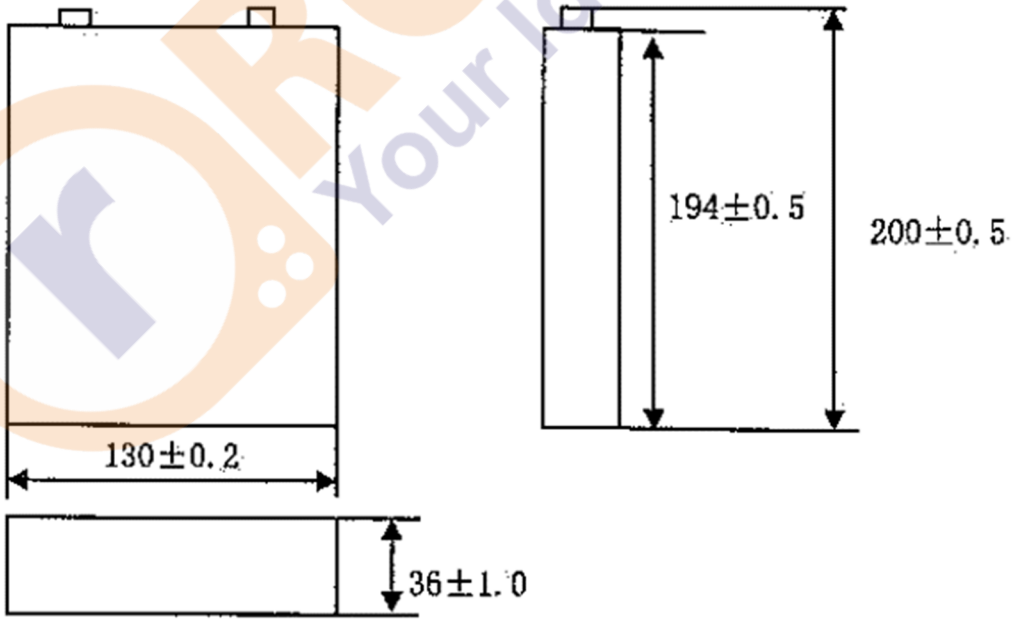
Prismatic LiFePO4 Battery

Model: IFP53173200-200
Capacity: 200Ah
Voltage: 3.2V
Grade: A

Product Specifications:

No.	Items	Specifications
1	Charge Voltage	3.65V
2	Nominal Voltage	3.2V
3	Rated Capacity (discharge at 0.33C to voltage of 2.5V at 23°C±5°C)	200Ah
4	Standard Charging Current	100A
5	Rapid Charging Current	200A
6	Discharge cut-off voltage	2.5V
9	Operating Environmental Temperature	Charging: 0°C-45°C
		Discharging: -20°C-60°C
10	Storage Temperature	15°C-35°C
11	Cell Weight	Approx. 1.82 Kg
12	Impedance	≤0.5 mΩ
13	Cell Dimension	Thick: 36.0 mm ± 0.1 mm Width: 130.0 mm ± 0.2 mm Length: 220.0 mm ± 0.5 mm

Cell Dimension:



Standard Test Conditions:

Unless otherwise specified, all tests stated in this datasheet are conducted at below conditions:
Temperature: 23°C±5°C, Relative Humidity: 65%±20%.

Electrical characteristics:

No.	Items	Test Methods and conditions	Criteria
1	Standard Charge Condition	Charging the cell initially with constant current at 0.33C and then with constant voltage at 3.65V till charge current declines to ≤0.05C.	Charge Voltage = 3.65V Charge Current = 26.4A
2	Rapid Charge Condition	Charging the cell initially with constant current at 1C and then with constant voltage at 3.65V till charge current declines to ≤0.05C.	Charge Voltage = 3.65V Charge Current = 80A
3	Initial Impedance	Internal resistance measured at AC 1KHz within 1 hour after standard charge.	≤0.5mΩ
4	Cell Voltage	Battery state upon shipment	≥3.2V
5	Rated Capacity	1) Prior to charging, the cell shall be discharged at a constant current of 0.33C down to the cutoff discharge voltage 2.5V, rest for 10 minutes. 2) The capacity means the discharge capacity of the cell, which is measured with discharge current of 0.33C with 2.5V cut-off voltage after standard charge.	80Ah
6	High Rate Discharge Performance	1) Prior to charging, the cell shall be discharged at a constant current of 0.33C down to cutoff discharge voltage 2.5V, rest for 10 minutes. 2) 0.33C CC to 3.65V, and CV to 0.05C cut off, rest for 10 minutes. 3) The capacity means the discharge capacity of the cell, which measured with discharge current of 1C with 2.5V cut-off voltage.	≥97% Rated Capacity
7	Cycle Life	Charge: The cell shall be charged in accordance with Standard Charge condition, rest for 30 mins. Discharge: 0.5C discharge to 2.5V, 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.	≥3500 cycles
8	Charge Retention and Recovery at Room Temperature	The cell shall be charged in accordance with the standard charging method. The cell shall be stored in the temperature 23 ± 5℃ for 30 days. Discharge at the constant power of 0.33C down to 2.5V. The discharge capacity is capacity retention. Charge again in accordance with the standard charging method. Discharge at the constant current of 0.33C down to 2.5V. This discharge capacity is capacity recovery.	Capacity Retention ≥95% rated capacity Capacity Recovery≥97% Rated capacity
7	High Temperature Charge-	1) After initial discharge, the cell shall be staned for 5h at the temperature (45 ± 2)℃, then the cell shall be charged at a constant power of 150W to the cutoff	Charge-discharge Energy≥99% Initial Charge-discharge

	discharge performance	charge voltage 3.65V at the temperature (45 ± 2)℃, rest for 30 minutes. 2) The cell shall be discharged at a constant power of 150W to the cutoff discharge voltage 2.5V under the temperature of (45 ± 2)℃, rest for 30 minutes.	Energy Energy Efficiency ≥ 90%
7	Low Temperature Charge-discharge performance	1) After initial discharge, the cell shall be staned for 5h at the temperature (5 ± 2)℃, then the cell shall be charged at a constant power of 150W to the cutoff charge voltage 3.65V at the temperature (5 ± 2)℃, rest for 30 minutes. 2) The cell shall be discharged at a constant power of 150W to the cutoff discharge voltage 2.5V under the temperature of (5 ± 2)℃, rest for 30 minutes.	Charge Energy≥80% Initial Charge Energy Discharge Energy ≥ 75% Initial Discharge Energy Energy Efficiency ≥ 75%
8			
9	Energy Retention and Recovery at High Temperature	After initial discharge, the cell shall be stored at the temperature 45℃ ± 2℃ for 7 days. Then rest for 5h at the temperature of 25C ± 2℃ Discharge at the constant power of 150W to 2.5V at the room temperature. This discharge energy is energy retention. The cell shall be charged at Charge the constant power of 150W to 3.65V at the room temperature, then rest for 30min; This charge energy is charge energy recovery. Discharge at the constant power 150 to 2.5V. This discharge energy is discharge energy recovery.	Energy Retention≥90% Initial Discharge Energy ≥90% Charge-discharge Energy Recovery≥92% Initial Charge-discharge Energy≥92%
10	Storage Performance	After initial charge, energy discharged at a constant power of 150W reaches to 50% initial discharge energy; The cell shall be stored for 28 days at the temperature of (45±2)℃; The rest for 5h, charged at a constant power of 150W to cutoff charge voltage 3.65V; Rest for 30min, discharged at a constant power of 150W to cutoff discharge voltage 2.5V at the room temperature.	Charge-discharge Energy Recovery≥90% Initial Charge-discharge Energy≥90%
11			
12	Rate charge-discharge Performance	1) After initial discharge, the cell shall be charge at constant power (150W) to cutoff charge voltage 3.65V, then rest for 30min; 2) The cell shall be discharge at constant power(150W) to cutoff discharge voltage 2.5V, then rest for 30min; 3) The cell shall be charge at constant power(300W) to cutoff charge voltage 3.65V, then rest for 30min; 4) The cell shall be charge at constant power(150W) to cutoff charge voltage 3.65V, then rest for 30min; 5) The cell shall be discharge at constant power(300W) to cutoff discharge voltage 2.5V, then rest for 30min; 6) The cell shall be discharge at constant power(150W) to cutoff discharge voltage 2.5V, then rest for 30min; 7) The cell shall be charge at constant power(600W) to cutoff charge voltage 3.65V, then rest for 30min;	1) Charge Energy at constant power (300W) ≥95% of Charge Energy at constant power (150W); 2) Discharge Energy at constant power (300W) ≥95% of Discharge Energy at constant power (150W); 3) Charge Energy at constant power (600W) ≥90% of Charge Energy at constant power (150W);

