

## 51.2V100Ah LiFePO4 Battery Specification

### 51.2V100Ah 磷酸铁锂电池规格书

MODEL

型号: SMS-51.2V100AH

Nominal Voltage

标称电压: 51.2V

Nominal Capacity

额定容量: 100Ah

Customer

客户: \_\_\_\_\_

Registered 编制	Checked 审核	Approved 批准
孙大成		
2019.08.05		

Customer Approve 客户确认		
Dept. 部门	Signature 签名	Date 日期
QA Dept 品质		
R&D Dept 研发		
Approved 批准		

## Content

### 目录

1. MODIFIED LIST 修订履历 .....	3
2. .Scope 适用范围 .....	3
3. Initial Dimension 初始尺寸 .....	4
4. Specification 产品规格 .....	4
5. BMS parameters BMS 参数 .....	6
6. General Performance 常规性能 .....	6
7. Environment Performance 环境性能 .....	7
8. Safe Characteristic 安全性能 .....	8
9. CAUTIONS IN USE 使用警告 .....	8
10. Battery operation instruction 电池操作说明 .....	10
11. Other The Chemical Reaction 其它化学反应 .....	9
12. Note: 备注 .....	9



**3. Products assembly drawing and size refers to picture 1**

产品组装图及尺寸请参阅图 1



**4.Specification 产品规格**

NO. 序号	Item 项目	Specifications 规格要求
4.1	Cell Type 电芯类型	LiFePO4 磷酸铁锂电池
4.2	Typical Capacity 典型容量	100Ah @ 0.2C Discharge (0.2C 放电)
	Minimum capacity 最小容量	98Ah @ 0.2C Discharge (0.2C 放电)
4.3	Nominal voltage 标称电压	51.2V
4.4	End-of-charge Voltage 充电截止电压	58V±1.0V, 0.2C5A
4.5	End-of-discharge Voltage 放电截止电压	40V±2.0V, 0.2C5A
4.6	Max Charge Current 最大充电电流	50A
4.7	Max Continuous Discharge Current 最大持续放电电流	100A
4.8	Instantaneous Max Discharge Current 最大瞬态放电电流	120A±5A /1S
4.9	Over Current Protection 过流保护值	150A±15A /100mS
4.10	Protection function 保护功能	OCVP/ODVP/OCP/SCP/OTP etc. 过充保护/过放保护/过流保护/短路保护/过温保护等

4.11	Communication interface 通信方式	RS485/CAN
4.12	Switch 开关	Yes 有
4.13	Operating temperature 工作温度	Charging(充电): 0°C~45°C Discharging(放电): -10°C~60°C
4.14	Storage temperature 储存温度	-5°C~35°C
4.15	Storage Humidity 储存湿度	≤75% RH
4.16	Standard environmental condition 标准环境	Temperature(温度) : 25±2°C Humidity (湿度) : 45-75%RH Atmospheric Pressure (大气压) : 86-106 KPA
4.17	Charge connector 充电接口端子	Terminal 端子
4.18	Discharge connector 放电接口端子	Terminal 端子
4.19	Communication connector 通信接口端子	RJ45 (484A/485B)
4.20	Switch connector 开关端子	Self-locking switch 自锁开关
4.21	Shell Material 外壳材质	Metal 金属外壳
4.22	Shell Color 外壳颜色	Black+White 黑色+白色外壳
4.23	Size 尺寸	500mm*520mm*145mm (Max)
4.24	Weight 重量	Approx(约): 48kg

## 5. BMS 参数

NO. 序号	Item 项目	Specifications 规格要求
5.1	单节过充保护	3.65V ±20mV , 延时 1S
5.2	整组过充保护	58V ±0.5V, 延时 1S
5.3	单体过放保护	2.70V ±50mV , 延时 1S
5.4	整组过放保护	43V ±2V, 延时 1S
5.5	充电过流保护	60A ±2A , 延时 1S
5.6	放电过流保护 1	100A ±5A , 延时 1S
5.7	放电过流保护 2	120A ±15A, 延时 100mS
5.7	充电高温保护	55°C ±2°C
5.8	充电低温保护	0°C ±2°C

