## SPECIFICATION FOR APPROVAL
### CHARGER JBC036-11

<table>
<thead>
<tr>
<th>CUSTOMER</th>
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<tbody>
<tr>
<td>CUSTOMER P/N</td>
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<tr>
<td>ITEM</td>
<td>:</td>
<td>DC 8-slot LCD Charger</td>
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<tr>
<td>DESCRIPTION</td>
<td>:</td>
<td>slot charger</td>
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<tr>
<td>OUR MODEL NO.</td>
<td>:</td>
<td>CH-RMH241-02</td>
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<td>STANDARD</td>
<td>:</td>
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<tr>
<td>RATING</td>
<td>:</td>
<td>I/P: DC 12V 1.0A</td>
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<tr>
<td>O/P AA</td>
<td>:</td>
<td>DC 1.2V 2000mA×0.25×4CHs×2groups</td>
</tr>
<tr>
<td>O/P AAA</td>
<td>:</td>
<td>DC 1.2V 1000mA×0.25×4CHs×2groups</td>
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### REMARKS

Attention: Before placing orders, please confirm to sign back the followings:

- Production Spec (Front Page)
- Nameplate Spec (if any)
- Packing Spec (if any)

### REV

<table>
<thead>
<tr>
<th>REV</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>A0</td>
<td>FIRST RELEASE</td>
<td>2013-01-08</td>
</tr>
<tr>
<td>A1</td>
<td>CHANGE THE BATTERY CHARGING VOLTAGE RANGE</td>
<td>2013-05-18</td>
</tr>
<tr>
<td>A2</td>
<td>ADD LOW TEMPERATURE PROTECTION</td>
<td>2017-02-27</td>
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Ryder Electronics

Approved by

Signature

DATE 2017-02-27

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CUSTOMER

Approved by

DATE
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1 Product Characteristics

1. It is a 8-slot PWM switching model quick charger with intelligent single chip microcomputer control. With accurate detection of battery’s status, each channel can control charging quality to prevent insufficient charge and overcharge.
2. 8 slots charging separately. AA/AAA battery can be mixed to charge.
3. This charger is suitable for 1.2V AA/AAA NI-MH battery and NI-CD battery.
4. Constant current charging model, -ΔV detection, quick charge.
5. Limitation of 8 hours charging time for safety
6. Convenience with DC connection and correct battery placing.
7. Battery reverse protection function (shell mechanism), to make sure that battery or charger will not be damaged under the condition of reverse.
8. LCD display
9. Input voltage: 100-240V AC 50/60Hz
10. Temperature protection. Normal charge in temperature range: 0° -- 55° C
11. AA/AAA battery can be mixed to charge, NI-MH battery and NI-CD battery also can be mixed to charge.

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

2 Electrical Specification

2.1 Input characteristics

2.1.1 Input voltage of adapter
- Input voltage: AC 100V–240V 50Hz/60Hz

2.1.2 Input voltage of charger
- Rated Input Voltage And Frequency: DC 12V
- Rated Input Current: In the condition of normal charging with rated input voltage, the input current is lower than 2.0A.

2.1.3 The range of charging voltage
- Range of charging voltage in normal condition:
  - 0.1.6V
- Charging with trickle current (about 1/10 of rated current) when battery’s voltage is lower than 0.8V; Charging with rated current when battery’s voltage is higher than 0.8V.

2.2 Output characteristics

2.2.1 No-load Voltage
- No-load Voltage: 2.3V–2.7V

2.2.2 Rated charging current: (under normal charging condition)
- Rated charging current:
  - 2.0A×0.25 ±15%  (0.25 duty cycle) & AA channel×4CHs×2 groups
  - 1.0A×0.25 ±15%  (0.25 duty cycle) & AAA channel×4CHs×2 groups

2.2.3 Trickle charging current
Trickle charging current:
2.0A × 0.025 ± 15% (0.025 duty cycle) &AA channel × 4CHs × 2 groups

Trickle charging current:
1.0A × 0.025 ± 15% (0.025 duty cycle) &AAA channel × 4CHs × 2 groups

2.2.4 Charge method

Constant current charge method.

