



Specification Sheet of Li-ion Battery

Battery Type	Lithium ion rechargeable battery
Model Number	Li-ion 21700 3.7V 5000mAh
Company Name	
Document Number	
Date	

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Amendment Records

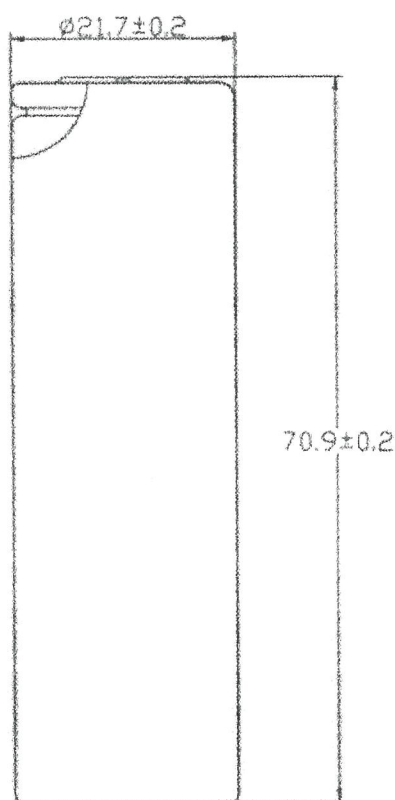
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A0	New release	2019-07-03	Kevin Liu



1. Scope:

This document is made according to customer parameter requirements, it describes the product specification of rechargeable Lithium ion battery produced by Shenzhen Qiyun Technology Co., LTD.

2. Battery Type and Drawing: Unit: mm



Product Type	Cylindrical Lithium ion rechargeable battery
Battery Model	Li-ion 21700 3.7V 5000mAh
Dimensions	21.7(D)*70.9(H)mm



3. Specifications:

No.	Item	Characteristics	Remarks
1	Nominal Capacity	5000mAh	Discharge to 3.0V @ 0.2C, after fully charged
2	Nominal Voltage	3.7V	
3	Charge cut-off voltage	4.2V	
4	Discharge cut-off voltage	3.0V	
5	Standard Charge	Constant Current: 1000mA(0.2C ₅ A), 100mA(0.02C ₅ A) cut-off, 4.2V	
6	Standard Discharge	Constant current: 1000mA(0.2C ₅ A), 3.0V	
7	Fast Charge	0°C < T ≤ 20°C, 1000mA(0.2C) 20°C < T ≤ 45°C, 2500mA(0.5C) 4.2V	
8	Fast Discharge	10A(2.0C)	
9	Operating Temperature	Charge: 0~45°C Discharge: -20~60°C	60±25%R.H. Bare Cell
10	Storage Temperature	Less than 1 year: -20~25°C Less than 3 months: -20~40°C Less than 7 days: -20~60°C	60±25%R.H. at shipment state
11	Approx Weight	75g	
12	Standard Testing Condition	Temperature: 23±5°C Humidity: ≤75%RH	

4. Initial Performance Test:

No	Item	Test Method and Condition	Criteria
1	Open Circuit Voltage	The open-circuit voltage shall be measured within 24 hours after standard charge.	≥3.85V
2	Internal impedance	Internal resistance measured at AC 1KHz after 50% charge.	≤20mΩ
3	Minimal Rated Capacity	The capacity on 0.2C ₅ A discharge till the voltage tapered to 3.0V shall be measured after rested for 30min then finish standard charge.	Discharge Capacity ≥4850mAh

5. General Performance:



NO	Item	Test Methods and Condition	Criteria
1	0.2C Capacity	After standard charging, rest battery for 10min, then discharging at 0.2C to voltage 3.0V, recording the discharging time.	≥300min
2	Cycle Life	Constant current 0.5C charge to 4.2V, then constant voltage charge to current declines to 0.01C, rest 10min, constant current 0.5C discharge to 3.0V, rest 10min. Repeat above steps till continuously discharging capacity Higher than 80% of the Initial Capacities of the Cells.	≥300 times
3	Capability of keeping electricity	20±5℃, After standard charging, rest the battery 28days, discharging at 0.2C to voltage 3.0V, recording the discharging time.	≥240min