5.9	放电高温保护	65°C ± 2°C
5.10	放电低温保护	-10°C ± 2°C
5.11	短路保护	有

## 6 General Performance 常规性能

No.	Item 项目	Test Methods and Condition 测试方法和条件	Criteria 标准
6.1	0.2C Capacity 0.2C 容量	After standard charging, rest battery for 10min, then discharging at 0.2C to voltage 44V, recording the discharging time. 标准充饱电后,搁置 10 分钟,然后用 0.2C 电流放电至 44V, 所记录放电时间	≥98Ah(安时)
6.2	Capability of keeping electricity 荷电保持能力	20 ± 5°C, After standard charging, rest the battery 28days, discharging at 0.2C to voltage 44.0V, recording the discharging time. 在 20 ± 5°C 状态下,标准充饱电后,电芯搁置 28 天,然后用 0.2C 放电至 44.0V,所记录放电时间.	≥200min

## 7 Environment Performance 环境性能

No.	Item 项目	Test Methods and Condition 测试方法和条件	Criteria 标准
7.1	Discharge at high temperature 高温放电	After standard charging, rest the cells 4h at 60 ± 2°C, then discharging at 1C to voltage 44.0V, recording the discharging time. 标准充电后,在 60 ± 2°C 条件下贮存 4h, 然后用 1C 放电至 44.0V, 所记录放电时间.	≥45min
7.2	Discharge at low temperature 低温放电	After standard charging, rest the cells for 16h at -20 ± 2°C, then discharging at 0.2C to voltage 44.0V, recording the discharging time. 标准充电后,在 -20 ± 2°C 条件下贮存 16h, 然后用 0.2C 放电至 44.0V, 所记录放电时间.	≥180min
7.4	Thermal shock 热冲击	Put the cells in the oven. The temperature of the oven is to be raised at 5 ± 2°C per minute to a temperature of 100 ± 2°C and remains 30 minutes. 将电池放进烘箱内,以 5 ± 2°C/min 速度升高烘箱内温度至 100 ± 2°C 后,恒温 30min.	No fire, no smoke 不起火,不冒烟

