

## SPECIFICATION FOR APPROVAL

### 承 认 书

客户 / CUSTOMER : \_\_\_\_\_

客户型号 / CUSTOMER P/N : \_\_\_\_\_

产品名称 / ITEM : 12.6V3A锂电池充电器/ 12.6V3A li-ion battery charger

产品种类 / DESCRIPTION : 线 充/ Wire type charger

本公司产品型号 / OUR MODEL NO. : CH-RLi503-10

标准 / STANDARD : \_\_\_\_\_

额定 / RATING : I/P:AC 100V~240V 50HZ/60HZ  
O/P: 12.6V 3A


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)

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A0	首次发行/FRIST ISSUE	2012-02-10
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瑞鼎电子/ Ryder Electronics	
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签名 Signature	衣绍鹏
日期/DATE	2019-1-22

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:

- 本产品是一款多节磷酸铁锂电池充电器，采用 MCU 控制充电，带有输出短路及反接保护功能，确保安全 This product is a multi-section lithium phosphate battery charger, which uses MCU to control charging, with output short circuit and reverse connection protection functions to ensure safety.
- 充电电流 3000mA; 适应 3 串 1500~10000mAh 锂电池充电。The charging current is 3000 mA, suitable for charging three series of 1500-10000 mAh lithium batteries.
- 充电器恒流恒压充电，充电电流在 150mA-300mA 时转绿灯充满并停止充电。The charger is charged at constant current and constant voltage. When the charging current is 150 mA-300 mA, turn the green light to fill and stop charging.
- 双色发光二极管指示充电状态，显示直观。Double-color light emitting diodes indicate charging status and display intuitively.
- 宽电压 AC 输入，100-240VAC 50/60Hz 适应全球。Wide voltage AC input, 100-240VAC 50/60Hz adapted to the global.

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 4 串磷酸铁锂充电器。**Note: Please do not use this charger to charge other batteries and battery packs beyond the scope of application. All batteries and battery packs mentioned in this specification refer to four series of lithium iron phosphate chargers.**

## 2 电气性能 Electrical Specification

### 2.1 输入特性 Input characteristics

#### 2.1.1 输入电压范围 Input voltage range

输入电压及频率范围: Input voltage and frequency range AC 90V~260V 47HZ~63H.

#### 2.1.2 最大输入电流 Maximum input current

≤1.0A

#### 2.1.3 浪涌电流 Surge current

浪涌电流: Surge current 30A/ MAX

#### 2.1.4 最大漏电流 Maximum leakage current.

最大漏电流: ≤0.25 mA (在输入电压为 240Vac 的条件下) Maximum leakage current: <0.25 mA (at 240 Vac input voltage)

#### 2.1.5 启动延迟时间 Startup Delay Time

接入市电时，启动延迟时间: ≤3S Start-up delay time: <3S when accessing power market

### 2.2 输出特性 Output characteristics

#### 2.2.1 输出空载电压 Output no-load voltage

输出电压: 12.6±0.15V Output voltage: 12.6 + 0.15V

#### 2.2.2 额定充电电流: (正常充电条件下) Rated charging current: (under normal charging conditions)

额定充电电流: 3000mA±200mA (CV=11.1V) Rated charging current: 3000 mA + 200 mA (CV = 11.1V)

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### 2.2.3恒流充电电压范围 Constant Current Charging Voltage Range

充电电压范围: 8V-12.6V Charging Voltage Range: 8V-12.6V

### 2.2.4充饱转灯电流 Full switching current

当电池快到充饱状态时的电流, 由红灯转为绿灯检测电流, 称为转灯电流

转灯电流:200mA±50mA When the battery is in full state, the current is changed from red light to green light to detect the current, which is called switching current. Turn-lamp current: 200 mA + 50 mA

### 2.2.5输出纹波 Output ripple

输出纹波: ≤150mV (CV=11.1V 时) Output ripple: <150 mV (CV=11.1V)

### 2.2.6充电方式 Charging Method

采用恒流恒压充电方式 Constant Current and Constant Voltage Charging Method

### 2.2.7输出短路保护 Output Short Circuit Protection

当输出端短路时, 充电器进入短路排除状态, 检测故障有没排除。

故障排除后, 充电器进入正常状态。When the output terminal is short-circuit, the charger enters the state of short-circuit elimination, whether the detection fault has been eliminated or not. After troubleshooting, the charger enters the normal state.

