

# 3kW2.5kWh

## Vertical wall-mounted all-in-one machine



## USER INSTRUCTION

This All in one energy storage is one of a series of industrial energy storage products designed and developed independently. Long cycle life, high safety standard BMS software protection, sturdy shell, beautiful appearance, easy installation and use, etc. Widely used in various energy storage systems.

# Catalogue

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(Revision History)

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|         |            |                 |                    |            |         |

## 1. Symbol Description

|                                                                                     |                                                                                                               |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
|    | Do not place near open fire or flammable materials.                                                           |
|    | A potential hazard exists when the equipment is working. Wear personal protective equipment during operation. |
|    | Warning electric shock.<br>Power off the equipment before any operation.                                      |
|    | Grounding: indicate PE cable connection position.                                                             |
|    | Do not place in areas accessible to children.                                                                 |
|  | Keep the battery away from open fire or ignition sources.                                                     |
|  | Read the product and operation manual before operating the battery system.                                    |
|  | Label for Waste Electrical and Electronic Equipment (WEEE) Directive (2012/19/EU).                            |
|  | The certificate label for CE.                                                                                 |
|  | Recycle label.                                                                                                |

## 2. Safety Precautions



### Alert

- 1) It is important and necessary to read the user manual carefully (and attachment) before installing or using battery. Failure to do so or to follow any instruction or warning in this document can result in electrical shock, serious injury, and death, or damage battery, potentially rendering it unusable.
- 2) When battery is stored for a long time, it is required to charge once every 6 months, and the SOC should be no less than 50%.
- 3) After battery module cannot be discharged, it needs to be recharged within 12h.
- 4) Do not connect power terminal reversely.
- 5) All power supplies must be disconnected during maintenance.
- 6) Please contact the supplier within 24 hours if there is something abnormal.
- 7) Do not use any liquid to clean the battery.
- 8) Do not expose battery to flammable or irritating chemicals or vapor.
- 9) Do not paint any part of battery, including any internal or external components.
- 10) Do not connect battery with PV solar wiring directly.
- 11) Do not install or use this product beyond provisions of the manual.
- 12) Direct or indirect damages caused by the above reasons are not covered by warranty claim.



### Warning

#### 2.1 Before Connecting

- 1) Please check the external packaging condition before unpacking. If it is damaged, contact corresponding local retailer.
- 2) After unpacking, please check the products and spare parts according to spare parts list. If the product is damaged or missing, please contact your local retailer.
- 3) Before installation, be sure to cut off the grid power and make sure battery switch is on OFF mode.
- 4) It is prohibited to connect the battery and AC power directly.
- 5) All electrical wiring must be connected in accordance with local regulations.
- 6) Please ensure that electrical performance of battery system is compatible with the equipment.
- 7) The installation onsite shall be equipped with fire-fighting facilities that meet relevant requirements, such as fire sand, dry powder fire extinguisher, etc.

#### 2.2 In Using

- 1) If battery system needs to be moved or repaired, power must be cut off and battery is completely shut down.

- 2) It is prohibited to connect battery with different types of battery.
- 3) Do not connect battery to faulty inverter.
- 4) Except for personnel from The Company or other authorized personnel, batteries shall not be opened, repaired or disassembled. The company shall not bear any liability or responsibility caused by violation of any safety operation or design standard, production standard, equipment safety standards or any other standards or requirements.

### 3.Introduction

This power lifepo4 lithium battery is a new energy storage product developed and produced by The Company, which can provide reliable power supply for all kinds of equipment or systems.

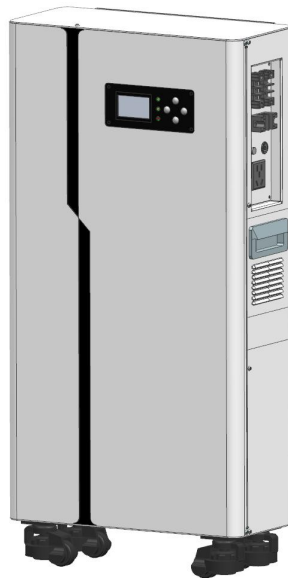


Figure 3-1

#### 3.1 Features

- 1) The module is non-toxic, non-polluting and environmentally friendly.
- 2) Cathode material is made from LiFePO<sub>4</sub> with safety performance and long cycle life.
- 3) Battery management system (BMS) has protection functions including over- discharge, over-charge, over-current and high/low temperature.
- 4) The system can automatically manage charge and discharge state and balance voltage of each cell.
- 5) Adopted self-cooling mode rapidly reduced system entire noise.
- 6) The module has less self-discharge, up to 6 months without charging it on shelf, no memory effect, excellent performance of shallow charge and discharge.
- 7) Multi-functional LED intelligent digital screen display.

