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BPE-P0516S 产品技术规格书

BPE-P0516S Product Technical Specification



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1. 安全说明 Safety introduction

对设备进行任何操作前请阅读安全须知。本手册中所提及的安全预防措施并不代表所应遵守的有安全事项，只作为所有安全注意事项的补充。在安装、操作、维护设备时，应遵守当地安全法规和只有经过培训的专业人员才能安装、操作和维护设备，本公司不承担任何因违反通用安全操作要求反设计、生产和使用设备安全标准而造成损失的责任。安装维护人员必须具备高压和交流电源操作技力。在安装、操作、维护设备时，不得穿戴任何导电物体，如手表、手链、手镯和戒指等，并防止水分进入设备。

Read the safety instructions before you operate the device。The safety precautions mentioned in this manual do not represent all the safety precautions to be followed,but only as a supplement to all the safety precautions。When installing, operating, and maintaining devices, comply with local safety laws and regulations。Only trained professionals can install, operate and maintain the equipment,SMARTKEY will not be liable for any loss caused by violation of general safe operation requirements or violation of safety standards for design,production and use of the equipment.The installation and maintenance personnel must be skilled in operating high-voltage and AC power supplies. When installing, operating, and maintaining the device, do not wear any conductive objects, such as watches, bracelets, bracelets, and rings, and prevent moisture from entering the device.



高压危险 High voltage hazard

高压电源为设备的运行提供电力，直接接触或通过潮湿物体间接接触高压电源，会带来致命危险。
The high-voltage power supply provides power for the device operation.Direct or indirect contact with the high-voltage power supply through damp objects may result in fatal danger.



使用专用工具 Use special tools

工作在高电压和交流电源时，一定要使用专用工具代替个人工具。
Always use special tools instead of personal tools when working with high voltage and AC power.



防静电 Anti-static

人体所产生的静电会损坏保护板上的静电敏感元器件，在触摸插件、电路板或芯片之前，要确保正确的防静电措施。
The static electricity generated by the human body may damage the electrostatic sensitive components on the circuit board.Therefore,take proper ESD preventive measures before touching plug-ins,circuit board,or chip.

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	操作时断开电源 Disconnect the power supply during operation
在操作电源时，必须先切断电源，禁止带电操作。 When operating the power supply,cut off the power supply first.Do not operate with the power on。	
	直流短路危险 DC short circuit hazard
电力系统提供直流稳压电源，直流短路会损坏设备并引起致命的危险。 The power system provides DC regulated power supply.A DC short circuit may damage the device and cause fatal hazards.	

2. 产品介绍 Product introduction

本产品为本公司设计、制造的磷酸铁锂电池组（含 BMS）。它由 16 串电芯组成，电芯的配组采用智能分选，准确可靠；BMS 用专业的保护板测试系统在上线前进行全面的检测，确保在使用过程中 BMS 对电池组实现全面有效的保护。本产品具有能量密度高，长寿命，安全可靠，重量轻，使用温度范围宽等特性，是您值得信赖的绿色环保产品。

This product is the lithium iron phosphate battery pack (including BMS) designed and manufactured by our company.It is composed of 16 battery cells, the battery group using intelligent sorting, accurate and reliable;BMS uses a professional protection panel test system to conduct a comprehensive test before going online to ensure that BMS can achieve comprehensive and effective protection of the battery pack during use.This product has high energy density, long life, safe and reliable, light weight, wide temperature range and other characteristics, is your reliable green environmental protection products.

1) 电池充电时 When the battery is charged

◆6 个容量指示灯（CAPACITY）会根据当前电池容量显示；

The six capacity indicators are displayed based on the current battery capacity;

◆运行指示灯（RUN）每隔大约 1S 时间闪烁一次；

The RUN indicator blinks every 1 second;

◆当电池 6 个容量指示灯状态为常亮。RUN 灯灭时，电池充满。

The six capacity indicators of the battery are steady on. When the RUN indicator is off,the battery is fully charged。

2) 电池放电时 Battery discharge

◆灯常亮；

The RUN normally on lamp RUN;

◆6 个容量指示灯（CAPACITY)会根据电池放电剩余容量显示；

The six capacity indicators display the remaining capacity of battery discharge;

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想的更多 做得更好 Think more,do better

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◆ 当电池放电至保护电压时，进入保护状态。电池所有指示灯将全部灭。
When the battery is discharged to the protection voltage, it enters the protection state. All indicators of the battery are off.

