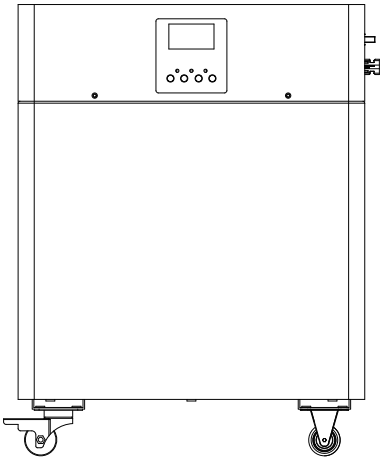
# ALL-IN-ONE Energy Storage System

# User Manual

**LE4000-8A**



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. |

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# 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.

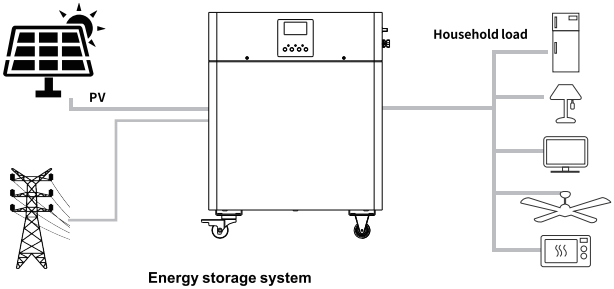
9. It is strictly prohibited to cause short circuits between AC output and DC transmission. When the DC transmission line is short circuited, it is strictly prohibited to connect to the mains.

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, 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, 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.

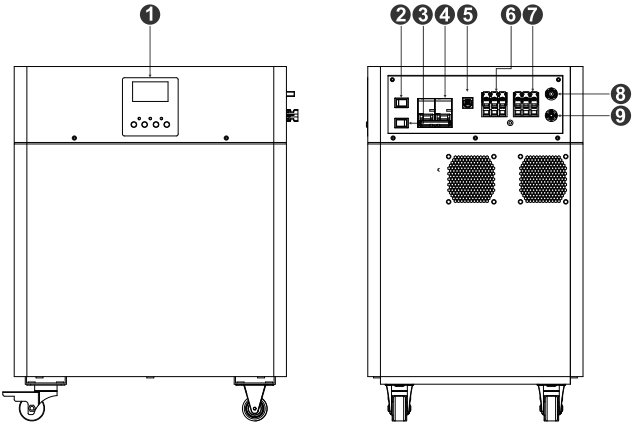
The AC-DC charging module adopts advanced control algorithms to achieve fully digital voltage and current dual closed-loop control, with high control accuracy and small size. The AC voltage input range is wide, and the input/output protection functions are complete, ensuring stable and reliable charging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




LE4000-8A

| Arrow Identification | | | |
|---|---|---|---|
| ❶ | Screen | ❻ | AC INPUT |
| ❷ | POWER | ❼ | AC OUTPUT |
| ❸ | AC SWITCH | ❽ | PV + |
| ❹ | BATTERY BREAKER | ❾ | PV - |
| ❺ | WIFI | | |

## 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
- PV connector kit x 1

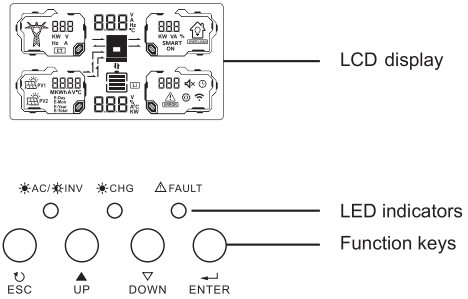
### 3.2 Installation precautions

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 40°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.




**LED Indicator**

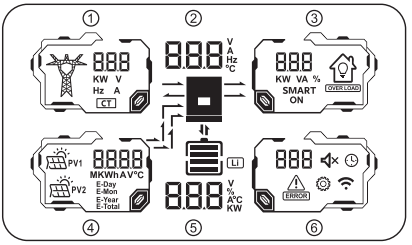
| LED Indicator | | | Messages |
|---|---|---|---|
| AC/INV | Green | Solid On | Output is powered by utility in Line mode. |
| | | Flashing | Output is powered by battery or PV in battery mode. |
| CHG | Yellow | Solid On | Battery is fully charged. |
| | | Flashing | Battery is charging. |
| FAULT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

