

FEATURES

- Lithium-ion chemical composition for stability, voltage capacity and charge retention
- Rechargeable multiple times
- Pre-wired with bare wire terminal
- Six cells, 11.1 V
- Charge capacity of 5.2 Ah
- Battery pack size of 55 x 68 x 41 mm
- Minimum operating temperature of -20°C
- Maximum operating temperature of +60°C

RS PRO 11.1V Lithium-Ion Rechargeable Battery Pack, 5.2Ah

RS Stock No.: 144-9414



RS Professionally Approved Products bring to you professional quality parts across all product categories. Our product range has been tested by engineers and provides a comparable quality to the leading brands without paying a premium price.

Product Description

This RS PRO 11.1volt Lithium-ion rechargeable battery offers stability and power efficiency while enabling you to recharge many times. It contains six cells and has a charge capacity of 5.2 Amp hours (Ah).

General Specifications

Chemistry	Lithium-Ion
Number Of Cells	6
Terminal Type	Wire Lead
Size	55 x 68 x 41 mm
Application	Emergency Lighting; Commercial; Industrial

Electrical Specifications

Nominal Voltage	11.1V
Capacity	5.2Ah
Cut-Off Voltage	8.25V
Maximum Charge Voltage	12.60 \pm 0.05V
Internal Resistance (At 1000HZ)	\leq 100 m Ω
Standard Charge	0.5C
Fast Charge	1C
Maximum Discharge Current	4A
Continuous output discharging current	4A
Over-Charge detect voltage	4.25 \pm 25mV
Over-Charge recovery voltage	4.15 \pm 50mV
Over-Discharge detect voltage	2.70 \pm 80mV
Over-Discharge recovery voltage	3.00 \pm 100mV

Overcurrent protection	13A±5
Idle mode	≤50μA
Main loops electrify resistance	≤100mΩ

Mechanical Specifications

Length	55mm
Width	68mm
Height	41mm
Weight	277g
Length Of Wire	120 ±10mm

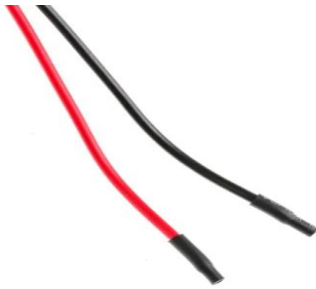
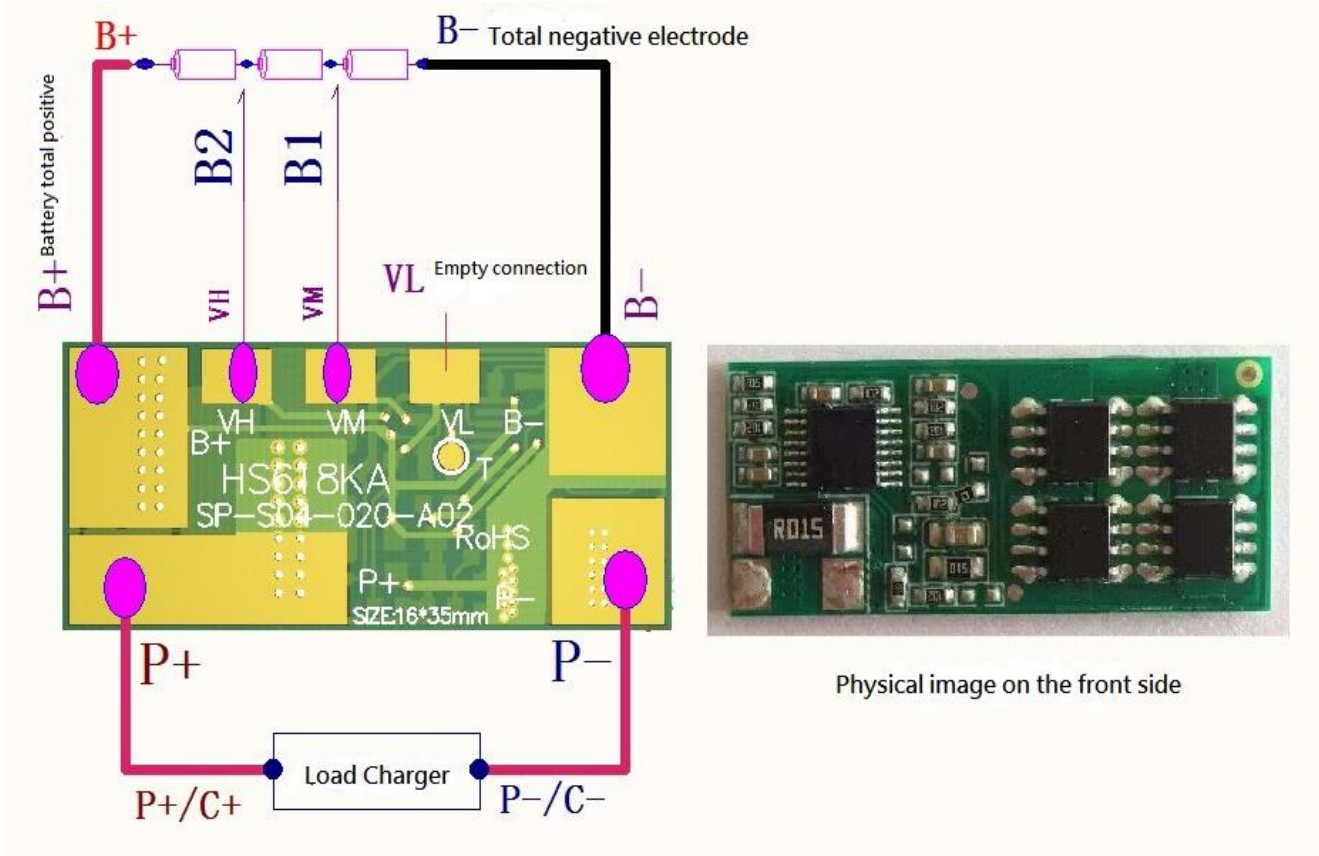
Operation Environment Specifications