### 2.2.8充电器反向漏电流 Reverse leakage current of charger

充电器反向漏电流: ≤10mA, (当无市电输入时) Reverse leakage current of charger: <10mA, (when no electricity input is available)

(当电池在正常充电过程中, AC 断电时电池包通过充电器放电的电流称反向漏电流, 小的漏电流有利于保持已充入电池的电量。) During the normal charging process, when AC is off, the current discharged by the battery pack through the charger is called reverse leakage current. A small leakage current is beneficial to maintaining the charge of the battery. )

### 2.2.9反接保护 Reverse Connection Protection

有电池反接保护功能。Battery Back Connection Protection Function

反接保护电流: ≤10mA Reverse protection current: <10mA

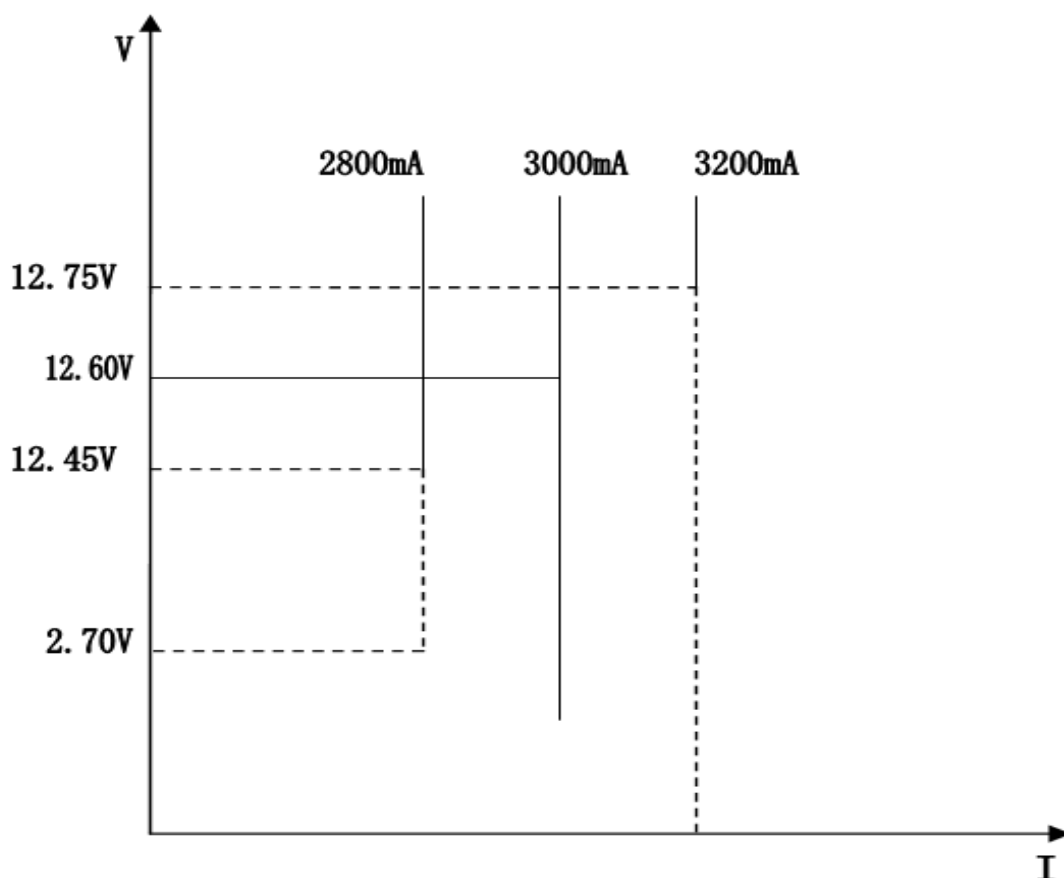
### 2.2.10 注意 Attention

本充电器只适用于 3 串锂离子电池充电。The charger is only suitable for charging three series of lithium ion batteries.

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### 3 充电方式及 LED 指示状态 Charging mode and LED indication status

#### 3.1 充电器输出特性曲线 Charger Output Characteristic Curve



图为12.6V时的充电曲线图，实际充电曲线不超过虚线部份

### 4 使用方法和 LED 指示状态 Use method and LED indication status

#### 4.1 使用方法 Method of Use

1: 将 AC 插头插入市电插座，充电器指示绿灯亮。The AC plug is inserted into the city electrical outlet, and the charger indicates the green light is on.

