

1. 范围 (Scope)

该承认书适用于生产的镍镉圆柱形充电电池及其组合电池

This specification is suitable for the performance of following
Nickel-Cadmium cylindrical cell and its stack-up battery packs:

型号: D-AA1000B×3	3.6V	尺寸:	AA×3 型
Model: D-AA1000B×3	3.6V	Size:	AA×3
额定容量:	1000mAh/0.2C	最低容量:	950mAh/0.2C
Rated Capacity:	1000mAh/0.2C	Minimum capacity:	950mAh/0.2C
标准充电:	0.1 C×16 小时	快速充电*:	0.5 C×2.1小时
Standard Charge:	0.1C×16h	Fast Charge*:	0.5 C×2.1h

* 加- ΔV 控制, $-\Delta V=10\text{mV/cell}$ 或 $dT/dt=0.8^\circ\text{C/min}$ 时停止充电.

*With $-\Delta V$ control, When $-\Delta V=10\text{mV/cell}$ or $dT/dt=0.8^\circ\text{C/min}$, stop charge

备注:

- 1 规格书只作为验货 (收到货一个月进行) 标准, 不能作为存货检验标准。
- 2 本公司规定电池的带电量超过30% 的情况下, 电池具有一定的潜在危险性, 如客户要求出货带电量超过30% 的电池所带来的质量问题, 及在运输、储存的过程中出现的安全问题本公司不承担任何责任。
- 3 电池保质期: 180天
- 4 本公司有在不事先通知客户的情况下修改规格书的权利。
- 5 未尽事宜由供求双方讨论商定。
- 6 对未按规格书操作所造成的意外, 本公司不承担任何责任。

Note: (1) Specifications can only regard as inspection (receipt of goods within one month) standard, can not be regard as inventory battery inspection standard

(2) Our company provides the batteries shipped with 30% power, while the battery with more than 30% power the battery has a certain degree of potential danger, we do not undertake any responsibility. If quality problems caused from the customer requirements like with more than 30% power, in the course of transportation and storage etc.

(3) Warranty period: 180days

(4) has the right that do not inform customer to modify specifications.

(5) Pending issues can be discussed by buyer and seller .

(6) Our company do not undertake any responsibility for the accident caused from customer do not follow the suggestion & cautions as specification mentioned .

2.性能和测试方法(Performance and Test Methods)

在进行下列各项测试前每颗电池应用0.2C 放至3.0V 。除特殊情况外，测试应按下列条件在一个月內完成测试

Before proceed the following tests, the cells should be discharged at 0.2C to 3.0V cutoff. Unless special stated, tests

should be done within one month of delivery under the following conditions:

环境温度: $20 \pm 5^{\circ}\text{C}$

环境湿度: $65 \pm 20\%$

Ambient Temperature: $20 \pm 5^{\circ}\text{C}$

Ambient Humidity: $65 \pm 20\%$

测试项目 Test Item	测试条件 Test Conditions				测试标准 Request
1. 标准充电 Standard Charge	先用0.2CmA 放电至3.0V , 然后用0.1CmA 电流持续充电16 小时 Charge is conducted continuously for 16 hours at the constant current of 0.1CmA after pre-discharge at the constant current of 0.2CmA up to an cut-off voltage of 3.0V.				
2. 开路电压 Open-circuit Voltage	电池按标准充电方式充电后, 静置1 小时, 然后测试电压 Voltage between terminals of the charged battery specified in item(1) is measured after rest for 1 hour.				$\geq 3.75\text{V}$
3. 容量 Capacity	按标准充电方式充电后, 静置30 分钟, 然后用0.2CmA 电流持续放电至3.0V , 若放电时间不能达到标准值, 应当按以上方式重做五次 Discharge time of the charged battery specified in item(1) is measured at 0.2CmA up to an cut-off voltage of 3.0V after rest for 30 minutes. If the discharge time doesn't reach the specified value, the test may be carried out further twice, up to three times in total.				\geq Minimum capacity
4. 循环寿命 Cycle Life	循环次数 Cycles	充电Charge	Rest	放电Discharge	≥ 500 循环 (cycles)
	1	0.1CmA×16h	None	0.25CmA×140min	
	2-48	0.25CmA×190min	None	0.25CmA×140min	

