

SPECIFICATION FOR APPROVAL

承 认 书


客户 / CUSTOMER	:	_____
客户型号 / CUSTOMER P/N	:	_____
产品名称 / ITEM	:	4槽1.2V AA/AAA镍氢电池LCD充电器/ 4-slot 0.5A NI-MH battery LCD charger
产品种类 / DESCRIPTION	:	槽 充/slot type charger
本公司产品型号 / OUR MODEL NO.	:	CH-RMH223-01
标准 / STANDARD	:	_____
额定 / RATING	:	I/P: 100V-240V~ 50Hz/60Hz
	:	O/P AA :DC1.2V 2000mA×0.5 ×2CH
	:	DC1.2V 2000mA×0.25×4CH
	:	O/P AAA:DC1.2V 1000mA× 0.5 ×2CH
	:	DC1.2V 1000mA×0.25×4CH
备注 / REMARKS		_____

注意:在贵司出单前,请确认签回以下项目/ Attention: Before placing orders, please confirm to sign back the followings:

- ☐ 产品规格(首页) /Production Spec(Front Page)
- ☐ 铭牌规格(如有) /Nameplate Spec(if any)
- ☐ 包装规格(如有)/Packing Spec(if any)

版本 REV	描述/DESCRIPTION	日期 DATE
A0	首次发行/FIRST RELEASE	2011-1-18
A1	修正电气参数/REVISE ELECTRONIC CHARACTERISTICS	2011-5-23
A2	变更格式/CHANGE FORMAT	2019-1-12

瑞鼎电子/ Ryder Electronics	
	批准/ Approved by
签名 Signature	衣绍鹏
日期/DATE	2019-1-12

客户/ CUSTOMER	
确认	
Approved by	
	(签字或公司盖章)
日期/DATE	

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1 产品特点 Product Characteristics

- 本充电器是一款 4 通道 PWM 开关型快速充电器, 采用单片机智能控制; 能精确的判断电池状态, 控制充电质量; 确保不欠充和过充。It is a 4-slot quick charger with PWM switching. It adopts intelligent single chip control. With accurate detection of battery's status, each channel can control charging quality to prevent insufficient charge and overcharge.
- 4 槽独立充电, AA 与 AAA 电池可混充。4 slots charging separately. AA/AAA battery can be mixed to charge.
- 本充电器适用于 1.2V AA/AAA 镍氢电池。This charger is suitable for 1.2V AA/AAA NI-MH battery.
- 恒电流充电模式, $-\Delta V$ 检测, 确保对电池快速充电。Constant current charging mode, $-\Delta V$ detection, quick charge.
- 8 小时充电安全时间限制, 确保使用安全。Limitation of 8 hours charging time for safety.
- 接入 AC 电源, 正确放入电池即可充电; 使用非常方便。Convenience with AC connection and correct battery placing.
- 电池自动识别功能, 能识别电池及电池的好坏, 对电池以外的其它负载将自动停止充电。Battery auto-detection function. It can detect bad battery and stop charging load except for battery.
- 具有电池反接保护功能, 确保充电器及电池在误操作(接反)的情况下不会损坏充电器及电池(注意请不要长时间反接电池充电)。Battery reversely connected protection function, to make sure that battery or charger will not be damaged under the condition of reverse. (Please don't charge battery in the condition of reverse for a long time.)
- LCD 指示充电状态, 显示直观。LCD display.
- 宽电压输入设计, 适应全球电压; 使用非常方便。Input voltage: 100V-240V ~ 50Hz/60Hz.

注意: 请不要拿 1.2V AA/AAA 镍氢电池以外的其它电池及电池包和本充电器连接充电, 本规格书所提及的所有电池均指 1.2V AA/AAA 镍氢电池。

Caution: this spec and charger are only suitable for 1.2V AA/AAA NI-MH battery.

