

Lithium iron Phosphate Battery Specification

MODEL:IFM6-45E2 (6.4V4.5Ah)

Prepared By/Date	Checked By/Date	Approved By/Date

Customer Approval	Signature/Date(签名/日期)
	Company Name(公司名称)
	Company Stamp(公司印章)

Amendment Records

Edition (版本)	Description (记述)	Prepared by (编制)	Approved by (批准)	Date (日期)
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1. Scope

This specification is applied to the LiFePO4 battery pack in this Specification distributed by Master Instruments Pty Ltd.

2. Product Specification

Table 1 (表 1)

No. (序号)	Item (项目)	General Parameter (常规参数)	Remark (备注)
1	Rated Capacity (额定容量)	4.5Ah	Standard discharge (0.2C) after standard charge (0.2C) (0.2C 标准充电后 0.2C 标准放电)
2	Minimal Rated Capacity (最小容量)	4.0Ah	
3	Nominal Voltage (标称电压)	6.4V	
4	Cycle Life (循环寿命)	Higher than 60% of the Initial Capacity of the Cells (初始容量的 60%)	<ul style="list-style-type: none"> ◆ Charge: <u>CC@0.2C</u> to 7.3V, then CV till current to 0.05C ◆ Rest: 30min. ◆ Discharge: 0.2C to 5.0V ◆ Temperature: 20±5°C ◆ Carry out 1000cycles@100%DOD ◆ 先以 0.2C 恒流充电至 7.3V, 再恒压充电至电流小于 0.05C ◆ 搁置: 30min. ◆ 放电: 0.2C 放至 5.0V ◆ 温度: 20±5°C ◆ 循环 1000 次 @100%DOD
5	Discharge cut-off voltage (放电截止电压)	4.5 V(放电保护电压)	5.0V(recommended)
6	Charging cut-off voltage (充电截止电压)	7.7V (充电保护电压)	7.3V(recommended)
7	Cell and assembly method (电芯和组装方式)	IFR18650EC-1.5AH	2S3P
8	Packing material (外包装材料)		

Continuous the table 1 (续表 1)

No. (序号)	Item (项目)	General Parameter (常规参数)	Remark (备注)
9	Standard charge (标准充电)	0.2C constant current(CC) charge to 7.3V,then constant voltage (CC) 7.3V charge till charge current decline to \leq 0.05C 0.2C 恒流充电至 7.3V,再恒压 7.3V 充电直至充电电流 $\leq 0.05C$	Charge time : Approx 7 h (充电时间:大约 7 个小时)
10	Standard discharge (标准放电)	Constant current 0.2C Cut-off voltage 5.0V (持续电流: 0.2C 截止电压:5.0V)	
11	Maximum Charge Current (最大充电电流)	4.5A	
12	Maximum Discharge Current (最大放电电流)	4.5A	Over current $12 \pm 2 A$ 5 mS 过流值 $12 \pm 2 A$ 5 毫秒
13	Operation Temperature Range (工作温度范围)	Charge (充电) : 0~45°C	60±25% R.H.
		Discharge (放电) : -10~60°C	
14	Storage Temperature Range (储存温度范围)	Less than 1 year : 0~25°C (小于一年: 0~25°C)	60±25% R.H. at the shipment state (出货态时的湿度范围)
		Less than 3 months:-5~35°C (小于 3 个月:-5~35°C)	
15	Weight (重量)	Approx/大约:350g	
16	Pack Dimension (包装后尺寸)	Max High/最大高度:70mm	
		Max Width/最大宽度:47mm	
		Max Length/最大长度: 100mm	

3. Performance And Test Conditions

3.1 Standard Test Conditions

Test should be conducted with new batteries within one week after shipment from our factory and the batteries shall not be cycled more than five times before the test. Unless otherwise specified, test and measurement shall be done under temperature of $20\pm 5^{\circ}\text{C}$ and relative humidity of 45~85%. If it is judged that the test results are not affected by such conditions, the tests may be conducted at temperature 15~30 $^{\circ}\text{C}$ and humidity 25~85%RH.

3.2 Measuring Instrument or Apparatus

3.2.1 Dimension Measuring Instrument

The dimension measurement shall be implemented by instruments with equal or more precision scale of 0.01mm.

3.2.2 Voltmeter

Standard class specified in the national standard or more sensitive class having inner impedance more than 10k Ω /V

3.2.3 Ammeter

Standard class specified in the national standard or more sensitive class. Total external resistance including ammeter and wire is less than 0.01 Ω .

3.2.4 Impedance Meter

Impedance shall be measured by a sinusoidal alternating current method (1kHz LCR meter).

3.3 Standard Charge\Discharge

3.3.1 Standard Charge : 0.2C

Charging shall consist of charging at a 0.2C constant current rate until the battery reaches 7.3V. The battery shall then be charged at constant voltage of 7.3V volts while tapering the charge current. Charging shall be terminated when the charging current has tapered to 0.05 C₅A. Charge time: Approx 7 h, The battery shall demonstrate no permanent degradation when charged between 0 $^{\circ}\text{C}$ and 45 $^{\circ}\text{C}$.

3.3.2 Standard Discharge : 0.2C

Battery shall be discharged at a constant current of 0.2C to 5.0V @ 20 $^{\circ}\pm 5\text{C}$

3.3.3 If not otherwise specified, the rest time between charging and discharging is 30min.

3.4 Appearance

There shall be no such defect as crack, rust, leakage, which may adversely affect commercial value of battery.

4. Handling of battery

4.1 Prohibition short circuit

Never short circuit battery. It generates very high current which causes heating of the battery and may cause electrolyte leakage, gassing or explosion that is very dangerous.

The poles may be easily short-circuited by putting them on conductive surface.

Such outer short circuit may lead to heat generation and damage of the battery.

An appropriate circuitry with PCM shall be employed to protect accidental short circuit of the battery pack.

4.2. Mechanical shock

Falling, hitting, bending, etc. may cause degradation of battery characteristics.

5. Others

Prevention of short circuit within a battery pack

Enough insulation layers between wiring and the cells shall be used to maintain extra safety protection.

The battery pack shall be structured with no short circuit internally, which may cause generation of smoke or firing.

6. Period of Warranty

The period of warranty is 12 months from the date of INVOICE. Master Instruments guarantees to give a replacement in case of battery with defects proven due to manufacturing process instead of the customer abuse and misuse.

7. Storing the Batteries

The batteries should be stored at room temperature, charged to about 30% to 50% of capacity.

We recommend that batteries be charged about once per half a year to prevent over-discharge.

8. Other Chemical Reaction

Because batteries utilize a chemical reaction, battery performance will deteriorate over time even if stored for a long period of time without being used. In addition, if the various usage conditions such as charge, discharge, ambient temperature, etc. are not maintained within the specified ranges the life expectancy of the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage. If the batteries cannot maintain a charge for long periods of time, even when they are charged correctly, this may indicate it is time to change the battery.

9. Photo:



10. Any other items which are not covered in this specification shall be agreed by both parties.