

Three Phase All-in-one RESS Inspiration-T

User Manual

Revision Table

No	Version	Revised by	Content	Revision Date
1	Rev1.0	Hunter.LI	First release	2023.09.13
2	Rev2.0	Hunter.LI	First release	2024.05.30
3				
4				
5				
6				

Content

1. Overview	1
1.1 Application Scope.....	1
1.2 Applicable People	1
1.3 User Manual	1
1.4 Disclaimers	1
2. Product description	2
3. Safety Instructions	2
3.1 Label Description.....	2
3.2 Installation Tools.....	3
3.3 Attention Items.....	4
4. Main Components.....	6
5. Product Description	8
5.1 Product Introduction	8
5.2 System Specification	8
6 Module Description	9
6.1 Module Specification.....	9
6.2 Illustration and Front Panel Description.....	10
6.3 DCDC Battery PACK ID Setting Description	13
7 System Installation	13
7.1 Handling, Transportation, Storage	13
7.2 Open-box Inspection.....	14
7.3 Mechanical Installation.....	15
7.4 Electrical Installation	18
8 Power On and Off the System	20
8.1 System Turn On	20
8.2 System Turn off	21
8.3 System Charge	21
9 System Starting Up.....	22
9.1 System Diagram	22
9.2 Operation Inverter Introduction.....	22
9.3 Unpacking and Checking.....	24
9.4 Mounting	25
9.5 Electrical Connection.....	26
9.6 Battery Connection	28
9.7 Grid & EPS Connection.....	29
9.8 Power key and Declaration for EPS Loads.....	30
9.9 Smart meter connection	30
9.10 Operating of the Inverter.....	35
9.10.1 LED and LCD Display	35
10 Monitoring System	37
10.1 Module connection	37
10.1.1 Software acquisition	38

10.1.2 Wi-Fi Configuration.....	38
10.2 Create Plant.....	39
10.3 Monitoring and Setting	39
10.4 Parameter setting	40
10.4.1 Enter parameter setting list	40
10.5 On the parameter setting page	40
10.5.1 Working Mode Setting.....	41
10.6 Battery Setting	44
10.7 Meter Protocol Setting.....	44
10.8 EPS Setup	45
10.9 Grid VHA Auto Low Power	45
10.10 Buzzer Setup.....	45
10.11 Function Settings	46
10.12 Power Grid Setup.....	46
10.13 Execute Instruction	47
10.14 Basic Settings.....	47
10.15 Special grid settings.....	48
11 Technical Data	48
11.1 Datasheet of Inverter.....	48
11.2 Datasheet of Battery.....	49
12 Maintenance.....	50
12.1 Trouble Shooting	50
12.2 Daily Maintenance.....	53
13 Uninstallation & Return.....	54
13.1 Remove the Product.....	54
13.2 Pack the Product	54
13.3 Dispose of the Product.....	54
14 Cautions and Warranty.....	55
14.1 Cautions.....	55
14.2 Description of Warranty.....	55

1. Overview

1.1 Application Scope

This manual introduces Three Phase All-in-one RESS products, including product specifications, operation specifications, product maintenance and other related information. For details on the operation, installation and use of the product, please refer to this user manual.

1.2 Applicable People

This manual is used for professional and technical staff who install, operate and maintain the batteries, as well as for the end-users who may need to view the relevant technical parameters. Anyone who operates must be qualified for electrical work.

1.3 User Manual

Before you operate Three Phase All-in-one RESS, you should be better trained and read the manual carefully, to ensure that the person using the product is fully understood. Remove any possible metallic shorting risks from jewelry, watches, pens, metal bars and frames. After reading, please keep it in a safe place for future reference.

1.4 Disclaimers

Failure to operate this product correctly may result in serious injury to yourself or others, or damage to the product or property. Once used, you will be deemed to have understood, acknowledged and accepted all the terms and contents in this document. Users undertake to be responsible for their own actions and all the consequences arising therefrom. The company shall not be liable for all damages caused by the user's failure in accordance with the provisions of this document and the user manual. The content of this manual will be constantly updated and revised, and update, revision or termination without prior notice. So please visit our official website or obtain the latest product manual through your local distributors.

2. Product description

Three Phase All-in-one RESS product incorporates an integrated design, integrated installation and boasts a protection level of up to IP65, which is mainly used for household photovoltaic systems. It integrates a 12KW three phase hybrid inverter and 5.12KWh LFP battery pack. The battery module has the power rating as 5.12KWh/3KW, Charged mode, Max output current is 62.5A and output voltage 45Vdc to 57Vdc, and the peak efficiency achieve to 98% max (at nominal conditions), Discharged mode, Max output current is 10A and output voltage 350Vdc to 450Vdc, and the peak efficiency achieve to 97% max (at nominal conditions), and the hybrid inverter power supports 4-12KW. The product supports power grid, photovoltaic and battery access at the same time, and has the function of on/off-grid operation. The system has the advantages of high energy density, long cycle life and high compatibility.

3. Safety Instructions

3.1 Label Description

In order to ensure the user's personal safety when using this product, this manual provides relevant identification information and uses appropriate symbols to alert the user, who should carefully read the following list of symbols used in this manual.

Table 3-1 Label Description

	Potentially low risk: may result in mild or moderate impairment if not avoided
	High Risk: May result in serious injury or death if not avoided
	The battery terminals must be disconnected before commencing on the battery
	The battery could explode and/or be severely damaged if dropped or crushed
	The battery may explode if exposed to open flames or other extreme sources of heat
	Grounding: The system must be firmly grounded for operator safety
	This side should be up
	Handle with care to avoid damage

	Keep dry
	Keep the battery away from kids
	Do not short circuit
	Do not reverse connection between the positive and negative
	Please read the instructions in the operation manual
	CE marking The product complies with the requirements of the applicable EU directives.
	WEEE designation Do not dispose of the battery together with the household waste but in accordance with the locally applicable disposal regulations for batteries.
	Marking for transport of dangerous goods The product passes the certifications of the UN38.3.

3.2 Installation Tools

Table 3-2 Installation Tools Sheet

Tools	Multi-meter 	Protective gloves 	Insulated anti-smashing shoes 
	Protective suit 	Safety glasses 	ESD wrist strap 
Installation Tools	Electric screwdriver 	Cross screwdriver 	Socket spanner 
	Slotted screwdriver 	Wire stripper 	

3.3 Attention Items

3.3.1 Manual Custody

This manual contains important information about the three Phase All-in-one RESS products. A careful reading of this manual will help you become familiar with this product, and this manual should be kept in a safe place so that it can be easily accessed by maintenance personnel at any time when needed.

3.3.2 Product Identity Protection

Warning labels, back panels and front doors of the cabinet contain important and safety protection information and are strictly forbidden to be torn and damaged.

3.3.3 Operator Requirements

Only trained and qualified professionals should perform various operations on the product: the product operator should be fully familiar with the product's system components and operating principles, as well as understand the product's user manual.

3.3.4 Safety Warning

 During the installation, daily maintenance, overhaul and other operations of three Phase All-in-one RESS products, the following conventions should be observed in order to prevent the accidental operation, proximity or occurrence of accidents by unrelated personnel: the front and rear switches of the products should be clearly marked to prevent accidents caused by wrong switches; warning signs or safety warning belts should be set near the operation area to prevent the proximity of unrelated personnel.



Danger to life due to electric shock when live components or DC cables are touched.

The DC cables connected to a battery, or a PV module may be live. Touching live DC cables can result in serious injury or even death due to electric shock. To avoid this danger:

- Disconnect the inverter and battery from voltage sources and make sure it cannot be reconnected before working on the device.
- Do not touch non-insulated parts or cables.
- Do not disconnect the DC connectors under load.
- Wear suitable personal protective equipment for all work on the product.
- Observe all safety information of this document.



DANGER

Danger to life due to electric shock if live system components in backup mode are touched

Even if the grid circuit breaker and the PV switch of the inverter are disconnected, parts of the system may still be alive when the battery is switched on due to backup mode. To avoid this danger:

- Before performing any work on the inverter, disconnect it from all voltage sources as described in this document.



DANGER

Danger to life due to electric shock if touching live components or DC cables when working on the battery

The DC cables connected to the battery may be live. Touching live DC cables can result in serious injury or even death due to electric shock. To avoid this danger:

- Before performing any work on the battery, disconnect the inverter from all voltage sources as described in this document.

3.3.5 Electric Measurement

 Due to the high voltage of the battery that may endanger personal safety, accidental contact may cause serious injury, so when you need to perform measurement operations, please take good insulation protection (such as insulating gloves).

3.3.6 Measuring Instrument

 To ensure that the electrical installation meets the requirements, please use the relevant electrical measuring equipment, such as multi-meter, power meters, etc.

3.3.7 Maintenance

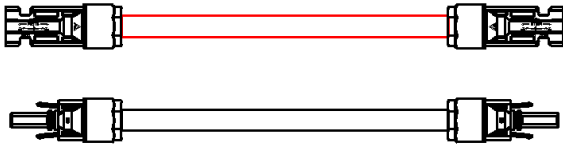
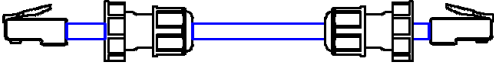
 During maintenance and repair operations, it should be ensured that the energy storage battery cabinet is not accidentally charged; a multi-meter, should be used to ensure that there is no electricity in the energy storage battery cabinet; insulating materials should be used to insulate the possible electrical parts of the system; ensure that the system has necessary grounding connections.

4. Main Components

The core components of the three Phase All-in-one RESS products are shown in Table 4-1 below:

Table 4-1 Main Components Sheet

No	Item	Picture
1	Hybrid Inverter (Three phase 4-12KW)	Technical drawing of the Hybrid Inverter showing front, side, and rear views. Dimensions: 185mm height, 570mm width, and 455mm depth.
2	Battery Module	Technical drawing of the Battery Module showing front, side, and rear views. Dimensions: 674mm width, 420mm height, and 170mm depth.
3	Mounting Base	Technical drawing of the Mounting Base showing front, side, and rear views. Dimensions: 50mm height, 674mm width, and 170mm depth.

4	Power Cable	
5	Communication Cable	

5. Product Description

5.1 Product Introduction

Three Phase All-in-one RESS products are modular products designed for energy storage applications, which are widely used in small and medium-sized energy storage systems. Each product consists of a hybrid inverter and battery modules, with single modules comprising cells, BMS, and shell. The BMS within each module has independent voltage, current, temperature detection and protection functions.

5.2 System Specification

Figure 5-1 Hybrid Inverter Module

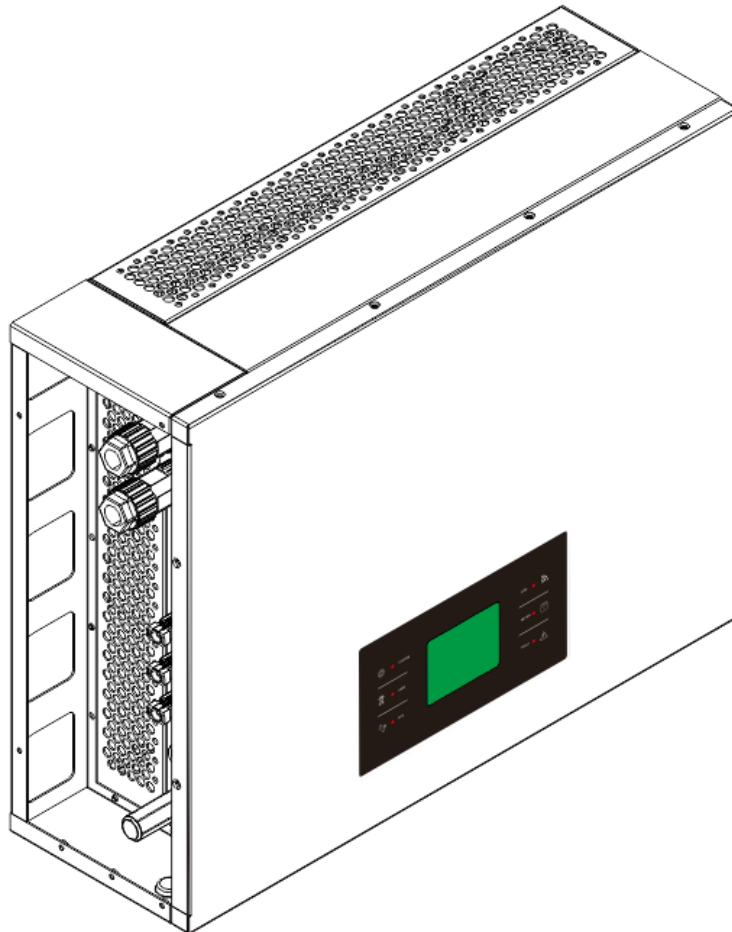


Figure 5-2 High-volt Stacked Module

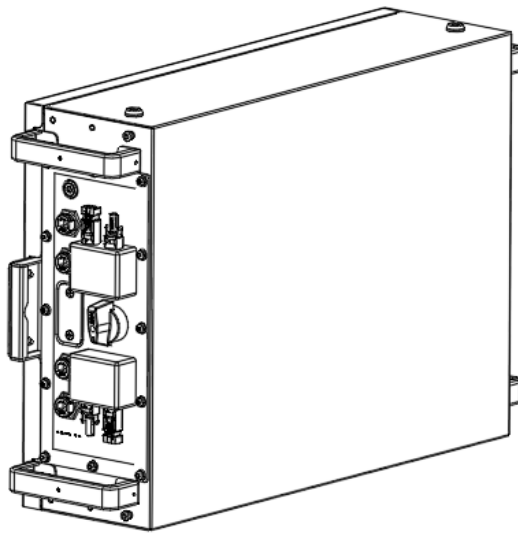
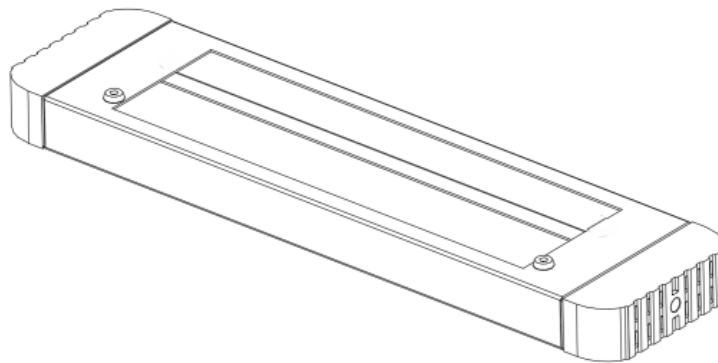


Figure 5-3 Mounting Base



6 Module Description

6.1 Module Specification

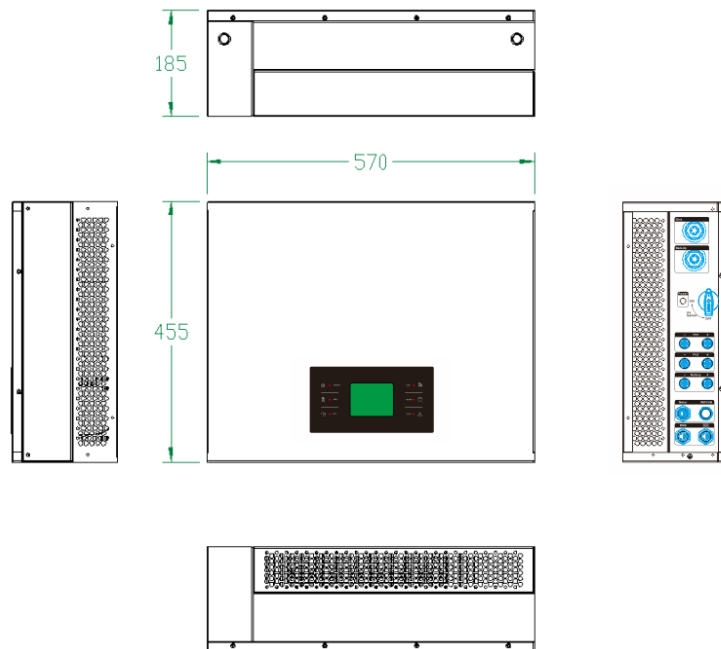
A newly designed solar and energy storage hybrid inverter, installed in on-grid solar, off-grid solar and back-up systems. The hybrid inverter enables a programmable and schedule smart solar energy storage system to help increase your solar energy self-consumption rate, protect your home appliances from grid outage, and balance your energy usage strategy to save energy bill.

