

Xinxiang Hongli Supply Source Technology Co Ltd

## Specification Approval Sheet

### 锂离子电池规格书

型号: 18650-2000mAh

Model: 18650-2000mAh

类型: 圆柱锂离子

Type: Cylindrical lithium ion

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## 1. 适用范围 Scope

仅适用于深圳优贝特科技有限公司生产的可充电锂离子电池或电池组，包括锂离子电池电芯和保护组件。

This document describes the product specification of lithium ion polymer battery or module which includes cell and protection devices supplied by Xinxiang Hongli Supply Source Technology Co

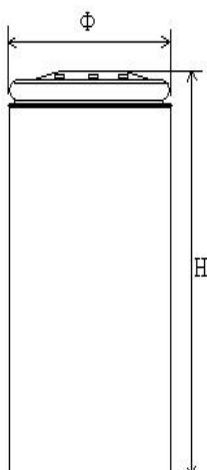
## 2. 电池组成 Battery Constitution

序号 No.	名称 Name	型号 Model	备注 Remarks
2.1	单体电芯	18650 2000mAh	

## 3. 主要技术参数 Specification

NO	Items	Criteria	Remarks
3.1	Typical Capacity 典型容量	<u>2000mAh</u>	0.2C Charge and Discharge to Cut-off Voltage (4.2V~ 2.7V) 0.2C 充放电至终止电压
3.1	Minimum Capacity 最小容量	<u>1950mAh</u>	
3.2	Nominal Voltage 标称电压	3.7V	
3.3	Internal Impedance 内阻	Cell: $\leq 60m\Omega$ Battery: $\leq 60m\Omega$	AC 1KHz Test after Standard Charge 标准充电后 AC 1KHz 测试
3.4	Charge Cut-off Voltage 充电截止电压 (V)	4.2 V	
3.5	Standard Charge Current 标准充电电流	<u>1000mA</u>	0.5C
3.6	Max. Charge Current 最大充电电流	<u>2000mA</u>	1.0C
3.7	Standard Discharge Current 标准放电电流	<u>1000mA</u>	0.5C
3.8	Max. Discharge Current 最大放电电流	<u>2000mA</u>	1.0C
3.9	Discharge Cut-off Voltage 放电截止电压	2.75V	
3.10	Operating Temperature 工作温度	0~+45°C	Charging 充电
		-10°C~+55°C	Discharging 放电
3.11	Storage Temperature 贮存温度	-20°C / +60°C	Less than 1 month 小于一个月
		-20°C / +45°C	Less than 6 months 小于六个月

#### 4. 电池尺寸 Battery Drawing



项目 Items	标准 Criteria
电芯长度: H Battery Length: H	65.2±0.2 毫米 65.2±0.2 mm Max.
电芯直径: $\Phi$ The electric core diameter $\Phi$	18.2-18.5 毫米 18.2-18.5mm Max.

#### 5. 电池性能 Battery Performance

##### 5.1 外观 Appearance

电池外表面应保持干净、清洁，不能出现划痕、凹点、脏污、漏液、变形等不良现象。

There can't be any defects like scratches, flaws, cracks, and leakage, which may affect commercial value of the battery.

##### 5.2 标准测试条件 Standard Testing Condition

除非另有说明,涉及本规格书的所有测试项目均应在温度 25±5℃,相对湿度 45%—85%RH 条件下进行。

Unless otherwise specified, all tests stated in this product specification should be conducted under below condition:

Temperature: 25 ± 5°C

Humidity: 45%—85% RH

##### 5.3 电性能 Electric Performance

序号 No.	项目 Items	测试条件 Test Method and Condition	标准 Criteria
1	标准充电模式 Standard Charge	0.5C 恒流充电至 4.2V，然后恒压充电至 0.02C Charge to 4.2V at constant current 0.5C, then constant voltage charge to taper current 0.02C	总充电时间不超过 13 小时，其中在 25±2℃ 环境下充电； Constant Charge Time ≤13hours, at 25±2℃.
2	最小容量 Minimum Capacity	在标准充电模式和标准放电模式下测量的电池容量 Measure the capacity through standard charge model and standard discharge model	≥1950 毫安时 ≥1950mAh
3	循环 Cycle Life	(1) 充电过程：标准充电模式； (2) 放电过程：标准放电模式。 重复以上步骤 200 次。 Charge: Standard charge model Discharge: Standard discharge model	200 次循环后放电容量大于等于标称容量的 80% Residual capacity ≥ 80% after 200 cycles vs. Discharge capacity of first cycle

		Repeat the procedures below 200 cycles	
4	内阻 Internal Impedance	电芯 50%容量时, 1KHz 下的交流阻抗 Internal impedance measured at 1KHz AC when at 50% capacity	≤60 毫欧 ≤60 mΩ
5	电池电压 Battery Voltage	用万用表测试开路电压 Measure OCV by multi-meter	3.75—4.2 伏 3.75—4.2V
6	电池温度性能 Temperature Performance of Battery	充电过程: 标准充电模式 放电过程: 分别在 -20° C, -10° C, 0° C 和 60° C 温度下以 0.2C 恒流放电至 2.75V Charge: Standard charge model Discharge: Discharge to 2.75V at 0.2C constant current at -20° C, -10° C, 0° C and 60° C respectively	-20°C 下, 容量 ≥40% -10°C 下, 容量 ≥75% 0°C 下, 容量 ≥80% 60°C 下, 容量 ≥95% -20°C, capacity ≥40% -10°C, capacity ≥75% 0°C, capacity ≥80% 60°C, Capacity ≥95%

