Lithium ion Battery Pack
22.2V 6s3p 12000mAh 266.4Wh
Specifications
Model No.:RP-L-S21700FJ 6s3p

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Lee	Cindy Li	Jack Ye	

深圳市瀚海龙科技有限公司
Shenzhen Hanhailong Technology Co., Limited

www.racepow.com

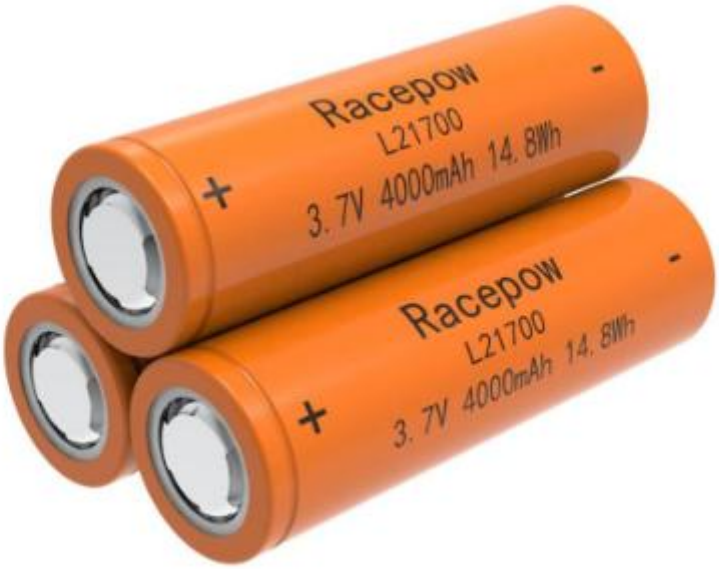
目 录 Contents

1. 范围 Scope

本规格书适用于深圳市瀚海龙科技有限公司生产的 22.2V 266.4Wh 锂离子可充电池组,产品性能指标以及产品使用条件及风险警示。

The purpose of this document is to specify the specifications of 22.2V 266.4Wh Lithium ion Battery supplied by Shenzhen Hanhailong Technology Co., Limited.

2.电芯图片 Cell Picture

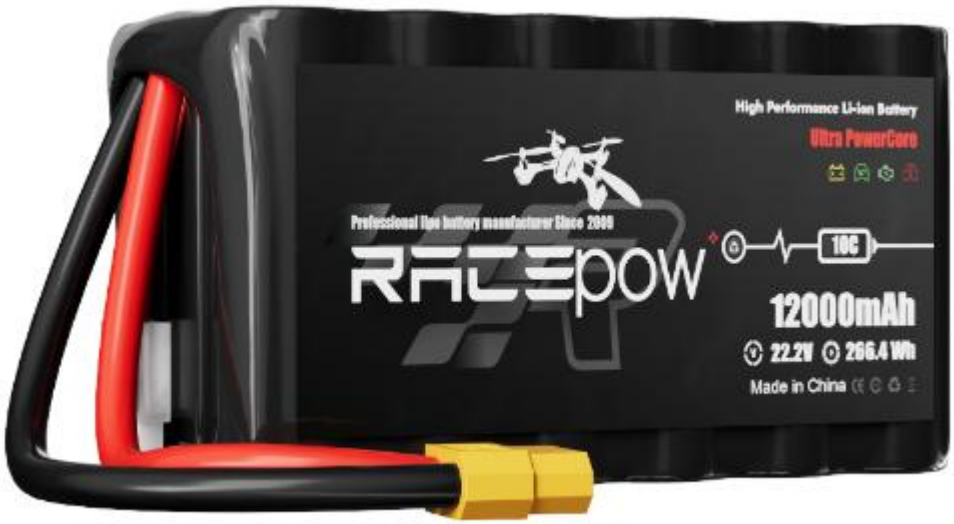


2. 电池组图 Battery Picture (单位 Units: 毫米 mm)

2.1 尺寸 Size: 长 Length 130±2; 宽 Width 65±2; 高 Height 75±2

2.2 充/放电头 Charge/Discharge Connect: XT60/XT90

2.3 产品效果图或照片 Product impression drawing(or photo):



