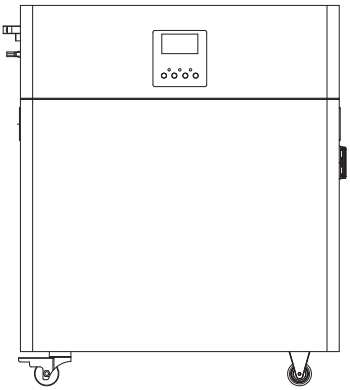
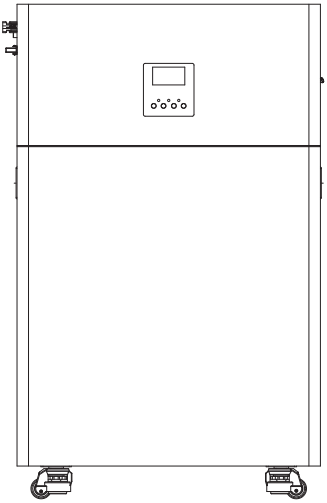
ALL-IN-ONE Energy Storage System

User Manual

LiFePO4



LE4000-6A & LE6000-6A



LE6000-12A

Thank you for choosing our company's product. In order to better experience the convenience and value that the product brings to you, please read this booklet carefully before using this product!

PREFACE

Summary:

This document mainly introduces the product introduction, application scenario, installation, commissioning, system maintenance and technical data of wall mounted household energy storage battery and battery expansion module.

Reader object:

This document is mainly applicable to the following Engineers:
- Marketing Engineer
- System Engineer
- Technical support engineer

Symbolic Convention:

The following symbols may appear in this article, and they represent the following meanings:

Symbol	Explanation
DANGER	Indicates a hazard with high risk that will lead to death or serious injury if not avoided.
Warning	Indicates a hazard with medium risk that may lead to death or serious injury if not avoided.
Attention	Indicates a hazard with low-level risk that may cause slight or moderate injury if not avoided.
Notice	It is used to transmit equipment or environmental safety warning information. If not avoided, it may lead to equipment damage, data loss, equipment performance degradation or other unpredictable results. The "instructions" do not involve personal injury.
Explanation	Indicates a hazard with high risk that will lead to death or serious injury if not avoided.

Table of Contents

1.Information of this volume 1
1.1 Range 1
1.2 Target group 1
1.3 Safety instructions 1
1.4 Application Introduction 2
1.5 Product Features 2
2.Overview 3
3.Install 4
3.1 Unpacking inspection 4
3.2 Installation precautions 4
4.Operation and Display Panel 5
4.1 LED Indicator 5
4.2 Function Keys 5
4.3 LCD Display Icons 5
4.4 Display Setting 7
4.5 Operating Mode Description 9
4.6 LCD Setting 12
4.7 AC input/output connection 21
4.8 PV connection 22
4.9 Start machine 22
5.Operation 23
5.1 Power on/off 23
5.2 Operation and display panel 23
5.3 Description of Setting Parameters 26
6.Operating Mode Description 29
6.1 Charge mode 29
6.2 Output mode 30
7.Battery parameters 31
8.Fault and alarm description 32
8.1 Faults Descriptions 32
8.2 Alarm Descriptions 33
8.3 Code Reference 34
9.Troubleshooting 35
10.Protection andMaintenance 36
10.1 Protections provided 36
10.2 Maintenance 37
11.Product Specifications 38

1. Information of this volume

This manual introduces the assembly, installation, operation, and troubleshooting of this machine. Please read this manual carefully before installation and operation. Please keep this booklet properly for future reference.

1.1 Range

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

1.2 Target group

This document is applicable to qualified employees and end users, and tasks that do not require any specific qualifications can also be performed by end users. Qualified personnel must possess the following skills:

1. Understand the working principle and operating methods of inverters.
2. Received training on how to handle the hazards and risks associated with the installation and use of electrical equipment and installation
3. Training on the installation and commissioning of electrical equipment and installation.
4. Understand applicable standards and directives.
5. Understand and comply with this document and all safety information.

1.3 Safety instructions

1. Before using this machine, please read all instructions and warning labels on the machine manual, as well as all relevant chapters of this manual. Our company has the right not to provide quality assurance. Failure to follow the instructions in this manual during installation may result in equipment damage.

2. Please choose which battery system is needed (lithium battery system or lead-acid battery system). If the wrong system is selected, the energy storage system will not function properly.

3. Do not disassemble this machine. When maintenance or repair is required, please send it to a qualified service center. Incorrect reassembly may lead to a risk of electric shock or fire.

4. All operations and connections must be carried out by professional electrical or mechanical engineers, and all electrical installations must comply with local electrical safety standards.

5. Attention: In order to reduce the risk of injury, only deep cycle lead-acid rechargeable batteries and lithium batteries can be charged. Other types of batteries may burst, causing personal injury and damage.

6. To reduce the risk of electric shock, please disconnect all electrical wires before performing any maintenance or cleaning. Turning off the power supply does not reduce the risk of electric shock.

7. In order to ensure the optimal operation of this inverter/charger, please select the appropriate cable size according to the required specifications. It is very important to operate this inverter/charger correctly.

8. Grounding Instructions - This inverter should be connected to a permanently grounded wiring system. When installing this inverter, be sure to comply with local requirements and regulations.

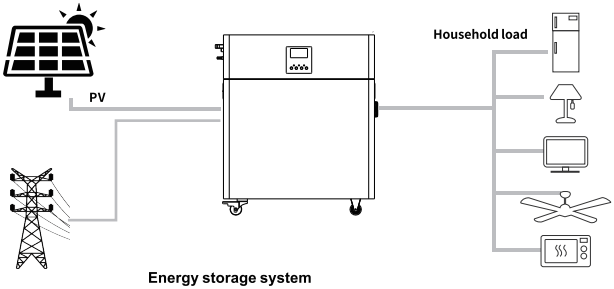
9. It is strictly prohibited to cause short circuits between AC output and DC transmission. When the DC transmission line is short circuited, it is strictly prohibited to connect to the mains.

10. Please do not install the machine in harsh environments such as outdoor, damp, greasy, flammable, explosive, or dust accumulation.

11. Warning!! Only qualified maintenance personnel can repair this equipment. If the fault persists after troubleshooting according to the troubleshooting table, please return the inverter/charger to your local dealer or service center for repair.

12. The polarity of the battery output terminal of this product is prohibited from being reversed, as it may damage the equipment or cause unpredictable hazards. Before operation, please confirm that the inverter has been fully assembled.

1.4 Application Introduction



The photovoltaic energy storage inverter is a new type of hybrid solar energy storage inverter control system (off grid energy storage inverter) that integrates solar energy storage and mains charging energy storage, DC output, and AC sine wave output. It adopts DSP control and advanced control algorithms, with high response speed, high reliability, and high industrial standards. There are four charging modes to choose from: solar, mains priority, solar priority, and mains & solar; This product integrates solar charging controllers, system controllers, inverters, lithium batteries, DC 12 V, USB fast charging, Type-C PD3.0, and a battery management system. It stores clean and environmentally friendly solar energy in the battery, which can be used for home lighting, computers, low-power household appliances, mobile phone charging, etc. in indoor power outages or outdoor situations. This system has the advantages of stable performance, safety and reliability, and convenient use.

The solar charging module adopts the latest optimized MPPT tracking technology, which can quickly track the maximum power point of the photovoltaic array in any environment and obtain the maximum energy of the solar panel in real time.

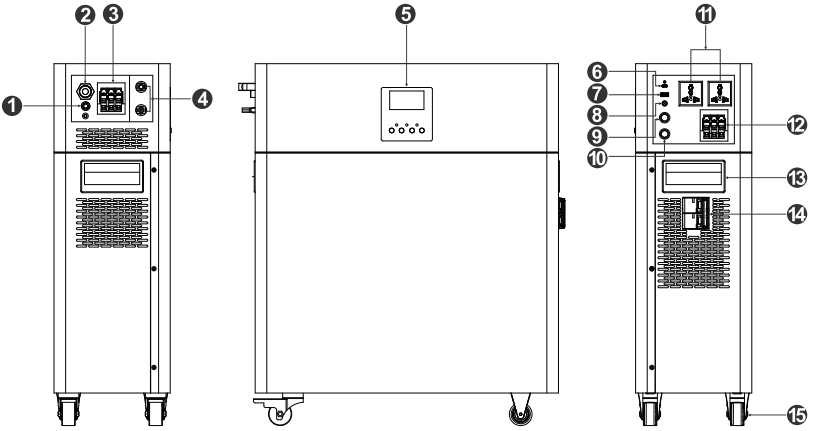
The AC-DC charging module adopts advanced control algorithms to achieve fully digital voltage and current dual closed-loop control, with high control accuracy and small size. The AC voltage input range is wide, and the input/output protection functions are complete, ensuring stable and reliable charging and protection of the battery.