2 电气性能 Electrical Characteristics

2.1 输入特性 Input characteristics

2.1.1 额定输入电压 Input rated voltage

输入电压 Input voltage:

100-240V ~ 50Hz/60Hz

2.1.2 输入电压范围 Input voltage range

额定输入电压及频率 Input rated voltage and frequency:

90V-264V ~ 47Hz-63Hz

2.1.3 额定输入电流 Input rated current

在额定输入电压及正常充电的情况下, 输入电流小于 200mA

Input current < 200mA (In the condition of rated input voltage)

2.2 输出特性 Output characteristics

2.2.1 空载电压 No-load voltage

空载电压 No-load voltage : < 0.2V

2.2.2 额定充电电流: (正常充电条件下) Rated charge current(In normal condition)

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额定充电电流 : $2.0A \times 0.5 \pm 10\%$ (0.5 充电占空比) &AA 通道 X2CH
Rated charge current: $2.0A \times 0.5 \pm 10\%$ (0.5 duty circle) &AA channel X2CH
额定充电电流 : $2.0A \times 0.25 \pm 10\%$ (0.25 充电占空比) &AA 通道 X4CH
Rated charge current: $2.0A \times 0.25 \pm 10\%$ (0.25 duty circle) &AA channel X4CH
额定充电电流 : $1.0A \times 0.5 \pm 10\%$ (0.5 充电占空比) &AAA 通道 X2CH
Rated charge current: $1.0A \times 0.5 \pm 10\%$ (0.5 duty circle) &AAA channel X2CH
额定充电电流 : $1.0A \times 0.25 \pm 10\%$ (0.25 充电占空比) &AAA 通道 X4CH
Rated charge current: $1.0A \times 0.25 \pm 10\%$ (0.25 duty circle) &AAA channel X4CH

2.2.3 涓流充电电流 Charge trickle current

涓流充电电流 : $2.0A \times 0.1 \pm 10\%$ (0.1 充电占空比) &AA 通道 X2CH
Trickle current: $2.0A \times 0.1 \pm 10\%$ (0.1 duty circle) &AA channel X2CH
涓流充电电流 : $2.0A \times 0.1 \pm 10\%$ (0.05 充电占空比) &AA 通道 X4CH
Trickle current: $2.0A \times 0.05 \pm 10\%$ (0.05 duty circle) &AA channel X4CH
涓流充电电流 : $1.0A \times 0.1 \pm 10\%$ (0.1 充电占空比) &AAA 通道 X2CH
Trickle current: $1.0A \times 0.1 \pm 10\%$ (0.1 duty circle) &AAA channel X2CH
涓流充电电流 : $1.0A \times 0.1 \pm 10\%$ (0.05 充电占空比) &AAA 通道 X4CH
Trickle current: $1.0A \times 0.05 \pm 10\%$ (0.05 duty circle) &AAA channel X4CH

2.2.4 充电方式 Charge method

采用恒流充电方式 Constant current charge

2.2.5 ΔV 检测精度- ΔV detection precision

ΔV 检测精度- ΔV detection precision : $\leq 20mV$

2.2.6 输出短路保护 Output short circuit protection

当充电器输出端短路, 短路状态没显示。

When there is an output short circuit, the short circuit current $< 50mA$. LCD backlight and LCD will not show.

2.2.7 电池反接保护 Battery reverse protection

结构防反接 Battery reverse protection(shell mechanism)

2.2.8 输出反向漏电流 Output reverse leakage current

当无 AC 市电输入时, 充电器输出反向漏电流: $\leq 10mA$, 以保持已充入电池的电量。

The charger's output reverse leakage current $\leq 10mA$ (no AC input), to maintain battery's volume.

2.2.9 最长充电时间限制 Limitation of the charge time

在放入电池开始充电起计时, 8 小时后无论是否充电完成, 充电器将停止充电, 保证电池安全, 即最长充电时间限制 8 小时。

The charger will stop charging since the battery was placed in charger for 8 hours no matter whether battery was fully charged or not.