测试项目 Test Item	测试条件 Test Conditions				测试标准 Request
	49	0.25CmA×190min	None	0.25CmA to 1.0V/Cell	
	50	0.1CmA×16h	1-4h	0.2CmA to 1.0V/Cell	
	循环寿命按上述条件重复进行测试，如果测试过程中任意一个第50次循环放电时间低于3小时，则寿命测试结束注释: IEC 61951-1. Cycles 1 to 50 shall be repeated until the discharge duration on any 50th cycle becomes less than 3h., Note: IEC61951-1				
5.内阻 Internal resistance	电池充满电后，用1000HZ 电流测试内阻 The battery is measured at 1KHz with charge state.				≤30mΩ
6.高温浮充量 Trickle discharge capacity under high temperature	55℃温度下，先0.2C 放电至3.0V，用0.05C 充电24H，静置30分钟，然后用0.25CmA 持续放电至3.0V。 In an ambient temperature of 55℃, discharge with a constant current of 0.2C down to 3.0V, charge 24h with 0.05C current, rest 30min., then discharge with a constant current of 0.25CmA down to 3.0V.				≥75%额定容量 Rated capacity
7. 过充 Over-charge	电池用0.1CmA 充电48 小时 Charge is conducted continuously for 48 hours at 0.1CmA after the capacity test specified in item(3).				没有变形或漏液 No deformation and leakage
8.过放 Over-discharge	先将电池以 0.2CmA 放电至3.0V，再用36.0 Ω 强放电24 小时 Forced discharge is conducted for 24 hours at a constant resistance of 36.0Ω after pre-discharge at a constant current of 0.2CmA up to 3.0V.				无明显变形 No external deformation
9. 自放电性能 Self-discharge	电池按标准方法充电后，在20℃下搁置28 天，以0.2CmA 放电至3.0V 终止电压 The charged battery specified in item(1) is stored for 28 days at 20℃, and the discharge time is measured at 0.2CmA down to 3.0V.				≥65 % Capacity
10. 高湿度测试 High Humidity	电池充满电后在温度 33±3℃，相对湿度 80±5% 的条件下搁置10 天 The charged battery is stored for 10 days at 33±3℃ and 80±5% of relative humidity.				无漏液 No electrolyte leakage

测试项目 Test Item	测试条件 Test Conditions	测试标准 Request
11. 短路测试 External Short Circuit	标准充电后, 在20℃ ±5 环境中用超过0.75mm ² 金属丝将电池短路至电池恢复到常温。 After standard charge, short-circuit the cell at 20 °C ±5°C until the cell temperature returns to ambient temperature.(cross section of the wire or connector should be more than 0.75mm ²)	不着火 不爆炸 No fire and no explosion
12. 安全阀 启动 Safety Valve Operation	先将电池以 0.2CmA 放电至0V, 再用1CmA 强放电30 分钟 Forced discharge is conducted for 30 minutes at a constant current of 1CmA after pre-discharge at a constant current of 0.2CmA up to 0V.	无爆炸 * Not explode or disrupt. *
13. 跌落测试 Drop Test	电池从1 米 (39.3 英寸) 的高度自由下落至厚度为10 毫米或以上的木板上, 重复进行三次 The battery is subjected to a drop, which has a height of 1m (39.3inches) to an board of 10mm or more thick in a voluntary axis respectively 3 times.	机械外观和电 池性能正常 Mechanically and electrically normal

备注 (Note) : * 允许电池漏液和变形. Electrolyte leakage and deformation of battery are acceptable.

3. 图形、尺寸和标识(Configuration, Dimensions and Markings)

请参阅附图 (Please refer to the attached drawings)

4. 一般特性 (General Characteristics)

请参阅附图 (Please refer to the attached drawings)

5. 注意事项(Precautions to ensure the safety on banding battery)

1. 电池在使用前必须充电.

Batteries should be charged prior to use.

2. 在使用新电池前, 或者长期存放后第一次使用电池, 在使用前请将电池充满电.

When using a new battery for the first time or after long term storage, please fully charge the battery before use.

3. 使用Ni-Cd 或 Ni-MH 专用充电器.

Use the correct charger for Ni-Cd or Ni-MH batteries.

