

磷酸铁锂电池组产品规格书
LiFePO4 BATTERY PACK SPECIFICATION

型号 model NO.: **ZM-P-200/4S**

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1 适用范围(Scope)

本规格书仅适用于泽木新能源科技有限公司所生产的锂离子电池组。

This product specification applies for Li-ion battery pack that produces by Zemu New Energy Technology Co., Ltd

2. 电池组常规规格标准(Nominal Specification)

Cell 电芯	规格型号 Model		N1-50Ah
	标称容量 Nominal Capacity		50Ah
	标称电压 Nominal Voltage		3.2V
	组合方式 Combination Method		4串4并
Pile Index 成品参数	标称容量 Nominal Capacity		200Ah
	标称电压 Nominal Voltage		12.8V
	最大充电电压 Charge Voltage Max.		14.4V±0.05V
	最小放电截止电压 End of discharging voltage Min.		8V±0.05V
	最大持续充电电流 Continue charging current Max.		200A
	最大持续放电电流 Continue discharging current Max.		200A
	电池重量 Weight		/
	外形尺寸 Dimension (L×W×H)		/
	适用温度 Operating Temperature		充电 Charge
放电 Discharge			-20°C~60°C;
BMS 管理系统	过充电检测电压 Over charge detection voltage		3.750±0.05V
	过充恢复电压 Release voltage for over-charging		3.600±0.08V
	过放电检测电压 Over discharge detection voltage		2.100±0.10V
	过放恢复电压 Release voltage for over-discharging		2.300±0.10V
	过流保护电流 Over-charge cut-off current		230A
	短路保护 Short-circuit protection		Yes
	过流\短路保护恢复条件 Condition for the recovery of over-current and short-circuit protection		断开负载自动恢复 Cut the circuit to automatic recovery
	均衡开启电压 Bleed Start voltage		/
	均衡电流 Bleed Current		/
均衡方式 Balance Mode		静态均衡	

4 电芯特性 (Cell characteristics)

4.1 测试条件(除特别规定) Testing Conditions (unless otherwise specified)

环境温度 Temperature: $25 \pm 2^\circ\text{C}$

相对湿度 Relative Humidity: 45%~75%

大气压 Atmospheric pressure: 86~106Kpa

标准充电 Standard Charge:

在 $25 \pm 2^\circ\text{C}$ 环境下, 以 0.5C 的电流恒流充电至 14.4V 后, 转为恒压 14.4V 充电, 至充电电流小于 0.05C 时, 停止充电。(Under $25 \pm 2^\circ\text{C}$, it can be charged to 14.8V with constant current of 0.5C, and then, charged continuously with constant voltage of 14.4V until the charged current is 0.05C.)

标准放电方式 Standard discharge method :

在 $25 \pm 2^\circ\text{C}$ 环境下, 以 0.5C 的电流恒流放电至 8V。(Under $25 \pm 2^\circ\text{C}$, it can be discharged to 8 V with 0.5C current.)

4.2 电性能 (Electrical Characteristics)

NO	项目(ITEM)	测试方法(Testing Instruction)	要求(Requirements)
1	初始容量 Rated Capacity	标准充电后搁置 30 分钟, 然后以标准放电方式放电, 搁置 30 分钟, 循环三次。 After standard charge, rest for 30 minutes, then discharge in standard discharge mode, rest for 30 minutes, cycle three times.	至少有一次容量 $\geq 200\text{Ah}$ At least one capacity $\geq 200\text{Ah}$
2	高、低温放电性能 High and low temperature Discharge performance	电池标准充电后, 将电池分别放入放电环境中搁置, 搁置时间分别为 -20°C 下 19.25h、 60°C 下 5h, 然后电池在放电环境温度下均以 0.5C 电流恒流放电。 After standard battery charging, the battery is placed in the discharge environment for 19.25h at -20°C and 5h at 60°C , respectively. Then the battery is discharged at 0.5C constant current at the discharge ambient temperature.	放电容量/初始容量 Discharge capacity/Original capacity: $-20^\circ\text{C} \geq 50\%$ $60^\circ\text{C} \geq 95\%$