3. 电池组重量 Battery Weight ≤1360g

4. 电池组性能参数 Battery Specification

序号 No.	参数 Parameter	规格 Specification	备注 Remarks
4.1	标称容量 Nominal Capacity	12Ah	25℃±2℃
4.2	放电能量 Discharge Energy	266.4Wh	
4.3	工作电压 Nominal Voltage	22.2V	
4.4	充电截止电压 Charge Cut-off Voltage	25.5V	
4.5	放电截止电压 Discharge Cut-off Voltage	15V	
4.6	交流内阻 Internal Resistance	≤24mΩ	AC 1kHz, 25℃±2℃
4.7	标准充电电流 Standard Charge Current	2.4A(0.2C)	25℃±2℃
4.8	持续放电电流 Continuous Discharge Current	24A(2C)	25℃±2℃
4.9	标准放电电流Standard Discharge Current	2.4A(0.2C)	
4.10	最大 放电电流Maximum Discharge Current	120A(10C)	
4.11	充电温度 Charge Temperature	0℃~45℃	
4.12	放电温度 Discharge Temperature	-20℃~55℃	
4.13	存储温度 Storage Temperature	-20℃~35℃	6 个月/6 months
4.14	存储湿度 Storage Humidity	≤75% RH	

5. 电池测试设备及测试条件要求 Battery Testing Equipment and Conditions

5.1 外观 Appearance

电池的表面应无明显的划痕毛刺及其其它机械划伤,外露的金属端子应无锈蚀污垢， 结构尺寸见电池的外形尺寸图。

There shall be no such defect as scratch, bur and other mechanical scratch, and the connector should be no rust dirt. The structure and dimensions see attached drawing of the battery.

5.2 测试设备要求 Measurement Apparatus

5.2.1 尺寸测量设备：测量尺寸仪器的精度应不小于 0.01mm;

Dimension Measuring Instrument: The dimension measurement shall be implemented by instruments with equal or more precision scale of 0.01mm

5.2.2 电压表：国家标准或更灵敏等级,内阻不小于 10 KΩ/V;

Voltmeter : Standard class specified in the national standard or more sensitive class having inner impedance not less than 10 KΩ/V.

5.2.3 电流表：国家标准或更灵敏等级,外部总体内阻包括电流表和导线应小于 0.01Ω;

Ammeter :Standard class specified in the national standard or more sensitive class.

Total external resistance including ammeter and wire is less than 0.01Ω

5.2.4 内阻测试仪：内阻测试仪测试方法为交流阻抗法(AC 1kHz LCR)。

Impedance Meter:Impedance shall be measured by a sinusoidal alternating current method. (AC 1kHz LCR meter).

5.3 标准试验条件：测试电池必须是本公司出厂时间不超过一个月的新电池,且电池未进行过五次以上充放电循环；除非其它特殊要求,本产品规格书规定的测试环境条件为：温度 25℃±2℃，湿度≤75%RH，气压 86Kpa~106Kpa。

Standard Test Condition:Test should be conducted with new batteries within one month after shipment from our factory and the batteries shall not be cycled more than five times before the test. Unless otherwise defined, test and measurement shall be done under temperature of 25±2℃ and relative humidity of less 75% ,air 86Kpa~106Kpa.

5.4 搁置时间：如无特殊要求，电池充电、放电间隔为 30min。

Rest Period:Unless otherwise defined, 30min,rest period after charge,30min,rest period after discharge.

6. 贮存及其它事项 Storage and Others

6.1 长期贮存：长期贮存的电池（未使用,超过 3 个月）须置于干燥处、凉爽处，电压范围 22.2V~25.5V。环境温度 25±2℃，湿度为 45%~75% 的洁净环境，长期搁置未使用电池每 3 个月补电一次，确保电池电压在上述范围内。

Long Times Storage: If stored for a long time(don’t used,exceed three months), the cell should be stored in drying and cooling place. The cell’s storage voltage should be 22.2V~25.5V and the cell is to be stored in a condition that the temperature of 25±2℃ and the relative humidity of 45%~75%. Long-term use of unused batteries to recharge every 3 months. Ensure that the battery voltage is within the above range.

