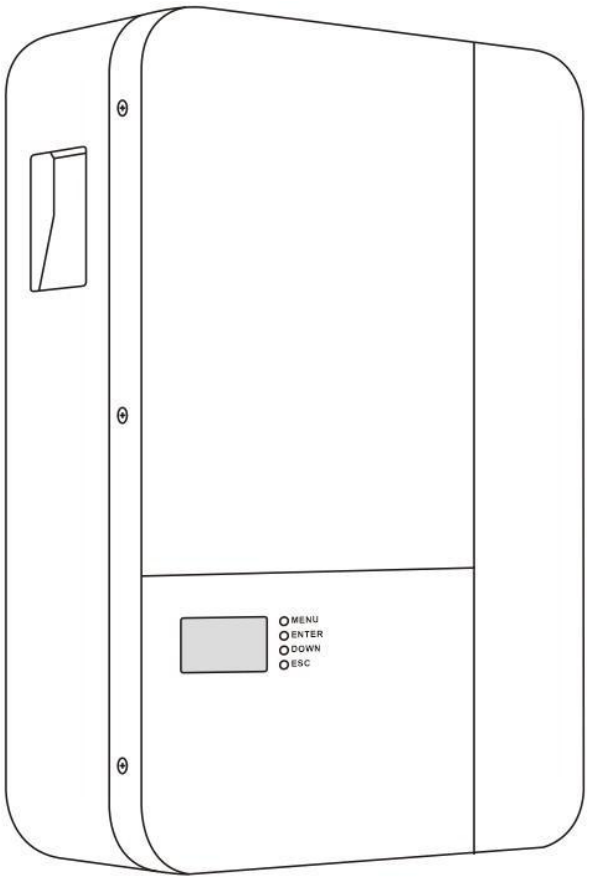
51.2V Power Wall Battery Pack Storage Battery

USER INSTRUCTION

1. Product Description

This power wall mode lifepo4 lithium battery belongs to one of the series of household energy storage products that are independently designed and developed. It has long cycle life, high safety standard BMS software protection and strong housing, exquisite looks, and easy installation, etc. It is widely used in energy storage system with off-grid inverters, on-off grid inverters and hybrid inverters.



*This interface design is only for reference, it may change according to different demands

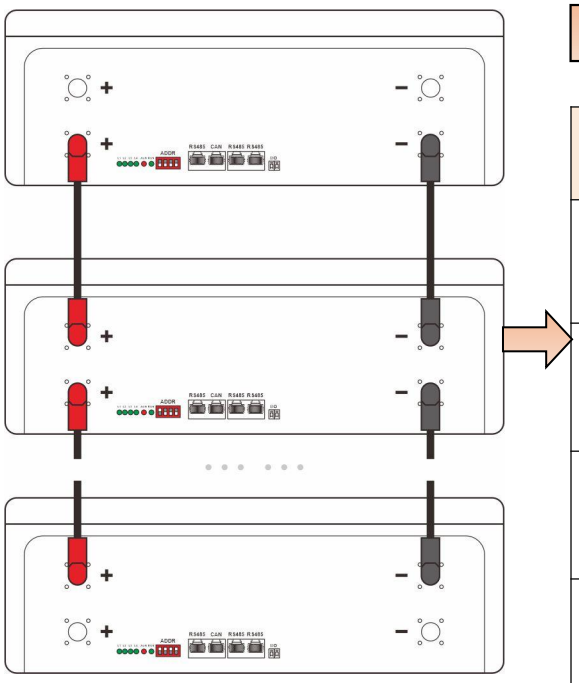
2. Product Function Description

2.1 Product Specifications

Items		Condition	Specification			
Nominal Capacity		Standard charge/discharge	50.0Ah	100.0Ah	150.0Ah	200.0Ah
Nominal Voltage		Average	51.2V	51.2V	51.2V	51.2V
Standard Charging Refer to 3.1		Constant current Constant voltage End current(Cut off)	10A 57.6V 0.2A	20A 57.6V 0.5A	30A 57.6V 0.7A	40A 57.6V 1A
Charging Voltage		/	57.6V	57.6V	57.6V	57.6V
Max. Continuous Charge Current		25±3℃	25.0A	50.0A	75.0A	100.0A
Standard Discharging Refer to 3.2		Constant current End voltage(Cut off)	25.0A 43.2V	50.0A 43.2V	75.0A 43.2V	100.0A 43.2V
Max Continuous Discharge Current		25±3℃	50.0A	100.0A	100.0A	100.0A
Max Output Power		25±3℃	2.4KW	4.8KW	4.8KW	4.8KW
Operating Temperature	Charge	/	0℃~ 60℃			
	Discharge	/	-20℃~ 60℃			
Storage Temperature		1 month 3 month 6 month	-20℃~ 45℃ -20℃~ 35℃ -20℃~ 25℃			
Power Cable Terminal		/	Ring Terminal			

