

24V LifePo4 Battery Pack
Energy Storage Battery
User Instruction



The internal single battery adopts the anode material of lithium ferrous phosphate(LifePo4 which has high safety, high energy density and excellent cycling performance.

Installation

The batteries may be mounted in any orientation. But care must be taken in connecting to the battery terminals. The positive and negative terminals are labeled and color coded (red for +, black/blue for -)

DO NOT REVERSE POLARITY THE BATTERY AS THIS WILL DAMAGE BOTH THE BATTERY AND THE DEVICE BEING CONNECTED!!!

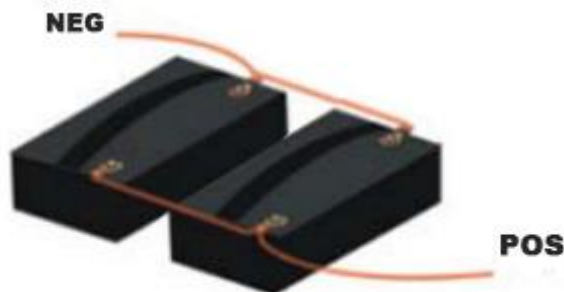
The batteries come standard with a terminal post with a 3/8" hole to accommodate a M8 bolt and lug sizes up to 2 AWG. All batteries ship with 18-8 stainless steel M8 bolts. If multiple lugs are used, the longer bolts may be required in order for the bolt to fully seat into the copper pillar.



Parallel

Max.4 units are supportive for parallel connections, but do please make sure the load power doesn't reach the limited power, like one 24V 100Ah is for 2400W, it's better lower than 2400W for 2 in parallel, to avoid the peak current of one battery pack is over 260, due to the out-sync caused by length difference of cables. However, all cables and connections MUST be able to accommodate the high currents that can be delivered by the battery. Appropriate fuses and circuit breakers are also highly recommended to protect downstream components from current spikes and short circuits.

Note: The voltage of each battery for parallel should be same before operation.

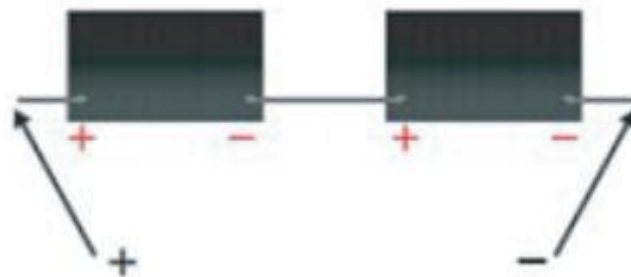


Series

Up to two 24V100Ah battery packs may be connected in series to increase the voltage of

the system up to a 48V system. When batteries are mounted in series, current capacities remain the same, but the system voltage is additive. Two 24V100Ah battery packs mounted in series to form a nominally 51.2V system should be charged using a bulk and absorption voltage of 58.4V.

Batteries to be connected in series should be at the same state of charge before they are connected. For best results, fully charge each 24V 100Ah battery packs using a 29.2V charger prior to connecting them in series, in order to ensure that they are at the same state of charge.



Series and Parallel

24V 100Ah could be connected max 2 in series and parallel , to reach 48V 200Ah, air breaker is recommended to add in the circuit to keep safety. Batteries to be connected in series should be at the same state of charge before they are connected. For best result, fully charge each 24V battery pack using a 58.4V charger prior to connecting diagram for 2S2P showing below.

Charging Parameters

Bulk/Absorption

For your Bulk/Absorption stage, the ideal voltage is between 28.4V-29.2V. For full charge and balance, the absorption mode should be set to last for at least 20 minutes per battery (for multiple batteries in parallel).

Float

LifePo4 batteries do not need a float for charging, but a float voltage between 26.8V and 27.6V can be used when connected to shore power.

Equalization

Equalization is not recommended for our batteries. Most chargers will allow you to shut this feature off or use a setting that does not use equalization, If you cannot turn off his mode, than you will need to adjust the equalization voltage to below 29.2V.

Temperature Compensation

Temperature compensation is not needed with our batteries and in some cases, may trigger the built-in BMS to go into protect mode. The temperature protection is designed in our BMS.