6. Mechanical characteristics and Safety Test:

NO	Item	Test Methods and Condition	Criteria
1	Vibration Test	After standard charging, fixed the cell to vibration table and subjected to vibration cycling that the frequency is to be varied at the rate of 1Hz per minute between 10Hz and 55Hz, the excursion of the vibration is 1.6mm. The cell shall be vibrated for 30 minutes per axis of XYZ axes.	No leakage, No fire
2	Drop Test	The cell is to be dropped from a height of 1 meter twice onto concrete ground.	No explosion, No fire, no leakage.
3	Crush Test	Fresh, fully charged cell. Crush between two flat plates. Applied force is about 13kN(1.72Mpa) for 30min	No explosion, No fire
4	Short Circuit Test	Fresh, fully charged cell. Each test sample battery, in turn, is to be short circuited by connecting the (+) and (-) terminals of the battery with a Cu wire having a maximum resistance load of 0.1Ω. Tests are to be conducted at room temperature(20±2℃).	No explosion, No fire The temperature of cells surface are lower than 150℃
5	Impact Test	Fresh, fully charged cell. A 56mm diameter bar is inlaid into the bottom of a 10kg weight. And the weight is to be	No explosion, No fire



		dropped from a height of 1m onto a sample cell and then the bar will be across the center of the sample.	
6	Forced Discharge Test	Fresh, fully charged cell Discharge at current of 1 C ₅ A for 2.5h.	No explosion, No fire

7. Cautions in use:

To ensure proper use of the battery please read the manual carefully before using it.

- Do not expose to, dispose of the battery in fire.
- Do not put the battery in a charger or equipment with wrong terminals connected.
- Avoid shorting the battery.
- Avoid excessive physical shock or vibration.
- Do not disassemble or deform the battery.
- Do not immerse in water.
- Do not use the battery mixed with other different manufacturers, type, or models.
- Keep out of the reach of children.
- Battery must be charged in appropriate charger only.
- Never use a modified or damaged charger.
- Do not leave battery in charger over 24 hours.
- Store the battery in a cool, dry and well-ventilated area.
- Regulations vary for different countries. Dispose of in accordance with local regulations.

8. Battery operation instruction:

8.1 Charging:

- Charging current: Cannot surpass the biggest charging current which in this specification book stipulated.
- Charging voltage: Does not have to surpass the highest amount which in this specification book stipulated to decide the voltage.
- Charge temperature: The battery must carry on the charge in the ambient temperature scope which this specification book stipulated.
- Uses the constant current and constant voltage charging mode, prohibit reverse charging. It will damage battery If positive electrode and the cathode reversed.

8.2. Discharging:

- Discharging current: the discharging current does not have to surpass this specification book stipulation



the biggest discharging current, the oversized electric current electric discharge can cause the battery capacity play to reduce and to cause the battery heat.

8.3. Discharge temperature:

- The battery discharge must carry on in the ambient temperature scope which this specification book stipulated.

8.4. Over-discharges:

- After the short time excessively discharges charges immediately cannot affect the use, but the long time excessively discharges can cause the battery the performance, battery function losing. The battery long-term has not used, has the possibility to be able to be at because of its automatic flash over characteristic certain excessively discharges the condition, for prevented excessively discharges the occurrence, the battery should maintain the certain electric quantity.

8.5. Storing the Batteries:

- The battery should store in the product specification book stipulation temperature range. If has surpasses above for six months the long time storage, suggested you should carry on additional charge to the battery.

9. Period of Warranty:

The period of warranty is one year from the date of shipment. We guarantee to give a replacement in case of cells with defects proven due to manufacturing process instead of the customers abuse and misuse.

10. Other The Chemical Reaction:

Because batteries utilize a chemical reaction, battery performance will deteriorate over time even if stored for a long period of time without being used. In addition, if the various usage conditions such as charge, discharge, ambient temperature, etc. are not maintained within the specified ranges the life expectancy of the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage. If the batteries cannot maintain a charge for long periods of time, even when they are charged correctly, this may indicate it is time to change the battery.

11. **Note:** Any other items which are not covered in this specification shall be agreed by both parties.