PRODUCT MANUAL

LiFePO4 Battery

IMPORTANT NOTICE:
Please Read The Manual Carefully Before Using The Equipment. To ensure safe and efficient operation, it is imperative that you carefully read this manual before utilizing the equipment

12.8V 100Ah

（SMART BMS）

1280Wh

info@ampgarden.com
www.ampgarden.com

Amp Garden

Product Feature Guide

CATALOGUE

01 Product Specifications

LiFePo4 Battery	12.8V 100Ah
Nominal Voltage	12.8V
Charge Voltage	14.2V-14.6V
Energy	1280wh
Max Continuous Charging Current	100A
Max Continuous Discharging Current	100A
Recommend Charge Current	20A ~ 100A
Max Load/Inverter Power	1280W
Operating Temperature Range	**Charge-0℃~50℃(32~122℉)** **Discharge-20℃~60℃(-4 ~ 140 ℉)** **Storage-10℃ ~50℃(-14 ~ 122℉)**
Waterproof Class	IP66
Terminal Type	M8
Dimension	L:335*W260*H:185 (mm) L:13.19*W10.24*H:7.28 (inches)

(Tip: There is a ± 5mm error in manual measurement of dimensions)

★ To Active Your Battery

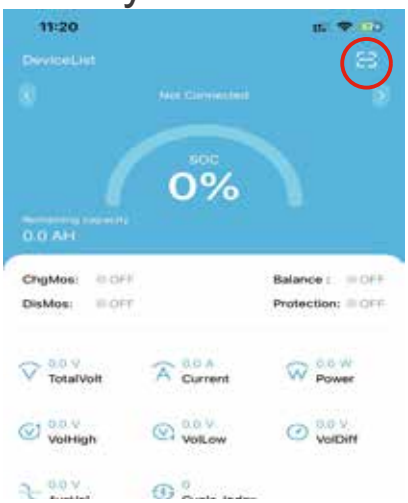
Installing Bluetooth Function - Quick Guide

