



# SolarAll-H 1-Phase Hybrid Inverter

Models 3kW-4kW-5kW-6kW



## User Manual

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## 1 Overview

This Manual mainly introduces the product information, installation, electrical connection, configuration commissioning, troubleshooting and maintenance, and technical parameters of Residential energy storage single-phase hybrid inverter. Before installing and using this product, please read this Manual carefully to understand the safety information and be familiar with the functions and features of the product. The Manual is subject to update. Please obtain the latest version from the official website to get more product information.

### 1.1 Scope of Application

This document applies to the inverters of the following models:






Model	Rated output power	Rated output voltage
SolarAll-H 3000S	3000W	220V/230V/240V, L/N/PE
SolarAll-H 3600S	3600W	
SolarAll-H 4000S	4000W	
SolarAll-H 4600S	4600W	
SolarAll-H 5000S	5000W	
SolarAll-H 6000S	6000W	

### 1.2 Intended Users

This Manual is only suitable for professional technicians who are familiar with local regulations, standards and electrical systems, have received professional training, and are familiar with the relevant knowledge of this product.


### 1.3 Symbols Used in This Manual

In order to ensure the user's personal and property safety when using the PV grid-connected inverter, and to use the product efficiently, relevant safety operation information is provided in this Manual and highlighted with corresponding symbols. Please fully understand and strictly abide by below emphasized information to avoid personal injury and property damage. The symbols used in this manual are listed below.


 <b>Danger</b>	It indicates a highly potential hazard which, if not avoided, will result in death or serious injury.
 <b>Warning</b>	It indicates a hazard with a medium level of potential which, if not avoided, could result in death or serious injury.
 <b>Caution</b>	It indicates a hazard with a low level of potential which, if not avoided, could result in moderate or minor injury.
 <b>Attention</b>	It indicates a potential hazard which, if not avoided, could result in the equipment malfunction or property damage.
 <b>Note</b>	It indicates the emphasis and supplementary instructions on the content, and may also provide tips for optimizing the product use, which can help you solve a certain problem or save your time.

## 2 Safety Precautions



The safety precautions information contained in this document must always be followed when operating the equipment.

 <b>Attention</b>	<p>The inverter has been designed and tested in strict accordance with safety regulations. However, as an electrical device, relevant safety instructions must be followed before any operation. Improper operation may cause serious injury or property loss.</p>
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### 2.1 Operation Safety

 <b>Attention</b>	<ul style="list-style-type: none"> <li>➤ Please read this manual carefully to fully understand the product and precautions before installing the equipment.</li> <li>➤ All operations of the equipment must be carried out by professional electrical technicians, and the technicians need to be familiar with the relevant standards and safety regulations of the project location.</li> <li>➤ When operating the inverter, use insulated tools and wear personal protective equipment to ensure personal safety. When touching electronic devices, wear ESD gloves, ESD wrist straps, and ESD clothing to prevent the inverter from being damaged by static electricity and causing losses.</li> <li>➤ Machine damage or personal injury caused by installation, use, and configuration not in accordance with the requirements of this Manual is not within the scope of the equipment manufacturer's responsibility.</li> </ul>
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## 2.2 PV String Safety

 <p><b>Danger</b></p>	<p>Please use the DC terminals provided with the box to connect the DC cables of the inverter. If other types of DC terminals are used, serious consequences may result, and the manufacturer isn't responsible for equipment damage therefrom.</p>
 <p><b>Warning</b></p>	<ul style="list-style-type: none"> <li>➤ Please ensure that the frame of the module and the bracket system are properly grounded.</li> <li>➤ After the DC cable is connected, please ensure that the cable connection is tight and firm.</li> <li>➤ Use a multimeter to measure whether the positive and negative poles of the DC terminal of the battery are connected correctly and the voltage is within the allowable range.</li> <li>➤ Do not connect the same PV string to multiple inverters, or the inverters will be damaged.</li> </ul>




## 2.3 Battery Safety




### Warning

- Please carefully read the content about battery safety introduced in the Manual before installing the equipment, and operate in strict accordance with the requirements in the Manual.
- If the battery has been fully discharged, please charge the battery strictly according to the corresponding type of battery in the Manual.
- The battery current may be affected by the external environment, such as temperature and humidity, which may cause the battery current limit and affect the battery load performance.
- If the battery fails to start, please contact the after-sales service center as soon as possible. Otherwise, the battery may be permanently damaged.
- Use a multimeter to measure whether the positive and negative poles of the DC terminal of the battery are normal and the voltage is within the allowable range.
- Do not connect the same battery pack to multiple inverters, or the inverter will be damaged.

## 2.4 Inverter Safety





 <p><b>Warning</b></p>	<ul style="list-style-type: none"> <li>➤ Please ensure that the voltage and frequency of the grid connection meet the specifications of the inverter.</li> <li>➤ It is recommended to add protection devices such as circuit breakers or fuses on the AC side of the inverter. The specification of the protection device must be greater than 1.25 times the maximum AC output current of the inverter.</li> <li>➤ The protective grounding wire of the inverter must be firmly connected. When multiple inverters are paralleled, ensure that the protective grounding points of all inverter chassis shells are equipotentially connected.</li> <li>➤ If no battery is configured in the PV system, it is not recommended to use the BACK-UP off-grid function, and the resulting system power consumption risk will not be covered by the equipment manufacturer's warranty.</li> </ul>
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## 2.5 Personnel Requirements

 <p><b>Attention</b></p>	<p>When the inverter is running, some components may be electrified or hot. Improper use, incorrect installation or operation may result in serious personal or property injury.</p> <p>Transport, installation, disassembly, start-up and maintenance operations must be performed by qualified electrical engineers.</p>
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## 2.6 Description of Symbols on the Inverter

There are some safety-related labels on the residential energy storage single-phase hybrid inverter. Please carefully read and fully understand the content of these labels before installing the product.

Symbol	Description	Meaning
	Residual voltage in the inverter	After the inverter is powered off for a period of time, the internal capacitor is still charged. Please wait for more than 5 minutes until the capacitor is completely discharged.
	High voltage	There is high voltage during the operation of the inverter. If you need to operate the inverter, please ensure that the inverter is powered off.
	Be careful of hot surface	The casing of the inverter is very hot when it is running. Do not touch it, or it may cause burns.
	Ground terminal	Connect the inverter to the ground to achieve the purpose of ground protection.

	<p>Read the Manual</p>	<p>Before installing the inverter, please carefully read and understand this Manual.</p>
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## 3 Equipment Inspection and Storage

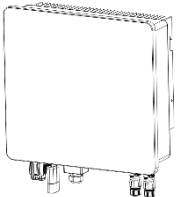
### 3.1 Inspection before Signing


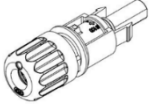
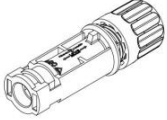


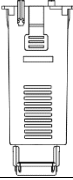
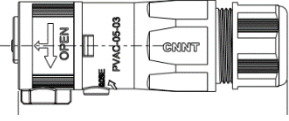

Before signing for the product, please check the following in detail:

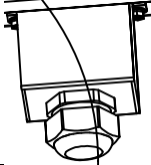









- Check whether the outer package is damaged, such as holes, deformation, cracks or other signs that may cause damage to the equipment in the box. If there is any damage, do not open the package and contact your dealer.
- Check whether the inverter model is correct; if not, do not open the package and contact your dealer.
- Check whether the type and quantity of deliverables are correct, and whether the appearance is damaged. In case of damage, please contact your dealer.

### 3.2 List of Deliverables


After unpacking the inverter, check whether the deliverables are complete. If any components are missing or incomplete, please contact the dealer in time.

No.	Picture	Description	Quantity
1		Inverter	1PCS

2		Wall mounted back panel	1PCS
3		PV+ wire input terminal molded case	2PCS
4		PV- wire input terminal molded case	2PCS
5		PV+ input terminal metal core	2PCS
6		PV- input terminal metal core	2PCS
7		Battery terminal box	1PCS
8		AC terminal block	2PCS
9		Single-phase electric meter (optional)	1PCS

10		Signal interface waterproof cover	1PCS
11		WIFI module (optional)	1PCS
12		Parallel communication line	1PCS
13		BMS communication line	1PCS
14		RJ45 terminal	2PCS
15		M8*80 expansion bolt	4PCS
16		L-shaped elbow external hexagonal socket	1PCS
17		M6 inner hexagon screw	4PCS
18		User Manual	1PCS
19		Warranty Card	1PCS

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20		Desiccant	1PCS
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### 3.3 Equipment Storage

If the inverter will not be put into use immediately, please store it according to the following requirements:

- Make sure that the outer packing box is not removed, and the desiccant in the box is not lost.
- Make sure the storage environment is clean and the temperature and humidity range is appropriate.
- Make sure that the stacking height and direction of the inverter comply with the instructions on the label on the packing box.
- Make sure that there is no risk of tipping over after the inverters are stacked.
- After the inverter has been stored for a long time, it must be checked and confirmed by professionals before it can continue to be used.



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## **4 Product Introduction**

### **4.1 Overview**

Residential energy storage single-phase hybrid inverter integrates PV grid-connected inverter and battery energy storage, and has built-in multiple working modes to meet the diverse needs of users. In the period of rising energy costs such as oil and coal, the declining energy subsidies of PV grid-connected systems, mountainous areas without grids or base stations with uninterrupted power supply and emergency power supply needs, Residential energy storage single-phase hybrid inverter can provide a complete solution.

## 4.2 Application Scenarios



### Warning

- PV system is not suitable for connecting devices that depend on stable power supply, such as life-sustaining medical equipment, etc. Please ensure that no personal injury will be caused when the system is powered off.
- In the PV system, please try to avoid using loads with high starting current, or the off-grid output may fail due to excessive instantaneous power.
- When the overload protection of the inverter occurs once, the inverter can automatically restart; if it occurs multiple times, the inverter will stop, and it can be restarted through the APP after the fault is eliminated.
- When the grid is powered off, if the load capacity exceeds the rated power of the inverter, the off-grid function of the inverter will be automatically turned off; if it needs to be started, the large load must be turned off to ensure that the load power is less than the rated power of the inverter.
- When the inverter is in off-grid mode, it can be used by ordinary household loads.
- Inductive load: It supports up to 1.5P non-inverter air conditioners. Connecting two or more non-inverter air

	<p>conditioners may lead to unstable standby mode.</p> <p>➤ Capacitive load: total power <math>\leq 0.66 \times</math> rated output power of inverter.</p>
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## 4.3 Working Mode

Note: The anti-reverse function is disabled by default.

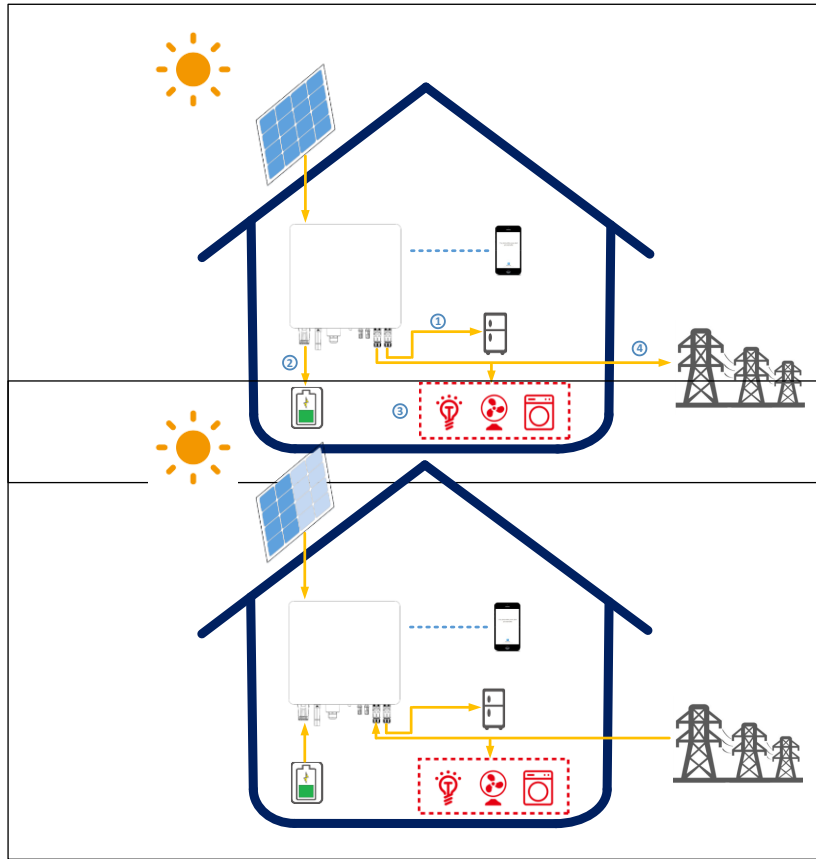
### 4.3.1 Self-use Mode (Default)

**Function:**

Prioritize the use of PV and battery energy, and try not to use the energy of the grid.

**Specific working method:**

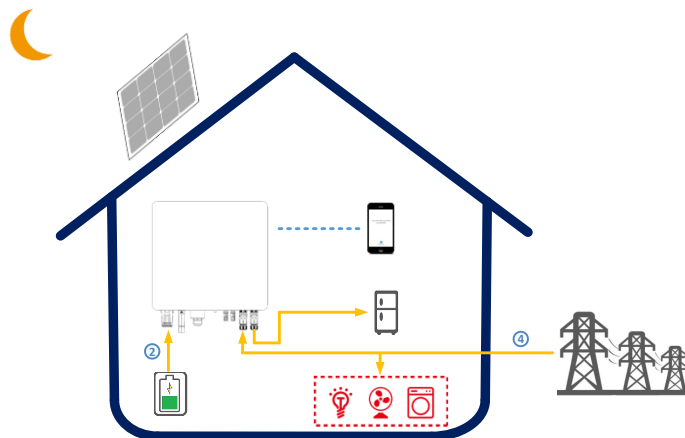
- When the PV is sufficient, the PV will give priority to powering the AC load ① and general load ③, then charge the battery ②, and the remaining energy can be connected to the grid ④.



- When the PV is insufficient, the PV, the battery, and the grid jointly supply power to the load.

- When the PV is not working, the battery ② and the grid ④ jointly supply power to the load together (priority to the

battery ②).



### 4.3.2 Time-of-use Mode

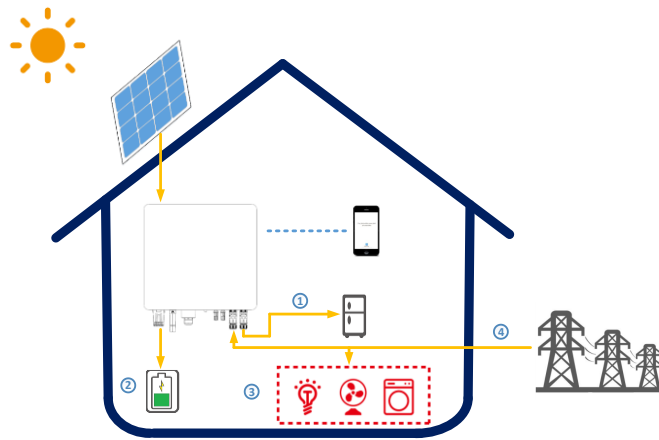
**Function:**

According to the electricity prices at different times, during the valley period: the grid

and PV give priority to supplying power to the AC load, and the remaining energy is used to charge the battery; in other periods, it is in self-use mode.

**Specific working method:**

- During the valley period: the power grid ④ and PV give priority to supplying power to the AC load ①, and the remaining energy is used to charge the battery ②.



- Other periods: Self-use

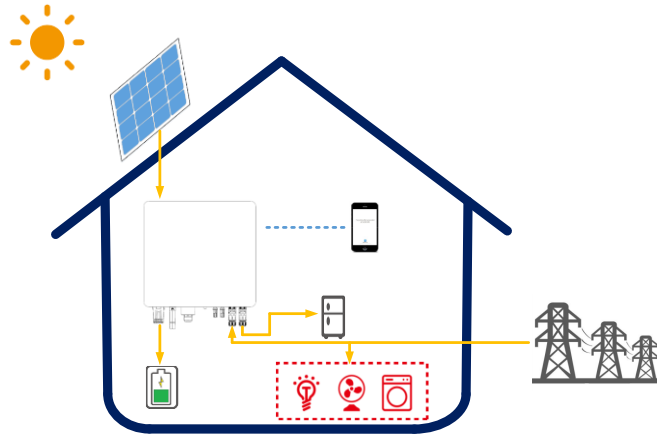
### 4.3.3 Disaster Backup Mode

**Function:**

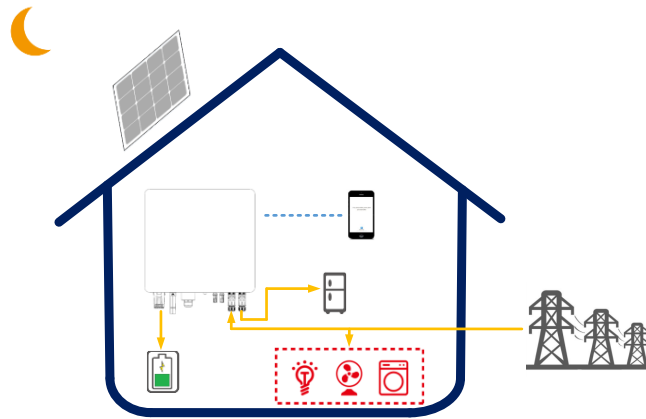
In the event of abnormal power grid, the energy storage system will provide power to the user alone. This mode can still maintain power supply when the user encounters a special situation such as an abnormal grid utility. (The battery needs to be charged and discharged every six months, which needs to be set manually)

**Specific working method:**

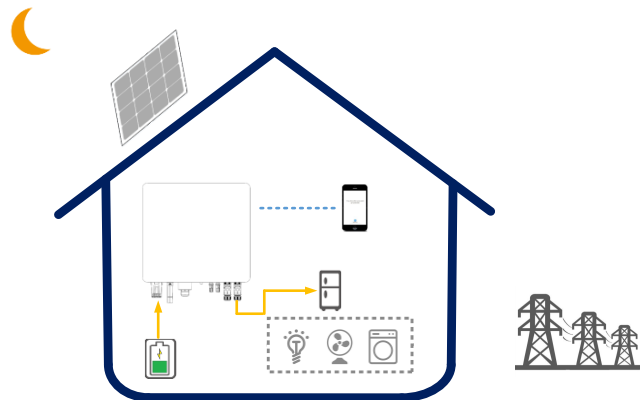
- PV and the grid jointly supply power to the battery and the load (the PV is given priority to charging the battery).



