USER MANUAL

POWER WALL LIFEPO4 BATTERY

HIGEE120

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Chapter 1 Safety Precautions

⚠ Warning

1.Please do not put the battery into water or fire, in case of explosion or any other situationthat might endanger your life.

2.Please connect wires properly while installation, do not reverse connect.To avoid short circuit, please do not connect positive and negative poles with conductor(Wires for instance).

3.Please do not stab, hit, trample or strike the battery in any other way.

4.Please shut off the power completely when removing the device or reconnecting wires duringthe daily use or it could cause the danger of electric shock.

5.Please use dry powder extinguisher to put out the flame when encountering a fire hazard,liquid extinguisher could result in the risk of secondary disaster.

6.For your safety, please do not arbitrarily dismantle any component in any circumstancesunless a specialist or an authorized one from our company, device breakdown due toimproper operation will not be covered under warranty.

⚠ Caution

1.We have strict inspection to ensure the quality when products are shipped out, however,please contact us if case bulging or another abnormal phenomenon.

2.For your safety, device shall be ground connected properly before normal use.

3.To assure the proper use please make sure parameters among the relevant device arecompatible.

4.Please do not mixed-use batteries from different manufacturers, different types and models.as well as old and new together.

5.Ambient and storage method could impact the life span and product reliability, pleaseconsider the operation environment abundantly to make sure device works in propercondition.

6.For long-term storage, the interval between two times cell charges is more than 2 months, the standard charging mode should be used first before the fast charging mode.

7.When the cell voltage is lower than 2.1V, the cell may be caused permanent damage. In this situation the product quality assurance liability becomes invalid. When the actual discharge cut-off voltage is lower than the standard discharge cut-off voltage, the internal energy consumption of system is down to minimum and the sleep time is extended before recharging. Customers need to train the user to recharge the cell in the shortest time to prevent the cell from entering the over-discharge state.

8.Formula of theoretical standby time: T=C/ (T is standby time, C is battery capacity, I is totacurrent of all loads).

Chapter 2 Installation and Configuration

2.1 Ready for installation

Safety Requirement

This system can only be installed by personnel who have been trained in the power supply systemand have sufficient knowledge of the power system.

The safety regulations and local safety regulations listed below should always be followed duringthe installation.

- If operating within the power system cabinet, make sure the power system is notcharged. Battery devices should also be switched off.
- Distribution cable wiring should be reasonable and has the protective measures toavoid touching these cables while operating power equipment.
- When installing the battery system, must wear the protective items below:

The isolation gloves

Safety goggles

Safety shoes

2.1.1 Environmental requirements

Working temperature:-20C~+55C

Charging temperature range is 0C~+55C

Discharging temperature range is -20C~+55C

Storage temperature: -10C~+35C

Relative humidity:5%~85%RH

Elevation:no more than 4000m

Operating environment: Indoor installation, sites avoid the sun and no wind, noconductive dust and corrosive gas.

And the following conditions are met:

- Installation location should be away from the sea to avoid brine and high humidity environment.
- The ground is flat and level.
- There is no flammable explosive near to the installation places.
- The optimal ambient temperature is 15°C~30C.
- Keep away from dust and messy zones.

2.1.2 Unpacking inspection

- When the equipment arrives at the installation site, loading and unloading should be carried out according to the rules and regulations, to prevent from being exposed to sun and rain.
- Before unpacking, the total number of packages shall be indicated according to the shipping list attached to each package, and the case shall be checked for good condition.
- In the process of unpacking, handle with care and protect the surface coating of the object.
- Open the package, ensure objects are complete and intact, if the internal packing is damaged, should be examined and recorded in detail.

2.1.3 Engineering coordination

Attention should be paid to the following items before construction:

- Power line specification.

  The power line specification shall meet the requirements of maximum discharge current for each product.
- Mounting space and bearing capacity.

