



Version:

NR

Serial number:

PD-JLS-1805

Date:

2018-05-12

Tel:

0769-8554 4410

深圳市杰力斯科技有限公司  
Shenzhen GenixGreen Technology Co.,Ltd

# Product Specification

## 产品规格书

电池型号: JLS-1250标称容量: 50Ah

客户名称: \_\_\_\_\_

客户确认: \_\_\_\_\_

日期: 2018-05-12

部门 Department	编制 Editor	审核 Auditor	批准 Approval
工程师 Engineer Name	胡明明 Ming Ming Hu	夏炜 Wei Xia	董继铮 Peter
日期 Date	20180512	20180512	2018513

公司名称 Company name	深圳市杰力斯科技有限公司 Shenzhen GenixGreen Technology Co.,Ltd
公司地址 company address	深圳市宝安区沙井街道运华时代 1206 Office: 12th Floor, Yunhua building, shajing Town, Shenzhen, PRC Factory: Building A, Minyi Road , 6th Wusha Industrial Zone, Changan, Dongguan, Guangdong, China

## 1.0 基本特性 The basic features

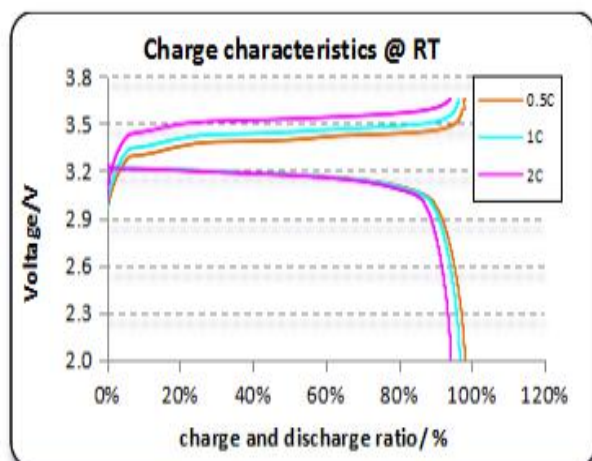
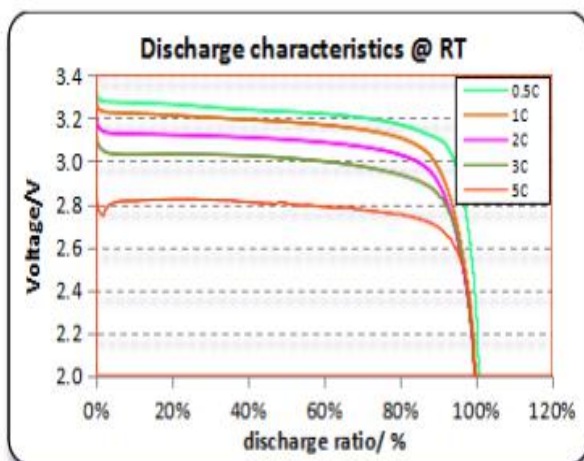
外壳材质 Casing material		Battery Pack PC+ABS shell
容量 capacity (0.2C5A)	标称值 Nominal capacity	50Ah
	最小值 Min.Value	49.5Ah
额定电压 Nominal Voltage		12.8V
最大充电电压 Max. Charge Volt.		14.6V
放电截止电压 Discharge cut-off voltage		8V
标准充电电流 Standard charge current		20A
标准放电电流 standard discharge current		20A
电池长度 Battery Length (Max.)		265mm
电池宽度 Battery Width (Max.)		165mm
电池高度 Battery Height (Max.)		210mm
电池重量 Battery Weight (Approx.)		约 6.6Kg
电池接线柱 Battery binding post (mm)		+14mm*-14mm
内阻 Internal resistance (Max, at 1000Hz.)		≦ 80 mΩ
操作温度 Operating temperature	充电 Charging	0°C~45°C; 32oF~113oF
	放电 Discharging	-20°C~60°C; -4oF~149oF
	贮存 Saving	-20°C~45°C; -4°F~113°F

