

# LiFePO4 Battery Specification & USER MANUAL



## 1. General Information

This specification defines the performance of rechargeable LiFePO4 battery pack 48V 400Ah and describes the type, performance, technical characteristics, warning and caution of the battery pack.

## 2. Specification

NO	Items	Description	
<b>Normal Specification</b>			
1	Nominal Voltage	51.2V	
2	Normal Capacity	400Ah	
3	Internal Resistance	≤20mΩ	
4	System information Display & Communication	Display Battery voltage\current\SOC \temperature through LCD with RS485\CAN BUS	
<b>Standard Charge</b>			
5	Battery operation temperature range @charging	0~50℃	
6	Normal charge voltage	58.4±0.1V	
7	Recommended float charge voltage(for Standby use)	55.6±0.1V	
8	Allowed MAX charge current	150A@Battery initial Temp 25±5℃	
9	Recommended charge current	≤60A	
<b>Standard Discharge</b>			
10	Battery operation temperature range @discharging	-20~60℃	
11	Output Voltage Range	40~58.4V	
12	Allowed discharge current	150A	
13	Peak discharge current	250A/20s withstand 60s	
14	Discharge Cut-off voltage	40V	
<b>Mechanical Characteristics</b>			
15	Dimension	Length 800mm±2mm	
		Width 600mm±2mm	
		Height 1600mm±2mm	
16	Weight	360Kg±10kg	
<b>Storage</b>			
17	Storage Temperature & Humidity Range	Short: within one month	-20~35℃, 45~75%RH
		Long term: above one mont	-10~30℃, 45~75%RH
18	Self-discharge rate	Residual capacity	≤3% per month; ≤15% per year
		Reversible capacity	≤1.5%per month; ≤8% per year

### 3. Electrical Characteristics & Test Condition

Testing Conditions: Ambient Temperature:  $25\pm 5^{\circ}\text{C}$ ; Humidity: 45%~75%.

NO	Items	Criterion	Condition	
1	Internal Impedance	$\leq 20\text{m}\Omega$	Test the internal resistance of 50% SOC battery pack with 1 kHz AC internal resistance test instrument.	
2	Capacity	$\geq 395\text{Ah}$	After the battery was fully charged, it was discharged at 0.33C, and the discharge capacity was recorded.	
3	Short circuit protection		Not allowed.	
4	MAX charge Current	150A	Charging with this current for more than 0.5h and the added temperature of battery pack less than $20^{\circ}\text{C}$ .	
5	MAX discharge Current	150A	Discharging with this current for more than 10min and the added temperature of battery pack less than $35^{\circ}\text{C}$ .	
6	(DOD%100)	$\geq 2000$ cycle	Discharge with the current of 50A until it can't discharge, and then rest it for 1h. Charge the battery following CC(50A)/CV(58.4V) mode to full capacity, and then rest it for 1h. Repeat above process until full charged capacity is no more than 80% of normal value. Accumulated times is defined as cycle life.	
7	Discharge Temperature Characteristics	$-20^{\circ}\text{C}$	$\geq 70\%$	At $25\pm 5^{\circ}\text{C}$ discharge the battery with the current of 50A to the cut-off voltage. Store the battery at various temperatures for 2h and discharge the battery with 50A to the cut-off voltage. Record the ratio between discharging & charging capacity.
		$0^{\circ}\text{C}$	$\geq 80\%$	
		$25^{\circ}\text{C}$	100%	
		$55^{\circ}\text{C}$	$\geq 95\%$	
8	Charge Retention ability	remain capacity $\geq 90\%$	Charge the battery to full capacity and store it for 28days, and then discharge it with 50A to the cut-off voltage.	