### 3.2 Functions

|                                          |                                |
|------------------------------------------|--------------------------------|
| Protection and Alarm                     | Management and monitor         |
| Charge/Discharge End                     | Cell Balance                   |
| Over voltage Charging Protection         | Intelligent Charge Model       |
| Under Voltage Discharging Protection     | Charge/Discharge Current Limit |
| Charge/Discharge Over current Protection | Capacity Retention Calculate   |
| High/Low Temperature Protection          | Short Circuit Protection       |
| History Record                           | Adjustable parameter settings  |

| Items                                 | Specification                                      |
|---------------------------------------|----------------------------------------------------|
| Product Name                          | 3kW2.5KwhAll in one energy storage                 |
| <b>Battery parameters</b>             |                                                    |
| Module Model                          | 25.6V100Ah                                         |
| Battery Type                          | LFP 1P8S                                           |
| Nominal Capacity                      | 2.5 kWh                                            |
| Nominal Voltage                       | 25.6V                                              |
| Working Voltage                       | 21.6-28V                                           |
| <b>VSOLAR CHARGER</b>                 |                                                    |
| Maximum PV Array Open Circuit Voltage | 160VDC                                             |
| PV Array MPPT Voltage Range(TYP.)     | 30~128VDC                                          |
| Maximum PV Array Power                | 1600W                                              |
| Maximum Solar Charge Current          | 60A                                                |
| Maximum AC Charge Current             | 60A                                                |
| <b>AC INPUT</b>                       |                                                    |
| Voltage                               | 230VAC                                             |
| Selectable Voltage Range              | 170~280VAC(UPS) / 90~280VAC(APL) / 184~253VAC(VDE) |
| Frequency Range                       | 50Hz / 60Hz (Auto sensing)                         |
| <b>AC Output</b>                      |                                                    |
| Rated Power                           | 3200W                                              |
| AC Voltage Regulation                 | 220~240Vac                                         |
| Inverter Efficiency                   | 90%~93%                                            |
| <b>Overall parameters</b>             |                                                    |
| Communication                         | RS485 ,WiFi                                        |
| Storage Temperature                   | -20°C ~ 55°C (Recommended)                         |
| Working Humidity                      | ≤95% (RH) No Condensation                          |
| Working Temperature                   | 0°C ~ 55°C                                         |
| Working Altitude                      | ≤2000m                                             |
| Cooling method                        | natural cooling                                    |
| Installation method                   | Wall-hung/On floor                                 |
| Protective Class                      | IP20                                               |
| Weight                                | ~45kg                                              |
| Dimension                             | 410mm*845mm*195mm                                  |
| Design Life                           | 10 Years (25°C)                                    |
| Cycle Life                            | > 6000 (25°C) ,80% DOD                             |

### 3.3 Specification Parameters



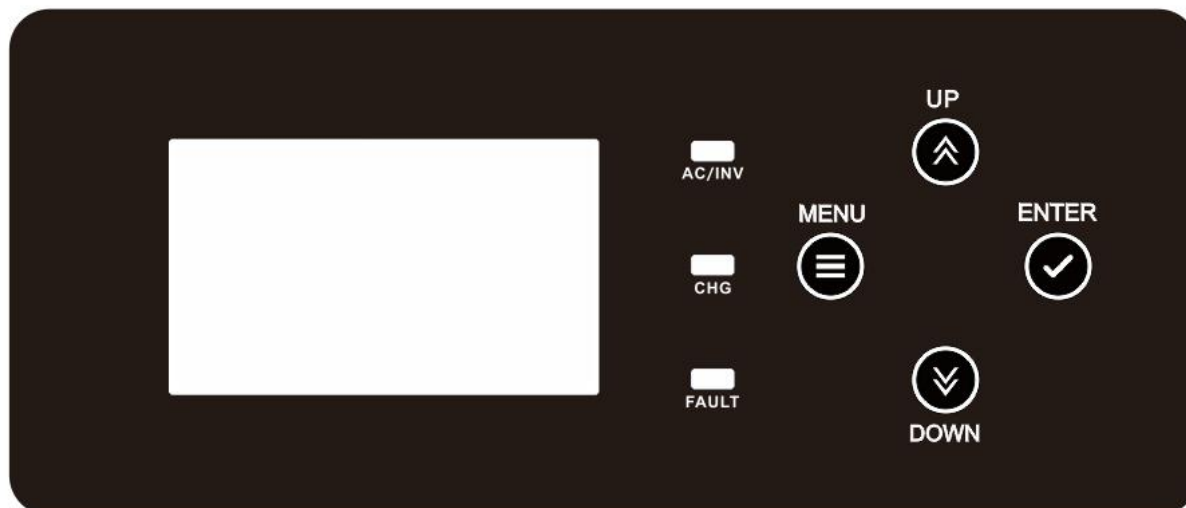
### 3.4 Equipment interface instruction

- ① **Operation panel:** LCD display, Status indicator, Function Keys
- ② **USB:** WiFi
- ③ **Communication port:** RS-485
- ④ **Start:** Power switch
- ⑤ **Anderson:** Battery parallel interface
- ⑥ **AC IN :** AC input terminal
- ⑦ **AC OUT:** AC output terminal
- ⑧ **PV:** PV charging interface
- ⑨ **Start:** Inverter switch
- ⑩ **OCP:** AC input overload protection
- ⑪ **AC OUT:** Power socket



## ➤ Operation 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  |        |          | Messages                                            |
|----------------|--------|----------|-----------------------------------------------------|
| <b>AC/IN V</b> | Green  | Solid On | Output is powered by grid in line mode.             |
|                |        | Flashing | Output is powered by battery or PV in battery mode. |
| <b>CHG</b>     | Yellow | Flashing | Battery is charging or discharging.                 |
| <b>FAULT</b>   | Red    | Solid On | Fault occurs in the inverter.                       |
|                |        | Flashing | Warning condition occurs in the inverter.           |

| Function Keys | Description                                                                                               |
|---------------|-----------------------------------------------------------------------------------------------------------|
| <b>MENU</b>   | Enter reset mode or setting mode go to previous selection.                                                |
| <b>UP</b>     | Increase the setting data.                                                                                |
| <b>DOWN</b>   | Decrease the setting date.                                                                                |
| <b>ENTER</b>  | Enter setting mode and Confirm the selection in setting mode go to next selection or exit the reset mode. |

## ➤ Start

When the battery is dormant, pressing the start button will open the battery module and inverter module.

