Product specification

Product model: CMB Energy CESS100Q

Version： A0

Date： 2024/12/19

CMB Energy Technology Co.,Ltd.

Foreword

Overview

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

This specification is compiled with reference to industry standards, national specifications and relevant technical requirements, and comprehensively stipulates the core technology of the product, component selection, system performance, safety performance, control and monitoring, etc. At the same time, this specification also provides requirements for delivery acceptance, maintenance and after-sales service to ensure product quality and reliability.

During the preparation of this specification, we have listened to the opinions and suggestions of suppliers, engineers and customers, and strive to make the content of the specification reasonable and feasible, and as consistent as possible with the 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 conditions.

CMB Energy CESS100Q product specification

Draft/Date	Review/Date	Approval/Date
Ye 2024/8/19	Guo 2024/8/19	Yin 2024/8/19

Revision history:

Date	Revision	Revision details	Revised by
2024/8/19	A0	Initial Release	Ye

Table of contents

1、Product description

1.1 Product Name：

CMB Energy CESS100Q household energy storage power supply (the document is hereinafter referred to as "this power supply")

1.2 Product Description：

This power supply adopts the car-grade lithium iron phosphate square battery as the main energy storage component, which has excellent battery performance and excellent consistency, and has a long cycle life, which can better meet the needs of users. The power shell is made of thickened steel plate with electrostatic spraying to ensure a solid and reliable battery structure. The built-in high-quality battery intelligent management system ensures the stability and reliability of the power supply. In addition, the power output port adopts a quick-plug connector, which is convenient for users to operate and has strong over-current capability. At the same time, it is equipped with Canbus/RS485 communication interface, which can be compatible with various mainstream brands of inverters in the market, providing greater compatibility and flexibility.

2、Product Specifications

NO	Items	Specification	Remark
1	**Nominal Voltage**	51.2V	
3	**Capacity**	200AH (10.24KWh)	
5	**Charge limit voltage**	58.4V	Max
6	**Working Voltage**	44.8 58.4V	
7	**Standard charging current**	40A	0.2C
8	**Maximum charging current**	100A	Based on the working current of BMS
9	**Discharge cut-off voltage**	44.8V	
10	**Standard discharge current**	40A	0.2C
11	**Maximum discharge current**	100A	Based on the working current of BMS
13	**Cell model**	LFP 3.2V 50Ah	
14	**Shell main material**	cold rolled steel	
17	**Dimensions**	850*625*185±3mm(without mounting angle)	
18	**Battery weight**	100kg±2kg	Installation configuration not included
19	**Range of working temperature**	Charge: 0C~45℃	At10%-90%RH
		Discharge: -20℃-60℃	

Note: For the above test items, the test conditions should comply with all the contents of the 3rd main item "Test Conditions". If any of the working conditions of the battery exceeds the scope of the 3rd main item, then the performance of the battery will have a certain deviation.

3. Test conditions and methods

3.1 Test product standards

3.1.1 The test should use a new battery pack delivered within 15 days, and it has not been charged and discharged more than 5 times.

3.1.2 The test should be carried out under the environmental conditions specified in 3.2.

3.2 Test method standards

NO	Project	Test Methods
3.2.1	standard charge	Constant current charging: Initially use a constant current of 0.5C to charge to the set voltage. Constant voltage charging: After reaching the charging voltage, switch to constant voltage charging mode. Reduced current: In constant voltage mode, the current is gradually reduced to 0.01C.
3.2.2	standard discharge	Constant current discharge: Discharge with a constant current of 0.5C until the discharge cut-off voltage is reached.
3.2.3	charge and discharge cycle	Charging stage: According to the requirements of item 3.3.1, charge to full charge, and let it stand for 0.5-1 hour. Discharge stage: Discharge to the end according to the requirements of item 3.3.2, and stand still for 0.5-1 hour again. Repeated cycle: After completing one charge and discharge cycle, charge and discharge again, keeping a rest time of 0.5-1 hour between each cycle

Note: For the above test methods, the standards required in 3.1 and 3.2 must be met. The parameters such as charge and discharge current and voltage involved in the test method are subject to the second product specification parameter.

