EnerShare

LiFePO4 Battery

User Manual

EN Version: V1.0

Table of Contents

Overview

◆ Scope

This user manual provides information, operating instructions, and maintenance guidelines for the low-voltage residential energy storage battery series. The residential energy storage series is a lithium battery system developed by designed to be compatible with various inverter brands available in the market.

◆ Intended Audience

This manual is intended for professional technical personnel involved in the installation, operation, and maintenance of lithium batteries, as well as end-users seeking technical information.

◆ Manual Usage

1.Before using the product, carefully review this user manual and keep it in a readily accessible location.
2.All information in this user manual, including images and symbols, is proprietary to . Unauthorized use of any part or all of the content is strictly prohibited for individuals outside the company.
3.Considering the potential for updates and corrections to the manual content, users are advised to use the provided documentation as a reference. For the latest user manual, please refer to the product documentation provided or contact customer service through the official website.

Product Introduction

◆ Introduction

1.The residential energy storage series is a battery module developed by for low-voltage lithium battery systems, primarily applied in the field of residential energy storage. It can achieve high-precision multi-cell voltage and temperature acquisition.
3.The module features external communication interfaces using CAN, RS485, and dry contact communication methods, allowing communication in parallel for up to 16 batteries.
4.Embedded BMS system effectively monitors phenomena such as over-temperature, over-voltage, and over-current, reducing the risk of battery damage or even fire, ensuring the safety of life and property.
5.This manual introduces the types, sizes, performance, technical characteristics, warnings, and precautions of lithium battery systems. This specification is only applicable to the battery systems provided by .

Safety Instructions

◆ Labeling Explanation

To ensure user safety during product use, relevant labeling information with appropriate symbols is provided in this manual. The following lists symbols that may be used in this manual, so please read carefully.

Icon	Description
	Signifies a low-level potential hazard. Failure to avoid may result in minor or moderate injury to personnel.
	Indicates the presence of high voltage inside the battery module. Touching may lead to electric shock hazards.
	This is the ground protection port (PE). It should be securely grounded to ensure the safety of operating personnel.

◆ Installation Tools

Prior to installation, prepare the following tools:

Category	Description		
General Tools	 Multimeter	 Protective gloves	 Insulated safety shoes
	 Protective clothing	 Safety goggles	 Antistatic wrist strap
Installation Tools	 Electric screwdriver	 Socket wrench	 Wire stripper
	 Phillips screwdriver (M4/M6)	 Electric drill	 Hammer

Precautions

◆ Manual Storage

1.This manual covers crucial information for the residential energy storage series. Prior to operating the product, carefully read this manual as it provides essential assistance in acquainting you with the product.
2.Store this manual securely for the convenience of relevant installation and maintenance personnel to refer to during operations.
3.Strictly follow the descriptions in this manual when operating the residential energy storage series to avoid equipment damage, injuries, property loss, and other potential issues.

◆ Label Protection

1.Warning labels on the residential energy storage series contain crucial safety operation information. It is strictly prohibited to intentionally tear or damage them!
2.The product has a nameplate on the casing, providing essential parameter information. It is strictly prohibited to intentionally tear or damage it!

◆ Safety Warning Labels

When conducting installation, routine maintenance, inspections, etc., on the Home Energy Storage Series, to prevent unauthorized individuals from approaching, engaging in improper operations, or accidents, adhere to the following conventions:
1.Erect clear signage at the switch locations of the products to prevent accidents caused by accidental closing.
2.Set warning signs or establish safety warning tape near the operating area to prevent unrelated personnel from approaching.
3.After maintenance or inspection, conduct a thorough on-site safety check.

◆ Personnel Requirements

1.Only personnel with relevant professional qualifications are allowed to perform various operations on this product.
2.Operating personnel should be thoroughly familiar with the composition and working principles of the entire residential energy storage series system.
3.Operating personnel should be fully acquainted with the "User Manual" for this product.

Precautions

◆ Power-On Measurement


Danger

After the energy storage battery is installed, there is a high voltage present, and accidental contact with the positive and negative terminals may result in electric shock injuries. Therefore, when conducting power-on measurements, attention should be paid to the following:

1.Take necessary insulation protection measures (such as wearing insulated gloves).
2.Accompanying personnel must be present to ensure personal safety.

◆ Measuring Instruments


Warning

When performing electrical connections and trial operations on the energy storage backup battery, and to ensure that electrical parameters meet requirements, relevant electrical measuring equipment such as multimeters, power meters, etc., should be used. Note the following:

1.Use measuring equipment with a suitable range that conforms to on-site working conditions.
2.Ensure the correct and standardized electrical connections of the instruments to avoid dangers such as electric arcs.

◆ Maintenance and Inspection

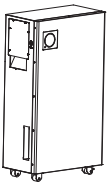
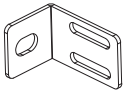
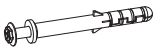

Warning

When both the energy storage battery and the inverter are turned off, and electrical connections are confirmed to be disconnected, maintenance or inspection operations can be carried out on the energy storage battery cabinet. Pay attention to the following:

1.Ensure that the energy storage battery will not be accidentally re-energized.
2.Use a multimeter to ensure that the energy storage battery is completely de-energized.
3.For parts near potentially live components during operations, use insulating materials for insulation covering or grounding.
4.It is strictly prohibited to perform maintenance or inspection operations on live equipment!

When performing maintenance or inspection on equipment, it must be ensured that at least two personnel are present at the site. Maintenance operations can only be carried out after the equipment is safely de-energized, fully charged, or discharged.

