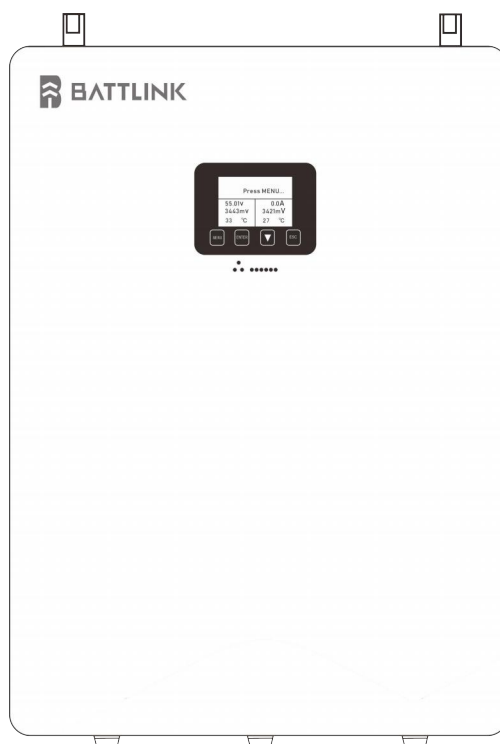




Low Voltage Wall Mounted ESS

Product Type: BATT-LS-10-C

Shenzhen Huaxing New Energy Technology Co., Ltd.

Factory Address: NO. 18, Mingcheng Road, Shijing Community, Shijing Street, Pingshan District, Shenzhen.

Tel.: +86 0755-89458220

Email: info@huaxingenergy.com

Overview

This specification aims to provide a detailed description of the technical specifications, performance requirements, and functional characteristics of the relevant products to meet the application needs in different scenarios. Provide a unified reference standard for suppliers, engineers, and customers, and ensure that products can meet expected requirements and operate safely and reliably.

The compilation of this specification book refers to industry standards, national regulations, and relevant technical requirements, and comprehensively regulates the core technology, component selection, system performance, safety performance, control and monitoring of the product. At the same time, this specification also provides requirements for delivery acceptance, maintenance, and after-sales service to ensure the quality and reliability of the product.

During the preparation process of this specification, we listened to the opinions and suggestions of suppliers, engineers, and customers, striving to make the content of the specification reasonable, feasible, and as consistent as possible with existing industry standards and specifications. However, due to the continuous development of technology and market, this specification may need to be updated and modified according to actual application situations.

BATT-LS-10-C Product Specification

Update records

Accumulate update records for each document update, with the latest version containing updated content from all previous document versions. Document version: A01 (March 4, 2024)

The document is officially released.

Catalogue

Preface	1
Overview	1
Updating Records	1
Catalogue	2
1、Product Overview	3
1. 1 Product Name:	3
1. 2 Product Description:	3
2、Product Specification Parameters	3
3、Testing Conditions and Methods.....	4
3. 1. Testing Product Standards	4
3. 2Testing environment standards	4
3. 3 Testing Method Standards	4
3. 4 Testing Equipment Accuracy Standards	4
4、General Performance	5
5、Safety.....	5
6、Interface Performance.....	5
7、BMS Parameters.....	6
8、Product Drawings.....	7
8. 1. Product Dimension Diagram.....	7
8. 2 Appearance Diagram.....	8
8. 3 Interface Definition	9
8. 4 indicator lights display status.....	10
8. 5 DIP switches.....	12
8. 6 Communication Interfaces.....	12
9、Instructions for Use.....	12
9. 1Charging Requirements.....	12
9. 2 Discharge Requirements.....	12
9. 3 Storage Requirements.....	13
9. 4 Shipping Charged.....	13
10、Warn.....	13
11、Attention.....	13
12、Warranty.....	13
13、Others.....	14

1. Product Overview

1.1 Product Name:

Xingyue BATT-LS-10-C Household Energy Storage Power Supply (hereinafter referred to as "this power supply" in the document)

1.2 Product Description:

This power supply uses automotive grade lithium iron phosphate square cells as the main energy storage component, with excellent cell performance and consistency, as well as a long cycle life, which can better meet user needs. The power supply casing is made of thickened steel plate through electrostatic spraying, ensuring the battery structure is sturdy and reliable. Equipped with a high-quality battery intelligent management system, ensuring the stability and reliability of the power supply. In addition, the power output port adopts a quick plug-in connector, which is easy for users to operate and has strong overcurrent capability. At the same time, the Canbus/RS485 communication interface is configured, which can be compatible with various mainstream brands of inverters in the market, providing greater compatibility and flexibility.

