



Document Name	Document No.	Ver	Date	Page
LIR10440 Specification	ZJQM-RD-SPC-A13931	0.0	2017-8-15	1/7

EEMB CO., LTD

Li-ion Battery

Specification

Model:	LIR10440
Capacity:	320mAh

Prepared	Checked	Approved

Customer:

Customer Approval (Customer confirmation) :

Signature	Checked	Approved

Address: Room ABCD, 25/F, Block A, Fortune Plaza, NO.7060 Shennan Road Shenzhen, China

Postal code: 518040

Phone: 0086-755-83022275

FAX: 0086-755-83021966

<http://www.eemb.com>



Document Name	Document No.	Ver	Date	Page
LIR10440 Specification	ZJQM-RD-SPC-A13931	0.0	2017-8-15	2/7

Catalog

Chapter	Content	Page
0	Catalog.....	2
1	Scope.....	3
2	Battery Cell Basic Characteristics.....	3
3	Battery Cell Shape and Dimensions.....	4
4	Appearance.....	4
5	Battery Cell Specification.....	4
5.1	Electrical Characteristics.....	4
5.2	Acclimatization Characteristics.....	4
5.3	Safety Characteristics.....	5
6	Warranty.....	5
7	Matters Needing Attention.....	5-7

Document Name	Document No.	Ver	Date	Page
LIR10440 Specification	ZJQM-RD-SPC-A13931	0.0	2017-8-15	3/7

1. Scope

This product specification defines the requirements of the rechargeable lithium-ion battery supplied to the customer by EEMB Co., Ltd.

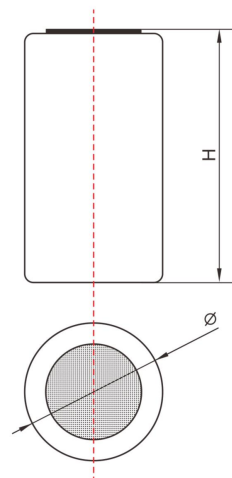
2. Battery Cell Basic Characteristics

No.	Item	Characteristics	Remark			
2.1	Model	LIR10440				
2.2	Typical Capacity	300 mAh	0.2C ₅ A Discharge			
2.3	Minimum Capacity	300 mAh	0.2C ₅ A Discharge			
2.4	Nominal Voltage	3.7 V				
2.5	Weight	Approx.8±2 g				
2.6	Internal Impedance	≤ 80 mΩ	AC 1KHz (50% charge)			
2.7	Dimension	Diameter	10.5 ^{-0.7} mm			
		Height	44.5 ^{-1.0} mm			
2.8	Charge	Standard Current	0.2 C ₅ A			
			8 hrs			
		Fast Current	300 mA			
		End-off Voltage	4.20±0.05 V			
	End-off Current	0.02 C ₅ A	At CV mode			
2.9	Discharge	Standard Current	0.2 C ₅ A			
		End-off Voltage	3.00 V			
		Fast Discharge Current	600 mA			
		Maximum Current	900 mA			
2.10	Operation Temperature	Charge	0 ~ 45 °C			
		Discharge	-20 ~ +60 °C			
2.11	Storage Temperature	-5 ~ +35 °C				
2.12	Storage Relative Humidity	≤ 75 %	RH			
2.13	Temperature Dependence of Discharge Capacity @ 0.2C Discharge					
	Charge temperature	Discharge temperature				
	25 °C	-10 °C	0 °C	15 °C	25 °C	40 °C
	Relative Capacity	50%	80%	90%	100%	100%
Standard environment condition: 25±2°C, 45-75%RH, 86-106KPA						

Document Name	Document No.	Ver	Date	Page
LIR10440 Specification	ZJQM-RD-SPC-A13931	0.0	2017-8-15	4/7

3. Battery Cell Shape and Dimensions (Unit: mm)

Item	Specification
Diameter (Φ)	10.5 $_{-0.7}$
Height (H)	44.5 $_{-1.0}$



4. Appearance

It shall be free from any defects such as remarkable scratches, breaks, cracks, discoloration, leakage, or middle deformation.

5. Battery Cell Specification

5.1 Electrical Characteristics

No.	Item 项目	Test Methods and Condition 测试方法和条件	Criteria 标准
5.1.1	0.2C Capacity	After standard charge, rest for 10min, then discharge at 0.2C to voltage 3.0V, record the discharging time.	$\geq 300\text{min}$
5.1.2	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 capacity.	≥ 300 times
5.1.3	Capacity Retention	At $20 \pm 5^\circ\text{C}$, after standard charge, rest the battery for 28 days, discharge at 0.2C to voltage 3.0V, record the discharging time.	$\geq 240\text{min}$

