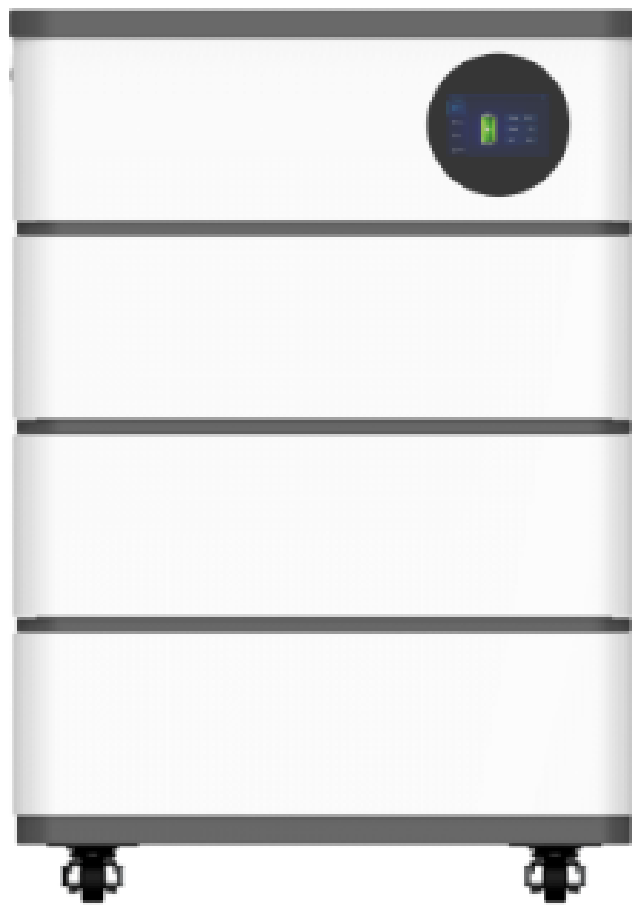


User Manual

LOW Voltage Stackable Lithium Energy Storage Battery



Version: 1.0

Contents

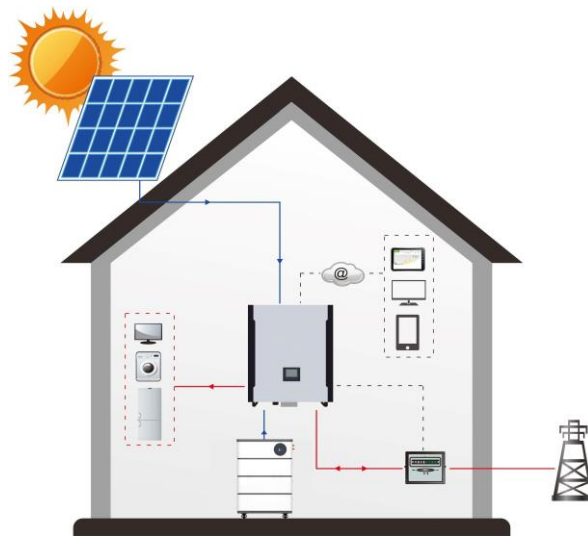
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1. Introduction

The energy storage battery is an essential component of the photovoltaic power generation system. It can provide electricity for the connected load, and store energy from photovoltaic solar modules, fuel generators, or wind energy generators for backup power. When the sun goes down, energy demand is high, or there is a power outage, you can use the energy stored in the battery to meet your energy needs at no additional cost. In addition, the energy storage battery can help you achieve energy self-consumption and ultimately achieve the goal of energy independence.

According to different power conditions, the energy storage battery can output power during peak power consumption, and can also store energy during low power consumption. The simple diagram of a typical energy storage system as following:

Figure 1 Energy storage battery Overview



It is very important and necessary to read the user manual carefully before installing or using the battery. Failure to follow any of the instructions or warnings in this document may result in warranty lost or serious injury or death, or battery damage etc.

- If the battery is stored for a long time, it is required that they are charged every three to six months, and the SOC should be no less than 80%, after fully discharged, the battery needs to be recharged within 12 hours.
- Do not expose cable outside. Do not use cleaning solvents to clean the battery.
- All battery terminals must be disconnected before maintenance.




2. Important Safety Warning

- Do not expose the battery to flammable or harsh chemicals or vapors.
- Do not paint any part of the battery, include any internal or external components.
- Do not connect battery with PV solar wiring directly.
- Any object is prohibited to be inserted into any part of the battery.
- Our company will not bear any warranty claims for direct or indirect damage caused by violation of the above items.

