HIGHSTAR	PRODUCT SPECIFICATION	DOC NO.:IFpP40130220-100 SHEET : 1 OF 17 ECN NO. Q/KAGG1295A-2022

受控 07

Specification Approval Sheet(Cell)

产品规格确认书（电芯）

Model: IFpP40130220-100

型号： IFpP40130220-100

AMENDMENT RECORDS
（规格变更记录）

Revision No.	Description	Date	Remark
A	新编 new version	2022. 03. 02	

Content

目录

1 Scope 适用范围

This document describes the Product Specification and application requirements of the Lithium-ion rechargeable battery cell supplied by Jiangsu Highstar Battery Manufacturing Co..LTD.

本规格说明书描述了江苏海四达电源股份有限公司生产的可充电锂离子电芯的产品性能指标及使用要求。

2 **Model: IFpP40130220-100 (Internal thread)**

型号： IFpP40130220-100（内螺纹极柱）

3 **Specification** 规格

No.	Items（项目）	Specifications（规格）
1	Maximum charging voltage 充电最高电压	3.65V
2	Nominal voltage 标称电压	3.2V
3	Rated Capacity (discharge at 0.2C to voltage of 2.5V at 25°C±2°C) 额定容量	100Ah
4	Standard Charging Current 标准充电电流	0.5C
5	Max. charge current 允许连续最大充电电流	1C
6	Max. Discharge current 允许连续最大放电电流	Under the conditions of 25° C ± 2 ° C, Discharging at 3C for 30s at 100% SOC 在 25℃±2° C 条件下，100%SOC 状态下，3C 放电 30s
7	Discharge cut-off voltage 放电截止电压	2.5V
8	Operating temperature Relative humidity % 工作温度 、湿度	Charging : 0°C-45°C, 65%±20%RH 充电： 0°C-45°C，65%±20%RH discharging : -20°C-60°C, 65%±20%RH 放电： -20°C-60°C，65%±20%RH
9	Recommended Storage temperature 推荐存储温度	15°C-35°C
10	Cell Weight 电芯重量	Approx. 2.3kg
11	Impedance 内阻	≤0. 6mΩ
12	Cell dimension (inclusive wrap foil) 电芯尺寸(包胶)	厚度 thickness : 40.2mm±0.5mm 宽度 Width : 130.2mm±0.5mm 长度 Length : 220.0mm±1.0mm

4 **Battery Cell Performance Criteria and Test Conditions** 电芯性能标准以及测试条件

4.1 **Standard environmental test conditions** 标准测试环境

Unless otherwise specified, all tests in this standard are carried out under the test conditions required by the test items: tests beyond this condition will produce obvious deviation to the test results.

Temperature : 25°C±2°C

Relative Humidity : 65%±20%

除非特别说明，本标准书中所有测试均在测试项目要求的测试条件环境下进行：超出此条件环境下的测试均会对测试结果产生明显偏差。

温度： 25°C±2°C

湿度： 65%±20%

4.2 Electrical characteristics 电气性能

No.	Items（项目）	Test Method and Condition （测试方法和条件）	Criteria（标准）
1	Standard Charge condition 标准充电	Charging the cell with constant current at 0.5C and then with constant voltage at 3.65V till charge current declines to ≤ 0.05C. 0.5C 恒流充电至 3.65V，再恒压 3.65V 充电直至充电电流≤ 0.05C。	Charge Voltage = 3.65V Charge Rate=0.5C
2	Initial Impedance 初始内阻	Internal resistance measured at AC 1KHz within 1 hour after standard charge 将电池按标准充电方法充电后，在 1h 内测量其 AC 1KHz 下的交流阻抗。	≤0. 6mΩ
3	Cell Voltage 电池电压	Battery state upon shipment 出货状态	≥3.0V
4	Initial Capacity 额定容量	(1) Prior to charging, the cell shall be discharged at a constant current of 0.5C down to the cutoff discharge voltage 2.5V, rest for 10 minutes. (2)The capacity means the discharge capacity of the cell, which is measured with discharge current of 0.2C with 2.5V cut-off voltage after standard charge. (1)充电前，电池以 0.5C 的恒流放电至截止电压 2.5V，休息 10 分钟。 (2)该容量是指标准充电后，0.2C 放电至 2.5V 的放电电量。	≥100Ah
5	High Rate Discharge Performance 倍率放电性能	(1) Prior to charging,the cell shall be discharged at a constant current of 0.5C down to cutoff discharge voltage 2.5V,rest for 10 minutes. (2) 0.5C CC to 3.65V,and CV to 0.05C cut off, rest for 10 minutes. (3) The capacity means the discharge capacity of the cell, which is measured with discharge current of 1C with 2.5V cut-off voltage. (1) 充电前，电池应以 0.5C 的恒流放电至截止电压 2.5V，休息 10 分钟。 (2)0.5C 恒流充电至 3.65V，再 3.65V 恒压充电至电流小于 0.05C，搁置 10mins； (3)以 1C 放电至 2.5V。	≥95% Initial Capacity ≥95%额定容量

No.	Items（项目）	Test Method and Condition （测试方法和条件）	Criteria（标准）
6	Cycle Life 循环寿命	Environmental test conditions Temperature : 25°C±2°C Relative Humidity : 65%±20% 1）Charge: the cell with constant current at 0.5C and then with constant voltage at 3.65V till charge current declines to ≤0.05C, 2)rest 30 mins 3)Discharge: 0.5C discharge to 2.5V; 4）rest 30 mins, 5)repect 1)~4), repetitions are cycles. 循环测试条件 温度：25°C±2°C 湿度： 65%± 20% 1）充电：0.5C 恒流充电至 3.65V ，再恒压 3.65V 充电直至充电电流≤0.05C, 2）搁置 30mins , 3）电池以 0.5C 放电至 2.5V ,; 4）搁置 30mins , 5）重复以上 1)~4)步骤，重复次数即为循环次数。	After 3500 cycles ≥80% Initiation Capacity 3500 周循环后≥初始容量 80%
7	Charge Retention and Recovery at Room Temperature 常温荷电保持与容量恢复能力	The cell shall be charged in accordance with the standard charging method. The cell shall be stored in the temperature of 23°C±5°C for 28 days. Discharge at the constant current of 0.5C down to 2.5V. This discharge capacity is capacity retention.Charge again in accordance with the standard charging method. Discharge at the constant current of 0.5C down to 2.5V. This discharge capacity is capacity recovery. 电池按标准方法充满电后，在 23°C±5°C下储存 28 天后，在 23°C±5°C下以 0.5C 电流放电，直到放电终止电压 2.5V，此放电容量为容量保持。电池再充电后在 23°C±5°C下以 0.5C 电流放电，直到放电终止电压 2.5V，此放电容量为容量恢复。	Capacity Retention≥ 93% Initial Capacity 荷电保持≥93%初始容量 容量 Capacity Recovery≥95% Initial Capacity 荷电恢复≥95%初始容量 容量
8	Charge Retention and Recovery at High Temperature 高温荷电保持与容量恢复能力	The cell shall be charged in accordance with the standard charging method. The cell shall be stored in the temperature of 55°C±2°C for 7 days. Discharge at the constant current of 0.5C down to 2.5V. This discharge capacity is capacity retention.Charge again in accordance with the standard charging method. Discharge at the constant current of 0.5C down to 2.5V. This discharge capacity is capacity recovery. 电池按标准方法充满电后，在 55°C±2°C下储存 7 天后，在 25°C±2°C 下以 0.5C 电流放电，直到放电终止电压 2.5V，此放电容量为容量保持。电池再充电后在 25°C±2°C 下以 0.5C 电流放电，直到放电终止电压 2.5V，此放电容量为容量恢复。	Capacity Retention≥ 93% Initial Capacity 荷电保持≥93%初始容量 容量 Capacity Recovery≥95% Initial Capacity 荷电恢复≥95%初始容量 容量

No.	Items（项目）	Test Method and Condition（测试方法和条件）	Criteria（标准）
9	High Temperature Performance 高温性能	(1)The cell shall be charged in accordance with the standard charge. (2) The cell shall be stored in the temperature of 55℃±2℃for 5h. (3)Discharge at the constant current of 0.5C down to the end-of-discharge voltage 2.5V. (1)按标准充电方法充电后； (2) 放入 55℃±2℃高温箱中恒温 5h； (3)在此条件下 0.5C 放电至 2.5V。	discharge capacity≥95% Initial Capacity 放电容量≥95%初始容量

4.3 Safety Performance 安全性能测试

4.3.1 Cell Safety Performance 电芯安全性能测试

No.	Items（项目）	Test Method and Condition（测试方法和条件）	Criteria（标准）
1	Short Circuit Test 强制放电测试	Discharge at the constant current of 1C down to 2.5V，rest for 0.5hours，Positive and negative pole reverse pole，1C CC 90 minutes. 在 20℃±5℃条件下，以 0.5C 恒流放电至 2.5V，搁置 0.5h,正负极反极，用 1C 电流充电 90min	No Fire, No Explosion. 不起火，不爆炸
2	Overcharge 过充试验	After standard charge, rest for 10mins; then charge at constant current of 3C to 5V. 按标准充电后，搁置 10mins；3C 恒流充电至电压 5V。	No Fire, No Explosion 不爆炸、不起火
3	Short Test 短路试验	After standard charge, the external short circuit for 10 min, the external circuit resistance 80mΩ±20mΩ. 电池充电后，经外部短路 10min，外部线路电阻 80mΩ±20mΩ。	No Fire, No Explosion 不爆炸、不起火
4	Heating Test 加热试验	After standard charge, the cell shall be stored in a oven with the heat rate of 5℃/min±2℃/min up to 130℃±2℃, maintain 10mins. 电池充电后放入烘箱，烘箱按照 5℃/min±2℃/min 的速率由室温升至 130℃±2℃，保持此温度 10min 后停止加热。	No Fire, No Explosion 不爆炸、不起火
5	Impact test 重物冲击试验	A test sample cell is to be placed on a flat surface and fixed in a jig. A 10kg weight is to be dropped from a height of 1.0m onto the sample. Cell allows deformation.电池放置于冲击台上并固定在夹具中，将 10kg 重锤自 1.0m 高度自由落下，电池允许发生变形。	The samples shall not fire, and explosion. 样品应不起火，不爆炸
6	Crush test 挤压试验	After standard charge, according to the following test conditions: 1) crush direction: perpendicularly to the cell plates, 2) crush degree: the applied force is 13 kN±1kN by hydrocylinder. 电池充电后，按下列条件进行试验： 1）挤压方向：垂直于蓄电池极板方向, 2）挤压程度：施加的压力为 13kN±1kN，当达到最大压力后泄压试验。	No Fire, No Explosion 不爆炸、不起火

