LIFEPO4 BATTERY

Product Specification

ORION®

32140-15000mAh

Date 2026

Originator		**Checked By**		**Approved By**	

Customer Recipient
Company ：
Approved By：
Date：

Change History

Version	Date	Contents	Remarks
A/0	2026	First issue	

Contents

1 Scope of Application

This product specification describes the technical requirements, test methods and use suggestions for cylindrical lithium-ion Phosphate rechargeable cell (IFR32140) produced by Pilsan Electronic ORION Battery Co.,

2 Product Type and Model

Product Type：Cylindrical Lithium-ion Phosphate Rechargeable Cell (referred to as: Cell);

Product Model：IFR32140.

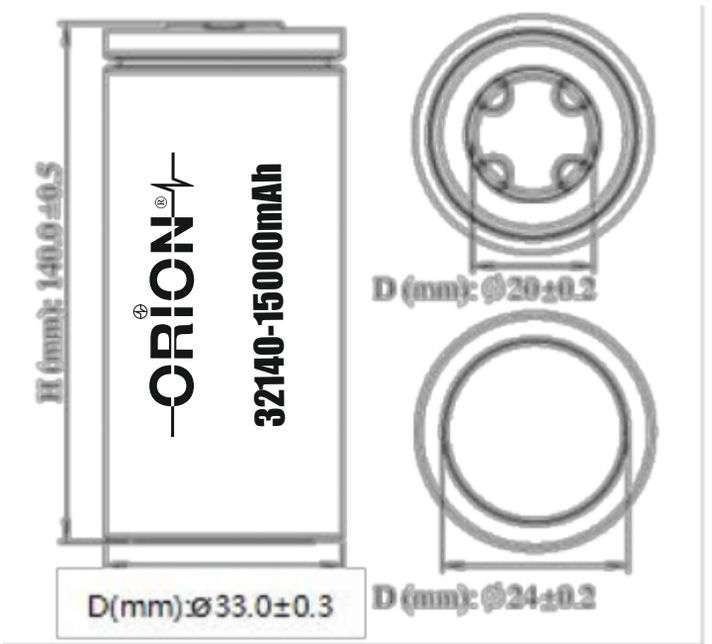
3 Product Specification

Product Specification

Items	Specifications	Remarks
Nominal Voltage	3.2 V	
Nominal Capacity	15Ah	Standard charge, 25℃ ± 2 ℃, 1 C Discharge to 2.0 V
Internal Impedance	≤ 3 mΩ	AC 1 KHz
Operation Temperature	Charging Temperature: 0 ℃~45 ℃; Discharging Temperature: -20 ℃~60 ℃	
Charge Limited Voltage	3.65 V	
Discharge Cut-off Voltage	2.0 V (T > 0℃） 1.8 V (T ≤ 0℃)	

Items	Specifications	Remarks
Standard Charge	0.5 C	25 ℃ ± 2 ℃, CC 0.5C to 3.65V，CV Cut-off 0.02 C
Rapid Charge	1 C	10 ℃~45 ℃， CC 1C to 3.65V，CV Cut-off 0.02 C
Standard Discharge	0.5 C	
Rapid Discharge	1 C	
Max. Discharge	3 C	Discharge to 2.0V
Max. Pulse Discharge	8C	10ms
Dimension	D=（33.0±0.3 ） mm H=（ 140.0±0.5 ） mm	
Weight	≤310g	
Storage Conditions	1 one month： -20 ℃~45 ℃； 3 three months： -20 ℃~ 35℃; 12 months / one year： 0 ℃~35 ℃； relative humidity: ≤ 70 %	30 %~50 % SOC
Shipping Voltage	3.10 V~3.35 V	

4 Cell Dimension



5 Standard Testing Conditions

5.1 Environmental Conditions

Unless otherwise specified, the test should be carried out in an environment with a temperature of 25 ± 10 ℃, a relative humidity of 15~95 % RH, and an atmospheric pressure of 86 kPa ~ 106 kPa.

5.2 Measuring Instruments

（ 1

The accuracy of the ammeter and voltmeter is no less than 0.5 %.

（ 2

The accuracy of the dimensions and weight measuring device should be no more than ± 0.1 %.

（ 3）

The accuracy of the temperature measuring device should be no more than ± 0.5 ℃.

（ 4

The impedance shall be measured with the sinusoidal alternating current method (AC 1 kHz) .

6 Performance and Testing Procedure

6.1 Appearance

Examine with naked eyes. There shall be no such defects like deep scratch, flaw, crack, rust or leakage.

6.2 Dimension

Use vernier caliper to measure while avoiding short-circuit, there should attach a layer of insulation material on the external jaws.

6.3 Electrical Performance

Electrical performance

Items	Test Conditions	Specifications
Rate Discharge Capacity	Under the temperature of 25±2 ℃, the discharge capacity is measured with 0.5 C 、1 C 、3C discharge current and 2.0 V cut-off voltage after standard full-charged. The capacity is defined as C1、C2 、C3.	C1≥100% Nominal Capacity； C2≥95% Nominal Capacity； C3≥93% Nominal Capacity.

