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## Technical specifications for li-ion battery

Name of products: Cylindrical Li-FePO4 battery

Model : IFR38120 S

Specification : 10000mAh/3.2V

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### 1. Range of application

This Specifications is apply to the Li-ion battery for IFR38120.

### 2. kinds of models

2.1 kind: Cylindrical Li-FePO4 battery

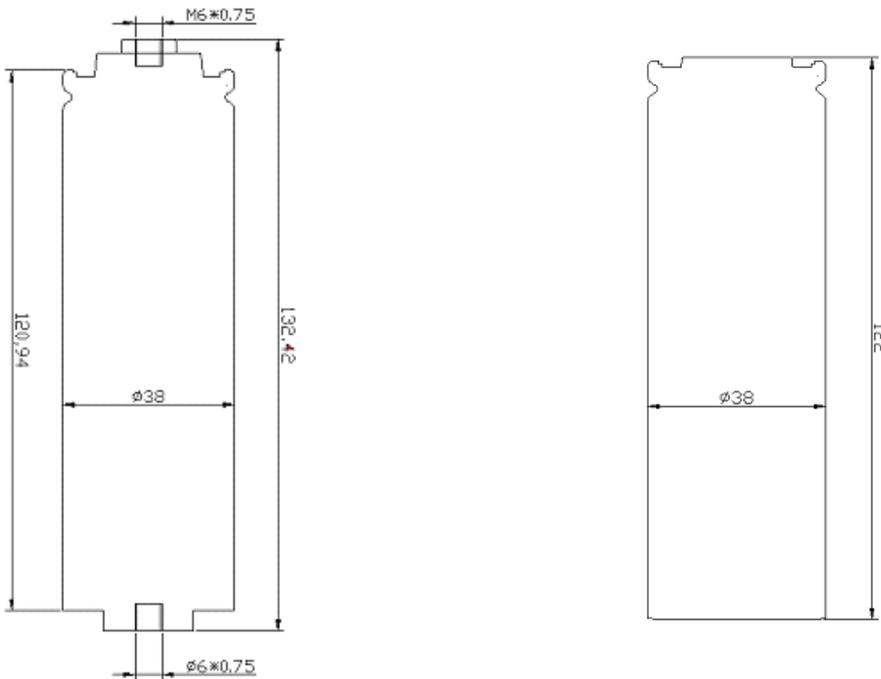
2.2 model: IFR38120

### 3. Technoolgy parameter

No.	Item	specification	
3-1	normal capacity	10000mAh (0.5c)	
3-2	normal voltage	3.2V	
3-3	Inter impedance	≤10mΩ	
3-4	Maximum Charge Current	3C (30A)	
3-5	Maximum Charge Voltage	3.65±0.05V	
3-6	Maximum Discharge Current	10C (100A)	
3-7	discharge stop voltage	2.0V	
3-8	dimension	diameter	38±1mm
		height	122 ±1mm (132±1mm)
3-9	weight	Appro. 300g	
3-10	Work temperature	charge	0~45℃
		discharge	-20~60℃
3-11	Store temperture	In one month	-20~45℃
		In sit month	-20~35℃

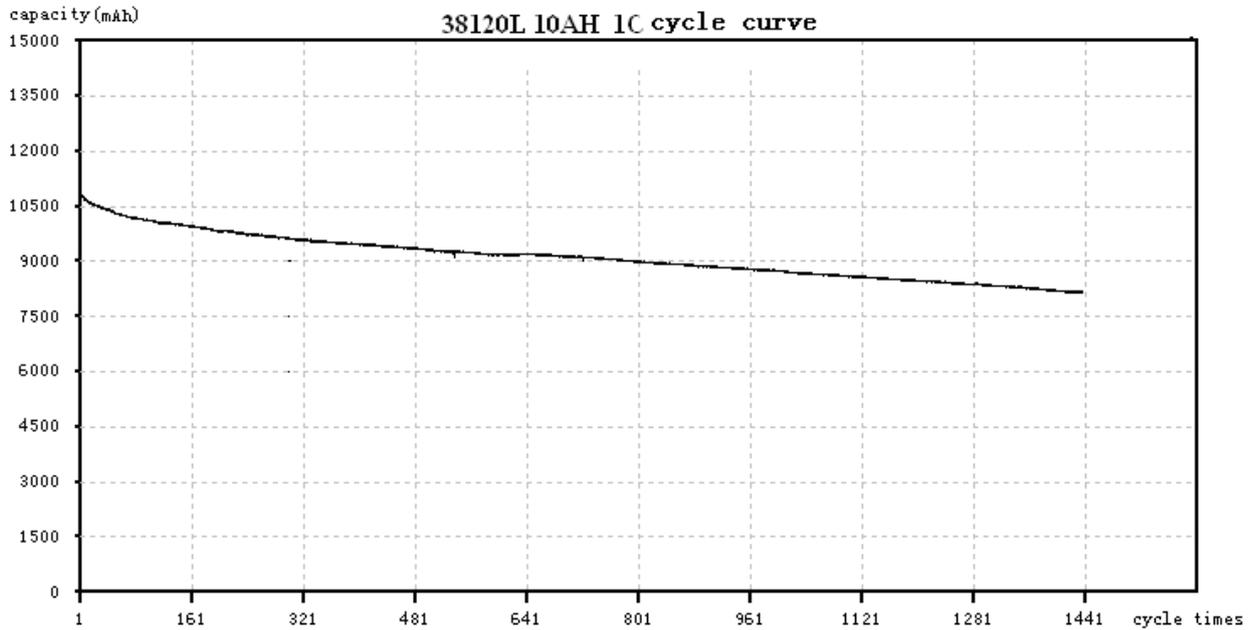
\*The battery need to be in the condition of half full charge or the voltage about 3.2-3.3

### Dimension of battery



38120S

38120



4. Standard test conditions

Measurements are carried out at  $20\pm 5^{\circ}\text{C}$  and relative humidity of  $65\pm 20\%$ . Accuracy of voltmeters and ammeters used in test is equal to or better than the grade 0.5

**4、 Test conditions**

4.1 experiment and test should at the normal temperature ( $20\pm 5^{\circ}\text{C}$ ) or the normal humidity ( $65\pm 20\%$ ).

Normal charge: adopt to constant current then constant voltage : constant current is  $0.5C(5000\text{mA})$ , constant voltage is  $3.65\text{V}$ , charge is stoped when the current low to  $200\text{mA}$  during constant voltage process.

Normal discharge: discharge with constant current  $5000\text{mA}$  and discharge to  $2.0\text{V}$ .

4.2 **the equipments of Test**

- Voltmeter                      Impedance  $>1000\Omega$ /one
- Ammeter                        total resistance (ammeter and line)  $<0.01\Omega$
- Vernier caliper                precision  $0.02\text{mm}$

5.Li-ion Battery Characteristics

Test item	Test conditions	Requirements
(1)Outside Appearance	Visual check	No abnormal stain, Deformation nor damage

(2) starting voltage	Starting voltage in an hour After the normal charge	≥3.3V
(3) Standard charge	Battery shall be charged continuously at the constant current of 0.2C <sub>5</sub> mA to 3.65V, then charge at the constant voltage of 3.65V until the end current of 0.01C <sub>5</sub> mA	
(4)Standard discharge	Battery shall be discharged continuously at the constant current of 0.2C <sub>5</sub> mA to 2.0V	
(5)Rated Capacity	Battery shall be charged in Item (3) and discharged in Item (4) within 10 minutes after full charged. If the discharge capacity does not reach the specified value,the test may be repeated up to three times in total.	Capacity≥10000mAh
(6)Cycle Life(20℃)	Battery shall be charged continuously at the constant current of 0.5C <sub>5</sub> mA to 3.65V then charge at the constant voltage of 3.65V until the current of 200mA and discharged continuously at the constant current of 0.5C <sub>5</sub> mA to 2.0V.A cycles defined as one charge and discharge, carry out cycles until discharge capacity <70% C <sub>5</sub> mAh.	≥2000cycles
(7)High temperature discharge	Battery shall be charged in Item (3) and discharged at the constant current of 1.0C <sub>5</sub> mA to 2.0V within 10 minutes after full charged. If the discharge capacity does not reach the specified value, the test may be repeated up to three times in total.	Capacity≥9000mAh
(8)Low temperature discharge	Battery shall be stored under -10℃±2℃ for 4h after charged in Item (3),then discharged at constant current of 0.5C <sub>5</sub> mA to 2.0V	Capacity≥6000mAh
(9)Drop Test	Drop 100% charged test sample from 1 meter above onto concrete board with more than 5cm thickness two times each for every direction after rated charge. After test , cells are discharge at constant current of 0.2 C <sub>5</sub> mA	No rupture, fire,smoke, Nor critical damage ≥90% C <sub>5</sub> mAh
(10)Vibration Test	Vibrate test sample for 90minutes per each of the three mutually perpendicular axis(x,y,z)after rated charge. Amplitude: 0.38mm(10-30Hz) ; 0.19mm ( 30-55Hz ) Frequency: 10-55Hz(1oct/min)Direction: X, Y,Z.	No rupture, fire, smoke, Nor critical damage ≥90% C <sub>5</sub> mAh
(11)Hot Oven Test	The charged batteries are to be heated in a gravity convection or circulating air oven. The temperature of the oven is to be raised at a rate of 5±2℃ per minute. The oven is to remain for 30 minutes at 130±2℃ before the test is discontinued.	No fire, Nor explosion
(12)Over charge	Battery should be tested at 20±5℃,Battery shall be discharged at 1C <sub>5</sub> mA current until end voltage.then connect cathode on DC powe, adjust the output current to	No fire, Nor explosion

	15I5A , output voltage shouldn't lower than 10V .charging is continued for 7 hours or voltage will not improve and the current will reached 0.	
(13)Over discharge	Battery is tested at $20\pm 5^{\circ}\text{C}$ , Battery discharged continuously with 15A to end voltage.then Reverse charge 90 min. with 5I5A.	No fire, Nor explosion
(14)Short Circuit Test	Battery shall be charged in item(3),Connect battery terminals with electric wire( electric resistance: 50m $\Omega$ or less ),short circuit , when the temperature will be lower than 10, the test will be end.	No fire, Nor explosion
(16)Storage characteristics	Battery shall be charged in Item (3) ,and stored in a temperature-controlled environment at $20\pm 5^{\circ}\text{C}$ for 30 days. After storage, Battery shall be discharged in Item (4) to obtain the remaining capacity.	Remaining capacity $\geq 90\%C_5\text{mAh}$

## 6. Remark

- 6.1 please don't let the battery near to hot, fire etc.
- 6.2 please use special charger.
- 6.3 polarity is not reversed.
- 6.4 The battery has the safe equipment, please don't dissect the battery or change the structure of battery for your safe.
- 6.5Ban to connect directly anode and cathode of battery with the metal.
- 6.6 Ban to beat or throw the battery.
- 6.7 Battery should keep it in the dry and cool place. ban to put the battery into the water
- 6.8 Charging before using if the battery haven't be used in 6 month.

## 7. Quality guarantee period

- 7.1 quality guarantee period: 2 years from the date of original shipment.
- 7.2 our company has no responsibility, if using the battery without regulation ways,

## 5、 transport

battery should avoid to Vibration , impact , exposed to the sun and rain. And battery is half-full capacity on passage.