<table>
<tr><th>No.</th><th>Items（项目）</th><th>Test Method and Condition
（测试方法和条件）</th><th>Criteria（标准）</th></tr>
<tr><td>7</td><td>Temperature Cyciling Test
温度冲击试验</td><td>After standard charge, the cell is put into the oven , cycling according to following chart, cycle 10 times,observe 1h.
电池标准方法充电，电池放入温度箱中，按照下图表进行调节，循环次数 10 次，观察 1h。
<table>
<tr><th>温度℃</th><th>时间增量h</th><th>累计时间h</th><th>温度变化要求</th></tr>
<tr><td>20</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>70</td><td>4</td><td>4</td><td>30min内达到</td></tr>
<tr><td>20</td><td>2</td><td>6</td><td>30min内达到</td></tr>
<tr><td>40</td><td>4</td><td>10</td><td>30min内达到</td></tr>
<tr><td>20</td><td>2</td><td>12</td><td>30min内达到</td></tr>
</table></td><td>No Leakage, No Explosion or Catch Fire
不爆炸、不起火、不漏液</td></tr>
<tr><td>8</td><td>Fall Test
跌落试验</td><td>After standard charge, the cell falls freely from 1.5m to the wooden floor, twice each.
电池充电后，电池从 1.5m 高度处自由跌落到木地板上，每个面 2 次。</td><td>No Fire, No Explosion
不爆炸、不起火</td></tr>
</table>

4.4 Appearance inspection 外观检测

There shall be no such defect as scratch, flaw, crack, and leakage, which may adversely affect commercial value of the cell.

不允许有任何影响电芯性能的外观缺陷，诸如裂纹、裂缝、泄漏等。

5. Storage and Others 贮存及其它事项

5.1. Storage 贮存

The best storage temperature：15°C-35°C, exceeding the optimal storage temperature range will affect the battery performance.

最佳贮存温度：15°C-35°C，超出最佳贮存温度范围会对电池性能产生影响。

5.2. Others 其它事项

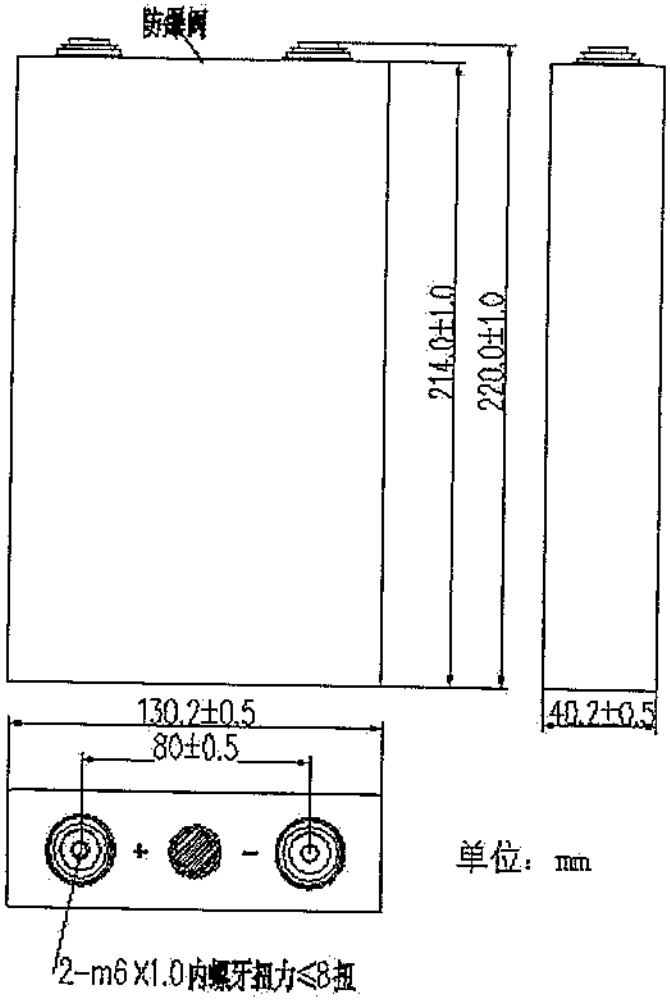
Any matters that this specification does not specify should be confirmed by the customer and HIGHSTAR.

