

USER MANUAL

Solar Storage Inverter

5KW

CONTENTS

1.General information	1
1.1 Product overview and features	1
1.2 Basic system introduction	2
1.3 Appearance	3
1.4 Dimension drawing	4
2.Installation instructions	5
2.1 Installation precautions	5
2.2 Wiring specifications and circuit breaker selection	6
2.3 Installation and wiring	8
2.4 Parallel machine wire connection	14
2.4.1 Introduction.....	14
2.4.2 Precautions for connecting the parallel connecting lines.....	14
2.4.3 Schematic diagram of parallel connection in single phase.....	16
2.4.4 Schematic diagram of parallel connection in split phase.....	20
2.4.5 Schematic diagram of parallel connection in three phase.....	25
3.LCD screen operating instructions.....	31
3.1 Operation and display panel.....	31
3.2 Setting parameters description.....	36
3.3 Battery type parameters.....	43
4.Other functions.....	45
4.1 Dry contact.....	45
4.2 RS485 communication port.....	45
4.3 USB communication port.....	45
4.4 Parallel communication function (parallel operation only).....	46
4.5 Current sharing detection function (parallel operation only).....	46
5.Protection.....	47
5.1 Protections provided.....	47
5.2 Fault code.....	48
5.3 Handling measures for part of faults.....	52
6.Troubleshooting.....	53
7.Technical parameters.....	54

Important safety instructions

Please keep this manual for future use.

This manual contains all safety, installation and operating instructions for the 5KW Series solar storage inverter. Please read all instructions and precautions in the manual carefully before installation and use.

- » Non-safety voltage exists inside the solar storage inverter. To avoid personal injury, users shall not disassemble the solar storage inverter themselves. Contact our professional maintenance personnel if there is a need for repair.
- » Do not place the solar storage inverter within the reach of children.
- » Do not install the solar storage inverter in harsh environments such as moist, oily, flammable or explosive, or heavily dusty areas.
- » The mains input and AC output are high voltage, so please do not touch the wiring terminals.
- » The housing of the solar storage inverter is hot when it is working. Do not touch it.
- » Do not open the terminal protective cover when the solar storage inverter is working.
- » It is recommended to attach proper fuse or circuit breaker to the outside of the solar storage inverter.
- » Always disconnect the fuse or circuit breaker near the terminals of PV array, mains and battery before installing and adjusting the wiring of the solar storage inverter.
- » After installation, check that all wire connections are tight to avoid heat accumulation due to poor connection, which is dangerous.
- » The solar storage inverter is off-grid. It is necessary to confirm that it is the only input device for load, and it is forbidden to use it in parallel with other input AC power to avoid damage.

1. General information

» 1.1 Product overview and features

5KW series is a new solar storage inverter, which integrates solar energy storage & means charging energy storage and AC sine wave output. Thanks to DSP control and advanced control algorithm, it has high response speed, high reliability and high industrial standard. Four charging modes are optional, i.e. Only Solar, Mains Priority, Solar Priority and Mains & Solar hybrid charging; and two output modes are available, i.e. Inverter and Mains, to meet different application requirements.

The solar charging module applies the latest optimized MPPT technology to quickly track the maximum power point of the PV array in any environment and obtain the maximum energy of the solar panel in real time.

Through a state of the art control algorithm, the AC-DC charging module realizes fully digital voltage and current double closed loop control, with high control precision in a small volume. Wide AC voltage input range and complete input/output protections are designed for stable and reliable battery charging and protection.

Based on full-digital intelligent design, the DC-AC inverter module employs advanced SPWM technology and outputs pure sine wave to convert DC into AC. It is ideal for AC loads such as household appliances, power tools, industrial equipment, and electronic audio and video equipment. The product comes with a segment LCD design which allows real-time display of the operating data and status of the system. Comprehensive electronic protections keep the entire system safer and more stable.

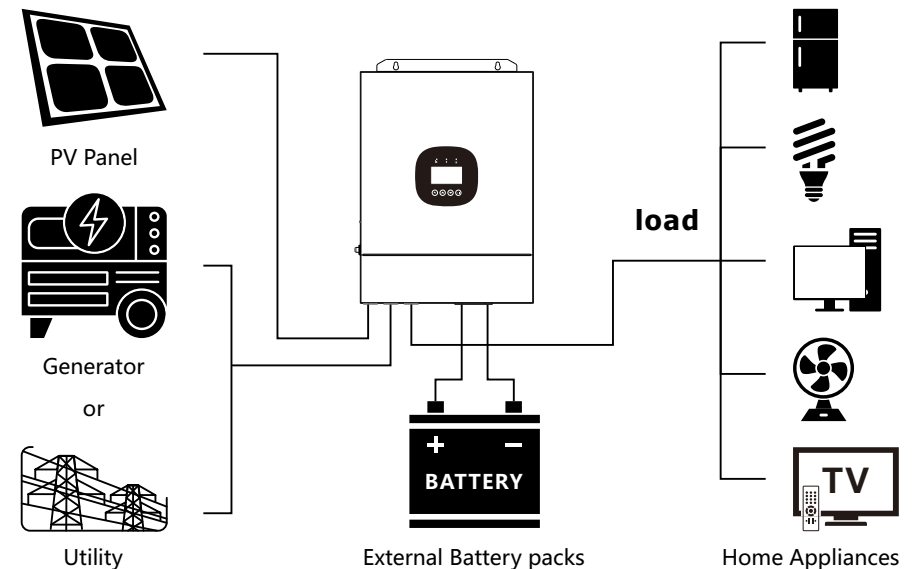
Features

1. Anti-backflow grid connection function, support for inverter and mains power hybrid output. support for use without battery, can be set up for on-grid power generation.
2. Two output modes: mains bypass and inverter output; uninterrupted power supply.
3. Available in 2 charging modes: Only Solar, and Grid& Solar hybrid charging.
4. Advanced MPPT technology with an efficiency of 99.9%.
5. Designed with a LCD screen and 3 LED indicators for dynamic display of system data and operating status.
6. With time slot control, you can set the priority of using the mains and battery according to the time slot in conjunction with the local peak and valley tariffs.
7. Power saving mode available to reduce no-load loss.
8. Intelligent variable speed fan efficiently dissipate heat and extend system life.
9. Lithium battery activation by PV solar or mains, allowing access of lead-acid battery and lithium battery.
10. 360 ° all-around protection with a number of protection functions.
11. Complete protections, including short circuit protection, over voltage and under voltage protection, overload protection, reverse protection, etc.

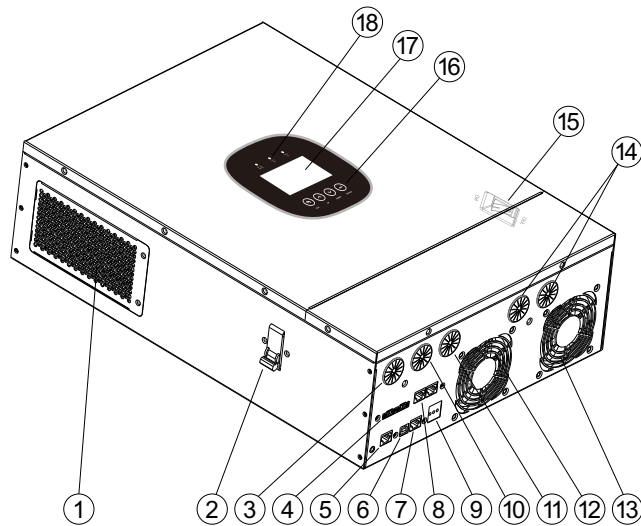
» 1.2 Basic system introduction

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

1. PV module:	Convert light energy into DC power, and charge the battery through the solar storage inverter, or directly invert into AC power to drive the load.
2. Mains or generator:	Connected at the AC input, to power the load while charging the battery. If the mains or generator is not connected, the system can also operate normally, and the load is powered by the battery and PV module.
3. Battery:	Provided to ensure normal power supply to the system loads when solar energy is insufficient and the Mains is not connected.
4. Household load:	Allow connection of various household and office loads, including refrigerators lamps, TVs, fans and air conditioners.
5. Solar storage inverter:	The energy conversion unit of the whole system. Specific system wiring method depends on the actual application scenario.

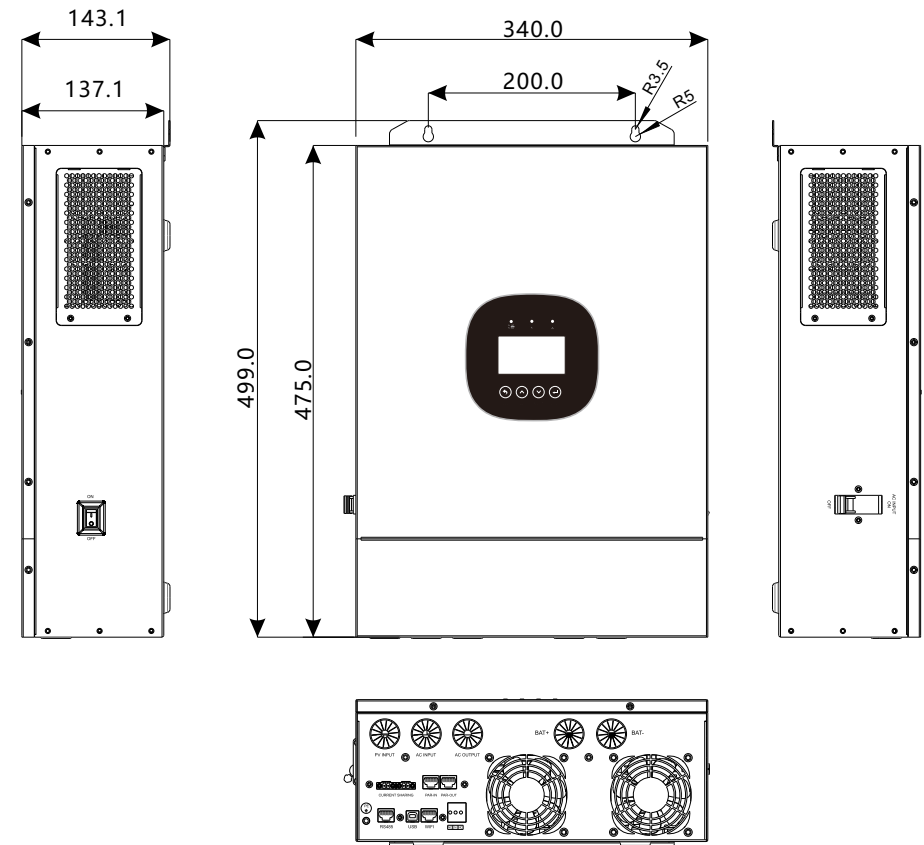


» 1.3 Appearance



①	Dust net	⑩	AC input port
②	AC input switch	⑪	AC output port
③	PV port	⑫	Cooling fan
④	Current sharing port (parallel module only)	⑬	Cooling fan
⑤	RS485 communication port	⑭	Battery port
⑥	USB communication port	⑮	ON/OFF rocker switch
⑦	WIFI port	⑯	Function key
⑧	Parallel communication port (parallel module only)	⑰	LCD screen
⑨	Dry contact port	⑱	Indicator light

» 1.4 Dimension drawing



2. Installation instructions

» 2.1 Installation precautions

Please read this manual carefully prior to installation to familiarize yourself with the installation steps.

- 1** Be very careful when installing the battery. Wear safety goggles when installing a lead-acid liquid battery. Once coming into contact with the battery acid, rinse with clean water timely.
- 2** Do not place metal objects near the battery to prevent short-circuit of the battery.
- 3** Acid gas may be generated when the battery is charged. So, please ensure good ventilation.
- 4** When installing the cabinet, be sure to leave enough space around the solar storage inverter for heat dissipation. Do not install the solar storage inverter and lead-acid battery in the same cabinet to avoid corrosion by acid gas generated during battery operation.
- 5** Only the battery that meets the requirements of the unit can be charged.
- 6** Poorly connected connections and corroded wires may cause great heat which will melt the wire insulation, burn the surrounding materials, and even cause fires. So, make sure the connectors have been tightened, and the wires are secured with ties to avoid looseness of connections caused by shaking of wires during mobile application.
- 7** The system connection wires are selected according to a current density of not more than 5 A/mm².
- 8** Avoid direct sunlight and rainwater infiltration for outdoor installation.
- 9** Even after the power is turned off, there is still high voltage inside the unit. Do not open or touch the internal components, and avoid related operations until the capacitor completely discharges.
- 10** Do not install the solar storage inverter in harsh environments such as moist, oily, flammable or explosive, or heavily dusty areas.
- 11** Polarity at the battery input end of this product shall not be reversed, otherwise it may damage the device or cause unpredictable danger.
- 12** The mains input and AC output are high voltage, so please do not touch the wiring terminals.
- 13** When the fan is working, do not touch it to prevent injury.
- 14** Load equipment input power needs to confirm that this solar storage inverter is the only input device, and it is forbidden to use in parallel with other input AC power to avoid damage. It is necessary to confirm that the solar storage inverter is the only input device for load equipment, and it is forbidden to use it in parallel with other input AC power to avoid damage.

