Product Model

POW-SunSmart 8KP



PowMr

HYBRID SOLAR INVERTER

User Manual

Important Safety Instructions

Please save these instructions for future use!

1. Before using the unit, read all instructions and cautionary marking on the unit, the batteries and all appropriate sections of this manual. The company reserves the right to void the warranty, if the unit is installed or operated not in accordance with the instructions in this manual, resulting in equipment damage.
2. Please be clear which kind of battery system you want, lithium battery system or lead-acid battery system, if you choose the wrong system, energy storage system can't work normally.
3. Do not disassemble the unit. Take it to a qualified service center when service or repair is required. Incorrect re-assembly may result in a risk of electric shock or fire.
4. All operations and connections must be performed by a professional electrical or mechanical engineer. All the electrical installation must comply with the local electrical safety standards.
5. **CAUTION**-To reduce risk of injury, charge only deep-cycle lead-acid type rechargeable batteries and lithium batteries. Other types of batteries may burst, causing personal injury and damage.
6. To reduce risk of electric shock, disconnect all wirings before attempting any maintenance or cleaning. Turning off the unit will not reduce this risk.
7. For optimum operation of this inverter, please follow required spec to select appropriate cable size. It's very important to correctly operate this inverter.
8. **GROUNDING INSTRUCTIONS** -This inverter should be connected to a permanent grounded wiring system. Be sure to comply with local requirements and regulation to install this inverter.
9. **NEVER** cause AC output and DC input short circuited. Do NOT connect to the mains when DC input short circuits.
10. Do not install the inverter in harsh environments such as moist, oily, flammable or explosive, or heavily dusty areas.
11. **WARNING!!** Only qualified maintenance personnel can repair this equipment. If the fault persists after troubleshooting according to the troubleshooting table, take this inverter/charger back to your local dealer or service center for repair.
12. Do not reverse polarity of the battery input; otherwise, the device may be damaged or unpredictable risks may occur.

13. Make sure the inverter is completely assembled before operation.
14. It is necessary to confirm that the inverter's AC output is the only power source for the load, and it is forbidden to use it in parallel with other input AC power to avoid damage.
15. Recommended to attach proper fuse or circuit breaker to the outside of the inverter.

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1 Information on this manual

This manual describes the assembly, installation, operation and troubleshooting of this unit. Please read this manual carefully before installations and operations. Please keep this manual for future use.

1.1 Scope

This manual provides safety and installation guidance as well as information about tools and wiring.

1.2 Target Group

This document is intended for qualified persons and end users. Tasks that do not require any particular qualification can also be performed by end users. Qualified persons must have the following skills:

1. Knowledge of how an inverter works and was operated.
2. Training in how to deal with the dangers and risks associated with installing and using electrical devices and installations.
3. Training in the installation and commissioning of electrical devices and installations.
4. Knowledge of the applicable standards and directives.
5. Knowledge of and compliance with this document and all safety information.

2 Product Introduction

2.1 Product Description

The hybrid energy storage inverter series integrates and manages photovoltaic systems, storage batteries, the power grid, and connected loads. It delivers stable, safe, and clean electricity for residential, commercial, and industrial applications, meeting diverse energy needs.

2.2 Product Features

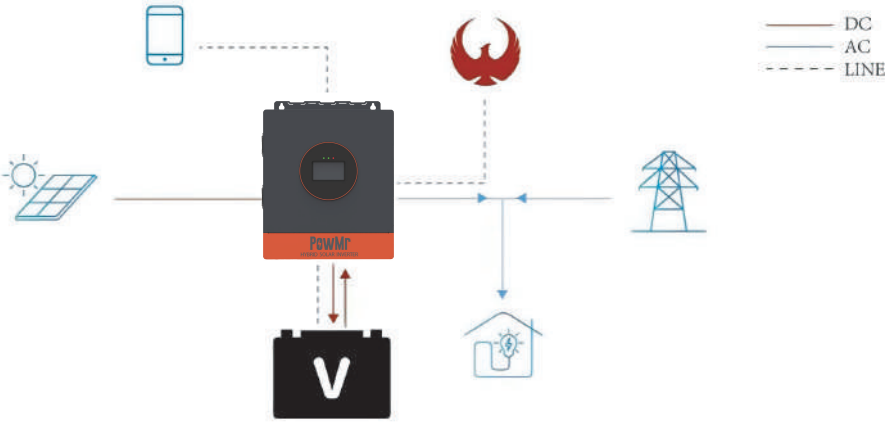
- Supports various types of energy storage batteries, such as lead-acid batteries and lithium-ion batteries.
- Supports single-phase and split-phase pure sine wave output.
- Supports voltage adjustment for each phase within the range of 100 to 130V.
- Supports single-channel photovoltaic input and features the function of simultaneously featuring a single MPPT tracker that can track the maximum power point. The MPPT efficiency reaches up to 99.9%, and the maximum current per channel is 27A.
- Has two output modes of mains bypass and inverter output, with uninterrupted power supply function.
- Offers two charging modes: photovoltaic only, and hybrid charging.
- Supports timed battery charging and timed battery discharging.
- The single unit energy saving mode function reduces no-load energy loss.
- Equipped with multiple protection functions to comprehensively protect the safety of photovoltaic panels, batteries, loads, and the controller itself.
- Features a capacitive intelligent touch screen, menu based operation, and intuitive and convenient parameter setting.
- Supports 256 event records and 512 day historical data storage.
- Built-in Bluetooth and WIFI, providing native cloud platform access capabilities. It can automatically synchronize time after connection.

2.3 System Connection Diagram

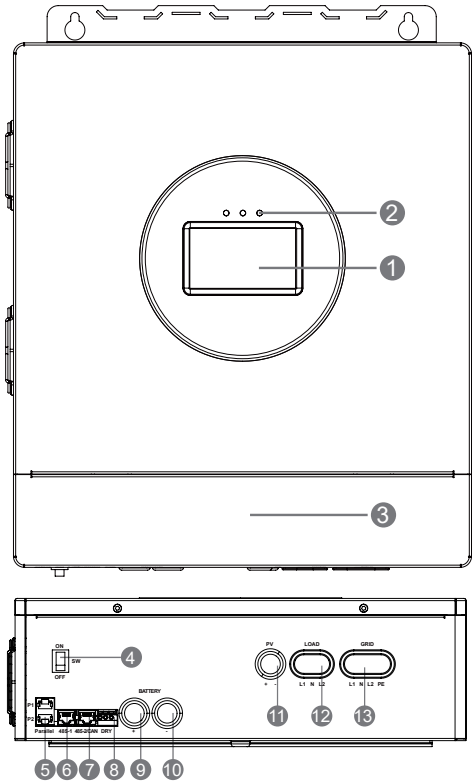
The following figure shows the system application scenarios of this product. A complete system consists of the following parts:

1. **Photovoltaic Modules:** These convert light energy into DC electrical energy. They can charge the battery through the inverter or be directly inverted into AC power to supply power to the load.
2. **Mains Power or Generator:** Connected to the AC input, it can supply power to the load and charge the battery simultaneously. When the battery and photovoltaic modules supply power to the load, the system can generally operate without mains power or a generator.
3. **Battery:** The function of the battery is to ensure the normal power supply to the system load when the photovoltaic power is insufficient or there is no mains power.
4. **Loads:** Various household and office loads can be connected, including refrigerators, lights, televisions, fans, air conditioners, and other AC loads.
5. **Inverter:** It is the energy conversion device of the entire system.

Actual Application Scenario Diagram:



3 Product Overview



1	Capacitive touch screen	8	Dry contact
2	LED indicator	9	Battery port (positive)
3	Terminal protection cover	10	Battery port (negative)
4	ON/OFF rocker switch	11	Photovoltaic port
5	Parallel communication port	12	AC output (L1+N+L2)
6	RS485-1 port	13	AC input (L1+N+L2+PE)
7	CAN/RS485-2 port		

4 Installation

4.1 Unpacking and Inspection

Before installation, please inspect the unit. Be sure that nothing inside the package is damaged.

You should have received the following items in the package:

- The unit × 1
- User manual × 1
- Cable lug × 2
- Parallel cable × 1
- Spare screws × 4
- Plastic expansion screws × 1
- Stainless steel expansion screws × 2

4.2 Installation Tool List

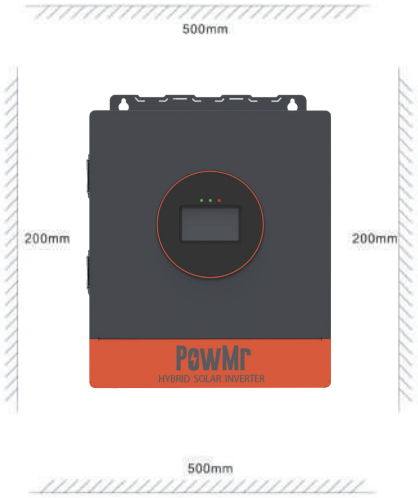
Prior to installation, prepare the following tools:

Tools			
Safety goggles 	Protective Gloves 	Safety Shoes 	Dust Mask 
RJ45 Crimping tool 	Diagonal Pliers 	Wire stripper 	DC Terminal Crimping Tool 
Hammer drill 	Mark 	Rubber Hammer 	Level 
DC Wiring Wrench 	Multimeter 	Cable Tie 	Torque Wrench 

4.3 Select the Mounting Location

This product is for indoor use only (protection level IP20). Before choosing an installation location, users should consider the following factors:

- Choose a solid wall to install the inverter on.
- Install the inverter at a height level with the line of sight.
- Ensure adequate clearance around the inverter: at least 200 mm on both sides and 500 mm at the top.
- Operating environment temperature: −10°C to 55°C. Avoid direct sunlight, humidity, and dust to ensure optimal performance.



DANGER

- Do not install the inverter near highly flammable materials.
- Do not install the inverter in potentially explosive areas.
- Do not install the inverter and lead - acid batteries in an enclosed space.

WARNING

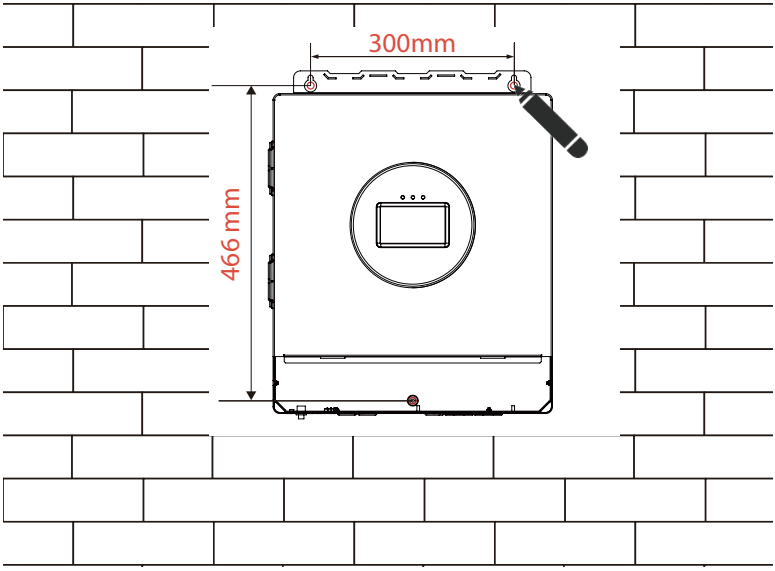
- Do not install the inverter in direct sunlight.
- Do not install or use the inverter in a humid environment.

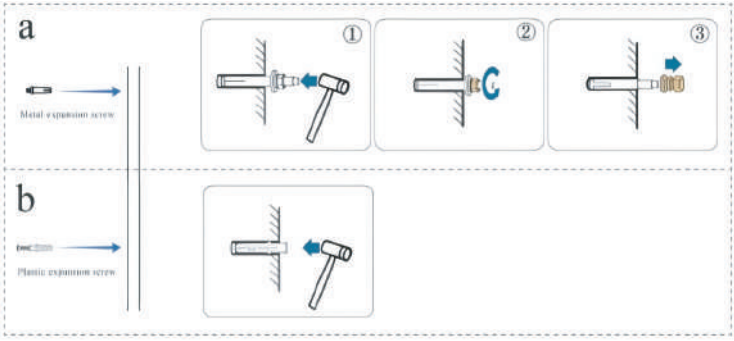
4.4 Install the Expansion Bolts

Drill three mounting holes in the wall according to the specified dimensions and the mounting holes on the inverter.

a. Drive the metal expansion bolt into the wall, tighten the nut to make the expansion bolt open its expanding feet; then remove the washer and nut.

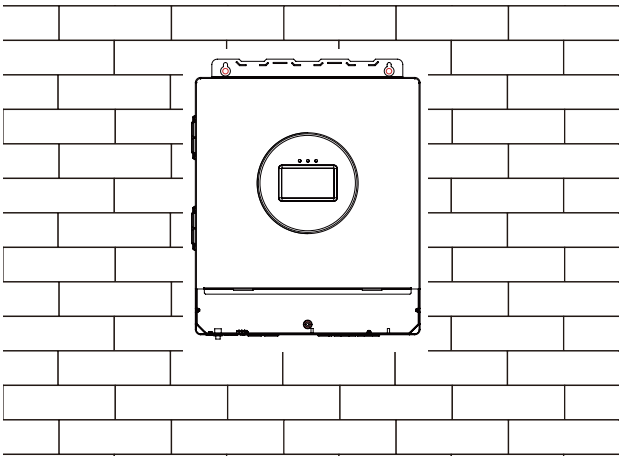
b. Drive the plastic expansion tube into the wall.





4.5 Install the Inverter

Align the inverter with the pre-drilled load-bearing wall and fix it in place. Tighten the nuts of the metal expansion bolts, then screw in the plastic expansion screws to ensure firm and reliable installation.