4、Interface performance

NO	Project	Performance description	
4.1	Parallel use	It supports a maximum of 15 battery packs for external parallel operation, which is mainly used for battery expansion and power increase.	
4.2	Communication function	External communication interface Can/RS485: mainly used for communication with the inverter, using a PC to read battery information; Internal communication interface RS485: used for communication of batteries in parallel, using a PC to read battery information.	
4.3	Adapt to the inverter	Canbus interface	Esma, Victor, Pylontech, Deye, Growatt, Shangke, Megareiner, GoodWe, Mercer, Pengcheng, Tuobao.
		RS485 interface	Pylontech, Deye, Growatt, Shangke, Riyueyuan, Shuori, Sanjing.

Remarks: When the batteries are used 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、Electrical Parameters

Function	Effectiveness	Project	Typical value	Range value	Remark
Overall voltage warning	turn on	Overcharge warning voltage	56.8V	±300mV	
		Over-discharge warning voltage	46.4V	±300mV	
Overall overcharge protection	turn on	Overcharge protection voltage	58.4V	±300mV	
		Overcharge Protection Delay	1s	500-3000ms	
		Overcharge recovery voltage	54.00V	±300mV	
Overall over-discharge protection	turn on	Over-discharge protection voltage	43.2V	±300mV	
		Over-discharge protection delay	1s	500-3000ms	
		Over-discharge recovery voltage	47.2V	±300mV	
Charging over current alarm	turn on	Charging alarm current	105A	±2A	
Charging over current protection	turn on	charging protection current	110A	±2A	
		Charge Over current Delay	5S	±2s	
Discharge over current alarm	turn on	Discharge alarm current	110A	±2A	

Discharge over current protection	turn on	discharge protection current	125A	±2A	
		Discharge over current delay	10s	±2s	
Secondary over current protection	turn on	Secondary protection current	≥150A	±3A	
		Secondary over current delay	500ms	100-1500ms	
Charge current limit		Charge current limit	20A	10A or 20A optional	30mintry once
Discharge over current recovery		auto recovery delay	2mins	2 minutes from recovery	3 times locks

6. Product drawings

6.1 Product map

Dimensions

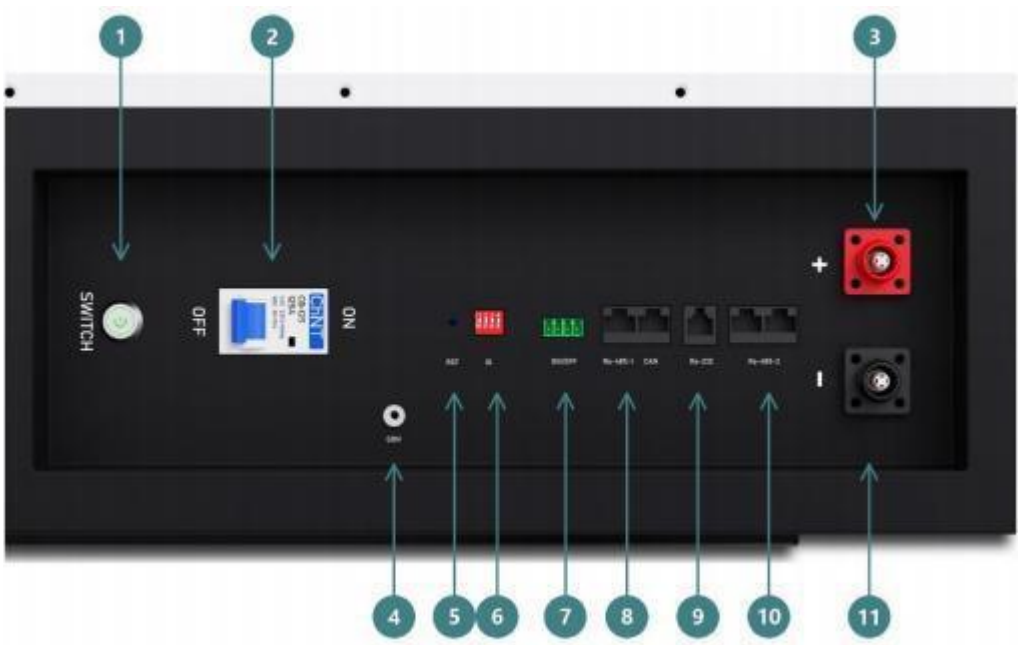
Front view

Isometric view

Side view

	Dimension	**L：850mm / W：625mm / H：185mm±3mm**
Noted	The above dimensions are the dimensions of the main body of the product, excluding accessories.	

