

SPECIFICATION FOR APPROVAL

承 认 书


客户 / CUSTOMER	:	
客户型号 / CUSTOMER P/N	:	
产品名称 / ITEM	:	AC 4槽0.5A镍氢LED充电器
产品种类 / DESCRIPTION	:	槽 充
本公司产品型号 / OUR MODEL NO.	:	CH-RMH222-01
标准 / STANDARD	:	
额定 / RATING	:	I/P:AC 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 EDITION	2011-4-23
A1	修改格式/CHANGE FORMAT	2019-01-16

瑞鼎电子/ Ryder Electronics	
	批准/ Approved by
签名 Signature	衣绍鹏
日期/DATE	2019-01-16

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

产品型号/MODEL NO.	受控编号/CONTROLLED DOCUMENTS NO.	版本 /VERSION	拟制/Drawn by	审核 /Verified by	页码/PAGE
CH-RMH222-01	JE-KF-GGS-059	A1	刘君斌	彭荣忠	PAGE1 / 9

目 录 Content

1 产品特点 PRODUCT CHARACTERISTICS	3
2 电气性能 ELECTRICAL CHARACTERISTICS	3
2.1 输入特性 INPUT CHARACTERISTICS	3
2.2 输出特性 OUTPUT CHARACTERISTICS	3
3 充电方式及 LED 指示状态 CHARGE AND LED INDICATION	4
3.1 充电器输出特性曲线 OUTPUT CURVE	4
3.2 LED 指示 LED INDICATION	5
4 适用环境 APPLICABLE ENVIRONMENTS	5
4.1 工作温度 WORKING TEMPERATURE	5
4.2 工作湿度 HUMIDITY	5
4.3 贮存温度 STORAGE TEMPERATURE	5
4.4 存储湿度 STORAGE HUMIDITY	5
4.5 大气压力 ATMOSPHERIC PRESSURE	5
5 机械 MECHANICS	6
5.1 外观图 APPEARANCE	6
5.2 输入 AC 插头 INPUT AC PLUG	6
5.3 铭牌标贴 LABEL	6
6 可靠性能 RELIABLE PERFORMANCE	6
7 外观要求 APPEARANCE REQUIREMENTS	7
8 体积与重量 VOLUME AND WEIGHT	8
8.1 体积 VOLUME	8
8.2 重量 WEIGHT	8
9 抽样标准 SAMPLING STANDARD	8
10 包装 PACKING	8
11 使用注意事项 CAUTION	8

产品型号/MODEL NO.	受控编号/CONTROLLED DOCUMENTS NO.	版本 /VERSION	拟制/Drawn by	审核 /Verified by	页码/PAGE
CH-RMH222-01	JE-KF-GGS-059	A1	刘君斌	彭荣忠	PAGE2 / 9

1 产品特点 Product Characteristics

1. 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.
2. 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.
3. 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.
4. 恒电流充电模式，- ΔV 检测, 确保对电池快速充电。Constant current charging mode, - ΔV detection, quick charge.
5. 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.
6. 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.
7. 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.
8. 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.)
9. 双色发光二极管指示充电状态，显示直观。LCD display.
10. 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 输入电压 Input rated voltage

输入电压 Input voltage: AC 100V~240V 50Hz/60Hz

2.1.2 额定输入电压 Input voltage range

额定输入电压及频率 Input rated voltage and frequency: AC 90V~260V 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 : 0V

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

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

产品型号/MODEL NO.	受控编号/CONTROLLED DOCUMENTS NO.	版本 /VERSION	拟制/Drawn by	审核 /Verified by	页码/PAGE
CH-RMH222-01	JE-KF-GGS-059	A1	刘君斌	彭荣忠	PAGE3 / 9

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

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, 短路状态指示灯不亮, 电流小于 50mA。

When there is an output short circuit, the short circuit current $<50mA$. LED light off..

2.2.7 不可充电电池与坏电池保护 Nonrechargeable or bad battery protection

当充电器接入不可充电电池或坏电池时, 指示灯红灯闪烁, 不充电。

If put nonrechargeable or bad battery in charger, LED will flash in red and charger stops charging.

2.2.8 电池反接保护 Battery reverse protection

结构防反接 Battery reverse protection(shell mechanism)

2.2.9 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.

2.2.10 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.

2.2.11 适用电池 Suitable battery

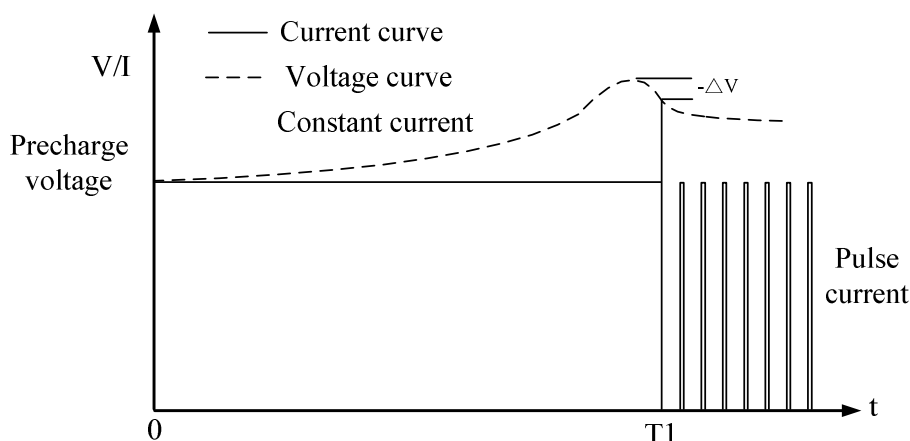
本充电器适合 1.2V NI-MH/NI-CD AA/AAA 电池

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

3 充电方式及 LED 指示状态 Charge and LED indication

3.1 充电器输出特性曲线 Output curve

产品型号/MODEL NO.	受控编号/CONTROLLED DOCUMENTS NO.	版本 /VERSION	拟制/Drawn by	审核 /Verified by	页码/PAGE
CH-RMH222-01	JE-KF-GGS-059	A1	刘君斌	彭荣忠	PAGE4 / 9



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,就会转入充电饱和阶段;指示灯在由红灯转为绿灯,指示充电饱和状态。

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- : 充电饱和阶段,充电器转入脉冲涓流状态(占空比约: 10%)。

T1- : Full-charged period. In this period, the charger turns into pulse trickle current charge method. (Duty circle: aprx 10%).

3.2 LED 指示 LED Indication

不接电池	充电指示灯——熄灭
充电状态	充电指示灯——红灯常亮
充电饱和状态	充电指示灯——绿灯常亮
输出短路	充电指示灯——不亮
不可充电电池坏电池保护	充电指示灯——红灯闪烁
No battery	LED-----light off
Charge	LED-----red light
Full charge	LED-----green light
Output short circuit	LED-----light off
Nonrechargeable or bad battery protect	LED-----red light flash

4 适用环境 Applicable Environments

4.1 工作温度 Working temperature

0~+35℃

4.2 工作湿度 Humidity

≤90% (不结露 no condensation)

4.3 贮存温度 Storage temperature

-20~+80℃

4.4 存储湿度 Storage humidity

相对湿度 relative humidity: ≤85%

4.5 大气压力 Atmospheric pressure

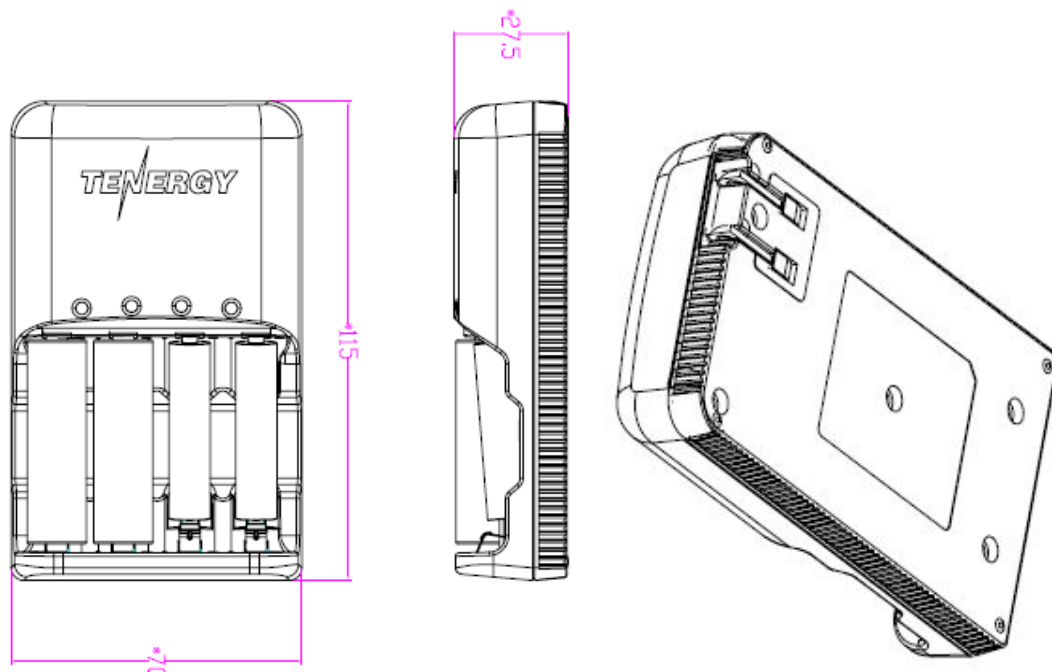
: 70~106KPa

产品型号/MODEL NO.	受控编号/CONTROLLED DOCUMENTS NO.	版本 /VERSION	拟制/Drawn by	审核 /Verified by	页码/PAGE
CH-RMH222-01	JE-KF-GGS-059	A1	刘君斌	彭荣忠	PAGE5 / 9

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

图为美规墙插式，实际可按客户要求订制
US standard, wall insert (Plug can be customized)

5.3 铭牌标贴 Label

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；LED 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, LED 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. LED 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；LED 指示功能及电气性能正常。

产品型号/MODEL NO.	受控编号/CONTROLLED DOCUMENTS NO.	版本 /VERSION	拟制/Drawn by	审核 /Verified by	页码/PAGE
CH-RMH222-01	JE-KF-GGS-059	A1	刘君斌	彭荣忠	PAGE6 / 9

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, LED 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. LED 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；LED 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, LED 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. LED 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；LED 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, LED 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. LED 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；LED 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, LED 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. LED indication function and electrical performance works normally

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

产品型号/MODEL NO.	受控编号/CONTROLLED DOCUMENTS NO.	版本 /VERSION	拟制/Drawn by	审核 /Verified by	页码/PAGE
CH-RMH222-01	JE-KF-GGS-059	A1	刘君斌	彭荣忠	PAGE7 / 9

8 体积与重量 Volume And Weight

8.1 体积 Volume

L 115 * W 70* H 27.5 mm³

8.2 重量 Weight

net: 约 110g

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-△V 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。

产品型号/MODEL NO.	受控编号/CONTROLLED DOCUMENTS NO.	版本 /VERSION	拟制/Drawn by	审核 /Verified by	页码/PAGE
CH-RMH222-01	JE-KF-GGS-059	A1	刘君斌	彭荣忠	PAGE8 / 9

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.

产品型号/MODEL NO.	受控编号/CONTROLLED DOCUMENTS NO.	版本 /VERSION	拟制/Drawn by	审核 /Verified by	页码/PAGE
CH-RMH222-01	JE-KF-GGS-059	A1	刘君斌	彭荣忠	PAGE9 / 9