DC DC battery PACK products consist of LFP battery module, BMS, DC-DC module, housing and wire. The product has complete protection function and can establish communication with external devices through CAN /RS485.

6.2 Illustration and Front Panel Description

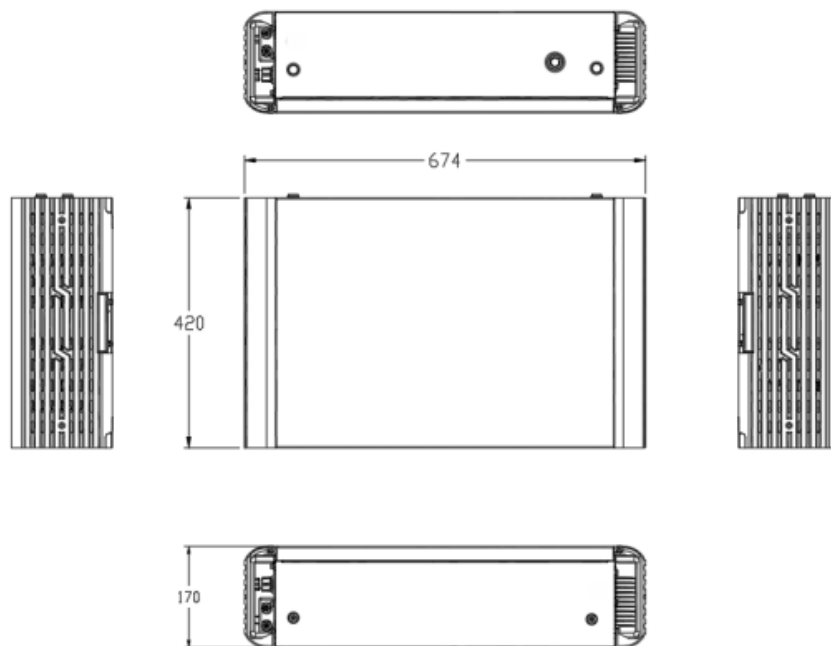
6.2.1 Hybrid Inverter Appearance & Dimension Schematic

Figure 6-1 Hybrid Inverter Appearance & Dimension Drawing



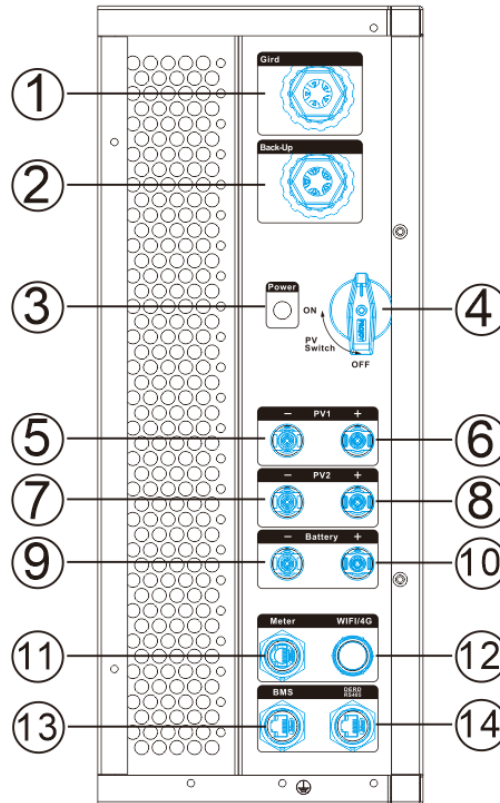
6.2.2 DCDC battery PACK Appearance & Dimension Schematic

Figure 6-2 DCDC battery PACK Appearance & Dimension Drawing



6.2.3 Hybrid Inverter Side View

Figure 6-3 Hybrid Inverter Side Panel Diagram



No.	Item	Function Description	Remarks
1	Grid	AC input interface	
2	Back-up	EPS output interface	
3	Power	INV Power ON/OFF	
4	PV switch	PV Rotary switch	
5	BAT-	Battery negative	
6	BAT+	Battery positive	
7	PV1-	PV1 negative	
8	PV1+	PV1 positive	
9	PV1-	PV2 negative	
10	PV1+	PV2 positive	
11	Meter	Grid Smart Meter Communication port	
12	WIFI/4G	Dongle Communication port	
13	BMS	BMS Communication port	
14	DERD/RS485	DERD/RS485 Communication port	

6.2.4 DCDC battery PACK Side View

Figure 6-4 DCDC battery PACK Side Panel Diagram

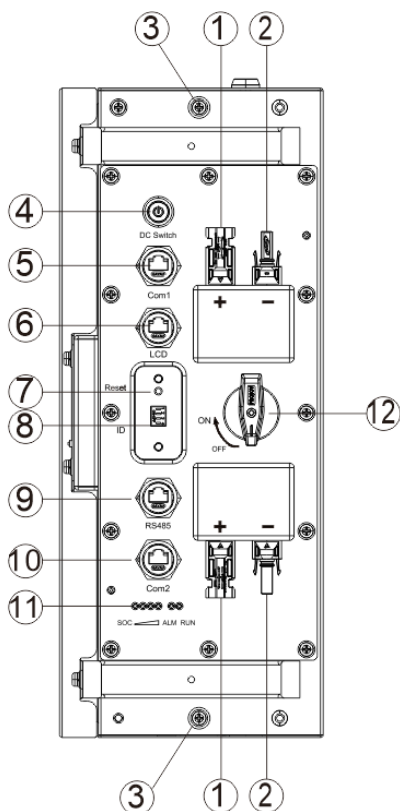
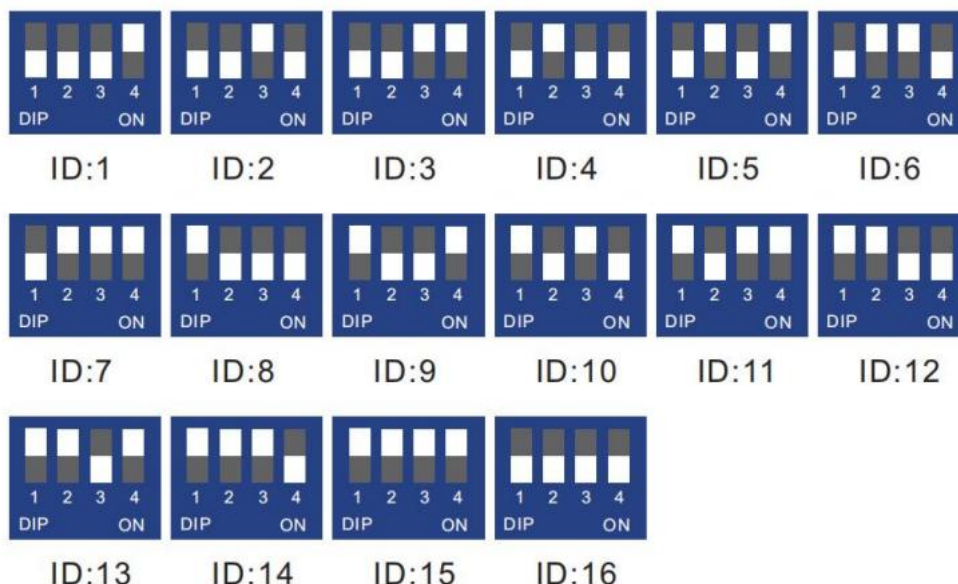


Table 6-3 DCDC battery PACK Side interface description

No.	Item	Function Description	Remarks
1	Bat+	Battery positive	
2	Bat-	Battery negative	
3	GND	Ground point	
4	DC switch	Power On/off switch	
5	Com port 1	Communication port	
6	LCD port	LCD Communication port	
7	ID Reset	ID Reset button	
8	ID	Battery address	
9	INV - BMS	Inverter Communication port	
10	Com port 2	Communication port	
11	SOC	Battery SOC and status	
12	Output Switch	Output ON/OFF	

6.3 DCDC Battery PACK ID Setting Description

Figure 6-5 ID Dialing Code Address Assignment Instructions



ID code bits correspond to binary digits, down represents "ON", up represents "OFF", the right side of the code bit is the low bit, the left side is the high bit, the code range is 1~16.

NOTE: The battery pack ID connected to the hybrid inverter must be set to ID1, indicating that it is the host, other batteries do not need to be set, and the ID1 host will automatically assign an address to the slave.

7 System Installation

7.1 Handling, Transportation, Storage

7.1.1 Handling



Rough handling practices may cause short circuit or damage to the battery pack, resulting in battery leakage or fire. Forklifts or carts should be used for handling, and materials transported should not exceed the width and height of aisles and doors and should be transported at a moderate speed. Avoid the phenomenon of inverted and laminated battery packs when unloading.

7.1.2 Transportation



Due to the heavy weight of the battery module, in order to guarantee safety, it is recommended to use a

forklift that meets the requirements for moving and transporting and should avoid dropping and throwing; the equipment should be prevented from collision and strong vibration during transportation.

Figure 7-1 Handling tool diagram



7.1.3 Storage



Short-term storage (within 3 months): If the battery is not used in a short period of time, the battery can be fully charged and stored in a dry, cool, non-corrosive gas, temperature 10-45°C, relative humidity 60±30%, no strong electromagnetic fields and in direct sunlight.



Long-term storage (over 3 months): If the battery is not used for more than 3 months, keep the battery SOC at 50%~70%, store it in a dry, cool, non-corrosive gas, temperature 20-35 °C, relative humidity 50 ± 15 %, in an environment without strong electromagnetic fields and direct sunlight, and ensure to charge once every 6 months to avoid irreversible capacity loss caused by long-term storage.

7.2 Open-box Inspection

Table 7-1 Unpacking Tools Sheet

Item	Tools		
Tools	Slotted screwdriver 	Protective gloves 	Stripper 
	Hammer 		



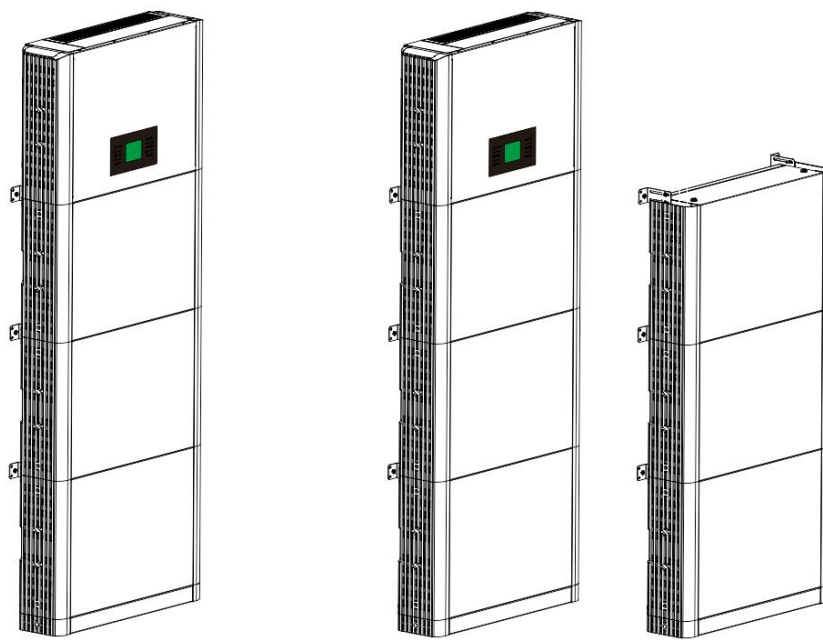
Three Phase All-in-one RESS products have been strictly tested and tested before leaving the factory. Please sign for them after inspection. If the product is damaged, please contact the local distributor. Please open the box to check whether the outer packaging is intact or damaged, whether the internal equipment is damaged.

7.3 Mechanical Installation

7.3.1 Installation Requirements

The installation position of the battery cabinet has a direct impact on its safety, service life and performance. It should ensure that the wiring of the system is convenient, easy to maintain and operate, and should avoid placing the system in a high temperature and high humidity environment. To ensure the flatness of installation floor. As shown in the following figure.

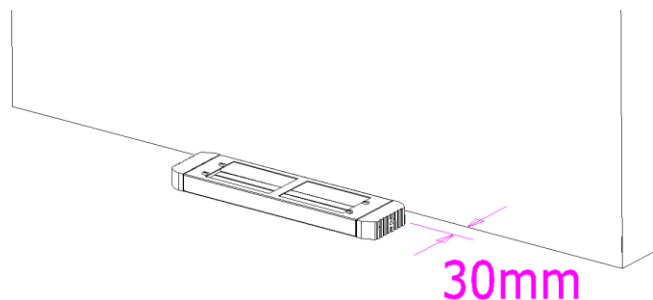
Figure 7-2 Installation Diagram



7.3.2 Mounting Base Installation

Remove the mounting base from the box and place it on flat ground. Our special construction design eliminates the need for screws to secure the base to the floor.

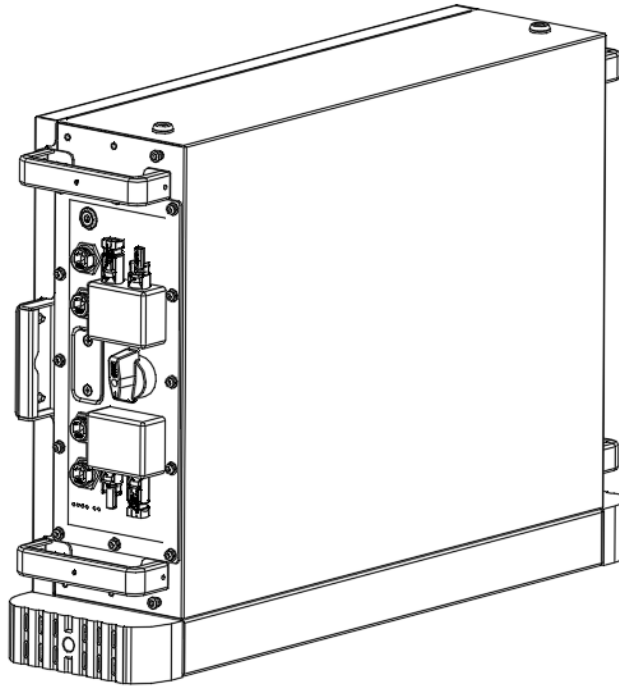
Figure 7-3 Mounting Base Installation



7.3.3 Battery Module Installation

 According to the actual situation of the installation site, use manual or machine to carry the module; it is recommended that at least two people lift it together and wear anti-smashing shoes and non-slip gloves during installation.