Overview of Main Components

Active16 Series Battery Packing List			
			
Active16 Battery Module × 1 Pcs	Fixed Support Rack × 2 Pcs	Expansion Screw M8-60 × 2 Pcs	Screw M8-16 × 4 Pcs
			
Screw M5-10 × 4 Pcs	Circular Terminal RNB 5.5-4L × 2 Pcs	Cable × 2 Pcs	Communication Network Wire × 1 Pcs
			
WiFi User Manual × 1 Pcs	Warranty Form × 1 Pcs	Qualified Certificate × 1 Pcs	Packing List × 1 Pcs
			
User Manual × 1 Pcs			

Product Introduction

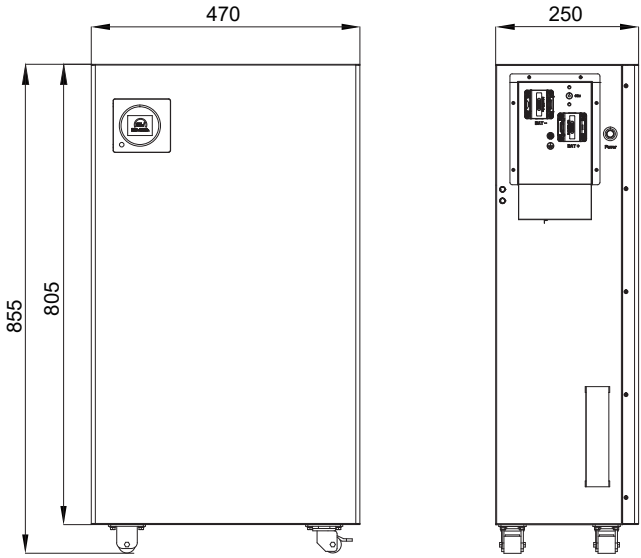
◆ Overview

The residential energy storage series lithium battery module integrates high-capacity, high-safety lithium iron phosphate battery cells. It adopts a stacked design with advantages in footprint and vertical space utilization. The module incorporates a high-precision Battery Management System (BMS) unit, monitoring and collecting real-time data on voltage and temperature inside the module. This enables intelligent temperature control at the cell level and smart cell balancing, enhancing system efficiency and battery cycle life. The module features a shock-resistant structure within a cold-rolled sheet metal shell for high safety and reliability, meeting household standards. Additionally, the module is designed for high stability and disturbance resistance, ensuring the safe and reliable operation of the battery system.

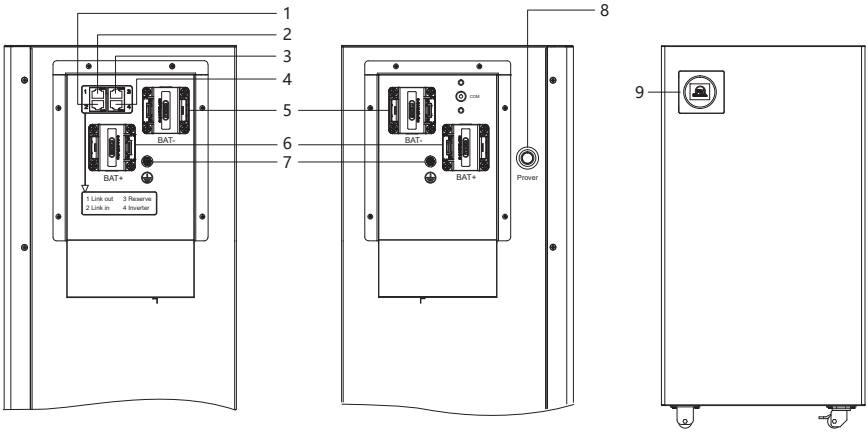
◆ Advantages

- The positive electrode material of the battery is lithium iron phosphate (LiFePO4) material, which has good safety performance.
- The high-performance intelligent management system is adopted to realize comprehensive state control of battery charging, discharging, floating charging and hibernation, and multi-level protection is set for voltage, current, temperature, etc., so that the battery is always in an ideal state.
- It has a comprehensive monitoring system to monitor the voltage, current, temperature, capacity and working status of the battery.
- The system adopts an intelligent design method to meet the four remote control standards of the national standard: telemetry, remote signaling, remote control, and remote adjustment.
- Built-in intelligent balance module to ensure the capacity consistency of the battery pack during long-term use and prolong the service life.
- The control panel includes status display and alarm devices, which can visually see the working status and alarm information of the battery.

Dimension（mm）:



◆ Electrical Interface Description



Object	Description	Object	Description
1	BMS parallel (Link in)	6	Battery+
2	BMS parallel (Link out)	7	Grounding
3	Reserve	8	Power On/Off Switch
4	Inverter communication	9	Battery indicator LEDs
5	Battery-	/	/

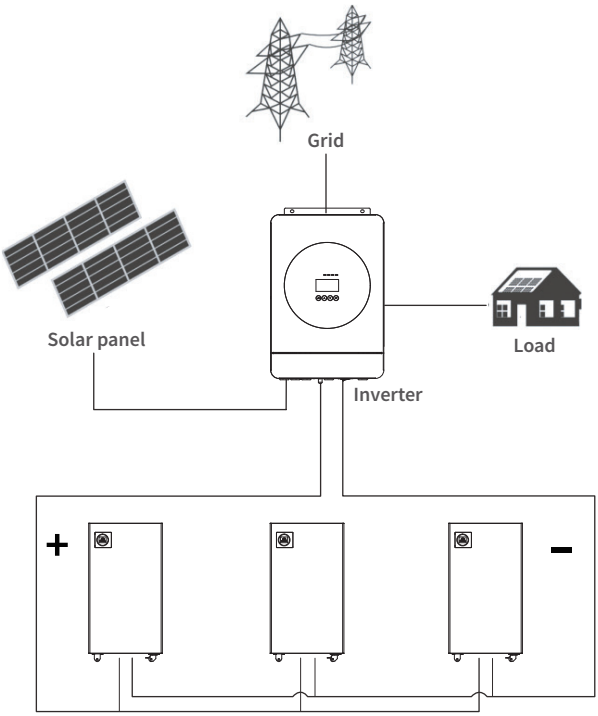
Principle and Structure

◆ Operating Principle

Working principle for Residential LiFePO4 Battery Energy Storage System: Connect battery pack in parallel to the DC output end of the inverter of the energy storage device. When the mains power supply is normal, the inverter module works normally to supply power to the equipment (the load in the figure) and charge the battery pack; when the utility power and photovoltaic power are cut off, the battery pack provides uninterrupted power supply to the inverter to ensure the normal operation of household electricity; When power is turned on again, the battery pack is charged while power is restored to the household loads.

