

EEMB CO., LTD

Polymer Li-ion Battery

Specification

Model: LP481530HC

Capacity: 120mAh

Prepared	Checked	Approved

Customer:

Customer Approval (Customer confirmation) :

Signature	Checked	Approved

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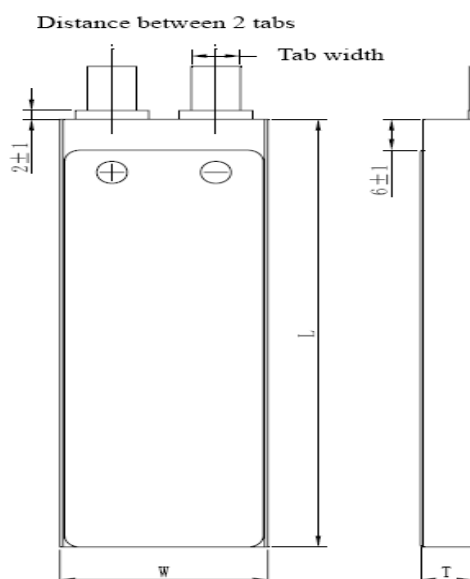
1. Scope

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

2. Product Basic Characteristics

No.	Item	Characteristics	Remark
2.1	Model	LP481530HC	
2.2	Nominal Capacity	120 mAh	0.2C ₅ A
2.3	Nominal Voltage	3.7 V	
2.4	Charge condition	Max. Current	240 mA
		Voltage	4.2±0.03 V
2.5	Discharge condition	Continuous Current	2.4 A
		Peak Current	3 A
		Cut-off Voltage	3.0 V
2.5	Internal Impedance	< 75 mΩ	AC 1KHz
2.6	Dimension	Length	29.0±0.5 mm
		Width	14.5±0.5 mm
		Thickness	4.6±0.2 mm
		Distance between 2 tabs	5±1 mm
		Tab Width	2mm
2.7	Cycle Life 【CHA:1.0C,DCH:20C】	>100 cycles	
2.8	Weight	3.3±0.5 g	
2.9	Operating Temp.	Charge	0℃~60℃
		Discharge	-20℃~40℃

3. Shape and Dimensions (Unit: mm)



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4. Battery Cell Performance Criteria

Before proceed the following tests, the cells should be discharged at 0.5C to 3.0V cut off. Unless otherwise stated, tests should be done within one month of delivery under the following conditions:

Ambient temperature: $20 \pm 5^{\circ}\text{C}$

Relative humidity: $65 \pm 20\%\text{RH}$

Standard charge conditions: The battery will be charged to 4.2V with 0.5C from constant current to constant voltage, when the current is 0.05C, stop to charge.

Discharge condition: 0.5C to 3.0V/cell

Test	Criteria	Test Instructions
Capacity	$\geq 120\text{mAh}$	Standard Charge / Discharge
Open Circuit Voltage	$\geq 4.15\text{V}$	Within 1 hr after standard charge
Low temp. discharge capacity	Discharge Time $\geq 210\text{min}$	Standard Charge, Storage: 2hrs at $-20 \pm 2^{\circ}\text{C}$ 0.2C discharge at $0 \pm 2^{\circ}\text{C}$ 3.0V/cell Cut-off
Internal Impedance	$\leq 75\text{m}\Omega$	Upon fully charge at 1kHz
High Rate Discharge (20C)	$\geq 2.7\text{min}$	standard Charge/rest 5min discharge at 20C to 3.0V
Charge Reserve	$\geq 90\%$ (First Capacity)	standard charge Storage at 20 degree: 30days standard discharge (0.5C)
Cycle Life Test	$\geq 100\text{cycle}$	Charge: 1C to 4.2V ,Discharge: 20C to 3.0V, 80% or more of 1 st cycle capacity at 20C discharge of Operation
External Short Circuit	No Fire and No Explosion	After standard charge, short-circuit the cell at $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$ until the cell temperature returns to ambient temperature.(cross section of the wire or connector should be more than 0.75mm^2)
Drop	No leakage, no fire or explosion;	Standard Charge ,and then leave for 2hrs,check battery before / after drop Height: 50 cm Thickness of wooden board: 30mm Direction is not specified Test for 3 times

5. Storage and Others

Ambient temperature: $20 \pm 5^{\circ}\text{C}$

Relative humidity: $65 \pm 20\%\text{RH}$

Please activate the battery once every 3 months according to the following method:

Charge at 0.2C to 4.2V, rest 5 min, and then discharge with 0.2C to 3.0V/cell, rest 5 min, then charge at 0.2C

to 3.9V.

6. Handling Precaution and Guidance

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℃. 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 microware 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.
- 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

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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 cloth before using the Cell.
- Storage the cells in storage temperature range as the specifications. After full discharged, we suggest that charging to 3.7~4.0V with no using for a long time.
- 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.
 - Store less than 1 month : -20°C - +60°C
 - Store less than 3 months : -20°C - +45°C
 - Store less than 1 year : -20°C - +25°C

! 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 3.7~4.0V. And store the battery in cool and dry place.