

东莞市浩博光电科技有限公司
Dongguan Hoppt Light Technology Co., Ltd.

锂离子电池规格书

Lithium-ion Rechargeable Battery Specification



电池型号 Battery Type: HB-51.2V100Ah-16S

客户名称 Customer Name: _____

客户确认: _____
Customer Confirmation

日期 Date: _____

核准 Approved	审核 Reviewed	制订 Prepared
黄奉安	王亮	林杰
Date:2021-01-04	Date:2021-01-04	Date:2021-01-04

地址: 广东省东莞市南城街道石鼓花园路8号1栋

网站: <http://www.hopptbattery.com>



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A0	2021-01-04	王亮	首次发行



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一、范围 Scope

本规格书描述东莞市浩博光电科技有限公司磷酸铁锂电池有关参考技术指标及要求。

This specification describes the requirements of the LiFePO₄ lithium-ion batteries Rechargeable Battery Pack supplied by Dongguan Hoppt Light Technology Co., Ltd.

二、产品描述 Description and Model

本产品是针对新型后备电源的要求开发研制的高科技产品，具有集成化、小型化、轻型化、智能化、标准化、环保化等特点，可广泛应用于室内分布站、一体化基站、边缘站、分布式供电、家庭储能等领域。

This product is a new type of backup power supply for the development of high-tech products, with integration, miniaturization, light, intelligent, standardized, environmental protection and other characteristics, can be widely used in indoor distribution stations, integrated base stations, marginal stations, distributed power supply and other fields.

本产品的制造标准参考 YDB032-2009《通信用后备式锂离子电池组》、YDT 2344.1-2011《通信用磷酸铁锂电池组 第1部分：集成式电池组》、YDT 1051-2010《通信局(站)电源系统总技术要求》、YDT 1363.3-2005《通信局(站)电源、空调及环境集中监控管理系统》的相关标准。

This product's manufacturing standard reference YDB032-2009 communication backup type lithium ion battery pack, YDT - 2011-2344.1 the communication lithium iron phosphate battery part 1: integrated battery "YDT, 1051-2010" communication board (stand) power system total technical requirements ", YDT - 2005-1363.3 the communication board (station) power supply, air conditioning and environment centralized monitoring management system "of the relevant standards.

高安全性能，所采用的锂电池以磷酸铁锂为正极材料，具有高安全性、高稳定性、高循环寿命、高比能量、高比功率、高低温性能优越、可大电流充放电等诸多优点，同时采用适用于通信要求的专用高性能电池管理系统（BMS），具有过充电、过放电、短路、过流（载）、过温、充电过流、总压保护、二次下电、均衡等多种保护功能，CAN/RS485 接口与上位机进行通讯来实现远程监控，可接入基站动力环境监控系统，采用智能防盗设计，保证了锂电池的使用寿命并减少了日常维护工作。

Adopted by the high safety performance, lithium battery cathode material for lithium iron phosphate, high safety, high stability, high cycle life, high specific energy, specific power, low temperature performance is superior, but large current charge and discharge, and many other advantages, at the same time, using suitable for communication demand special high performance battery management system (BMS), with the charge, over discharge, short circuit, over-current (load), temperature, flow, total pressure protection,

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charging under the secondary electricity, balanced and various protective functions, and provides CAN 、 RS485 communication interface and the upper machine to realize remote monitoring, can be connected to the base station power environmental monitoring systems, Intelligent software anti-theft design, Ensure the life of lithium battery and reduce the daily maintenance work.

标准设计，使用环境要求低（可在-20~60℃，湿度< 95%内正常工作），体积小，重量轻，安装方便，后期维护简单，可节约可观的前期投资及后期的维护费用。

Standard design, low operating environment requirements (can be in -20 ~ 60℃, humidity < 95% normal work), small size, light weight, easy installation, simple maintenance in the later stage, can save considerable upfront investment and maintenance costs in the later stage.

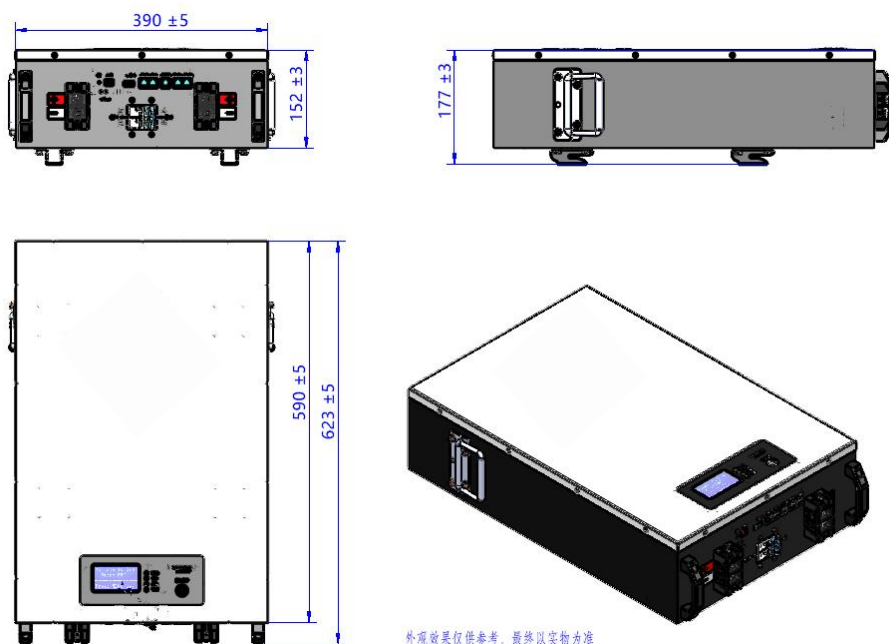
三、产品特点 Product features

1. 内部单体电池采用的正极材料为磷酸亚铁锂（LiFePO₄），该电池具有高安全性、高能量密度和优良循环性能；
1. The internal single battery adopts the anode material of lithium ferrous phosphate (LiFePO₄), which has high safety, high energy density and excellent cycling performance;
2. 电池组装配有高性能的电池管理系统BMS，BMS具备过放、过充、过流、温度过高和过低等保护功能，保证电池组的安全；
2. The battery pack is equipped with BMS, a high-performance battery management system, which has the protection functions of over discharge, over charge, over current, high temperature and low temperature to ensure the safety of the battery pack;
3. 充放电自动管理，监控单元自动测量电池的充放电电流并对电池进行浮充和均充管理；
3. Automatic charge and discharge management. The monitoring unit automatically measures the charge and discharge current of the battery and manages the floating charge and even charge of the battery;
4. 电池电压低于告警值时告警，电压过低时自动下电，以保护电池；
4. When the battery voltage is lower than the alarm value, it will alarm, and when the voltage is too low, it will automatically power down to protect the battery;
5. 电池组具有良好的电磁兼容性；
6. The battery pack has good electromagnetic compatibility;

