Customer/客户:_____

LiFePO4 Battery

Specification

磷酸铁锂电池说明书

MODEL:**IFM12-1100E2(12.8V110Ah)**

Prepared By/Date 编 制/日 期	Checked By/Date 审 核/日 期	Approved By/Date 批 准/日 期

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

Amendment Records （修正记录）				
Edition (版 本)	Description （记 述）	Prepared by （编 制）	Approved by （批 准）	Date （日 期）
A	First Edition	WP LIU		2009-2-15

1	Model/型号	IFM12-1100E2	12.8V110AH
2	Nominal capacity/标称容量	110Ah	标准充放电/Standard charging & discharging
	Minimal capacity/最小容量	103Ah	
3	Nominal voltage/标称电压	12.8V	
4	Charge cut-off voltage/ 充电截止电压	15.6V	推荐/Recommended 14,6V
5	Float charging voltage/ 浮充电压	13.6V	
6	Discharge cut-off voltage/ 放电截止电压	8.0V	测试时/under testing 10.0V 使用时/under using 12.0V
7	Charging method/充电方式	CC，CV	
8	Standard charging current/ 标准充电电流	22A	
9	Max. charging current/ 最大充电电流	25A	
10	Charging cut-off current/ 充电截止电流	5.5A	
11	Standard charging duration/ 标准充电时间	6~7h	
12	Standard discharging current/ 标准放电电流	22A	
13	Max. continuous discharging current/ 最大持续放电电流	25A	
14	Pulse discharging current/ 峰值放电电流	40A（1S）	
15	Short-circuit protection/ 短路保护	有保护/with	

Continued (续 表 1)

No. 序号	Item 项目	General Parameter 常规参数	Remark 备注
16	Short-circuit protection recovery/ 短路保护恢复	断开负载/remove load	
17	PCB temperature protection/ 保护板温度保护	60℃ ±5℃	
18	Cycle life/ 循环寿命	1000 cycles≥60% of initial capacity 1000 次≥初始容量 60%	充电：22A 充至 14.6V，再恒压至 5.5A，搁置 10min； 放电：22A 放至 12.0V 搁置：10min 温度：25±5℃ 湿度：60±25%RH CC charging@22A to 14.6V, then CV to 5.5A, rest 10min; CC discharging@22Ato 12.0V Rest 10min Temperature：25±5℃ Humidity：60±25%RH
19	Self discharge/ 自放电	5%/月 month	
20	Dimension/尺寸	Length/长 260mm	
		Width/宽 158mm	
		Height/高 250mm	
21	Approx. Weight/大致重量	15.0Kg	
22	Working temperature range/ 工作温度范围	Charging/充电： 0℃～45℃	60±25%RH
		Discharging 放电： -10℃～55℃	
23	Storage temperature range/ 储存温度范围	One month/一个月： -15℃～45℃	60±25%R.H
		Three months/三个月： -5℃～35℃	
		One year/一年： 5℃～20℃	

3. Performance And Test Conditions (电池性能及测试条件)

3.1 Standard Test Conditions（标准测试条件）

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 25±5℃ 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℃ and humidity 25~85%RH.

测试必须使用出厂时间不超过一个星期的新电池，且未进行过五次以上的充放电循环。除非特别说明，否则测试会在温度 25±5℃，相对湿度 45~85%的条件下进行。如果经鉴定测试结果不受上述条件影响，测试也可以在温度 15~30℃，相对湿度 25~85%RH 的条件下进行。

3.2 Measuring Instrument or Apparatus（测量器具及设备）

3.2.1 Dimension Measuring Instrument（尺寸测量器具）

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

尺寸测量器具的精度等级应不小于 0.01 mm。

3.2.2 Voltmeter（伏特计）

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

按照国家标准指定规格等级或采用灵敏度更高的，测量电压时内阻不应小于 10kΩ/V。

3.2.3 Ammeter（安培计）

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

按照国家标准指定规格等级或采用灵敏度更高的，包括电流表及电线在内的总电阻应小于 0.01Ω。

3.2.4 Impedance Meter（电阻计）

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

内阻测试仪测量原理应为交流阻抗法（1KHz LCR）。

3.3 Standard Charge\Discharge（标准充放电）

3.3.1 Standard Charge : 0.2C

标准充电: 0.2C

Charging shall consist of charging at 0.2C constant current rate until the battery reaches 14.6V. The battery shall then be charged at constant voltage of 14.6V volts while tapering the charge current. Charging shall be terminated when the charging current has tapered to 0.05C. Charge time: 6~7h, The battery shall demonstrate no permanent degradation when charged between 0 ºC and 45 ºC.

电池先以 0.2C 恒流充电至 14.6V，再以 14.6V 恒压充电至电流减小到 0.05C，充电时间 6~7 个小时。在 0℃~45℃内充电电池应没有永久损害。

3.3.2 Standard Discharge : 0.2C

标准放电: 0.2C

Battery shall be discharged at a constant current of 0.2C to 10.0V @ 20º ± 5C

电池以 0.2C 恒流放电至 10.0V @ 20º ± 5C

3.3.3 If no otherwise specified, the rest time between charging and discharging is 30min.

如果没有特别说明，电池充放电间隔时间为 30 分钟。

3.4 Appearance（外观）

There shall be no such defect as crack, rust, leakage, which may adversely affect commercial value of battery.
电池外观应没有破裂、污渍、生锈、漏液等影响市场价值的缺陷存在。

4. Mechanical characteristics and Safety Test（安全测试及机械特性）

Table 5（表 5） (Mechanical characteristics)

No. 序号	Items 项目	Test Method and Condition （测试方法及条件）	Criteria （标准）
1	Vibration Test 振动测试	After standard charging, fixed the cell to vibration table and subjected to vibration cycling that the frequency is to be varied at the rate of 1Hz per minute between 10Hz and 55Hz, the excursion of the vibration is 1.6mm. The cell shall be vibrated for 30 minutes per axis of XYZ axes. 将标准充电后的电芯固定在振动台上，沿 X、Y、Z 三个方向各振动 30 分钟，振幅 1.6mm，振动频率为 10Hz~55Hz，每分钟变化 1Hz。	No leakage 无泄漏 No fire 不起火
2	Drop Test 跌落测试	The cell is to be dropped from a height of 1 meter twice onto concrete ground. 将标准充电后的电芯从 1 米高度自由跌落至混凝土地面 2 次。	No explosion, No fire. 无爆炸、无起火

5. Handling of battery （电池操作注意事项）

5.1 Prohibition short circuit（禁止电池短路）

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.

避免电池短路。短路会产生很高的电流而使电池发热以及电解液泄漏，产生有毒气体或爆炸是非常危险的。电极端连接在导电物体表面很容易短路，外部短路会导致发热及损害电池。选用一个适当的保护电路可以在意外短路时保护电池。

5.2.Mechanical shock（机械撞击）

Falling, hitting, bending, etc. may cause degradation of battery characteristics.
跌落、碰撞、弯曲等等都可能会降低电池的性能。

6. Others（其它）

Prevention of short circuit within a battery pack（电池内部的短路预防）

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.
在电池和引线之间应该有足够的绝缘层用于安全保护。电池的包装构成应没有导致起烟、起火的短路情况。