USER MANUAL

Uhome-DINV024-B3

Version: 1.0

Uhome Smart Energy(Wuxi)Co., Ltd.

About this manual

This manual is intended for the Uhome-DINV024-B3

Statement

Before using the product, please read all instructions and cautionary markings on the unit and manual. Put the instructions where you can take them easily.The Uhome-DINV024-B3 of ours strictly conforms to related safety rules in design and test. Local safety regulations shall be followed during installation, operation and maintenance. Incorrect operation work may cause injury or death to the operator or a third party and damage to the product and other properties belonging to the operator or a third party.

Declaration

Uhome declares that the Uhome-DINV024-B3 is compliance with the essential requirements and other relevant of RE Dire.

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CONTENT

1. Safety Introduction

1.1 Important Safety Instructions

This manual contains important instructions for:
Uhome-DINV024-B3 product and this manual must be followed when installing and using this product.

- Installation,maintenance and connection of this device must be performed by qualified personnel, in compliance with local electrical standards, wiring rules and requirements of local power authorities and/or companies.
- To avoid electric shock, DC input and AC output of the device must be terminated at least 5 minutes before performing any installation or maintenance.
- The temperature of some parts of the device may exceed 60℃ during operation. To avoid being burnt, do not touch the device during before touching it.
- Ensure children are kept away from device.
- Don’t open the front cover of the device. A part from performing work at the wiring terminal (as instructed in this manual), touching or changing components without authorization may cause injury to people, damage to device and annulment of the warranty.
- Static electricity may damage electronic components. Appropriate method must be adopted to prevent such damage to the device; otherwise the device may be damaged and the warranty annulled.
- Ensure the output voltage of the proposed PV array is lower than the maximum rated input voltage of the device; otherwise the device may be damaged and the warranty annulled.
- When exposed to sunlight, the PV array generates dangerous high DC voltage. Please operate according to our instructions, or it will result in danger to life.
- PV modules should have an IEC61730 class A rating.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- Completely isolate the device before maintaining. Completely isolate the device should: Switch off the device switch, disconnect the PV terminal, disconnect the battery terminal, and disconnect the AC terminal.
- Prohibit to insert or pull the AC and DC terminals when the device is running.

1.2 Warnings in this Document

A warning describes a hazard to equipment or personnel. It calls attention to a procedure or practice which if not correctly performed, could result in damage to or destruction of part or all of the Uhome equipment and/or other equipment connected to the Uhome equipment or personal injury.

Symbol	Description
	HIGH VOLTAGE HAZARD. High voltage exists during the device's running, Disconnect all incoming power and turn off the product before working on it.
	CE Mark.
	Delayed discharge. Wait 5 minutes after power off until the components are completely discharged.
	Read through the user manual before any operations.
	Potential risks exist. Wear proper Personnel Protective Equipment before any operations.
	High-temperature hazard. Do not touch the product under operation to avoid being burnt.
	Grounding point.
	Do not dispose of the device as household waste. Dispose of the product in compliance with local laws and regulations, or send it back to the manufacturer.

For safety reasons, installers are responsible for familiarizing themselves with the contents of this manual and all warnings before performing installation.

1.3 Installers

Uhome Energy Storage device is suggested installing by skilled worker or electrician.
A skilled worker is defined as a people who had been trained and qualified electrician or had all of the following skills and experience:

- Knowledge of the functional principles and operation of on-grid Energy Storage systems.
- Knowledge of the dangers and risks associated with installing and using electrical devices and acceptable mitigation methods.
- Knowledge of the installation of electrical devices
- Knowledge of and adherence to this manual and all safety precautions and best practices.

2. Product Introduction

2.1 Technical Specifications

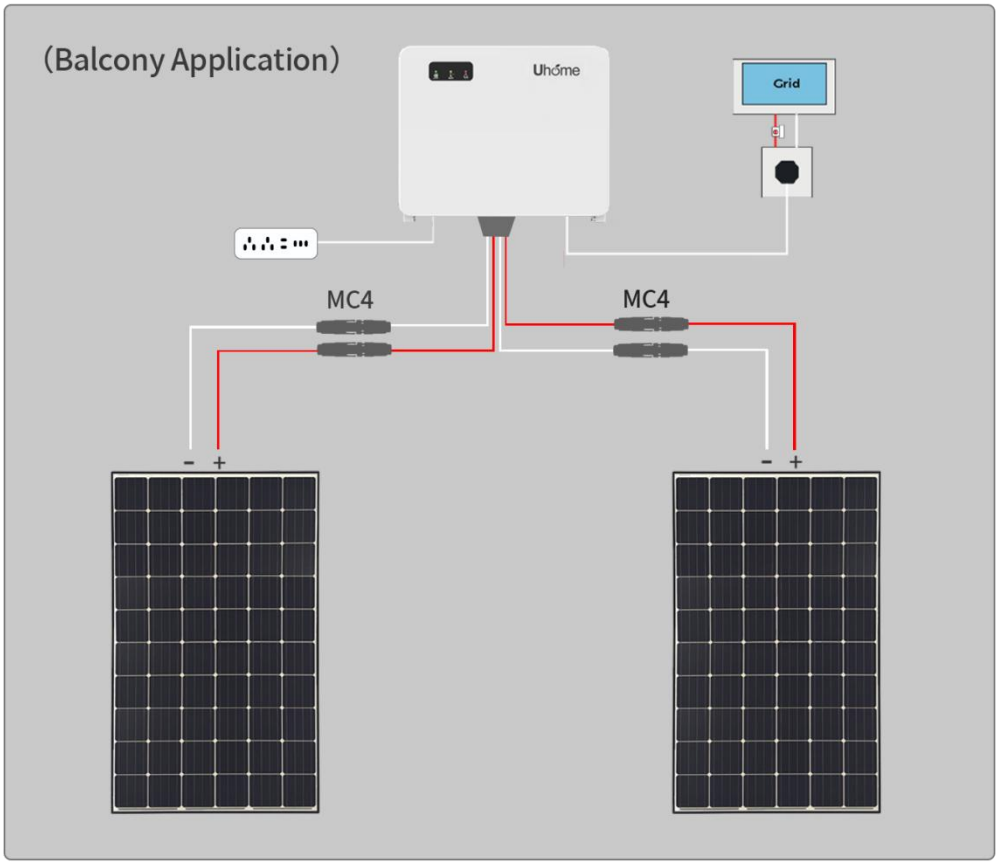
Model	Uhome-DINV024-B3
Basic Parameters	
Rated Power	2400W
Peak Power	4800W
Machine Architecture	Bidirectional AC/DC Inverter / Buck-boost MPPT
Number of Input and Output Phases	Single Phase Input/Output
Work Mode	See page 12 for details
Output	
AC Output	Single-phase, two-wire(L,N)+Ground wire
Rated Voltage	220~240 Vd.c
Output Voltage Accuracy	±1%
Output Frequency	50/60Hz
Output Waveform	Pure Sine Wave
Output Distortion THDV	＜2%(Linear load)
	＜7%(Nonlinear load)
Overload Capacity	5 Min@105%~120%Rated Load
	10s@120%~150%Rated Load
	5s@>150%Rated Load
Efficiency	
Grid Charge	Min 93% (Basic)
Battery Discharge	Min 92% (Basic)
MPPT	99.9%
PV Charge	95%
Eco Mode	<13W(Dormancy,No Output); <30W(No Load)
Shutdown Leakage Current	<100uA
Grid Input	
AC Input	Single-phase,two-wire(L,N)+Ground wire
Input Voltage Range	184Vac~253Vac
Input Frequency Range	48Hz-51Hz(50Hz)
Input Power Factor	≥0.95
Battery and Charge	
Rated Energy	2.5kWh

Useable Energy	2.3kWh
Max Dis/Charge Depth	90%
Rated Battery Voltage	51.2V
Battery Type	Li-ion
Charge Cut-off Voltage	55.6V(Continuously Adjustable)
Discharge Cut-off Voltage	49.6V(Continuously Adjustable)
Charge Current	Maximum 50A (hybrid charging) can be set, maximum 32A for PV charging, and maximum 32A for mains charging
Protection Feature	Overload Protection, Over-Temperature Protection, Input Over-Voltage Protection, Input Under Voltage Protection, Over-Charge Protection, Over-Discharge Protection
Solar Charge	
PV Max Input Power	800W*2
PV Max Open-Circuit Voltage	100VDC
PV Operating Voltage Range	10~100VDC
PV Input Current	0-16A*2
General Parameter	
Grid-Connected Power	The grid-connected power can be allowed to 0~1600W(the default grid-connected power is less than 800W)
Parallel Connection Number	2-6pcs
Customer APP(WIFI Bluetooth Module Customer)	Mobile APP manages and controls grid-connected time and power, on-grid standard selection, etc
Communication Interface	WIFI/CAN
LED Indicator	Operating status: AC/OUT / CHARGE / FAULT
Software Update	Remote/Local
Operating Temperature Range	Normal full power working environment temperature -10-45 ℃, above 45 ℃, the power will be derated to 55 ℃ before shutting down
Operating Humidity Range	0-98%(No Condensation)
Cooling Method	Natural Cooling
Dimension	579*460*165 mm
Weight (kg)	33KG
Safety and electromagnetic compatibility standards	IEC62619/IEC63056/VDE2510-50/ICE/EN62109/EN300328/EN300386/EN50549-1/VDE4105and Other Relevant European Standard

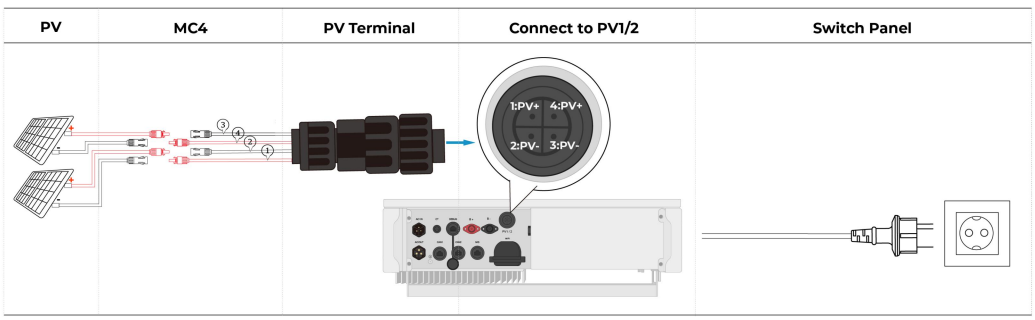
2.2 Application Scenarios

2.2.1 Balcony application

Can be used for portable&outdoor energy storage needs, with 400W PV module(The following connection scheme is for reference only)