  Make sure that the battery has enough room to install, and that the battery rack and bracket have enough load capacity.
- Wiring.

  Make sure the power line and ground wire are reasonable. Not easy to short-circuit, water and corrosion.

The security check

- Firefighting equipment should be provided near the equipment, such as portable dry powder fire extinguisher.
- Automatic fire fighting system shall be provided for the case where necessary.
- No flammable, explosive and other dangerous articles are placed beside the battery.

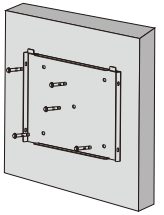
2.2 Equipment Installation

2.2.1 Installation Steps

Wall Mount:

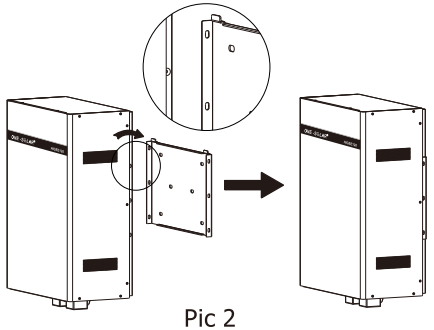
Step 1

- Please use the mounting back plate as atemplate to drill 6 holes (diameter 8 mm,depth 60 mm).
- Use the random bolts in the accessory boxto firmly fix the mounting back plate to thewall.(See Pic 1)



Pic 1

Step 2

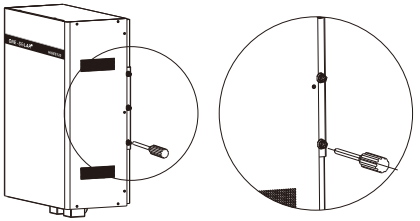


Pic 2

- Fix the bolts on the battery box Do not tighten the screws.
- Two persons are required to hold the battery box and fix the battery box on the installation backplane. (See Pic 2)

Step 3

Fix the battery box with the M5 screws in the accessories.(See Pic 3)



Pic 3

Chapter 3 Product Specification

3.1 Size and Weight

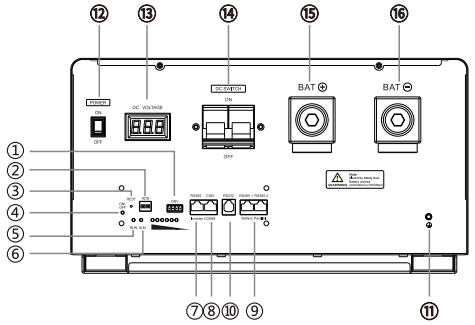
Product	Dimension	Weight
HIGEE120	606x417x226mm	62.5kg

3.2 Performance Parameter

Item	Parameter value
Capacity	120AH
DC Voltage	51.2V
High Voltage Protection	58.4V
Low Voltage Protection	44.8V
Max Discharge Current	100A
Max Charge Current	80A
Display	LED

3.3 Interface Definition

This section elaborates on interface functions of the front interface of the device.



Item	Name	Item	Name
①	DRY port	②	ADS port
③	REST port	④	ON/OFF indicator
⑤	RUN indicator	⑥	ALM indicator
⑦	RS485 communication port	⑧	CAN communication port
⑨	RS485 communication port	⑩	RS232 communication port
⑪	GND	⑫	Power Switch
⑬	DC Voltage	⑭	ON/OFF Switch
⑮	BAT+	⑯	BAT-

3.4 Communication Description

3.4.1 RS232 communication

The BMS can communicate with the host computer through the RS232 interface, so that various information of the battery can be monitored through the host computer, including battery voltage, current, temperature, status and battery production information, etc., and the default baud rate is 9600bps.

3.4.2 CAN communication

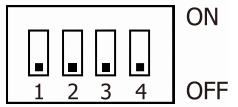
CAN communication, baud rate 500K.

