

# Specification

Product name: RYO 40V li-ion battery		Product model: IP-LI-RY4050				
File number:IP-LI-RY4050		File version:1.1				
Scope of Application:This product specification applies to the R Y O 40V 5.0Ah li-ion battery.						
<b>Revision Record</b>						
Version number	Revision content			Revision Date	Expurgator	
1.0	Editio princeps			2023-12-20	Yang Hao	
1.1	Defencive function			2026-5-11	Yang Hao	
Department responsible for drafting: Engineering Department		Despatch department : <input checked="" type="checkbox"/> quality department <input checked="" type="checkbox"/> PE Section <input checked="" type="checkbox"/> Production Department <input checked="" type="checkbox"/> business department				
Prepare	Yang Hao	Proofread		Examine and verify	Date	2025-6-30

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## I. Technical Specifications

Order number	Project	Specification/Range	Remarks
1.	Cell type	Li-ion 18650	Power Type
2.	Nominal voltage	40V	
3.	Nominal capacity	5.0Ah	
4.	Charging Method	CC/CV	
5.	Charging Voltage Limit	42V	
6.	Standard charging current	1000mA	
7.	Fast charging current	2.5A	
8.	Maximum charging current	5A	Constant-current charging
9.	Internal resistance	$\leq 210\text{m}\Omega$	Exchange Test Method
10.	Standard discharge current	1000mA	
11.	High-rate discharge	10A	
12.	Maximum discharge current	15A	Continuous discharge
13.		25A	Pulse discharge for 5 seconds
14.	Final discharging voltage	27.5V	
15.	Defensive function	Overcharge Protection	4.25 V $\pm$ 0.05 V (charger communication)
16.		Over-discharge protection	2.7V $\pm$ 0.1V
17.		Charging Temperature Protection	NTC45°C
18.		Discharge temperature protection	NTC60°C
19.		Short-circuit protection	Not have
20.	Quiescent dissipation	<150uA	
21.	Work environment	Charging: 0-40°C Discharge: -10 to +40°C Maximum relative humidity: 85%	
22.	Cycle life	$\geq 300$ times	

## II. Performance Testing Methods and Requirements

Order number	Surveillance project	Testing conditions	Ask
1.	Surface	Visualization	The outer shell surface shall be smooth without scratches, burrs, or other mechanical damages; exposed metal parts must not exhibit oxidation, and the adhesive shell must remain undeformed.
2.	Nominal capacity	<p>Environmental temperature: 20±5°C</p> <p>1) Standard charging method: Charge at 0.2C until 42V, then maintain a constant voltage of 42V with a current below 0.01C to complete charging; allow the battery to rest for 30 minutes after charging.</p> <p>2) Discharge at a constant current of 0.2C to 27.5 V.</p>	Discharge capacity ≥ 90% of nominal capacity
3.	Charge retention capability	Under an ambient temperature of 20°C ±5°C, the device was stored for 30 days after standard charging, followed by constant-current discharge at 1C until reaching 27.5 V.	≥70% of the nominal capacity
4.	Transmission Voltage	Before shipment, the product is tested with a voltmeter to measure the voltage across its positive and negative terminals.	≥36V ≤42V
5.	High-temperature resistance	At an ambient temperature of 40°C, charge the battery fully at 0.2C, let it stand for 30 minutes, then discharge it at a constant current of 1C until reaching 27.5V.	≥80% of the nominal capacity
6.	Low-temperature resistance	Under an ambient temperature of 0°C, charge the battery fully at a rate of 0.2C and leave it undisturbed for 30 minutes. Then place the battery in an environment at -20°C and discharge it at a constant current of 1C until reaching 27.5 V.	≥65% of the nominal capacity
7.	Vibration resistance performance	<p>At room temperature, place the fully charged battery on the vibration platform and vibrate it for 30 minutes according to the specified parameters:</p> <p>Displacement amplitude: 0.38 mm (10–30 Hz); 0.19 mm (30–55 Hz)</p> <p>Frequency: 10–55 Hz (1 octave per minute); Directions: X, Y. Inspect the battery's appearance and functionality after testing.</p>	The battery should exhibit no visible damage, show no liquid leakage, emit no smoke, ignite, or explode.

### III. Product Dimension Diagram



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## IV. Storage Requirements

- 1) Store the battery in a cool, dry place. The recommended storage temperature range is:  $-10^{\circ}\text{C}$  to  $+35^{\circ}\text{C}$ .
- 2) During battery storage, it must be charged every three months to prevent damage caused by over-discharge.

## V. Precautions

- 1) Anti-polar charging is prohibited.
- 2) Do not burn or damage the battery, as this may cause it to explode or release harmful gases.
- 3) Discontinue use if murmurs, elevated temperature, or leakage occurs.
- 4) When power is insufficient, discontinue use to prevent over-discharge and battery damage.
- 5) Do not place the battery in water.
- 6) Do not attempt to disassemble, press, or impact the battery, as this may cause excessive heating or fire.
- 7) Keep out of reach of children.
- 8) Short circuits, overcharging, or improper charging methods can damage the battery.
- 9) Use the appropriate charger to charge the battery.