



USER MANUAL

**EP PLUS INVERTER SINE WAVE LONG BACKUP
(1000VA - 6000VA)**



Preface

Thank you for choosing our Line interactive UPS or Inverter, which are safe, reliable and easy to use.

Please read this manual carefully, which includes a safe installation and operation description, as well as its electrical performance and associated protection functions, which will help you get the fullest service life. Observe all warnings and operating instructions in the manual and on the machine and keep this manual in a safe place.

The installation, operation and maintenance of this series of products should be carried out by trained technical personnel and the following requirements:

1. Make sure that the DC / AC voltage of the connected product complies with the nominal rated operating voltage of this product.
2. Make sure that the DC input of the product is connected to the positive and negative terminals of the battery and cannot be reversed.
3. Make sure that the cable between the product and the battery is as short as possible. Input and output wiring is correct and solid, and pay attention to avoid short circuit connection.
4. There is a high voltage inside the product. Do not open the case by non-electrical professionals.

Disclaimer: As the product and technology constantly updated, perfect, the contents of this information may not be fully consistent with the actual product, please understand. Please contact our company for information on product updates.

 *The car battery to provide big current to start the engine in short time, but not designed for continuous power consumption, not suitable for deep cycle discharge. If you want to use a continuous use of equipment for a long time, it is recommended that you install battery for deep discharge, such as AGM or GEL batteries.*

CHAPTER 1 SAFETY PRECAUTIONS

1.1 Scope of Application

The user manual provides instructions for the assembly, installation, operation, and maintenance procedures of power inverter. Please carefully read this manual before proceeding with installations and operations. Keep this user manual for future reference.

1.2 Safety Warning

DANGER

- Dangerous due to electrical shock and high voltage.
- Avoid contact with the operational components to prevent burning or potential fatality.
- Prior to installation and maintenance, ensure that all AC and DC terminals are unplugged to reduce the risk of electric shock.
- Do not touch the inverter's surface if the housing is wet, as it may result in electrical shock.
- Stay away from the inverter during severe weather conditions such as storms or lightning.
- Before opening the housing, disconnect the inverter from the utility power, and wait at least five minutes to allow energy storage capacitors to fully discharge after power disconnection.

WARNING

- The installation, servicing, recycling, and disposal of the power inverter must be performed by qualified personnel in adherence to national and local standards and regulations.
- Unauthorized actions, including any form of product functionality modification, may pose a lethal hazard to the operator, third parties, the units, or their property. The manufacturer is not liable for losses and warranty claims arising from such unauthorized actions.
- Ensure that the power inverter is properly grounded to safeguard both properties and individuals.

CAUTION

- The inverter will generate heat during operation; therefore, avoid touching the heat sink or peripheral surface during or immediately after operation.
- Risk of fire damage exists with improper modifications.
- Do not modify or tamper with the power inverter and other components of the system.

NOTICE

- This inverter operates off-grid and cannot provide AC power to the utility grid.
- Do not directly connect the AC output to the utility power.

1.3 Users

- Only professionals who have thoroughly read and understood all the safety rules outlined in this manual are authorized to install, maintain, and repair this inverter. The operator must be aware that this is a high-voltage device.

1.4 Safety Instructions

1.4.1 Please pay attention to the safety markings on this product, battery and instructions.

1.4.2 Before using this product, read all instructions and cautionary markings on this product, the batteries and all appropriate sections of this manual.

1.4.3 There are high temperature and high pressure inside the product, only qualified personnel can install, operate and maintain this product.

1.4.4 During the process of the operation and maintenance, must comply with electrical safety regulations and related operating procedures, otherwise it may lead to personal injury or equipment damage. The safety precautions mentioned in the manual are intended only as a supplement to safety regulations.

1.4.5 DO NOT disassemble this product. 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.

1.4.6 To reduce risk of electric shock, disconnect all wiring before any maintenance or cleaning. Turn off this product will not reduce this risk.

1.4.7 NEVER charge a frozen battery.

1.4.8 Please strictly follow installation procedure when you want to disconnect AC or DC terminals. Please refer to INSTALLATION section of this manual for the details.

1.4.9 NEVER cause AC output and DC input short circuit. DO NOT connect to the electricity power when DC input short circuit.

1.4.10 The manufacturer shall not be liable for any breach of the general safety requirements or violation of the design, production and use of equipment safety standards.

1.5 General Safety Precautions

Do not expose the inverter to water, fog, snow, dust, etc. In order to reduce the risk, please do not block or cover the ventilation. Do not install in a small space without ventilation, otherwise the power supply will overheat and cause a fire. To avoid fire and electric shock, please ensure that all cables have good electrical characteristics and suitable wire diameters.

DO NOT use damaged or undersized cables.

Since there are parts inside the power supply that can cause discharge and ignition, please do not place flammable and explosive materials around it.