2.2 Parallel Connection

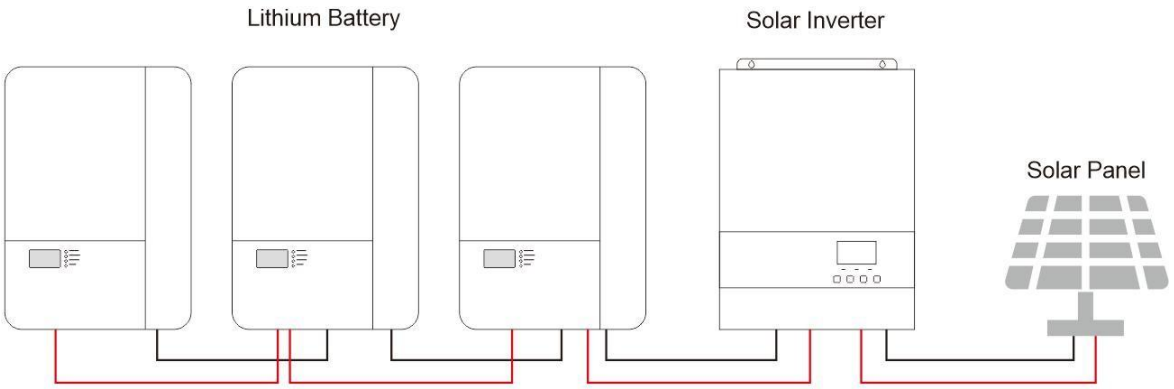
When Connect the batteries in parallel, connect the positive terminal and positive terminal(red colour) in parallel, and the negative terminal and negative terminal (black colour) in parallel, the max parallel quantity is 15pcs, as shown in the figure below：



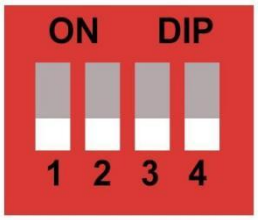
15pcs max in parallel

Model	Capacity	Max Parallel	Max Capacity
51.2V 50Ah	2.56 Kwh	15pcs	51.2V 750Ah 38.4 Kwh
51.2V 100Ah	5.12 Kwh	15pcs	51.2V 1500Ah 76.8 Kwh
51.2V 150Ah	7.68 Kwh	15pcs	51.2V 2250Ah 115.2 Kwh
51.2V 200Ah	10.24 Kwh	15pcs	51.2V 3000Ah 153.6 Kwh

Solar System Structure



2.3 Dial Code Switch Settings (parallel connection needed)



ON

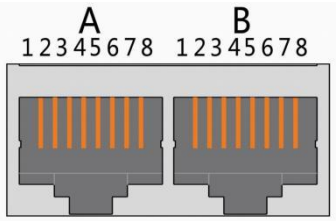
OFF

When the battery packs are connected in parallel, the dial code switch of each battery can be used to distinguish different Pack addresses. The hardware address can be set through the dial code switch on the board. The definition of the dial code switch refer to the following table.

ADD	Dial switch position				Explain
	#1	#2	#3	#4	
1	OFF	OFF	OFF	OFF	No parallel connection or pack 1
2	ON	OFF	OFF	OFF	Pack2
3	OFF	ON	OFF	OFF	Pack3
4	ON	ON	OFF	OFF	Pack4
5	OFF	OFF	ON	OFF	Pack5
6	ON	ON	ON	OFF	Pack6
7	OFF	ON	ON	OFF	Pack7
8	ON	ON	ON	OFF	Pack8
9	OFF	OFF	OFF	ON	Pack9
10	ON	OFF	OFF	ON	Pack10
11	OFF	ON	OFF	ON	Pack11
12	ON	ON	OFF	ON	Pack12
13	OFF	OFF	ON	ON	Pack13
14	ON	OFF	ON	ON	Pack14
15	OFF	ON	ON	ON	Pack15
16	ON	ON	ON	ON	Pack16