四、电池组基本参数 Basic Characteristics

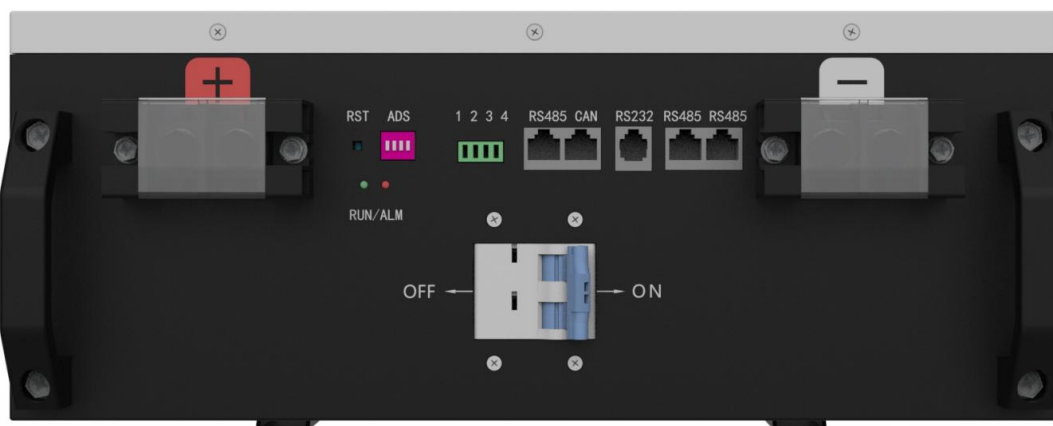
No.	项目 Item	规格 Specification
1.	额定容量 Nominal Capacity	100Ah
2.	瓦特小时 Watt Hour	5120Wh
3.	额定电压 Nominal Voltage	51.2V
4.	工作电压范围 Operating voltage range	40V~58.4VV
5.	标准充电 Standard charging method	50A
6.	最大持续充电电流 Maximum continuous charging current	100A
7.	标准放电 Standard discharging method	50A
8.	最大持续放电电流 Maximum continuous discharge current	100A
9.	循环寿命 Cycle Life	≥4000 cycles (0.5C charge , 0.5C discharge) 80%DOD; ±25°C
10.	工作温度 Operating Temperature	-20°C-60°C
11.	贮存温度 Storage Temperature	-20°C ~ 50°C
12.	通讯方式 communication mode	RS485、RS232、CAN
13.	出货电压 Shipment voltage	≥51.2V
14.	荷电保持能力与容量恢复能力 Charge retention and capacity recovery capability	电池标准充电后, 常温搁置 28d 或 55°C搁置 7d, 荷电保持率≥90%,容量恢复率≥90% Standard charge the battery, and then put aside at room temperature for 28d or 55 °C for 7d, Charge retention rate≥90%, Recovery rate of charge≥90
15.	重量 Weight	52kg
16.	尺寸 size	(W390×L590×D152mm) ±5mm
17.	设计寿命 designed life	10年year
18.	质保 guarantee period	3年year

五、产品外观及尺寸 Product appearance and size



外观效果仅供参考，最终以实物为准

Port drawings 接口示意图



六、环境适应性能 Environmental Characteristic

No.	项 目 Item	测 试 条 件 Testing Instruction	性能要求 Requirement
1	振动测试 Vibration Test	<p>电池满充电后，将电池安装在振动台上，在 X,Y,Z 三个垂直的方向进行实验，振动频率在 10Hz 和 55Hz 间以 1Hz/min 的速率变化，往复振动 30min。</p> <p>振动频率：10-30Hz 位移振幅：0.38mm</p> <p>振动频率：30-55Hz 位移振幅：0.19mm</p> <p>The battery will be vibrated 30 minutes in three mutually perpendicular directions and changing frequency between 10 to 55Hz. The rate of scanning frequency is from 10 Hz to 55Hz with the rate of 1Hz per min. Vibration frequency: 10-30Hz</p>	<p>电池外观应无明显的损伤，不能破裂、漏液、无冒烟或爆炸。</p> <p>电池电压 ≥ 51.2V</p> <p>The battery shall not rupture, smoke, explode or leak.</p> <p>Battery electric voltage ≥ 51.2V</p>