3) 电池告警 The battery warning

当电池出现问题故障时，ALM 灯为红色显示，电池故障告警提示。
When a battery fault occurs, the ALM indicator is red, indicating a battery fault alarm.

4) ADS 拨码 ADS Dial the code

拨码开关位置在保护板插口的左边,形状如下图:
The DIP switch is on the left of the protection board jack. The shape is shown in the following figure:



拨码开关在作用是用来控制保护板的地址。拨码控制是用二进制方式控制地址，上图中 1 表示最低位，4 表示最高位。每位拨到上面表示 1，拨到下面表示 0。四位二进制可以表示 0、1、2-----、14、15，一共 16 个地址。

The DIP switch is used to control the address of the protection board。Dip control is used to control the address in binary mode. In the figure above, 1 represents the lowest bit and 4 the highest bit. Each dial above means 1, and each dial below means 0。The four-bit binary can represent 0, 1, 2-----, 14, 15, a total of 16 addresses。

- ◆ 如上图所示，表示 1—4 位都是 0，表示地址是 0；
As shown in the figure above, digits 1-4 are 0, indicating that the address is 0;
- ◆ 如果把 3 拨到上面，地址是 $2^2=4$ ；
If I dial 3 up, the address is $2^2=4$;
- ◆ 如果把 3 和 4 都拨到上面，二进制是 $2^2+2^3=4+8=12$ ；
If you put both 3 and 4 up here, the binary is $2^2+2^3=4+8=12$;
- ◆ 如果要把保护板地址设置成 3，需要将 1 和 2 拨到上面，而不是将 3 拨到上面。
If you want to set the IP address of the protection board to 3, you need to dial 1 and 2 instead of 3.

5) RS232 监控端口 RS232 monitoring port

电池系统上传数据时采用 RS232 串口通讯方式，通过 RS232 串口可以对电池系统进行后台集中监控，将电池系统工作状态和告警信息等信息传到远端监控中心，实现远程监控。
The battery system uses RS232 serial port communication mode when uploading data. Through RS232 port, the battery system can be monitored in the background in a centralized manner, and the working status and alarm information of the battery system can be transmitted to the remote monitoring center.

6) RS485 通讯端口 RS485 communication port

RS485 级联通讯接口。系统级联时，数据传输采用 RS485 串口通讯方式。级联后的 Pack 系统内部使用 RS485 通讯方式，上位机系统对各个 Slave Pack 数据的获取都是通过 Master Pack 来实现的。
RS485 level communication interface. During system cascading, data is transmitted through the RS48 port. The Pack system uses RS485 for communication. The system obtains Slave Pack data through the Master Pack.

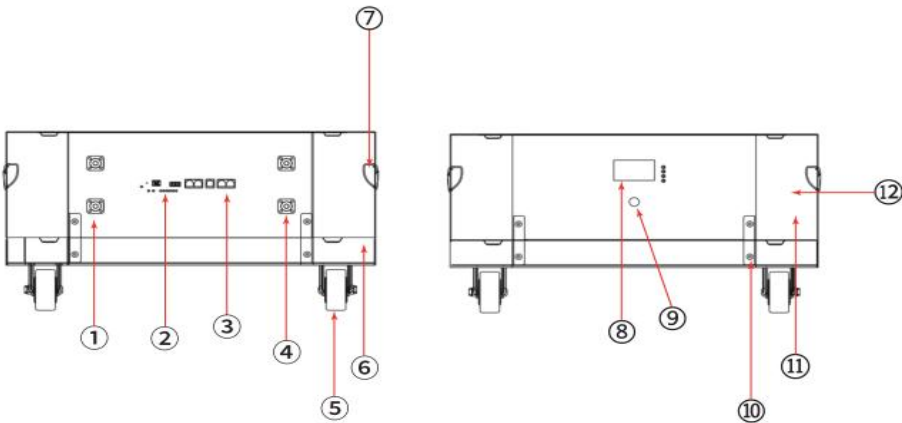
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- 7) FUSE
- 输出、输入保险，当电池发生短路或受到大电流冲击时，FUSE 保险熔断，有效保护电池组安全。FUSE 可直接插拔进行更换。
- Output and input insurance: When the battery is short-circuited or is impacted by a large current, FUSE insurance is used to effectively protect the battery pack 。 FUSE can be directly inserted and removed for replacement.
- 8) RST 复位键 RST reset button
- RST：表示复位，在系统出现异常时，可以使用此键对系统进行复位，恢复系统的正常运行。
- RST：Reset indicates the reset key. If the system is abnormal, you can use this key to reset the system.