4. 不要将电池短路,那可能永久的损坏电池.

Do not short circuit batteries, permanent damage to batteries may result.

5. 不要燃烧或毁坏电池，可能导致有毒气体释放或爆炸。

Do not incinerate or mutilate batteries, may burst or release toxic material.

6. 不要让电池处于不利环境中，比如极端的温度，深度循环，或者经常过充/过放电

Do not subject batteries to adverse condition such as extreme temperature, deep cycling and excessive overcharge/overdischarge.

7. 将电池贮存在阴凉干燥处。

Store batteries in a cool dry place.

8. 不要将明易达科技有限公司的电池与其他品牌的电池或者不同种类的电池，比如碱性锌电池混用。

Do not mix MD TECHNOLOGY LIMITED batteries with other battery brands or batteries of a different chemistry such as alkaline and zinc carbon.

9. 不要将新旧电池混用，可能会导致过放电。

Do not mix new batteries in use with semi-used batteries, overdischarge may occur.

10. 禁止将电池在密闭环境中使用。需要保持通风，否则电池可能产生氢气，导致爆炸。

Avoid batteries being used in an airtight compartment. Ventilation should be provided inside the battery compartment; otherwise batteries may generate hydrogen gas, which could cause an explosion if exposed to an ignition source.

11. 当把电池放入充电器中时，注意保证极性正确。

When connecting a battery pack to a charger, ensure correct polarity

12. 如果出现噪音，温度异常，或者漏液，请停止使用。

If find any noise, excessive temperature or leakage from a battery, please stop its use.

13. 如果电池发烫，请勿触摸，直至冷却。

When the battery is hot, please do not touch it and handle it, until it has cooled down.

14. 不要把电池（电池组）的外套去除。

Do not remove the outer sleeve from a battery pack nor cut into its housing.

15. 电池使用时发现功率下降，请关闭用电器开关以防止电池过放。

When find battery power down during use, please switch off the device to avoid overdischarge.

16. 当电池不使用时，请把它从装置上取下。

When not using a battery, disconnect it from the device.

17.取下电池组时，用手抓住插头而不是拉线。

Unplug a battery by holding the connector itself and not by pulling at its cord.

18.电池使用后，如果电池发热，再次充电前，请在通风环境中冷却。

After use, if the battery is hot, allow it to cool in a well-ventilated place out of direct sunlight before recharging it..

19.不要将电池放入水中或海水中。

Never put a battery into water or seawater.

20.经过长时间存放，电池应每三个月进行一次充放电。

During long term storage, battery should be charged and discharged once every 3 months.

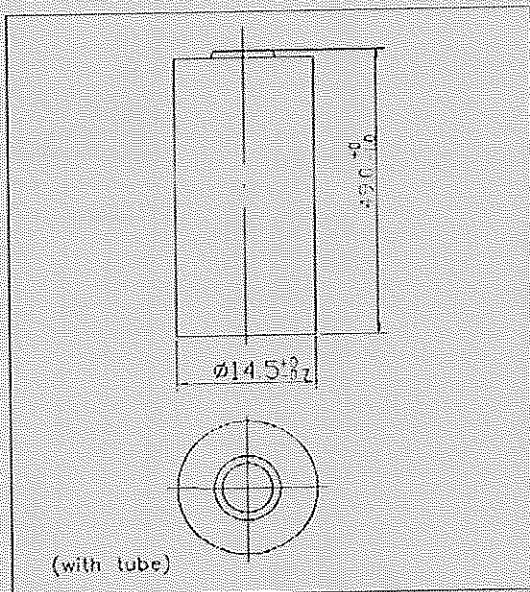
21.不要尝试分离，挤压，撞击电池，电池会发热或起火。电池中的碱液对皮肤和眼睛有害，而且会损伤衣服。

Do not attempt to take batteries apart or subject them to pressure or impact. Heat may be generated or fire may result. The alkaline electrolyte is harmful to eyes and skin, and it may damage clothing upon contact.