3	循环寿命 Cycle Life	标准充电后搁置 10 分钟，然后标准放电，搁置 10 分钟，一直循环直到放电容量低于初始容量的 80% After standard charge, rest for 10 minutes, then standard discharge, rest for 10 minutes, cycle charge and discharge until the discharge capacity is lower than 80% of the initial capacity	Cycle NO. ≥ 1000 循环数 ≥ 1000
4	储存性能 Storage Characteristics	标准充电后，在 $25\pm 2^{\circ}\text{C}$ 下存储 28 天，再以标准放电方式进行放电 After standard charging, battery was stored at $25\pm 2^{\circ}\text{C}$ for 28 days, and then discharged in standard discharge mode	剩余容量/初始容量 $\geq 94\%$ residual capacity/Original discharge capacity $\geq 94\%$
		标准充电后，在 $55\pm 2^{\circ}\text{C}$ 下存储 7 天，再以标准放电方式进行放电 After standard charging, battery was stored at $55\pm 2^{\circ}\text{C}$ for 7 days, and then discharged in standard discharge mode	剩余容量/初始容量 $\geq 90\%$ residual capacity/Original discharge capacity $\geq 90\%$

4.3 环境和机械性能 (Environmental & Mechanical Characteristic)

NO	项目 (ITEM)	测试方法(Testing Instruction)	要求 (Requirements)
1	温度循环 temperature cycling testing	<p>标准充电后, 电池组在 $72\pm 2^{\circ}\text{C}$ 温度下存放 6 小时, 然后在温度 $40\pm 2^{\circ}\text{C}$ 存放 6 小时, 温度转换时间应小于 30 分钟。重复温度循环 10 次后, 再在环境温度下存放 24 小时。</p> <p>After standard charging, the battery pack is stored at $72\pm 2^{\circ}\text{C}$ for 6 hours and then at $40\pm 2^{\circ}\text{C}$ for 6 hours. The temperature conversion time should be less than 30 minutes. Repeat the temperature cycle 10 times, and then store at ambient temperature for 24 hours.</p>	<p>无渗漏、无排气、无解体、无破裂和无起火, 电压大于 90% 初始电压</p> <p>No leakage, no exhaust, no disintegration, no rupture and no fire, the voltage is greater than 90% of the initial voltage</p>
2	低气压 High altitude-low pressure	<p>电池组按标准充电制度充电; 电池放入低气压箱中, 调节试验箱中气压 11.6kPa, 温度为室温, 静置 6h; 停止试验, 取出电池, 观察 1h。</p> <p>The battery pack is charged according to the standard charging system; The battery is put into the low-pressure chamber, the pressure in the test chamber is adjusted to 11.6KPa, the temperature is room temperature, and the battery stands for 6h; Stop the test, remove the battery and observe for 1h.</p>	<p>无渗漏、无排气、无解体、无破裂和无起火, 电压大于 90% 初始电压</p> <p>No leakage, no exhaust, no disintegration, no rupture and no fire, the voltage is greater than 90% of the initial voltage</p>
3	海水浸泡 Seawater immersion	<p>电池组标准充电后将单体蓄电池浸入 3.5%NaCl 溶液 (质量分数, 模拟常温下的海水成分) 中 2h; 水深应完全没过电池组。</p> <p>After standard charging of the battery pack, the single battery is immersed in 3.5% NaCl solution (mass fraction, simulating the composition of seawater at normal temperature) for 2h; The water should be completely up to the battery pack.</p>	<p>不爆炸、不起火</p> <p>No explosion, no fire</p>

5 保质期及产品责任 (Warranty period & Product liability)

保质期是从出厂日期(喷码)开始起十二个月.

Warranty period of this product is 12 months from manufacturing code.

本公司对因没有按本规格书规定操作而导致的意外不负责任

Our company is not responsible for the troubles caused by mishandling of the battery which is clearly against the instructions in this specification.

当我们公司发现本规格书有新的修改细节, 我们将再告知。

When our company finds any new facts which require modification of this document, we will inform you again.

6 包装电池上的标示 (Indications on battery pack)

★ 以下警告应注明在包装后的电池上

The following warnings should be indicated on the battery packs.

★ 使用规定的充电器

Use a specified charger.

★ 不要将电池投入火中或加热

Do not throw the battery into fire, or heat.