2. Product Specification Parameters

Nominal voltage	51.2V
Capacity	200Ah At 0.2C
Energy	10.24KWh
Internal resistance of battery	≤180mΩ At AC1KHz
Limited charge voltage	58.4V Max
Working voltage	44.8~58.4V
Standard charge current	40A
Maximum charging current	100A
Discharge Cut-off Voltage	44.8V
Standard discharge current	40A
Maximum discharge current	100A
Composition	16S2P
Cell model	LFP 3.2V 100Ah
Main material of the shell	Cold rolled steel plate
Protection level	IP65
Cooling method	Natural cooling
External dimensions	850*625*180±3mm
Battery weight	≈100kg Not including installation configuration components
Working temperature range	Charge: 0℃~45℃ At10%-90%RH Discharge: -20℃~60℃
Storage temperature range	15℃~25℃: 9months At 50%-60% SOC 0℃~35℃: 6months -20℃~45℃:1month
Storage humidity range	-20℃~45℃: 1month

Note: For the above testing items, the testing conditions should comply with all the contents of the third main item "Testing Conditions". If any of the working conditions of the battery exceed the range of the third main item, there will be a certain deviation in the performance of the battery.

3. Testing Conditions and Methods

3.1 Testing Standards

3.1.1 The test should use new battery packs delivered within 15 days and have not undergone more than 5 charging and discharging cycles. 3.1.2 The test should be conducted under the environmental conditions specified in 3.2.

3.2 Testing Environment Standards

Temperature: $25 \pm 2^{\circ}\text{C}$, humidity: $60 \pm 20\%$ RH, air pressure: 60-160kPa.

3.3 Testing Method Standards

NO	Test Item	Testing Mode
1	Standard Charging	Constant current charging: Initially, a constant current of 0.5C is used for charging until the set voltage is reached. Constant voltage charging: After reaching the charging voltage, switch to constant voltage charging mode. Reduce current: In constant voltage mode, the current gradually decreases to 0.01C.
2	Standard Discharge	Constant current discharge: Discharge at a constant current of 0.5C until the discharge cutoff voltage is reached.
3	Charge-discharge Cycle	Charging stage: Charge to full capacity according to the requirements of item 3.3.1 and let it stand for 0.5-1 hour. Discharge stage: Discharge according to the requirements of item 3.3.2 until the end, and let it stand for another 0.5-1 hour. Repeated cycle: After completing one charge and discharge cycle, charge and discharge again, maintaining a standing time of 0.5-1 hour between each cycle

Note: For the above testing methods, they must meet the standards required in 3.1 and 3.2. The charging and discharging current and voltage parameters involved in the testing method shall be subject to the second product specification parameter.

NO	Test Item	Testing Mode
3.4.1	Voltage Accuracy	$\geq 0.5\%$ Level
3.4.2	Current Accuracy	$\geq 0.5\%$ Level
3.4.3	Temperature Accuracy	$\pm 0.5^{\circ}\text{C}$
3.4.4	Time Accuracy	0.1%
3.4.5	Dimensional Accuracy	0.1%

4. Interface Performance

NO	Test Item	Performance Description	
4.1	Parallel Use	Supports up to 15 battery packs for external parallel operation, mainly used for battery expansion and power increase.	
4.2	Communication	External communication interface Can/RS485: mainly used for communication with inverters and reading battery information using PCs; Internal communication interface RS485: Used for battery parallel communication and reading battery information using a PC.	
4.3	Adapted Inverter	Canbus Interface	SMA, Victron, PYLONTECH, DEYE, Growatt, Sacolar, MEGARE VO, SOFAR, Goodwe, MUST, TBB
		RS485 Interface	PYLONTECH, DEYE, Growatt, Sacolar, Voltronic, SRNE, SAJ

Note: When using batteries in parallel, a junction box needs to be installed, and the positive and negative poles of each battery group should be connected to the junction box.