### Attention:

**It is strictly prohibited to turn off the circuit start switch first when the inverter is charging and discharging the battery.**

## ➤ AC OUT

The device has two AC output sockets, a 3P wall terminal (30A), and a five pin socket (10A). Do not use electrical appliances other than the power indicated on the device. Air conditioning and other electrical appliances need at least 2-3 minutes to restart, as they require sufficient time to balance the refrigerant gas in the circuit. If there is a power shortage and it is restored in a short period of time, it will cause damage to the connected devices. To prevent such damage, please check if the air conditioner has a delay function before installation and check the manufacturer. Otherwise, this inverter/charger will trigger an overload fault and cut off the output to protect your device, but sometimes it can still cause internal damage to the air conditioner.

## ➤ OCP

An overload protection switch for the AC charging socket. If it is overloaded, the protection switch button will automatically pop up and you need to wait for 30 seconds before manually pressing the switch back.

## ➤ AC IN

Before connecting the AC input power, please install a separate AC circuit breaker between this device and the AC input power. This will ensure that the inverter can be safely disconnected during maintenance and fully protect it from the impact of AC input over current. The recommended specification for AC circuit breakers is 32A, suitable for 3KW.



### **Warning**

All wiring must be operated by professional personnel.

The use of appropriate cables for AC input connections is crucial for the safe and efficient operation of the system. To reduce the risk of injury, please use a 12AWG cable for connection.

## ➤ PV

Before connecting PV components, please install a separate DC circuit breaker between this device and the photovoltaic system.

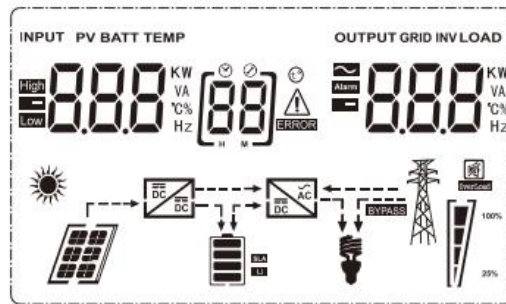


### **Warning**

All wiring must be operated by professional personnel.

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 8AWG cable to connect.

### 3.5 LCD Display Icons



| Icon                                                                                | Function description                                                                                                       |                                                                        |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Input Source Information and Output Information                                     |                                                                                                                            |                                                                        |
|    | Indicates the AC information.                                                                                              |                                                                        |
|    | Indicates the DC information.                                                                                              |                                                                        |
|    | Indicate input voltage, input frequency, PV voltage, battery voltage and charger current.                                  |                                                                        |
|                                                                                     | Indicate output voltage, output frequency, load in VA, load in Watt and discharging current.                               |                                                                        |
| Configuration Program and Fault Information                                         |                                                                                                                            |                                                                        |
|  | Indicates the setting programs.                                                                                            |                                                                        |
|  | Indicates the warning and fault codes.                                                                                     |                                                                        |
|                                                                                     | Warning: flashing  ⚠ with warning code. |                                                                        |
|                                                                                     | Fault: lighting  with fault code.       |                                                                        |
| Battery Information                                                                 |                                                                                                                            |                                                                        |
|  | Indicates battery level by 0-24%, 25-49%, 50-74% and 75-100% in battery mode and charging status in line mode.             |                                                                        |
| In AC mode, it will present battery charging status.                                |                                                                                                                            |                                                                        |
| Status                                                                              | Battery voltage                                                                                                            | LCD Display                                                            |
| Constant Current mode / Constant Voltage mode                                       | <2V/cell                                                                                                                   | 4 bars will flash in turns.                                            |
|                                                                                     | 2 ~ 2.083V/cell                                                                                                            | Bottom bar will be on and the other three bars will flash in turns.    |
|                                                                                     | 2.083 ~ 2.167V/cell                                                                                                        | Bottom two bars will be on and the other two bars will flash in turns. |
|                                                                                     | > 2.167 V/cell                                                                                                             | Bottom three bars will be on and the top bar will flash.               |
| Batteries are fully charged.                                                        |                                                                                                                            | 4 bars will be on.                                                     |