6.2 其它事项：任何本规格书中未提及的事项，须经双方协商确定。

Other: Any matters not mentioned in this specification shall be determined by both parties through negotiation.

7. 安全性能 Safety Characteristics

序号 No.	项目 Items	测试方法 Test Methods & Steps	标准 Standard
7.1	过放电 Over-discharge	以 1C 电流放电,直至放电时间到达 90min,观察 1 小时。 After the cell is fully charged according to the standard charging mode, it is discharged with 1C current for 90min.	电池应不起火、不爆炸 No fire. No explosion.
7.2	过充电 Over-charge	按照标准充电模式充满电后,再以 1C 电流充电到 25.5V 停止充电。 After the cell is fully charged in the standard charging mode, it is then charged with 1C current to 25.5V stop charging.	电池应不起火、不爆炸 No fire. No explosion.
7.3	加热测试 Heating Additive Test	按照标准充电模式充满电后，将产品放置在加热试验箱中,以 5℃/min 的速度由室温升至 130℃±2℃并保持 30 分钟。 After the cell is fully charged in the standard charging mode, place the cell in a heating test chamber, rise from room temperature to 130℃±2℃ at 5℃/min and hold for 30 min.	电池应不起火、不爆炸 No fire. No explosion.
7.4	温度循环 High and Low Temperature shock	按照标准充电模式充满电后，放入温度-20℃的低温环境中搁置 2h，再在 75℃条件下搁置 2h，如此循环 5 次结束试验，试验结束后将样品取出。 After the cell is fully charged according to the standard charging mode, it is put in a low temperature environment of-20℃ for 2h, and then for 2h at 75℃. End the test for 5 cycles, and the sample is taken out after the test.	电池应不起火、不爆炸 No fire. No explosion.
7.5	挤压测试 Crushing Test	按照标准充电模式充满电后，用半径为 75mm 的半圆柱体挤压板以（2±1）mm/s 的速度沿垂直于电池极板方向对电池施压，当电压达到 0V 或变形量达到 30%或挤压力达到 13KN 后停止测试。 After the cell is fully charged according to the standard charging mode, the half cylinder plate with a radius of 75mm is used to press the cell in the direction vertical to the cell plate at the speed of (2±1) mm/s. When the voltage reaches 0V or the deformation reaches 30% or the extrusion pressure reaches 13 KN.	电池应不起火、不爆炸 No fire. No explosion.
7.6	针刺 The Acupuncture	在 1 标准大气压，环境温度 25℃±2℃的条件下，电池以 1C 快速恒流恒压充电至 26.4V，截止电流 0.5C，搁置 60min 后，使用 5mm 的钢针（针尖的圆锥角度是 45°，针的表面光滑无污）以 25mm/s 的速度从垂直于电池的方向贯穿，贯穿位置宜靠近电池表面的中心位置，电池背面的底板孔径是 25mm，厚度≥15mm，钢针停留电池中观察 1h。 Under the condition of 1 standard atmospheric pressure, ambient temperature 25℃±2℃, the battery is charged to 26.4V at 1C constant current,charged to cutoff current of 0.5C at constant voltage. Use a 5mm steel needle (the conical angle of the tip is 45°,and the surface of the needle is smooth and free of dirt) to penetrate from the direction perpendicular to the battery at the speed of 25mm/s. The penetrating position is close to the center of the battery surface. The steel plate underneath the battery has 25mm-diameter hole with thickness ≥15mm,and the steel needle stays in the battery for observation of 1h.	电池应不漏液、不起火、不爆炸 No leakage. No fire. No explosion
7.7	振动测试 Vibration Test	安装在振动台的台面上，按下面的振动频率和对应的振幅调整好试验设备。X、Y、Z 三个方向每个方向上从 10～55Hz 循环扫频振动 90-100min，扫频速率为 1Hz/min，位移幅值(单振幅)：0.16mm。 After the battery cell is fully charged according to the standard charging mode, install the battery fixture on the surface of the vibration table, and adjust the test equipment according to the vibration frequency and the corresponding amplitude below. In	电池应不起火、不爆炸 No fire. No explosion.