## 2.0 外形图 The outline picture



## 3.0 电芯性能 Cell performance

### 3.1 特性曲线图 Characteristic curve



### 3.2 电化学性能 Electrochemical Performance

序号 No.	项目 Project	标准 Standard	测试方法 Testing method
1	常温放电性能 Normal temperature discharge performance	放电容量/标称容量×100% (A) 0.2C <sub>5</sub> A ≥100% (B) 1C <sub>5</sub> A ≥95%  Discharge capacity/nominal capacity *100% (A) 0.2C <sub>5</sub> A ≥100% (B) 1C <sub>5</sub> A ≥95%	在 1 个标准大气压, 环境温度 25℃±5℃, 相对湿度为 45%~80% 的条件下, 电池 0.2C <sub>5</sub> A 标准充电后 (以下若没有特别说明, 均在此条件下放置, 皆按此充电方式), 搁置 10min, 分别以 0.2C <sub>5</sub> A、1C <sub>5</sub> A 进行放电至下限电压 2.5V, 循环三次, 当有一次达到标准, 即达到标准要求 (下同)。  In 1 standard atmospheric pressure, ambient temperature of 25 °C ±5 °C, relative humidity is 45% ~ 80%, 0.2 C <sub>5</sub> A standard battery charge (if no specific instructions, below are placed under the condition, is by the way), suspended 10 min, respectively by 0.2C <sub>5</sub> A, 1C <sub>5</sub> A, discharge to the lower voltage 2.5 V, cycle three times, when once reach standard, which meet the standard requirements (the same below).
2	常温荷电保持能力 Normal temperature charge holding capacity	剩余容量≥标称容量*95% Residual capacity ≥ nominal capacity * 95%	电池标准充电后, 在 25℃±5℃贮存 1 个月, 储存期满后, 以 0.2C <sub>5</sub> A 放电至终止电压 2.5V, 测量电池容量。After standard charging, the battery was stored at 25℃±5℃ for 1 month. After the storage period, the battery was discharged at 0.2c5a to the termination voltage of 2.5V to measure the battery capacity.
3	循环寿命 Cycle life	容量≥标称容量*80% Capacity ≥ nominal capacity * 80%	0.2C 标准充满电后, 以 0.2C <sub>5</sub> A 放电至终止电压 2.5V 搁置 10min, 以此模式循环 2000 次。 After standard full charging at 0.2C, discharge at 0.2C <sub>5</sub> A to the termination voltage of 2.5V for 10min, and cycle in this mode for 2000 times.
4	贮存性能 The storage performance	贮存 12 个月的电池容量保持率≥80% Storage 12 months battery capacity retention rate 80%	电池标准充电后, 开路放置 12 个月, 以 0.2C <sub>5</sub> A 放电至 2.5V, 测量电池的剩余容量; 0.2C/0.2C 测量电池的恢复容量。可循环三次, 当有一次达到标准, 即达到标准要求。 After standard battery charging, open circuit for 12 months, discharge from 0.2C <sub>5</sub> A to 2.5V, and measure the remaining capacity of the battery; 0.2C / 0.2C measure the recovery capacity of the battery. Can be recycled three times, when one of the standards, that is to meet the standard requirements.