◆ Connection Structure

The connection diagram of residential LiFePO4 battery energy storage system is shown in Figure 1 below:



Operation Principle Diagram of Battery System

Battery Installation and Wiring

◆ Tool Preparation for Installation

Tools Required: Electric drill, hammer, wrench, M8*60 expansion bolt, Phillips screwdriver, multimeter, insulated gloves, Ethernet cable, power cable.

◆ Installation Preparation

Safety Regulations

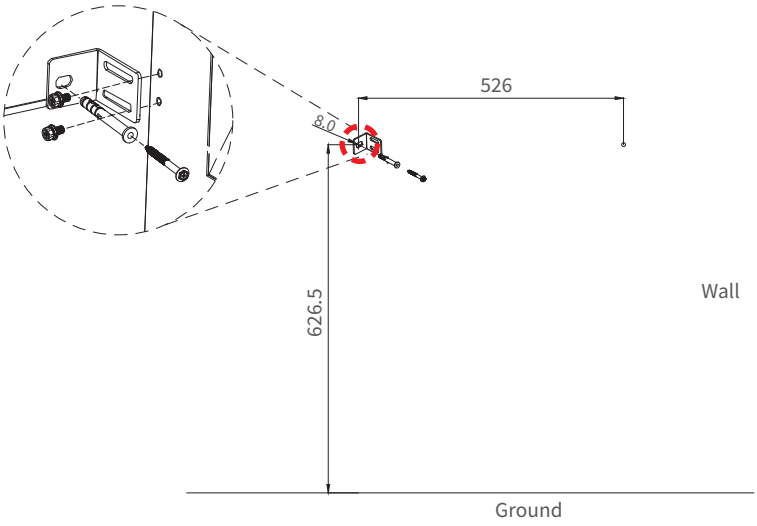
The installation, operation and maintenance of LiFePO4 Battery Energy Storage System should only be carried out by trained and qualified professionals. Before installation and use, please read the safety precautions and related operating procedures of this product carefully. The installation process must strictly abide by the following safety regulations and local safety regulations, otherwise it may cause personal injury or product damage.

- Please ensure that the inverter connected to the battery is a qualified power system;
- When installing the battery, please ensure that the power system is turned off and the battery pack is turned off;
- All power-saving cables must have corresponding insulation measures, and it is strictly forbidden to expose the power cord;
- Ensure that the battery and the power system are reliably grounded during installation.

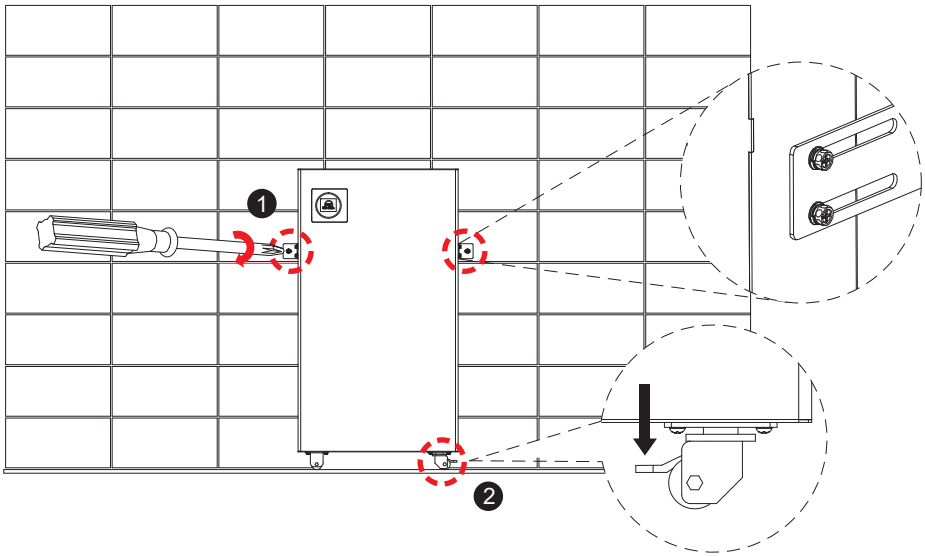
◆ Installation Notes

- When begin to install the battery system, you should pay attention to the following matters:
- Installation space and load bearing. Make sure that there are sufficient fixed components to install the battery system, and to ensure that the battery mounting bracket or the cabinet be strong enough to bear the weight.
- Cable specifications. To ensure that the use of the connection of the power supply line can meet the maximum current requirements of equipment operation.
- Project layout. Ensure the whole construction process of power equipment, batteries and other reasonable layout.
- Wiring layout. Ensure that the wiring reasonable, orderly; and consider the moisture-proof, corrosion prevention.
- The whole installation process should wear anti-static wristband.
- The installation site should be at least two or more peoples to operate.
- Please ensure the installation site safe before installation.