The DC-AC inverter module is based on fully digital intelligent design and adopts advanced SPWM technology to output pure sine waves, converting direct current into alternating current. It is suitable for AC loads such as household appliances, electric tools, industrial equipment, electronic audio and video, etc. The product adopts a segmented LCD screen display design, which real-time displays the operating data and status of the system. Comprehensive electronic protection functions ensure that the entire system is safer and more stable.

1.5 Product Features

1. Adopting fully digital voltage and current dual closed-loop control, advanced SPWM technology, and outputting pure sine wave.
2. There are four charging modes to choose from: solar only, mains priority, solar priority, and hybrid charging.
3. Advanced MPPT technology with a tracking efficiency of up to 99.9%.
4. LCD screen design, 4 LED indicator lights, dynamically displaying system data and operating status.
5. The panel touch button switch controls the main power supply/DC output/AC output/EV output.
6. It has a power-saving mode function to reduce no-load losses.
7. Adopting intelligent adjustable speed fans, efficient heat dissipation, and extending system lifespan.
8. Equipped with lithium battery solar and mains activation functions, supporting the connection of lead-acid and lithium batteries.
9. Equipped with multiple protection functions, providing 360 ° all-round protection.
10. Equipped with complete short-circuit protection, overvoltage and undervoltage protection, overload protection, backflow protection, etc.

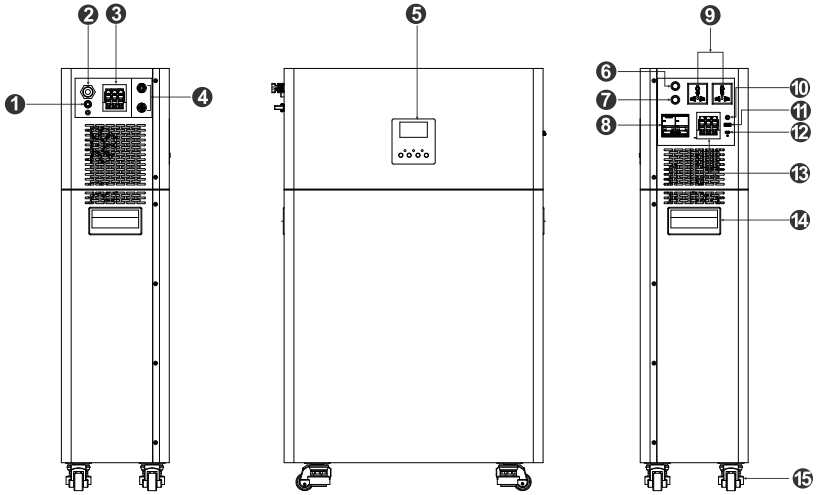
2. Overview



LE4000-6A & LE6000-6A

Arrow Identification			
❶	Thermal Circuit Breaker	❾	BMS Switch
❷	Wi-Fi	❿	AC Switch
❸	AC Input	⓫	AC Output
❹	PV Input	⓬	AC 4000W Out
❺	Screen	⓭	Plastic handle
❻	TYPE-C Output ⋆	⓮	Battery Breaker
❼	USB-A Output ⋆	⓯	Contact Roller
❽	DC5521 Output		

★ Some models have dual output ports.



LE6000-12A

Arrow Identification			
❶	Thermal Circuit Breaker	❾	AC Output
❷	Wi-Fi	❿	DC5521 Output
❸	AC Input	⓫	USB-A Output ⋆
❹	PV Input	⓬	TYPE-C Output ⋆
❺	Screen	⓭	AC 4000W Out
❻	BMS Switch	⓮	Plastic handle
❼	AC Switch	⓯	Contact Roller
❽	Battery Breaker		

★ Some models have dual output ports.

3. Install

3.1 Unpacking inspection

Before installation, please inspect the unit. Be sure that nothing inside the package is damaged. You should have received the following items in the package:

The following are options:

- The unit x 1
- User manual x 1

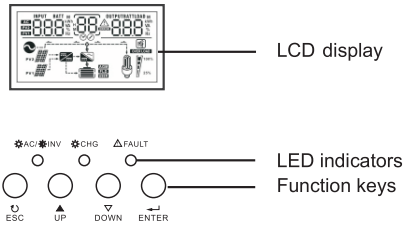
3.2 Installation precautions

Consider the following points before selecting where to install:

1. Do not install the Machine on flammable building materials.
2. The ambient temperature should be between 0°C and 55°C to ensure optimal operation.
3. Be sure to keep other objects and surfaces as shown in the guarantee sufficient heat dissipation and to have enough space for removing wires.

4. Operation and Display Panel

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



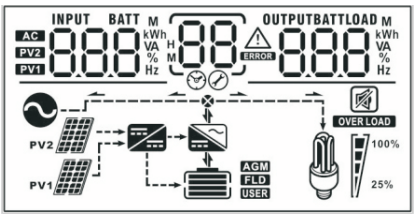
4.1 LED Indicator

LED Indicator			Messages
AC / INV	Green	Solid On	Output is powered by utility in Line mode.
		Flashing	Output is powered by battery or PV in battery mode.
CHG	Green	Solid On	Battery is fully charged.
		Flashing	Battery is charging.
⚠ FAULT	Red	Solid On	Fault occurs in the inverter.
		Flashing	Warning condition occurs in the inverter.

4.2 Function Keys

Function Key	Description
ESC	To exit setting mode
UP	To go to previous selection
DOWN	To go to next selection
ENTER	To confirm the selection in setting mode or enter setting mode

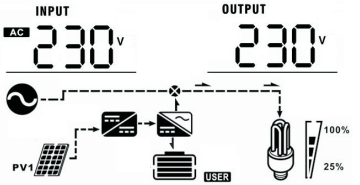
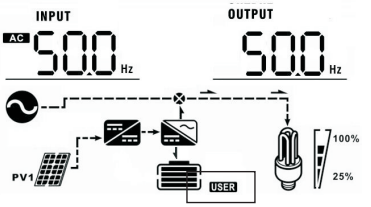
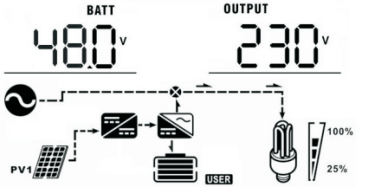
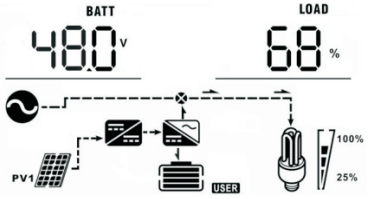
4.3 LCD Display Icons

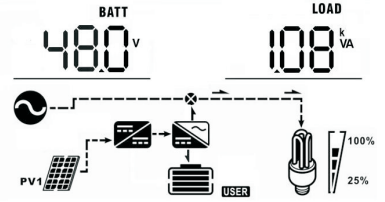
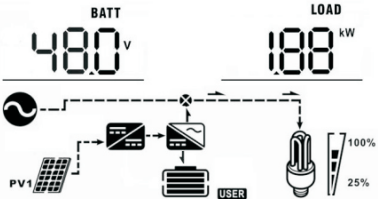
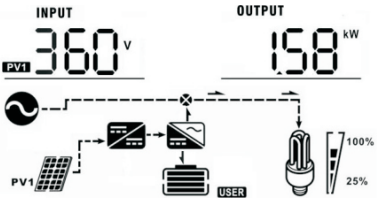
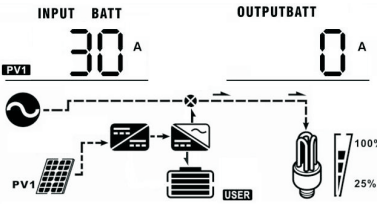
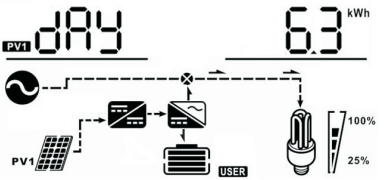


