

SPECIFICATION FOR LIFEPO4 BATTERY

Client No. :	****
Cell Model:	300Ah
Pack Model:	*****
Pack :	4S1P
Voltage :	12.8V
Capacity :	300Ah

Prepared by	Checked by
2023-07-24	

Customer Approval		
Dept.	Signature	Date

Product Modification Record List

Revision	Date	Mark	Modified content	Approved by
A/0	2024-07-07	/	NEW RELEASE	/

1. Scope

This specification only applies to the reference battery in this specification and manufactured by Shenzhen CREPOWER Energy Technology Co.,Ltd

2. Rating

Item		Rating	Note
Cell	Type	LiFePO4 Battery	
	Cell Model	/	
	Nominal Capacity	300Ah	Discharge : 0.1C Cut-off Voltage:2.5V
	Minimum Capacity	300Ah	Discharge : 0.1C Cut-off Voltage: 2.5V
	Nominal voltage	3.2V	
	Internal Impedance	$\leq 2.0\text{m}\Omega$	50%SOC
	Weight	$4 \pm 10\text{g}$	
Battery pack	Pack Method	4S1P	
	Nominal Capacity	300Ah	Discharge : 0.1C Cut-off Voltage:10V
	Minimum Capacity	300Ah	Discharge : 0.1C Cut-off Voltage: 10V
	Nominal Voltage	12.8V	
	Energy	3840Wh	
	Charge Voltage	14.6V	
	Discharge cut-off voltage	10V	
	Charge Method	CC/CV	
	Standard Charge Current	30A	
	Max. Charge Current	200A	
	Standard Discharge Current	30A	
	Max. Continues Discharge current	200A	
	Max. Pulse Discharge current	$220\text{AS} \pm 5\text{A}$	4.7 seconds
	Cycle Life	6000 times	25°C@0.5C charge/0.2C discharge.80%DOD,
	Internal Impedance	$\leq 70\text{m}\Omega$	
	Dimension	L640xW245xH220mm	
	Output Wire	/	
	Output Connector	M8 M8 terminal	
	Weight	Approx.42kg about	
	Working Temperature Range	Charge: 0°C--55°C Discharge: -20°C--60°C	
	Storage Temperature	-10°C--45°C	

