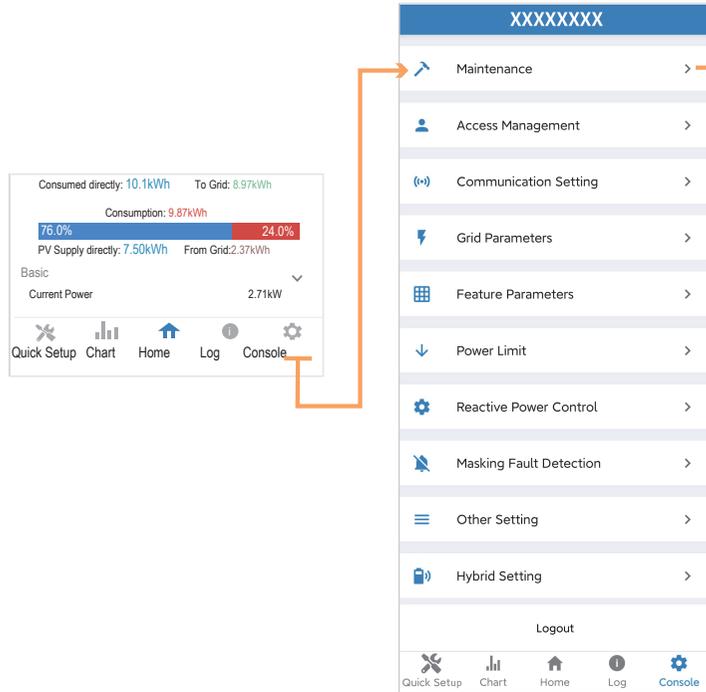
History Log

Press Log at the bottom and then go to the history logpage (as shown below). It contains all the logs for the inverter.

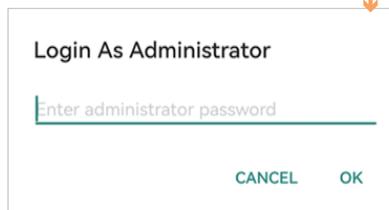


■ Maintenance

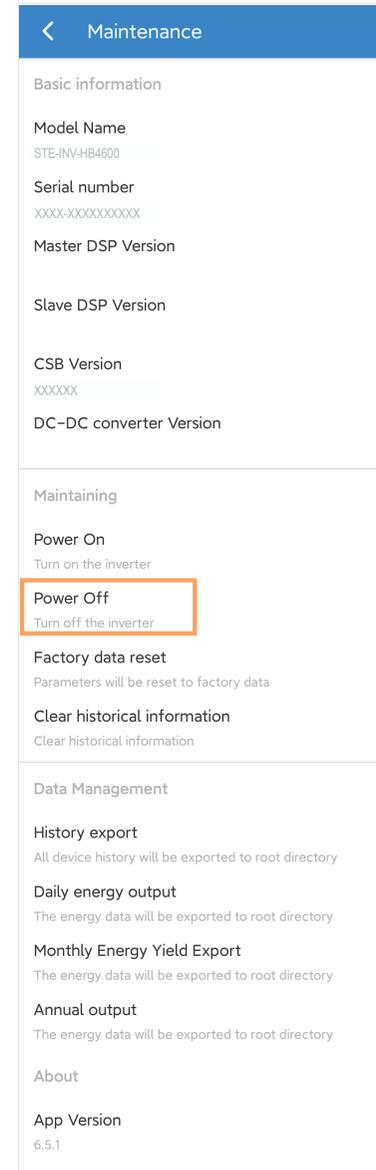
Go to [Console](#) page. And click [Maintenance](#)



Then you need to enter password in a popup window (as shown below).