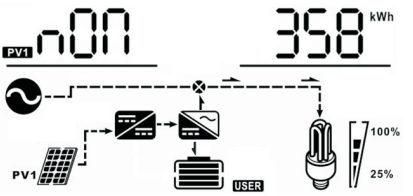
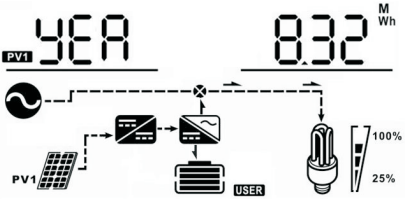
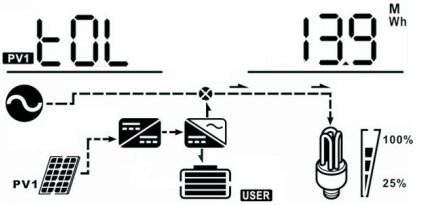
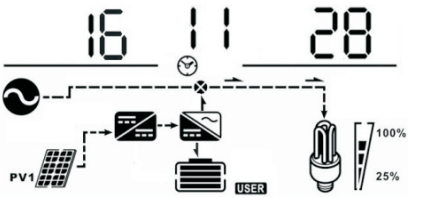
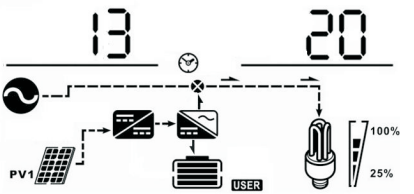
Icon	Function
Input source information	
AC	Indicates the AC input
PV1	Indicates the 1st PV panel input
PV2	Indicates the 2nd PV panel input
Left digital display information	
	Indicate input voltage, input frequency, battery voltage, V1 voltage, PV2 voltage, charger current
Middle digital display information	
	Indicates the setting programs.
	Indicates the warning and fault codes. Warning: Flashing  with warning code Fault: display  with fault code
Right digital display information	
	Indicate the output voltage, output frequency, load percent, load VA, load W, PV1 charger power, PV2 charger power, DC discharging current.
Battery information	
	Indicates battery level by 0-24%,25-49%,50-74% and 75-100% and charging status.
AGM FLD USER	Indicates the battery type: AGM, Flooded or User-defined battery.
Load information	
OVER LOAD	Indicates overload.
	Indicates the load level by 0-24%,25-50%,50-74%,and 75-100%.
0%~25%	
25%~50%	
50%~75%	
75%~100%	
Mode operation information	
	Indicates unit connects to the mains.
PV1 	Indicates unit connects to the 1st PV panel
	Indicates the solar charger is working
	Indicates the DC/AC inverter circuit is working.
Mute operation	
	Indicates unit alarm is disabled.

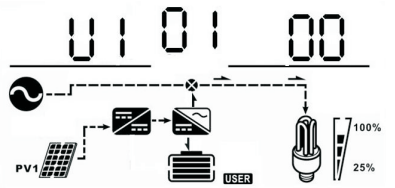
4.4 Display Setting

The LCD display information will be switched in turns by pressing "UP" or "DOWN" key. The selectable information is switched as below order: input voltage, input frequency, PV voltage, charging current, battery voltage, output voltage, output frequency, load percentage, load in Watt, load in VA, load in Watt, DC discharging current, main board firmware version and SCC firmware version.

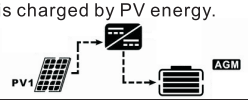
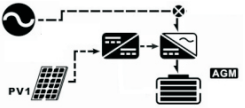
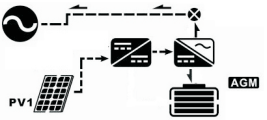
Select item	LCD display
Input voltage and output voltage (Default Display Screen)	Input Voltage=230V, output voltage=230V 
Input frequency and output frequency	Input frequency=50.0Hz, output frequency=50.0Hz 
Battery voltage and output voltage	Battery Voltage=48.0V,output voltage=230V 
Battery voltage and load percentage	Battery Voltage=48.0V,load percentage 68% 

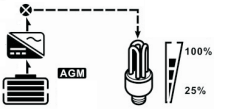
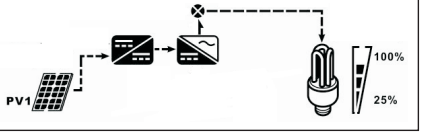
Battery voltage and load in VA	Battery Voltage=48.0V, load in VA=1.08kVA 
Battery voltage and load in Watt	Battery Voltage=48.0V, load in Watt=1.88kW 
PV1 voltage and PV1 charger power	PV1 Voltage=360V, charging power=1.58kW 
Charger current and DC discharging current	Charging current=30A, discharging current=0A 
PV energy generated today	Today energy = 6.3kWh 

PV energy generated this month	This month energy = 358kWh. 
PV energy generated this year	This year energy = 8.32MWh 
PV energy generated totally	Total energy = 13.9MWh 
Real date	Real date Nov 28, 2016. 
Real time	Real time 13: 20. 

Main board firmware version	Version 00001.00 

4.5 Operating Mode Description

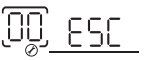
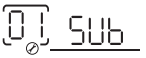
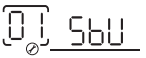
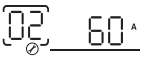
Operating mode	Behaviors	LCD display
Standby mode Note: *Standby mode: The inverter is not turned on yet but at this time, the inverter can charge battery without AC output. *Power swing mode: If enabled, the output of inverter will be off when connected load is pretty low or not detected.	No output power, solar or utility charger available	Battery is charged by utility. 
		Battery is charged by PV energy. 
		Battery is charged by utility and PV energy. 
		Battery is charged by PV energy and feed PV energy grid. 
		No charging. 
Line mode	Output power from utility. Charger available	Utility charges battery and provides power to load. 
		Utility and battery power provide power to load. 

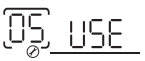
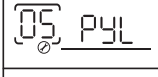
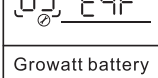
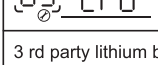
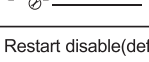
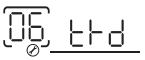
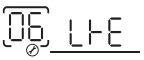
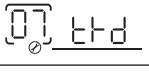
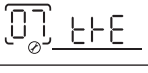
<table>
<tr><td rowspan="4">Line mode</td><td>Output power from utility. Charger available</td><td>PV energy, battery power and utility provide power to load.
 
</td></tr>
<tr><td rowspan="3">Output power from utility. Charger available</td><td>PV energy and utility charge battery, and utility provides power to load.
 
</td></tr>
<tr><td>PV energy charges battery, utility and PV energy provide power to the load.
 
</td></tr>
<tr><td>PV energy charges battery, PV energy provides power to the load and feeds remaining energy to the grid.
 
</td></tr>
<tr><td rowspan="3">Battery mode</td><td rowspan="3">Output power from battery or PV</td><td>PV energy charges battery, PV energy provides power to the load and feeds remaining energy to the grid.
 
</td></tr>
<tr><td>PV energy and battery energy supply power to the load.
 
</td></tr>
<tr><td>Battery provides power to the load.
 
</td></tr>
<tr><td>Only PV mode</td><td>Output power from PV</td><td>PV provides power to the load.
 
</td></tr>
</table>

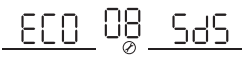
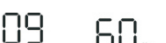
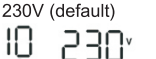
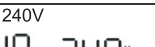
4.6 LCD Setting

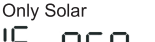
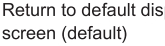
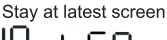
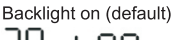
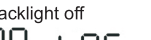
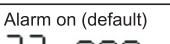
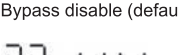
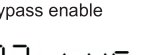
After pressing and holding ENTER button for 3 seconds, the unit will enter setting mode. Press "UP" or "DOWN" button to select setting programs. And then, press "ENTER" button to confirm the selection or ESC button exit.

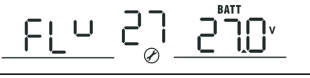
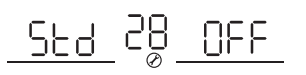
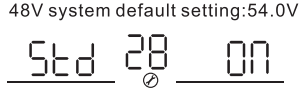
4.6.1 Setting Programs:

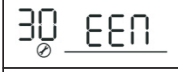
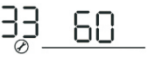
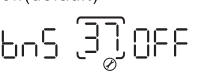
Program	Description	Selectable option	
00	Exit setting mode	Escape 	
01	Output source priority selection		Solar energy provides power to the loads as first priority. If solar energy is not sufficient to power all connected loads, Utility energy will supply power to the loads at the same time.
			Solar energy provides power to the loads as first priority. If solar energy is not sufficient to power all connected loads, battery energy will supply power to the loads at the same time. Utility provides power to the loads only when battery voltage drops to either low-level warning voltage or the setting point in program 12 or solar and battery is not sufficient.
02	Maximum charging current: To configure total charging current for solar and utility chargers. (Max. charging current = utility charging current + solar charging current)	60A(default) 	Setting range is from 10A to maximum charging current. Increment of each click is 10A.
03	AC input voltage range	Appliances (default) 	If selected, acceptable AC input voltage range will be within 90-280VAC.
		UPS 	If selected, acceptable AC input voltage range will be within 170-280VAC.