RST 复位键手动操作说明 RST resetkey manual operation instructions	开机 boot	BMS 在关机状态，按键 1S 开机 BMS In the shutdown state, press the button for 1S to power on.
	关机 OFF	BMS 非备电状态，按键 3S 关机 BMS No backup power, press 3S to shut down.
	复位 reset	BMS 非备电状态，按键 10S 直至所有 LED 点亮复位 BMS In the standby state, press the button for 10S until all led light up and reset.

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3. 功能外观 Functional appearance



①	正极防呆接插端子	⑦	箱体拉手
②	电量显示	⑧	LED显示屏
③	RS485/CAN	⑨	开关
④	负极防呆接插端子	⑩	连接固定块
⑤	底座轮子	⑪	白色箱体
⑥	底座	⑫	定位手

备注：为了保持最佳且长久的工作性能，建议每年进行两次以下项目检查。

Note: To maintain optimal and long-lasting performance, it is recommended to conduct the following project inspections twice a year.

1. 确认周围的气流不会被阻挡，清除散热孔上的任何污垢和碎屑。
1. Confirm that the surrounding airflow is not obstructed and remove any dirt and debris from the cooling holes.
2. 检查所有裸露的导线是否老化、破损，必要时进行更换或维修。
2. Check all exposed wires for aging or damage, and replace or repair as necessary.
3. 如果长期不使用建议每隔三个月充电一次。
3. If not used for a long time, it is recommended to charge it every three months.

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4. 技术规格 Technical specifications

4.1 电芯参数 Parameters of cell

电芯型号 Batteries models	CV04-106Ah
标称电压 Nominal voltage	3.2V
标称容量 Capacity	106AH
电芯内阻 Internal resistance of cell	≤0.5mΩ
配组标准 Combination Standard	A、容量 Capacity Difference: ≤2% B、内阻 Resistance: 0.2mΩ C、荷电保持能力 Current-maintaining Ability: ≥90% D、电压 Voltage : 电压配组 ≤5mV

4.2 电池组参数 Parameters of battery pack

电芯连接方式 Cell connection mode	16S1P
标称电压 Nominal voltage	51.2V
电池容量 Battery capacity	5120Wh
充电截止电压 Voltage at end of charge	58.4V
放电终止电压 Voltage at end of Discharge	43.2V
标准放电电流 Standard discharge current	50A
最大持续放电电流 Max continuous discharge current	100A
标准充电电流 Standard charge current	50A
最大充电电流 Maximum charge current	100A
自放电率 Self-discharge	≤4%/月 month
工作环境 work environment	温度 temperature: -20℃ ~ + 60℃; 湿度 humidity: 10~85%; 海拔 At an altitude of: ≤4000m
电池重量 Net Weight	48±1KG
外形尺寸(mm) 长×宽×高 Dimensions (mm) Length×width×height	554*460*215mm

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4.3 保护板性能参数 Performance of protection board

过充电压保护	Overcharge protection	3.65V±0.05V@1cell
过充解除电压	Overcharge relief voltage	3.38V±0.05V@1cell
过放电压保护	Over discharge protection	2.55V±0.05V@1cell
过放解除电压	Over discharge voltage	2.95V±0.05V@1cell
电池充饱电压	Battery charge voltage	58.4V±0.2V
输出过流保护	Output over current protection	110A
主回路电阻	Main circuit resistance	10mΩ
短路保护	Short circuit protection	OK
休眠电流	Dormancy current	<1mA