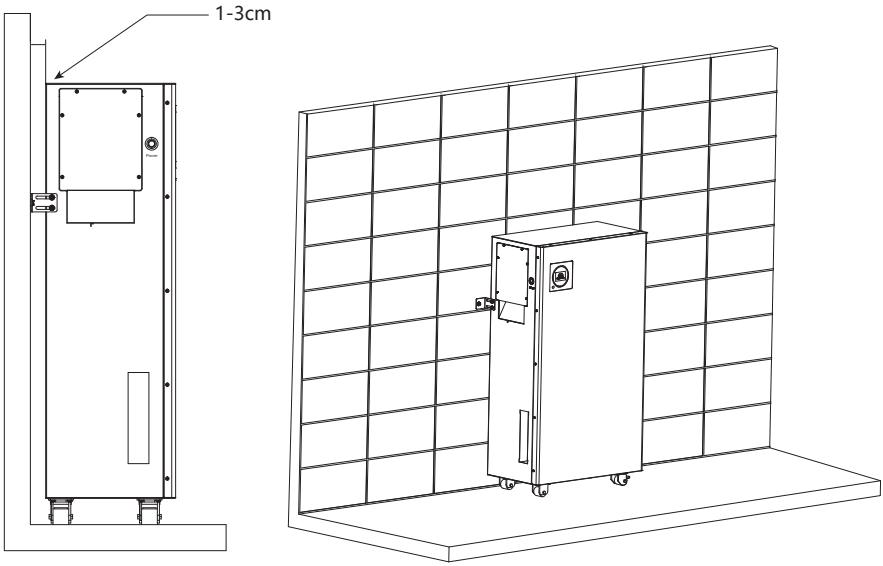
Step 1: Please refer to the following figure for the position of the expansion bolt holes for the Fixed Support Rack. The distance between the hole position and the ground is about 626.5mm, and the distance between two hole positions is about 526mm, with an opening of 8mm.



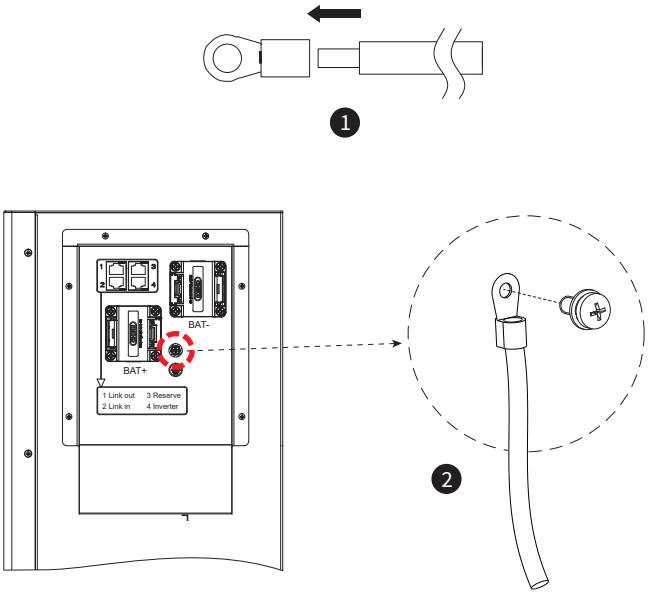
Step 2: Place the machine in the appropriate position on the bracket and tighten the screws on both sides. And press the locking switches for the movable casters in the left and right directions.



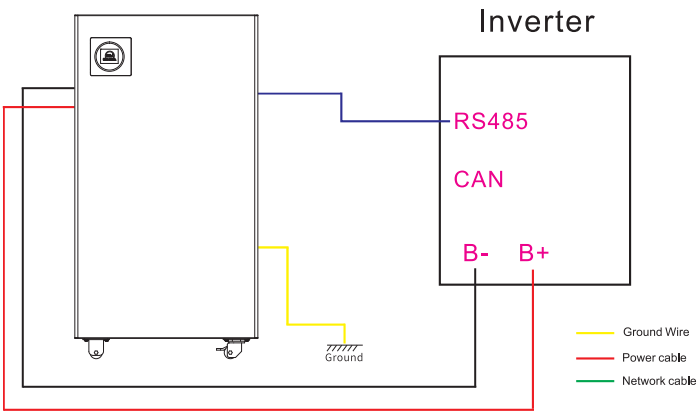
Step 3: Install against the wall with an interval of 1-3cm.



◆ External Protective Grounding Connection



◆ Single machine installation

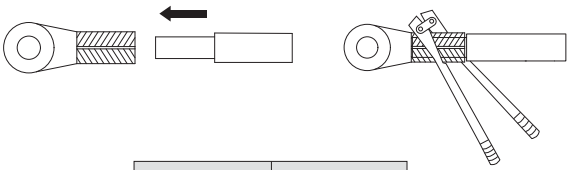


WARNING	● Ensure Battery switch is off during installation to avoid the risk of short circuit caused by wrong operation during battery wiring.

Step 1: Prepare the cables, the cable wire diameter is listed below. Use wire strippers to strip out the core of the cable by about 15mm.

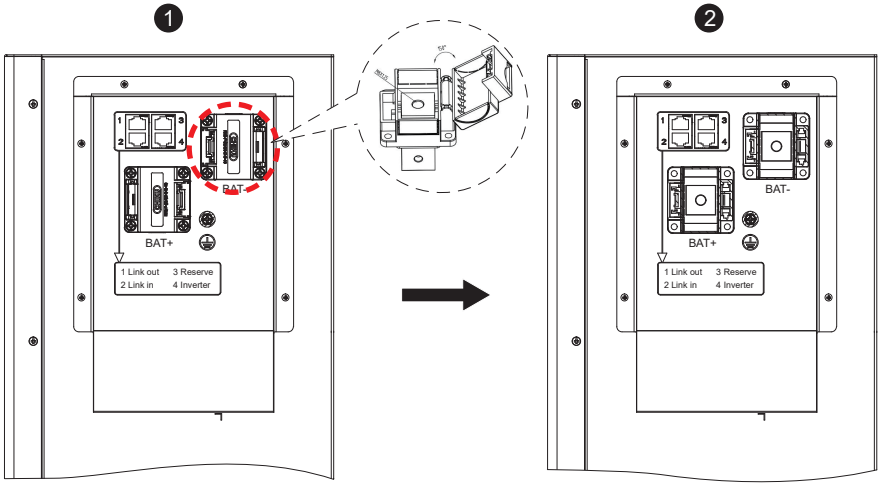
Cable Type	Core Cross Sectional Area (mm^2)
1 AWG	42.4

Step 2: Apply the cable into the crimping position. Use a special tool to crimp the cable to ensure that the crimping is intact.