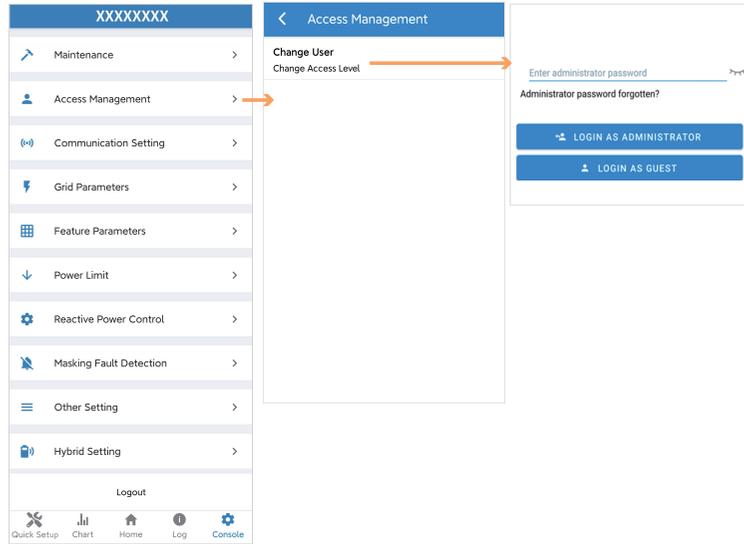
In this page, you can view the basic information like some version information, do some maintaining operations like turn off/on the inverter and manage data.



■ Console

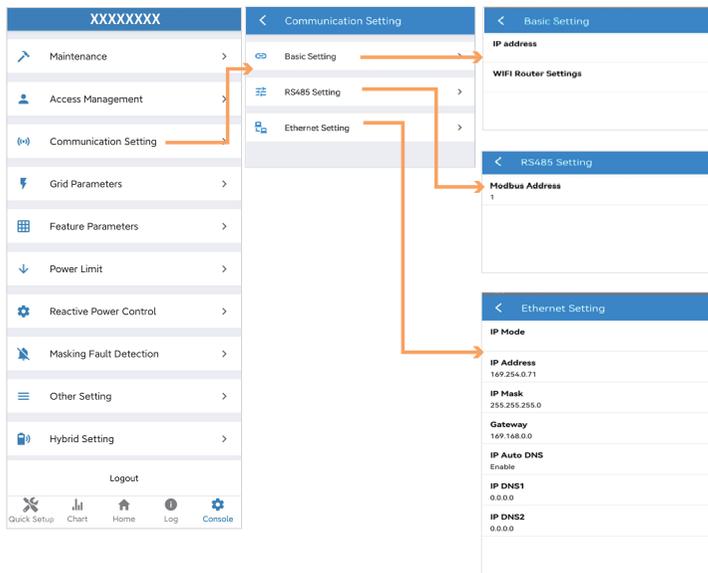
Access Management

Go to [Console](#) > [Access Management](#) page. In this page, you can switch the login permission.



Communication Setting

Go to [Console](#) > [Communication Setting](#) page. In this page, you can set or change the parameters of communication settings: Basic Setting, RS485 Setting and Ethernet Setting.