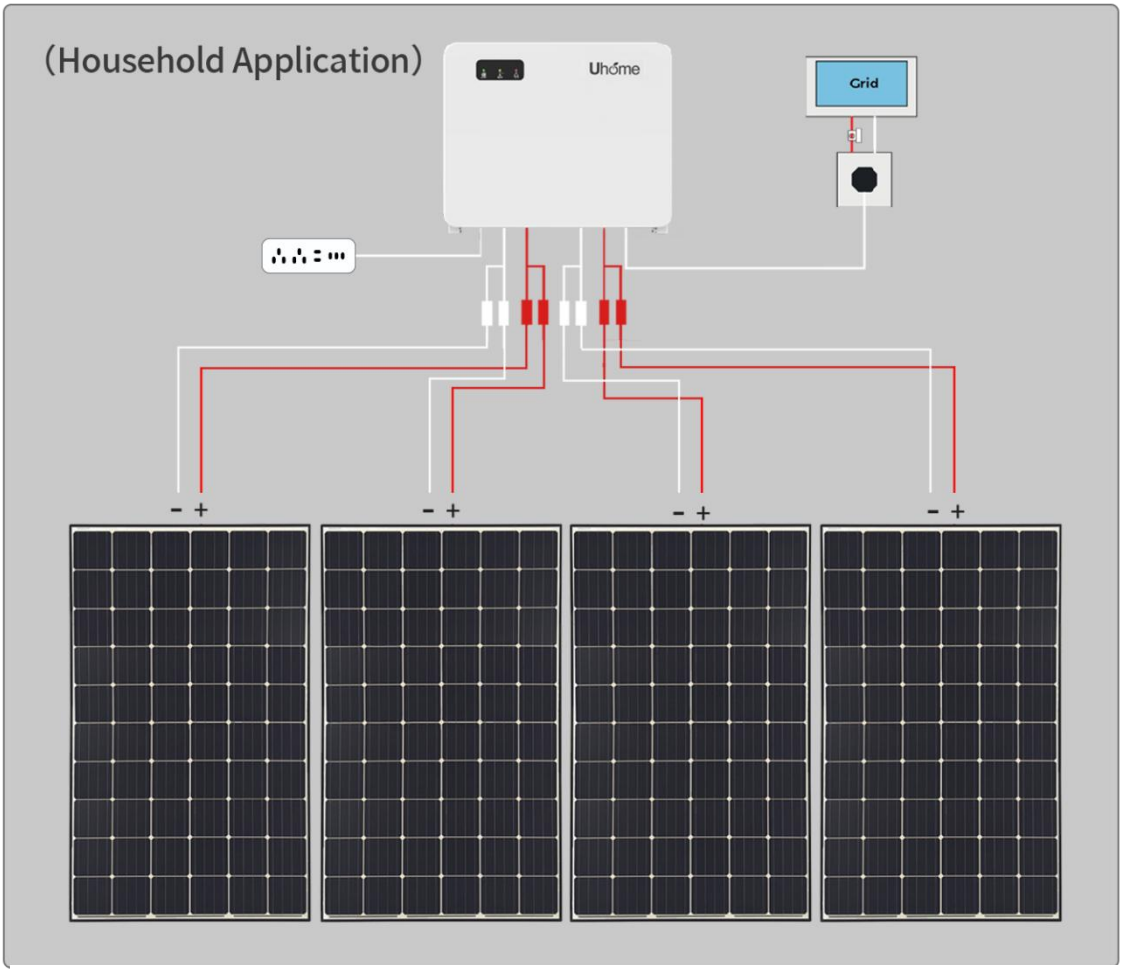


Wiring reference diagram

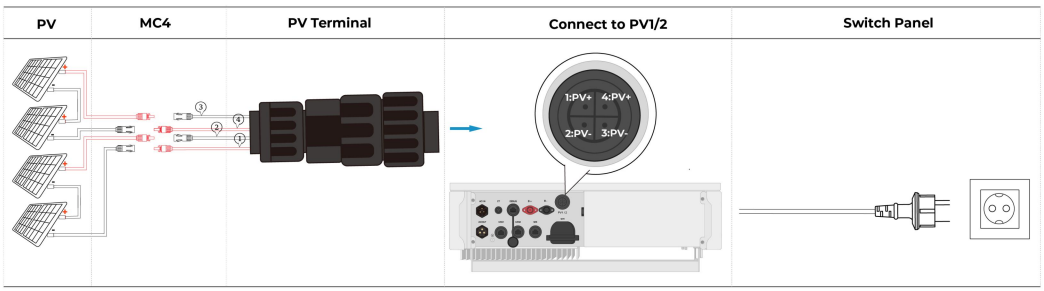


2.2.3 Household application

Can be used for household energy storage needs, with 800W PV module(The following connection scheme is for reference only).

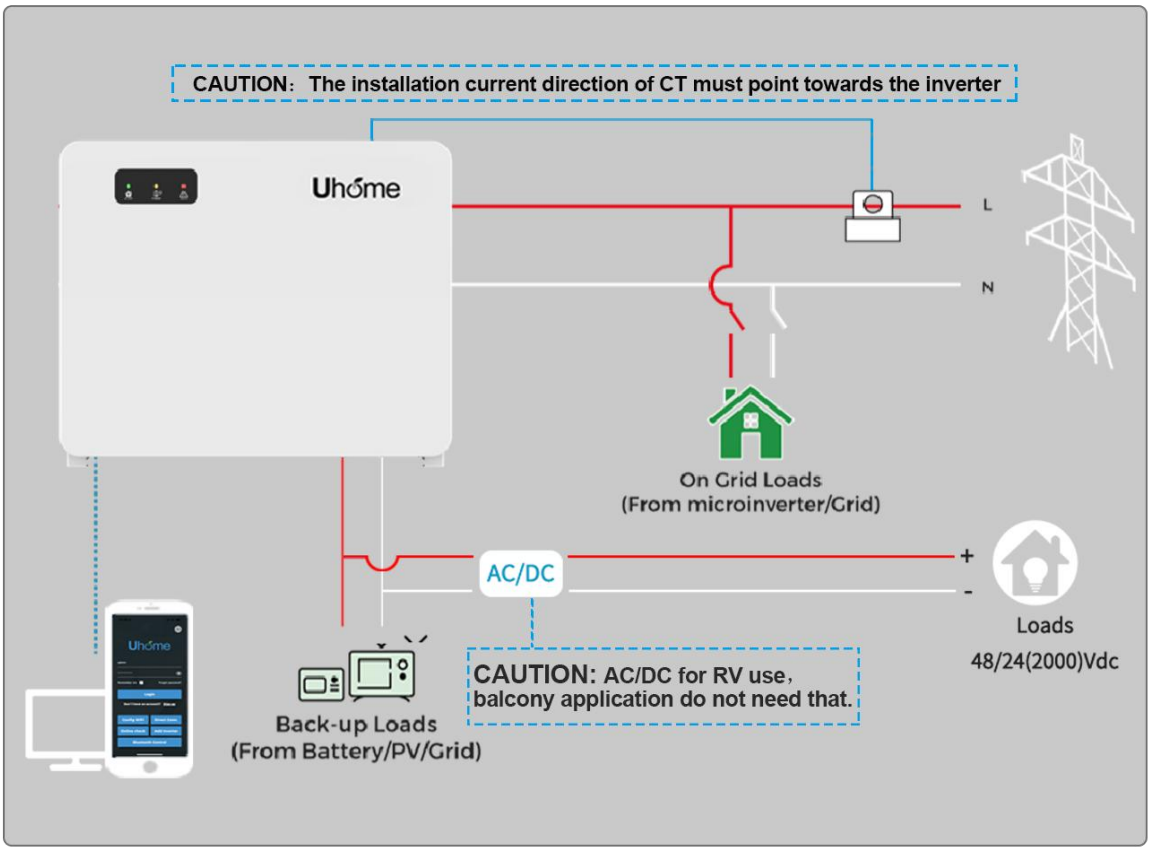


Wiring reference diagram



2.2.3 AC Couple Inverter

The AC couple devices are high-quality device which can store energy into battery. The device can be used to optimize self consumption, store in the battery for future use or feed into public grid. Work mode depends on the battery and user's preference. It can provide power for

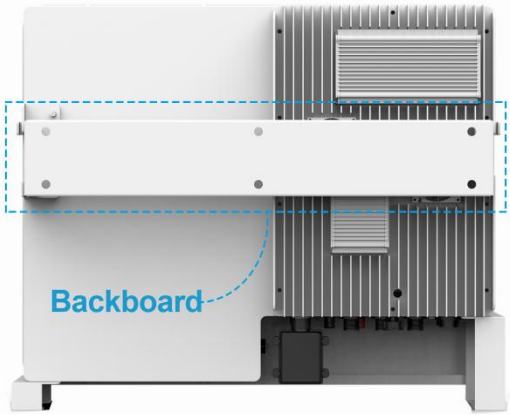


emergency use during the grid lost by using the energy from battery.