Cable	Color
BAT+	Red
BAT-	Black

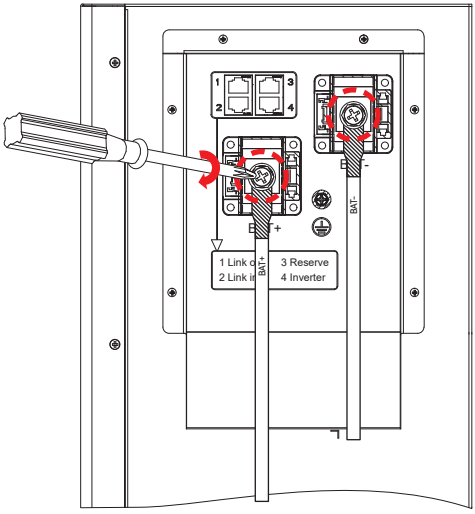
Step 3: Ensure that the unit is switched off, key off the clear plastic cover and wire up.



Note!

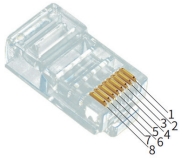
- There are 2 wiring holes for both positive and negative terminals, when the power of the inverter is less than 5kw, you can connect only one wiring hole.
- If the inverter power is greater than 5kw, both terminals need to be connected. Refer to 3.3.1 step 1 for wire diameter requirement.

Step 4: Remove the screws from the terminals, install the positive and negative battery wires and then re-secure them with screws.

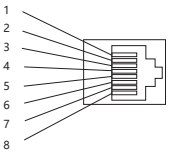


Step 5: Communication line connection

Battery RJ45 pins are defined in the following table, please make sure that the battery communication is the same as the inverter communication and the wire sequence is the same.



RJ45



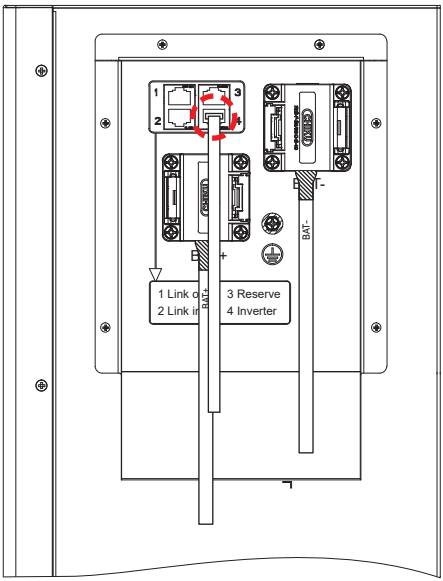
RJ45 female connector

Inverter communication

Object	Description	Object	Description
1	485 B	5	CAN L
2	485 A	6	NC
3	NC	7	NC
4	CAN H	8	NC

BMS parallel (Link in, Link out)

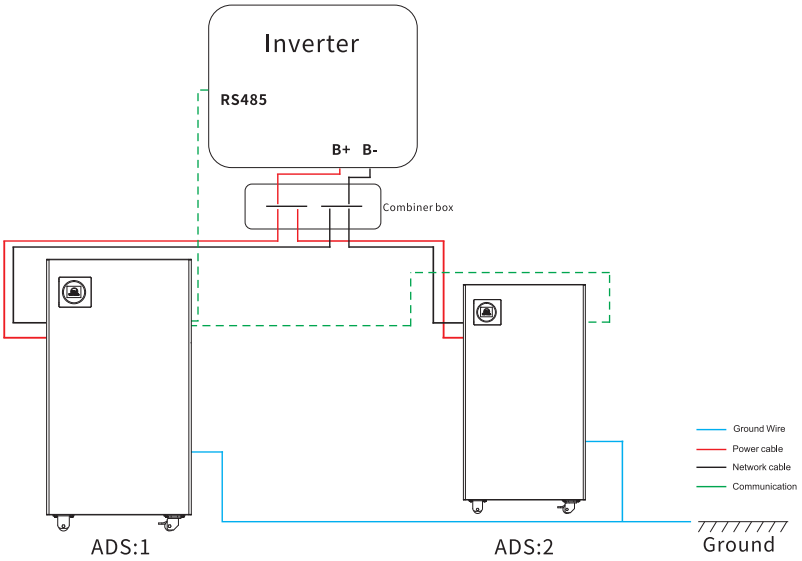
Object	Description	Object	Description
1	CAN H	5	NC
2	CAN L	6	NC
3	NC	7	NC
4	NC	8	NC



The battery communicates with the inverter using the“COM”communication port on the machine.

◆ Parallel installation

If multiple batteries are used in parallel, manually press the low-voltage switch (ON/OFF) first. Use a multimeter to check if the voltage of each battery is consistent. If consistent, turn off the batteries and proceed with cable connections, as shown in the schematic diagram (using two batteries in parallel as an example).