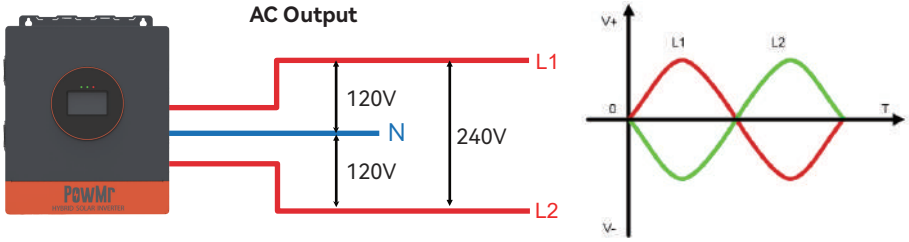


NOTICE

- When the equipment is used in areas with poor air quality, the dust filter may become clogged by airborne particles. Please clean the dust filter regularly by removing it for maintenance. This helps prevent reduced airflow inside the inverter, which could trigger over-temperature protection, affect power supply performance, and shorten the inverter's service life.

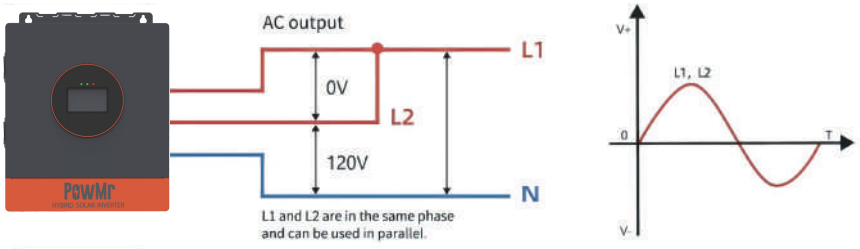
5 Wiring

5.1 Split-phase Mode



Item	Description
Applicable Models	POW-SunSmart 8KP
AC Output Phase Voltage (L - N)	100~130V, 120V default
AC Output Line Voltage (L1 - L2)	200~260V, 240V default

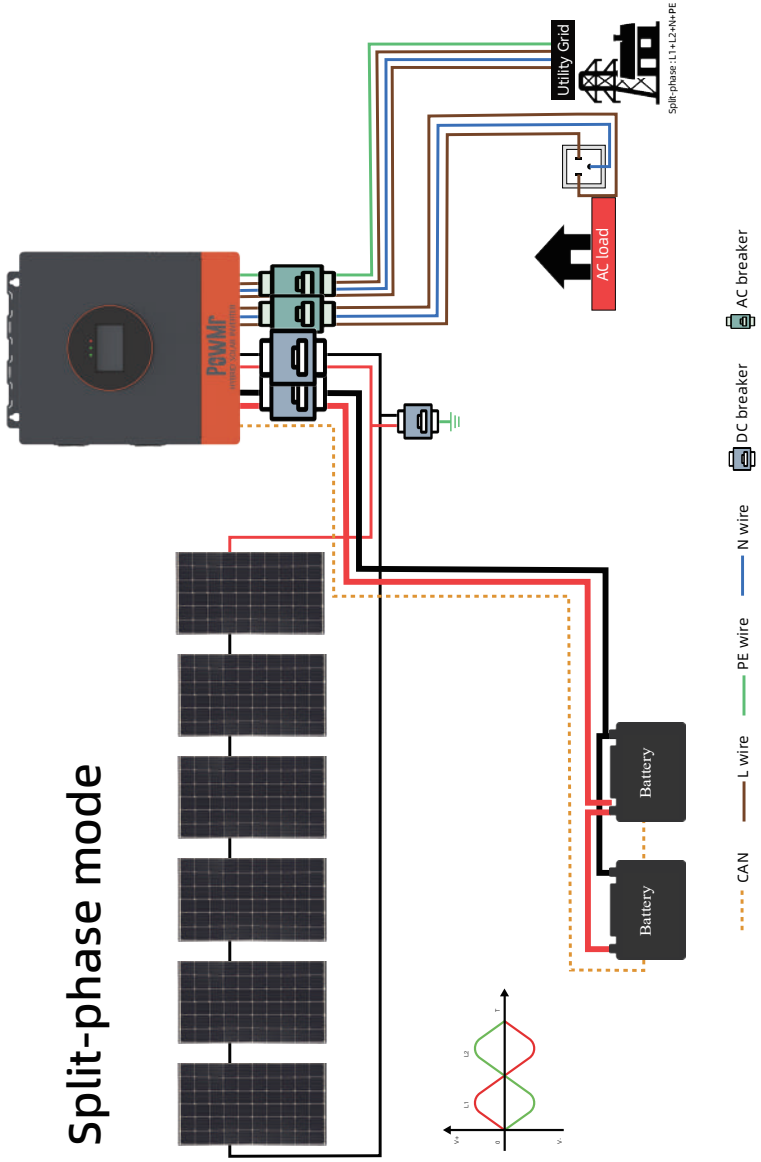
5.2 Single-phase Mode

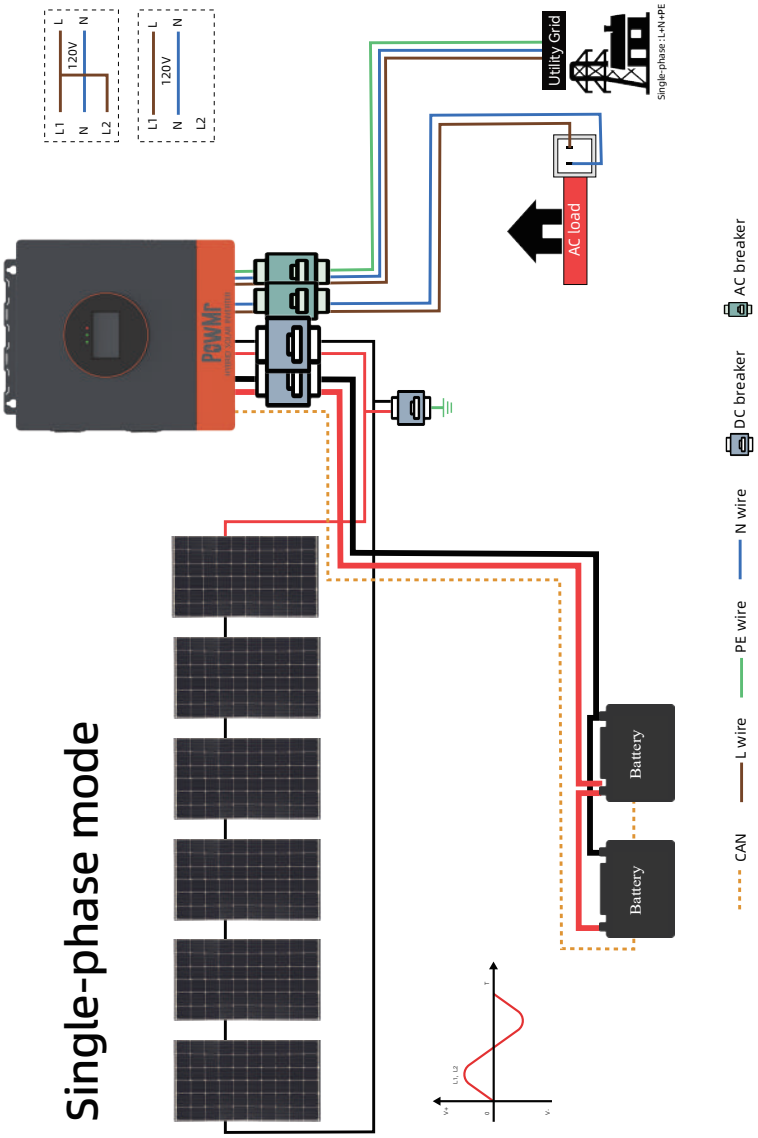


Item	Description
Applicable Models	POW-SunSmart 8KP
AC Output Phase Voltage (L - N)	100~130V, 120V default

NOTICE

- Users can change the output voltage through the setting menu.
- The output voltage can be set within the range of 100V to 130V.


Split-phase mode
Utility Grid
Split-phase: L1+L2+N+PE
AC load
Battery
Battery
AC breaker
DC breaker
N wire
PE wire
L wire
CAN


Single-phase mode
Utility Grid
Single-phase: L+N+PE
AC load
Battery
Battery
L
N
120V
L1
N
L2
L
N
120V
L1
N
L2
AC breaker
DC breaker
N wire
PE wire
L wire
CAN

5.3 Cable and Circuit Breaker Selection

- **Photovoltaic Input**

Model	Wire Diameter	Maximum Input Current	Circuit Breaker Specification
POW-SunSmart 8KP	6mm²/ 10 AWG	27A	2P-32A

- **AC Input**

Model	Input Mode	Maximum Current	Wire Diameter	Circuit Breaker Specification
POW-SunSmart 8KP	Split-phase	45A (L1/L2/N)	10mm²/ 8 AWG (L1/L2/N)	3P-50A
	Single-phase	45A (L1/L2) 90A (N)	10mm²/ 8 AWG (L1/L2) 25mm²/ 4 AWG (N)	2P-100A

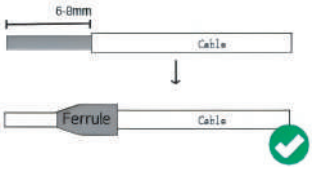
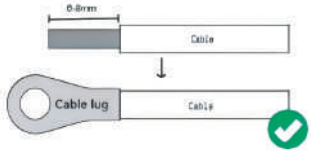
- **Battery**

Model	Wire Diameter	Maximum Current	Circuit Breaker Specification
POW-SunSmart 8KP	50mm²/ 1 AWG	120A	2P-125A

- **AC Output**

Model	Output Mode	Maximum Current	Wire Diameter	Circuit Breaker Specification
POW-SunSmart 8KP	Split-phase	45A (L1/L2/N)	10mm²/ 8 AWG (L1/L2/N)	3P-50A
	Single-phase	45A (L1/L2) 90A (N)	10mm²/ 8 AWG (L1/L2) 25mm²/ 4 AWG (N)	2P-100A

NOTICE

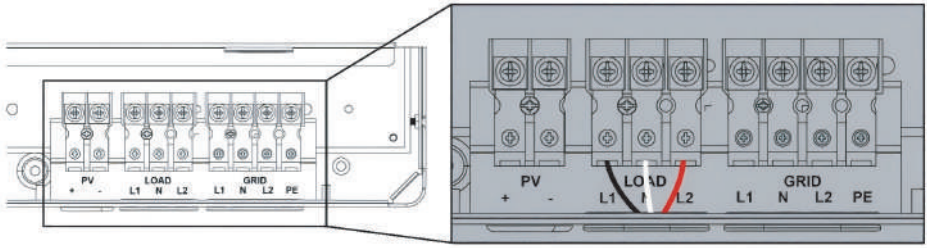
● **PV INPUT, AC INPUT, AC OUTPUT** 1. Use a stripper to remove the 6~8mm insulation of the cable. 2. Fix a ferrule at the end of the cable (the ferrule needs to be prepared by the user).	
● **BATTTERY** 1. Use a stripper to remove the 6~8mm insulation of the cable. 2. Fix the cable lugs (provided with the box) at the end of the cable.	

The wire diameter is for reference only. If the distance between the PV array and the inverter or between the inverter and the battery is long, using a thicker wire will reduce the voltage drop and improve the performance of the system.

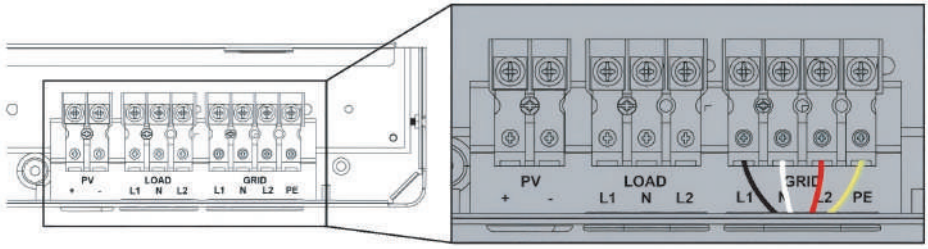
5.4 AC Input and Output Wiring

Connect the live wire, neutral wire, and ground wire according to the position and sequence of the cables shown in the following figure.

AC Output



AC Input

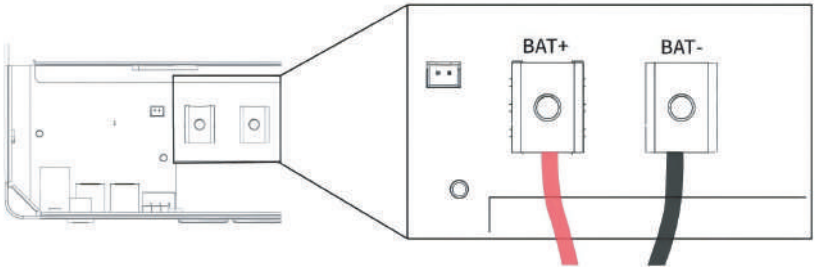


DANGER

- There must be only one neutral-to-ground connection in the system.
- Reversing the L/N wiring will cause faults or equipment damage.
- Incorrect wiring between the grid input and load output may result in faults or damage.
- Do NOT leave any terminal unconnected or improperly connected.
- Before connecting the AC input and output, turn off all breakers to avoid electric shock. Do not perform any wiring under live conditions.
- Please ensure that the cables used meet the required specifications. Undersized or poor-quality cables pose serious safety risks.

5.5 Battery Wiring

Connect the positive and negative battery cables according to the cable positions and sequence shown in the figure below.

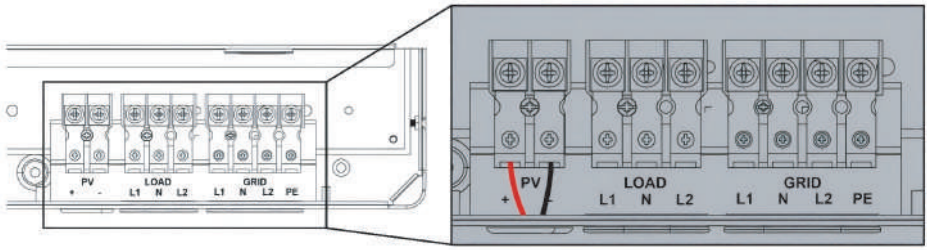


DANGER

- The lithium-ion battery must communicate properly with the inverter.
- Before connecting the battery, the circuit breaker must be disconnected to avoid the risk of electric shock. Do not operate under live conditions.
- Make sure the battery polarity is connected correctly. Reverse connection may damage the inverter.
- Check whether the cables used meet the required specifications. Undersized or poor-quality cables may pose serious safety hazards.