1.6 Safety Precaution of Battery Operation

- If the skin, clothing stained with acid batteries, washing it immediately with soap and water. If the acid is splashed into the eyes, rinse immediately with cold water for at least 20 minutes and treat it in time.
- Do not smoke or ignite an open fire near a battery or engine.
- Do not place metal tools on the battery, sparks or short circuits can cause an explosion.
- When operating lead-acid batteries do not wear rings, bracelets, necklaces, watches and other metal jewelry, and when the battery short-circuits, the current can produce high heat to melt metal, leading to serious burns.

CHAPTER 2 PRODUCTION INFORMATION

2.1 Production Introduction

The power inverter is designed to concurrently fulfill three key functions: pure sine wave inverter, multi-stage intelligent battery charging, and power switching. This integration streamlines system configuration, minimizing wiring complexities. Despite its compact size, the inverter boasts a robust load capacity and a high level of intelligence. It can provide power to AC loads while simultaneously accepting utility or alternator power inputs. In the absence of a bypass for alternating current, it taps into stored electrical energy in the battery to generate sine wave AC, ensuring continuous power supply to equipment. Its adaptability within power distribution systems allows for versatile solutions, with the ability to adjust charging currents and manage loads. Widely applicable in vehicles, ships, solar independent systems, backup power scenarios, and more, this power inverter offers a comprehensive and efficient solution for various applications.

2.2 Features

2.2.1 Power Inverter Function

2.2.1.1 Pure sine wave output

Smoother and cleaner output for sensitive equipment, and improve equipment performance and efficiency (THDi < 3%).

2.2.1.2 Super load capacity

It is built-in isolation transformer, it can provide all the benefits of isolation including a very robust buffer between the utility and the critical load, and is widely suitable for all types of inductive load, such as refrigerators, air conditioners, power tools, etc.

2.2.1.3 Low standby power consumption

This inverter provides many operating modes, in the energy-saving mode, the inverter will detect the output load power at all times. When the load is less than 3% of the total power, the inverter will start intermittent output; when the load is more than 4% of total, the inverter will return to normal operating mode.

2.2.2 Battery Charging Function

- **Three-stage charging:** Smart chip control of the three-stage battery charge management, it can charge the battery quickly, and effectively extend the battery life.
- **Settable charging current:** The users can select the corresponding charging current from 0% - 100% according to capacity of battery, add 20% in each step.
- **Settable charging voltage:** Choose different charging voltages according to different types of batteries, like lead acid batteries, GEL batteries, Lithium batteries.

2.2.3 Fast Transfer Switch Function

The power inverter features an integrated fast switch that automatically transitions between modes based on specific conditions. When the mains power supply aligns with the inverter's working voltage or fulfills the output load requirements, the inverter seamlessly switches to mains.

power supply mode. In this mode, it channels power to the output load through the bypass while simultaneously charging the battery. The inverter operation is temporarily turned off, and the output voltage synchronizes with the input voltage. Conversely, if the mains cannot meet the inverter's working voltage or output load demands, the system automatically shifts to inverter working mode. In this scenario, the battery supplies power to the inverter, facilitating the conversion of DC to AC. This ensures uninterrupted AC output to the load. Once the mains power is restored or meets the inverter's output load demands, the power inverter seamlessly transitions back to the mains power supply mode.

2.3 Operating Mode Description

Mode	Name	Description
01	Regular Mode	In utility power priority mode, upon the initiation of the inverter, stable power is seamlessly supplied to the load through the utility power bypass, while simultaneously charging the battery pack when the utility power input is within normal parameters. However, in the event of abnormal conditions such as high or low voltage, or severe distortion in the utility power, the inverter swiftly transitions to the battery pack. Utilizing internal modules, it efficiently converts stored battery energy into high-quality power, ensuring a continuous and uninterrupted power supply to the load.
02	Energy Saving Mode	In energy saving mode, the inverter conducts automatic load condition assessments while in operation. If the detected load surpasses 5% of the rated power, the inverter initiates AC output to power the load. In the absence of any detected load, the inverter seamlessly transitions to search mode, minimizing energy consumption from the battery pack. During this mode, load condition detection occurs at a frequency of 4 seconds off and 2 seconds on, optimizing energy-saving measures. Upon normal connection of mains power, the inverter smoothly switches to mains power operation, ensuring continued AC output and battery charging.
03	Energy Storage Priority Mode	In energy storage priority mode, when the battery is charged by an external source, such as a solar charging system or mains power, reaching a predetermined battery priority start value triggers the inverter to automatically convert battery energy

Mode	Name	Description
		into high-quality power for the load. Conversely, when the battery power decreases to a specified battery priority termination value, the inverter continues to supply power to the load through mains bypass voltage regulation but refrains from charging the battery.

2.4 Product Protection

This product equipped with a series of comprehensive hardware and software protection to ensure its stable integrated reliability.