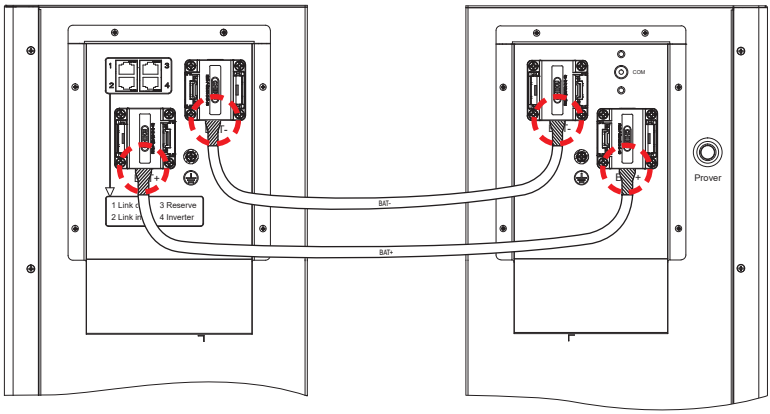


Note!	• This device allows a maximum of 16 parallel devices to be used.

WARNING	• Due to the battery terminal current-carrying each 200A, parallel use of the maximum output power of 10kW, if you need to output more power, you need to replace the wiring, not directly connected to the battery terminal.

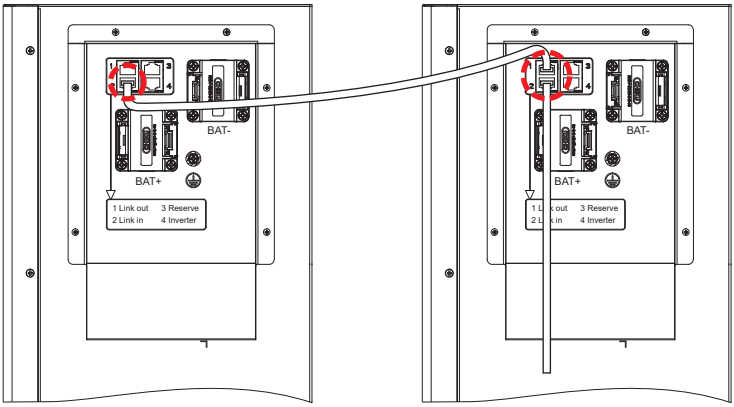
Step 1: Power Wiring

When batteries are used in parallel, the positive terminal of the battery is connected to the positive terminal of the another one and the negative terminal of the battery is connected to the negative terminal of the another one.

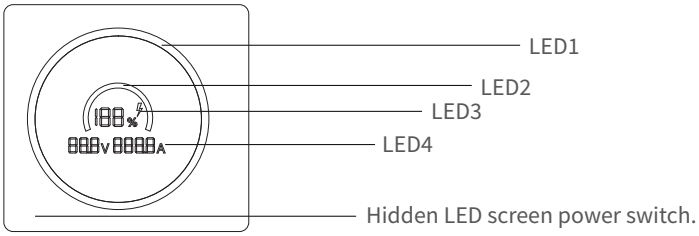


Step 2: Communication Wiring

Use the network cable to connect the of battery communication interface.



Battery Indicator LEDs



Battery Indicator LEDs				
Working State	LED1	LED2	LED3	LED4
Charge	Slow Flashing	Lighting	Flashing	Display real-time voltage, current and SOC
Discharge	Lighting	Lighting	Off	

The battery LED screen can be turned off by touching Hidden Power Switch in the bottom left corner of the screen.

Technical Parameters

Model	Active16
Electrical Parameter	
Battery Type	$LiFePO_4$
Battery Capacity per Kit [Wh]	16.08kWh
Usable Energy [Wh]	14.47kWh
Rated Voltage [V]	51.2V
Voltage range [V]	44.8V-57.6V
Max. Charging and Discharging Rate	200A
Depth Of Discharge [DOD]	≤90%
Cycle Life (25℃, 0.5C)	≥8000 times, 80% Capacity retention
Scalability	Yes
General Data	
Communication Mode	RS485/CAN2.0
Operating Temperature Range	0~50°C (Charge)/-10~55°C (Discharge)
Storage Temperature Range	-20°C~60°C
Cooling Method	Natural Convection
Altitude	≤3000m
Ambient Humidity	20-95% non-condensing
Noise[dBA]	<25
Ingress Protection	IP54
Dimensions [H*W*D]	855*470*250mm
Weight	118.5kg
Installation Methods	Floor Standing

APP Operation Guide

Download and install

According to the mobile phone system, select the download link:

Android entrance： Mobile phones that support GMS can download SmartEnergy App through Google Play Store, and Android phones that do not support GMS can install APK directly.

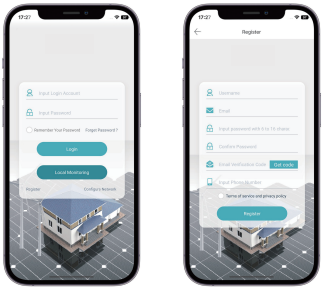
Google Store search the APP "SmartEnergy", or download in the URL: http://www.smartenergy-cloud.com/download/SmartEnergy.apk

IOS: https://apps.apple.com/cn/app/smartenergy/id6480028113

Android & iOS

1. Account Registration

1.1 Register Account



Step 1: Accept the Terms of Service and Privacy Policy.

Step 2: Enter a username in the "Username" input box.

Step 3: Enter an unregistered email address in the "Email" input box.

Step 4: Enter two consistent passwords in the "Input password" and "Confirm Password" input boxes (password length is 6-16 digits).

Step 5: Click the "Get code" button to send an email verification code. Enter the received Email Verification Code into the "Email Verification Code " input box.

Step 6: Enter your mobile phone number in the "Phone Number" input box.

Step 7: Click Register.

1.2 Retrieve password

Step 1: On the login page, click the "Forget Password" button to access the password retrieval page.

Step 2: Enter the registered Email address in the input box and click "Retrieve Through Email".