2.3 Product Appearance

2.3.1 Appearance Design

△FRONT



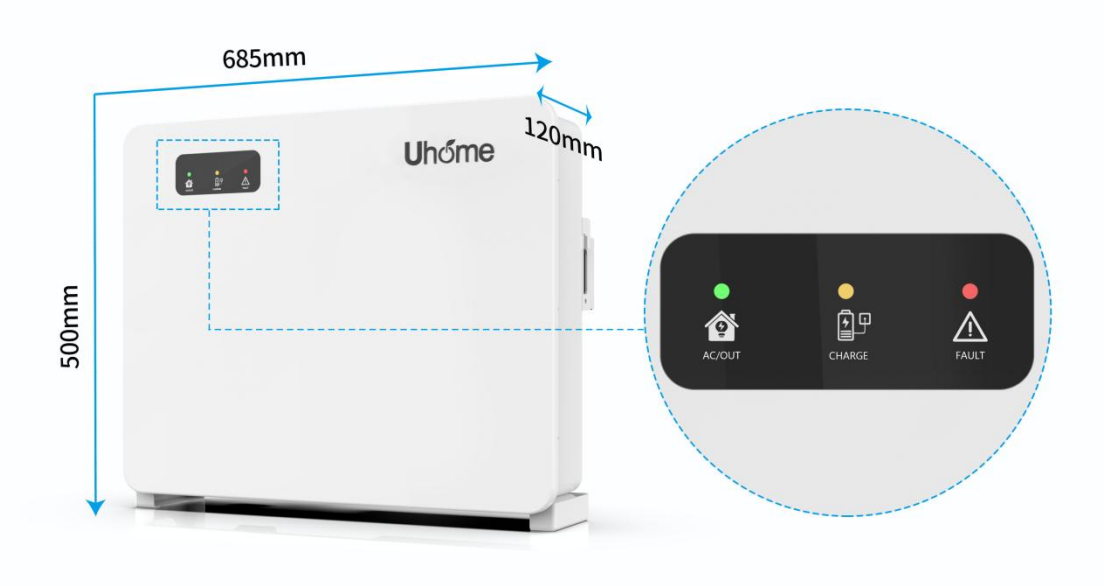
△BACK

△ BOTH SIDES

△BOTTOM

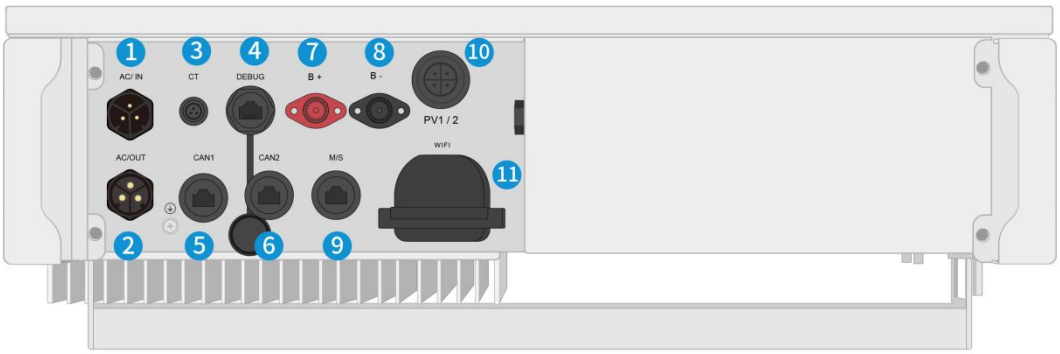
This product has a simple and smooth appearance design with compact size, which is easy to install. It is suitable for balcony, mobile house, RV, etc. It is an economical and highly practical household energy storage device.

Dimensions and indicator light instructions：



LED	LIGHT	DEFINITION
AC/OUT	GREEN	AC power output
CHARGE	YELLOW	Charging
FAULT	RED	Failure occurred

2.3.2 Interface instruction



Schematic of the interfaces:

Interface Definition:

Item	Designation	Definition
1	AC/IN	AC power input(connect to Grid)
2	AC/OUT	AC power output(connect to UPS)
3	CT	Current transformer
4	DEBUG	Factory commissioning
5	CAN1	CAN1port
6	CAN2	CAN2 port
7	B+	Battery positive pole
8	B-	Battery negative pole
9	M/S	External battery communication port
10	PV1/2	PV
11	WIFI	WIFI module

Interface	Pin	Pin Definition
AC/IN	1	N
	2	PE
	3	L
AC/OUT	1	N
	2	PE
	3	L
CT	1	GRID_+
	2	GRID_-
PV1/2	1	PV+
	2	PV-
	3	PV-
	4	PV+

2.3 Operation Mode

2.3.1 Self-comsumption mode

Self-comsumption mode (allow feeding, prohibit feeding - enable feeding):
A/ PV priority: Priority is given to load supply, excess energy is used to charge the battery, and the remaining energy is fed back to the grid;
B/When the photovoltaic energy is insufficient, the battery will be prioritized for compensation, followed by the supply of mains electricity.
Tips:
A/ Self-consumption mode (allow feeding, prohibit feeding - enable feeding);
B/ When two modes are used together ,in case of conflict between self-consumption mode and time-of-use mode , the latter takes priority).
The selection of feeding countries corresponds to different feeding power levels in different countries. Germany has a feeding power of 800W, while other countries have a feeding power of 1600W.

2.3.2 Off-grid mode

Grid supplys the power to loads directly, automatically switchover UPS supply when the grid outage(<10ms).
A/ Discharge: Photovoltaic priority, insufficient photovoltaic energy, battery compensation, followed by grid supplementation;
B/ Charging: Photovoltaic priority, insufficient photovoltaic energy, compensation for mains charging.

3. Installation condition

3.1 Check before Receiving

Check the following items before receiving the product.

1.Check the outer packing box for damage, such as holes, cracks, deformation, and other signs of equipment damage. Do not unpack the package and contact the supplier as soon as possible if any damage is found.

2.Check the device model. If the device model is not what you requested, do not unpack the product and contact the supplier.

3.Check the deliverable for correct model, complete contents, and intact appearance. Contact the supplier as soon as possible if any damage is found.

3.2 Storage

If the equipment is not to be installed or used immediately, please ensure that the storage environment meets the following requirements:

1. Do not unpack the outer package or throw the desiccant away.
2. Store the equipment in a clean place. Make sure the temperature and humidity are appropriate and no condensation.
3. The height and direction of the stacking device should follow the instructions on the packing box.
4. The device must be stacked with caution to prevent them from falling.
5. If the device has been long term stored, it should be checked by professionals before being put into use.

3.3 Installation Environment Requirements

a. The storage device protection class is IP65 and can be mounted indoors or outdoors.

b. The mounting location must be inaccessible to unrelated personnel since the enclosure and heat sinks are extremely hot during operation.

c. Do not install the storage device in areas containing highly flammable materials or gases.

d. To ensure optimum operation and long service life, the ambient temperature must be below 55℃.

e. The storage device must be mounted in a well ventilated environment to ensure good heat dissipation.

f. To ensure long service life, the storage device must not be exposed to direct solar irradiation, rain, or snow. It is recommended that the device be mounted in a sheltered place.

g. The carrier where the device is mounted must be fire-proof. Do not mount the device on flammable building materials.

h. Do not install the device in a rest area since it will cause noise during operation.

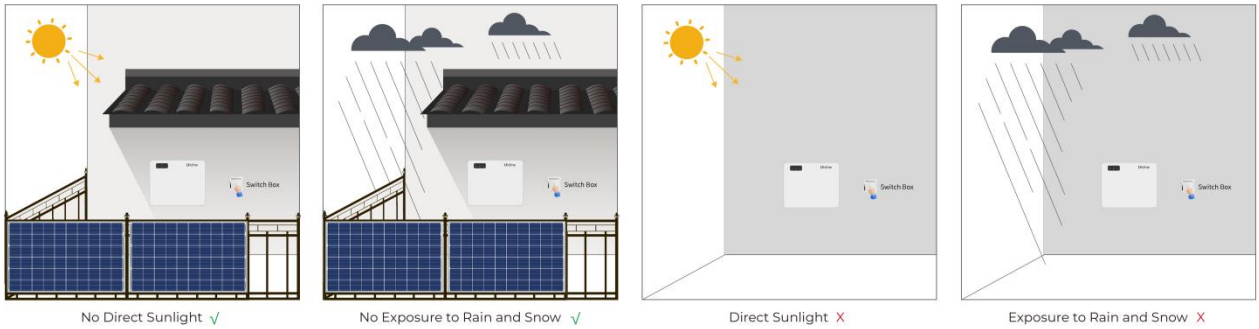
i. The installation height should be reasonable and make sure it is easy to operate and view the display.

j. Product label and warning symbols shall be clear to read after installation.

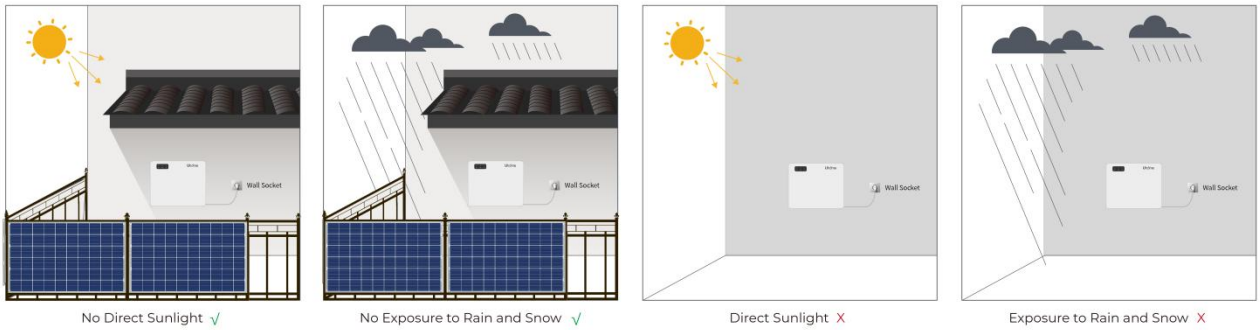
k. Please avoid direct sunlight, rain exposure, show lay up install.

l.It is recommended to hang it on the wall for use.

Connect the power supply through the switch box:

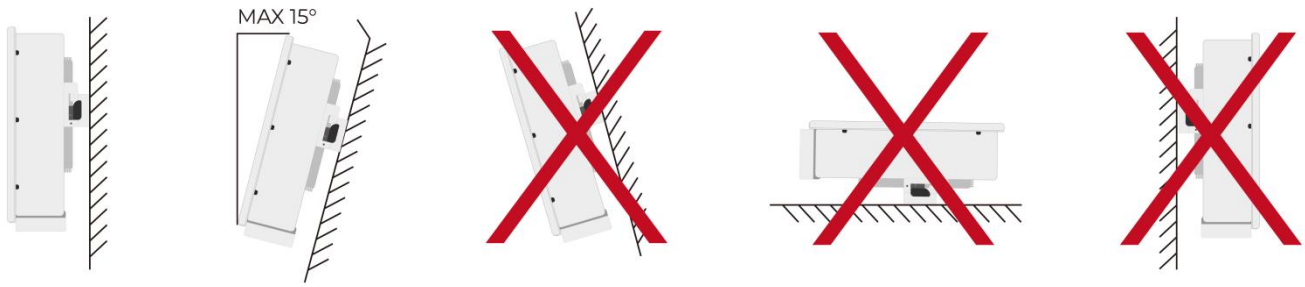


Connect the power supply through the wall socket:



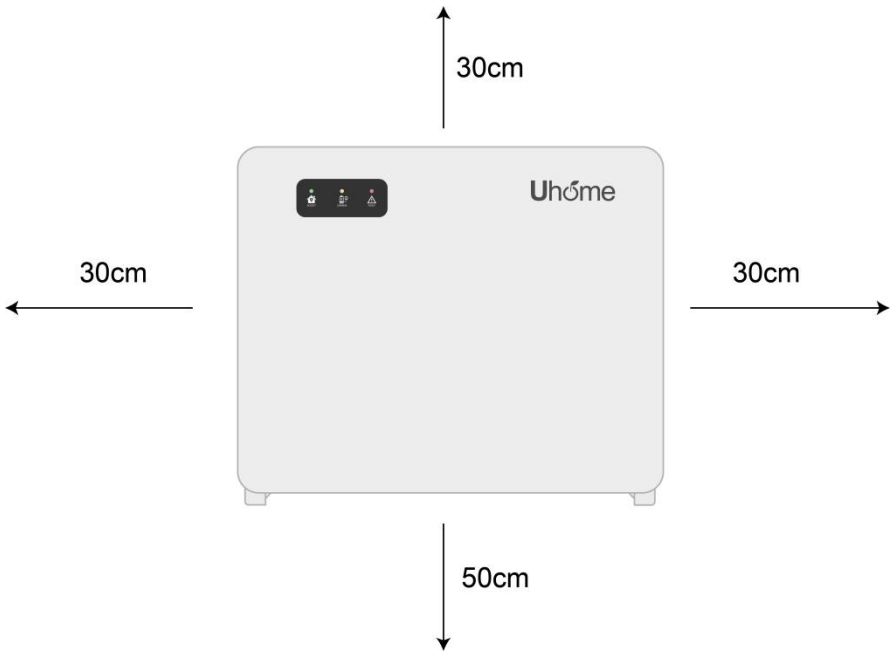
3.4 Mounting Requirements

Mount the device vertically or tilted backward by max 15°. The device can not be installed with a wrong mode and the connection area must point downward.