4.4 其他参数 Other parameters

放电高温保护	Discharge high temperature protection	65°C
放电高温解除	Discharge high temperature relief	60°C
充电高温保护	High temperature protection during charging	55°C
充电高温解除	High charging temperature relief	50°C
放电低温保护	Discharge low temperature protection	-20°C
放电低温解除	Discharge low temperature release	-15°C
充电低温保护	Charging low temperature protection	0°C
充电低温解除	Charging low temperature release	5°C
工作温度	Working temperature	-20°C-60°C
工作湿度	Working humidity	10%-85%
存储温度	Storage temperature	-20°C-35°C
存储湿度	Storage humidity	10%-60%

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4.5 LED 指示说明 LED indicator instructions

表 1 LED 工作状态指示

状态	正常/告警/保护	ON/ OFF	RUN	ALM	电量指示 LED						说明
					L6	L5	L4	L3	L2	L1	
关机	休眠	灭	灭	灭	灭	灭	灭	灭	灭	灭	全灭
待机	正常	常亮	闪1	灭	依据电量指示						待机状态
	告警	常亮	闪1	闪3							模块低压
充电	正常	常亮	常亮	灭	依据电量指示 (电量指示最高 LED 闪2)						最高电量 LED 闪动 (闪2)，过 充告警时 ALM 不闪烁
	告警	常亮	常亮	闪3							
	过充保护	常亮	常亮	灭	常亮	常亮	常亮	常亮	常亮	常亮	若无市电, 指示灯转为待机状态
	温度、过流、失效 保护	常亮	灭	常亮	灭	灭	灭	灭	灭	灭	停止充电
放电	正常	常亮	闪3	灭	依据电量指示						
	告警	常亮	闪3	闪3							
	欠压保护	常亮	灭	灭	灭	灭	灭	灭	灭	灭	停止放电
	温度、过流、短路、 反接、失效保护	常亮	灭	常亮	灭	灭	灭	灭	灭	灭	停止放电
失效		灭	灭	常亮	灭	灭	灭	灭	灭	灭	停止充、放电

表 2 容量指示说明

状态		充电						放电					
容量指示灯		L6	L5	L4	L3	L2	L1	L6	L5	L4	L3	L2	L1
电量 (%)	0%~17%	灭	灭	灭	灭	灭	闪2	灭	灭	灭	灭	灭	常亮
	18%~33%	灭	灭	灭	灭	闪2	常亮	灭	灭	灭	灭	常亮	常亮
	34%~50%	灭	灭	灭	闪2	常亮	常亮	灭	灭	灭	常亮	常亮	常亮
	51%~66%	灭	灭	闪2	常亮	常亮	常亮	灭	灭	常亮	常亮	常亮	常亮
	67%~83%	灭	闪2	常亮	常亮	常亮	常亮	灭	常亮	常亮	常亮	常亮	常亮
	84%~100%	闪2	常亮	常亮	常亮	常亮	常亮	常亮	常亮	常亮	常亮	常亮	常亮

表 3 LED 闪动说明

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闪动方式	亮	灭
闪1	0.25S	3.75S
闪2	0.5S	0.5S
闪3	0.5S	1.5S

备注： 可通过上位机使能LED指示灯，默认为使能。通过上位机使能LED指示灯，默认为使能。
Note: The LED indicator can be enabled by the computer, and it is enabled by default at the factory.

4.6 屏幕与按键 Screen and Key

4.6.1 显示效果图



4.6.2 按键说明 Key Description

- SW1----MENU, SW2----ENTER, SW4----DOWN, SW5----ESC。
SW1-- MENU, SW2-- ENTER, SW4-- DOWN, SW5-- ESC.
- 每项都以“》”或“--”作为开头，其中“》”表示当前光标的位置，按 DOWN 键可向下移动光标位置；以“》”结束的项目，表示该项目有未显示的内容，按 ENTER 键可进入相应的页面。
Each item starts with "" or "--", where "" represents the current position of the cursor, and pressing the Down key can move the cursor position downwards; A project that ends with "" indicates that there is content that has not been displayed. Press the Enter key to enter the corresponding page.
- 按 ESC 键可返回上一级目录；在任何位置，按 MENU 键可返回主菜单页面。
Press ESC to return to the previous level directory; At any location, press the MENU key to return to the main menu page.
- 在休眠状态下，按任意按键，可激活显示屏。
In sleep mode, press any button to activate the display screen.