Step 3: Enter the correct email verification code on the "Set new password" page.

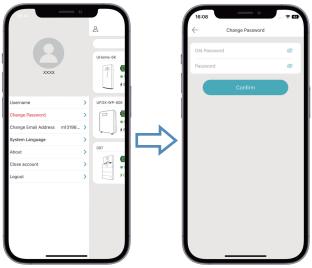
Step 4: Enter the new password twice in the password input box (the two passwords must be the same).

Step 5: Click the "Confirm" button to successfully set a new password Add device.

2. Personal Centre

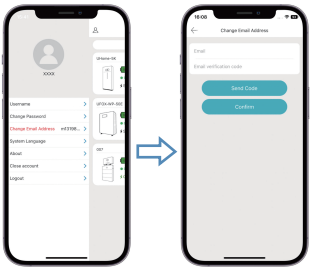
2.1 Change Password

If you need to change your login password, you can find "Change Password" on the personal center page, enter the old password of your account and set a new password on the password change page, and click Confirm to log in to the APP with the new password.



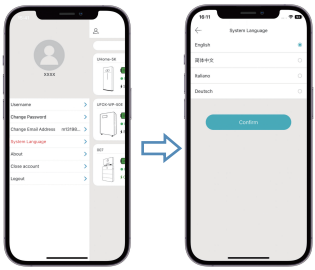
2.2 Change of email address

If you need to change the email address of your account, you can find "Change email address" on the personal center page, enter your new email account on the modify email page, then click the "Send Code" button, enter the correct email verification code and click Confirm. You can log in to the APP with your new email account.



2.3 System Language

If you need to change the current APP language, you can find the "System language" on the personal center page, select the language version you need to change on the system language page, click Confirm and then reopen the APP to change to the corresponding language version.

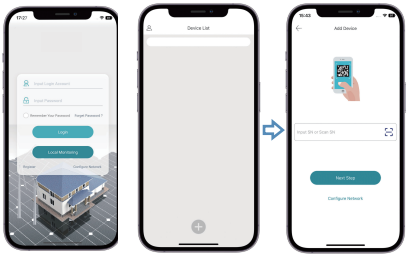


3. Add a Device

The monitor is workable under different conditions:
Local Monitoring Mode: Available under WiFi-free, Single Sign On conditions.
Online Mode: Only available under Network configured, WiFi-connected, Signed In conditions.
Note: Bluetooth device shall be paired under two modes, please ensure the Bluetooth is accessible.

3.1 Local Monitoring Mode

Step 1: Open APP, click "Local Monitoring".
Step 2: Click the icon ⊕ in the device list to enter the "Add Device" page.
Step 3: Enter the serial number in the "SN" input box (or scan the code on the WiFi-Plug for automatic recognition) and then click "Next Step" to add the device.



3.2 Online Mode

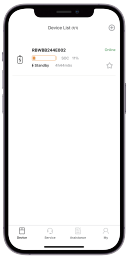
Step 1: On the login page of the App, click the "Configure Network" button to enter the device configuration network page. Enter the SN code in the SN input box (or scan the code on the WiFi-Plug for automatic identification). Then click "Next Step".

Step 2: After waiting for the app to automatically search for the Bluetooth of the device and successfull connection, the WiFi-Plug will automatically search and display the available WiFi networks. Manually select the WiFi network you want the inverter to connect with.

Step 3: After the connection is successful, click "Check Internet Connection Status" to check the network status.

Step 4: After the device is successfully connected to the network, the app will confirm that the network connection is successfully established.

Step 5: After the device configures the network, log in your account, click the icon ⊕ in the device list to enter the "Add Device" page. Enter the serial number in the "SN" input box (or scan the code on the WiFi-Plug for automatic recognition) and then click "Next Step" to add the device.

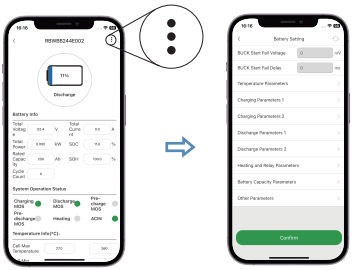


4. Battery Setting

4.1 Home Page

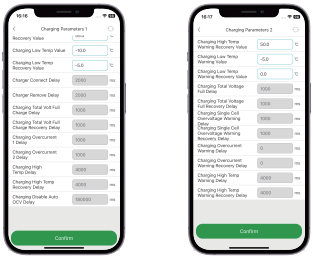
Step 1: Click on the device icon in the device list to enter the device homepage. The homepage will display key parameters such as battery module SOC and voltage, and you can scroll down to view more.

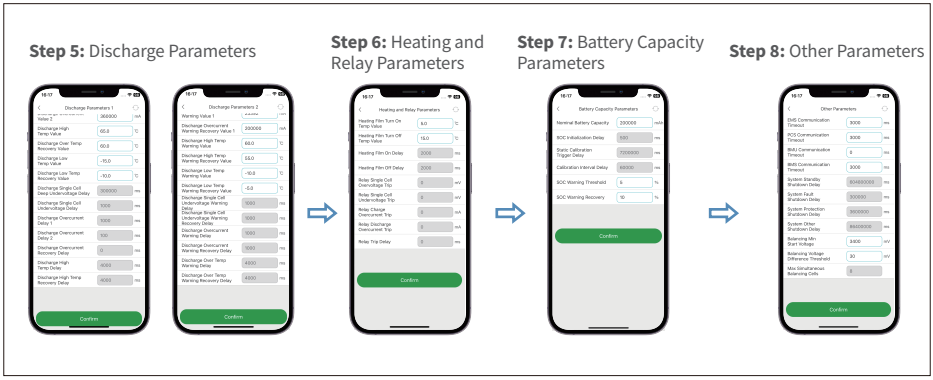
Step 2: Click on ⋮ the icon in the upper right corner to see the following parameter page and customizable items.



