

SPECIFICATION FOR APPROVAL

承 认 书

客户 / CUSTOMER : _____

客户型号 / CUSTOMER P/N : _____

产品名称 / ITEM : 4 槽 9.6V(7-8 节)75mA 镍 氢 充 电 器 /4-slot
9.6V(7-8seires)75mA NI-MH battery charger

产品种类 / DESCRIPTION : 槽充/slot type charger

本公司产品型号 / OUR MODEL : CH-RMH220-02

标准 / STANDARD : _____

额定 / RATING : I/P:DC 15V 500mA
O/P:8.4V、9.6V 75mA ×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	
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	

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1 产品特点 Product Characteristics

1. 本充电器是一款采用单片机智能控制，精确监测电池电压，确保电池不过充、不欠充；配 15.0V /500mA 适配器 DC 输入。It is a smart charger with adapter (15.0V/500mA DC output). It adopts intelligent single chip control. With accurate detection of battery's voltage, each channel can control charging quality to prevent insufficient charge and overcharge.
2. 本充电器适用于 7 节、8 节 NI-MH 方块电池，4 槽独立充电。This charger is suitable for 7-8 series NI-MH square battery. 4 slots charging separately.
3. 恒流充电模式，-△V 检测，确保对电池快速充电。Constant current charge method. -△V detection to ensure quick charge.
4. 电池电压低，充电器预充充电，待电池电压升高至一定值，进入快速充电。The charger applies pre-charge to battery when battery's voltage is low and fast-charge to battery when battery's voltage is higher than set value.
5. 5 小时充电安全时间限制，确保使用安全。Limitation of 5 hours charging time for safety.
6. 具有电池反接、短路保护功能，充电器红灯告警。Battery reverse connection protection, short circuit protection. Red LED warning.
7. 双色发光二极管指示充电状态，显示直观。Bicolor LED.
8. 配套的 DC 适配器 AC 宽电压输入。Input voltage: 100V-240V~ 50Hz/60Hz (accessory adapter).

注意：请不要拿本充电器充适应范围以外的其它电池及电池包，本规格书所提及的所有电池及电池包均指 7 节、8 节 NI-MH 方块电池。

Caution: this spec and charger are only suitable for 7-8 series square NI-MH battery.

2 电气性能 Electrical Characteristics

2.1 配套 AC 电源适配器输入输出特性 Accessory AC adapter input/output characteristics

2.1.1 配套 AC 电源适配器输入电压 Accessory AC adapter input voltage

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

2.1.2 配套 AC 电源适配器输出空载电压 Accessory AC adapter output DC no-load voltage

输出 DC :15.0V

output DC voltage: 15.0V

2.1.3 配套 AC 电源适配器额定输出电流 Accessory AC adapter rated output current

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额定输出电流 rated output current: 0.5A

2.2 本充电器输出特性 Output characteristics

2.2.1 充电通道空载电压 Voltage in no-load status

充电通道空载电压 Voltage in no-load status:

13.0V-15.0V ×4CH

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

额定充电电流 rated charge current : 75±10 mA ×4CH

2.2.3 涓流充电电流 Trickle current

涓流充电电流 : 10mA (电池充电饱和后, 每停止 10 秒, 补充 1 秒)

Trickle current: 10mA (when battery was fully charged, charger will charge battery for 1 sec and stop charge for 10 seconds periodically.)

2.2.4 充电方式 Charge method

采用恒流充电方式 constant current charge method

2.2.5-ΔV 检测精度-ΔV detection accuracy

-ΔV 检测精度 : -ΔV detection accuracy≤15mV

2.2.6 输出短路保护 Output short circuit protection

当电池正负极短路或电池短路, 充电器短路电流: ≤20mA, 约 5 秒后指示灯红色闪烁告警。

Charger's output short circuit current≤20mA, red LED will flash about 5 seconds later.

2.2.7 输出反接保护 Output reversely connection protection

当电池正负极错误的接入充电器, 充电器反接保护电流: ≤30mA, 约 5 秒后指示灯红色闪烁告警。

When battery's polarities was wrongly connected and charger's output short circuit current ≤30mA, red LED will flash 5 seconds later.

2.2.8 反向漏电流 Reverse leakage current

充电器反向漏电流: ≤5mA, (当无市电输入时)

Charger's reverse leakage current ≤5mA (when no AC input).

2.2.9 最长充电时间限制 Maximum limitation of the charging time

在放入电池开始充电起计时, 5 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。充电最长充电时间 5 小时。

The charger will stop charging since the battery was placed in charger for 5 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 7 节、8 节 NI-MH 方块电池。

This charger is suitable for 7-8 series square battery.

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3 LED 指示状态 LED indication

3.1 LED 指示 LED indication

充电器上电	指示灯——红绿灯交替亮 1 秒后熄灭
不接电池	指示灯——熄灭
充电状态	指示灯——红灯常亮
充电状态	指示灯——绿灯常亮
输出短路或反接	指示灯——红灯快闪
Power on	LED--- red and green LED alternately light up for 1 sec then light off
No battery	LED--- light off
Charge	LED--- red light
Full-charger	LED--- green light
Output short circuit or battery reversely connected	LED--- red light will flash

4 适用环境 Applicable environments

4.1 工作温度 Working temperature

0- +35℃

4.2 工作湿度 Working humidity

工作湿度 working humidity ≤90% （不结露 no condensation）

4.3 贮存温度 Storage temperature

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

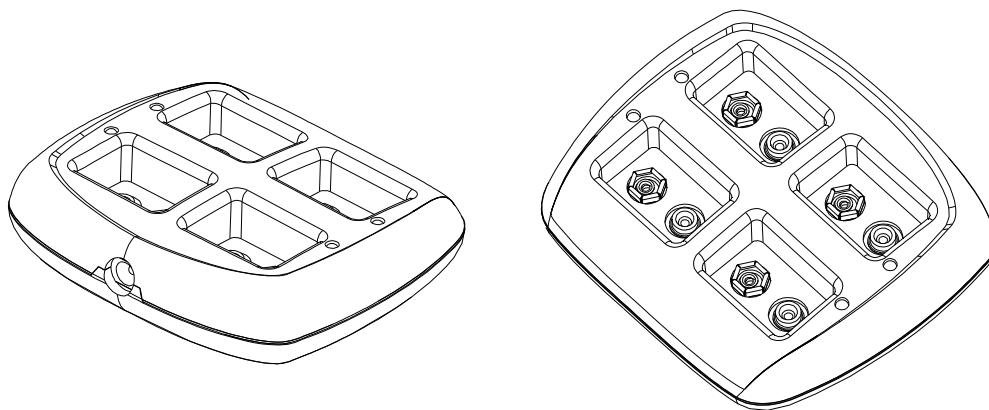
大气压力 atmospheric pressure: 70- 106KPa

5 机械 Mechanics

5.1 本充电器外观图 Appearance

具体外观颜色及印字按客户要求定制
 Appearance and print can be customized

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5.2 本充电器铭牌标贴 Label

按客户要求订制

Label can be customized.

5.3 适配器外观图 Adapter appearance

配套 AC 适配器具体外观颜色及 AC 输入插头标准按客户要求定制。

Accessory AC adapter's appearance and AC input plug standard can be customized.

6 可靠性能 Reliable characteristics

- 1 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、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；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 work normally.

- 2 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、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；LED 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, 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 work normally.

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- 3 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、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； 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 work normally.

- 4 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、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； 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 work normally.

- 5 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，电性能应满足要求。外观无破损，内部无异响。

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 work 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 has no rust

8 体积与重量 Volume And Weight

8.1 体积 Volume

L 119* W 61 *H38 mm3

8.2 重量 Weight

net: 54g

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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. It also can be based on the customer's requirements.

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

1. 本充电器指定使用配套的 AC 适配器。

Please use the accessory AC adapter

2. 不可以拿本充电器充适应范围以外的电池。

Only suitable for 7-8 series square NI-MH battery.

3. 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.

4. 充电时请远离热源和火源。

Far away from heat and fire.

5. 请勿在酸、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.

6. 请勿将充电器进水或淋雨，以免引起安全问题。

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

7. 请勿自行拆开充电器和电池，以免发生危险。

Do not disassemble charger and battery, to avoid danger.

8. 不得让小孩单独使用本充电器；请勿将充电器放置小孩可接触接触到的地方，以免发生危险。

Do not let children use the charger alone. Please place the charger out of the reach of children, or it may cause dangerous.

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