5.6 Photovoltaic Wiring

Connect the positive and negative wires of one PV input according to the cable positions and sequence shown in the figure below.

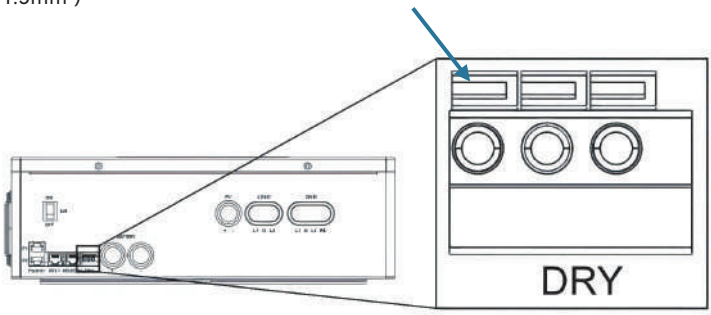


DANGER

- Before connecting the PV modules, turn off the breaker to avoid the risk of electric shock. Do not perform any wiring under live conditions.
- Ensure that the open-circuit voltage (Voc) of the PV modules connected in series does not exceed the inverter's maximum open-circuit voltage (500V); otherwise, the inverter may be damaged.
- You must measure the PV voltage first (≤ the inverter's maximum PV input voltage) before closing the PV input breaker.
- The PV modules connected to the same MPPT must have the same orientation, tilt angle, and specifications.
- Each MPPT input should have the same number of PV modules.
- The PV input ports and PV arrays must be used independently. Under no circumstances should different PV arrays or PV inputs be interconnected or shared.

5.7 Dry Contact Wiring

Use a small-sized screwdriver to push in the direction indicated by the arrow, and then insert the communication cable into the dry contact port. (The cross-sectional area of the communication cable is 0.2~1.5mm²)



5.8 Final Installation

After ensuring that the wiring is reliable and the wire sequence is correct, restore the terminal protection cover to its original position.

5.9 Inverter Start-up

Step 1: Close the battery circuit breaker.

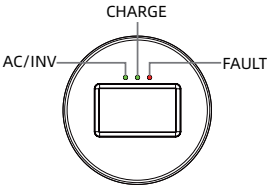
Step 2: Press the rocker switch located at the bottom of the inverter. The screen and indicator lights will illuminate, indicating that the inverter has been activated.

Step 3: Close the circuit breakers of photovoltaic, AC input and AC output in turn.

Step 4: Start the loads one by one in ascending order of power.

6 Operation

6.1 LED Indication

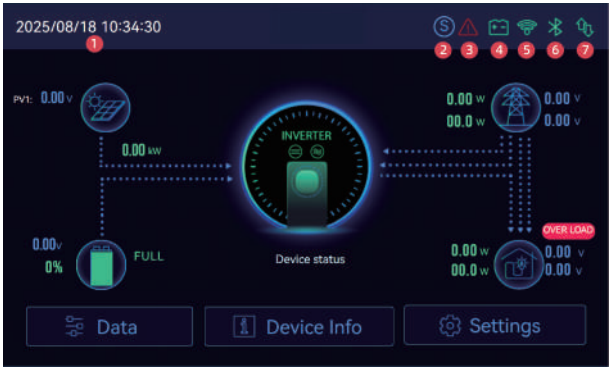


Indicator Light	Colors	Description
AC/INV	Green	Steady on: Mains bypass output
		Flashing: Inverter output
CHARGE	Green	Steady on: Charging completed
		Flashing: Charging is underway
FAULT	Red	Flashing: A fault has occurred

6.2 LCD Display and Operation

6.2.1 Home Page

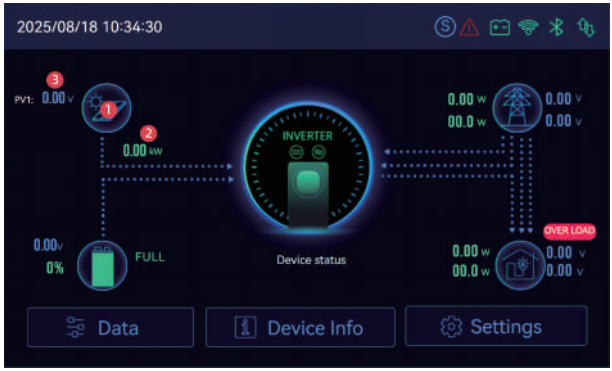
➢ **Time and Status Bar**



No.	Descriptions
1	Displays the current time on the device.
2	When the device operates in standalone mode, this icon is not displayed. In parallel mode, the icon displays “M” when the device is in master status and “S” when in slave status.

3	Device failure: This icon appears gray under normal operation and red when a fault occurs.
4	Battery BMS communication status. Icon is green when communication is normal, and gray when not connected.
5	WIFI, connection status, when the device is connected to 2.4G-WIFI, it is green, and gray when not connected.
6	Bluetooth connection status. When the APP connects to the device through Bluetooth, the icon is green and gray when not connected.
7	Equipment communication status: green when the equipment is normal, otherwise gray. (Note: When the equipment is gray, contact the staff for processing)

➢ **PV Data**



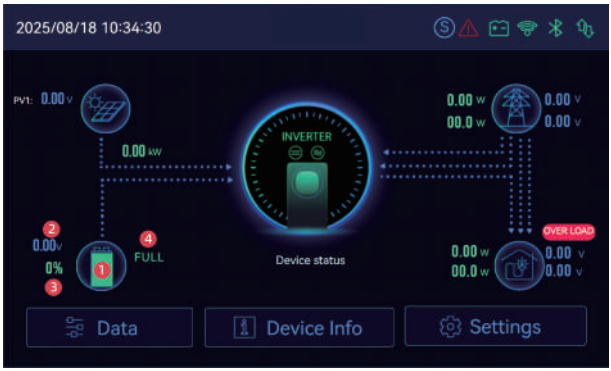
No.	Descriptions
1	Long press this icon for about 1s to enter the detailed PV data interface.
2	Real-time PV total power.
3	Real-time voltage of PV1.

➢ Grid Data



No.	Descriptions
1	Long press for about 1s to enter the detailed data interface of the power grid.
2	If the equipment is single-phase, this data shows is not available. If the device is a split-phase, the data shows the real-time power of the grid L1.
3	If the device is single-phase, this data shows the grid power. If the device is a split-phase, the data will show the real-time power of the grid L2.
4	If the device is single-phase, this data shows the grid frequency. If the device is a split -phase, the data shows the real-time voltage of the grid L1.
5	If the device is single-phase, this data shows the grid voltage. If the device is a split -phase, the data shows the real-time voltage of the grid L2.

➢ Battery Data



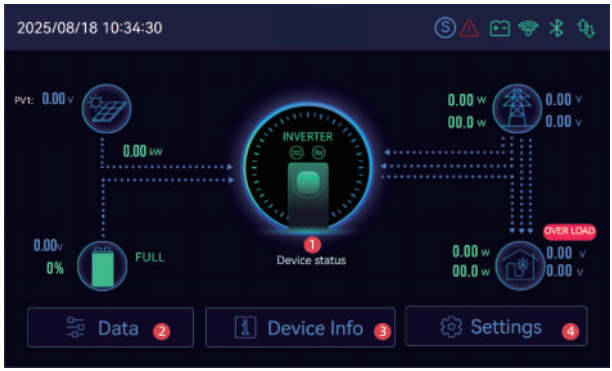
No.	Descriptions
1	Long press for about 1s to enter the detailed data interface.
2	Battery real-time voltage.
3	Percentage of battery capacity.
4	When this text is displayed, it means that the battery is full.

➢ Load Data



No.	Descriptions
1	Long press for about 1s to enter the load detailed data interface.
2	If the device is a single-phase, this data shows the real-time load voltage. If the device is a split -phase, this data shows the real-time power of load L1.
3	If the device is a single-phase, this data is not displayed. If the device is a split -phase, this data shows the real-time power of load L2.
4	If the device is a single-phase, this data shows the real time power of load. If the device is a split -phase, this data shows the real-time voltage of load L1.
5	If the device is a single-phase, this data is not displayed. If the device is a split-phase, this data shows the real-time voltage of load L2.
6	This icon appears when the device is operating under overload conditions.

➢ Operating Status and Main Menu

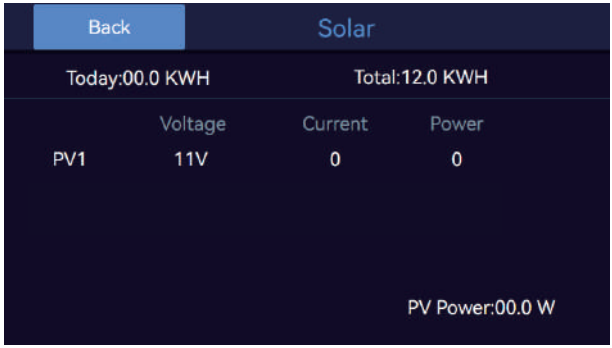


No.	Descriptions
1	The running status of the device.
2	Click this icon to enter the data menu interface.
3	Click this icon to enter the device information interface.
4	Click this icon to enter the device settings menu interface.

Press and hold the inverter icon in the center of the screen to enable the manual shutdown function. Once shut down, the inverter will stop output, and “MANUAL OFF” will be displayed in the Device State section. To restore output, press and hold the inverter icon again.

6.2.2 Real-time Monitoring

➢ **PV Data Interface**



In this interface, the upper part shows the daily PV solar panel's PV power generation and total power generation, while the lower part shows the PV voltage, current and power respectively.

➢ **Grid Data Interface**

The grid data displayed may vary depending on the equipment model.



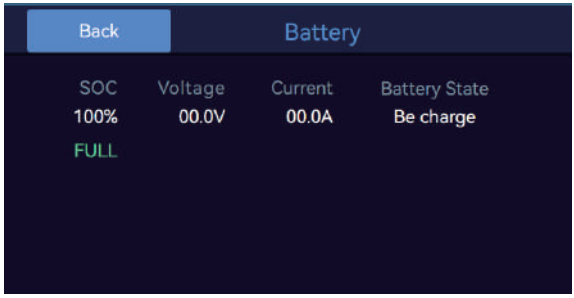
For split-phase systems, the interface will display the following information:
the voltage of L1 and L2, as well as the active power and apparent power for each phase.



For single-phase systems, the corresponding interface will be displayed.

The top section of the interface shows the daily and total grid-connected energy.

➢ **Battery Data Interface**



The battery interface displays the following data: battery capacity, voltage, current, and charge status. When “FULL” is shown, it indicates that the battery is fully charged.

➢ Load Data Interface

The load-side data, similar to the grid-side data, varies depending on the inverter model.



For split-phase inverters, the corresponding interface displays:

Active power, and apparent power for load L1 and L2, respectively, as well as the overall load rate.

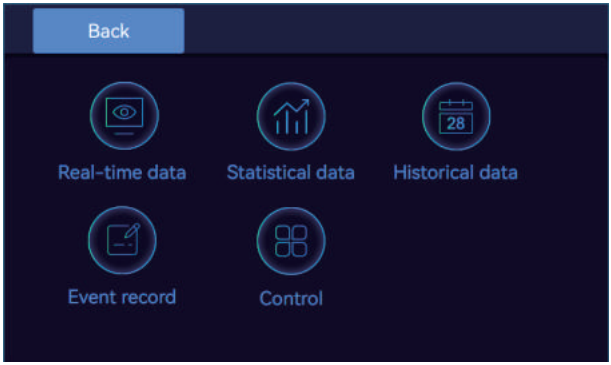


For single-phase inverters, the corresponding interface displays:

Load active power, apparent power, and load rate.

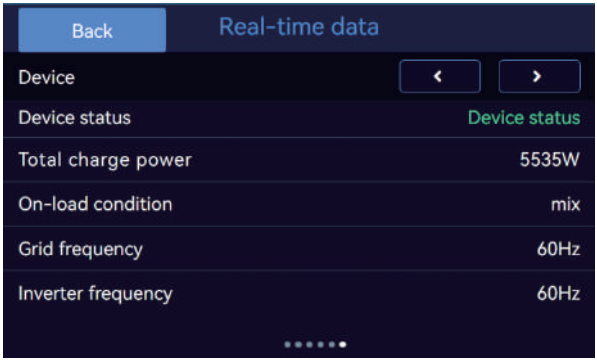
Daily and total load energy consumption (shown at the top of the interface)

6.2.3 Data Interface



Icon	Description
	Click to enter the real-time data interface
	Click to enter the statistics data interface
	Click to enter the historical data interface
	Click to enter the event record data interface
	Click to enter the control function options

➢ **Real-Time Data Interface**

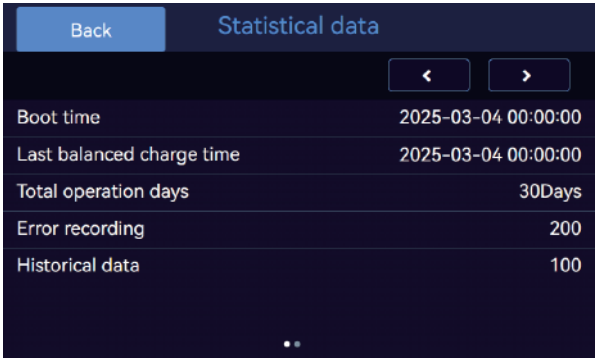


Tap "<" or ">" to turn pages. The dots at the bottom of the screen indicate the current page. When the user enters this interface, it opens on the page last viewed.

The interface is divided into 6 pages, displaying the following:

Page	Information	Interface Display Content
1	Device	Device status, total charging power, load state, grid frequency, inverter frequency.
2	Alarm	Fault information 1, Fault information 2, Fault information 3, Fault information 4.
3	Current	Average current of parallel load, PV charging current, mains charging current.
4	Temperature	PV heatsink temperature, inverter heatsink temperature, battery heatsink temperature.
5	Voltage	Total bus voltage, positive bus voltage, negative bus voltage. (By model differentiation: some models use high and low busbars only, while others use high and low busbars plus total, positive, and negative busbars.)
6	Communication status	Bluetooth status, WIFI status, cloud platform connectivity status, RS485-1 communication status, RS485-2 communication status, BMS communication status.