- The battery SOC is always fully charged when the grid utility is normal.



- The battery will discharge only when the grid utility is abnormal.



#### 4.3.4 Off-grid Mode

**Function:**

PV and batteries form an off-grid system, and the inverter is used without grid power.



### Specific working method:

Set the charging and discharging schedule of the battery according to your own needs.

If the power outage notification is known in advance, the battery can be fully charged in advance to prepare for the use of household loads during power outages.

## 4.4 Inverter Running Status

**Table 4-1 Description of inverter running status**

No.	Running status	Description
1	Waiting	<ul style="list-style-type: none"> <li>➤ After the machine is powered on, it enters the waiting stage.</li> <li>➤ When the conditions are met, it enters the self-check.</li> <li>➤ If there is a fault, the inverter enters the fault state.</li> </ul>
2	Self-check	<ul style="list-style-type: none"> <li>➤ Self-check and initialization are performed continuously before the inverter starts.</li> <li>➤ If the conditions are met, it will enter the grid-connected mode, and the inverter starts grid-connected operation.</li> <li>➤ If the grid is not detected, it will enter the off-grid state, and the inverter will run off-grid.</li> <li>➤ If the self-check fails, it will enter the fault state.</li> </ul>
3	Grid-connected	<ul style="list-style-type: none"> <li>➤ The inverter is normally connected to the grid.</li> <li>➤ If it is detected that the grid does not exist, it will enter the off-grid working mode.</li> <li>➤ If a fault is detected, it will enter the fault state.</li> <li>➤ If it is detected that the grid conditions do not meet the grid-connection requirements, and the off-grid output function is not enabled, it will enter the waiting state.</li> <li>➤ If switch to off-grid mode, it is detected that the grid conditions meet the grid-connection requirements, and the</li> </ul>



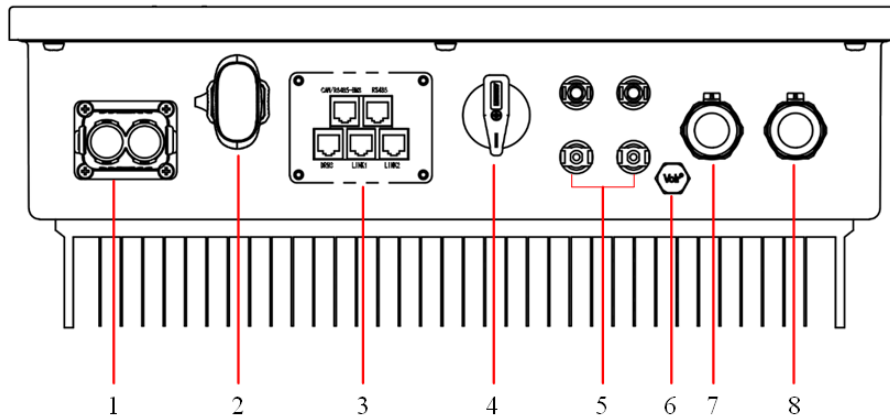
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		grid-connection function is enabled, it will enter the grid-connection state.
4	Off-grid	<ul style="list-style-type: none"><li>➤ When the grid is powered off, the inverter will switch to off-grid mode and continue to supply power to the load.</li><li>➤ When the working mode is set to off-grid before running, the inverter works off-grid.</li><li>➤ When the off-grid mode is set during operation, it needs to be turned off and on again, and the off-grid mode will take effect.</li><li>➤ If a fault is detected, it will enter the fault state.</li></ul>
5	Fault	<ul style="list-style-type: none"><li>➤ If a fault is detected, the inverter enters the fault state, and after the fault is cleared, it resumes the previous operation mode.</li></ul>

## 4.5 Appearance Description

### 4.5.1 Appearance Introduction

Please check the product packaging and accessories carefully before installation.

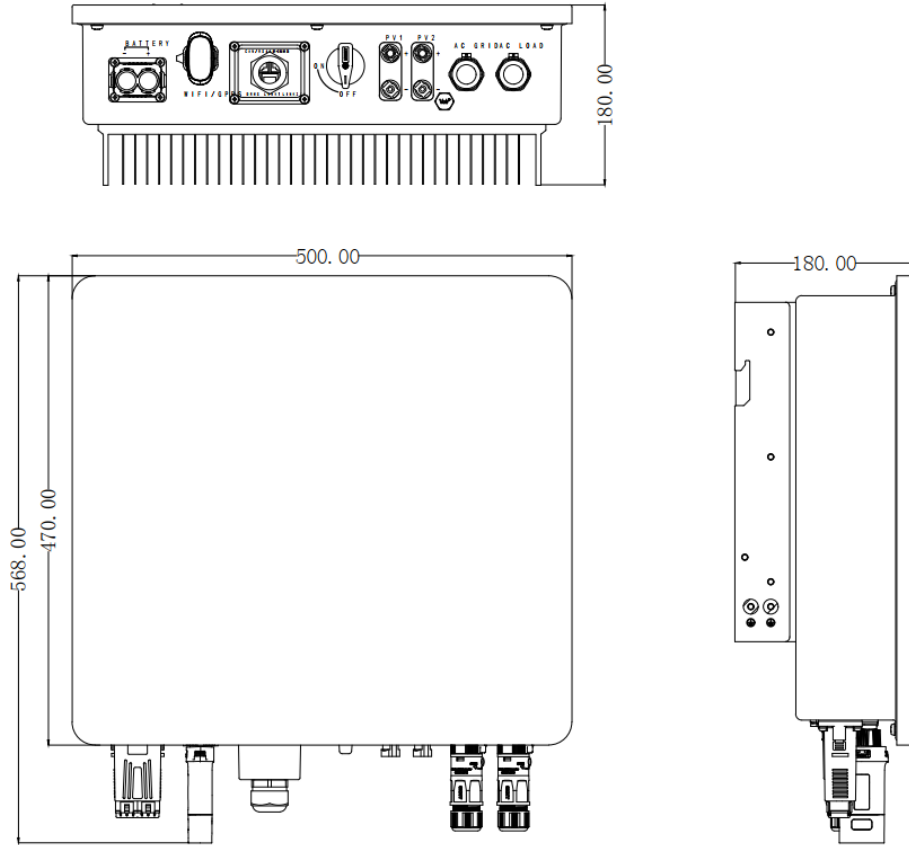


**Table 4-2 Definition of external terminals**

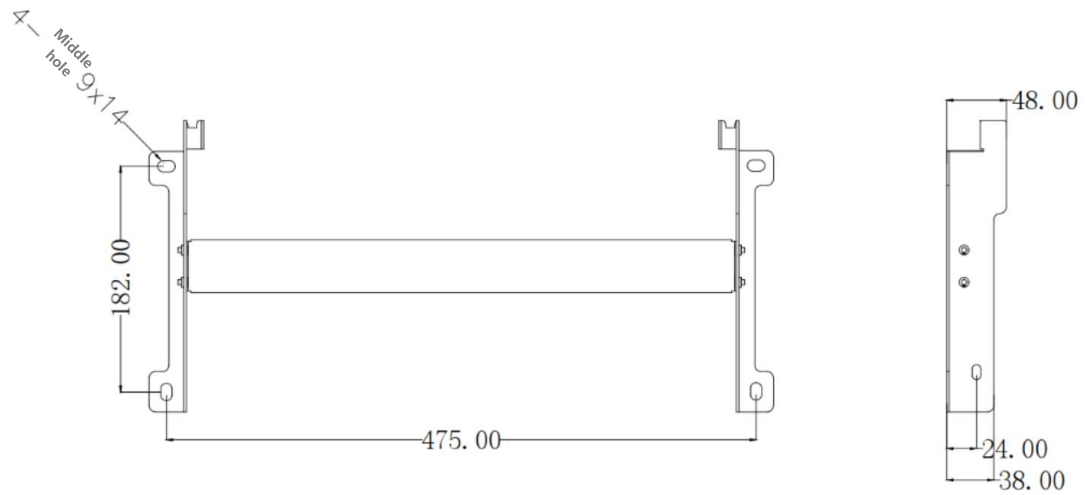
1	Battery DC input port (BAT+/-)	5	PV DC input port (PV+/-)
2	WIFI/4G/Bluetooth	6	Explosion-proof ventilation device
3	Multifunctional communication interface	7	Grid-connected AC wiring port
4	PV DC input switch	8	Load wiring port

## 4.5.2 Size Description

### Inverter dimensions



### Wall hanging size chart



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## 5 Installation

### 5.1 Installation Requirements

#### 5.1.1 Installation Environment

- 1) Do not install the equipment in flammable, explosive or corrosive environments.
- 2) Please keep away from the water pipes and cables in the wall at the installation location to avoid danger when drilling holes.
- 3) The installation location should be kept out of the reach of children, and should not be installed in places that are easy to touch. The surface may be hot when the equipment is in operation. Be careful to prevent burns.
- 4) The installation environments of inverter need to avoid direct sunlight, rain and snow. It is recommended to install it in a sheltered installation location. If necessary, a sunshade can be built.
- 5) The installation space must meet the equipment ventilation and heat dissipation requirements and operating space requirements.
- 6) The protection level of the equipment meets indoor and outdoor installation, and the temperature and humidity of the installation environment must be within the appropriate range.
- 7) Please ensure that the indicator lights and all labels of the equipment are easily visible and the terminal blocks are easily accessible.
- 8) The inverter installation altitude is lower than the maximum working altitude of 4000m.

9) Keep away from strong magnetic field environment to avoid electromagnetic interference. If there are radio stations or wireless communication equipment below 30MHz near the installation location, please install the equipment according to the following requirements:

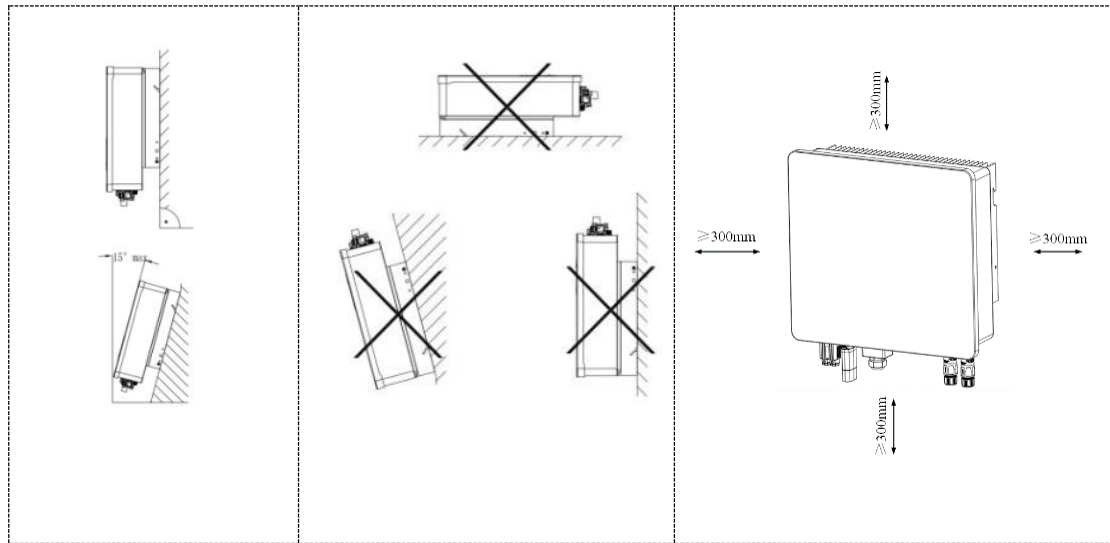
- Add a multi-turn ferrite core to the DC input line or AC output line of the inverter, or add a low-pass EMI filter.
- The distance between the inverter and the wireless electromagnetic interference device exceeds 30m.

### **5.1.2 Installation Carrier**

- 1) The installation carrier must not be a flammable material and must have fire resistance.
- 2) Please ensure that the installation carrier is firm and reliable, and can bear the weight of the inverter.
- 3) When the equipment is running, it will emit noise. Do not install it on a carrier with poor sound insulation, so as to avoid the noise generated by the equipment when it is working, causing troubles to the residents in the living area.

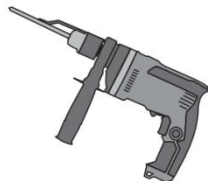
### 5.1.3 Installation Angle

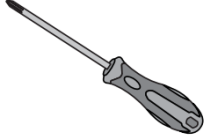




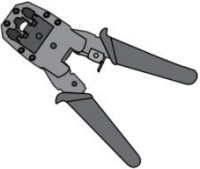
- 1) Recommended inverter installation angle: vertical or backward  $\leq 15^\circ$ .
- 2) Do not install the inverter upside down, tilt forward or backward beyond the angle, or install it horizontally.


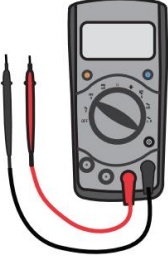





### 5.2 Installation Tools



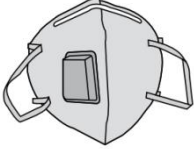
Table 5-1 List of installation tools

No.	Tool	Description	Function
1		Impact drill 8mm drill bit recommended	For drilling in wall

2		6mm cross screwdriver	For removing and installing screws and wiring
3		4mm cross screwdriver	For removing and installing load terminal screws
4		Removal tool	For removing PV terminal
5		Wire strippers	For wire stripping
6		Crimping pliers	For crimping power cables
7		Crimping pliers	For crimping signal network cable


8		6mm inner hexagonal wrench	For fastening the grid terminal and the cable
9		Multimeter	Check whether the cable connection is correct, whether the positive and negative poles of the battery are correct, whether the grounding is reliable, and whether the voltage is within the specification range
10		Marker pen	Mark for drilling
11		Measuring tape	For measuring distance
12		Level ruler	To ensure the level of the back panel



13		Protective gloves	Wear when installing the machine
14		Goggles	Wear when drilling
15		Dust mask	Wear when drilling


### 5.3 Moving the Inverter

Take the inverter out of the package and move it horizontally to the designated installation location. Open the outer packing box, two operators respectively put their hands under the inverter radiator, move the inverter out of the outer packing box, and move it to the designated installation location.