### 3.3 环境适应性能 Environmental adaptability

序号 No.	项目 Project	标准 Standard	测试方法 Testing method
1	温度循环性能 Temperature cycling performance	电池不冒烟、不起火、不爆炸 Batteries do not smoke, fire, or explode	<p>电池标准充电后, 在环境温度为 <math>60 \pm 2^\circ\text{C}</math> 的条件下开路放置 48h, 后在 <math>-10 \pm 2^\circ\text{C}</math> 条件下开路放置 6h 后在室温条件下开路放置 24h, 然后 <math>0.2\text{C}_5\text{A}</math> 进行放电至 <math>2.5\text{V}</math>。以 <math>0.2\text{C}/0.2\text{C}</math> 连续做 3 次充放电循环。</p> <p>Battery charging standard, in the environment temperature is <math>60 \pm 2^\circ\text{C}</math> under the condition of open circuit for 48 h, under the condition of <math>-10 \pm 2^\circ\text{C}</math> after open after 6 h at room temperature under the condition of open 24 h, then <math>0.2\text{C}_5\text{A}</math> discharge to <math>2.5\text{V}</math>. Charge and discharge cycles were performed for 3 times continuously at <math>0.2\text{C} / 0.2\text{C}</math>.</p>
2	恒定湿热性能 Constant heat and humidity	<p>搁置后放电容量/标称容量 <math>\times 100\% &gt; 60\%</math></p> <p>电池外观无明显变形、不冒烟、不爆炸</p> <p>Discharge capacity after shelving/nominal capacity <math>*100\% &gt; 60\%</math></p> <p>Battery appearance without obvious deformation, no smoke, no explosion</p>	<p>电池标准充电后, 置于温度为 <math>40 \pm 5^\circ\text{C}</math>, 相对湿度为 90% 的恒温恒湿箱中, 搁置 48h 后, 取出电池搁置 2h, 以 <math>0.2\text{C}_5\text{A}</math> 放电至 <math>2.5\text{V}</math>。</p> <p>Battery charging standard, placed in a temperature of <math>40 \pm 5^\circ\text{C}</math>, relative humidity is 90% of the constant temperature and humidity box, shelved after 48 h, take out the battery aside 2 h, Discharge at <math>0.2\text{C}_5\text{A}</math> to <math>2.5\text{V}</math>.</p>
3	不同温度下的放电性能 Discharge performance at different temperatures	<p>搁置后放电容量/标称容量 <math>\times 100\%</math></p> <p>(A) <math>60^\circ\text{C} \geq 95\%</math>; (B) <math>0^\circ\text{C} \geq 85\%</math>; (C) <math>-10^\circ\text{C} \geq 60\%</math>;</p> <p>电池不冒烟、不爆炸、不起火</p> <p>Discharge capacity after shelving/nominal capacity 100%</p> <p>(A) <math>60^\circ\text{C} \geq 95\%</math> (B) <math>0^\circ\text{C} \geq 85\%</math>; (C) <math>-10^\circ\text{C} \geq 60\%</math>;</p> <p>Batteries do not smoke, explode, or catch fire</p>	<p>电池标准充电后, 在 <math>60 \pm 2^\circ\text{C}</math> 条件下恒温搁置 3h, 以 <math>1\text{C}_5\text{A}</math> 放电至 <math>2.5\text{V}</math>, 然后在室温条件下标准充电, 依此按照 <math>0 \pm 2^\circ\text{C} / -10 \pm 2^\circ\text{C}</math> 的顺序在相应的恒温条件下搁置 20h, 以 <math>0.2\text{C}_5\text{A}</math> 测量电池对应的终止容量, 最后在室温状态下搁置 2h。</p> <p>After standard charging, place the battery in <math>60 \pm 2^\circ\text{C}</math> for 3 h, <math>1\text{C}_5\text{A}</math> discharge to <math>2.5\text{V}</math>, standard charge at room temperature, then place the battery to <math>0 \pm 2^\circ\text{C} / -10 \pm 2^\circ\text{C}</math> for 20 h under the condition of constant temperature, measured at <math>0.2\text{C}_5\text{A}</math> corresponding to terminate your battery capacity, finally place the battery at room temperature for 2 h.</p>

4	振动环境 适应性表现 Performance of environmental adaptability of vibration	剩余容量 $\geq$ 初始容量*95% 电压减少率 $\leq$ 3mV 内阻增加率 $\pm$ 3 m $\Omega$ 不爆炸, 不起火 Residual capacity $\geq$ initial capacity * 95% Voltage reduction rate $\leq$ 3mV Internal resistance increase rate $\pm$ 3 m $\Omega$ No explosion, no fire	电池标准充电后, 建立电池振动台板根据震动频率和 相关移动距离来调节测试仪。从 X、Y、Z 三个方向。 每个方向在 10Hz~55Hz 震动 30 分钟。速度是 (1) 震动频率: 10Hz~30Hz 移动距离: 0.38mm (2) 震动频率: 30Hz~55Hz 移动距离: 0.38mm 测试之后, 0.2C5/0.2C5 测试剩余容量。 After standard battery charging, the battery vibration table is established to adjust the tester according to vibration frequency and relative moving distance.From X, Y, and Z.Vibrate at 10Hz ~ 55Hz in each direction for 30 minutes.The velocity is (1) vibration frequency: 10Hz ~ 30Hz movement distance: 0.38mm (2) vibration frequency: 30Hz ~ 55Hz movement distance: 0.38mm After the test, 0.2C <sub>5</sub> A/0.2C <sub>5</sub> A test the remaining capacity.
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### 3.4 安全性能 Safety performance

序号 No.	项目 Project	标准 Standard	测试方法 Testing method
1	过充性能 The overcharge performance	不爆炸、不起火 最高温度 $<150^{\circ}\text{C}$ No explosion, no fire The highest temperature $<$ 150 $^{\circ}\text{C}$	电池标准充电后, 保证电池状态正常(下同), 以 3C <sub>5</sub> A 电流充电至 5.0V, 然后转恒压充电至截至电流 0.05C <sub>5</sub> A 时终止, 观察电池的温度及外观变化。 After standard battery charging, ensure the battery is in normal state (the same below), charge to 5.0v with 3C <sub>5</sub> A current, and then switch to constant voltage charging to stop when the current reaches 0.05c <sub>5</sub> a, observe the battery temperature and appearance changes.
2	过放性能 The over Discharge performance	不起火、不爆炸 No fire, no explosion	电池标准充电后, 以 0.2C <sub>5</sub> A 进行放电至 2.5V, 然后 用 10 $\Omega$ 的电阻将电池正负极相连, 搁置 60min。 Battery charging standard, with 0.2C <sub>5</sub> A discharge to 2.5 V, then the battery with a 10 $\Omega$ resistance is connected to the positive and negative , for 60 min.
3	常温短路性能 Room temperature short circuit performance	不爆炸、不起火 最高温度 $<150^{\circ}\text{C}$ No explosion, no fire The highest temperature $<$ 150 $^{\circ}\text{C}$	电池标准充电后, 置于防爆玻璃罩中直接短路其正 负极(线路总电阻不大于 50m $\Omega$ ), 当电池温度下降 到比峰值约低 10 $^{\circ}\text{C}$ 时试验结束。观察电池的温度及 外观变化。 After standard charge, put the battery in the explosion-proof glass box, directly short the positive and negative (line resistance is not more than 50 m $\Omega$ ), when the battery temperature dropped to 10 $^{\circ}\text{C}$ lower than the peak around the end of the test. Observe battery temperature and appearance changes.