5. General Performance

NO	Item	Testing Mode	Standard Requirements
5.1	Initial Capacity	Under standard testing conditions, repeat the charging and discharging cycles of the battery according to the requirements of item 3.3.3 for 5 times, with at least one capacity meeting the standard requirements.	Initial Capacity $\geq 100\text{Ah}$
5.2	Cycle Life	Under standard testing conditions, the new battery undergoes 4000 charge and discharge cycles according to the requirements of item 3.3.3.	4000 cycles of capacity $\geq 80\%$ of initial capacity
5.3	Charge Retention Performance	Under standard testing conditions, the new battery is fully charged according to the requirements of item 3.3.1. The battery is left open at $25 \pm 2^\circ\text{C}$ for 30 days, and then discharged according to the requirements of item 3.3.2 until the discharge is complete.	Remaining discharge capacity $\geq 95\%$ of initial capacity
5.4	Storage Performance	Under standard testing conditions, the new battery shall undergo one charge discharge cycle according to the requirements of item 3.3.3, and then be stored at $20 \pm 3^\circ\text{C}$ for 90 days. Repeat the charging and discharging cycle of the battery according to the requirements of item 3.3.3 for 5 times, and at least 1 time restore the capacity to meet the standard requirements.	Recovery capacity $\geq 90\%$ of initial capacity
5.5	High temp discharge performance	Under standard testing conditions, the new battery is fully charged according to the requirements of item 3.3.1. The battery is opened and left to stand at $55 \pm 2^\circ\text{C}$ for 5 hours, and then discharged according to the requirements of 3.3.2 until the discharge is complete.	High temperature discharge capacity $\geq 98\%$ of initial capacity
5.6	Low temp discharge performance	Under standard testing conditions, the new battery is fully charged according to the requirements of item 3.3.1. The battery is opened and left to stand at $-20 \pm 2^\circ\text{C}$ for 5 hours, and then discharged according to the requirements of 3.3.2 until the discharge is complete.	Low temperature discharge capacity $\geq 75\%$ of initial capacity.

6. Safety

NO	Item	Testing Mode	Standard Requirements
6.1	Short Circuit Test	Under standard test conditions, connect the positive and negative terminals of a fully charged battery with a load not exceeding $100\text{m}\Omega$, and short-circuit the external components of the battery for 10 minutes.	No liquid leakage, no smoke, no fire, no explosion. After removing the load, the battery should be able to function properly.
6.2	Temperature Shock	Place the fully charged battery into a constant temperature and humidity test chamber, and perform the following tests: 1. Adjust the temperature of the test chamber to 75°C and maintain it for 6 hours. 2. Adjust the temperature of the test chamber to -40°C , with a conversion time of less than 1 hour, and maintain it for 6 hours. 3. Adjust the temperature of the test chamber to 75°C , with a conversion time of less than 1 hour, and maintain it for 6 hours. 4. Repeat steps 2 and 3 above for a total of 10 cycles 5. Remove the test battery and store it in an environment of $25 \pm 2^\circ\text{C}$ for 24 hours	No liquid leakage, no smoke, no fire, no explosion.
6.3	Testing	Fix the packaged battery on the test bench and conduct the test according to the following requirements: Collision waveform: half sine wave Peak acceleration: 180m/s^2 Pulse width: 6ms Collision direction: 6 directions Collision count: 100 times in each direction.	No liquid leakage, no smoke, no fire, no explosion.
6.4	Low Pressure Experiment	Fix the packaged battery on the test bench and conduct the test according to the following requirements: Collision waveform: half sine wave Peak acceleration: 180m/s^2 Pulse width: 6ms Collision direction: 6 directions Collision count: 100 times in each direction.	No liquid leakage, no smoke, no fire, no explosion. Open the packaging, there should be no deformation in the appearance, and the battery should be able to function normally.
6.5	Crash Test	Fix the packaged battery on the test bench and conduct the test according to the following requirements: The vibration should be in a sinusoidal waveform, with a logarithmic sweep frequency of 1 minute, oscillating between 7 and 200Hz before returning to 7Hz. This vibration process needs to be repeated 12 times in each direction of the three mutually perpendicular battery installation directions for a total of 3 hours. One of the vibration directions must be perpendicular to the end face. The logarithmic sweep frequency is: maintain a maximum acceleration of 1gn from 7Hz until the frequency reaches 18Hz. Then maintain the amplitude at 0.8 millimeters (total offset 1.6 millimeters) and increase the frequency until the maximum acceleration reaches 8gn (frequency approximately 50Hz). Maintain the maximum acceleration at 8gn until the frequency increases to 200Hz.	No liquid leakage, no smoke, no fire, no explosion. Open the packaging, there should be no deformation in the appearance, and the battery should be able to function normally.

