	Prismatic LiFePO4 Battery	
	Model	Specifications
	IFpP1779135-10	LFP 10Ah 1c Grade A

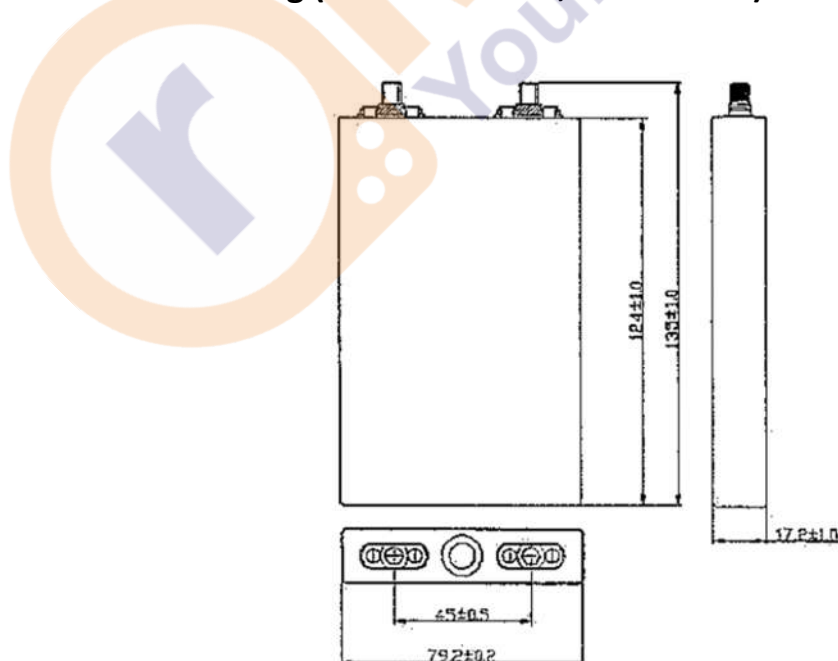
1. Scope


This document describes the product specification of the Lithium-ion Phosphate rechargeable cell mentioned above.

2. Specifications:

No.	Items	Specifications
1	Charge Voltage	3.55V
2	Nominal Voltage	3.2V
3	Rated Capacity (discharge at 0.33C to voltage of 2.5V at 25°C±5°C)	10Ah
4	Standard Charging Current	0.2C
5	Standard Discharging Current	0.1C
6	Max. Charge Current	0.5C
7	Max. Discharge Current	1C
8	Discharge cut-off voltage	2.7V
9	Operating Temperature	Charging: 0°C-45°C, 65%±20%RH
	Relative Humidity %	Discharging: -20°C-60°C, 65%±20%RH
10	Recommended Storage Temperature	15°C-35°C
11	Cell Weight	Approx. 330 gm
12	Impedance	≤10.0 mΩ
13	Cell Dimension	Thick: 17.2 mm ± 1.0 mm Width: 79.2 mm ± 0.2 mm Length: 135.0 mm ± 1.0 mm

3. Batter Cell Drawing (All units in mm, not in scale) :



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4. Battery Cell Performance Criteria and Test Conditions:

4.1 Standard environmental test conditions

Unless otherwise specified, all tests stated in this datasheet are conducted at below conditions:

Temperature: 25°C±2°C,

Relative Humidity: 65%±20%.

4.2 Electrical characteristics:

No.	Items	Test Methods and conditions	Criteria
1	Standard Charging Method	Charging the cell with constant current at 0.2C and then with constant voltage at 3.55V till charge current declines to ≤ 0.05C	Charge Voltage = 3.55V Charge Rate = 0.2C
2	Standard Discharge condition	Discharging the cell with constant current at 0.1C to 2.7V	Discharge Voltage = 2.7V Discharge Rate = 0.1C
3	Initial Impedance	Internal resistance is measured at AC 1KHz within 1 hour after standard charge.	≤10.0mΩ
4	Cell Voltage	Battery state upon shipment	≥3.0V
5	Rated Capacity	1) Prior to charging, the cell shall be discharged at a constant current of 0.1C down to the cutoff discharge voltage 2.7V, rest for 10 minutes. 2) The capacity means the discharge capacity of the cell, which is measured with discharge current of 0.1C with 2.7V cut-off voltage after standard charge.	10Ah
6	High rate discharge performance	1) Prior to charging, the cell shall be discharged at a constant current of 0.1C down to cutoff discharge voltage 2.7V, rest for 10 minutes. 2) 0.2C CC to 3.55V, and CV to 0.5A cut off, rest for 10 minutes. 3) The capacity means the discharge capacity of the cell, which is measured with discharge current of 1C with 2.7V cut-off voltage.	≥ 95% Rated Capacity
7	Cycle Life	Charge: The cell shall be charged in accordance with Standard Charge condition. Rest for 10 mins. Discharge: 5A discharge to 2.7V, one cycle is finished, then rest for 30 mins. Then repeat above steps, when capacity is less than 80% of initial capacity, the battery life is over.	≥2000 cycles
8	Charge Retention and Recovery at	The cell shall be charged in accordance with standard charging method. The cell shall be stored in the temperature of 25°C ± 2°C for 28 days. Discharge at	Capacity Retention ≥95% Rated Capacity



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	Room Temperature	the constant current of 0.1C down to 2.7V. The discharge capacity is capacity retention.	
9	High Temperature performance	1) The cell shall be charged in accordance with the standard charge. 2) The cell shall be stored in the temperature of temperature of (40 ± 2)°C for 4 hr, rest for 30 minutes. 3) Discharge at the end of constant current of 1A down to the end of discharge voltage 2.7V	discharge capacity ≥95% rated capacity no distortion and no rupture
		1) The cell shall be charged in accordance with the standard charge. 2) The cell shall be stored in the temperature of temperature of (55 ± 2)°C for 4 hr. 3) Discharge at the end of constant current of 1A down to the end of discharge voltage 2.7V	discharge capacity ≥90% rated capacity no distortion and no rupture
10	Low Temperature Performance	1) The cell shall be charged in accordance with the standard charge. 2) The cell shall be stored in the temperature of temperature of (-10 ± 2)°C for 4 hr. 3) Discharge at the end of constant current of 1A down to the end of discharge voltage 2.7V	discharge capacity ≥60% rated capacity no distortion and no rupture

4.3. Safety Performance:

4.3.1. Battery Cell Safety Performance:

No.	Items	Test Methods & Conditions	Criteria
1	Overcharge	After standard charge, rest for 10mins; then charge at constant current of 20A to 6.4V.	The samples shall not fire, and explosion.
2	Altitude/Low pressure simulation test	The full charged cells are to be stored for 6h at a vacuum environment with pressure of less than 11.6kPa and and a temperature of 25°C+2°C.	The samples shall not fire, and explosion.
3	Heating test (130°C)	The cells are fully charged with standard charging condition, and put into incubator with nature air or cycled air convected, heat battery by velocity of 5°C 12°C/min to 130°C+2°C, and maintain for 30 mins.	The samples shall no leakage, no fire, no explosion
4	Temperature Cycling Test	The fully charged batteries are placed in a test chamber and subjected to the following cycles: a) Raising the temperature to 70°C +2°C within 30 minutes and maintaining this temperature for 12 hours.	The samples shall no leakage, no fire, no explosion



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		<p>b) Raising the temperature to -40°C 2°C within 30 minutes and maintaining this temperature for 12 hours.</p> <p>c) Repeating the sequence for a further 9 cycles.</p> <p>1) After the 10th cycle, storing the batteries for 24h prior to examination.</p>	
5	Crush Test	The cells wide and narrow surface shall be crushed at speed of (5±1)mm/s and the crushing is to be continued until an applied force of 13±0.78kN. Once the maximum force has been obtained it is to be kept for 10min.	No Fire, No Explosion, No leakage.
6	Vibration Test	Cells, fully charged, shall be firmly secured to the platform of the vibration machine. Test batteries shall be subjected to sinusoidal vibration according to Table 1. This cycle shall be repeated 12 times for a total of approximately 3h for each of three mutually perpendicular mounting positions. One of the directions shall be perpendicular to the terminal face.	No leakage, No venting, No disassembly, No rupture and No fire during the test and after the test and if the open circuit voltage of each test cell after testing in its perpendicular mounting position is not less than 90% of its voltage immediately prior to this procedure
7	Mechanical Shock	Cells, fully charged, shall be subjected to three shocks in each direction of three mutually perpendicular mounting positions of the battery for a total of 18 shocks. For each shock, the parameters given in Table 2 shall be applied.	No leakage, No venting, No disassembly, No rupture and No fire during the test and after the test and if the open circuit voltage of each test cell after testing in its perpendicular mounting position is not less than 90% of its voltage immediately prior to this procedure
8	Impact Test	A cell is to be placed on a flat surface. A 15.8±0.1 mm diameter bar is to be placed across the center of the sample. A 9.1±0.46 kg weight is to be dropped from a height of 610±25mm onto the sample (wide and narrow planes both shall be tested).	No Fire, No Explosion
9	Burning Test	Each cell is to be placed on a screen that covers a 102-mm (4 in) diameter hole in the center of a platform table. The screen is to be constructed of steel wire mesh having 20 openings per inch (25.4 mm) and a wire diameter of 0.017 in (0.43 mm). An eight-sided covered wire cage, 610-mm (2-ft) across and 305-mm (1-ft) high, made from metal screening is to be placed	No part of an exploding cell shall penetrate the wire screen such that some or all of the cell protrudes through the screen