任何本说明书中未提及的事项，须经双方协商确定。

6. Cell drawing (all unit in mm, not in scale, included wrapped foil) 电芯尺寸图（包胶）

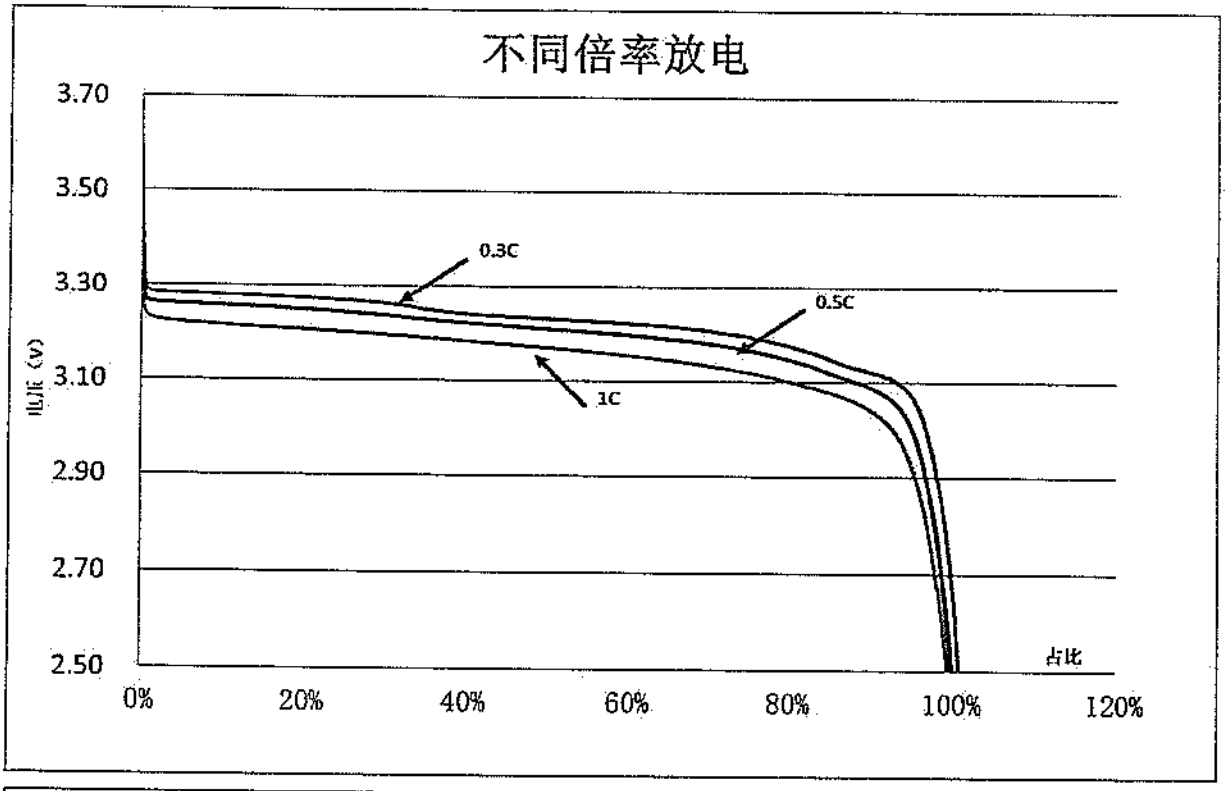
极柱为 M6*1.0 内螺纹，扭矩≤8N · m，正极极柱为铝极柱，负极极柱为紫铜镀镍极柱。