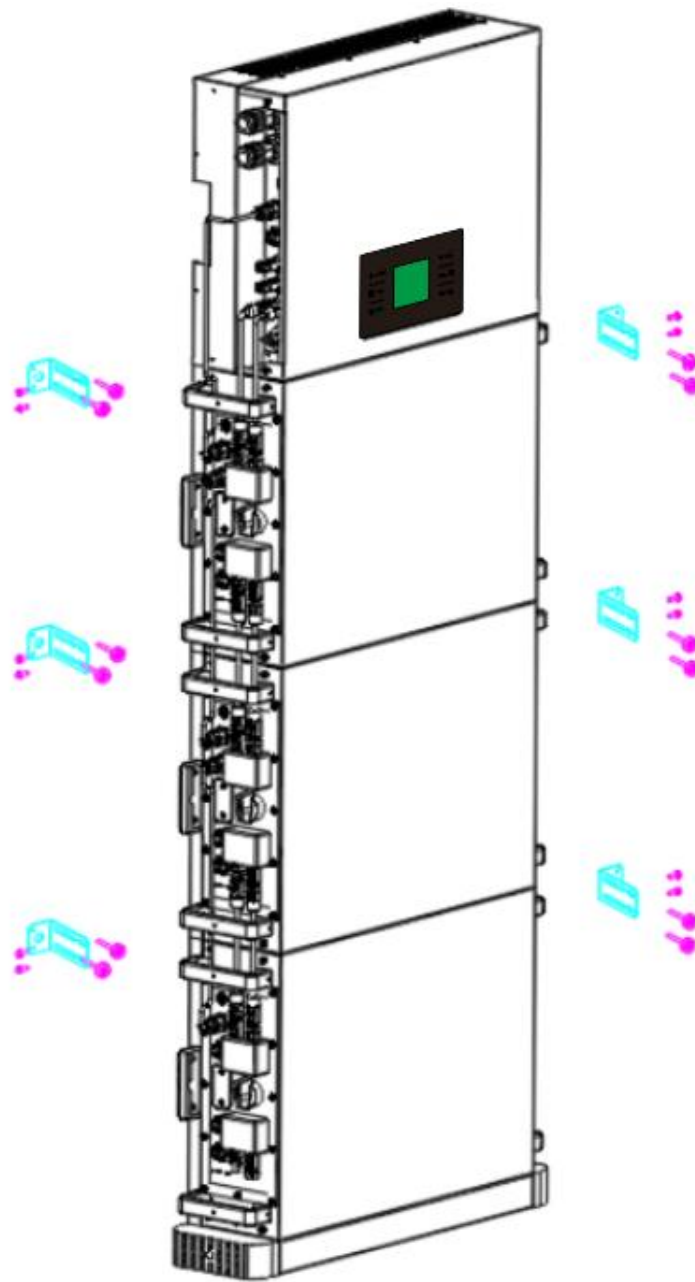
Figure 7-4 Battery Module Installation diagram



7.3.4 Combiner box Installation

While the low-volt battery module installation is finished, the final step is to install the Hybrid inverter. Place the Hybrid inverter at the top of the entire system, and make sure the fixing holes are aligned, then fasten it firmly with the battery module below with the quick lock pin

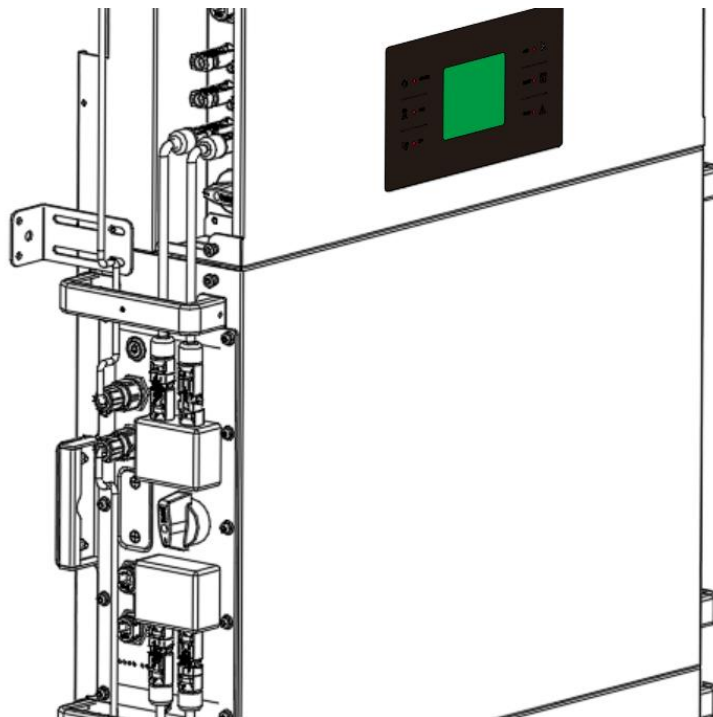
Figure 7-5 Three Phase All-in-one Installation



7.3.5 System Fixed Installation

⚠ Considering that our mounting base adopts non-traditional screw fixing method, so we need to install a fixed mounting ear on the wall to ensure the stability of the battery system after the combiner or high-volt box installation is done. The battery system is at risk of tipping if not handled properly.

Figure 7-6 Mounting Lug Installation



7.4 Electrical Installation

7.4.1 Tools Introduction

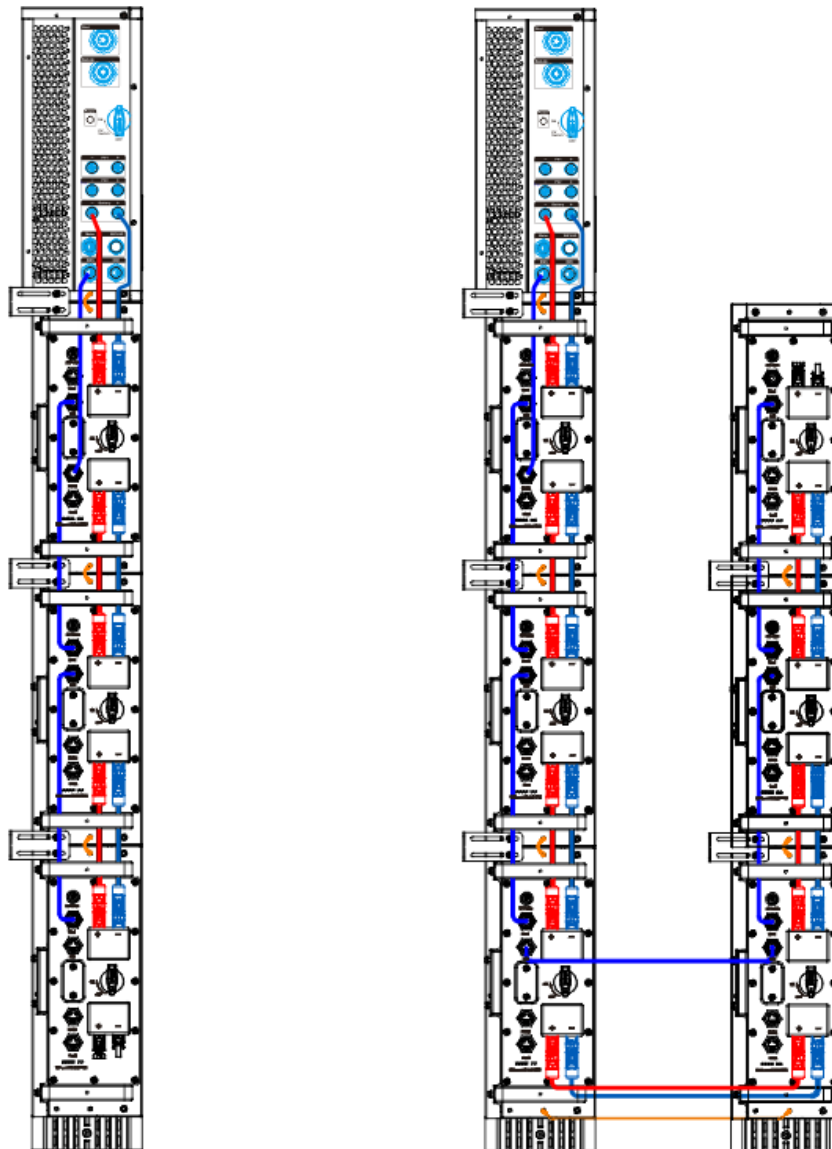
The following tools are required for electrical connection, as shown in Table 7-2:

Table 7-2 Electrical Installation Tools Diagram

Item	Tools		
Tools	Multi-meter 	Protective gloves 	Screwdriver 
	Electric batch 	Cross screwdriver 	Socket wrench 

7.4.2 System Cable Connection

Figure 7-7 Three Phase All-in-one System Connection Schematic



(1) Grounding. One end of the grounding cable (PVC 25mm²) is screwed to the grounding hole at the end of the chassis (M5), and the other end is connected to the grounding copper strip to ensure a solid connection.



(2) Communication cable installation. Finally, connect the RS485/CAN interface of the No.1 battery to the inverter via communication cable.



(3) Power cable installation. Use the power cable to connect each battery in parallel as the above picture shows. Avoid short circuit and reverse connection of positive and negative terminal.

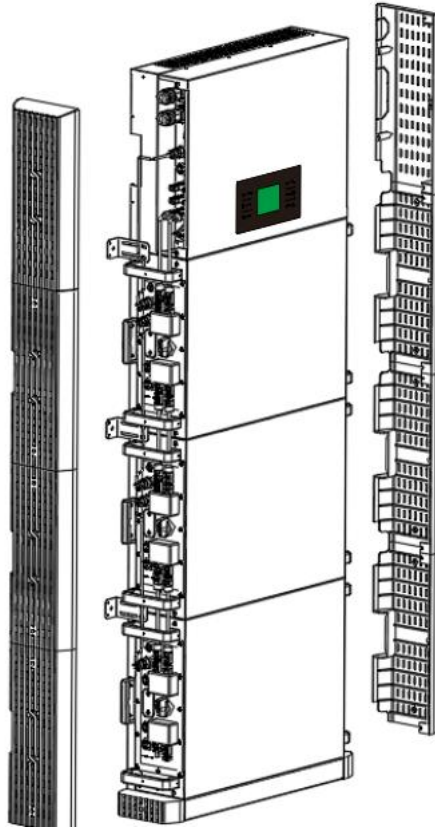


(4) Connect the equipment. Make sure the battery and device are powered off before connecting. Clearly identify the location of the positive and negative terminals of the system, red to the positive terminal, black to the negative terminal, to ensure no connection errors.

7.4.3 Side Panel Installation

After all wiring harnesses are installed (power lines, communication lines), use power tools to complete the side panel installation.

Figure 7-8 Side Panel Installation



8 Power On and Off the System

⚠ Three Phase All-in-one System needs to be started up. Before starting up, please check the following precautions carefully to make sure there are no errors.

All electrical connections must be made in accordance with the electrical diagrams in the manual; the cables are properly distributed, without mechanical damage, and connected and fastened correctly; the internal protection devices in the combiner box must be firmly installed; No excess parts or conductive material remains.

8.1 System Turn On

System turns on step:

- (1) The battery pack ID connected to the hybrid inverter must be set to ID1.
- (2) Turn on the batteries output rotary switch for each battery pack, reference [Figure 6-4](#).
- (3) Press DC switch continuously for 5 seconds to turn on the battery pack, LED will light, [Figure 6-4](#).
- (4) Switch on the AC breaker between the grid port of the energy storage inverter and the mains grid (this AC breaker should be labeled Main Switch Battery ESS Supply or similar).
- (5) Switch on the AC breaker between the backup port of the energy storage inverter and the loads (this AC Breaker should be labeled Main Switch Battery ESS Backup or similar).
- (6) Switch on the PV switch at the left middle of the inverter (if there is PV directly connected to the energy storage inverter), PV switch reference [Figure 6-3](#).
- (7) Switch on the AC breaker (if there is any) between any separate PV inverter and the mains grid. These separate PV inverters are also referred to as “AC-coupled PV inverters”.

8.2 System Turn off



After the energy storage system is powered off, the remaining electricity and heat may still cause electric shocks and body burns. Please put on protective gloves and operate the product 5 minutes after the system is powered off.

When failure or before service, the procedure to switch it off is:

- (1) Switch off the AC breaker between the grid port of the energy storage inverter and the mains grid (this AC breaker should be labeled Main Switch Battery ESS Supply or similar)
- (2) Switch off the PV switch on the left-hand side of the energy storage inverter (if there is PV directly connected the energy storage inverter), immediately below the Wi-Fi module.
- (3) Switch off the DC breaker between the battery and the inverter if there is any.
- (4) Turn the rotary switch to OFF for the one you want power off battery pack.
- (5) Press DC switch continuously for 5 seconds for every battery pack.

8.3 System Charge

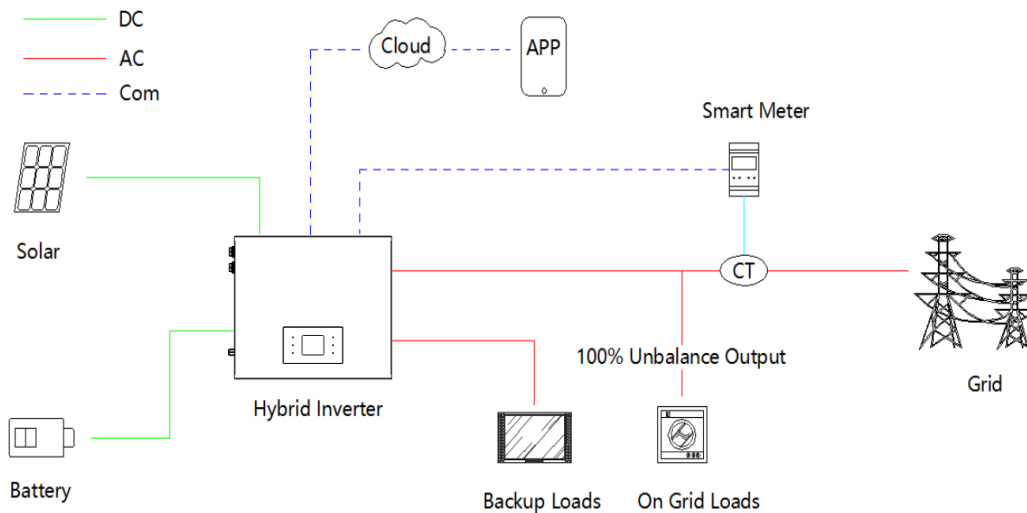


When the battery system is transported or stored for a long time, the battery SOH may be low due to self-discharge of the cells and system consumption, and the lithium battery needs to be charged after normal start-up and before use.

9 System Starting Up

9.1 System Diagram

Fig.9-1



9.2 Operation Inverter Introduction

Three Phase All-in-one system normally has the following operation modes based on your configuration and layout conditions.

9.2.1 General mode (Default)

The default is General mode, and there are mainly two common application scenarios as shown below:

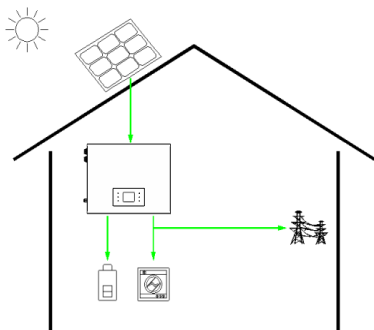


Fig:9.2.1(A)

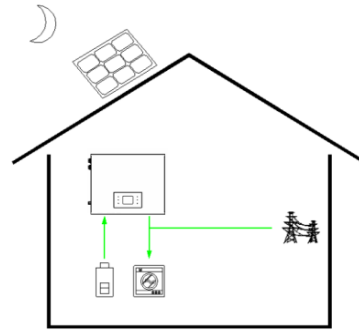


Fig:9.2.1(B)

A) When there is sufficient sunlight, it will give priority to supply power to the loads, charge the battery with excess, and then merge the excess into the grid.