		each direction of X, Y and Z, the frequency is swept for 90-100min, and the sweep rate is 1Hz / min, displacement amplitude (single amplitude): 0.16mm	
7.8	低气压 Low Air Pressure	按照标准充电模式充满电后，电池在绝对压力为 1.6kPa，温度为室温条件下搁置 6 小时。 After the cell is fully charged according to the standard charging mode, the cell is 11.6kPa for 6 hours at room temperature.	电池应不起火、不爆炸 No fire. No explosion.
注：电池安全测试参考锂电池最新标准。 Notes: Refer to lithium-ion battery standards for battery safety test.			

8. 安全防范 Safety Precautions

为避免电池发生泄漏、发热、燃烧、爆炸等危险,请注意.

To prevent the possibility of the cell from leakage, heating, explosion, please observe the following precautions.

8.1 禁止电池正负极短路，否则强电流和高温可能导致人身伤害或者火灾。在电池系统组装和连接时，应有足够的安全保护，以避免短路。

Do not short circuit cell terminals, otherwise high current and temperature may cause body injury or fire hazards. Metallic cell terminals exposed from plastic packaging and ample safety precautions should be implemented to avoid short circuiting them during system integration or connections.

8.2 禁止将电池浸入水中。

Do not immerse cells into water.

8.3 禁止将电池置于高温热源旁，如火、加热器等。

Don’t use and leave the cell near a heat source, such as fire or heater.

8.4 充电时请选用电池专用充电器。

When charging, please choose a special charger for battery.

8.5 禁止敲击或抛掷、踩踏和弯折电池。

Do not knock or throw, trample or bend the battery.

8.6 禁止用钉子或其他利器刺穿电池。

Do not puncture the battery with nails or other sharp tools.

8.7 禁止在高温下使用电池。

Do not use batteries at high temperatures.

8.8 禁止在强静电和强磁场的地方使用电池。

No use of batteries in places with strong electrostatic conditions and strong magnetic fields.

8.9 请将电池放置在宠物和儿童接触不到的位置，禁止小孩接触电池。

Please place the battery outside the reach of the pet and the child. Prevent the child from touching the battery.

8.10 当电解液泄露时,应避免皮肤和眼睛接触电解液。如有接触,应使用大量的清水清洗接触到的区域并向医生寻求帮助。禁止任何人或动物吞食电池的任何部件或电池所含物质。

When the electrolyte leaks, skin and eye contact with the electrolyte should be avoided. In case of contact, a large amount of clean water should be used to clean the contact area and seek help from the doctor. It is

forbidden for any person or animal to swallow any part or substance contained in the battery.

8.11 防止电池包装内产生短路，引线与电池之间要有足够的绝缘层以保证绝对安全。外壳内不得有任何短路发生，以防止冒烟或着火。

To prevent short circuit in the battery package, there should be sufficient insulation layer between the lead and the battery to ensure absolute safety. There shall be no short circuits in the enclosure occurs to prevent smoke or fire.

8.12 严禁拆卸电池，更换电池时应由电池供应商或设备供应商完成，用户不得自行更换。

It is strictly prohibited to remove the battery. The battery replacement should be done by the battery supplier or the equipment supplier, and the user shall not replace the battery by himself.

8.13 禁止使用已损坏的电池。

Prohibition of using the damaged batteries.

8.14 如果电池端子变脏，在使用前用干布清洁端子。

In case the cell terminals get dirty, clean the terminals with a dry cloth before use.

8.15 尽力保护电池，使其免受机械震动、碰撞及压力冲击，否则电池内部可能短路，产生高温和火灾。

Protect cells from mechanical shock, impact and pressure. Internal electrical circuit may short circuit to generate high temperature and fire hazards.