22.要使电池远离儿童。如发现吞食，立即联系医生。

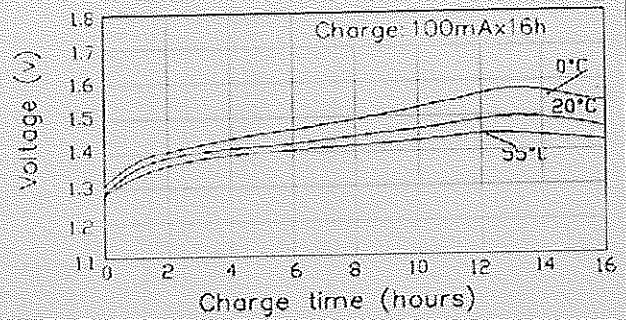
Keep away from children. If swallowed, contact a physician at once.

Single Specification		
Product Name	Sealed Nickel Cadmium Cylindrical Rechargeable Battery	
Model	D-AA1000BT	
Nominal Voltage	1.2V	
Nominal Capacity	1000mAh	
Minimum Capacity	950mAh	
Dimension (with tube)	Diameter	14.5 ⁺⁰ _{-0.7}
	Height	49.0 ⁺⁰ _{-1.0}
Internal Resistance at 1000Hz	≤ 30mΩ (After charge)	
Charge	Standard	100mA × 16h
	Rapid	500mA × 2.1h
	Trickle	30~50mA
Discharge Cut-off Voltage	1.0V	
Cycle Life	> 500 Cycles	
Ambient Temperature	Standard Charge	0°C to 55°C
	Rapid Charge	10°C to 55°C
	Trickle Charge	0°C to 55°C
	Discharge	-20°C to 55°C
	Storage	-20°C to 45°C
Ambient Humidity	65±20%	