Charge Temperature Range	0°C to 52°C
Discharge Temperature Range	-20°C to 60°C
Storage Temperature Range	-20°C to 60°C

Approvals

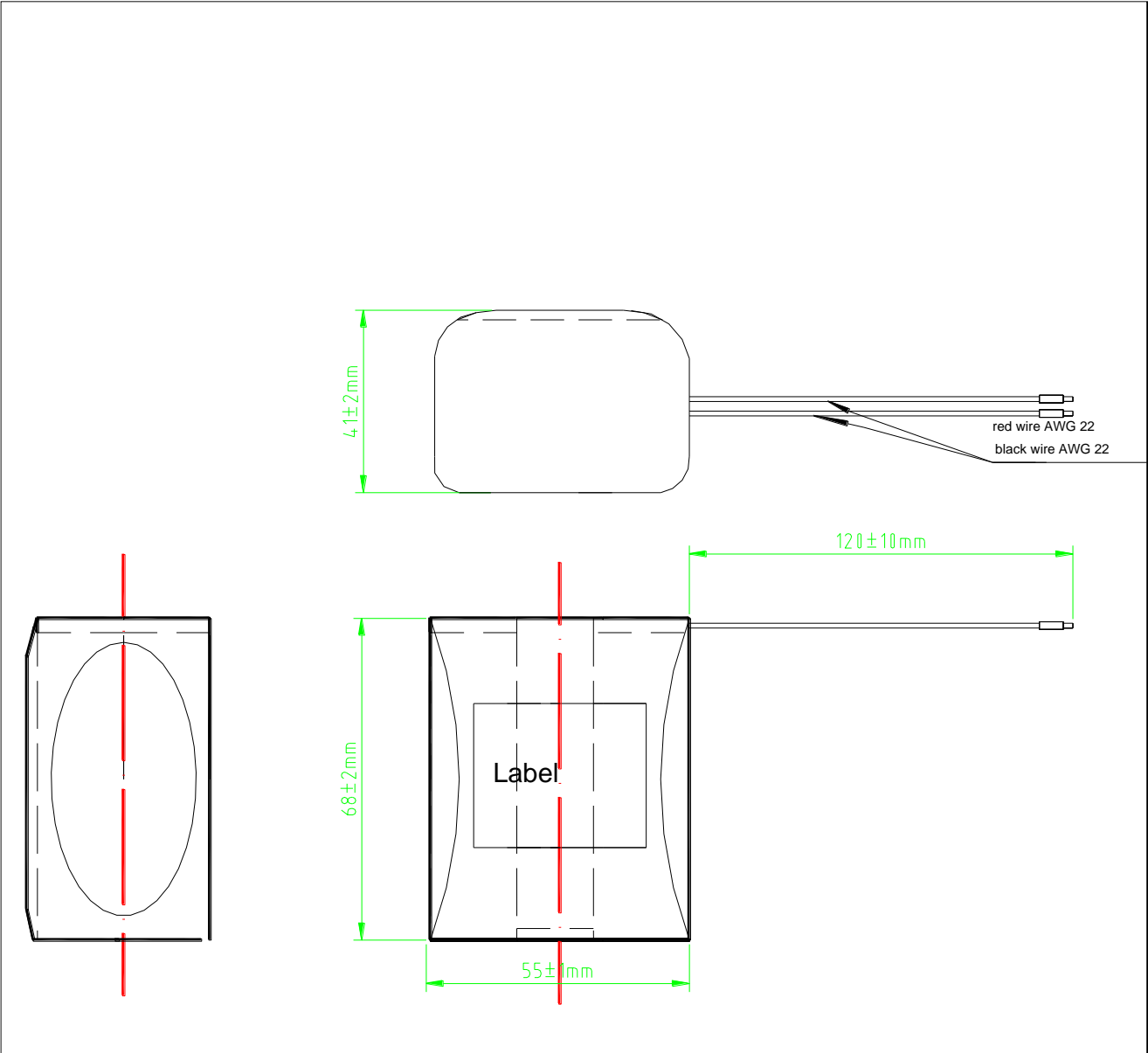
Compliance/Certifications	Un38.3 ROHS
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Rechargeable Battery Packs