4.6.3 休眠与关机 Hibernation and shutdown

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在正常运行状态下，无按键操作 1 分钟以后，系统将进入休眠/关机状态。在关机/休眠状态下，操作任意一按键，显示屏将会激活。

In normal operating mode, after 1 minute of no button operation, the system will enter sleep/shutdown mode. In shutdown/sleep mode, operating any button will activate the display screen.

5. 通信说明 Communication instructions

5.1 RS232 通讯 RS232 communication

BMS 可以通过 RS232 接口与上位机进行通讯，从而可通过上位机监控电池的各种信息，包括电池电压、电流、温度、状态及电池生产信息等，默认波特率为 9600bps。

BMS can communicate with the upper computer through the RS232 interface, allowing for monitoring of various battery information, including battery voltage, current, temperature, status, and production information. The default baud rate is 9600bps.

5.2 CAN 通讯 CAN communication

具有 CAN 通信接口，默认波特率 500K，此接口用于与逆变器通信，当此电池为主机时，可汇总从机数据与逆变器通信。

It has a CAN communication interface with a default baud rate of 500K. This interface is used for communication with the inverter. When the battery is the main unit, it can summarize slave data and communicate with the inverter.

5.3 独立 RS485 通讯 Independent RS485 communication

具有独立 RS485 接口，默认波特率为 9600bps，此接口用于与逆变器通信，当此电池为主机时，可汇总从机数据与逆变器通信。

It has an independent RS485 interface, with a default baud rate of 9600bps. This interface is used for communication with the inverter. When this battery is the host, it can summarize slave data and communicate with the inverter.

5.4 并机 RS485 通讯 Parallel RS485 communication

具有双 RS485 接口，可以查看 PACK 的信息，默认波特率为 9600bps。如需通过 RS485 与监控设备通信，监控设备作为主机，依据地址轮询数据，地址设置范围为 2~15。

It has dual RS485 interfaces and can view PACK information. The default baud rate is 9600bps. To communicate with the monitoring device through RS485, the monitoring device serves as the host and sets the address range from 2 to 15 based on address polling data.

5.5 拨码开关设置 Address setting

当 PACK 作并联使用时，可通过 BMS 上的拨码开关设置地址区分不同的 PACK，需避免地址设为相同，BMS 拨码开关的定义参照下表。

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When packs are used in parallel, you can set the addresses of different packs by using the dip switch on the BMS. Avoid setting the addresses to be the same. For the definition of the DIP switch, see the following table.

地址	拨码开关位置				说明
	1#	2#	3#	4#	
0	OFF	OFF	OFF	OFF	单机使用，无级联
1	ON	OFF	OFF	OFF	设置为Pack1（主）
2	OFF	ON	OFF	OFF	设置为Pack2
3	ON	ON	OFF	OFF	设置为Pack3
4	OFF	OFF	ON	OFF	设置为Pack4
5	ON	OFF	ON	OFF	设置为Pack5
6	OFF	ON	ON	OFF	设置为Pack6
7	ON	ON	ON	OFF	设置为Pack7
8	OFF	OFF	OFF	ON	设置为Pack8
9	ON	OFF	OFF	ON	设置为Pack9
10	OFF	ON	OFF	ON	设置为Pack10
11	ON	ON	OFF	ON	设置为Pack11
12	OFF	OFF	ON	ON	设置为Pack12
13	ON	OFF	ON	ON	设置为Pack13
14	OFF	ON	ON	ON	设置为Pack14
15	ON	ON	ON	ON	设置为Pack15

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6. 包装&运输&贮存 packaging&transportation&storage

6.1 包装 Packaging

磷酸铁锂电池组进行整体包装，以确保产品在搬运、运输、贮存中不受任何有害气体、化学污染、静电、潮湿和机械损伤。

The lithium iron phosphate battery pack is packaged as a whole to ensure that the products are protected from any harmful gas, chemical pollution, static electricity, moisture and mechanical damage during handling, transportation and storage.