6.2 Interface definition



11	P-	Negative connector, input and output negative interface 。
10	RS485-2	Multi-machine parallel communication interface
9	RS232	Host computer communication debugging interface
8	RS482-1/CAN	Host computer communication debugging interface and inverter communication interface
7	Dry contact interface	Dry contact interface
6	DIP switch	When performing multi-machine parallel communication operation, it is necessary to configure the dial address first.
5	Reset switch	Reset button switch (hidden), long press 3S to take effect.
4	GND	ground connection
3	P+	Positive connector, input and output positive interface
2	Breaker	Input and output power switch
1	Weak current switch	BMS Turn On/OFF
Noted		

6.3 Indicator light display status

6.3.1 Self-test mode

When the "Power On" button is pressed, the battery BMS starts to work, and the status of the indicator light is as follows:

a. The bottom LED starts to light up in red, and then lights up in turn from bottom to top until all LED light up in red at the same time, and then go out synchronously;

b. The bottom LED starts to turn on the yellow light, and then turns on the yellow light from bottom to top until all the LED turn on the yellow light at the same time, and then turn off synchronously;

c. The bottom LED starts to light green, and then turns green sequentially from bottom to top until all LED light green at the same time, and the self-test is completed and enters the working state.

6.3.2 Battery Indicator

Power%	Charge				Discharge			
100%	on	on	on	on	on	on	on	on
75%	on	on	Flash		on	on	on	
50%	on	on			on	on		
25%	on			OFF	on			

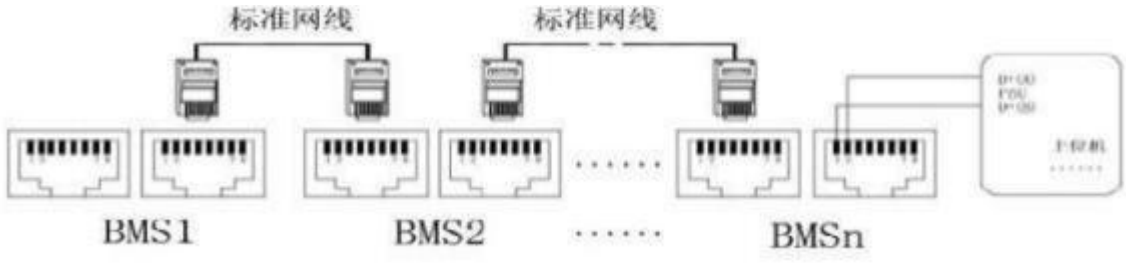
6.4 DIP switch

When it needs to be used in parallel, the unique address of the power supply can be set through the dial switch, so as to distinguish different power supplies. The detailed definition of the power supply address is asfollows:

address:	DIP switch position				Directions
	# 1	#2	#3	#4	
1	ON	OFF	OFF	OFF	(Slave) Pack1
2	OFF	ON	OFF	OFF	(Slave) Pack2
3	ON	ON	OFF	OFF	(Slave) Pack3
4	OFF	OFF	ON	OFF	(Slave) Pack4
5	ON	OFF	ON	OFF	(Slave) Pack5
6	OFF	ON	ON	OFF	(Slave) Pack6
7	ON	ON	ON	OFF	(Slave) Pack7
8	OFF	OFF	OFF	ON	(Slave) Pack8
9	ON	OFF	OFF	ON	(Slave) Pack9
10	OFF	ON	OFF	ON	(Slave) Pack10
11	ON	ON	OFF	ON	(Slave) Pack11
12	OFF	OFF	ON	ON	(Slave) Pack12
13	ON	OF	ON	ON	(Slave) Pack13

