

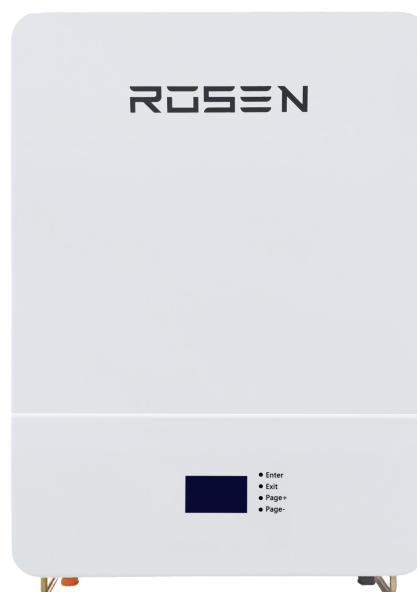
# Rosen Solar Energy Co., Ltd.

## Powerwall LiFePo4 Battery Specification

Model: LFP48V200AH

### Modified Record

Revision	Date	Modified Content	Principle
V.004	2021-01-15	Design	Li Bin



## 1. General Information

This specification is suitable for the 48v 200ah battery pack, and describes its dimensions, characteristics, technical requirements and precautions for use.

## 2. Battery Specification (@ 25±5°C)

NO	Items	Characteristics	
<b>System specification</b>			
2.1	Battery cell	3.2V 50AH, Prismatic, LiFePo4	
2.2	Normal capacity	200AH	
2.3	Nominal energy	9.6KWh	
2.4	DC discharge nominal voltage	48Vdc (LFP-15S)	
2.5	Rang of DC discharge voltage	37.5V-54.75Vdc	
2.6	Internal resistance	≤22mΩ @1kHz AC	
2.7	Compose method	15S4P	
2.8	DC normal charge voltage	54.75±1Vdc	
2.9	DC float charge voltage	54.75±1Vdc	
2.10	Allowed Max. charge current	100Adc	
2.11	Recommended charge current	≤100Adc	
2.12	Continue discharge current	150Adc	
2.13	Allowed Max. discharge current	200Adc	
2.14	End of discharge voltage	37.5±1Vdc	
2.15	Display method and language	LCD, English	
2.16	Communication method	CAN and RS485	
2.17	Cooling method	Natural cooling	
2.18	BMS SUPPORTS	14 PCS CONNECT IN PARALLEL (MAX 134.4 KWH)	
2.19	Cooling method	Natural cooling	
2.20	Dimension	W495+5mm	
		H170+5 mm	
		L680+5 mm	
2.21	IP rating	IP21	
2.22	Weight	About 87Kg	
2.23	Operation temperature	Charge	0~50℃
		Discharge	-20~60℃
2.24	Self-discharge rate	Residual capacity	≤3%/Month; ≤15%/ year
		Recover capacity	≤1.5%/Month; ≤8%/ year
2.25	Storage environment	≤1month	-20~+65℃、5~75%RH
		≥3month	-10~+45℃、5~75%RH

	Recommend environment	15~35℃、5~75%RH
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### 3. Electrical Characteristics & Test Condition

Testing Conditions: Ambient Temperature: 25±5℃; Humidity: 45%~75%.

Normal charge: Charge battery under CC(0.5C)/CV(54.75V) mode until over charge protection or the charge current reduce to 0.05C, and then rest for 1h.

NO	Items	Criterion	Condition
3.1	Normal Capacity	200AH	After Normal charge, discharge @0.33C current to the end of discharge voltage.
3.2	Internal Impedance	≤22mΩ	@50% SOC @1kHz AC internal resistance test instrument.
3.3	Short circuit protection	Auto cut off load when short circuit	Connect the positive and negative of this battery pack through a lead with 0.1Ω resistance.
3.4	Cycle life	≥6000 cycles	After Normal charge, discharge @0.5C current to the end of discharge voltage. Repeat above process until discharge capacity reduce to 80% of initial value.
3.5	Discharge temperature characteristic @0.2C	-20℃(6h)	≥60%
		0℃(6h)	≥80%
		25℃(4h)	≥100%
		55℃(4h)	≥95%
		$\frac{\text{Capacity @specified temperature}}{\text{Capacity @ 25℃}}$ the percentage accord with criterion	
3.6	Capacity retention rate	Remain capacity ≥96%	After normal charge, store the battery @25±5℃ for 28days, then discharge capacity @0.2C, the retention capacity accord with criterion.

