

# Shenzhen Kunteng Co., Ltd

Document Class	Specification	Version	I
Name	Columned lithium ion battery	Date	2011/11/26

## Columned Lithium Ion Battery Specification

Type: [ICR14505](#)

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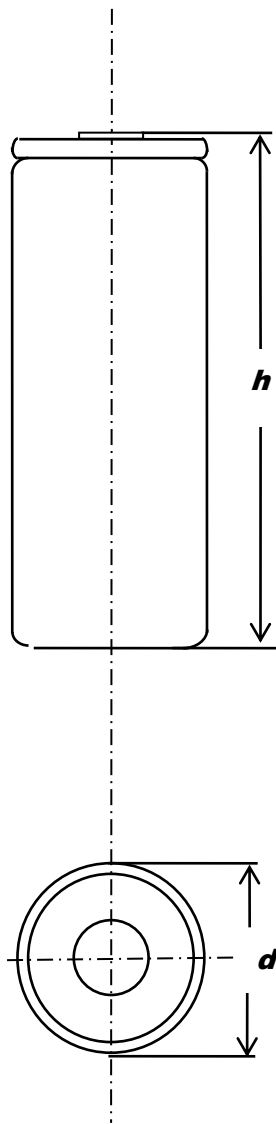
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## Data Sheet



**Type** ----- Columned sealed rechargeable lithium ion battery

**Model** ----- ICR14505

**Siree number**----- 14505

**Nominal voltage**----- 3.7V

**Weight**----- 18g(approx.)

**C<sub>5</sub>mAh**----- 550mAh

**Charging voltage**----- 4.200±0.049V

**Final discharging voltage(min)**----- 2.75V

**Final charging voltage(max)**----- 4.20V

**Lasting charging current(max)**----- 550mA

**Lasting discharging current(max)**----- 1100mA

**Dimension** (Heat-shrinkable coat included)

Diameter ----- 14.0±0.2mm

Height ----- 50.2±0.5mm

**Capacity** (20°C, 0.2 C<sub>5</sub> to 2.75V)

Minimal capacity----- 481mAh

**Internal resistance** ( 20°C±5°C, testing after full charging)----- less than 80mΩ

**Charging condition** (20°C)

Standard charge ----- 350mA charging to 4.2V, 4.2V constant voltage to current less than 20mA

Quick charge ----- 700mA charging to 4.2V, 4.2V constant voltage to current less than 20mA

**Operating environment (Suggestion)**

Storage---Temperature(15-35°C)RH(45-75%)ATM Press(86-106Kpa)

Electro-discharge----- -20-60°C

Standard charging ----- 0-45°C

Relative humidity----- <93%

Atmospheric pressure----- 86-106kPa

**Standard Testing Environment (Only if required)**

Temperature----- 20°C±5°C

Relative humidity----- 65±20%

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In case of modify, new version should be prevailed, without prior notice.

## 1. Function

Testing Items	Testing Condition	Requirements
(1) Appearance and Structure	Visual inspection	Without fracture, scratch, deformation, contamination and leakage.
(2) Standard testing conditions	Under condition of $20\pm 5^{\circ}\text{C}$ (temperature), $65\pm 20\%$ (humidity), if not required. The precision of the ammeter and voltmeter $\leq 0.5$	
(3) Standard charge	Under condition of $20\pm 5^{\circ}\text{C}$ (temperature), $65\pm 20\%$ (humidity), 1) After unit cell under $0.5I_t$ mA charging to 4.2V in voltage, 2) turn to charging at constant voltage 4.2V, stop charging at the current less than 20mA.	
(4) Quick charge	Under condition of $20\pm 5^{\circ}\text{C}$ (temperature), $65\pm 20\%$ (humidity), 1) After unit cell under $1I_t$ mA charging to 4.2V in voltage, 2) turn to charging at constant voltage 4.2V, stop charging at the current less than 20mA.	
(5) Transporting voltage	Inspection at shipment	$\geq 3.75\text{V}$
(6) Nominal capacity	Under condition of $20\pm 5^{\circ}\text{C}$ (temperature), $65\pm 20\%$ (humidity), 1) Before charging, discharge at $0.2I_t$ mA constant current to cut-off voltage 2.75V; 2) Lay up for 10mins after standard charge; 3) The capacity discharge at $0.2I_t$ mA to 2.75V in voltage.	Discharge capacity: $\geq 100\%C_5\text{mAh}$
(7) Quick discharging capacity	Under condition of $20\pm 5^{\circ}\text{C}$ (temperature), $65\pm 20\%$ (humidity), 1) Before charging, discharge at $0.2I_t$ mA constant current to cut-off voltage 2.75V; 2) Lay up for 10mins after standard charge; 3) The capacity discharge at $1I_t$ mA to 2.75V in voltage.	Discharge capacity: $\geq 87.5\%C_5\text{mAh}$
(8) Cycle Life	Before testing, 1) Lay up the battery for 10mins after standard discharging. 2) Under condition of $20\pm 5^{\circ}\text{C}$ (temperature), $65\pm 20\%$ (humidity), lay up the battery for 10mins after charging at current 1200mA, 3) Discharge at 600mA to arrive the cut-off voltage 2.75V. Repeat according to 2) and 3), the cell would out of use at the discharging capacity of any one cycle less than 80%.	$\geq 300$ cycles