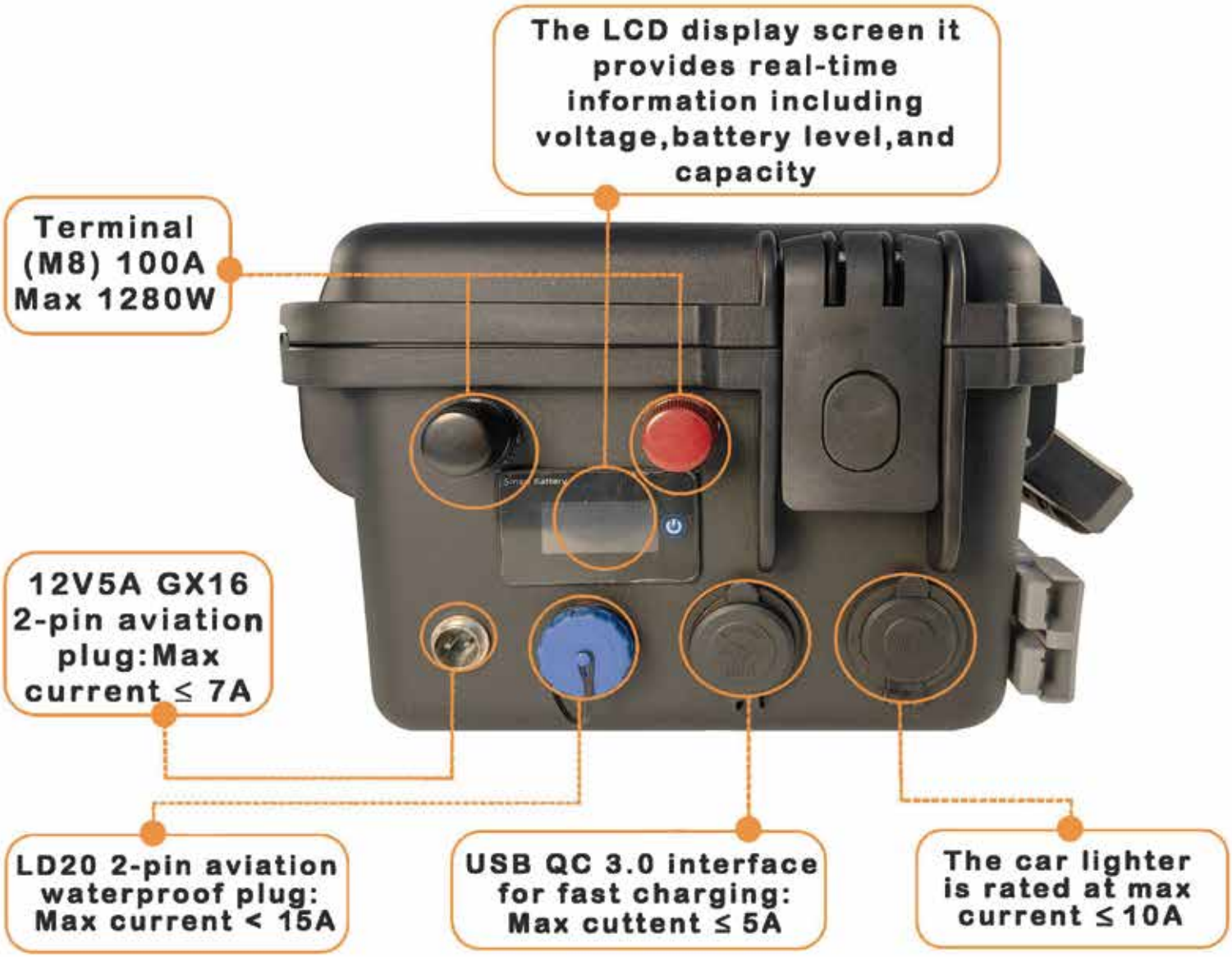
Step 1

App Download：
For Apple or Android users, search for "xiaoxiangElectric" on the app store and download the app. Alternatively, you can scan the QR code on the device; follow the instructions on the label, where the left one guides you to download the app, and the right one directs you to add and connect the device through the app. You can also scan the QR code in this manual to download the app. If you encounter difficulties, contact us for assistance via email at service@repowerflow.com.