### 4. Circuit Protection(BMS Protect parameter)

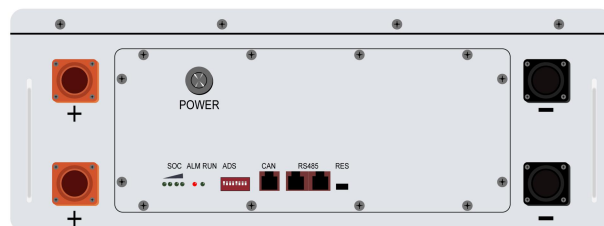
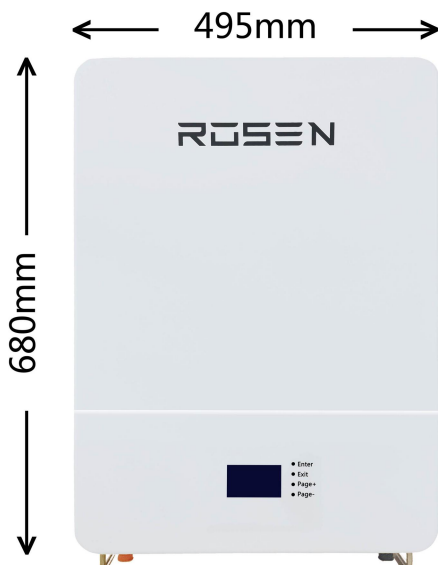
The batteries are supplied with a LiFePo4 Battery Management System (BMS) that can monitor and optimized each single prismatic cell during charge & discharge, to protect the battery pack overcharge, over discharge, short circuit. Overall, the BMS helps to ensure safe and accurate running.

No	Item	Content	Criterion
4.1	Over charge	Over-charge protection Alarm for each cell	3.55±0.05V
		Over-charge protection for each cell	3.65±0.05V
		Over-charge protection delay time	0.5~1.5s
		Over-charge release for each cell	3.5±0.05V
		Over-charge protection Alarm for system	53.25±1V
		Over-charge protection for system	54.75±1V
		Over-charge protection delay time	0.5~1.5s
		Over-charge release for system	52.5±1V

		Over-charge release method	Under the release voltage than 60s
4.2	Over discharge	Over-discharge alarm for each cell	$2.80 \pm 0.05V$
		Over-discharge protection each cell	$2.50 \pm 0.05V$
		Over-discharge protection delay time	0.5~1.5s
		Over-discharge release for each cell	$3.00 \pm 0.05V$
		Over-discharge alarm for system	$42 \pm 1V$
		Over-discharge protection system	$37.5 \pm 1V$
		Over-discharge protection delay time	0.5~1.5s
		Over-discharge release for each cell	$45 \pm 1V$
		Over-discharge release method	Higher the release voltage than 60s
4.3	Over current	Charge over current protection alarm	$100 \pm 10A$
		Charge over current protection	$110 \pm 10A$
		Charge over current protection delay time	0.5~1.5s
		Charge over current release method	Auto release after 1min
		Discharge over current protection alarm	$200 \pm 10A$
		Discharge over current protection	$210 \pm 10A$
		Discharge over current protection delay time	0.5~1.5s
		Discharge over current release	Auto release after 1min
		Short circuit protection	Yes
		Short circuit protection release	cut-off download or exchange fuse
		4.4	Temperature
Charge under temperature protection	Protect@ $0 \pm 3^{\circ}C$ ; Release@ $5 \pm 3^{\circ}C$		
Discharge over temperature protection	Protect@ $65 \pm 3^{\circ}C$ ; Release@ $60 \pm 3^{\circ}C$ ;		
Discharge under temperature protection	Protect@ $-20 \pm 3^{\circ}C$ ; Release@ $-15 \pm 3^{\circ}C$ ;		

## 5. User guide

### 5.1 Product dimension



## 5.2 Transport & Store

If stored for a long time don't used, exceed three months, the battery should be stored in drying and cooling place. The cell's storage voltage should be 48.0V-49.0V and the cell is to be stored in a condition that the temperature of  $25\pm 2^{\circ}\text{C}$  and the humidity Of 45%- 75%. Long-term use of unused batteries to recharge every 3 months. Ensure that the battery voltage is within the above range.

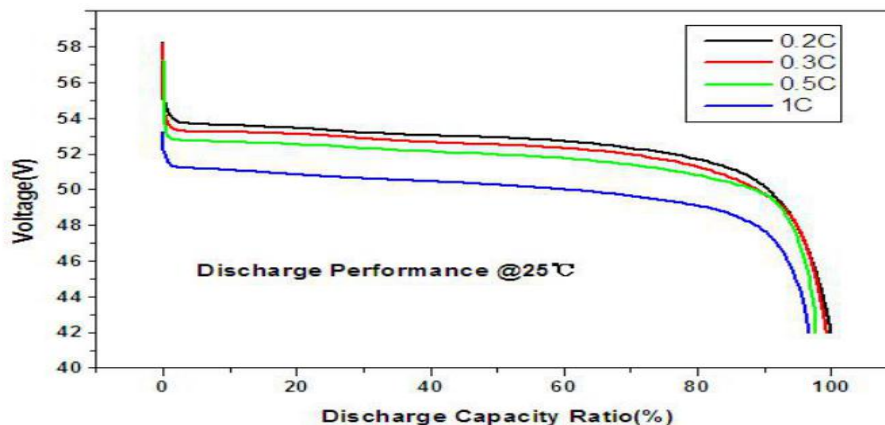
No fall down, no pile up over 6 layers, and keep face up.

## 5.3 Warning & Tips.

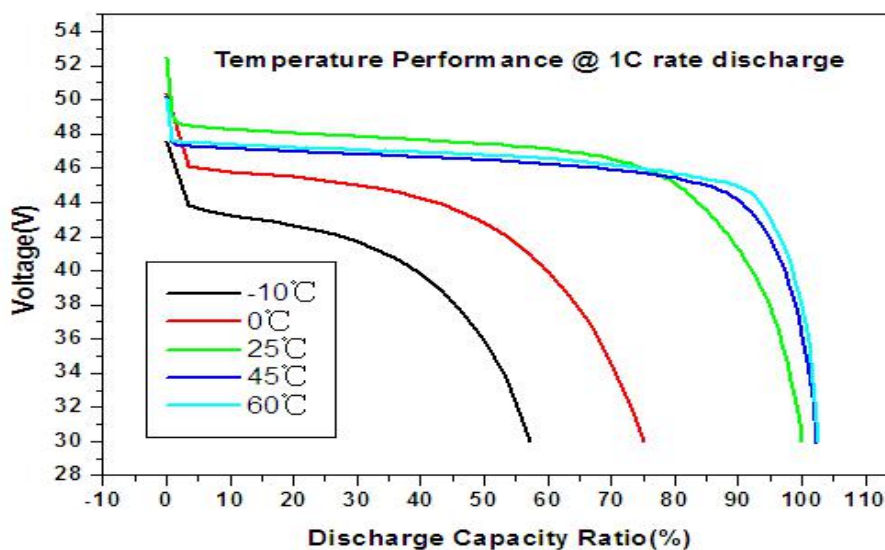
Please read the specifications and warning signs on the surface of the battery box carefully before using the battery. Improper use of the battery may cause overheating and damage of the battery. Rosen Solar Energy Co., Ltd. will not bear any responsibility for any accident caused by the operation not in accordance with the specifications. In order to ensure the safe use and handling of the battery, please read the operation instructions carefully before using

## 6. Testing Report Curve

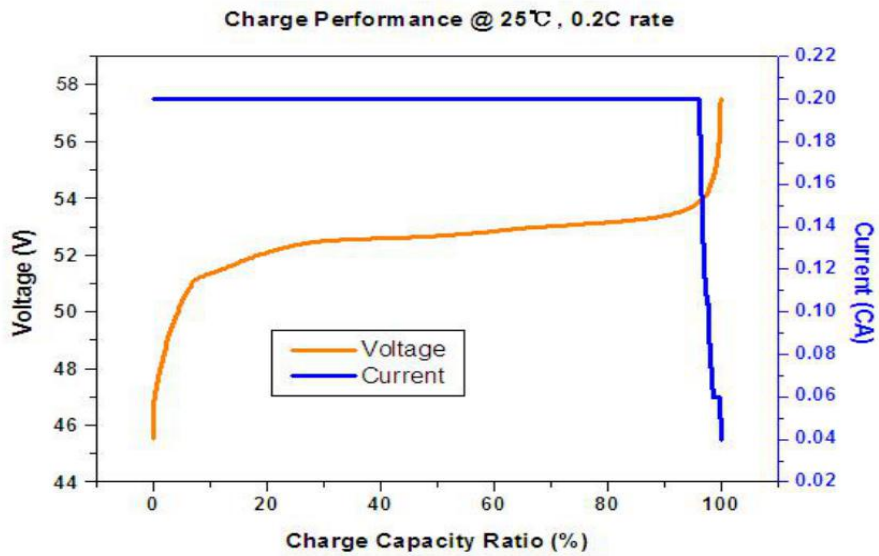
### 6.1 Discharge Curve-C rate



### 6.2 Discharge Curve-1C



## 6.3 Charge Curve-0.2 C



## 6.4 Cycle life over 6000 times –0.5 C standard