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(9)-20°C Discharging performance	1) Standard charging; 2) Lay out the battery for 16h~24h under condition of -20°C~2°C; 3) under condition of -20°C~2°C discharge the battery at 0.2It mA constant current to cut-off voltage 2.75V; 4) calculate the discharged capacity	Discharge capacity: $\geq 60\% C_5$ mAh
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## 2 Mechanical characteristic

Testing Items	Testing Condition	Requirements
(1) Vibration test	At indoor temperature, according to the following parameters, lay up the battery onto the vibrating platform for 30mins Displacement amplitude: 0.38mm(10-30Hz); 0.19mm (30-55Hz) Frequency: 10-55Hz(1oct/min) Direction: X,Y	No liquid and gas leakage, no explosion and not burn. No interferences to the performance and appearance of the battery.
(2) Drop test	Drop the 100% charged battery from the height of 1m to a 5cm thick hard wooden board, which be laid horizontal, each side be dropped twice.	No liquid and gas leakage, no explosion and not burn. No interferences to the performance and appearance of the battery.

## 3 Security characteristic

Testing Items	Testing Condition	Requirements
(1) Shermal-shock test	Heat the full-charged battery in the shermal-shock test chamber, the temperature must up to 150±2°C at the rate of 5±2°C/min, then keep the heat preservation for 30mins.	No fire breaking-out, no explosion
(2) Short circuit test	Connect the polars of the full-charged battery with a wire, which can afford at least current of 50A, the total resistance of the external circuit is less than 50mΩ, then end it when the battery temperature descending to a point---10°C lower than peak.	No fire breaking-out, no explosion
(3) Over charge test	After discharging at condition of 1ItmA and 2.75V, charging the battery at current of 3ItmA and restricted voltage of 4.6V for 8 hours.	No fire breaking-out, no explosion
(4) Soak test	Under indoor temperature, put the full-charged battery into the clear water for 24 hours.	No fire breaking-out, no explosion

## 4 Defensive functions

When operating under condition of over voltage or over current, the electrolyte of the lithium ion rechargeable battery may disassemble, it may have bad effect to the battery defensive function. In case of the battery voltage under 1.0V, the function will get worse. So, it is necessary to equip the battery with fuse and circuit protective board to prevent the battery from over-charging, over-discharging and over current.

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The fuse and the circuit protective board must be connected and must be stick to the battery case as close as possible.

Recommend to use the assorted circuit protective board from Shenzhen Kunteng Co., Ltd.

Specifications of a unit circuit protective board is as following,

Over-charging detection voltage	:	4.250±0.025V
Over-charging release voltage	:	4.175±0.050V
Over-discharging detection voltage	:	2.30±0.08V
Over-discharging release voltage	:	2.40±0.10V
Over current estimate value	:	≤3 A (for reference)

## 5 Warranty time

6 months since the batteries leave the factory

## 6 Instructions

Do not heat the battery or put on fire.

Do not use metal conductors to make the battery short-circuit in incorrect connect of the “+”-”polars.

Do not disassemble the battery.

Do not weld the battery.

Do not charge, use and store the battery in a static environment.

Do not use the battery with primary cells and other different types and brands batteries.

In case of the electrolyte leakage onto your skin, please wash with clear water at once.

In case of the electrolyte leakage into your eyes, do not rub, wash them with clear water at once and see the doctor.

Put the battery beyond the reach of children to avoid swallowing.

The operating temperature must in the following range,

Charging temperature range: 0°C~45°C

Discharging temperature range: -20°C~60°C