3.4.3 RS485 communication

With dual RS485 interfaces, you can view PACK information, and the default baud rate is 9600bps. If you need to communicate with the monitoring device through RS485, the monitoring device as the host, poll the data according to the address, and the address setting range is 2~15.

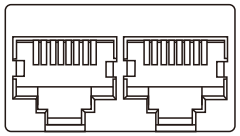
3.4.4 DIP switch settings

When the PACK is used in parallel, the address can be set by the DIP switch on the BMS to distinguish different PACKS, and the address needs to be avoided to be set to the same, and the definition of the BMS DIP switch is referred to the following table.

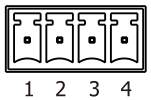


ADD	DIP switch position			
	#1	#2	#3	#4
0	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	ON	ON	OFF	OFF
4	OFF	OFF	ON	OFF
5	ON	OFF	ON	OFF
6	OFF	ON	ON	OFF
7	ON	ON	ON	OFF
8	OFF	OFF	OFF	ON
9	ON	OFF	OFF	ON
10	OFF	ON	OFF	ON
11	ON	ON	OFF	ON
12	OFF	OFF	ON	ON
13	ON	OFF	ON	ON
14	OFF	ON	ON	ON
15	ON	ON	ON	ON

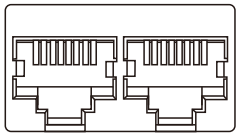
3.5 Interface Definition



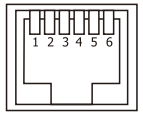
CAN and RS485 port



DRY port



Parallel communication ports



Rs232 communication port

RS232--Using 6P6C vertical RJ11 socket	
RJ11 pin	Definition description
2	NC
3	TX (single board)
4	RX (single board)
5	GND

CAN--Using 8P8C vertical RJ45 socket		**RS485--Using 8P8C vertical RJ45 socket**	
RJ45 pin	Definition description	RJ45 pin	Definition description
1、2、3、6、8	NC	9、16	RS485-B1
5	CANL	10、15	RS485-A1
4	CANH	11、14	GND
7	GND	12、13	NC

CAN and RS485 port

RS485--Using 8P8C vertical RJ45 socket		**RS485--Using 8P8C vertical RJ45 socket**	
RJ45 pin	Definition description	RJ45 pin	Definition description
1、8	RS485-B	9、16	RS485-B
2、7	RS485-A	10、15	RS485-A
3、6	GND	11、14	GND
4、5	NC	12、13	NC

Parallel communication ports

3.6 LED Indications

LED Working Status Indication

State	Normal/alarm /protection	ON/ OFF	RUN	ALM	Power Indicator LED						Explain
		●	●	○	●	●	●	●	●	●	
Shut down	Dormancy	off	off	off	off	off	off	off	off	off	All off
Standby	Normal	Lighting	Flash 1	off	According to the electricityinstruction						Stand by
	Alarm	Lighting	Flash 1	Flash 3							Module low voltage
Charge	Normal	Lighting	Lighting	off	According to the electricityinstruction (Power level indicatesmaximum LED flash 2)						Alarm when overvoltage light off
	Alarm	Lighting	Lighting	Flash 3							
	Overcharge protection	Lighting	Lighting	off	Lighting	Lighting	Lighting	Lighting	Lighting	Lighting	If there is no charging the indicator light is instandby state
	Temperature. overcurrent. protection	Lighting	off	Lighting	off	off	off	off	off	off	Stop charging
Discharge	Normal	Lighting	Flash 3	off	According to the electricity instruction						The max. battery LED flashes(flash 2) and the ALM does not flash in case of an overcharge alarm.
	Alarm	Lighting	Flash 3	Flash 3							
	Undervoltage protection	Lighting	off	off	off	off	off	off	off	off	Stop discharge
	Temperature over -current, short-circuit. Reverse connection and failure protection	Lighting	off	Lighting	off	off	off	off	off	off	Stop discharge
Fail		off	off	Lighting	off	off	off	off	off	off	Stop charging and discharging

