



河南新太行电源股份有限公司 Henan Xintaihang Power Source CO. LTD.	VER: A/1
地址: 河南新乡市北环路东段太行工业园区 Tel: 0373-5283716 Fax: 0373-5283799	Model: IFR26650-4000mAh

Cylindrical Lithium-Ion Battery Specification

Model: IFR26650-4000mAh

Customer Name:

Customer Approval:

Comment:(Please return one copy with your approval signature)

Customer's Signature:

Prepared By/Date	Checked By/Date	Approved By/Date

The information in this specification subject to change without prior notice.



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1、Scope/适用范围

This specification describes the technical performance and notice of IFR26650-4000mAh batteries, supplied by Henan XinTaiHang Power Source CO., LTD.

本规格书描述了磷酸铁锂电池 IFR26650-4000mAh 的有关技术指标及使用注意事项, 由河南新太行电源股份有限公司提供。

2、Specification/基本特性

No. 序号	Item 项目	General parameter 常规参数	Remark 备注
1	Can Material 壳体材质	Ni-plate Steel 镀镍钢壳	
2	Nominal capacity 标称容量	4000mAh	0.5C ₅ A
3	Minimum capacity 最小容量	3950mAh	0.5C ₅ A
4	Nominal voltage 标称电压	3.2V	
5	Maximum charge voltage 充电最高电压	3.65V	
6	Discharge cut-off voltage 放电截止电压	2.0V	
7	Maximum continuous charge current 最大持续充电电流	1C ₅ A	RT
8	Maximum continuous discharge current 最大持续放电电流	3C ₅ A	RT
9	Internal impedance 内阻	≤25mΩ	Measured at AC1KHz of 50%SOC 半电态下交流 1KHz 测量
10	Battery weight 电池重量	Approx.88g 约 88g	
11	Battery diameter (d) 电池直径	26.5±0.2mm	含 PVC 包装
12	Battery height (h) 电池高度	65.5±0.3mm	
13	Standard charge 标准充电	Constant Current 0.5C ₅ A, Constant Voltage 3.65V, Cut-off Current 0.02C ₅ A 持续电流 0.5C ₅ A, 持续电压 3.65V, 截止电流 0.02C ₅ A	CC/CV



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14	Rapid charge 快速充电	Constant Current 1C ₅ A, Constant Voltage 3.65V, Cut-off Current 0.02C ₅ A 持续电流 1C ₅ A, 持续电压 3.65V, 截止电流 0.02C ₅ A	CC/CV
15	Standard discharge 标准放电	Constant Current 0.5C ₅ A, Cut-off Voltage 2.0V 持续电流 0.5C ₅ A, 截止电压 2.0V	CC
16	Operation temperature 工作温度	Charge/充电: 0°C ~ 45°C Discharge/放电: -20°C ~ 60°C	At 60±25%RH
17	Storage temperature 储存温度	Less than 3 months: -20 ~ 45°C Less than 1 year: -20 ~ 25°C 小于 3 个月: -20 ~ 45°C 小于 1 年: -20 ~ 25°C	At 60±25%RH

3. Battery Performance / 电池性能

3.1 Electric Performance/电性能

No. 序号	Test Item 检测项目	Test Method 测试方法	Test Standard 检测标准
1	Normal temperature discharge performance 常温放电性能	Standard charge, then rest for 10min and discharge at 0.5C ₅ A、1C ₅ A、3C ₅ A、5C ₅ A to 2.0V respectively. 电池标准充电后, 搁置 10min, 然后以 0.5C ₅ A、1C ₅ A、3C ₅ A、5C ₅ A 放电至 2.0V。	Discharge capacity/Nominal capacity×100% 放电容量/标称容量×100% 0.5C ₅ A≥100% 1C ₅ A≥95% 3C ₅ A≥90% 5C ₅ A≥85%
2	Normal temperature ratio charging performance 常温倍率充电性能	At normal temperature environment, let stand for 1h after the discharge standard, with 2C constant current charging to 3.65V, let stand for 1h, 1C discharge to 2.0V, 在室温环境下, 电池标准放电后静置 1h, 以 2C 恒流充电至 3.65V, 静置 1h, 以 1C 放电至 2.0V, 采集放电容量, 放电容量/初始容量×100%	Discharge capacity/Nominal capacity×100%≥80% 放电容量/标称容量×100% ≥80%
3	Normal Temperature Storage 常温荷电保持能力	Store for 28days after standard charge, then discharge at 0.5C ₅ A to 2.0V measuring residual capacity; Then standard charge/discharge cycle for 3 times to obtain the recoverable capacity. (the same below) . 电池标准充电后, 开路放置 28 天, 然	Residual capacity≥ Nominal capacity×85% Recoverable capacity≥ Nominal capacity×92% 剩余容量≥标称容量×85% 恢复容量≥标称容量×92%