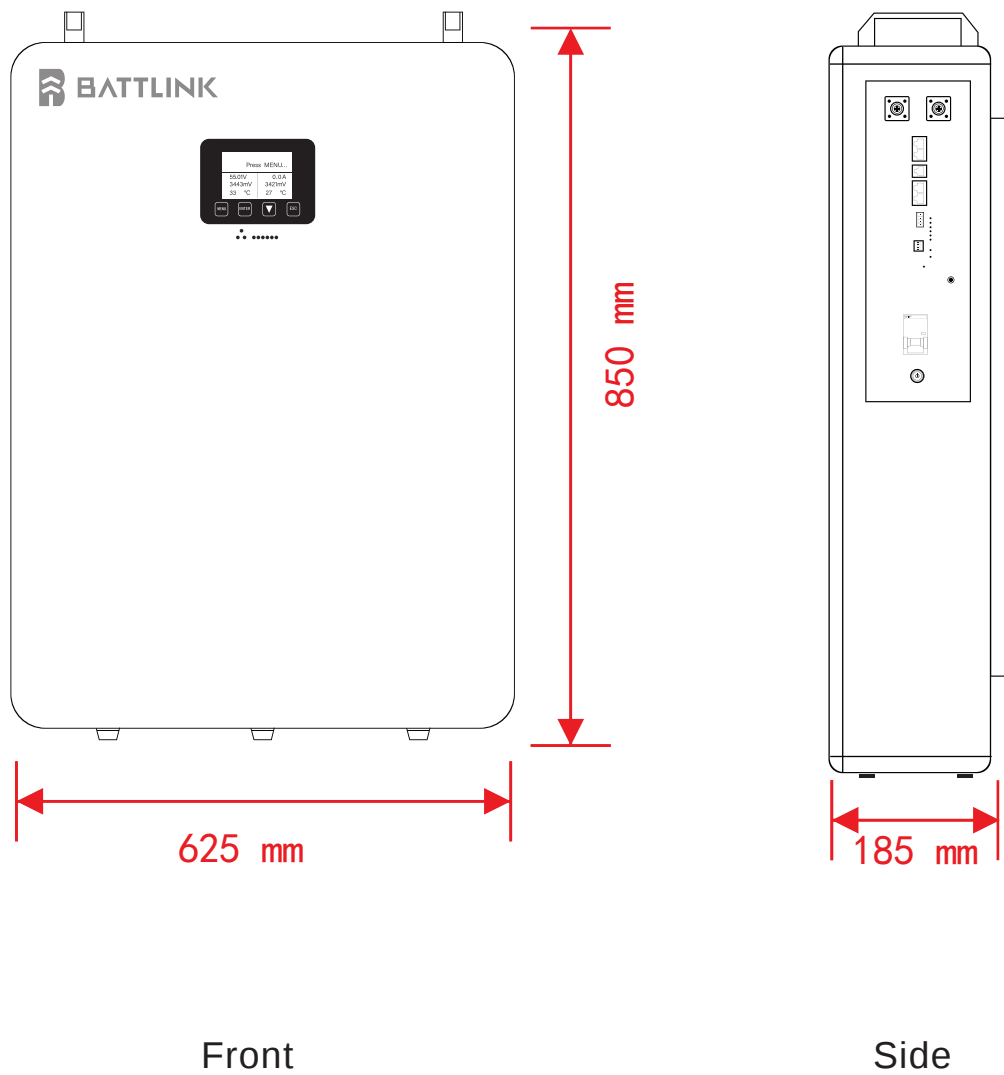
Note: Safety performance testing is a very dangerous operation that must be carried out by qualified technical personnel under safe protection conditions.