		F			
…	…	…	…	…	…
16	ON	ON	ON	ON	Set as hos t

6.5 Communication Interface



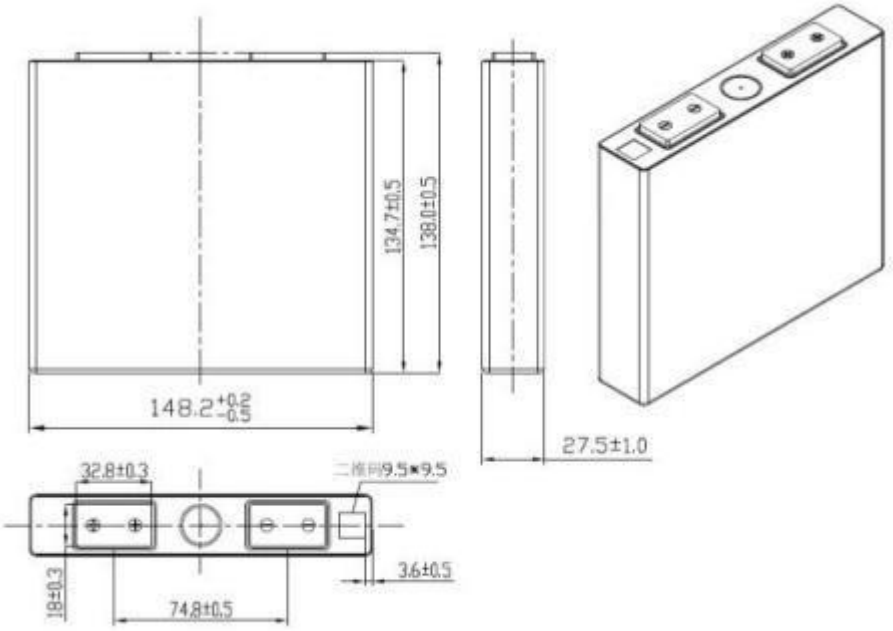
RS232--Adopt 6P6C vertical RJ11 socket	
RJ11pin	Definition
2	NC
3	TX（veneer）
4	RX（veneer）

RS485--Adopt 8P8C vertical RJ45 socket		CAN--Adopt 8P8C vertical RJ45 socket	
RJ45 pin	Definition	RJ45 pin	Definition
1.8	RS485-B1	9、10、11、14、16	NC
2.7	RS485-A1	12	CANL
3.6	GND	13	CANH
4.5	NC	15	GND

CAN and RS485 interface

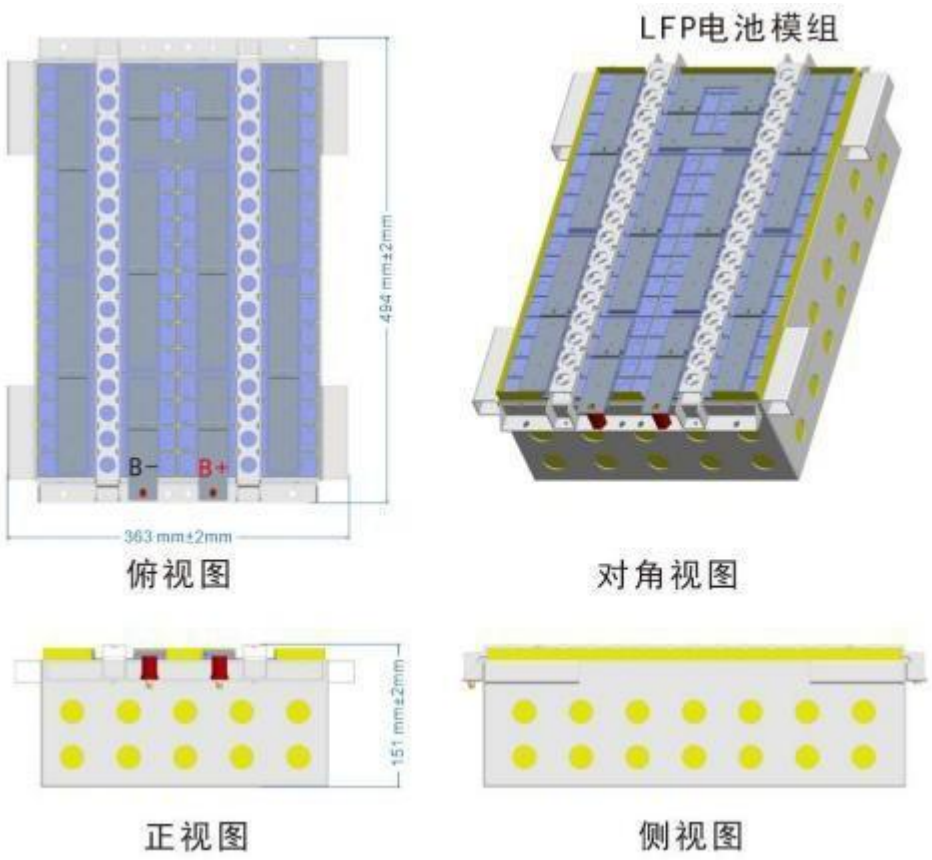
RS485--Adopt 8P8C vertical RJ45 socket		RS485--Adopt 8P8C vertical RJ45 socket	
RJ45 pin	Definition	RJ45 pin	Definition
1.8	RS485-B	9、16	RS485-B
2.7	RS485-A	10、15	RS485-A
3.6	GND	11、14	GND
4.5	NC	12、13	NC