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		amplitude: 0.38mm vibration frequency: 30-55Hz: amplitude: 0.19mm	
2	恒温恒湿性能 Constant Temperature/ Humidity Test	电池满充电后, 将电池放入 40°C±2°C、相对湿度为 90%-95%的恒温恒湿箱中, 搁置 48h, 实验结束后, 将电池放在环境温度为 20°C±5°C的条件下搁置 2h, 目测电池外观。以 0.5C 的恒流放电至终止电压。Keep the battery at 40±2°C and 90%-95%RH for 48 hrs after complete charge. After the test, keep the battery at 20±5°C for 2 hrs. Discharge at 10A constant current discharge to the termination voltage.	电池外观应无明显的变形、锈蚀、冒烟或爆炸 电池放电容量≥80% Appearance of the battery shall not rust, smoke or explode. Discharge Capacity ≥ 80%
3	高温性能 High Temperature Performance Test	电池满充电后, 将电池放入 55°C±2°C的高温箱中恒温 2h, 然后以 0.5C 电流放电至截止电压, 实验结束后, 将电池放在环境温度为 20°C±2°C的条件下搁置 2h, 目测电池外观。Keep the battery at a hot oven with 55±2°C for 2 hrs, then measure the capacity with constant discharge current 0.5C to discharge protection point after complete charge. After the test, keep the battery at 20±5°C for 2 hrs.	电池外观应无生锈、冒烟或爆炸, 电池放电容量≥90% Appearance of the battery shall not rust, smoke or explode Discharge Capacity >90%
4	低温性能 Low Temperature Performance Test	电池满充电后, 将电池放入-10°C±2°C的低温箱中恒温 20h 后, 以 0.5C 电流放电截止电压。实验结束后, 将电池放在环境温度为 20°C±5°C的条件下搁置 2h, 目测电池外观。Keep the battery at -20±2°C for 16-24 hrs, then measure the capacity with constant discharge current 0.5C to discharge protection point after complete charge. After the test, keep the battery at 20±5°C for 2 hrs.	电池外观应无生锈、冒烟或爆炸, 电池放电容量≥55% Appearance of the battery shall not rust, smoke or explode Discharge Capacity >55%

七、安全特性 Safe Characteristic

注: 安全特性测试未安装电子保护线路 safety characteristics test no electronic protection circuit

序号 No.	项 目 Item	测 试 条 件 Testing Instruction	性能要求 Requirement
1	过充测试 Over-charge test	按照如下两种充电方式进行充电 (两者选一即可)。(1) 以 1C 电流充电 90min 或某一单体电池电压达到 5.0V (其中一个条件优先达到即停止试验)。(2) 以 3C 电流充电至某一单体电池电压达到 10.0V 即停止试验。Charge in accordance with the following two ways (Choosing one between the two). (1)Charge at 1C current for 90min or until voltage of some single battery reaches 5.0V (stop test when fulfills either condition). (2)Charge at 3C current until the voltage of some single battery reaches 10.0V, then stop the test.	不爆炸、不起火 The battery shall not explode or catch fire

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2	过放测试 Over-discharge test	蓄电池组充电。在 $20\pm 5^{\circ}\text{C}$ 条件下搁置 1h。然后在同一温度条件下，蓄电池以 $1/3\text{C}$ 电流放电，直至某一单体电池电压达到 0V Charge the battery. Place at $20\pm 5^{\circ}\text{C}$ for 1h, then discharge in $1/3\text{C}$ current at same temperature until some cell's voltage is 0V	不爆炸、不起火 The battery shall not explode or catch fire
3	短路测试 Short-circuiting Test	蓄电池组充电后，在 $20\pm 5^{\circ}\text{C}$ 条件下搁置 1h。将蓄电池经外部短路 10min，外部线路电阻应小于 $5\text{m}\Omega$ After charge batteries, place at $20\pm 5^{\circ}\text{C}$ for 1h. Short the battery for 10min, the external circuit resistance should be less than $5\text{m}\Omega$.	不爆炸、不起火 The battery shall not explode or catch fire

以上技术性能标准测试环境温度： $20\pm 5^{\circ}\text{C}$ ，相对湿度： $65\pm 20\%$ （除非另外要求），大气压力： $86\text{Kpa}-106\text{Kpa}$ ；
Above technical performance standard test environment temperature: $20\pm 5^{\circ}\text{C}$ ，
Relative humidity: $65 \pm 20\%$ (unless otherwise requested), Atmospheric pressure: $86\text{Kpa}-106\text{Kpa}$

八、包装方式 Packaging Method

运输过程装卸电池时请注意不要摔落，请勿超过8层堆积、翻转放置，保证正面朝上。
No fall down, no pile up over 8 layers, and keep face up.



九、储存条件 Storage conditions:

电池组需长期贮存时，请将电池组充电至60%左右的电量，放置于干燥、通风处，每3个月必须用充电器充电1.5小时。

When the battery pack to be long-term stored, charge the battery pack to about 60% capacity, store in dry and ventilated place, charge 1h for every 3 months.

电池组与充电器应贮存在清洁、干燥、通风处，应避免与腐蚀性物质接触，远离火源及热源。
The battery pack and charger should be stored in clean, dry and ventilated place, avoid contacting with corrosive materials and be away from fire and heat.

十、产品责任 Product Liability

* 本公司对违反本规格书规定操作而导致的意外不负任何责任；

We assume no responsibility for the accident of not operating in accordance with the specification.

* 如果规格书、原材料、生产过程或生产控制系统发生改变，改变的信息将会随质量和可靠性数据以书面形式通知客户。

Specifications, raw materials, production process or production control system is changed, the change will vary depending on the quality and reliability of data written notice to the customer.

十一、使用电池注意事项 Battery Handling Precautions

- 勿将电池组投入水中或将其浸湿！

Forbid to immerse battery in water or allow it to get wet!

- 禁止在火源或极热条件下给电池组充电！勿在热源（如火或加热器）附近使用或贮存电池组！如果电池泄漏或发出异味，应立即将其从接近明火处移开。第一次使用电池，需将电池充满电后再使用！

Don't charge, use and store battery near a heat source such as fire and heater! If the battery leaks or releases strange odor, pls remove it from place near fire place immediately. Fully charge the battery before first-time using.

- 勿将正负极接反！ Forbid to reverse the positive and negative pole!
- 勿将电池组投入火中或给电池组加热！

Forbid to throw the battery pack into fire or heat it!

- 禁止用导线或其他金属物体将电池组正负极短路！

Forbid to short-circuit battery with wire or other metal objects!

- 禁止用钉子或其他尖锐物体刺穿电池组壳体，禁止锤击或脚踏电池组！

Forbid to nail, knock or trample battery!

- 禁止以任何方式分解电池组和电池！

Forbid to disassemble the battery and battery pack in any way!

- 禁止将电池组置于微波炉或压力容器中！

Forbid to put the battery into microwave oven or pressure vessel!

- 如果电池组发出异味、发热、变形、变色或出现其他任何异常现象时不得使用；如果电池组正在使用或充电，应立即从用电器或充电器上取出并停止使用！

If the battery pack gives off odor, gets heat, deformation, discoloration or appears any abnormal phenomenon, stop using it; please remove the battery from electrical appliances and stop using it, when the battery is being used or charged!

- 不能使用处于极热环境中的电池组，如阳光直射或热天的车内。否则，电池组会过热，这样就会影响性能、缩短电池组的使用寿命！

Forbid to use battery pack in a very hot environment, such as under direct sunlight or in car on hot day. Otherwise, the battery pack will overheat, which will affect battery performance and shorten battery life!

- 如果电池漏液后电解液进入眼睛，不要擦，应立即用水冲洗，立即寻求医疗救助。如不及时处理，眼睛将会受到伤害！

If the battery leaks and electrolyte leakage enters into the eyes, do not rub, rinse with water immediately and seek immediate medical assistance. If not in time, eyes will be hurt!

- 环境温度会影响放电容量，环境温度超出标准环境时（ $25\pm 5^{\circ}\text{C}$ ），放电容量会有所降低！

Ambient temperature will affect the discharge capacity, if the ambient temperature is beyond the standard environment (25 ± 5), $^{\circ}\text{C}$ the discharge capacity will drop!

特别注意事项 Special Considerations:

- 电池组在充电过程中，如果出现异味、异常声响，请立即停止充电。

During charging, if there is odor and unusual noise, immediately stop charging.

- 电池组在放电过程中，如果出现异味、异常声响，请立即停止放电。

During discharging, if there is odor, unusual noise, immediately stop charging.

- 如果出现上述现象，请与厂家联系，请勿私自拆卸。

If there are above phenomenon, please contact the manufacturer, do not disassemble by yourself.