6.2 运输 Transportation

电池搬运过程应注意以下方面：

Pay attention to the following aspects during battery handling:

(1) 应轻拿轻放，避免设备受剧烈震动；

should be handled with care to avoid severe vibration of the equipment;

(2) 禁止倒置、翻滚、摔、撞电池，避免破坏电池的外观；

Do not invert, roll, drop or bump the battery to avoid damaging the appearance of the battery;

(3) 电池应避免暴晒、雨淋，禁止直接将电池整体浸入水中；

The battery should avoid exposure to the sun and rain, and it is forbidden to directly submerge the battery into the water;

(4) 禁止正负极短路。

Do not short-circuit the positive and negative terminals.

6.3 贮存 Storage

(1) 电池组的外接端子处于绝缘防护状态；

The outer terminals of the battery string are insulated;

(2) 储存期超过 3 个月的电池组要相应进行充电，打开 BMS 电量指示灯亮，当电量指示灯亮两个及以上时：以 0.2C 充电 1 小时；当电量指示灯亮 1 个时：以 0.2C 充电 3 小时。

The battery pack with a storage period of more than 3 months shall be replenished accordingly. Turn on the BMS power indicator light, and when the power indicator light is two or more times, charge the battery at 0.2C for 1 hour; When the power indicator lights on 1: charge at 0.2C for 3 hours.

(3) 电池应存放在干燥、清洁、通风，无腐蚀气体的环境中，要远离火源，避免暴晒；

The battery should be stored in a dry, clean, ventilated, non-corrosive gas environment, away from fire, avoid exposure to the sun;

(4) 不要在超过 60 度的高温下长期储存或放置，否则会引起功能衰退、寿命减小。

Do not store or place at a high temperature of more than 60 degrees for a long time, otherwise it will cause

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functional decline and reduced life。

7. 使用规程及安全说明 Operating procedures and safety instructions

7.1 使用说明 Instructions

1、使用电池前，请仔细阅读规格书。

Please read the specification carefully before using the battery.

2、在使用过程中，应远离热源、高压，切勿摔打。

During use, keep away from heat source and high pressure, and do not make it fall.

3、切勿将电池正负极短路，切勿自己拆装电池，也勿让电池放在受潮处，以免发生危险。

Do not short circuit the positive and negative poles of the battery, do not disassemble the battery by yourself, and do not put the battery in the damp place, so as to avoid danger.

4、长期不用时，请将电池储存完好，让电池处于半荷电状态。请用不导电材料包裹电池，以避免金属直接接触电池，造成电池损坏，将电池保存阴凉干燥处。

When not in use for a long time, please store the battery in good condition and keep the battery in a half-charged state. Please wrap the battery with non-conductive material to avoid direct metal contact with the battery, causing damage to the battery. Keep the battery in a cool and dry place.

5、废弃电池请安全妥当处理，不要投入火中或水中。

Waste batteries should be handled safely and properly. Do not put them into fire or water.

6、如果将电池用于其他设备，请与供应商咨询，不得擅自将本电池包用于其他系统。

If the battery is used for other equipment, please consult with the supplier, and do not use the battery pack for other systems without authorization.

7.2 危险警告 Danger Warning

1、禁止拆装产品内部的电池

It is forbidden to disassemble the battery inside the product

电池内部具有保护机构和保护电路可以避免发生危险。不合适的拆装会损坏保护功能，将会造成让电池发热、冒烟、变形或燃烧。

The protection mechanism and protection circuit inside the battery can avoid danger. Improper disassembly and assembly will damage the protection function and cause the battery to heat, smoke, deform or burn.

2、禁止让产品内部的电池短路

Do not short circuit the battery inside the product

不要将电池的正负极用金属连接，也不要将电池组与金属片放在一起存储和移动。如果电池被短路，将会有超大电流流过，将会损坏保险丝。

Do not connect the positive and negative electrodes of the battery with metal, do not store and move the battery pack together with the metal sheet. If the battery is short circuited, there will be a large current flow, which will damage the fuse.

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3、严禁加热和焚烧产品内部的电池

It is strictly forbidden to heat and burn the battery inside the product

加热和焚烧电池将会造成电池隔离物的溶化、安全功能丧失或电解质燃烧，过热就会使电池发热、冒烟、变形或燃烧。

Heating and burning the battery will cause the dissolution of the battery insulator, loss of safety function or electrolyte burning. Overheating will cause the battery to heat, smoke, deform or burn.