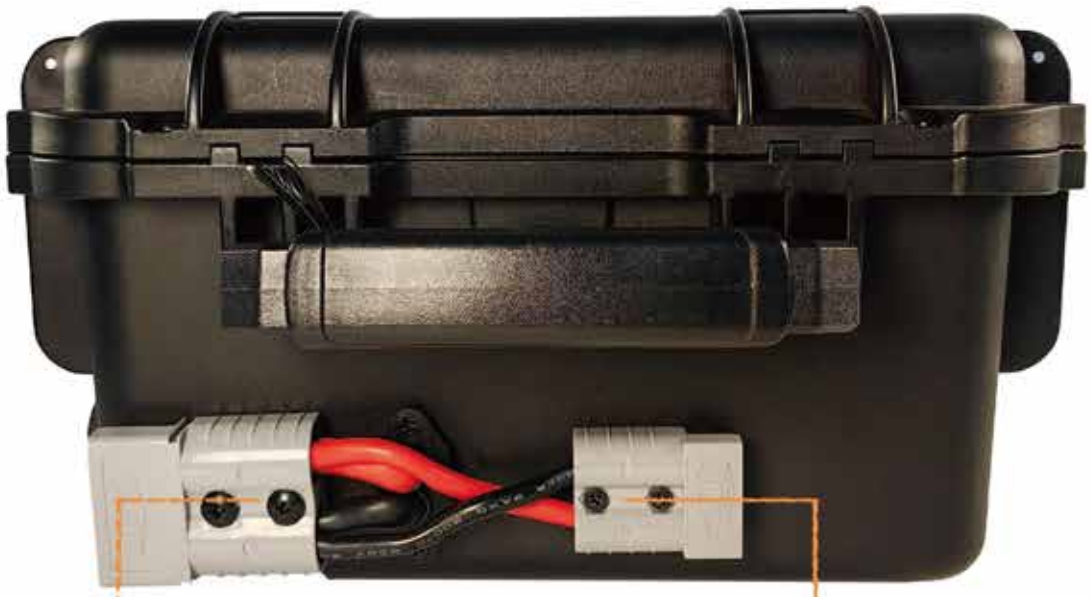
Step 2

Activation:
After app installation, ensure your phone's Bluetooth is turned on. Use the app's code scanning function to scan the QR code on the battery's outer shell, specifically the one on the left side of the label, for seamless binding. Stay connected effortlessly!





Product Feature Guide



Product Feature Guide

02 ADVANTAGES

● Smartphone Bluetooth Monitoring On-the-Go

RePower Flow not only delivers exceptional waterproofing but also introduces a cutting-edge Bluetooth monitoring feature. Stay connected to your power source with the convenience of real-time monitoring via your smartphone. Track important metrics like voltage, current, and temperature effortlessly, ensuring you have complete control over your battery's performance.

● Advanced 100A BMS Protection

Experience unparalleled safety with RePower Flow's upgraded 100A Battery Management System (BMS). This intelligent system safeguards against overcharge, over-discharge, over-current, and short circuits, coupled with an excellent self-discharge rate. The built-in high-temp/low-temp cut-off adds an extra layer of protection, preventing charging/discharging when temperatures reach critical thresholds.

● Efficient Low-Temperature Protection

Say goodbye to performance worries in chilly conditions. RePower Flow incorporates low-temperature protection, allowing it to operate reliably even in colder environments. This feature not only enhances the battery's overall efficiency but also broadens its usability in various climates, making it an ideal choice for diverse outdoor activities.

● Waterproof Excellence for Enhanced Durability

Introducing RePower Flow, our robust 12V 300A LiFePO4 battery with exceptional waterproof capabilities. Engineered to thrive in challenging conditions, this battery ensures optimal performance even in wet and marine environments. Dive into outdoor adventures with confidence, knowing your power source is securely sealed against water intrusion.

• Automotive Grade LiFePO4 Battery Cells

RePower Flow sets the standard by adopting Automotive Grade A Lithium iron phosphate battery cells. These cells boast higher energy density, more stable performance, and greater power, aligning with our commitment to providing environmentally friendly green power solutions. Our dedication to the highest grade of battery cells positions RePower Flow as a leader in LiFePO4 battery technology.

03 WARRANTY POLICY

• Warranty Information:

At RePower Flow, we stand behind the quality of our batteries and offer a comprehensive five-year warranty. This warranty ensures your peace of mind and covers the following benefits if the battery is used correctly according to the manual:

• 24-Hour Customer Support:

We commit to assisting you with any issues within 24 hours of your inquiry. Our team is dedicated to analyzing the problem, providing guidance, and helping you restore optimal battery usage.

• Replacement Guarantee:

If, despite our efforts, the issue persists and cannot be resolved, we will promptly send you a new battery to replace the defective one. The defective battery must be returned to our warehouse for inspection and testing by our technical team.

Our goal is to ensure your satisfaction and the reliable performance of our batteries throughout their warranty period.

For any warranty-related queries or assistance, please contact us at

✉ www.ampgarden.com

04 CHARGING TIPS

★ Understanding Charging Voltage:

When dealing with Lithium Iron Phosphate (LiFePO4) batteries, it's crucial to recognize that the voltage measured during charging is not the true voltage of the battery. Due to the characteristics of LiFePO4 batteries, the measured voltage is a temporary value.