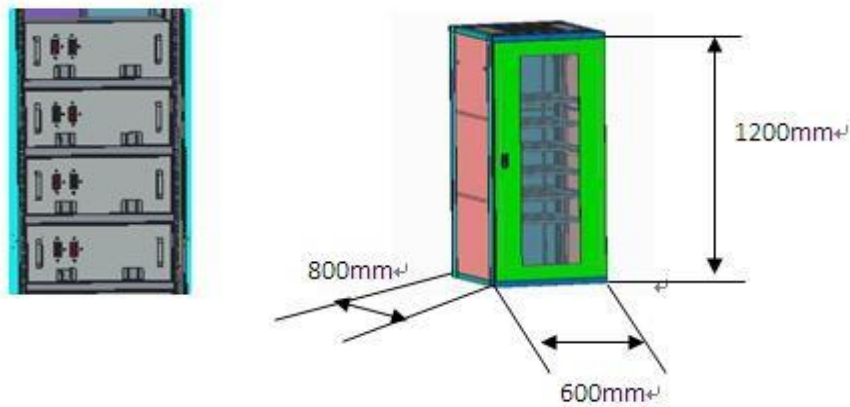
### 4. Circuit Protection

The batteries are supplied with a LiFePO<sub>4</sub> Battery Management System (BMS) that can monitor and optimize 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.

Test item	Content	Criterion
Over charge	Over-charge protection for each cell	$3.80\pm 0.03\text{V}$

	Over-charge release for each cell	3.60±0.05V
	Over-charge release method	Under the release voltage
Over discharge	Over-discharge protection for each cell	2.50±0.05V
	Over-discharge release for each cell	2.80±0.05V
	Over-discharge release method	Charging
Over & Lower Temperature	Battery over temperature	Protection @65±5°C
		Release @55±5°C
	Battery Lower temperature	Protection @-20±5°C
		Release @-10±15°C

## 5. Mechanical Characteristics



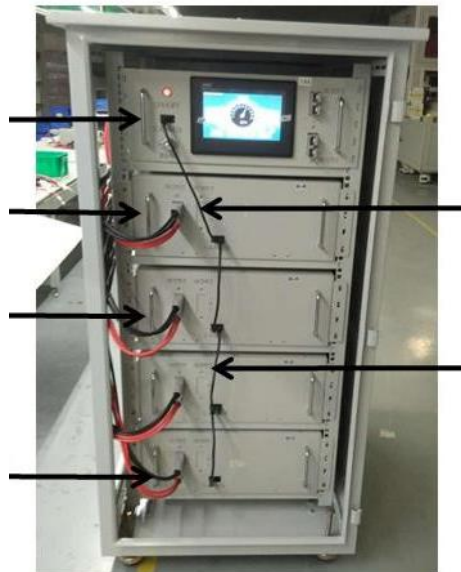
## 6. Installation Instructions

a. Put the six battery boxes and control boxes into cabinet in sequence; Installed 1-1 in the bottom;

Installed 1-4 in the top; (Refer to the logo on panel and line)

b. Connect the battery boxes and control boxes by communication line;

c. Connect the battery boxes and control boxes by power line (The codes of Anderson terminal need to be one-to-one correspondence with the battery boxes), you should connect 1-1 in the first, then connect 1-2, 1-3, 1-4 .





**Caution:** Please note that positive and negative terminals are short-circuited before power-on, it can't be reversed.

## 7. Functional Presentation of Control Box Panel



After finished the installation, press ON/OFF to turn on the system.

**Caution:** Please note that positive and negative terminals are short-circuited before power-on, it can't be reversed.

## 8. Storage & Transportation

- \* Based on the character of cell, proper environment for transportation of LiFePO4 battery pack need to be created to protect the battery.
- \* Battery should be stayed in the ware house  $-20^{\circ}\text{C} \sim 35^{\circ}\text{C}$  where it's dry, clean, shade, and well-ventilated.
- \* The 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 that seller Describes is not responsible for any accidents caused by the usage without following our specification. **Warning!**

- \* The battery must be far away from heat source, high voltage, and avoid to be exposed in sunshine for long time.
- \* Never throw the battery into water.
- \* Never connect the positive and negative of battery with metal.

- \* Never ship or store battery together with metal.
- \* Never reverse two electrodes when use the battery.
- \* Never disassemble the battery without manufacturer's permission and guidance. \* Never knock, throw or trample the battery. **Tips!**
- \* 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 device.
- \* If the battery leaks and get into the eyes or skin, do not wipe, instead, rinse it with clean water and see doctor immediately.
- \* Please far away from children or pets.
- \* Do not put disuse battery into a fire or water.
- \* It is strictly prohibited any series between the battery packs. Any requirements on serials connection, please contact your dealer for details.