 <b>Attention</b>	<ul style="list-style-type: none"> <li>➤ When carrying out operations such as transportation, turnover, and installation, the laws, regulations, and relevant standards of the country and region where it is located must be met.</li> <li>➤ Since the inverter is heavy, please keep the balance when</li> </ul>
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	<p>carrying it, so as not to hurt the operators when the machine falls.</p> <ul style="list-style-type: none"> <li>➤ The power line interface and signal line interface at the bottom of the inverter can't bear the load. Do not make the terminal directly contact the ground. Please place the inverter horizontally.</li> <li>➤ When the inverter is placed on the ground, place foam or cardboard under it to avoid damage to the casing.</li> </ul>
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## 5.4 Inverter Installing

 <b>Attention</b>	<ul style="list-style-type: none"> <li>➤ When drilling, ensure that the drilling position avoids water pipes and cables in the wall to avoid danger.</li> <li>➤ When punching holes, please wear goggles and dust mask to prevent dust from being inhaled into the respiratory tract or falling into the eyes.</li> </ul>
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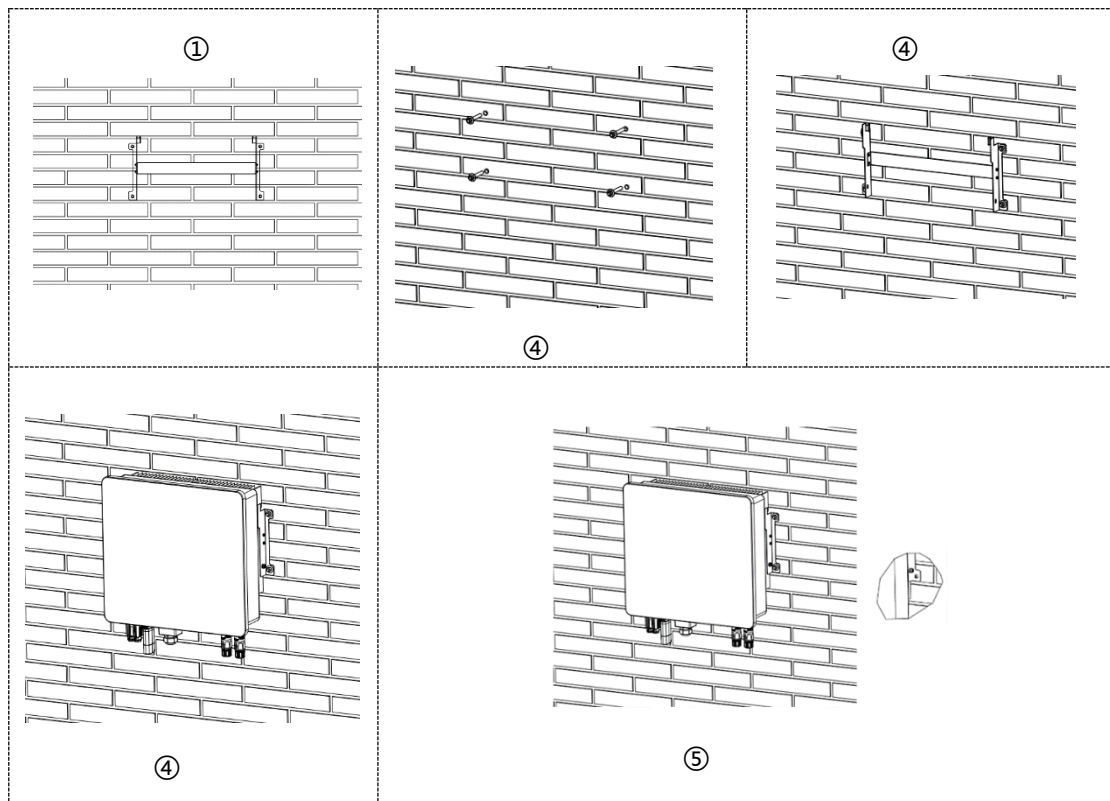
Step 1: Please choose a wall with sufficient bearing capacity, attach the wall mount to the installation wall horizontally, mark the position on the wall where the wall mount needs to be drilled with a marker pen, and then use an impact drill to drill holes on the wall. When drilling, keep the impact drill perpendicular to the wall. Do not shake it, so as not to damage the wall. If the hole drilling error is large, it needs to be repositioned;

Step 2: Insert the M8\*80 expansion bolt vertically into the hole. The insertion depth of the expansion bolt should not be too shallow;

Step 3: Align the hole position of the wall mount, and fix the wall mount to the wall with nuts;

Step 4: Hang the inverter on the wall mount, ensure that the inverter is correctly inserted into the wall mount slot, then fix the inverter to the wall mount with 2\*M6 hexagon screws.

Step 5: In order to prevent theft, the user can configure a suitable small lock to lock the inverter and the wall mount (optional).




## 6. Electrical Connection

Before installation and maintenance, ensure that the AC and DC sides are disconnected.

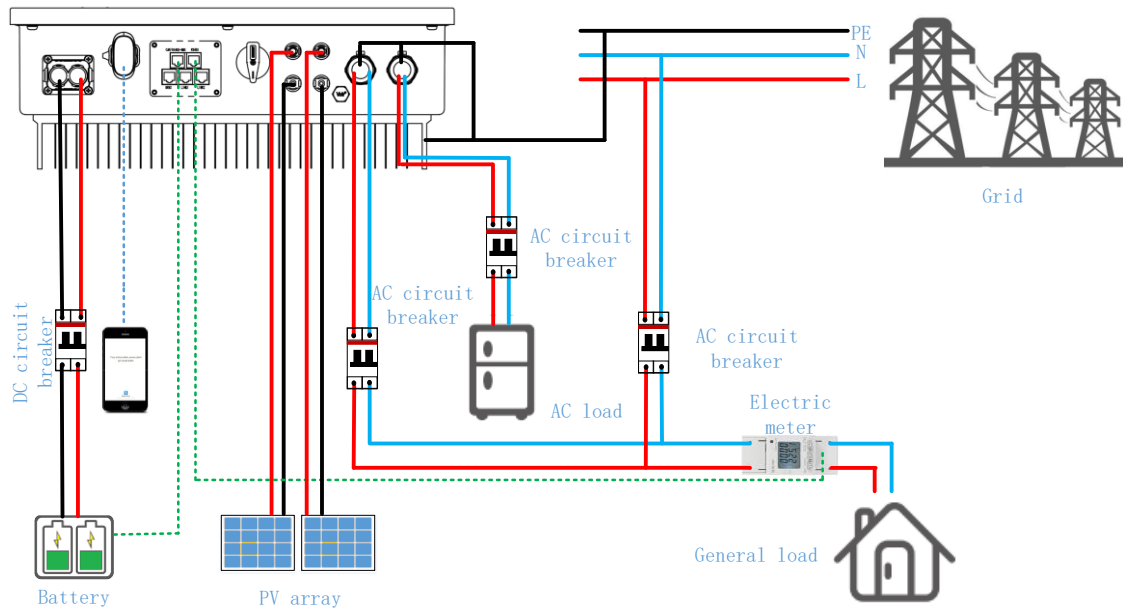
Since the capacitor is still charged after the inverter is powered off, it is necessary to wait for at least 5 minutes to ensure that the capacitor is fully discharged. Residential Hybrid inverters are used in battery energy storage PV systems. The inverter may be damaged if it is not used as intended.

### 6.1 Electrical System Connection Diagram

 <b>Attention</b>	<ul style="list-style-type: none"><li>➤ According to the regulatory requirements of different regions, the wiring methods of the N wire and PE wire of the AC-GRID and AC-LOAD ports of the inverter are different. The specific requirements of the local regulations shall prevail.</li><li>➤ The AC-GRID and AC-LOAD ports of the inverter have built-in relays. When the inverter is in the off-grid mode, the built-in AC-GRID relay is in the disconnected state; when the inverter is in the grid-connected mode, the built-in AC-GRID relay is in the connected state.</li><li>➤ When the inverter is powered on, the AC-LOAD port is live. If you need to maintain the AC-LOAD, please powered off the inverter, or it may cause electric shock.</li></ul>
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Residential hybrid inverter wiring system (schematic structure, not electrical wiring

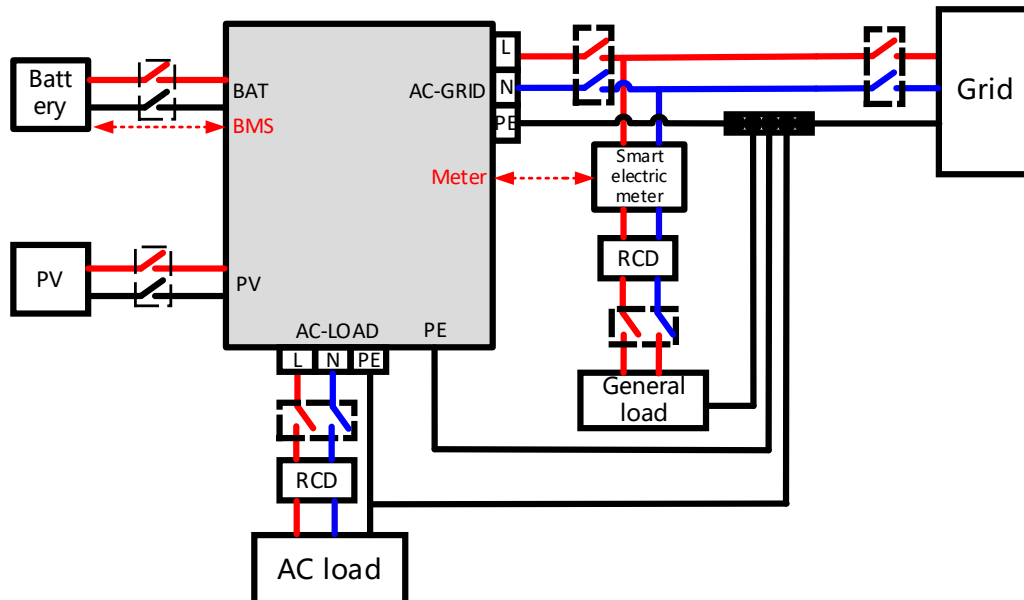
standard).



Recommended circuit breaker specifications: DC circuit breaker 120A; AC circuit breaker:

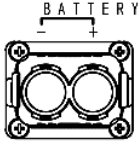
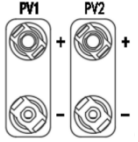

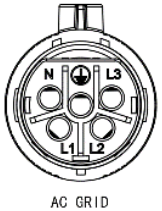
40A.

### System electrical connection




## 6.2 Wiring Instructions for External Ports

Table 6-1 Cable models and specifications

Port	Definition	Cable type	Cable size
	+: Positive pole of battery	Outdoor multi-core copper cable	Conductor cross-sectional area: 16mm <sup>2</sup> ~25mm <sup>2</sup>
	-: Negative pole of battery		
	+: Positive pole of PV	Outdoor multi-core copper cable	Conductor cross-sectional area: 4mm <sup>2</sup> ~6mm <sup>2</sup>
	-: Negative pole of PV		
 AC LOAD	Load	L3	Conductor cross-sectional area: 6mm <sup>2</sup> ~10mm <sup>2</sup>
		N	
		PE	
 AC GRID	Grid	L3	Conductor cross-sectional area: 6mm <sup>2</sup> ~10mm <sup>2</sup>
		N	
		PE	

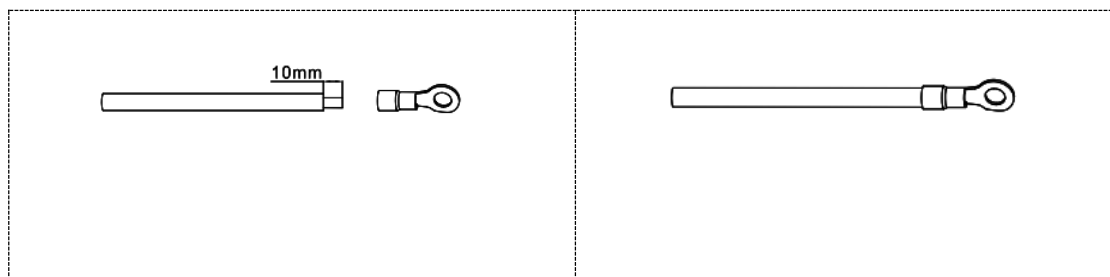
## 6.3 Connecting Protective Earth (PE)

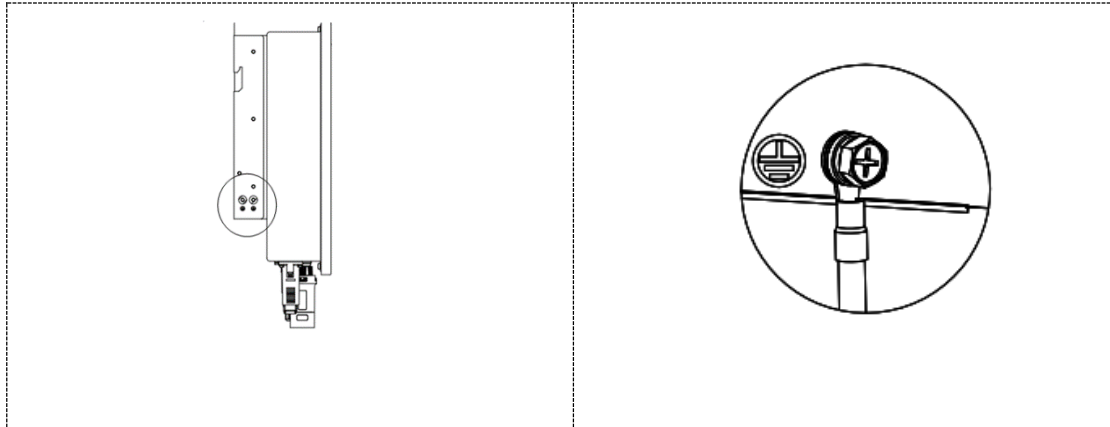
 <b>Attention</b>	<p>Since the inverter is a transformerless type, it is required that the positive and negative poles of the PV array cannot be grounded, Otherwise, it will cause fault to the inverter. In the PV power generation system, all non-current-carrying metal parts (such as brackets, distribution cabinet housing, inverter housing, etc.) should be connected to the ground.</p>
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Step 1: Use yellow-green outdoor cable  $\geq 4\text{mm}^2$ , Strip the insulation layer of the grounding cable to an appropriate length with wire stripper;



Step 2: Put the wire core stripped of the insulation layer into the conductor crimping area of the OT terminal, and press it tightly with crimping pliers;

Step 3: Fix the OT terminal with M6 inner hexagon screws, and the recommended tightening torque is  $5\text{N}\cdot\text{m}$ .





## 6.4 Connecting PV Cables

 <b>Danger</b>	<ul style="list-style-type: none"> <li>➤ Do not connect the same PV string to multiple inverters, or the inverter may be damaged.</li> <li>➤ Before connecting the PV strings to the inverter, please confirm the following information, or it may cause permanent damage to the inverter, and even cause a fire and result in personal and property losses.</li> <li>➤ Please ensure that the maximum short-circuit current and maximum input voltage of each PV are within the allowable range of the inverter.</li> <li>➤ Please ensure that the positive pole of the PV string is connected to the PV+ of the inverter, and the negative pole of the PV string is connected to the PV- of the inverter.</li> </ul>
 <b>Warning</b>	<p>The PV string output does not support grounding. Before connecting the PV string to the inverter, ensure that the minimum insulation resistance of the PV string to ground meets the minimum insulation resistance requirements.</p>

Step 1: Check and ensure that the PV knob switch is set to "OFF".



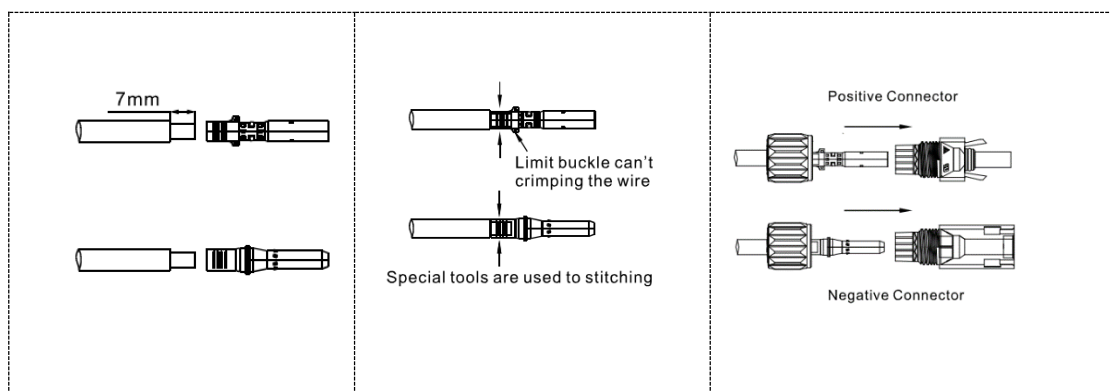
Step 2: According to the cable model and specification in Table 6-1, cable with appropriate type and specification, then strip the cable insulation layer. The specific stripping length is shown in the figure below.

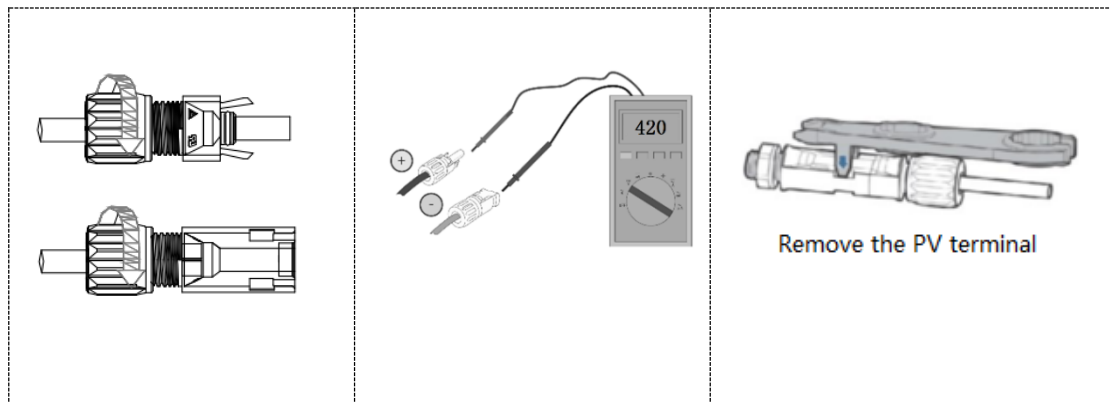
Step 3: Insert the positive and negative cables with the insulation layer stripped into the positive and negative metal terminals respectively, and use crimping pliers to press the cable and the metal core of the terminal tightly to ensure that the cable and the metal core are crimped firmly.

Step 4: Pass the crimped positive and negative cables through the lock nut, and insert them into the corresponding plastic shells until you hear a "click". This indicating that the metal core has been snapped into place, and tighten the lock nut.

Step 5: Check the positive and negative poles with a multimeter. After confirming that they are correct, insert them into the PV input terminal of the inverter.

To remove the PV connector from the inverter, you can use a disassembly wrench to insert into the fixing bayonet, press down firmly, and carefully remove the DC connector.