» 2.2 Wiring specifications and circuit breaker selection

Wiring and installation must comply with national and local electrical codes.

Recommended PV array wiring specifications and circuit breaker selection: Since the output current of the PV array is affected by the type, connection method and illumination angle of the PV module, the minimum wire diameter of the PV array is calculated according to its short-circuit current; refer to the short-circuit current value in the PV module specification (the short-circuit current is constant when the PV modules are connected in series; the short-circuit current is the sum of the short-circuit currents of all PV modules connected in parallel); the short-circuit current of the PV array shall not exceed the maximum input current.

► Refer to the table below for PV input wire diameter and switch:

Models	Recommended PV wiring diameter	Maximum PV input current	Recommended circuit breaker type
5KW	6mm ² /10AWG	22A	2P-25A

Note: The voltage in series shall not exceed the maximum PV input open circuit voltage.

► Refer to the table below for recommended AC input wire diameter and switch:

Models	Recommended AC input wiring diameter	Maximum bypass input current	Recommended circuit breaker type
5KW	10mm ² /7AWG	63A	2P-63A

Note: There is already an appropriate circuit breaker at the Mains input wiring terminal, so it is not necessary to add one more.

► Recommended battery input wire diameter and switch selection

Models	Recommended battery wiring diameter	Rated battery discharge current	Maximum charge current	Recommended circuit breaker type
5KW	30mm ² /2AWG	125A	100A	2P-200A

► Recommended AC output wiring specifications and circuit breaker selection

Models	Recommended AC output wiring diameter	Rated inverter AC output current	Maximum bypass output current	Recommended circuit breaker type
5KW	10mm ² /7AWG	42A	63A	2P-63A

Note: The wiring diameter is for reference only. If the distance between the PV array and the solar storage inverter or the distance between the solar storage inverter and the battery is relatively long, using a thicker wire can reduce the voltage drop to improve system performance.

Note: The above are only recommended wiring diameter and circuit breaker. Please select the appropriate wiring diameter and circuit breaker according to actual situations.

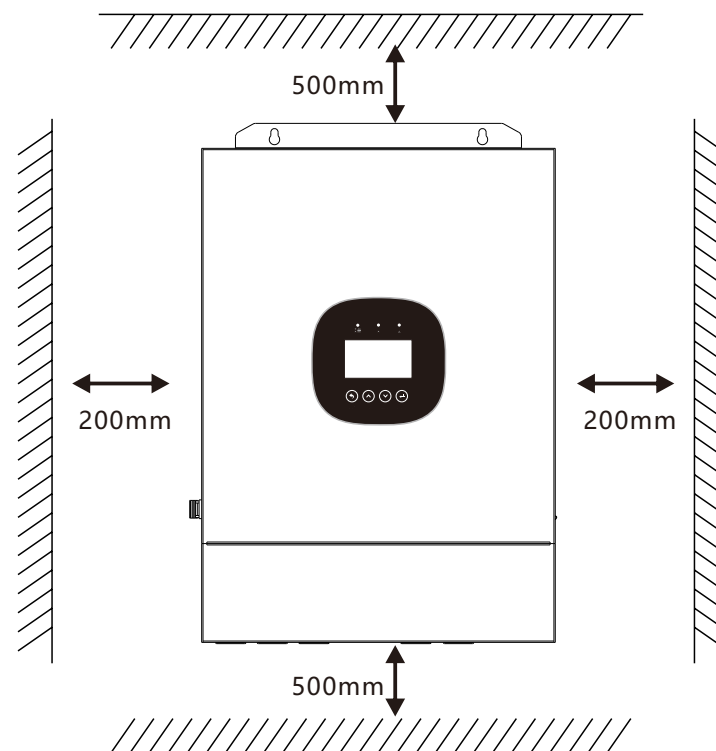
» 2.3 Installation and wiring

Installation steps:

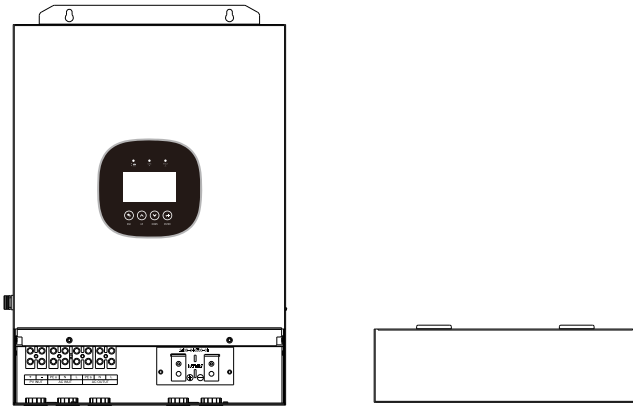
Step 1: Determine the installation position and the space for heat dissipation, Determine the installation position of the solar storage inverter, such as wall surface; when installing the solar storage inverter, ensure that there is enough air flowing through the heat sink, and space of at least 200mm to the left and right air outlets of the inverter shall be left to ensure natural convection heat dissipation. Refer to the installation diagram of the whole machine as above.



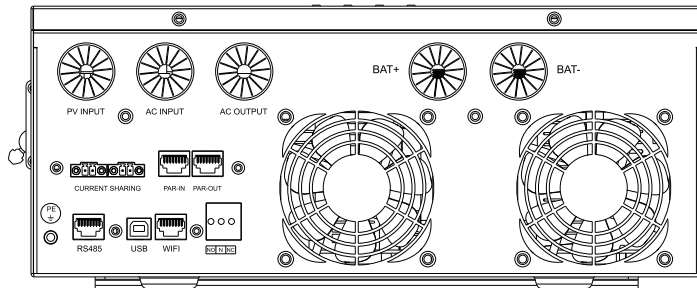
Warning: Danger of explosion! Never install the solar storage inverter and lead-acid battery in the same confined space! Also do not install in a confined place where battery gas may collect.



Step 2: Remove the terminal cover.



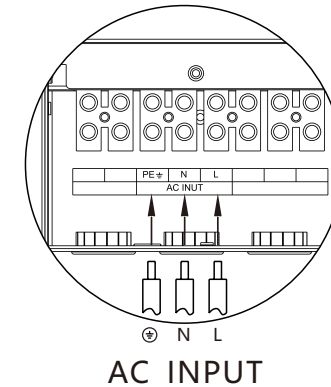
Step3: Wiring.



AC input / output wiring method:

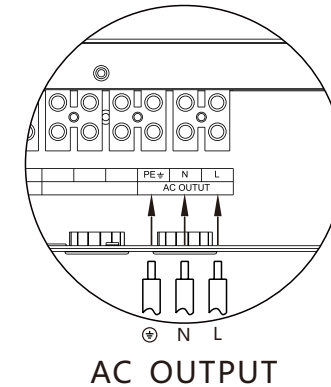
- 1** Prior to AC input/output wiring, opening the external circuit breaker and confirm that the wire used is thick enough, Please refer to Section 2.2 " Wiring Specifications and Circuit Breaker Selection" ;
- 2** Properly connect the AC input wire according to the wire sequence and terminal position shown in the figure below. Please connect the ground wire first, and then the live wire and the neutral wire;

⊕ : Ground N : Neutral L : Live



- 3** Properly connect the AC output wire according to the wire sequence and terminal position shown in the figure below. Please connect the ground wire first, and then the live wire and the neutral wire. The ground wire is connected to the grounding screw hole on the cabinet through the O-type terminal.

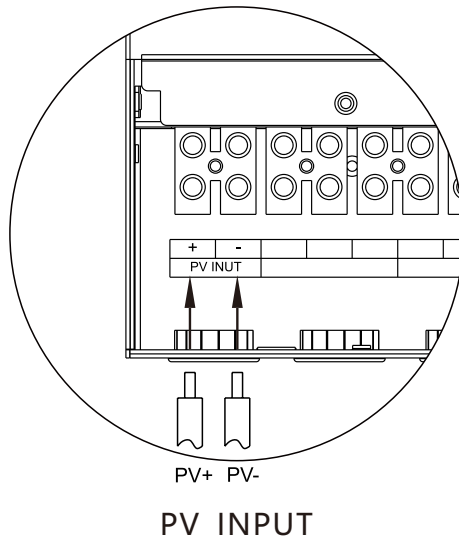
⊕ : Ground N : Neutral L : Live



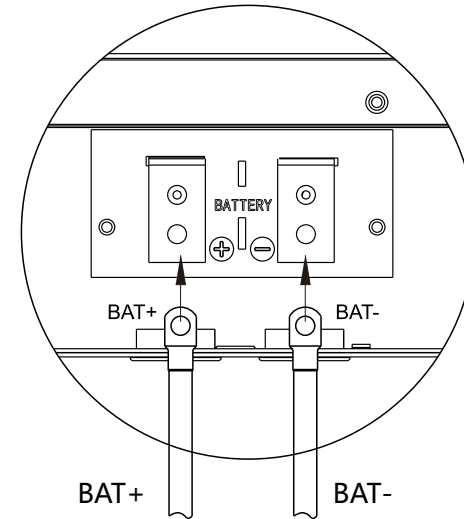
Note: The grounding wire shall be as thick as possible (cross-sectional area is not less than 4mm²). The grounding point shall be as close as possible to the solar storage inverter. The shorter the grounding wire, the better.

PV input wiring method:

- 1 Prior to wiring, disconnect the external circuit breaker and confirm that the wire used is thick enough. Please refer to Section 2.2 "Wiring Specifications and Circuit Breaker Selection";
- 2 Properly connect the PV input wire according to the wire sequence and terminal position shown in the figure below. When used in parallel connection, different machines need to be connected to different PV arrays or PV sources.

PV+: PV input positive pole**PV-: PV input negative pole****BAT wiring method:**

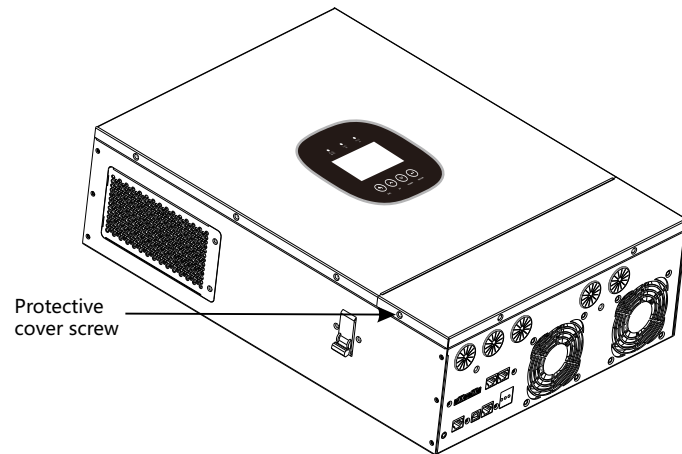
- 1 Prior to wiring, disconnect the external circuit breaker and confirm that the wire used is thick enough. Please refer to Section 2.2 "Wiring Specifications and Circuit Breaker Selection". The BAT wire needs to be connected to the machine through the O-type terminal. The O-type terminal with an inner diameter of 6mm is recommended. The O-type terminal shall firmly press the BAT wire to prevent excessive heat generation caused by excessive contact resistance;
- 2 Properly connect the BAT wire according to the wire sequence and terminal position shown in the figure below.

BAT+: Battery positive**BAT-: Battery negative****Warnings:**

- 1 Mains input, AC output and PV array will generate high voltage. So, before wiring, be sure to opening the circuit breaker or fuse;
- 2 Be very careful during wiring; do not close the circuit breaker or fuse during wiring, and ensure that the "+" and "-" pole leads of each component are connected properly; a circuit breaker must be installed at the battery terminal. Refer to Section 2.2 "Wiring Specifications and Circuit Breaker Selection" to select a right circuit breaker. Before wiring, be sure to disconnect the circuit breaker to prevent strong electric sparks and avoid battery short circuit; if the solar storage inverter is used in an area with frequent lightning, it is recommended to install an external lightning arrester at the PV input terminal.

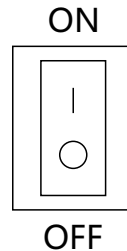
Step 4: Check if the wiring is correct and firm, In particular, check if the battery polarity is reversed, if the PV input polarity is reversed and if the AC input is properly connected.

Step 5: Install the terminals cover.



Step 6: Turn on the solar storage inverter.