Items	Test Conditions	Specifications
Temperature Performance	After standard full-charged of the cell, the capacity is recorded according to the following conditions test. (1) Cells shall be stored for 4 hours at -20 ℃±2 ℃, then discharged at 1.0 C to 1.8 V. (2) Cells shall be stored for 4 hours at -10 ℃±2 ℃, then discharged at 1.0 C to 1.8 V. (3) Cells shall be stored for 8 hours at 0 ℃ ±2 ℃, then discharged at 1.0 C to 1.8 V. (4) Cells shall be stored for 4 hours at 60 ℃±2 ℃, then discharged at 1.0 C to 1.8 V.	（1）-20 ℃ capacity/Nominal Capacity ≥ 70 %; （2）-10 ℃ capacity/Nominal Capacity ≥ 80 %; （3）0 ℃ capacity/Nominal Capacity ≥ 85 %; （4）55 ℃ capacity/Nominal Capacity ≥ 96 %.
Cycle Life	At 25±2 ℃, the cell is standard full-charged and discharge to 2.0 V with 1C, 10mins between charge and discharge, after 2000 cycles the discharge capacity should be recorded.	2000 cycles, capacity ≥ 80 % first capacity.

Items	Test Conditions	Specifications
RT Storage Characteristic	The cell is stored for 28 days in 25 ± 2 ℃ after standard full-charged, then discharge to 2.0 V with 0.5 C at 25 ± 2 ℃. The capacity is defined as C2. After the test as C2, The cell is standard full-charged and discharged to 2.0 V with 0.5 C at 25 ± 2 ℃, The discharge capacity is C3.	Capacity Retention C2/Nominal Capacity ≥ 93%; Capacity Recoverable Ratio C3/Nominal Capacity ≥ 96%.

6.4 Environmental Characteristics

3 Environmental Characteristics

Items	Test Conditions	Specifications
Free Drop	After standard full-charged of the cell,dropped four times from a height of 1m(the lowest point of the cell) onto a concrete floor. The two end faces fall once and the cylinder falls twice for 4 free drops; measure the battery open circuit voltage and observe for 1h.	No explosion, no fire, no smoke. The OCV after the test no less than 90% before free-fall test.

Crush Test	A standard full-charged cell is to be crushed between two flat surfaces. The force for the crushing is applied by a hydraulic ram exerting a force of 13±1 KN. Once the maximum force has been applied, or an abrupt voltage drop 1/3 initial voltage, or 10% of deformation has occurred compared to the initial dimension, the force is released; and observed for 1 hour.	No explosion, no fire
Vibration Test	A standard full-charged cell is fixed on the vibration table, X、Y and Z for 90 ~ 100 minutes, with amplitude of 0.8mm, vibration frequency of 10Hz~55Hz, changing 1Hz per minute. The cell was restored to situ after test completion and observed for 6 hours.	No explosion, no fire, no leakage
Altitude Simulation Test	The full-charged cells are to be stored for 6 hours at an absolute pressure of 11.6 kPa and the temperature of 20±3℃ .	No explosion, no fire, no leakage

6.5 Safety Performance

4 Safety performance

Items	Test Conditions	Specifications

External Short-Circuit	After standard full-charged of the cells,each test sample cell is to be short-circuited by connecting the positive and negative terminals of the cell with a Cu wire having a maximum resistance load of 80±20mΩ .The sample is to discharge until a fire or explosion is obtained,or until it has reached a completely discharge state of less than 0.2V and the sample case temperature has returned to ±10℃ of the ambient temperature.Tests are to be conducted at 20±5℃ and 55±5℃; and observed for 1 hour.	No fire, no explosion, Max.Temp.of cell surface should not exceed 150℃.
Over-charge	The cell is charged at a 1C constant current with a voltage limit of 4.8V for 1 hours after standard full-charged; and observed for 1 hour.	No fire, no explosion, Max. Temp.of cell surface should not exceed 150℃.
Over Discharge	After standard full-charged of the cells, than discharged 90 mins at 1C, and observed for 1 hour.	No fire, no explosion
Hot oven Characteristics	The standard full-charged cells is placed in the hot oven,then rise to 130℃±2℃ in the temperature to 5℃±2℃/min rate, insulation 30min; and observed for 1 hour.	No fire, no explosion

Impale Test	After standard full-charged of the cell, with 5mm diameter high temperature resistant steel needle, at a speed （25±5 ）mm/s , perpendicular to the side of the cell (the steel needle stay in the cell), and observed for 1 hour .	No fire, no explosion
Impact Test	The standard full-charged cell is to be placed on a flat surface. A φ15.8 ±0.2mm diameter bar is to be placed across the center of the sample. A 9.1kg±0.1kg mass is to be dropped from the height of 610 ±25mm to the center of the cell vertically; and observed for 6 hours.	No fire, no explosion