|                                                                                     |                          |                                                                                     |                                                                                       |                                                                                       |                                                                                       |
|-------------------------------------------------------------------------------------|--------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| In battery mode, it will present battery capacity.                                  |                          |                                                                                     |                                                                                       |                                                                                       |                                                                                       |
| Load Percentage                                                                     |                          | Battery Voltage                                                                     |                                                                                       | LCD Display                                                                           |                                                                                       |
| Load > 50%                                                                          | < 1.717V/cell            |                                                                                     |    |                                                                                       |                                                                                       |
|                                                                                     | 1.717V/cell ~ 1.8V/cell  |                                                                                     |    |                                                                                       |                                                                                       |
|                                                                                     | 1.8 ~ 1.883V/cell        |                                                                                     |    |                                                                                       |                                                                                       |
|                                                                                     | > 1.883 V/cell           |                                                                                     |    |                                                                                       |                                                                                       |
| 50%> Load > 20%                                                                     | < 1.817V/cell            |                                                                                     |    |                                                                                       |                                                                                       |
|                                                                                     | 1.817V/cell ~ 1.9V/cell  |                                                                                     |    |                                                                                       |                                                                                       |
|                                                                                     | 1.9 ~ 1.983V/cell        |                                                                                     |    |                                                                                       |                                                                                       |
|                                                                                     | > 1.983V/cell            |                                                                                     |    |                                                                                       |                                                                                       |
| Load < 20%                                                                          | < 1.867V/cell            |                                                                                     |   |                                                                                       |                                                                                       |
|                                                                                     | 1.867V/cell ~ 1.95V/cell |                                                                                     |  |                                                                                       |                                                                                       |
|                                                                                     | 1.95 ~ 2.033V/cell       |                                                                                     |  |                                                                                       |                                                                                       |
|                                                                                     | > 2.033V/cell            |                                                                                     |  |                                                                                       |                                                                                       |
| Load Information                                                                    |                          |                                                                                     |                                                                                       |                                                                                       |                                                                                       |
|  |                          | Indicates overload.                                                                 |                                                                                       |                                                                                       |                                                                                       |
|  |                          | Indicates the load level by 0-24%, 25-49%, 50-74% and 75-100%.                      |                                                                                       |                                                                                       |                                                                                       |
|                                                                                     |                          | 0%~24%                                                                              | 25%~49%                                                                               | 50%~74%                                                                               | 75%~100%                                                                              |
|                                                                                     |                          |  |    |  |  |
| Mode Operation Information                                                          |                          |                                                                                     |                                                                                       |                                                                                       |                                                                                       |
|  |                          | Indicates unit connected to the mains.                                              |                                                                                       |                                                                                       |                                                                                       |
|  |                          | Indicates unit connected to the PV panel.                                           |                                                                                       |                                                                                       |                                                                                       |
|  |                          | Indicates load is supplied by utility power.                                        |                                                                                       |                                                                                       |                                                                                       |
|  |                          | Indicates the solar charger is working.                                             |                                                                                       |                                                                                       |                                                                                       |
|  |                          | Indicates the DC/AC inverter circuit is working.                                    |                                                                                       |                                                                                       |                                                                                       |
| Mute Operation                                                                      |                          |                                                                                     |                                                                                       |                                                                                       |                                                                                       |
|  |                          | Indicates unit alarm is disabled.                                                   |                                                                                       |                                                                                       |                                                                                       |

### 3.6 LCD Setting

After pressing and holding "ENTER" button for 2 seconds, the unit will enter setting mode. Press "UP" or "DOWN" button to select setting programs. And then, press "ENTER" or "MENU" button to confirm the selection and exit.

#### Setting Programs:

| Program | Description                      | Selectable option     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------|----------------------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 00      | Exit setting mode                | Escape<br>[00] ESC    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 01      | Output source priority selection | [01] SBU              | Solar energy provides power to the loads as first priority. If battery voltage has been higher than the setting point in program 21 for 5 minutes, the inverter will turn to battery mode, solar and battery will provide power to the load at the same time. When the battery voltage drops to the setting point in program 20, the inverter will turn to bypass mode, utility provides power to the load only, and the solar will charge the battery at the same time.                                                            |
|         |                                  | [01] SOL              | Solar energy provides power to the loads as first priority. If battery voltage has been higher than the setting point in program 21 for 5 minutes, and the solar energy has been available for 5 minutes too, the inverter will turn to battery mode, solar and battery will provide power to the load at the same time. When the battery voltage drops to the setting point in program 20, the inverter will turn to bypass mode, utility provides power to the load only, and the solar will charge the battery at the same time. |
|         |                                  | (default)<br>[01] UTI | Utility will provide power to the loads as first priority. Solar and battery energy will provide power to the loads only when utility power is not available.                                                                                                                                                                                                                                                                                                                                                                       |



|    |                                                                                                        |                                                                                                                |                                                                                                                          |
|----|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| 02 | AC input voltage range                                                                                 | Appliances (default)<br>[02] APL                                                                               | If selected, acceptable AC input voltage range will be within 90-280VAC.                                                 |
|    |                                                                                                        | UPS<br>[02] UPS                                                                                                | If selected, acceptable AC input voltage range will be within 170-280VAC.                                                |
|    |                                                                                                        | VDE<br>[02] VDE                                                                                                | If selected, acceptable AC input voltage range will conform to VDE4105(184VAC-253VAC).                                   |
|    |                                                                                                        | GEN<br>[02] GEN                                                                                                | When the user uses the device to connect the generator, select the generator mode.                                       |
| 03 | Output voltage                                                                                         | [03] 230 <sub>v</sub>                                                                                          | Set the output voltage amplitude, (220VAC-240VAC).                                                                       |
| 04 | Output frequency                                                                                       | 50HZ(default)<br>[04] 50.0                                                                                     | 60HZ<br>[04] 60.0                                                                                                        |
|    |                                                                                                        |                                                                                                                |                                                                                                                          |
| 05 | Solar supply priority                                                                                  | [05] BLU                                                                                                       | Solar energy provides power to charge battery as first priority.                                                         |
|    |                                                                                                        | (default)<br>[05] LBU                                                                                          | Solar energy provides power to the loads as first priority.                                                              |
| 06 | Overload bypass: When enabled, the unit will transfer to line mode if overload occurs in battery mode. | Bypass disable<br>[06] bYd                                                                                     | Bypass enable (default)<br>[06] bYE                                                                                      |
|    |                                                                                                        |                                                                                                                |                                                                                                                          |
| 07 | Auto restart when overload occurs                                                                      | Restart disable (default)<br>[07] LId                                                                          | Restart enable<br>[07] LI-E                                                                                              |
|    |                                                                                                        |                                                                                                                |                                                                                                                          |
| 08 | Auto restart when over temperature occurs                                                              | Restart disable (default)<br>[08] LId                                                                          | Restart enable<br>[08] LI-E                                                                                              |
|    |                                                                                                        |                                                                                                                |                                                                                                                          |
| 10 | Charger source priority: To configure charger source priority                                          | If this inverter/charger is working in Line, Standby or Fault mode, charger source can be programmed as below: |                                                                                                                          |
|    |                                                                                                        | Solar first<br>[10] C50                                                                                        | Solar energy will charge battery as first priority. Utility will charge battery only when solar energy is not available. |
|    |                                                                                                        | Solar and Utility (default)<br>[10] SNU                                                                        | Solar energy and utility will charge battery at the same time.                                                           |