4	针刺性能 Acupuncture performance	不爆炸、不起火、 最高温度<150℃ No explosion, no fire, The highest temperature < 150 °C	电池标准充电后，放在支座上，并与热电偶相连，然后用直径为3mm的铁钉在电池的高度方向中间的部位快速完全刺穿电池，观察电池外观及温度变化。 After standard charging, the battery is placed on a support and connected to a thermal-couple. Then, a nail with a diameter of 3mm is used to Pierce the battery completely and quickly in the middle of the height direction of the battery to observe the battery appearance and temperature changes.
5	热冲击安全性能 Thermal shock safety	不爆炸、不起火 No explosion, no fire	电池标准充电后，放置于热箱中，并与热电偶相连，温度以(5℃±2℃)/min的速率升至150℃±2℃并保温30Min。观察电池温度外观变化。 Battery charging standard, placed in hot box, and connected to the thermocouple, temperature (5 °C + /- 2 °C)/min rate rose to 150 °C +/- 2 °C and thermal insulation for 30 min. Observe the change of battery temperature and appearance.

备注：以上标准中的一些术语的定义；

Note: definitions of some terms in the above standards;

(1)标准充电：在环境温度25℃±5℃的条件下，以0.2C<sub>5</sub>A充电，当电池端电压达到充电限制电压3.65V时，改为恒压充电，直到充电电流小于或等于0.05C<sub>5</sub>A后停止充电

(2)初始状态：电池的初始外观、开路电压、交流内阻。

(3)最终状态：电池的最终外观、开路电压、交流内阻。

(4)剩余容量：电池经过特定的检测程序后的首次放电容量。

(5)恢复容量：电池经过特定的检测程序后，通过反复充放电使状态恢复后的放电容量。

(6)0.2C/0.2C (0.2C/1C、0.2C/2.5C)：以0.2C<sub>5</sub>A充电，当电池端电压达到充电限制电压3.65V时，转为恒压充电，直到充电电流小于或等于0.05C<sub>5</sub>A停止充电，充电完成后，搁置10min，再以0.2C<sub>5</sub>A (1C<sub>5</sub>A、2.5C<sub>5</sub>A、)恒流放电至终止电压2.5V。

1) charging standard: At the ambient temperature of 25 °C ± 5 °C, at 0.2C<sub>5</sub>A charge, when the voltage of the battery to charge limit voltage of 3.65 V, instead of constant voltage charging, until after the charging current is less than or equal to 0.05C<sub>5</sub>A stops charging

(2) initial state: initial appearance of the battery, open circuit voltage, ac internal resistance.

(3) final state: final appearance of the battery, open circuit voltage, ac internal resistance.

(4) residual capacity: the initial discharge capacity of the battery after a specific detection procedure.

(5) recovery capacity: the discharge capacity of the battery restored after repeated charging and discharging after specific detection procedures.

(6) 0.2C / 0.2C (0.2C / 1C, 0.2c / 2.5c) : charge at 0.2C<sub>5</sub>A. When the terminal voltage reaches 3.65v, the battery will be charged at a constant voltage until the charging current is less than or equal to 0.05C<sub>5</sub>A. After the completion of charging, the battery will be put on hold for 10min. Then A constant discharge of 0.2c5a (1C<sub>5</sub>A, 2.5C<sub>5</sub>A,) is applied to the termination voltage of 2.5V.

#### 4.0 保护板基本参数 Protection board basic parameters

此保护板为全功能板，针对电池的过充、过放、过流实施有效的保护，保护 IC 采用普通保护 IC,具体保护项目及保护范围如下。

This protection board is a full-function board, which provides effective protection for over-charge, over-discharge and over-current of the battery. General protection IC is adopted for protection IC. Specific protection items and scope are as follows.