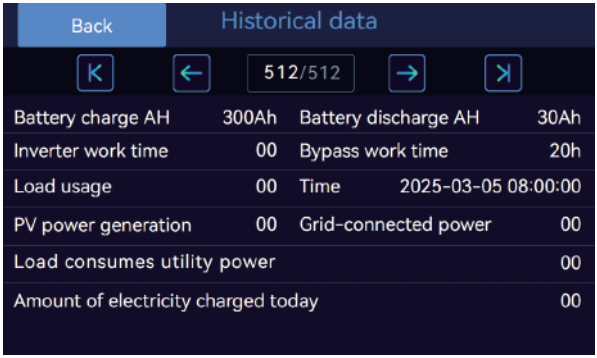
➢ Statistical Data Interface



The interface is divided into 2 pages, showing the following:

Page	No.	Parameter Name
1	1	The ampere-hours charged to the battery during the day and the total accumulated ampere-hours charged
	2	The ampere-hours discharged from the battery during the day and the total accumulated ampere-hours discharged.
	3	The inverter's operating time for the day and its total accumulated operating time.
	4	The bypass operating time for the day and its total accumulated operating time.
	5	The amount of energy charged during the day and the total accumulated charged energy.
	6	The amount of energy consumed during the day and the total accumulated consumed energy
2	7	The time when the inverter was last powered on.
	8	The time when the most recent battery equalization was performed.
	9	Total accumulated operating days of the inverter.
	10	The number of fault records stored by the inverter.
	11	The number of historical data entries recorded.

➢ **Historical Data Interface**



If there is a large amount of historical data, click the current page number and enter the desired record number using the on-screen keyboard to jump directly to that record.

No.	Parameter Name
1	The number of ampere hours charged to the battery on that day
2	The number of ampere hours discharged from the battery on that day
3	The inverter operating time on that day
4	The bypass operating time on that day
5	The total load power consumed on that day
6	Time
7	The total PV power generated on that day
8	The total grid-connected power on that day
9	The total utility charging power on that day
10	The total load power consumed from the utility on that day

➢ Event Log Interface

Click the "Event Data Record" menu to enter the event record list interface (as shown in Figure 1). Click any record in the list to jump to the details interface (as shown in Figure 2) and view the detailed information of that record.

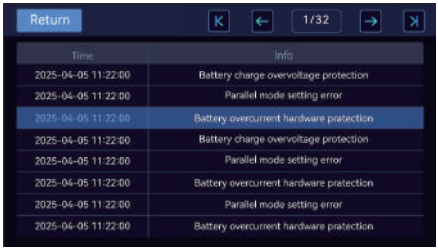


Figure 1



Figure 2

Note: If the time for a record in Figure 1 is 0, it indicates that no fault has occurred for this record.

The detailed information of the record shown in Figure 2 is as follows:

No.	Parameter Name	No.	Parameter Name
1	Error code	15	Load active power
2	Time	16	Mains charge current
3	PV1 voltage	17	Grid frequency
4	Total bus voltage	18	Inverter frequency
5	Battery voltage	19	PV radiator temperature
6	Battery current	20	Battery charge status
7	Total charge power	21	Inverter temperature
8	Battery SOC	22	PV charge current
9	Grid voltage	23	Battery temperature
10	Grid current	24	Total PV Energy
11	Inverter voltage	25	Load apparent power
12	Inverter current	26	Average current of parallel load
13	Load current	27	Device status
14	Load rate		

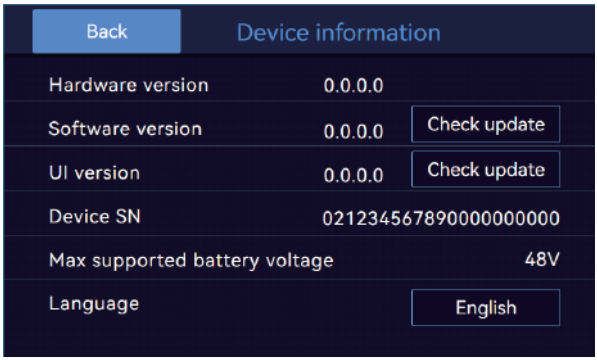
➢ Control Function



The control functions are shown in the table below. After the user clicks the ">" arrow, all functions can be executed directly upon confirmation, except for "Time setting," which will redirect to an additional interface for configuration.

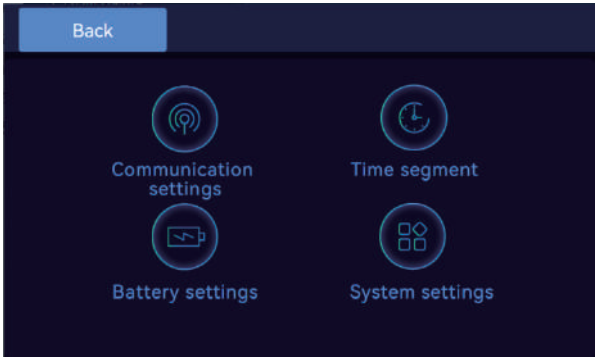
No.	Parameter Name
1	Immediate equalization charge
2	Time setting (Set the correct time zone; otherwise, time synchronization and scheduling may be affected at the next startup.)
3	Clear events
4	Clear statistics
5	Clear historical records
6	Restore factory settings
7	Reset

6.2.4 Device Information



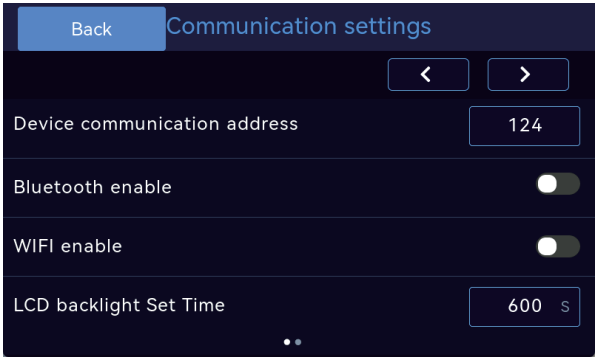
Display Text	Description
Hardware Version	Current machine hardware version number.
Software Release	Current software version of the device (To check whether the device is running the latest version, ensure that the device is in the manual shutdown state. After the device has been connected to Wi-Fi, tap the Check for Updates option on the side panel. If an update is available, the user may choose to update the current version.)
Display the screen UI version	Current inverter display UI version (To check whether the current device is running the latest UI version, ensure the inverter is in manual shutdown mode. After the device is connected to Wi-Fi, tap the “Check for Updates” option on the sidebar. If the UI version is not the latest version, the user may choose to update to the current version.)
Device SN	The current machine’s SN code.
Maximum support voltage of battery	The maximum supported battery voltage of the current machine.
Language	After clicking, users can choose the language setting of UI on the interface. Currently, Chinese, English, German, Romanian, Russian and Spanish are supported.

6.2.5 Setting Interface



Icon	Description
	After clicking, enter the communication data setting interface.
	After clicking, enter the interface of time setting for charging and discharging.
	After clicking, enter the battery parameter setting interface.
	After clicking, enter the system parameter setting interface.

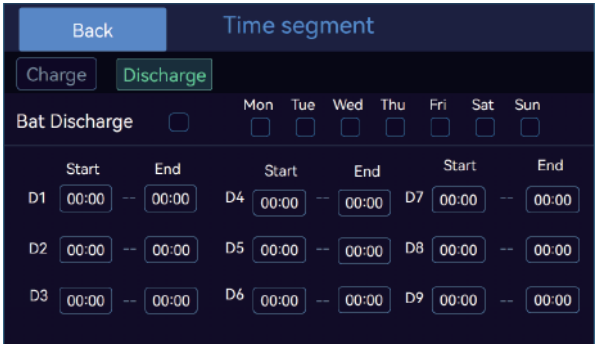
➢ **Communication Setting Interface**



In the parameter settings, selecting the input field displays the on-screen keyboard for data entry, while selecting the switch icon toggles the function on or off.

Page	No.	Parameter Name
1	1	Device communication address
	2	Bluetooth enable
	3	WIFI enable
	4	LCD backlight set time
2	5	RS485-1 communication parameter
	6	RS485-2 communication parameter

➢ Time-Slot Charging and Discharging Settings



In the time-of-use charge/discharge setting interface, the time parameters for each charge/discharge period can be set only when the corresponding enable function is active. If the enable function is not turned on, the configured period parameters will not take effect.

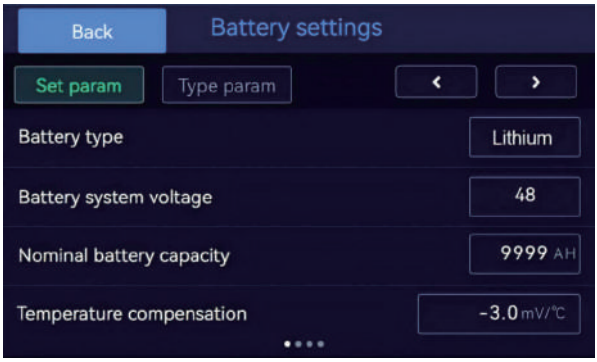
Supports switching between charge and discharge modes. Allows customization of multiple charge/discharge periods for any day of the week: after checking the desired weekday(s), set the start and end times for charging and discharging, and the system will automatically control battery charging/discharging according to the settings.

Option		NO.	Parameter name
Charge	Weekday checkboxes (Mon–Sun)	1	Time-Segmented Charging – Enable
		2	Start/End Time – Charging Stage 1
		3	Start/End Time – Charging Stage 2
		4	Start/End Time – Charging Stage 3
		5	Start/End Time – Charging Stage 4
		6	Start/End Time – Charging Stage 5
		7	Start/End Time – Charging Stage 6
		8	Start/End Time – Charging Stage 7
		9	Start/End Time – Charging Stage 8
		10	Start/End Time – Charging Stage 9
Discharge	Weekday checkboxes (Mon–Sun)	1	Time-Segmented Discharging – Enable
		2	Start/End Time – Discharging Stage 1
		3	Start/End Time – Discharging Stage 2
		4	Start/End Time – Discharging Stage 3

		5	Start/End Time – Discharging Stage 4
		6	Start/End Time – Discharging Stage 5
		7	Start/End Time – Discharging Stage 6
		8	Start/End Time – Discharging Stage 7
		9	Start/End Time – Discharging Stage 8
		10	Start/End Time – Discharging Stage 9

➢ Battery Settings

When “Setting Parameters” or “Type Parameters” is highlighted in green, it indicates that the interface is in editable mode, and parameters can be configured via drop-down lists or input fields.



■ **Setting Parameters**

Page	Setting Item	Option	Description
1	Battery type	Lead - acid	Lead - acid battery
		Lithium	Lithium battery
	Battery system voltage	48V	The voltage of the battery system is fixed at 48V and cannot be changed.
	Nominal battery capacity	1~9999AH	It can be input in the range of 1 ~ 9999AH, and step by 1 AH.
	Temperature compensation	-(3~5)mV/℃/2V	Setting range: -(3~5)mV, adjustable in 0.1 mV increments, to be configured according to the battery specifications. 0: No compensation.
2	Battery SOC of inverter to grid transfer	5~ 100%	It can be input in the range of 5 ~ 100%, and the step is 1%. Under the inverter priority mode, when the SOC capacity is less than or equal to this value, it switches to mains power.

	Battery SOC of grid to inverter transfer	10~100%	It can be input in the range of 10 to 100%, with a step of 1%. In the inverter priority mode, the SOC capacity is greater than or equal to this value and switches to inverter.
	Battery voltage of inverter to grid transfer	36~68V	It can be input in the range of 36 ~ 68V with a step of 0.1V. In inverter-priority mode, when the battery voltage is less than or equal to this value, the load will be transferred to mains power.
	Battery voltage of grid to inverter transfer	36~68V	It can be input in the range of 36 ~ 68V with a step of 0.1V. In inverter-priority mode, when the battery voltage is greater than or equal to this value, the load will be supplied by the inverter.
3	Maximum allowed charge current	0~ 120A	It can be input in the range of 0 ~ 120A, step by 1A, and set to 0 to prohibit the system from charging and discharging.
	Stop charging the current	1~ 10A	It can be input in the range of 1 ~ 10A and step 1A.
	Stop Charge SOC	50~100%	It can be input in the range of 50 ~ 100% and step 1A.
	Charge recovery SOC	5~30%	It can be input in the range of 5 ~ 30%, and the step is 1%.
4	Activation current of lithium battery	1~20A	Can be set within the range of 1–20A with 0.1A increments.
	Charging activation method	OFF (Default)	Activation prohibited (lead-acid battery only).
		PULSE	Uses intermittent control (except for lead-acid batteries).

	Discharge cut-off SOC	5~ 100%	It can be input in the range of 5 ~ 100%, and the step is 1%.
	SOC low alarm	10~ 100%	It can be input in the range of 10 ~ 100%, and the step is 1%. An alarm will be given when the set SOC capacity is reached.