Rechargeable Battery Packs

- 1 Product and Model
 - 1.1 Products :RS Lithium-ion Battery Pack
 - 1.2 Model: RS ICR 18650-26H M(18650 5200Ah 11.1V 3S2P)
 - 1.3 Picture and output wire (In order to prevail in kind)



1.	Positive	Red one wire with 22AWG	Length: 120±10 mm	UL1007
2.	Negative	Black one wire with 22AWG	Length: 120±10mm	

2 Battery Pack Specifications

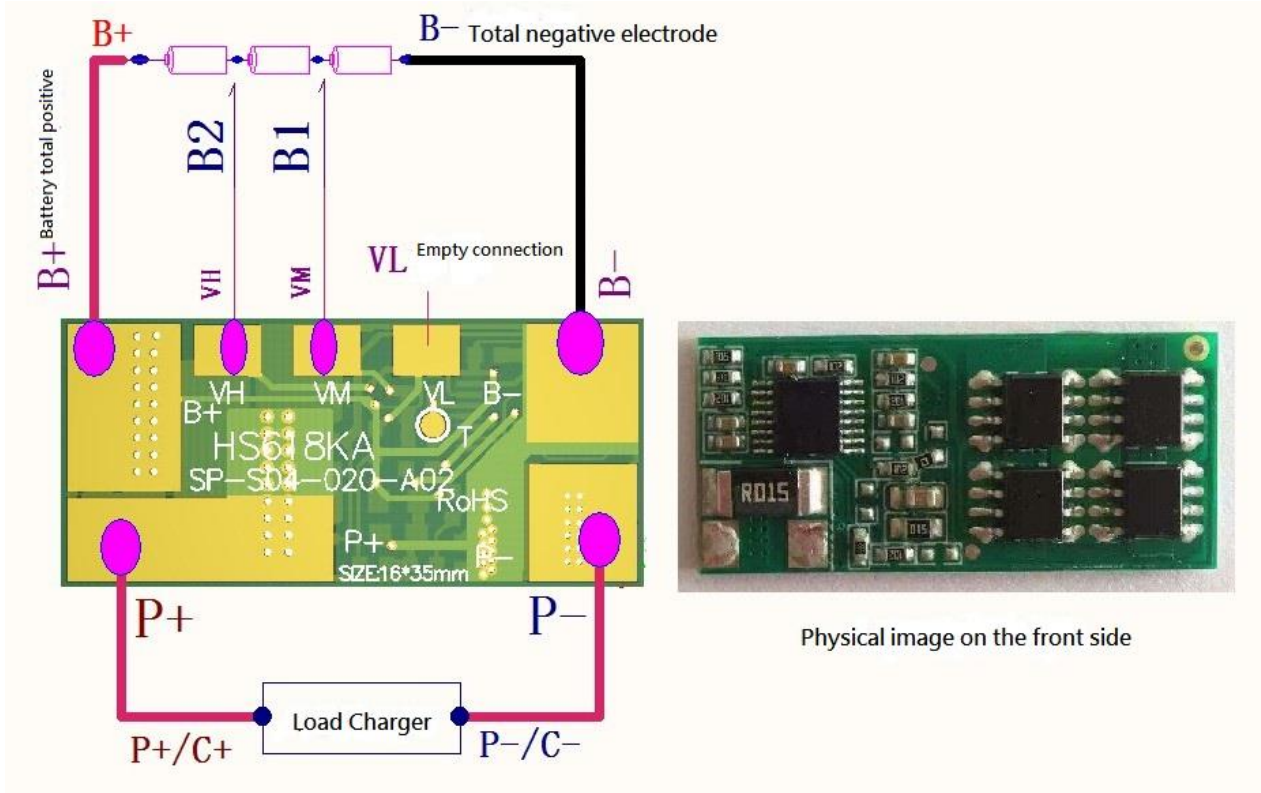
Item		Parameters
Nominal Voltage		11.1V
Typical capacity		5.2Ah (At 0.2C, 8.25V discharge)
Discharge	Maximum Discharge Current	<4A (ambient temperature 25°C) (Continuous output discharging current 4A)
	Cut-off voltage	8.25 V
Charge	Voltage	12.60±0.05V
	Current	Standard Charge:0.5C Maximum Charge:1C
	Maximum Current	4A (ambient temperature 25°C)
	Charge mode	CC/CV, please use special lithium charger
Operation temperature / humidity range	Charge	0°C ~ +52°C / (65±20) % RH
	Discharge	-20°C ~ +60°C / (65±20) % RH
		When the environment temperature is higher than 45°C, please pay attention to ventilation and heat rejection.
Storage temperature/ humidity range	(65±20) % RH	One year: -20~20°C Three months: -20~45°C ONE months: -20~60°C
Protection function	Over charge protection, Over discharge protection	Please refer as below PCB function instruction
Shell material	PVC	
Weight	277g	
Size (L* W*H) mm	55 x 68 x41± (1-2-2mm)	

