
产 品 规 格 书

PRODUCTS SPECIFICATION

客户代码 (Client code) : A126

客户料号(Client P/N#):

规格型号(MODEL NO#): D-D4000mAh 2.4V (HT)

文件编号(File No#):

制单日期 (date): 18th MAR 2019

Specification Approved (规格书审批项)	Prepared By(编制)	
	Checked By(审核)	
	Approved By(批准)	
Customer Approved (客户审批项)	We confirm the product provided fulfill its specification, and will operate according to the requirements agreed here. (signed and sealed)	

1、 APPLICATION/描述

This specification governs the performance of the following Nickel-Cadmium Cylindrical cell and its stack-up battery。/此规格书包括下述镍镉单体及组合电池全部性能指标。

Model /电池标称: ID-D 4000HT

Cell Size /单体平头尺寸: $\phi 32.2^{\pm 0.5} \times 59.5^{\pm 0.5}$

2、 DATA OF STACK UP BATTERIES/组合电池的指标

All data involves voltage and weight to stack-up battery are equal to the value of unit cell times the number of unit cell which consisted in the stack-up batteries /组合电池的电压、重量等数据, 近似等于组成其单体电池数与对应值之乘积。

Example/例如:

Stack-up battery consisting three unit cells/电池组包括三个单体电池

Nominal voltage of unit cell=1.2V/单体电池的额定电压=1.2V

Nominal voltage of stack-up batteries=1.2V×3=3.6V /电池组的额定电压=1.2V×3=3.6V

3、 RATINGS/额定性能

Description/项目	Unit/ 单位	Specification/ 指标	Conditions/条件
Nominal Voltage/ 额定电压	V	2.4	
Nominal Capacity/ 额定容量	mAh	4000	Standard Charge/Discharge/标准充放
Standard Charge/ 标准充电	mA	400 (0.1C)	Ambient Temperature/环境温度: 25°C
	Hour	16	
Quick Charge/快充	mA	1200 (0.3C)	Ambient Temperature/环境温度: 25°C
	hour	4	
Trickle Charge/涓充		(0.03C)~(0.05C) 120mAh~200mAh	-5~55°C
Standard discharge/ 标准放电	mA	800 (0.2C)	Ambient Temperature/环境温度: -20~60°C Humidity: Max /最大湿度: 85%
DischargeCut-off Voltage /放电截止电压	V/cell	1.0	
Storage Temperature 贮存温度	°C	-20~40	Discharged state、Humidity、Max.85% 放电状态下, 最高环境湿度 85%

4、 PERFORMANCE/电池性能

Unless otherwise stated, tests should be done within one month of delivery under the following conditions: 除非另有说明, 测试须在发货后一个月内在下述条件下进行:

Ambient Temperature/环境温度, T: 20±5°C

Relative Humidity/相对湿度: 65±20%

Test/测试项目	Unit/单位	Specification/指标	Other Condition/其它条件	Remarks/备注
Capacity/容量	mAh	≥4000	Standard Charge Discharge/标准充放	up to 3 cycles are allowed/允许最多三次充放
Open Circuit Voltage (OCV)/开路电压	V/cell	≥1.25	Within 1 hour after standard Charge/在标准充电后 1 小时内测量	
Internal Impedance /交流内阻	mΩ/ cell	≤18	Upon fully charge(1 KHz)/ 充满电后 (1KHZ 的交流频率)	
High Rate Discharge (0.5C)/ 0.5 C 放电时间	minute	≥110	Standard Charge, 1 hour rest Before Discharge by 2000mA(0.5C) to 1.0 V /cell/ 标准充电后搁置 1 小时, 2000mA 放电至 1.0V	up to 3 cycles are allowed/允许最多三次充放
Overcharge/过充	mA	400 (0.1C)	Continuous charge 28days at 0.1C and stored for 30minutes, discharge to 1.0V at 0.2C 用 0.1C 电流连续充电 28 天, 搁置 30 分钟, 电池以 0.2C 放电到 1.0V	No leakage nor deformation/discharge time ≥300min 电池无漏液变形, 放电时间大于 300 分钟
Charge Retention / 荷电保持能力	mAh	≥2600 (65%)	Standard Charge, Storage: 28 days, Standard Discharge/标准充电后存放 28 天, 标准放电	End voltage is 1.0V/cell 终止电压 1.0V/只
Safety device operation 安全阀启动测试	N/A	No disrupt nor burst 不爆炸不爆裂	Forced discharge is conducted for 60minutes at 1C after pre-discharge at 0.2C to 0V 先将电池以 0.2C 放电到 0V 后再用 1C 电流强行放电 60 分钟	Leakage of electrolyte and deformation are acceptable. 允许电池有漏液和变形
Impact Resistance/抗撞击		There should be no breakage for PVC sleeves, and the capacity should be more than nominal capacity. /PVC 外套无破裂, 容量大于额定容量.	Charge the cell 0.1C 16hrs, Then leave for 1-4hrs, check bat-before/after dropped, Height 100cm Wooden board (thickness 3mm), Direction is not specified, repeat 3 times. /将电池用 0.1C 电流充 16 小时, 开路 1~4 小时, 检查掉落前后电池状况, 落体高度 50cm, 3mm 厚的木板 3 次	