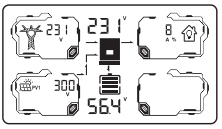
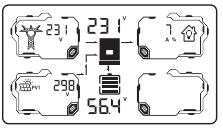
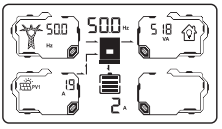
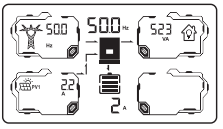
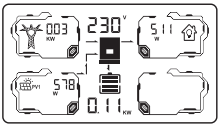
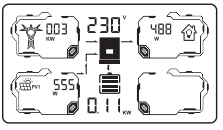
**Function Keys**

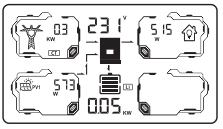
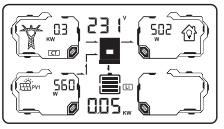
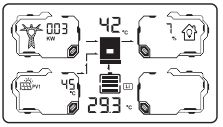
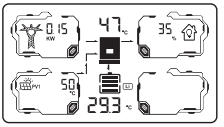
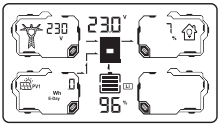
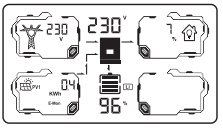
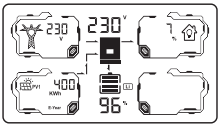
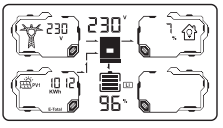
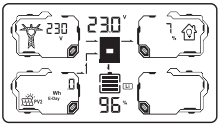
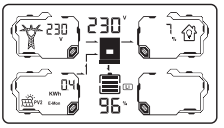
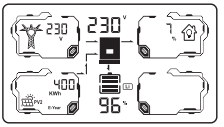
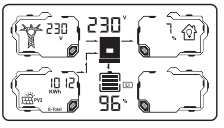
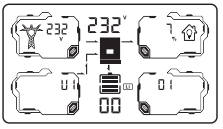
| Function Key | Description |
|---|---|
| ESC | To exit setting mode |
| UP | To go to previous selection |
| DOWN | To go to next selection |
| ENTER | To confirm the selection in setting mode or enter setting mode |

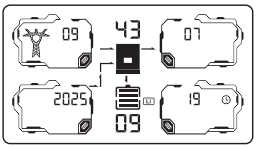
**Display Setting**

The LCD display information will be switched in turns by pressing "UP" or "DOWN" key. The selectable information is switched as below order: voltage, frequency,current, power, Temperature, firmware version,date.

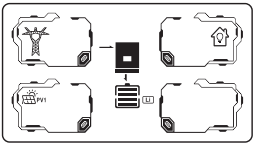
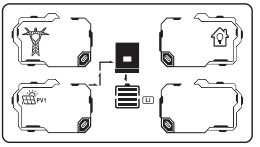
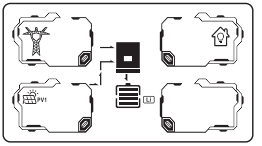
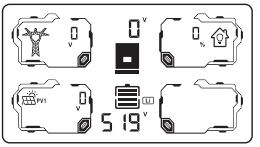


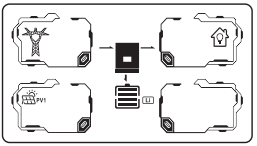
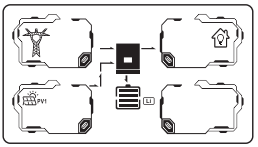
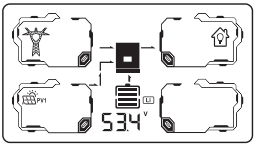
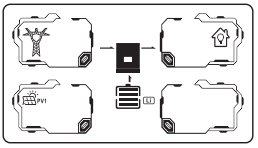
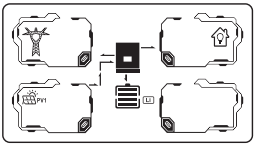