2.1 Before Connecting

- Before installation, please check the battery and packing list first, if the battery is damaged or spare parts are missing. Please contact the dealer.
- Before installation, be sure to cut off the grid power and make sure the battery is in the power-off mode;
- Wiring must be correct, do not mix-connect the positive and negative cables, and ensure no short circuit with the external device;
- It is prohibited to connect the battery with AC power directly;
- The BMS in the battery is designed for below 100VDC system, DO NOT connect battery in series;
- It is prohibited to connect the battery with different type of battery;
- Please ensure the electrical parameters of battery system are compatible to inverter;
- Keep the battery away from fire or water.

Necessary installation Tools

		
Multimeter+ Current clamp	Screw Driver Set	Lifting strap+ mechanical lifter

Personal protective equipment.

			
Insulated gloves	Safety goggles	Safety shoes	Helmet







2.2 During operation

- If the battery system needs to be moved or repaired, the power must be cut off first and the battery is completely shut down;
- It is prohibited to connect different type of battery modules together;
- It is prohibited to put the batteries working with faulty or incompatible inverter;
- In case of fire, only dry powder fire extinguisher can be used, liquid fire extinguishers are prohibited;
- Please do not open, repair or disassemble the battery module. We do not undertake any consequences or related responsibility due to violation of safety operation or violating of design, production and equipment safety standards.

3. Unpacking & Overview

3.1 Battery packing List

You will receive the following parts (Not a standard set), sample as follow picture. For customized requirements, please contact the manufacturer.

battery module	Combiner box	Power out positive cable*1
		
base*1	Manual *1	Power out Negative cable*1
		

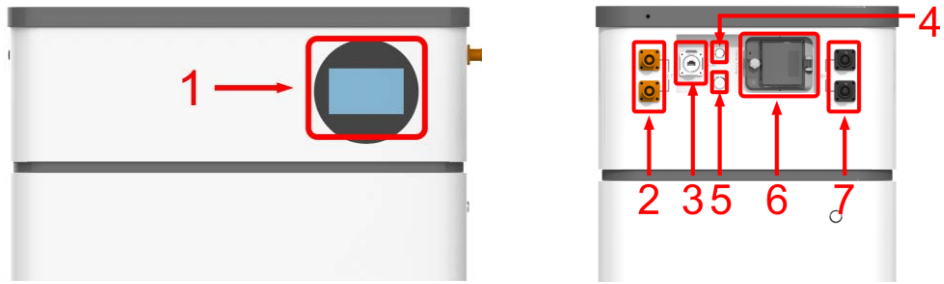
3.2 Product Overview

Battery module



No.	Description	Silk-screen	Remark
1	Handle		
2	Battery module Output terminal		

Battery main control box



NO.	Description	Silk-screen
1	Touch Screen	Touch Screen
2	Output terminal	P+
3	RJ45	BATTER RJ45
4	Reset switch	Reset switch
5	Start button	ON/OFF
6	Circuit breaker	Circuit breaker
7	Output terminal	P-

There is any change in the pin position of the communication line, the customer shall be notified in writing or provided with supporting communication wire.

	COM Up	
1	RS485-B1	
2	RS485-A1	
3	SGND	
4	CANH1	
5	CANL1	
6	SGND	
7	RS485-A1	
8	RS485-B1	

4. Installation

4.1 Selecting Mounting Location

Consider the following points to install the energy storage system:

- The energy storage system needs to be installed on a solid surface;
- It is recommended to place the energy storage system horizontally.
- To ensure air circulation and heat dissipation, please leave a gap about 200mm away from the side of the device.
- The ambient temperature should be between 0°C and 40°C, and the relative humidity should be between 25% and 85% to ensure optimal operation.
- Install the battery module in a dry, protected, dust-free area with sufficient air circulation. Do not operate in locations where the temperature and humidity are outside the specified

range.

4.2 Mounting the battery module

WARNING!! Remember that the battery module is heavy so please be careful when removing it from the battery package, or install it .

Step 1: When receiving the product, firstly check if all parts are complete as part list, if not, please reach out to the dealer.

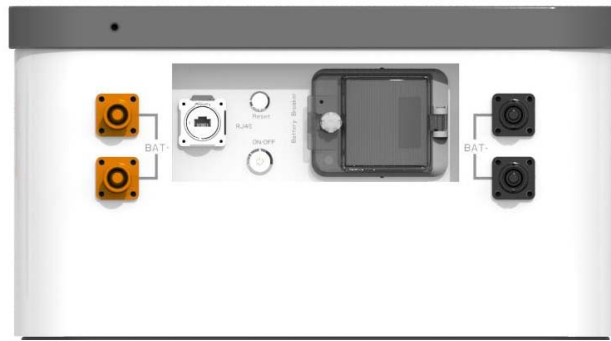
Step 2: Take out the battery module and the base from the box, lay the base flat and then lift the battery module to a fixed position. (Note: The battery module with a fixed base is different from other modules, and has no connectors at the bottom) as shown in the figure:



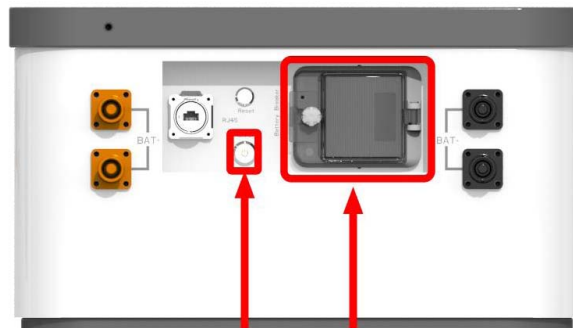
Step 3: Align the connectors, place the second battery module on top of the first battery module and press firmly; install the third battery module. Finally, install the battery main control box. The installation is complete as shown in the figure below:



Step 4: Open the side cover of the main control box, install the output cable and communication cable, and connect to the inverter. Lock the side cover to complete the installation.



Step 5: Start the low-voltage system, press the power lock switch, and push the circuit breaker switch to start the system.



Step 6: Running the device, set the parameters for external charger or inverter according to their operation manuals and make sure the set parameters are in the range of the rated parameter requirements.

System parameters:

Nominal Voltage (V)	51.2			
Capacity (AH)	100AH	200AH	300AH	400AH
Energy (KWH)	5.12	10.24	15.36	20.48
Cycle Life	≥ 5000 cycles@80%DOD,25°C, 0.5C ≥ 4000 cycles@80%DOD,40°C, 0.5C			
Charge Cut-off Voltage (V)	58.4			
Max. Continuous Work Current	100			
Discharge Cut-off Voltage (V)	43.2			
Charge Temperature	0°C~60°C (Under 0°C extra heating mechanism)			
Discharge Temperature	-20°C~60°C (Under 0°C work with reduced capacity)			

Storage Temperature	0°C~50°C @ 60%±25% relative humidity			
Dimensions(L*W*H)	680*429*200	680*429*400	680*429*600	680*429*800
Weight (KG)	50	100	150	200
Protocol (optional)	RS232-PC, RS485-PC, Canbus-Inverter			
Certification	UN38.3			

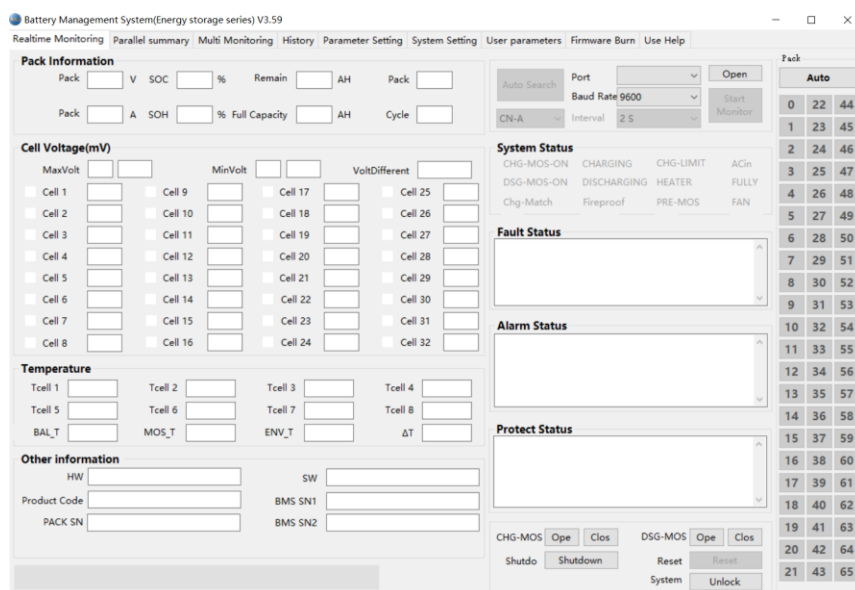
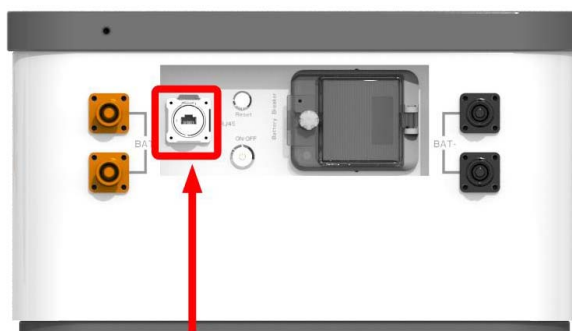
Step 7: Shut down the battery group.