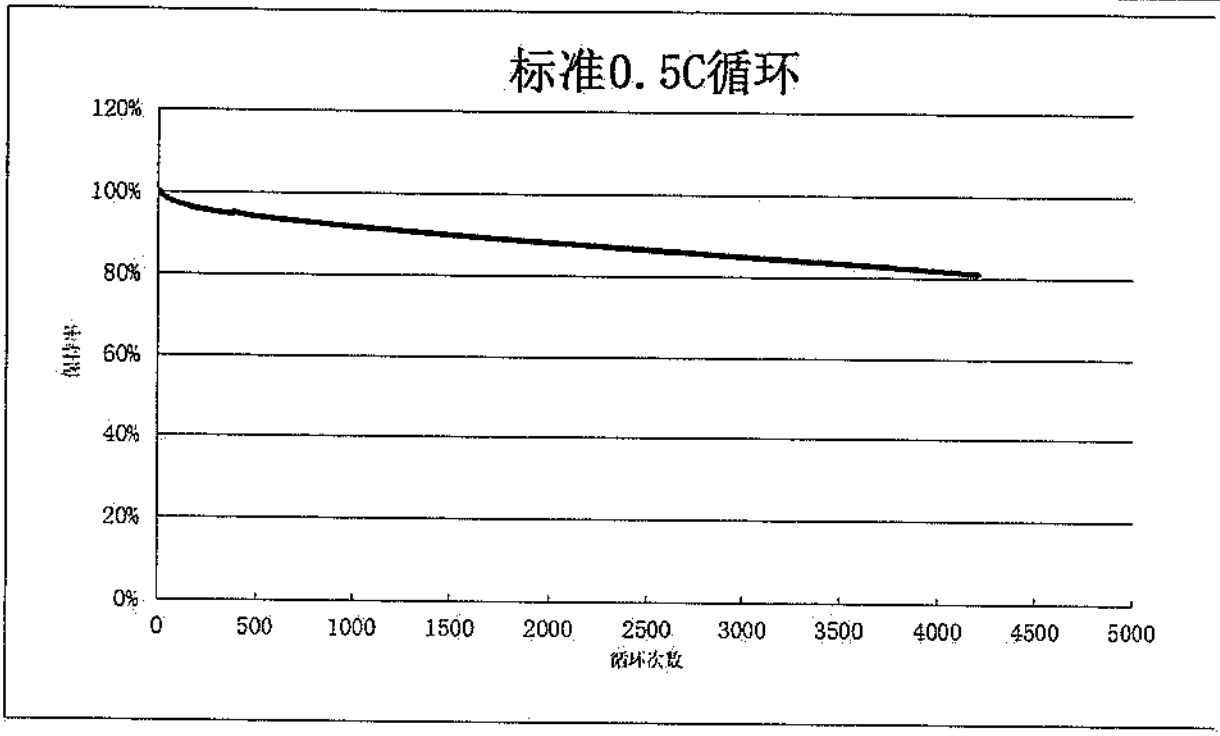
The terminal poles are both M6*1.0 internal thread, torque ≤8N · m, the positive terminal is aluminum, the negative terminal is red cooper with nickel plated.



7. Appendix (For Reference Only) 附件 （仅供参考）

The test conditions are carried out under standard conditions 测试条件均在标准下进行





8. Special Warning 特别提示

Handling Precautions and Guideline for Lithium-Ion Rechargeable Batteries

锂离子充电电芯操作指示及注意事项

Statement (1):

Customers are requested to contact HIGHSTAR in advance, if and when the customer needs other applications or operating conditions than those described in this document. Additional experimentation may be required to verify performance and safety under such conditions.

声明一：

客户若需要将电芯用于超出文件规定以外的设备，或在文件规定以外的使用条件下使用电芯，应事先联系海四达，因为需要进行特定的实验测试以核实电芯在该使用条件下的性能及安全性。

Statement (2):

HIGHSTAR will take no responsibility for any accident when the cell is used under other conditions than those described in this Document.

声明二：

对于在超出文件规定以外的条件下使用电芯而造成的任何意外事故,海四达概不负责。

Statement (3):

HIGHSTAR will inform, in a written form, customers of improvement(s) regarding proper usage and handling of cells, if it is deemed necessary.

声明三：

如有必要，海四达会以书面形式告知客户有关正确操作使用电芯的改进措施。

Statement (4):

The battery must be used under the protection of power management system; When used in combination, the power management system must have the equalization function to balance the voltage difference in the battery pack and ensure the normal performance of the battery pack.

声明四：

电池使用时须在有电源管理系统保护下使用；组合使用时，电源管理系统必须具有均衡功能，能对电池组内电压差进行均衡，确保电池组发挥正常性能。

Statement (5):

During designation of host device or battery pack, it's better for customers to get HIGHSTAR involve to review the battery installation and safety protection scheme. This is very helpful to safety of battery application.

声明五：

客户在产品设计过程中，最好邀请海四达共同完成电池安装及电池安全保护装置部分的设计，这对电池的安全使用会很有帮助。

8.1 Charge 充电

8.1.1 Charging Power:

Charge power should be less than the maximum value specified in the Product Specification. Charging with power higher than the recommended value may deteriorate the charge and discharge performance, mechanical performance and safety performance of the cell, and may lead to heating or leakage, which will seriously affect the service life of the battery. If you have special needs, please contact with the company.

充电功率:

充电功率不得超过本标准书中规定的最大充电功率。使用高于推荐值功率充电将可能引起电芯的充放电性能、机械性能和安全性能等变差，并可能会导致发热或泄漏，会严重影响电池使用寿命。如有特殊需要，请与公司联系沟通。

8.1.2 Charge Voltage limit:

Batteries shall be charged shall be done by voltage less than that specified in the Product Specification (3.65V/cell). Charging beyond 3.65V, which is the absolute maximum voltage, must be strictly prohibited. The charger and protection circuit of battery pack shall be designed to comply with this condition. It is very dangerous that charging with higher voltage than the maximum value and may cause damage to the cell electrical, mechanical safety performance and could lead to heat generation or leakage. In serious cases, it will affect the service life of the battery and even cause safety problems.

充电电压限制

充电电压不得超过本规格书中规定的额定电压（3.65V/电芯）。3.65V 为充电电压最高极限，充电器和电池保护电路的设计应满足此条件。电芯电压高于额定电压值时，将可能引起电芯的充放电性能变差、可能会导致发热或泄漏，严重时会影响电池使用寿命甚至会产生安全问题。

8.1.3 Charge Temperature:

Batteries shall be charged at 0°C-45°C environment temperature specified in the Product Specification. In case of environment temperature is lower than 10°C, batteries shall be charged with a little current (no larger than 0.2C). If the environment temperature is lower than 0°C, charge shall be prohibited. Charging at low temperature will affect the service performance and service life of the battery, and long-term low-temperature charging will produce safety problems.