Power Amplifier Over Current	This system is equipped with the ability to detect the operating current of the power amplifier tube. If the detected current exceeds a certain threshold, the system will automatically switch to a current-limiting mode, and concurrently display the fault code E01.
Output Short Circuit Protection	When a short circuit is detected in the inverter, the system will initiate an automatic shutdown and display the fault code E02. Once the fault is rectified, manual intervention is required to restart the system.
Overload Protection	When the charger or inverter experiences an overload, the inverter will activate a protective state, accompanied by the display of fault code E03. This protection includes both hardware and software safeguards.
Over Temperature Protection	When the internal temperature of the inverter exceeds a specified threshold, the inverter will engage the over-temperature protection state and show fault code E04.
Battery Over Voltage Protection	To prevent potential system damage resulting from incorrect battery connections or faults in the controller and charger, the system is designed to automatically shut down and display fault code E05 when it detects an excessively high battery voltage.
Low Battery Voltage Protection	To prevent excessive battery discharge, the inverter will autonomously initiate a system shutdown and present fault code E06.
Phase Reverse Protection	When the system detects an internal phase error, it will trigger an alarm and display fault code E07.
Low Output Voltage Protection	When the system detects that the output voltage is excessively low, the inverter will automatically shut down and display fault code E08.
Hardware Protection	When entering hardware protection, the over-current protector disengages, requiring the user to press the over-current protector button before the inverter can resume normal operation.
Software Protection	When software protection is triggered, the inverter will automatically shut down through software control. In such instances, the user is required to manually restart the inverter.

2.5 Product Information

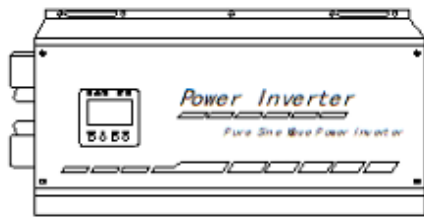


Technical Support: 0797-247-888

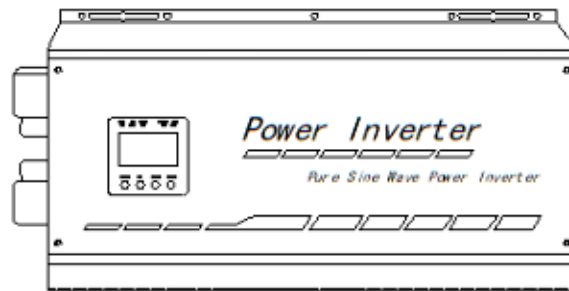


Customer Service: 0903-808-500

➤ Front view

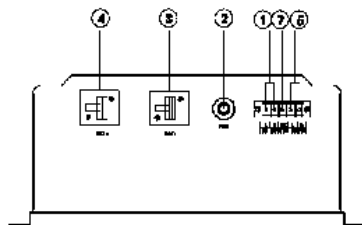


1000W

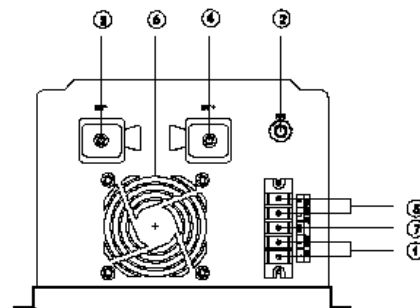


2000W – 6000W

➤ Rear side



1000W



2000W – 6000W

1. AC INPUT
2. INPUT Fuse
3. Battery Negative (BAT -)
4. Battery Positive (BAT+)
5. AC OUTPUT
6. Fan
7. Grounding
8. PV INPUT (option)

2.6 Technical Specificatio

Model		EP PLUS 1K12	EP PLUS 2K24	EP PLUS 3K24	EP PLUS 4K48	EP PLUS 5K48	EP PLUS 6K48
Rated Power		1000W	2000W	3000W	4000W	5000W	6000W
Instantaneous Power		3000W	6000W	9000W	12000W	15000W	18000W
AC Input	Voltage Range	220V/230VAC (± 25%)					
	Frequency Range	50/60Hz ± 2.5Hz					
Output	Battery Efficiency	81%		83%		85%	
	AC Efficiency	93%					
	Output Voltage	220/230VAC (AC mode +10%, Battery mode +5%)					
	Output Frequency	50/60Hz ± 0.5Hz (AC mode ± 2.5)					
	Transfer time	< 8ms					
	USB Output	DC 5V/1A * 1 port					
	Wave Form	Pure Sine Wave					
Connector	Input/ Output	Input & Output terminals					
	Battery	Terminals					
Battery	Votage	12VDC	24VDC		48VDC		
	Charging Current	0-20A	0-30A	0-45A	0-30A	0-40A	0-50A
LCD	Method	LCD + LED					
	Content	Input/Output Voltage, Battery Voltage, Battery Capacity, Load Capacity, Working mode, Frequency					
Protection	Battery Reversal	Optional					
	Output Short Circuit	AC mode: Jump fuse, Invertermode: Shut down					
	Overload	Full load 100%, inverter will alarm. Overload 120%, inverter will shut down output in 10s. Once the load back to normal, inverter will recover output					
	High AC Voltage	Turn off AC, turn to UPS mode automatically					
	Low DC Voltage	Inverter will shut down automatically, Once the AC recover, inverter will turn on and charge automatically					
	Over Temperature	Inverter will alarm and turn off output but it will recover to normal state after cooling down					
Dimension	DxWxH (mm)	320*308*133	550*295*205				
Weight	N.W(KGS/PC)	7.6	16	18.2	20.8	22.6	23.1
Environment	Humidity	15 ~ 93% (non-condensing)					
	Temperature	-10 ~ 50 oC					
	Altitude	< 3000m					