序号 No.	项 目 Item	规 格 Specification	备 注 Remark
1	过充电保护电压 Overcharge protection voltage	3.9V ± 25mV	
2	过放电保护电压 Over discharge protection voltage	2.0V ± 80mV	
3	过电流保护 Over current protection	120 ± 10A	
4	过充电保护侦测延时时间 Overcharge protection detects delay time	1200 ± 300mS(Typical)	
5	过放电保护侦测延时时间 Over - discharge protection detects delay time	144 ± 30mS(Typical)	
6	过电流保护侦测延时时间 Over current protection detects delay time	200mS ± 50 mS (Typical)	
7	输出短路保护侦测延时时间 Output short circuit protection detects delay time	600uS(Typical)	
8	过充保护解除电压 Overcharge protection release voltage	3.8V ± 50mV	
9	过放保护释放电压 Over discharge protection releases voltage	2.2V ± 300mV	
10	短路及过流保护恢复条件 Short circuit and over current protection condition	断开负载 Disconnect the load	
11	过放保护恢复条件 Over discharge protection recovery condition	断开负载 Disconnect the load	
12	PCB 内阻 PCB resistance	≤ 30mΩ	
13	静态自耗电电流 Static consumable current	≤ 60uA	
14	工作温度 Working temperature	-20~60℃	

注明：以上规范中测试条件为：

温度：20 ± 5℃，相对湿度：45%—75%，大气压强：86KPa—106KPa.

Note: the test conditions in the above specifications are: Temperature: 20 ± 5 °C, relative humidity: 45% - 75%, Atmospheric pressure :86KPa -- 106KPa.

## 5.0 保质期及产品责任 Shelf life and product liability

保质期是从出厂日期（喷码）开始起 **3年**；电池在闲置不使用时请 **3个月** 保证充一次电！

杰力斯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，当本规格书有一些变动时，杰力斯公司会通知购买方。

Shelf life is 3 years from the date of delivery (ink jet code); When the battery is not in use, please make sure to charge it once every 3 months!

Genixgreen shall not be liable for any accident resulting from non-compliance with this specification and shall notify the purchaser of any changes to this specification.

## 6.0 包装电池上的标识 The label on the battery pack

按照客户要求标识

Mark according to customer requirement

## 7.0 电池使用时警告事项及注意事项 Warnings and precautions for battery use

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 possible leakage, heat and explosion of the battery, please take the following precautions:

### 警告！Warning!

- 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 seawater or water. Keep it in a cool and dry place when not in use.
- 禁止将电池在热高温源旁,如火、加热器等使用和留置。  
it is forbidden to battery at the high temperature heat source, such as fire, heater use and lien.
- 充电时请选用锂离子电池专用充电器。  
Please use the special charger for lithium ion battery when charging.
- 只能在电池底部铝镍复合带处点焊  
It can only be spot-welded at the bottom of the battery at the aluminium-nickel composite strip
- 严禁颠倒正负极使用电池。  
Do not use the battery upside down.
- 严禁将电池直接插入电源插座。  
Do not plug the battery directly into the power socket.
- 禁止将电池丢于火或加热器中。  
Do not throw the battery into the fire or heater.
- 禁止用金属直接连接电池正负极短路。  
Do not use metal to directly connect the battery anode and cathode short circuit.
- 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 batteries with metal such as hairpins or necklaces.
- 禁止敲击或抛掷、踩踏电池等。  
Do not tap or throw or trample the battery.
- 禁止直接焊接电池和用钉子或其它利器刺穿电池。  
Forbid direct welding battery and use nails or other piercing battery.





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## 小心! Be Careful!

- 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 high temperatures (in hot sunlight or in very hot cars) as it may cause the battery to overheat, catch fire or function Failure, shortened life.**

- 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.
- It is forbidden to use in places with strong static electricity and strong magnetic field. Otherwise, it is easy to damage the battery safety protection device and bring unsafe hidden trouble.
- 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,并立即送医治疗,否则会伤害眼睛.
- If the battery leaks and the electrolyte gets into your eyes, please don't rub it. Please wash your eyes with water and send to the doctor immediately, otherwise it will hurt your eyes.
- 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.
- Remove the battery from the device or charger immediately and deactivate it if it smells, becomes hot, discolored, deformed, or has any abnormalities during use, storage, or charging.
- 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
- if the electrodes are dirty, the application of dry cloth to wipe clean before using, otherwise it may result in poor contact failure
- 废弃之电池应用绝缘纸包住电极,以防起火、爆炸。
- Waste battery application of insulating paper cover the electrodes, in case of fire, explosion.