■ **Type Parameters**

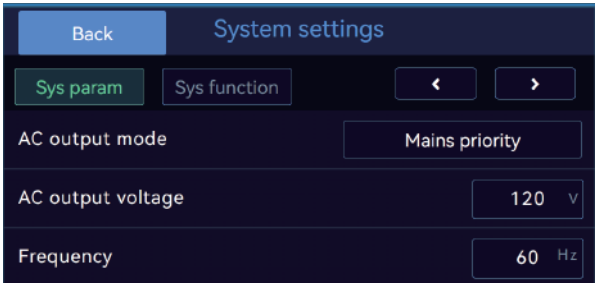
Page	Setting Item	Option	Description
1	Overvoltage threshold	36~68V	It can be input in the range of 36 ~ 68V with a step of 0.1V.
	Equalization charging voltage	36~68V	It can be input in the range of 36 ~ 68V with a step of 0.1V and is only valid when the battery type is flooded lead- acid battery, sealed lead-acid battery.
	Boost charging voltage	36~68V	It can be input in the range of 36 ~ 68V with a step of 0.1V and is valid for lithium battery types.
	Float charging voltage	36~68V	It can be input in the range of 36 ~ 68V with a step of 0.1V. This parameter cannot be set after successful BMS communication.
2	Boost charging recovery voltage	36~68V	It can be input in the range of 36 ~ 68V with a step of 0.1V.
	Battery over discharge recovery voltage	36~68V	When the battery pack voltage drops below the “over-discharge protection voltage” during discharge triggering, the inverter resets the allowable supply voltage to the preset value when the battery voltage recovers to this level during charging. The input range is 36 ~ 68V with a 0.1V step adjustment, and the

			parameter must exceed the preset "Over- discharge voltage".
	Battery under-voltage warning voltage	36~68V	When the battery voltage is lower than this voltage, the device will give an undervoltage alarm and output without shutdown. It can be input within the range of 36 ~ 68V with a step of 0.1V. It is valid for lithium battery types.
	Battery over-discharge voltage	36~68V	When the battery voltage is lower than this judgment point, and the inverter output is turned off after triggering the value of “over discharge delay”, it can be input within the range of 36 ~ 68V, step by 0.1V, and it is valid for lithium battery type.
3	Discharge limit voltage	36~68V	When the battery voltage is lower than the value of this parameter, the output is immediately turned off. The input can be in the range of 36 ~ 68V, with a step of 0.1V.
	Over-discharge time delay	0~60s	When the battery voltage is lower than the parameter "overcharge voltage", and the inverter output is turned off after triggering the delay time set by this parameter, the input range can be 0~60s, and the step is 1s. It is valid for lithium battery.
	Equalization charging time	0~300 min	Can be input in the range of 0~ 300 min, step 1 min, only when the battery type is flooded lead-acid battery and sealed lead-acid battery.

	Boost charging time	0~300 min	Refers to the continuous charging time when the voltage reaches the parameter “Boost charging voltage” and the set voltage. It can be input in the range of 0 ~ 300 min, step by 1 minute, and it is valid for battery types of lithium battery.
4	Equalization charging interval	0	Set to 0 to be off.
		1~300D(days)	It can be input in the range of 1 ~ 300 days, step by 1 day, and is only valid when the battery type is flooded lead-acid battery, sealed lead-acid battery.
	Equalization charging timeout	5~900 min	Can be input in the range of 5~900 min, step 1 min, only when the battery type is flooded lead-acid battery and sealed lead-acid battery.

➢ System Settings

When "System Parameters" or "System Functions" is displayed in green, it indicates the current interface. All parameters can be set via dropdown options and input fields.



■ **System parameter**

Page	Setting Item	Option	Description
1	AC output mode	Mains priority	Mains priority: PV supplies power to loads and the battery first. When PV is insufficient, mains power supplements; the battery only supplies power to loads when mains power is unavailable. (The battery can discharge when scheduled discharge function is enabled) Priority: Photovoltaic > Mains power > Battery
		Inverter priority	Inverter priority: Switch to mains power with load only when the battery voltage falls below the set value of parameter [Battery-to-utility voltage point]. When the battery voltage exceeds the set value of parameter [Utility-to-Battery voltage point] or is fully charged, switch back to inverter with load from mains power Inverter first. Priority: Photovoltaic > Battery > Mains power

	AC output voltage	100V-130V	It can be input in the range of 100~130V with a step of 1V.
	Frequency	45 ~ 65Hz	It can be input in the range of 45~65Hz and step 1Hz.
2	Parallel mode	Single	Select this mode when the inverter is operating as a standalone unit (no parallel connection).
		Split-phase master	Select this mode on the master inverter when configuring a split-phase parallel system.
		Three-phase master	Select this mode on the master inverter when configuring a three-phase parallel system.
		Slave	Select this mode on slave units in a split-phase parallel system or on slave units in a three-phase parallel system.
	Parallel phase	A Phase	Defines the grid phase to which this inverter is connected in a parallel system. Please configure according to the actual wiring to ensure system balance and synchronization. For Split-Phase Systems: If the system is configured for split-phase, all inverters should be uniformly set to A Phase. For a three-inverter three-phase parallel system: If the inverter's output terminals L1 and L2 are connected to the grid phases A and C, set this unit to A Phase.
		B Phase	
		C Phase	

			If the inverter's output terminals L1 and L2 are connected to the grid phases A and B, set this unit to B Phase. If the inverter's output terminals L1 and L2 are connected to the grid phases B and C, set this unit to C Phase.
	Battery parallel mode	Unified	Select this option when multiple parallel inverters share one battery bank or a common DC bus.
		Independent	Select this option when each inverter is equipped with an independent battery bank and the DC sides are not interconnected.
3	Battery charging mode	Hybrid	PV charging is prioritized. When PV power is insufficient, the system switches to mains power. During inverter operation, only PV charging can be enabled.
		PV only	PV charging only. Mains charging is disabled.
	Charge current limit	SET	The maximum battery charging current shall not exceed the lower of the configured Battery Maximum Charging Current and the BMS current limit.
		BMS (Default)	
		INV	
	Mains charging current limit	0 ~ 100A	It can be input in the range of 0 ~ 100A and step 1A.
4	BMS protocol	PYLON	This item is set to Pylon by default
		DYNESS	Selecting this option indicates that the DYNESS communication protocol is selected.
	PV output priority	Load priority	In this mode, the PV output gives power to the load first
		Charge priority	In this mode, the PV output charges the battery first

	BMS communication fault shutdown	Enable (Default)	When the communication abnormal shutdown switch is enabled, the machine shuts down with BMS Communication Fault if communication is lost, and runs normally under normal communication.
		Disable	If the communication abnormal shutdown switch is not enabled, the unit will report fault 58 (BMS Communication Fault) and operate under non-communication mode when communication is lost. When communication is established, the unit runs in normal communication mode.
5	AC input mode	APL	The input voltage range is 90 ~ 140V.
		UPS	The input voltage range is 90 ~ 140V.
	Grid type (only displayed on the split-phase inverter)	240/120 (L1-L2 180°)	Select this option for standard split-phase applications. This is the default setting for split-phase output operation.
		208/120 (L1-L2 120°)	Select this option when split-phase units are connected in parallel to form a three-phase output system. This setting is only applicable in three-phase configurations.
		120/120 (L1-L2 0°)	Select this option when operating a split-phase unit in split-phase mode to obtain full power output on a single phase. In this mode, terminals L1 and L2 must be short-circuited. Parallel operation is not allowed under this setting.

■ **System function**

Page	Setting Item	Option	
1	NPE ground wire shorting function	Enable	
		Disable	
	Energy saving mode	Enable	If the Energy-Saving mode is enabled and the output active power remains below 50 W for five consecutive minutes, the inverter will enter Energy-Saving mode by disabling the inverter output. After 30 minutes, the inverter will automatically resume output and continue monitoring the load power. To exit Energy-Saving mode within this 30-minute period, there are two options: 1. Disable the Energy-Saving function. 2. Power the unit off and on again.
		Disable	
	Automatic restart after overload	Enable	
		Disable	
	Automatic restart after over-temperature	Enable	
		Disable	
2	Buzzer alarm	Enable	
		Disable	
	Mode shift alerted	Enable	
		Disable	
	Overload bypass function	Enable	
		Disable	

6.3 Fault Information

Fault Codes	Description	Fault Codes	Description
1	Battery voltage low	29	Battery SOC is below the alarm value (Effective after successful BMS communication)
2	Battery over current software	30	Battery SOC is below the discharge cutoff set value (Effective after successful BMS communication)
3	Battery no connect	31	Battery Discharge Disabled (Effective after successful BMS communication)
4	Battery undervoltage stops discharging	32	Parallel control CAN communication failure
5	Battery overcurrent hardware protection	33	Parallel CAN communication failure
6	Battery charge overvoltage protection	34	Parallel communication address setting error
7	Bus overvoltage hardware protection	35	Parallel current sharing fault
8	Bus overvoltage software protection	36	Parallel mode, battery voltage difference is large
9	PV overvoltage protection	37	the mains input source is inconsistent
10	PV Boost overcurrent software protection	38	Parallel mode, hardware sync signal failure
11	PV Boost overcurrent hardware protection	39	Abnormal DC component of inverter voltage
12	SPI communication error	40	Parallel program versions are inconsistent
13	Bypass overload protection	41	Parallel wiring fault
14	Inverter overload protection	42	Serial number is not set at the factory

15	Inverter overcurrent hardware protection	43	Parallel mode setting error
16	Slave chip request shutdown fault	44	Battery voltage is lower than discharge limit voltage
17	Inverter short circuit protection	45	Battery radiator over-temperature protection
18	Bus soft start fault	46	Overload warning
19	PV radiator over-temperature protection	47	Battery discharge current overcurrent
20	Inverter radiator over-temperature protection	48	Leakage current protection
21	Fan fault	49	PV insulation protection
22	Memory fault	58	BMS communication failure
23	Model setting error	59	BMS Error
24	Positive and negative bus voltages are unbalanced	60	BMS low temperature alarm (Effective after successful BMS communication)
25	Bus short circuit	61	BMS over temperature alarm (Effective after successful BMS communication)
26	Inverter AC output is fed back to bypass AC output	62	BMS overcurrent alarm (Effective after successful BMS communication)
27	Mains input phase error	63	BMS undervoltage alarm (Effective after successful BMS communication)
28	Bus voltage low protection	64	BMS overvoltage alarm (Effective after successful BMS communication)

NOTICE

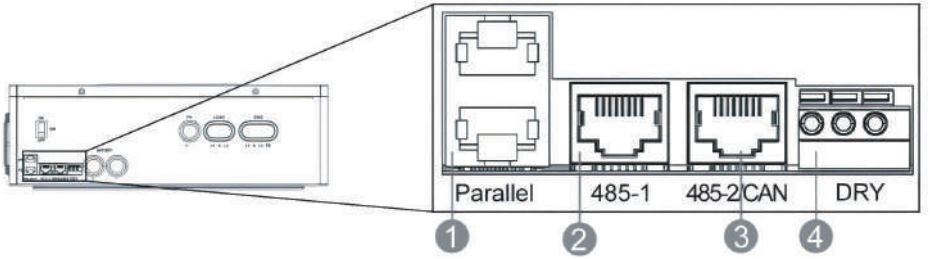
- This manual only lists some of the inverter fault codes. As inverter fault diagnosis involves multi-dimensional hardware detection, software logic interaction and operating condition adaptation, certain low-probability faults, deep-seated faults requiring professional diagnostic tools, and associated faults linked with supporting equipment are not included in this manual temporarily.
- Troubleshooting and resolution of such faults must be performed by our company's authorized professional technicians using dedicated diagnostic tools and background systems. Do not attempt any operation by yourself, so as to avoid equipment damage or potential safety hazards.

Notes:

1) OTA Update: The device cannot perform OTA update when it is in the following states: Mains Operation, Inverter Operation, Inverter-to-Mains Switching, Mains-to-Inverter Switching, PV Charging Only, or Fault.
   Solution: For UI version 1.3.0.7 and above, long-press the large icon on the main interface to manually shut down the device before proceeding with the update.
2) When Setting Charging Current: The set value of mains charging current must always be less than the set value of maximum charging current.
3) In Fault State: When modifying parameters in general settings, a secondary confirmation is required.
4) In Parallel Operation State (Device as Master Unit): The device does not allow parameter modification when it is in the following states: Mains Operation, Inverter Operation, Inverter-to-Mains Switching, Mains-to-Inverter Switching, or PV Charging Only.
5) In Parallel Operation State (Device as Slave Unit): The device does not allow parameter modification when it is in the following states: Mains Operation, Inverter Operation, Inverter-to-Mains Switching, Mains-to-Inverter Switching, or PV Charging Only. In other states, only the following three parameters can be modified: [Parallel Operation Mode], [Grid Type], and [Parallel Operation Phase].
6) "Output frequency" and "Factory reset" can only be modified under "Fault" or "Manual stop" states; modification is not allowed under other equipment states.

7 Communication

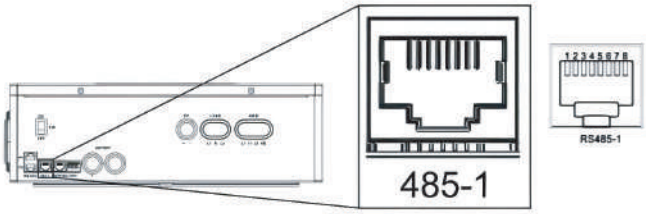
7.1 Overview



1	Parallel port	3	CAN/RS485-2 port
2	RS485-1 port	4	Dry contact

7.2 RS485-1 Port

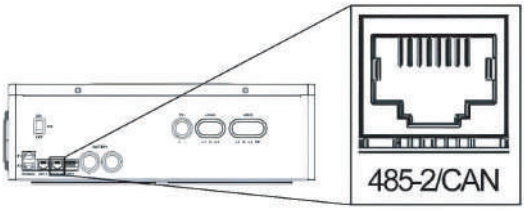
The RS485-1 port serves as a data expansion port.

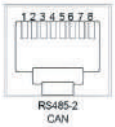


RJ45	Definition
Pin 1	5V
Pin 2	GND
Pin 3	/
Pin 4	/
Pin 5	/
Pin 6	/
Pin 7	RS485-A
Pin 8	RS485-B

7.3 CAN/RS485-2

The CAN/RS485-2 port can be used to connect to the BMS (Battery Management System) of lithium-ion batteries.





RJ45	Definition
Pin 1	5V
Pin 2	GND
Pin 3	/
Pin 4	CANH
Pin 5	CANL
Pin 6	/
Pin 7	RS485-A
Pin 8	RS485-B

When the communication cable is correctly connected and the protocol matches, communication is successful, and the battery icon in the upper-right corner of the inverter display will be illuminated, as shown in the figure.

If the communication cable is not connected, connected incorrectly, the communication protocol does not match, or the cable is unplugged after connection, communication fails, and the communication status icon in the upper-right corner will be illuminated, as shown in the figure.