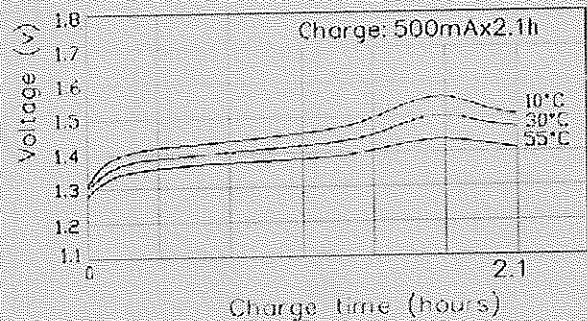


General Characteristics

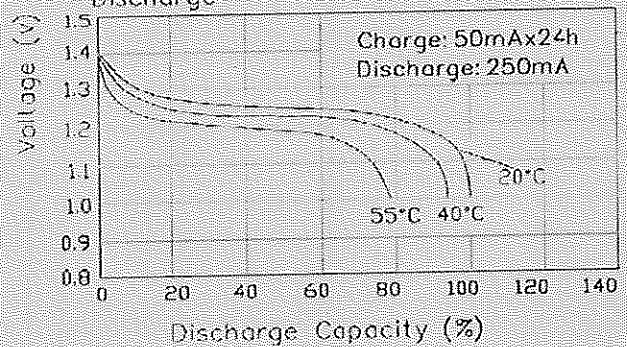
Standard charge



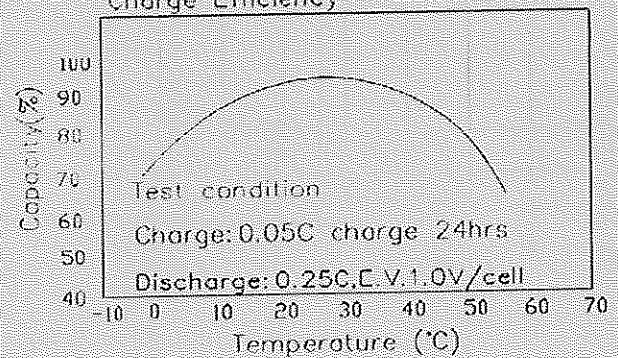
Rapid charge

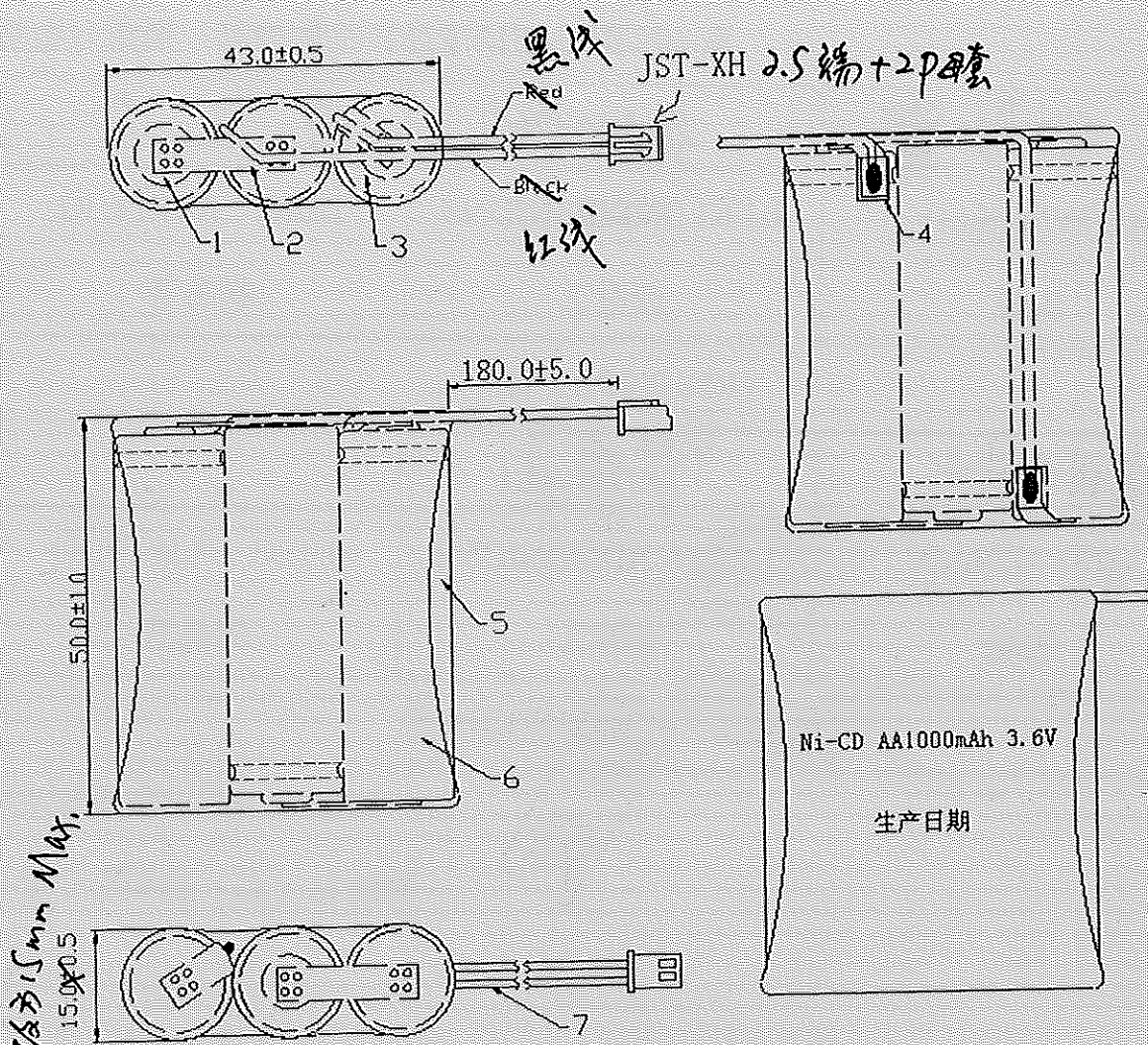


Discharge



Charge Efficiency





7	PLUG (插针)	Red \ Black		UL 1007# 24AWG				
6	PVC (OUT)	64.0×50.0×0.12	1	White				
5	PVC (IN)	53.5×23.0×0.12	3	White				
4	SHRINK PVC TUBE	9×3.5	2	Black				
3	CONNECTION TAB	18×4×0.12	2	Metal Strip	Unit	mm		
2	LEAD TAB	18×4×0.12	2	Metal Strip Plated Ni	Deg	Mark	DATE	Sep.05.2012
1	CELLS	AA1000mAh (BT)	3	NI-Cd	Check		DATE	
NO	NAME	SIZE	QTY	NOTE	Approve		DATE	