B) When there is no sunlight, the battery supplies power to the loads.

9.2.2 Battery backup mode

In this mode, it is necessary to ensure that the battery is charged regardless of whether there is photovoltaic or not.

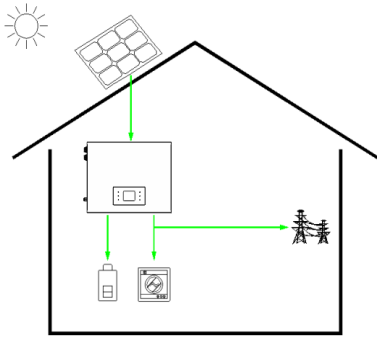


Fig: 9.2.2(A)

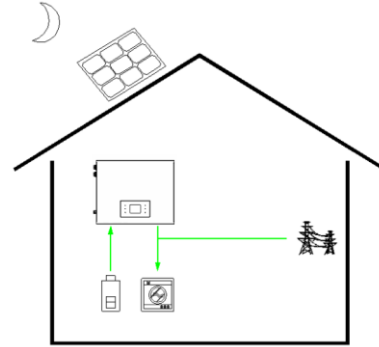


Fig: 9.2.2(B)

A) When there is sufficient sunlight, it will give priority to supply power to battery, supply power to loads, and then merge the excess into the grid.

B) When there is no sunlight, it will get power from grid to charge battery fully.

9.2.3 Micro-grid mode

Suitable for non-grid scenarios

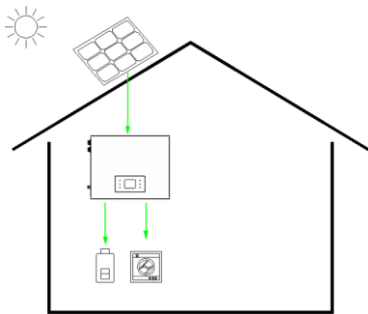


Fig:9.2.3(A)

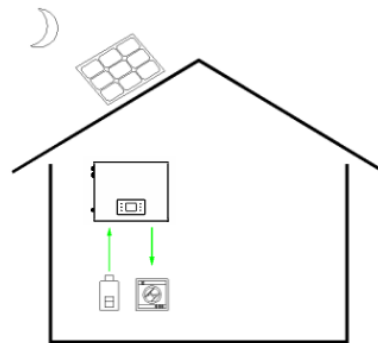


Fig:9.2.3(B)

A) When there is sufficient sunlight, it will give priority to supply power to the loads, charge the battery with excess.

B) When there is no sunlight, the battery supplies power to the loads.

9.2.4 Peak shaving and valley filling mode

According to the difference of electricity price, a day can be divided into three periods: peak, flat and valley.

9.2.4.1) In the valley level, the grid and PV charge the batteries. (Fig:9.2.4.1)

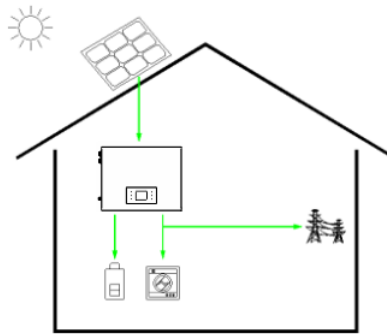


Fig:9.2.4.1

9.2.4.2) In the flat stage, if the PV is sufficient, the battery can be charged (Fig:9.2.4.2A); if the PV is insufficient, Priority is for loads (Fig:9.2.4.2B).

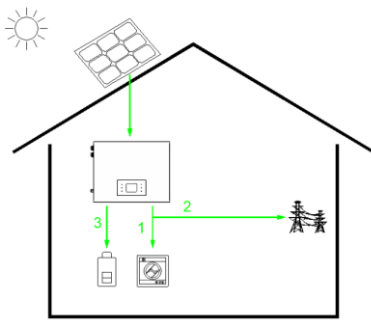


Fig:9.2.4.2A

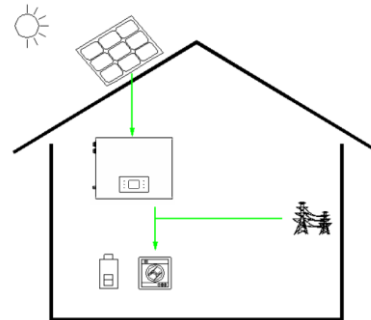


Fig:9.2.4.2B

9.2.4.3) In the peak level.

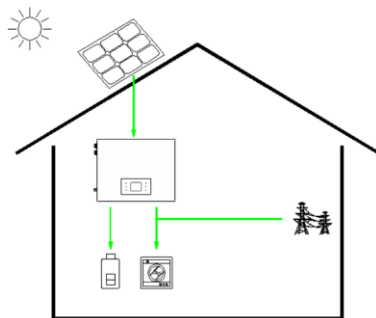


Fig:9.2.4.3(A) (PV is sufficient)

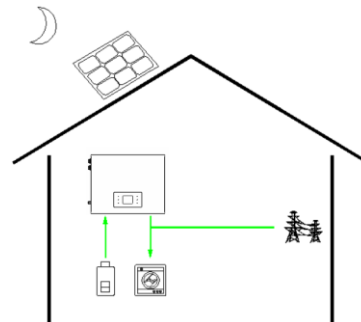
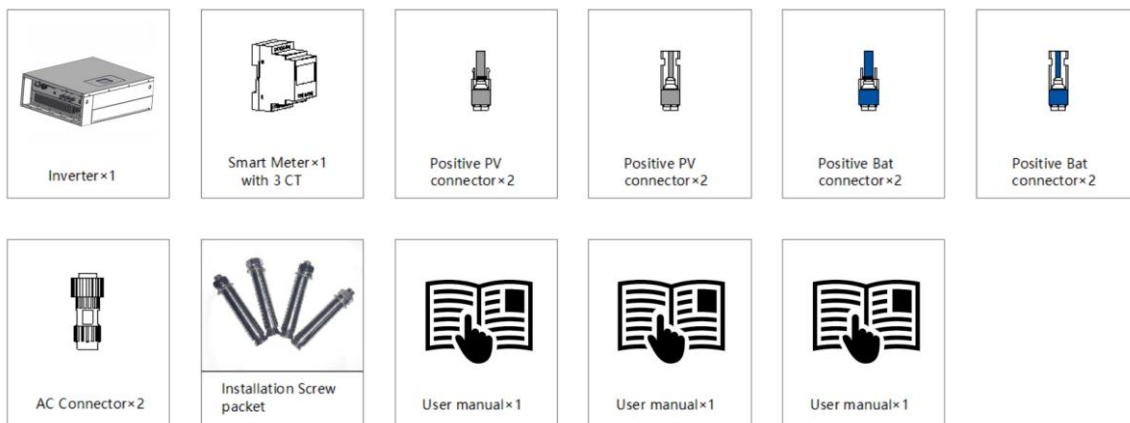


Fig:9.2.4.3(B)(PV is insufficient)

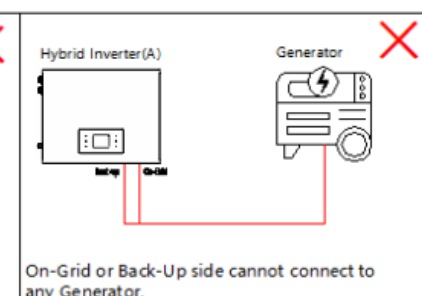
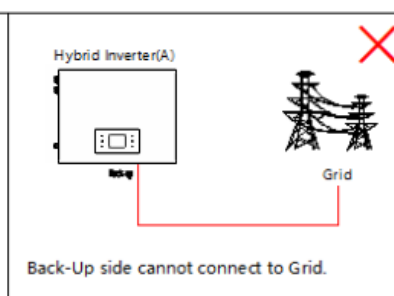
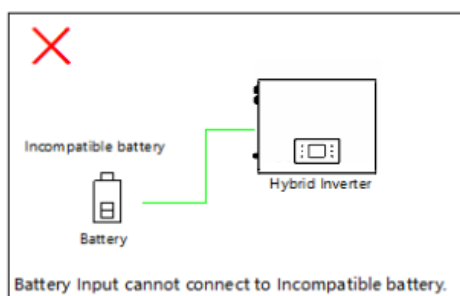
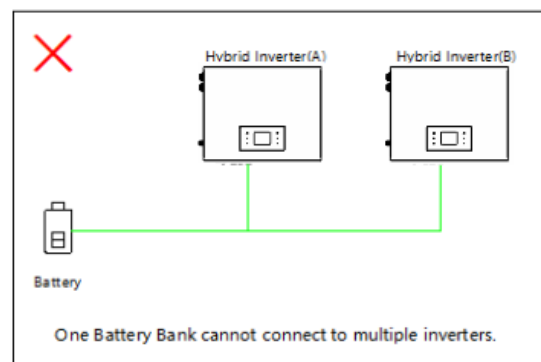
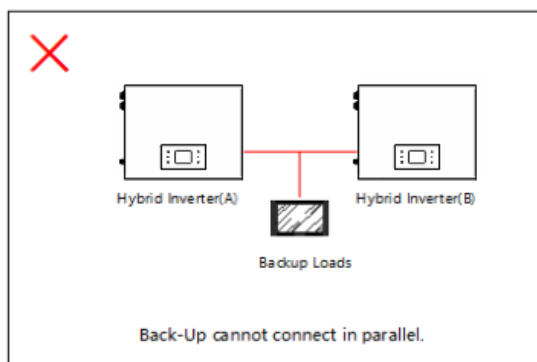
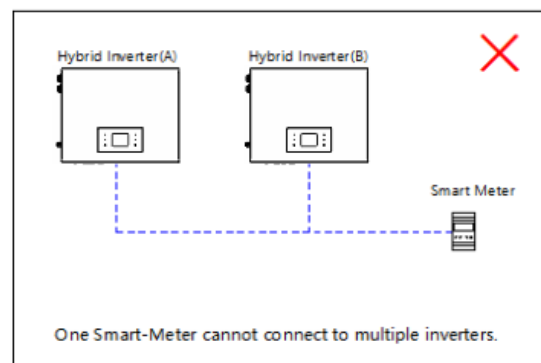
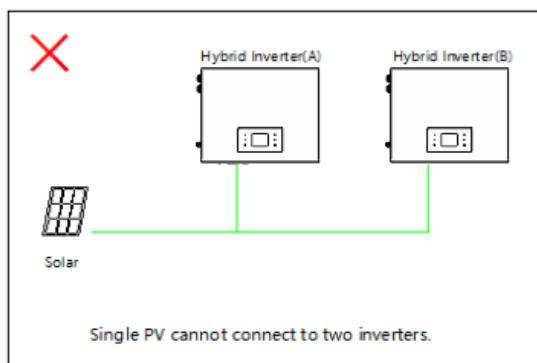
9.3 Unpacking and Checking

On receiving the inverter, please check before installation to make sure all the components as below are not missing or damaged.



9.3.1 Unacceptable Installations

Please avoid the following installations, which will damage the system or the inverter.

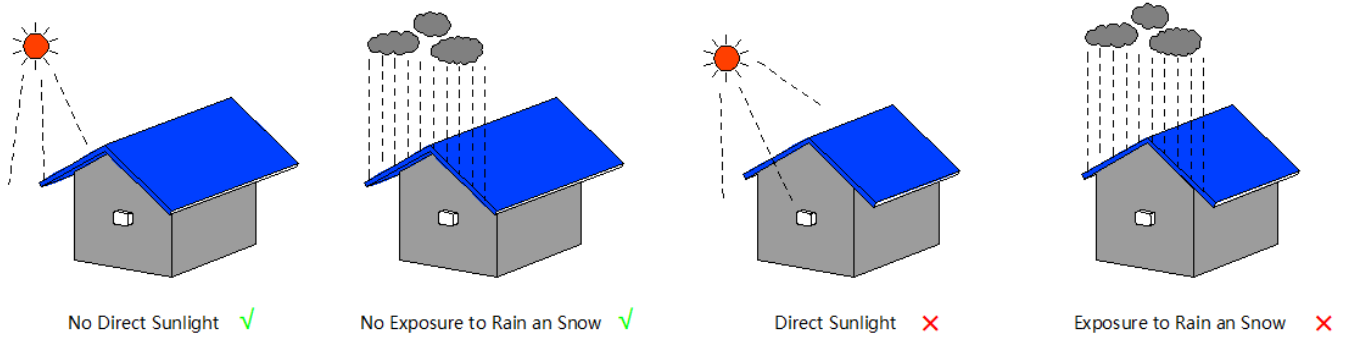


9.4 Mounting

9.4.1 Requirements for Mounting

※ The installation of the inverter should be protected under shelter from direct sunshine or any bad weather conditions as shown below:

Fig.9-1

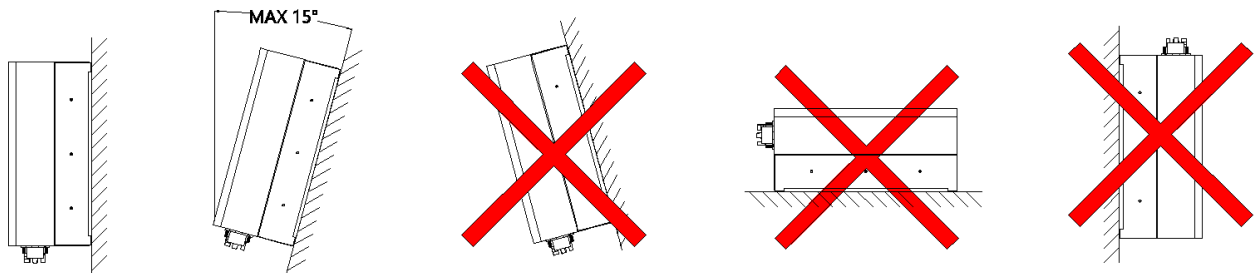


※ The inverter should be installed in a cool & dry place with temperature from -25°C to 60°C (High ambient temperature will cause the inverter's power derating).

※ The inverter LCD should be leveled with eyes and with enough space in the front for inspection.

※ The inverter should be installed on a vertical wall or within 15° at most if backwards to the wall.

Fig.9-2



※ To avoid burning and electric shock, the inverter should be installed beyond reach of children.

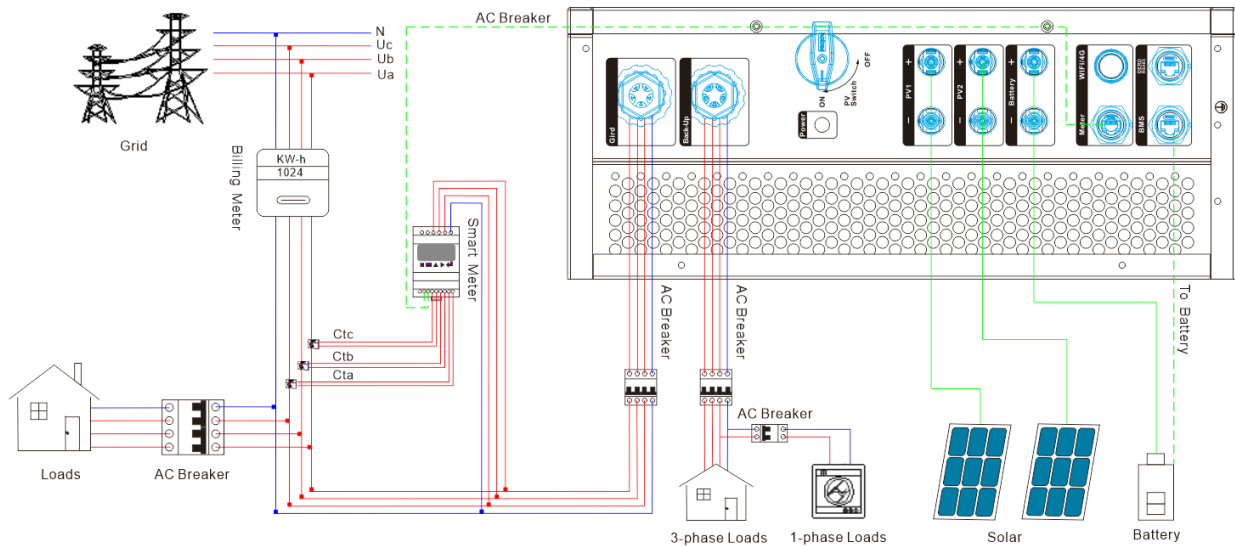
※ Make sure the installation position does not shake.

9.5 Electrical Connection

9.5.1 System Wiring Diagram

General wiring diagram of EPH series hybrid inverter.

Fig.9-3

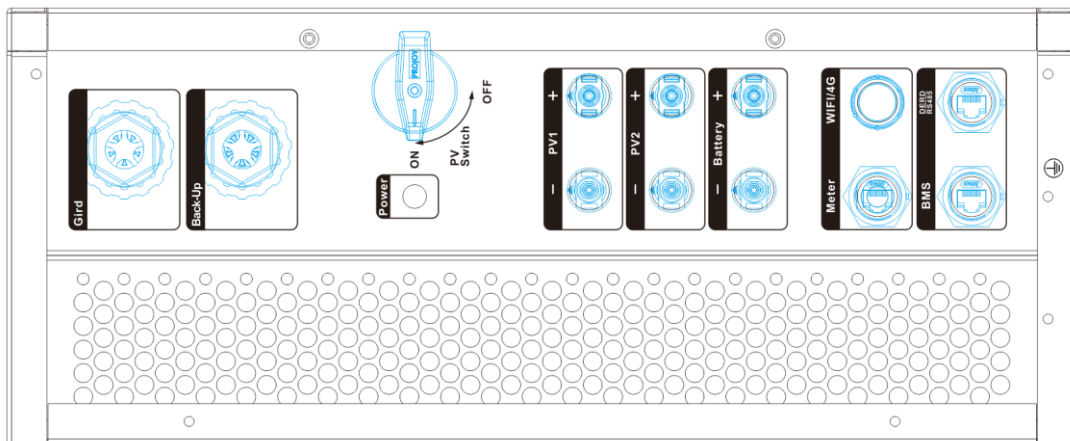


AC breaker grid: 100A AC breaker; AC breaker load: 40A AC breaker.

AC breaker for 1-phase load: 40A AC breaker.

9.5.2 Overview of The Electrical Connecting Part

Fig.9-4



9.5.3 PV Connection

Before connecting PV panels/strings to inverter, please make sure:

- 1) Use the right PV connectors in the accessory box.
- 2) The voltage, current and power ratings of the PV strings are within the allowable range of the inverter. Please refer to the Technical Data Sheet for voltage and current limits.
- 3) Make sure the PV switch of the inverter is in the “OFF” position during wiring.

4) PV strings could not connect to EARTH conductor.

STEP1:

Assemble the PV connectors from the accessory box. (PV cable must be firmly crimped into connectors)

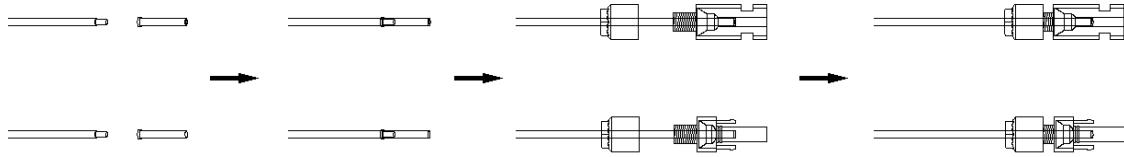


Fig.9-5

STE P2:

Connect the PV connectors to the inverter. There will be a click sound if connectors are inserted correctly into PV plugs.

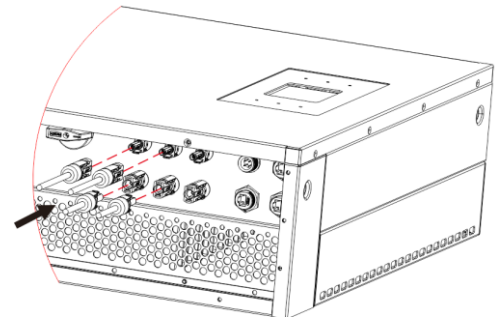
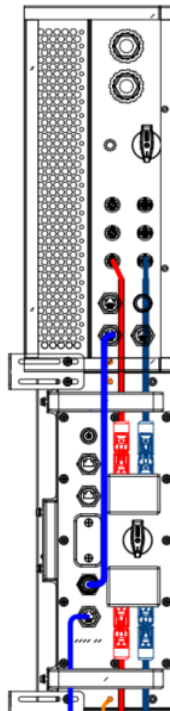


Fig.9-6

9.6 Battery Connection

Battery connection diagram

Fig.9-7



1) Use the right BAT connectors in the accessory box.

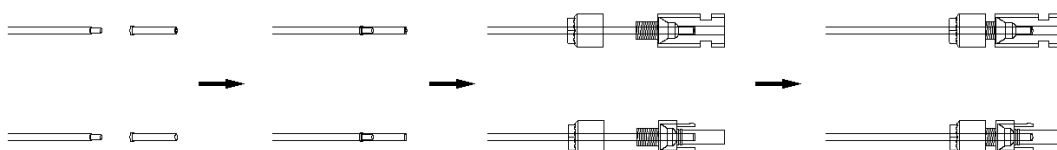
2) Choose 4 to 6 mm² (AWG 10) tin-plated cable to connect the battery and the inverter.

3) Make sure battery switch is off and battery nominal voltage meets EPH series inverter's specification before connecting battery to inverter.

STEP1:

Assemble the battery connectors from the accessory box. (battery cable must be firmly crimped into connectors)

Fig.9-8



STEP2:

Connect the battery connectors to the inverter.

There will be a click sound if connectors are inserted correctly into battery plugs.

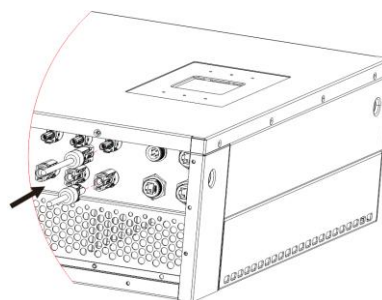


Fig.9-9

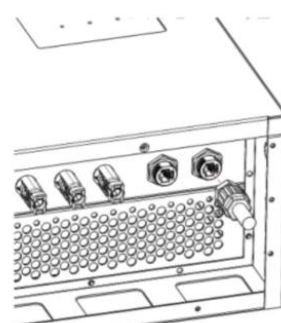
STEP3:

Connect the BMS cable between battery and inverter, insert the RJ45 connector with water-proof cap into the port marked "BMS" on inverter and fasten the cap. Then insert the other end of the cable into the battery port.

Fig.9-10

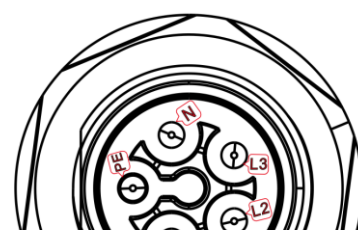


Position	Color	Signal name
1	Orange&white	NC
2	Orange	NC
3	Green&white	NC
4	Blue	CAN_H
5	Blue&white	CAN_L
6	Green	NC
7	Brown&white	NC
8	Brown	NC



9.7 Grid & EPS Connection

Use the AC connectors from accessory box for grid and EPS connection. An external AC breaker(32A) is needed for on-grid connection to isolate from grid when necessary.



STEP1:

Assemble the grid connector. Follow the markings on the connectors, make sure 3L/N/PE lines are connected correctly.

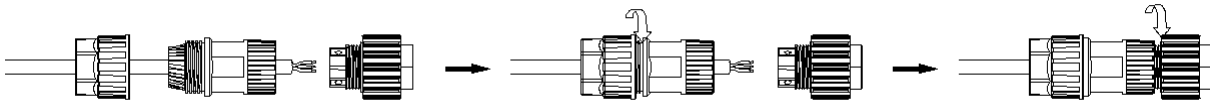
Note: Pin 1 connect to grid phase A,

Pin 2 connect to phase B and pin L to phase C.

Fig.9-11

The similar way to assemble the EPS connector, pin 1, pin2 and pin L are live lines, pin N is neutral.

Fig.9-12



STEP2:

Connect the grid connector and the EPS connector to the inverter. Just follow the markings on the inverter to connect them correctly.

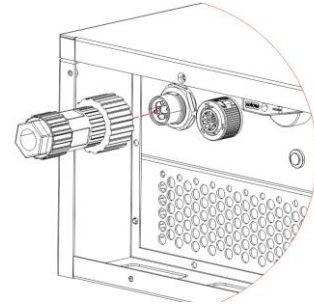


Fig.9-13

9.8 Power key and Declaration for EPS Loads

The power button on the rear panel is only used for EPS function.

※When mains power does not exist and EPS function is enabled, press and hold for 3 seconds, the inverter will enter backup mode.

※When inverter operates in backup mode, press and hold for 3 seconds, inverter will exit backup mode.

※When inverter gives an alarm and shutdown in backup mode, press and hold for 3 seconds, inverter will clear alarm.

Accepted loads as blow.

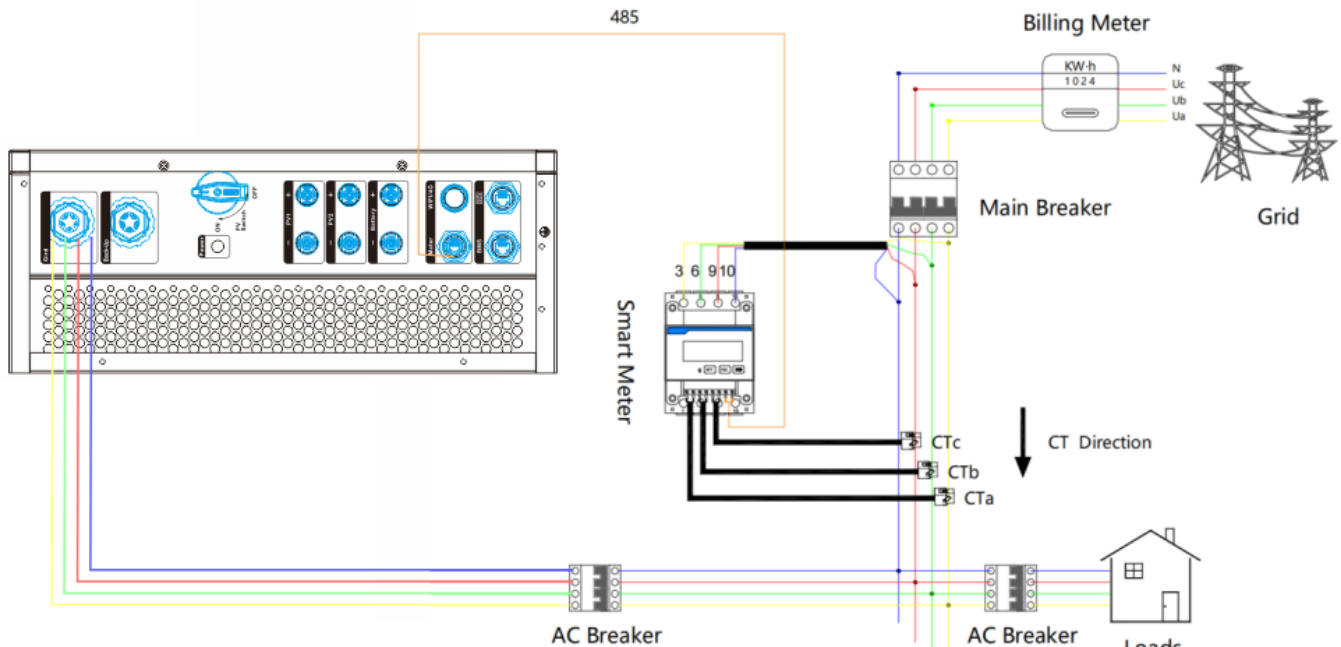
※Inductive load: a non-frequency conversion air conditioner within 1.5P can be connected to EPS side. Two or more may cause EPS output unstable.

※Do not connect 3-phase inductive load (like motor) without Neutral line to EPS side.

※Capacities load: Total power $\leq 0.6 \times$ nominal power of model.

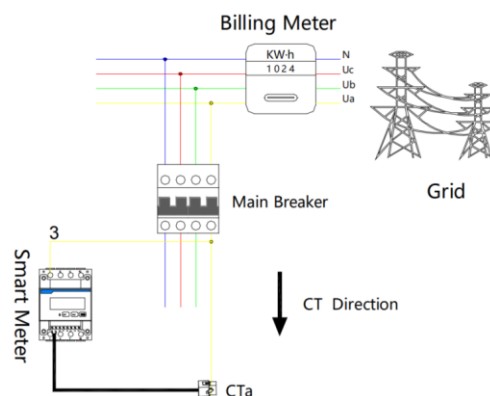
9.9 Smart meter connection

9.9.1 Diagram



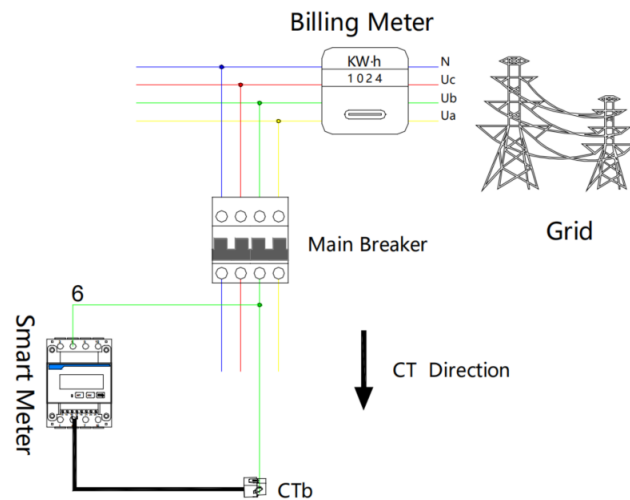
STEP1:

Place the smart meter in or near the grid distribution box right after the billing meter. Connect the yellow live core of volt sample cable to power grid phase A, and let grid phase A pass through CT-A in the direction indicated by the arrow "Grid Load."