| Select item | LCD display | |
|---|---|---|
| ① AC Input voltage<br>(it indicates that the input voltage of the generator is displayed at this time, and the power and frequency displayed after turning the page are also the input parameters of the generator.)<br>② Output voltage<br>③ Load percentage<br>④ Left:PV1 input voltage<br>Right:PV2 input voltage<br>⑤ Battery voltage<br>⑥ Warning or Fault code(Default Display Screen) |  |  |
| ①AC Input frequency<br>②Output frequency<br>③Load power in VA<br>④Left:PV1 input current<br>Right: PV2 input current<br>⑤Battery current<br>⑥ Warning or Fault code |  |  |
| ① AC input power in Watts<br>② Output voltage<br>③ Load power in Watts<br>④ Left:PV1 input power in Watts<br>Right:PV2 input power in Watts<br>⑤ Battery in Watts<br>⑥ Warning or Fault code |  |  |

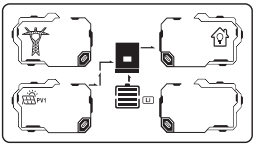
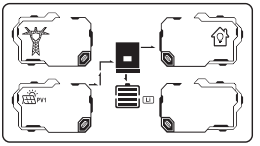
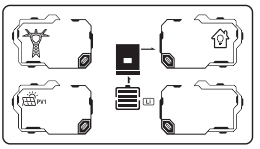
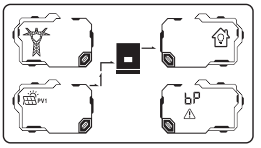
| Select item | LCD display | |
|---|---|---|
| ① External CT AC input power in Watts (If the external CT is reversed, a "-" will be displayed in front of the power figure.)<br>② Output voltage<br>③ Apparent power<br>④ Left:PV1 input power in Watts Right:PV2 input power in Watts<br>⑤ Battery in Watts<br>⑥ Warning or Fault code |  |  |
| ① AC input power in Watts<br>② Inverter temperature<br>③ Load percentage<br>④ Left:PV1 temperature Right:PV2 temperature<br>⑤ Battery temperature<br>⑥ Warning or Fault code |  |  |
| ① AC Input voltage<br>② Output voltage<br>③ Load percentage<br>④ Left:PV1 energy generated this day /this Monthly/this year/total Right:PV2 energy generated this day /this Monthly/this year/total<br>⑤ Battery percentage<br>⑥ Warning or Fault code(Default Display Screen) |  <br>  <br>  <br>  |  <br>  <br>  <br>  |
| Main board firmware version<br>① AC Input voltage<br>② Output voltage<br>③ Load percentage<br>④⑤⑥Firmware version (CPU:U1.00.01) |  | |

| Select item | LCD display |
| --- | --- |
| ① hour<br>② minute<br>③ second<br>④ year<br>⑤ month<br>⑥ day<br>(09:43:07 September 19 2025) |  |

**Operating Mode Description**

| Operating mode | Behaviors | LCD display |
| --- | --- | --- |
| Standby mode<br>Note:<br>*Standby mode: The inverter is not turned on yet but at this time, the inverter can charge battery without AC output.<br>*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.<br>  |
| | | Battery is charged by PV energy.<br>  |
| | | Battery is charged by utility and PV energy.<br>  |
| | | No charging.<br>  |

| Operating mode | Behaviors | LCD display |
|---|---|---|
| Line mode | Output power from utility. Charger available | Utility charges battery and provides power to load.<br>  |
| | | PV energy,battery power and utility provide power to load.<br>  |
| | | If “PEC”-is-selected as output source priority, PV energy and battery will support the output load with utility.<br>  |
| | | If "PEC"is selected as output source priority, Power from battery and utility.<br>  |
| | | If "SUF"is selected as output source priority, The remaining PV energy can be supplied to the grid.<br>  |

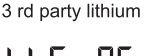
| Operating mode | Behaviors | LCD display |
|---|---|---|
| Battery mode | Output power from battery or PV | PV energy and battery energy supply power to the load.<br>  |
| | | The PV energy power to the load and has remaining energy to charge the battery<br>  |
| | | Battery provides power to the load.<br>  |
| Only PV mode | Output power from PV | PV provides power to the load.<br>  |

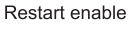
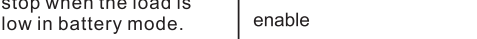
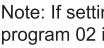
## 4.1 LCD Setting

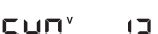
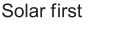
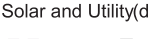
After pressing and holding ENTER button for 3 seconds, the unit will enter setting mode. Press "UP" or "DOWN" button to select setting programs. And then, press "ENTER" button to confirm the selection or ESC button exit.