7、BMS Parameters

Function	Effectiveness	Test Item	Typical Value	Range Value	Remark
Individual Voltage Alarm	Open	Overcharge alarm voltage/Overdischarge alarm voltage	3550mV/2900mV	± 25mV	
Individual Overcharge Protection	Open	Overcharge protection voltage/Overcharge protection delay/Overcharge recovery voltage	3700mV/1s/3380mV	± 25mV/500-3000ms/ ± 25mV	
Individual Over Discharge Protection	Open	Overdischarge protection voltage/Overdischarge protection delay/Overdischarge recovery voltage	2700mV/1s/2950mV	± 25mV/500-3000ms/ ± 25mV	
Overall Voltage Alarm	Open	Overcharge alarm voltage/Overdischarge alarm voltage	56.8V/46.4V	± 300mV	
Overall overcharge protection	Open	Overcharge protection voltage/Overcharge protection delay/Overcharge recovery	58.4V/1s/54.00V	± 300mV/500-3000ms/ ± 300mV	
Overall Over Discharge Protection	Open	Overdischarge protection voltage/Overdischarge protection delay/Overdischarge recovery voltage	43.2V/1s/47.2V	± 300mV/500-3000ms/ ± 300mV	
Cell Temperature Alarm	Open	Charging high temperature alarm/Charging low temperature alarm/Discharge high temperature alarm/Discharge low temperature alarm	60°C/0°C/65°C/-15°C	± 2°C	
Cell Temp Prohibited from Charging	Open	Charging high temperature protection/Charging high temperature recovery/Charging low temperature protection/Charging low temperature recovery	65°C/55°C/-5°C/0°C	± 2°C	
Cell Temperature Prohibition	Open	Discharge high-temperature protection/Discharge high-temperature recovery/Discharge low-temperature protection/Discharge low-temperature recovery	70°C/60°C/-20°C/-15°C	± 2°C	
Environmental Temperature Alarm	Open	Environmental high temperature alarm/environmental low temperature alarm	65°C/-25°C	± 2°C	
Environmental Temperature Protection	Open	Environmental high-temperature protection/Environmental high temperature protection recovery/Environmental low-temperature protection/Environmental low-temperature protection recovery	70°C/65°C/-25°C/-20°C	± 2°C	
MOS High Temperature Alarm	Open	MOS high temperature alarm	100°C	± 2°C	
MOS High Temperature Protection	Open	MOS high temperature alarm/MOS high temperature protection recovery	110°C/85°C	± 2°C	
Charging Overcurrent Alarm	Open	Charging alarm current	105A	± 2°C	
Charging Overcurrent Protection	Open	Charging protection current/charging overcurrent delay	110A/5S	± 2°C	
Discharge Overcurrent Alarm	Open	Discharge alarm current	110A	± 2°C	
Discharge Overcurrent Protection	Open	Discharge protection current/discharge overcurrent delay	110A/5S	± 2°C	
Secondary Overcurrent Protection	Open	Secondary protection current/secondary overcurrent delay	≥150A/500ms	±3A/100-1500ms	
Charging Current Limiting		Charging current limit value	20A	Optional 10A or 20A	30min Try once
Discharge Overcurrent Recovery		Automatic recovery delay	2mins	Automatically recover in 2 minutes	Lock after 3 attempts
Cell Balancing Function	Open	Charging balance/opening voltage/opening voltage difference/balancing current	3.45V/30mV/55mA	Can be set/can be set/can not be set	
Battery Capacity Setting		Rated full capacity of battery/remaining capacity of battery	100Ah/60Ah	Can be set	
SOC Alarm	Open	SOC low alarm/SOC low alarm recovery	5%/10%	Can be set	
Standby Automatic Sleep		Sleep voltage/sleep delay	3.15V/1H/10%		
Full Charge Setting	Settable	Constant voltage value/constant current value	56V/2000mA		
Intermittently Charging	Open	Intermittent charging (standby time)	5days	Can be set	

8. Product Drawings

8.1 Product Dimensional Drawing



Front

Side

L:	850MM
W:	625MM
H:	185MM

The above dimensions are the main body dimensions of the product and do not include accessories.