|    |                                                                                                                |                                                                                                                                                                                    |                                                                                                                                                    |
|----|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                                                                                                                | Only Solar<br>[10] 050                                                                                                                                                             | Solar energy will be the only charger source no matter utility is available or not.                                                                |
|    |                                                                                                                | If this inverter/charger is working in Battery mode or Power saving mode, only solar energy can charge battery. Solar energy will charge battery if it's available and sufficient. |                                                                                                                                                    |
| 11 | Maximum solar charging current<br>(Max. charging current=utility charging current +solar charging current)     | 2-3KW<br>60A (default)<br>[11] 60 <sup>A</sup>                                                                                                                                     | Setting range is from 1 A to 60A. Increment of each click is 1A.                                                                                   |
| 13 | Maximum utility charging current<br>(Max. charging current= utility charging current + solar charging current) | 2KW<br>40A (default)<br>[13] 40 <sup>A</sup>                                                                                                                                       | 40A(Maximum current)<br>Setting range is from 1 A to 40A. Increment of each click is 1A.                                                           |
|    |                                                                                                                | 3KW<br>60A (default)<br>[13] 60 <sup>A</sup>                                                                                                                                       | 60A(Maximum current)<br>Setting range is from 1 A to 60A. Increment of each click is 1A.                                                           |
| 14 | Battery type                                                                                                   | AGM (default)<br>[14] AGM                                                                                                                                                          | Flooded<br>[14] FLd                                                                                                                                |
|    |                                                                                                                | GEL<br>[14] GEL                                                                                                                                                                    | LEAD<br>[14] LEA                                                                                                                                   |
|    |                                                                                                                | Lithium Ion<br>[14] LI                                                                                                                                                             | User-Defined<br>[14] USE                                                                                                                           |
|    |                                                                                                                | If "User-Defined" LI is selected, battery charge voltage and low DC cut-off voltage can be set up in program 17, 18 and 19.                                                        |                                                                                                                                                    |
| 17 | Bulk charging voltage<br>(C.V voltage)                                                                         | default setting: 28.2V<br>[17] CV 28.2 <sup>V</sup>                                                                                                                                | If "User-Defined" LI is selected in program 14, this program can be set up. Setting range is from 24.0V to 29.2V. Increment of each click is 0.1V. |
| 18 | Floating charging voltage                                                                                      | default setting: 27.0V<br>[18] FLV 27.0 <sup>V</sup>                                                                                                                               | If "User-Defined" LI is selected in program 14, this program can be set up, Setting range is from 24.0V to 29.2V. Increment of each click is 0.1V. |



|    |                                                                                                                        |                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                 |
|----|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 19 | Low DC cut off battery voltage setting                                                                                 | default setting: 20.4V<br>[19] 20.4 <sup>v</sup>                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                 |
|    |                                                                                                                        | If "User-Defined" LI is selected in program 14, this program can be set up. Setting range is from 20.0V to 24.0V. Increment of each click is 0.1V.<br>Low DC cut-off voltage will be fixed to setting value no matter what percentage of load is connected. |                                                                                                                                                                                                                                                                 |
| 20 | Battery stop discharging voltage when grid is available                                                                | 23V (default)<br>[20] 23.0 <sup>v</sup>                                                                                                                                                                                                                     | Setting range is from 22.0V to 29.0V.<br>Increment of each click is 0.1V.                                                                                                                                                                                       |
| 21 | Battery stop charging voltage when grid is available                                                                   | 27.0V (default)<br>[21] 27.0 <sup>v</sup>                                                                                                                                                                                                                   | Setting range is from 22.0V to 29.0V.<br>Increment of each click is 0.1V.                                                                                                                                                                                       |
| 22 | Auto turn page                                                                                                         | (default)<br>[22] PLE                                                                                                                                                                                                                                       | If selected, the display screen will auto turn the display page.                                                                                                                                                                                                |
|    |                                                                                                                        | [22] PLd                                                                                                                                                                                                                                                    | If selected, the display screen will stay at latest screen user finally switches.                                                                                                                                                                               |
| 23 | Backlight control                                                                                                      | Backlight on<br>[23] LON                                                                                                                                                                                                                                    | Backlight off(default)<br>[23] LOF                                                                                                                                                                                                                              |
| 24 | Alarm control                                                                                                          | Alarm on (default)<br>[24] BON                                                                                                                                                                                                                              | Alarm off<br>[24] BOF                                                                                                                                                                                                                                           |
| 25 | Beeps while primary source is interrupted                                                                              | Alarm on<br>[25] AON                                                                                                                                                                                                                                        | Alarm off (default)<br>[25] AOF                                                                                                                                                                                                                                 |
| 27 | Record Fault code                                                                                                      | Record enable (default)<br>[27] FON                                                                                                                                                                                                                         | Record disable<br>[27] FOF                                                                                                                                                                                                                                      |
| 28 | Solar power balance: When enabled, solar input power will be automatically adjusted according to connected load power. | Solar power balance enable<br>[28] Sbe                                                                                                                                                                                                                      | If selected, the solar input power will be automatically adjusted according to the following formula:<br>Max. Input solar power = Max. battery charging power + Connected load power when the machine in OffGrid workstate.                                     |
|    |                                                                                                                        | Solar power balance disable (default)<br>[28] Sbd                                                                                                                                                                                                           | If selected, the solar input power will be the same to max. Battery charging power no matter how much loads are connected. The max.battery charging power will be based on the setting current in program 11 ( Max. solar power = Max.battery charging power ). |