2.4 Communication port

a)RS485/CAN main communication

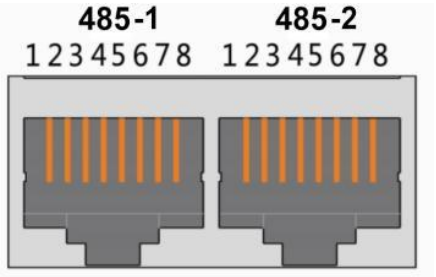


If you need to communicate with the monitoring device through RS485 or Can, the monitoring device will be used as the host, and the address setting range of other batteries will be 2~16 according to the polling data of the address.

The product adopts isolated communication design, supports RS485/CAN communication mode, RS485 communication default baud rate is 9600bps, the default baud rate of CAN communication is 500Kbps；

RS485 & CAN use 8P8C vertical RJ45 socket			
RS485 PIN	Define	CAN PIN	Define
1, 4	RS485-B1	3, 6	NC(empty)
2, 5	RS485-A1	1, 5	CANL
7, 8	NC(empty)	4, 8	CANH
3, 6	GND	2, 7	GND

b)RS485-1 and RS485-2 communication for parallel connection



With dual RS485 interfaces, the default baud rate is 9600bps. If you need to communicate the batteries in parallel with the monitoring device or inverter, you need to connect each battery with RS485-1 and RS485-2 ports, so the host battery can read the information of each battery.

All pins of 485-1 and 485-2 connectors are parallel, so the interface definition is identical.

2.5 LED Indication Function

The current power consumption and operation status of the product are shown through LED indicator Light Working status indication

State	Normal / alarm / protection	RUN	ALM	The power level indicates the LED				Explain
		🟢	🔴	🟢	🟢	🟢	🟢	
Shut down	Dormancy	off	off	off	off	off	off	All off
Standby	normal	flash 1	off	According to the electricity instruction				stand by
	alarm	flash 1	flash 3					Module low pressure
Charge	normal	always on	off	According to the electricity instruction (Power level indicates maximum LED flash 2)				Maximum power LED flash (flash 2), no overcharge alarm ALM flash
	alarm	always on	flash 3					
	Overcharge protection	always on	off	always on	always on	always on	always on	If there is no utility power, the indicator light is in standby state
	temperature overcurrent failsafe protection	off	always on	off	off	off	off	stop charging
discharge	normal	flash 3	off	According to the battery indicator				
	alarm	flash 3	flash 3					
	Undervoltage protection	off	off	off	off	off	off	stop discharging
	Temperature overcurrent short circuit reverse connection failsafe	off	always on	off	off	off	off	stop discharging
lose efficacy		off	always on	off	off	off	off	Stop charging and discharging

Description of capacity indicator

State		Charge				Discharge			
Capacity indicator light		**L4●**	**L3●**	**L2●**	**L1●**	**L4●**	**L3●**	**L2●**	**L1●**
Power（%）	0～25%	Off	Off	Off	Flash	Off	Off	Off	always on
	25～50%	Off	Off	Flash	always on	Off	Off	always on	always on
	50～75%	Off	Flash	always on	always on	Off	always on	always on	always on
	≥75%	Flash	always on	always on	always on	always on	always on	always on	always on
Running lights●		always on				Flash			

LED Flashing Instructions

Flash way	Bright	NO
Flash 1	0.25S	3.75S
Flash 2	0.5S	0.5S
Flash 3	0.5S	1.5S

Note:

The LED indicator alarm can be enabled or disabled through the host computer.

The factory default is enabled.

2.6 Buzzer action description

Turn on the power and the buzzer will beep for a long time;

Shut down to sleep, the buzzer beeps briefly;

During short-circuit protection, the buzzer beeps every 2S. After the short-circuit protection is locked for 3 times, the buzzer will no longer beep; the buzzer function can be enabled or disabled through the host computer, and the factory default is disabled;

When the buzzer function is disabled, the buzzer does not work when the protection board alarms and protects (except for short circuit and reverse connection protection).

2.7 Key Description

When the BMS is in sleep state, press the button for more than 1S, the protection board is activated.

When the BMS is in the working state, when the button is pressed for more than 3S and less than 6S, the BMS enters the sleep state.

When the BMS is in working state, the protection board is reset when the button is pressed for more than 6S.