CHAPTER 3 INSTALLATION

3.1 Safety Instructions

DANGER

- Potential life-threatening hazards exist due to the risk of fire or electric shock.
- Ensure that the inverter installation maintains a safe distance from any flammable or explosive materials.
- The inverter will be directly linked to a HIGH VOLTAGE power generation device; Installation should be carried out exclusively by qualified personnel, adhering to national and local standards and regulations.

WARNING

- This equipment is designed for use in pollution degree II environments.
- Improper installation or an environment not in harmony with specifications may compromise the inverter's lifespan.
- Avoid installing the equipment directly in intense sunlight.
- Ensure the installation site has optimal ventilation conditions.

3.2 Pre-installation Check

3.2.1 Check the package

While the inverters undergo rigorous testing and inspection before leaving the factory, it is essential to be aware that potential damages can occur during transportation. Please carefully inspect the package for any visible signs of damage. If such indications are present, refrain from opening the package and promptly contact your dealer for further assistance.

3.2.2 Installation environment

- When moving the inverter from a cold environment to a warmer indoor setting, condensation may occur internally. It is crucial to wait until the inverter is completely dry before installation.
- Therefore, upon reaching the installation site, allow a minimum of 2 hours for the inverter to acclimate to the environment before proceeding with installation.
- Avoid installing the inverter in close proximity to water or moisture. It should not be positioned under direct sunlight or near heating equipment.
- Ensure that ventilation holes on the inverter housing remain unobstructed; never block or shield them.

3.2.3 Installation Position

- Excessive heat can result in a decrease in power output. Therefore, it is not advisable to install the inverter in direct sunlight. The recommended ambient temperature range for the installation site is -25°C to +60°C (-13°F to 140°F). Additionally, it is

important to note that for every 5°C increase in temperature, the load should be reduced by 10%.

- Ensure that the installation location is well-ventilated, as the presence of airflow significantly influences the operational efficiency of internal electronic components, ultimately impacting the inverter's lifespan.
- Moreover, if multiple devices are being installed in close proximity, it is crucial to establish suitable air circulation conditions to maintain optimal performance for all equipment.

3.3 Battery Connection

CAUTION: For safety operation and regulation compliance, it's requested to install a separate DC over-current protector or disconnect device between battery and inverter. It may not be requested to have a disconnect device in some applications, however, it's still requested to have over-current protection installed.

 **WARNING!** All wiring must be performed by qualified personnel.

 **WARNING!** It's very important for system safety and efficient operation to use appropriate cable for battery connection. To reduce risk of injury, please use the proper recommended cable and terminal size as below.

Recommended battery cable and terminal size:

Capacity	Battery Voltage	Cable Size (mm ²)	Torque value
300W	12VDC	6	
600W	12VDC	10	
1000W	12VDC	16	
1000W	24VDC	10	
2000W	24VDC	16	
3000W	24VDC	25	
3000W	48VDC	16	
4000W	48VDC	25	2 ~ 3 Nm
5000W	48VDC	25	
6000W	48VDC	35	
8000W	48VDC	35	

Capacity	Battery Voltage	Cable Size (mm ²)	Torque value
8000W	96VDC	25	
10000W	96VDC	25	

⚠ WARNING: Shock Hazard

Installation must be performed with care due to high battery voltage in series.

⚠ CAUTION!!

- Do not place anything between the flat part of the power inverter terminal and the ring terminal. Otherwise, overheating may occur.
- Do not apply anti-oxidant substance on the terminals before terminals are connected tightly.
- Before making the final DC connection or closing DC breaker, be sure positive (+) must be connected to positive (+) and negative (–) must be connected to negative (–).

3.4 AC INPUT / OUTPUT Connection

CAUTION! Before connecting to AC input power source, please install a separate AC breaker between inverter and AC input power source. This will ensure the inverter can be securely disconnected during maintenance and fully protected from over current of AC input.

CAUTION! There are two terminal blocks with "IN" and "OUT" markings. Please do NOT mis-connect input and output connectors.