3.5 Installation Space Requirements

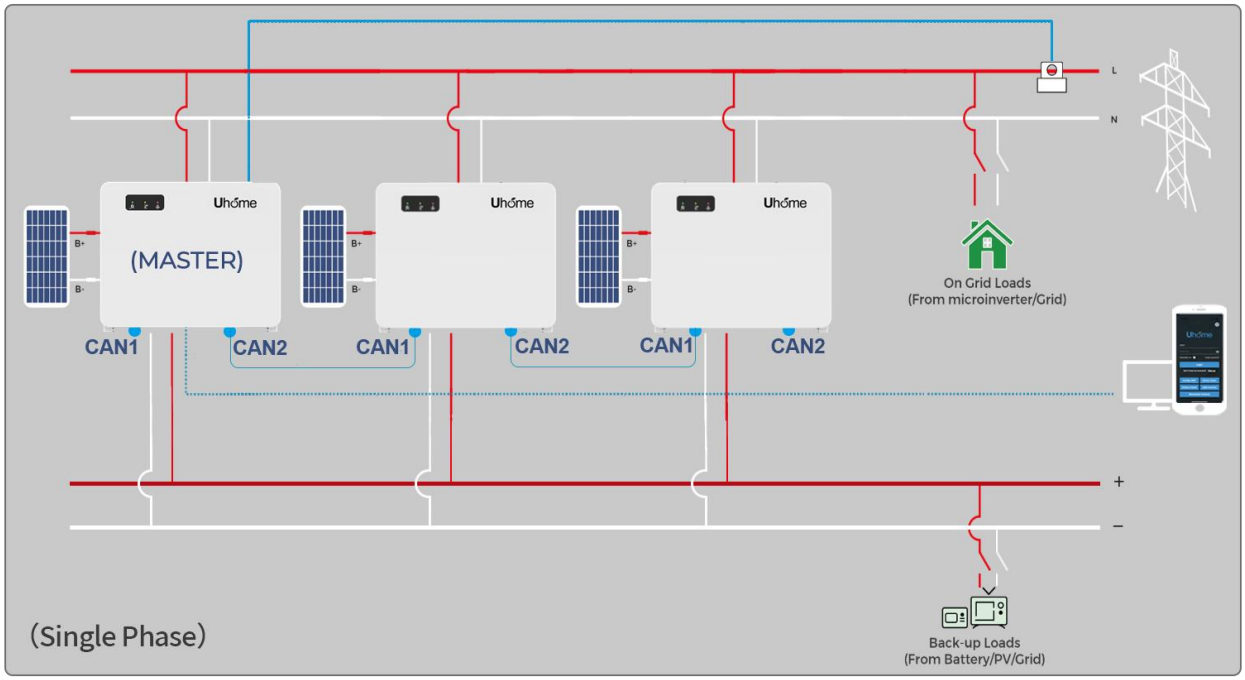
To ensure the device normally and easy to operate, there are requirements on available spaces of the device , e.g. to keep enough clearance. Refer to the following figures.



3.6 System parallel

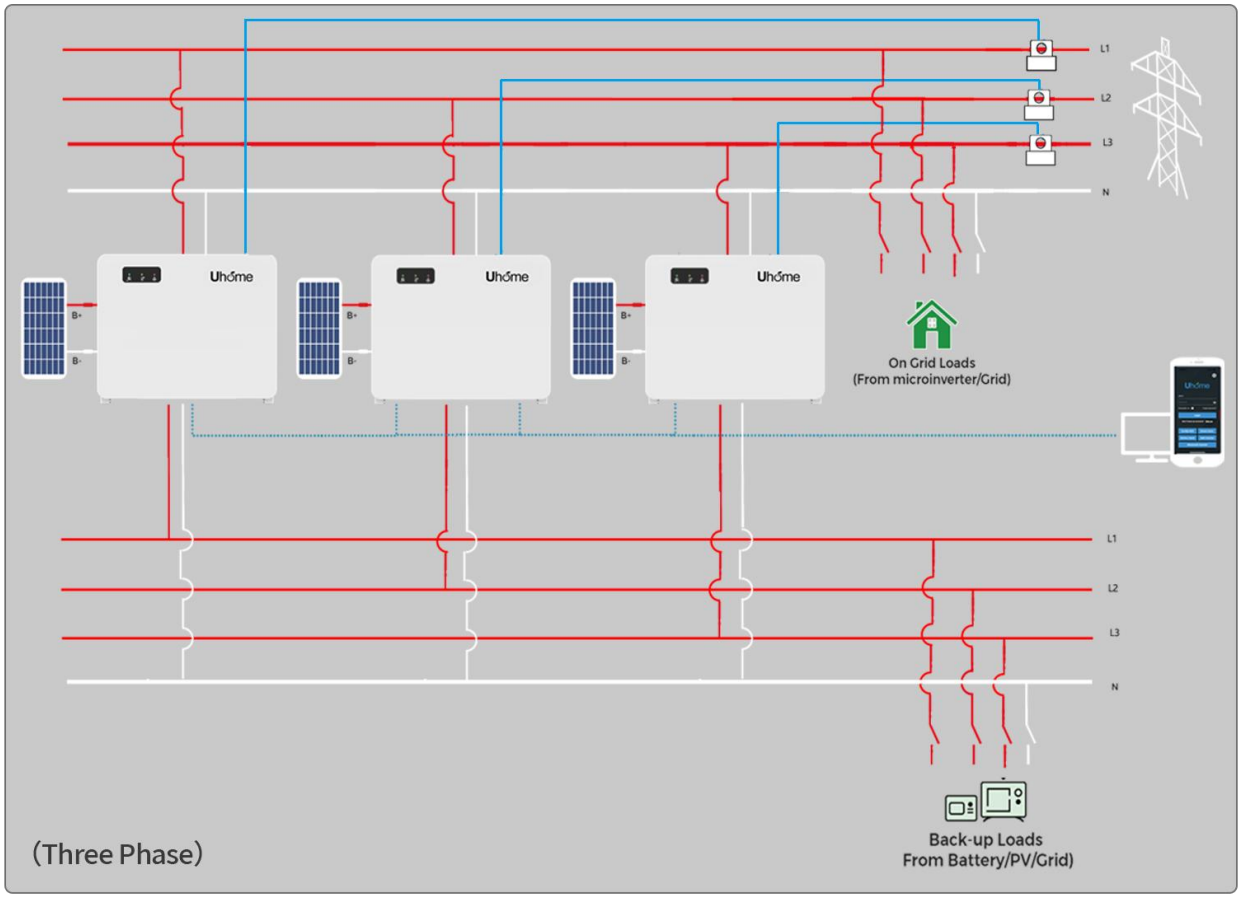
3.6.1 Single phase

Please refer to the following diagram for installation, with a maximum parallel of 6 pcs.



3.6.2 Three phase

Please refer to the following diagram for installation, with a maximum parallel of 6 pcs.



3.7 Tools

To install the device pack, those following tools are required:

			
Phillips screwdriver	**Torque wrench**	**Cable crimper**	**Wire clamp**
			
Voltmeter	**Tape measure**	**Drill**	**Flat-head screwdriver**

In order to protect operator and installer's safety, please select and use suitable tools and measuring instruments that are certified for precision and accuracy.

3.8 Safety Instruments

When dealing with the device, following safety gears should be equipped. Installers must meet the relevant requirements of the domestic legislation and other relevant international standards.

		
Insulated glove	Safety goggles	Safety shoes

4. Installation

4.1 Moving the product

CAUTION

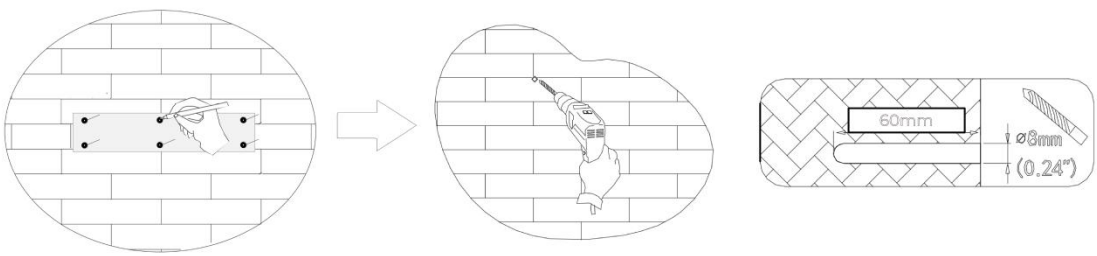
• Operations such as transportation, shipment, installation and so on shall in compliance with the laws and regulations of the country or region where the device is located.
• Move the device to the site before installation. Follow the instructions below to avoid personal injury or equipment damage.
1. Consider the weight of the equipment before moving it. Assign enough personnel to move the equipment to avoid personal injury.
2. Wear safety gloves to avoid personal injury.
3. Keep balance to avoid falling down when moving the equipment.

4.2 Installing the product

NOTICE

• Wear goggles and a dust mask to prevent the dust from being inhaled or contacting eyes when drilling holes.
• Make sure the device is firmly installed in case of falling down.

