规格承认书
Specification Approval Sheet

型号:锂铁 AA，FR6
Model: LFB-AA，FR6

制定 Prepared	审核 Checked	批准 Approved
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制定日期 Prepared date	**2023-04-25**	
客户批准 Customer Approval	确认 Confirmation	日期 Date

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注意：1.请在上面签字并在样品批准后寄回给我们。
2.如果样品未被批准，请尽快与我们联系；谢谢！

Note: 1. Kindly please sign on the above and send it back to us if the sample is approved.
2. Kindly please contact us as soon as possible if the sample isn't approved. Thanks!

1. 适用范围
Scope
本规格适用于昆腾的锂-二硫化亚铁（Li-FeS_2）电池的性能。
This specification is suitable for the performance of the Kunteng Lithium and Iron Disulfide battery

2. 产品型号
Model
LFB-AA / IEC FR6 / L91

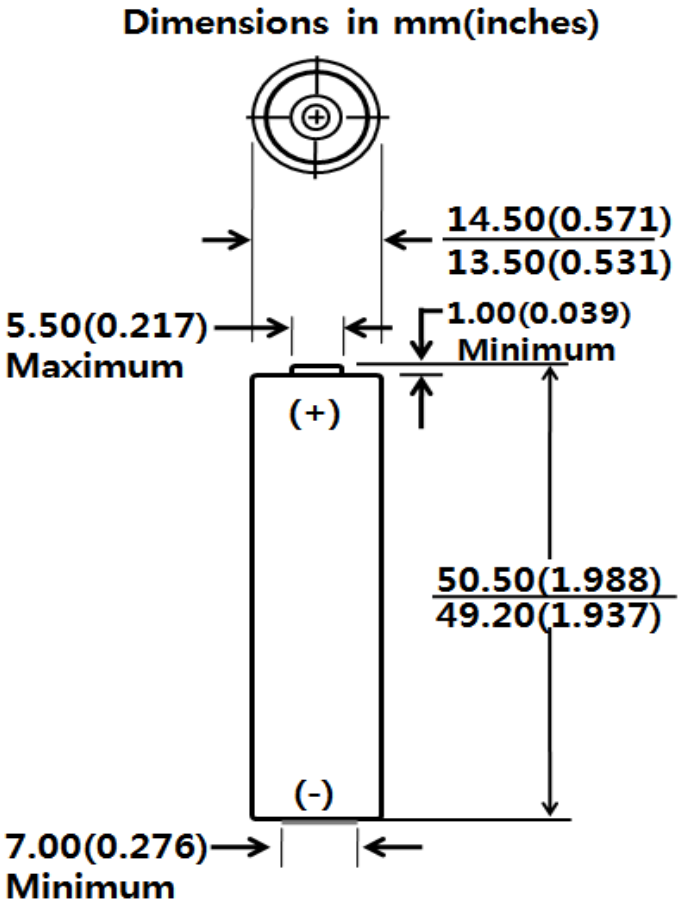
3. 参考文件
Reference Document
Q /（GZ）PH001-2004：锂和二硫化铁电池
Q/(GZ)PH001-2004: Lithium and iron disulfide battery
IEC60086-4：2000 原电池 - 第 4 部分：锂电池的安全性
IEC60086-4: 2000 Primary batteries-Part 4: Safety of lithium batteries

4. 规格参数
Specification

No.	项目 Items	标准 Specification
1	电池系统 Battery system	锂和二硫化铁电池（Li / FeS2） Lithium and Iron Disulfide Battery（Li/FeS2）
2	电池类型 type of battery	原电池 Primary battery
3	标称电压 Nominal Voltage	1.5 V
4	额定容量 Rated Capacity	2900 mAh
5	工作电压 Working Voltage	1.30V (200mA 恒流放电) 1.30V @ 200mA discharge rate
6	最大脉冲放电电流 Maximum pulse discharge current	4000mA (2 sec on / 8 sec off)
7	最大连续放电电流 Maximum continuous discharge current	2500mA
8	放电截止电压 Discharge Cut-off Voltage	0.80V
9	体积 Volume	8. 0cm^3 8.0 cubic centimeters
10	重量 Weight	约 15 g Approx. 15 g
11	锂含量 Lithium Content	单只电池小于 1g Less than 1 gram per cell

No.	项目 Items	标准 Specification
12	外形尺寸 Dimensions	外径：14.0±0.5 mm Diameter: 14.0±0.5 mm
		高度：49.85±0.65 mm Height: 49.85±0.65 mm
13	工作温度 Operating Temp.	-40 ℃ to 60 ℃
14	存储/运输温度 Storage/Shipping Temp.	-20 ℃ to 40 ℃
15	存储/运输湿度 Storage/Shipping Humidity	≤75 %
16	保质期 Shelf Life	10 年 10 Years

5. 结构尺寸（单位：毫米（英寸））
Drawing (unit: mm(inches))



6. 测试条件和性能
Test Conditions and Performance

6.1 测量仪器
Measuring Instrument or Apparatus

6.1.1 尺寸测量仪器
Dimension Measuring Instrument

尺寸测量应使用相同或更高精度 0.01mm 的卡尺来执行。

The dimension measurement shall be implemented by calipers with equal or more precision scale of 0.01mm.