5.2 Acclimatization Characteristics

No.	Item	Test Methods and Condition	Criteria
5.2.1	Discharge at high temperature	After standard charge, rest the cells for 4h at $60 \pm 2^\circ\text{C}$, then discharge at 1C to voltage 3.0V, record the discharging time.	$\geq 54\text{min}$
5.2.2	Discharge at low temperature	After standard charge, rest the cells for 16h at $-20 \pm 2^\circ\text{C}$, then discharge at 0.2C to voltage 3.0V, recording the discharge time.	$\geq 210\text{min}$
5.2.3	Thermal shock 热冲击	Put the cells in the oven. The temperature of the oven is to be raised at $5 \pm 2^\circ\text{C}$ per minute to a temperature of $130 \pm 2^\circ\text{C}$ and remains 30 minutes.	No fire, no smoke

Document Name	Document No.	Ver	Date	Page
LIR10440 Specification	ZJQM-RD-SPC-A13931	0.0	2017-8-15	5/7

5.3 Safety Characteristics

No.	Item	Test Methods and Condition	Criteria
5.3.1	Over charge testing	At 23±5°C, charge cells with constant current 2C to voltage 5.0V, stop test till cells temperature 10°C lower than max temperature.	No smoke or fire
5.3.2	Over discharge testing	At 23±5°C, standard discharge to cut-off voltage, then connect with external load of 30 Ω for 24h.	No fire, no smoke, no leakage.
5.3.3	Short-circuit testing	At 23±5°C, After standard charging, connect cells anode and cathode by wire which impedance less than 80±20mΩ, keep 6h.	No smoke or fire

6. Warranty

One year warranty after the date of production.

7. Matters Needing Attention

Strictly observes the following needing attention. EEMB will not be responsible for any accident occurred by handling outside of the precautions in this specification.

! Danger

- Strictly prohibits heat or throw cell into fire.
- Strictly prohibits throw and wet cell in liquid such as water、 gasoline or drink etc.
- Strictly prohibits use leave cell close to fire or inside of a car where temperature may be above 60°C. Also do not charge / discharge in such conditions.
- Strictly prohibits put batteries in your pockets or a bag together with metal objects such as necklaces. Hairpins, coins, or screws. Do not store or transportation batteries with such objects.
- Strictly prohibits short circuit the (+) and (-) terminals with other metals.
- Do not place Cell in a device with the (+) and (-) in the wrong way around.
- Strictly prohibits pierce Cell with a sharp object such as a needle.
- Strictly prohibits disassemble or modify the cell.
- Strictly prohibits welding a cell directly.
- Do not use a Cell with serious scar or deformation.
- Thoroughly read the user's manual before use, inaccurate handling of lithium ion rechargeable cell may cause leakage, heat, smoke, an explosion, or fire, capacity decreasing.

! Warning

- Strictly prohibits put cell into a microwave oven, dryer, or high-pressure container.
- Strictly prohibits use cell with dry cells and other primary batteries, or new and old battery or batteries of a different package, type, or brand.
- Stop charging the Cell if charging is not completed within the specified time.
- Stop using the Cell if abnormal heat, odor, discoloration, deformation or abnormal condition is detected during use, charge, or storage.

Document Name	Document No.	Ver	Date	Page
LIR10440 Specification	ZJQM-RD-SPC-A13931	0.0	2017-8-15	6/7

- Keep away from fire immediately when leakage or foul odor is detected.
- If liquid leaks onto your skin or clothes, wash well with fresh water immediately.
- If liquid leaking from the Cell gets into your eyes, do not rub your eyes. Wash them well with clean edible oil and go to see a doctor immediately.

! Caution

- Before using the Cell, be sure to read the user's manual and cautions on handling thoroughly.
- Charging with specific charger according to product specification. Charge with CC/CV method. Strictly prohibits reversed charging. Connect cell reverse will not charge the cell. At the same time, it will reduce the charge-discharge characteristics and safety characteristics; this will lead to product heat and leakage.
- Store batteries out of reach of children so that they are not accidentally swallowed.
- If younger children use the Cell, their guardians should explain the proper handling.
- Before using the Cell, be sure to read the user's manual and cautions on handling thoroughly.
- Batteries have life cycles. If the time that the Cell powers equipment becomes much shorter than usual, the Cell life is at an end. Replace the Cell with a new same one.
- When not using Cell for an extended period, remove it from the equipment and store in a place with low humidity and low temperature.
- While the Cell pack is charged, used and stored, keep it away from objects or materials with static electric charges.
- If the terminals of the Cell become dirty, wipe with a dry clothe before using the Cell.
- Storage the cells in storage temperature range as the specifications. After full discharged, we suggest that charging to 3.6~4.0V. with no using for a long time.
- Battery should be charged and discharged every 3 months at 0.2 C during long term storage, and then charge to 50-70% of the capacity for storage.
- Do not exceed these ranges of the following temperature ranges:
 - Charge temperature range: 0°C to 45°C
 - Discharge temperature range: -20°C to 60°C
 - Storage temperature range: -5°C to 35°C



Document Name	Document No.	Ver	Date	Page
LIR10440 Specification	ZJQM-RD-SPC-A13931	0.0	2017-8-15	7/7

! Special Notice

Keep the cells in **50% charged state** during long period storage. We recommend to charge the battery up to 50% of the total capacity every 3 months after receipt of the battery and maintain the voltage 3.6~4.0V. And store the battery in cool and dry place.