BMS Basic Features

All lifepo4 batteries come with a built-in battery management system (BMS) that protects the cells for long-term cycling. The BMS protects against the following conditions:

High voltage: $>30V$

If an individual cell voltage exceeds 3.75V during charging, the BMS will prevent a charge current from continuing. Discharge is always allowed under this condition.

Low voltage: $<17.6V$

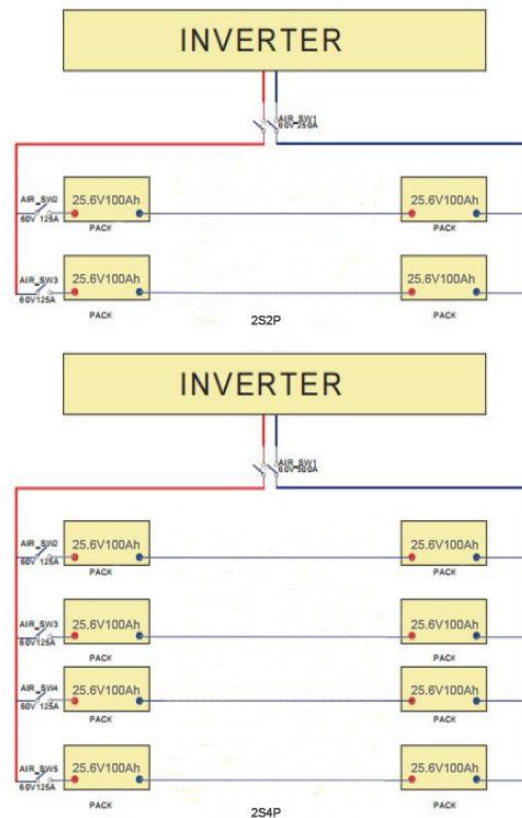
If an individual cell falls below 2.2V during discharging, the BMS will prevent further discharge. Although the battery is in "low-voltage disconnect" mode, it will still allow a charging current.

High temperature: $>65^{\circ}C$

The BMS will not allow a charging or discharging current.

Low temperature: $<0^{\circ}C$

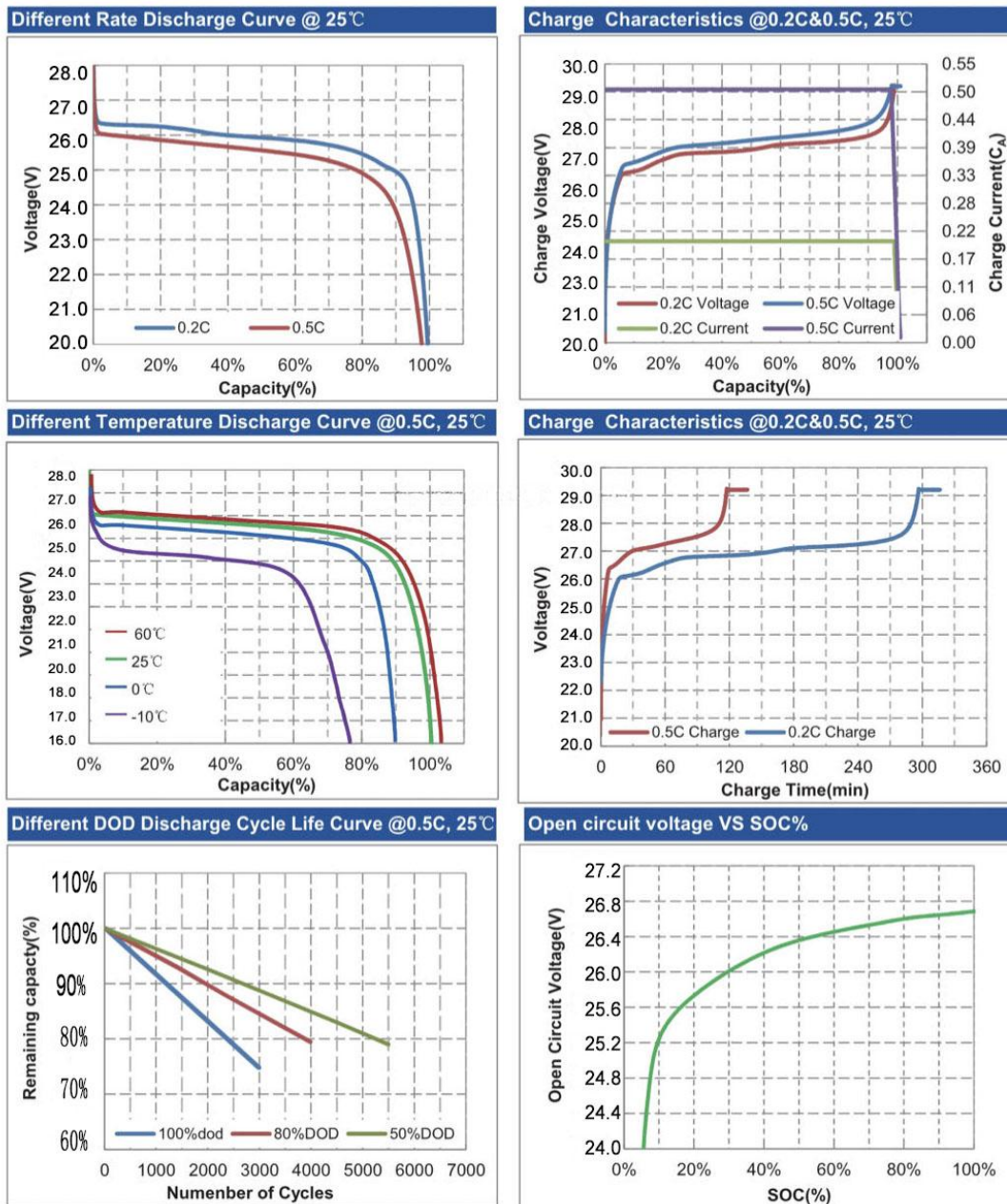
The BMS will not allow a charging current.



High current

The BMS allows constant current 100 (+/-5%) Amps, 260 (+/-10%) Amps for 5s. For power model, constant current 150 (+/-5%) Amps, 500 (+/-5%) Amps for 5s.

A passive balancing process is activated by the BMS at the top of each charge cycle, when the battery voltage exceeds around 28.8V. This ensures that all the cells remain at the same state of charge which helps for pack longevity and performance.



APP User Guide (Operating Environment)

Android version 5.0 / IOS version 10.0 or above, it can be used on devices that support Bluetooth 4.0, and after obtaining the permission to use Bluetooth and GPS, it can run.

Use your phone to scan the QR code on the battery box



Step 1

Click on the upper right corner to select Web page to open



小象电动

版本: 3.2.019 | 大小: 6.5 MB | 更新时间: 2022-12-31



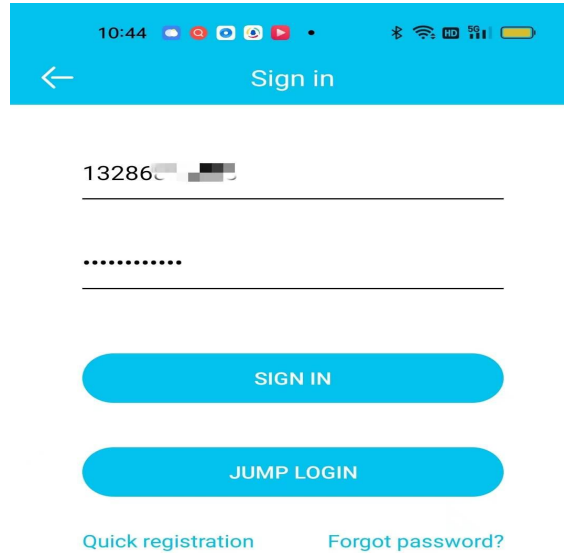
安装安卓版

安装苹果版

Step 2

Login connection (Registering an Account)

After the Xiaoxiang Electric APP is successfully installed, open the APP, allow Bluetooth to be turned on, and obtain location information, the APP will automatic The account registration page pops up, please enter the mobile phone number as required, set the password, and click Confirm when finished.