7. Basic parameters ofthe battery cell



Nominal capacity	50AH
Nominal Voltage	3.2V
Maximum charging voltage	3.65±0.05V
Discharge cut-off voltage	2.0±0.05V
Standard charge and discharge current	0.5C（25A）
Maximum continuous charge and discharge current	1C
Battery cell weight	1.15±0.05kg
Cycle life	≥2000Weeks≥2000Cycles

8. Basic parameters of thebattery module



Model	DM0804
Cell type	LFP
Weight	40±2kg
Dimension	494*363*151±2mm
Available capacity	5120KWh
Grouping	8S4P
Connection method	Aluminum row laser connection
Extraction method	M6 insulating post

9、BMS basic parameters

9.1 Physical map of BMS

TOP

BOTTOM

9.2 BMS General parameters

Normal working voltage	36-60V
Normal charging voltage	42-60V
Continuous charging current	100A
Continuous discharge current	100A
Overall overcharge protection	55V（Can be set）
Overall over-discharge protection	40.5V（Can be set）
Overall Overcharge Recovery	51V（Can be set）
Overall Over discharge Recovery	46.5V（Can be set）
Product Size	Motherboard：300*100*40mm
	Interface board：160*45*20mm

10、Instructions for use

10.1 Charging requirements

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

The charging current must not exceed the maximum charging current specified in the specification. The charging voltage must not exceed the voltage range specified in the specification.

The design of the charger must meet the condition that the charging voltage does not exceed the maximum charging voltage of the battery.

During the charging process, the battery must be charged within the ambient temperature range specified in the specification.

Reverse charging is strictly prohibited. Please make sure to connect the positive and negative poles of the battery correctly to avoid reverse charging.

Compliance with these charging requirements ensures a safe charging process while protecting the life of the device and battery。

10.2 Discharge requirements

Discharge requirements are also regulations to ensure safe and efficient use of batteries. Please observe the following discharge requirements:

1. The discharge current must not exceed the maximum discharge current specified in the specification.
2. During the discharge process, the battery must be discharged within the ambient temperature range specified in the specification.
3. In order to prevent the battery from over-discharging due to self-consumption, it is recommended to charge it every three months. If the storage time exceeds half a year, it is recommended to charge and discharge once every six months to activate the battery.

Complying with these discharge requirements will ensure proper battery use and prolong battery life. Please pay attention to charge and discharge regularly to maintain the performance of the battery.

10.3 Storage requirements

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

1. The battery pack should be stored at room temperature (15~25°C) and humidity 60±20%RH.
2. The battery should be charged to 40% to 60% capacity before storage.
3. If you plan to store the battery for more than 30 days, you should adjust the state-of-charge (SOC) of the battery to about 50%. After three months of storage, a charge and discharge should be performed to readjust the SOC to 50%.
4. If the battery is stored with 50% SOC for more than 6 months without charge and discharge maintenance, it may cause about 5% irrecoverable capacity loss. If the battery is stored with 50% SOC for more than 9 months without charge and discharge maintenance, it may cause capacity loss or other defects to the battery, and we will not be responsible for the warranty at this time.

Adhering to these storage requirements preserves the performance and life of the battery and ensures that it will function properly when it is needed. Please pay attention to regular charge and discharge maintenance to maintain the state of the battery.

10.4 Shipment with power

The shipping charge refers to the charging state that the battery should have when it is transported. According to different transportation methods, the requirements for the amount of charge for shipment are as follows:

1. The electrical charge required for air transportation is within the range of 20%~30% SOC (State of Charge).
2. The charging capacity of ocean transportation or land transportation is required to be within the range of 40%~60% SOC.

Complying with these requirements ensures the safety of batteries during transportation and reduces potential risks. When arranging the transportation of the battery, please ensure that the charging capacity of the battery is within an appropriate range according to the transportation method.

11、Warning

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

1. It is forbidden to disassemble or change the external structure of the battery. Do not disassemble the battery or change its external structure by yourself.
2. Charging uses a dedicated lithium-ion battery charger. Make sure to choose a charger that is suitable and meets the specifications of the battery for charging.
3. It is forbidden to use the battery pack with the positive and negative poles reversed. Correct wiring, make sure the positive and negative terminals of the battery are connected correctly.
4. Do not connect the battery pack directly to a power outlet. Avoid connecting the battery pack directly to an electrical outlet.

5. It is forbidden to directly short-circuit the positive and negative terminals of the battery pack with metal objects. prevent short circuit conditions from occurring.
6. It is forbidden to transport and store batteries together with metal objects. Avoid contact between the battery and metal objects to prevent potential danger.
7. Do not knock, throw or step on the battery pack. Prevent physical damage to the battery pack.
8. It is forbidden to hit the battery pack with sharp parts, and it is forbidden to pierce the battery pack. Avoid damage to the battery pack.
9. Do not immerse the battery pack in seawater or water. Keep the battery out of contact with water to prevent a hazardous situation.
10. It is forbidden to use the battery pack in a high temperature environment, such as a fire source, a heater, strong sunlight, a hot car, etc. Avoid the impact of high temperature environment on the battery pack.
11. Direct soldering of battery packs or cells is prohibited. Do not perform direct soldering operations on the battery pack.
12. It is forbidden to use the battery pack in the environment of strong static electricity and strong magnetic field. These environments may affect the safety protection device of the battery pack, resulting in potential safety hazards.
13. When the battery is short-circuited, bumped or dropped, the battery should be marked and isolated immediately. Do not continue to use the battery even if it appears to be functioning normally. The problematic battery should be properly disposed of.
Please be sure to abide by the above usage rules and precautions to ensure the safe use of the battery pack and prevent potential dangers.

12、Notes

1. Please make sure that the voltage and current generated by the load do not exceed the reverse withstand voltage and current withstand value of the BMS (Battery Management System), so as not to damage the BMS board.
2. If the battery leaks, do not rub your eyes with your hands, rinse them with water immediately and seek medical treatment to avoid eye injuries.
3. If there are abnormalities during battery use or storage, such as odor, heat, discoloration, deformation, or abnormalities during charging, please stop using the battery 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. Discarded batteries should wrap electrodes with insulating paper to prevent dangerous situations such as short circuit, smoke or fire.
6. Please observe the above precautions to ensure safe use of the battery. If you encounter problems or abnormal situations, please take appropriate measures in time or consult a professional.

13、Warranty

According to company policy, batteries have a maximum shelf life of 4 years from the date of shipment. If it is confirmed by our after-sales technicians that the product failure is caused by its own quality problems, not caused by user abuse, wrong use, self-dismantling, intentional damage or other force majeure external factors, our company will be responsible for the product. warranty. If the evaluation reveals that the battery is defective beyond repair, we will provide the customer with a new replacement battery.
Therefore, if the battery you purchased has its own quality problems within the warranty period and is confirmed by the after-sales technicians, we will provide you with warranty services. Please provide the corresponding proof of purchase and detailed problem description, and our after-sales team will assist you in evaluation and solution.
The following are the warranty details:

1. The complete power supply:
The warranty period is 3 years, and the host has functional problems and cannot be used normally. If the machine cannot be turned on or off, charging or discharging fails, or the display
The screen does not light up, the indicator light does not light up, etc.

2. Batteries:
The warranty period is 3 years, and there are severe bulges, liquid leakage from the shell, falling off of the connecting piece, and rapid capacity decay. 3. Consumable parts:
The warranty period is 2 years, and the input and output ports, switches, buttons and other parts that are easy to wear and tear.

4. Accessories:
The warranty period is 1 year, and accessories such as positive and negative power cables, communication data cables, and mounting screws are included.

5. Packaging:
Packages such as packing boxes and pearl cotton are not covered by the warranty.

If you have special requirements for the purchased product that exceed our warranty policy, we recommend negotiating with our sales representatives at the time of purchase, and separately entering into a special warranty service agreement applicable to the product. We will wholeheartedly provide you with solutions to meet your special needs, and provide you with corresponding warranty services according to the content of the agreement. Please contact our sales representative to discuss and negotiate your special warranty needs in detail.

14、Others

1. Please read the product manual carefully before using the battery, and follow the instructions in the manual. Improper use may cause battery heating, cracking, fire, damage or capacity decline, and may even cause personal property damage.
2. If the customer intends to use the battery beyond the scope specified in the document or under special conditions of use, 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 is not responsible for any loss or accident caused by using this product under conditions beyond the scope specified in the document.
4. Unless both parties reach an agreement, matters not mentioned in this specification shall not have legal effect.
5. Our company has the right to upgrade and adjust the performance or specification parameters of the product without prior notice to the customer.