First, close the circuit breaker at the battery terminal, and then turn the rocker switch on the left side of the machine to the "ON" state. The "AC/INV" indicator flashing indicates that the inverter is working normally. Close the circuit breakers of the PV array and the Mains. Finally, turn on AC loads one by one as the AC output is normal to avoid a protection action caused by a large momentary shock due to simultaneous turning on the loads simultaneously. Now, the machine goes into a normal operation according to the set mode.



Note: If power is supplied to different AC loads, it is recommended to first turn on the load with a large surge current. After the load is stable, turn on the load with a small surge current.

Note: If the solar storage inverter does not work properly or the LCD or indicator is abnormal, refer to Chapter 5 to handle the exceptions.

» 2.4 Parallel machine wire connection

2.4.1 Instruction

- 1 Up to six units connected in parallel.
- 2 When using the parallel operation function, the following connecting lines (package accessories) shall be firmly and reliably connected:

Parallel communication line*1:

Current sharing detection line*1:



2.4.2 Precautions for connecting the parallel connecting lines

Warning:

1 PV connection:

When used in parallel connection, different machines need to be connected to different PV arrays or PV sources.

2 Battery wiring:

Parallel connection in single or split phase: Ensure that all solar storage inverters are connected to the same battery, with BAT + connected to BAT +, BAT - connected to BAT - and that the connection is correct with the same wiring length and line diameter before power on and start-up, so as to avoid the abnormal operation of parallel system output caused by wrong connection.

3 AC OUT wiring:

Parallel connection in single phase: Ensure L-to-L, N-to-N and PE-to-PE connection for all solar storage inverters, and that the connection is correct with the same wiring length and line diameter before power on and start-up, so as to avoid the abnormal operation of parallel system output caused by wrong connection. For specific wiring, please refer to 2.4.3 Wiring Diagram.

Parallel connection in split phase: Ensure N-to-N and PE-to-PE connection for all solar storage inverters. The L lines of all inverters connected to the same phase need to be connected together. But L lines of different phases cannot be joined together. Other connection precautions are the same as parallel connection in single phase. For specific wiring, please refer to 2.4.4 Wiring Diagram.

4 AC IN wiring:

Parallel connection in single phase: Ensure L-to-L, N-to-N and PE-to-PE connection for all solar storage inverters, and that the connection is correct with the same wiring length and line diameter before power on and start-up, so as to avoid the abnormal operation of parallel system output caused by wrong connection. Meanwhile, it is not allowed to have multiple different AC source inputs to avoid damage to the external equipment of the inverter. The consistency and uniqueness of AC source input shall be ensured. For specific wiring, please refer to 2.4.3 Wiring Diagram.

Parallel connection in split phase: Ensure N-to-N and PE-to-PE connection for all solar storage inverters. The L lines of all inverters connected to the same phase need to be connected together, But L lines of different phases cannot be joined together. Other connection precautions are the same as parallel connection in single phase. for specific wiring, please refer to 2.4.4 Wiring Diagram.

5 Wiring of parallel communication line:

Parallel connection in single or split phase: Our company's parallel communication line is a RJ45 standard computer cable with shielding function. Ensure the "one-in-one-out" rule when connecting each inverter; that is, connect the male connector (out) of this inverter with the female connector (in) of the inverter to be paralleled. Do not connect the male connector of the inverter to its female connector. In addition, make sure to tighten the parallel communication line of each inverter with self-contained end screws of RJ45 to avoid the abnormal operation or damage of the system output caused by the falling off or poor contact of the parallel communication line.

6 Wiring of current sharing detection line:

Parallel connection in single phase: Our company's current sharing detection line is a twisted connection line. Ensure the "one-in-one-out" rule when connecting each inverter: that is, connect the current sharing line of the inverter with the current sharing green port of the inverter to be paralleled (choose one port from the two, and there is no mandatory sequence requirement). The current sharing ports of the inverter cannot be connected to each other. In addition, make sure that the red and black current sharing connection lines of each inverter are not manually exchanged, and make sure to tighten the lines with self-contained screws to avoid the abnormal operation or damage of the system output caused by abnormal parallel current sharing detection. For specific wiring, please refer to 2.4.3 Wiring Diagram.

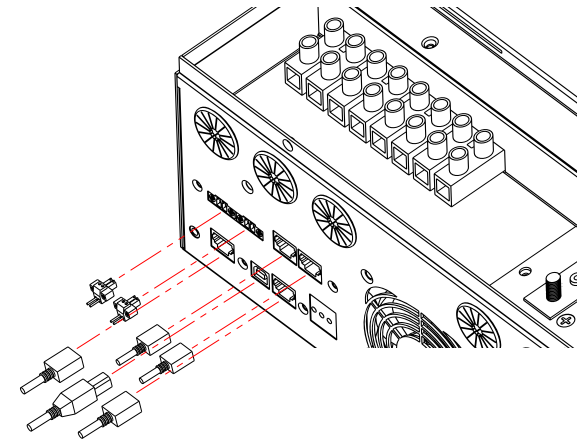
Parallel connection in split phase: The current sharing detection lines of all inverters connected to the same phase need to be connected together. But the current sharing detection lines of different phases cannot be joined together. Other connection precautions are the same as parallel connection in single phase. For specific wiring, please refer to 2.4.4 Wiring Diagram.

7 Before or after connecting the system, please carefully refer to the following system wiring diagram to ensure that all wiring is correct and reliable before power on.

8 After the system is wired, powered on and in normal operation, if a new inverter needs to be connected, make sure to disconnect the battery input, PV input, AC input and AC output, and that all solar storage inverters are powered off before reconnecting into the system.

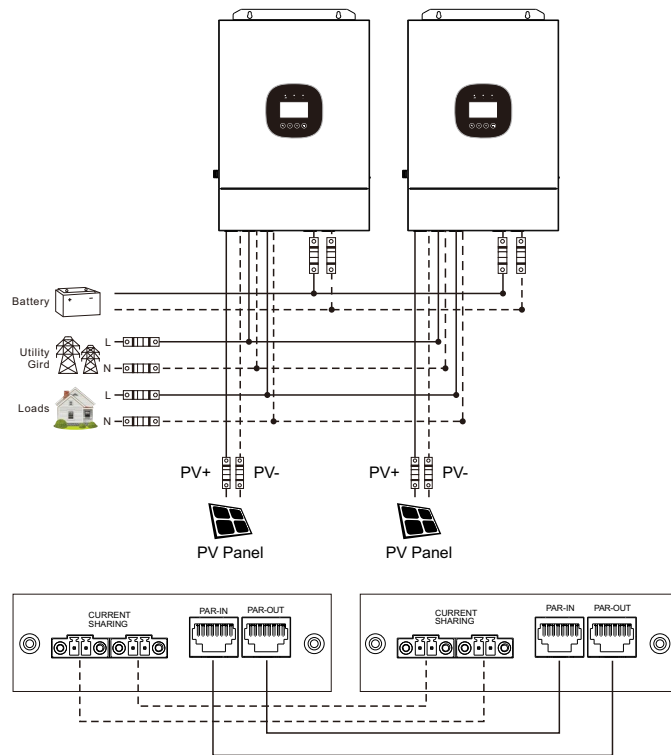
2.4.3 Schematic diagram of parallel connection in single phase

1 The parallel communication line and current sharing detection line of the all-in-one solar charger inverter need to be locked with screws after connecting. The schematic diagram is as follows:

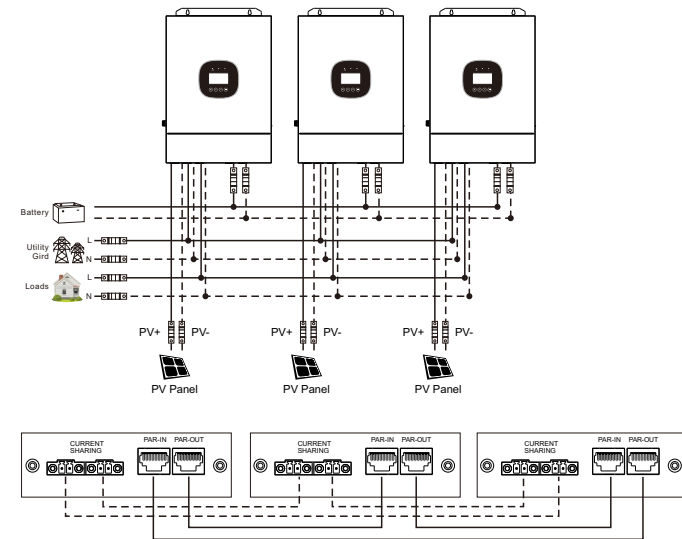


2 In case of parallel operation with multiple inverters, the schematic diagram of parallel connection is as follows:

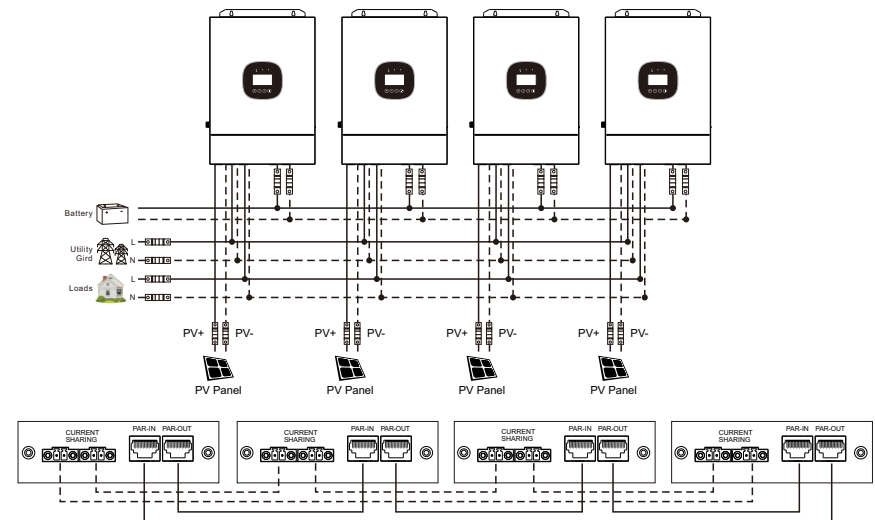
a) Two solar storage inverters of the system connected in parallel:



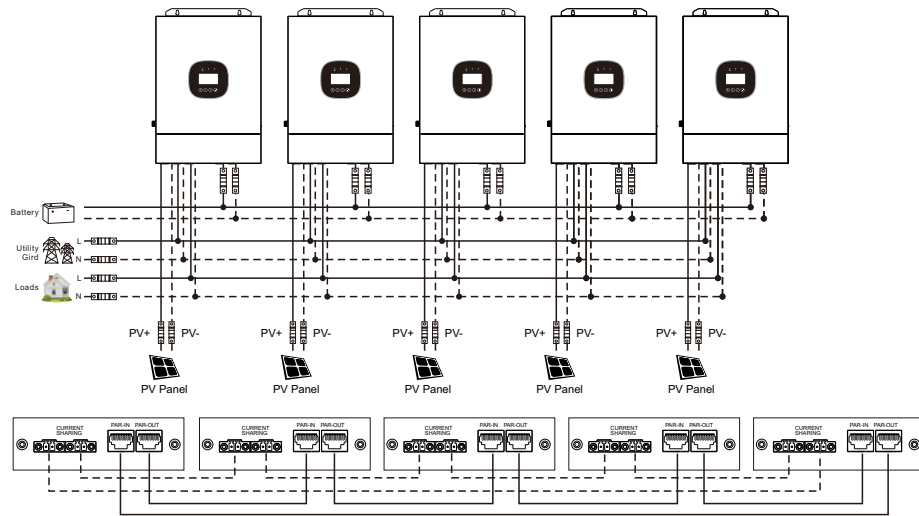
b) Three solar storage inverters of the system connected in parallel:



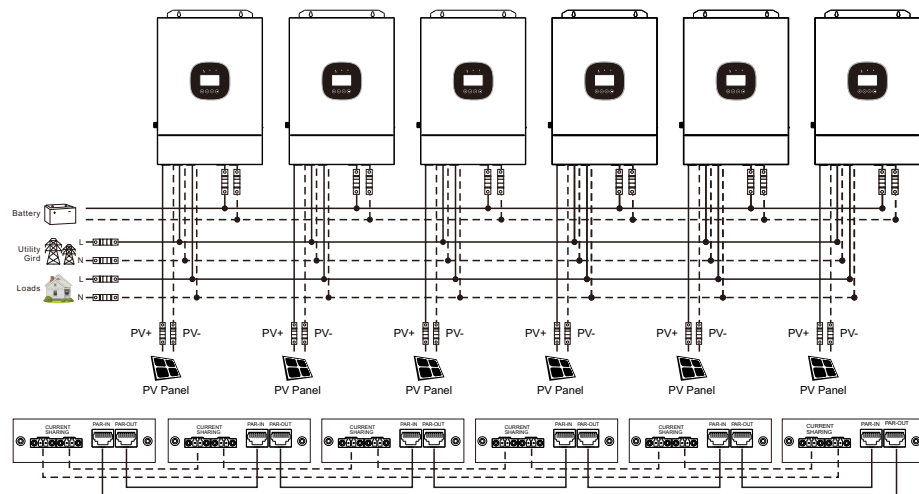
c) Four solar storage inverters of the system connected in parallel:



d) Five solar storage inverters of the system connected in parallel:

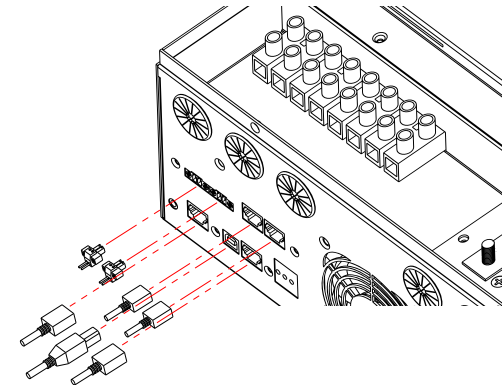


e) Six solar storage inverters of the system connected in parallel:



2.4.4 Schematic diagram of parallel connection in split phase

- 1 The parallel communication line and current sharing detection line of the solar storage inverter need to be locked with screws after connecting. The schematic diagram is as follows:

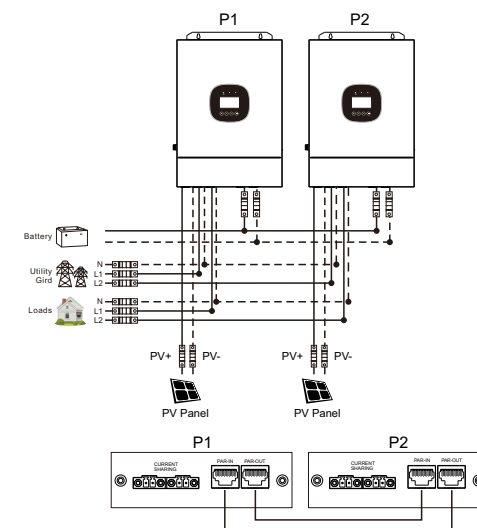


- 2 In case of parallel operation with multiple inverters, the schematic diagram of parallel connection is as follows:

Parallel operation in two phase

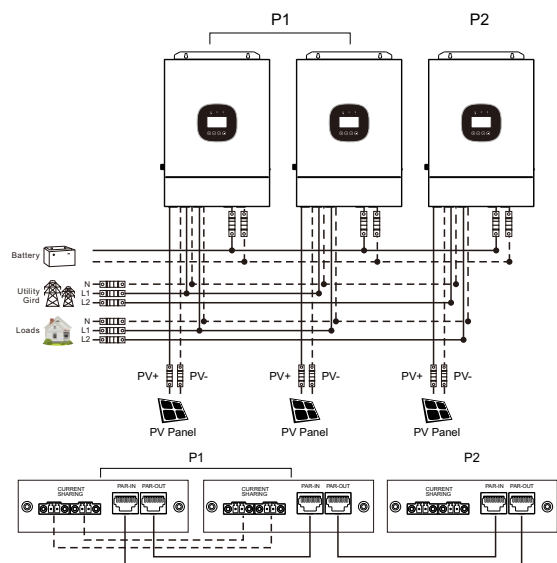
a) Two solar storage inverters of the system connected in parallel:

1 + 1 system:



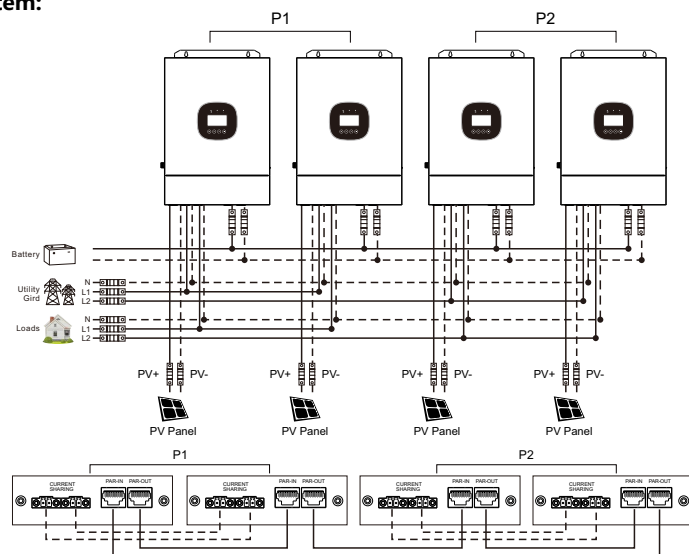
b) Three solar storage inverters of the system connected in two phase:

2+1 system:

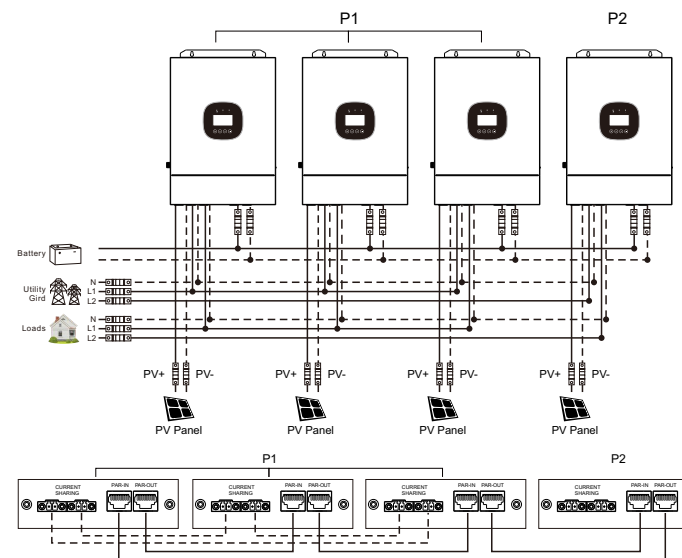


c) Four solar storage inverters of the system connected in two phase:

2+2 system:

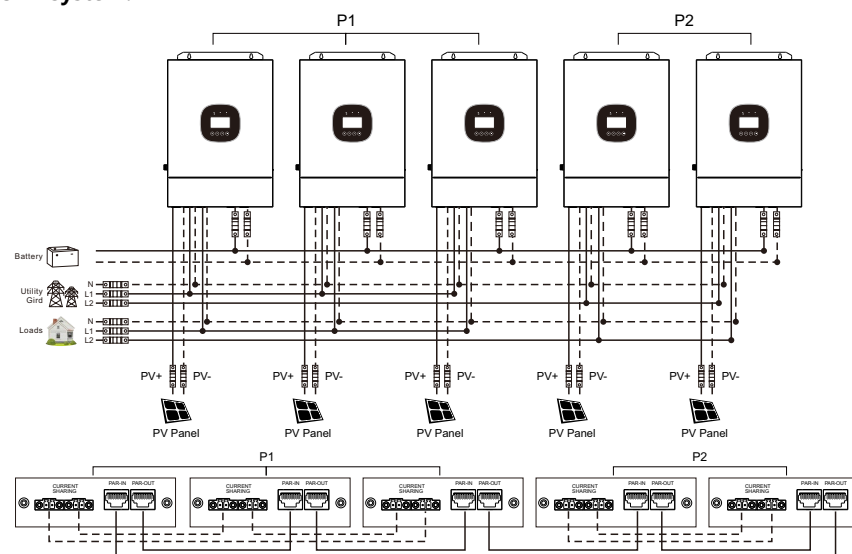


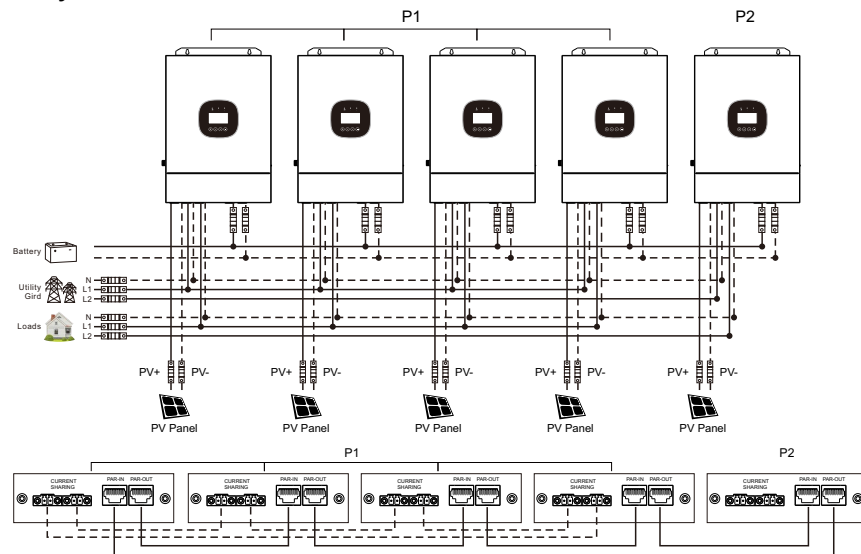
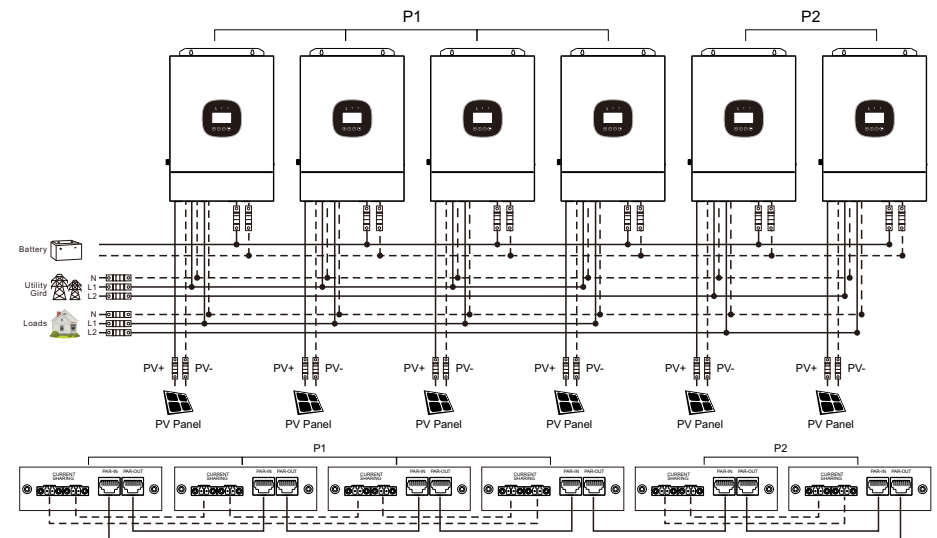
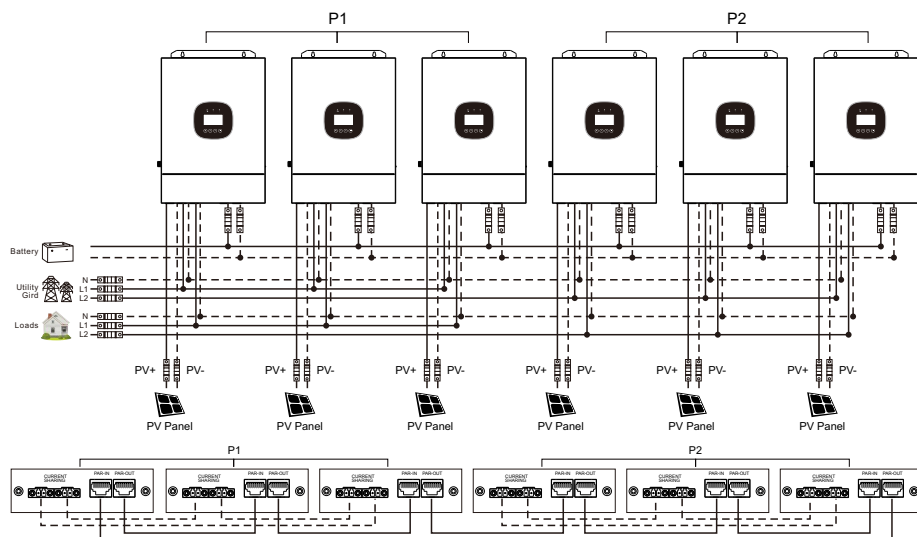
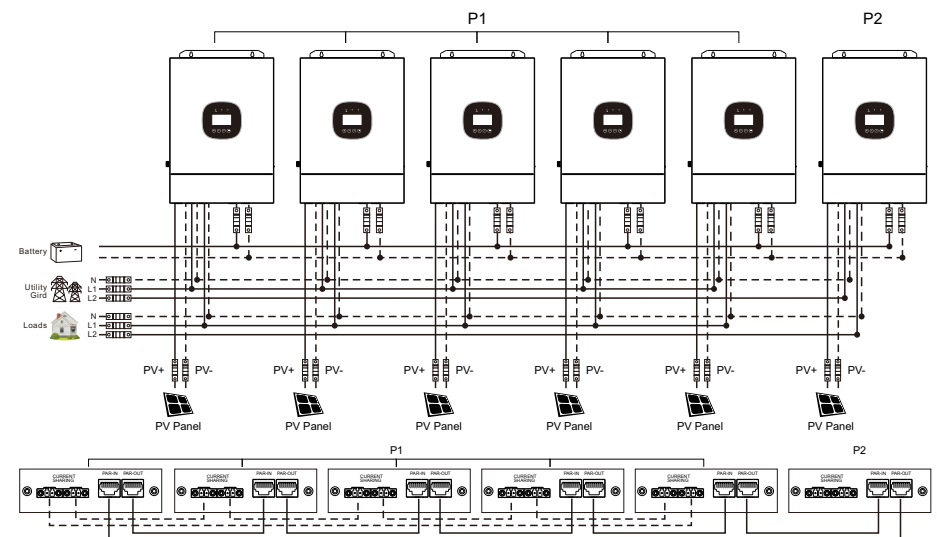
3+1 system:



d) Five solar storage inverters of the system connected in two phase:

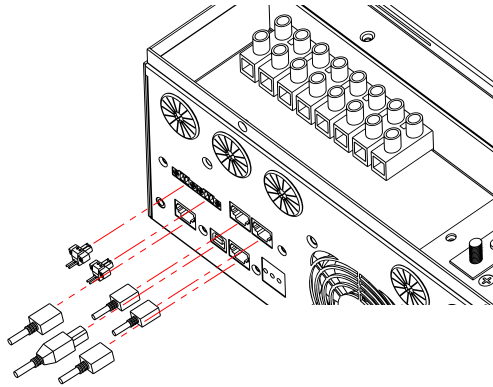
3+2 system:



4+1 system:**4+2 system:****e) Six solar storage inverters of the system connected in two phase:****3+3 system:****5+1 system:**

2.4.5 Schematic diagram of parallel connection in three phase

- 1 The parallel communication line and current sharing detection line of the solar storage inverter need to be locked with screws after connecting. The schematic diagram is as follows:

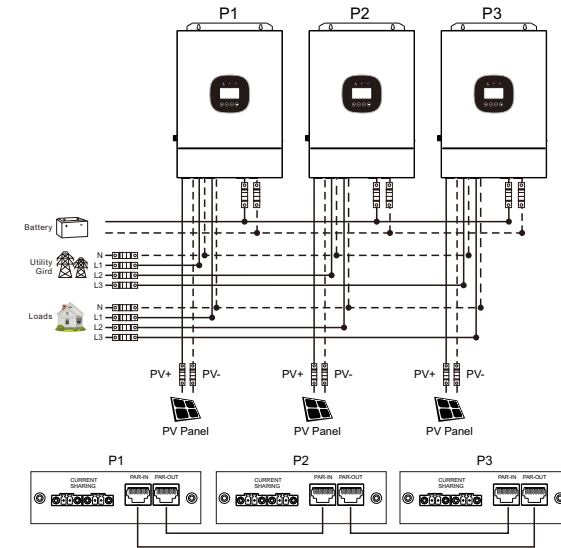


- 2 In case of parallel operation with multiple inverters, the schematic diagram of parallel connection is as follows:

Parallel operation in three phase :

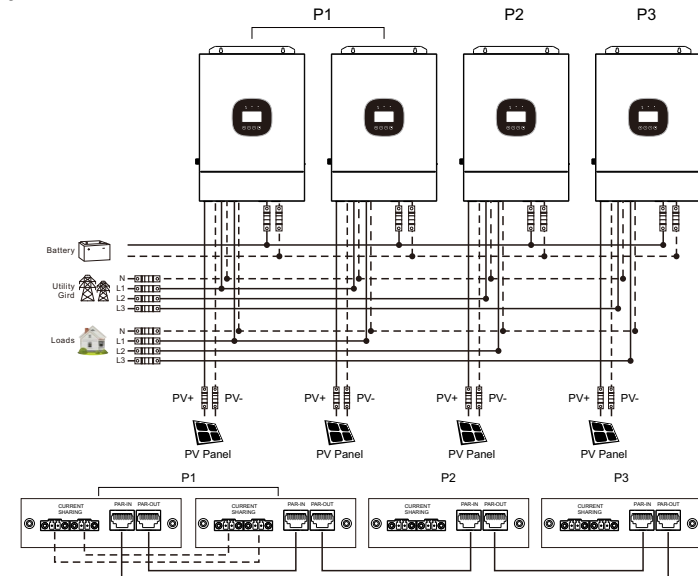
a) Three solar storage inverters of the system connected in three phase:

1+1+1 system:



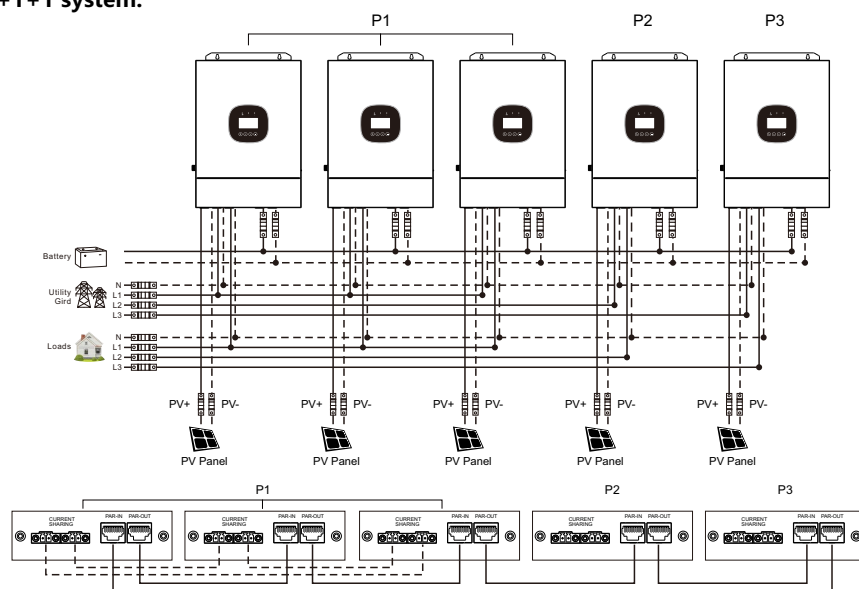
b) Four solar storage inverters of the system connected in three phase:

2+1+1 system:

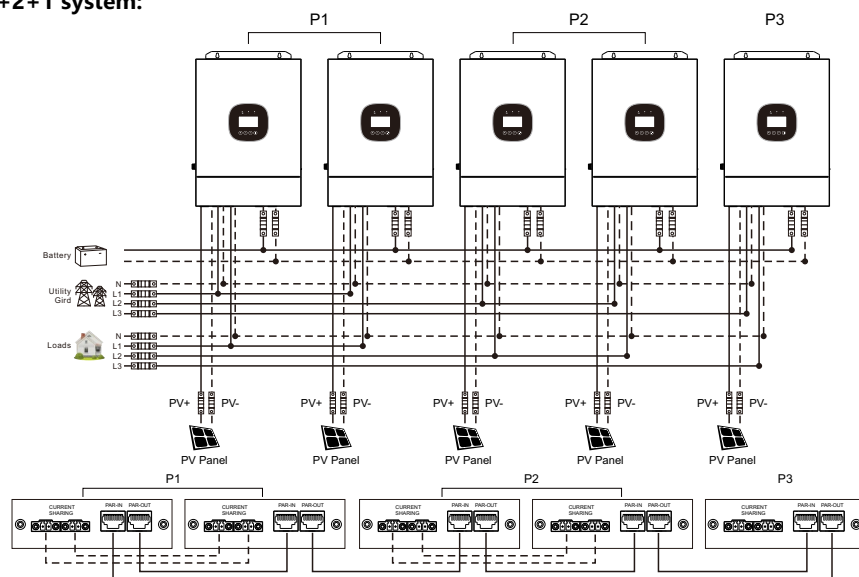


c) Five solar storage inverters of the system connected in three phase:

3+1+1 system:

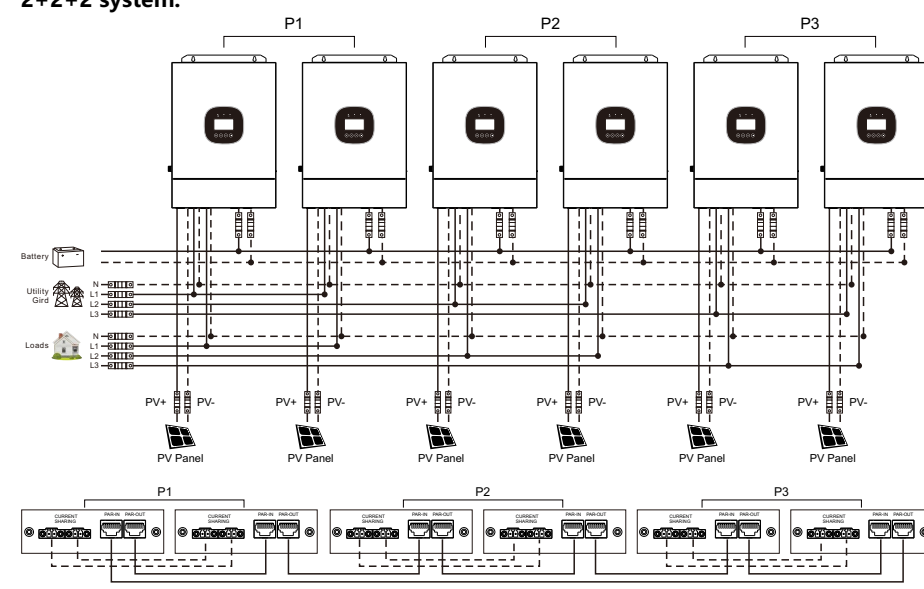


2+2+1 system:

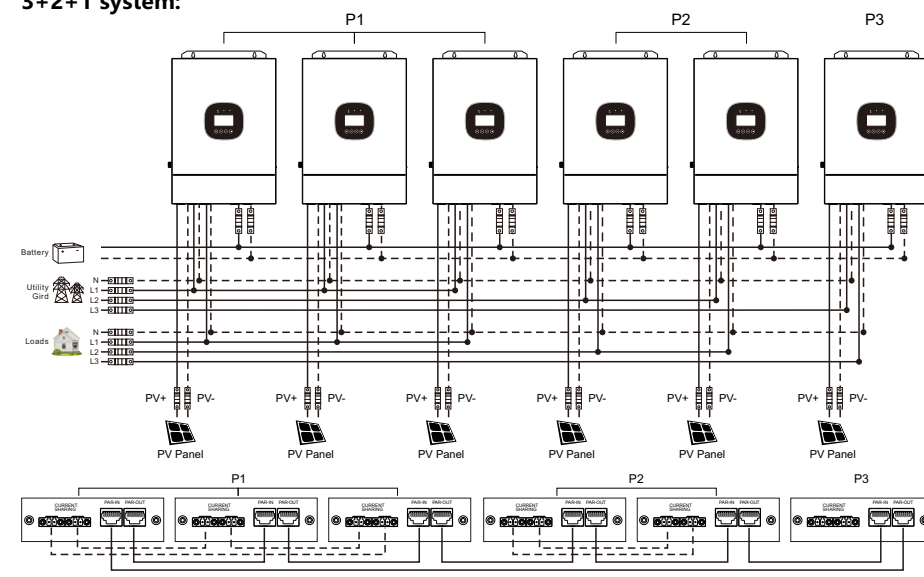


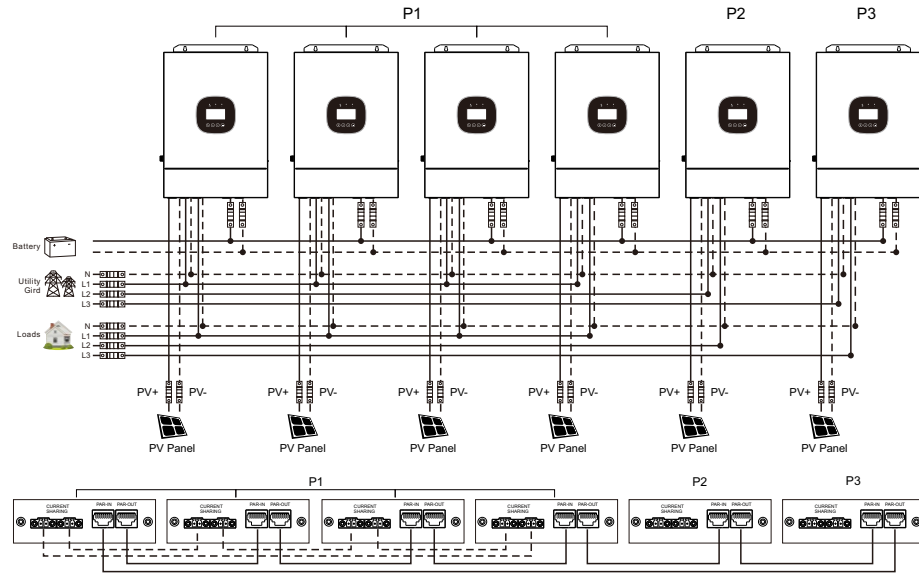
d) Six solar storage inverters of the system connected in three phase:

2+2+2 system:



3+2+1 system:



4+1+1 system:**Note:**

- 1** Before starting up and running, please check whether the connection was correct to avoid any abnormalities in the system.
- 2** All wiring must be fixed and reliable to avoid wire drop during use.
- 3** When the AC output is wired to the load, it shall be properly wired according to the requirements of the electrical load equipment to avoid damage to the load equipment.
- 4** Settings **[38]** need to be set consistently or only for the host. When the machine is running, the voltage set by the host shall prevail, and the master will force the rewrite of the other slave machines to keep the same set, Only can be set in the standby mode.

