



15kWh

Battery Energy Storage System

Draft	Checked	Approval

Customer Approval	Checked	Approval



1.Description

This product uses lithium iron phosphate batteries with high safety performance and long cycle life, which can better meet user needs.

Built in high-quality battery intelligent management system to ensure product stability and reliability

Equipped with a Canbus/RS485 communication interface, it can be compatible with mainstream brand inverters in the market.

The shell is made of thick steel plates that have been electrostatically sprayed to ensure the durability of the battery structure reliable.

2.Specification parameters

NO.	Item	Parameter	Remarks
1	Battery type	Lithium iron phosphate battery	
2	Nominal voltage	51.2V	
3	Capacity	15kWh	
4	Maximum charge voltage	58.4V	
5	Standard charge current	60A	
6	Maximum charging current	200A	
7	Standard discharge current	60A	
8	Maximum discharge current	200A	
9	Discharge Cut-off Voltage	44.8V	
10	Operating temperature range	Charge:0-45°C	At 10%-90%RH
		Discharge: -10-60°C	
11	Cooling mode	Natural cooling	
12	Dimension	696*506*700mm	
13	Weight	Approx:190kg	
14	Shell material	Cold rolled steel plate	
15	Protection level	IP51	
16	Storage temperature range	1 month:-20-45°C	
		6 months:0-35°C	
		12 months:15-25°C	



3. Testing conditions and methods

3.1 Testing standards

The test should use new battery packs delivered within 15 days and have not undergone more than 5 charging and discharging cycles.

Testing environment standards:

Temperature: 25 ± 2 °C

Humidity: $60 \pm 20\%$ RH

Air pressure: 60-160kPa

3.2 test method

NO.	Item	Test method
1	Standard charging	Constant current charging: Initially, a constant current of 0.2C 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 0.2C until the discharge cutoff voltage is reached.
3	Charge and discharge cycle	Charging stage: Charge to full capacity according to standard charging requirements and let it stand for 0.5-1 hour. Discharge stage: Discharge according to standard discharge requirements 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



4.General performance

NO.	Item	Test method	Result
1	Cycle life	Under standard testing conditions, the new battery undergoes 5000 charge and discharge cycles according to the requirements of item 3.2.	$\geq 80\%$ of initial capacity
2	Charge retention performance	Under standard test conditions, the new battery is fully charged according to 3.3 requirements, the battery is left open at $25\pm 2^{\circ}\text{C}$ for 30 days, and then discharged according to 3.3 requirements until the end of discharge.	$\geq 95\%$ of initial capacity
3	Storage performance	Under standard testing conditions, the new battery is subjected to one charge discharge cycle according to the requirements of item 3.3, and then 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 for 5 times, and at least 1 time restore the capacity to meet the standard requirements.	$\geq 90\%$ of initial capacity
4	High temperature discharge performance	Under standard testing conditions, the new battery is fully charged according to the requirements of item 3.3. The battery is left open at $55 \pm 2^{\circ}\text{C}$ for 5 hours, and then discharged according to the requirements of item 3.3 until the discharge is complete.	$\geq 98\%$ of initial capacity
5	Low temperature discharge performance	Under standard testing conditions, the new battery is fully charged according to the requirements of item 3.3. 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 until the discharge is complete.	$\geq 75\%$ of initial capacity



5. Safety performance

NO.	Item	Test method	Result
1	Short-circuit test	Under standard test conditions, the positive and negative terminals of a fully charged battery are connected with a load of no more than 100mΩ, and the outside of the battery is shorted for 10 minutes.	No leakage, no smoke, no fire, no explosion. After the load is removed, the battery should work normally.
2	Temperature shock	Put the full battery into the constant temperature and humidity test chamber, the test is as follows: 1. Adjust the temperature of the test chamber to 75℃ and keep it for 6 hours. 2. Adjust the temperature of the test chamber to -40℃, the conversion time is <1 hour, and keep it for 6 hours. 3. Adjust the temperature of the test chamber to 75℃, the conversion time is <1 hour, and keep it for 6 hours. 4. Repeat steps 2 and 3 for a total of 10 cycles 5. Take out the test battery and store it at 25±2℃ for 24 hours.	No leakage, no smoke, no fire, no explosion.
3	Crash test	Fix the packaged battery on the test bench and test according to the following requirements: The vibration should be in a sinusoidal waveform, oscillating between 7 and 200Hz and back to 7Hz with a logarithmic sweep frequency of 1 minute. This vibration process must be repeated 12 times in each of the three perpendicular battery mounting directions for a total of 3 hours. One of the vibration directions must be perpendicular to the end face. The logarithmic sweep frequency is: from 7Hz, the maximum acceleration of 1gn is maintained until the frequency reaches 18Hz. The amplitude is then maintained at 0.8 mm (a total offset of 1.6 mm) and the frequency is increased until the maximum acceleration reaches 8gn(a frequency of about 50Hz). Keep the maximum acceleration at 8gn until the frequency increases to 200Hz.	No leakage, no smoke, no fire, no explosion. Open the package, the appearance is not deformed, the battery should be able to work normally.