Grid Parameters

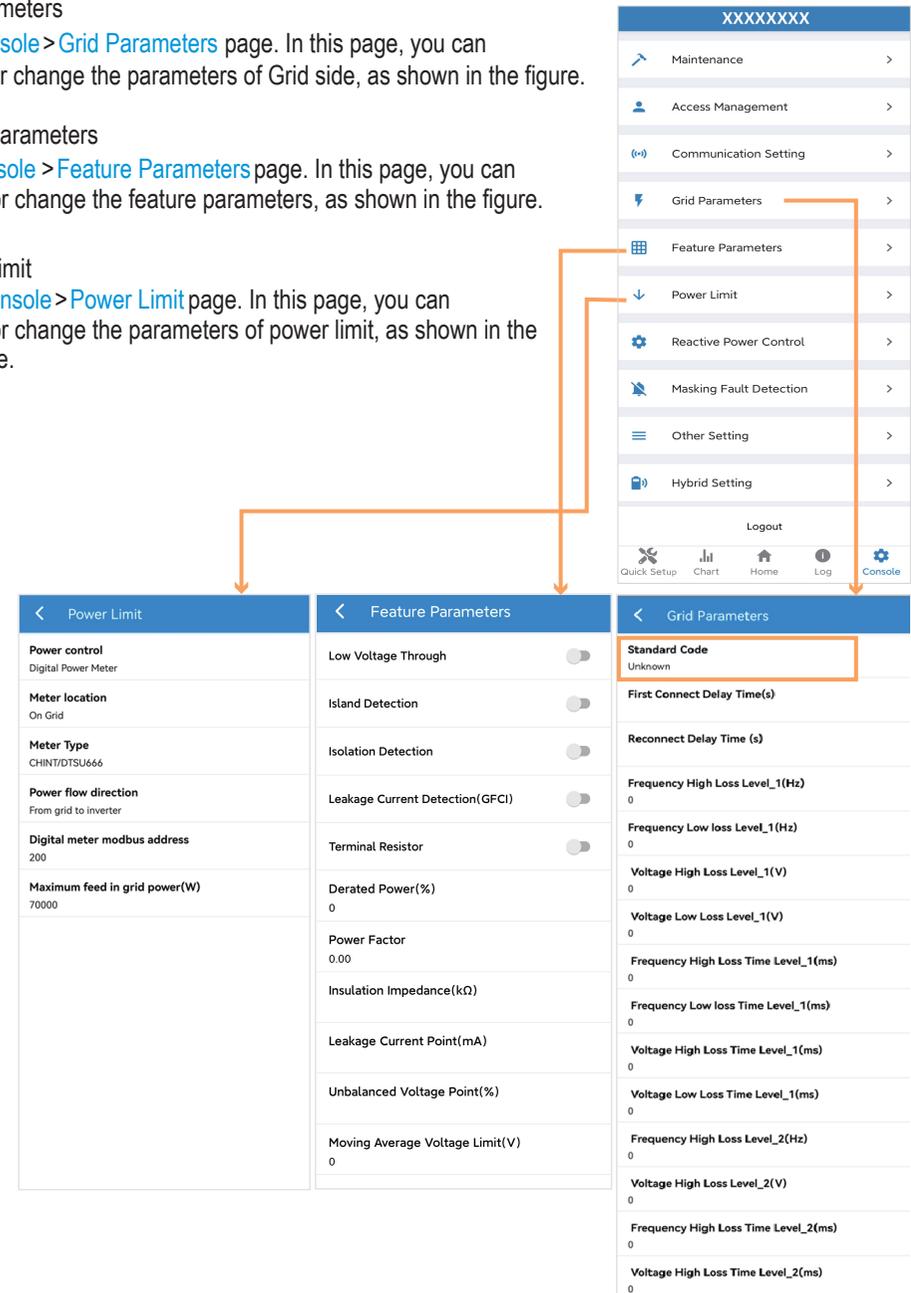
Go to [Console](#) > [Grid Parameters](#) page. In this page, you can set or change the parameters of Grid side, as shown in the figure.

Feature Parameters

Go to [Console](#) > [Feature Parameters](#) page. In this page, you can set or change the feature parameters, as shown in the figure.