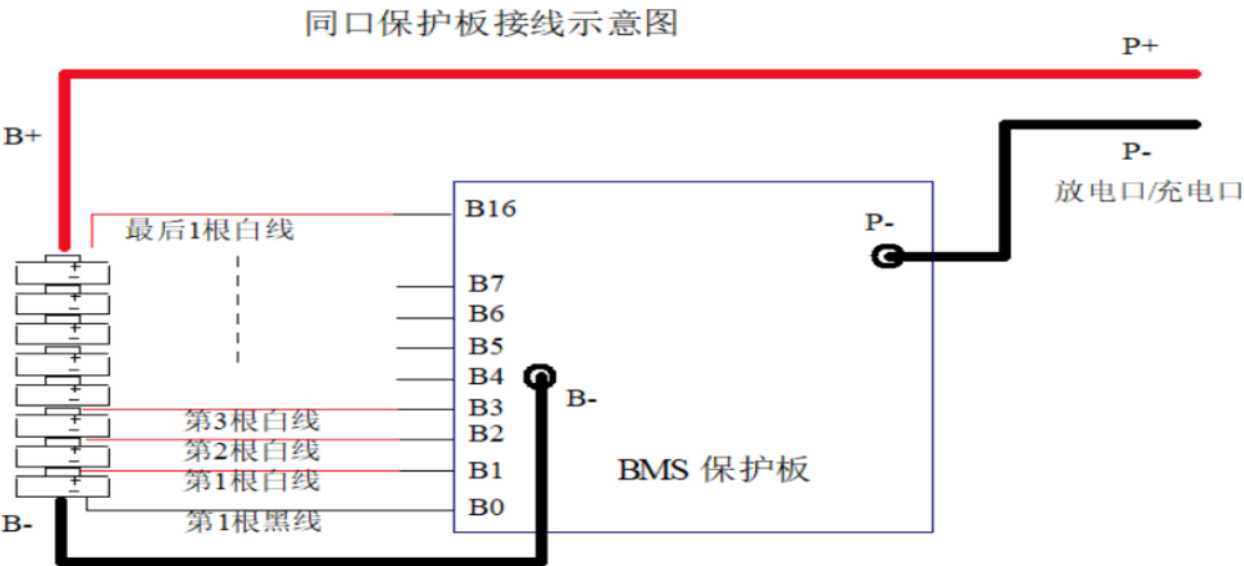
3.1PCM Parameter

(Overvoltage and undervoltage protection)	Project	Specification			Unit
		MIN	TYP	MAX	
	Overvoltage	3.720	3.750	3.780	V
	Overvoltage delay	500	1000	1500	mS
	Overvoltage release	3.400	3.550	3.600	V
	Undervoltage	2.120	2.200	2.280	V
	Undervoltage delay	500	1000	1500	mS
	Undervoltage release	2.600	2.700	2.800	V
Undervoltage release conditions		Disconnect load or charge release			
Overcurrent Charge	Overcurrent Charge protection value	230	230	230	A
	Overcurrent Charge delay	500	1000	1500	mS
	Charge over current release conditions	Disconnect the charger			
Overcurrent Discharge	1th Overcurrent Discharge	700	900	1100	A
	1th Overcurrent Discharge delay	5	10	15	mS
	2th Overcurrent Discharge	1400	1800	2200	A
	2th Overcurrent Discharge delay	500	1000	1500	uS
	Overcurrent Discharge release	Disconnect load or charge release			
Short Circuit Discharge	Short circuit protection current	3000	3600	4200	A
	Short circuit protection delay time	200	500	800	uS
	Short circuit protection recovery	Disconnect load or charge release			
	Short-circuit description: The short-circuit current is less than the minimum value or higher than the maximum value, which may cause the short-circuit protection to fail, and the short-circuit current exceeds 2500A, short-circuit protection is not guaranteed, and short-circuit protection testing is not recommended.				
Overtemperature Charge	Temperature protection value	49	53	59	℃
	Temperature protection release value	44	49	54	℃
Undertemperature Charge	Temperature protection value	-20	-15	-10	℃
	Temperature protection release value	-13	-8	-3	℃

Overtemperature Discharge	Temperature protection value	70	75	80	℃
	Temperature protection release value	53	58	63	℃
	Overtemperature Discharge protection release conditions	Disconnect load or charge release			
Undertemperature Discharge	Temperature protection value				℃
	Temperature protection release value				℃
high temperature protection of FET(Built-in)	Temperature protection value	82	90	98	℃
	Temperature protection release value	50	65	80	℃
	Overtemperature Discharge protection release conditions	Disconnect load or charge release			
Balance Function	Equalization turn-on voltage	3.45	3.50	3.55	V
	Balance current	150	200	250	mA
	(Balance type	Pulse equalization			

Note: Test should be at temperature $25\pm2^{\circ}\text{C}$, and relative humidity $65\pm20\%$ of surroundings.

3.2Product Circuit diagram



4. Appearance

It shall be free from any defects such as scratch, distortion, contamination and leakage.

5. Performance

5.1 Standard Test Condition

The battery shall be evaluated within 1 month from the arrival date.

Unless otherwise stated in these specifications, the following test shall be carried out in an ambient temperature of $20\pm 5^{\circ}\text{C}$, relative humidity of $65\pm 20\%$

Discharge capacity when the battery is discharged at 30A to 10V after being standard charged. Five cycles are permitted for this test. The test shall be terminated at the end of the first cycle which meets the requirement.

5.2 Testing Instrument or Apparatus

5.2.1 Dimension Measuring Instrument

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

5.2.2 Voltmeter and Ammeter

Voltmeters and ammeters shall be equal or more precision instruments of $10\text{K}\Omega/\text{V}$ and 0.01Ω .

5.2.3 Impedance Meter

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

5.3 Standard Charge

Standard charge means charging for 6 hours using 14.6V/20A charger

5.4 Standard Discharge

Standard discharge means discharging at 20A down to 10V

5.5 Electrical Performance

Item	Condition	Specification
Open-Circuit Voltage	The open-circuit voltage shall be measured within 24 hours after standard charge	$\geq 13.2\text{V}$
Battery Capacity	The discharge time at 30A shall be measured after standard charge at $20\pm 5^{\circ}\text{C}$ and rest 30 mins	$\geq 100\%$
Cycle Life	The discharge time on standard discharge shall be measured after 6000 cycles of standard charge and discharge at $20\pm 5^{\circ}\text{C}$	$\geq 70\%$
Charge(capacity) retention	The discharge time at 30A shall be measured after standard charge and then storage at $20\pm 5^{\circ}\text{C}$ for 28 days	$\geq 80\%$