- 5** Machine factory default for single machine mode, if you use parallel, split-phase or three-phase function, you need to set the **[31]** item parameters through the screen. The setting method is: power on one machine at a time, the rest of the machine off, and then set the **[31]** item parameters according to the site system operation mode. After this machine is set successfully, turn off the machine switch and wait for the machine to be powered down, then set the rest of the machines in turn until all machines are set, and then all machines are powered up again at the same time and enter the working state.

The **[31]** setting item:

When in single phase parallel connection: setting **[31]** should be set as **[PAL]**

When in single phase parallel connection, setting **[31]** should be set as follows:

When in three phase parallel connection, all machines in phase 1 must be set as "3P1", all machines in phase 2 must be set as "3P2" all machines in phase 3 must be set as "3P3" at present, the voltage phase difference between P1-P2, P1-P3 and P2-P3 is 120 degrees.

When the output voltage set in the setting **[38]** is 120 Vac, the line voltage between L1 in phase 1 and L2 in phase 2 is $120 \times 1.732 = 208$ Vac, similarly the line voltage between L1-L3, L2-L3 is 208 Vac; the single phase voltage between L1-N, L2-N, L3-N is 120 Vac.

In split phase parallel connection, All connected P1-phase inverters are set to "2P0":

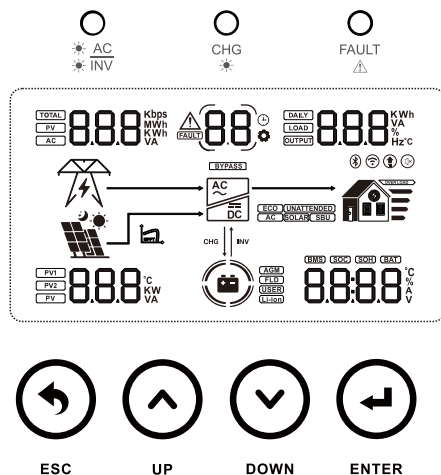
- (1) If all connected P2-phase inverters are set to "2P1", AC output line voltage difference is 120 degrees (L1-L2), line voltage is $120 \times 1.732 = 208$ Vac; Phase voltage is 120 Vac (L1-N; L2-N).
- (2) If all connected p2-phase inverters are set to "2P2", AC output line voltage difference is 180 degrees (L1-L2), line voltage is $120 \times 2 = 240$ Vac; Phase voltage is 120 Vac (L1-N; L2-N).

- 6** After the system runs, the output voltage is measured correctly, and then the load setting is connected.

3. LCD screen operating instructions

» 3.1 Operation and display panel

The operation and display panel is shown below, including one LCD screen, 3 indicator lights and 4 operation buttons.

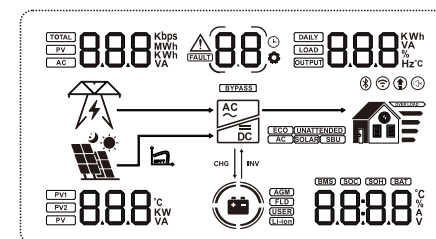


Operation buttons introduction

Function key	Description
	Menu of enter/Exit settings
	Page number/Option increase
	Page number/Option decrease
	Under the menu of settings, OK/Enter options

Operation buttons introduction

Indicator light	Color	Description
AC/INV	Yellow	Normally on: Mains power output
		Flicker: Inverter output
CHARGE	Green	Flicker: The battery is being charged.
		Normally on: The charging is completed.
FAULT	Red	Normally on: Fault status

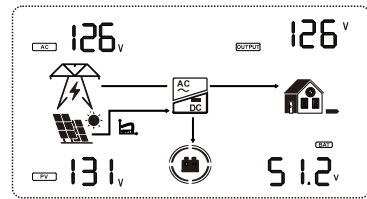
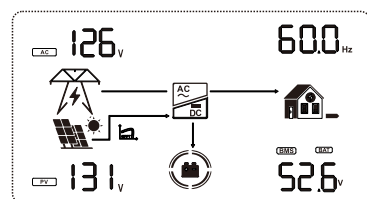
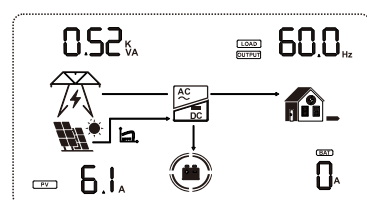
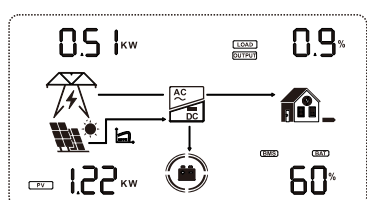


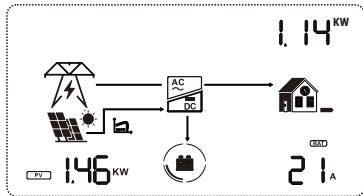
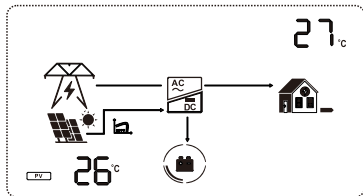
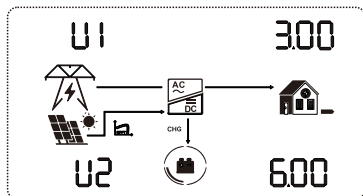
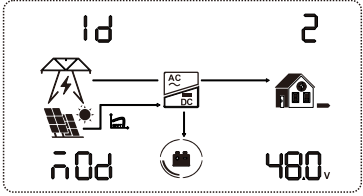
Icon	Function description				
Input source information					
TOTAL PV AC 88.8 Kbps MWh KWh VA	Indicates the AC information				
Solar information					
PV1 PV2 PV 88.8 °C KW VA	Indicates PV current, PV voltage				
Output information					
DAILY LOAD OUTPUT 88.8 KWh VA % Hz °C	Indicates output voltage, output frequency, load percentage, VA in load, load watts and discharge current				
Battery information					
BMS SOC SOH BAT 88.8 °C % A V	Indicates battery voltage and charging current				
	The battery capacity status is 0-5%, 5-25%, 25-50%, 50-70%, and 75~ 100%				
	0%~5%	5%~25%	25%~50%	50%~70%	75%~100%

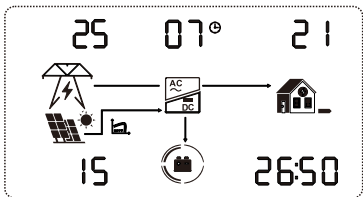
Load information					
		Indicates overload			
	Indicates load				
	0%~5%	5%~25%	25%~50%	50%~75%	75%~100%
					
Mode operation information					
	Indicates unit connects to PV				
	Indicates unit connects to AC				
	Indicates MPPT				
	Indicates the DC inverter circuit is working				
	Indicates include Li-ion				
Buzzer information					
	Indicates buzzer off				

Real-time data viewing method

On the LCD main screen, press the "Up" and "DOWN" buttons to scroll through the real-time data of the machine.

Icon	Parameter interface	LCD display
①	1) AC input voltage 2) Output voltage 3) PV voltage 4) Battery voltage	
②	1) AC input voltage 2) AC input frequency 3) PV voltage 4) BMS battery voltage. (Valid when BMS is enabled)	
③	1) Load apparent power 2) AC output frequency 3) PV input current 4) Battery discharge current	
④	1) Load active power 2) Load percentage 3) PV input power 4) BMS SOC (BMS battery remaining capacity percentage, valid when BMS is enabled)	

Icon	Parameter Interface	LCD Display
⑤	1) battery input charging power 2) PV input power 3) Battery charging current	
⑥	1) INV TEMP °C 2) PV TEMP °C	
⑦	1) U1 software version 2) U2 software version	
⑧	1) RS485 address 2) Model battery voltage rating	

⑨	1) Date setting 2) Time setting	
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» 3.2 Setting parameters description

Key operation instructions: Enter the setting menu and exit the setting menu, please press "ESC", After entering the setting menu, the parameter number [00] will flash. At this time, you can press the "UP" and "DOWN" key to select the parameter code to be set. Then press "ENT" to enter the parameter editing state, at this time, the value of the parameter flashes, adjust the value of the parameter through the "UP" and "DOWN", and finally press "ENT" to complete the editing of the parameter and return to the parameter selection state.

Parameter number	Parameter name	Setting options	Description
00	Exit	[00]ESC	Menu of exit settings
01	Supply priority mode	[01] UTI default	PV load priority, when PV energy is insufficient, grid and PV mixed load, only when the grid power is off, the battery starts to discharge
		[01] SBU	Inverter priority mode. Switch to mains power only when the battery is under voltage or lower than the setting value of parameter [04]; Switch to battery discharge only when the battery is fully charged or higher than the setting value of parameter [05].
		[01] SOL	PV priority mode, switching to the Mains when the PV fails or the battery is lower than the setting value of parameter [04].
02	Output frequency	[02] 60.0Hz Default	Bypass self-adaption, it automatically adapts to AC frequency in case of AC power; without AC power the output frequency can be set via the menu. For 120V machine, it is 60Hz by default.
		[02] 50.0Hz	

03	AC input voltage	[03] UPS Default	Mains input voltage range of 120V machine: 90~140V
		[03] APL	Mains input voltage range of 120V machine: 90~140V
04	Battery to mains	[04] 43.6V Default	parameter [01] = SBU,the battery voltage is lower than this setting value, the output is switched from inverter to mains, the setting range is 40V~57.2V.cannot be set more than [14] setting item.
05	Mains to battery	[05] 57.6V Default	Parameter [01] = SBU, the battery voltage is higher than this setting value,the output is switched from mains to inverter, the setting range is 52.4V~60V. It can not be set lower than [04] and [35] setting items.
06	Charging mode	[06] SNU Default	PV and Mains hybrid charging; PV charging is a priority, and when the PV energy is insufficient, the Mains charging supplements. When the PV energy is sufficient, the Mains charging stops. Note: Only when the Mains bypass output is loaded, the PV charging and the mains charging can work at the same time. When the inverter works, only the PV charging can be started.
		[06] OSO	Only PV charging, with the Mains charging not activated.
		[06] CSO	PV priority charging; only when the PV charging fails, the mains charging is started.
		[06] CUB	Mains priority charging; only when the mains charging fails, the PV charging is started.
07	Maximum charging current	[07] 80A Default	Set Range of 0~100A
08	Battery type	[08] USE	User-defined, all battery parameters can be set.
		[08] SLd	Sealed lead-acid battery with constant charge voltage of 57.6V and floating charge voltage of 55.2V
		[08] FLd	Flooded lead-acid battery with constant charge voltage of 58.4V and floating charge voltage of 55.2V
		[08] GEL Default	GEL lead-acid battery with constant charge voltage of 56.8V and floating charge voltage of 55.2V
		[08]N13/N14	Ternary lithium battery; which is adjustable. N13, constant-voltage charge voltage is 53.2V. N14, constant-voltage charge voltage is 57.6V.