## 6.5 Connecting the Battery Cable



**Danger**

- Battery short circuit may cause personal injury, and the instantaneous high current caused by the short circuit may release a large amount of energy, which may cause a fire.
- Before connecting the battery cable, please confirm that the inverter and the battery are powered off, and the front and rear switches of the equipment are disconnected.
- When the inverter is running, it is forbidden to connect or disconnect the battery cable, or the operation may cause electric shock.
- Do not connect the same battery pack to multiple inverters, or the inverter may be damaged.
- Do not connect loads between the inverter and the battery.
- When connecting the battery cable, please use insulated tools to prevent accidental electric shock or short circuit of the battery.
- Please ensure that the open circuit voltage of the battery is within the allowable range of the inverter.

 <b>Warning</b>	<ul style="list-style-type: none"> <li>➤ When wiring, the battery cable should match the "BAT+" and "BAT-" of the battery terminal completely. If the cable is connected incorrectly, the equipment will be damaged.</li> <li>➤ Please make sure that the wire core is completely inserted into the terminal wiring hole without being exposed.</li> <li>➤ Make sure the cable connection is tight, or the terminal may be overheated and the equipment may be damaged when it is running.</li> </ul>
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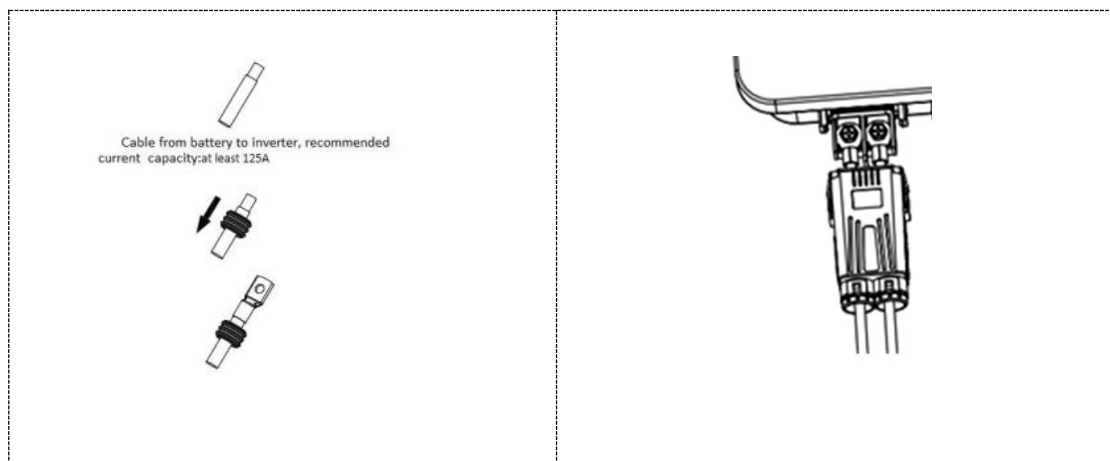
Step 1: According to the cable model and specification in Table 6-1, select the appropriate cable type and specification, and strip the cable insulation layer;

Step 2: Put the wire core stripped of the insulation layer through the waterproof plug and the battery junction box, and then press the OT terminal tightly;

Step 3: Lock the crimped positive and negative cables into the corresponding terminals respectively, with a locking torque of 3.5N•m;


Step 4: Use a multimeter to check the positive and negative poles to ensure that the open circuit voltage is less than 60V;

Step 5: Install the rear cover of the waterproof plug.





## 6.6 Connecting Off-grid Port (AC LOAD) and Grid-connected Port (AC GRID)

	<ul style="list-style-type: none"> <li>➤ When wiring, the AC wire should fully match the "L", "N" and grounding ports of the AC terminal. If the cable is connected incorrectly, it will cause equipment damage.</li> <li>➤ Please make sure that the wire core is completely inserted into the terminal wiring hole without being exposed.</li> <li>➤ Please ensure that the insulating plate at the AC terminal is clamped tightly without loosening.</li> <li>➤ Make sure the cable connection is tight, or the terminal may be overheated and the equipment may be damaged when it is running.</li> </ul>
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Step 1: According to the cable model and specification in Table 6-1, select the appropriate cable type and specification, and strip the cable insulation layer. For the specific stripping length, refer to the figure below;

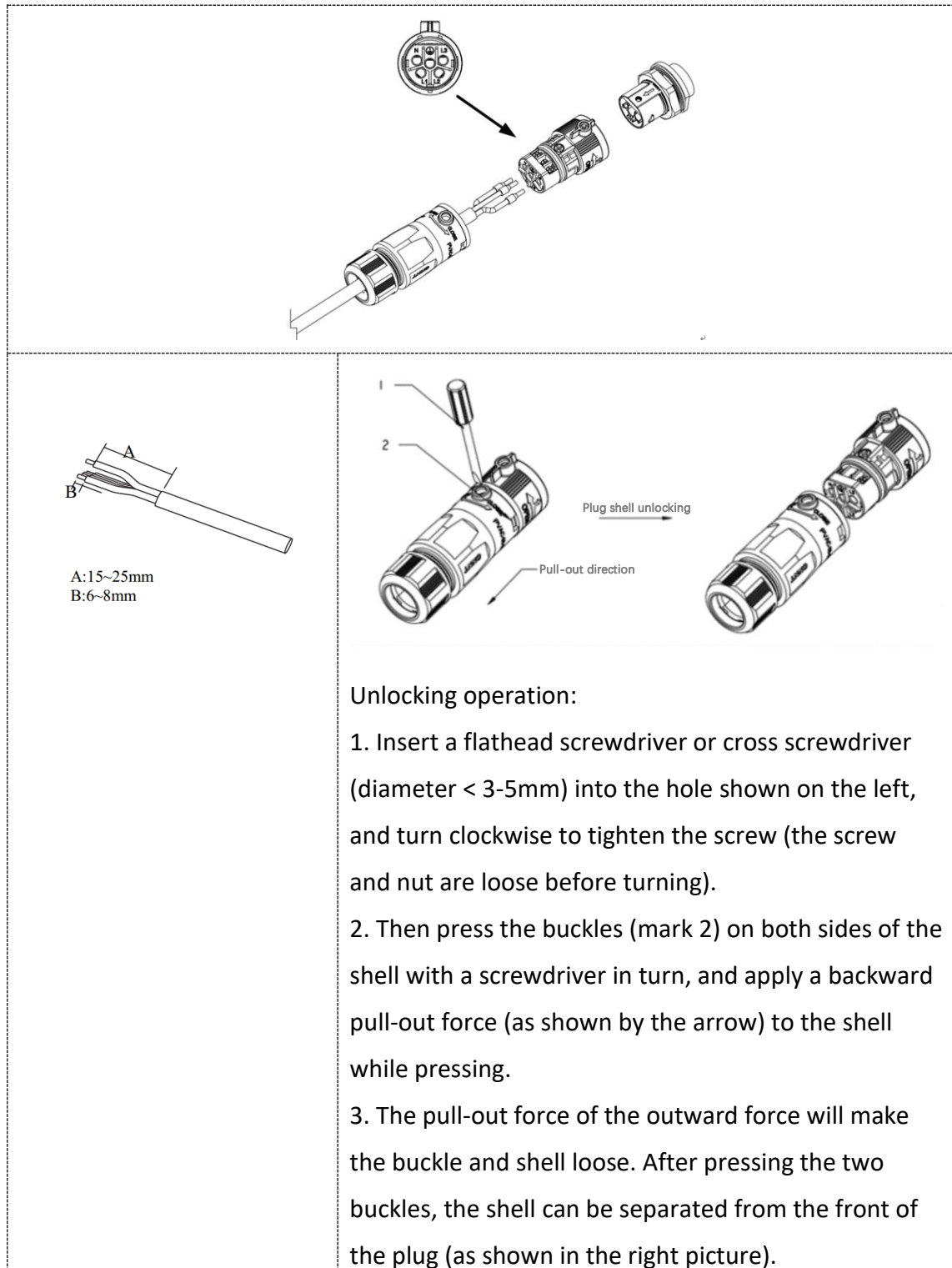
Step 2: Unlock the terminal according to the figure, and pass the stripped cable through each part of the terminal;

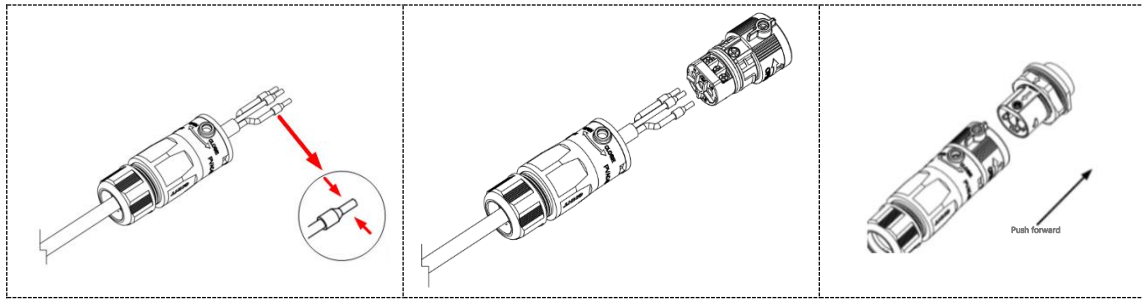
Step 3: Press the terminal on the cable conductor core, lock the cable in the lock hole on the terminal according to the mark, and fasten it with a screwdriver;

Step 4: After plugging in the terminal shell and hearing a "click", tighten the waterproof nut clockwise to ensure that the cable is firmly connected;

Step 5: Connect the connected load terminal to the load port of the inverter, push it forward until a "click" sound is heard, which indicates the load terminal and the load

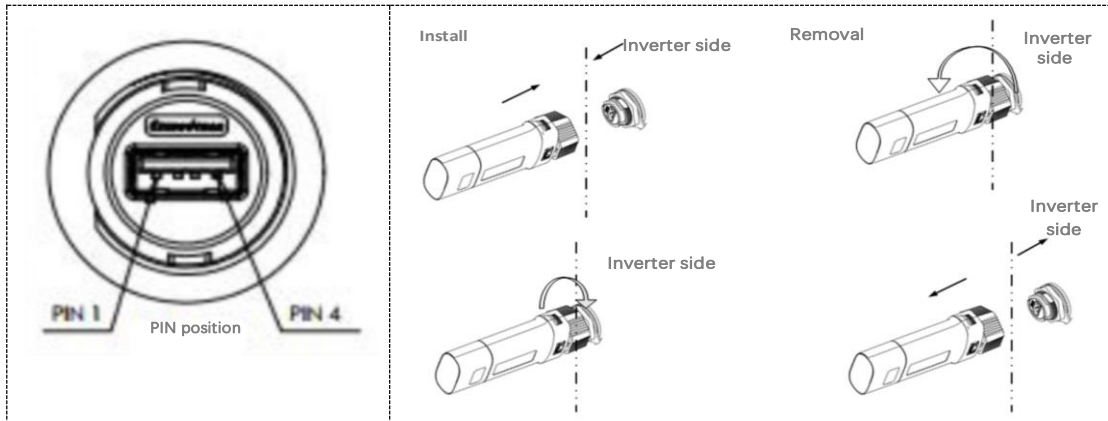
port of the inverter is well connected.





## 6.7 Installing WIFI/Bluetooth/4G Module

The collector is connected to WIFI/Bluetooth module by default and is used for remote monitoring and control of the inverter.



### Indicator light description of WIFI/Bluetooth module

No.	Status	Description
1	RUN	Indicates normal operation, flashing every second.
2	COM	Indicates that the equipment data can be collected; it is always on and goes out for a short time, goes out when sending data, and turns on after receiving the data and verifying it is correct.
3	NET	<p>Network status indicator.</p> <p>Flashing quickly: Searching for network, 20ms on, 180ms off.</p> <p>Always on: Connected to the network.</p> <p>Flashing slowly: The cloud platform has been registered successfully, 500ms on and 500ms off.</p>

## 6.8 Connecting Communication Cables

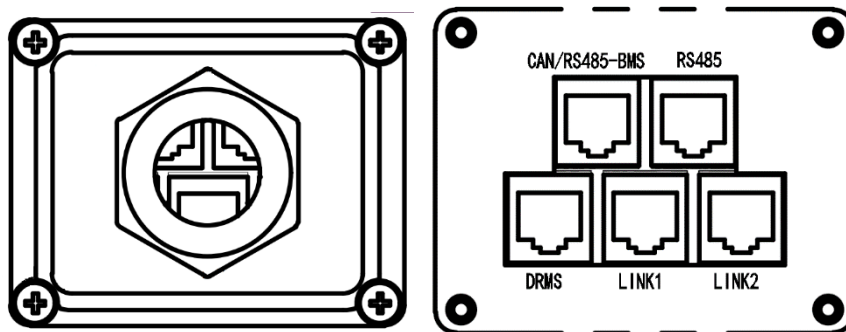
Multi-function communication port, including BMS communication, meter communication, DRMS, external dry contact signal and parallel communication.

Step 1: Pass the cables through the waterproof cover of the signal interface and their respective waterproof plugs, and crimp the RJ45 terminals according to the order of the pins.

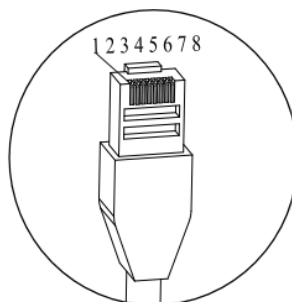
Step 2: Plug the cable into the communication port on the inverter side.

Step 3: Fasten the waterproof cover with screws.

Step 4: Tighten the waterproof nut.



The pin assignment of the RJ45 socket of the communication cable is as follows:



The interfaces are described as follows:

CAN/RS485-BMS interface



PIN	Definition	Function	Remarks
1	GND_SELV	Communication ground	Communicates with lithium battery BMS, and can provide CAN and RS485 communication for lithium batteries adaptively
2	GND_SELV	Communication ground	
3	/	NC	
4	CAN_A_H	CAN high bit data	
5	CAN_A_L	CAN low bit data	
6	/	NC	
7	RS485_A_BMS	RS485 differential signal A	
8	RS485_B_BMS	RS485 differential signal B	

Note: ① When communicating with a lithium battery, you need to pay attention to the order of the battery's communication ports and pin definitions;

② Pay attention to whether there is a prohibition on wiring at the battery port;

### DRMS interface

PIN	Definition	Function	Remarks
1	DRM1/5	DRMS interface is suitable for the Australian AS-NZS-4777.2 (some European requirements) safety standard	DRMS logical interface
2	DRM2/6		
3	DRM3/7		
4	DRM4/8		
5	REF GEN		
6	COM LOAD		

7	OP-	Normally open dry contact signal ( $\leq 1A$ )	External dry contact interface
8	OP+		

#### LINK 1&2 interface (parallel communication)

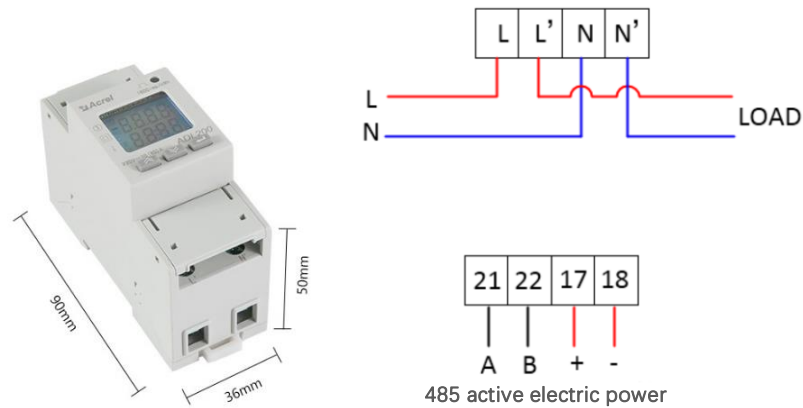
PIN	LINK1 definition	LINK2 definition	Remarks
1	CON2_AO	CON1_AO	Parallel signal
2	CON2_BO	CON1_BO	
3	CON2_AI	CON1_AI	
4	CON2_BI	CON1_BI	
5-6	/	/	
7	CON_SynchH	CON_SynchH	
8	CON_SynchL	CON_SynchL	

#### RS485 interface (electric meter communication)

PIN	Definition	Function	Remarks
1	GND_SELV	Communication ground	NC
2	GND_SELV	Communication ground	
3-6	/	NC	
7	RS485_A_EEM	RS485 differential signal A	Meter 485 communication
8	RS485_B_EEM	RS485 differential signal B	

### Application notes:

PIN7 and PIN8 are used for meter communication and need to be connected to ports 21 and 22 of the meter respectively (Acrel ADL200 has a built-in CT single-phase electronic kilowatt-hour meter). The meter L/N is the incoming line side of the power grid, and L' /N' is the outgoing line side (load side). Connect the meter as shown in the figure below.



## 6.9 Parallel Wiring Operation

The terminal wiring steps of the parallel communication cable are as follows:

Step 1: Put the network cable plug on the table, and make sure the metal contact piece of the connector is facing up.

Step 2: Use a wire stripper to peel off the outer sheath of the network cable and uncover about 1.5cm of the insulation layer.

Step 3: Insert the LINK1 port to arrange the core sequence of the network cable.