★ 不要将电池两端短路

Do not short-circuit the battery terminals

★ 不要将电池分解拆散

Do not disassemble the battery.

7 电池使用时警告事项及注意事项 (Warnings and cautions in handling the Lithium-ion battery)

为防止电池可能发生泄漏,发热、爆炸,请注意以下预防措施:

To prevent a possibility of the battery from leaking, heating or explosion please observe the following precautions:

警告 WARNINGS!

★ 严禁将电池浸入海水或水中,保存不用时,应放置于阴凉干燥的环境中

Do not immerse the battery in water or seawater, and keep the battery in a cool dry surrounding if it stands by.

- ★ 禁止将电池在热高温源旁,如火、加热器等使用和留置

Do not use or leave the battery near a heat source as fire or heater

- ★ 充电时请选用锂离子电池专用充电器

When recharging, use the battery charger specifically for that purpose

- ★ 严禁颠倒正负极使用电池

Do not reverse the positive (+) and negative (-) terminals

- ★ 严禁将电池直接接入电源插座

Do not connect the battery to an electrical outlet

- ★ 禁止将电池丢于火或加热器中

Do not discard the battery in fire or heat it

- ★ 禁止用金属直接连接电池正负极短路

Do not short-circuit the battery by directly connecting the positive (+) and negative (-) terminal with metal objects such as wire.

- ★ 禁止将电池与金属,如发夹、项链等一起运输或贮存

Do not transport or store the battery together with metal objects such as necklaces, hairpins etc.

- ★ 禁止敲击或抛掷、踩踏电池等

Do not strike or throw the battery

- ★ 禁止直接焊接电池和用钉子或其它利器刺穿电池

Do not directly solder the battery and pierce the battery with a nail or other sharp object.

- ★ 严禁将电池浸入海水或水中,保存不用时,应放置于阴凉干燥的环境中

cool dry surrounding if it stands by.

★ 禁止将电池在热高温源旁,如火、加热器等使用和留置 Do not use or leave the battery near a heat source as fire or heater

- ★ 充电时请选用锂离子电池专用充电器

When recharging, use the battery charger specifically for that purpose

- ★ 严禁颠倒正负极使用电池

Do not reverse the positive (+) and negative (-) terminals

- ★ 严禁将电池直接接入电源插座

Do not connect the battery to an electrical outlet

- ★ 禁止将电池丢于火或加热器中

Do not discard the battery in fire or heat it

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Do not strike or throw the battery

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Do not directly solder the battery and pierce the battery with a nail or other sharp object.

注意事项 CAUTIONS!

★ 禁止在高温下（炙热的阳光下或很热的汽车中）使用或放置电池,否则可能会引起电池过热、起火或功能失效、寿命减短

Do not use or leave the battery at very high temperature (for example, at strong direct sunlight or in a vehicle in extremely hot weather). Otherwise, it can overheat or fire or its performance will be degenerated and its service life will be decreased.

- ★ 禁止在强静电和强磁场的地方使用,否则易破坏电池安全保护装置,带来不安全的隐患

Do not use it in a location where static electricity is great, otherwise, the safety devices may be damaged, causing hidden trouble of safety.

★ 如果电池发生泄露,电解液进入眼睛,请不要揉擦,应用清水冲洗眼睛,并立即送医院治疗,否则会伤害眼睛

If the battery leaks, and the electrolyte get into the eyes. Do not rub eyes, instead, rinse the eyes with clean running water, and immediately seek medical attention. Otherwise, it may injure eyes or cause a loss of

sight.

★ 如果电池发出异味,发热、变色、变形或使用、贮存,充电过程中出现任何异常,立即将电池从装置或充电器中移离并停用

If the battery gives off an odor, generates heat, becomes discolored or deformed, or in any way appear abnormal during use, recharging or storage, immediately remove it from the device or battery charger and stop using it.

★ 如果电极弄脏,使用前应用干布抹净,否则可能会导致接触不良功能失效

In case the battery terminals are dirty, clean the terminals with a dry cloth before use. Otherwise power failure or charge failure may occur due to the poor connection with the instrument

★ 废弃之电池应用绝缘纸包住电极,以防起火、爆炸

Be aware discarded batteries may cause fire, tape the battery terminals to insulate them