		[08]L14/L15/L16	Lithium iron phosphate battery L14/L15/L16 corresponds to lithium iron phosphate battery 14,15,16strings. 14 strings, constant-voltage charge voltage is 49.6V. 15 strings,constant-voltage charge voltage is 53.2V. 16 strings,constant-voltage charge voltage is 56.8V.
		[08]N13/N14	Ternary lithium battery; which is adjustable. N13, constant-voltage charge voltage is 53.2V. N14, constant-voltage charge voltage is 57.6V.
09	Boost voltage	[09] 56.8V Default	Setting of Boost Voltage: Set Range of 48V~58.4V, Step 0.4V, available when the battery type is user-defined and lithium battery.
10	Maximum boost duration	[10] 120 Default	Setting of Maximum Boost Duration, which is the maximum charging time when the voltage reaches the Parameter [09] when charging at constant voltage, with the Set Range of 5min~900min, and Step of 5min.
11	Float charge voltage	[11] 55.2V Default	Floating Charge Voltage, with the Set Range of 48V~58.4V, Step of 0.4V.
12	Over-discharge voltage	[12] 42V Default	Over-discharge Voltage: the battery voltage is lower than such criterion, and the Inverter output is turned off after the time delay parameter is set to [13], with the Set Range of 40V~52V and Step of 0.4V.
13	Over discharge delay time	[13] 5S Default	Over-discharge Delay Time: when the battery voltage is lower than the Parameter [12], the inverter output is turned off upon delay of time set by this Parameter, with the Set Range of 5S~55S, Step of 5s
14	Battery under voltage alarm point	[14] 44V Default	Battery under-voltage alarm point when the battery voltage is lower than such criterion, under-voltage alarm will be given, the output will not be shut down, with the Set Range of 40V~54V, Step of 0.4V.
15	Battery discharge limit voltage	[15] 40V Default	Battery Discharge Limit Voltage: the battery voltage is lower than such criterion, output and shut down immediately. Set Range of 40V~52V, Step of 0.4V, available when the battery type is user-defined and lithium battery
16	Equalization charge	[16] DIS	No equalization charging
		[16] ENA Default	Enable equalization charging, only Flooded lead-acid batteries, sealed lead-acid batteries and user-defined are effective

17	Equalization voltage	[17] 56.8V Default	Equalization Charging Voltage, with the Set Range of 48V~58V, Step of 0.4V, available for Flooded lead-acid battery, sealed lead-acid battery and user-defined
18	Equalization charging time	[18] 120 Default	Equalization Charging Time, with the Set Range of 5min~900min, Step of 5min, available for Flooded lead-acid battery, sealed lead-acid battery and user-defined
19	Equalized charging delay	[19] 240 Default	Equalization Charging Delay, with the Set Range of 5min~900min, Step of 5min, available for Flooded lead-acid battery, sealed lead-acid battery and user-defined
20	Equalization charge interval time	[20] 30 Default	Equalization Charge Interval Time, 0~30d, Step of 1d, available for Flooded lead-acid battery, sealed lead-acid battery and user-defined
21	Equalization charging start-stop	[21] ENA	Start equalization charging immediately
		[21] DIS Default	Stop equalization charging immediately
22	ECO mode	[22] DIS Default	NO ECO mode
		[22] ENA	After the power saving mode is enabled, if the load is null or less than 50W, the inverter output is turned off after a delay for a certain period of time. When the load is more than 50W, the inverter automatic restart.
25	Buzzer alarm	[25] DIS	No Alarm
		[25] ENA Default	Enable alarm
26	Mode change reminder	[26] DIS	Alarm is disabled when the status of the main input source has change.
		[26] ENA Default	Alarm is abled when the status of the main input source has change.
27	Inverter overload to bypass	[27] DIS	Automatic switch to Mains Power is disabled when the inverter is overloaded.
		[27] ENA Default	Automatic switch to Mains Power when the inverter is overloaded.

28	Current of charging under grid electricity	[28] 40A Default	AC output 120Vac, with the Set Range of 0~40A
30	RS485 address setting	[30] 1 Default	RS485 communication address can be set within the range of 1~254 for stand-alone mode and 1 to 6 for parallel mode.
31	AC output mode (Can be set in the standby mode only)	[31] SIG Default	Single machine setting
		[31] PAL	Single-phase parallel connection setting
		[31] 2P0/2P1/2P2	Split-phase parallel connection setting
		When the parameter [38] setting item=120 for model. All connected P1-phase inverters are set to "2P0": 1) If all connected P2-phase inverters are set to "2P1", AC output line voltage difference is 120 degrees (L1-L2), line voltage is 120*1.732= 208Vac; Phase voltage is 120Vac (L1-N; L2-N). 2) If all connected P2-phase inverters are set to "2P2", AC output line voltage difference is 180 degrees (L1-L2), line voltage is 120*2= 240Vac; Phase voltage is 120Vac (L1-N; L2-N).	
		[31] 3P1/3P2/3P3	Three-phase parallel connection setting
		All machines in phase 1 must be set as [3P1] All machines in phase 2 must be set as [3P2] All machines in phase 3 must be set as [3P3] When the output voltage set in the setting [38] is 120 Vac At present the line voltage between L1 in phase 1 and L2 in phase 2 is 120*1.732= 208 Vac, similarly the line voltage between L1-L3, L2-L3 is 208 Vac; the single phase voltage between L1-N, L2-N, L3-N is 120 Vac.	
32	Communication function	[32]SLA Default	RS485 port for PC or telecommunication control
		[32]BMS	RS485 port for BMS communication.
33	BMS communication protocol	When [32] enables BMS communication, the corresponding lithium battery manufacturer brand should be selected for communication	
		PAC=PACE, PYL=PYLONTECH ...	

34	PV grid-connected power generation function	[34] DIS Default	Disable this Function.
		[34] Lod	Hybrid power to load mode, in which the PV is only charged first in utility mode and the remaining energy is supplied to the load and not fed into the grid.
		[34] Grid	On-grid function, in utility mode, the PV is charged first and the remaining energy is supplied to the load and fed into the grid.
35	Battery under-voltage recovery point	[35] 52V Default	When the battery is under-voltage, the battery voltage should be greater than this set value to restore the inverter AC output of the battery, and the set range is 44.4V~57.2V.
36	Max PV charger current	[36] 80A Default	Max PV charger current. Setting range: 0~100A.
37	Battery recharge recovery point	[37] 52V Default	After the battery is fully charged, the inverter will stop charging, and when the battery voltage is lower than this Value, the inverter will resume charging again. And the set range is 44.4V~54.8V.
38	AC output rated voltage	[38] 120Vac Default	You can set: 100/105/110/120Vac.
39	Charge current limiting method (When BMS is enabled)	[38] SET	Max. battery charging current not greater than the value of setting [07].
		[38] BMS Default	Max. battery charging current not greater than the limit value of BMS.
		[38] INV	Max. battery charging current not greater than the logic judgements value of the inverter.
53	Sectional discharge function	[53] DIS Default	Disable this Function.
		[53] ENA	After the sectioned discharge function is enabled, the power supply mode will change to UTI and the system will switch to battery inverter power supply only during the set discharge period or when the mains power is off.
57	Stop charging current	[57] 2A Default	Charging stops when the default charging current is less than this setting, And the set range is 2-10A.

58	Discharge alarm SOC setting	[58] 15% Default	SOC alarm when capacity is less than this set value (valid when BMS communication is normal).
59	Cut-off discharge SOC settings	[59] 5% Default	Stops discharging when the capacity is less than this setting (valid when BMS communication is normal).
60	Cut-off charge SOC settings	[60] 100% Default	Stops charging when capacity is greater than or equal to this setting (valid when BMS communication is normal).
61	Switch to mains SOC settings	[61] 10% Default	Switch to mains when capacity is less than this setting (valid when BMS communication is normal).
62	Switch to inverter output SOC settings	[62] 100% Default	Switches to inverter output mode when capacity is greater than or equal to this setting (valid when BMS communication is normal).
63	N-G automatically connect	[63] DIS Default	Disable automatic switching of N-G connection.
		[63] ENA	Enable automatic switching of N-G connection.

» 3.3 Battery type parameters

For Lead-acid Battery :

Batterytype Parameters	Sealed lead acid battery (SLD)	Colloidal lead acid battery (GEL)	Vented lead acid battery (FLD)	User-defined (USE)	Adjustable
Overvoltage disconnection voltage	60V	60V	60V	60V	
Battery fully charged recovery point	52V	52V	52V	52V	√
Boost charge voltage	57.6V	56.8V	57.6V	40~60V	√
Floating charge voltage	55.2V	55.2V	55.2V	36~60V	√
Undervoltage alarm voltage ([01] fault)	44V	44V	44V	40~60V	√
Undervoltage alarm voltage recovery point ([01] fault)	Undervoltage alarm voltage+0.8V				
Low voltage disconnection voltage ([04] fault)	42V	42V	42V	40~60V	√
Low voltage disconnection voltage recovery point ([04] fault) (setup item [35])	52V	52V	52V	52V	√
Discharge limit voltage	-	-	-	40~60V	√
Over-discharge delay time	5s	5s	5s	1~30s	√
Boost charge duration	-	-	-	10~900 minutes	√

For Lithium Battery :

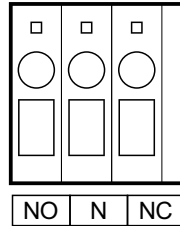
Battery type Parameters	Ternary (N13)	Ternary (N14)	LFP (L16)	LFP (L15)	LFP (L14)	Adjustable
Overvoltage disconnection voltage	60V	60V	60V	60V	60V	
Battery fully charged recovery point (setup item [37])	50.4V	54.8V	53.6V	50.4V	47.6V	√
Equalizing charge voltage	-	-	-	-	-	√
Boost charge voltage	53.2V	57.6V	56.8V	53.2V	49.2V	√
Floating charge voltage	53.2V	57.6V	56.8V	53.2V	49.2	√
Undervoltage alarm voltage ([01] fault)	43.6V	46.8V	49.6V	46.4V	43.2V	√
Undervoltage alarm voltage recovery point ([01] fault)	Undervoltage alarm voltage+0.8V					
Low voltage disconnection voltage ([04] fault)	38.8V	42V	48.8V	45.6V	42V	√
Low voltage disconnection voltage recovery point ([04] fault)(setup item [35])	46V	49.6V	52.8V	49.6V	46V	√
Discharge limit voltage	36.4V	39.2V	46.4V	43.6V	40.8V	√
Over-discharge delay time	30S	30S	30S	30S	30S	√
Equalizing charge duration	-	-	-	-	-	
Equalizing charge interval	-	-	-	-	-	
Boost charge duration	120 minutes	120 minutes	120 minutes	120 minutes	120 minutes	√

4. Other functions

» 4.1 Dry contact

Working principle: This dry contact can control the ON/OFF of the diesel generator to charge the battery.

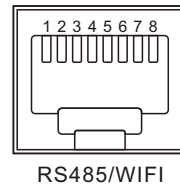
- 1 Normally, the terminals are that the NC-N point is closed and the NO-N point is opened;
- 2 When the battery voltage reaches the low voltage disconnection point, the relay coil is energized, and the terminals turn to that the NO-N point is closed while NC-N point is opened. At this point, NO-N point can drive resistive loads:125VAC/1A,230VAC/1A, 30VDC/1A.



» 4.2 RS485 communication port

This port is an RS485 communication port which comes with two functions:

- 1 RS485 port allows direct communication with the optional host computer developed by our company through this port, and enables monitoring of the equipment running status and setting of some parameters on the computer; This port allows RS485 communication with lithium battery BMS.
- 2 WIFI port also allows direct connection with the optional RS485 to WiFi/GPRS communication module developed by our company through this port. After the module is selected, you can connect the solar storage inverter through the mobile phone APP, on which you can view the operating parameters and status of the device.



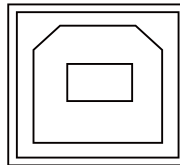
As shown in the figure:

RS485 : Pin 2, Pin 7 is R485-A1, and Pin 1, 8 is RS485-B1:

WIFI : Pin 1 is RS485-A2, Pin 2 is RS485-B2, Pin 7 is 5V power supply, and Pin 8 is GND;

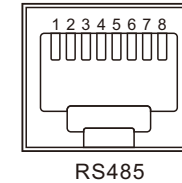
» 4.3 USB communication port

This is a USB communication port, which can be used for USB communication with the optional PC host software. To use this port, you should install the corresponding "USB to serial chip CH340T driver" in the computer.



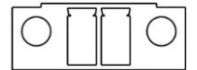
» 4.4 Parallel communication function (parallel operation only)

- 1 This port is used for parallel communication, through which the parallel modules can communicate with each other.
- 2 Each inverter has two RJ45 ports, one for the male connector and the other for the female connector.
- 3 When connecting, make sure to connect the male connector of the inverter with the female connector of the inverter to be paralleled, or connect the female connector of the inverter to the male connector of the inverter to be paralleled.
- 4 Do not connect the male connector of the inverter to its female connector.