Step1: Use the positioning cardboard as template to drill 6 holes on walls.



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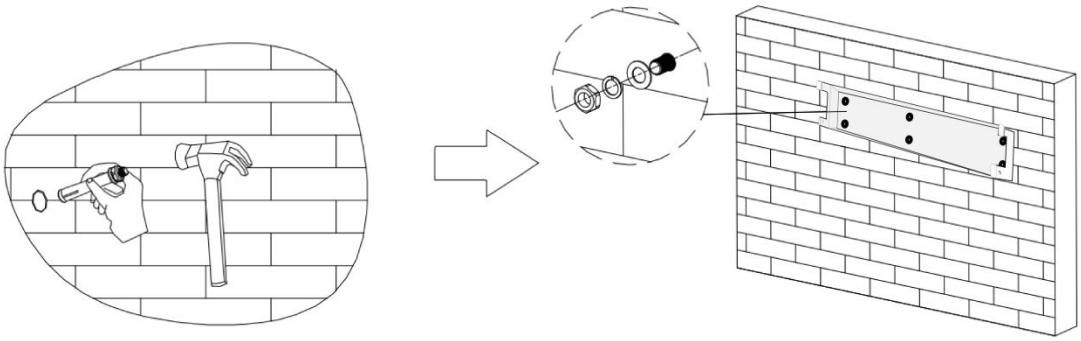
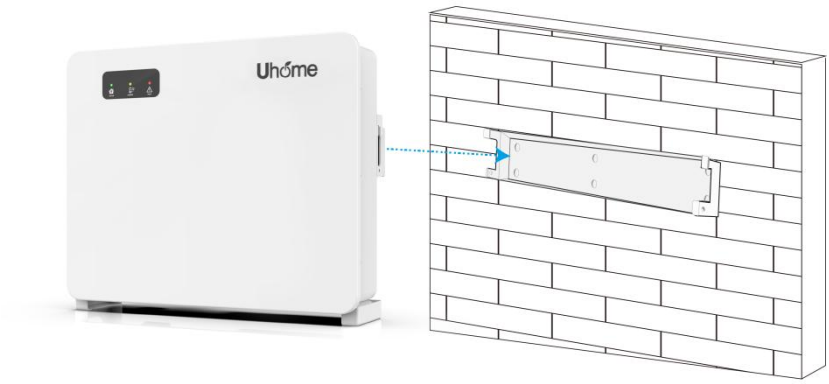
Step2: Fix backboard to the wall with expansion screws tightly.



Step3: Lift and hang the device on the backboard, lock the nuts on the side of device.



5. Electrical Connection

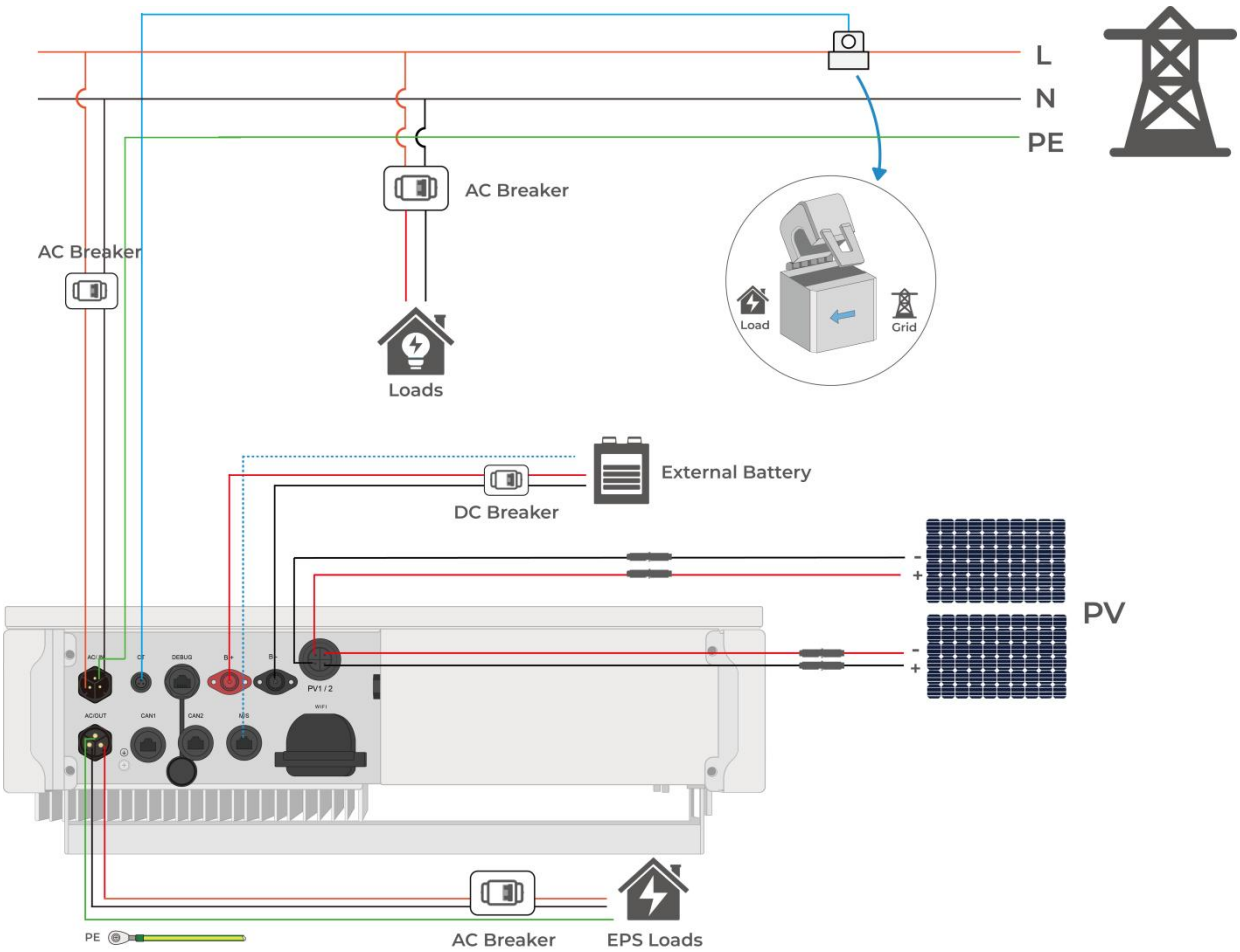
5.1Safety Precaution

DANGER
• Disconnect the switch of the product to power off that before any electrical connections. Do not work with power on. Otherwise, an electric shock may occur. • All operations, cables, and component specifications used during the electrical connection must comply with local laws and regulations. • If the tension is too large, the cable may be poorly connected. Reserve a certain length of the cable before connecting it to the device cable port.

5.2 ESS device System Connection Diagram:

5.2.1System Wiring Diagram

This chapter shows the details connection of ESS device.The following illustration only uses the hybrid devices as an example.



Note:

1. PV related contents are N/A for AC Couple device.
2. BMS communication connection is only for lithium battery.
3.The CT is used to detect feedback or prevent backflow,and the CT installation position is at the front end of the switch box.
4.About breakers:

DC breaker on BATTERY side: Not less than 80A

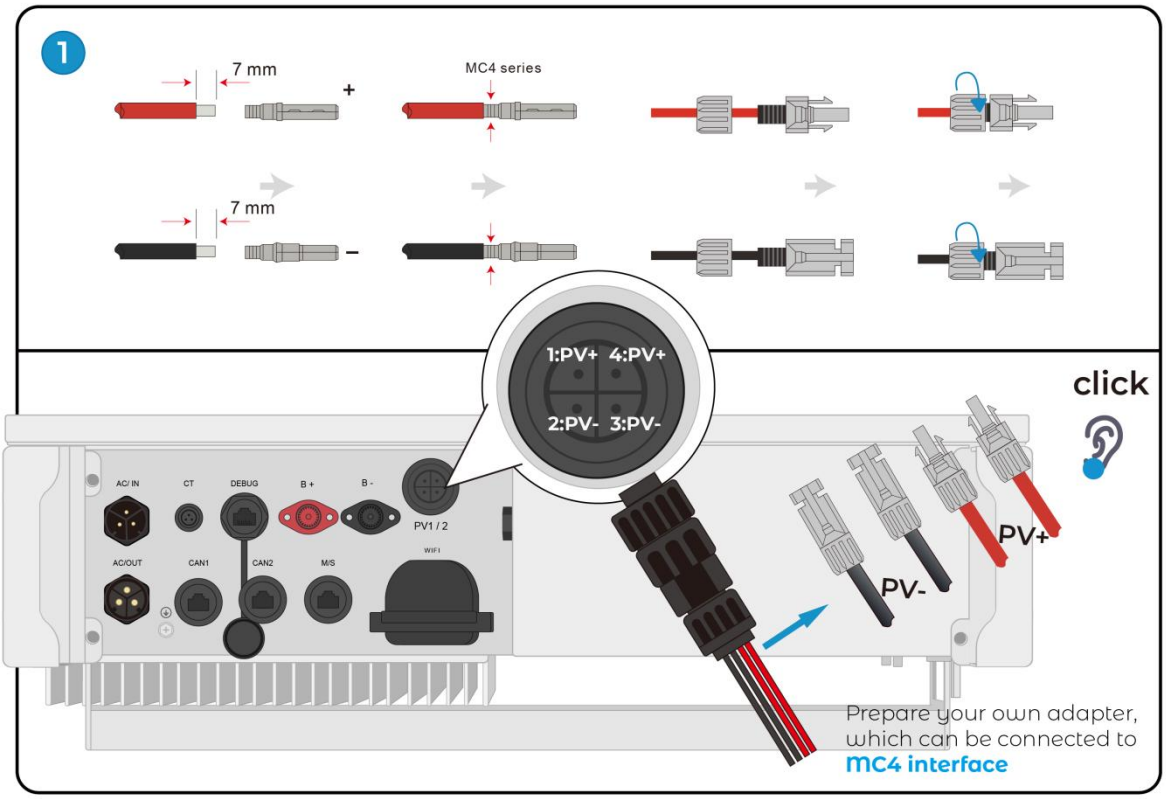
AC breaker on EPS load side:Not less than 20A

AC breaker on Grid side:Not less than 20A

DANGER
Ensure that device and all cables to be installed are completely powered off during whole installation and connection. Otherwise, fatal injury can occur due to the high voltage caused from AC and DC cables.