5、 Special clause for Emergency Lighting luminaries 适用于应急灯的特殊条款

Item	Technical Data	International standards Clauses
cells intended for permanent charge at elevated temperature	Yes	EN60598-2-22 IEC 61-951-1 (ex IEC60285) §7.2 IEC 61-951-1 (ex IEC60285) §7.4.2.4 and 7.9
Expected operation life under following conditions: ·Maximum continuous temp ·Maximum occasional temp ·Permanent charging current ·Discharge frequency ·Minimum operating time	>4years +55°C +70°C (1 month) 200mA max 1 disch/month 1 hour at 0.6C 3 hours at 0.25C	IEC 60598.2.22 clause 22.6.8 IEC 60598.2.22 Annex A

6、 CONFIGURATION,DIMENSIONS AND PACKINGS/电池结构、尺寸、包装物,具体见样品

7、 EXTERNAL APPEARANCE/外观

The cell/battery shall be free from cracks, scars, breakage, rust, discoloration, leakage nor deformation. /无裂缝、疤痕、破裂、锈蚀、脏污、漏液、变形

8、 CAUTION/使用注意事项

(1)Reverse charging is not acceptable./ 勿将电池反极充电

(2)Charge before use. The cells/batteries are delivered in an uncharged state./ 初次使用前先充电，所提供的电池为未充电态

(3)Do not charge/discharge with more than our specified current./ 避免以高于指定的电流充电

(4)Do not short circuit the cell/battery Permanent damage to the cell/battery may result./

(5)Do not incinerate or mutilate the cell/battery./ 勿拆解或焚烧电池

(6)Do not solder directly to the cell/battery./ 勿在电池上直接焊接

(7)the life expectancy may be reduced if the cell/battery is subjected adverse conditions like:

Extreme temperature, deep cycling, excessive overcharge/ over-discharge./ 如超高温、深度循环、过量的过充、过放电，电池的使用寿命可能会下降

(8)store the cell/battery uncharged in a cool dry place. Always discharge batteries before bulk storage or shipment./ 电池应贮放干爽阴凉处；组合电池或装定前应将电池放电。

9、NOTES:

(1) Approximate charge time from discharged state is for reference only./ 以放电态为基准的大致充电时间仅供参考

(2) IEC61951-1©IEC 7.4 Cycle Life:/ 循环寿命

Cycle No. /循环周次	Charge/充电	Rest/搁置	Discharge/放电
1	0.1C×16h	None	0.25C×2h20min
2-48	0.25C×3h10min	None	0.25C×2h20min
49	0.25C×3h10min	None	0.25C to 1.0V/cell
50	0.1C×16h	1-4h	0.2C to 1.0V/ cell
Cycles 1 to so shall be repeated until the discharge duration on any 50th Cycle becomes less than 3 h. / 循环至任一第 50 次放电时间不足 3 小时为止。			

9、 Battery drawing and Dimension /电池图纸尺寸:

