# Rosen Solar Energy Co., Ltd.

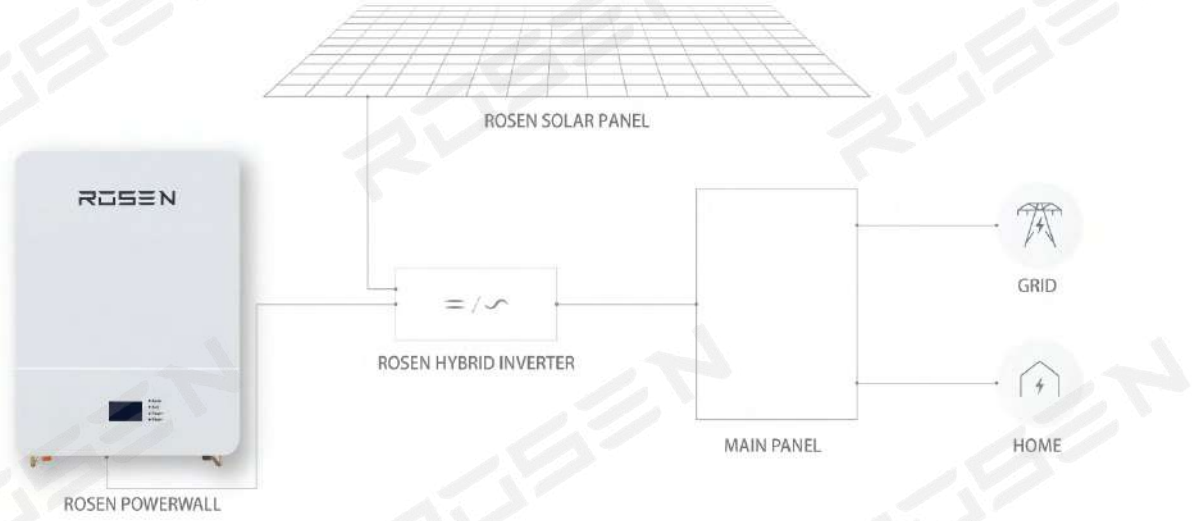
## Powerwall

## LiFePo4 Battery Specification

Model: LFP48V200AH

**Modified Record**

| | | | |
|---|---|---|---|
| Revision | V.006 | Draft | Chuanjun Bao |
| Date | 2021-09-23 | Checked | Chuanqiang Yao |
| File No. | LF48200-210901 | Approved | Jack Tian |



## 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℃）

| NO | Items | | Characteristics |
|---|---|---|---|
| **System specification** | | | |
| 2.1 | Battery Cell | | 3.2V 50AH, Prismatic, LiFePo4 |
| 2.2 | Nominal capacity | | 200AH |
| 2.3 | Total energy | | 9.6KWh |
| 2.4 | Nominal voltage | | 48Vdc |
| 2.5 | Cell compose method | | 15S4P |
| 2.6 | End of discharge voltage | | 40.5V |
| 2.7 | Charging voltage | | 52.5~54.75V |
| 2.8 | Max. charging current | | 100Adc |
| 2.9 | Max. discharging current | | 150Adc |
| 2.10 | Max. power | | 9600W |
| 2.11 | Pulse discharge current | | 200A@1S |
| 2.12 | Display method and language | | LCD，English |
| 2.13 | Communication interface | | CAN and RS485 |
| 2.14 | BMS parallel supports | | Yes, Max. 14units |
| 2.15 | BMS series support | | Not support |
| 2.16 | Cooling method | | Natural cooling |
| 2.17 | Dimension | | W 495±5mm |
| | | | H 190±5mm |
| | | | L 680±5mm |
| 2.18 | IP rating | | IP21 |
| 2.19 | Net Weight | | About 96 Kg |
| 2.20 | Cycle life (80% DOD, 25℃) | | ≥6000 times |
| 2.21 | Life time( 25℃) | | 10 years |
| 2.22 | Protection | | Over voltage, Low voltage,<br>Over current, Over temperature,<br>Low temperature, Short circuit. |
| 2.23 | Operation Humidity | | 0~95% RH (No condensing) |
| 2.24 | Operation temperature | Charge | 0～50℃ |
| | | Discharge | -15～55℃ |
| 2.25 | Self-discharge rate | Residual capacity | ≤3%/Month; ≤15%/ Year |
| | | Recover capacity | ≤1.5%/Month; ≤8%/ year |

## 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 | -15℃(6h) | ≥60% | $\frac{\text{Capacity @specified temperature}}{\text{Capacity @ 25℃}}$ the percentage accord with criterion |
| | | 0℃(6h) | ≥80% | |
| | | 25℃(4h) | ≥100% | |
| | | 55℃(4h) | ≥95% | |
| 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)

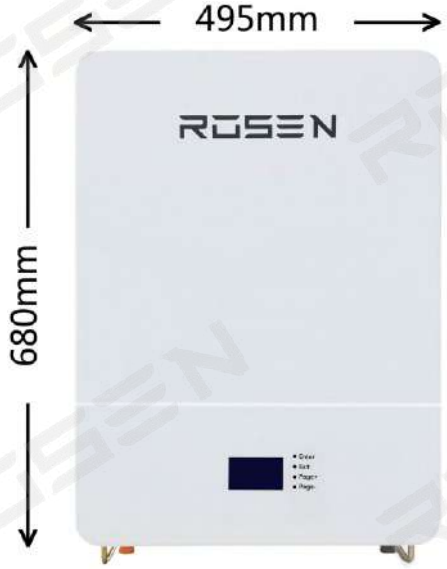
The batteries are supplied with a LiFePo4 Battery Management System (BMS)that can monitor and optimized each single prismatic cell during charge & discharge, to protect the battery pack over charge, over discharge, short circuit. Overall, the BMS helps to ensure safe and accurate running.

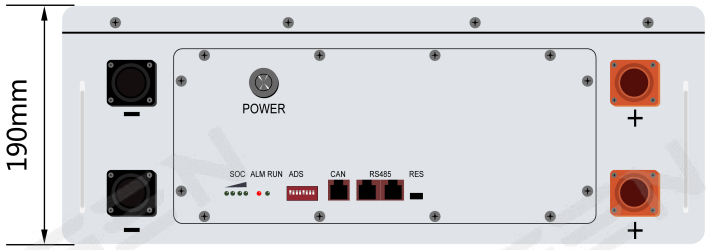
| No | Item | Content | Criterion |
|---|---|---|---|
| 4.1 | Over charge | Over-charge protection Alarm for each cell | 3.5±0.05V |
| | | Over-charge protection for each cell | 3.65±0.05V |
| | | Over-charge protection delay time | 0.5~1.5s |
| | | Over-charge release for each cell | 3.4±0.05V |
| | | Over-charge protection Alarm for system | 52.5±0.5V |
| | | Over-charge protection for system | 54.75±0.5V |
| | | Over-charge protection delay time | 0.5~1.5s |
| | | Over-charge release for system | 51±0.5V |
| | | Over-charge release method | Under the release voltage than 60s |

| | | | |
|---|---|---|---|
| 4.2 | Over discharge | Over-discharge alarm for each cell | 2.90±0.05V |
| | | Over-discharge protection each cell | 2.70±0.05V |
| | | Over-discharge protection delay time | 0.5~1.5s |
| | | Over-discharge release for each cell | 3.0±0.05V |
| | | Over-discharge alarm for system | 43.5±0.5V |
| | | Over-discharge protection system | 40.5±0.5V |
| | | Over-discharge protection delay time | 0.5~1.5s |
| | | Over-discharge release for each cell | 45±0.5V |
| | | Over-discharge release method | Higher the release voltage than 60s |
| 4.3 | Over current | Charge over current protection alarm | 100±5A |
| | | Charge over current protection | 120±5A |
| | | Charge over current protection delay time | 0.5~1.5s |
| | | Charge over current release method | Auto release after 1min |
| | | Discharge over current protection alarm | 150±5A |
| | | Discharge over current protection | 160±5A |
| | | 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 over temperature protection | Protect@55±3℃; Release@50±3℃; |
| | | Charge under temperature protection | Protect@-10±3℃; Release@5±3℃ |
| | | Discharge over temperature protection | Protect@55±3℃; Release@50±3℃; |
| | | Discharge under temperature protection | Protect@-15±3℃; Release@-0±3℃; |

## 5. User guide

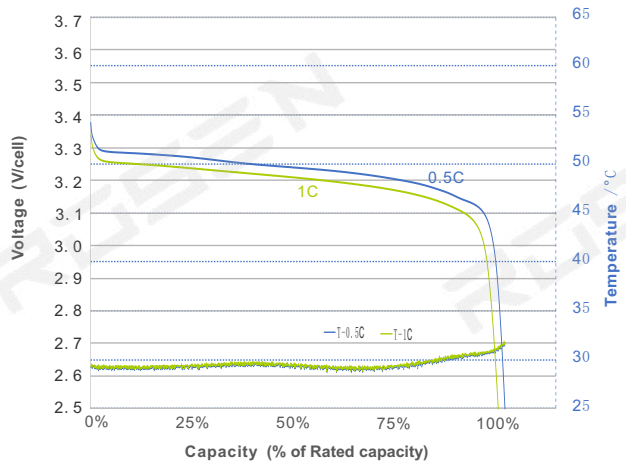
### 5.1 Product dimension



# 48V POWERWALL LITHIUM BATTERY

### Different Discharge Rate and Temperature Characteristic

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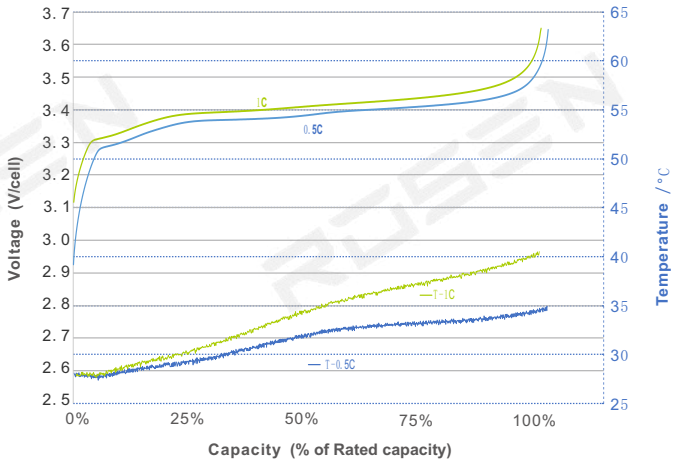
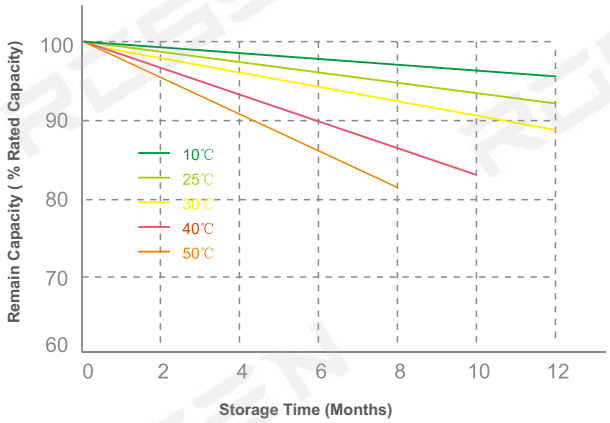
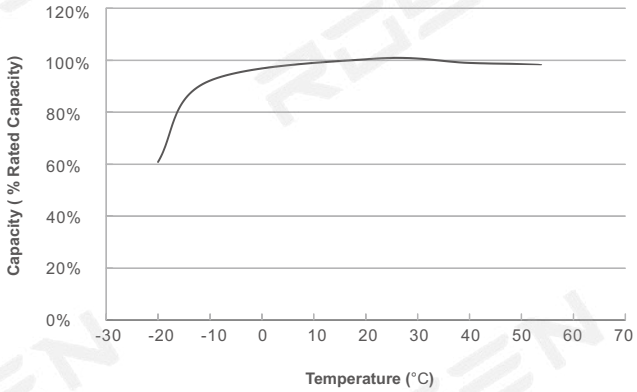


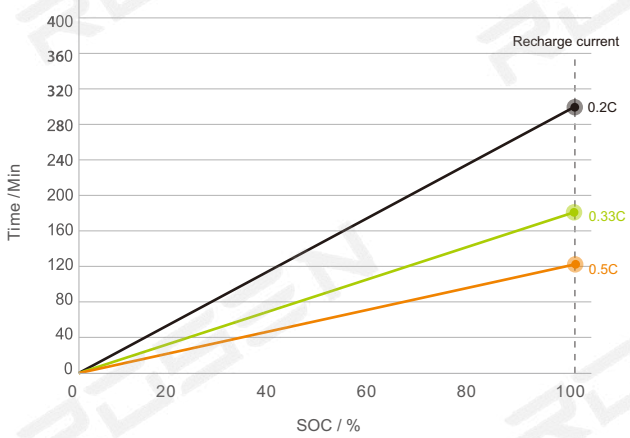

### Different Temperature Self Discharge Curve

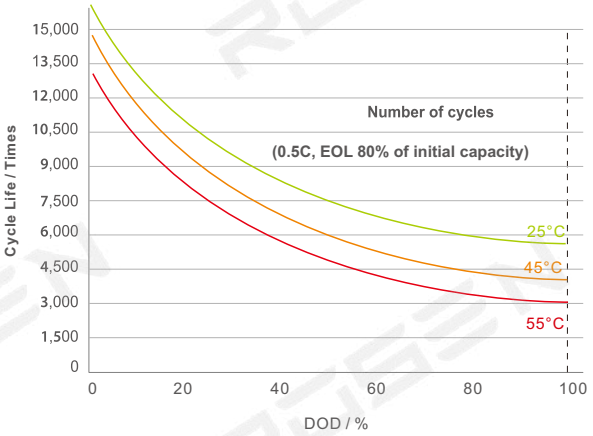



### Capacity with Different Temperature




### Typical Recharge Time




### Typical Cycle Life