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1. Scope 适用范围

This document describes the Product Specification of the LNCM Cylindrical rechargeable battery cell supplied by AA Portable Power Corp (<http://www.batteryspace.com>).

本标准规定了锂镍钴锰圆柱型电池的产品性。

2. Specification 规格

No. 序号	Items 项目	Specifications 规格
1	Charge voltage 充电截止电压	4.20V
2	Nominal voltage 平均电压	3.65V
3	Minimal capacity (0.5C) 最小容量 (0.5C)	3.5Ah (25±2°C)
4	Nominal capacity (0.5C) 标称容量 (0.5C)	3.6Ah (25±2°C)
5	Standard charging method 标准充电模式	1.8A CC (constant current) charge to 4.20V, then CV (constant voltage 4.20V) charge till charge current decline to ≤ 0.05C at 25±2°C 25±2°C温度下, 以1.8A恒流充电至4.20V, 然后4.20V恒压充电至电流小于0.05C截止。
6	Charging time 充电时间	Standard charge: 3 hrs Ref. Rapid charge: 1.5hrs Ref. 标准充电: 3小时(参考) 快速充电: 1.5小时(参考)
7	Max. charge current 最大充电电流	0.3C (0~10°C); 0.5C (10~20°C); 1C (20~45°C);
8	Max. discharge current 最大放电电流	5C
9	Discharge cut-off voltage 放电截止电压	2.75V
10	Operating temperature 工作温度	Charging (充电): 0~45°C Discharging (放电): -20~60°C
11	Storage temperature 存储温度	-20°C ~ 45°C in three months at 50%~70% SOC. 三个月内存储温度-20°C ~ 45°C 充电状态: 50%~70%SOC
12	Cell Weight 电池重量	Approx (大约): 94g
13	Cell Dimension 电池尺寸	Height (高度): 65.5 mm max Diameter (直径): 26.3 mm max

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3. Cell Performance Criteria 电池性能标准

3.1. Electrical characteristics 电性能

No. 序号	Items 项目	Test Method and Condition 测试方法和条件	Criteria 标准												
1	Rated Cap. 1.8A 1.8A 容量	Capacity measured with discharge current of 1.8A with 2.75V cut-off voltage after the standard charge. 标准充电后, 以 1.8A 电流恒流放电至 2.75V 截止所测得的容量	$\geq 3.5\text{Ah}$												
2	Cycle Life 循环寿命	Test condition: Temperature : $25\pm 2^{\circ}\text{C}$ Charge: standard charge (refer to item2.5 in page4) Discharge: 1C discharge (4.20V to3.0V) 80% or more of 1 st cycle capacity at 1C discharge of operation 测试条件: 温度: $25\pm 2^{\circ}\text{C}$ 充电: 标准充电 (参照第四页 2.5) 放电: 1C 放电 (截止电压 3.0V) 容量低于 1 st 容量 (1C) 80%, 停止测试。读取循环周次	≥ 1500 times												
3	Storage Performance 储存性能	Battery cell stored at $25\pm 5^{\circ}\text{C}$ with 50% SOC (Ref.) 50% SOC 电池在 $25\pm 5^{\circ}\text{C}$ 温度下储存 (参考)	<table border="1"><thead><tr><th></th><th>1 month</th><th>3 months</th><th>6 months</th></tr></thead><tbody><tr><td>Cap Retention 残留容量/充电容量</td><td>$\gg 97\%$</td><td>$\gg 90\%$</td><td>$\gg 80\%$</td></tr><tr><td>Cap Recovery 可恢复容量/1st 容量</td><td>$\gg 99\%$</td><td>$\gg 98\%$</td><td>$\gg 97\%$</td></tr></tbody></table>		1 month	3 months	6 months	Cap Retention 残留容量/充电容量	$\gg 97\%$	$\gg 90\%$	$\gg 80\%$	Cap Recovery 可恢复容量/1 st 容量	$\gg 99\%$	$\gg 98\%$	$\gg 97\%$
	1 month	3 months	6 months												
Cap Retention 残留容量/充电容量	$\gg 97\%$	$\gg 90\%$	$\gg 80\%$												
Cap Recovery 可恢复容量/1 st 容量	$\gg 99\%$	$\gg 98\%$	$\gg 97\%$												
4	Initial Impedance 初始电阻	Internal resistance measured at AC 1KHz after 50% charge 半充电池在 1KHz 下的交流电阻	$\leq 20\text{mohm}$												
5	Cell Voltage 电池电压	As of shipment 出货	3. 60V ~ 3.70V												