2.2.5 -△V Detection accuracy

-△V Detection accuracy: ≤ 9mV

2.2.6 Discharge Characteristics

Discharge current:
Due to the battery’s voltage and difference of battery’s number, the discharge current will be range from 0mA to 800mA.
The stop condition of discharge:
  If all batteries discharge to 1.0V, the charger will turn to charge status.

2.2.7 Short-circuit Protection

Charger’s short-circuit protection current: ≤ 1mA

2.2.8 Battery reverse protection

Battery reverse protection current: 0A
(Reverse protection by shell mechanism)

2.2.9 Output reverse leakage current

Without DC12V input, charger’s output reverse leakage current: ≤ 10mA, to maintain power which had input to the battery

2.2.10 The maximum charging time limitation

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 Temperature protection. Charger will not charge battery beyond the range:

0° -- 55° C

2.2.12 Suitable Battery

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

3 Charge method and LCD Indication

3.1 Output Characteristics Curve

0-T1: Constant current charge period. In this period, charger detects battery’s -△V. when -△V was detected, it turns into fully charged period that LCD indicates the battery is fully charged.

T1- Fully charged period. Charger turns into pulse trickle current charging (duty cycle: aprx 10%)
3.2 LCD Indication

3.2.1 When charger was connect to power supply, the backlight LED will light for 6 seconds. The LCD display and backlight LED will turn off in no-load status.

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

3.2.3 Fully charged:
When battery is fully charged, the corresponding LCD indicator no longer in flash, CHG only indicates a trickle charging.
3.2.4 Error:

If the placed battery occur short circuit or battery is alkaline battery, the corresponding LCD indicates ERROR about 5 seconds later.

3.2.5 Discharge:

Place the battery in charger, press the DISCHG button for 1 second, the corresponding LCD indicator and DISCHG will light up at the same time. The battery's power capacity is dynamic displayed to indicate the discharging state.
4 Applicable Environment

4.1 Working temperature
0~+40°C

4.2 Working humidity
Working humidity ≤90% (No condensation)

4.3 Storage temperature
Storage temperature: -20~+80°C

4.4 Storage humidity
Relative humidity ≤85%

4.5 Atmospheric pressure
70~106KPa
5 Mechanics

5.1 Appearance
The appearance and print can be customized

5.2 Input AC Plug
US standard, wall insert

5.3 Charger Label
Charger label can be customized

6 Reliable Performance

6.1.1 High temperature test: under $65^\circ C \pm 2^\circ C$, 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 work normally

6.1.2 Low temperature test: under $-20^\circ C \pm 3^\circ C$, 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 work normally
6.1.3 The constant humidity and heat test: under 40°C ±2°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 work normally

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

6.1.5 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 work normally

7 Appearance Requirements
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 Volume And Weight
8.1 Volume
L173* W 105* H 30 mm³

8.2 Weight
net. 194g

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

10 Packing
Product can be packed with blister. Packing can be customized

11 Caution
11.1.1 Only suitable for 1.2V AA/AAA NI-MH battery.
11.1.2 Do not use the charger to charge when temperature is over 40°C, temperature below 35°C is recommended. It is normal that there is some heat when battery was fully charged.
11.1.3 For safety, 1.2V AA/AAA NI-MH battery made by TENERGY Co.,Ltd is recommended to use.
11.1.4 Far away from heat and fire.
11.1.5 Do not use the charger under the environment of acids, alkalis, and corrosion
11.1.6 Do not place the charger into rain or water, or may cause safety problems
11.1.7 Do not disassemble charger and battery, to avoid danger
11.1.8 Do not let children use the charger alone
11.1.9 When the battery is not in use for a long time, there may be false -△V phenomenon, resulting in wrong detection and stop charging. In this case, please repeatedly charge and discharge the battery for a few times.