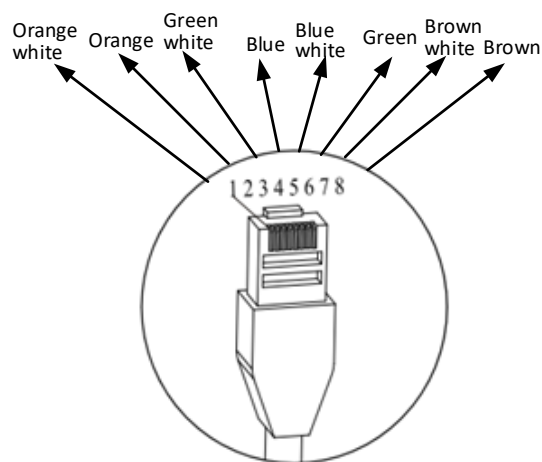
The order of the wire cores from left to right is: orange & white -orange-green & white-blue-blue & white-green-brown & white-brown. Insert the LINK2 port to

arrange the core sequence of the network cable. Insert the cores of the network cable into the LINK2 port and arrange the cores in the order from left to right: green & white-blue-orange & white-orange-blue & white-green-brown & white-brown. Straighten each strand and arrange them in the correct order.

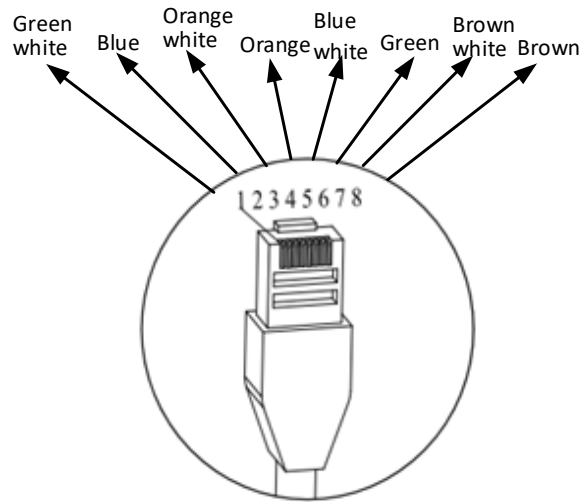
Step 4: Insert the cores into the slots of the plug, making sure that each core is fully inserted into the slot without being twisted or bent.

Step 5: Use pliers to fix the plug on the network cable, make sure the connection between the plug and the network cable is firm.

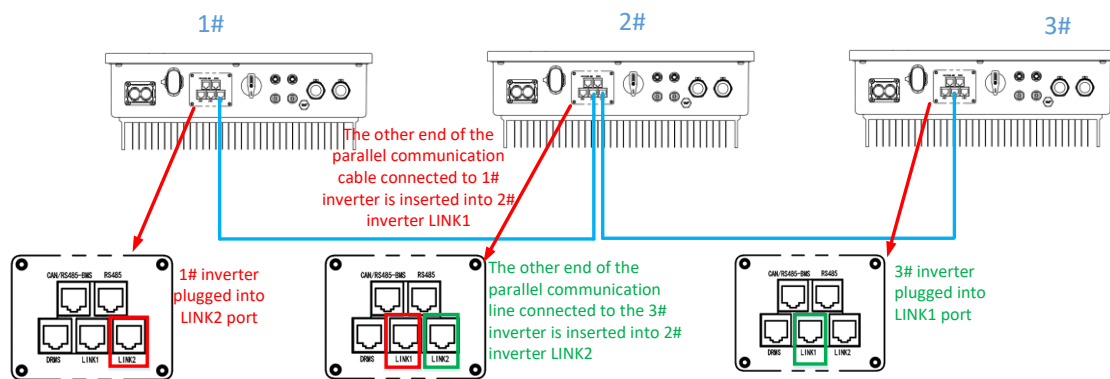
LINK1 port wiring method:



LINK2 port wiring method:



Parallel wiring is as follows:





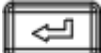
### Application notes:

- 1) Up to 6 parallel inverters of the same model are supported, and can be set to parallel mode or three-phase mode;
- 2) Make sure that the inverters are connected to parallel cables;
- 3) The length specifications of the cables connecting the load end of the inverter to the AC LOAD end of each of the equipment must be consistent to ensure that the loop impedance is consistent, and the load current distribution to each inverter is approximately equal;

4) Make sure that the load power is less than the maximum power of parallel power.


## 6.10 Meter Operation and Display



### (1) Description of key functions

Icon	Name	Function
	Up key for voltage and current	Check the voltage and current in the view interface Scroll up and flash shift in the programming interface
	Down key for power	Check the power in the view interface Scroll down and modify the flashing bit in the programming interface
	Electricity Programming confirmation key	Check electricity in the view interface Press for 3 seconds to enter/exit menu Press OK in the programming interface to save the settings

### (2) Display instructions

Display the total active energy after power on. The page turning can be realized through three types of viewing keys. The sequence of display pages is described as follows:

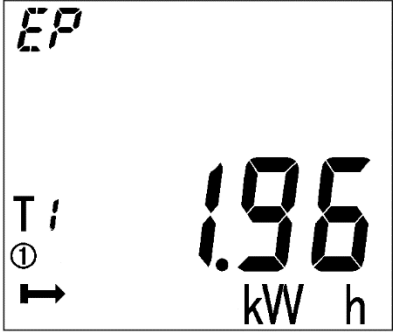
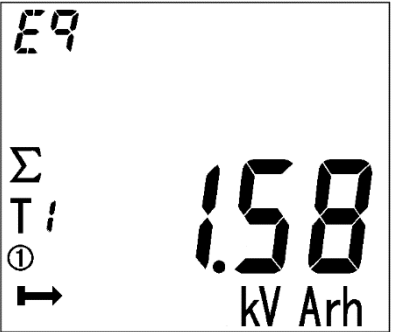

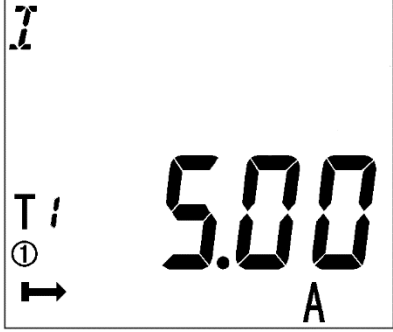
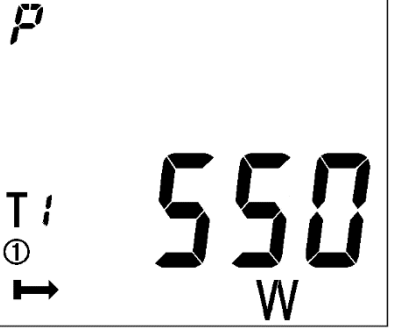
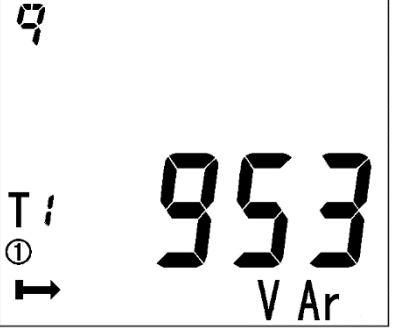
	Voltage, current, frequency, time, MODBUS protocol address, baud rate, check digit, DL/T645 address, software version number, full display detection.
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	<p>Total active power, total reactive power, total apparent power, and total power factor.</p>
	<p>Total active energy, forward active total energy, reverse active total energy, total active spike energy, total active peak energy, total active flat energy, total active valley energy, total reactive energy, forward total reactive energy, reverse reactive total energy, total reactive spike energy, total reactive peak energy, total reactive level energy, and total reactive valley energy.</p>

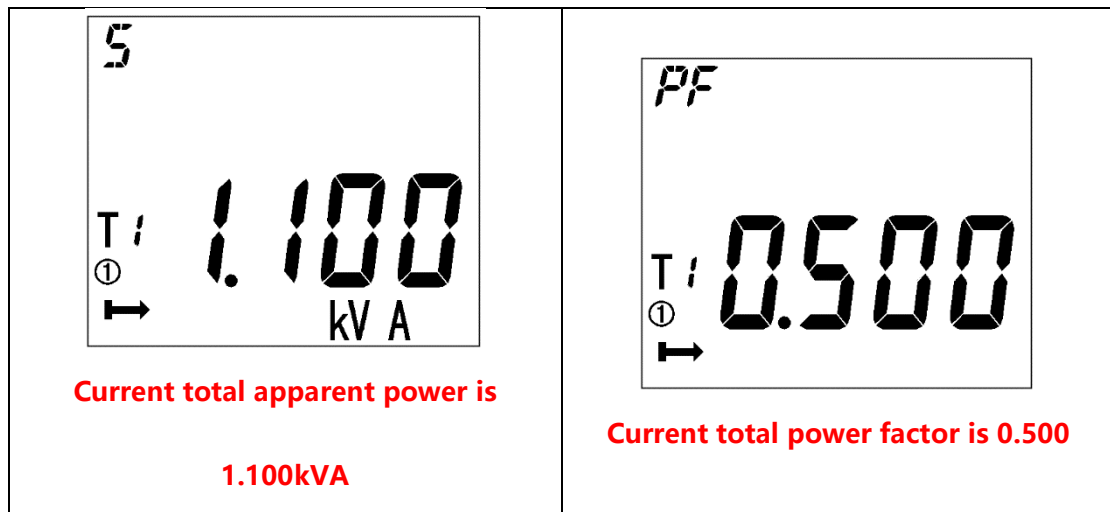
Application notes:

- The above list is the name of all display interfaces of ADL200 meter with multi-rate function. The three buttons can switch different types of display content, and the switching sequence is as above;
- For ADL200 meters without multi-rate function, the date, time and time-of-use electric energy (that is, the electric energy in the four periods of spike, peak, flat, and valley) are not displayed.

### Example of display interface






 <p><b>Current total active power is 1.96kWh</b></p>	 <p><b>Current total reactive power is 1.58kWh</b></p>
 <p><b>Current voltage is 220.0V</b></p>	 <p><b>Present current is 5.00A</b></p>
 <p><b>Current total active power is 550W</b></p>	 <p><b>Current total reactive power is 953VAR</b></p>

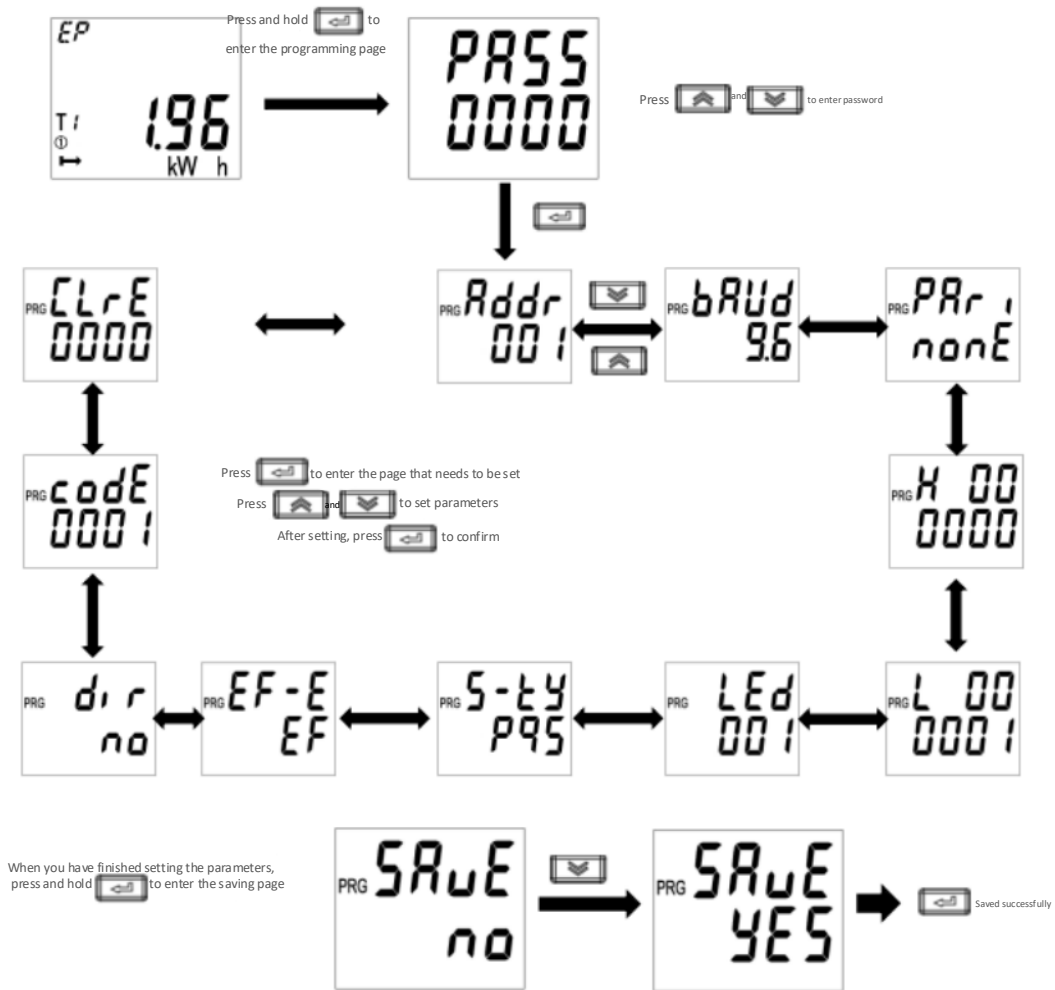




**Note:** The above is only a part of the display interface, and the display modes of other interfaces are similar to the above figure. The display meaning can be judged according to the information displayed in the interface.

### (3) Programming interface

Under any display item in the measurement display menu, press and hold  to enter the "PASS" interface, enter the password and then press ; if the password is entered incorrectly, it will return "0000", please re-enter the password; if the password is correct, the parameters can be set. After setting, press and hold  to enter the "SAVE" interface, select "YES" and then press  to save and then exit, select "No" and then press  to exit without saving. The programming interface flow is as follows:



Application notes:

- The initialization password is 0001
- The communication address is set to 0001
- The baud rate is set to 38400

**(4) Data items can be set**

**Setup menu description**

No.	Secondary menu		
	Symbol	Meaning	Range

1	ADDR	Communication address setting	1-254
2	Baud	Baud rate selection	1200、2400、4800、9600、 19200、38400
3	Pari	Parity selection	None、Odd、Even
4	HI	DL/T645 high 6-bit meter number	000000-999999
5	LO	DL/T645 low 6-bit meter number	000000-999999
6	LED	Backlight time setting	0-255 minutes, 0 is always on
7	S-TY	Apparent power calculation method	PQS,RMS
8	EF-E	Multi-rate function	EF-with multi-rate E-Without multi-rate
9	DIR	Current direction	No-Forward Yes-Reverse
10	CoDE	Password setting	1-9999
11	CLrE	Clear	0-9999

## 7. Equipment Trial Run

### 7.1 Check before Power-on

No.	Check item
1	The inverter is firmly fixed on the wall mounting bracket.
2	The cable binding meets the routing requirements, the distribution is reasonable, and there is no damage.
3	The PV+/PV-, BAT+/BAT- wires are firmly connected, the polarity is correct, and the voltage meets the connection range.
4	The DC switch is correctly connected between the battery and the inverter, and the DC switch is disconnected.
5	The AC circuit breaker is correctly connected between the grid port of the inverter and the grid, and the circuit breaker is disconnected.
6	The AC circuit breaker is correctly connected between the load port of the inverter and the power grid, and the circuit breaker is disconnected.
7	For lithium batteries, please make sure the communication cable is properly connected.

## 7.2 First Power-on

**Important: Follow the steps below to turn on the inverter.**

- 1) Make sure the inverter is not working;
- 2) Turn on the rotary switch of the inverter (when connected to PV);
- 3) Turn on the battery and close the DC switch between the battery and the inverter;
- 4) Close the AC circuit breaker between the grid port of the inverter and the grid;
- 5) Close the AC circuit breaker between the load port of the inverter and the load;
- 6) The inverter starts to run after the self-check is successful.

## 8. System Commissioning

### 8.1 Indicator Description

The bar indicator light is in the middle of the equipment panel, and indicates the status of the inverter through three colors of red, green and blue.

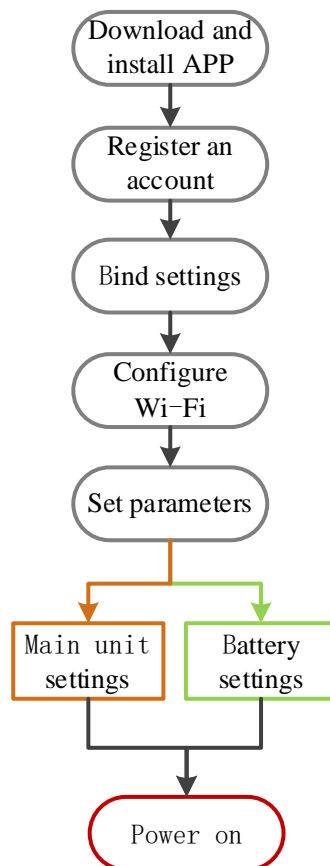
Display item	Indicator status	Corresponding description	Remarks
Green	Always on	Grid connected	/
	Blinking	Standby (connected to the grid)	/
Blue 	Always on	Off grid	/
	Blinking	Standby (off-grid)	/
Red 	Always on	Non-recoverable fault	Inverter needs power-off inspection
	Blinking 2s/time	Alarm	Non-stop or reduced power operation
	Blinking 0.5s/time	Alarm	The inverter is shut down, waiting for the recovery condition to be met

## 8.2 SolarAll-H APP

“ESS LINK” is a mobile app that can communicate with the inverter through WiFi. The following are commonly used functions:

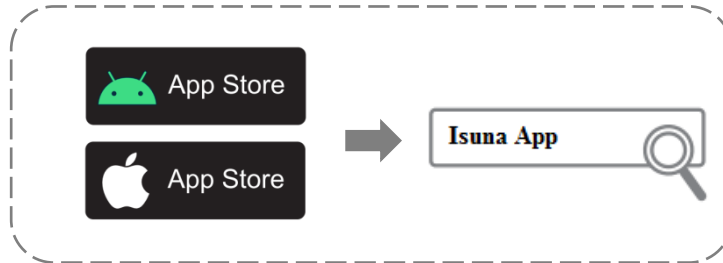
1. Monitor system data, alarm information, software version of the equipment.
2. Set the parameters of the inverter.
3. Maintain the equipment.