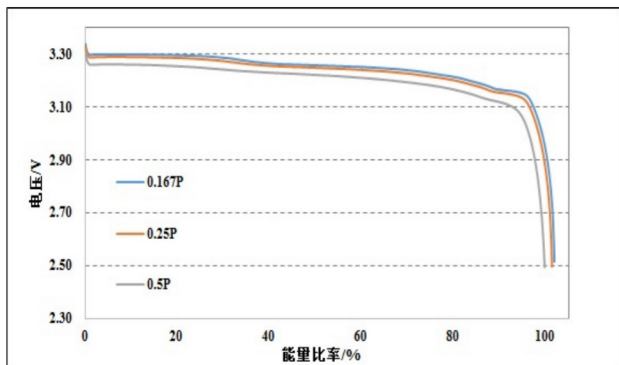
## 8 Safe Characteristic 安全性能

No.	Item 项目	Test Methods and Condition 测试方法和条件	Criteria 标准
8.1	Over charge testing 过充测试	At $23 \pm 5^\circ\text{C}$ , charging cells with constant current 2C to voltage 60V, Stop test till cells temperature $10^\circ\text{C}$ lower than max temperature. 在 $23 \pm 5^\circ\text{C}$ 状态下, 电池用 2C 电流充电至 60V, 监视电池温度变化, 当电池温度下降一峰值低约 $10^\circ\text{C}$ 时, 停止实验.	No smoke or fire 不起火, 不冒烟
8.2	Over discharge testing 过放测试	At $23 \pm 5^\circ\text{C}$ , According to the requirements of standard charge, the cells will be discharge to cut-off voltage, then connect with external load of 30 ohm for 24 hours. 在 $23 \pm 5^\circ\text{C}$ 状态下, 按标准放电的要求放电至终止电压后, 外接 $30\ \Omega$ 负载放电 24 小时.	No fire, no smoke, no leakage. 无起火, 无冒烟, 无泄液
8.3	Short-circuit testing 短路测试	At $23 \pm 5^\circ\text{C}$ , After standard charging, connect cells anode and cathode by wire which impedance less than $200 \pm 20\text{m}\ \Omega$ , keep 6h. 在 $23 \pm 5^\circ\text{C}$ 状态下, 标准充电后, 将电池的正负极用一根小于 $200 \pm 20\text{m}\ \Omega$ 的导线连接, 放置 6 小时.	No smoke or fire 不起火, 不冒烟

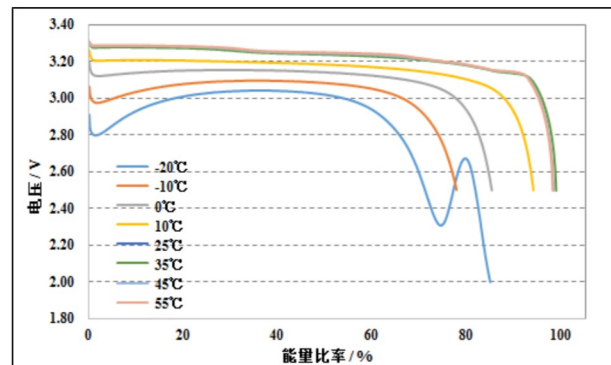
※ Above testing of safe characteristic must be with protective equipment.(安全性能测试应在有保护措施下进行)

## 9. Electrical performance curve 电性能曲线图

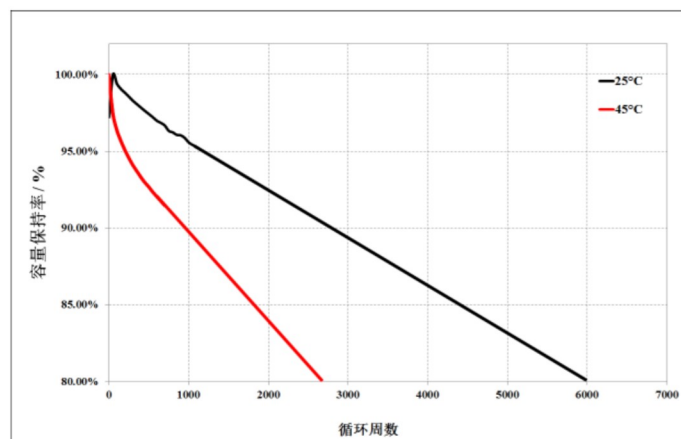
1、 $25^\circ\text{C}$  rate discharge curve  
 $25^\circ\text{C}$  倍率放电曲线



2、Discharge curves at different temperatures(0.5P)  
不同温度放电曲线 (0.5P)



3、Cyclic curve (0.5C/0.5C charging and discharging, 3.65V-2.5V)  
循环曲线 (0.5C/0.5C 充放, 3.65V-2.5V)



## 10. CAUTIONS IN USE 使用警告

To ensure proper use of the battery please read the manual carefully before using it. Handling  
为了使电池安全的使用及处理请在使用前认真的阅读操作说明

- Do not expose to, dispose of the battery in fire.
- 不能把电池曝晒或丢在火中
- Do not put the battery in a charger or equipment with wrong terminals connected.
- 电池充电时不能把正负极性装反
- Avoid shorting the battery
- 避免短路电池
- Avoid excessive physical shock or vibration.
- 避免过分的物理震动和冲击电池
- Do not disassemble or deform the battery.
- 不能拆解或使电池变形
- Do not immerse in water.
- 不能将电池浸入水中
- Do not use the battery mixed with other different make, type, or model batteries.
- 不能将其它不同厂家，类型，型号的电池混合使用
- Keep out of the reach of children.
- 禁止小孩接触电池

### . charge and discharge 充放电

- Battery must be charged in appropriate charger only.
- 电池必须在合适的条件下充电
- Never use a modified or damaged charger.
- 决不能用故障的充电器给电池充电
- Do not leave battery in charger over 24 hours.
- 电池持续充电不能超过 24H

### . storage 贮存

- Store the battery in a cool, dry and well-ventilated area.
- 电池贮藏在通风干燥的环境中

### . disposal 处理

- Regulations vary for different countries. Dispose of in accordance with local regulations.
- 不同国家法规的不同，处理时根据当地的法规。

## 11. Battery operation instruction 电池操作说明

### 11.1 Charging 充电

**Charging current:** Cannot surpass the biggest charging current which in this specification book stipulated.

**充电电流:** 不能超过规格书规定的最大的充电电流

**Charging voltage:** Does not have to surpass the highest amount which in this specification book stipulated to decide the voltage.



充电电压：不能超过规格书规定的最高的限制电压

Charge temperature : The battery must carry on the charge in the ambient temperature scope which this specification book stipulated.

充电温度：电池充电温度必须按照规格书的温度范围执行

Uses the constant electric current, and the constant voltage way charge, the prohibition reverse charges. If the battery positive electrode and the cathode meet instead, can damage the battery.

先恒流后恒压方式充电，禁止颠倒的方式充电。如果电池正负极颠倒充电会带来危险。

## 11.2 Discharging current 放电电流

The discharging current does not have to surpass this specification book stipulation the biggest discharging current, the oversized electric current electric discharge can cause the battery capacity play to reduce and to cause the battery heat.

电池放电电流不能超过规格书规定的最大放电电流，过大的电流放电会造成电池发热和容量衰减。

## 11.3 discharge temperature 放电温度

The battery discharge must carry on in the ambient temperature scope which this specification book stipulated

电池放电温度必须按照规格书的温度范围执行

## 11.4 Over-discharges 过放电

After the short time excessively discharges charges immediately cannot affect the use, but the long time excessively discharges can cause the battery the performance, battery function losing. The battery long-term has not used, has the possibility to be able to be at because of its automatic flashover characteristic certain excessively discharges the condition, for prevented excessively discharges the occurrence, the battery should maintain the certain electric quantity.

短时间的的过充过放不影响电池的使用，但是长时间的过放电会影响到电池的功能失效，电池永久性不能适用，电池可能过放还有一个原因是自动能量的消失。预防电池过放的出现方法是电池应保持一定的电量。

## 11.5 Storing the Batteries 贮存电池。

The battery should store in the product specification book stipulation temperature range. If has surpasses above for three months the long time storage, suggested you should carry on additional charge to the battery.

电池贮存在规格书规定的温度范围内，如果电池贮存超过三个月，建议你开始给电池充电。

## 12. Other The Chemical Reaction 其它化学反应

Because batteries utilize a chemical reaction, battery performance will deteriorate over time even if stored for a long period of time without being used. In addition, if the various usage conditions such as charge, discharge, ambient temperature, etc. are not maintained within the specified ranges the life expectancy of the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage. If the batteries cannot maintain a charge for long periods of time, even when they are charged correctly, this may indicate it is time to change the battery.

由于电池是利用化学反应的原理，所以随时间的增加电池的性能会降低，即使是存放很长一段时间而不使用。如果使用条件如充电、放电及周围环境温度等情形不在指定的使用范围内，也会缩短电池的使用寿命，或者产生漏液导致设备损坏。如果电池长周期不能充电，即使充电方法正确，这样需要更换电池了。

## 13. Note: 备注

Any other items which are not covered in this specification shall be agreed by both parties.

本说明书未包括事项应由双方协议确定。