4、避免在热源附近使用电池

Avoid using batteries near heat sources

不要在火源、烤炉附近或超过 80℃的环境中 使用电池，过热将会导致电池内部短路，使电池发热、冒烟、变形或燃烧。

Do not use the battery near the fire source, oven or in the environment over 80℃. Overheating will lead to internal short circuit of the battery, causing the battery to heat, smoke, deform or burn.

5、禁止浸泡产品使内部的电池被弄湿

Do not soak the product to wet the internal battery

不要弄湿电池，更不能将电池投入水中，否则会造成电池内部保护电路和功能丧失及发生不正常的化学反应，电池有可能发热、冒烟、变形或燃烧。

Do not wet the battery, and do not put the battery into water. Otherwise, the internal protection circuit and function of the battery will be lost and abnormal chemical reaction will occur. The battery may be heated, smoking, deformed or burned.

6、禁止带电拆机

No live dismantling

产品工作时，内部有高压，拆机前一定要先关机，确保所有的输出接口都没有电压。

When the product is working, there is high voltage inside. It must be shut down before dismantling to ensure that all output interfaces have no voltage.

7、禁止破坏电池

Do not damage the battery

禁止用金属凿入电池、锤打或摔打电池或其他方法破坏电池，否则会造成电池发热、冒烟、变形或燃烧，甚至会发生危险。

It is forbidden to chisel the battery with metal, hammer or drop the battery or damage the battery by other means, otherwise it will cause the battery to heat, smoke, deform or burn, and even cause danger.

8、禁止在产品内部的电池主体上直接焊接

Direct welding on the battery body inside the product is prohibited

过热将会造成电池隔离物的溶化、安全保护功能丧失，使电池发热、冒烟、变形或燃烧。

Overheating will cause the dissolution of the battery insulator and the loss of safety protection function, which will make the battery heat, smoke, deform or burn.

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9、不要直接触及漏液电池

Do not touch the leaking battery directly

渗漏的电解液会造成皮肤不适，万一电解液进入眼睛，尽快用清水冲洗，并迅速送医院处理。

Leakage of electrolyte will cause skin discomfort. In case of electrolyte entering eyes, rinse with water as soon as possible and send to hospital for treatment.

7.3 危险类型 Types of Hazards

客户知悉在电池使用和操作过程中存在以下潜在的危险：

The customer should be aware of the following potential hazards during battery use and operation:

1、操作者在操作时可能会受到化学品、电击或者电弧的伤害。尽管人体对遭受直流电与交流电的反应不同，但是高于 50V 的直流电压与交流电对人体的伤害都是比较严重的，因此客户必须在操作中采取保守的姿势以避免电流的伤害。

Operators may be injured by chemicals, electric shocks or electric arcs during operation. Although the human body responds differently to direct current and alternating current, DC voltage and alternating current higher than 50V are more serious to the human body. Therefore, customers must take a conservative posture during operation to avoid current damage.

2、存在来自电池中的电解液的化学风险。

There is a chemical risk from the electrolyte in the battery.

3、在操作电池和选择个人防护装备时，客户及其雇员必须考虑到以上潜在的风险,防止发生意外短路，造成电弧、爆炸或热失控。

When operating the battery and selecting personal protective equipment, the customer and its employees must take into account the above potential risks to prevent accidental short circuit and cause arc, explosion or heat out of control.

4、产品工作时，内部有高压，用户必须在操作中采取保守的行为以避免高压伤害。

When the product works, there is high pressure inside. The user must take conservative actions in operation to avoid high pressure injury.

8 其他 others

8.1 本公司保有对规格书修改和解释的权利。

Better Power reserve right to revise and interpret the specification;

8.2 未尽事宜由供求双方讨论决定。

Anything not mentioned in this specifications,customer and Better Power should discuss to get a solution;

8.3 对未按规格书操作（人为导致短路烧坏）所造成的意外，本公司不承担任何责任。

Better Power does not undertake any responsibility for the accidents caused by actions not matching With specifications(Man-made short circuit to burn out).