● Green ○ Red

Capacity Indication Instructions

State		Charge						Discharge					
Capacity indicator light		L6 ●	L5 ●	L4 ●	L3 ●	L2 ●	L1 ●	L6 ●	L5 ●	L4 ●	L3 ●	L2 ●	L1 ●
Battery Power (%)	0~16.6%	off	off	off	off	off	Flash2	off	off	off	off	off	Lighting
	16.6~33.2%	off	off	off	off	Flash2	Lighting	off	off	off	off	Lighting	Lighting
	33.2~49.8%	off	off	off	Flash2	Lighting	Lighting	off	off	off	Lighting	Lighting	Lighting
	49.8~66.4%	off	off	Flash2	Lighting	Lighting	Lighting	off	off	Lighting	Lighting	Lighting	Lighting
	66.4~83.0%	off	Flash2	Lighting	Lighting	Lighting	Lighting	off	Lighting	Lighting	Lighting	Lighting	Lighting
	83.0~100%	Flash2	Lighting	Lighting	Lighting	Lighting	Lighting	Lighting	Lighting	Lighting	Lighting	Lighting	Lighting
Operation Indicator ●		Lighting						Flashing(Flssh2)					

LED Flashing Instructions

Flash Mode	Bright	Off
Flash,1	0.25S	3.75S
Flash,2	0.5S	0.5S
Flash,3	0.5S	1.5S

Note: The alarm of LED indicator can be enabled or disabled by the software, and the factory default is enabled.

3.7 Description of Buzzer Action

In case of fault, beep for 0.25 S every 1s;

During protection, beep 0.25 S every 2S (except over voltage protection);

In case of alarm, beep 0.25 S every 3S (except over voltage alarm);

The buzzer function can be enabled or disabled by the software, and it is disabled by factory default.

3.8 Key Description

When the BMS is in sleep mode, press the key (3 ~ 6S) and release it, the BMS will be activated, and the LED indicator lights will be on for 0.5 seconds from "RUN".

When the BMS is activated, press the key (3 ~ 6S) and then release it, the BMS is put to sleep, and the LED indicator lights are on for 0.5 seconds from the lowest power lamp.

When the BMS is activated, press the key (6 ~ 10S) and release it, the BMS reset, and all LEDs are on for 1.5s.

After the BMS is reset, it still retains the parameters and functions set by the software. If it is necessary to restore the initial parameters, it can be realized by "restoring the default value" of the software, but the relevant operation records and storage data remain unchanged (such as electric quantity, cycle times, protection records,etc.).

3.9 Battery Management System(BMS)

3.9.1 Voltage Protection

Discharging Low Voltage Protection :

When any battery cell voltage is lower than the protection value during discharging,The over-discharging protection starts, and the battery buzzer makes an alarm sound. Thenbattery system stops supplying power to the outside. When the voltage of each cell recovers torated return range, the protection is over.

Charging Over Voltage Protection:

When total voltage or any battery cell voltage reaches the protection value during chargingbattery stops charging. When total voltage or a cell recover to rated return range, the protectionis over.

3.9.2 Current Protection

Over Current Protection in Charging:

When the charging current is greater than the protection value, the battery buzzer alarms and thesystem stops charging. Protection is removed after rated time delaying.

Over Current Protection in Discharging:

When the discharge current is greater than the protection value, the battery buzzer alarms andthe system stops discharging. Protection is released after rated time delaying.

⚠ Note:

The buzzer function can be enabled or disabled by the software, and it is disabled by factory default.

3.9.3 Temperature Protection

Less/Over temperature protection in charging:

When battery's temperature is beyond range of 0℃ ~+65℃ during charging, temperature protection starts, device stops charging.The protection is over when it recovers to rated return range.

Less/Over temperature protection in discharging:

When battery's temperature is beyond range of -20℃ ~+65℃ during discharging, temperature protection starts, device stops supplying power to the outside.