		8) The cell shall be charge at constant power(150W) to cutoff charge voltage 3.65V, then rest for 30min; 9) The cell shall be discharge at constant power(600W) to cutoff discharge voltage 2.5V, then rest for 30min; 10) The cell shall be discharge at constant power(150W) to cutoff discharge voltage 2.5V, then rest for 30min; 11) The cell shall be charge at constant power(300W) to cutoff charge voltage 3.65V, then rest for 30min; 12) The cell shall be discharge at constant power(300W) to cutoff discharge voltage 2.5V, then rest for 30min; 13) The cell shall be discharge at constant power(150W) to cutoff discharge voltage 2.5V, then rest for 30min; 14) The cell shall be charge at constant power(600W) to cutoff charge voltage 3.65V, then rest for 30min; 15) The cell shall be discharge at constant power(600W) to cutoff charge voltage 2.5V, then rest for 30min;	4) Discharge Energy at constant power (600W) ≥90% of Discharge Energy at constant power (150W); 5) Energy Efficiency at constant power (150W) ≥90% 6) Energy Efficiency at constant power (300W) ≥86% 7) Energy Efficiency at constant power (600W) ≥80%

Battery Cell Safety Performance:

No.	Items	Test Methods & Conditions	Criteria
1	Overcharge	Full charge cell shall be charged at constant current of 1C to 5.5V, or suspend the test after one hour.	No Fire, No Explosion.
2	Overfall	Cell – Discharged cell shall be discharged at constant current of 1C to -3.65V, or suspend the test after 90min. Battery – One full discharged battery is connected in series with four fully charged cells forming the battery pack. The battery pack is to be short circuited with a resistance load of 80±20 mΩ, until it has reached completely discharge state of less than 0.2V and the battery case temperature has returned to ±10℃ of ambient temperature.	No Fire, No Explosion.
3	Short Circuit Test	Cell – Fully charge cell be stored in an ambient temperature of 55℃±5℃ for 4h. While still in an ambient temperature of 55℃±5℃, the cell is short-circuited with a total external resistance of 80±20 mΩ. The cell remains on test for 24 h or until the surface temperature declines by 20% of the maximum temperature rise, whichever is sooner. Battery – A fully discharged battery is then short-circuited with a total external resistance of 80±20 mΩ in the room temperature. The battery remains on test for 24h or until the case temperature of battery	No Fire, No Explosion.

		declines by 20% of the maximum temperature rise, whichever is the sooner.	
4	Continuos Charging at constant voltage	Fully charged cells shall be charged using CC (constant current)-CV(constant voltage) to 4V for 7 days.	No Fire, No Explosion.
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 teminal 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	No part of an exploding cell shall penetrate the wire screen such that some or all of the cell protrudes through the screen

		(1-ft) high, made from metal screening is to be placed 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±2℃, 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 ± 5℃)	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℃ ± 5℃, for 1h. The oven temperature is raised at a rate of 5℃/min±2℃/min to a temperature of 130℃ ± 2℃. 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℃ ± 3℃.	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.

Visual Inspection:

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

Appendix (For Reference Only):