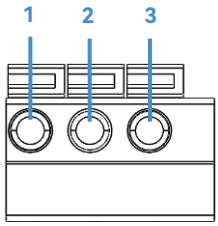


NOTICE

- If you need the inverter to communicate with the lithium battery BMS, please contact us to learn about the communication protocol or upgrade the inverter to the corresponding software program.
- If you use a common RJ45 network cable, please check the pin definition. Pins 1 and 2 typically need to be cut off for normal operation.

7.4 Dry Contact Port

Dry Contact Signal



Function	Description
Generator Remote Start/Stop	When the battery voltage reaches the undervoltage alarm level or the voltage point for battery to mains switching, Pin 2 to Pin 1 is in normally open (NO) state, and Pin 3 to Pin 1 is in normally closed (NC) state. When the battery voltage reaches the voltage point for mains-to-battery switching or the battery is fully charged, Pin 2 to Pin 1 is in normally closed (NC) state, and Pin 3 to Pin 1 is in normally open (NO) state. (Pins 1/2/3 output 125V/1A, 230V/1A, 30V/1A respectively).

NOTICE

- If you need to use the remote start/stop function of the generator with dry contacts, please ensure that the generator is equipped with an ATS and supports remote start/stop.

7.5 Bluetooth

The inverter has a built-in Bluetooth module, which can be connected to the EnerWise APP (EnerWise APP can be downloaded from the website or contact us to obtain the installation package.)

iOS

Android

Chinese Android

7.6 WIFI

To connect to Enerwise Cloud Platform, set up the network via the APP.

Note: When setting the WiFi name within the app, the WiFi name must consist of English letters and numbers (name length < 32 characters) and cannot contain Chinese characters or special symbols. The password must consist of English letters and numbers (password length ≥ 8, < 16 characters) and cannot contain Chinese characters or special symbols.

For stable communication, ensure the home Wi-Fi operates on 2.4GHz and support WPA2 protocol. 5GHz is not supported.

8 Protection Function

8.1 Protective Features

No	Protective features	Instructions
1	PV Current Limiting Protection	When the charging current or power of the configured PV array exceeds the rated current or power of the inverter, it will be charged at the rated current or power.
2	PV Overvoltage Protection	If the PV voltage exceeds the maximum allowed by the hardware, the machine will report a fault and stop the PV boost to output a sinusoidal AC wave.
3	Night Anti-Backflow Protection	At night, because the battery voltage is higher than the voltage of the photovoltaic module, it will prevent the battery from discharging to the photovoltaic module.
4	AC Input Overvoltage Protection	When the mains voltage exceeds 140V per phase, the mains charging will be stopped and the inverter output will be switched.
5	AC Input Undervoltage Protection	When the mains voltage per phase voltage is lower than 90Vac, the mains charging will be stopped and the inverter output will be switched.
6	Battery Overvoltage Protection	When the battery voltage reaches the over-voltage disconnect voltage point, the PV and the mains will automatically stop charging the battery to prevent the battery from being damaged by overcharging.
7	Battery Undervoltage Protection	When the battery voltage reaches the low voltage disconnect voltage point, the battery will automatically stop discharging to prevent the battery from being damaged by excessive discharge.

8	Battery Overcurrent Protection	After the battery current exceeds the range allowed by the hardware, the machine will turn off the output and stop discharging the battery.
9	AC Output Short-Circuit Protection	When a short circuit fault occurs at the output end of the load, the output AC voltage will be turned off immediately, and the output will be output again after 1 minute. If the output load is still in a short circuit state after 3 attempts, the short circuit fault of the load must be eliminated first and then manually powered on again to restore the normal output.
10	Heat Sink Overtemperature Protection	When the internal temperature of the inverter is too high, the inverter will stop charging and discharging; when the temperature returns to normal, the inverter will resume charging and discharging.
11	Overload Protection	After overload protection is triggered, the inverter will resume output after 3 minutes. If overload occurs 5 times consecutively, the output will be shut down until the inverter is restarted. (102% < Load < 110%) ±10%: Fault, output will be shut down after 5 minutes.
12	AC Backfeed Protection	Prevent the battery inverter AC from backflow to the bypass AC input.
13	Bypass Overcurrent Protection	Software detection.
14	Bypass Wiring Error Protection	When the phase of the bypass input differs from that of the inverter's split-phase output, the inverter will block the bypass switchover to prevent load power failure or short circuit during the transition.

9 Product Maintenance

9.1 Troubleshooting

Trouble Codes	Meaning	Reasons	Solutions
/	The screen is not displaying	No power input, or device switch is not turned on.	Check whether the battery circuit breaker or PV circuit breaker is closed. The switch is in the "ON" state
01	Battery voltage low	The battery voltage is lower than the value set in the "battery under-voltage warning voltage" parameter.	Charge the battery until the battery voltage is higher than the value set in the parameter.
03	Battery no connect	The battery is not connected, or the lithium battery BMS is in discharge protection mode.	1. Check that the battery is reliably connected; 2. Check that the battery's circuit breaker is closed; 3. Make sure the BMS of the lithium-ion battery can communicate normally.
04	Battery undervoltage stops discharging	The battery voltage is lower than the value set in over discharge voltage.	1. Manual reset: Turn off the power and restart 2. Automatic reset: Charge the battery so

			that the battery voltage is higher than the value set in the parameter "Overcharge Return Voltage"
06	Battery charge overvoltage protection	The battery is overvoltage.	Manually turn off the power and restart it. Check whether the battery voltage exceeds the limit. If so, discharge the battery until the voltage is below the over voltage of the battery.
13	Bypass overload protection	The bypass output power or output current is overloaded for a certain period of time.	Reduce the load power and restart the device. Refer to item 11 in Protection Features for more details.
14	Inverter overload protection	The output power or output current of the inverter is overloaded within a certain period.	
19	PV radiator over-temperature protection	The temperature of the photovoltaic radiator exceeds 80℃ for 3s.	When the temperature of the radiator cools below the over-temperature recovery temperature, normal charging and discharging are resumed.
20	Inverter radiator over-temperature protection	The temperature of the inverter heat sink exceeds 80° C for 3s.	

21	Fan fault	The hardware has detected a fan failure.	After shutting down the system, manually start the fan and check for any foreign objects obstructing it.
26	Inverter AC output is fed back to bypass AC output	The AC output relay is stuck.	Restart manually, if the fault occurs again after restarting, you will need to contact after-sales service to repair the machine.
27	Mains input phase error	Phase mismatch detected between AC input and output.	Ensure that the AC input phase configuration matches the AC output phase configuration. For example, if the output is configured for split-phase operation, the input must also be in split-phase mode.

9.2 Maintenance

To maintain optimal long-term performance, it is recommended to perform the following checks twice a year:

1. Ensure that airflow around the inverter is not obstructed, and remove any dirt or debris from the radiator.
2. Inspect all exposed wiring for damage caused by sun exposure, friction with surrounding objects, dry rot, or insect or rodent activity. Repair or replace any damaged wiring as necessary.
3. Verify that the display and instructions are consistent with the actual operation of the equipment. Pay attention to any faults or incorrect displays, and take corrective action if necessary.
4. Check all terminals for signs of corrosion, insulation damage, high temperature, or burning/discoloration, and tighten the terminal screws.
5. Check for dirt, nesting insects, and corrosion. Clean the insect netting regularly as needed.
6. If the lightning arrester has failed, replace it promptly to prevent lightning damage to the inverter or other user equipment.

DANGER

- Prior to any inspection or operation, it is essential to disconnect the inverter from all power sources and ensure that internal capacitors are fully discharged to prevent the risk of electric shock.

The following causes of machine issues are not covered under the standard warranty:

1. The product is beyond the warranty period (except for extended warranty services agreed upon by both parties);
2. Failures or damages resulting from failure to follow the product instructions or installation and maintenance requirements, or caused by operating, storing, or using the product in an environment that does not meet the specified conditions — such as improper installation distance, inadequate ventilation, or failure to use waterproof caps correctly;
3. Unauthorized disassembly, repair, or modification of the product;
4. Products obtained through unauthorized channels;
5. Failures or damages caused by unforeseeable circumstances, human factors, or force majeure

events, such as storms, floods, lightning strikes, overvoltage, insect infestation, or fire;

6. Unauthorized design changes, modifications, or part replacements;
7. Intentional damage, defacement, permanent markings, or theft;
8. Normal wear and tear;
9. Failure to use the product in accordance with applicable safety standards (e.g., VDE standards);
10. Any other failures or damages not caused by product quality issues;
11. Damage incurred during transportation (including scratches on the casing caused by movement of the packaged product during transit);
12. Rust or corrosion of the enclosure due to exposure to harsh environmental conditions.

10 Specifications

Model Number	POW-SunSmart 8KP
Inverter Output	
Rated Output Power	8000 W
Max. Peak Power	16000 W
Rated Output Voltage	120/240V（Single-phase/Split-phase）
Rated Frequency	50/60Hz
Output Waveform	Pure sine wave
Switching Time	Typical Value:10ms, Max Value for Single Machine: 15ms, Max Value For Parallel Machine: 30ms
Total Voltage Total Harmonic Distortion (THDv)	<3% (Rated power)
DC Current Output	<0.5% x Rated current
Battery	
Battery Type	Lithium-ion battery/lead-acid battery
Rated Battery Voltage	48Vdc
Battery Voltage Range	40~60Vdc
Max. Charging Current	120A
Max. Discharging Current	120A
Max. mains/generator charging current	100A
PV Input	
Number of MPPT	1
Max. Input Power	10500 W
Max. Input Current	27A
Max Input Short-Circuit Current	40A
Max. Open Circuit Voltage	500Vdc
MPPT Rated Voltage	375Vdc
MPPT Start-Up Voltage	100Vdc
MPPT Operating Voltage Range	125~425Vdc

Mains/Generator Input	
Input Voltage Range	90~280Vac
Input Frequency Range	60/55~65Hz
Bypass Overload Current	45A
Efficiency	
MPPT Tracking Efficiency	99%
Max. Efficiency of Battery Inverter	93%
Universal	
Dimensions (H*W*D)	472*412*130mm
Net Weight	16kg
Level of Protection	IP20
Ambient Temperature	-10~55℃,>45℃ derating
Noise	≤45dB @25℃(77℉)
Cooling Method	Intelligent Air Cooling
Warranty Time	1 Year
Communication	
Communication Method	WIFI/Bluetooth/RS485/CAN

11 Parallel Installation and Wiring

11.1 Introduction

- Before parallel operation, ensure that the inverter software is updated to the latest version.
- A maximum of six inverters can be connected in parallel.
- When using the parallel function, ensure that the parallel communication cables are correctly and securely connected.
- Recommended cable specifications for parallel connection:
  - RJ45 connector (8-pin modular plug)
  - Length: 2 meters
  - Cat-6 shielded twisted-pair cable (with ferrite bead shielding)

  The following diagram illustrates the connection cable:

Parallel communication line*1:



11.2 Wiring Guidelines for Parallel Systems

1. PV wiring:

When connecting in parallel, each inverter must be connected to a separate PV array or PV source. The same PV source must not be connected to multiple inverters.

2. Battery cable connection:

In both split-phase and three-phase parallel configurations, all inverters must be connected to the same battery system. Connect BAT+ to BAT+ and BAT− to BAT− across all units. Before powering on the system, ensure that the wiring is correct, and that cable length and diameter are consistent, to avoid abnormal output operation in the parallel system.

3. AC OUT connection:

a. Split-Phase Parallel Wiring

When connecting in split-phase parallel mode, connect all inverters' L1 terminals together, all L2 terminals together, N to N, and PE to PE. Ensure all connections are correct and that wiring length and conductor size are consistent before powering on, to prevent incorrect wiring that could cause abnormal operation of the parallel system.

b. Three-Phase Parallel Wiring

For three-phase parallel systems, connect all inverters' N to N and PE to PE. Inverters assigned to the same phase must have their L lines connected together. Do not connect L lines between different phases. All other precautions are the same as for split-phase connections.

4. AC IN connection:

a. Split-Phase Parallel Wiring

For split-phase parallel systems, connect N to N and PE to PE. L1 terminals of all inverters must be connected to the L1 phase, and L2 terminals must be connected to the L2 phase. Ensure all connections are correct before powering on, and that wiring lengths and wire gauges are uniform to prevent abnormal operation of the parallel system.

Do not connect multiple AC input sources simultaneously, as this may damage the inverters or other connected equipment. AC input sources must maintain consistent and unique configurations.

b. Three-Phase Parallel Wiring

For three-phase parallel systems, connect N to N and PE to PE. L lines of inverters in the same phase must be connected together. Do not connect L lines from different phases.

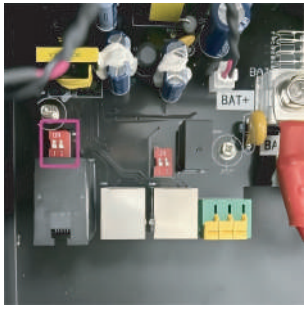
5. Parallel communication cable wiring:

Communication cables should be connected according to the split-phase or three-phase parallel configuration. Each inverter must follow a one-in-one-out daisy-chain connection: the male connector (OUT) of one device must be connected to the female connector (IN) of the next. Reversing this order is not allowed.

All communication cables must be securely fastened with screws to prevent loosening or poor contact, which could lead to system malfunctions or equipment damage.

Reminder: Set the parallel communication DIP switch of the first and the last inverter to the ON position, and set the corresponding DIP switches of the two intermediate inverters to the OFF position. Switches in the ON position correspond to address 1, while switches in the OFF position correspond to address 0.

