

## LifePO4 Battery Pack Data Sheet

LBP-F04150-001-2

SmarTEC Technology Co., Ltd

**Cadium-Free / Mercury-Free / Lead-Free / RoHS-Conformity**

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<b>Customer Approval</b>	Signature	Date	
	Company Name :		
	Company Stamp :		

### 1.General Information

This specification defines the performance of rechargeable LiFePO4 battery pack LBP-F04150-001-2 manufactured by SmarTEC Technology Co., Ltd., The battery pack support Non-Bluetooth and Bluetooth communication function. Through Android and IOS APP, user can read the battery status and information. Especially due to the Android system's openness, different smart phone manufacturer will have

their own different Bluetooth hardware version and customized feature Android systems. So the APP may not work well on some smart phones (with Android system) due to compatible issue. It is necessary for the customer to confirm whether the phone is compatible for the APP.

## 2.Specification :

Electrochemical System : Lithium Iron (Lifepo4 ) Battery Pack

No.	Items	Specifications
1	Cell in pack :	Lifepo4 Cells
2	Nominal voltage	12.8V
3	Charge Voltage Range:	9V-14.4V
4	End of Charge voltage :	14.4V+/- 0.05V
5	Max Capacity	150AH
6	Minimal capacity	148Ah
7	Continuous discharging current	150A
8	Contiunuous charging current	150A
9	Peak current	300-500A /Second
10	Short circuit protection	Automatic recovery
12	Shelf life :	6 month typically before recharging
13	Cycle life	≥2000 times
13	Temperature shut down (Charge/discharge)	60°C
14	Operating temperature	Charging: 0°C ~ 45°C Discharging: -20°C ~ 60°C
15	Storage temperature/humidity	Temperature -10°C ~ +35°C Humidity 65%±20%RH
16	Dimension	483*170*240mm± 10mm
17	Weight	24kg
18	Battery Management system	<b>PCM /BMS with I2C /HDQ commnication</b>

## 3.Electrochemical System : Specification of PCM

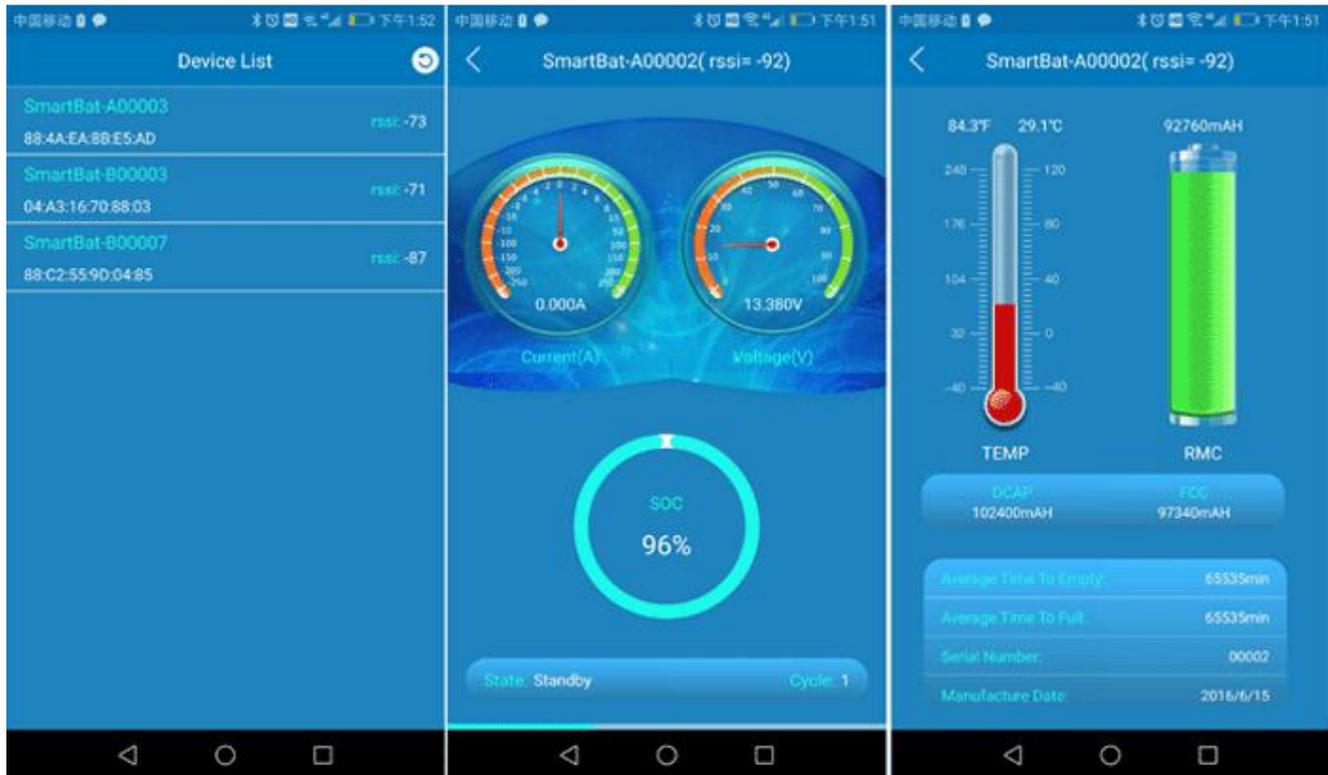
The batteries are supplied with a LiFePO4 Battery Management System (BMS)that can monitor and