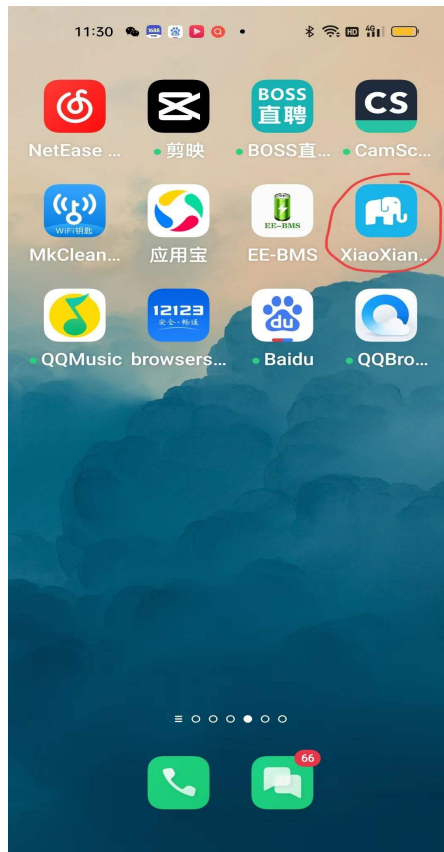
Step 3

Select the system installation software that matches the phone



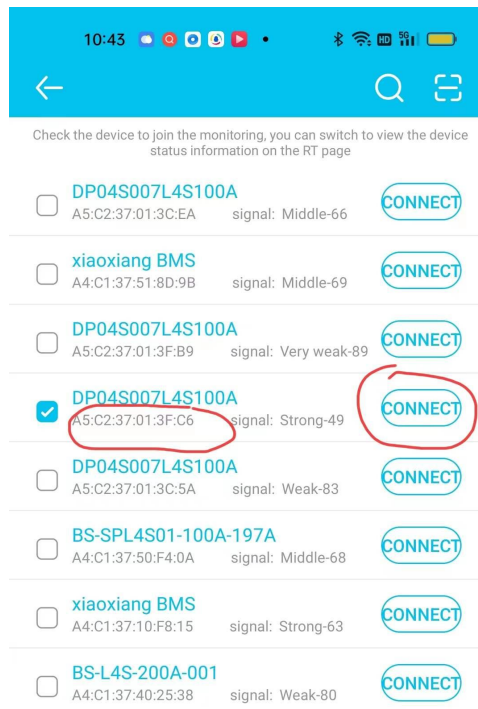
Step4

Go back to the phone and find the Bluetooth APP



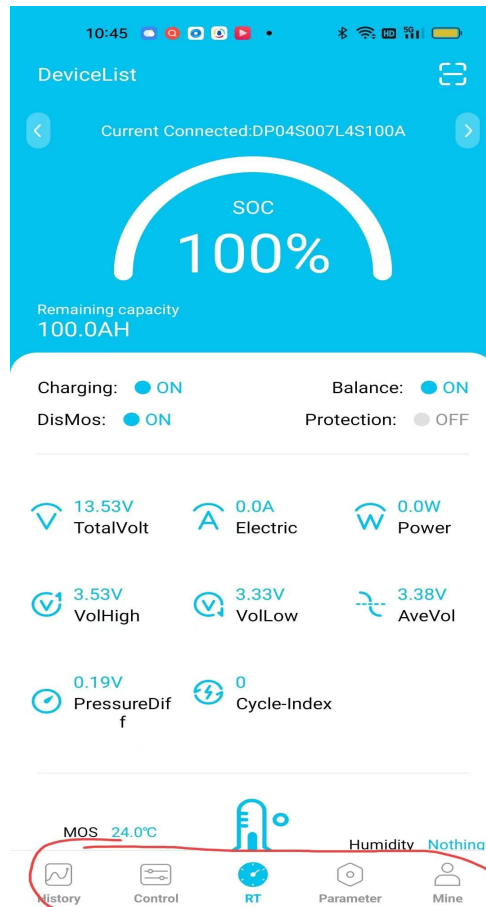
Step5

Find the Bluetooth account on the battery box and link it



Step6

The link is successful, and the page is displayed to view more content



Step7

Bluetooth connect/disconnect

- (1) Connect to Bluetooth: After successful login, the APP will jump to the Bluetooth list, select the Bluetooth that needs to be connected to connect.
- (2) Switch battery: When there are multiple batteries, you can check multiple Bluetooth names in the list, and quickly switch the battery to be connected on the real-time interface
- (3) Scan code connection: In the upper right corner of the real-time interface, click the scan code button to connect directly by scanning the barcode of the Bluetooth module
- (4) Search for Bluetooth: On the device list page, when there are multiple batteries, you can quickly find the battery that needs to be connected by searching for the Bluetooth name
- (5) Disconnect Bluetooth: On the device list page, click Disconnect.