After completing the charging process and disconnecting the battery from the power source, the displayed voltage will gradually decline to the actual voltage of the battery. To accurately assess the real voltage, we recommend a simple procedure:

1. Charge the battery.

2. Disconnect the power supply.

3. Allow the battery to sit undisturbed for a minimum of 15 minutes.

After this brief period, you can reliably test the battery's voltage. This method ensures an accurate representation of the battery's true voltage, providing you with precise information for optimal use and monitoring.

★ Battery Charging Guidelines:

To ensure optimal performance and longevity of the 12.8V lithium iron phosphate battery, adhere to the following charging recommendations:

● Charging Methods

Method 1 : You can use a lithium iron phosphate charger to charge the battery pack.

Method 2: You can use photovoltaic solar panels to charge the battery through MPPT.

Method3: You can use the inverter to charge the battery pack:(note:the inverter needs a built-in AC to DC charging function).

Battery charger

• Using a 14.6V Lithium Battery Charger:

- Employ a 14.6V lithium battery charger to maximize the battery's capacity.

- Recommended charging voltage falls within the range of 14.2V to 14.6V.

• Charging Current for a 12V 100Ah Battery:

- For a 12V 100Ah battery, the recommended charging currents are as follows:

- 20A (0.2C): Fully charged in approximately 5 hours to 100% capacity.

- 50A (0.5C): Fully charged in around 2 hours to approximately 97% capacity.

• Inverter (MPPT) Connection:

If utilizing an inverter (MPPT) to connect the battery pack, adhere to the provided MPPT settings for the 12.8V lithium iron phosphate battery:

• Charge Settings:

- Charging limit voltage: 14.6V
- Over-voltage disconnection voltage: 15V
- Over-voltage re-connection voltage: 14.2V

• Discharge Settings:

- Low voltage disconnection voltage: 10.8V
- Low voltage re-connection voltage: 11.6V
- Under-voltage warning voltage: 12.4V

★ state of charge(soc)

Battery capacity estimation based on voltage:

capacity	Voltage
100%	13.5V
99%	13.4V
90%	13.3V
70%	13.2V
40%	13.1V
30%	13.0V
20%	12.9V
10%	12.8V
1%	10.8V(recommended low-Voltage disconnect Voltage)
0%	10V

Ensure that the voltage is tested at rest (with zero current) after a 15-minute disconnection from both the charger and any connected loads for accurate reading

05 Long-Term Storage Guidelines:

For prolonged battery storage, adhere to the following recommendations to ensure optimal performance and longevity:

●Temperature Considerations:

- The battery is operational within a temperature range of -20°C to 60°C.

- Ideal long-term storage temperatures fall between 10°C to 35°C.

●Storage Precautions:

- Store the battery in a fireproof container, and keep it out of reach of children.

●Charge Level for Extended Storage:

- For extended periods of non-use, maintaining the battery at a 50% charge level is optimal for longevity.

●Periodic Recharging:

- To enhance the lifespan of the battery, recharge it every three months if it is not expected to be in use for an extended period.

Following these guidelines ensures that the battery remains in prime condition during prolonged storage, ready for reliable use when needed.

06 Connection Tips

Before connecting batteries in series or parallel, adhere to the following guidelines for optimal performance and safety:

●Premise of Connection:

1. Same Battery Capacity (Ah):

- Ensure that batteries being connected have identical capacity specifications (Ah).

2. From the Same Brand:

- Connect batteries from the same brand, as lithium batteries from different brands may have unique Battery Management Systems (BMS).

3. Purchased in Near Time:

- Connect batteries purchased within one month of each other to maintain consistency.

●Connected in Parallel and in Series:

Our LiFePO4 batteries offer flexibility for expanded capacity and voltage. Follow these recommendations for series and parallel connections:

●Max Connection in Series:

- Connect a maximum of 4 batteries in series for a total voltage of 51.2V.

●Max Connection in Parallel:

- Connect multiple batteries in parallel, but ensure not to exceed 4 batteries in parallel.