optimized each single prismatic cell during charge & discharge, to protect the battery pack overcharge, over discharge, short circuit. Overall, the BMS helps to ensure safe and accurate running.

Items	Content	Specification
Over charge Protection	Over charge detection voltage	3.90±0.025V
	Over charge detection delay time	0.5S—2S
	Over charge release voltage	3.80±0.025V
Over discharge protection	Over discharge detection voltage	2.00±0.05V
	Over discharge detection delay time	10mS—200mS
	Over discharge release voltage	2.3±0.05V
Over current protection	Over current detection current	400±50A
	Detection delay time	5ms—20ms
	Release condition	Cut load,charge release
Short protection	Detection condition	Exterior short circuit
	Detection delay time	200-500us
	Release condition	charge release
Temperature	Operating Temperature Range	-40~+85°C
	Storage Temperature Range	-40~+125°C

#### 4. Products Photos /Packaging Materials

[For IOS Apps system,pls go to App Store download: SmarTEC-BMS](#)



## 5. Installation

1. Our batteries are very simple to install, simply connect your positive cables to the positive terminals and your negative cables to the negative terminal. Our battery pack also support to connect in parallel. Our batteries come standard with a Circular style terminal post. These terminals include a 3/8” hole that allows for most ring terminals to work well with our batteries. For the best connection, we recommend either copper or brass ring terminals.
2. Multiple battery pack may be mounted in parallel in order to increase the current capacity of the system. When batteries are mounted in parallel, the voltage does not change, but the current will double. For example, two 12V 100A batteries mounted in parallel can deliver 200A continuous and 500A for 10-30 seconds. Therefore, all cables and connections must be able to bear the high currents that can be delivered by the battery. Appropriate fuses and circuit breakers are also highly recommended to protect downstream components from current spikes and short circuits
3. Two battery packs may be mounted in series to increase the voltage of the system up to a 24V system. When batteries are mounted in series, current capacities and discharge current remain the same, but the system voltage is additive. should be charged using a charger voltage of 28.8V, and a float voltage below 27.2V.

## 6. Performance

### 6.1 Battery Performance

No	Items	Testing method and determinant standard
1	Charge Performance	The standard charge mode: under the temperature of $23\pm 2\text{ }^{\circ}\text{C}$ , charge the battery with the current of $0.3\text{C}$ until the voltage reaches up to $14.6\text{V}$ , then charge with constant voltage until the charge current $\leq 0.03\text{C}$ , then stop charging.
2	Discharge performanc	When connecting with load, the battery can supply power. Charge the battery with standard CC/CV charge mode, then rest for $0.5\text{h}$ , then discharge with $0.2\text{C}$ until the voltage is $8\text{V}$ , and the discharge time is required $\geq 5\text{h}$ .
3	High Temperature Characteristics	Standard charge the battery, then put the battery into the constant temperature and humidity oven with $55\pm 2\text{ }^{\circ}\text{C}$ , then discharge with $0.2\text{C}$ to $8\text{V}$ . The discharge time is required $\geq 4\text{h}$ (90%) and the battery should no deformation and smoking.
4	Low Temperature Characteristics	Standard charge the battery, then put the battery into the constant temperature and humidity oven with $-20\pm 2\text{ }^{\circ}\text{C}$ , then discharge with $0.2\text{C}$ to $8\text{V}$ . The discharge time is required $\geq 2.5\text{h}$ (50%) and the battery should no deformation and smoking.
5	Cycle Performance	Under the temperature of $23\pm 2\text{ }^{\circ}\text{C}$ , charge the battery with $0.2\text{C}$ , when the voltage reaches up to $14.6\text{V}$ charge with constant voltage until the charge current $\leq 0.02\text{C}$ , then stop charging, then rest for $0.5\text{h}$ , then discharge with $0.2\text{C}$ to $8\text{V}$ . Cycle with the above mode, the test shall be terminated when Discharging Capacity $< 80\%$ of Initial Capacity in three consecutive cycles. The cycle life is required $\geq 2000$ times.
6	Charging keep ability in normal temperature	After standard charged, rest it in $25\text{ }^{\circ}\text{C}\pm 5\text{ }^{\circ}\text{C}$ for 1 months. Then discharge with $0.2\text{C}5\text{A}$ to $2.5\text{V}$ , testing the battery capacity.
7	Storage performance	Capacity can be kept $\geq 80\%$ Storage for 12 months. After standard charged, rest for 12 months, discharge with $0.2\text{C}5\text{A}$ to $2.0\text{V}$ , test the remain capacity; $0.2\text{C}/0.2\text{C}$ test the recover capacity, cycle for 3 times, One cycle capacity arrive standard, that's to say it is qualified.