Power Limit

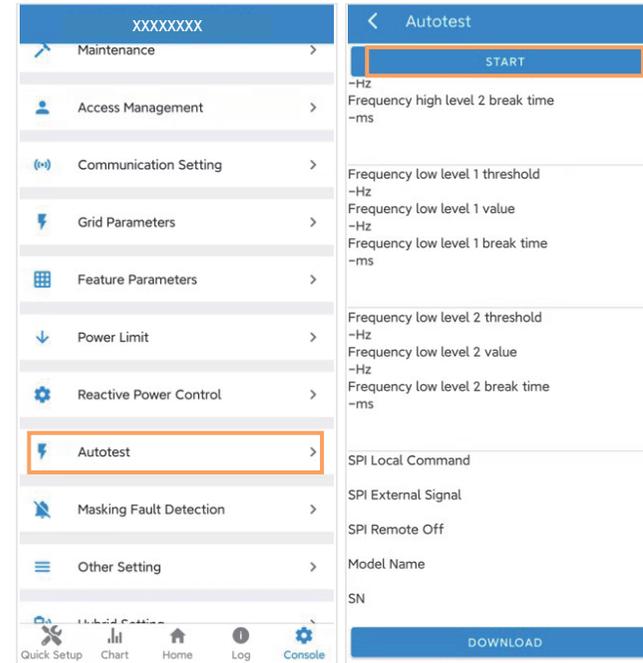
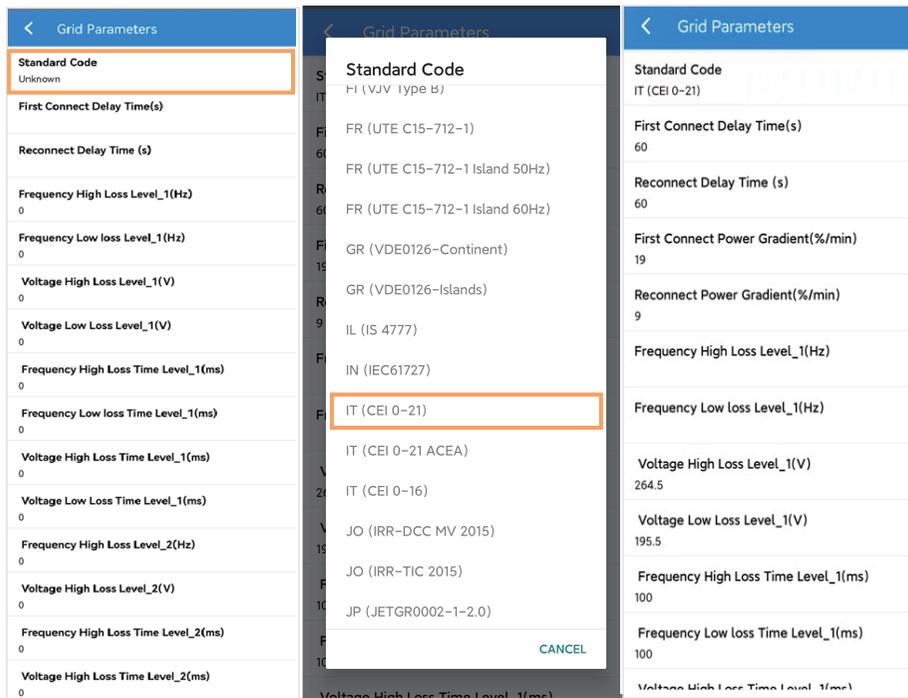
Go to [Console](#) > [Power Limit](#) page. In this page, you can set or change the parameters of power limit, as shown in the figure.



How to Autotest?

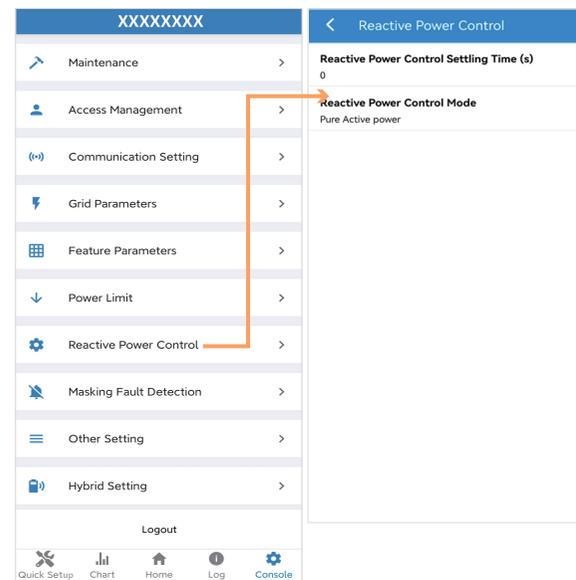
- Step 1. Go to [Grid Parameters](#) > [Standard Code](#) page to select the IT (CEI 0-21).
- Step 2. Back to [Console](#) page. Refresh the page and enter the [Autotest](#) page to click **START**.
- Step 3. Then the inverter is autotesting. Wait for about 10 minutes, the autotest process will be finished.
- Step 4. You can click the [DOWNLOAD](#) to save the data file if necessary.

Note: if the [Autotest](#) option can't be turned out after the refresh in step 2. Please re-connect after logout. And then go to [Console](#)>[Autotest](#) page to click **START**.