8.2 Appearance Diagram

Front View



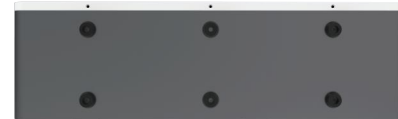
Back View



Top

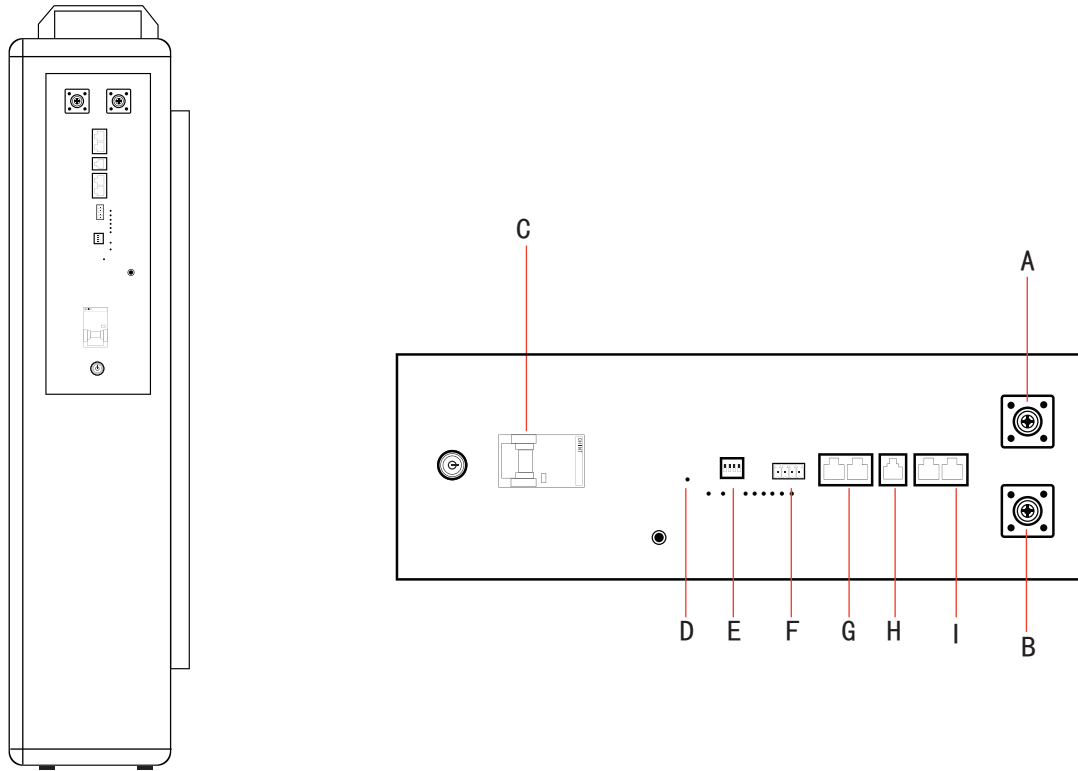


Side



Bottom

8.3 Interface Definition



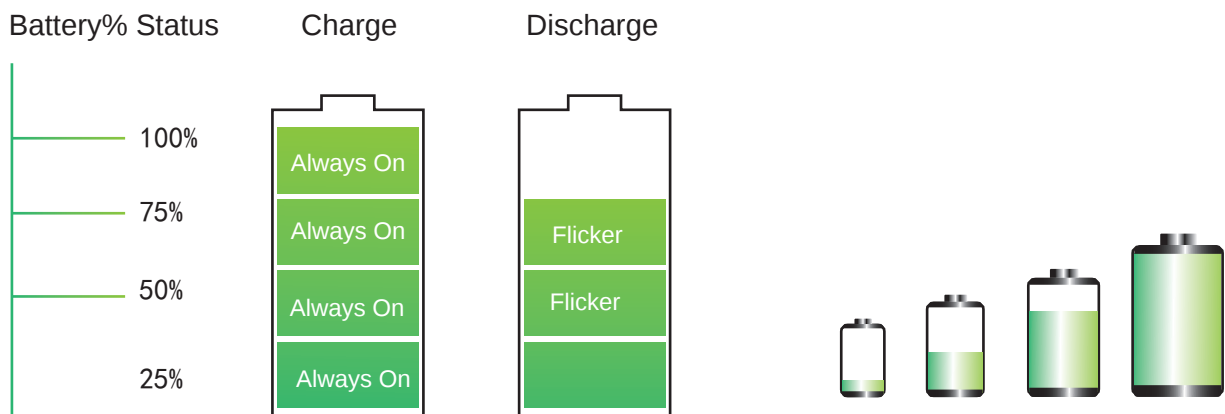
A	P+	Positive electrode connector, input/output positive electrode interface.
B	P-	Negative terminal connector, input/output negative terminal interface.
C	Circuit Breaker	Positive pole power switch
D	RST	Reset button (hidden), long press for 1 min to take effect.
E	DIP Switch	When conducting multi machine parallel communication operations, it is necessary to first configure the dialing address.
F	Dry Contact Interface	KF2EDG-Y_3.81-4P connector, dry contact interface
G	RS485/CAN	RJ45 connector, upper computer software communication and inverter communication interface.
H	RS232	RJ11 connector, upper computer communication debugging interface.
I	RS485	RJ45 connector, multi machine parallel communication interface

8.4 Indicator Light Display

8.4.1 Self check mode

When the "power on" button is pressed, the battery BMS starts working, and the indicator light status is as follows:

- The bottom LED starts to light up the red light, and then lights up the red light in sequence from bottom to top until all LEDs light up the red light at the same time, and then goes out synchronously;
- The bottom LED starts to light up the yellow light, and then lights up the yellow light sequentially from bottom to top until all LEDs light up the yellow light at the same time, and then goes out synchronously;
- The bottom LED starts to light up the green light, and then lights up the green light sequentially from bottom to top until all LEDs light up the green light at the same time. The self check ends and enters the working state.