⚠ WARNING! All wiring must be performed by qualified personnel.

⚠ WARNING! All inverter installation must be well grounded (GND).

⚠ WARNING! It's very important for system safety and efficient operation to use appropriate cable for AC input connection. To reduce risk of injury, please use the proper recommended cable size as below.

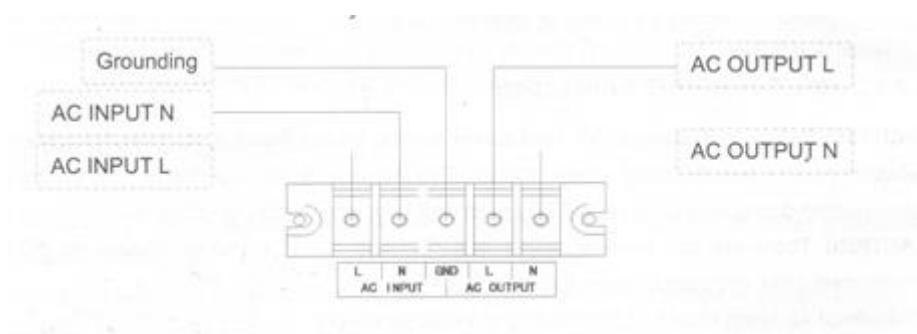
Suggested cable requirement for AC wires

Capacity	Cable Size (mm ²) 110VAC/120VAC	Cable Size (mm ²) 220VAC/230VAC	Torque value
300W	0.75	0.5	0.5 ~ 0.6 Nm
600W	1	0.75	0.5 ~ 0.6 Nm
1000W	1	0.75	0.5 ~ 0.6 Nm
1500W	2.5	1.5	0.8 ~ 1 Nm

Capacity	Cable Size (mm ²) 110VAC/120VAC	Cable Size (mm ²) 220VAC/230VAC	Torque value
2000W	4	2.5	0.8 ~ 1 Nm
3000W	4	2.5	0.8 ~ 1 Nm
4000W	6	4	1.2 ~ 1.6 Nm
5000W	10	4	1.2 ~ 1.6 Nm
6000W	10	6	1.4 ~ 1.6 Nm
8000W	16	6	1.4 ~ 1.6 Nm
10000W	25	10	1.6 ~ 1.8 Nm

Please follow below steps to implement AC input/output connection:

1. Before making AC input/output connection, be sure to open DC protector or disconnecter first.
2. Remove insulation sleeve 10mm for six conductors. And shorten phase L and neutral.
3. Insert AC input wires according to polarities indicated on terminal block and tighten the terminal screws. Be sure to connect GND protective conductor first.
4. Then, insert AC output wires according to polarities indicated on terminal block and tighten terminal screws. Be sure to connect GND protective conductor first.
5. Make sure the wires are securely connected.



⚠ CAUTION: Important

Be sure to connect AC wires with correct polarity. If L and N wires are connected reversely, it may cause utility short-circuited when these inverters are worked in parallel operation.

3.5 Communication Connection

RS-232 interface can be used to set the alarm information, automatically starting the generator, or turning on/off the load.

RS-232 port



To allow for unattended inverter shutdown/start-up and status monitoring, connect the communication cable one end to the RS-232 and the other to the communication port of your PC. With the monitoring software installed and monitor inverter status through PC.

The inverter is also for SNMP card, RS-485, Dry contact, Wi-Fi module, but these are options.

CHAPTER 4 OPERATION

4.1 Operation Guide

- Make sure all switches are "OFF", and check if each input voltage matches the rated input voltage identified by the rear panel of the inverter. Please change, if you find that it does not meet the item, otherwise it will damage the inverter.
- Turn on the battery switch and AC input switch.
- The inverter will start-up automatically and enter into the self-test mode: LCD display on, the LED indicators also are on. Once the buzzer beep, the AC INPUT LED indicator is on, and the inverter will turn to the normal working operation.
- After confirmed that the output is normal, turn on the load switch to supply power. During the loading process you should ensure that the load is less than the rated load capacity of the inverter, that is, the FAULT indicator will not on and the buzzer will not overload alarm.

⚠ CAUTION: Important!!!