Parallel Communication Port DIP Switch



11.3 Split-phase Parallel Machine Connection Guide Diagram

1. The diagram for the connection of communication cables for inverter parallel operation is as follows:

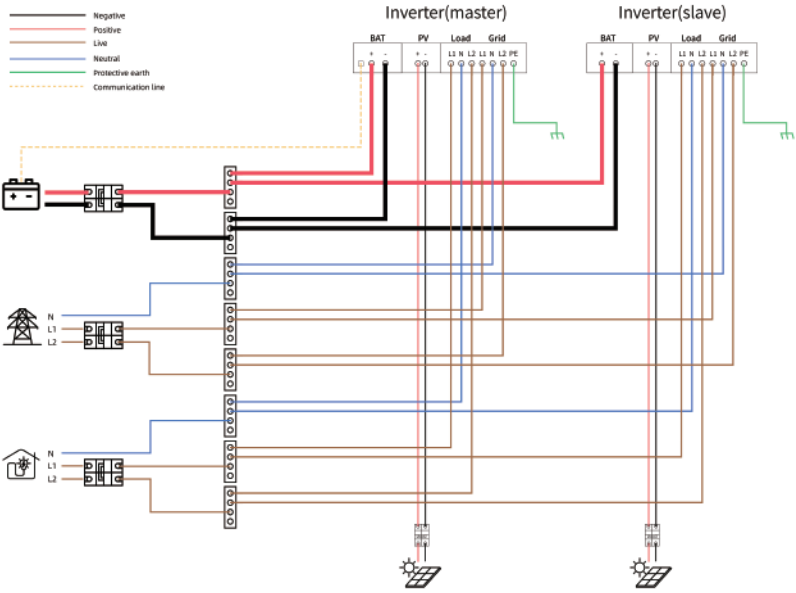


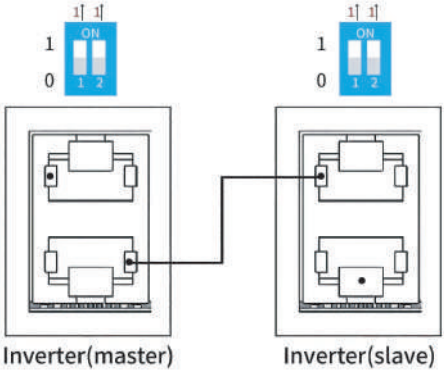
DANGER

- Read the instruction manual carefully and follow the guidelines strictly before parallel connection!

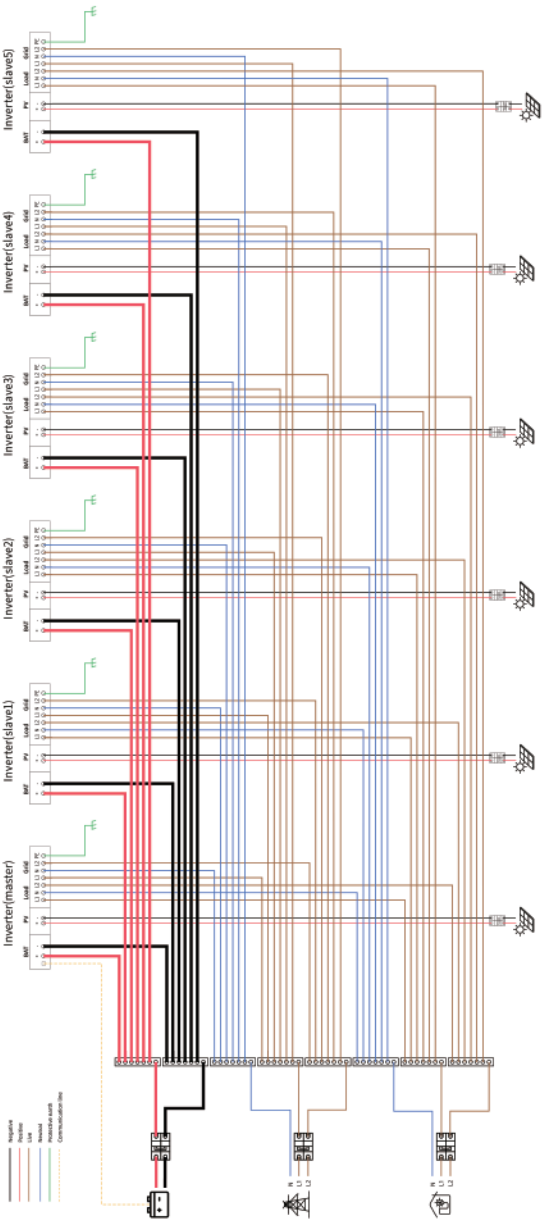
2. When multiple units are connected in parallel, the connection diagram is as follows:

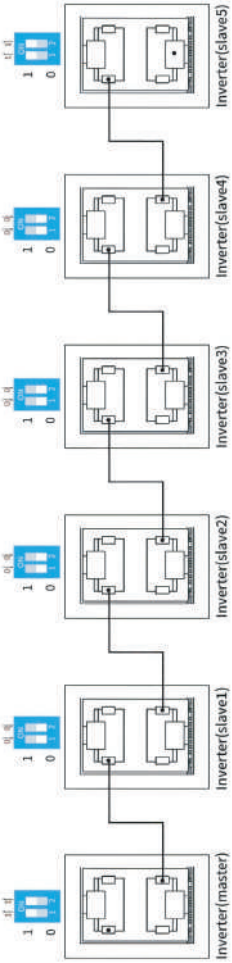
   a. Two inverters connected in parallel





b. Parallel Connection System with Six Inverters:





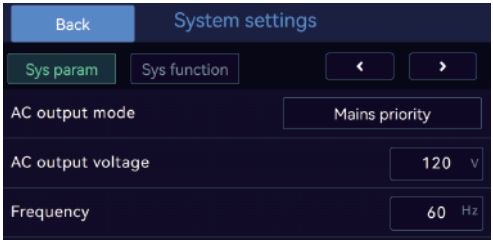
3. Split-Phase Parallel Connection UI Operation Steps:

The following operations must be performed using only battery power after all cables are connected. All other circuit breakers must remain off.

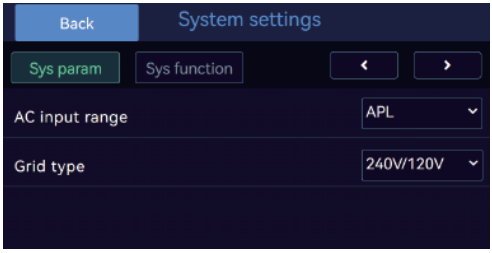
First, turn on the master unit's rocker switch while keeping the slave units off to configure the parallel settings on the master.

1) Verify that both the UI and software versions are the latest.

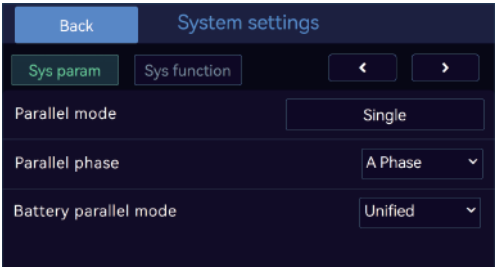
2) Ensure the AC output voltage and frequency match the local utility grid.



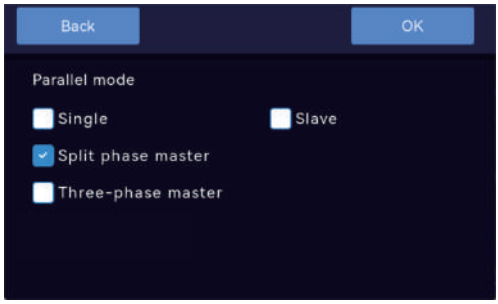
3) Set Grid Type to 240V/120V (L1-L2 180°).



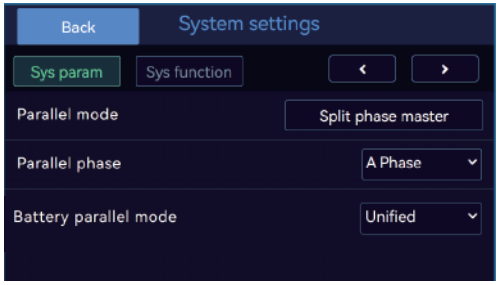
4) To change the parallel mode, parallel phase and Battery parallel mode. navigate to: Settings > System Settings > System Parameters



Navigate to: Settings > System Settings > System Parameters > Parallel Mode, and select “Split Phase Master”.



Navigate to: Settings > System Settings > System Parameters > Parallel Phase, and select 'A Phase', > Battery parallel mode, and select 'Unified'.



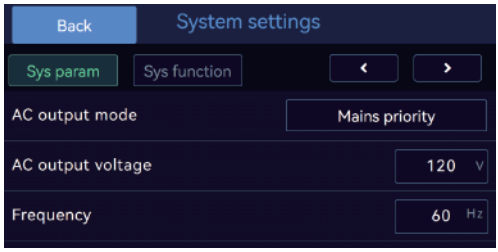
NOTICE

- After completing the above steps and returning to the main interface, if the inverter reports a parallel fault, this is normal because the other parallel units are not powered on. No action is required.

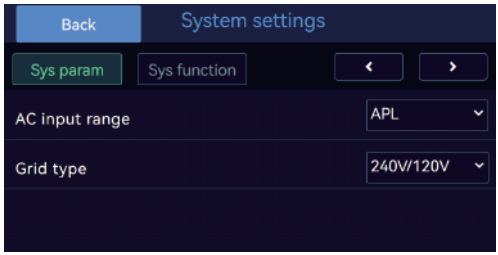
Turn off the master unit, power on a slave unit, and then configure the parallel settings for the slave unit.

1) Verify that the UI and software versions are the latest and consistent with the master unit.

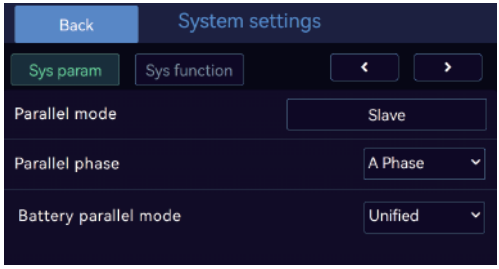
2) Ensure the AC output voltage and frequency match the local utility grid.



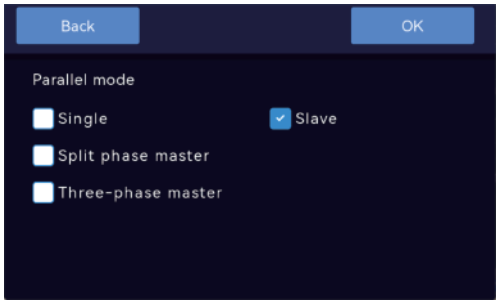
3) Set Grid Type to 240V/120V(L1-L2 180°).



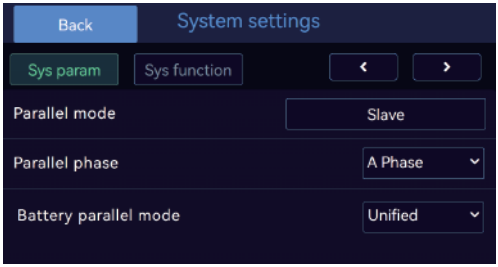
4) To change the parallel mode, parallel phase and Battery parallel mode.
navigate to: Settings > System Settings > System Parameters



Navigate to: Settings > System Settings > System Parameters > Parallel Mode, and select 'slave'.



Navigate to: Settings > System Settings > System Parameters > Parallel Phase, and select 'A Phase', > Battery parallel mode， and select 'Unified'.



NOTICE

- If there are multiple slave units, repeat the above steps for each. During the setup process, one and only one unit must be powered on at a time. After completing the above steps and returning to the main interface, if the inverter reports a parallel fault，this is normal because the other parallel units are not powered on yet; no action is required. Once all units have been configured, power them on simultaneously, and the parallel fault will clear.

Note:

Please follow the power-on sequence below:

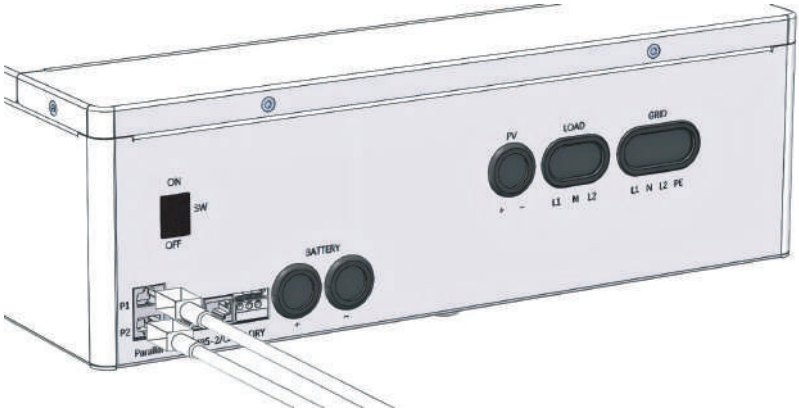
1. Turn on the battery switch and wait for 30 seconds to confirm the battery is operating stably with no errors. Then, turn on the DC breaker.
2. Turn on the inverter switch and wait for the unit to stabilize.
3. Before turning on the AC breaker, use a multimeter to measure the utility voltage and verify that the two utility lines (L1/L2) are balanced.
4. Before turning on the PV breaker, use a multimeter to measure the open-circuit voltage to

ensure it does not exceed the MPPT input open-circuit voltage rating (500V for this model). After all breakers are turned on, allow the system to run with no load for ten minutes. Confirm there are no alarms, the voltage is normal, and the system is operating stably.