Thermal-cold Cycling Performance Test	（1）30 min 70 ℃ ± 2 ℃, 4 h； （2）30 min 25 ℃ ±2 ℃, 2 h； （3）30 min 40 ℃ ±2 ℃, 4 h； （4）30 min 25 ℃ ± 2 ℃； （5）25 ℃± 2 ℃ 24 h 1 h。 The standard full-charged cells placed in temperature chamber, and test under the following conditions: （1） Within 30mins, raise the chamber temperature to 70 ℃±2 ℃ and maintain this temperature for 4 hours; （2） Within 30mins, raise the chamber temperature to 25 ℃ ± 2 ℃ and maintain this temperature for 2 hours; （3） Within30mins,reduce the chamber temperature to -40 ℃ ± 2 ℃ and maintain this temperature for 4 hours; （4） Within 30mins, raise the chamber temperature to 25 ℃ ± 2 ℃; （5） Repeat above steps 9 times, than the 10 times over, cells shall be stored for 24 hours at 25 ℃ ± 2 ℃, and observed for 1 hour.	No fire, no explosion, no leakage

7 Nameplate and Symbol

The nameplates and symbols of the cells should stay clear, attached and have no obvious color difference.

The polarity markings are on the side of the cell, “+” and “-” stand for positive tab and negative tab respectively.

8 Transportation

During transportation, the cell should not be exposed to direct sunlight, fire, rain, water, or corrosive substances.

Impacts and vibrations during the transportation, loading and unloading should be limited to the minimum scale.

The stacking height of cartons should not exceed 7 layers.

When batteries transported over a long distance, if they are shipped, they should be kept away from the engine; in the summer, they should not be kept in an unventilated environment for a long period of time.

9 Safety Precautions

The product can be somewhat dangerous during transportation, storage and use. It may leak or even explode when it is operated incorrectly. Before using this product, please read this specification of product carefully and keep it for reference.

The cell must not be over discharged, squeezed or incinerated.

Do not short circuit the cell.

Do not disassemble the cells without permission.

Do not use the cell outside of the working temperature range. Do not heat up the cell above allowable temperature.

It is forbidden to high-temperature solder directly on the surface of the cell (solder temperature not higher than 130 ℃) .

Do not use batteries with deep scratches or deformation.

Do not use the cell with dry batteries or other kinds of primary batteries together. Do not use batteries with different packaging, different models or different brands together.

It is forbidden to mix up old and new batteries and use them together.

When installing the batteries into the device, pay attention to the positive polarity and negative polarity of the cell.

When the cell is used up to the cut-off voltage, it should be taken out from the instrument in time.

When the cell is not in use for a long time, it should be taken out from the device and stored in a low-temperature and low-humidity environment.

For series and parallel connection of the batteries, please contact us.

decrease.

Please charge the battery when it discharges out.

Please use the matching or recommended professional lithium battery charger.

If the battery leaks, contact eyes or skin, immediately flush with plenty of water and seek medical help.

Battery odor, discoloration, noise, leakage, serious deformation and other abnormal circumstances, should stop using.

Keep batteries out of reach of pets and children. Keep them out of reach of children.

12 Disclaimer

Please read the warning sign on the surface of the specification carefully before using the cell. Improper use of the cell may cause the cell to overheat and damage, Pilsan electronic ORION Co.,Ltd. does not assume any responsibility, in order to make the safe use and disposal of cells, please read this product specification carefully before use.

If you have any questions about this specification of product, please contact us. Pilsan Electronic ORION Battery company reserves the right to modify this product specification .

Used batteries should be disposed in accordance with local environment regulations.

If there is any heating, odor, discoloration, deformation, or other abnormality of the cell during usage or storage, stop using it.

10 Storage

The batteries should be used and stored away from static electricity.

The batteries should be stored at a temperature between 0 ℃ and 30 ℃with a relative humidity of not more than 60 %， and batteries should be in a 30 % ~50 % state of charge . If stored for a long time, charge it every 3 ~ 4 months to prevent the battery from over discharge.

Batteries should be stored away from the heat source, can not be placed in direct sunlight, to ensure that clean、cool、dry、 ventilation, and not affected by the climate.

Battery Stacking Height depends on the strength of the packaging, general provisions, paper packaging box stacking height should not exceed 1.5 meters.

Battery to the original packaging storage and display batteries, remove the packaging after the battery can not be disorderly stacked, it is easy to cause battery short circuit and damage.

11 Use suggestions

The battery is suitable for use in a relatively cool environment. When used in a high temperature and high humidity environment for a long time, the service life of the battery will

1： Figure 1: Packing method

(1) Each box contains 40 cells.

(2) 15.5 kg 16.5 kg。

The net weight and gross weight of the cells are about 15.5 kg and 16.5 kg respectively.