Real-time interface

1. Capacity information: Only the battery SOC percentage and remaining capacity are displayed when it is static; the estimated full time is displayed when charging; the estimated emptying time is displayed when discharging.
2. Switch and protection status: the current status of the charge and discharge switch is displayed, when the switch is turned on, it is on, otherwise it is off; the balance status display, the balance is turned on, it is on, and vice versa; the protection status display,

when the protection board triggers the protection threshold or manual control. When charging and discharging, the protection state displays the corresponding protection state, and it displays off when the protection state is not triggered.

3. Battery information: total voltage, current, power, maximum single-cell voltage, minimum single-cell voltage, average voltage, voltage difference, cycle times, read or calculated through the protection board, and the above data is displayed on the APP.

4. Temperature and humidity: The MOS temperature is the ambient temperature of the protection board, the others are the external NTC temperature, and the temperature of the cell is detected; the humidity is the ambient humidity, which needs to be installed with a humidity probe to display.

5. Single string voltage: single string cell voltage, the protection board collects cell information, the highest voltage is displayed in green, the middle value is displayed in blue, and the lowest voltage is displayed in gray.

Control interface

1. Charge and discharge switch: Through the APP, you can directly control the charge and discharge switch to open or close, and control the charging/discharging of the battery.

2. Automatic equalization: The equalization function is forced to be turned on. When it is turned on successfully, the real-time interface equalization status will be displayed.

3. Clear alarm: clear alarm data.

4. Reset capacity: Re-estimate the remaining capacity through the current voltage value.

Note: Automatic equalization switch, clear alarm, reset capacity are not displayed in some BMS versions

Services

Scope of Services

1. Support APP name and logo modification, customized according to customer needs;
2. Support Google, APP store store applications;
3. Support operation interface design, 100% meet customer needs;
4. Support adding custom functions, and provide function implementation solutions.

Note: The above services are modified based on the Xiaoxiang Electric APP, and the excess part needs to be confirmed with our company.

Warning

- ※Do not throw the battery into water, keep it under dry;
- ※Do not short circuit the batteries;
- ※Do not reverse polarity;
- ※Do not use or keep the battery under the high temperature;
- ※Do not mishandle, drop, or apply excessive force to the batteries;
- ※Do not operate with loose terminal connections;
- ※Do not ship or store the batter together with metal.

Storage and maintenance

Storage

Storage could not be easier simply charge the batteries to at least 50% state of charge and disconnect from any charge or discharge.

Maintenance

The lifepo4 batteries require very little maintenance if any at all. If your batteries are in series and not being charged by a multi-bank charger, it is recommended that you fully charge the batteries individually once half a year. This will balance out the entire battery bank to ensure the batteries will reach its expected life span. If your batteries are in parallel this is not necessary. The BMS has a built-in passive balancing system that will take care of this.

Warranty policy

In the unlikely event, you are having an issue with one of our batteries we have developed a straightforward warranty policy to help answer any questions you may have. A 5-year manufacturer's defect warranty is offered from the date of purchase. A new one will be offered once the battery is default caused by the product itself.

All specifications are subject to change without prior notice.

Model:	LP24100
Dimension:	27 ± 1kg
Cell Type:	LifePo4
Warranty:	5 years
Nominal Voltage:	25.6V
Nominal Capacity:	100Ah
Charging Current:	20-40A
Nominal Energy:	2560Wh
Standard Charge Voltage:	29.2V
Max Charge Current:	100A
Discharge Cut-Off Voltage:	10V
Max Discharge Current:	100A
Internal Resistance:	≤40m Ω
Cycle Life:	> 5000 Times
Service Life:	10 Years
Charge Temperature Range:	0°C ~45°C
Discharge Temperature Range:	-20°C ~65°C
BMS:	8S100A