3: 接入电池，正常时指示灯亮红灯开始充电，充饱时，指示灯自动转绿灯，表示电池已经充满，电池充满时如不取出电池充电电流将自动减小，不会损坏电池。When the battery is connected, the indicator lights up red light and starts charging normally. When the battery is full, the indicator lights turn green automatically, indicating that the battery is full. If the charging current of the battery is not removed when the battery is full, it will automatically reduce and the battery will not be damaged.

报错 Wrong indication

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## 4.2 LED 指示 LED Indicators

不接电池 No battery 充电指示灯——绿灯常亮 Charging Indicator Light - Green Light always on  
 充电状态 Charging state 充电指示灯——红灯常亮 Charging Indicator Lamp - Red Lamp always on  
 充电状态 Full state 充电指示灯——绿灯常亮 Charging Indicator Light - Green Light always on  
 输出短路 Output short circuit 充电指示灯——绿灯常亮 Charging Indicator Light - Green Light always on

## 5 适用环境 Applicable environment

### 5.1 工作温度 Working temperature

在 0~+40℃

### 5.2 工作湿度 Working humidity

工作湿度: ≤90% (不结露) Working humidity: <90% (no condensation)

### 5.3 贮存温度 Storage temperature

贮存温度: -20~+80℃ Storage temperature: - 20 ~ + 80 ~C

### 5.4 存储湿度 Storage humidity

相对湿度: ≤85% Relative humidity: <85%

### 5.5 大气压力 Atmospheric pressure

大气压力: 70~106Kpa Atmospheric pressure: 70-106 KPa

## 6 安全要求 Safety requirements

### 6.1 抗电强度 Anti electric strength

初、次级抗电强度≥3000VAC 50HZ/60HZ 正弦波有效值一分钟无击穿、飞弧现象, 漏电流≤10 mA  
 No breakdown and arc phenomena occur in one minute when the primary and secondary resistances are greater than 3000VAC 50HZ/60HZ, and the leakage current is less than 10 mA.

### 6.2 绝缘电阻 Insulation Resistance

绝缘电阻≥10MΩ(在 DC500V 条件下) Insulation Resistance (> 10M) (under DC500V condition)

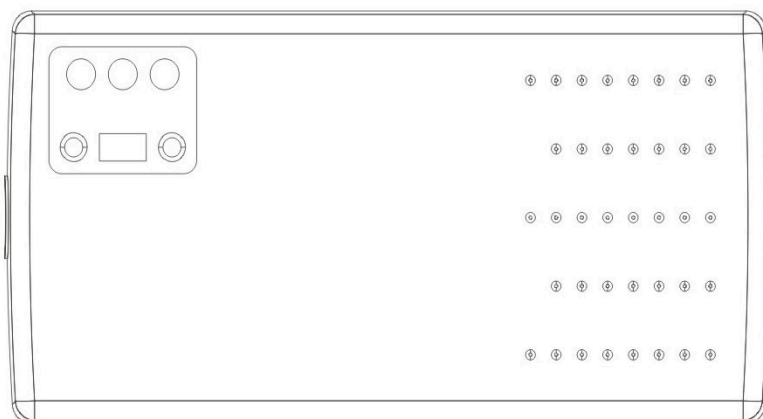
## 7 机械 Mechanics

### 7.1 外观图: Appearance chart

外壳颜色: 实际外观颜色或印字内容按客户订制 Shell color: actual appearance color or print content customized by customer

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## 7.2 输入线材与 AC 头标准 Input Wire and AC Head Standard

具体 AC 头标准及线材规格按客户要求订制 Specific AC Head Standard and Wire Specification According to Customer Requirements

## 7.3 输出线材 DC 极性要求 DC Polarity Requirements for Output Wire

具体 DC 插头标准及线材标准按客户要求订制 Specific DC plug standards and wire standards are customized according to customer requirements

## 7.4 铭牌标贴 nameplate labeling

具体内容按客户要求订制 Specific content customized according to customer requirements

# 8 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、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；成品电性能正常；LED 指示功能正常。High temperature test: the temperature of the experiment is  $65 \pm 2$ . The product is not packaged and lasts for 5 hours. After restoring at room temperature, the appearance, insulation strength, indicating function and electrical performance of the device are re-tested. Appearance should be flat without scratches, burrs and other mechanical damage, exposed metal parts should not be rusted; insulation testing without breakdown, arc phenomenon; electrical performance of finished products is normal; LED indicator function is normal.

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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、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；成品电性能正常；LED 指示功能正常。Low temperature test: the experimental temperature is  $-20 (+3 (?)^{\circ}\text{C}$ , the product is not packaged and lasts for 8 hours. After restoring at room temperature, the appearance, insulation strength, indicating function and electrical performance of the device are re-tested. Appearance should be flat without scratches, burrs and other mechanical damage, exposed metal parts should not be rusted; insulation testing without breakdown, arc phenomenon; electrical performance of finished products is normal; LED indicator function is normal.
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、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；成品电性能正常；LED 指示功能正常。Constant humidity and heat test: the experimental temperature is  $40 \pm 2^{\circ}\text{C}$  and the humidity is 90%-95%. The product is not packaged and lasts for 48 hours. After testing, its appearance, insulation strength, indicating function and electrical performance were re-tested. Appearance should be flat without scratches, burrs and other mechanical damage, exposed metal parts should not be rusted; insulation testing without breakdown, arc phenomenon; electrical performance of finished products is normal; LED indicator function is normal.
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、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；成品电性能正常；LED 指示功能正常。Vibration test: the frequency is 10-55 HZ, the amplitude is 0.35 mm, and the frequency sweeping cycles in each direction are 10 times. After the experiment, its appearance, insulation strength, indicating function and electrical performance were re-tested. Appearance should be flat without scratches, burrs and other mechanical damage, exposed metal parts should not be rusted; insulation testing without breakdown, arc phenomenon; electrical performance of finished products is normal; LED indicator function is normal.
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，外观应无机械破损，外露金属部分不应有锈蚀；绝缘测试无击穿、飞弧现象；成品电性能正常；LED 指示功能正常；成品内部应无异响。Drop test: Hardwood board with height of 1 meter and thickness of 20 mm, 6 surfaces, once in each direction. After the experiment, its appearance, insulation strength, indicating function and electrical performance were re-tested. There should be no mechanical damage in the appearance, no rust in the exposed metal part, no breakdown and arc phenomenon in the insulation test, normal electrical performance of the finished product, normal LED indicating function and no abnormal sound inside the finished product.

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## 9 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。  
The surface of charger shell is flat without scratches, burrs and other mechanical damage.  
The screen printing is complete and clear, and the exposed metal part is free from rust.

## 10 体积与重量 Volume And Weight

### 10.1 体积 Volume

体积 L 119\* W\* 61 H38 mm    Volume L 119\* W\* 61 H38 mm

### 10.2 重量 Weight

Net weight: 284g

## 11 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。Sampling inspection of products refers to the MIL-STD-105E standard to formulate a sampling plan to meet the company's product quality inspection, and strictly supervise the implementation. When customers or contracts have special requirements. Can be executed according to customer and contract requirements

## 12 包装 Packing

产品配套白盒/彩盒包装，具体包装方式可按客户要求订制 Whitebox/colour box packaging, specific packaging methods can be customized according to customer requirements

## 13 使用注意事项 Caution

1. 不可以拿本充电器充适应范围以外的电池。This charger should not be used to charge batteries beyond the scope of application.
2. 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。This charger should not be used to charge batteries in the environment of over 40 C. It is recommended to charge batteries under 35 C. It is normal for batteries to have slight fever when they are sufficient. Please rest assured that they will be used.
3. 充电时请远离热源和火源。Keep away from heat and fire sources when charging.
4. 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 this charger or battery in acid, alkali or corrosive environment
5. 请勿将充电器进水或淋雨，以免引起安全问题。Do not water or rain the charger in order to avoid causing safety problems
6. 请勿自行拆开充电器和电池，以免发生危险。Do not disassemble chargers and batteries on your own to avoid danger.

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7. 不得让小孩单独使用本充电器充电; 以免发生危险。Children should not be allowed to charge with this charger alone in order to avoid danger
8. 请勿将充电器放置小孩可接触到的地方, 以免发生危险。Do not place the charger where children can touch it in order to avoid danger.

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