8.5 DIP switch

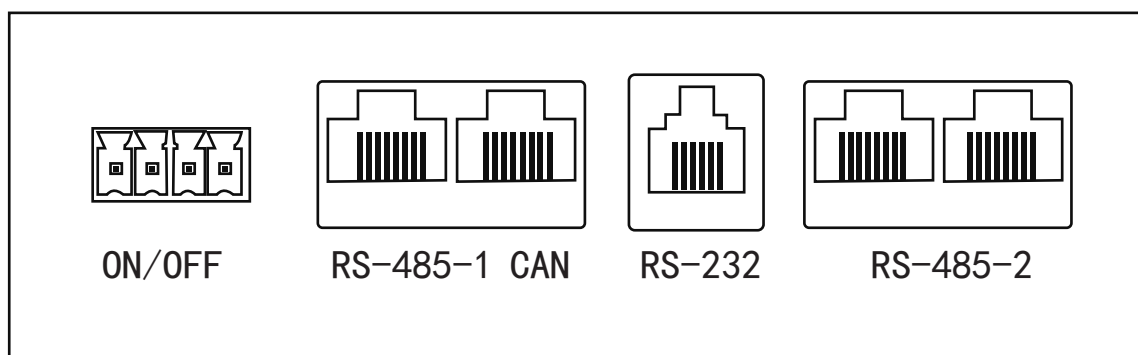
When parallel use is required, the unique address of the power supply can be set through a dial switch to distinguish different power sources. The detailed definition of the electrical state source address is as follows:

Using BCD code format, the definition of address 0 is as follows:

The host address code must be 0, and addresses must be assigned from 1 to 15 in sequence.



8.6 Communication Interface Status



Definition of PIN for the back interface socket

RS-485-1 C Standard RJ45 interface, inverter communication port.

AN Standard RJ45 interface, inverter communication port.

Dry contact Dry contact 1: (Pin1 to Pin2): Short circuit protection, discharge overcurrent protection, charge and discharge over-temperature protection, high and low ambient temperature protection, MOS high temperature protection, charge and discharge MOS fault protection, sampling AFE fault, temperature interruption.

RS-485-1 Dry contact 2: (Pin3 to Pin4): Low capacity (<5%)

Standard RJ45 port for communication within the battery pack during parallel operation. When CAN communication automatic address allocation is required, the CAN port for communication with the inverter can be connected in parallel through pins 4 and 5

9. Instructions for use

9.1 Charging requirements

Charging requirements are regulations that ensure safe and effective charging. Please make sure to comply with the following charging requirements:

1. The charging current shall not exceed the maximum charging current specified in the specifications.
2. The charging voltage shall not exceed the voltage range specified in the specifications.
3. The design of the charger must meet the condition that the charging voltage does not exceed the maximum charging voltage of the battery.
4. During the charging process, the battery must be charged within the ambient temperature range specified in the specifications.
5. Reverse charging is strictly prohibited. Please ensure that the positive and negative terminals of the battery are correctly connected to avoid reverse charging. Adhering to these charging requirements can ensure the safety of the charging process while protecting the lifespan of the device and battery.

9.2 Discharge requirements

Discharge requirements are also regulations that ensure safe and effective use of batteries. Please comply with the following discharge requirements:

1. The discharge current shall not exceed the maximum discharge current specified in the specifications. During the discharge process, the battery must be discharged within the ambient temperature range specified in the specifications.
2. To prevent excessive discharge caused by battery self consumption, it is recommended to charge every three months. If the storage time exceeds six months, it is recommended to charge and discharge the battery every six months to activate it.
3. Adhering to these discharge requirements can ensure the normal use of the battery and extend its lifespan. Please pay attention to regular charging and discharging to maintain the performance of the battery.

9.3 Storage Requirements

Storage requirements are regulations that ensure that batteries can remain in good condition when not in use. Please comply with the following storage requirements:

1. The battery pack should be stored at room temperature (15-25 °C) and humidity of 60 ± 20% RH.
2. Before storage, the battery should be charged to 40% to 60% of its capacity. If the battery is planned to be stored for more than 30 days, the state of charge (SOC) of the battery should be adjusted to approximately 50%. After three months of storage, a charge and discharge should be performed to readjust the SOC to 50%. If the battery is stored with 50% SOC for more than 6 months without charging and discharging maintenance, it may result in approximately 5% irreparable capacity loss. If the battery is stored with 50% SOC for more than 9 months without charging and discharging maintenance, it may cause capacity loss or other defects to the battery, and we will not be responsible for warranty in this case. Adhering to these storage requirements can protect the performance and lifespan of batteries, ensuring their normal operation when needed. Please pay attention to regular charging and discharging maintenance to maintain the condition of the battery.

