

# HybridPower

## 1. General Information

This specification defines the performance of rechargeable LiFePO<sub>4</sub> battery pack and describes the type, performance, technical characteristics, warning and caution of the battery pack.

The battery pack support 4Serial-4Parallel combination.

## 2. Specification

NO	Items	Description
<b>Normal Specification</b>		
1	Nominal Voltage	12.8V
2	Normal Capacity	100Ah
3	Internal Resistance	≤20mΩ
4	Series-Parallel application	4S-4P
5	Communication function	/
<b>Standard Charge</b>		
6	Charge operation temperature range	0~45°C
7	Normal charge voltage	14.6±0.1V
8	Recommended float charge voltage(for Standby use)	13.8±0.1V
9	Allowed MAX constant charge current	80A@Battery initial Temp 25±5°C
10	Recommended charge current	≤50A
<b>Standard Discharge</b>		
11	Discharge operation temperature range	-20~60°C
12	Output Voltage Range	8.0~14.6V
13	Allowed MAX constant discharge current	80A @Battery initial Temp 25±5°C
14	Discharge peak current	100A/30min, 400A/3s
15	Discharge end voltage	8.0V

NO	Items	Description	
<b>Mechanical Characteristics</b>			
16	Dimension	Length	318±2mm
		Width	165±2mm
		Height	215±2mm
17	Weight	Approx.	12.2Kg
<b>Storage</b>			
18	Storage Temperature & Humidity Range	Short: within one month	-20~35°C, 45~75%RH
		Long term: above one month	-10~30°C, 45~75%RH
19	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±5°C; Humidity:45%~75%.

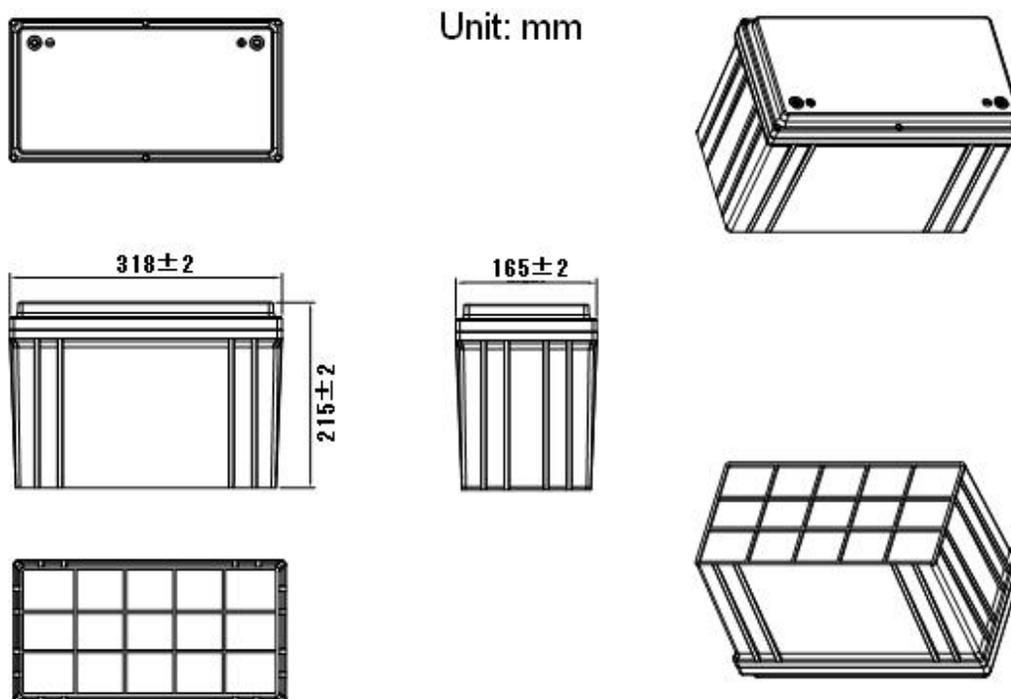
NO	Items	Criterion	Condition
1	Min Capacity	≥97Ah	Rest for 1 hour after fully charged, then discharge with 0.33C current until the battery reaches the cutoff voltage. you can stop and define the Discharging current*time value (Ah) as battery capacity.
2	Cycle life (DOD%100)	≥2000cycle	Charge / CC(0.33C)/CV(14.6V); End current : 0.05C; Rest time : 1h; Discharge / CC(0.5C); End voltage : 8.0V; Repeat above process until discharge capacity is no more than 80% of normal value. Accumulated times is defined as cycle life.
3	Discharge Temperature Characteristics	-20°C	≥70%
		0°C	≥80%
		25°C	100%
		55°C	≥95%
4	Charge Retention ability	remain capacity≥90%	Charge the battery to full capacity and store it for 28days, and then discharge it with 0.33C 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 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.

Test item	Content	Criterion
Over charge	Over-charge protection for each cell	3.80±0.03V
	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	2.00±0.05V
	Over-discharge release for each cell	2.30±0.05V
	Over-discharge release method	Charging
Over current	Discharge over current protection	350~550A
	Protection delay time	10~40ms
	Over current release method	Release after 30s.
Over Temperature	Battery over temperature	Protection @65±5°C
		Release @60±5°C
Over Temperature	Battery lower temperature	Protection @-10±5°C
		Release @0±5°C

## 5. Dimensional Drawing



## 6. Storage & 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 stayed in the warehouse -20°C ~35°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.

## 7. 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. The supplier 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 transport 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 scrap battery into a fire or water.
- \* If user needs to parallel several battery packs, please charge them to full capacity with same type of matched charger, and set it aside for 8 hours, professionals only. This battery pack supports application no more than 4 group parallel. If user needs to apply this product to more groups parallel, please reconfirm details with us.
- \* This batteries pack allows a maximum of 4 series using.