2.8 Dormancy

In order to reduce the power consumption of the whole system, the system has a sleep function, when the following conditions are met, the system will enter the sleep mode:

1) The over-discharge protection of the monomer has not been released for 5 minutes (the time can be set).

2) The duration of the standby state reaches 24 hours (no communication, no charging and discharging, no charger connection).

3) Operate the composite key switch according to the operating rules.

4) By operating the "Force Sleep" button of the upper computer, the protection board can be forced to shut down and enter the sleep mode.

2.9 Awakening

Combined with the actual situation, for the convenience of use, the system provides a variety of different wake-up methods:

1) Wake up from charging, connect to the charger, and the voltage of the charger is greater than 36V;

2) Press the key to wake up;

3) Wake up by communication, you can wake up via RS485-1, RS232 serial port and CAN communication; please note that the battery enters sleep mode due to single or overall over-discharge, and cannot be woken up by serial port;

interface	Definition Description	
X7 communication port definition	PIN 1	NC (empty)
	PIN 2	NC (empty)
	PIN 3	TX protection board sends data (computer receives data pin)
	PIN 4	RX protection board receives data (computer sends data)
	PIN 5	ground signal ground
	PIN 6	NC (empty)

3. Electrical Specification

(Unless there is special requirement, the test shall be done under temperature of 25±2℃ and with relative humidity of 45~85%.)

<table>
<tr><th>Items</th><th>Test Condition</th><th>Standard</th></tr>
<tr><td>3.1
Standard
Charge</td><td>The standard charge means charge the battery in temperature below 25±3℃with initial charge current of 10A(50Ah)/ 20A(100Ah)/ 30A(150Ah)/ 40A(200Ah) and with constant voltage of 57.6V, then charge with constant voltage of 57.6V and with floating current taper to 0.2A(50Ah)/ 0.5A(100Ah)/ 0.7A(150Ah)/ 1A(200Ah) cut-off (Charger should be exclusively designed for lithium battery, with an accuracy of ±0.05V) within 6 hours.</td><td>/</td></tr>
<tr><td>3.2
Standard
Discharge</td><td>After battery is charged fully in accordance with the standard and then discharge to voltage 43.2V with discharge current of 10A(50Ah)/ 20A(100Ah)/ 30A(150Ah)/ 40A(200Ah).The minimum gap time between charge and discharge period is 30 minutes.</td><td>Minimum Capacity ≥50/100/150/ 200Ah</td></tr>
<tr><td>3.3
Cycle Life</td><td>After the completion of standard charge and 30 minutes' rest, discharge with 80% DOD with constant current of 0.2C in the (25±3℃) environment, after 3000 cycles, rest it for 1 day and test the capacity in accordance with the above 3.2</td><td>Capacity≥80% Minimum Capacity</td></tr>
<tr><td>3.4
Discharge
Character</td><td>
<table>
<tr><td>Discharge current</td><td colspan="4">Discharge Temperature</td></tr>
<tr><td>0.2C</td><td>-10℃</td><td>0℃</td><td>25℃</td><td>40℃</td></tr>
<tr><td colspan="5">Batteries shall be charged according to 3.1 and discharged in accordance with the above mentioned temperature. The discharge capacity shall meet the standard. Batteries shall be stored for 6~8 hours at the test temperature</td></tr>
</table>
</td><td>At -10℃: Discharge Capacity≥50%