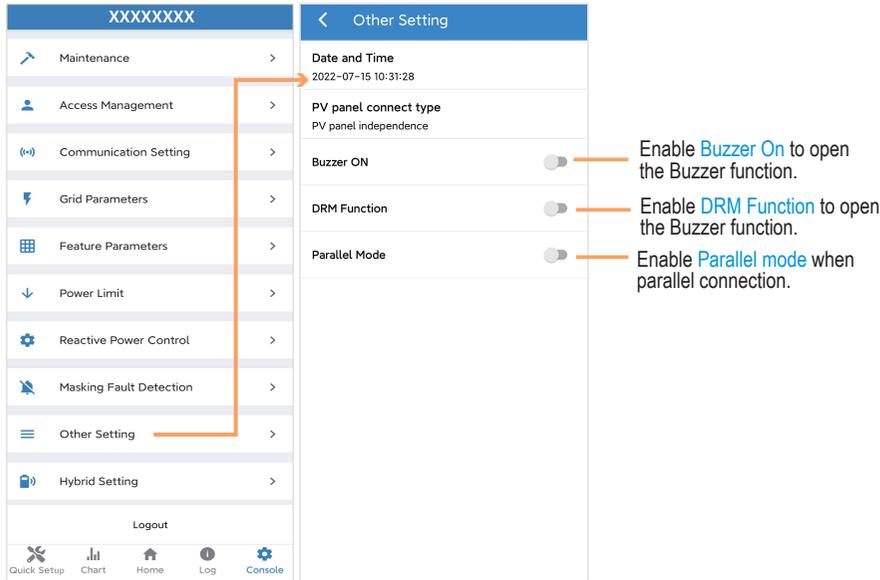
Reactive Power Control

Go to [Console](#) > [Reactive Power Control](#) page. In this page, you can set or change the Reactive Power Control parameters.



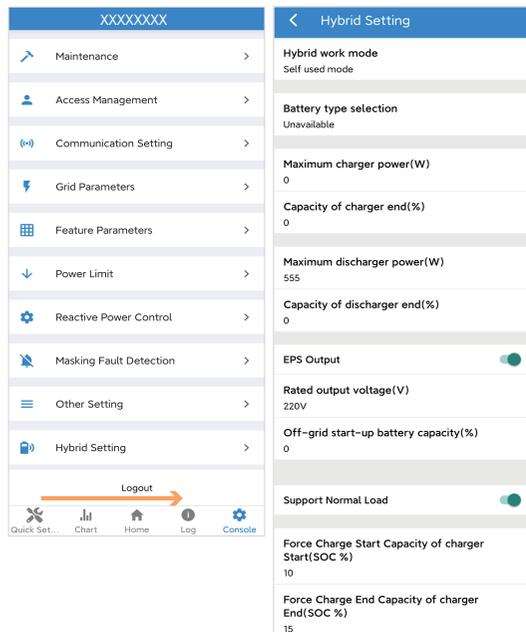
Other Setting

Go to **Console > Other Setting** page. In this page, you can set other setting parameters.



Hybrid Setting

Go to **Console > Hybrid Setting** page. In this page, you can set Hybrid Setting parameters.



6.3 Remote Monitoring

6.3.1 Remote Monitoring

Since you have configured the inverter to router via SolarHope APP in page 51, please use SOLARMAN WEB or APP for remote monitoring of the inverter.

If you are installers or distributors, please use SOLARMAN Business, here is the guide:

1. https://1m2919z267.k.topthink.com/@solarmanbusiness-web_en/xiaomaishangjiabanWebcaozuoshou.html
2. https://1m2919z267.k.topthink.com/@solarmanbusiness-app_en/1xiaomaishangjiabanAPPyingyong.html

If you are end users, please use SOLARMAN Smart, here is the guide:

1. https://1m2919z267.k.topthink.com/@solarmansmart-web_en/1xiaomaizhidianWebyingyong.html
2. https://1m2919z267.k.topthink.com/@solarmansmart-app_en/1.xiaomaizhidianAPPyingyong.html

| | |
|---------|--|
| CAUTION | Before maintaining and commissioning inverter and its peripheral distribution unit, switch off all the charged terminals of the inverter and wait at least 10 minutes after the inverter is powered off. |
|---------|--|