3. Protection Parameters (for individual cell):(SP-S04-00-A02-M3ST))

Item	Min	Typ	Max	Unit
Over-Charge voltage protection (OVP)	4.225	4.25	4.275	V
Over Charge voltage protection release (OVPR)	4.050	4.15	4.20	V
Over discharge voltage protection (UVP)	2.62	2.70	2.78	V
Over discharge voltage protection release (UVPR)	2.90	3.00	3.10	V
Input Charging Current		2	4	A
Over current discharge protection (OCDP)	9	13	17	A
Over current protection delay time (OCPDT)	5	10	15	ms
Continuous output discharging current		4	4	A
Over discharge protection release	Charge activate			

Rechargeable Battery Packs

Over current discharge protection release	Release load			
Short circuit current protection	Enable			
Short circuit current protection deay time	200	600	800	uS
Short circuit protection release	Release load			
Idle mode	≤50			μA
Main loop electrify resistance	≤100			mΩ
Operating Temperature	-20	25	60	°C

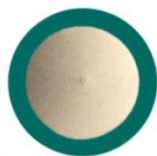


RS 18650 2600 mAh Single cell Datasheet

1. Model

ICR18650-2600mAh-3.6V

2. Appearance and Dimension



Item	Dimension(mm)
H	65.2±0.3
Φ1	8.2±0.15
Φ2	18.45±0.1
Φ3	18.30±0.1

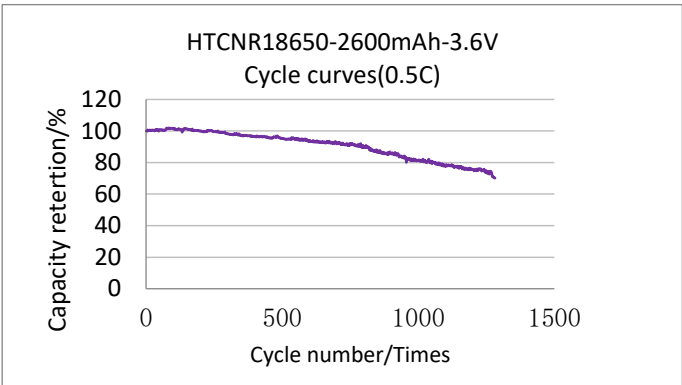
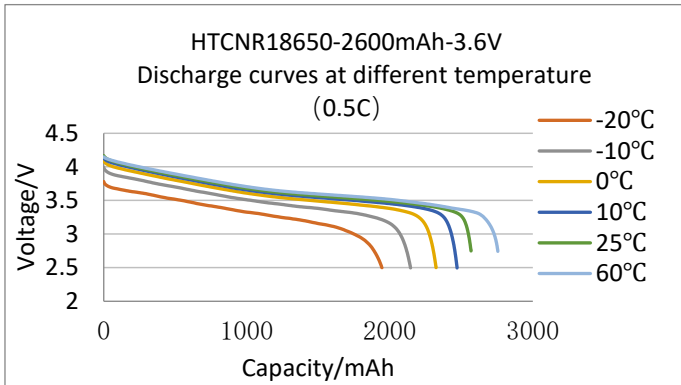
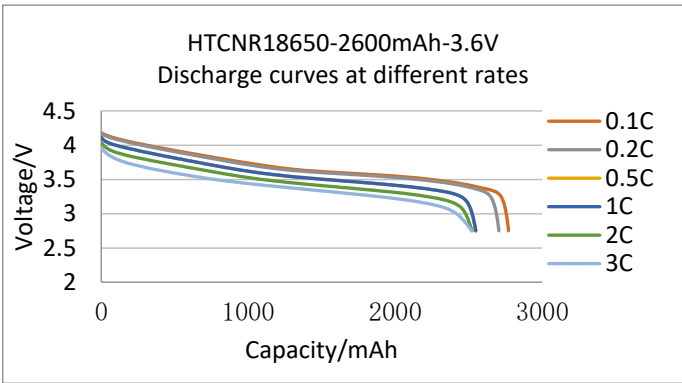
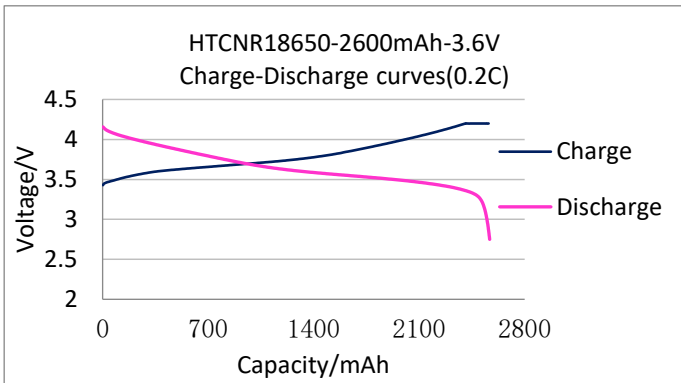
3.3. Major Technical Parameters

NO.	Item		Standard	Note
1	Standard Capacity		2600mAh	0.5C discharge
2	Minimum Capacity		2550mAh	0.5C discharge
3	Standard Voltage		3.6 V	
4	Alternating Internal Resistance		≤25mΩ	
5	Charge Conditions	Cut-off Voltage	4.2±0.05V	
		Cut-off Current	0.02C	
5	Standard charging current		1300mA	0.5C
6	Maximum Charging Current		2600mA	1C
7	Discharge Cut-off Voltage		2.75±0.05V	
8	Standard Discharge Current		2600mA	1C
9	Max. Continuous Discharge Current		7.8A	3C
10	Cycle Characteristic		1000 times (100%DOD)	the residual capacity is no less than 80% of rated capacity at 0.5C/ 1C rate.
			1500 times (80%DOD)	

Rechargeable Battery Packs

		2000 times (50%DOD)	
11	Working Temperature	Charge: 0°C ~ 55°C	
		Discharge: -20°C ~ 60°C	
12	Storage Temperature	-20°C ~ 55°C	Short-term storage (< 3 months)
13	Cell Weight	Approx 48g	