**Setting Programs**:

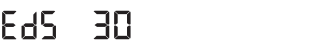
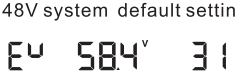
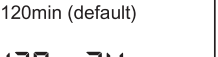
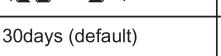
| Program | Description | Selectable option | |
|---|---|---|---|
| 00 | Exit setting mode | Escape<br>ESC 00 | |
| 01 | Output source priority selection | SUb 01 | Solar energy provides power to the loads as first priority.<br>If solar energy is not sufficient to power all connected loads, Utility energy will supply power to the loads at the same time. |
| | | SbU 01 | Solar energy provides power to the loads as first priority.<br>If solar energy is not sufficient to power all connected loads, battery energy will supply power to the loads at the same time.<br>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. |
| | | SUF 01 | If solar energy is sufficient to all connected loads and charge battery, the solar energy could feedback to the grid (sell power to grid).<br>If solar energy is not sufficient to power all connected loads, Utility energy will supply power to the loads at the same time. |
| | | PEC 01 | The units will not only provide power to the connected load but also give power to connected home load. If PV power and battery power is insufficient, it will take grid energy as supplement. The units will not sell power to grid. In this mode, a CT can be used. The installation method of the CT please refer to chapter about CT connection. The external CT will detect power flowing back to the grid and will reduce the power of the inverter only to supply the local load, charge battery and home load. |

| | | | |
|---|---|---|---|
| 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)<br>  | Setting range is from 10A to maximum charging current. Increment of each click is 10A. |
| 03 | AC input voltage range | Appliances (default)<br>  | If selected, acceptable AC input voltage range will be within 90-280VAC. |
| | | UPS<br>  | If selected, acceptable AC input voltage range will be within 170-280VAC. |
| 05 | Battery type | AGM (default)<br>  | Flooded<br>  |
| | | User-Defined<br>  | 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<br>  | If selected,programs of 24,26,27 and 29 will be automatically set up. No need for further setting. |
| | | Pylontech battery<br>  | |
| | | Techfine battery<br>  | |
| | | Growatt battery<br>  | |
| | | Felicity battery<br>  | |
| | | LIB-protocol compatible battery<br>  | 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<br>  | 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. |

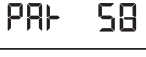
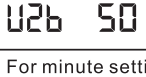
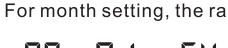
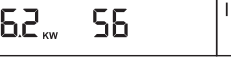
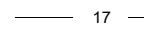
| | | | |
|---|---|---|---|
| 06 | Auto restart when overload occurs | Restart disable(default)<br>  | Restart enable<br>  |
| 07 | Auto restart when over temperature occurs | Restart disable (default)<br> | Restart enable<br>  |
| 08 | ECO function:<br>System will temporarily stop when the load is low in battery mode. | disable (default)<br>  | |
| | | enable<br>  | |
| 09 | Output frequency | 50Hz(default)<br> | 60Hz<br>  |
| 10 | Output voltage | 220V<br> | 230V (default)<br>  |
| | | 240V<br> | |
| 11 | Maximum utility charging current<br>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. | 30A(default)<br> | Setting range is 2A, then from 10A to max.AC charging current.<br>Increment of each click is 10A. |
| 12 | Setting voltage point back to utility source when selecting“SBU priority” in program 01. | Available options in 24 system model: | |
| | | 23.0V (default)<br> | Setting range is from 22V to 25.5V.<br>Increment of each click is 0.5V. |
| | | Available options in 48 system model: | |
| | | 46V (default)<br>  | Setting range is from 44V to 51V.<br>Increment of each click is 1V. |