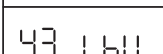
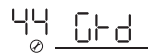
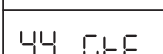
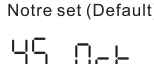
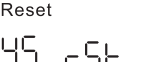
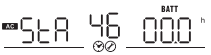
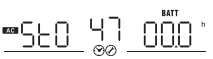
05	Battery type	AGM (default) 	Flooded 
		User-Defined 	If "User-Defined" is selected, battery charge voltage, low DC cut-off voltage and dual cut -off voltage can be set up in program 24,26,27,29 and 61.
		LIA-protocol compatible battery 	If selected,programs of 24,26,27 and 29 will be automatically set up. No need for further setting.
		Pylontech battery 	
		Techfine battery 	
		Growatt battery 	
		LIB-protocol compatible battery 	Select “LIB if using Lithium battery compatible to Lib protocol. If selected, programs of 26,27 and 29 will be automatically se up. No meed for further setting.
		3 rd party lithium battery 	If selected, programs of 26,27 and 29 will be automatically set up. No need for further setting. Please contact the battery supplier for installation procedure.
06	Auto restart when overload occurs	Restart disable(default) 	Restart enable 
07	Auto restart when over temperature occurs	Restart disable (default) 	Restart enable 

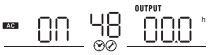
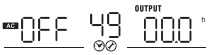
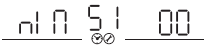
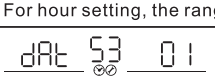
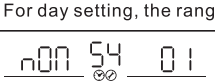
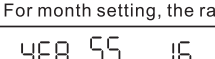
<table>
<tr><td rowspan="2">08</td><td rowspan="2">ECO function:
System will temporarily stop when the load is low in battery mode.</td><td colspan="2">disable (default)
  </td></tr>
<tr><td colspan="2">enable
  </td></tr>
<tr><td>09</td><td>Output frequency</td><td>50Hz(default)
  </td><td>60Hz
  </td></tr>
<tr><td rowspan="2">10</td><td rowspan="2">Output voltage</td><td>220V
  </td><td>230V (default)
  </td></tr>
<tr><td>240V
  </td><td></td></tr>
<tr><td>11</td><td>Maximum utility charging current
Note: If setting value in program 02 is smaller than that in program in 11, the inverter will apply charging current from program 02 for utility charger.</td><td>30A(default)
</td><td>Setting range is 2A, then from 10A to max.AC charging current.
Increment of each click is 10A.</td></tr>
<tr><td rowspan="5">12</td><td rowspan="5">Setting voltage point back to utility source when selecting“SBU priority” in program 01.</td><td colspan="2">Available options in 24 system model:</td></tr>
<tr><td>23.0V (default)
  </td><td>Setting range is from 22V to 25.5V.
Increment of each click is 0.5V.</td></tr>
<tr><td colspan="2">Available options in 48 system model:</td></tr>
<tr><td>46V (default)
  </td><td>Setting range is from 44V to 51V.
Increment of each click is 1V.</td></tr>
<tr><td></td></tr>
<tr><td rowspan="6">13</td><td rowspan="6">Setting voltage point back to battery mode when selecting“SBU priority”in program 01.</td><td colspan="2">Available options in 24 system model:</td></tr>
<tr><td>Battery fully charged
  </td><td>27V(default)
  </td></tr>
<tr><td colspan="2">Setting range is from 24V to 29V. Increment of each click is 0.5V.</td></tr>
<tr><td colspan="2">Available options in 48 system model:</td></tr>
<tr><td>Battery fully charged
  </td><td>54V (default)
  </td></tr>
<tr><td colspan="2">Setting range is from 48V to 58V. Increment of each click is 1V.</td></tr>
</table>

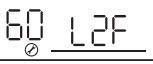
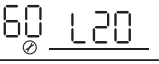
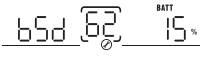
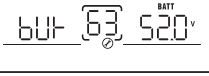
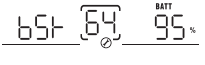
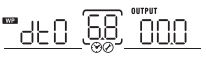
<table>
<tr><td rowspan="5">16</td><td rowspan="5">Charger source priorit:
To configure charger source priority</td><td colspan="2">If this inverter/charger is working in Line, Standby or Fault mode,charger source can be programmed as below:</td></tr>
<tr><td>Solar first
  </td><td>Solar energy will charge battery as first priority.
Utility will charge battery only when solar energy is not available.</td></tr>
<tr><td>Solar and Utility(default)
  </td><td>Solar energy and utility will charge battery at the same time.</td></tr>
<tr><td>Only Solar
  </td><td>Solar energy will be the only charger source no matter utility is available or not.</td></tr>
<tr><td colspan="2">If this inverter/charger is working in Battery mode, only solar energy can charge battery. Solar energy will charge battery if it's available and sufficient.</td></tr>
<tr><td>18</td><td>Alarm control</td><td>Alarm on (default)
  </td><td>Alarm off
  </td></tr>
<tr><td rowspan="2">19</td><td rowspan="2">Auto return to default display screen</td><td>Return to default display screen (default)
  </td><td>If selected, no matter how users switch display screen, it wil automatically return to defaultl display screen (Input voltage /output voltage) after no button is pressed for 1 minute.</td></tr>
<tr><td>Stay at latest screen
  </td><td>If selected, the display screen will stay at latest screen user finally switches.</td></tr>
<tr><td>20</td><td>Backlight control</td><td>Backlight on (default)
  </td><td>Backlight off
  </td></tr>
<tr><td>22</td><td>Beeps while primary source is interrupted</td><td>Alarm on (default)
  </td><td>Alarm off
  </td></tr>
<tr><td>23</td><td>Overload bypass:
When enabled, the unit will transfer to line mode if overload occurs in battery mode.</td><td>Bypass disable (default)
  </td><td>Bypass enable
  </td></tr>
<tr><td rowspan="2">24</td><td rowspan="2">Battery low voltage
● If battery power is only power source availableinverter will alarm.</td><td colspan="2">Battery low voltage 44.0V
  </td></tr>
<tr><td colspan="2">Setting range is from 20.0V-27.0V for 24V system and 40.0V-54.0V for 48V system.</td></tr>
</table>

<table>
<tr><td>25</td><td>Record fault code</td><td>Record enable (default)
  </td><td>Record disable
  </td></tr>
<tr><td rowspan="3">26</td><td rowspan="3">Bulk charging voltage
(C.V voltage)</td><td colspan="2">24V system default setting:28.2V
  </td></tr>
<tr><td colspan="2">48V system default setting:56.4V
  </td></tr>
<tr><td colspan="2">If self-defined is selected in program 5,this program can be set up. Setting range is from 24.0V to 30.0V for 24V system and 48.0V to 60.0V for 48V system. Increment of each click is 0.1V.</td></tr>
<tr><td rowspan="2">27</td><td rowspan="2">Floating charging voltage</td><td colspan="2">24V system default setting:27.0V
  </td></tr>
<tr><td colspan="2">48V system default setting:54.0V
  </td></tr>
<tr><td rowspan="2">28</td><td rowspan="2">Reset factory setting</td><td colspan="2">default:
  </td></tr>
<tr><td colspan="2">48V system default setting:54.0V
  </td></tr>
<tr><td rowspan="3">29</td><td rowspan="3">Low DC cut-off voltage:
• If battery power is only power source availableinverter will shut down.
• If PV energy and battery power are available, inverter will charge battery without AC output.</td><td colspan="2">24V system default setting:21.0V
  </td></tr>
<tr><td colspan="2">48V system default setting:42.0V
  </td></tr>
<tr><td colspan="2">If self-defined is selected in program 5, this program can be set up.Setting range is from 20.0V to 26.0V for 24V system and 40.0V to 52.0V for 48V system.
Increment of each click is 0.1V Low DC cut-off voltage will be fixed to setting value no matter what percentage of load is connected.</td></tr>
</table>

<table>
<tr><td rowspan="2">30</td><td rowspan="2">Battery equalization</td><td>Battery equalization
  </td><td>Battery equalization disable (default)
  </td></tr>
<tr><td colspan="2">If “Flooded” or “User Defined” is selec ted in program05, this program can be set up.</td></tr>
<tr><td rowspan="3">31</td><td rowspan="3">Battery equalization voltage</td><td colspan="2">24V system default setting:29.2V
  </td></tr>
<tr><td colspan="2">48V system default setting:58.4V
  </td></tr>
<tr><td colspan="2">Setting range is from 24.0V to 30.0V for 24V system and 48.0V to 60.0V for 48V system. Increment of each click is 0.1V.</td></tr>
<tr><td>33</td><td>Battery equalized time</td><td>60min (default)
  </td><td>Setting range is from 5min to 900min. Increment of each click is 5min.</td></tr>
<tr><td>34</td><td>Battery equalized timeout</td><td>120min (default)
  </td><td>Setting range is from 5min to 900min. Increment of each click is 5min.</td></tr>
<tr><td>35</td><td>Equalization interval</td><td>30days (default)
  </td><td>Setting range is from 0 to 90 days. Increment of each click is 1 day.</td></tr>
<tr><td rowspan="2">36</td><td rowspan="2">Equalization activated immediately</td><td>Enable
  </td><td>Disable (default)
  </td></tr>
<tr><td colspan="2">If equalization function is enabled in program 30, this program can be set up. If "Enable" is selected in this program, it’s to activate battery equalization immediately and LCD main page will shows "  ", If "Disable" is selected, it will cancel equalization function until next activated equalization time arrives based on program 35 setting. At this time, " " will not be shown in LCD main page.</td></tr>
<tr><td rowspan="2">37</td><td rowspan="2">BMS Function Switch</td><td>off(default)
  </td><td rowspan="2">Whether to enable the BMS communication function</td></tr>
<tr><td>  </td></tr>
</table>