Step 3: Temperature Parameters

Step 4: Charging Parameters





◆ POWER-ON SEQUENCE

After the completion of the connections between the inverter, battery, and mains power, start each battery one by one. Then, turn on the inverter. After the battery startup, check if the communication between the inverter and the battery is normal. If the battery data is successfully uploaded to the inverter, it indicates successful communication between the inverter and the battery.

◆ COMMON ISSUES AND SOLUTIONS

No.	Fault Symptoms	Cause Analysis	Solution
1	No DC Output	Battery Voltage Too Low, Protection Activated	Startup after Charging Activation
2	Short Power Supply Time	Insufficient Battery Capacity or Failure to Reach Full Charge	Confirm Maintenance or Replace Battery
3	Battery Cannot Reach Full Charge	DC Voltage Output from Power System Lower than Minimum Charging Voltage	Adjust Device's DC Output Voltage to Suitable Charging Voltage for Battery
4	Unstable Battery Output Voltage with Significant Fluctuations	Interference with Management System Operation	Restart the System
5	Temperature Monitoring Too Low	Damage to Temperature-Sensing Crystal Head	Replace the Collection Line with a Temperature-Sensing Crystal Head
6	Unable to Charge	Single Cell Protection Activated upon Full Battery Charge	Discharge Protection Removal
7	MOS temperature abnormal	MOS tube damaged	Replace BMS
8	Discharge overcurrent protection	Inverter power exceeds limit	Match the number of batteries according to the inverter power value

◆ Inverter Matching Information

SOLIS	DEYE	GROWATT	MEGAREVO
LUXPOWER	VICTRON	GOSPOWER	SAJ
SACOLAR			

Maintenance

1. Do not immerse the battery in water. When not in use, store it in a cool and dry environment.
2. Do not throw the battery into the fire or heat it externally to avoid explosion or other hazards.
3. Do not invert the positive and negative poles of the battery. Never connect the battery directly to a power outlet, and prohibit short-circuiting the positive and negative poles.
4. Do not mix batteries from different manufacturers, different kinds, types, or different ages.
5. Do not use batteries that show signs of heating, swelling, deformation, or leakage in charging or discharging devices.
6. Prohibit piercing the battery with nails or other sharp objects, as well as throwing, stepping on, hitting, or impacting the battery.
7. Prohibit disassembling or dismantling the battery and its components. Any damage caused by unauthorized disassembly or repair will not be the responsibility of our company.
8. The battery undergoes strict inspection before leaving the factory. If customers find signs of heating, swelling, or unusual odors, do not use it and return it to the factory immediately.
9. For long-term storage, to ensure optimal battery performance, perform a charge-discharge cycle every three months and ensure a storage charge of 40%~60%.
10. Use the battery within the specified temperature range as stated in the specification.
11. Follow the specified power-up sequence for both the battery and the inverter.
12. The recommended load power for the battery should not exceed the maximum continuous discharge current of the battery (100A).
13. If the battery is left unused for more than 3 months, it needs manual charging periodically to prevent complete discharge.

NOTE:

- In case of specific technical issues or situations not mentioned above, please contact technical support promptly.

EnerShare

Active Series Low Voltage Battery System

Important Note: The installation and all other kinds of works or measurements in correlation with the Active Series battery are only allowed by professional and qualified electricians. Improper handling can cause danger and damage. Please see the Active Series Battery Service Manual for troubleshooting and the latest version can be downloaded on the website: http://enershare.cn. This checklist does not replace the official service manual. No responsibility is accepted for the accuracy of the information.

1. GENERAL STEPS

Please carefully check **all** "General Steps" Service Manual and confirm this in the boxes below.

- ☐ 1.1 Settings
- ☐ 1.2 Type of stacks
- ☐ 1.3 External Connections
- ☐ 1.4 Latest Firmware
- ☐ 1.5 Restart
- ☐ 1.6 Correct operation

2. ERROR RELATED ANALYSIS

Please mark the **error related** of the Service Manual that you checked, and collect all the information related to those Sections.

- ☐ 2.1 Event Code
- ☐ 2.2 System cannot be turned on
- ☐ 2.3 Automatic tripping after a period of operation
- ☐ 2.4 Wi-Fi Issues
- ☐ 2.5 Firmware Update Issue
- ☐ 2.6 Changes in SOC
- ☐ 2.7 Active Link
- ☐ 2.8 Stack Exclusion Method
- ☐ 2.9 Voltage Measurement
- ☐ 2.10 Undervoltage
- ☐ 2.11 BMS/Stack Replacement

3. SERVICE INFORMATION

Please fill in all available information in below table. Some information like the Serial Number of the BMS is mandatory to receive service.

• Service Ticket Number or System ID: _____

• **Installer / Delivery Address / Contact:**

Company		ZIP / City	
Contact Person		Phone	
Street / No.		Email	

• **System Information**

Configuration		BMS Firmware	
BMS Serial Number		Inverter Firmware	
BMS Connected to Internet	Yes ☐ No ☐	System Name on Inverter Portal	
Inverter Serial Number			
Commissioning Date			

• **Service Information**

BMS Event Code		Inverter Error Code	

Was the battery charging / discharging before (was the system working normally before?) Yes ☐ No ☐

Take pictures of connection area on the BMS and Inverter clearly showing connection cables ☐

Get data of the Active Series battery with the Active Link program (see of the service manual) ☐

Description of the Problem

Please provide any additional information that is necessary or could help in the analysis of the service case (e.g., serial number of a wrong module; video of a special behaviour; pictures; Active Link screenshots; module voltages...)

Before contacting us, you have confirmed that a qualified person has done the necessary control and collected all available information above.