<table>
<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<br></td><td>27V(default)<br></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<br>  </td><td>54V (default)<br>  </td></tr>
<tr><td colspan="2">Setting range is from 48V to 58V. Increment of each click is 1V.</td></tr>
<tr><td rowspan="6">16</td><td rowspan="6">Charger source priorit:<br>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<br>  </td><td>Solar energy will charge battery as first priority.<br>Utility will charge battery only when solar energy is not available.</td></tr>
<tr><td>Solar and Utility(default)<br>  </td><td>Solar energy and utility will charge battery at the same time.</td></tr>
<tr><td>Only Solar<br>  </td><td>Solar energy will be the only charger source no matter utility is available or not.</td></tr>
<tr><td>Solar residual<br>  </td><td>Solar energy will support.<br>all connected loads as first priority, the residual energy will charge battery</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>17</td><td>Battery reboot voltage</td><td>default:<br>  </td><td>If in SOC mode, when the machine will restart and resume operation until the PV charging reaches the set value after the battery is low and the device shuts down.</td></tr>
<tr><td>18</td><td>Alarm control</td><td>Alarm on (default)<br>  </td><td>Alarm off<br>  </td></tr>
</table>

| | | | |
|---|---|---|---|
| 19 | Auto return to default display screen | Return to default display screen (default)<br>ESP 19 | 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. |
| | | Stay at latest screen<br>REP 19 | If selected, the display screen will stay at latest screen user finally switches. |
| 20 | Backlight control | Backlight on (default)<br>LON 20 | Backlight off<br>LOF 20 |
| 22 | Beeps while primary source is interrupted | Alarm on (default)<br>AON 22 | Alarm off<br>AOF 22 |
| 23 | Overload bypass:<br>When enabled, the unit will transfer to line mode if overload occurs in battery mode. | Bypass disable (default)<br>byd 23 | Bypass enable<br>byE 23 |
| 24 | Battery low voltage<br>● If battery power is only power source availableinverter will alarm. | Battery low voltage 44.0V<br>LOV 440V 24 | |
| | | Setting range is from 20.0V-27.0V for 24V system and 40.0V-54.0V for 48V system. | |
| 25 | Record fault code | Record enable (default)<br>FEN 25 | Record disable<br>Fbs 25 |
| 26 | Bulk charging voltage (C.V voltage) | 24V system default setting:28.2V<br>CV 28.2V 26 | |
| | | 48V system default setting:56.4V<br>CV 56.4V 26 | |
| | | 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. | |
| 27 | Floating charging voltage | 24V system default setting:27.0V<br>FLV 27.0V 27 | |
| | | 48V system default setting:54.0V<br>FLV 54.0V 27 | |

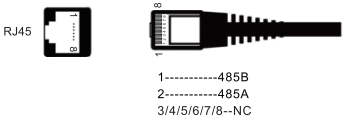
<table>
<tr><td rowspan="2">28</td><td rowspan="2">Reset factory setting</td><td colspan="2">default:<br>  </td></tr>
<tr><td colspan="2">  </td></tr>
<tr><td rowspan="3">29</td><td rowspan="3">Low DC cut-off voltage:<br>• If battery power is only power source availableinverter will shut down.<br>• If PV energy and battery power are available, inverter will charge battery without AC output.</td><td colspan="2">24V system default setting:21.0V<br>  </td></tr>
<tr><td colspan="2">48V system default setting:42.0V<br>  </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.<br>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>
<tr><td rowspan="2">30</td><td rowspan="2">Battery equalization</td><td>Battery equalization<br>  </td><td>Battery equalization disable (default)<br>  </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<br>  </td></tr>
<tr><td colspan="2">48V system default setting:58.4V<br>  </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)<br>  </td><td>Setting range is from 5min to 900min.<br>Increment of each click is 5min.</td></tr>
<tr><td>34</td><td>Battery equalized timeout</td><td>120min (default)<br>  </td><td>Setting range is from 5min to 900min.<br>Increment of each click is 5min.</td></tr>
<tr><td>35</td><td>Equalization interval</td><td>30days (default)<br>  </td><td>Setting range is from 0 to 90 days.<br>Increment of each click is 1 day.</td></tr>
</table>

