



Lead Acid Replacement Battery

12.8V100Ah/150Ah/166Ah/200Ah

25.6V100Ah/150Ah/166Ah/200Ah

User Manual

TABLE OF CONTENTS

1. IMPORTANT SAFETY INSTRUCTIONS	1
2. BATTERY INSTALLATION	3
3. SERIES / PARALLEL CONNECTION	3
4. BATTERY SETTINGS AND CONFIGURATION VIA BLUETOOTH	5
5. TECHNICAL SPECIFICATIONS	9
6. BATTERY MAINTENANCE	10
7. BATTERY STORAGE	10
8. FREQUENTLY ASKED QUESTIONS	11
10. WARRANTY	12

IMPORTANT SAFETY INSTRUCTIONS

This manual contains important installation, operation, and maintenance instructions for the Smart LiFePO₄ Battery. Please observe these instructions and keep them located near the battery for further reference.

Handling Precautions:

DO NOT puncture, drop, crush, burn, penetrate, shake, or strike the battery.
Avoid opening, dismantling, or modifying the battery.
Refrain from touching any terminals or connectors.
Avoid contact with exposed electrolyte or powder if the battery casing is damaged.
Keep the battery away from water, heat sources, sparks, and hazardous chemicals.

Charging Safety:

Ensure any battery charger or charge controller is disconnected before working on the battery.
DO NOT connect or disconnect terminals from the battery without first disconnecting loads.
Please use the matched charger that contains a Lithium charge profile for this battery.

Workplace Safety:

Avoid placing tools on top of the battery.
Keep the battery out of the reach of young children.
Wear proper protective equipment and use insulated tools when working on the battery.
Do not wear jewelry or other metal objects when working on or around the battery.

Transportation:

Use suitable handling equipment for safe transportation of the battery.
Avoid shipping or storing the battery together with metal.

Installation Environment:

Ensure adequate and secure mounting of the battery.
Install the battery away from heat sources, high voltage, and avoid exposed sunlight for long periods.

- The battery should be installed in a clean, cool, and dry place, away from water, oil, and dirt. Accumulation of these materials on the battery can lead to current leakage, self-discharge, and potential short-circuits.
- Ensure sufficient air flow around the battery to prevent excessive heat build-up and minimize temperature variation between batteries. This helps maintain optimal performance and prolongs battery life.

Usage Instructions:

- Do not use the battery for cranking/starting applications.
- Do not connect the positive and negative terminals of the battery together.
- DO NOT connect batteries with different chemistries, brands, models, rated capacities, or nominal voltages in series or parallel configurations.
- In parallel connections, ensure that the cables between each battery are of equal length to promote uniformity in the system's operation.

Disposal and Recycling:

- DO NOT dispose of the battery as household waste. Please use recycling channels in accordance with local, state, and federal regulations.

Emergency Procedures:

- If the battery emits a peculiar smell, heats up, distorts, or exhibits any abnormality during operation or storage, stop using the battery immediately. Contact San Hima for further details.
- In case of battery leakage getting into eyes or on skin, do not wipe. Rinse with clean water and seek medical attention immediately.

BATTERY INSTALLATION

Before installing and operating the battery, it is advisable to have the following equipment or tools readily available:

- Proper Protective Equipment
- Insulated Tool(s)
- Multimeter
- Battery Cable
- Battery Charger / Charge Controller

SERIES / PARALLEL CONNECTION

Series Connection:

Please connect the batteries in series as shown with cables of the same type and specification.

(see Figure 1.)

Note: When the batteries need charging, disconnect the series connection and charge your batteries separately before connecting them in series again.

A battery connected in series will have lower volume than its standard capacity.

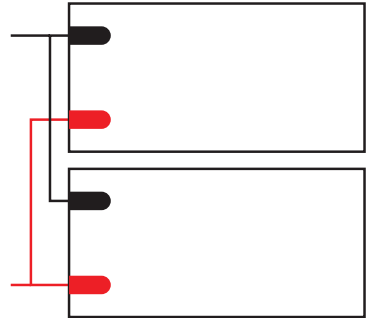


Figure 1.