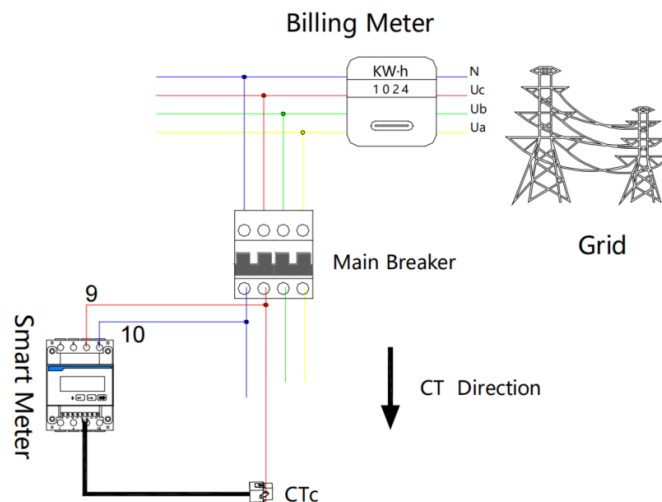
Step 2:

Connect the green live core of volt sample cable to power grid phase B, and let grid phase B pass through CT-B in the direction indicated by the arrow "Grid Load"



Step 3:

Connect the red live core of volt sample cable to power grid phase C, and let grid phase C pass through CT-C in the direction indicated by the arrow "Grid Load", and the blue neutral core to power grid neutral



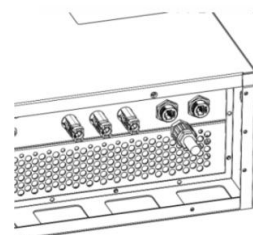
Step 4:

Make the smart meter cable for communication with water-proof cap in the accessory box.

Insert the RJ45 connector into the port marked "Meter" on inverter and fasten the cap.



Position	Color	Signal name
1	Orange&white	NC
2	Orange	NC
3	Green&white	485_B
4	Blue	NC
5	Blue&white	NC
6	Green	485_A
7	Brown&white	485_B
8	Brown	485_A



Step 5:

The wires on the other end should be stripped and connected to the smart meter accordingly.

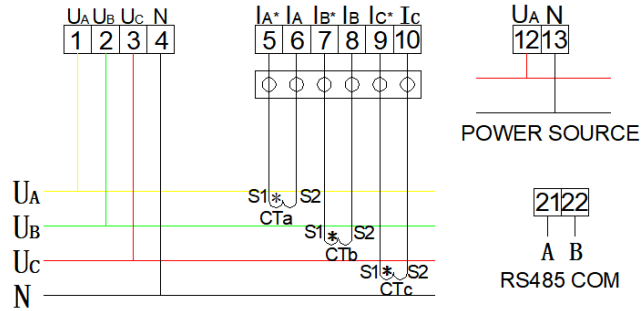


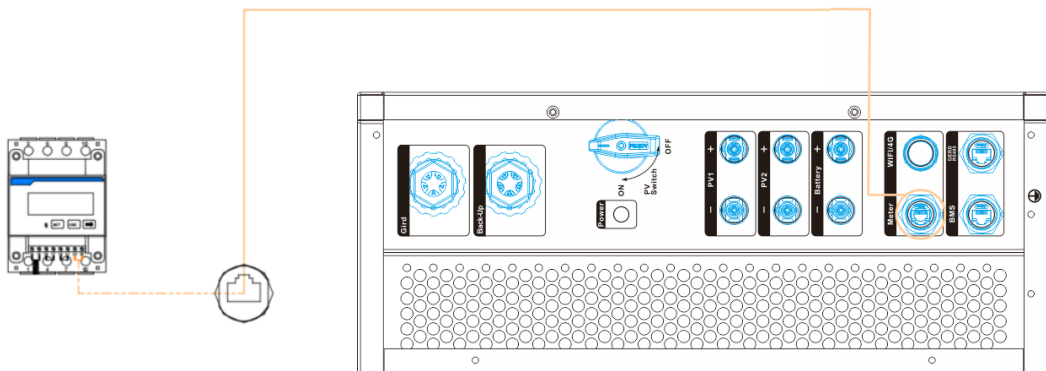
Fig.9-14

Connect the smart meter correctly according to the instructions in Figure 9-14:

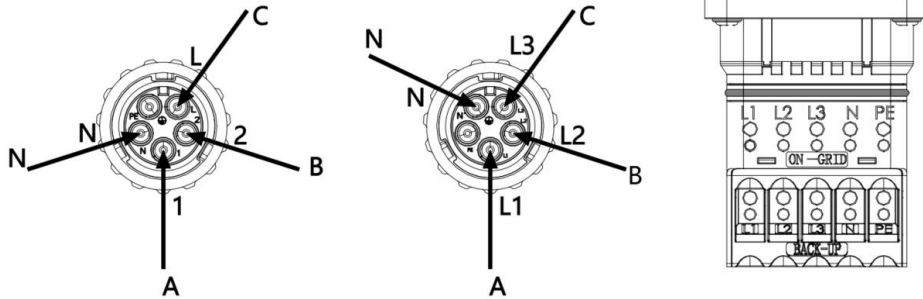
- Connect pins 1, 2, 3, and 4 of the smart meters to the three-phase power grid (phases A, B, C and N) in sequence.
- The A-phase cable passes through CT-a in the direction indicated by the arrow and connect S1 of CT-a to pin 5 of the smart meters and connect S2 to pin 6 of the smart meters.
- The B-phase cable passes through CT-b in the direction indicated by the arrow and connect S1 of CT-b to pin 7 of the smart meters and connects S2 to pin 8 of the smart meter.
- The C-phase cable passes through CT-c in the direction indicated by the arrow and connect S1 of CT-c to pin 9 of the smart meters, and S2 to pin 10 of the smart meters.
- Connect pin 12 of the smart meter to the A-phase live wire of the system, and pin 13 to the zero wire of the system.

Step 6:

Connect the smart meter to the Inverter using a network cable.

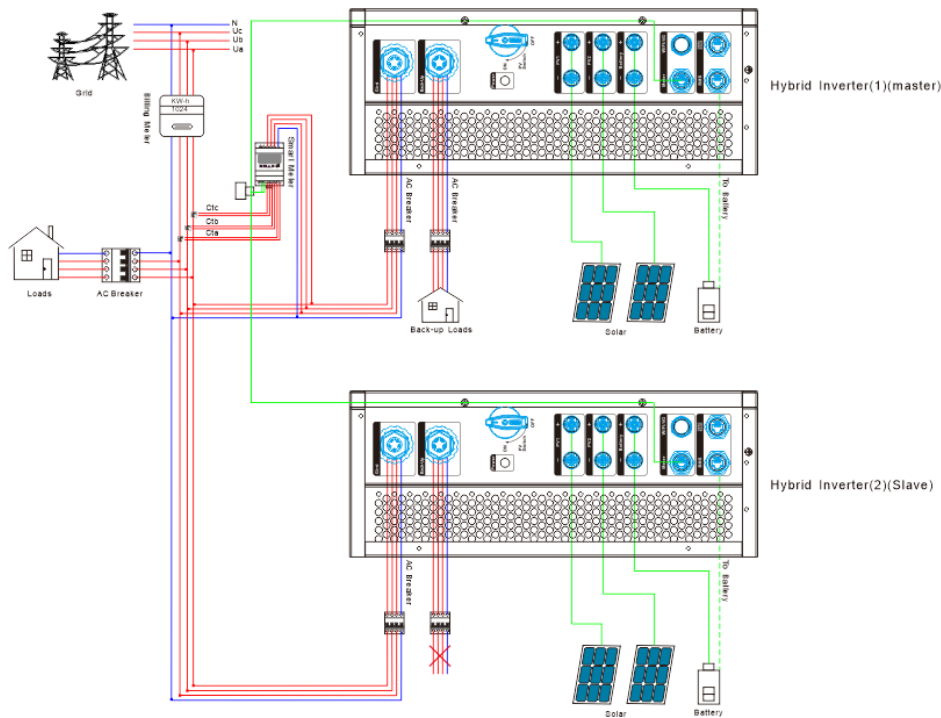


Note: Pay attention to the line sequence during AC wiring of hybrid inverter, pin 1(or pin L1) connect to grid phase A, pin 2 (or pin L2) to phase B and pin L(or pin L3) to phase C. Otherwise, it may cause the inverter abnormal operation when the three-phase unbalanced output mode is enabled.



9.9.2 System with multi-inverters

We support multi-inverters with one smart to form a large capacity energy storage system, connection diagram



is as follows:

With APP, in the setting page, choose “Basic Settings”, Set the 1st inverter as “Master” and set internal comm address 1 Set the 2nd inverter as “Slave” and set internal comm address 2, etc. We design support up to 20 inverters in one system.

Note: Please keep the slave backup terminal unconnected, otherwise it may cause damage to the inverter.

9.10 Operating of the Inverter

<
Basic Settings
Save

Master/Slave setting

Master ▼

* Internal Comm Address(1-247)

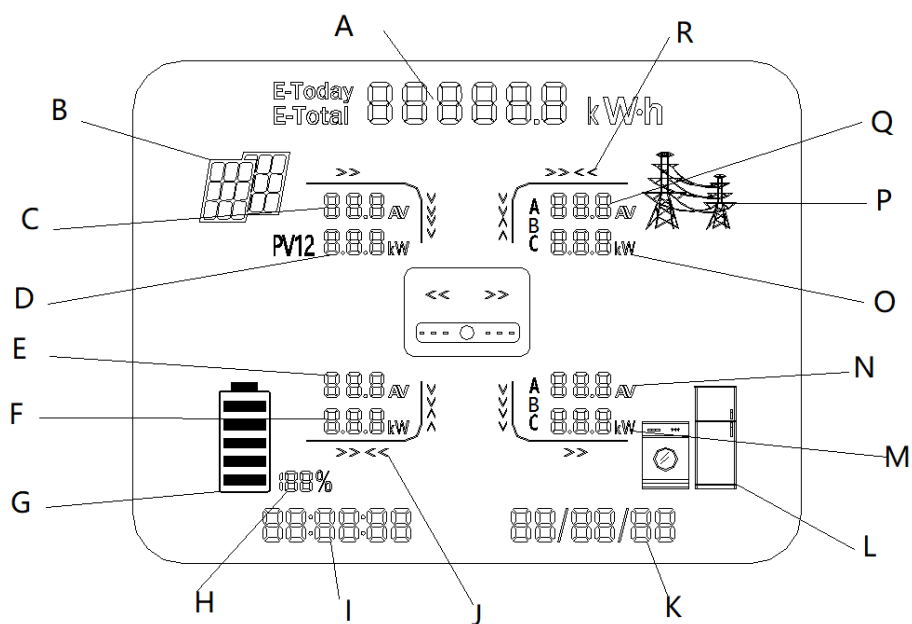
1

9.10.1 LED and LCD Display

The LED indicators are shown as blow:

LED	Status	Explanation
SYSTEM	ON	System is powered up
	OFF	System is not powered up
GRID	ON	Grid is normal
	OFF	Grid loss
	FLASH	Grid is abnormal
EPS	ON	Inverter in offline mode, EPS is active
	OFF	Inverter is not in offline mode
COM	ON	WIFI module connected
	OFF	WIFI module not connected
METER	ON	Smart meter communication OK
	OFF	Smart meter communication fail
FAULT	ON	Alarm occurred and inverter stop work
	OFF	No Alarm
	FLASH	Alarm occurred but inverter still work

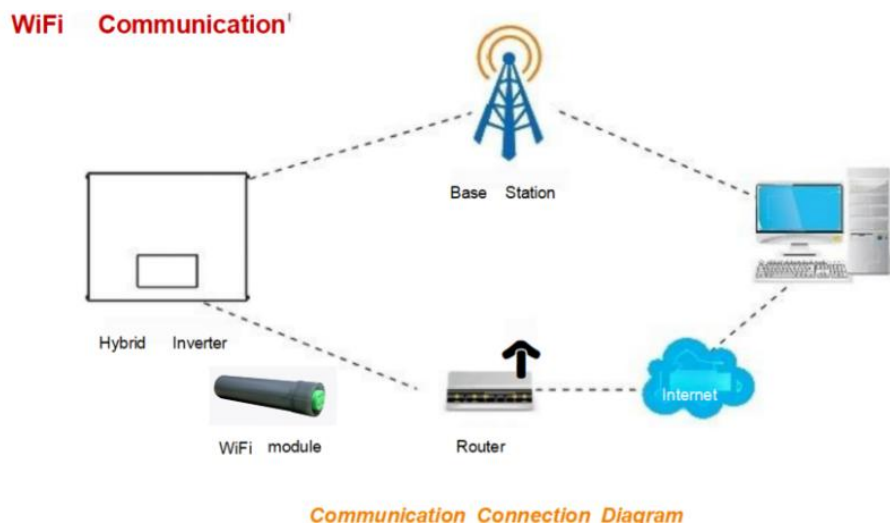
The LCD display shows the detailed information of the inverter.



Position	Description
A	It indicates the power output amount of total and today alternately. Unit: kWh or MWh
B	PV panels indicator
C	PV1, PV2 panels parameters. Voltage and current are displayed alternately.
D	Total PV power
E	Battery parameters. Voltage and current are displayed alternately.
F	Battery power
G	Battery indicator
H	SOC of battery
I	Current time
J	Power flow array of battery. When it towards battery, it means charging; when it towards inverter, it means discharging.
K	Default as current date. When an error occurs, fault code will be displayed alternately.
L	Loads indicator
M	Loads power consumption of each phase
N	Load parameters. Voltage and current of each phase are displayed alternately.
O	Power export or import of each phase
P	Grid indicator
Q	Grid parameters. Voltage and current of each phase are displayed alternately.
R	Power flow array of load

10 Monitoring System

Communication principle: Power View monitoring platform support both APP and web monitoring, user can monitor detailed running information like generating capacity, system data, and send command, set parameters at same time.



10.1 Module connection

Install Wi-Fi module as per following steps

Step1: Find out the bayonet position of Wi-Fi module and inverter's communication connector.

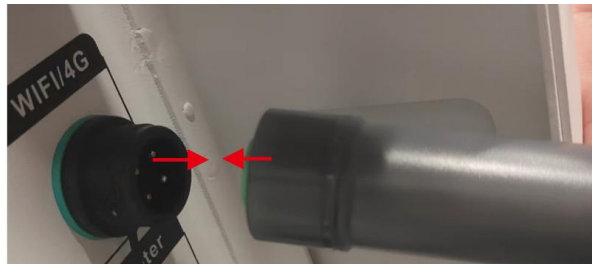


Wi-Fi module



Communication connector of inverter

Step2: Make sure that bayonets of Wi-Fi module and inverter's communication connector are in the same direction. Plug Wi-Fi module into the communication connector.



Connection photo

Step3: Rotate clockwise the nut to fix Wi-Fi module.

(Attention: Rotate the nut instead of Wi-Fi module to avoid damage to it)



Connection complete

Plug in the Wi-Fi module, power up inverter with PV the Wi-Fi module red LED will turn on, configure Wi-Fi follow steps below.

10.1.1 Software acquisition

APP: Download APP by searching 'PvPro' in Google Play or Apple App Store.