7. Maintenance

7.1 Routine Maintenance

| Items | Check Content | Maintain Content | Maintenance Interval |
|------------------------------------|---|--|----------------------|
| Inverter output status | Statistically maintain the status of electrical yield, and remotely monitor its abnormal status. | N/A | Weekly |
| PV inverter cleaning | Check periodically that the heat sink is free from dust and blockage. | Clean periodically the heat sink. | Yearly |
| PV inverter running status | Check that the inverter is not damaged or deformed. Check for normal sound emitted during inverter operation. Check and ensure that all inverter communications are running well. | If there is any abnormal phenomenon, replace the relevant parts. | Monthly |
| PV inverter electrical connections | Check that all AC, DC and communication cables are securely connected; Check that PGND cables are securely connected; Check that all cables are intact and free from aging. | If there is any abnormal phenomenon, replace the cable or re-connect it. | Semiannually |

7.2 System Troubleshooting

When the inverter has an exception, its basic common warning and handling methods are shown below.

| Code | Alarm Information | Suggestions |
|------|--------------------------------|---|
| A0 | Grid over voltage | 1. If the alarm occurs occasionally, possibly the power grid voltage is abnormal temporarily, and no action is required. 2. If the alarm occurs repeatedly, contact the local power station. After receiving approval of the local power bureau, revise the electrical protection parameter settings on the inverter through the App. 3. If the alarm persists for along time, check whether the AC circuit breaker /AC terminals is disconnected, or if the grid has a power outage. |
| A1 | Grid under voltage | |
| A3 | Grid over frequency | |
| A4 | Grid under frequency | |
| A2 | Grid absent | Wait till power is restored. |
| B0 | PV over voltage | Check whether the maximum input voltage of a single PV string exceeds the MPPT working voltage. If yes, modify the number of PV module connection strings. |
| B1 | PV insulation abnormal | 1. Check the insulation resistance against the ground for the PV strings. If a short circuit has occurred, rectify the fault. 2. If the insulation resistance against the ground is less than the default value in a rainy environment, set insulation resistance protection on the App. |
| B2 | Leakage current abnormal | 1. If the alarm occurs occasionally, the inverter can be automatically recovered to the normal operating status after the fault is rectified. 2. If the alarm occurs repeatedly, contact your dealer for technical support. |
| B4 | PV under voltage | 1. If the alarm occurs occasionally, possibly the external circuits are abnormal accidentally. The inverter automatically recovers to the normal operating status after the fault is rectified. 2. If the alarm occurs repeatedly or last a long time, check whether the insulation resistance against the ground of PV strings is too low. |
| C0 | Internal power supply abnormal | 1. If the alarm occurs occasionally, the inverter can be automatically restored, and no action is required. 2. If the alarm occurs repeatedly, please contact the customer service. |

| | | |
|----|-------------------------------|---|
| C2 | Inverter over dc-bias current | 1. If the alarm occurs occasionally, possibly the power grid voltage is abnormal temporarily, and no action is required. 2. If the alarm occurs repeatedly, and the inverter fails to generate power, contact the customer service. |
| C3 | Inverter relay abnormal | 1. If the alarm occurs occasionally, possibly the power grid voltage is abnormal temporarily, and no action is required. 2. If the alarm occurs repeatedly, pls. refer to the suggestions or measures of Grid over voltage. If the inverter fails to generate power, contact the customer service center. If there is no abnormality on the grid side, the machine fault can be determined. (If you open the cover and find traces of damage to the relay, it can be concluded that the machine is faulty.) And pls. contact the customer service. |
| CN | Remote off | 1. Local manual shutdown is performed in APP. 2. The monitor executed the remote shutdown instruction. 3. Remove the communication module and confirm whether the alarm disappears. If yes, replace the communication module. Otherwise, please contact the customer service. |
| C5 | Inverter over temperature | 1. If the alarm occurs occasionally, the inverter can be automatically recovered. No action is required. 2. If the alarm occurs repeatedly, please check whether the installation site has direct sunlight, bad ventilation, or high ambient temperature (such as installed on the parapet). Yet, if the ambient temperature is lower than 45° C and the heat dissipation and ventilation is good, please contact customer service. |
| C6 | GFCI abnormal | 1. If the alarm occurs occasionally, it could have been an occasional exception to the external wiring. The inverter can be automatically recovered. No action is required. 2. If it occurs repeatedly or cannot be recovered for a long time, please contact customer service. |
| B7 | PV string reverse | Check and modify the positive and negative polarity of the input string. |
| C8 | Fan abnormal | 1. If the alarm occurs occasionally, please restart the inverter. 2. If it occurs repeatedly or cannot be recovered for a long time, check whether the external fan is blocked by other objects. Otherwise, Please contact customer service. |
| C9 | Unbalance Dc-link voltage | 1. If the alarm occurs occasionally, the inverter can be automatically recovered. No action is required. |
| CA | Dc-link over voltage | 2. If the alarm occurs repeatedly, the inverter cannot work properly. Please contact customer service. |

| | | |
|----|------------------------------|---|
| CB | Internal communication error | <ol style="list-style-type: none"> 1. If the alarm occurs occasionally, the inverter can be automatically recovered. No action is required. 2. If the alarm occurs repeatedly, the inverter cannot work properly. Please contact customer service. |
| CC | Software incompatibility | |
| CD | Internal storage error | <ol style="list-style-type: none"> 1. If the alarm occurs occasionally, the inverter can be automatically recovered. No action is required. 2. If the alarm occurs repeatedly, the inverter cannot work properly. Please contact customer service. |
| CE | Data inconsistency | |
| CF | Inverter abnormal | <ol style="list-style-type: none"> 1. If the alarm occurs occasionally, the inverter can be automatically recovered. No action is required. 2. If the alarm occurs repeatedly, the inverter cannot work properly. Please contact customer service. |
| CG | Boost abnormal | |
| CJ | Meter lost | <ol style="list-style-type: none"> 1. Check the meter parameter settings 2. Check whether the communication address of the inverter is consistent with that of the electricity meter through local APP. 3. The communication line is connected incorrectly or in bad contact 4. electricity meter failure. 5. If exclude the above faults, the alarm continues to occur, please contact the customer service center. |
| P1 | Parallel ID warning | It is Parallel ID Alarm. Pls. check the parallel communication cable, and check whether any inverter joins or exits online. All inverters are powered off completely, check the line, and then power on the inverters again to ensure that the alarm is lifted |
| P2 | Parallel SYN signal warning | Parallel synchronization signal is abnormal. Check whether the parallel communication cable is properly connected. |
| P3 | Parallel BAT abnormal | The parallel battery is abnormal. Check whether the battery of the inverter is reported low voltage or the battery is not connected. |
| P4 | Parallel GRID abnormal | The parallel grid is abnormal. Check whether the grid of the inverter is abnormal. |

| | | |
|----|------------------------------------|--|
| D2 | Battery over voltage | <ol style="list-style-type: none"> 1. If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required. 2. Check whether the battery overvoltage protection value is improperly set. 3. The battery is abnormal. 4. If exclude the above, the alarm continues to occur, please contact customer service. |
| D3 | Battery under voltage | <ol style="list-style-type: none"> 1. If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required. 2. Check the communication line connection between BMS and inverter (lithium battery). 3. The battery is empty or the battery voltage is lower than the SOC cut-off voltage. 4. The battery undervoltage protection value is improperly set. 5. The battery is abnormal. 6. If exclude the above, the alarm continues to occur, please contact the customer service center. |
| D4 | Battery discharger over current | <ol style="list-style-type: none"> 1. Check whether the battery parameters are correctly set. 2. The battery is undervoltage. 3. Check whether a separate battery is loaded and the discharge current exceeds the battery specifications. 4. The battery is abnormal. 5. If exclude the above, and the alarm continues to occur, please contact customer service. |
| D5 | Battery over temperature | <ol style="list-style-type: none"> 1. If the alarm occurs repeatedly, please check whether the installation site is in direct sunlight and whether the ambient temperature is too high (such as in a closed room). 2. If the battery is abnormal, replace it with a new one 3. If exclude the above, and the alarm continues to occur, please contact the customer service center. |
| D6 | Battery under temperature | |
| D7 | EPS output voltage abnormal | <ol style="list-style-type: none"> 1. Check whether the EPS voltage and frequency Settings are within the specified range 2. Check whether the EPS port is overloaded 3. When not connected to the power grid, check whether EPS output is normal 4. If exclude the above, and the alarm continues to occur, please contact customer service. |
| D8 | Communication error (Inverter-BMS) | <ol style="list-style-type: none"> 1. Check whether the battery is disconnected. 2. Check whether the battery is well connected with the inverter. 3. Confirm that the battery is compatible with the inverter. It is recommended to use CAN communication. 4. Check whether the communication cable or port between the battery and the inverter is faulty. 5. If exclude the above, and the alarm continues to occur, please contact the customer service center. |