|    |                                    |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----|------------------------------------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 30 | Battery equalization               | Battery equalization<br>[30] EEN | Battery equalization disable(default)<br>[30] Ed5                                                                                                                                                                                                                                                                                                                                                                                                    |
| 31 | Battery equalization voltage       | default setting:28.8V<br>[31] EV | 28.8 <sup>v</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 33 | Battery equalization time          | 60min(default)<br>[33] 60        | Setting range is from 5 min to 900min.<br>Increment of each clink is 5min.                                                                                                                                                                                                                                                                                                                                                                           |
| 34 | Battery equalization timeout       | 120min(default)<br>[34] 120      | Setting range is from 5 min to 900min.<br>Increment of each clink is 5min.                                                                                                                                                                                                                                                                                                                                                                           |
| 35 | Equalization interval              | 30days(default)<br>[35] 30d      | Setting range is from 0 to 90days.<br>Increment of each clink is 1 day.                                                                                                                                                                                                                                                                                                                                                                              |
| 36 | Equalization activated immediately | Enable<br>[36] AEN               | Disable(default)<br>[36] Ad5<br><br>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 "EQ ". If "Disable" is selected, it will cancel equalization function until next activated equalization time arrives based on program 35 setting. At this time, "EQ " will be shown in LCD main page too. |

After pressing and holding "MENU" button for 6 seconds, the unit will enter reset model. Press "Up" and "DOWN" button to select programs. And then ,press "ENTER" button to exit.

|     |                       |                        |
|-----|-----------------------|------------------------|
| SET | (default)<br>[dt] ntt | Reset setting disable. |
|     | [dt] t5t              | Reset setting enable.  |

### 3.7 Fault Reference Code

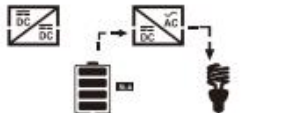
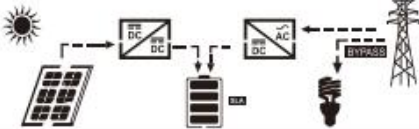
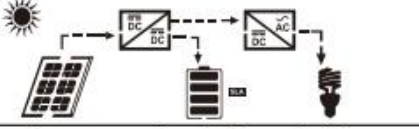
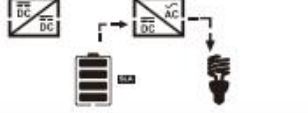
| Fault Code | Fault Event                               | Icon on                                                                               |
|------------|-------------------------------------------|---------------------------------------------------------------------------------------|
| 01         | Fan is locked when inverter is off        |    |
| 02         | Inverter transformer over temperature     |    |
| 03         | Battery voltage is too high               |    |
| 04         | Battery voltage is too low                |    |
| 05         | Output short circuited                    |    |
| 06         | Inverter output voltage is high           |    |
| 07         | Overload time out                         |    |
| 08         | Inverter bus voltage is too high          |    |
| 09         | Bus soft start failed                     |   |
| 11         | Main relay failed                         |  |
| 21         | Inverter output voltage sensor error      |  |
| 22         | Inverter grid voltage sensor error        |  |
| 23         | Inverter output current sensor error      |  |
| 24         | Inverter grid current sensor error        |  |
| 25         | Inverter load current sensor error        |  |
| 26         | Inverter grid over current error          |  |
| 27         | Inverter radiator over temperature        |  |
| 31         | Solar charger battery voltage class error |  |
| 32         | Solar charger current sensor error        |  |
| 33         | Solar charger current is uncontrollable   |  |
| 41         | Inverter grid voltage is low              |  |
| 42         | Inverter grid voltage is high             |  |

|    |                                                                      |                                                                                                 |
|----|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| 43 | Inverter grid under frequency                                        | <b>[43]</b>  |
| 44 | Inverter grid over frequency                                         | <b>[44]</b>  |
| 51 | Inverter over current protection error                               | <b>[51]</b>  |
| 52 | Inverter bus voltage is too low or component temperature is too high | <b>[52]</b>  |
| 53 | Inverter soft start failed                                           | <b>[53]</b>  |
| 55 | Over DC voltage in AC output                                         | <b>[55]</b>  |
| 56 | Battery connection is open                                           | <b>[56]</b>  |
| 57 | Inverter control current sensor error                                | <b>[57]</b>  |
| 58 | Inverter output voltage is too low                                   | <b>[58]</b>  |