NOTE:

Series Connection Limitations :

For 12V system Up to 4 batteries (reduces warranty to 18 months)

For 24V system Up to 2 batteries (reduces warranty to 18 months)

Parallel Connection:

Please configure the LiFePO4 batteries in parallel as indicated in the diagram on the right.

NOTE:

Parallel Connection Limitations: Up to 4 batteries

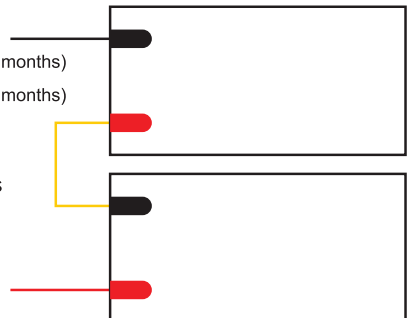


Figure 2.

Series-parallel Connection:

Please configure the LiFePO4 batteries in a series-parallel configuration as depicted in the diagram below.

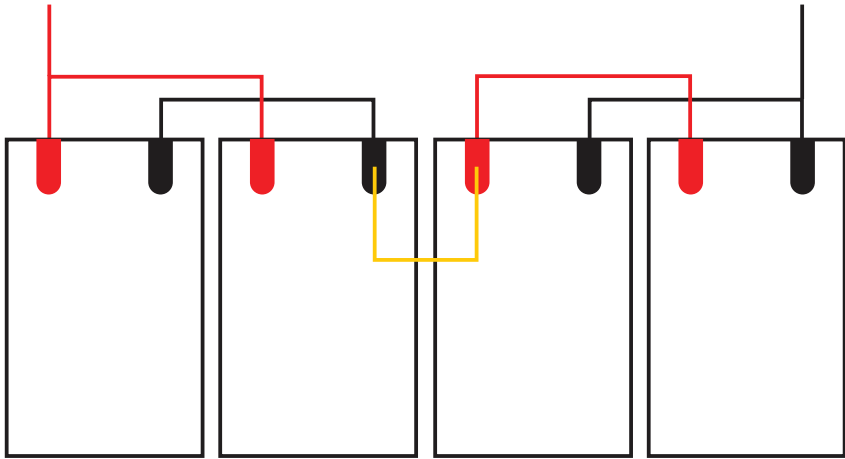


Figure 3.

BATTERY SETTINGS AND CONFIGURATION VIA BLUETOOTH

Download

Scan the QR code with your smartphone to download the app version for your phone. You'll be directed to the App Store (Apple) or Google Play (Android) automatically. Alternatively, you could search for "XiaoXiangElectric" instead.



- Requires Bluetooth 4.0+
- Needs iOS 10.0+

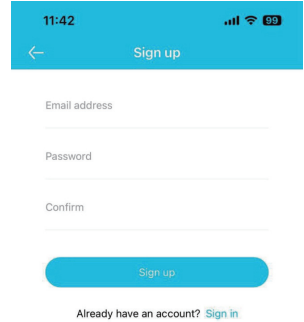
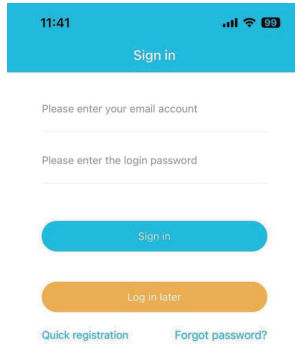


- Requires Bluetooth 4.0+
- Needs Android 5.0+

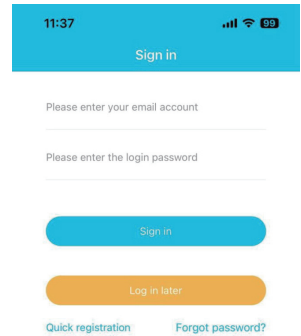
Connection

After you have successfully downloaded and installed the app, you can open the app on your smartphone. When using the app for the first time Bluetooth must be turned on. When the relevant message appears on your smartphone, press "Allow" or "OK".