4. Characteristics Curves



5. Electrical Characteristics

NO.	Item	Test Method	Standard
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1	discharge capacity at normal temperature	After full charge, the experiment can be put on hold for 10 minutes; 0.2C discharge to 2.75V allows five repetitions. When the range of three consecutive experiments is less than 3% of the rated capacity, the experiment can be completed ahead of time and the maximum value of the test results can be obtained.	$\geq 2550\text{mAh}$
2	Discharge performance at different temperatures	After standard charging of normal batteries, it should be stored at least 12 hours in the constant temperature environment of -20°C , -10°C , 0°C , 10°C and 25°C , respectively, and 5 hours of 60°C . Then discharge with 0.5C current to the corresponding termination voltage. When the ambient temperature is more than 15°C , the termination voltage is 2.75V, if less than 15°C , which is 2.5V.	discharge capacity / initial capacity * 100% $-20^{\circ}\text{C} \geq 60\%$; $10^{\circ}\text{C} \geq 85\%$; $-10^{\circ}\text{C} \geq 70\%$; $25^{\circ}\text{C} \geq 100\%$. $0^{\circ}\text{C} \geq 75\%$; $60^{\circ}\text{C} \geq 99\%$;
3	Discharge performance at normal temperature different rate	After standard charging of normal batteries, it should be placed for 10 minutes at the prescribed ambient temperature. Then discharged to 2.75V at different rates of 0.2C, 0.5C, 1C, 2C and 3C, respectively. The capacity of batteries with different discharge rates was recorded, and the temperature rise T of batteries with different discharge rates was recorded synchronously.	discharge capacity / initial capacity * 100% 0.1C: $\geq 100\%$ T: $\leq 5^{\circ}\text{C}$ 0.2C: $\geq 100\%$ T: $\leq 5^{\circ}\text{C}$ 0.5C: $\geq 100\%$ T: $\leq 10^{\circ}\text{C}$ 1C: $\geq 95\%$ T: $\leq 15^{\circ}\text{C}$ 2C: $\geq 90\%$ T: $\leq 25^{\circ}\text{C}$ 3C: $\geq 85\%$ T: $\leq 35^{\circ}\text{C}$
4	Charge retention at normal temperature	Normal batteries are charged according to the standard. They are placed in open circuit for 28 days at room temperature, and then discharged to 2.75V at 0.5C. The recovery capacity of the battery was tested according to the charging and discharging standards.	storage capacity \geq initial capacity *90% recovery capacity \geq initial capacity *95%
5	Charge retention and capacity recovery capability at high temperature	After standard charging, normal batteries are placed open circuit for 7 days in the environment of $55 \pm 2^{\circ}\text{C}$. After the storage period expires, they are placed for 5 hours at room temperature, and then discharged to 2.75V at 0.5C. The recovery capacity of the battery was tested according to the charging and discharging standards	storage capacity \geq initial capacity *90% recovery capacity \geq initial capacity *95%

6	Cycle characteristic	After filling up the battery, stand for 10 minutes, then charge and discharge according to 0.5C. It is counted as a cycle. The interval between each cycle should not be less than 10 minutes, and the discharge capacity should end when it is less than 70% of the rated capacity.	≥1000 times
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6. Safety Characteristics

NO.	Item	Test Method	Standard
1	Overcharge	Normal batteries are charged at 1C constant current until the charging termination voltage is 1.5 times or after charging time reaches 1h, then stop charging and the appearance changes of the batteries are observed for 1h.	No explosion, No fire.
2	Over Discharge	After normal charge, test the batteries' initial state. When the batteries are normal, discharge to 0V at 0.5C. Observe cell's variation of appearance.	No explosion, No fire.
3	External Short-circuit	After standard charging of normal batteries, direct short circuit positive and negative poles for 10 minutes, external line resistance should be less than 5 mΩ. When the temperature of batteries drops to 10 °C, the test is completed and the appearance changes of batteries are observed for 1 hour.	No explosion, No fire.
4	Thermal Abuse	The initial state of the normal battery was measured. After standard charging, the battery was placed in the oven. The temperature was increased to 130±2°C at a rate of (5±2°C)/min and kept for 30 minutes. Then the appearance of the battery was observed for one hour.	No explosion, No fire.
5	Drop	After standard charging of normal batteries, the initial state of the batteries was measured, and the test batteries were freely dropped from 1.5m height to flat cement ground, once in each direction.	No explosion, No fire.