When you need to stop charging and discharging the battery or troubleshooting, please stop the external equipment first, cut off the input and output circuits; when the power switch starts to light up, press the power switch and then release it, pull down the circuit breaker, and the system shuts down.

Appendix 1

A Host soft operation:

When the equipment manufacturer confirms that it is necessary, it can authorize to provide the customer with the host software and operating instructions.



Appendix 2

Troubleshooting

1. Battery module stop work.

A: Turn on switch, be sure it is ON; if battery is low SOC.it need to charging in.

B: Battery module is in low voltage or sleep mode, you can press down power switch button, then charge it.

2. No communication, inverter can not receive any DATA from BMS.

A: Check whether if communication cable is OK,

B: Replace the communication line. Please give feedback to the dealer and exchange it.

C: Check inverter or other device which connect to BMS, update its firmware.

D: If the communication function needs to be upgraded, please consult the agent or manufacturer.

E: confirm your inverter and battery protocol is correct, Different protocol or different connection will make a mistake.

3. Battery module reports incorrect SOC.

A: Inverter receives Data from master BMS,its SOC data is less than actual total SOC, for exam. : a battery modules with 100Ah capacity, but inverter read DATA is 30Ah.So you may check if every cell Voltage is unbalance. This will lead to lower SOC.

B: SOC DATA has large tolerance.

Discharge empty the battery first, then charge it fully with a small current, and learn to discharge. Any battery module is mistake, we advice you read the BMS Data(When we authorize the terminal to use) with host software. then we reset the BMS and calibration.

4. How to turn on the battery module to discharge.

We recommend methods are:

A: reset the power switch, then restart BMS system.

B: turn on the power switch on the bottom/front panel;



WARNING: The operating parameters of the equipment cannot exceed the rated working voltage and current of the battery, or cause damage to the battery or other failures.

5. Inverter or other external device can not connect the battery.

We recommend method are:

A: Check whether the working parameters of the device and battery are appropriate, and improper parameters cannot be matched.

B: It is necessary to update BMS parameters and match the device, then Reset BMS and restart your device.

6. Replace bad battery module .

If bad battery module is found, please connect your supplier for replacement, only professional installers can operate it .We recommend to replace all modules to make sure battery modules are in the same voltage and performance.

NOTE: When replacing the battery, the same module needs to be replaced at the same time, and the voltage should be the same .

7. Need to replace spare parts or emergency maintenance .

Some parts can be obtained from the sales or agency, and the excess parts need to be purchased separately. Be careful, turn off the power switch before replacing parts.

8. Need to make safety precaution before any operations.

You'd keep a safe case for battery modules and external device, Please place safety device, such as: fire-fighting sand, fire-fighting blankets, fire-fighting water pipes, Install Monitor sound, light, electricity, smoke and other equipment.

WARNING:

Emergency process:

1 .The external device catches fire and explodes:

A: Under the condition of ensuring safety, non-operating personnel immediately move to a safe location;

B: Under the condition of ensuring safety, the operator immediately cut off the external power supply of the equipment and the internal power supply.

C: Use fire-fighting equipment for fire-fighting treatment (the use of fire-fighting sand, fire-fighting blankets, fire-fighting water pipes)

D: If you cannot completely extinguish the fire, please call the local fire department for help.

E: Keep the accident site data so that the source of the accident can be traced.

2. The battery module catches fire and explodes:

A: Under the condition of ensuring safety, non-operating personnel immediately move to a safe location;

B: Under the condition of ensuring safety, the operator immediately cut off the external power supply of the equipment and the internal power supply.

C: Use fire-fighting equipment for fire-fighting treatment (first the use of fire-fighting sand, fire-fighting blankets, then fire-fighting water pipes for cool the battery module)

D: If you cannot completely put out the fire, please call the local fire department for help.

E: Keep the accident site data so that the source of the accident can be traced.