6.1.2 电压表
Voltmeter

标准等级在国家标准或更敏感的类别内具有超过 10kΩ/V 的内部阻抗。

Standard class specified in the national standard or more sensitive class having inner impedance more than 10 kΩ/V.

6.1.3 电流表
Ammeter

标准类别在国家标准或更敏感的类别中指定。包括电流表和导线在内的总外部电阻小于 0.01Ω。

Standard class specified in the national standard or more sensitive class. Total external resistance including ammeter and wire is less than 0.01Ω.

6.2 标准测试条件
Standard Test Conditions

测试和测量应在 20±5℃，相对湿度为 45～85％的温度下进行。 如果判断测试结果不受这些条件的影响，则测试可以在 10～30℃和湿度 25～85％RH 下进行；否则需另外规定。

Unless other defined, test and measurement shall be done under temperature of 20±5℃ and relative humidity of 45~85%. If it is judged that the test results are not affected by such conditions, the tests may be conducted at temperature 10~30℃ and humidity 25~85%RH.

6.3 目视检查
Visual inspection

不得存在划伤，瑕疵，裂缝，渗漏等可能对电池商业价值产生不利影响的缺陷。

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

6.4 基本特征
Basic Characteristics

No.	项目 Item	测量程序 Measuring Procedure	标准 Criteria
1	开路电压 Open-Circuit Voltage	开路电压应由电压表测量 The open-circuit voltage shall be measured by voltmeter.	≥1.74 V
2	尺寸 Dimension	使用卡尺测量电池的尺寸 Use calipers test cell's dimensions.	请参考‘4.9’ As item 4.9
3	放电容量 Discharge Capacity	以 30mA 恒流放电至 0.8V，温度在（25±2℃）的条件下连续放电测量 The capacity means the discharge capacity of the cell, which is measured by continuously discharging with a current of 30 mA to 0.8V.(25±2℃).	≧2850 mAh
4	外部短路 External Short Circuit	未使用电池的正极和负极通过铜线连接。 短路状况在室温（20±2℃）下持续 1 天 Positive and negative of fresh battery are connected by a Cu wire. This short-circuit condition is continued for 1 day at room temperature (20±2℃).	不泄漏; 不爆炸 No leakage; No explosion
5	强制放电 Forced Discharge	在 100mA 恒流放电至 0.8V; 然后以 100mA 强制放电 3 小时 Discharged to 0.8V at 100mA; And then the sample cell is forced discharged with 100mA for 3 hours.	不泄漏; 不爆炸 No explosion; No fire

6.5 机械特性
Mechanical Characteristics

No.	项目 Item	测试方法 Test Method	标准 Criteria
1	冲击 Impact	垂直放置15.8mm直径的铁棒，横跨样品电池的中心。 9.1公斤的质量从610mm±25mm的高度落到样品上； A 15.8 mm diameter bar is vertically placed across the centre of the sample cell. A 9.1 kg mass is dropped from a height of 61cm onto the sample.	不爆炸; 不起火； No explosion, No fire.

No.	项目 Item	测试方法 Test Method	标准 Criteria
2	振动 Vibration	频率：10～55hz；放大器：2mm；三个方向；总共 90 分钟 Freq: 10~55hz; Amp: 2mm; Three directions; total 90 min	不泄漏，不爆炸;不起火；最大电压变化 0. 02V No leakage, No explosion, no fire 0.02V total maximum OV changes
3	挤压 Crush	将样品电池放置在两个平坦表面之间被挤压。 力量：32mm 直径活塞；最大压力：17. 2MPa；最大力量：13KN；当获得最大压力时释放 A sample cell is to be crushed between two flat surfaces. Force: 32mm diameter piston; Max pressure: 17.2MPa; Max force: 13KN; Released when the max pressure obtained.	不爆炸;不起火 No explosion,No fire