7. Environmental Adaptability

NO.	Item	Test Method	Standard
1	Thermal Cycle	Store the cell for 48 hours at 75±2°C after standard charge, then store the cell at -20°C for 6 hours, and at room temperature for 24 hours. Observe the batteries' appearance.	No leakage, No smoke, No fire, No explosion.
2	Static Humidity	Put the cell at 40°C±5°C and 95%RH chamber for 48h, then get it out and store it for 2h at room temperature. Observe the appearance and discharge at 0.5C to 2.5V, then test the final capacity.	Discharge capacity after storage is more than 90% of rated capacity. No obvious outside damage, No corrosion, No smoke, No explosion
3	Vibration	Standard charge. Equip it to the vibration platform, prepare the test equipment according to following vibration frequency and relevant swing, doing frequency sweeping from X, Y, Z three directions,	Residual Capacity≥90% Rated Capacity Voltage Decrease Rate ≤0.5%

		each from 10Hz to 55Hz for 30 minutes of recycling, rating of which is 1oct/min: A)vibration frequency:10Hz ~ 30Hz Displacement breadth (single swing): 0.38mm B)vibration frequency:30Hz ~ 55Hz Displacement breadth (single swing): 0.19mm. Observe the final state after scanning.	No obvious outside damage, No leakage, No smoke, No explosion.
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8. Standard Test Environment

Unless especially specified, all tests stated in this Product Specification are conducted at below condition:

Temperature: $25 \pm 2^{\circ}\text{C}$

Humidity: $(65 \pm 20) \% \text{ RH}$

9. Storage and Others

9.1 Long Time Storage

It should be stored in dry and cool place if the cell is stored for a long time (more than three months), Storage ambient temperature is required to be $25 \pm 5^{\circ}\text{C}$, humidity is required to be less than 85% RH. And in order to ensure that the environmental control under this condition cannot make the surface of the cell appear condensate droplets, while the surface of the storage cell cannot appear moisture phenomenon. The batteries' storage voltage should be 3.3~3.4V and the cell should be stored in a condition as NO.8.

9.2 Other considerations

Any matters that this specification does not cover should be consulted between the customer and RS PRO.

10. Notice in Using Cell

Abuse of cell may cause accidents such as damage to cores or personal injury. So please read the following safety codes and precautions carefully before used:

- Do not immerse the cell in water or seawater, and keep the cell in a cool dry surrounding if it stands by.
- Do not use or leave the cell at high temperature as fire or heater. Otherwise, it can overheat or fire or its performance will be degenerate and its service life will be decreased.
- Do not reverse the position and negative terminals.
- Do not connect the cell electrodes to an electrical outlet.
- Do not short circuit. Otherwise it will cause serious damage of the cell.
- Do not transport or store the cell together with metal objects such as hairpins, necklaces, etc.
- Do not strike, trample, throw, fall and shock the cell.
- Do not directly solder the cell and pierce the cell with a nail or other sharp objects.
- Do not use the cell in a location where static electricity and magnetic field is great, otherwise, the safety devices may be damaged, causing hidden trouble of safety.
- Use the cell charger specifically when recharging.
- If the cell leaks and the electrolyte gets into the eyes, do not rub the eyes, instead, rinse

the eyes with clean water, and immediately seek medical attention. Otherwise, it may injure eyes.

- If the cell gives off strange odor, generates heat, becomes discolored or deformed, or in any way appears abnormal during use, recharging or storage, immediately stop charging, using, and remove it from the device.
- In case the cell terminals are dirty, clean the terminals with a dry cloth before use. Otherwise poor performance may occur due to the poor connection with the instrument.
- Tape the discarded cell terminals to insulate them.

• **Never put batteries in your pockets or a bag together with metal objects such as necklaces, Hairpins, coins, or screws. Do not store or transport batteries with such objects.**

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11. Disclaimer

Quality assurance does not include normal wear and tear, as well as problems caused by improper maintenance, handling and storage. Failure to follow the use and installation specified in this product specification, including but not limited to the following:

- Damage during transportation or storage.
- Problems arising from the combination of circuit, batteries and chargers.
- Incorrect battery installation or maintenance.
- Use cell or cell pack in inappropriate environments.
- Used improper or incorrect charging and discharging methods which is not included in this specification.
- Failure to comply with operational precautions.
- Bad battery cells generated in the process of assembling by the customer after shipment.
- In case of force majeure, such as lightning, storm, flood, fire, earthquake, etc.

The Company shall not be responsible for any direct or indirect damage caused by or related to the product not being assembled or used as required.