

PRODUCT  
SPECIFICATION  
产品规格书

|                   |                                                                                      |
|-------------------|--------------------------------------------------------------------------------------|
| Type Designation: | LR03(AAA) Premium                                                                    |
| 电池型号:             |                                                                                      |
| Prepared by:      |  |
| 编制:               |                                                                                      |
| Checked by:       |  |
| 审核:               |                                                                                      |
| Approved by:      |  |
| 批准:               |                                                                                      |
| Issued Date:      | 2025-06-18                                                                           |
| 发布日期:             |                                                                                      |

| PRODUCT SPECIFICATION 产品规格书 |                                                                       |                 |                        |
|-----------------------------|-----------------------------------------------------------------------|-----------------|------------------------|
| Product 产品                  | Alkaline Zinc Manganese Dioxide battery;<br>1.5Volts 碱性锌-二氧化锰电池, 1.5V | Page 页码         | 1 of 5                 |
| Designation<br>规格           | LR03(AAA) Hi-Tech                                                     | Document<br>No. | J/PT311156.12-2025(A3) |

LR03(Premium) battery specification 电池规格书

1.Type designation 电池型号: IEC: LR03

JIS: AM4

ANSI: 24A

2.Chemical system 电池化学体系:

Electrolyte-zinc-manganese dioxide (mercury & cadmium free)  
碱性电解液-锌-二氧化锰（无汞无镉）

3.Dimension 尺寸: Diameter 电池直径: 9.8-10.5mm

Height 电池高度: 43.5-44.5mm

4.Nominal voltage 标称电压: 1.5Volts

5.Nominal weight 标称重量:

The weight of each battery is approximately 每只电池的重量大约是: 11.6±0.3g

6. Reference standard 参考标准:

IEC60086-1:2021——Primary batteries-part 1: General

IEC60086-2:2021——Primary batteries-part 2: Physical and electrical specifications

IEC60086-5:2021——Primary batteries-part 5: Safety of batteries with aqueous electrolyte

ANSI C18.1M,Part 1-2021 Portable primary Cells and Batteries with Aqueous Electrolyte---General and Specifications

ANSI C18.1M,Part 1-2019 Portable primary Cells and Batteries with Aqueous Electrolyte---Safety Standard

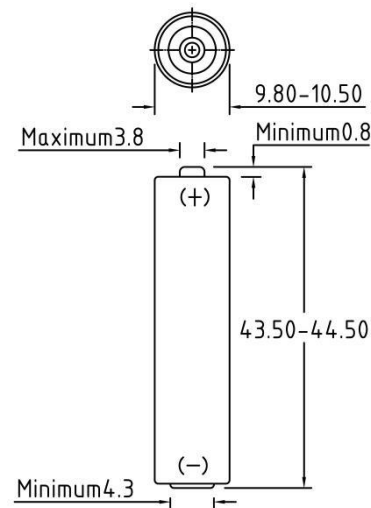
7.Heavy Metal content 重金属含量 (%):

Mercury 汞: ≤1ppm; Cadmium 镉: ≤10ppm ; Lead 铅: ≤40ppm

8.Appearance and terminal 电池外观和极端:

Battery shall be clean and have no dirt, no leakage, and no deformation which may affect their performance and actual use and shall have clearly visible markings.

电池外观干净整洁，无脏物、无漏液、无变形以影响电池的性能和实际使用，标志清晰。



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**9.Battery capacity 放电容量:** (Test environment 测试环境: 20±2°C, 55+20/-40%RH)

(Load resistance:**10mA**, Daily period:**24h/d**, Cut off voltage:**0.8V**; According to as the above the same discharge condition, the capacity of each battery is approximately:**1400mAh**)

(放电负载: **10mA**, 放电方式: **24h/d**, 终止电压: **0.8V**; 电池的容量大约是: **1400mAh**)

**10.Storage characteristics 贮存性能:**

After 12 months storage at 20°C ±5°C,55+20/-40%RH, 90% capacitance of fresh cells.