5. Gradually turn on the loads in order from smallest to largest power rating. Observe whether the L1/L2 voltage and current are stable and balanced. Ensure the system runs stably for at least 30 minutes

11.4 Three-Phase Parallel Connection Diagram

1. The diagram for the connection of communication cables for inverter parallel operation is as follows:



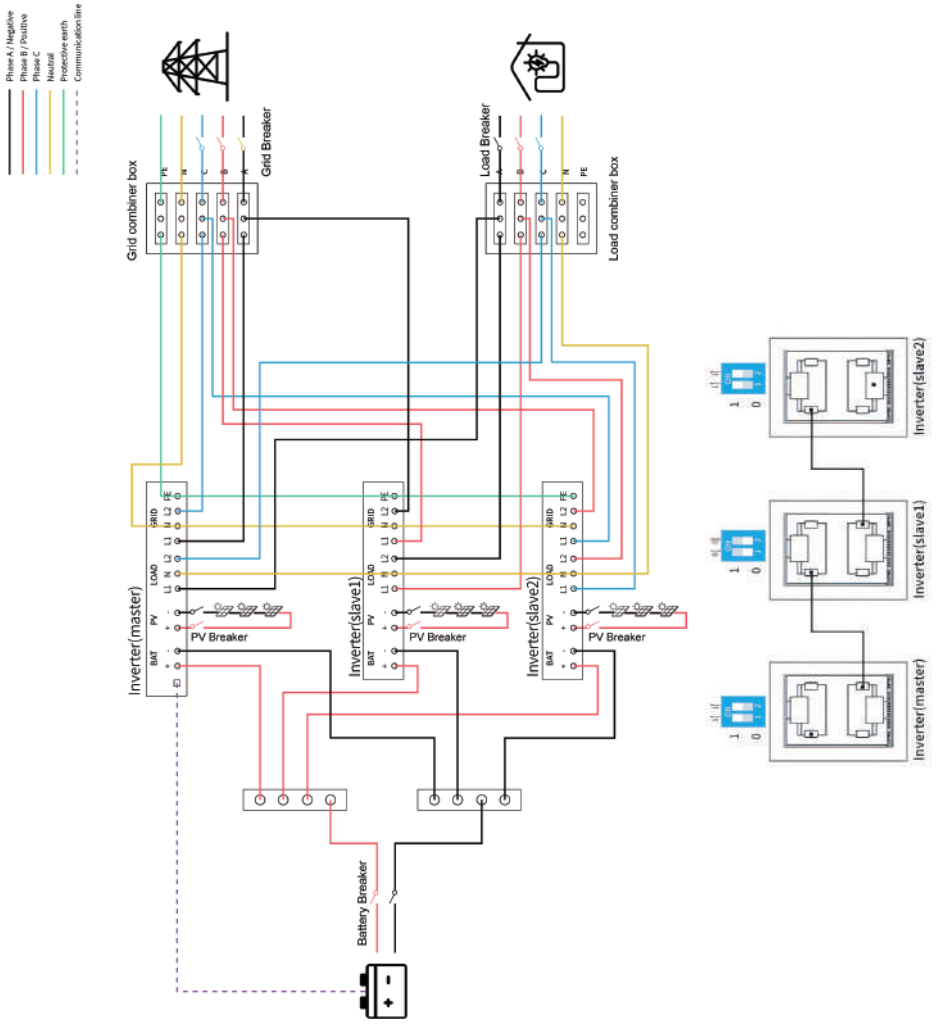
DANGER

- Read the instruction manual carefully and follow the guidelines strictly before parallel connection!

NOTICE

- The PV input ports must always be used independently.
- The wiring diagram in this manual illustrates a 3-unit configuration for reference only. For parallel systems exceeding 3 units, please consult technical support before installation to ensure proper system configuration and stable operation.

2. Three units in three-phase configuration:



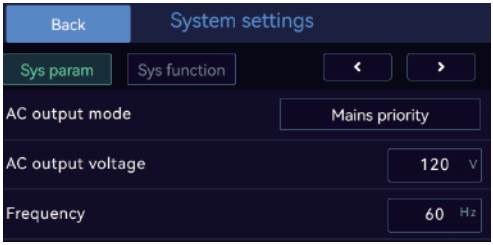
3. UI Operation Steps for Three Inverters in Three-Phase Parallel System:

The following operations must be performed using only battery power after all cables are connected. All other circuit breakers must remain off.

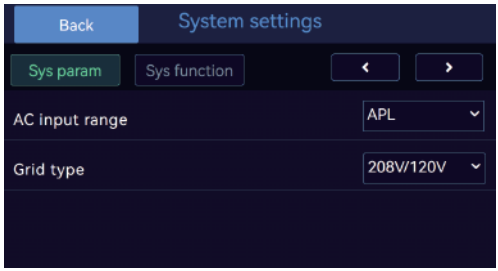
First, turn on the master unit's rocker switch while keeping the slave units off to configure the parallel settings on the master.

1) Verify that the UI and software versions are the latest.

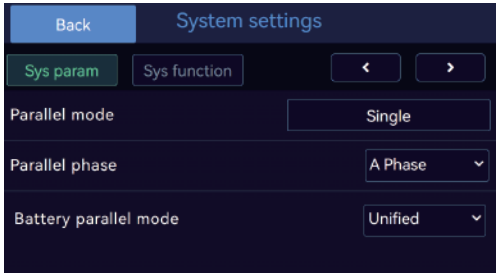
2) Ensure the AC output voltage and frequency match the local utility grid.



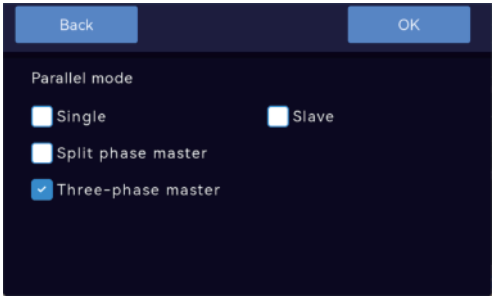
3) Set the grid type to 208V/120V (L1-L2 120°).



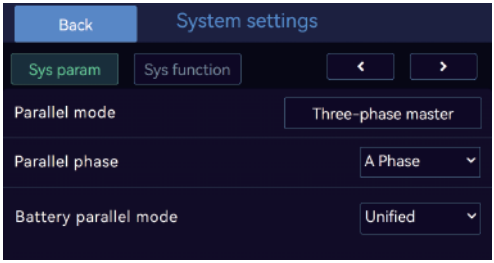
4) To change the parallel mode, parallel phase and Battery parallel mode. navigate to: Settings > System Settings > System Parameters



Navigate to: Settings > System Settings > System Parameters > Parallel Mode, and select “Three-Phase Master”.



Navigate to: Settings > System Settings > System Parameters > Parallel Phase, and select 'A Phase', > Battery parallel mode， and select 'Unified'.

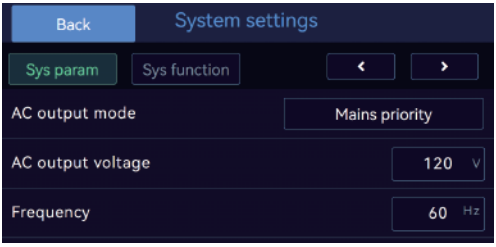


NOTICE

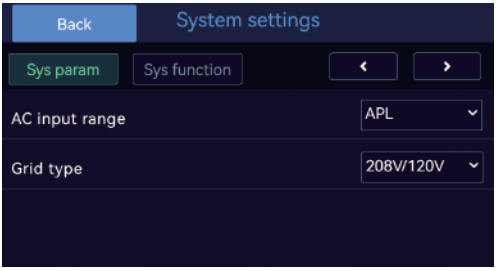
- After completing the above steps and returning to the main interface, if the inverter reports a parallel fault, this is normal because the other parallel units are not powered on. No action is required.

Power off the master unit, power on Slave 1, and configure the parallel settings for Slave 1.

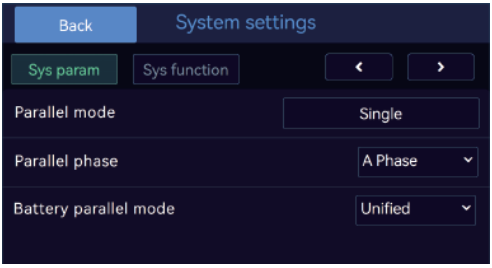
1) Verify that the UI and software versions are the latest and consistent with the master unit.
2) Ensure the AC output voltage and frequency match the local utility grid.



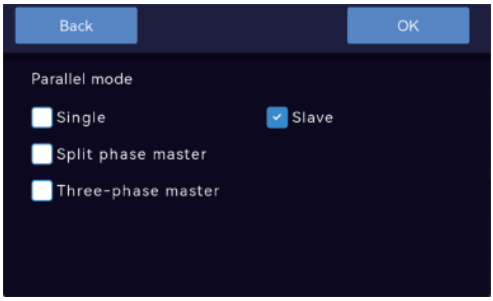
3) Set the grid type to 208V/120V (L1-L2 120°).



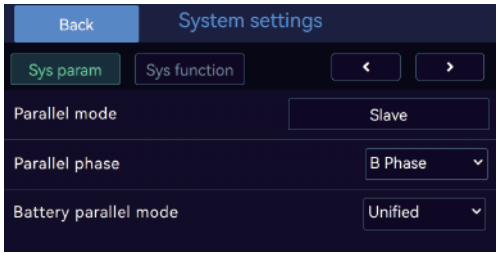
4) To change the parallel mode, parallel phase and Battery parallel mode. navigate to: Settings > System Settings > System Parameters



Navigate to: Settings > System Settings > System Parameters > Parallel Mode, and select “Slave”.



Navigate to: Settings > System Settings > System Parameters > Parallel Phase, and select 'B Phase', > Battery parallel mode， and select 'Unified'.

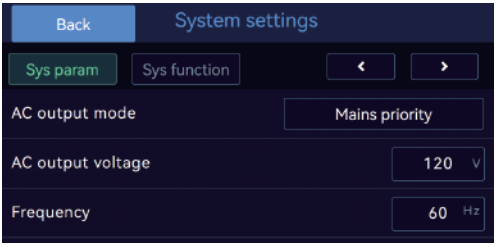


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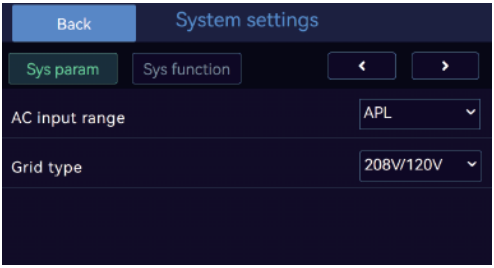
- After completing the above steps and returning to the main interface, if the inverter reports a parallel fault, this is normal because the other parallel units are not powered on yet. No action is required. Once all units are powered on simultaneously, the parallel fault will clear.

Power off Slave 1, power on Slave 2, and configure the parallel settings for Slave 2.

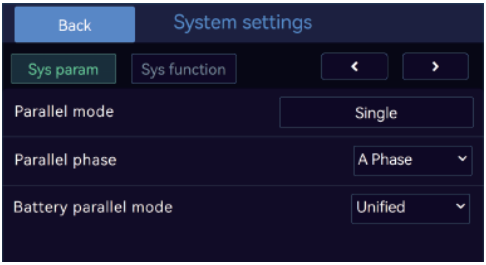
1) Verify that the UI and software versions are the latest and consistent with the master unit.
2) Ensure the AC output voltage and frequency match the local utility grid.



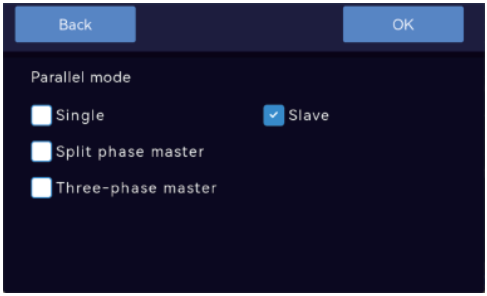
3) Set the grid type to 208V/120V (L1-L2 120°).



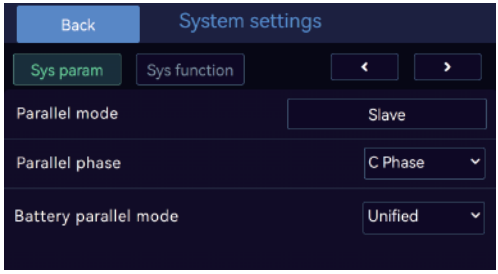
4) To change the parallel mode, parallel phase and Battery parallel mode. navigate to: Settings > System Settings > System Parameters



Navigate to: Settings > System Settings > System Parameters > Parallel Mode, and select “Slave”.



Navigate to: Settings > System Settings > System Parameters > Parallel Phase, and select 'C Phase', > Battery parallel mode， and select 'Unified'.



NOTICE

- After completing the above steps and returning to the main interface, if the inverter reports a parallel fault, this is normal because the other parallel units are not powered on yet. No action is required. Once all units are powered on simultaneously, the parallel fault will clear.

Note:

Please follow the power-on sequence below:

1. Turn on the battery switch and wait for 30 seconds to confirm the battery is operating stably with no errors. Then, turn on the DC breaker.
2. Turn on the inverter switch and wait for the unit to stabilize.
3. Before turning on the AC breaker, use a multimeter to measure the utility voltage and verify that the two utility lines (L1/L2) are balanced.
4. Before turning on the PV breaker, use a multimeter to measure the open-circuit voltage to ensure it does not exceed the MPPT input open-circuit voltage rating (500V for this model). After all breakers are turned on, allow the system to run with no load for ten minutes. Confirm

there are no alarms, the voltage is normal, and the system is operating stably.

5. Gradually turn on the loads in order from smallest to largest power rating. Observe whether the L1/L2 voltage and current are stable and balanced. Ensure the system runs stably for at least 30 minute

Attention:

1) Before powering on the unit to illuminate the screen, verify that all wiring is correct according to the wiring diagram above to prevent system issues.
2) Ensure all connections are securely fastened to prevent loose wires, which could lead to system malfunctions.
3) When connecting AC output wiring to loads, follow the requirements of the electrical load equipment to avoid damaging the load equipment.
4) The AC output voltage must be set consistently across all units, or configured only on the master unit. During parallel operation, the voltage setting on the master unit takes precedence, and the master will automatically overwrite the settings on all slave units to ensure consistency. This option can only be configured in standby mode.
5) The factory default setting is single-unit mode. To use parallel or three-phase functionality, the parallel mode must be configured via the display interface. The configuration procedure is as follows:

   Power on and start one inverter at a time, keeping all other units turned off. Configure the parallel mode and phase according to the actual system operation mode. For split-phase parallel systems, set the units sequentially as: split-phase master, slave, slave. For three-phase parallel systems, set the units sequentially as: three-phase master, slave, slave, with phases assigned in order as Phase A, Phase B, and Phase C. After completing the settings on the current unit, turn off the inverter and wait until it is fully powered down. Then proceed to configure the remaining units one by one. Once all units have been configured, power on all inverters simultaneously to enter normal operation.
6) After the system is operational, measure and confirm the output voltage is correct before connecting loads.

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