#### 5.4 机械性能测试 Mechanical Performance Testing

序号 No.	项目 Items	测试条件 Test Method and Condition	判断标准 Criteria
1	振动测试 Vibration Test	充满电电池按 X、Y、Z 三个方向, 每个方向上从 10HZ~55HZ 的频率循环扫描振动 90min 振动频率 10HZ~50HZ 位移幅值 (单振幅 0.8mm)。 After standard charging, fixed the capacitor to vibration table and start vibrate. Vibrate at 10HZ~55HZ with amplitude of 0.8mm for 90 minus at axis of XYZ respectively.	不起火,不爆炸,不冒烟或漏液 No fire, no explode, no smoke or no leakage
2	跌落测试 Drop Test	电池完全充电后从 1300mm 高度由 X, Y, Z 正负 6 个方向自由跌落到置于水泥地面上 18mm-20mm 的厚木板上,每个方向跌落 1 次,最后用 1C 进行充放循环 3 次。 Battery free fall from a height of 1.3 meters 6 times at six angles (X, Y, Z plus positive, negative) to concrete ground, then cycle three times at 1C current.	不起火,不爆炸,不冒烟或漏液 No fire, no explode, no smoke or no leakage

#### 5.5 安全性能测试 Safety Performance Testing

序号 No.	项目 Items	测试条件 Testing condition	标准 Criteria
1	过充电测试 Overcharge Test	充满电的电池外接 3C/4.8V 的电源给电池持续加载 2 小时 3C/4.8V DC power supply charge for 2hrs after fully charge	不起火,不爆炸,不冒烟或漏液 No fire, no explode, no smoke or no leakage
2	短路测试 Short Circuit Test	充满电电池用 < 0.1 Ω 电阻短路 1 h With < 0.1 Ω resisto 1 h battery wire circuit	不起火,不爆炸,不冒烟或漏液 No fire, no explode, no smoke or no leakage
3	重物冲击 Impact Test	将电池放在冲击台上, 将 10kg 重锤自 1m 高度自由落下, 冲击电芯 Put a cell on the impact plat. A 10kg hammer free fall from the height of 1m onto the cell	不起火,不爆炸, 允许电芯变形 No fire, no explode, but distortion is allowed

4	过放电测试 Over discharge Test	将电池放电至终止电压后,以 30Ω负载给电池持续加载 28 小时 Discharge 28hrs with 30Ω resistor after fully charge	不起火,不爆炸,不冒烟或漏液 No fire, no explode, no smoke or no leakage
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## 5.6 高温储存性能测试 High Temperature Storage Performance Testing

序号 No.	项目 Items	测试条件 Testing condition	标准 Criteria
1	45°C/7 天 45°C/7 days	充满电电池在 45°C ± 2°C 高温箱中搁置 7 天,再放电至终止电压 Stored in a 45°C ± 2°C oven 7 day after fully charged, then discharge to 2.75V at RT	不起火,不爆炸, 不冒烟或漏液 No fire, no explode, no smoke or no leakage 容量衰减 < 10%, 内阻增加 < 30% Cap loss < 10%, imp increase < 30%

## 6. 贮存及其它事项 Storage and Others

### 6.1 长期贮存 Long Time Storage

长期贮存的电池（超过 3 个月）须置于干燥、凉爽处。贮存电压为 3.75~3.95V.

If stored for a long time (more than three months), the cell should be stored in a dry and cool place. The cell's storage voltage should be 3.75~3.95V

### 6.2 其它事项 Others

任何本说明书中未提及的事项，须经双方协商确定

Any matters that this specification does not cover should be conferred between the customer and Ubetter.

## 7. 电池的注意事项 Handling Instructions

Read and observe the following warnings and circular column to ensure correct and safe use of Li-ion batteries.

认真阅读下面的注意事项，确保正确使用圆柱锂离子电池。中诚智慧对违反下述注意事项而产生的任何问题不予负责。

## **Danger!** **危险!**

### **安全警示及使用说明 Caution and Guideline**

使用前应先阅读产品规格书以及安全警示，确保正确使用电池并确保电池使用过程中的安全。  
Before using battery, please read specification and safety caution, insure proper application and safety.

### **安全警示 Caution**

下面的操作可能导致电池泄漏，发热甚至爆炸：

The following operations may cause the battery to leak, fever and even explosion:

禁止反向充电！

Prohibition of reverse charge of battery.

禁止过充电！

Prohibition of overcharge of battery.

禁止过放电！

Prohibition of overdischarge of battery.

禁止正负极短路！

Prohibition of short circuit of positive and negative of battery.

请使用指定的充电器充电！

Please charge by specified charger.

请不要撞击，敲打，钉刺或拆卸电池！

Don't knock, beat, nail or disassemble battery.

请保持电芯远离热源，禁止将电芯扔入火中！

Please keep away from fire or other heating sources and prohibition of dumping of battery into fire.

### **使用说明 Guideline**

如果电解液接触到皮肤或眼睛，请立刻用清水冲洗接触的区域并寻求医生的建议！

If electrolyte comes into contact with the skin or eyes, where shall flush the electrolyte immediately with fresh water and physicians' advice is to be sought.

请不要在规定的范围外使用或储存电池，否则将削弱电池的性能，缩短电池的寿命，甚至导致电池发热，起火或爆炸！

Don't use or storage battery under the circumstance beyond specified, or will weaken battery performance and shorten battery life-span, even will cause heating, fire or explosion.

使用前请确保电池在质量保证期内。

Please insure battery in quality guarantee duration before using.

如果电池太脏，使用前请清扫它们，否则可能导致其不正常工作。

If batteries are too dirty, please clean them before using. Unless will cause abnormal work of battery.