3.2. Safety Performance 安全性能

No. 序号	Items 项目	Test Method and Condition 测试方法和条件	Criteria 标准
1	Vibration test 振动测试	After standard charging, fixed the battery cell to vibration table and subjected to vibration cycling that the frequency is to be varied at the rate of 1Hz per minute between 10Hz and 55Hz, the excursion of the vibration is 1.6mm. The cell shall be vibrated for 30	No leakage No fire No explosion 不漏液、不起火、不爆炸

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		minutes per axis of XYZ axes. 将标准满充后的电池固定在振动平台上，按照以下条件进行振动： 1) 频率范围 10Hz~55Hz，频率变化速度：1Hz/Min 2) 振幅：1.6mm 3) 振动方向和时间：XYZ 三个方向，每个方向振动 30 分钟。	
2	Crush test 挤压测试	The battery to be fully charged with standard charging condition, and crushed between two flat plates. Applied force is 13kN 将电池按标准充电模式满充，然后将电池放在两平台中间，采用 13KN 力进行挤压测试	No fire No explosion 不起火，不爆炸
3	Overcharge test (1C5V) 1C5V 过充测试	The battery to be fully charged with standard charging condition, and be charged to 5.0V with 1C current, than keep CV (5V) charge for 2.5H. 将电池按标准充电模式满充，1C 持续充电至 5V，然后保持 5V 恒压充电 2.5H。	No fire No explosion 不起火、不爆炸
4	Impact test 冲击测试	The battery to be fully charged with standard charging condition, and put a rod with diameter=15.8mm on the cell, and then heavy block (weight=9.1Kg) crash on the cell from a certain height (height=61.0cm) 将电池按标准充电模式满充，上面横放一根直径为 15.8mm 钢棍，然后将一重锤 (9.1kg) 从 61 cm 的高度跌落到电池上。	No fire No explosion 不起火，不爆炸
5	Drop test 跌落实验	The battery to be fully charged with standard charging condition, and dropped from a height of 1m to concrete floor for 4times (+/- direction on x, y, z axes) 将电池按标准充电模式满充，从 1m 高度自由跌落 6 次 (高度和直径方向正反各一次)	No leakage No fire No explosion 不漏液、不起火、不爆炸
6	Short test 短路测试 (25°C)	The battery to be fully charged with standard charging condition, and short the positive and negative terminals for 4 hrs with wire resistance = 30mOhm. and 25°C 将电池按标准充电模式满充，采用电阻为 30mOhm 的导线将正负极短路 4h，环境温度 25 度	No leakage No fire No explosion 不漏液、不起火、不爆炸
7	Heating test 热箱测试 (130°C)	The battery to be fully charged with standard charging condition, and put into the chamber for heating at 130°C / 30mins 将电池按标准充电模式满充，在热箱内加热 130 度保持 30 分钟。	No fire No explosion 不起火、不爆炸

3.3. Visual inspection 外观要求

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

电池表面无生锈、裂纹、裂缝及漏液等影响电池出售使用的缺陷。

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3.4. Standard environmental test condition 标准测试环境、

Unless otherwise specified, all tests stated in this Product Specification are conducted at below condition:

Temperature: $25 \pm 2^{\circ}\text{C}$

Humidity: $65 \pm 20\% \text{ RH}$

如无特殊说明，本标准所有测试环境要求应满足以下条件：

温度: $25 \pm 2^{\circ}\text{C}$

湿度: $65 \pm 20\% \text{ RH}$

4. Storage and Others 储存条件及其他

4.1. Long Time Storage 长时间储存

If the Cell is stored for a long time (≥ 3 month), the cell's storage SOC should be 50%~70% and the cell is to be stored in a condition as No. 3.4.

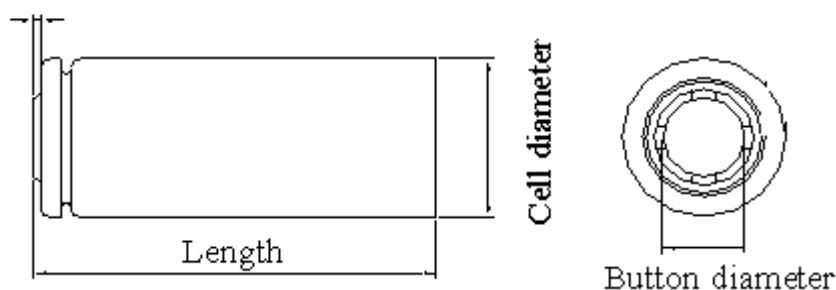
如果电池需要长时间(≥ 3 个月), 则电池需要保持在 50%~70%充电状态, 储存条件参照 3.4 条。

4.2. Others 其他

Any matters that this specification does not cover should be conferred between the customer and PBI.
任何本规定未涉及事项请客户和本公司协商讨论。

5. Battery Cell Drawing (all unit in mm) 电池图纸 (单位: mm)

Tip to shoulder(bottom height)



Cell Diameter 电池直径 Min. / Max. (mm)	Cell Length 电池总高 Min. / Max. (mm)	Button Diameter 凸台直径 (mm)	Tip to Shoulder (Button Height) 凸台高度 (mm)
25.8 / 26.3	64.9 / 65.5	15.0 ± 0.5	(0.5)

6. Others 其他

6.1. Prevention of short circuit within a battery pack 电池组内部短路保护

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

为了使用安全，电池组内部电芯本体和连接导线必须做到充分绝缘措施，采用合理的电池组结构避免因短路导致的冒烟和起火现象。

6.2. Prohibition of disassembly 禁止拆卸

Never disassemble the cells.

The disassembling may generate internal short circuit in the cell, which may cause leakage, firing, or other

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problems.

禁止拆卸电池

拆卸电池将可能产生电池内部短路，引起漏液、起火及其他问题。

6.3 Electrolyte is harmful 电解液有害

In case the electrolyte come into contact with the skin, or eyes, physicians shall flush the electrolyte immediately with fresh water .

如果电解液不慎接触皮肤或眼睛，请及时用清水清洗接触部位。

6.3. Prohibition of dumping of cells into fire 严禁掷入火中

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

严禁将电池掷入火中，电池将可能起火，引发安全事故。

6.4. Prohibition of cells immersion into liquid such as water 严禁浸入液体中（如水）

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

电池不能被液体浸湿，如水，海水，或软饮料、果汁、咖啡等饮料及其他。

6.5. Battery cells replacement 更换电池

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

电池如需更换，请联系电池供应商或产品供应商，用户严禁私自更换电池。

6.6. Prohibition of use of damaged cells 严禁使用已损坏电池

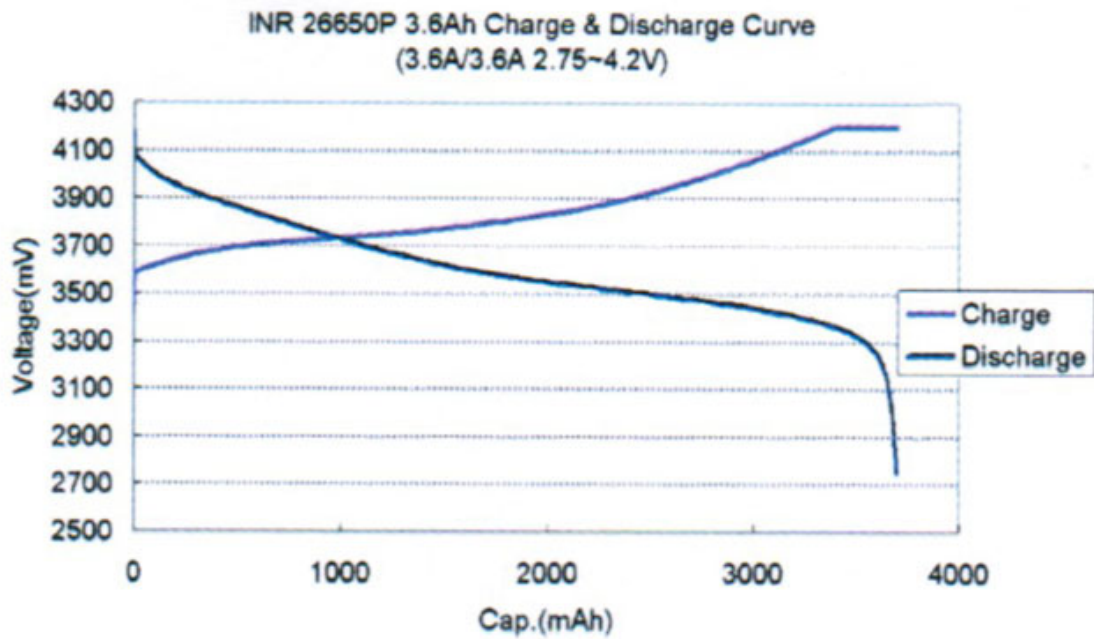
The cells might be damaged during shipping by shock. If any abnormal features of the cells are found such as damages in a plastic envelop of the cell, deformation of the cell package, smelling of an electrolyte, an electrolyte leakage and others, the cells shall never be used any more.

The Cells with a smell of the electrolyte or a leakage shall be placed away from fire to avoid firing.

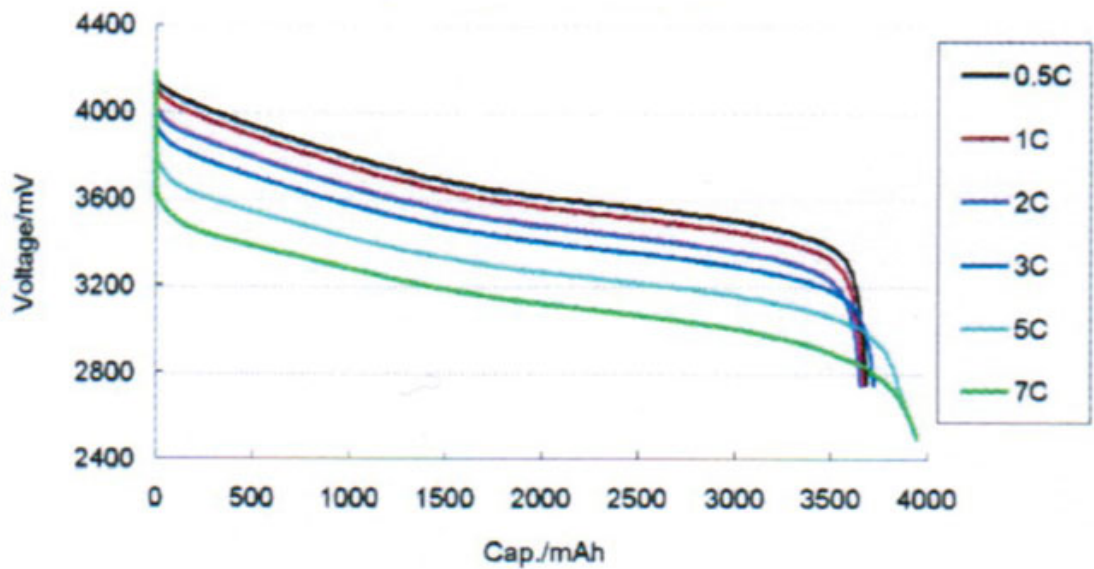
电池在运输过程中可能会因为振动而受损。如果发现电池有热俗套损坏、变形、电解液气味、漏液及其他，则请勿再使用。

如果电池有电解液气味，请远离火源，以免起火。

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Typical Discharge Curve



INR 26650P Cycle Life (25°C)
Charge: 7.2A CC to 4.2V
Discharge: 7.2A DC to 2.75V