### 3.8 Warning Indicator

| Fault Code | Fault Event                                 | Icon on                                                                                                                                                                                 |
|------------|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 61         | Fan is locked when inverter is on.          | <b>[61]</b>                                                                                        |
| 62         | Fan 2 is locked when inverter is on.        | <b>[62]</b>                                                                                        |
| 63         | Battery is over-charged.                    | <b>[63]</b>                                                                                        |
| 64         | Low battery.                                | <b>[64]</b>                                                                                        |
| 67         | Overload.                                   | <b>[67]</b>   |
| 70         | Output power derating.                      | <b>[70]</b>                                                                                        |
| 72         | Solar charger stops due to low battery.     | <b>[72]</b>                                                                                        |
| 73         | Solar charger stops due to high PV voltage. | <b>[73]</b>                                                                                        |
| 74         | Solar charger stops due to over load.       | <b>[74]</b>                                                                                        |
| 75         | Solar charger over temperature.             | <b>[75]</b>                                                                                        |
| 76         | PV charger communication error.             | <b>[76]</b>                                                                                        |
| 77         | Parameter error.                            | <b>[77]</b>                                                                                        |

### 3.9 Operating State Description

| Operation state   | Description                                                                                                               | LCD display                                                                                                                             |
|-------------------|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Utility-Tie state | PV energy is charger into the battery and utility provide power to the AC load.                                           | PV is on<br>                                          |
|                   |                                                                                                                           | PV is off<br>                                         |
| Charge state      | PV energy and grid can charge batteries.                                                                                  |                                                       |
| Bypass state      | Error are caused by inside circuit error or external reasons such as over temperature, output short circuited and so on.  |                                                      |
| Off-Grid state    | The inverter will provide output power from battery and PV power.                                                         | Inverter power loads from PV energy<br>             |
|                   |                                                                                                                           | Inverter power loads from battery and PV energy<br> |
|                   |                                                                                                                           | Inverter power loads from battery only<br>          |
| Stop mode         | The inverter stop working if you turn off the inverter by the soft key or error has occurred in the condition of no grid. |                                                     |



### 3.10 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: battery voltage, battery current ,inverter voltage, inverter current, grid voltage, grid current, load in Watt, load in VA, grid frequency, inverter frequency, PV voltage, PV charging power, PV charging output voltage, PV charging current.

| Selectable information                              | LCD display                            |                                        |
|-----------------------------------------------------|----------------------------------------|----------------------------------------|
| Battery voltage/DC discharging current              | <sup>BATT</sup><br>26.0 <sup>V</sup>   | 48.0 <sup>A</sup>                      |
| Inverter output voltage/Inverter output current     | 229 <sup>V</sup>                       | <sup>INV</sup><br>6.70 <sup>A</sup>    |
| Grid voltage/Grid current                           | 229 <sup>V</sup>                       | -3.0 <sup>A</sup>                      |
| Load in Watt/VA                                     | 150 <sup>KW</sup>                      | <sup>LOAD</sup><br>168 <sup>KVA</sup>  |
| Grid frequency/Inverter frequency                   | <sup>INPUT</sup><br>50.0 <sup>Hz</sup> | <sup>INV</sup><br>50.0 <sup>Hz</sup>   |
| PV voltage and power                                | <sup>PV</sup><br>6.10 <sup>V</sup>     | 1.00 <sup>KW</sup>                     |
| PV charger output voltage and MPPT charging current | <sup>PV</sup><br>25.0 <sup>V</sup>     | <sup>OUTPUT</sup><br>4.00 <sup>A</sup> |