| | | | |
|---|---|---|---|
| 36 | Equalization activated immediately | Enable<br>AEn 36 | Disable (default)<br>AdS 36 |
| | | 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 " E9 ", If "Disable" is selected, it will cancel equalization function until next activated equalization time arrives based on program 35 setting. At this time, " E9 " will not be shown in LCD main page. | |
| 37 | BMS Function Switch | off(default)<br>bnS OFF 37<br>bnS On 37 | Whether to enable the BMS communication function |
| 38 | Bat Soc Under Lock | bSU 10% 38 | If any type of lithium battery is selected in program 5.<br>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 | StG 20% 39 | If any type of lithium battery is selected in program 5.<br>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 | Stb 95% 40 | If any type of lithium battery is selected in program 5.<br>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 | bSr 50% 41 | If any type of lithium battery is selected in program 5.<br>When the inverter is turned on, the SOC must be higher than the set value to work normally. |
| 45 | Reset PV energy storage | Notre set (Default)<br>nrt 45 | Reset<br>rSt 45 |
| 46 | Start charging time for AC charger | 00:00(Default)<br>StA 00.0H 46<br>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)<br>StO 00.0H 47<br>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)<br>  <br>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)<br>  <br>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<br>  | 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<br>  | 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<br>  | 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<br>  | If selected, acceptable feed-in grid voltage range will be 170-264.5VAC. Acceptable feed-in grid frequency range will be 47.5-53.5Hz. |
| | | Mode 5(Default)<br>  | If selected, acceptable feed-in grid voltage range will be 100-280VAC. Acceptable feed-in grid frequency range will be 47.5-53.5Hz. |
| 51 | Time setting-Minute | For minute setting, the range is from 00 to 59.<br>  | |
| 52 | Time setting-Hour | For hour setting, the range is from 00 to 23.<br>  | |
| 53 | Time setting-Day | For day setting, the range is from 00 to 31.<br>  | |
| 54 | Time setting-Month | For month setting, the range is from 1 to 12<br>  | |
| 55 | Time setting-Year | For year setting, the range is from 16 to 99.<br>  | |
| 56 | GRID-tie power | 6.2KW<br>  | Increment of each click is 200W. |

| | | | |
|---|---|---|---|
| 58 | Set the input power of the mains power | 0.15KW(default)<br>2EP 0.15KW 58 | Setting range is from 0.01KW to 0.5KW.Increment of each click is 0.01KW. |
| 59 | Max battery discharge current setting | 200(default)<br>d1C 200 59 | When the battery discharge current more than the setting value, the unit will be alarm.The setting range is from 20 to 200. |
| 67 | Output Open Time | dtA 000 67 | The value ranges from 0 to 23. |
| 68 | Output Stop Time | dtO 000 68 | The value ranges from 0 to 23. |
| 71 | Start time setting for power grid peak shaving | 00:00(Default)<br>LSA 000 71<br>The setting range of start time for power grid peak shaving is from 00:00 to 23:00, increment of each click is 1 hour. | In PEC mode, set the start time and stop time for the battery to sell electricity according to requirements. |
| 72 | Stop time setting for power grid peak shaving | 00:00(Default)<br>LSO 000 72<br>The setting range of start time for power grid peak shaving is from 00:00 to 23:00, increment of each click is 1 hour. | |

When the BMS/485 communication interface is externally connected, as shown in the following figure:




**Communication Connection**

Please use supplied communication cable to connect to inverter and PC. Please install a monitoring software on the computer.

## 4.2 Battery Equalization Description

Equalization function is added into charge controller, It reverses the buildup of negative chemical effects like stratification, a condition where acid concentration is greater at the bottom of the battery than at the top. Equalization also helps to remove sulfate crystals that might have built up on the plates. If left unchecked, this condition, called sulfation, will reduce the overall capacity of the battery. Therefore, it's recommended to equalize battery periodically.

## 4.3 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 output wiring diameter | Max. bypass output current | Recommended air switch or circuit breaker models | Torque value |
|---|---|---|---|---|
| 4KVA | 12AWG | 20A | 2P-20A | 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.

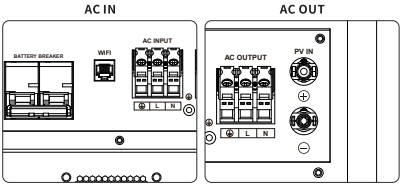
2、Insert AC input wires according to polarities indicated on terminal block and tighten the terminal screws. Be sure to connect PE protective conductor ⏚ first.

| | |
|---|---|
| ⏚ | →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.

## 4.4 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 |
|---|---|---|---|
| 3.3mm²A/12AWG | 15A | 2P-16A | 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.