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		后标准放电至 2.0V。再以标准充放电测试电池的恢复容量, 可循环三次, 任一次容量达到标准要求, 试验即可停止。	
4	Cycle Life 循环寿命	After 2000 cycles at standard charge and discharge, the residual discharge capacity is above 80% of initial capacity. 将电池按照标准充放电制度循环 2000 次, 电池残余容量 $\geq 80\%$ *初始容量。	≥ 2000 cycles
5	Storage Characteristics 储存性能	Stored for 12 months in room-temperature at 50%SOC.After storage cell shall be conducted standard charge/discharge cycle for 5 times to obtain the recoverable capacity. 电池在 50%荷电量条件下室温储存 12 个月后, 以标准充放电循环 5 次, 有一次达到标准要求, 试验即可停止。	Recoverable capacity $\geq$ Nominal capacity $\times 90\%$ 恢复容量 $\geq$ 标称容量 $\times 90\%$
6	Power performance 功率性能	Battery 1C constant current constant voltage charge cut-off current 0.05C to 3.65V C, put aside 30 min, exiled to 1C constant electric 30 min, adjust the sample SOC to 50%; Aside 30 min, with maximum discharge current discharge 5s, put 1min, then 1C discharge to 2.0V, collect data, computing power 电池 1C 恒流恒压充电至 3.65V 截止电流 0.05C, 搁置 30min, 以 1C 恒流放电 30min, 调整试样 SOC 至 50%; 搁置 30min, 以最大放电电流放电 5s, 搁置 1min, 然后以 1C 放电至 2.0V, 采集数据, 计算功率	
7	Discharge temperature Characteristics 放电温度特性	Standard charged in normal temperature, stored under the following temperature for 5h, then discharged at constant current of 1 C ₅ A to 2.0V (-20℃ discharge to 1.6V). 常温条件下电池标准充电后, 电池在放电温度环境中放置 5h, 然后测试 1C ₅ A 至 2.0V (-20℃放至 1.6V) 放电容量。	Discharge capacity/Nominal capacity $\times 100\%$ 放电容量/标称容量 $\times 100\%$ -20℃ $\geq 50\%$ 25℃ $\geq 100\%$ 55℃ $\geq 95\%$

Remark: Measurements are carried out at normal atmospheric pressure、ambient temperature $25\pm 2^{\circ}\text{C}$ and relative humidity of $60\pm 25\%$ without other specified condition. Accuracy of voltmeters and ammeters used in test is equal to or better than the grade 0.5.

注: 如没有特殊要求测试应在 1 标准大气压、环境温度 $25\pm 2^{\circ}\text{C}$ 、相对湿度 $60\pm 25\%$ 条件下进行, 测试中所使用的电压表和电流表的精度等级不低于 0.5 级。



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3.2 Safety Performance/安全性能

No. 序号	Test Item 检测项目	Test Method 测试方法	Standard 检测标准
1	Overcharge 过充电	Standard discharged, then charge at 1C ₅ A constant current to 1.5 termination voltage, or constant current charging after 1 h, observation 1 h, 电池标准充电后, 1C 恒流充电至 1.5 倍终止电压或恒流充电 1h 后, 观察 1h	No fire、No explosion 不起火、不爆炸
2	Over-discharge 过放电	Standard discharged, then discharge at 1C ₅ A constant current to 90min, observation 1 h, 电池标准充电后, 以 1C 放电 90min, 观察 1h,	No fire、No explosion 不起火、不爆炸
3	External Short-circuit 外部短路	After standard charge, external short circuit for 10 min, external line resistance should be less than 5 mΩ, observation of 1 h 电池标准充电后, 电池外部短路 10min, 外部线路电阻应小于 5mΩ, 观察 1h	No fire、No explosion 不起火、不爆炸
4	Crush 挤压	After standard charge, Cell is flat on extrusion device, radius of 75 mm longer than squeezed battery semicylinder extrusion board, according to the speed of 5 ±1mm/s, squeezing the battery to 0V or deformation reached 30% or after reaching 200KN stop pressing, and then observation of 1 h 电池标准充电后, 平放于挤压装置上, 半径为 75mm 长于被挤压电池的半圆柱体挤压板, 按 5±1mm/s 的速度, 将电池挤压到电压为 0V 或变形量达到 30%或挤压力达到 200KN 后停止挤压, 然后观察 1h	No fire、No explosion 不起火、不爆炸
5	Hot oven 热冲击	After standard charge, Cells are heated in a circulating air oven at a rate of 5±2℃ per minute to 130±2℃ and remained for 30 minutes. stop heating, observation of 1 h. 电池标准充电后, 放置于空气流通的热箱中, 温度以 (5±2 ℃) /min 的速率升至 130 ℃±2℃ 并保持 30min, 停止加热, 观察 1h。	No fire、No explosion 不起火、不爆炸

3.3 Environmental tests/环境适应性

No. 序号	Test Item 检测项目	Test Method 测试方法	Standard 检测标准
1	Temperature Cycle 高低温循环	After standard charge, the battery in the temperature box, box temperature adjusted in accordance with table 1, five	No deformation , No fire, No explosion.



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		cycles, observation of 1 h. a) 电池标准充电后 b) 单体蓄电池放入温度箱中, 温度箱温度按照表 1 进行调节, 循环次数 5 次; c) 观察 1h; <table border="1"> <tr> <th colspan="4">表1: 温度循环实验一个循环的温度和实际</th></tr> <tr> <th>温度℃</th><th>时间增量 min</th><th>累计时间 min</th><th>温 度 变 率℃/min</th></tr> <tr> <td>25</td><td>0</td><td>0</td><td>0</td></tr> <tr> <td>-40</td><td>60</td><td>60</td><td>13/12</td></tr> <tr> <td>-40</td><td>90</td><td>150</td><td>0</td></tr> <tr> <td>25</td><td>60</td><td>210</td><td>13/12</td></tr> <tr> <td>85</td><td>90</td><td>300</td><td>2/3</td></tr> <tr> <td>85</td><td>110</td><td>410</td><td>0</td></tr> <tr> <td>25</td><td>70</td><td>480</td><td>6/7</td></tr> </table>	表1: 温度循环实验一个循环的温度和实际				温度℃	时间增量 min	累计时间 min	温 度 变 率℃/min	25	0	0	0	-40	60	60	13/12	-40	90	150	0	25	60	210	13/12	85	90	300	2/3	85	110	410	0	25	70	480	6/7	电池不变形、不起火、不爆炸
表1: 温度循环实验一个循环的温度和实际																																							
温度℃	时间增量 min	累计时间 min	温 度 变 率℃/min																																				
25	0	0	0																																				
-40	60	60	13/12																																				
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85	90	300	2/3																																				
85	110	410	0																																				
25	70	480	6/7																																				
2	Drop 跌落	Battery charging standards, from 1.5 m high free fall to the cement ground, positive and negative terminals of a once. Observation of 1 h 电池标准充电后, 由 1.5m 高度自由跌落到水泥地面上, 正负端子各一次。观察 1h	No fire, No explosion. 不起火、不爆炸																																				
3	Low pressure (altitude simulate) 低压性能 (高度模拟)	After standard charge, cells are stored under the atmosphere pressure of 11.6KPa for 6 hours. 电池标准充电后, 在 11.6kPa 气压下搁置 6h	No leakage, No fire, No explosion. 电池不漏液、不起火、不爆炸																																				
4	Seawater immersion 海水浸泡	After standard charge, The battery immersed in 3.5% NaCl solution (mass fraction, simulated under normal temperature water composition) in 2h. The depth of the water should be no monomer battery. a) 电池标准充电后 b) 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; c) 水深应完全没过单体蓄电池。	No fire, No explosion. 电池不爆炸、不起火、																																				

Remark: All safety and environmental tests should be conducted by the professional under the good safeguard. Otherwise the test possibly causes damage to the test equipment or the operator.

