



**E&J TECHNOLOGY GROUP CO., LTD**

## **LiFePO4 Battery Specification**

**Model Number: EJ1220Fe-F**

**Doc No: SPE-LFE-011**

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<b>Prepared</b>	<b>Checked</b>	<b>Approved</b>
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## 1. Scope

This specification is applied to the LiFePO<sub>4</sub> battery pack with communication and with SMBus manufactured by E&J technology group co., ltd.

## 2. Product Specification

Table 1

No.	Item	General Parameter	Remark
1	Rated Capacity	20.0Ah	Standard discharge ( 0.2 C <sub>5</sub> ) after standard charge ( 0.2 C <sub>5</sub> )
2	Minimal Rated Capacity	18.0Ah	
3	Nominal Voltage	12.8V	
4	Cycle Life	Higher than 60% of the Initial Capacity of the Cells	◆ Charge: CC@0.2C to 14.6V, then CV till current to 0.05C ◆ Rest: 30min. ◆ Discharge: 0.2C to 10.0V ◆ Temperature: 20±5℃ ◆ Carry out 2000cycles
5	Discharge cut-off voltage	9.2V	10.0V( recommended)
6	Charging cut-off voltage	14.8V	14.6V (recommended)
7	Cell and assembly method	IFR26650EC-3.3AH	4S6P
		IFR18650EC-1.5AH	4S14P
8	Housing material	ABS+PC housing/	

Continuous the table 1

No.	Item	General Parameter	Remark
9	Standard charge	0.2C constant current(CC) charge to 14.6V, then constant voltage (CV) 14.6V charge till charge current decline to $\leq 0.05C$	Charge time : Approx 7h
10	Standard discharge	Constant current 0.2C Cut-off voltage 10.0V	
11	Maximum Charge Current	10A	
12	Continuous Discharge Current	20A	
13	Operation Temperature Range	Charge: 0~45℃	60±25%R.H.
		Discharge: -10~60℃	
14	Storage Temperature Range	Less than 1 year : 0~25℃	60±25%R.H. at the shipment state
		Less than 3 months:-5~35℃	
15	Weight	Approx: 2.75Kg	
16	Max. Dimension	Height: 166mm	
		Width: 76mm	
		Length: 181mm	
17	Short Circuit Protection	Will recover after removal of short	30A fuse
18	Fuel gauge	Four LED lights	With SMBus communication port

### 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  $15 \sim 30^{\circ}\text{C}$  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  $10\text{k}\Omega/\text{V}$

##### 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  $0.01\Omega$ .

##### 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 15.6V. The battery shall then be charged at constant voltage of 15.6V volts while tapering the charge current. Charging shall be terminated when the charging current has tapered to  $0.05\text{C}_5\text{A}$ . Charge time: Approx 7.0h, The battery shall demonstrate no permanent degradation when charged between  $5^{\circ}\text{C}$  and  $45^{\circ}\text{C}$ .

##### 3.3.2 Standard Discharge : 0.2C

Battery shall be discharged at a constant current of 0.2C to 9.2V @  $20^{\circ} \pm 5^{\circ}\text{C}$

##### 3.3.3 If no 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 shipment. E&J 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 three months 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.