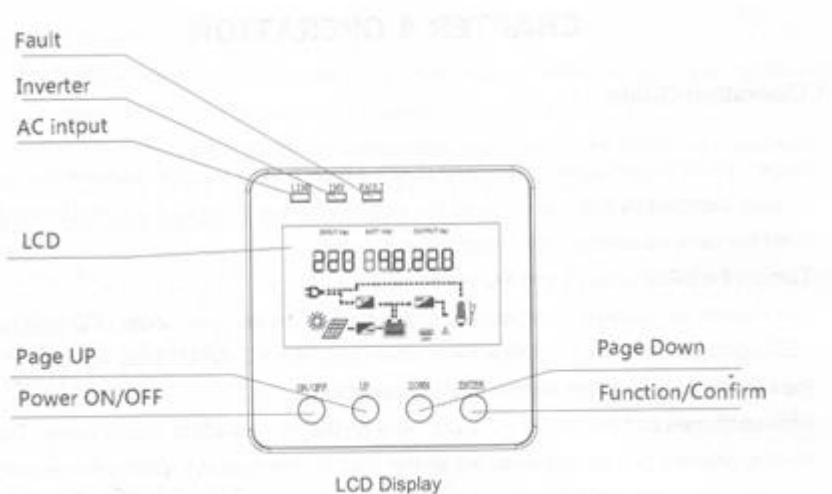
After the installation, the start-up of the inverter must connect with AC input to match the utility frequency, otherwise the inverter will work in accordance with the frequency set at factory. The inverter always records the frequency before the power outage. The next start-up if no utility power input, it will depend on the last record to work; if connecting with electricity, the frequency is based on the current utility frequency to work.

4.2 Power ON/OFF

Once the inverter has been properly installed and the batteries are connected well, simply press ON/OFF switch to turn on the power inverter.

4.3 Operation and Display Panel

The operation and display panel, shown in below chart, is on the front panel of the power inverter. It includes three indicators, four function keys and a LCD display, indicating the operating status and input/output power information.



4.3.1 LED Indicator

Indicator light	Color	Description
Line light	Green	AC is normal "Bright" and AC abnormal "OFF".
Inverter light	Yellow	The inverter is working "Bright", and inverter is not working "OFF".
Fault light	Red	The inverter is working normal "OFF", the inverter is fault "Bright", Buzzer is long alarm.

4.3.2 Function Keys

Function Keys	Description
ON/OFF	Power ON/OFF
UP	To previous selection
DOWN	To next selection
ENTER	To confirm the selection in setting mode or enter setting mode

4.3 LCD Display Icons

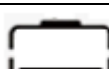
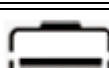
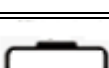
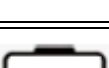
Icon	Function description
INPUT Vac	Indicates the AC input voltage.
BATT Vdc	Indicates the battery voltage.
OUTPUT Vac	Indicates the output voltage.
INPUT Hz	Indicates the AC input frequency.
BATT %	Indicates the battery capacity.
OUTPUT %	Indicates output loading.
	Indicates battery level by 0-24%, 25-49%, 50-74%, 75-100% 100% in battery mode and charging status in line mode.

In AC mode, it will present battery charging status.

Status	Battery voltage	LCD Display
Constant	< 2V/cell	4 bars will flash in turns.
Current mode	2 ~ 2.1V/cell	Bottom bar will be on and other three bars will flash in turns.
	2.1 – 2.2V/cell	Bottom two bars will be on and other two bars will flash in turns.

Status	Battery voltage	LCD Display
	> 2.2V/cell	Bottom three bars will be on and the top bar will flash.
Floating mode. Batteries are fully charged.		4 bars will be on

In battery mode, it will present battery capacity

Load Percentage	Battery Voltage	LCD Display
Load > 50%	< 1.7V/cell	
	1.7 – 1.8V/cell	
	1.8 – 1.9V/cell	
	> 1.9V/cell	
50% ≥ Load > 20%	< 1.8V/cell	
	1.8 – 1.9V/cell	
	1.9 – 2.0V/cell	
	≥ 2.0V/cell	
Load < 20%	< 1.9V/cell	
	1.8 – 1.9V/cell	
	1.9 – 2.0V/cell	

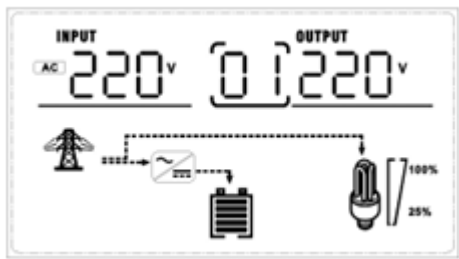
Load Percentage	Battery Voltage	LCD Display
	$\geq 2.0\text{V/cell}$	

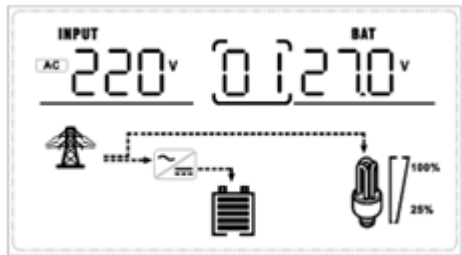
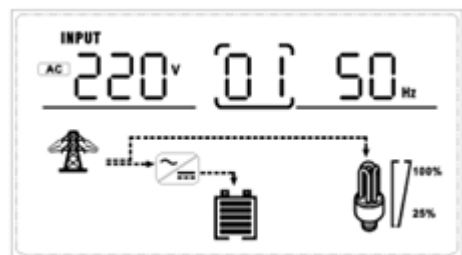
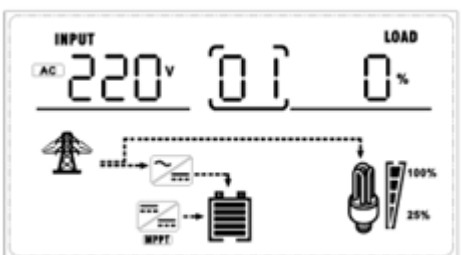
Additional LCD icons:

	0% ~ 24%	25% ~ 50%	51% ~ 74%	75% ~ 100%
	The device is connected to the utility power			
	The utility charging circuit is operating			
	The DC/AC inverter circuit is operating.			
	Operating mode indicator			
	The device alarm has been disabled.			

4.4 LCD Display

The LCD display information will be switched in turns by pressing "UP" or "DOWN" key. The selectable information is switched as below order: AC input voltage, AC output voltage, AC input frequency, battery voltage, load percentage.

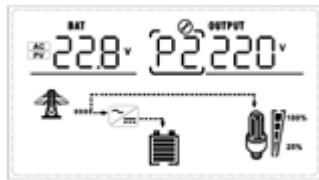
ITEM	LCD DISPLAY
AC Input Voltage/Output Voltage (Default Display Screen)	

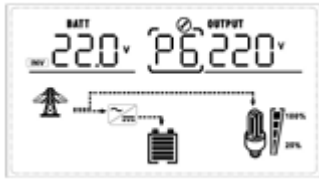
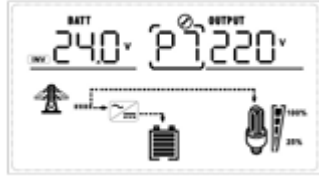
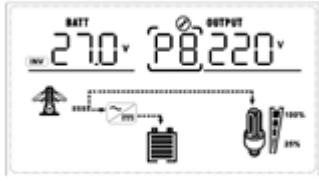
ITEM	LCD DISPLAY
AC Input Voltage / Battery Voltage	
AC Input Voltage / Output Frequency	
AC Input Voltage / Output Load Percentage	

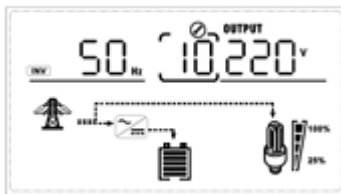
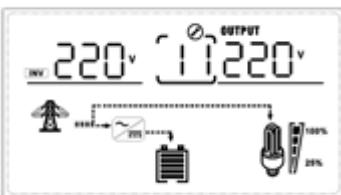
4.5 LCD Setting

After pressing and holding ENTER button for 3 seconds, the inverter will enter setting mode. Press "UP" or "DOWN" button to select setting programs. And then, press "ENTER" button to confirm the selection or ESC button to exit.

Program	Description	Operation	Selectable options
P0	Exit setting mode	Press the "ENTER" button and hold for 5 seconds to enter the setting mode, the LCD will display "ESC" and a flashing "P0".	

Program	Description	Operation	Selectable options
P1	Operation Mode	When "P1" is flashing, press "ENTER" to enter the "operation mode". Press "DOWN" to display 01, 02, 03 in sequence of working modes. Press "ENTER" to confirm the setting. For more information, please refer to the section "Operation Mode Description".	 01 Normal Mode 02 Energy Saving Mode 03 Energy Storage Priority Mode
P2	Battery Type	When "P2" is flashing, press "ENTER" to enter the "battery type" menu. Press "UP" or "DOWN" to select different battery types, and press "ENTER" to confirm the setting. (* represents the float voltage of a single battery cell)	 13.4V AGM1 Battery 13.6V Lead-acid Battery 13.7V AGM2 or Gel Battery 13.8V Gel, Flooded, or Lead-calcium Battery 14.5V LiFePO4 Battery
P3	AC Charging Current	When "P3" is flashing, press "ENTER" to enter the "AC charging current adjustment" menu. Press "UP" or "DOWN" to adjust the charging current from 0% to 100% (in 20% increments), then press "ENTER" to confirm the setting.	
P4	Buzzer	When "P4" is flashing, press "ENTER" to enter the "Buzzer adjustment" menu. Press "UP" or "DOWN" to change the buzzer operation status, then	