5.3 Connecting the PV Input Cable

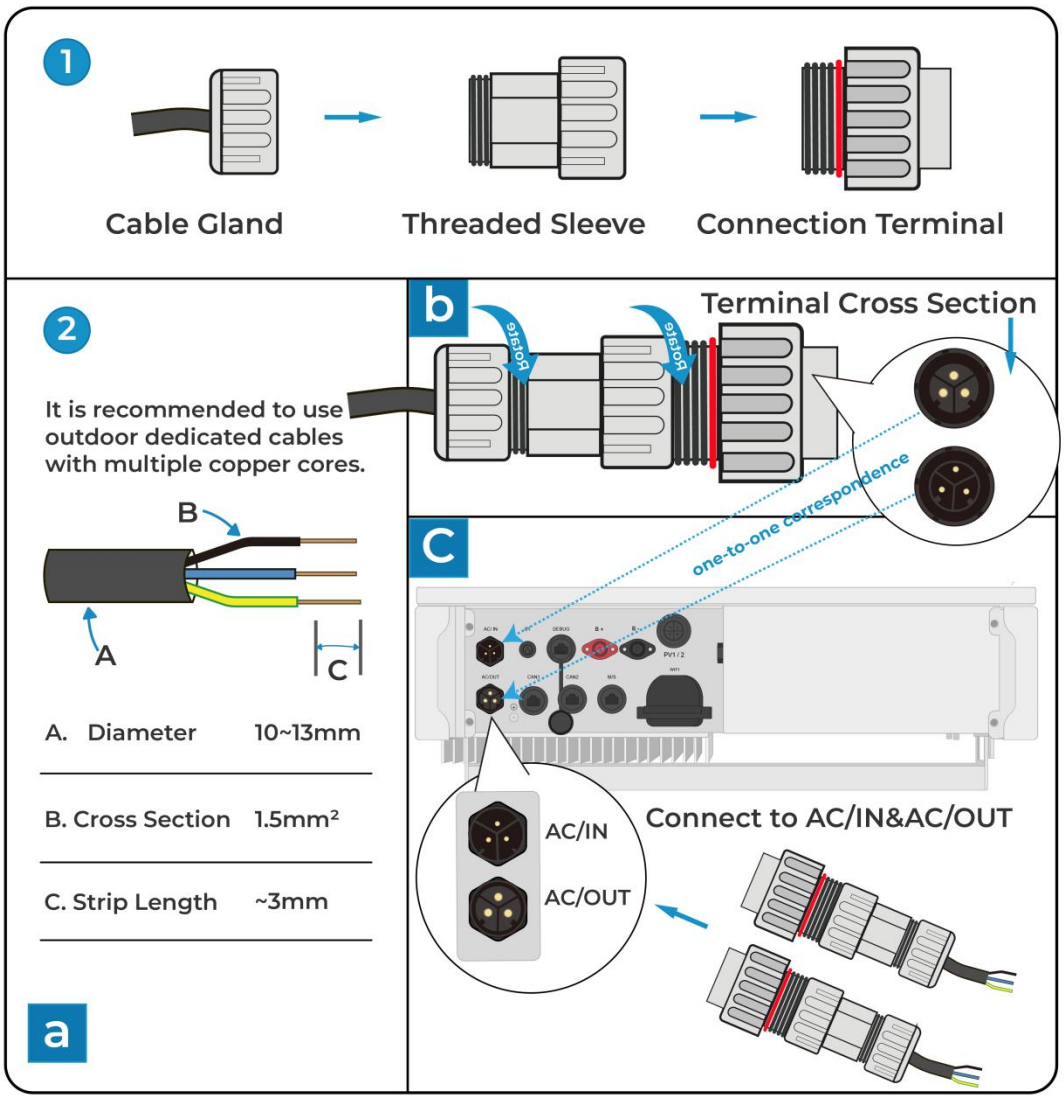
DANGER
Confirm the following information before connecting the PV string to the device. Otherwise.the device may be damaged permanently or even cause fire and cause personal and property losses. 1. Make sure that the max short circuit current and the max input voltage per MPPT are within the permissible range. 2. Make sure that the positive pole of the PV string connects to the PV+ of the device. And the negative pole of the PV- connects to the PV of the device. 3. The minimum insulation resistance to ground of the PV panels must exceed 20MΩ, there is a risk of shock hazard if the requirement of minimum resistance is not met.



5.4 AC/IN & AC/OUT Connection

Before connecting the AC/IN & AC/OUT terminal, ensure that both the B+ terminal and the B- terminal are powered OFF and the PV switch is OFF. Otherwise there is a risk of high voltage shock.

Step 1: Assemble the AC connector.



Step 2: Connect the AC connector.

An AC breaker should be installed between device and the AC/IN&AC/OUT.

a. Before connecting the AC cable from device to AC breaker, you should confirm the AC breaker is working normally .

b. Connect the PE conductor to grounding electrode, and connect the N and L conductors to AC breaker.

c. Connect the AC breaker to the AC/IN & AC/OUT.

NOTICE
Multiple devices are not allowed to share a circuit breaker. Load is not allowed to connect between the device and the AC breaker.

To ensure that the device can be safely and reliably disconnected from the grid, a AC breaker （not less than 20A）should be installed only for device AC/IN & AC/OUT port.

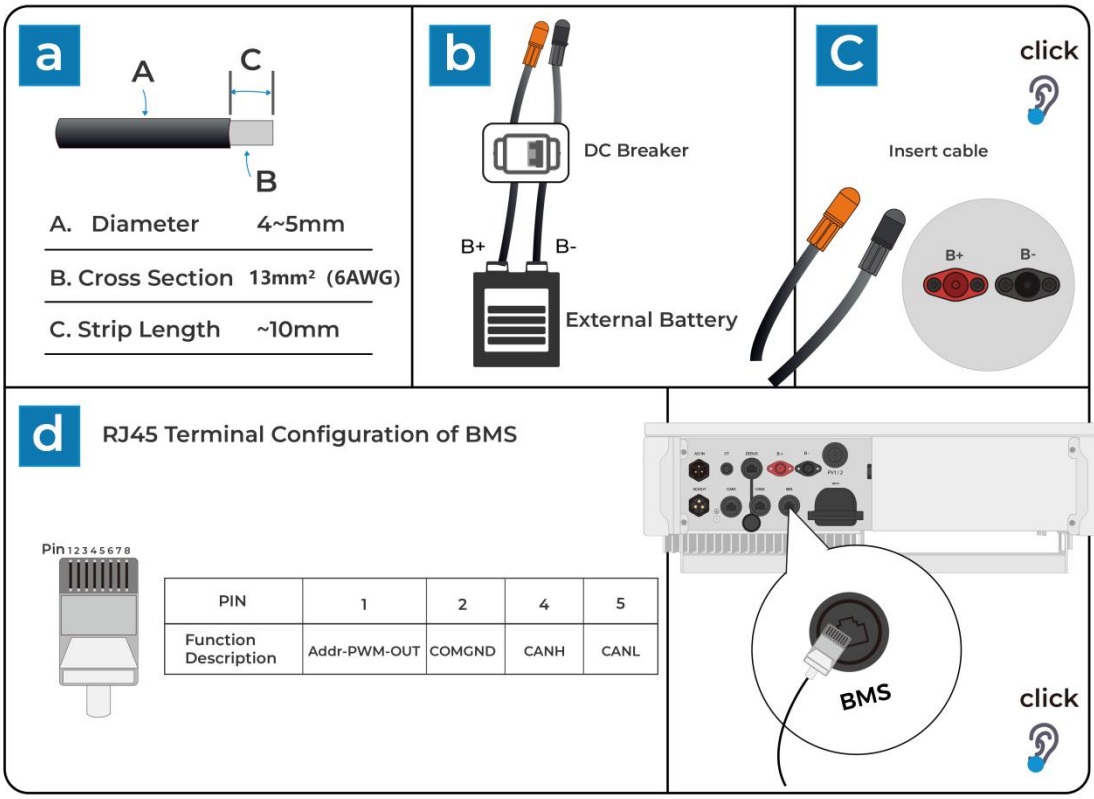
5.5 External Battery Connection

ESS device now only supports the lithium battery.
This part in this manual only describe the battery connection on device side. If you need more detailed connection information about the battery side, please refer to the manual of the battery you using.
Before connecting to battery, please install a separate DC breaker (60A, not equipped) between device and battery. This ensure the device can be security disconnected during maintenance.

WARNING
Polarity reverse will damage the device! Be careful of electric shock and chemical hazards! To reduce risk of injury, please use the suitable recommended cable size.

Battery Communication Connection

If the battery type is lithium battery which need communication between the device and battery management system(BMS), the connection must be installed.

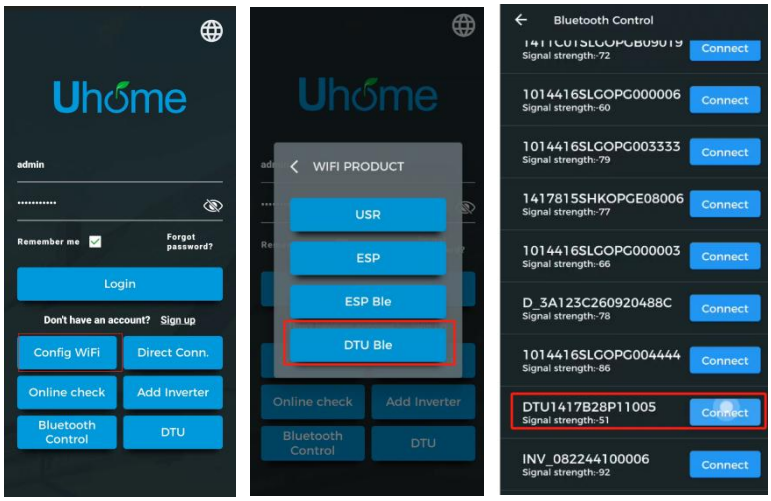


This manual describes the cable sequence of the device. For details about the cable sequence of the battery, see the manual of the external battery you used.