注: 如需进行上述试验, 均须在良好的安全措施保护下, 由专业人员进行。否则可能会对试验设备和人身造成意外伤害!



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4. Warranty period and Product responsibility/保质期及产品质量

Warranty period of this product is 6 months from leaving plant date (code).

产品保质期限为自出厂日期（喷码）开始算起 6 个月内。

We will not guarantee against any accidents occurring due to usage against this specification.

河南新太行电源股份有限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。

5. Mark of Packaging/电池包装标识

The following notice should mark on the packaging of batteries.

以下警告应注明在包装后的电池上

Use the prescribed charger for Li-ion batteries.

- 使用规定的锂离子电池充电器

Never put batteries into fire or heat.

- 不要将电池投入火中或加热

Do not short circuit batteries.

- 不要将电池两端短路

Never disassemble batteries.

- 不要将电池分解拆散



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Please read the specification carefully and according to the following to install or use the cell, as improper handling of li-ion cell may result in lose of efficiency, heating ignition, electrolyte leakage or even explosion.

请仔细阅读并遵照以下条款安装使用电池，不正确的安装使用可能会导致电池发热、鼓胀、泄漏、冒烟或爆炸着火等。

警告/ Warning

Never put a battery into water or seawater. Store batteries in a cool dry place.

禁止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。

Never put batteries into fire or heat.

禁止将电池放入火中，或对电池加热。

Never reverse positive and negative terminals to use batteries.

严禁颠倒正负极使用电池。

Never disassemble or modify batteries.

禁止拆解电池，请勿随意改变电池结构。

Do not short circuit the (+) and (-) terminals with other metals

禁止用金属直接连接电池正负极造成短路。

Hair-pins, coins or screws. Do not store batteries with such objects.

禁止将电池与金属物，如发夹、硬币等一起运输或贮存。

Do not hit with a hammer, step on or throw batteries.

禁止敲击或抛掷、踩踏电池等。

Do not solder batteries directly.

禁止直接焊接电池。

Do not penetrate batteries by nail or other tools.

禁止用钉子或其它利器刺穿电池。

注意/Notice

If liquid leaks onto your skin or clothes, wash well with fresh water immediately.

If liquid leaking from the battery gets into your eyes, do not rub your eyes. Wash them well with clean water and go to see a doctor immediately.

如果电池发生泄露，电解液接触皮肤或衣物，应立即用清水冲洗干净；

如果电解液进入眼睛，请不要揉擦，应立即用清水冲洗眼睛，并及时送医院治疗。

While using, testing or reserving batteries, if you find the battery become hot , distribute smell , change color, deform or any other abnormality, please stop using or testing immediately, and attempt to isolate and keep away from the battery.



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如果电池发出异味、发热、变色、变形或在使用、贮存、充电过程中出现任何异常, 应在有安全防护的条件下, 立即将电池从装置或充电器中移至安全的地方并停止用。

Store batteries out of reach of children so that they are not accidentally swallowed.

把电池放到儿童接触不到的地方, 避免发生意外。

When the battery is thrown away, be sure it is non-conducting by applying insulating tape to the (+) and (-) terminals.

废弃之电池应用绝缘纸包住电极, 以防起火、爆炸。

提醒/Caution

Batteries have been examined before shipment. If you find the battery become hot , distribute smell, deform or any other abnormality, please contact with us immediately.

电池出货前已经严格检查, 如发现所购电池有变形、发热、异味等现象, 请与我司联系;

Keep the batteries at the half-fully charged state in room temperature. During long term storage, batteries should be charged once every half a year to avoid over-discharged.

电池应当在室温下存放, 应充到 20-50%的电量存放。长时间储存时, 建议每半年充电一次, 防止电池过放电。

Do not use unqualified charger or equipment. Please reference to the using recommendation.

充放电时请勿用不合格设备, 并遵循正确的使用说明。

Do not use battery with dry cells and other primary batteries, or batteries of a different package, type or brand.

请勿将不同厂家或不同种类、型号的电池以及新旧电池混用。



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Figure: External Dimension Drawing:

附: 电池外形尺寸图示:

