

## SPECIFICATION FOR APPROVAL

### 承认书

客户 / CUSTOMER	:	
客户型号 / CUSTOMER P/N	:	
产品名称 / ITEM	:	4槽8.4V100mA锂电池充电器/4-slot 8.4V 100mA li-ion battery charger
产品种类 / DESCRIPTION	:	槽充/slot type charger
本公司产品型号 / OUR MODEL NO.	:	CH-RLi240-01
标准 / STANDARD	:	
额定 / RATING	:	I/P:DC 12V 500mA
		O/P:DC8.4V 100mA ×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 ISSUE	2010-12-30
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-RLi240-01	JE-KF-GGS-134	A1	刘君斌	彭荣忠	PAGE1 / 8

## 目 录 Content

<b>1</b>	<b>产品特点 PRODUCT CHARACTERISTICS</b>	<b>3</b>
<b>2</b>	<b>电气性能 ELECTRICAL CHARACTERISTICS</b>	<b>3</b>
2.1	配套 AC 电源适配器输入输出特性 ACCESSORY AC ADAPTER INPUT AND OUTPUT CHARACTERISTICS	3
2.2	本充电器输出特性 CHARGER'S OUTPUT CHARACTERISTICS	4
<b>3</b>	<b>LED 指示状态 LED INDICATION</b>	<b>5</b>
3.1	LED 指示 LED INDICATION	5
<b>4</b>	<b>适用环境 APPLICABLE ENVIRONMENT</b>	<b>5</b>
4.1	工作温度 WORKING TEMPERATURE	5
4.2	工作湿度 WORKING 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
<b>5</b>	<b>机械 MECHANICS</b>	<b>5</b>
5.1	本充电器外观图 APPEARANCE	5
5.2	本充电器铭牌标贴 LABEL	6
5.3	适配器外观图 ADAPTER APPEARANCE	6
<b>6</b>	<b>可靠性能 RELIABLE CHARACTERISTICS</b>	<b>6</b>
<b>7</b>	<b>外观要求 APPEARANCE REQUIREMENTS</b>	<b>7</b>
<b>8</b>	<b>体积与重量 VOLUME AND WEIGHT</b>	<b>7</b>
8.1	体积 VOLUME	7
8.2	重量 WEIGHT	7
<b>9</b>	<b>抽样标准 SAMPLING STANDARD</b>	<b>7</b>
<b>10</b>	<b>包装 PACKING</b>	<b>8</b>
<b>11</b>	<b>使用注意事项 CAUTION</b>	<b>8</b>

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-RLi240-01	JE-KF-GGS-134	A1	刘君斌	彭荣忠	PAGE2 / 8

## 1 产品特点 Product Characteristics

1. 本充电器是一款配 AC 适配器 12.0V /500mA DC 输入，采用单片机智能控制，精确监测电池电压，确保充电电池不过充、不欠充。It is a smart charger with AC adapter (12.0V/500mA DC output). 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. 本充电器适用于 8.4V 方块 LI-ION 电池 4 槽独立充电。4 slots charging separately. This charger is suitable for 8.4V LI-ION square battery.
3. 恒电流充电模式，周期电池电压检测,确保电池电压至 8.4V。Constant current charge mode. Charger checks the voltage of battery periodically to maintain cell's voltage equal to 8.4V.
4. 8±1 小时充电安全时间限制，确保安全。Limitation of 8±1 hours charging time for safety.
5. 连接好适配器与充电器，及适配器接入市电，将电池正确插入充电槽即可进行充电，使用方便。Convenience with AC connection and correct battery placing.
6. 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 reverse connection 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 direction of reverse for a long time.)
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，适应全球电压；使用非常方便。

Input voltage: 100V-240V~ 50Hz/60Hz

注意：请不要拿本充电器充适应范围以外的其它电池，本规格书所提及的所有电池均指 8.4V 方块 LI-ION 电池。

**Caution: this spec and charger are only suitable for 8.4V square LI-ION 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 and 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

100V-240V~ 50Hz/60Hz

#### 2.1.2 配套 AC 电源适配器输出直流空载电压 Accessory AC adapter output no-load DC current

输出 DC：output DC voltage

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-RLi240-01	JE-KF-GGS-134	A1	刘君斌	彭荣忠	PAGE3 / 8

12.0V

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

额定输出电流: rated output DC current

0.5A

## 2.2 本充电器输出特性 Charger's output characteristics

2.2.1 充电通道空载及检测电压 Charge channel's no-load voltage and detected voltage

检测电压: detected voltage

$12.0V \pm 2V \times 4CH$

充满转绿灯电压: full-charged voltage(light shifts to green)

$8.4V \pm 0.1V \times 4CH$

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

$100 \pm 20mA \times 4CH$

2.2.3 充电方式 Charge method

采用恒流充电方式。Constant current charge method.

2.2.4 输出短路保护 Output short circuit protection

有短路保护功能, 当电池正负极错误的接入或电池短路, 指示灯红灯闪烁报警。

Short circuit protection. The red light will flash if there is a wrong connection of battery's polarity or a short circuit.

充电器短路电流: Short circuit current  $\leq 1mA$

2.2.5 电池反接保护 Battery reverse connection protection

有反接保护功能, 当电池正负极错误的接入, 指示灯红灯闪烁报警。

Reverse protection. The red light will flash if there is a wrong connection of battery's polarity.

电池反接电流: battery reverse current  $\leq 1mA$

2.2.6 反灌电流 Reverse current

充电器反灌电流: reverse current  $\leq 1mA$ , (当无市电输入时 no AC input)

2.2.7 最大充电时间限制 Limitation of the charging 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。

充电最长充电时间约 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.

2.2.8 适用电池 Suitable battery

本充电器适合 8.4V 方块 LI-ION 电池。

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-RLi240-01	JE-KF-GGS-134	A1	刘君斌	彭荣忠	PAGE4 / 8

This charger is suitable for 8.4V LI-ION square battery.

### 3 LED 指示状态 LED indication

#### 3.1 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
充电状态	充电指示灯——绿灯常亮
输出短路或反接	充电指示灯——红灯快闪

No battery	LED —— light off
Charging	LED —— red light
Full-charged	LED —— green light
Output short circuit or reverse connection	LED —— red light flash

### 4 适用环境 Applicable environment

#### 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  
 The appearance and print can be customized

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-RLI240-01	IE-KF-GGS-134	A1	刘君斌	彭荣忠	PAGE5 / 8

## 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 appearance and AC 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 works 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 works normally

- 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.

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-RLi240-01	JE-KF-GGS-134	A1	刘君斌	彭荣忠	PAGE6 / 8



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

- 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 works 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 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

## 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

## 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

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-RLi240-01	JE-KF-GGS-134	A1	刘君斌	彭荣忠	PAGE7 / 8

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

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 8.4V LI-ION square 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.

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-RLi240-01	JE-KF-GGS-134	A1	刘君斌	彭荣忠	PAGE8 / 8