The APP operation flow chart is shown in the figure below:

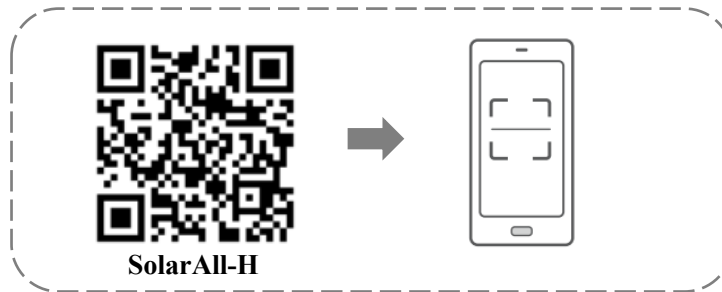


### 8.2.1 Software Acquisition

Method 1: Search for the ESS LINK APP in the App Store (Android) or APP Store (IOS), download and install it.



Method 2: Scan the QR code below to download and install.

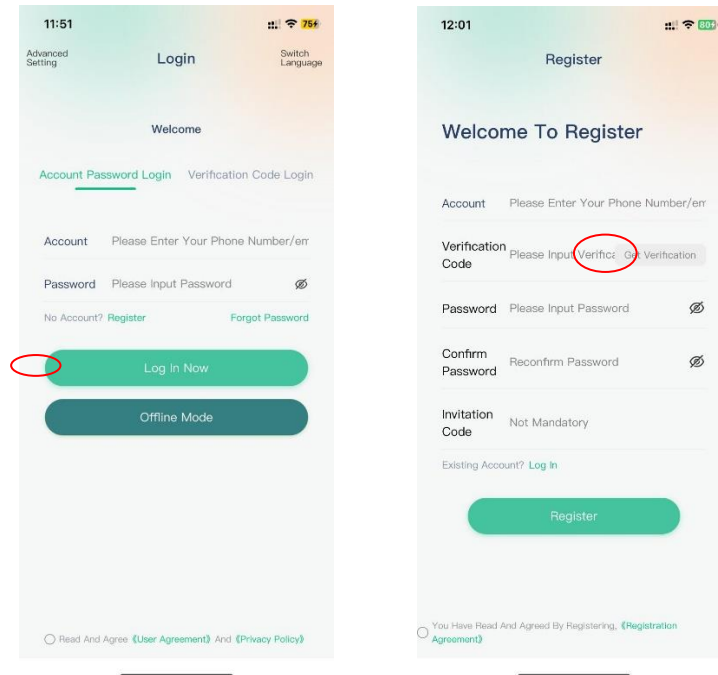


**Note: If there is a version update after the ESS LINK APP is installed, it will automatically prompt for a software update.**

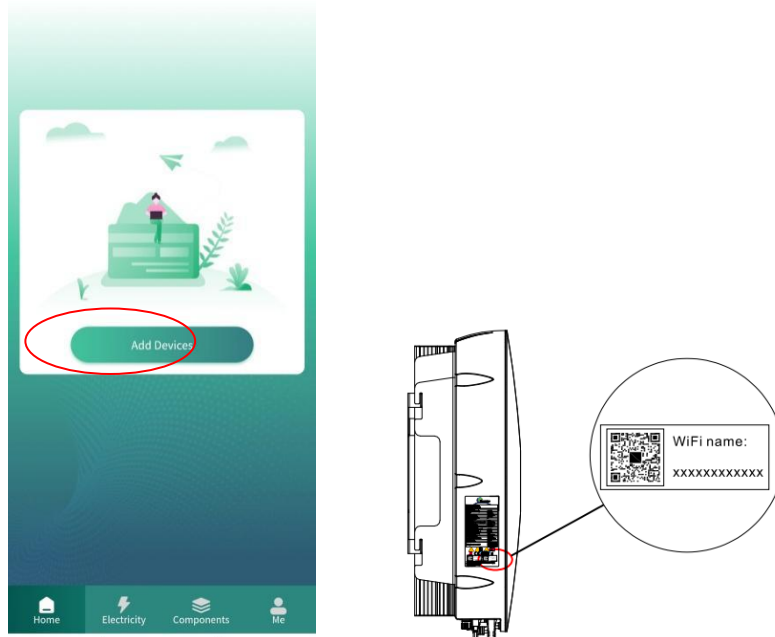


## 8.2.2 Registering Account and Binding Device

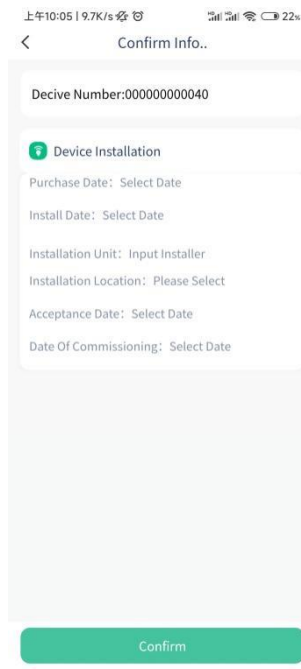
Step 1: Tap the APP icon > register > enter the mobile number > verification code > set password > register, as shown below:



Step 2: After logging into the account, enter the home interface, and bind the device: Tap Add device> By QR code, and scan the QR code label on the Wi-Fi stick.

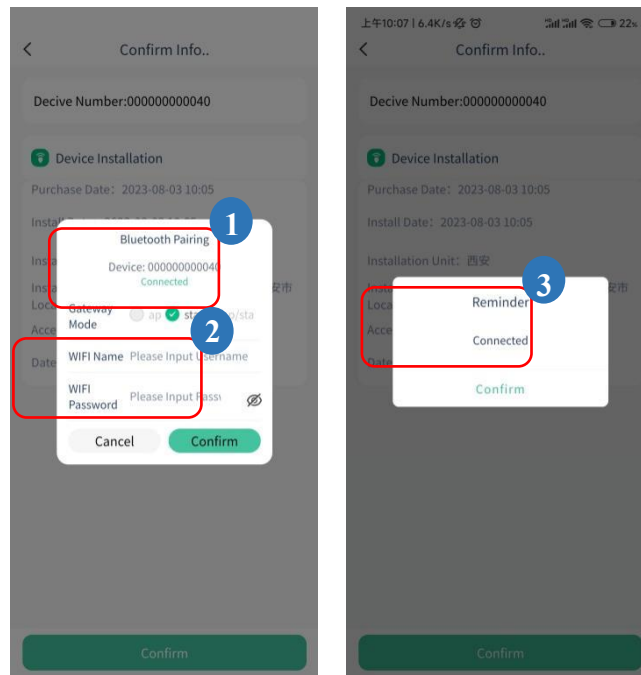


After the scan is successful, the device information will be recognized, fill in the installation information, and click OK to add.



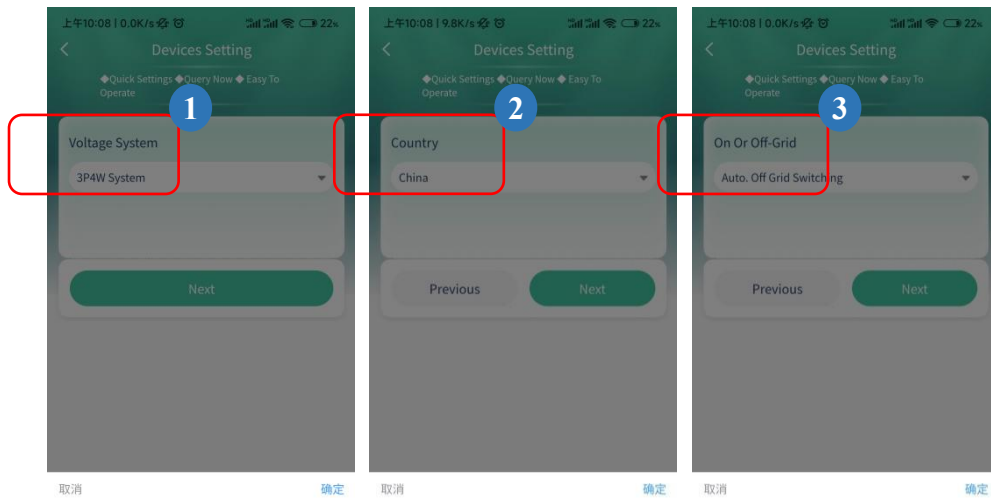
Step 3: After confirming to add the device, the Bluetooth pairing window will pop up. When the device is connected successfully, please enter the WiFi name and password, and tap OK;

after the setting is successful, a prompt window will pop up.

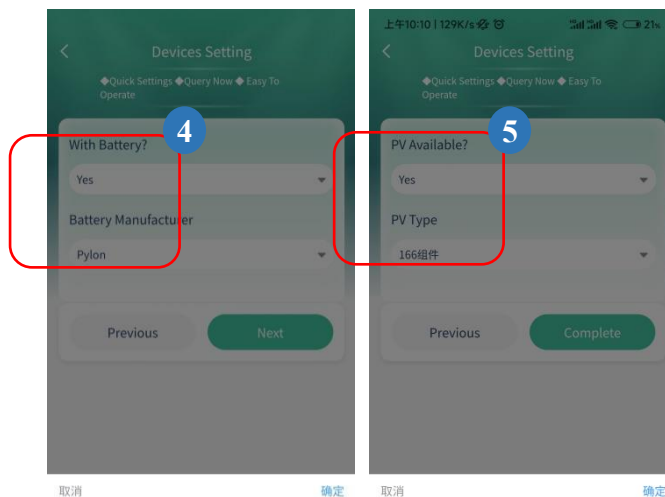


**Note: If it is connected to the network normally, the NET light of the Wi-Fi stick is always on.**

Step 4: Set device-related information to the last item, and tap the "Finish" button to return to the home page.



N/A	N/A	N/A
3P4W System	China	Auto. Off Grid Switching
3P4W System	United States	Manual Off-Grid Mode
		Manual On-Grid Mode



N/A	N/A
Pylon	166组件
Dyness	182组件
Greenway	210组件

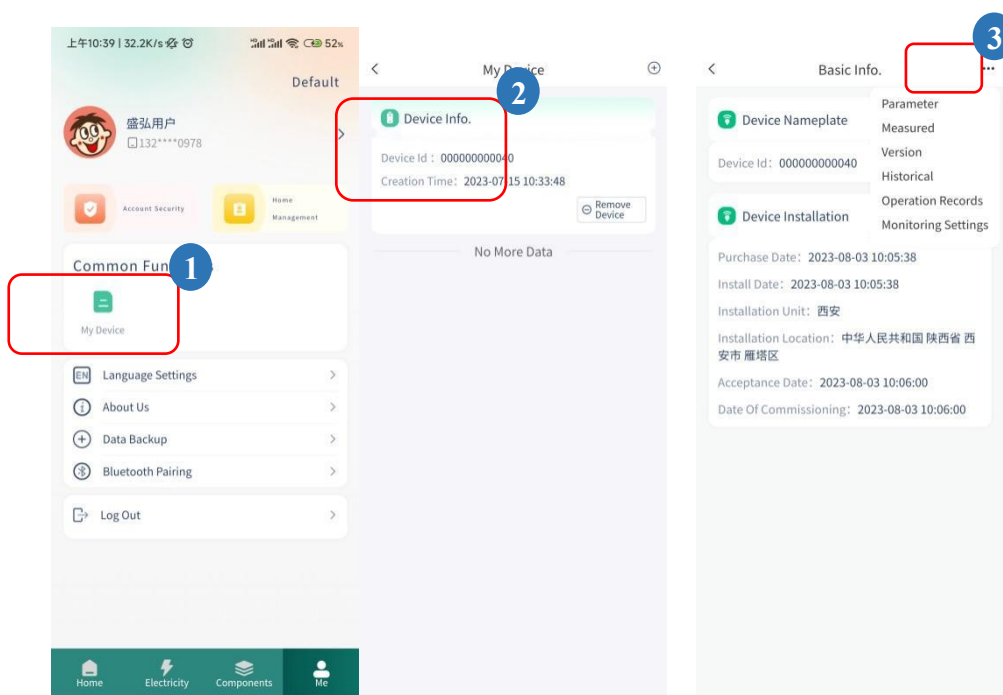
### 8.3 Home Page

The home page of the App can monitor the running status of the energy storage inverter, alarm information, and the operating power of each unit, and display the cumulative power generation of the energy storage inverter, carbon emissions, cost savings, and local real-time weather.



## 8.4 Setting Parameters

Step 1: Go to Home > My > My Devices > Device Info > Basic Devices, tap the "..." button in the upper right corner, and a list of options will appear, including inverter parameter settings, measurement data, version, historical data, operation records and monitoring settings, as shown in the figure below:



Click "Parameter Settings" to go to the parameter setting interface, which mainly includes main unit settings, battery settings and advanced settings. You can set basic parameters according to the country or region where the inverter is located and the actual application scenario of the inverter.

### 1. Main unit settings

Main unit settings include power-on command, anti-backflow function, working mode setting, on-off grid switching setting, and schedule charging and discharging time period.

### 2. Battery settings

Battery settings include battery start command, PV start command, battery type and maximum charge/discharge current settings, etc.

### 3. Advanced settings

Tap the upper right corner to enter "Advanced Settings", system control parameter settings.

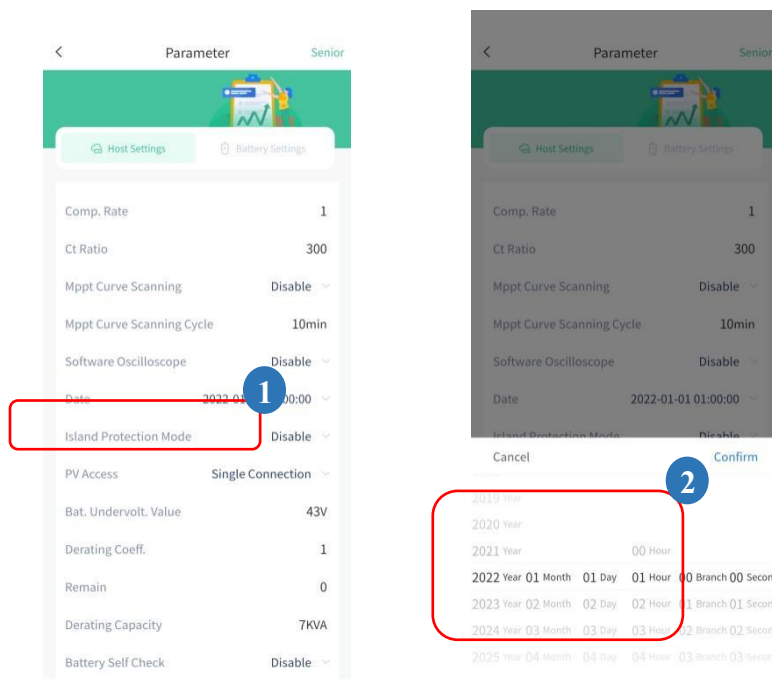
This interface is for debugging, and doesn't need user setting.

**Note:** Before sending the power-on command, it is necessary to ensure that the working mode and working parameters match the current system status and send it to the inverter.

### 8.4.1 Set Date

Tap **Parameter settings > Main unit settings.**

1. Click "Date setting" , enter for settings.
2. Set the parameters of year, month, day, hour, minute and second respectively.

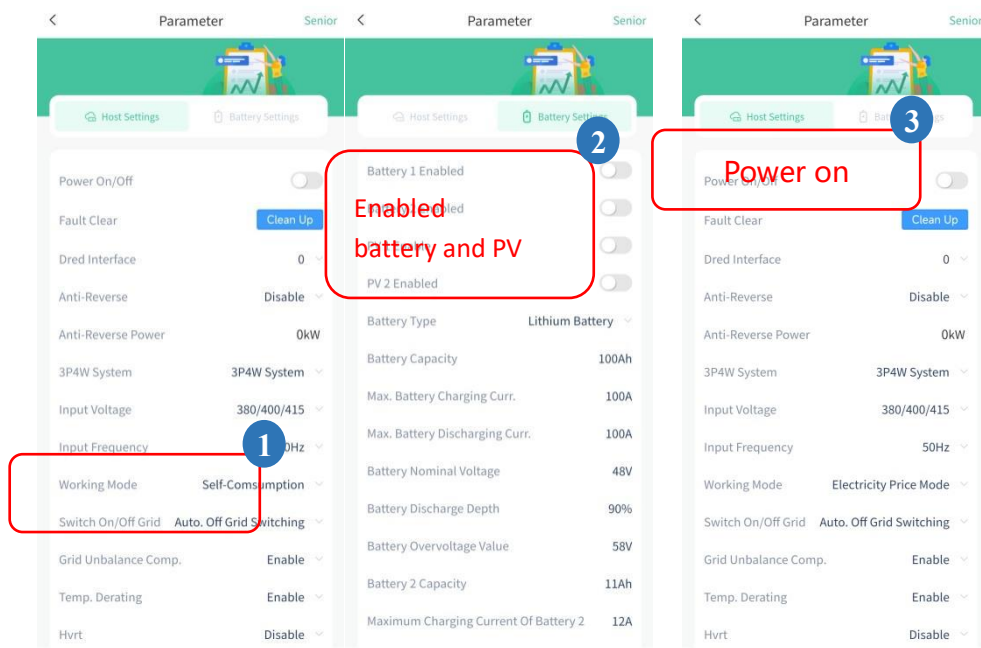


### 8.4.2 Setting Working Mode

When power-on for the first time, the default working mode of the inverter is self-use. At present, the inverter has 5 working modes. You can choose the working mode according to the scenario.

- (1) Self-use mode

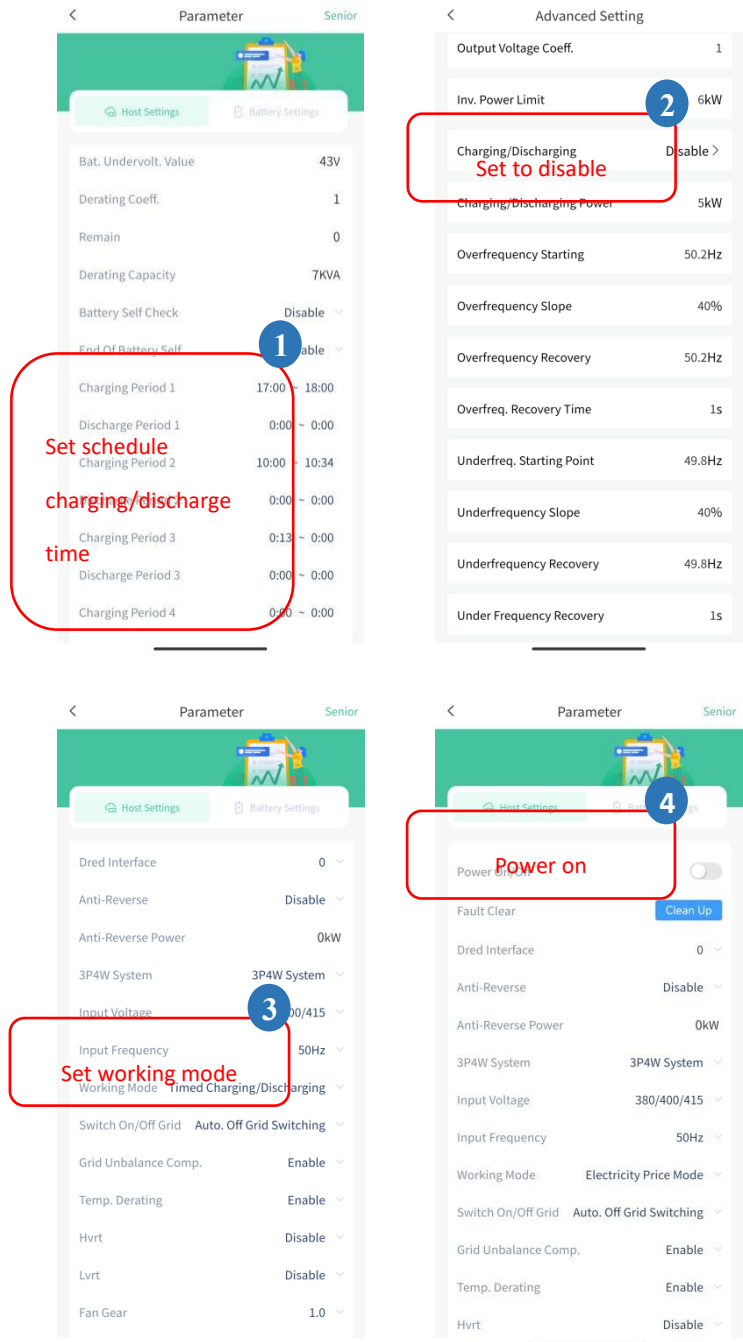
1. The working mode is set with self-use;
2. On/off-grid switching mode: Automatic switch-over;
3. Confirm whether the battery and PV are enabled;
4. Click " power-on" to start off the inverter (the power-on button is green).



## (2) Timed charging/discharging mode

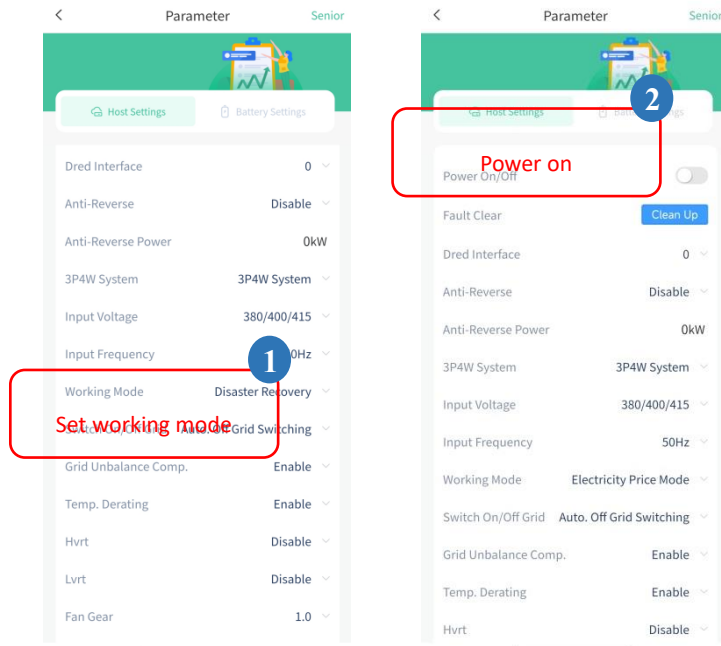
1. Set the schedule charging and discharging time period according to the demand (at least one time period of charging and discharging should be set, and it should not overlap);
2. Advanced settings > Active charging and discharging, set to Disable;
3. Set the working mode to Timed charging/discharging;
4. Set Startup mode.





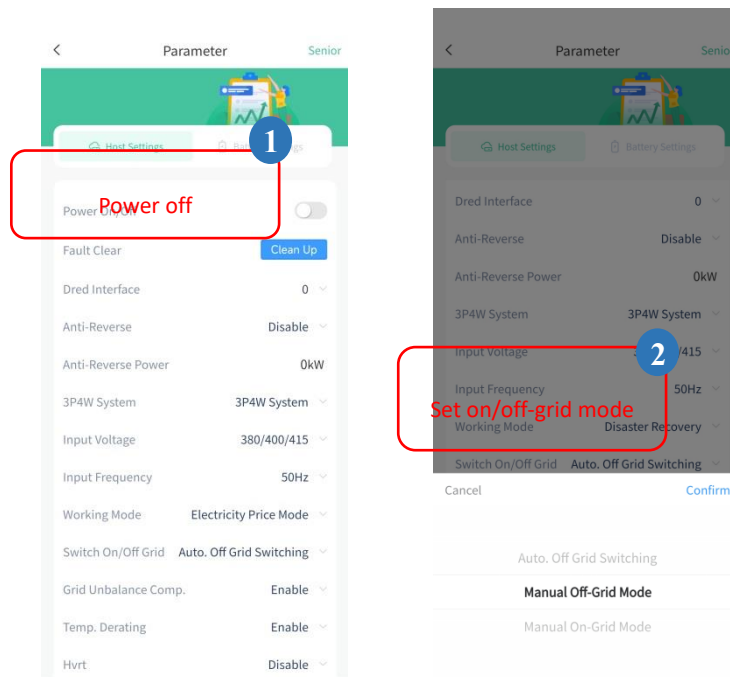
(3) Disaster recovery mode

1. Set the working mode to disaster recovery;
2. Set Startup mode.



### 8.4.3 Set On/Off-grid Mode

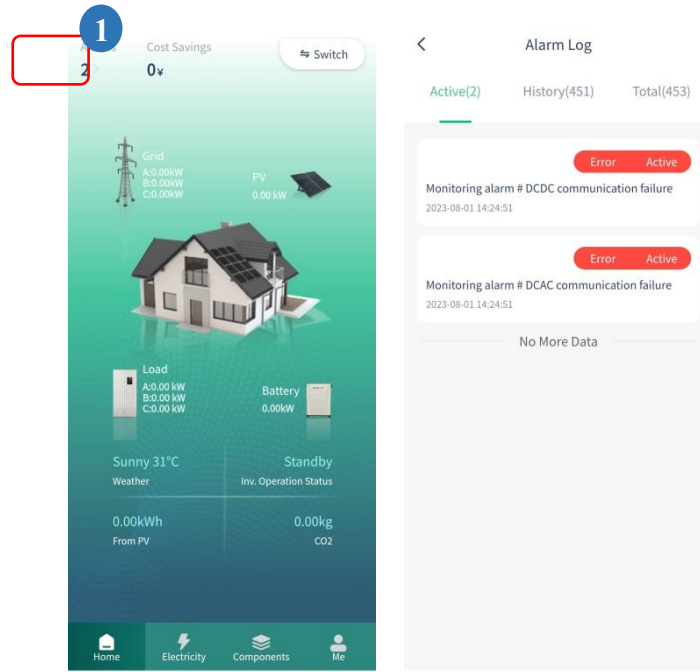
Note: To set the on/off-grid switching mode, you need to ensure that the inverter is turned off (the power button is gray) before selecting the on/off-grid switching mode.



## 8.5 View Data

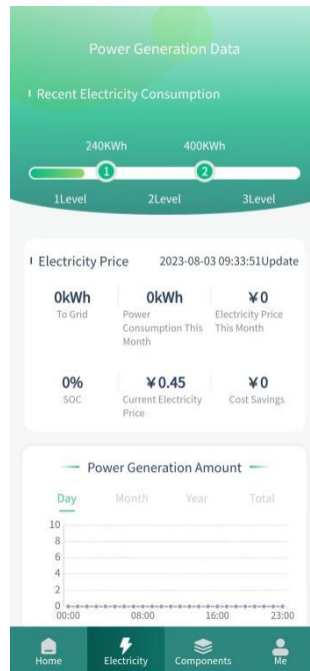
### 8.5.1 Alarm Information

Step 1: Check the current alarm, historical alarm and all alarm information in Home > Number of alarms > Alarm log.



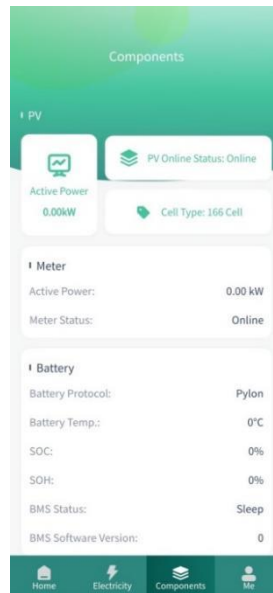
## 8.5.2 Power generation data

Step 1: Click to enter, Home>Power Amount, then you can see the history power consumption, current battery power, electricity price, and graphs of total power generation amount & feed-in power amount per day, per month, per year.



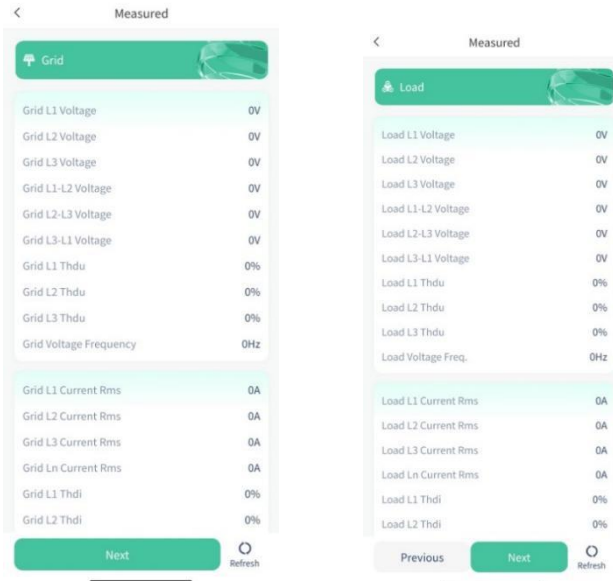
### 8.5.3 PV and Battery Status

Step 1: Click to enter, Home>Components, then you can find the information about PV panel, smart meter, battery.

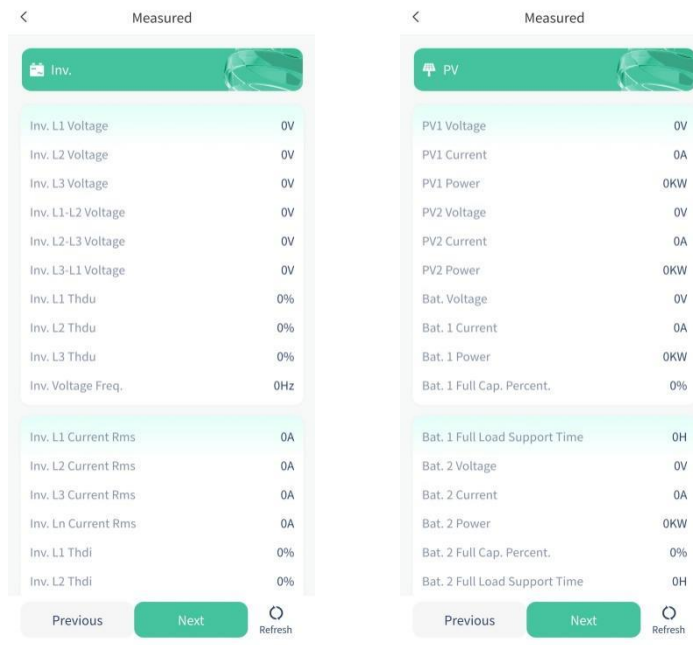


### 8.5.4 System Data

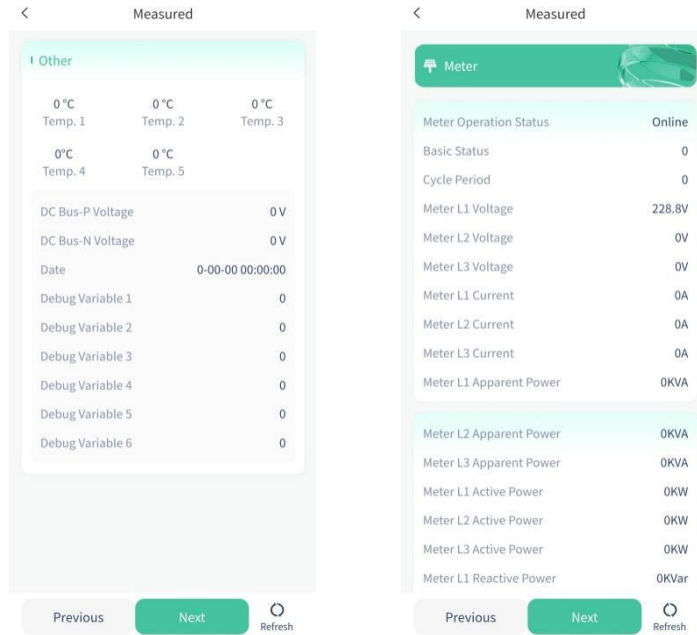
Step 1: Me>My Devices>Device Info>Basic Devices, then click "... " button in the upper right corner, and select "measurement data" to view grid, load, inverter, PV panel, smart meter, battery, monitoring and other information.