9. 免责声明 Disclaimer

9.1 本文档“半固态电池组操作指示及注意事项”仅适用于深圳市瀚海龙科技有限公司生产之产品。

This document "Solid State Battery pack operation Instruction and Notes" is only applicable to the products produced by Shenzhen Hanhailong Technology Co., Limited.

9.2 客户若需要将电池用于超出本规格书规定以外的设备，或本规格书以外的使用条件下使用电池组，应事先联系深圳市瀚海龙科技有限公司，因为需要进行特定的实验测试以核实电池在该使用条件下的性能及安全性。

The customer needs to use the battery for equipment other than this specification, or for conditions of use other than this specification first Shenzhen Hanhailong Technology Co., Limited, because specific experimental tests need to be conducted to verify the performance of the battery under such conditions and safety.

9.3 对于在超出本规格书规定以外的条件下使用电池而造成的任何意外事故，深圳市瀚海龙科技有限公司概不负责。

For any accident caused by the use of batteries under conditions beyond the provisions of this Specification Shenzhen Hanhailong Technology Co., Limited. the master is not responsible.

9.4 如果由于产品需求单位不按本说明书中的规定进行使用，造成社会性影响，并对深圳市瀚海龙科技有限公司的声誉造成影响的，深圳市瀚海龙科技有限公司将会追究产品需求单位的责任。

If the product demand company is not used according to the regulations in the specification, the social influence is caused, and the reputation of the Shenzhen Hanhailong Technology Co., Limited is influenced, the Shenzhen Hanhailong Technology Co., Limited will be investigated for the responsibility of the requirement unit.

10. 安全守则 Hazard Warning

10.1 警示声明 Waring Statement

警 告

电池存在潜在的危险，在操作和维护时必须采取适当的防护措施！
不正确地滥用测试实验，可能导致严重的人身伤害和财产损失！
必须使用正确的工具和防护装备操作电池。
电池的维护必须由具有电池专业知识并经过安全培训的人士执行。
不遵守上述警告可能造成多种灾难。

WARNING

CELLS ARE POTENTIALLY DANGEROUS AND PROPER PRECAUTIONS MUST BE OBSERVED IN HANDLING AND MAINTENANCE.
RUNNING TESTS ON THE CELLS IMPROPERLY MAY RESULT IN SEVERE PERSONAL BODY INJURY OR PROPERTY DAMAGES.
WORK ON CELLS MUST BE PERFORMED ONLY WITH PROPER TOOLS AND PROTECTIVE EQUIPMENT MUST BE USED.
CELL MAINTENANCE MUST BE CARRIED OUT BY PERSONNEL KNOWLEDGEABLE OF CELLS AND TRAINED IN THE SAFETY PRECAUTIONS INVOLVED. FAILURE TO OBSERVE THE ABOVE MAY CAUSE VARIOUS HAZARDS.

10.2 危险类型 Types of Hazards

客户知悉在电池使用和操作过程中存在以下潜在的危险:

Customer acknowledges the following potential hazards in connection with the usage and handling of the Products:

10.2.1 操作者在操作时可能会受到化学品、电击或者电弧的伤害。尽管人体对遭受直流电与交流电的反应不同,但是高于 50V 的直流电压与交流电对人体的伤害是同样严重的，因此客户必须在操作中采取保守的姿势以避免电流的伤害。

Working with battery can expose the handler to chemical, shock and/or arcing hazards. Although a person’s body might react to contact with direct current voltage differently than from contact with alternate current voltage. Customer shall take a conservative position and consider the risk of shock or electrocution to be the same for both alternate current and direct current exposures greater than 50V.

10.2.2 存在来自电池中的电解液的化学风险。

Batteries expose its handler to chemical hazards associated with the electrolyte used in the cell.

10.2.3 在操作电池和选择个人防护装备时，客户及其雇员必须考虑到以上潜在的风险，防止发生意外短路，造成电弧、爆炸或热失控。

When selecting work practices and personal protective equipment, customer and its employees should consider potential exposure to these hazards and therefore prevent accidental short-circuit that can result in electrical arcing, explosion, and/or “thermal runaway” of the batteries.