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		over the test sample. The metal screening is to be constructed from 0.25-mm (0.010-in) diameter aluminum wire 16-18 wires per inch (25.4 mm) in each direction. The cell is to be heated and shall remain on the screen until it explodes or the cell or battery has ignited and burned out.	
10	Temperature Cycling Test	Fully charged cells are to be stored for at least 12 h at a test temperature equal to $75 \pm 2^\circ\text{C}$, followed by storage for at least 12 h at a test temperature extreme in 30 minutes. This procedure is to be repeated until 10 total cycles are complete after which all test cells and batteries are to be stored for 24h at ambient temperature ($20 \pm 5^\circ\text{C}$)	No leakage, No venting, No disassembly, No rupture and No fire during the test and after the test and if the open circuit voltage of each test cell after testing in its perpendicular mounting position is not less than 90% of its voltage immediately prior to this procedure.
11	Thermal abuse	Each fully charged cell is placed in a gravity or circulating air-convection oven, in an ambient temperature of $20^\circ\text{C} \pm 5^\circ\text{C}$, for 1h. The oven temperature is raised at a rate of $5^\circ\text{C}/\text{min} \pm 2^\circ\text{C}/\text{min}$ to a temperature of $130^\circ\text{C} \pm 2^\circ\text{C}$. The cell remains at this temperature for 30 min before the test is terminated.	No Fire, No Explosion
12	Free Fall	Each full-charged cell is dropped three times from a height of 1,0 m onto a flat concrete floor or metal floor. After the test, the cell shall be put on rest for a minimum of 1 h and then a visual inspection shall be performed.	No Fire, No Explosion
13	Low Pressure Test	The cells are to be stored for 6 h at an absolute pressure of 11.6 kPa and a temperature of $20^\circ\text{C} \pm 3^\circ\text{C}$.	No leakage, No venting, No disassembly, No rupture and No fire during the test and after the test and if the open circuit voltage of each test cell after testing in its perpendicular mounting position is not less than 90% of its voltage immediately prior to this procedure.

4.4 Visual Inspection:

There shall be no such defect as scratch, flaw, crack and leakage which may adversely affect commercial value of the cell.



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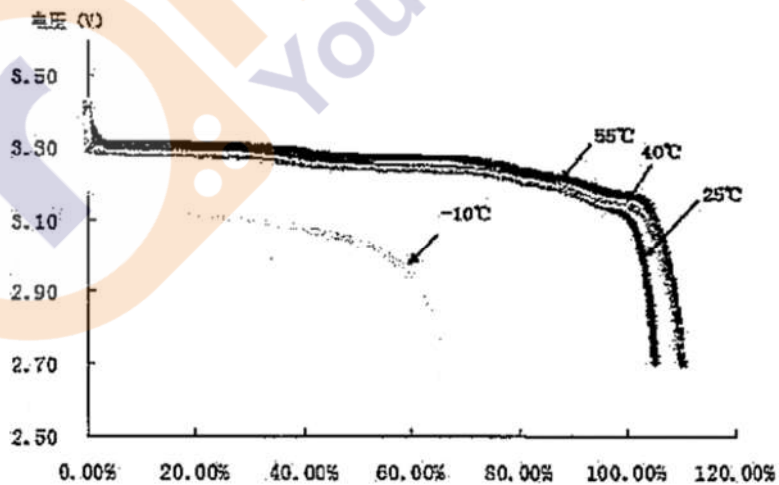
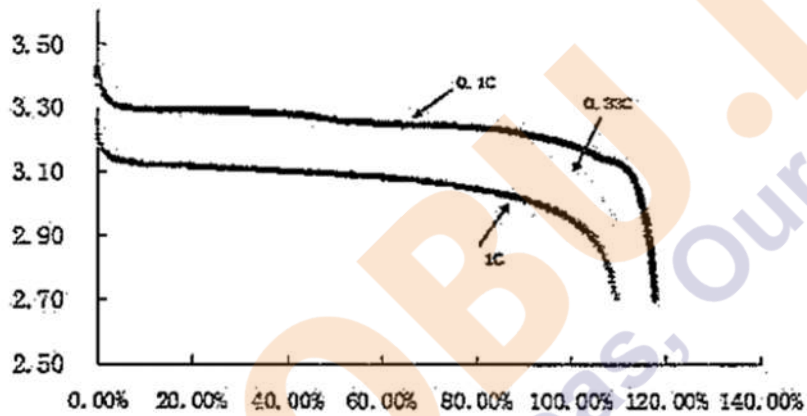
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5. Storage and others:

5.1 Storage

The best storage temperature: 15°C - 35°C.

6. Appendix (For reference only)





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