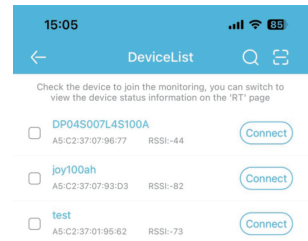
Select 'Quick Registration' to set up your account, fill in the required details, and finally, click 'Sign Up'.



Enter your account and password, and then click 'Sign In'.

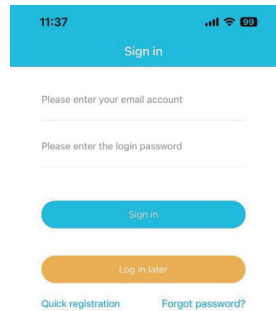


Once logged in, the app will redirect to the Bluetooth list. Choose the Bluetooth device matching the sequential number on the battery housing for connection. To disconnect, just tap on the 'Disconnect' option on the device list page.



Guest Mode:

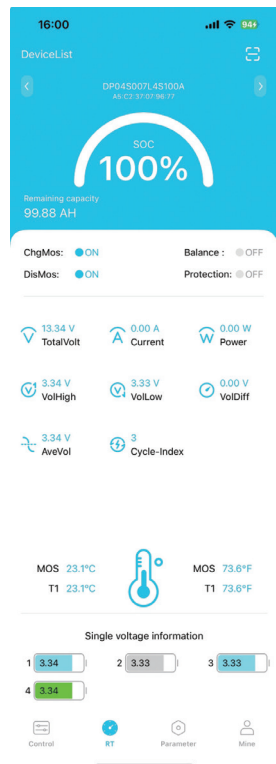
When experiencing poor mobile signal or wishing to bypass account registration, you can opt for Guest Mode. Note that in this mode, certain settings are unavailable. To access these permissions, login is required. Steps: select 'Log in Later', and the app will enter Guest Mode.



Real-time Interface:

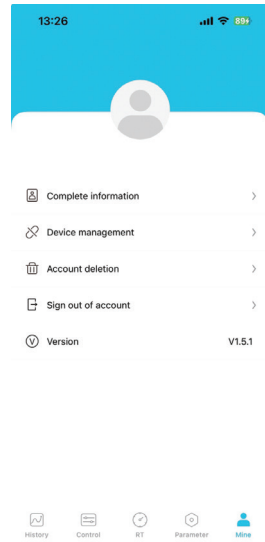
Once connected to the battery, you have all the relevant information and values for your LiFePO4 battery at a glance.

1. Capacity Information: When the battery is idle, the app only displays battery State of Charge (SOC) percentage and remaining capacity; during charging, it shows estimated time to full charge; during discharging, show estimated time to empty.
2. Status Information: Charging, discharging, balancing and protection status will be displayed accordingly.
3. Battery Information: Total voltage, current, power, highest single cell voltage, lowest single cell voltage, average voltage, voltage difference and will be displayed on the app.
4. Temperature and Humidity: MOS temperature denotes the protection board's ambient temperature; T1 represents internal temperatures.
5. Single Voltage Information: Voltage of individual cells, collected by the protection board; highest voltage displayed in green, middle values in blue, lowest voltage in gray.

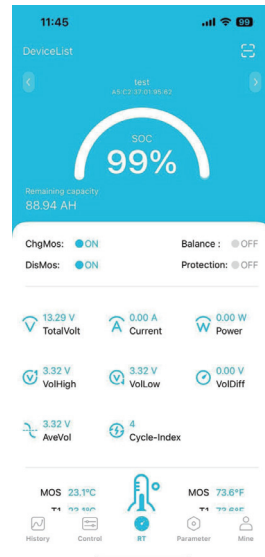


My Account

Click 'Mine' to access your account. Within this interface, you can update your account information, manage your devices, and choose to either delete your account or sign out.