Temperature Characteristic1	After standard charging at $20\pm5^{\circ}\text{C}$, laying the battery at 55°C for 2hour, then discharge at 30A to 10V, record the discharge time	$\geq 90\%$
Temperature Characteristic2	After standard charging at $20\pm5^{\circ}\text{C}$, laying the battery at -10°C for 4hour, then discharge at 30A to 10V, record the discharge time	$\geq 50\%$

6.Mechanical Performance

Item	Condition	Specification
Crush Test	A battery is to be crushed between two flat surfaces. The force for the crushing is to be applied by a hydraulic ram with a 32mm diameter piston. The crushing is to be continued until a pressure reading of 17.2mmPa is reached on the hydraulic ram, applied force of 13kN. Once the maximum pressure has been obtained it is to be released.	No fire, No explosion
Drop Test	The battery has only two axes of symmetry in which case only two directions shall be tested. The battery is to be dropped from a height of 1 meter twice onto concrete ground.	No explosion, No fire, No smoke
Vibration	A full-charged battery is to be subjected to simple harmonic motion with an amplitude of 1.6mm total maximum excursion. The frequency is to be varied at the rate of 1 hertz per minute between 10 and 55 hertz. The cell shall be vibrated for 30 minutes per axis o XYZ axes.	No leakage, No Fire, No explosion

7. Cell Safety Performance

Item	Condition	Specification
Over charge	At $20\pm5^{\circ}\text{C}$, charging battery with constant current 1C to voltage 4V, then with constant voltage 4V till current decline to 0.	No explosion, No fire
Over discharge	At $20\pm5^{\circ}\text{C}$, according to the requirement of the standard of discharge after discharge to termination voltage, 30 m Ω external load discharge within 24 hours.	No explosion, No fire
Short-circuit	At $20\pm5^{\circ}\text{C}$, Standard charge, across the electrodes of the battery with a less than 50 m Ω wire connection, 6 hours	No explosion, No fire The temperature of the surface of the cell are lower than 150°C

Heating	Battery is heated in a circulating air oven at a rate of $5\pm 2^{\circ}\text{C}$ per mins to 130°C , an then placed 30 mins at 130°C	No explosion, no fire
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8. Delivery Conditon

Approx. 20-50% charged

Shipment voltage: 13-13.36V

9. Pack Drawing



Remarks:

Dimension:

L640xW245xH220mm

1. A column plastic color:

+: Red、 -: Black

2. color: 黑色 Black

3. Terminal:M8

10. Warnings

To prevent the possibility of the battery from leaking, heating, fire, Please READ this specification carefully before usage and observe the following precautions:

©When recharging, use the LiFePO4 battery charger specifically for that purpose

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- Ⓢ Do not strike battery with any sharp edge parts, such as Ni-tabs, pins and needles
 - Ⓢ Do not immerse the battery in water and seawater
 - Ⓢ Do not use and leave the battery near a heat source as fire or heater
 - Ⓢ Do not reverse the position and negative terminals
 - Ⓢ Do not connect the battery to an electrical outlet
 - Ⓢ Do not discard the battery in fire or heat it
 - Ⓢ The battery tabs are not so stubborn especially for aluminum tab. Do not bend tab.
 - Ⓢ Do not short-circuit the battery by directly connecting the positive and negative terminal with metal object.
 - Ⓢ Do not transport and store the battery together with metal objects such as necklaces, hairpins etc.
 - Ⓢ Do not directly solder the battery and pierce the battery with a nail or other sharp object.

11. Battery operation instruction

11.1Charging

Charging current: Do not surpass the biggest charging current which in this specification。

Charging voltage: Do not surpass the highest voltage which in this specification。

Charge temperature: The charge temperature is in according to this specification。

11.2Discharging

Discharge current: Do not surpass the biggest discharge current which in this specification.

Discharge voltage: Do not be less than the lowest voltage which is in this specification.

Discharge temperature: The discharge temperature is in according to this specification,

11.3Over-discharges

After the short time excessively discharges charges immediately cannot affect the use, but the long time excessively discharges can cause the battery the performance, battery function losing. The battery long-term has not used, has the possibility to be able to be at because of its automatic flashover characteristic certain excessively discharges the condition, for prevented excessively discharges the occurrence, the battery should maintain the certain electric quantity.

11.4Storing the Batteries

The battery should store in the product specification book stipulation temperature range. If has surpasses above for 3 months the long time storage, suggested you should carry on additional charge to the battery.

11.5 Please do not continuously charge the battery over 8hours.