Web: <https://pv.inteless.com>

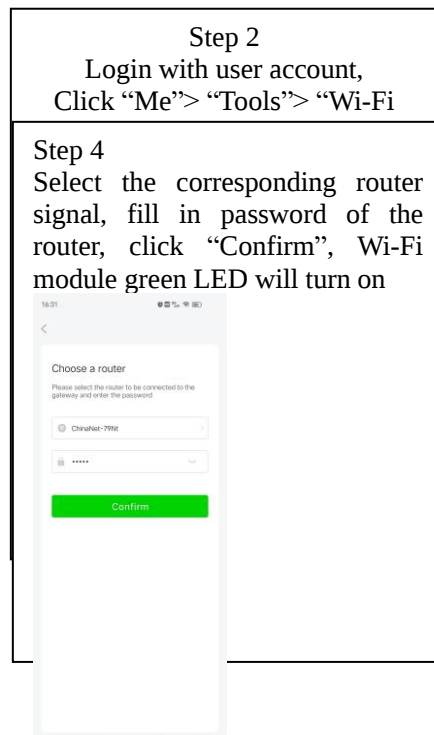
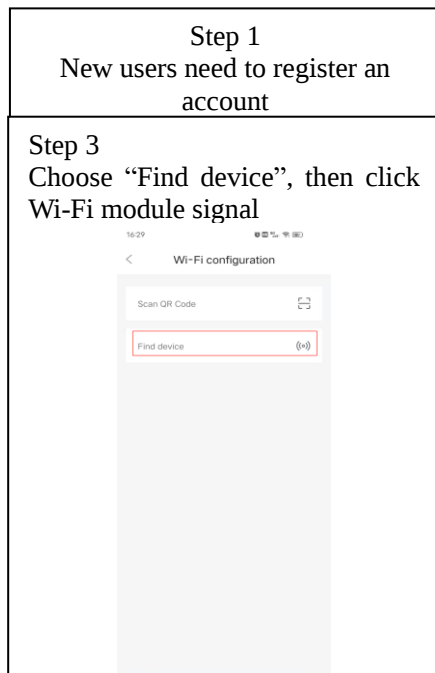
10.1.2 Wi-Fi Configuration

Plug in the Wi-Fi module, power up inverter with PV or Battery, the Wi-Fi module red LED will turn on, configure Wi-Fi follow steps below.

Step1: Please search 'PV Pro' in Google Play or Apple App Store to install App (or scan QR code to download)



Step2: New users need to register an account first, usually email Account is preferred.

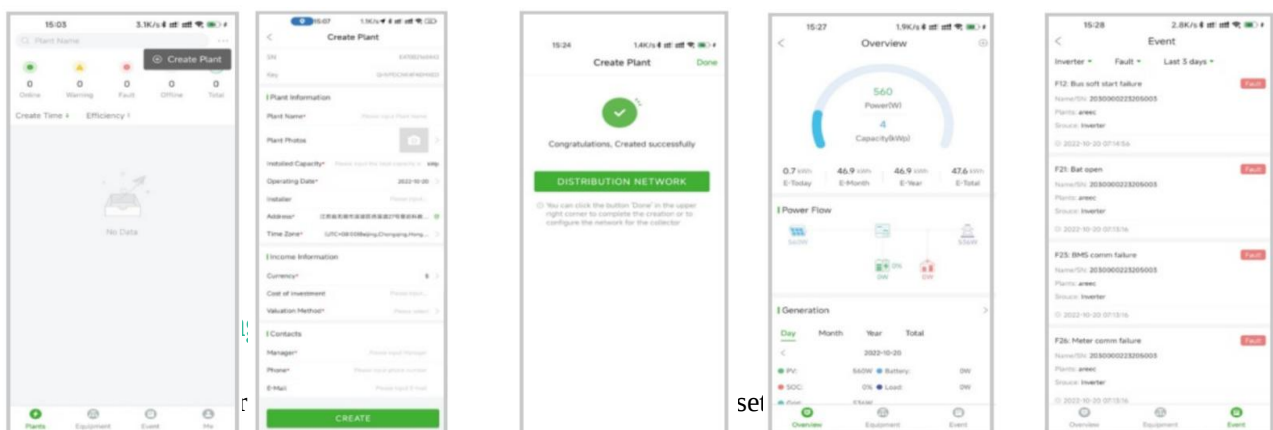


10.2 Create Plant

Step1: On the APP "Plants" page, click the upper right corner "...", Create Plant, Scan the QR code on the module.

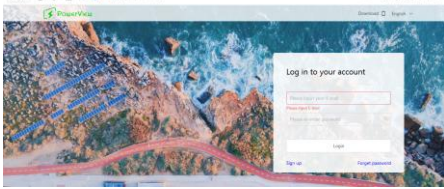
Step2: Click "CREATE" after filling in the information and click "Done" in the upper right corner.

Click the created power station to view the status and power generation information of the power station; You can also query the machine error information.



The default setting is the most common, and users generally do not need additional settings.

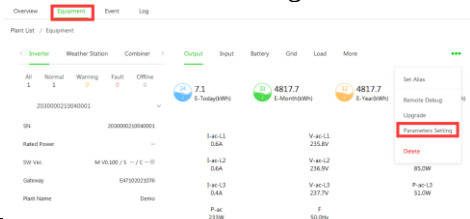
Open web <https://pv.inteless.com>, fill in account and password



On the plant list page, click plant name, user can view plant detail information.



On the plant information page, click “Equipment”>” Parameter Setting”, Users can set the inverter according to their needs

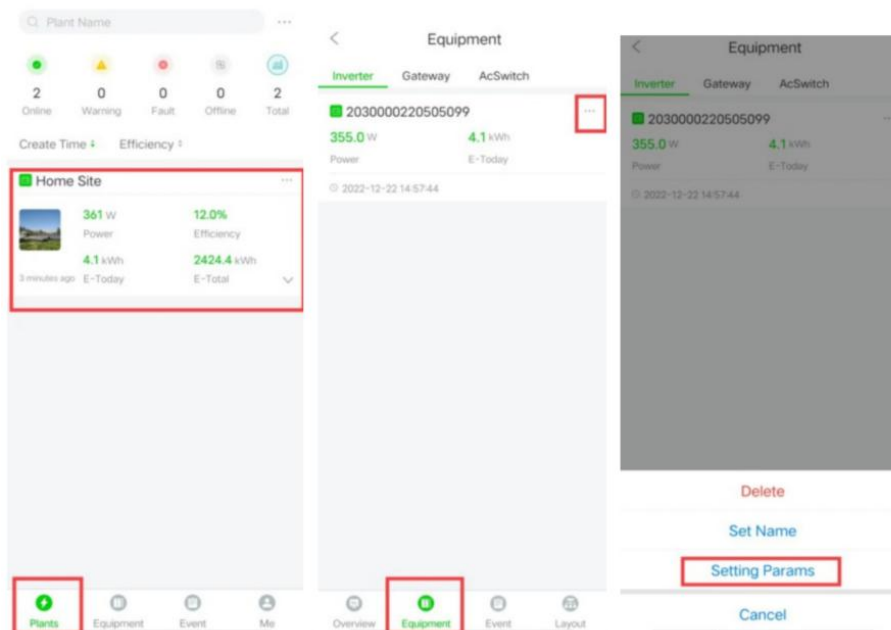


10.4 Parameter setting

Both Web and APP are available, this part shows setting on APP. The default setting is most common, and users usually do not need additional settings except battery protocol choice.

10.4.1 Enter parameter setting list

Click "Plants" to enter the power station list, click your power station, click "Equipment", then click". In the upper right corner, and select "Setting Params" to enter the parameter setting list.

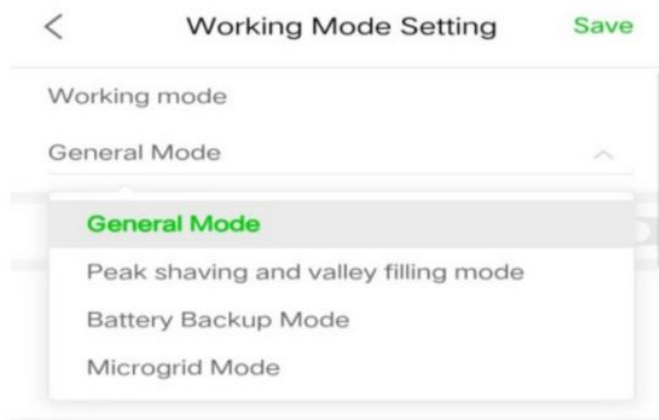


10.5 On the

you can enter the corresponding parameter items to set according to your circumstances

10.5.1 Working Mode Setting

Working Mode



The energy storage inverter provides four working modes to meet the needs of users in different applications namely, General Mode Peak shaving and valley filling Mode, Battery backup Mode and Micro grid Mode

1.General mode (default)

General mode: the general mode can maximize the self-use rate of photovoltaic power generation and achieve the goal of not consuming grid power as much as possible within the regulation range of the energy storage system. The load at any time is the priority, and charging is the second priority. When the battery is full, selling power to the grid is the third priority. When the photovoltaic power is less than the load power, the battery will automatically discharge to avoid consuming the power of the grid. The automatic mode can meet the application needs of most families. It is generally recommended that users keep the automatic mode setting.

2. Peak shaving And Valley Filing Mode

When the battery capacity of the energy storage system is small, the user's power consumption is relatively large, and there is a big peak valley electricity price difference in the user's region, the user can choose whether to adopt the peak shaving and valley filling mode according to his own power consumption. It should be noted that after setting the peak shaving and valley filling mode, the user must correctly set the peak valley period at the bottom of the page, and the period outside the peak valley period is the flat period. Compared with the automatic mode The self-utilization rate of photovoltaic power generation in the energy storage system will be reduced. During the peak period, the priority of load &charging &selling power is the same as that in the automatic mode; During the valley period, if the photovoltaic power is less than the load power, the battery will not discharge. At this time, the load consumes the power of the grid, and the user can set whether to charge the battery from the grid during this period; In the flat section, the system only charges the battery with excess power when the photovoltaic power is greater than the load power, and the battery will not discharge or get charged from the grid.

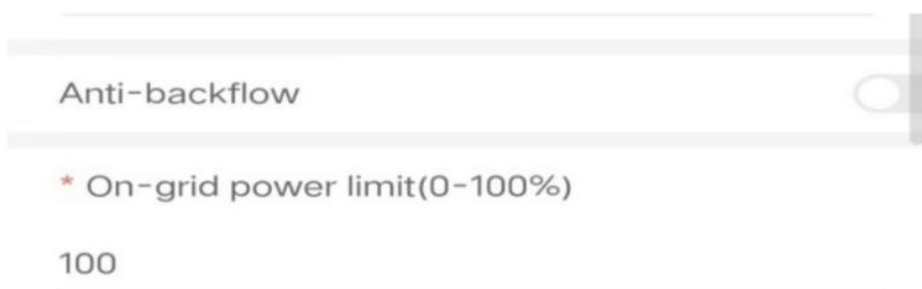
3. Battery Back-up Mode

In areas with unstable power grid, this mode can try to meet the power demand of users during power loss. At the bottom of the setting page, you can set whether to charge the battery from the grid in the battery backup mode.

4. Micro grid Mode

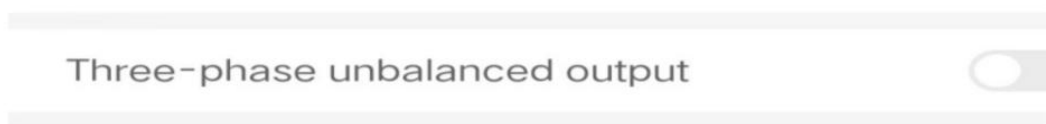
Applicable areas without power grid.

power limit setting



Users can choose whether to turn on the on-grid power limit function after the battery is fully charged according to whether the local power grid company allows the photovoltaic power being exported to the power grid. This function is turned off by default. When the photovoltaic power is greater than the load power, the system will charge the battery. If the battery is full at this time, if the on-grid power limit function is turned off, the excess photovoltaic power will be sent to the power grid; If the on-grid power limit function is enabled, the system will adjust the amount of power sent to the grid according to the power limit percentage set by the user.

For example, if the system is 10kW and the on-grid power limit is 0%, the power export is completely prohibited; If it is 50%, after the system is fully charged, the excess photovoltaic energy is allowed to send 5kW to the grid at most.



Three phase unbalance setting

In some countries or regions, such as the Czech Republic, three-phase billing meters charge independently on each phase. Users can choose whether to turn on the three-phase unbalanced output function. It should be noted that in most countries, three-phase billing meters are charged uniformly after three-phase summary, so it is not necessary to turn on this function, because the conversion efficiency of the inverter will be slightly reduced after turning on this function.

Valley time charging





This function is only effective when the user selects the peak shaving and valley filling mode, and it is generally not recommended to start it.

valley period & peak period

Valley period 1 ☐

Valley period 1 start hour
🕒 00:00

Valley period 1 start minute
🕒 00:00

Valley period 1 end hour
🕒 00:00

Valley period 1 end minute
🕒 00:00

Peak and valley periods are only effective when the user selects the peak cutting and valley filling mode. The system can set three Valley periods and three peak periods, and the periods cannot overlap.

Peak time discharge

Peak time discharge mode
Automatic power regulation ▼

* Peak time discharge power(500-10000W)
2000

The peak time discharge setting is only effective when the user selects the peak shaving and valley filling mode. During the peak time, the default setting is that the system automatically adjusts the discharge power according to the household power detected by the smart meter; If the smart meter is not installed, the user can select a fixed discharge power according to the approximate power consumption.

Battery backup mode charging setting

Charging with grid in storage mode ☐

* Storage mode charge SOC(20-100%)
80

The battery backup mode charging setting is only effective when the user selects the battery backup working mode. You can set whether to turn on the mains power to charge the battery, and the charging power and battery charging cut-off SOC.

10.6 Battery Setting

EPH series hybrid
select Lead acid battery

If with battery, you can
battery related alarms.

Default BMS protocol is "Think Power High Voltage battery". You can select the corresponding protocol according to your battery.

On Grid Bat SOC lower limit refers to that when the power grid is normal, the inverter discharges the battery to provide load consumption and avoid generating electricity charges. By default, the lower limit of battery discharge SOC when grid normal is 20%, that is, the discharge depth is 80%. If your local power grid is unstable or photovoltaic power generation is small in winter, you can reduce the maximum discharge depth; Off Grid Bat SOC lower limit means that when the power grid is lost, if you enable the EPS function, the inverter will enter the off grid mode to provide power for the key loads connected to the backup port. By default, the lower limit of battery discharge SOC in the off-grid state is 10%, that is, the discharge depth is 90%. You can make corresponding modifications according to your circumstance.

10.7 Meter Protocol Setting

If you use Chint meter, please select "ThinkPower Three phase meter"; If it is an Acrel meter, please select "Acrel Three phase meter"; For EastRon meter, please select "EastRon Three phase meter"

10.8 EPS Setup

<

EPS Setup

Save

EPS output

☒

EPS volt setting

230V

▼

EPS frequency setting

50HZ

▼

You can choose whether to enable the EPS function according to your demands. PS is generally used in an emergency, and its endurance depends on the battery capacity and pv power. It is not recommended to connect heavy loads at the backup port.

10.9 Grid VHA Auto Low Power

<

Grid VHA Auto Low Power

Save

Power adaptation follow grid volt

☐

The solar system will sell electricity to the power grid when the battery is full. If it is a weak power grid(local transformer capacity is small),it may cause the grid voltage to rise and reach the high-voltage protection limit, inverter will disconnect from grid; If this function is enabled, the inverter will automatically reduce the generating power when the grid voltage is close to the high-voltage protection limit to avoid inverter disconnection.

10.10 Buzzer Setup

Buzzer Setup

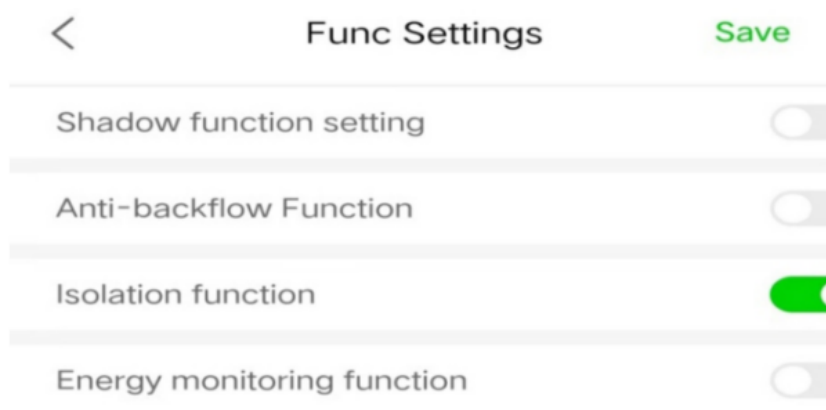
Save

Buzzer setting



When the inverter is in the off-grid mode or there is a fault in the off-grid mode, the buzzer will generate a sound alarm, and you can choose to turn the buzzer on or off.

10.11 Function Settings



Shadow function setting: If your solar system is shaded between 9:00 a.m. And 3:00 p.m., you can enable this function, generally, it is not recommended to enable it.

Anti-Backflow Function: Ignore this option. This function is the same as the Anti backflow function in Working Mode Setting.

Isolation function: The isolation function of solar string will generate alarm when the impedance of solar string to ground is lower than limit value. If the inverter continues to alarm, you can disable this function after confirming that the solar string has no problem with the insulation to the ground. Make sure that the solar string is well insulated from the ground. If the solar string is short to the ground and the isolation function disabled, it will cause inverter irrecoverable damage.

Energy monitoring function: Ignore this option, it is only used for common on-grid inverter.

10.12 Power Grid Setup

<

Power Grid Setup

Save

Grid standard

50Hz Standard Grid

* Reconnect Time(10~1000S)

20

* Grid volt upper limit(240.0~276.0V)

264.5

* Grid volt lower limit(160.0~220.0V)

184.0

* Grid frequency upper limit(50.00~65.00HZ)

52.00

* Grid frequency lower limit(45.00~60.00HZ)

48.00

* Grid 10min average volt(240.0~276.0V)

It is recommended to keep the default parameter settings.

10.13 Execute Instruction

<

Execute Instruction

Remote off

☒

Confirm

Clear all running data

Confirm

Restore factory settings

Confirm

Remote off: The inverter can be turned off or on remotely by clicking this option

Clear all running data: The operation data of inverter can be cleared by clicking this option

Restore factory settings: You can restore the default settings of the inverter by clicking this option.

10.14 Basic Settings

<

Basic Settings

Save

Master/Slave setting

Master

* Internal Comm Address(1-247)

1

If your system is equipped with two or more inverters, please set one master with address 1, and the others are slave. The slave addresses are arranged in order from 2.

10.15 Special grid settings

Some countries require to display more grid parameter settings, and it is generally recommended to retain the default settings.

11 Technical Data

11.1 Datasheet of Inverter

Model	EPH4KT	EPH5K	EPH6KT	EPH8K	EPH10K	EPH12KTL
Input(PV)						
Max PV Power	5500W	6500W	7500W	9500W	11500W	13200W
Max PV Voltage	1000Vd.c					
MPPT voltage range	200~850Vd.c					
Max input current/per string	13A/13A					
Number of MPP trackers	2					
Number of input string	1					
Battery Input						
Battery Type	Li-Lon					
Battery voltage range	180~650V					
Max charge/discharge	25A/25A					
Charge strategy for Li-lon	Seff-adaption to BMS					
AC Output (On-Grid)						
AC nominal power	4000VA	5000VA	6000VA	8000VA	10000VA	12000VA
Max AC apparent power	5000VA	5500VA	7000VA	8800VA	11000VA	13200VA
Max output current	8	10	12	15	17	20
Nominal AC output	50/60Hz;400/350					
AC output range	45/55Hz;280~490Vac (Adj)					
Power factor	0.8leading~0.8laging					
Harmonics	<3%					
Grid type	3W/N/PE					
Three-phase unbalance	0~100%					0~80%

AC Output （Back-up）						
Max AC apparent power	4000VA	5000VA	6000VA	8000VA	10000VA	10000VA
Nominal Output Voltage	400/380					
Nominal Output Frequency	50/60					
Output THDV （@Linear	<3%					
Efficiency						
Max conversion efficiency	98.0%	98.0%	98.2%	98.2%	98.2%	98.2%
European efficiency	97.3%	97.3%	97.5%	97.5%	97.5%	97.5%
MPPT efficiency	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%
Safety and protection						
DC reverse-polarity	yes					
DC breaker	yes					
DC/AC SPD	yes					
Leakage current protection	yes					
Insulation Impedance	yes					
Residual Current protection	yes					
Output short circuit	yes					
Bat reverse connection	yes					
General Parameters						
Dimensions(W/H/D)	548*444*184mm					
Weight	27kg					
Operating temperature range	-25℃~+60℃					
Degree of protect on	IP65					
Cooling concept	Natural convection					
Topology	Transformer less					
Display	LCD					
Humidity	0~95%, No convection					
Communication	GPRS/Wi-Fi					
BMS communication	CAN/RS485					
Meter communication	RS485					

11.2 Datasheet of Battery

Serial number	name	Lithium iron phosphate battery (5KWh)
---------------	------	---------------------------------------

1	Nominal capacity	51.2V/100Ah
2	Nominal input/output voltage	350-450VDC
3	Normal operating voltage	360-435VDC
4	Nominal energy	5.12kWh
5	Nominal output power	3KW
6	Maximum output current	10A
7	Maximum discharge depth	≤90%
8	Voltage range of rechargeable battery	45-57V
9	Maximum charging current	62.5A
10	Charging temperature range	0°C ~ 55°C
11	Discharge temperature range	-20°C ~ 55°C
12	Optimum operating temperature range	20~30 °C
13	Storage humidity	60±25 %R.H.
14	Cooling mode	Natural cooling
15	Communication mode	CAN Bus or RS485
16	Efficiency	Charge 98%; Discharge 97%
17	Weight	~55kg
18	Size	674*420*170mm

12 Maintenance

12.1 Trouble Shooting

This part introduces the common fault and solving steps, provides troubleshooting methods and skills to the user, and helps the user identify and solve some common faults of the inverter.

Table 12-1

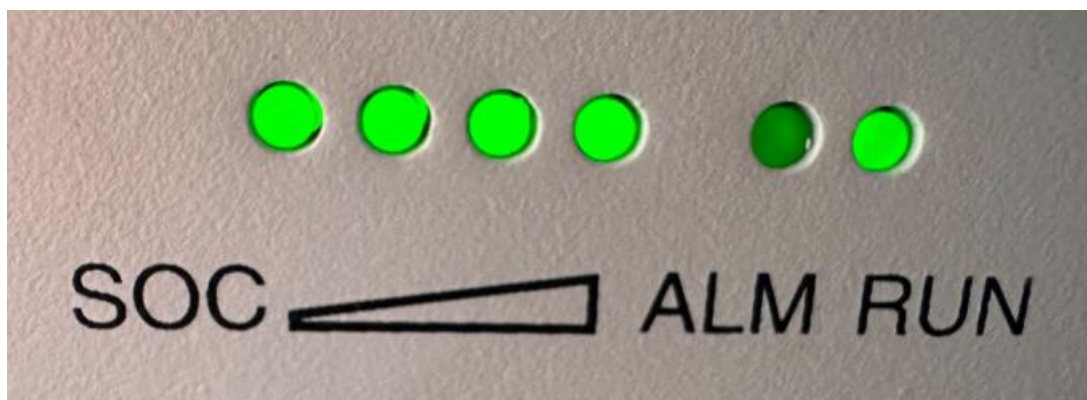
Protection code	Description	Recommended solution
P001	PV over voltage protection	Check the configuration of the PV panels
P002	Battery over voltage protection	Check if battery volt larger than 600V
P003	Insulation resistance low	Check the insulation of PV panels
P004	Leakage current high	This error will reset itself.
P005	Over temperature protection	The inverter will recover automatically when the temperature gets lower.
P006	Bus voltage unbalance	The inverter will recover automatically.
P007	Bus voltage high	
P008	Bus voltage low	
P009	Grid and EPS are reversed	Check the connection of AC side. Make sure the grid and EPS load are connected to the ports on the inverter correctly.
P010	Grid relay open circuit	Shut down and restart. If it still can't be auto-recover, please contact the service.
P011	Grid relay stick	
P012	On-grid mode bus soft start fault	
P013	MCU communication fault	
P019	Battery SOC low in on-grid mode	Battery discharged to low level; it will recover after charged automatically
P020	Battery SOC low in EPS mode	
P021	Battery voltage low	
P022	Battery open circuit	Check the connection of battery and set right battery SOC in each mode. Check the battery for parameter settings.
P023	Battery SOC deadly low	
P024	BMS communication fault	Check the BMS communication cable and BMS protocol setting
P025	No time interval setting for Peak shaving and valley filling mode	Check inverter work mode setting
P026	Remote off	Inverter turn off through monitoring
P027	Smart meter communication fault	Check the communication cable for smart meter and meter protocol
P033	Grid voltage high	Check if grid fails or not connected well
P034	Grid voltage low	
P035	Grid frequency high	
P036	Grid frequency low	
P037	Islanding protection	
P038	Grid wave loss	
P039	DC injection high	The inverter will recover automatically.
P040	Utility not three phases	Check if grid cable well connected
P041	Phase sequence fault	Reverse connection order of L2 and L3 cable

P042	PLL error	The inverter will recover automatically.
P048	EPS overload	Decrease EPS loads to make sure the total loads power is lower than EPS nominal output power, press power key more than 3 seconds to clear alarm
P049	EPS output voltage high	Check if EPS overload, press power key more than 3 seconds to clear alarm
P050	EPS output voltage low	
P051	EPS mode bus soft start fault	
P052	Inv soft start fault	
P053	EPS load short circuit	
P059	Battery current limited	The inverter will recover automatically.
P060	Inv trip	
P061	Transient trip	
P062	Bus trip	

If you meet any problem that you cannot solve by yourself, please contact with your local distributor or our company.

Battery Error Description

The three LED indicators on the front cover provide information about the error status of the battery.



N O.	Fault phenomenon	Analysis	Solution
1	Communication failure with inverter	Communication port connect error or battery ID setting error	Check communication connection or ID settings
2	No DC output	Not close breaker or low voltage	Close breaker or charge the battery
3	Power supply time is too short	Battery capacity lack or not fully charged	Maintenance or replacement

4	Battery can't be fully charged	Power system DC output voltage falls below the minimum charge voltage	Regulating DC output voltage of power supply to battery suitable charging voltage
5	ALM LED always lights	Power line connection short circuit	Disconnect the power cable and check all cables
6	The battery output voltage is unstable	DCDC system do not operate normally	Press the reset button to reset the system, then reboot the system
7	ALM LED flash 2 second and Green LED off	Can't charge and discharged	Check DCDC status
8	SOC LED flash 0.5 second and ALM LED off	Can charged and can't discharged	Charged model
9	SOC LED flash 2 second and ALM LED off	Can discharged and can't charged	discharged model
10	Different SOC value of batteries in parallel	Normal phenomenon	No operation

12.2 Daily Maintenance

Routine maintenance items are shown in Table 12-2 below.

Table 12-2 Routine Maintenance Items

Item	Maintenance Method	Maintenance intervals
Power Cables   	1. check whether there is mechanical damage to the power cable and whether the terminal insulation sleeve has fallen off; if there is such a phenomenon, please turn off the machine and carry out maintenance or replacement. 2. check whether the power cable is loose; if there is any sign of looseness, please use a standard torque wrench to tighten it. 3. check the system for loose screws or discoloration of the copper bus bar; if the screws are loose, please tighten them with a standard torque wrench; if the copper bus bar is discolored, please contact the manufacturer for after-sales replacement.	Once every 6 month
Communication Cables 	1. check whether the parallel communication cable terminal is loose, if it is loose, re-tighten it. 2. check whether the color of the communication cable has obvious discoloration, if discoloration, please shut down the machine to replace the communication cable	Once a year
Cleanliness	Check the cleanliness of the front battery module & combiner box, if there is obvious dust, please clean up in time.	Once 6-12 month

System Running Status 	1. check if all parameters are normal when the system is running (system voltage, current, temperature, etc.) 2. check whether the main core components of the system are normal, including system switches, contactors, etc. are normal 3. check whether the system air inlet and outlet, and air ducts are normal, if there is blockage and congestion, needs to clean up in time	Once every 6 month
Charge and Discharge Maintenance	Use light load and shallow charge/discharge to check whether the SOC, SOH status of the battery is normal (using the upper computer software to read); it is recommended that the depth of discharge and charge/discharge power should not exceed 20% of the rated value	Once every 6 month

13 Uninstallation & Return

13.1 Remove the Product

Procedure

Step 1: Power off the energy storage system as described in Chapter 8.

Step 2: Disconnect all cables from the system, including communication cables, PV power cables, battery power cables, AC cables, and PE cables.

Step 3: Remove the Wi-Fi module.

Step 4: Remove the cable covers of the inverter and the battery. Remove the right cover of the inverter.

Step 5: Remove the inverter from the top of the battery.

Step 6: Remove the battery wall brackets.

Step 7: Remove the batteries.

13.2 Pack the Product

If the original packaging is available, put the product inside it and then seal it using adhesive tape.

If the original packaging is not available, put the product inside a suitable cardboard box and seal it properly.

13.3 Dispose of the Product

If the product service life expires, dispose of it according to the local disposal rules for electrical equipment and electronic waste.

Dispose of the packaging and replaced parts according to the rules at the installation site where the device is installed.

Do not dispose the product with regular household waste.



14 Cautions and Warranty

14.1 Cautions



Please read and comply with the following conditions of installation and use of the battery, incorrect installation using the battery may cause personal injury or damage to the product.

- (1) DO NOT throw the battery into water. Store batteries in a cool and dry environment.
- (2) DO NOT put the battery into fire or heat the battery, so as to avoid explosion.
- (3) Use a specialized charger and follow the correct procedures.
- (4) DO NOT reverse positive and negative terminals, and do not connect the battery directly to AC power.
- (5) DO NOT use different manufacturers or different kinds of batteries together, and do not mix old batteries and new batteries.
- (6) DO NOT use the battery when it is hot, bulges, deforms or leaks.
- (7) DO NOT puncture the battery with nails or other sharp objects; Do not throw, stamp on or hit the battery.
- (8) DO NOT open or try to repair the battery. The warranty is invalid if the battery is repaired or disassembled.
- (9) Batteries are half charged before shipment. Don't use the battery if it's hot, bulge, or smells abnormal and so on, and report to the after-sale department immediately.
- (10) If you need to store the battery for a long time, please charge and discharge the battery every three months to ensure the best performance and the best state of charge for storage is between 50%~60%.
- (11) Please use the battery in the temperature range defined in the manual.
- (12) The state of charge of batteries is 50% before shipment, please charge the battery before using.

14.2 Description of Warranty

During the valid warranty period of the product, any problems such as product damage or functional failure caused by non-human or intentional damage will enjoy our free repair and replacement services. Customers need to provide a valid purchase invoice or related product warranty information. We have the right to refuse to provide related services if no valid proof can be provided.

ZETARA



Shenzhen Zetara Power System Co.,Ltd