» 4.5 Current sharing detection function(parallel operation only)

- 1 This port is used for current sharing detection, through which the current sharing of the parallel modules can be detected (parallel operation only).
- 2 Each inverter has two current sharing detection ports, which are connected in parallel. When it is connected to other models to be paralleled, either port can be connected for convenience. There is no special mandatory wiring requirements.



5. Protection

» 5.1 Protections provided

No.	Protections	Description
1	PV current /power limiting protection	When charging current or power of the PV array configured exceeds the PV rated, it will charge at the rated.
2	PV night reverse-current protection	At night, the battery is prevented from discharging through the PV module because the battery voltage is greater than the voltage of PV module.
3	Mains input over voltage protection	When the mains voltage exceeds 140V(120Vmodel), the mains charging will be stopped and switched to the inverter mode.
4	Mains input under voltage protection	When the mains voltage is lower than 90V(120V model or APL mode) the mains charging will be stopped and switched to the inverter mode.
5	Battery over voltage protection	When the battery voltage reaches the overvoltage disconnection point, the PV and the mains will be automatically stopped to charge the battery to prevent the battery from being overcharged and damaged.
6	Battery low voltage protection	When the battery voltage reaches the low voltage disconnection point, the battery discharging will be automatically stopped to prevent the battery from being over-discharged and damaged.
7	Load output short circuit protection	When a short-circuit fault occurs at the load output terminal, the AC output is immediately turned off.
8	Heat sink over temperature protection	When the internal temperature is too high, the all-in-one machine will stop charging and discharging; when the temperature returns to normal, charging and discharging will resume.
9	Overload protection	Output again 3 minutes after an overload protection, and turn the output off after 5 consecutive times of overload protection until the machine is re-powered. For the specific overload level and duration, refer to the technical parameter s table in the manual.
10	PV reverse polarity protection	When the PV polarity is reversed, the machine will not be damaged.
11	AC reverse protection	Prevent battery inverter AC current from being reversely input to Bypass. (In off-grid mode)

12	Bypass over current protection	Built-in AC input overcurrent protection circuit breaker.
13	Battery input over current protection	When the discharge output current of the battery is greater than the maximum value and lasts for 1 minute, the AC input would switched to load.
14	Battery input protection	When the battery is reversely connected or the inverter is short-circuited, the battery input fuse in the inverter will blow out to prevent the battery from being damaged or causing a fire.
15	Charge short protection	When the external battery port is short-circuited in the PV or AC charging state, the inverter will protect and stop the output current.
16	CAN communication loss protection	In parallel operation, an alarm will be given when CAN communication is lost.
17	Parallel connection error protection	In parallel operation, the equipment will be protected when the parallel line is lost.
18	Parallel battery voltage difference protection	In parallel operation, the equipment will be protected when the battery connection is inconsistent and the battery voltage is greatly different from that detected by the host.
19	Parallel AC voltage difference protection	In parallel operation, the equipment will be protected when the AC IN input connection is inconsistent.
20	Parallel current sharing fault protection	In parallel operation, the running equipment will be protected when the load difference of each inverter is large due to improper connection of current sharing line or device damage.
21	Synchronization signal fault protection	The equipment will be protected when there is a fault in the guidance signal between parallel buses, causing inconsistent behavior of each inverter.

» 5.2 Fault code

Fault code	Fault name	Whether it affects the output or not	Description
[01]	BatVoltLow	No	Battery undervoltage alarm
[02]	BatOverCurrSw	Yes	Battery discharge average current overcurrent software protection

【03】	BatPopen	Yes	Battery not-connected alarm
【04】	BatLowEod	Yes	Battery undervoltage stop discharge alarm
【05】	BatOverCurrHw	Yes	Battery overcurrent hardware protection
【06】	BatOverVolt	Yes	Charging overvoltage protection
【07】	BusOverVoltHw	Yes	Bus overvoltage hardware protection
【08】	BusOverVoltSw	Yes	Bus overvoltage software protection
【09】	PvVoltHigh	No	PV overvoltage protection
【10】	PvBoostOCSw	No	Boost overcurrent software protection
【11】	PvBoostOCHw	No	Boost overcurrent hardware protection
【13】	OverloadBypass	Yes	Bypass overload protection
【14】	OverloadInverter	Yes	Inverter overload protection
【15】	AcOverCurrHw	Yes	Inverter overcurrent hardware protection
【17】	InvShort	Yes	Inverter short circuit protection

【19】	OverTemperMppt	No	Buck heat sink over temperature protection
【20】	OverTemperInv	Yes	Inverter heat sink over temperature protection
【21】	FanFail	Yes	Fan failure
【22】	EEPROM	Yes	Memory failure
【23】	ModelNumErr	Yes	Model setting error
【26】	RlyShort	Yes	Inverted AC Output Backfills to Bypass AC Input
【29】	BusVoltLow	Yes	Internal battery boost circuit failure
【30】	BatCapacityLow1	No	Alarm given when battery capacity rate is lower than 10% (setting BMS to enable validity)
【31】	BatCapacityLow2	No	Alarm given when battery capacity rate is lower than 5% (setting BMS to enable validity)
【32】	BatCapacityLowStop	Yes	Inverter stops when battery capacity is low (setting BMS to enable validity)
【34】	CanCommFault	Yes	CAN communication fault in parallel operation
【35】	ParaAddrErr	Yes	Parallel ID setting error
【37】	ParaShareCurrErr	Yes	Parallel current sharing fault
【38】	ParaBattVoltDiff	Yes	Large battery voltage difference in parallel mode
【39】	ParaAcSrcDiff	Yes	Inconsistent AC input source in parallel mode

[40]	ParaHwSynErr	Yes	Hardware synchronization signal error in parallel mode
[41]	InvDcVoltErr	Yes	Inverter DC voltage error
[42]	SysFwVersionDiff	Yes	Inconsistent system firmware version in parallel mode
[43]	ParaLineContErr	Yes	Parallel line connection error in parallel mode
[44]	Serial number error	Yes	If the serial number is not set by omission in production, please contact the manufacturer to set it
[45]	Error setting of splitphase mode	Yes	[31] Settings item setting error
[58]	BMS communication error	No	Check whether the communication line is connected correctly and whether [33] is set to the corresponding lithium battery communication protocol
[59]	BMS alarm	No	Check the BMS fault type and troubleshoot battery problems
[60]	BMS battery low temperature alarm	No	BMS alarm battery low temperature
[61]	BMS battery over temperature alarm	No	BMS alarm battery over temperature
[62]	BMS battery over current alarm	No	BMS alarm battery over current
[63]	BMS battery under-voltage alarm	No	BMS alarm low battery
[64]	BMS battery over-voltage alarm	No	BMS alarm battery over voltage

» 5.3 Handling measures for part of faults

Fault code	Faults	Remedy
Display	No display on the screen	Check if the battery the PV air switch has been closed; if the switch is in the "ON" state; press any button on the screen to exit the screen sleep mode.
[06]	Battery overvoltage protection	Measure if the battery voltage exceeds rated, and turn off the PV array air switch and Mains air switch.
[01] [04]	Battery undervoltage protection	Charge the battery until it returns to the low voltage disconnect ion recovery voltage.
[21]	Fan failure	Check if the fan is not turning or blocked by foreign object.
[19] [20]	Heat sink over temperature protection	When the temperature of the device is cooled below the recovery temperature, normal charge and discharge control is resumed.
[13] [14]	Bypass overload protection, inverter overload protection	① Reduce the use of power equipment; ② Restart the unit to resume load output.
[17]	Inverter short circuit protection	① Check the load connection carefully and clear the short-circuit fault points; ② Re-power up to resume load output.
[09]	PV overvoltage	Use a multimeter to check if the PV input voltage exceeds the maximum allowable input voltage rated.
[03]	Battery disconnected alarm	Check if the battery is not connected or if the battery circuit breaker is not closed.
[40] [43]	Parallel connection fault	Check whether the parallel line is not connected well, such as loose or wrong connection.
[35]	Parallel ID setting error	Check whether the setting of parallel ID number is repeated.
[37]	Parallel current sharing fault	Check whether the parallel current sharing line is not connected well, such as loose or wrong connection.
[39]	Inconsistent AC input source in parallel mode	Check whether the parallel AC inputs are from the same input interface.
[42]	Inconsistent system firmware version in parallel mode	Check whether the software version of each inverter is consistent.

6. Troubleshooting

► In order to maintain the best long-term performance, it is recommended to conduct following checks twice a year.

- 1 Confirm that the air flow around the machine will not be blocked. In addition, remove any dirt or debris from the radiator.
- 2 Check whether the insulation of all exposed wires is damaged due to sun exposure, friction with other objects around, dry rot, insect or rat damage, etc. If necessary, it is required to repair or replace the wires
- 3 Verify that the indication and display are consistent with the operation of the device. Please pay attention to any fault or error display and take corrective measures if necessary.
- 4 Check all terminals for corrosion, insulation damage, high temperature or burning/discoloration sign, and tighten the terminal screws.
- 5 Check for dirt, nesting insects and corrosion phenomenon and clean as required.
- 6 If the arrester has failed, replace the failed arrester in time to protect the machine and other user device against lightning damage.

Warning: Danger of electric shock! When doing the above operations, make sure that all power supplies of the machine have been disconnected, and all capacitors have been discharged, and then check or operate accordingly!

► We are not responsible for any following damage:

- 1 Damage caused by improper use or use in inappropriate place.
- 2 Open-circuit voltage of PV module exceeds maximum allowable voltage
- 3 The damage caused by the operation ambient temperature beyond the limited operation temperature range.
- 4 Personally take apart and maintain the machine.
- 5 Damage caused by force majeure: damage caused by transportation and handling of the machine.

7. Technical parameters

Models	5KW
Parallel mode	
Permitted parallel number	1~6units
AC mode	
Rated input voltage	110/120Vac
Input voltage range	(90Vac-140Vac) ±2%
Frequency	50Hz/ 60Hz (Auto detection)
Frequency range	47±0.3Hz ~ 55±0.3Hz (50Hz); 57±0.3Hz ~ 65±0.3Hz (60Hz);
Overload/short circuit protection	Circuit breaker
Max efficiency	>92%
Conversion time (bypass and inverter)	10ms (typical)
AC reverse protection	Available
Maximum bypass overload current	63A
Inverter mode	
Output voltage waveform	Pure sine wave
Rated output power (VA)	5000
Rated output power (W)	5000
Power factor	1
Rated output voltage (Vac)	120Vac(100/105/110Vac Settable)
Output voltage error	±5%
Output frequency range (Hz)	50Hz ± 0.3Hz 60Hz ± 0.3Hz
Maximum efficiency	92%
Overload protection	(102% < load < 125%) ± 10%: report error and turn off the output after 1 minutes; (125% < load < 150%) ± 10%: report error and turn off the output after 10 seconds; Load > 150% ± 10%: report error and turn off the output after 5 seconds
Peak power	10000VA

Loaded motor capability	4HP
Rated battery input voltage	48V (Minimum starting voltage 44V)
Battery voltage range	Undervoltage alarm/shutdown voltage/overvoltage alarm /overvoltage recovery...settable on LCD screen
Power saving mode self-consumption	Load≤50W
AC output (Grid)	
Rated output power (W)	5000W
Max. apparent power (VA)	5000VA
Max. output current (A)	42A
THDI	<3%
Rated voltage(V)	120Vac
Frequency	50Hz/60Hz
AC charging	
Battery type	Lead acid or lithium battery
Maximum charge current(can be set)	0-40A
Charge current error	± 3A _{dc}
Charge voltage range	40 –58V _{dc}
Short circuit protection	Circuit breaker and blown fuse
Circuit breaker specifications	63A
Overcharge protection	Alarm and turn off charging after 1 minute
PV charging	
Maximum PV open circuit voltage	500V _{dc}
PV operating voltage range	60V-500V _{dc}
MPPT voltage range	60V-450V _{dc}
Battery voltage range	40-60V _{dc}
Maximum PV input power	5500W
Maximum PV input current	22A

PV charging current range (can be set)	100A
Charging short circuit protection	Blown fuse
Wiring protection	Reverse polarity protection
Hybrid charging Max charger current specifications (AC charger+PV charger)	
Max charger current(can be set)	100A
Certified specifications	
Certification	CE(IEC62109-1)/FCC/UKCA
EMC certification level	EN61000
Operating temperature range	-10°C to 55°C (14°F~131°F)
Storage temperature range	-25°C ~ 60°C (13°F~140°F)
Humidity range	5% to 95% (Conformal coating protection)
Noise	≤60dB
Heat dissipation	Forced air cooling, variable speed of fan
Communication interface	USB/RS485(WiFi/GPRS)/Dry contact control
Product size(D*W*H)	499mm*340mm*143mm
Packing size(D*W*H)	555mm*415mm*225mm
N.W.(Kg)	12.70Kg
G.W.(Kg)	14.32Kg