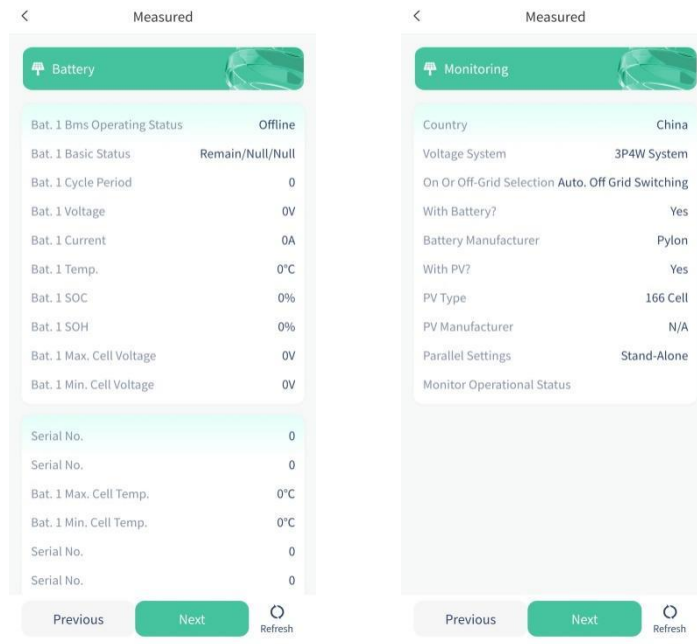
Grid and load data



Inverter and PV data



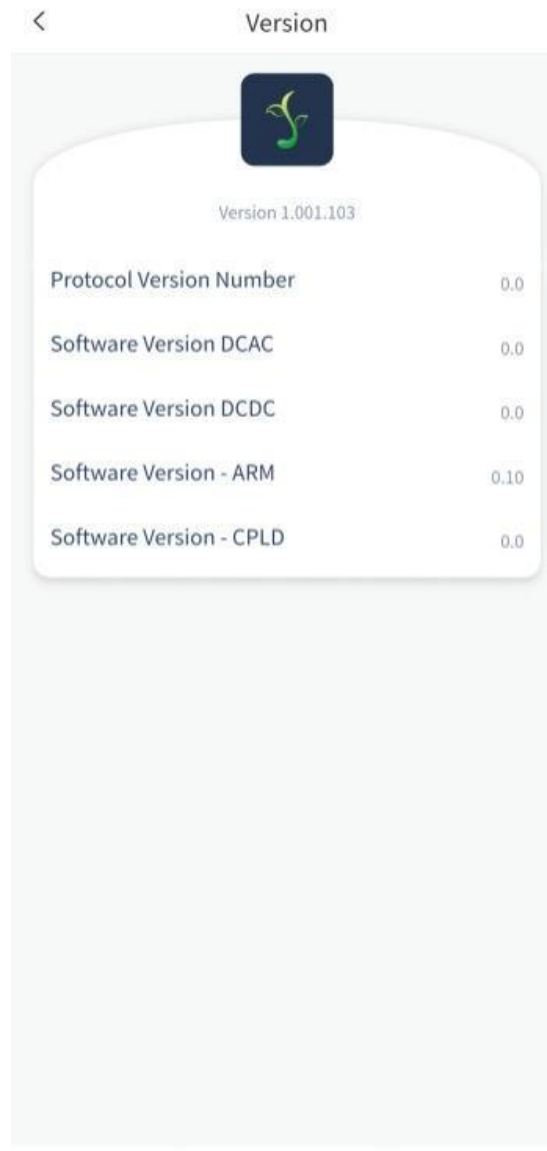
System temperature and meter data



Battery and monitoring data

## 8.5.5 Version Information

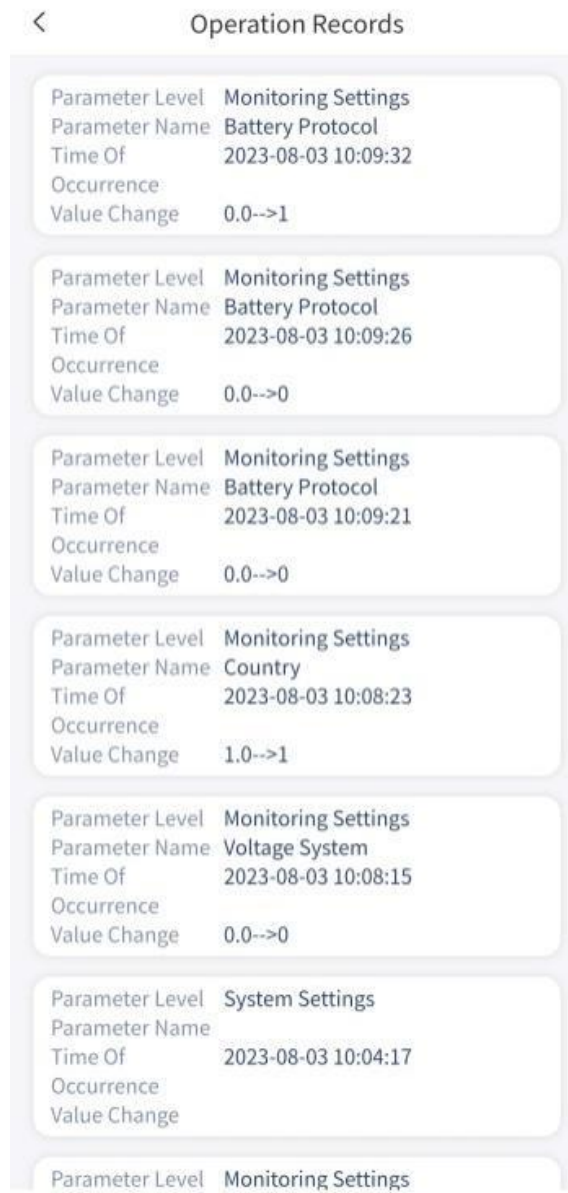
Step 1: Me>My Devices>Device Info>Basic Devices, then click "... " button in the upper right corner, and select "Version Information" to view the current software versions of DCAC, DCDC, ARM, CPLD and protocols.





## 8.5.6 Operation Record

Step 1: Me>My Device>Device Info>Basic Devices, then click "..." button in the upper right corner, and select Operation Record. This interface records the name, occurrence time and value changes of the operation parameters.



The screenshot shows a mobile application interface titled "Operation Records". It features a list of seven entries, each representing a parameter change. Each entry is displayed in a light gray rounded rectangle and includes the following fields: Parameter Level, Parameter Name, Time Of, Occurrence, and Value Change. The entries are as follows:

Parameter Level	Parameter Name	Time Of	Occurrence	Value Change
Monitoring Settings	Battery Protocol	2023-08-03 10:09:32		0.0-->1
Monitoring Settings	Battery Protocol	2023-08-03 10:09:26		0.0-->0
Monitoring Settings	Battery Protocol	2023-08-03 10:09:21		0.0-->0
Monitoring Settings	Country	2023-08-03 10:08:23		1.0-->1
Monitoring Settings	Voltage System	2023-08-03 10:08:15		0.0-->0
System Settings		2023-08-03 10:04:17		
Monitoring Settings				

## 8.5.7 Monitoring Settings

Step 1: Me>My Devices>Device Info>Basic Devices, then click "... " button in the upper right corner, and select "Monitoring Settings" to view and set inverter-related information.



## 9. Troubleshooting and Maintenance

This section will help you figure out the causes of malfunction during inverter operation.

### 9.1 Mobile APP Alarm Display and Troubleshooting

No.	Fault Description	Solution
1	Abnormal power grid voltage	<ul style="list-style-type: none"> <li>If the alarm occurs occasionally, it may be due to short-term abnormality of the grid power. After the grid power turn into normal, the inverter automatically turn into normal working status. If the alarm is frequent, check whether the grid voltage/frequency is within the acceptable range. If yes, check the inverter's AC breaker and AC wiring.</li> <li>If the grid voltage/frequency is not within the acceptable range, and the AC connection is correct, but the alarm occurs repeatedly, please contact technicians for support to change the grid over-voltage and under-frequency protection values.</li> </ul>
2	Abnormal grid frequency	
3	Ambient temperature is too high	<ul style="list-style-type: none"> <li>Please ensure that the inverter is installed in a place without direct sunlight.</li> <li>Make sure the inverter is installed in a cool/well-ventilated place.</li> <li>Please ensure that the inverter is installed vertically and the ambient temperature is lower than the upper temperature limit of the inverter.</li> </ul>
4	Radiator temperature is too high	


		<ul style="list-style-type: none"> <li>● If the still exists, please refer your dealer or after-sales service center for help.</li> </ul>
5	Insulation fault	<ul style="list-style-type: none"> <li>● Check the impedance of the PV string to the protective ground; if the resistance is greater than 20k<math>\Omega</math>, it is normal; if the resistance is less than 20k<math>\Omega</math>, please check the short circuit point and rectify it; check Whether or not the protective ground wire of the inverter is connected correctly. If power-on detection completed successfully, the alarm will be cleared automatically or a fault clearing command will be sent.</li> <li>● If it is confirmed that the impedance is indeed lower than the default value in a rainy environment, please reset the "insulation resistance protection point".</li> </ul>
6	Leakage protection failure	<ul style="list-style-type: none"> <li>● Check whether there is any problem with the machine or wiring, and send a fault clear command to retest if there is no problem.</li> </ul>
7	Islanding protection	<ul style="list-style-type: none"> <li>● Check whether the power grid is lost.</li> <li>● Contact your dealer or after-sales service center for help.</li> </ul>
8	Battery 1 not connected	<ul style="list-style-type: none"> <li>● Check whether or not the battery overvoltage setting is consistent with the battery specification.</li> </ul>
9	Battery 1 overvoltage	
10	Battery 1 undervoltage	

11	Battery 1 discharge termination	<ul style="list-style-type: none"> <li>Please check whether the battery 1 is connected correctly or whether the voltage is abnormal. Once confirmed it is correct, the alarm will be automatically cleared or a fault clearing command will be sent.</li> </ul>
12	PV1 not connected	<ul style="list-style-type: none"> <li>Please check whether the connection of PV1 is correct or whether the voltage is abnormal. Once confirmed it is correct, the alarm will be automatically cleared or a fault clearing command will be sent.</li> </ul>
13	PV1 overvoltage	<ul style="list-style-type: none"> <li>Check whether the PV series voltage is higher than the maximum input voltage of the inverter. If yes, adjust the number of PV modules and reduce the PV string voltage to fit the input voltage range of the inverter. After correction, the inverter will automatically return to normal state.</li> </ul>
14	PV1 current sharing abnormal	
15	PV2 not connected	<ul style="list-style-type: none"> <li>Please check whether the connection of PV2 is correct or whether the voltage is abnormal. Once confirmed it is correct, the alarm will be automatically cleared or a fault clearing command will be sent.</li> </ul>
16	PV2 over-voltage	<ul style="list-style-type: none"> <li>Check whether the PV series voltage is higher than the maximum input voltage of the inverter. If yes, adjust the number of PV modules in and reduce the PV string voltage to fit the input</li> </ul>
17	PV2 current sharing abnormal	

		voltage range of the inverter. After correction, the inverter will automatically return to normal state.
18	DC bus over-voltage	<ul style="list-style-type: none"> <li>● Turn off the switch in AC output side and DC input side, and turn off the switch in AC output side and DC input side after 5 minutes.</li> <li>● If the fault still exists, please contact your dealer or after-sales service center for help.</li> </ul>
19	DC bus under-voltage	
20	Unbalanced DC bus voltage	<ul style="list-style-type: none"> <li>● The fault is automatically cleared within 2s when the voltage fluctuation is within allowable range.</li> </ul>
21	Inverter overload	<ul style="list-style-type: none"> <li>● Please check whether the inverter is working in the overload state. Once confirmed that it is normal, the alarm will be automatically cleared within 10 minutes or a fault clearing command will be sent.</li> </ul>
22	Inverter overload timeout	
23	overload timeout	
24	PV1 overload timeout	
25	PV2 overload timeout	
26	Inverter soft start failed	<ul style="list-style-type: none"> <li>● Inverter internal fault, turn off the inverter, wait for 5 minutes and then turn on the inverter, send fault clear command for soft start.</li> </ul>
27	Battery 1 soft start failed	
28	DSP1 parameter setting failure	<ul style="list-style-type: none"> <li>● The alarm will be automatically cleared once the parameter setting is correct.</li> </ul>
29	DSP2 parameter setting failure	
30	DSP通讯故障 DSP communication failure	<ul style="list-style-type: none"> <li>● The alarm is cleared automatically after the SPI communication is normal.</li> </ul>

31	Relay self-check failure	<ul style="list-style-type: none"> <li>Send the fault clear command for re-test.</li> </ul>
32	Inverter abnormal	<ul style="list-style-type: none"> <li>This alarm will be automatically cleared after other faults are cleared.</li> </ul>
33	PV1 soft start failure	<ul style="list-style-type: none"> <li>Inverter internal failure, turn off the inverter, wait for 5 minutes and then turn on the inverter, send the fault clear command for soft start</li> </ul>
34	PV2 soft start failure	

## 9.2 Regular Maintenance

 <b>Warning</b>	<p>Make sure the inverter is powered off.</p> <p>When operating the inverter, please wear personal protective equipment.</p>
---	--

Maintenance items	Maintenance method	Maintenance cycle
System cleaning	Check the heat sink for foreign objects and dust. Clean the heat sink if necessary.	1 time/half a year~1 time/year (depending on ambient dust content)
DC switch	Turn the DC switch on and off 10 times continuously to ensure that the DC switch functions normally.	1 time/year
Electrical connection	Check whether the cable connection is loose or disconnected, whether the	1 time/half a year~1 time/year

	appearance of the cable is damaged, or whether there is copper leakage.	
Airtightness	Check whether the leakproofness of the inverter inlet hole meets the requirements. If the gap is too large or not sealed, it needs to be sealed again.	1 time/year
THDi test	<p>According to the requirements of Australia, Zref should be added between the inverter and the grid in the THDi test.</p> <p>L:0.24 <math>\Omega</math> + j0.15 <math>\Omega</math>; N:0.16 <math>\Omega</math> +j0.10 <math>\Omega</math></p> <p>L:0.15 <math>\Omega</math> + j0.15 <math>\Omega</math> ; N:0.1 <math>\Omega</math> + j0.1 <math>\Omega</math></p>	Depending on demand



## 10. Technical Parameters

Product model	SolarAll-H 3000S	SolarAll-H 3600S	SolarAll-H 4000S	SolarAll-H 4600S	SolarAll-H 5000S	SolarAll-H 6000S
<b>Battery parameters</b>						
Number of battery inputs	1					
Battery type	Lithium battery					
Nominal battery voltage	51.2V					
Battery voltage range	42V-58V					
Max. voltage	60V					
Nominal charge/discharge power	3kW	3.6kW	4kW	4.6kW	5kW	5kW
Max. charge/discharge current	75A	85A	85A	100A	100A	100A
Communicatio	RS485/CAN					

n interface						
<b>PV input</b>						
PV input channels	2					
Max. input power①	4500Wp	6000Wp	6000Wp	7500Wp	7500Wp	9000Wp
Max. input voltage	600V					
Starting voltage	95V					
MPPT voltage range	80~550V					
MPPT full load voltage range	350~500V					
Nominal voltage	360V					
MPPT Number of MPPTs	2					
Number of strings of each	1					

MPPT input	
Max. input current of each MPPT	13A/13A
Max. short-circuit current of each MPPT	18A/18A

Remark ①: Two independent PV channels are recommended, and the maximum power of a single PV does not exceed 4500W.

Grid-connected parameters						
Nominal output power	3000W	3600W	4000W	4600W	5000W	6000W
Max. grid input power	3500W	3600W	3600W	3600W	5000W	6000W
Max. output current	13.6A	16.4A	18.2A	20.8A	22.7A	27.2A
Max. grid input current	16.4A	22.7A	22.7A	27.2A	27.2A	27.2A
Nominal grid-connected	220V/230V/240V					

voltage						
Grid voltage range	184-264V					
Nominal grid frequency	50/60Hz					
Grid frequency range	45Hz~55Hz/55Hz~65Hz					
Power factor	~1 (0.8 lead-0.8 lag)					
THDi(@rated power)	<3%					
<b>Off-grid parameters</b>						
Nominal output power	3kVA	3.6kVA	4kVA	4.6kVA	5kVA	6kVA
Max. output power	3kVA	3.6kVA	4kVA	4.6kVA	5kVA	6kVA
Max. output current	13.6A	16.4A	18.2A	20.8A	22.7A	27.2A
Nominal output voltage	220V/230V/240V					
Nominal	50/60Hz					

output frequency						
THDu (@linear load)	<2%					
Switching time	<20ms					
<b>Efficiency</b>						
European efficiency	97.2%	97.3%	97.3%	97.4%	97.5%	97.5%
Max. efficiency	97.5%	97.5%	97.8%	97.8%	98%	98%
Max. battery charge/dischar ge efficiency	95.2%					
<b>Protection</b>						
Insulation resistance detection	Integrated					
Residual current monitoring	Integrated					

Input reverse polarity protection	Integrated
Islanding protection	Integrated
Overvoltage and overload protection	Integrated
AC short circuit protection	Integrated
AC side overvoltage level	III
Battery and PV overvoltage level	II
Surge protection	Integrated
Lightning protection	Integrated

<b>General parameters</b>	
Installation method	Wall-mount
Dimensions	500mm*470mm*180mm (without terminals)
Weight	23kg
Standby power consumption	$\leq 10\text{W}$
Permissible temperature range	$-25^{\circ}\text{C} \sim +60^{\circ}\text{C}$
Permissible humidity range	0~100%
Noise	$< 25\text{dB (A)}$
Permissible altitude	$< 4000\text{m}$ ( $\leq 3000\text{m}$ under full load, every increase of 100m, the power will be reduced by 5%)
Condensation method	Self-heating and heat dissipation
Degree of protection	IP65

Monitoring	LED/APP/WIFI/4G/Bluetooth (optional)
Communication port	RS485/CAN/DRED/dry contact/parallel communication
<b>Performance and Certification</b>	
Parallel function	Yes
Standard warranty	5 years
Safety standard	IEC 62109-1, IEC 62109-2, EN 62109-1, EN 62109-2
EMC	EN61000-6-1, EN61000-6-2, EN61000-6-3, EN61000-6-4
Grid-connected standard	VDE-AR-N 4105, VDE V 0126-1-1, G98/G99, CEI 0-21, EN50549 NRS 097-2-1, AS 4777.2, R25





[www.ensmartpower.com](http://www.ensmartpower.com)

## UNITED KINGDOM

Unit 25 Broadfields Farm, Dunmow Road,  
Rayne, CM77 6SA, Essex, UK  
T: + 44 20 3808 85 60  
E: [info@ensmart-ess.co.uk](mailto:info@ensmart-ess.co.uk)

## TURKEY

Halk Cad. No:8/A3, Atasehir,  
Istanbul, Turkey 34752, TR  
T: +90 216 225 84 66  
E: [sales@ensmartpower.com](mailto:sales@ensmartpower.com)

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