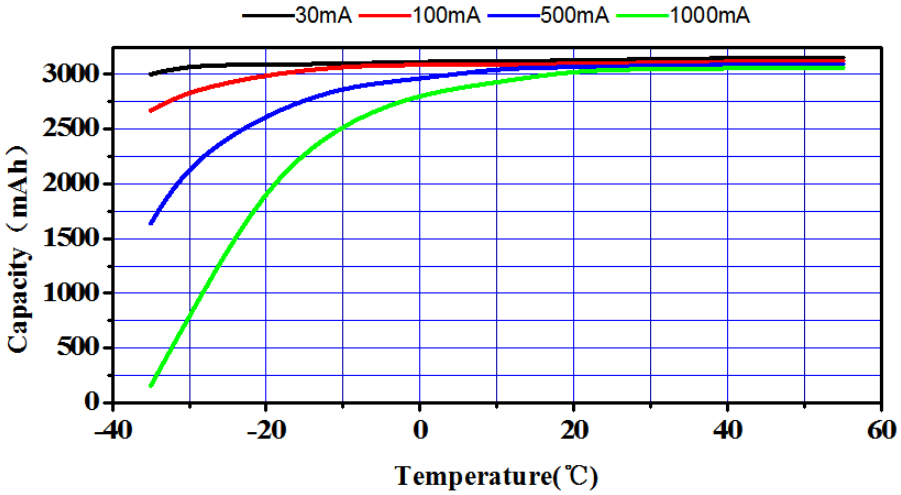
6.6 环境测试
Environmental test

No.	项目 Item	测试方法 Test Conditions	标准 Criteria
1	热搁置测试 Thermal test	未使用的电池在 70℃放置 4 小时；20℃放置 2 小时；-20℃放置 4 小时；20℃放置 2 小时。全部循环 5 次 Fresh batteries, store at 70 deg. C for 4hs; 20 deg. C for 2hs; -20 deg. C for 4hs; 20 deg. C for 2hs. All cycled 5 times	不泄漏 不爆炸； 不起火 No leakage No explosion; No fire
2	加热测试 Heating test	未使用的电池在烤箱中加热。 升温速度：每分钟 5±2℃;最大温度保持 150±2℃10 分钟 Fresh battery is heated in an oven. The rate of temperature raised: 5±2℃ per minute; Max. temperature 150±2℃ remaining for 10 minutes.	不爆炸； 不起火 No explosion; No fire
3	跌落测试 Drop test	未使用的电池；高度：1 米，6 次；每个方向两次；混凝土楼板 Fresh batteries; Height: 1m, 6 times; Each direction two times; Concrete floor	不泄漏 不爆炸； 不起火 No leakage; No explosion; No fire