20°C ±5°C,55+20/-40%RH 条件下贮存 12 个月后, 电池的容量是新电容量的 90%。

After 24 months storage at 20°C ±5°C,55+20/-40%RH, 85% capacitance of fresh cells.

20°C ±5°C,55+20/-40%RH 条件下贮存 24 个月后, 电池的容量是新电容量的 85%。

**11.Electrical characteristics 电气特性:** (Load resistance **3.9Ω**, **0.3S** 负载电阻 **3.9Ω**, **0.3 秒**)

| I                     |        | OCV (V)<br>开路电压 | CCV(V)<br>闭路电压 | SCC (A)(reference)<br>短路电流 (参考) |
|-----------------------|--------|-----------------|----------------|---------------------------------|
| Initial<br>初始         | Normal | 1.62            | 1.46           | 8                               |
|                       | Min    | 1.58            | 1.4            | 6                               |
| Stored 1 year<br>储存一年 | Normal | 1.58            | 1.4            | 6                               |
|                       | Min    | 1.55            | 1.37           | 4                               |

Remark1: OCV: Open Circuit Voltage 开路电压;CCV: closed circuit voltage 闭路电压;

SCC: Short Circuit Current 短路电流.

Remark2: Test environment:20±2°C, 55+20/-40%RH;测试环境: 20±2°C,相对湿度 55+20/-40%

Remark3: All samples shall be normalized for a minimum of 8 hours at the above environment prior to measurement. 测试前, 应在上述环境放置至少 8 小时。

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12.Discharge test (service life)放电性能:

| Applications 应用       | Load<br>负载 | Daily Period 放电方式 | Cut off<br>Voltage<br>截止电压 | Normal<br>(Initial)<br>典型值 | MAD(Initial)<br>初始<br>最小平均值 |
|-----------------------|------------|-------------------|----------------------------|----------------------------|-----------------------------|
|                       | 3.9Ω       | 24h/d             | 0.9V                       | 175min                     | ≥ 165min                    |
| Remote control 遥控器    | 24Ω        | 15s/min,8h/d      | 1.0V                       | 23.5h                      | ≥ 22.0h                     |
| Portable lighting 手电筒 | 5.1Ω       | 4min/h,8h/d       | 0.9V                       | 285min                     | ≥ 265min                    |
| Digital audio 数码录音笔   | 50mA       | 1h/12h,24h/d      | 0.9V                       | 25.2h                      | ≥ 24.2h                     |
| Toy 玩具                | 5.1Ω       | 1h/d              | 0.8V                       | 5.0h                       | ≥ 4.7h                      |
| Digital audio 数码录音笔   | 75mA       | 1h/12h,24h/d      | 0.9V                       | 16.0h                      | ≥ 15.0h                     |
| Home medical 家用医疗     | 250mA      | 5m/d,12h/d        | 1.1V                       | 2.80h                      | ≥ 2.5h                      |
| Photo flash 闪光灯       | 600mA      | 10s/min,1h/d      | 0.9V                       | 465pulses                  | ≥425pulses                  |

Remark1: Test environment:20±2℃, 55+20/-40%RH

测试环境：20±2℃,相对湿度 55+20/-40%RH

Remark2: A normal value represents the mean derived from long-term repeated testing. MAD value stands for Minimum Average Discharge Time.

Normal 值为长期多次测试的平均值，MAD 值为最小平均放电时间。

Remark3: The initial discharge test shall commence within 60 days of manufacture.

初始放电测试在电池生产后 60 天内进行；

Remark4: Test quantity: n=8pcs (for per discharge test).