2.2.10 适用电池 Suitable battery

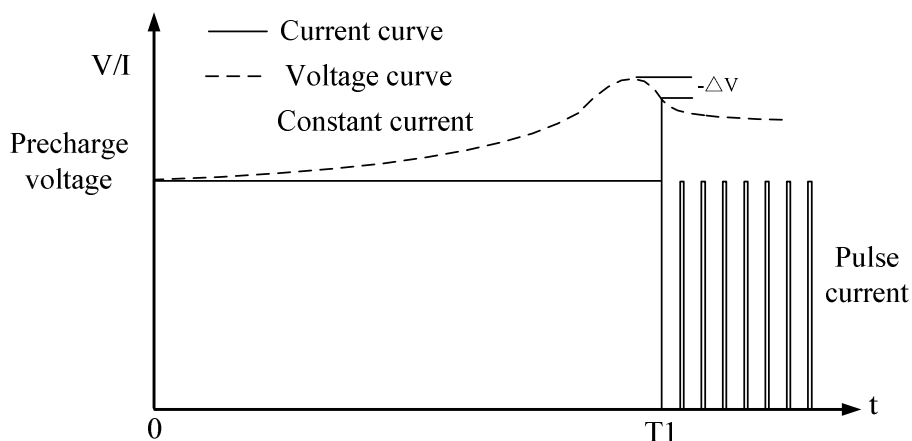
本充电器适合 1.2V NI-MH AA/AAA 电池

This charger is suitable for 1.2V NI-MH AA/AAA battery.

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3 充电方式及 LCD 指示状态 Charge method and LCD indication

3.1 充电器输出特性曲线 Output curve



T0-T1: 恒流充电阶段,在此阶段,检测电池的 $-\Delta V$,当检测到 $-\Delta V$ 时,就会转入充饱阶段;LCD指示电池不动,指示充饱状态。

T0-T1: Constant current charge period. In this period, if the $-\Delta V$ is detected, charger turns into full-charged period. LCD indicates that the battery is fully charged.

T1- : 充饱阶段,充电器转入脉冲涓流状态(占空比约: 2.5%)。.

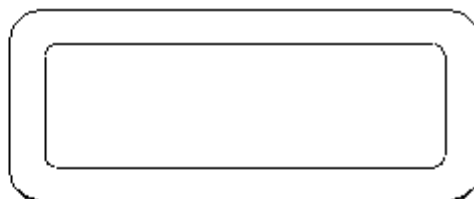
T1- : Full-charged period. In this period, the charger turns into pulse trickle current charge method. (Duty circle: aprx 2.5%).

3.2 LCD 指示状态 LCD indication

A、开机启动LCD显示状态:

充电器连接通电开机瞬间, LCD屏全部闪示启动,约1秒后产品空载关态LED屏灯亮无任何图样显示。

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B、放电充电状态:

放入电池时, 其LCD显示对应电池槽位电池容量格数, 同时CHG充电指示亮起, 电池容量格上下跳动显示指示充电状态。



C、电池饱合状态:

当对应槽位电池容量充电饱合时, 其LCD屏电池容量指示格满屏指示并不再上下闪烁充电, 此时涓流充电。



D、电池出错状态:

对应电池槽放入电池为碱性电池或坏电池时, 十秒钟左右LCD屏ERROR错误指示显示, 对应槽位电池边以边框以错误报警闪烁显示。



A: Start-up:

When charger was connecting to power supply, all indicators will show up for 1 second. The LCD display and backlight LED will turn off in no-load status.

B: Charge:

When the battery was put into the charger, the LCD displays the number of battery capacity corresponding to the battery slot, while the CHG charging indicator light up, and the battery capacity is dynamic displayed to indicate the charging state.

C: Full charged:

When battery is fully charged, the corresponding LCD indicator no longer in flash, CHG only indicates a trickle charge.

D: Error:

If battery into short circuit or is alkaline battery, the corresponding LCD indicates ERROR about 10 seconds later.

4 适用环境 Applicable Environments

4.1 工作温度 Working temperature

0- +35℃

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4.2 工作湿度 Humidity

工作湿度 humidity: $\leq 90\%$ (不结露 no condensation)

4.3 贮存温度 Storage temperature

贮存温度 storage temperature: -20°C - $+80^{\circ}\text{C}$

4.4 存储湿度 Storage humidity

相对湿度 relative humidity: $\leq 85\%$

4.5 大气压力 Atmospheric pressure

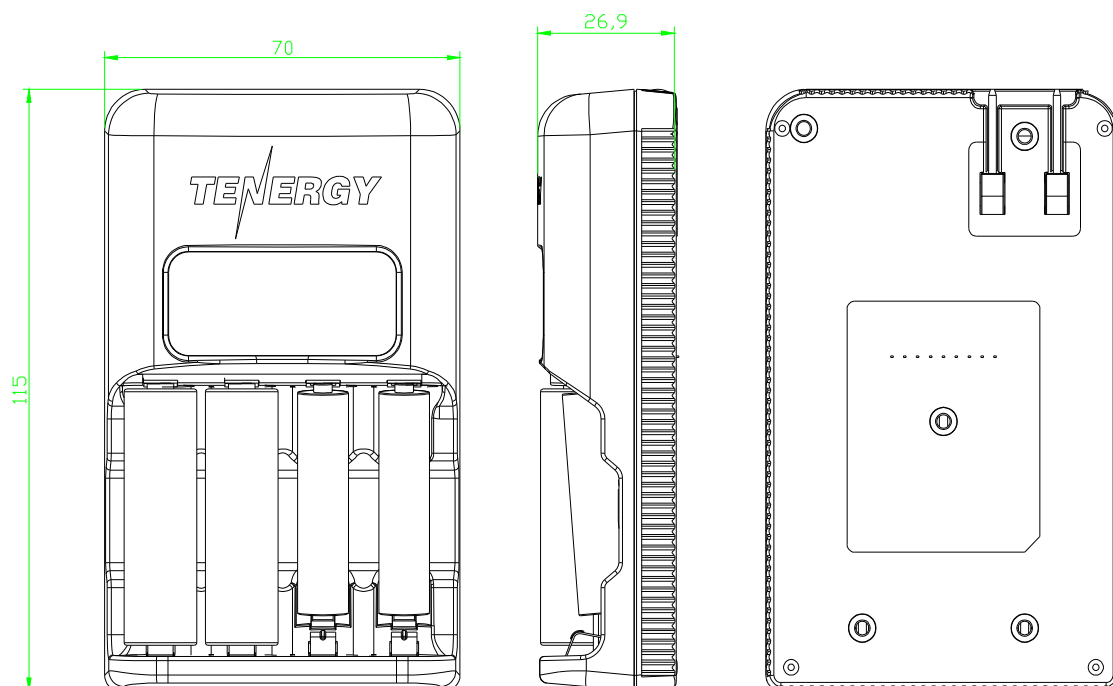
大气压力 atmospheric pressure: 70- 106KPa

5 机械 Mechanics

5.1 外观图 Appearance

具体外观颜色及印字可按客户要求定制

The appearance and print can be customized



5.2 输入 AC 插头 Input AC plug

美规墙插式 (具体 AC 输入插头可按客户要求定制)

US standard, wall insert (Plug can be customized)

5.3 铭牌标贴 Label

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按客户要求订制
Label can be customized.

6 可靠性能 Reliable Performance

- 高温试验：实验温度为 $65^{\circ}\text{C} \pm 2^{\circ}\text{C}$ ，产品不包装，持续时间为 5 小时。在常温下放置待恢复后对其外观、绝缘强度、指示功能及电气性能进行重新测试；外观应平整无划痕、毛刺以及其它机械损伤；外露金属部分不应有锈蚀；绝缘测试无击穿、飞弧现象；LCD 指示功能及电气性能正常。

High temperature test: under $65^{\circ}\text{C} \pm 2^{\circ}\text{C}$, the charger without packing, last for 5 hours. Then take it into the room temperature, test its appearance, LCD and electrical specification. The appearance should have no scratches, burrs and other mechanical damage, metal parts rust should have no corrosion. Insulation test has no breakdown or arcing phenomenon. LCD indication function and electrical performance works normally

- 低温试验：实验温度为 $-20^{\circ}\text{C} \pm 3^{\circ}\text{C}$ ，产品不包装，持续时间为 8 小时。在常温下放置待恢复后对其外观、绝缘强度、指示功能及电性能进行重新测试；外观应平整无划痕、毛刺以及其它机械损伤，外露金属部分不应有锈蚀；绝缘测试无击穿、飞弧现象；LCD 指示功能及电气性能正常。

Low temperature test: under $-20^{\circ}\text{C} \pm 3^{\circ}\text{C}$, the charger without packing, last for 8 hours. Then take it into the room temperature, test its appearance, LCD and electrical specification. The appearance should have no scratches, burrs and other mechanical damage, metal parts rust should have no corrosion. Insulation test has no breakdown or arcing phenomenon. LCD indication function and electrical performance works normally

- 恒定湿热试验：实验温度为 $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ ，湿度为 90%-95%，产品不包装，持续时间为 48 小时。测试后对其外观、绝缘强度、指示功能及电性能进行重新测试。外观应平整无划痕、毛刺以及其它机械损伤，外露金属部分不应有锈蚀；绝缘测试无击穿、飞弧现象；LCD 指示功能及电气性能正常。

The constant humidity and heat test: under $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$, humidity 90%~95%, the charger without packing, last for 48 hour. Then test its appearance, LCD and electrical specification.

The appearance should have no scratches, burrs and other mechanical damage, metal parts rust should have no corrosion. Insulation test has no breakdown or arcing phenomenon. LCD indication function and electrical performance works normally

- 振动试验：频率为 10-55Hz，振幅为 0.35mm，每个方向上扫频循环次数为 10 次。实验后对其外观、绝缘强度、指示功能及电性能进行重新测试。外观应平整无划痕、毛刺以及其它机械损伤，外露金属部分不应有锈蚀；绝缘测试无击穿、飞弧现象；LCD 指示功能及电气性能正常。

Vibration test: 10~55HZ, amplitude 0.35mm, Sweep cycles in each direction 10 times. Then test its appearance, LCD and electrical specification. The appearance should have no scratches, burrs and other mechanical damage, metal parts rust should have no corrosion.

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Insulation test has no breakdown or arcing phenomenon. LCD indication function and electrical performance works normally

- 跌落试验：高度为 1 米，实验台厚度为 20mm 的硬木板，6 个表面，每个方向 1 次。实验后对其外观、绝缘强度、指示功能及电性能进行重新测试。产品内部无异响，外观无机械破损，外露金属部分不应有锈蚀；绝缘测试无击穿、飞弧现象；LCD 指示功能及电气性能正常。

Drop test: from 1M, the test platform is the hardboard with 20mm thickness. 6 surface, once in each direction. Then test its appearance, Dielectric strength, LCD and electrical specification.

The appearance should have no damage, no abnormal noise inside; metal parts rust should have no corrosion. Insulation test has no breakdown or arcing phenomenon. LCD indication function and electrical performance works normally

- 认证要求：暂无

Authentication requirements: None

7 外观要求 Appearance requirements

充电器外壳表面平整无划痕，毛刺及其它机械损伤，丝印完整清晰，外露金属部份无锈蚀。

Charger case should be smooth and have no scratches, burrs and other mechanical damage, complete and clear screen, the exposed metal parts no rust

8 体积与重量 Volume And Weight

8.1 体积 Volume

L 115 * W 70* H 26.9 mm³

8.2 重量 Weight

net: 125g

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9 抽样标准 Sampling Standard

产品抽样检验参照 MIL-STD-105E 标准制定满足本公司产品品质检验之抽样计划，并严格督导实施。

当客户或合同有特殊要求时。可按客户和合同要求执行。

Product sampling reference MIL-STD-105E standards to meet the company's products quality inspection of the sampling plan, and implement strict supervision. Also can be based on the customer requirement

10 包装 Packing

产品可配套吸塑包装，具体包装方式可按客户要求订制。

Product can be packed with blister. Packing can be customized

11 使用注意事项 Caution

- 不可以拿本充电器适配 1.2V AA/AAA NI-MH 以外的电池。

Only suitable for 1.2V AA/AAA NI-MH battery.

- 不可在超过 40℃ 环境使用本充电器对电池充电；建议在 35℃ 以下的环境下充电，电池在充足的时候有轻微的发热，属正常现象，请放心使用。

Do not use the charger to charge when temperature is over 40℃, temperature below 35℃ is recommended. It is normal that there is some heat when battery was fully charged.

- 充电时远离热源和火源。

Far away from heat and fire

- 不得在酸、碱、和有腐蚀的环境中使用本充电器及电池。

Do not use the charger under the environment of acids, alkalis, and corrosion

- 不得让充电器进水或淋雨，以免引起安全问题。

Do not place the charger into rain or water, or may cause problems

- 不得拆解充电器和电池，以免引起危险。

Do not disassemble charger and battery, to avoid danger

- 不得让小孩单独使用本充电器。

Do not let children use the charger alone

- 当电池长时间放置不用后再次使用时，可能会出现假象- ΔV 现象，导致充电器误判而停止充电，出现此情况后，请对电池反复充电、放电几次后即可修复或部分修复。

When the battery is not in use for a long time, there may be false $-\Delta V$ phenomenon, resulting in wrong detection and stop charging. In this case, please charge and discharge the battery repeatedly for a few times.

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