38	Bat Soc Under Lock		If any type of lithium battery is selected in program 5. BMS low voltage SOC value, if the BMS SOC value is lower than the set value, the inverter will shut down to protect the battery.
39	Bat Soc Turn To Ac		If any type of lithium battery is selected in program 5. When the working mode of the inverter is set to the battery priority mode, the inverter will be forced to enter the mains charging when the SOC of the BMS is lower than the set value.
40	Bat Soc Turn To Dc		If any type of lithium battery is selected in program 5. When the working mode of the inverter is set to the battery priority mode, the inverter resumes the DC working mode when the SOC of the BMS is higher than the set value.
41	Bat Restart Soc		If any type of lithium battery is selected in program 5. When the inverter is turned on, the SOC must be higher than the set value to work normally.
43	Solar supply priority		Solar energy provides power to charge battery as first priority.
			Solar energy provides power to the loads as first priority.
44	Solar energy feed to grid configuration		Solar energy feed to grid disable.
			Solar energy feed to grid enable.
45	Reset PV energy storage	Notre set (Default) 	Reset 
46	Start charging time for AC charger	00:00(Default)  The setting range of start charging time for AC charger is from 00:00 to 23:00, increment of each click is 1 hour.	
47	Stop charging time for AC charger	00: 00(Default)  The setting range of scheduled Time for AC output on is from 00: 00 to 23:00,increment of each click is 1 hour.	

48	Scheduled time for AC output on	00: 00(Default)  The setting range of scheduled Time for AC output off is from 00: 00 to 23:00,increment of each click is 1 hour.	
49	Scheduled time for AC output off	00: 00(Default)  The setting range of scheduled Time for AC output off is from 00: 00 to 23:00,increment of each click is 1 hour.	
50	Set country customized regulations	Mode 1 	If selected, acceptable feed-in grid voltage range will be 195.5-253VAC. Acceptable feed-in grid frequency range will be 49-51Hz.
		Mode 2 	If selected, acceptable feed-in grid voltage range will be 184-264.5VAC. Acceptable feed-in grid frequency range will be 47.5-51.5Hz.
		Mode 3 	If selected, acceptable feed-in grid voltage range will be 184-264.5VAC. Acceptable feed-in grid frequency range will be 57-62Hz.
		Mode 4(Default) 	If selected, acceptable feed-in grid voltage range will be 170-264.5VAC. Acceptable feed-in grid frequency range will be 47.5-51.5Hz.
51	Time setting-Minute	 For minute setting, the range is from 00 to 59.	
52	Time setting-Hour	 For hour setting, the range is from 00 to 23.	
53	Time setting-Day	 For day setting, the range is from 00 to 31.	
54	Time setting-Month	 For month setting, the range is from 1 to 12	
55	Time setting-Year	 For year setting, the range is from 16 to 99.	
56	GRID-tie current	10A 	Increment of each click is 1A.

60	Dual output	Disable(default) 	Use 
61	Enter the dual output functional voltage point	Default setting:44.0V 	
		Default setting:22.0V 	
		If battery voltage lower than inverter setting, second output will be cutted of, Increment of each click is 0.1V.	
62	Enter the dual output functional SOC point		If any type of lithium battery is selected in program 5. If BMS capacity lower than SOC setting, second output will be cutted of.
63	Dual battery voltage recever		Default 52V/26V,if the battery voltage is higher than the inverter setting, the dual will be restored.
64	Dual battery SOC Recever		If any type of lithium battery is selected in program 5. Default 50%,if the BMS capacity is higher than the SOC setting, the second output will be restored.
65	Setting discharge time on the second output	Disable(default) 	Setting range is disable and then from 0 min to 990 min. Increment of each dick is 5 min. *If the battery discharge time achieves the setting time in program 61 and the program 60 function is not triggered, the output will be turned off.
66	Dual Recover Delay Time	 	The value ranges from 0-60min.
67	Output Open Time		The value ranges from 0 to 23.
68	Output Stop Time		The value ranges from 0 to 23.

4.7 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 a qualified personnel.

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:

Rated Capacity	Recommended AC input wiring diameter	Max. bypass input current	Recommended air switch or circuit breaker models	Torque value
4KVA	12AWG	20A	2P-20A	1.2-1.6Nm

Rated Capacity	Recommended AC output wiring diameter	Max. bypass output current	Recommended air switch or circuit breaker models	Torque value
6KVA	10AWG	30A	2P-32A	1.2-1.6Nm

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

1、Before making AC input/output connection, be sure to open DC protector or disconnector first.

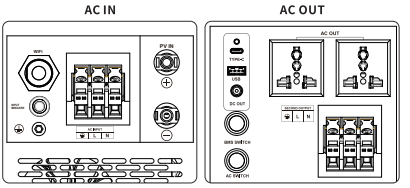
2、Insert AC input wires according to polarities indicated on terminal block and tighten the terminal screws. Be sure to connect PE protective conductor ⏚ first.

⏚	→Ground (yellow-green)
	L→LINE(brown or black)
	N→Neutral(blue)

WARNING:
Be sure that AC power source is disconnected before attempting to hardwire it to the unit.

4、Then, insert AC output wires ⏚ according to polarities indicated on terminal block and tighten terminal screws. Be sure to connect PE protective conductor first.

⏚	→Ground (yellow-green)
	L→LINE(brown or black)
	N→Neutral(blue)



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.

CAUTION: Appliances such as air conditioner are required at least 2~3 minutes to restart because it’s required to have enough time to balance refrigerant gas inside of circuits. If a power shortage occurs and recovers in a short time, it will cause damage to your connected appliances. To prevent this kind of damage, please check with manufacturer of air conditioner that if it’s equipped with time-delay function before installation. Otherwise, this off grid solar inverter will trig overload fault and cut off output to protect your appliance but sometimes it still causes internal damage to the air conditioner.

4.8 PV connection

Warning! Before connecting the PV module, please install a separate DC circuit breaker between the inverter and the PV module.

Warning! All wiring must be carried out by qualified personnel.

Warning! The use of appropriate cables to connect PV components is crucial for the safe and efficient operation of the system . To reduce the risk of injury ,please use the correct recommended cable size shown.

Recommended PV input wiring diameter	Max. PV input current	Recommended air switch or circuit breaker models	Torque value
5.2mm^2/10AWG	27A	2P-32A	1.2-1.6Nm

PV Module Selection:

When selecting proper PV modules, please be sure to consider below parameters:

1. Open circuit Voltage (Voc) of PV modules not exceeds max. PV array open circuit voltage of inverter.
2. Open circuit Voltage (Voc) of PV modules should be higher than min. battery voltage.

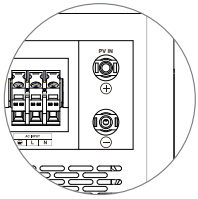
Max.PV array open circuit	500Vdc
Starting voltage	100Vdc
PV array MPPT voltage range	85Vdc~450Vdc

Please follow below steps to implement PV module connection:

1. Check correct polarity of connection cable from PV modules and PV input connectors. Then, connect positive pole (+) of connection cable to positive pole (+) of PV input connector. Connect negative pole (-) of connection cable to negative pole (-) of PV input connector.
2. Make sure the wires are securely connected.

PV+:PV input positive pole

PV-:PV input negative pole



4.9 Start machine

Step1:after connecting all lines,close the circuit break of th battery.

Step2:press the BMS switch,the button led ring will light green,then press the AC switch,the LCD screen will be lighted.

Step3:start the load one by one according the power from small to large.

5. Operation

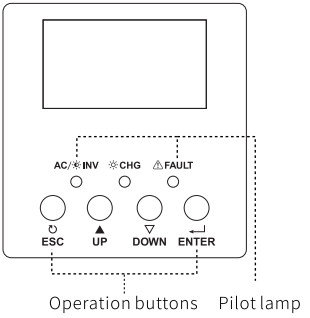
5.1Power on/off

Once the device is properly installed and the battery connection is good, simply press the power switch (located on the chaOnce the unit has been properly installed and the batteries are connected well, simply press On/Off switch (located on the button of the case) to turn on the unit.

5.2 Operation and display panel

The operation and display panel, as shown in the figure below, is located on the front panel of the inverter.

It includes Output terminal, 3 indicator lights, 4 function keys, and 1 LCD display screen, displaying the operating status and input/output power information.



Introduction to operating buttons

Function keys	Description
⮌	To exit setting mode
▲	Previous choice
▼	Next choice
↵	To confirm the selection in setting mode or enter setting mode

Introduction to indicator lights

Pilot lamp	Colour	Description
AC OUT	Green	Steady on: Mains output Flash: Inverter output
CHARGE	Yellow	Flash: Fast charging Steady on: Floating charge
FAULT	Red	Flash : Fault state

Arrow display			
❶	Indicating power supply from the grid to the load	❺	Indicating the power supply from the battery end to the inverter circuit
❷	Indicates grid supplying power to the charging circuit	❻	This arrow is not displayed
❸	Indicates PV module supplying power to the charging circuit	❼	Indicating the inverter circuit to supply power to the load
❹	Indicates the charging circuit charging the battery terminal		

Icon	Function	Icon	Function
	Indicates that the AC input terminal has been connected to the grid		Indicates that the inverter circuit is working
	Indicates that the AC input mode in APL mode (wide voltage range)	BYPASS	Indicates that the machine is in the Mains Bypass mode
	Indicates that the PV input terminal has been connected to the solar panel	OVER LOAD	Indicates that the AC output is in an overload state
	Indicates that the machine has been connected to the battery:  Indicates the remaining battery power 0%~24%,  Indicates the remaining battery power 25%~49%,  Indicates the remaining battery power 50%~74%,  Indicates the remaining battery power 75%~100%		Indicates the percentage of AC output load,  Indicates that the load percentage is 0%~24%,  Indicates that the load percentage is 25%~49%,  Indicates that the load percentage is 50%~74%,  Indicates that the load percentage is ⩾75%
Li	Indicates that the battery type of the machine is a lithium battery		Indicates that the buzzer is not enabled
SLA	Indicates that the current battery type of the machine is a lead-acid battery		Indicates that the machine has an alarm
CHARGING	Indicates that the battery is in a charging state	ERROR	Indicates that the machine is in a fault condition
	Indicates that the AC/PV charging circuit is working		Indicates that the machine is in setup mode
	Indicates that the AC output terminal has an AC voltage output		The parameters displayed in the middle of the screen: 1.In the non-setup mode, the alarm or fault code is displayed. 2.In the setup mode, the currently set parameter item code is displayed.

Icon	Function	Icon	Function
M	In parallel operation, this icon indicates that this inverter is the host, which is only valid in parallel mode.		
Parameter display on the left side of the screen: Input parameters			
RST	This icon is not displayed		
PV	Indicates PV input		
AC	Indicates AC input		
	Display battery voltage, battery charge total current, mains charge power, AC input voltage, AC input frequency, PV input voltage, internal heat sink temperature, software version		
Parameters display on the right side of the screen: Output parameters			
	Indicates output voltage, output current, output active power, output apparent power, battery discharge current, software version; in setup mode, displays the set parameters under the currently set parameter item code		

5.3 Description of Setting Parameters

Buttons operation instructions: Press the “SET” button to enter the setup menu and exit the setup menu. After entering the setup menu, the parameter number [00] will flash. At this point, press the “UP” and “DOWN” buttons to select the code of parameter item to be set. Then, press the “ENT” button to enter the parameter editing mode, and the value of the parameter is flashing. Adjust the value of the parameter with the “UP” and “DOWN” buttons. Finally, press the “ENT” button to complete the parameter editing and return to the parameter selection state.

Note: in parallel mode, all machines will synchronize the setting parameters of the host (the machine with "M" is displayed on the display screen) before startup. After startup, the setting parameters of any machine will be synchronized to other machines in the system

Parameter number	Parameter name	Option settings	Description
00	Exit setting menu	[00] ESC	Exit the setup menu
01	Output source priority	[01] GID default	Mains priority mode, switching to inverter only when the mains fails.
		[01] BAT	Battery priority mode. Switch to mains power only when the battery is under voltage or lower than the setting value of parameter [16]; Switch to battery discharge only when the battery is fully charged or higher than the setting value of parameter [17].
		[01] PV	PV priority mode, switching to the Mains when the PV fails or the battery is lower than the set value of parameter [16].
		[01] HBR	Hybrid mode, you can set this mode through the [33] setting item.
02	AC output voltage setting	[02] 230V	Allow to set to 200Vac/208Vac/220Vac/230Vac/ 240 Vac, default 230V. The rated output power will be reduced= (Power Rate)*(Vset/230)
03	Output Frequency	[03] 50.0Hz	Bypass self-adaptation; when the mains is connected, it automatically adapts to the mains frequency; when the mains is disconnected, the output frequency can be set through this menu. The default output frequency to 50Hz of the 230V.
		[03] 60.0Hz	
04	AC Input Voltage Range	[04] APL	Wide mains input voltage range of 230Vac machine: 90~280Vac; Frequency range: 47~ 55Hz (50Hz);57Hz ~ 65Hz (60Hz);
		[04] UPS default	Narrow mains input voltage range of 230Vac machine: 170~280Vac; Frequency range : 47~ 55Hz (50Hz); 57Hz ~ 65Hz (60Hz);
		[04] GEN	Diesel generators input, need to set this mode, at this time:Narrow Ac input voltage range of 230Vac machine: 90~280Vac Frequency range : 40~ 70Hz
05	Energy saving mode	[05] DIS default	Power saving mode disabled.
		[05] ENA	After the power saving mode is enabled, if the load is null or less than 25W, 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.

Parameter number	Parameter name	Option settings	Introduction
06	Charger source priority	[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] OUO	Mains priority charging; only when the mains charging fails, the PV charging is started.
		[06] OSO	PV priority charging; only when the PV charging fails, the mains charging is started.
		[06] NUC	Only PV charging, with the Mains charging not activated.
07	Max total charging current	[07] 80A Default	Maximum total charging current setting. setting range:0~100A。
08	PV max. charging current	[08] 80A Default	Max PV charger current. Setting range: 0~100A；
09	Max AC charger current	[09] 60A default	Setting range: 0~60A；60A default.
10	Battery fully charging current setting	[10] 3A default	When the battery type is lead-acid, when the battery voltage is greater than or equal to the floating charge value, and the charging current is less than the setting value, the battery is considered to be fully charged and the charging is stopped; If the battery type is lithium battery, when the battery voltage is greater than or equal to the constant voltage charging value and the charging current is less than the set value, the battery is considered to be fully charged and the charging is stopped.
11	Battery type	[11] USE	User defined, all battery parameters can be set.
		[11] Sld	Sealed lead-acid battery, constant voltage chargingvoltage 57.6V, float charging voltage 55.2V.
		[11] FLd	Open end lead-acid battery, constant voltage chargingd voltage 58.4V, float charging voltage 55.2V.
		[11] GEL Default	A solid lead-acid battery with a constant voltage charging voltage of 56.8V and a floating charging voltage of 55.2V.
		[11] LF14/LF15 /LF16	Lithium iron phosphate battery LF16/LF15/LF14 corresponds to 16, 15, and14 series of lithium iron phosphate batteries. The default constant voltage charging voltage for 16 series is 56.8V, the default constant voltage charging voltage for 15 series is 53.2V, and the default constant voltage charging voltage for 14 series is 49.2V, which can be adjusted.
		[11] N13/N14	Triple lithium battery, adjustable. The default constant voltage chargingvoltage for N13 is 53.2V, and the default constant voltage charging voltage for N14 series is 57.6V.
12	Battery boost charge voltage	[12] 57.6V Default	Boost charge voltage setting; the setting range is 48V~58.4V, with step of 0.4V; it is valid for user-defined battery and lithium battery.
13	Battery floating charge voltage	[13] 55.2V Default	Floating charge voltage, setting range: 48V~58.4V, step: 0.4V.
14	Battery recharge recovery poin	[14] 120 Default	Boost charge maximum time setting, which means the maximum charging time to reach the set voltage of parameter [12] during constant-voltage charging. The setting range is 5min~900min, with a step of 5 minutes. It is valid for user-defined battery and lithium battery.
15	Battery Recharging Recovery Point	[15] 52V Default	After the battery is fully charged, the inverter stops charging, and restarts charging when the battery voltage is lower than the voltage value.
16	Battery Power to Utility Setpoint	[16]46V Default	When the parameter [01] =Bat, the battery voltage is lower than the set value, and the output is switched from the inverter to the mains. Setting range: 44V~52V.
17	Utility to Battery Power Setpoint	[17] 57.6V Default	When the parameter [01] =Bat, the battery voltage is higher than the set value, and the output is switched from the mains to the inverter. Setting range: 48V~60V.

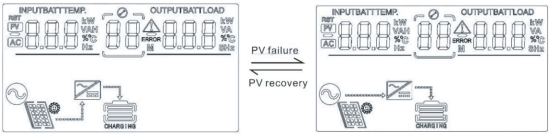
Parameter number	Parameter name	Option settings	Introduction
18	Battery under voltage alarm	[18] 44V Default	Battery undervoltage alarm point; when the battery voltage is lower than the point, an undervoltage alarm is given (01 fault), and the output is not turned off; the setting range is 40V~52V, with a step of 0.4V.
19	Battery over discharge voltage (delay off)	[19] 42V Default	Over-discharge voltage; when the battery voltage is lower than this judgment point, delay the time set by parameter [22] and turn off inverter output. Setting range is 40V~48V, with a step of 0.4V.
20	Battery over discharge voltage (immediately)	[20] 42V Default	Battery discharge limit voltage; when the battery voltage is lower than the point, the output is turned off immediately (02 fault); the setting range is 40V~52V, with a step of 0.4V. It is valid for user-defined battery and lithium battery.
21	Battery voltage recovery point after over discharge protection (02 fault)	[21] 52V Default	When the battery over discharge protection disconnects the inverter output, the battery voltage must be greater than this value to restore the inverter AC output.
22	Battery over discharge delay time	[22] 5S Default	Over-discharge delay time; when the battery voltage is lower than the parameter [19], the inverter output will be turned off after the time set by this parameter is delayed. The setting range is 5S~55S, with a step of 5S.
23	RS485-2 /CAN communication	[23] DIS Default	RS485-2 turn off the BMS communication function. But our PC and remote monitoring protocol can continue to be used.
		[23] RS485	RS485-2 BMS communication
24	BMS protocol settings	When the setting Program [23] is RS485, the corresponding lithium battery manufacturer brand needs to be selected for communication	
		PLN=PYLONTECH, PCE=PACE, GXU=GOTION, DAQ, AOG=ALLGRAND, OLT=OLITER, XWD=SUNWODA, CFE, MIT=FOXESS, VOL=WEELAND	
25	SOC discharge alarm (Optional when BMS is enabled)	[25] 15% default	After the BMS of the setting item [23] is enabled, the machine will alarm 07 if the battery capacity rate is lower than this value, and the alarm will be cleared if the battery capacity rate is higher than 5% of this value.
26	SOC switching mains (optional when BMS is enabled)	[26] 10% ndefault	After the BMS of the setting item [23] is enabled, the machine will switch to the mains when the battery capacity rate is lower than this value and the mains power is available.
27	SOC switching inverter (optional when BMS is enabled)	[27] 100% default	After the BMS of the setting item [23] is enabled, it takes effect in battery priority mode. If the battery capacity rate is higher than this value, the machine will switch from the mains to the inverter mode.
28	SOC discharge cut off (optional when BMS is enabled)	[28] 5% default	After the BMS of the setting item [23] is enabled, if the battery capacity rate is lower than this value, the machine will report 08 fault and cut off the power supply or output.
29	SOC charging cut off (optional when BMS is enabled)	[29] 100% default	After the BMS of the setting item [23] is enabled, when the battery capacity rate is higher than this value, the inverter considers the battery to be full. If the battery priority mode is adopted at this time, the machine will switch the battery back from the mains.
30	Buzzer alarm	[30] DIS Default	Alarm beep is enabled when the status of the main input source changes or the inverter fails.
		[30] ENA	Buzzer is silent

Parameter number	Parameter name	Option settings	Introduction
31	AC output mode (can be set in the standby mode only)	[31] SIG Default	When single inverter is used, the default is SIG mode.
		[31] PAL	In parallel operation with single phase. Please refer to 8.3 Wiring Diagram.
		[31] 3P1/3P2/3P3	In split phase operation with three phase. Please refer to 8.4 Wiring Diagram.
		All connected P1-phase inverters are set to "3P1"; All connected P2-phase inverters are set to "3P2"; All connected P3-phase inverters are set to "3P3"; When the parameter [02] setting item=230: AC output line voltage difference is 120 degrees (P1-P2/P1-P3/P2-P3), each line voltage is 230*1.732= 398Vac; Each phase voltage is 230Vac (L1-N; L2-N; L3-N).	
32	Rs485 ID Setting	[32] 1 Default	Parallel mode needs to be set in the range of 1-6, the ID cannot be repeated. When the power is first turned on, it will be automatically distributed. Single mode setting range 1-254.
33	Mixed mode (available for some models, Hybrid mode available)	[33] Gid	It is allowed to connect to the grid, and the surplus electricity is generated by the grid.
		[33] Lod	Anti-countercurrent, self-use according to the load power, do not input current to the mains.
34	N-PE connection switchover is enabled	[34] DIS Default	Do not automatically connect the N wire to the PE wire under any working conditions.
		[34] ENA	When there is no mains input off the grid, the neutral line automatically connects to the PE. When the bypass has mains input, the neutral line is automatically disconnected from the PE.
35	Automatic battery activation	[34] DIS	When the battery is dormant or not connected, the PV or mains does not automatically activate the battery to turn on the battery output.
		[34] ENA Default	When the battery is dormant or not connected, the PV or mains automatically activates the battery to turn on the battery output.

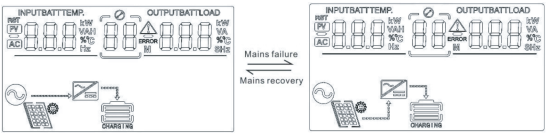
6. Operating Mode Description

6.1 Charge mode

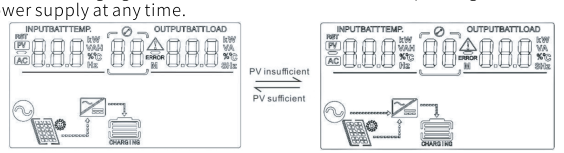
1) **PV priority:** PV module will charge the battery preferentially, and the battery is charged by the Mains only when the PV system fails. During the day, solar energy is fully used to charge, while at night, it converts to the Mains. This can maintain battery level, and is ideal for areas where the grid is relatively stable and electricity price is relatively high.



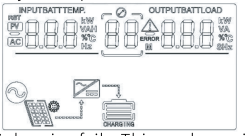
2)**Mains priority:** The Mains supply is preferentially used to charge the battery. Only when the Mains fails, the PV charging can be activated.



3) **Hybrid charging:** PV and mains hybrid charging. PV MPPT charging is a priority, and when PV energy is insufficient, the mains supply supplements. When the PV energy is sufficient again, the mains stops charging. This is the fastest charging mode, suitable for the areas where power grid is unstable, providing sufficient backup power supply at any time.



4) **Only Solar Only Solar):** Only PV charging, without Mains charging. This is the most energy-efficient way in which battery is charged only by solar panels, and is usually used in areas with good lighting conditions.

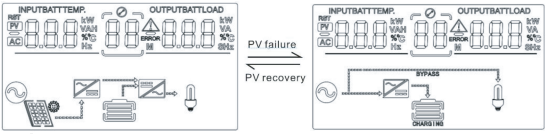


6.2 Output mode

1) PV priority mode:

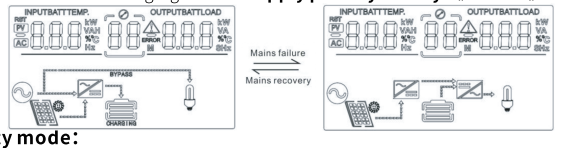
Switch to mains supply when the PV charging fails. This mode maximizes the use of solar energy while maintaining battery power, suitable for use in the areas with relatively stable grid.

Power supply priority:Solar—》Utility—》Battery.



2) Mains priority mode:

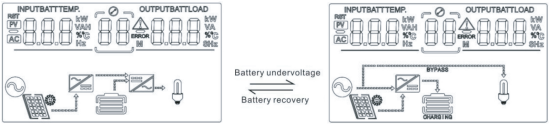
Switch to inverter only when the mains fails (when there was mains power, switch to mains power for charging and power supply).Then, the unit is equivalent to a backup UPS, suitable for areas with unstable grid. Switching does not affect PV charging. **Power supply priority:Utility—》Solar—》Battery.**



3) Battery priority mode:

Switch to mains supply only when the battery discharge undervoltage is lower than the set point (item 16). When the charging battery is higher than the set point of (17 setting item), switch to the battery discharge mode. This can cycle the battery charge and discharge. This mode maximizes the use of DC power and is used in the area with stable grid. Switching does not affect PV charging.

Power supply priority:Solar—》Battery—》Utility.



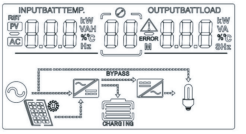
4) Hybrid mode:

LOD: Inverter power generation energy only to the load (generation power < Load power).

Note: mixed load, mains and photovoltaic are loaded together, photovoltaic is not enough to supplement the mains

GID: Inverter power generation energy directly connected to the grid (generation power may be greater than the load power).

Note: photovoltaic power generation is sufficient load power, excess grid-connected power generation



7. Battery parameters

Parameter \ Battery type	LiFePO4(LFP)		
	LE4000-6A	**LE6000-6A**	**LE6000-12A**
Rated Voltage (VDC)	25.6V	51.2V	51.2V
Battery capacity (Ah)	238Ah	119Ah	238Ah
Battery Energy (Wh)	6.092kWh	6.092Kwh	12.185Kwh
Battery voltage range (VDC)	20-29.2V	40-58.4V	40-58.4V
Maximum overcharge voltage(VDC)	29.2V	58.4V	58.4V
Battery input under voltage protection	20V	40	40
Battery input under voltage recovery point(VDC)	22.08V	44.16	44.16
Battery input overvoltage recovery point(VDC)	27.04V	54.08	54.08

8. Fault and alarm description

8.1 Faults Descriptions

Fault: The inverter enters the fault mode, the red LED light is always on and the LCD displays the fault code.

Fault Reference Code

Fault Code	Fault Event	Icon on
01	Fan is locked when inverter is off.	
02	Over temperature or NTC is not connected well.	
03	Battery voltage is too high.	
04	Battery voltage is too low.	
05	Output short circuited or over temperature is detected by internal converter components.	
06	Output voltage is too high.	
07	Over load time out.	
08	Bus voltage is too high	
09	Bus soft start failed	
51	Over currents or urge	
52	Bus voltage is too low	
53	Inverter soft start failed	
55	Over DC voltage in AC output	
57	Current sensor failed	
58	Output voltage is too low	
59	PV voltage is over limitation	

8.2 Alarm Descriptions

Alarm: The red LED flashes, and the LCD displays an alarm code, the inverter does not enter the failure mode

Alarm Indicator

Alarm Code	Alarm Event	Audible Alarm	Icon flashing
01	Fan is locked when inverter is on.	Beep three times every second	
02	Over temperature	None	
03	Batery is over-charged	Beep once every second	
04	Low battery	Beep once every second	
07	Overload	Beep once every 0.5 second	
10	Output power derating	Beep twice every 3 seconds	
15	PV energy is low.	Beep twice every 3 seconds	
16	High AC input (>280VAC) during BUS soft start	None	
E9	Battery equalization	None	
bP	Battery is not connected	None	

8.3 Code Reference

Related information code will be displayed on LCD screen. Please check inverter LCD screen for the operation.

Code	Description
60 ⚠	If battery status is not allowed to charge and discharge after the communication between the inverter and battery is successful, it will show code 60 to stop charging and discharging battery.
61 ⚠	Communication lost • After battery is connected, communication signal is not detected for 1 minutes, buzzer will beep. • Communication lost occurs after the inverter and battery is connected successfully, buzzer beeps immediately.
69 ⚠	If battery status is not allowed to charge after the communication between the inverter and battery is successful, it will show code 69 to stop charging battery.
70 ⚠	If battery status must to charge after the communication between the inverter and battery is successful, it will show code 70 to charge battery.
71 ⚠	If battery status is not allowed to discharge after the communication between the inverter and battery is successful, it will show code 71 to stop discharge battery.

9. Troubleshooting

Problem	LCD/LED/Buzzer	Explanation/Possible cause	What to do
Unit shuts down automatically during startup process.	LCD/LEDs and buzzer will be active for 3 seconds and then complete off.	The battery voltage is too low (<1.91V/Cell)	1. Re-charge battery. 2. Replace battery.
No response after power on.	No indication	1. The battery voltage is far too low.(<1.4V/Cell) 2. Internal fuse tripped.	1.Contact repair center for replacing the fuse. 2. Re-charge battery. 3. Replace battery.
Mains exist but the unit works in battery mode.	Input voltage is displayed as 0 on the LCD and green LED is flashing.	Input protector is tripped	Check if AC breaker is tripped and AC wiring is connected well.
	Green LED is flashing	Insufficient quality of AC power. (Shore or Generator)	1. Check if AC wires are too thin and/or too long. 2. Check if generator (if applied)is working well or if input voltage range setting is correct.(UP-->sppliance)
	Green LED is flashing.	Set “Solar First” as the priority of output source.	Change output source priority to Utility first.
When the unit is turned on, internal relay is switched on and off repeatedly.	LCD display and LEDs are flashing	Battery is disconnected.	Check if battery wires are connected well.
Buzzer beeps continuously and red LED is on.	Fault code 07	Overload error. The inverter is overload 105% and time is up.	Reduce the connected load by switching off some equipment.
		If PV input voltage is higher than specification, the output power will be derated.At this time, if connected loads is higher than derated output power, it will cause overload.	Reduce the number of PV modules in series or the connected load.
	Fault code 05	Output short circuited.	Check if wiring is connected well and remove abnormal load.
		Temperature internal converter component is over 120°C.	Check whether the air flow of the unit is blocked or whether the ambient tem perature is too high.
	Fault code 02	Internal temperature of inverter component is over 100°C	
	Fault code 03	Battery is over-charged	Return to repair center.
		The battery voltage is too high.	Check if spec and quantity of batteries are meet requirements.
	Fault code 01	Fan fault	Replace the fan.
	Fault code 06/58	Output abnormal (Inverter voltage below than 190Vac or is higher than 260Vac)	1. Reduce the connected load. 2. Return to repair center
	Fault code 08/09/53/57	Internal components failed.	Return to repair center.
	Fault code 51	Over current or surge.	Restart the unit, if the error happens again, please return to repair center.
	Fault code 52	Bus voltage is too low.	
	Fault code 55	Output voltage is unbalanced.	
	Fault code 59	PV input voltage is beyond the specification.	Reduce the number of PV modules in series.

10. Protection and Maintenance

10.1 Protections provided

Serial Number	Protection function	Introduction
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 280V (230V model), 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 170V (230V model /UPS mode) or 90V (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.

Serial Number	Protection function	Introduction
7	Load output short circuit protection	When a short circuit fault occurs at the load output terminal for more than 200 milliseconds, 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 parameters 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.
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.

10.2 Maintenance

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

1. Make sure that the airflow around the unit is not blocked and remove any dirt or debris from the heat sink.
2. Check that all exposed wires are not damaged by exposure to sunlight, friction with other objects around them, dryness, bite by insects or rodents, etc., and the wires shall be repaired or replaced if necessary.
3. Verify for the consistency of indication and display with the operation of thedevice. Please pay attention to the display of any faults or err ors, and take corrective actions if necessary.
4. Check all wiring terminals for corrosion, insulation damage, signs of high temperature or burning/discoloration, and tighten the screws.
5. Check for dirt, nesting insects and corrosion, and clean up as required.
6. If the arrester has failed, replace in time to prevent lightning damage to the unit or even other equipment of the user.

The company does not assume any liability for damage caused by:

NOTICE

a) Improper use or use in improper site.

b) Open circuit voltage of the PV module exceeds the maximum allowable voltage rated.

c) Temperature in the operating environment exceeds the limited operating temperature range.

d) Disassemble and repair the all-in-one solar charge inverter without permission.

e) Force majeure: Damage that occurs in transportation or handling of the all-in-one solar charge inverter.

DANGER

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

11. Product Specifications

Model	LE4000-6A	LE6000-6A	LE6000-12A
AC Output			
Rated output power	4000W	6000W	6000W
Surge power	8000VA/2S	12000VA/2S	12000VA/2S
Rated output voltage	230V±10%		230V±10%
Output frequency	50Hz (Optional 60Hz)		50Hz (Optional 60Hz)
DC Output			
USB-A output	5V/2.4A		5V/2.4A
TYPE-C output	5V/3A,9V/2.25A,12V/2A		5V/3A,9V/2.25A,12V/2A
DC5521 output	12V/3A		12V/3A
LFP Battery			
Nominal energy	6092Wh		12184Wh
Nominal voltage	25.6V	51.2V	51.2V
Operation ambient temperature(Charge)	0°C-40°C (32°F-104°F)		0°C-40°C (32°F-104°F)
Operation ambient temperature(Discharge)	-10°C-40°C (14°F-104°F)		-10°C-40°C (14°F-104°F)
PV Input			
Max.PV input power	6500W	8500W	8500W
Max. input voltage(Voc)	500V		500V
MPPT operating voltage range	85-450Vdc		85-450Vdc
Max. input current per MPPT	27A		27A
AC Input			
AC input voltage	200~240V		200~240V
Acceptable input voltage range	150~265V		150~265V
Nominal input frequency	50Hz/60Hz		50Hz/60Hz
General Parameters			
Noise level	⩽50dB		⩽50dB
G.W.	66kg		95.5kg
Dimension	561*200*623mm		528*222*860mm
IP rating	IP21		IP21
Safety & Certification	UN38.3/MSDS		UN38.3/MSDS/CE