| | | |
|----|-----------------------------------|---|
| D9 | Internal communication loss (E-M) | <ol style="list-style-type: none"> 1. Check whether the communication cables between EPS, electricity meter and inverter are well connected and whether the wiring is correct 2. Check whether the communication distance is within the specified range 3. Disconnect the external communication and restart the electricity meter and inverter. |
| DA | Internal communication loss (M-D) | <ol style="list-style-type: none"> 4. If exclude the above, and the alarm continues to occur, please contact the customer service center. |
| CU | Dcdc abnormal | <ol style="list-style-type: none"> 1. If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required. 2. If the alarm occurs repeatedly, please check: <ol style="list-style-type: none"> 1) Check whether the MC4 terminal on the PV side is securely connected. 2) Check whether the voltage at the PV side is open circuit, short circuit or ground to ground, etc. <p>If exclude the above, and the alarm continues to occur, please contact the customer service center.</p> |
| CP | EPS over dc-bias voltage | <ol style="list-style-type: none"> 1. If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required. 2. If the alarm occurs repeatedly, the inverter cannot work properly. Pls. contact the customer service center. |
| DB | EPS short circuit | <ol style="list-style-type: none"> 1. Check whether the live line and null line of EPS output are short-circuited. 2. If it is confirmed that the output is not short-circuited or an alarm, please contact customer service to report for repair (after the troubleshooting of alarm problems, EPS switch needs to be manually turned on during normal use) |
| DC | EPS over load | <ol style="list-style-type: none"> 1. Disconnect the EPS load and check whether the alarm is lifted 2. If the load is disconnected but the alarm still exists, please contact the customer service. (After the alarm is lifted, the EPS switch needs to be manually turned on for normal use.) |

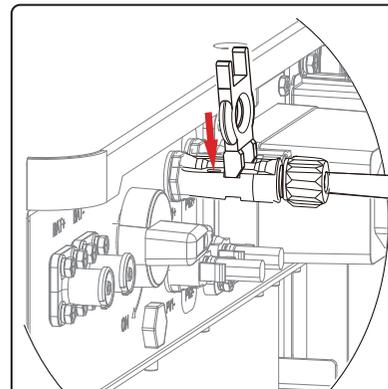


WARNING

Before removing DC input connector, double check DC input switch is turned to OFF to avoid inverter damage and personal injury.

Perform the following procedures to remove the inverter:

Step 1. Disconnect all cables from the inverter, including communications cables, DC input power cables, AC output power cables, and protective ground (PGND) cable, as shown below.

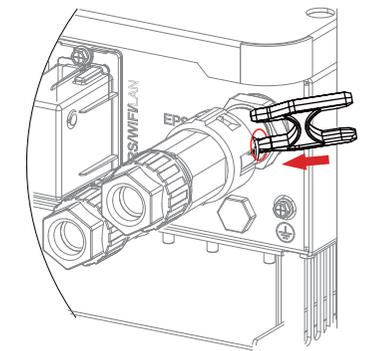
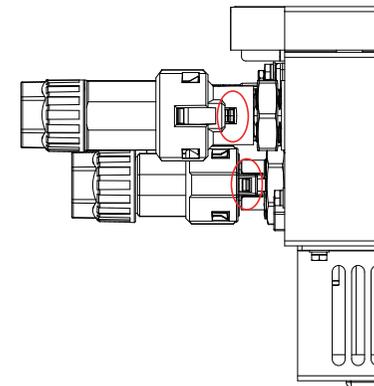


PV Connectors Removing Detail



NOTE

To remove the PV/Grid/EPS connectors, insert the removal tool into the bayonet according to the position indicated in the drawing, press inward, and then take out the connector outward.



Grid/EPS Connectors Removing Detail

Step 2. Remove the inverter from the mounting bracket.

7.3 Removing the Inverter