LTO Battery

Specification

MODEL: **1865**

（2.4V/1100mAh）

Prepared By/Date 编 制/日 期	Checked By/Date 审 核/日 期	Approved By/Date 批 准/日 期
刘国华 2013.3.21	郑小耿 2013/3/25	

Customer Approval	**Signature/Date(签名/日期)**
	Company Name(公司名称)
	Company Stamp(公司印章)

1 Scope

This specification is applied to the reference battery in this Specification and manufactured by AA Portable Power Corp

2 Product Specification

2.1 Characteristic

Table 1 (表 1)

No. (序号)	Item （项目）	General Parameter (常规参数)		Remark （备注）
1	Rated Capacity （额定容量）	Typical （标称容量）	1100mAh	Standard discharge（1.0C C) after Standard charge （标准充电后 1.0C 标准放电）
		Minimum (最小容量)	1050mAh	
2	Nominal Voltage （标称电压）	2.4V		Mean Operation Voltage （即工作电压）
3	Internal Impedance (内阻)	≤17mΩ		The measure must uses the new batteries (使用出货后一个星期内的新电池)
4	Standard charge （标准充电）	Constant Current 1100mA (1.0C） end Voltage 2.85V 22mA cut-off （恒流：1100mA 1.0C_5A 截止电压：2.85V 截止电流：22mA		Charge time : Approx 1.6h （充电时间：大约 1.6 个小时）
5	Standard discharge （标准放电）	Constant current 1100mA（1.0C） end voltage 1.5V （恒流：1100mA（1.0C） 截止电压：1.5V）		
6	Fast charge (快速充电)	Constant Current 5500mA（5.0C） end Voltage 2.85V 26mA cut-off （恒流：5500mA（5.0C） 截止电压：2.85V 截止电流：22mA）		Charge time : Approx 0.5h （充电时间：大约 0.5 个小时）
7	Maximum Continuous Discharge Current （最大放电持续电流）	11A		30A（27.27C < 5SEC)
8	Operation Temperature Range （工作温度范围）	Charge（充电）: 0~45℃		60±25%R.H. Bare Cell （单体电池工作湿度范围）
		Discharge（放电）: -30~65℃		
9	Storage Temperature Range （储存温度范围）	Less than 1 year: -20~20℃ （小于一年：-20~20℃）		60±25%R.H. at the shipment state （出货状态时的湿度范围）
		less than 3 months: -20~45℃ （小于 3 个月：-20~45℃）		

2.2 Cycle Life

Table 2

No. （序号）	Item （项目）	Criteria （标准）	Test Conditions （测试条件）
1	Cycle Life （循环寿命） (1.0 C)	Higher than 70% of the Initial Capacities of the Cells （初始容量的 70%）	Carry out 3000cycle Charge: 1.0C to 2.85V Discharge: 1.0 C to 1.5 V Temperature:25±3℃ 循环 3000 次 充电: 1.0C to 2.85V 放电:1.0C 放至 1.5V 温度: 25±3℃

2.3 Temperature Dependence of discharge capacity

Cells shall be charged per 3.3.1 and discharged @0.2C_5A to 3.0 volts. Except to be discharged at temperatures per Table 3. Cells shall be stored for 2 hours at the test temperature prior to discharging and then shall be discharged at the test temperature. The capacity of a cell at each temperature shall be compared to the capacity achieved at 25 ºC and the percentage shall be calculated. Each cell shall meet or exceed the requirements of Table 3.

Table 3

Discharge Temperature （放电温度）	-30℃	-20℃	25℃	65℃
Discharge Capacity （1C_5A） （放电容量/1C_5A）	60%	85%	100%	95%

3 Protection circuit

LTO battery is very safe, it can be in the overcharge and over discharge without risk, so it can be used safely without PCM;

Although it can be used safely without PCM, but charging and discharging of the battery must ensure that under normal conditions (this is all cells are required), if not the battery performance will deteriorate or failure.

4. Note For Use Of Battery

5. Cell Mechanical characteristics and Safety Test

Table 5 (Safety Test)

Item （项目）	Battery Condition （电池要求）	Test Method （测试方法）	Requirements （要求）
Vibration Test 振动测试		After standard charging, fixed the 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 an 55Hz, the excursion of the vibration is 1.6mm. The cell shall be vibrated for 30 minutes per axis of XYZ axes. 将标准充电后的电芯固定在振动台上，沿 X、Y、Z 三个方向各振动 30 分钟，振幅 1.6mm，振动频率为 10Hz~55Hz，每分钟变化 1Hz。	No leakage 无泄漏 No fire 不起火
Crush （挤压试验）	Fresh, Fully charged （充满电的新电池）	Crush between two flat plates. Applied force is about 13kN(1.72Mpa) for 30min. （电池放置在两块平面金属板间，施加 13KN（1.72Mpa）的作用力，且持续保持 30 分钟）	No explosion, No fire (无起火无爆炸)
Short Circuit （短路试验 20℃）	Fresh, Fully charged （充满电的新电池）	Each test sample battery, in turn, is to be short circuited by connecting the (+) and (-) terminals of the battery with a Cu wire having a maximum resistance load of 0.05 Ω .Tests ae to be conducted at room temperature(20±2℃). （在常温下约 20±2℃依次把每个样品电池的正负极用铜线连接起来使电池外部短路--线路总电阻不超过 0.05Ω ）	No explosion,No fire hetempera-ture of the surface of the Cells are lower than 150℃ (无起火无爆炸 电池表面温度应低于 150℃)
Impact （冲击试验）	Fresh, Fully charged （充满电的新电池）	A 56mm diameter bar is inlayed into the bottom of a 10kg weight. And the weight is to be dropped from a height of 1m onto a sample battery and then the bar will be across the center of the sample.（用一条直径为 56mm 的圆棒放置在电池中央，将一 10Kg 的重锤从 1m 的高度垂直落下在电池的中心位置）	No explosion, No fire (无起火无爆炸)
Over Charge （过充测试）	Fresh, Fully charged （充满电的新电芯）	Charging voltage：2.4*4=9.6V；charging current:：2C；end current：0.02C （充电电压：标称电压的 4 倍，2.4*4=9.6V，充电电流：2C，结束电流：0.02C）	No explosion, No fire (无起火无爆炸)
Forced Discharge （过放试验）	Fresh, Fully charged （充满电的新电池）	Discharge at a current of 1 Ç A for 2.5h. （以 1C 的电流放电 2.5 小时）	No explosion, No fire (无起火无爆炸)

6. Handling of Cells

6.1 Cell fixing

The cell should be fixed to the battery pack by its large surface area.

No cell movement in the battery pack should be allowed.

6.2 Inside design（外壳内部设计）

No sharp edge components should be insides the pack containing the LIP cell.

7. Others

7.1 Prohibition of disassembly

1) Never disassemble the cells

The disassembling may generate internal short circuit in the cell, which may cause gassing, firing, explosion, or other problems.

2) Electrolyte is harmful

LTO battery should not have liquid from electrolyte flowing, but 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.

7.2 Prohibition of dumping of cells into fire

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

7.3 Battery cells replacement

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

7.4 Please do not exceed the specification range using the battery.

8. Period of Warranty

The period of warranty is 3 months from the date of shipment. We guarantee to give a replacement in case of cells with defects proven due to manufacturing process instead of the customer abuse and misuse.

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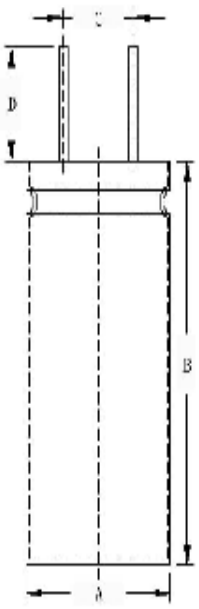
9. Storing the Batteries

The batteries should be stored at room temperature, charged to about 30% to 50% of capacity.

We recommend that batteries be charged about once per half a year to prevent over discharge.

10. Initial Dimension:



单位：mm　　公差：±0.2

项 目	参 数
A(直径)	18.7
B(长度)	65.3
C(引脚间距)	7.5
D(引脚规格)	12

Units（单位）	mm			PCM（保护板）			
Connector/插头	无						
Wire(引线)	无			L(线长)			
T（厚度）	Max.	W（宽度）		Max.	H（高度）		Max.
Drawer (绘图）		Checked (审核)		Approved (批准)		Date （日期）	
			DRAWING				