## 6.2 Safe performance

No	Project	Standard	Testing method
1	Over-charge performance	No exploding, No fire The highest temperature $< 150\text{ }^{\circ}\text{C}$	After standard charged, Battery status should be ensure the normal (the same below), charge with $3\text{C}5\text{A}$ to $5.0\text{V}$ , then change to charge with constant voltage and stop charge until the current is $0.05\text{C}5\text{A}$ , check the temperature and appearance of the battery.

2	Over-discharge performance	No exploding, No fire	After standard charged, discharge with 0.2C <sub>5</sub> A to 2.5V, then connect the positive and negative with 10Ω resistor, rest for 60min.
3	Short-circuit performance in normal temperature	No exploding, No fire The highest temperature <150°C	After standard charged, keep the battery pack in explosion-proof box and connect positive and negative to short-circuit (the total impedance should not be over than 50mΩ) stop the testing when the temperature of the battery reduces 10 °C compare with the top one. check the temperature and appearance of the battery
4	Acupuncture performance	No exploding, No fire The highest temperature <150°C	After standard charged. Put the adminiculum, and connect with thermocouple. Then use the nails 3mm in diameter from the high position of battery to middle to puncture the battery completely. Check the temperature and appearance of the battery.
5	Thermal Shock safe performance	No exploding, No fire	After standard charged. put the battery to hot-box, and connect with thermocouple, the temperature from (5 °C±2 °C) /min to 150 °C±2 °C. And keep warm 30 Min. check the temperature and appearance of the battery.

## 7. Transportation

- ✧ Based on the character of cell, proper environment for transportation of LifePo<sub>4</sub> Battery pack need to be Created to Protect the battery.
- ✧ Battery should be stays in the warehouse 15°C~35°C where it's dry, clean, shade and well-ventilated.
- ✧ Battery should be stored in 50%SOC during transportation.
- ✧ The battery need to be charged every 6 months if out of use.
- ✧ Keep the battery against dropping, turning over and serious stacking during loading.

## 9. Warning & Tips:

Please read and follow the specification and caution remarks on battery surface before use the battery. Improper use may cause heat, fire, rupture, damage or capacity deterioration of the battery. SmarTEC Describes is not responsible for any accidents caused by the usage without following our specification.

The battery must be far away from heat source, high voltage, and avoid to be exposed in sunshine for long time.

Do not put the battery in a charger or equipment with wrong terminals connected.

Never connect the positive and negative of battery with metal.

Avoid excessive physical shock or vibration. don't hit, fall, stamp on the battery

Without the permission of the manufacturer and guidance, forbidden to remove or to assemble the battery

Do not use the battery mixed with other different manufacturer, type, or model batteries.

Keep the battery against high temperature. Otherwise it will cause battery heat, get into fire or lose some function and reduce the life.

When battery run out of power, please charge your battery timely ( $\leq 15$ day).

Please use the matched or suggested charger for this battery.

If battery emit peculiar smell, heating, distortion or appear any abnormality during working or storage, please stop using and take it out from equipment.

If the battery leaks and get into the eyes or skin, rinse with clean water and see doctor immediately.

Please far away from children or pets.

Do not put disuse battery into a fire or water.

## 10. Battery charge and discharge operation instruction

Charging current: Do not surpass the largest charging current that specification stipulated

Charging voltage: Do not surpass the highest limited voltage that specification stipulated

Charging temperature: within temperature scope that specification stipulated

Charge with constant current, then with the constant voltage, no reverse charge, which is dangerous

Special note:

Short time doesn't affect the use of the battery overcharge too, but for a long period of time over discharge or over charge can affect the function of the battery failure, or the battery can't use permanent, appear serious safety hazards, need long time floating please use the recommended floating model specification. Battery when not in use for a long time, because of its own self-discharge characteristics can also cause discharge, to prevent the occurrence of a discharge, battery should maintain a certain capacity, maintain the voltage at 50% state of SOC.

### 10 . Others:

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 discharge time is much shorter than the normal after full charged, even.