7. 放电曲线
Discharge curve

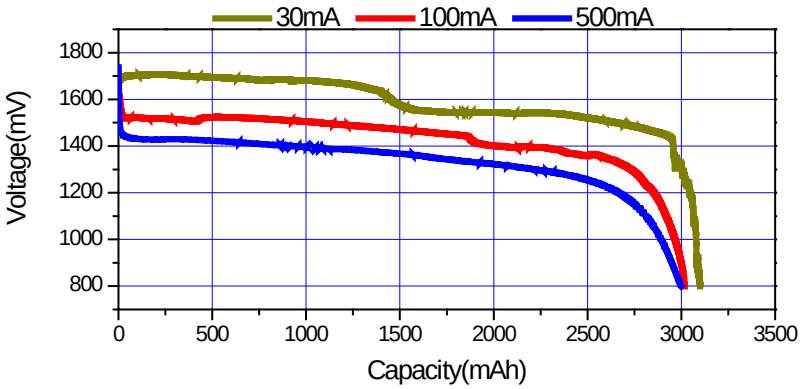
温度对容量/恒流放电的影响

Temperature Effects on Capacity / Constant current discharge



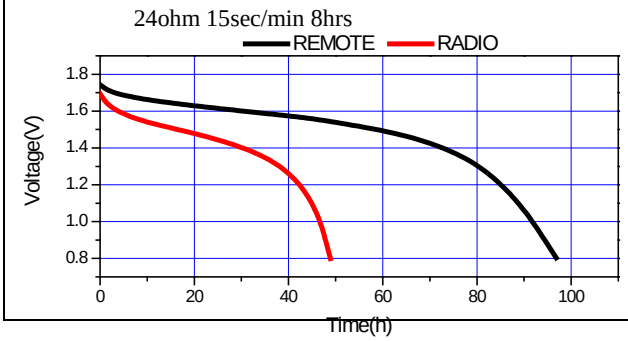
不同电流恒流放电曲线

Discharge curve / Constant current discharge

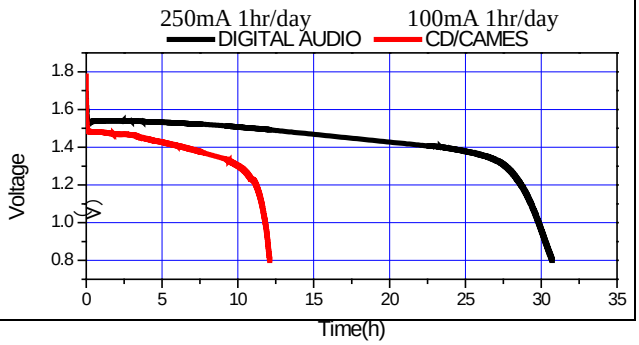


8.模拟测试
Application Tests

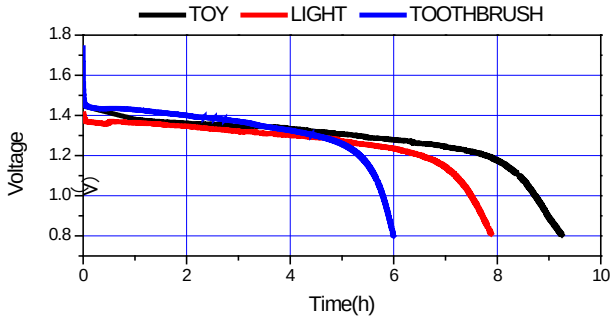
用电器:远程无线电(REMOTE RADIO



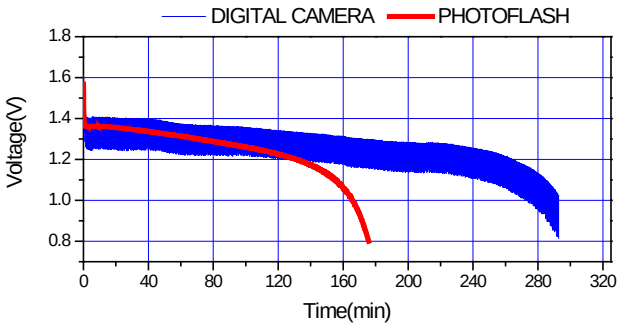
用电器:数字音频 CD(CD/CAMES)



用电器：便携式照明玩具
PORTABLE LIGHTING TOY
500mA 2min/13min 3.3ohm constant 3.9ohm 1hr/day



用电器：数码相机 PHOTOFL
DIGITAL CAMERA PHOTOFL
1.5W/0.65W/2S/28S 1KmA 10S/min 1hr/Da



9.使用注意事项

Cautions in use

为确保正确使用电池，请在使用前仔细阅读本手册。
To ensure proper use of the battery please read the manual carefully before using it.

- 处理
  Handling

➢ 不要暴露在火中，将电池丢入火中。
Do not expose to, dispose of the battery in fire.
➢ 请勿将电池放入充电器或连接有错误端子的设备中。
Do not put the battery in a charger or equipment with wrong terminals connected.
➢ 避免短路电池
Avoid shorting the battery
➢ 避免过度的物理冲击或振动。
Avoid excessive physical shock or vibration.
➢ 请勿拆解或变形电池。
Do not disassemble or deform the battery.
➢ 不要将电池浸入水中。
Do not immerse in water.
➢ 不要使用混合使用过的电池或其他不同型号的电池，型号，型号的电池。
Do not use the battery mixed with used or other different make, type, model batteries.
➢ 放在儿童接触不到的地方。
Keep out of the reach of children.

存储
Storage

➢ 将电池存放在阴凉，干燥和通风良好的地方。
Store the battery in a cool, dry and well-ventilated area.
➢ 不同国家的处置条例有所不同。
Disposal Regulations vary for different countries.
➢ 按照当地的规定处理。
Dispose of in accordance with local regulations.

10. 电池操作说明
Battery operation instruction

10.1 放电电流
Discharging current

放电电流不得超过本规范书规定的最大放电电流，超大电流放电可使电池容量降低并导致电池发热的作用。

The discharging current does not have to surpass this specification book stipulation the biggest discharging current, the over sized electric current electric discharge can cause the battery capacity play to reduce and to cause the battery heat.

10.2 放电温度
Electric discharge temperature

必须在本规格书规定的环境温度范围内进行电池放电。

The battery discharge must carry on in the ambient temperature scope which this specification book stipulated.

10.3 存放电池
Storing the Batteries

电池应存放在产品规格书规定的温度范围内。如果未按规定超过六个月以上的长时间储存，电池容量将会下降。

The battery should store in the product specification book stipulation temperature range. If has surpasses above for six months the long time storage, the discharge capacity will decrease sharply

11.其他化学反应
Other Chemical Reaction

由于电池原理为化学反应，所以即使长期存放而未使用，电池性能也会随着时间推移而恶化。另外，如果诸如放电，环境温度等各种使用条件未被保持在规定范围内，则电池的预期寿命可能缩短，或者使用电池的装置可能由于电解质泄漏而被损坏。请及时更换电池。

Because batteries utilize a chemical reaction, battery performance will deteriorate over time even if stored for a long period of time without being used. In addition, if the various usage conditions such as discharge, ambient temperature, are not maintained within the specified ranges the life expectancy of the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage. Please change the battery in time.

12.注意
Note

本规格说明书未涵盖的任何其他物品应由双方同意。

Any other items which are not covered in this specification shall be agreed by both parties.