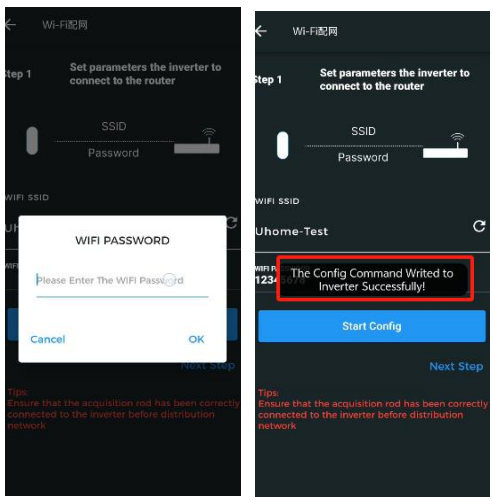
6. Configuration device

6.1 Bluetooth Connect

1. Open the APP, select the **Config WIFI,** find **the SN of DTU**, then press the **Connect. (Note that must choosing the letter is beginning with DTU******.)**

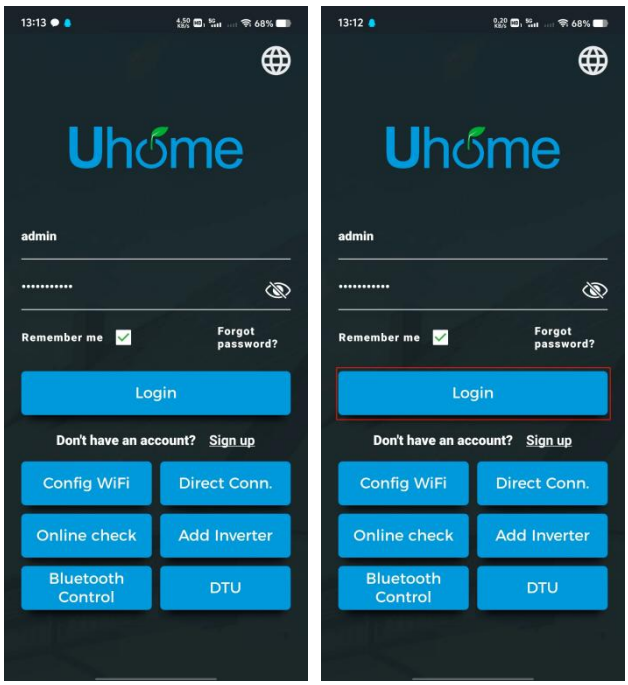


2. As you can see in the quick setting interface, select **local WIFI** and enter the password. Click the **Start Config** button , when it is successful, The interface will prompt "The Config Command Writed to device Successfully!".Then you should exit the config interface.

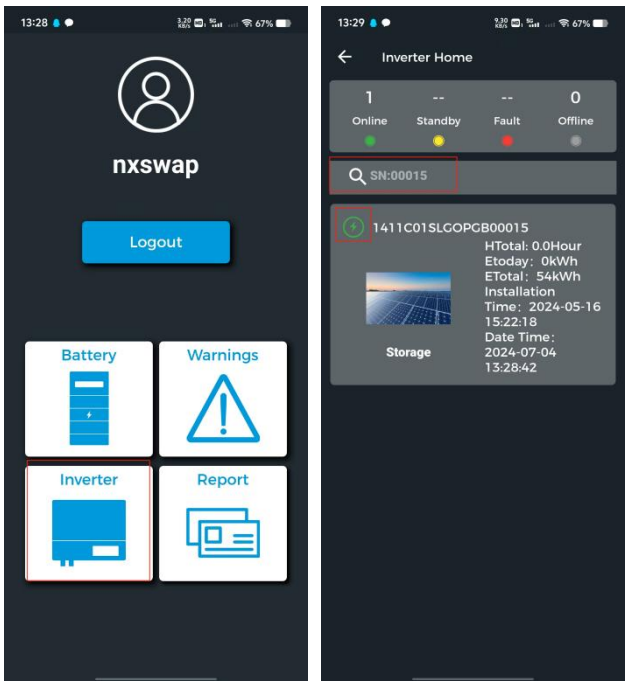


NOTICE
WIFI only supports 2.4GHz! Not supporting 5GHz WIFI.

3. Exit the distribution network interface and return to the homepage, wait for 2-5 minutes.Then press **Login** to log in to your account



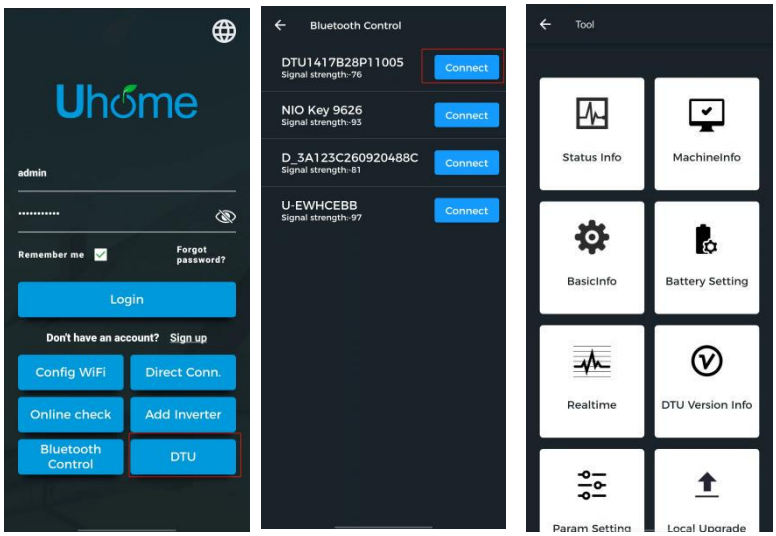
4. Press the **device** icon ,enter the device interface.Then search for the **SN** of the device,if you can see this ICON ,that means successful network distribution and device online.



6.2 DTU Direct

In off-grid situations,connect the device via cell phone.

Open the APP, select the **DTU,** find **the SN of DTU**, then press the **Connect.**

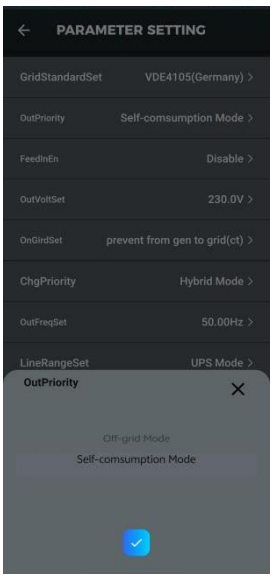


6.3 Mode Setting

The device provides three working modes and two functions to meet the needs of users in 5 different applications, namely :Automatic mode (default), off-grid mode, time-of-use mode,anti backflow function and On-grid power function.

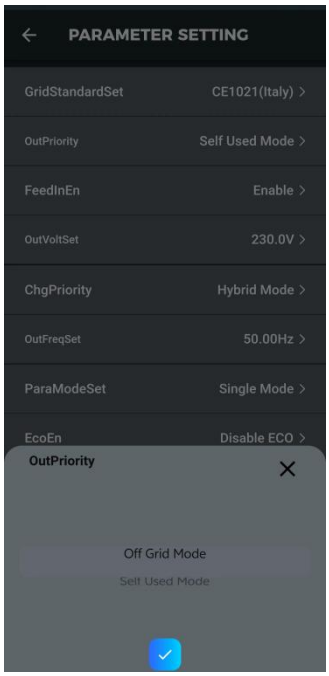
1.Self-consumption mode

Self-consumption mode: the self-consumption 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 first 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 self-consumption mode setting.



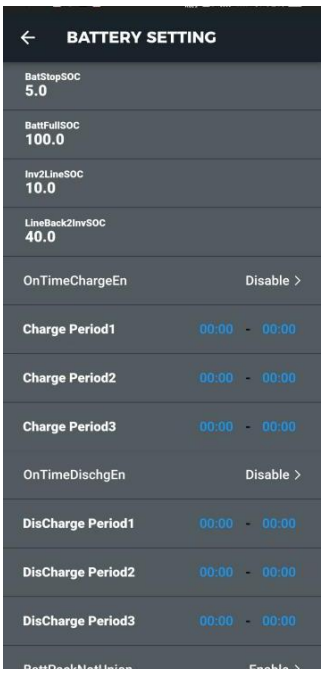
2.Off-grid mode

In off-grid mode, photovoltaic power prioritizes the supply of loads, while excess photovoltaic power charges the battery. When the photovoltaic power is less than the responsible power, the battery and photovoltaic power supply the responsible power together. In this mode, the excess photovoltaic power will not be fed into the grid.



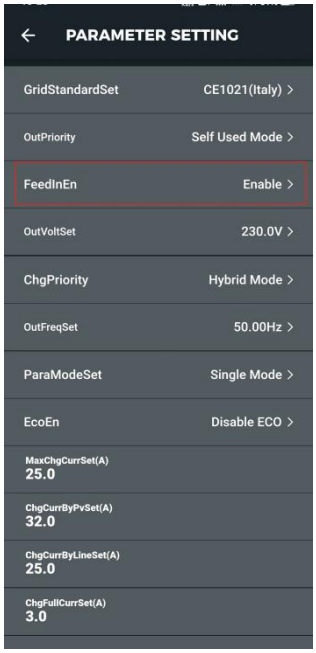
3.Time-of-use mode(Used in conjunction with self-consumption/off-grid mode)

This mode can be used in conjunction with the spontaneous self use mode, which allows the energy storage system to operate in the most economical state. Customers can use the timed mains charging function to charge the battery when the electricity price is low, and sell it when the electricity price is high.



4.Grid feeding function(Used in conjunction with self-consumption mode)

Enabling this function will allow grid feeding for photovoltaics and batteries, while disabling this function will prohibit grid feeding for photovoltaics and batteries.



5. On-grid power function(Used in conjunction with self-consumption mode)

This function allows users to output photovoltaic power to the grid based on whether the local power grid company allows it after the battery is fully charged. The grid connected power limit function requires customers to set the grid connected power according to local regulations. When the photovoltaic power exceeds the load power, the system will charge the battery. If the battery is full at this time, and the grid power is limited to 800W, the maximum excess photovoltaic power can be fed into the grid is 800W.