充电温度：

电芯必须在 0°C～45°C 的环境温度范围内才能进行充电。环境温度低于 10°C 时，须以小电流（不大于 0.2C）充电；当环境温度低于 0°C 时，应禁止充电。低温下充电会影响电池使用性能和寿命，长期低温充电会产生安全问题。

8.1.4 Prohibition of Reverse Charge:

Reverse charging is prohibited. Cells shall be connected correctly. The polarity has to be confirmed before wiring. In case of the cell is connected improperly, the cell cannot be charged. the reverse charging may cause damage to the cell which may lead to degradation of cell performance and damage the cell safety, and could cause heat generation or leakage.

禁止反向充电：

正确连接电池的正负极，严禁反向充电。若电池正负极接反，应保证无法对电芯进行充电。反向充电会降低电芯的充放电性能、安全性，并会导致发热、泄漏。

8.2 Discharge 放电

8.2.1 Discharge Power:

The cell shall be discharged at less than the maximum discharge current specified in the Product Specification. High discharging current may reduce the discharge capacity significantly or cause over-heat. At the same time, it will seriously affect the service life of the battery.

放电功率：

放电功率不得超过本规格书规定的最大放电功率，大功率放电会导致电芯容量剧减并导致过热，同时会严重影响电池使用寿命。

8.2.2 Discharge Temperature:

Cells shall be discharged at -20°C～60°C environment temperature specified in the Product Specification. The optimum discharge temperature range is 25 ℃～35 ℃; The discharge current shall be controlled when it exceeds the optimal temperature range, otherwise the service life will be affected. If necessary, please contact the company.

放电温度：

电芯可在 -20°C～60°C 的环境温度范围内进行放电，最佳放电温度范围 25°C～35°C；超出最佳温度范围使用时需对放电电流进行控制，不然会影响使用寿命，如有需要，请与公司联系沟通。

8.2.3 Over-discharge:

It should be noted that cells would be at an over-discharged status due to self-discharge characteristics in case they were not used for a long time. In order to prevent over-discharging, cells shall be charged periodically to maintain the voltage

between 3.2V and 3.4V. Over-discharging may cause the loss of cell performance, characteristics , or battery functions.

过放电：

需注意的是，在电芯长期停止使用期间，它可能会因其自放电特性而处于某种过放电状态。为防止过放电的发生，电芯应定期充电，将其电压维持在 3.2V 至 3.4V 之间。过放电会导致电芯性能、电池功能的丧失。

8.3 Other requirements for charging and discharging:

If many cells are used in the same group, try to make the cells charge and discharge under the same current and temperature. If there are differences, there will be differences in the performance of the same group of cells, which will affect the performance of the whole battery pack if in serious case.

充放电其余要求：

如是许多电芯同组使用，要尽量使电芯在相同的电流和温度等环境下进行充放电使用，如有差异会对同组电芯的性能产生差异，严重时会影响整组电池性能的发挥。

8. 4 Notice for Designing Battery Pack 电池结构设计注意事项

8.4.1 Pack Design 外壳设计

Battery pack should have sufficient strength to make sure the cell(s) inside is protected from mechanical shock.

电池外壳应有足够的机械强度以保证其内部电芯免受机械损伤，材质为阻燃性材料。

8.4.2 Cell Fixing 电芯的安装

8.4.2.1 No cell movement in the battery pack should be allowed.

电芯不得在壳内活动。

8.4.2.2 Prevention of short circuit in a battery pack or host device.

防止电芯在电池包装或主机内产生短路。

8.4.2.3 Enough insulation layers between wiring and the cells shall be used to maintain extra safety protection. The battery pack or host device shall be structured with no any potential short circuit, which may cause generation of smoke or firing.

引线与电芯之间要有足够的绝缘层以保证绝对安全。电池壳内不得有任何短路发生隐患，以防止冒烟或着火。

8. 5 Storage 贮存

The cell shall be stored at the environmental condition of -20°C- 45°C and 65%±20% RH.Long term storage will cause irreversible damage to battery performance.

The voltage for a long time storage shall be 3.2V-3.4V range.

If the cell has to be storied for a long time (Over 3 months), the environmental condition should be:

Temperature:15°C-35°C

Humidity: 65%±20%RH

During the warranty period, the battery with battery voltage lower than 3.2V shall be recharged with 10A～50A current every 3 months until the voltage reaches 3.4V, otherwise it will cause great irreversible damage to the battery performance.

