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1. Outline

1.1 Range of Application

This specification applies to relative features of TC-4H-LCD-D charger, including electric, appearance, mechanical characteristics and external environment.

1.2 Updating Record

Edition	Date	Introductions	Approved	Audited
01	Jun.16 th ,2014			

2. Product Features

- Microcomputer IC controls charging process: CC/CV/Trickle charging, to make sure the battery is full charged and won't be over charged; each slot controls independently; Mixed charging mode.
- LCD instantly shows the charging process, battery voltage, charging current and capacity.
- Discharge and test batteries' capacity function.
- Applicable batteries
Compatibility: various kinds of cylindrical chargeable batteries (Diameter: below 26mm, height: 34-70mm)
Charge 3.7V Li-ion or 1.2V Ni-MH/Ni-CD batteries
- Adopt Negative voltage control technology to improve charge efficiency.
- Protect opposite connection and short circuit. (Do not display battery symbol and voltage.)
- Activate automatically for Li-ion batteries with protection board, which are instantaneous short circuit.
- For the batteries' voltage below 0.5V, LCD does not display battery symbol and voltage and shows "NULL".
- Two types of charging current: 0.5A, 1A. (According to different capacity)
- Two types of discharging current: 0.25A, 0.5A. (According to different capacity)
- Stainless steel rail is more durable and smooth.
- Worldwide voltage, suitable for the whole world.
- 12V car adapter is available.
- Sound prompt function (Any slot completes a charging or discharging step, prompt tone rings.)

3. Environment Condition

Using indoor

Operating Temperature	0°C-35°C	Storage Temperature	0°C-40°C
Operating Humidity	35%-95%	Storage Humidity	45%-85%
Testing Temperature	25°C±10°C	Atmospheric Pressure	70-106Mpa

4. Electric Features

4.1 AC Features

AC 100-240V 50/60Hz

DC 12V 2.5A

4.2 Output Features

DC 4.2V±0.02V	0.50A±30mA*2	1.0A ±50mA*2
DC 1.48V	0.50A±30mA*2	1.0A ±50mA*2

4.3 Charging Instruction Mode

- A. If don't plug in, LCD shows nothing.
- B. If don't install the batteries and plug in, LCD shows all the data and then shows line between, "NULL", charging current (0.5A) and "CHG".
- C. If put the batteries into the slots, the charger can recognize the Li-ion or NI-MH/NI-CD battery automatically, show the present voltage and charging capacity and battery symbol jumps forward. (Pressing the button momentarily can choose the charging current.)
- D. When finishing charging, the prompt tone rings.

4.4 Testing Capacity Instruction Mode

- A. Long press to access the testing capacity mode and LCD shows "CAP".
- B. When finishing charging, the prompt tone rings. Then access to discharge status and press the button momentarily can choose the discharging current. Display the voltage and battery symbol jumps backward and capacity position begins to count the emitted capacity.
- C. When reach the discharge cut-off voltage (Li-ion batteries-2.7V; Ni-MH/Ni-CD batteries-0.9V), then discharge is finished the prompt tone rings. The number in capacity position is the true capacity. And then begin to access to charging status, when finishing charging, the prompt tone rings.

4.5 Charging Control Mode

Ni-MH/Ni-CD

A. Current Control: CC

B. $-\Delta V$: 5mV

C. The total Time: 5h (Counting when each battery begins charging)

D. Max Voltage: 1.53V

Li-ion

Current Control: CC-CV

5. Reliability Test

5.1 High Temperature Test

Test temperature: 45°C ±5°C, last time:5 hours (no package)

Retest the appearance, insulation strength, indicating functions and charging features after putting in normal temperature. There are no scratches and other damages; there is no rust in outside metal. It is normal in indicator and electricity functions.

5.2 Low Temperature Test

Test temperature: -10°C ±3°C, last time:8 hours (no package)

Retest the appearance, insulation strength, indicating functions and charging features after putting in normal temperature. There are no scratches and other damages; there is no rust in outside metal. It is normal in indicator and electricity functions.

5.3 Constant Voltage Thermal-Humidity Test

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Test temperature: 25°C ±2°C Humidity: 90%~95% last time:8 hours (no package)

Retest the appearance, insulation strength, indicating functions and charging features after putting in normal temperature. There are no scratches and other damages; there is no rust in outside metal. It is normal in indicator and electricity functions.

5.4 Vibrating Test

Frequency: 10~55Hz Amplitude: 0.35mm Circulation times in each direction: 10 times

Retest the appearance, insulation strength, indicating functions and charging features after putting in normal temperature. There are no scratches and other damages; there is no rust in outside metal. It is normal in indicator and electricity functions.

5.5 Falling Test

Height: 1000mm test-bed thickness: 20mm (hard wood) six side: once per direction

Retest the appearance, insulation strength, indicating functions and charging features after putting in normal temperature. There are no scratches and other damages; there is no rust in outside metal. It is normal in indicator and electricity functions.

6. Appearance Features

6.1 Size

Charger: 136mm*120mm*35mm (L*W*H)

6.2 Weight

Charger: 180g

6.3 Appearance

No scratch, blot, burrs, fissure and rust

7. Actual Charging Description

7.1 Plug charger in socket; charger begins working after check itself.

7.2 This product can charge 1 or 2 Ni-MH/ Ni-CD/Li-ion batteries.

8. Packaging & Storing

8.1 Packaging

A. Plastic bag or bubble bag

B. Neutral box

8.2 Storing

A. Under the environment temperature during 0°C-40°C;

B. Clean, dry and ventilating indoor;

C. Avoid contacting with corrosive material.

D. Stay away from fire and heat source

9. Using Tips

9.1 Warnings

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- A. This product charges only for Ni-MH/ Ni-CD battery or Li-ion battery. If charging other batteries maybe lead to explode, break the batteries or weep and make personal injury and property loss.
 - B. Using charger in the wrong way maybe gets an electric shock.
 - C. Use the battery indoor and do not in the rain or snow.
 - D. Do not break or assemble the charger.

9.2 The Do's and Don'ts

- A. Do not put heavy stuff in the charger.
- B. Children should be supervised by adults during using the charger.
- C. Use the charger in the temperature of 0°C-35°C
- D. Do not use or store the charger under the direct sunlight, nearby the heated equipment and other high temperature places.