Program	Description	Operation	Selectable options
		press "ENTER" to confirm the setting.	
P5	Low Voltage Battery Protection	When "P5" is flashing, press "ENTER" to make the value on the left flash. Press "UP" or "DOWN" to adjust the value, with each step increasing or decreasing by 0.1V. Adjustment range: 9.6V → 12.5V. Press "ENTER" to confirm the setting.	
P6	Low Voltage Battery Warning	When "P6" is flashing, press "ENTER" to make the value on the left flash. Press "UP" or "DOWN" to adjust the value, with each step increasing or decreasing by 0.1V. Adjustment range: 9.8V → 13.0V. Press "ENTER" to confirm the setting.	
P7	Real-time Battery Voltage	When "P7" is flashing, press "ENTER" to make the value on the left flash. Press "UP" or "DOWN" to adjust the value, with each step increasing or decreasing by 0.1V. Adjustment range: 11.5V → 14.5V. Press "ENTER" to confirm the setting.	
P8	Battery Priority Start-up Voltage	When "P8" is flashing, press "ENTER" to make the value on the left flash. Press "UP" or "DOWN" to adjust the value, with each step increasing or decreasing by 0.1V. Adjustment range: 11.5V → 14.5V.	

Program	Description	Operation	Selectable options
		Press "ENTER" to confirm the setting.	
P9	Battery Priority Cut-off Voltage	When "P9" is flashing, press "ENTER" to make the value on the left flash. Press "UP" or "DOWN" to adjust the value, with each step increasing or decreasing by 0.1V. Adjustment range: 9.8V → 14.0V. Press "ENTER" to confirm the setting.	
P10	Output Frequency	When "P10" is flashing, press "ENTER" to make the value on the left flash. Press "UP" or "DOWN" to adjust the value, selectable between 50Hz or 60Hz. Press "ENTER" to confirm the setting.	
P11	Output Voltage	When "P11" is flashing, press "ENTER" to make the value on the left flash. Press "UP" or "DOWN" to adjust the value, with each step increasing by 10V. There are two selectable ranges for automatic voltage recognition: 100V → 120V 200V → 240V Press "ENTER" to confirm the setting.	

Special Note:

After finishing all parameter adjustments, completely turn off the inverter, disconnect both AC and DC power for 10 seconds, then restart the inverter.

The adjustments will only take effect when the inverter starts up normally and operates with the new parameter settings.

CHAPTER 5 COMMON FAULT ANALYSIS

5.1 Fault Reference Code

Fault code	Fault	Icon
E00	No fault	E00
E01	MOSFET over current	E01
E02	Output short circuit	E02
E03	Overload	E03
E04	Over temperature	E04
E05	Over DC voltage	E05
E06	Low DC voltage	E06
E07	Power cable wrong connection	E07
E08	Low output voltage protection	E08
E09	No date of manufacture	E09
E10	Sharp drop in battery voltage due to battery aging or damaged, as well as larger internal resistance	E10

5.2 Trouble Shooting

Fault	Causes	Solutions
AC is normal, AC LED is off, inverter operating in battery mode	AC power cable missing or poorly connected	Check all AC power cables and rectify any issues
	AC input fuse blown	Replace the fuse (or press the reset button if it's a resettable fuse)
AC power failure, inverter backup time insufficient	The battery may not be fully charged	Charge the battery for at least 5 hours, then check the battery capacity. If it's still low, contact the supplier.

Fault	Causes	Solutions
	Battery is damaged	Contact the supplier and replace the battery
Buzzer sounds continuously, fault LED is on	Overheating	Reduce the load and check if the system vents are blocked
	Output short circuit or incorrect connection	Check the AC output wiring
	Overload	Reduce the load
Inverter tự động tắt trong khi chạy	Điện áp ắc quy quá thấp	1. Sạc lại ắc quy. 2. Thay ắc quy.
Inverter shuts down automatically during operation	1. Battery voltage too low 2. Battery polarity reversed	1. Check if the battery and cables are properly connected 2. Recharge the battery 3. Replace the battery
Chuông báo kêu liên tục và đèn LED đỏ sáng, màn hình LCD hiển thị mã lỗi.	E00 – No Error	Restart the inverter. If the error persists, take it to the service center.
	E01 – MOSFET Overcurrent	Take it to the service center.
	E02 – Output Short Circuit	1. Check if the connections are secure and remove any abnormal loads 2. Replace the MOSFET and check if the control board is functioning properly
	E03 – Overload	Reduce the load by turning off some devices
	E04 – Overheating	Check if the airflow of the inverter is blocked or if the ambient temperature is too high

Fault	Causes	Solutions
	E05 – Battery voltage too high	Check whether the battery specifications and quantity meet the requirements
	E06 – Battery voltage too low	Check if the battery is damaged
	E07 – Internal Phase Error	Take it to the service center
	E08 – Low Output Voltage Protection	Take it to the service center
	E09 – No Manufacturing Date	Take it to the service center
	E10 - Sharp drop in battery voltage due to battery aging or damaged, as well as larger internal resistance	Replace with a new battery

CHƯƠNG 6 RECYCLING

The power inverter cannot be treated as household waste. When the life of the inverter reaches its limit, it is not required to be sent back to the dealer or to manufacturer, but must be recycled to the special waste electrical recycling station in the area.