电芯储存可在温度 -20°C~ 45°C ，湿度为 65%±20%RH 的环境中，长期储存会对电池性能产生不可逆损伤。

长期存储电池（超过 3 个月）须置于温度为 15°C-35°C、湿度为 65%±20%RH 的环境中，电压为 3.2V~3.4V。

保质期内每隔 3 个月对电池电压低于 3.2V 的电池用 10A~50A 电流进行补充电，至电压达到 3.4V，不然会对电池性能产生较大不可逆损伤。

8.6 User's Guideline for Safety Handling: 用户安全操作信息：

8.6.1 The following information, or equivalent statements, shall be made available to the user through one or more of the following means, as appropriate: printed on the label for the battery, printed on the label for host device, printed in the owner's manual, or posted in a help file or Internet website:

下列信息或类似的申明必须通过一种或多种适当的途径让用户知晓，可选择的途径包括：电池标签、主机标签、用户手册、储存于帮助文档或互联网：

8.6.1.1 Do not disassemble or open, crush, bend or deform, puncture, or shred;

请勿拆解或打开、挤压、弯折、变形、刺穿、敲碎；

8.6.1.2 Do not modify or remanufacture, attempt to insert foreign objects into the battery, immerse or expose to water or other liquids, or expose to fire, explosion, or other hazard.

请勿修改或改装，不要试图将外物插入电池，不要浸入或暴露在水或其它液体中，远离火源、爆炸物和其他危险；

8.6.1.3 Only use the battery for the system for which it was specified.

只能使用本系统规定的电池；

8.6.1.4 Only use the battery with a charging system that has been qualified with the system per standard. Use of an unqualified battery or charger may present a risk of fire, explosion, leakage, or other hazard.

只能使用通过标准认证具有充电管理系统的电池，使用未经认证的电池或充电器可能存在起火、爆炸、或其它危险；

8.6.1.5 Do not short circuit a battery or allow metallic or conductive objects to contact the battery terminals

请勿使电池短路，也不要让金属或其它导体接触电池接电端子；

8.6.1.6 Replace the battery only with another battery that has been qualified with the system per standard. Use of an unqualified battery may present a risk of fire, explosion, leakage, or other hazard.

更换电池时只能使用通过标准认证的电池，使用未经认证的电池可能存在起火、爆炸或其它危险；

8.6.1.7 Don't keep a battery at rest for a long time (over 6 months). Safety accident may happen when recharging a battery which has a rest for a long time.

避免电池长时间放置不用（6 个月以上），长期放置不用的电池重新充电时可能会发生安全问题。

8.6.1.8 Promptly dispose of used batteries in accordance with local regulations.

按当地法规迅速处理报废电池；

8.6.1.9 Battery usage by children should be supervised.

儿童使用电池应受到监督；

8.6.1.10 Avoid dropping the phone or battery. If the phone or battery is dropped, especially on a hard surface, and the user suspects damage, take it to a service center for inspection.

不要跌落主机或电池，如果主机或电池不慎跌落（尤其在硬表面上），用户怀疑电池损坏，则应找服务中心检查；

8.6.1.11 Improper battery use may result in a fire, explosion, or other hazard.

不正确使用电池可能发生燃烧、爆炸或其它危险。

8.6.1.12 In the event of a battery leak, do not allow the liquid to come in contact with the skin or eyes. If contact has been made, wash the affected area with large amounts of water and seek medical advice.

如果电池发生漏液，不要让电池接触皮肤和眼睛，如果接触不幸发生，则用大量的水冲洗接触部位或寻求医生帮助；

8.6.1.13 Seek medical advice immediately if a battery has been swallowed.

如果电池被吞食了，立即就医；

8.6.1.14 Communicate the appropriate steps to be taken if a hazard occurs.

告知用户当危险发生，应采取什么步骤。

8.6.2 The following indications, notifications, and dialog/messages, at the system level, or an equivalent statement, may be displayed along with recommended actions as appropriate:

下列指示、通告、语句、信息或类似的申明应通过适当途径让用户知悉：

8.6.2.1 Abnormal battery temperature alert.

不正常的电池温度警示；

8.6.2.2 Abnormal host device and/or battery dc input voltage alert.

不正常的主机或电池的直流输入电压警示；

8.6.2.3 Abnormal current draw alert.

不正常的电流警示；

8.6.2.4 Battery communication fail/time-out alert.

电池通讯失败或超时警示；

8.6.2.5 Incompatible battery alert.

不相容电池警示；

8.6.2.6 Alert for other malfunctions that may lead to hazards.

可能导致危险的其它故障警示。

8.7 Cycle Life 循环寿命

Cycle life refers to the cycle life of the test method under the test conditions specified above. The service conditions not specified in this specification will affect the cycle life.

循环寿命是指上述规定的使用条件下的循环寿命。不在此规格书规定的使用条件下均会影响循环寿命。

8.8 Others: 其它事项：

8.8.1 Prohibition of Disassembly 严禁拆卸电芯

8.8.1.1 Never disassemble cells. The disassembling may generate internal short circuit in the cell, which may cause firing or other problems.

在任何情况下不得拆卸电芯。拆卸电芯可能会导致内部短路，进而引起着火及其它问题。

8.8.1.2 Electrolyte is harmful. In case the electrolyte come into contact with the skin, or eyes, physicians shall flush the electrolyte immediately with fresh water and medical advice is to be sought.

电解液有害。万一有电解液泄漏而接触到皮肤、眼睛或身体其它部位，应立即用清水冲洗电解液并就医。

8.8.2 Never incinerate nor dispose the cells in fire. These may cause firing of the cells, which is very dangerous and is prohibited.

在任何情况下，不得燃烧电芯或将电芯投入火中，否则会引起电芯燃烧，这是非常危险的，应绝对禁止。

8.8.3 The cells shall never be soaked with liquids such as water, seawater, drinks such as soft drinks, juices, coffee or others.

不得将电芯浸泡液体，如淡水、海水、饮料（果汁、咖啡等）。

8.8.4 The battery replacement shall be done only by either cells supplier or device supplier and never be done by the user.

更换电芯应由电芯供应商或设备供应商完成，用户不得自行更换。

8.8.5 Prohibition of use of damaged cells

禁止使用已损坏的电芯

8.8.6 The cells might be damaged during shipping by shock. If any abnormal features of the cells are found such as deformation of the cell package, smelling of an electrolyte, an electrolyte leakage and others, the cells shall never be used any more. The Cells with a smell of the electrolyte or a leakage shall be placed away from fire to avoid firing.

电芯在运输过程中可能因撞击等原因而损坏，若发现电芯有任何异常特征，如外壳破损，闻到电解液气味，电解液泄漏等，该电芯不得使用。有电解液泄漏或闻到异常味道的电池应远离火源以避免着火。

8.7.7 Curve Graph 曲线图

The curve graph above is for reference only

本规格书中的曲线图仅供参考。

8.7.8 The manufacturer reserves the right to change and revise the design and product specification Approval Sheet without prior notice;

制造商保留在没有预先通知的情况下改变和修正设计及产品规格确认书的权力；

9. Limited Warranty and Liabilities 有限保证和责任

9.1 Limited Warranty period 有限保证期限

The cells shall compile with this specification within 12 months from the manufacture date as stipulated on cell marking ("Warranty Period"). In the Warranty Period, HIGHSTAR will replace cells which fail to confirm to this specification at no cost to Customer.

自电芯标识显示的制造日期之日起 12 月内（"保证期限"），电芯应符合本规格书的规定。在此保证期限内，海四达免费为客户更换不符合本规格书规定的电芯。

9.2 Warranty and Waiver 保证责任免除

Under the following conditions, HIGHSTAR will not take any responsibility incurred in any losses resulting from the use of cells:

在以下条件下，海四达对客户因使用电芯而引起的任何损失不承担赔偿责任：

a. The cells are misused, abused or are used in any manner deviated or in breach of conditions as set out in this specification and beyond the allowable conditions of this specification.

误用、滥用电芯或违反本规格书规定和超出本规格书的允许条件使用的电芯；

b. The cells are rendered to be nonconforming to this specification for reasons caused by parties other than HIGHSTAR or by circumstances beyond the control of HIGHSTAR.

非海四达原因导致的或海四达不能控制的原因导致的电芯不符合本规格书的规定。

9.3 Limited Warranty range 有限保证范围

Customer is recommended to follow this specification to use. Or customer can use an alternative operation method mutually agreed by customer and HIGHSTAR. Using an operation method neither according to the specification nor agreed by HIGHSTAR in written will cause the resulting change in product quality are not applicable to the warranty scope promised by HIGHSTAR.

推荐客户完全按照此产品规格书上所描述的要求进行操作，或采用经过客户与海四达双方确认的其他条件。如果客户采用的使用方法既没有按照本规格书的要求，也没有经海四达具有法定有效的书面同意，所导致产品质量变化不适用于海四达公司承诺的保质保证范围内。

Warning Statement

WARNING

BATTERIES ARE POTENTIALLY DANGEROUS AND PROPER PRECAUTIONS MUST BE OBSERVED IN HANDLING AND MAINTENANCE.

RUNNING TESTS ON THE BATTERIES IMPROPERLY MAY RESULT IN SEVERE PERSONAL BODY INJURY OR PROPERTY DAMAGES.

WORK ON BATTERIES MUST BE PERFORMED ONLY WITH PROPER TOOLS AND PROTECTIVE EQUIPMENT MUST BE USED.

BATTERY MAINTENANCE MUST BE CARRIED OUT BY PERSONNEL KNOWLEDGEABLE OF BATTERIES AND TRAINED IN THE SAFETY PRECAUTIONS INVOLVED.

FAILURE TO OBSERVE THE ABOVE MAY CAUSE VARIOUS HAZARDS.

Customer Inquiry

产品规格需求

Model: IFpP40130220-100

The customer is requested to write down your information and contact HIGHSTAR in advance, if the customer needs applications or operating conditions other than those described in this document. HIGHSTAR could design and build such products according to your special request if it is attainable.

我司也可以根据客户的特殊要求而设计、制造符合要求的电池产品，如果贵公司有本规格书描述之外的性能要求，请您写在下面并回签给我司：

	Special Request(要求)	Criteria(规格)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Company Name:_____ Signature:_____ Date:_____