9.4 Shipment electrified

The charged capacity of the shipment refers to the charging state that the battery should have during transportation

. According to different transportation methods, the electrical quantity requirements for shipment are as follows:

1. The electric charge requirement for air transportation is within the range of 20% to 30% SOC (State of Charge).
2. The electrification requirement for ocean or land transportation is within the range of 40% to 60% SOC. Adhering to these requirements can ensure the safety of batteries during transportation and reduce potential risks. Please ensure that the charged capacity of the battery is within an appropriate range according to the transportation method when arranging the transportation of the battery.

10. Warning

To ensure safe use of battery packs, the following are some usage rules and precautions:

1. It is prohibited to disassemble or change the external structure of the battery. Do not disassemble or alter the external structure of the battery on your own.
2. Use a dedicated lithium-ion battery charger for charging. Ensure to choose a charger that is suitable and meets the battery specifications for charging.
3. It is prohibited to use the battery pack by reversing the positive and negative poles. Connect the wires correctly to ensure that the positive and negative terminals of the battery are connected correctly.
4. It is prohibited to directly connect the battery pack to the power socket. Avoid directly connecting the battery pack to a power outlet.
5. It is prohibited to directly short-circuit the positive and negative poles of the battery pack with metal objects. Prevent the occurrence of short circuits.
6. It is prohibited to transport and store batteries together with metal objects. Avoid contact between batteries and metal objects to prevent potential hazards.
7. It is prohibited to strike, throw, or step on the battery pack. Prevent physical damage to the battery pack.
8. It is prohibited to hit the battery pack with sharp parts and puncture the battery pack. Avoid damaging the battery pack.
9. It is strictly prohibited to immerse the battery pack in seawater or water. Avoid contact between batteries and water to prevent dangerous situations.
10. It is prohibited to use the battery pack in high-temperature environments, such as sources of fire, heaters, strong sunlight, or in extremely hot cars. Avoid the impact of high temperature environments on the battery pack.
11. It is prohibited to directly weld battery packs or cells. Direct welding operations on battery packs are not allowed.
12. It is prohibited to use battery packs in environments with strong static electricity and strong magnetic fields. The environments may have an impact on the safety protection devices of battery packs, leading to safety hazards.

When the battery experiences a short circuit, collision, or falling, it should be immediately marked and isolated. Even if the battery appears to be functioning properly, it must not be used again. Handle the problematic battery properly.

Please make sure to follow the above usage rules and precautions to ensure the safe use of the battery pack and prevent potential hazards.

11. Attention

1. Please ensure that the voltage and current generated by the load do not exceed the reverse voltage and current withstand values of the BMS (battery management system) to avoid damaging the BMS board.
2. If the battery leaks, do not rub your eyes with your hands. Immediately rinse with water and seek medical treatment to avoid eye injuries.
3. If there are any abnormal situations during the use or storage of the battery, such as odor, heat, discoloration, deformation, or abnormal charging process, please stop using it immediately and remove the battery from the charger or device.
4. Before using the battery, make sure to clean the battery connection contacts to ensure good contact and avoid performance degradation.
5. Waste batteries should be wrapped with insulating paper around the electrodes to prevent dangerous situations such as short circuits, smoking, or fires.
6. Please follow the above precautions to ensure safe use of the battery. If encountering problems or abnormal situations, please take appropriate measures or consult professionals in a timely manner.

12. Other matters

1. Please carefully read the product manual and follow the instructions in the manual before using the battery. Incorrect use may cause the battery to heat up, crack, catch fire, be damaged or lose capacity, and may even cause personal and property damage.
2. If the customer intends to use the battery beyond the scope specified in the document or under special usage conditions, please contact us in advance. We need to conduct specific experiments and tests to verify the performance and safety of the battery under these conditions.
3. Our company shall not be responsible for any losses or accidents caused by the use of this product beyond the scope specified in the document.
4. Unless mutually agreed upon, matters not mentioned in this specification shall not have legal effect.
5. Without prior notice to the customer, our company has the right to upgrade and adjust the performance or specification parameters of the product.