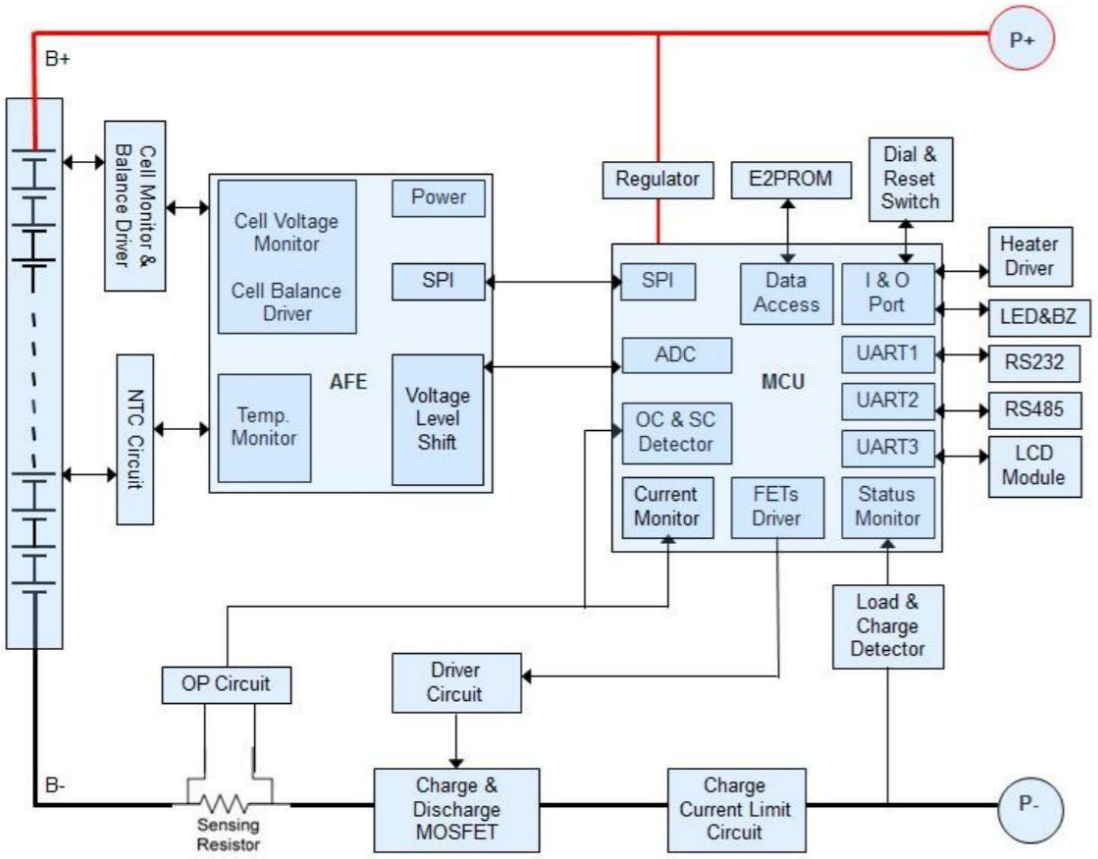
At 0℃: Discharge capacity≥80%

At 25℃ Discharge capacity≥100%

At 40℃ Discharge capacity≥100%</td></tr>
</table>

4. BMS

4.1 BMS System Schematic Diagram



4.2 BMS Parameter

No.	Item		48V 50Ah	48V 100Ah	48V 150Ah	48V 200Ah
1	Power Consumption	Low power consumption mode	≤100μA	≤100μA	≤100μA	≤100μA
2	Over charge Protection	Over charge detection voltage	3.6V	3.6V	3.6V	3.6V
		Over charge release voltage	3.38V	3.38V	3.38V	3.38V
3	Over discharge protection	Over discharge detection voltage	2.7V	2.7V	2.7V	2.7V
		Over discharge release voltage	2.95V	2.95V	2.95V	2.95V
4	Over current protection	Charging over current detection current (detection time)	27.5A (1S)	55A (1S)	82.5A (1S)	110A (1S)
		Discharging over current detection current 1 (detection time)	60A 1S	110A 1S	110A 1S	110A 1S
		Discharging over current detectioncurrent 2(detection time)	≥75A 100ms	≥150A 100ms	≥150A 100ms	≥150A 100ms
5	Temp. Protection	Detection temperature	65±2℃	65±2℃	65±2℃	65±2℃
6	Balance	Balance voltage	3.5V	3.5V	3.5V	3.5V

5. Product Life

The design life of this product is 10 years.

6. Transportation

During transportation, please keep the battery from acutely vibration, impacting, over-exposure to the sun and drenching.

7. Storage

7.1 Storage environment requirement

Under temperature of 25±2℃ and relative humidity of 45~85%.

7.2 Storage term

The lithium battery must be charged every six months, and a complete charging and discharging period is required in every nine months.

8. Cautions

※The installation and debugging should be operated by professional electric personnel.

※Please do not stick your hands or other objects deep into the interior of the product.

※Please do not open the product without a professional around.

※Please do not mechanically damage the battery module of the energy storage cabinet (perforation, deformation, peeling, etc.).

※Please use dry powder extinguisher as extinguishing agent.

※Please do not let the storage cabinet battery module contact abnormal metals or conductors.

※Please do not use the product after short circuit occurs.

※Please do not expose the energy storage cabinet to flammable or hazardous chemicals or vapors.

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