## 4. Safe Handling of Lithium-iron ESS Batteries Guide

### 4.1 Solution Diagram

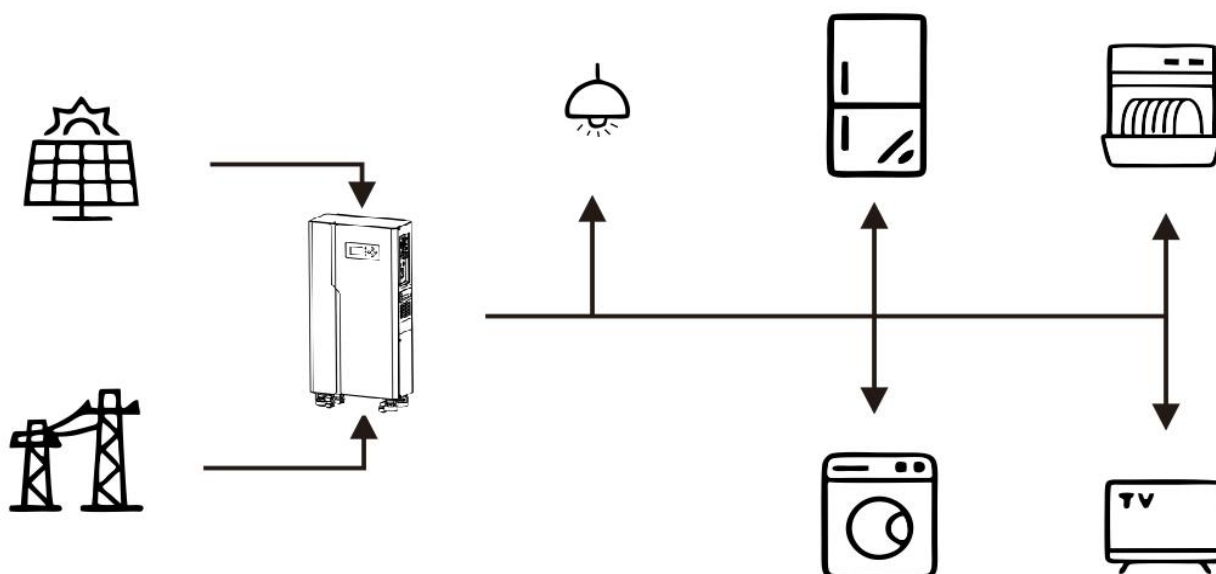


Figure 4-1

## 4.2 Danger Label

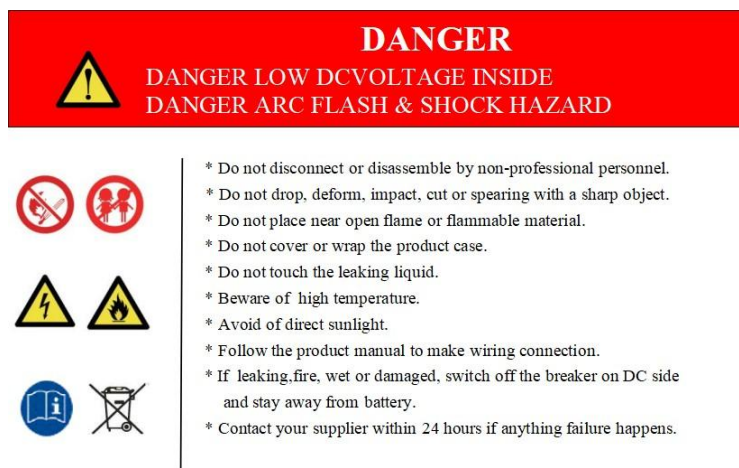


Figure 4-2

## 4.3 Tool



Wire Cutter



Modular Crimping Pliers



Screwdriver



Electric drill

Note :

Properly use insulated tools to prevent accidental electric shock or short circuits. If tools are not insulated, cover the entire exposed metal surfaces of available tools with electrical tape except their tips.

## 4.4 Safety Gear

It is recommended to wear the following safety gear when dealing with battery pack.



Insulated Gloves



Safety Goggles



Safety Shoes

## 5. Installation and operation

### 5.1 Installation Location

Make sure that installation location should meet the following condition:

- 1) The area should be completely water-proof.
- 2) The floor should be flat and level.
- 3) No flammable or explosive materials.
- 4) The ambient temperature is within the range from 0°C to 50°C.



- 5) The temperature and humidity are maintained at a constant level.
- 6) There is just a little dust and dirt in the area.
- 7) The distance from heat source should be more than 2 meters.
- 8) The distance between the air outlet of this device and the obstruction is greater than 0.5 meters.
- 9) This device should avoid direct sunlight as much as possible.
- 10) No forced ventilation requirement for battery module, but please avoid installing in a closed area.

## **5.2 System turns on**



Warning: Double check all the power cables and communication cables. Check all the power switches are OFF.

System turns on step:

- 1) Check all cables are connected correctly. Check grounding is connected.
- 2) If necessary, turn on the switch at battery. If possible, turn on AC or PV power source to wake up inverter.
- 3) If no alarm, the battery system will be ready for charging and discharge with PCS.

## **5.3 System turns off**

When failure or before service, must turn the battery storage system off:

- 1) Turn off the power supply of electrical appliances.
- 2) Turn off the battery button switch.
- 3) Remove the connecting cable between the battery and the electrical appliance.

# **6. Emergency Situations**

## **6.1 Battery Leakage**

If the battery pack leaks electrolyte, avoid contact with the leaking liquid or gas. If one is exposed to the leaked substance, immediately perform the actions described below.

- 1) Inhalation: Evacuate contaminated area and seek medical aid.
- 2) Contact with eyes: Rinse eyes with flowing water for 15 minutes and seek medical aid.
- 3) Contact with skin: Wash affected area thoroughly with soap water and seek medical aid.

Ingestion: Induce vomiting and seek medical aid.

## **6.2 On Fire**

**NO WATER!**

Only dry powder fire or carbon dioxide extinguisher can be used; if possible, move the battery module to a safe area before it catches fire.

## **6.3 Wet Batteries**

If the module is wet or submerged in water, do not let people access it, then contact us or an authorized dealer for technical support. Cut off all power switch.

## 6.4 Damaged Batteries

Damaged batteries are dangerous and must be handled with utmost care. They are not fit for use and may pose a danger to people or property. If the module seems to be damaged, pack it in its original container, then return it to authorized dealer.



### Warning

Damaged batteries may leak electrolyte or produce flammable gas.

## 7. Remarks

### 7.1 Maintenance

Check installation environment such as dust, water, insect etc. Make sure it is suitable for IP20 battery system. Connection of power connector, grounding point, power cable and screw are suggested to be checked every year.

## Parts List

| Item | Part Name                 | Description                         | Unit | Quantity |
|------|---------------------------|-------------------------------------|------|----------|
| 1    | All in one energy storage | 3kW2.5kWh                           | PCS  | 1        |
| 2    | Network line              | 1meters network line                | PCS  | 1        |
| 3    | Instructions              |                                     | PCS  | 1        |
| 4    | Certificate               |                                     | PCS  | 1        |
| 5    | grounding wire            | A 1.5-meter grounding wire of No.12 | PCS  | 1        |
| 6    | Parallel power lines      | 1meters 8AGW silicone cable         | PCS  | 1        |

## Maintenance Record

Dear user.thank you for selecting our product,Please fill in and keep the warranty card for better services.

Attn:\_\_\_\_\_Product No.:\_\_\_\_\_

Tel:\_\_\_\_\_E-mail:\_\_\_\_\_

Purchase Date:\_\_\_\_\_

Address:\_\_\_\_\_

| Maintenance Record |         |                       |      |
|--------------------|---------|-----------------------|------|
| Date of repair     | Content | Maintenance Personnel | Note |
|                    |         |                       |      |
|                    |         |                       |      |
|                    |         |                       |      |
|                    |         |                       |      |
|                    |         |                       |      |
|                    |         |                       |      |



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