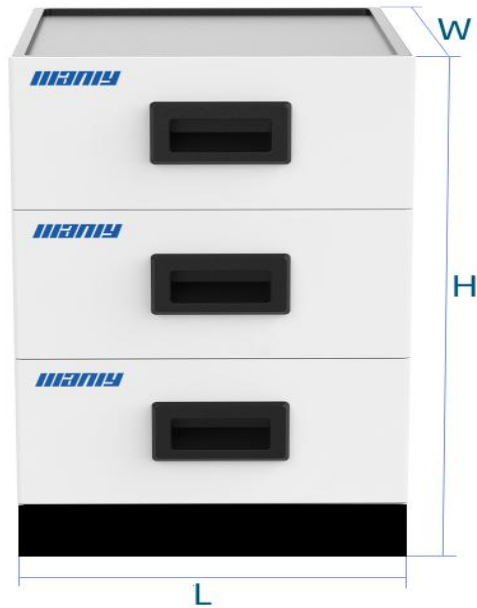


6. BMS parameter

Function	Item	Parameter	Range value	Remark
Battery voltage alarm	Overcharge alarm voltage	56.8V	±300mV	
	Overdischarge alarm voltage	46.4V	±300mV	
Battery overcharge protection	Overcharge protection voltage	58.4V	±300mV	
	Overcharge protection delay	1S	500-3000ms	
	Overcharge recovery voltage	54.0V	±300mV	
Battery discharge protection	Overdischarge protection voltage	43.2V	±300mV	
	Overdischarge protection delay	1S	500-3000ms	
	Overdischarge recovery voltage	47.2V	±300mV	
Charging overcurrent alarm	Charging alarm current	105A	±2A	
Charging overcurrent protection	Charging protection current	110A	±2A	Adjustable
	Charging overcurrent delay	5S	±2S	
Discharge overcurrent alarm	Discharge alarm current	110A	±2A	
Discharge overcurrent protection	Discharge protection current	125A	±2A	Adjustable
	Discharge overcurrent delay	10S	±2S	

7. Dimensional structure

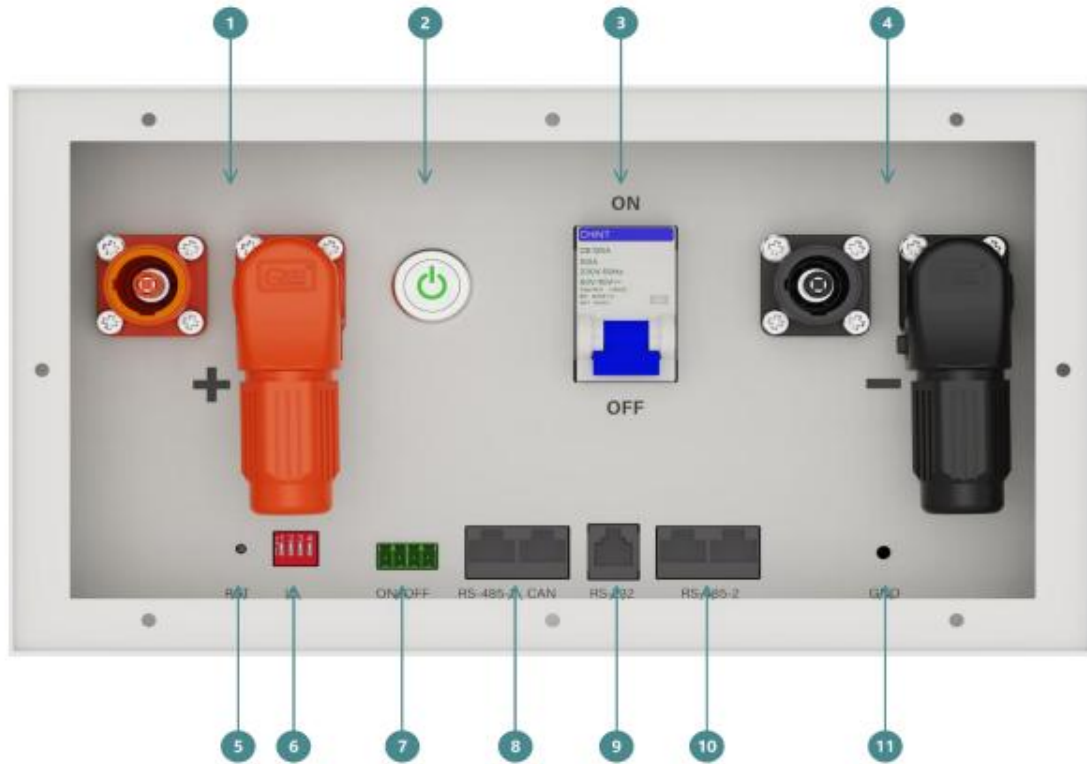
Size:696(L)*506(W)*700(H)mm



For reference only , please regards the real products as the standard.



8. Panel Definition



1	P+	Input/output positive electrode interface.
2	Weak current switch	BMS switch
3	Circuit breaker	Positive pole power switch
4	P-	Input/output negative electrode interface.
5	Reset switch	Reset button switch (hidden), long press for 3 seconds to take effect.
6	DIP switch	When conducting multi machine parallel communication operations, it is necessary to first configure the dialing address
7	Dry contact interface	Dry contact interface
8	RS482-1/CAN	Upper computer communication debugging interface and inverter communication interface
9	RS232	Upper computer communication debugging interface
10	RS485-2	Multi machine parallel communication interface
11	GND	Grounding interface



9. Instructions for use

To ensure the normal use and service life of the battery, please pay attention to the following matters:

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.
6. The discharge current shall not exceed the maximum discharge current specified in the specifications.
7. During the discharge process, the battery must be discharged within the ambient temperature range specified in the specifications.
8. 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.

10. warning

To ensure the safe use of the battery pack, please pay attention to the following 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. These environments may have an impact on the safety protection devices of battery packs, leading to safety hazards.
13. 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.