检测数量 n=8 节（每一种放电检测）。

13.Leakage-proof structure 防漏性能:

13.1 The sealing location of the battery is provided with double beading scores to make the structure tighter.使用二次刻线封口技术，保证封口结构更加紧密；

13.2 Using special nylon sealing ring, with more reliable leakage-proof performance.  
使用特种尼龙密封圈，保证更好的防漏液性能。

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14.Safety test (Test environment: 20±2°C,55%±20%R.H)

安全测试（测试环境：20±2°C,相对湿度 55%±20%）

| Test item 测试项目                             | Test method 测试方法                                                                                                                                               | Quantity<br>数量 | Requirements<br>测试要求                              |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------------------------------------|
| Storage after partial use<br>部分使用（部分放电）后贮存 | See IEC 60086-5 Edition 5.0 6.3.2.1<br>Test A - Storage after partial use<br>具体测试方法见 IEC 60086-5（版本 5.0） 6.3.2.1<br>测试 A-部分使用（部分放电）后贮存                         | 5              | No leakage 不泄露<br>No fire 不着火<br>No explosion 不爆炸 |
| Transportation-shock<br>运输-冲击              | See IEC 60086-5 Edition 5.0 6.3.2.2<br>Test B-1 - Transportation-shock<br>具体测试方法见 IEC 60086-5（版本 5.0） 6.3.2.2<br>测试 B-1-运输-冲击                                  | 5              | No leakage 不泄露<br>No fire 不着火<br>No explosion 不爆炸 |
| Transportation-vibration<br>运输-振动          | See IEC 60086-5 Edition 5.0 6.3.2.3<br>Test B-2 - Transportation-vibration<br>具体测试方法见 IEC 60086-5（版本 5.0） 6.3.2.3<br>测试 B-2-运输-振动                              | 5              | No leakage 不泄露<br>No fire 不着火<br>No explosion 不爆炸 |
| Climatic-temperature<br>cycling 气候-温度循环    | See IEC 60086-5 Edition 5.0 6.3.2.4<br>Test C - Climatic-temperature cycling<br>具体测试方法见 IEC 60086-5（版本 5.0） 6.3.2.4<br>测试 C-气候-温度循环                            | 5              | No fire 不着火<br>No explosion 不爆炸                   |
| Incorrect installation<br>不正确的安装           | See IEC 60086-5 Edition 5.0 6.4.2.1<br>Test D - Incorrect installation(four batteries in series)<br>具体测试方法见 IEC 60086-5（版本 5.0） 6.4.2.1<br>测试 D-不正确的安装（四节电池串联） | 20             | No fire 不着火<br>No explosion 不爆炸                   |
| External short circuit<br>外部短路             | See IEC 60086-5 Edition 5.0 6.4.2.2<br>Test E - External short circuit<br>具体测试方法见 IEC 60086-5（版本 5.0） 6.4.2.2<br>测试 E-外部短路                                     | 5              | No fire 不着火<br>No explosion 不爆炸                   |
| Overdischarge 过放电                          | See IEC 60086-5 Edition 5.0 6.4.2.3<br>Test F - Overdischarge<br>具体测试方法见 IEC 60086-5（版本 5.0） 6.4.2.3<br>测试 F-过放电                                               | 20             | No fire 不着火<br>No explosion 不爆炸                   |
| Free fall test 自由跌落                        | See IEC 60086-5 Edition 5.0 6.4.2.4<br>Test G - Free fall test<br>具体测试方法见 IEC 60086-5（版本 5.0） 6.4.2.4<br>测试 G-自由跌落                                             | 5              | No fire 不着火<br>No explosion 不爆炸                   |

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15.Expiry period: 7 years 有效期：7 年

16.Expiry period marking 有效期表示方法:

16.1 Expiry date marked on the bottom plate of finished battery .

For example:“2032-08” means the expiry date is August 2032.

有效期标在电池的底部：如“2032-08”表示电池的有效期至 2032 年 8 月。

16.2 For private label, can mark according to customer’s requirement.

做 OEM 定牌电池时，可以根据客户的要求进行标示。

17.Discharge curve 放电曲线:

