



PRODUCT SPECIFICATION

Version:

A

Date:

2022

MMD Hong Kong Holding Limited

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108 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong

Rechargeable Ni-MH Battery Product Specification

Product Model: R6B4A210/10

Cell Model: NI-MH AA2100mAh 1.2V



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1. Preface

This specification is suitable for the performance of the PHILIPS Ni-MH rechargeable battery.

2. Model: R6B4A210/10

3. Appearance

There shall be no such defects as deformation, flaw, stain, discoloration or electrolyte leakage.

4. Nominal specification

Description(项目)		Specification (规格)	
Model (产品号)		NiMH AA RTU 1.2V 2100mAh	
Size (型号)		AA	
Dimensions (尺寸)	Standard Diameter/标准直径(mm)	14.5+0/-0.7	
	Typical Diameter/典型直径(mm)	14.35	
	Standard Height/标准高度(mm)	50.5+0/-1.5	
	Typical Height/典型高度(mm)	50.25	
	Weight/重量(g)	Approx. 26.5	
Nominal Voltage/公称电压(V)		1.2	
Nominal capacity/公称容量(mAh)		2100	
Internal Impedance/内阻 (充满电后测量) (mΩ)		≤40	
Discharge Cut-off Voltage/放电截止电压		1.0V	
Ambient temperature 环境温度	Charge 充电	Standard/标准	0°C to 40°C
		Fast/快充	10°C to 40°C
	Discharge		-10°C to 50°C
	Storage 贮存	<1 year/年	-10°C to 30°C
		<3 months/月	-10°C to 40°C
The relative humidity should keep with in 相对湿度必须保持在		65±20%	

5. Characteristics

Unless otherwise specified, test: should be done within one month of delivery under the following conditions;

Ambient temperature	20±5°C
Relative humidity	65±20%
Atmospheric pressure	960±100mbar



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Test item/测试项目		Condition/制度	Specification/指标
1. Charge 充电	Standard/标准	Charge at 0.1C for 16 hours 0.1C 充 16 小时	0°C to 40°C
	Fast/快速	Charge at 0.5C , $-\Delta V=0-5mV$ 、 0.5C 充电, $-\Delta V=0-5mV$	10°C to 40°C
	Trickle/涓流	(0.03C)-(0.05C)	0°C to 40°C
2. Discharge/标准放电		At 0.2C to 1.0V 0.2C 放电至 1.0V	
3. Discharge cut-off voltage 放电截止电压			1.0V
4. Capacity/容量 (mAh)	Minimum 最低	Standard charge/discharge 标准充放电	2000
	Typical 典型	Standard charge/discharge 标准充放电	2100
5. Internal resistance/内阻		After fully charge, rest 1 hour, measured at 1000Hz 充满电静置 1 小时测试	$\leq 40m\Omega$
6. Self-Discharge/自放电		The charged battery is stored for 360 days at 20 °C \pm 5 °C . And the discharge time is measured at standard discharge/ 充满电后电池 于 20 \pm 5°C 贮存 360 天后, 用标准放 电制度测试	Capacity \geq 75% 容量 \geq 75%
7. High Rate Discharge 高倍率放电		Standard charge 1hour rest Before Discharge by 0.5C to 1.0V/ 标准充 电后搁置一小时, 0.5C 放电至 1.0V	≥ 108 minutes (≥ 108 分钟)
8. Overcharge/过充		0.1C charger 28 days, /0.1C 充电 28 天	No leakage 无漏液



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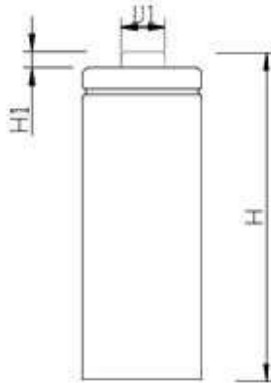
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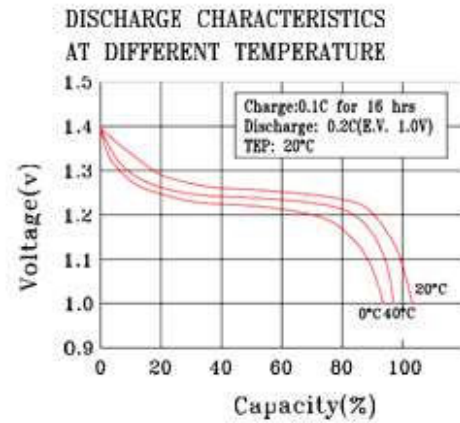
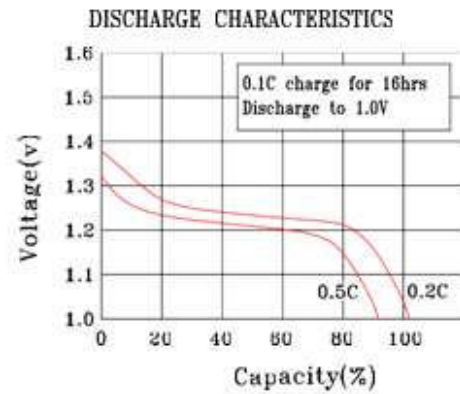
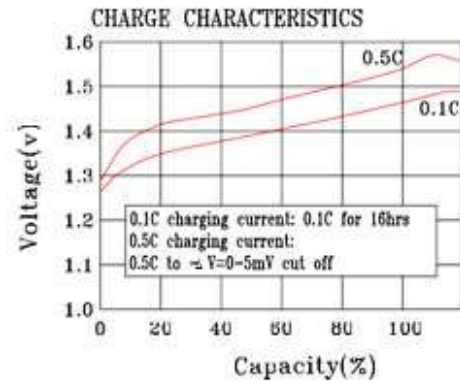
9.Cycle 循环寿命	life	按照 IEC61951-2 2003 中 7.4.1.1 项实验方法 Based on clause 7.4.1.1, IEC61951-2 2003			
		Charge 充电	Rest 测试	Discharge 放电	
1		0.1C for 16h 0.1C 充 16 小时	0	0.25C for 2h20min 0.25C 放 2 小时 20 分	循环500 次后容量 ≥60% Capacity retention≥60% after 500cycles
2~48		0.25C for 3h10min 0.25C 充 3 小时 10 分	0	0.25C for 2h20min 0.25C 放 2 小时 20 分	
49		0.25C for 3h10min 0.25C 充 3 小时 10 分	0	0.25C to 1.0V 0.25C 放至 1.0V	
50		0.1C for 16h 0.1C 充 16 小时	1~4h	0.2C to 1.0V 0.2C 放至 1.0V	

Cycles 1 to 50 shall be repeated until the discharge duration on any 50th cycle becomes
Less than 3h 循环至任意第 50 次放电时间不足 3 小时为止

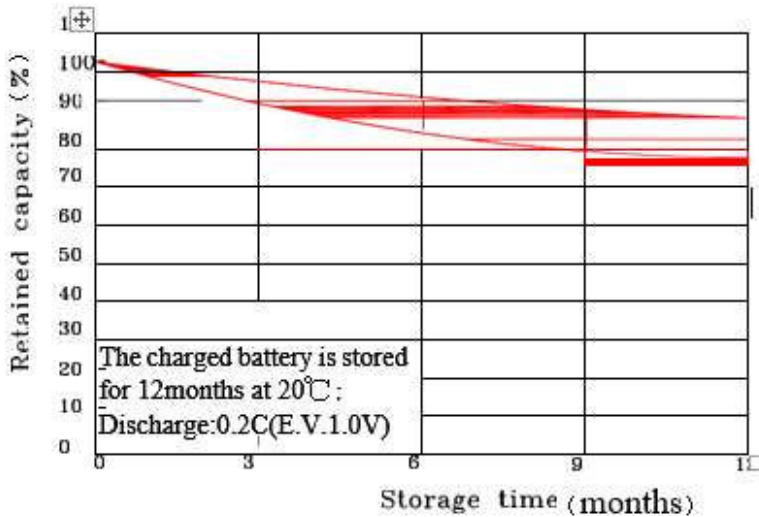
10. Leakage Test 泄漏测试	Standard charge stand for 14days 标准充电后存放 14 天检查	No leakage 无漏液
11. High temperature test 高温测试	Store at 40°C、50°C、60°C for 2 hours then charge/discharge 在 40°C、50°C、60°C的环境下贮存 2 小时后充放电	No leakage 无漏液
12.Low temperature test 低温测试	Store at 0 °C for 2 hours then charge/discharge 在 0°C 的环境温度下贮存 2 小时后充电, 放电	No leakage 无漏液
13.Short circuit test 短路测试	Short circuit after fully charge 充满后进行短路测试	No explode 无爆炸
14. Drop test 跌落测试	Free fall on the concrete from 1 meters after fully charged 充满电后于 1 米高处自由跌落 3 次	No leakage No short-circuit 池不泄漏/不短路



Project 项目	Description 类型	Dimension 尺寸 (mm)
D1	Diameter 直径1	Max 5.5
D	Diameter 直径	14.5 ⁺⁰ _{-0.1}
H1	Height 高度1	≥1.0
H	Height 高度	50.5 ⁺⁰ _{-1.0}



SELF-DISCHARGE





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7. Cautions in use

To ensure proper use of the battery please read the manual carefully before using it.

Handling

- Do not expose to, dispose of the battery in fire.
- Do not put the battery in a charger or equipment with wrong terminals connected.
- Avoid shorting the battery.
- Avoid excessive physical shock or vibration.
- Do not disassemble or deform the battery.
- Do not immerse in water.
- Do not use the battery mixed with other different make, type, or model batteries.
- Keep out of the reach of children.

8. Storage

Cycle (charge and discharge) the battery every 6 month to maintain cell/battery performance, when being stored for an extended period of time.

Store the battery in a cool, dry and well-ventilated area.

9. Disposal

Regulations vary for different countries.

Dispose of in accordance with local regulations.

10. Note

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

11. Period of Warranty

The period of warranty is one year from the date of shipment. TPV guarantees to give a replacement in case of cells with defects proven due to manufacturing process instead of the customer abuse and misuse.