Control Mode This mode is restricted to developers



TECHNICAL SPECIFICATIONS

Rated Voltage	12.8V			
Rated Capacity	100Ah	150Ah	166Ah	200Ah
Rated Energy	1280Wh	1920Wh	2124.8Wh	2560Wh
Output Voltage Range	12V~14.4V			
Charging Voltage	14V~14.4V			
Cut-off Voltage	12V			
Max. Charging Current @10Sec	<80A	<100A	<100A	<100A
Recommended Charging Current	<50A	<75A	<75A	<75A
Max.Discharging Current @10Sec	<80A	<100A	<100A	<100A
Efficiency	>98%			
Dimension L*W*H(mm)	330*171*190	330*171*245	330*172*245	475*172*190
Weight (kg)	12.2	16.3	18.3	21.1
Humidity	5%~95% Relative humidity			
Charging Temperature	0°C~60°C			
Discharging Temperature	-20°C~60°C			
Storage Temperature	-10°C~30°C			
Cycle Life	>6000 times (0.2C, @25°C, 80%DOD)			
Design Life	>10 years			

Rated Voltage	25.6V			
Rated Capacity	100Ah	150Ah	166Ah	200Ah
Rated Energy	2560Wh	3840Wh	4249.6Wh	5120Wh
Output Voltage Range	24 V~29.2V			
Charging Voltage	28.4~28.8V			
Cut-off Voltage	24 V			
Max. Charging Current @10Sec	<80A	<100A	<100A	<100A
Recommended Charging Current	<50A	<75A	<80A	<80A
Max.Discharging Current @10Sec	<80A	<100A	<100A	<100A
Efficiency	>98%			
Dimension L*W*H(mm)	485*172*275	420*172*275	540*172*275	522*260*218
Weight (kg)	21.5	29.4	33.4	39.3
Humidity	5%~95% Relative humidity			
Charging Temperature	0°C~60°C			
Discharging Temperature	-20°C~60°C			
Storage Temperature	-10°C~30°C			
Cycle Life	>6000 times (0.2C, @25°C, 80%DOD)			
Design Life	>10 years			

BATTERY MAINTENANCE

Regular Inspections:

- Examine the external appearance of the battery.
- Ensure the top of the battery and terminals are clean, dry, and free of corrosion.
- Check battery cables and connections; replace damaged cables and tighten loose connections.

Cleaning Procedure:

- Disconnect the battery from the charging source or electric load.
- Clean the top of the battery and terminals with a damp cloth or non-metallic brush.
- Dry the battery with a clean cloth and maintain cleanliness and dryness around the battery.

Periodic Voltage Checks:

- Periodically check the battery voltage to assess battery health.
- If the battery resting voltage is under 10V in active mode at room temperature, it may indicate over-discharge due to self-discharge or parasitic loads.
- Stop using the battery until the fault is corrected and the battery can be charged.

BATTERY STORAGE

- To prevent potential parasitic loads from discharging the battery, disconnect it from the discharge equipment.
- Store the battery in an open, well-ventilated, dry, and clean area to maintain its condition and prevent damage.
- Charge the battery at least once every 3 months to prevent over-discharge and ensure its longevity.
- When taking the battery out of storage, ensure it is given a full charge before use to optimize its performance and reliability.

FREQUENTLY ASKED QUESTIONS

1. Question: Is battery activation required for initial self-heating?

Answer: No activation is required.

2. Question: Does self-heating activate automatically as soon as power is supplied to the battery, regardless of conditions?

Answer: Self-heating initiates when charging in temperatures below 0°C.

3. Question: What's the minimum charging current needed to start self-heating?

Answer: 8A.

4. Question: Does using a PWM or MPPT charge controller affect self-heating when using a solar panel?

Answer: No, both controllers can trigger self-heating.

5. Question: Why might the self-heating fail to start?

Answer: Possible reasons include:

- Dead battery.
- BMS activated protection.
- Self-heating system is faulty.