7. Fault codes and countermeasures

7.1 Fault codes

Fault code	Fault name	Whether it affects the output	explain
【01】	Battery voltage undervoltage reminder	deny	The battery voltage is lower than [18] setting item to remind the battery is in the battery undervoltage state.
【02】	Battery-voltage and low-voltage protection	yes	Battery voltage is at low voltage, turn off the output to stop the battery discharge protection.
【03】	Battery discharge average current overcurrent protection	yes	The average battery discharge current is greater than the maximum input battery current for 1 minute, close the output to stop the battery discharge protection.
【04】	Battery discharge instantaneous value of overcurrent protection	yes	The battery discharge current instantaneous value is greater than the maximum instantaneous value of the device. Close the output to stop the battery discharge protection.
【05】	The battery is not connected	yes	The Battery is not connected to the alarm.
【06】	The battery over pressure	yes	Beyond the selected battery type or set battery voltage, close the output to stop the battery charging protection.
【07】	The BMS battery has a low capacity rate alarm	deny	Lithium battery BMS battery low capacity rate reminder. (Set up the BMS to be effective)
【08】	The BMS battery capacity rate is low for protection	yes	Lithium battery BMS battery capacity rate is low, close the output to stop the battery discharge protection. (Set up the BMS to be effective)
【09】	By pass overload protection	yes	mains load overload, turn off AC output and stop mains charging.
【10】	Battery inverter overload protection	yes	Battery discharge inverter with load overload, turn off AC output and stop battery discharge protection.
【11】	Battery inverter AC output is short-circuit	yes	Battery discharge inverter AC output short circuit, turn off the AC output and stop the battery discharge protection.
【12】	Battery inverter AC output overcurrent	yes	Battery discharge inverter AC output overload, turn off AC output and stop battery discharge protection.
【13】	The inverter voltage and DC component of the battery is abnormal	yes	Battery inverter voltage DC component regulation is abnormal, close the AC output and stop the battery discharge protection.
【14】	Bus overvoltage software sampling protection	yes	Internal battery boost, boost bus voltage overvoltage software protection, turn off AC output and charging.
【15】	Bus overvoltage hardware sampling protection	yes	Internal battery boost, boost bus voltage overvoltage hardware protection, close AC output output and charging.
【16】	Bus undervoltage protection	yes	Internal battery boost, boost bus voltage unde rvoltage protection, turn off AC output output and charging.
【17】	Bus-wire short-circuit protection	yes	Internal battery boost, boost bus voltage short circuit protection, turn off AC output output and charging.
【18】	The PV input voltage is	yes	The solar energy input voltage exceeds

	overvoltage		the maximum allowable input voltage protection.
【19】	-	-	-
【20】	PV current overcurrent protection	deny	Solar charging overcurrent hardware protection, turn off solar charging.
【21】	-	-	-
【22】	PV radiator overtemperature	deny	Solar charging radiator temperature is too high, close the solar charging.
【23】	The AC radiator is overheat	yes	AC charging or battery inverter discharge If the radiator temperature is too high,turn off the AC charging or battery inverter discharge.
【24】	The main transformer temperature is over warm	yes	AC charging or battery inverter discharge inside the main transformer temperature is too high, turn off the AC charging or battery inverter discharge.
【25】	The AC input relay is short-circuit	yes	AC input relay short circuit protection to prevent inverter AC output back to bypass AC input
【26】	The AC output relay is short-circuit	yes	AC output relay short circuit protection, turn off the inverter output and all charging functions.
【27】	Fan fault	yes	The fan block turn or failure fault, turn off the inverter output and all charging functions.
【28】	-	-	-
【29】	-	-	-
【30】	Model number detection error	yes	The model is not set, and the model identification is wrong.
【31】	-	-	-
【32】	-	-	-
【33】	Combined machine control can communication fault	yes	In parallel mode, CAN communication is lost, and AC output and charging are closed.
【34】	Combined machine control can communication fault	yes	In parallel mode, CAN communication is lost, and AC output and charging are closed.
【35】	Pa rated mode failure	yes	In parallel mode, the system has inconsistent settings in machine parallel mode [31].
【36】	Meflow fault of parallel machine	yes	In the parallel mode, the inverter AC output of the battery is quite different, and the AC output and charging are turned off.
【37】	The machine ID is set correctly	yes	In the parallel mode, the RS485 address conflicts repeatedly, and the fault mechanism closes the AC output and charging. After the host automatically redistributes the address, the fault will be cleared and enter the parallel machine.
【38】	The parallel battery is inconsistent	yes	In the parallel mode, the battery voltage input of each machine is very different.
【39】	In the parallel mode, the mains input source is inconsistent	yes	In the parallel mode, the mains input source is inconsistent.
【40】	Pa rated mode synchronization failure	yes	Combined machine mode, hardware synchronous signal reception failure,stop parallel operation and AC output
【41】	The parallel program version is inconsistent	yes	For machines with inconsistent program versions in the parallel system, stop the parallel machine and make the AC output.
【42】	Ffault of parallel	yes	The connection communication wire

	communication line		wiring fault, stop the connection and AC output.
【43】	Serial number error	yes	No serial number is set, or there is repeated in the system.
【49】	A BMS communication error	deny	Check whether the communication line is correctly connected and whether [11] is set to the corresponding lithium battery pass News agreement
【50】	BMS remaining fault alarm	deny	After checking the fault type of lithium battery BMS fault, clear the lithium battery fault
【51】	The BMS battery has an over-temperature alarm	deny	Lithium battery BMS over - temperature alarm
【52】	The BMS battery has an overcurrent alarm	deny	Lithium battery BMS battery overcurrent alarm
【53】	The BMS battery overvoltage alarm	deny	Lithium battery BMS battery overvoltage alarm
【54】	The BMS battery undervoltage alarm	deny	Lithium battery BMS battery undervoltage alarm
【55】	The BMS battery has a low-temperature alarm	deny	Lithium-ion battery BMS low -temperature alarm

7.2 Troubleshooting

Hitch code	Hitch	countermeasure
/	The screen is not displayed	Check whether the battery or PV is closed;whether the switch is in "ON " state; press any button on the screen to exit the screen sleep mode.
【06】	Charging battery over voltage protection	Check if the battery voltage exceeds the protection value. When exceeding, the battery needs to be discharged until the voltage is below the battery overvoltage recovery point.
【01】【02】	Battery under voltage protection	Above the battery charging to low voltage off recovery voltage.
【27】	Fan fault	Check if the fan does not turn or is blocked by something else.
【22】【23】	Radiator over - temperature protection	When the equipment cools to the over temperature, resume normal charging and discharge control.
【09】【10】	Bypass overload protection, inverter overload protection	① Reduce electrical equipment; ① Restart the all-in-one machine and load restore the output.
【11】	Inverse short circuit protection	① Carefully check the load connection situation, and clear the short-circuit fault point; ② Power on again, and the load to restore the output.
【18】	PV overvoltage	Check whether the PV input voltage exceeds the maximum allowable input voltage with a multimeter.
【05】	The battery is not alerted	Check whether the battery is not connected or whether the battery side circuit breaker is not closed.
【40】【42】	Parallel machine wiring fault	Check whether the parallel cable is not well connected, such as loose or incorrect connection
【37】	The machine ID is set correctly	Whether the setting of the parallel machine ID number is repeated phenomenon
【36】	Meflow fault of parallel machine	Check whether the parallel flow cable is not connected, such as loose or wrong connection
【39】	In the parallel mode, the mains input source is inconsistent	Check whether the parallel mains input is the same input interface
【41】	The parallel program version is inconsistent	Check whether the software version of each machine is consistent
【49】	A BMS communication error	Check whether the BMS communication line and the inverter communication ports are correctly connected

Note: If you encounter product malfunctions that cannot be solved by the methods listed in the above table, please contact our after-sales service department for technical support and do not disassemble the equipment on your own.

8. Protection function & product maintenance

8.1 Protection function

order number	defencive function	explain
1	PV current / limited power protection	When the configured photovoltaic array charging current exceeds the PV rated current, it will be charged with the rated current.
2	PV night anti -charge protection	At night, because the battery voltage is greater than the voltage of the PV assembly, prevent the battery from discharging through the PV assembly.
3	Overvoltage protection for mains power input	When the mains voltage exceeds 280V (230V model)Electricity, and turn the inverter output.
4	Under voltage protection for mains power input	When the battery voltage reaches the overvoltage disconnection voltage point, PV and mains charging of the battery will be automatically stopped to prevent damage caused by overcharging.
5	Battery overvoltage protection	When the battery voltage reaches the overvoltage break voltage point, the PV and mains will automatically stop charging the battery to prevent the battery from overcharging and damage.
6	Battery undervoltage protection	When the battery voltage reaches the low voltage off voltage point, it will automatically stop discharging the battery to prevent the excessive discharge and damage.
7	Load output for short-circuit protection	When the short circuit fault at the load output exceeds 200MS, the output AC voltage is turned off immediately.
8	Radiator over - temperature protection	When the internal temperature of the all-in-one is too high, the machine will stop charging and discharging when the temperature returns to normal.
9	overload protection	After 3 minutes of overload protection, output again and continuously overload 5 times to turn off the output until the machine is powered on again. For specific overload levels and duration, refer to the technical parameter table in the manual.
10	PV anti-counter protection	Then the machine will not be damaged.
11	AC-backirrigation protection	Prevent the battery inverter AC current from backflooding to the bypass AC input.
12	Passing by the flow of protection	Built-in AC input overcurrent protection circuit breaker.
13	Battery input for overcurrent protection	When the battery discharge output current is greater than the maximum value and lasts for 1 minute, turn to the AC input with load.
14	Battery input protection	When the battery is connected back or the inverter is short circuit, the battery input fuse inside the inverter will fuse to prevent battery damage or fire.

8.2 Product maintenance

To maintain optimal long-term performance, it is recommended to conduct inspections twice a year for the following items:

1. Confirm that the airflow around the device is not obstructed, and remove any dirt or debris from the heat sink.
2. Check if all exposed wires have been damaged due to exposure to sunlight, friction with surrounding objects, drying, insect or rodent damage, etc. Repair or replace the wires as necessary.
3. Verify that the instructions and displays are consistent with the device operation. Please be aware of any faults or incorrect displays and take necessary corrective measures.
4. Check all wiring terminals for signs of corrosion, insulation damage, high temperature, or burning/discoloration, and tighten terminal screws. 5. Check for dirt, nesting insects, and corrosion, clean as required, and regularly clean insect nets.
6. If the lightning arrester has failed, replace it in a timely manner to prevent lightning damage to the device or even other equipment of the user.

Our company is not responsible for damages caused by the following reasons:

a) Damage caused by improper use or use in the wrong location.
b) The open circuit voltage of the photovoltaic module exceeds the maximum allowable voltage.
c) Damage caused by working temperature exceeding the limited working temperature range
d) Unauthorized personnel dismantle and repair the device.
e) Damage caused by force majeure: damage during transportation or handling of device.

9. Firmware Update

If you need to upgrade the BMS software version, please contact the after-sales staff by email: **marketing@uhomeenergy.com**.

10. Accessories List

After receiving the product, please check the accessory details according to the table below.

Accessory schematic diagram	Definition
	Power line
	Terminal connector shells (For AC/IN&AC/OUT&PV1/2)
	Expansion screws (6 pcs for backboard)
	Side screws (2 pcs for backboard)
	Current Transformer & supporting cables
	WIFI Module