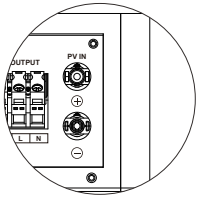
| | |
|---|---|
| Max.PV array open circuit | 500Vdc |
| Starting voltage | 100Vdc |
| PV array MPPT voltage range | 85Vdc~450Vdc |

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**




## 4.5 Start machine

Step1:connecting all lines.

Step2:press the power 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. Battery parameters

| Parameter \ Battery type | LiFePO4(LFP) |
|---|---|
| | LE4000-8A |
| Rated Voltage (VDC) | 25.6V |
| Battery capacity (Ah) | 314Ah |
| Battery Energy (Wh) | 8038.4Kwh |
| Battery voltage range (VDC) | 20~29.2V |
| Maximum overcharge voltage(VDC) | 29.2V |
| Battery input under voltage protection | 20 |
| Battery input under voltage recovery point(VDC) | 22.08V |
| Battery input overvoltage recovery point(VDC) | 27.04V |

# 6. Fault and alarm description

## 6.1 Fault and alarm description

➢ **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 |
|---|---|---|
| F01 | Fan is locked when inverter is off. |  |
| F02 | Over temperature or NTC is not connected well. |  |
| F03 | Battery voltage is too high. |  |
| F04 | Battery voltage is too low. |  |
| F05 | Output short circuited or over temperature is detected by internal converter components. |  |
| F06 | Output voltage is too high. |  |
| F07 | Over load time out. |  |
| F08 | Bus voltage is too high |  |
| F09 | Bus soft start failed |  |
| F51 | Over currents or urge |  |
| F52 | Bus voltage is too low |  |
| F53 | Inverter soft start failed |  |
| F55 | Over DC voltage in AC output |  |
| F57 | Current sensor failed |  |
| F58 | Output voltage is too low |  |
| F59 | PV voltage is over limitation |  |

## 6.2 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 |
|---|---|---|---|
| A01 | Fan is locked when inverter is on. | Beep three times every second | A01 ⚠ |
| A02 | Over temperature | None | A02 ⚠ |
| A03 | Batery is over-charged | Beep once every second | A03 ⚠ |
| A04 | Low battery | Beep once every second | A04 ⚠ |
| A07 | Overload | Beep once every 0.5 second | A07 ⚠ |
| A10 | Output power derating | Beep twice every 3 seconds | A10 ⚠ |
| A15 | PV energy is low. | Beep twice every 3 seconds | A15 ⚠ |
| A16 | High AC input (>280VAC) during BUS soft start | None | A16 ⚠ |
| A27 | Max battery discharge current setting | None | A27 ⚠ |
| E9 | Battery equalization | None | E9 ⚠ |
| bP | Battery is not connected | None | bP ⚠ |

**5.5.3** 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<br>• After battery is connected, communication signal is not detected for 1 minutes, buzzer will beep.<br>• 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. |

## 7. Trouble removeal

| 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.<br>2. Replace battery. |
| No response after power on. | No indication. | 1. The battery voltage is far too low.(<1.4V/Cell)<br>2. Internal fuse tripped. | 1.Contact repair center for replacing the fuse.<br>2. Re-charge battery.<br>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.<br>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.<br>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. |

# 8. 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!**

# 9. Product Specifications

| Model | LE4000-8A |
|---|---|
| AC Output | |
| Rated output power | 4000W |
| Surge power | 7200VA/2S |
| Rated output voltage | 230V±10% |
| Output frequency | 50Hz (Optional 60Hz) |
| LFP Battery | |
| Nominal energy | 8038.4Wh |
| Nominal voltage | 25.6V |
| Operation ambient temperature(Charge) | 0°C-40°C (32°F-104°F) |
| Operation ambient temperature(Discharge) | -10°C-40°C (14°F-104°F) |
| PV Input | |
| Max.PV input power | 5000W |
| Max. input voltage(Voc) | 500V |
| MPPT operating voltage range | 85-450Vdc |
| Max. input current per MPPT | 15A |
| AC Input | |
| AC input voltage | 200~240V |
| Acceptable input voltage range | 150~265V |
| Nominal input frequency | 50Hz/60Hz |
| General Parameters | |
| Noise level | ⩽50dB |
| G.W. | 70kg |
| Dimension | 430*340*560mm |
| IP rating | IP21 |
| Safety & Certification | UN38.3/MSDS |