● Manufacturer Consistency:

- Do not connect batteries from different manufacturers in series or parallel.

●Voltage Matching:

- When using batteries in parallel or series, ensure that the voltage of each battery is identical.

Adhering to these guidelines guarantees a safe and effective battery connection, allowing for enhanced capacity and voltage as needed.

★ Two Necessary steps Before connecting:

These two crucial steps are essential to minimize voltage differences between batteries, ensuring optimal performance in both series and parallel configurations.

step1: Fully Charge Your Batteries Separately

- Prior to connecting, ensure each battery is fully charged individually. This step establishes a uniform starting point for all batteries.

step2 : Connect Your Batteries in Parallel and Allow Time

- Connect your fully charged batteries one by one in parallel. Leave them connected together for a period of 12 to 24 hours. This allows the batteries to equalize and harmonize.

After completing these two steps, your batteries are ready for connection in series or parallel configurations. These measures promote balanced voltage levels, enhancing the overall efficiency and longevity of the battery system.

07 ABOUT OUR BATTERY'S BMS(Battery Management System)

Experience unparalleled safety with RePower Flow's upgraded 100A Battery Management System (BMS). This intelligent system safeguards against overcharge, over-discharge, Over-load, over-current, Over-heating and short circuits, coupled with an excellent self-discharge rate. The built-in high-temp/low-temp cut-off also broadens its usability in various climates, making it an ideal choice for diverse outdoor activities.

● Key BMS Features:

1. Overcharge Protection: Prevents the battery from charging beyond 15V, safeguarding against potential overcharging issues.
2. over-discharge Protection: Automatically disconnects when the voltage drops below 10V during discharge, preventing damage due to excessive discharge.
3. Over-load Protection: Guards against overload situations, ensuring the battery's longevity and stable performance.
4. Over-heating Protection: Equipped with a high-temperature disconnect function. If the internal battery temperature reaches 75°C (167°F), it automatically disconnects to prevent overheating.
5. Short Circuit Protection: Detects and mitigates short circuits promptly, enhancing the overall safety of the battery.
6. Low Self-Discharge Rate: Maintains a low self-discharge rate, preserving the battery's charge during extended periods of inactivity.
7. high-temp/low-temp cut-off: Adds an extra layer of protection, preventing charging/discharging when temperatures reach critical thresholds.

● Recommended Voltages:

- Charging Voltage: 14.4V ± 0.2V
- Discharging Voltage: 10V ± 0.2V

Adhering to these recommended voltage parameters ensures optimal charging and discharging performance, contributing to the longevity and efficiency of the battery.

HOW TO ACTIVATE THE BATTERY AFTER BMS PROTECTION?

If the Battery Management System (BMS) has triggered a cut-off for protection, follow these steps to reactivate the battery:

1. Cut Off Load and Wait:
   - Disconnect the load from the battery.
   - Allow the battery to sit aside for a minimum of 30 minutes.

   After this period, the battery will automatically recover to its normal voltage and can be used after a full charge.
2. If Auto-Recovery Fails:
   - If the battery fails to auto-recover and its voltage remains too low to hold a charge, consider the following methods:

●Option 1: Charger with 0V Charging Function

- Utilize a charger with a 0V charging function capable of charging the battery from 0V.
- After a full charge, the battery should return to normal functionality.

●Option 2: Parallel Connection with Another 12V Lithium Battery

- Connect another 12.8V lithium battery in parallel with the affected battery for one minute.
- Alternatively, a lead-acid battery with a voltage between 12.8V and 14.6V can be used.

- After this parallel connection, fully charge the battery, and it should resume normal operation.

Following these steps ensures a safe and effective reactivation of the battery, allowing it to regain its functionality after protective measures have been activated.

08 PRECAUTIONS FOR USAGE

To ensure the safe and optimal usage of your LiFePO4 battery, please observe the following precautions:

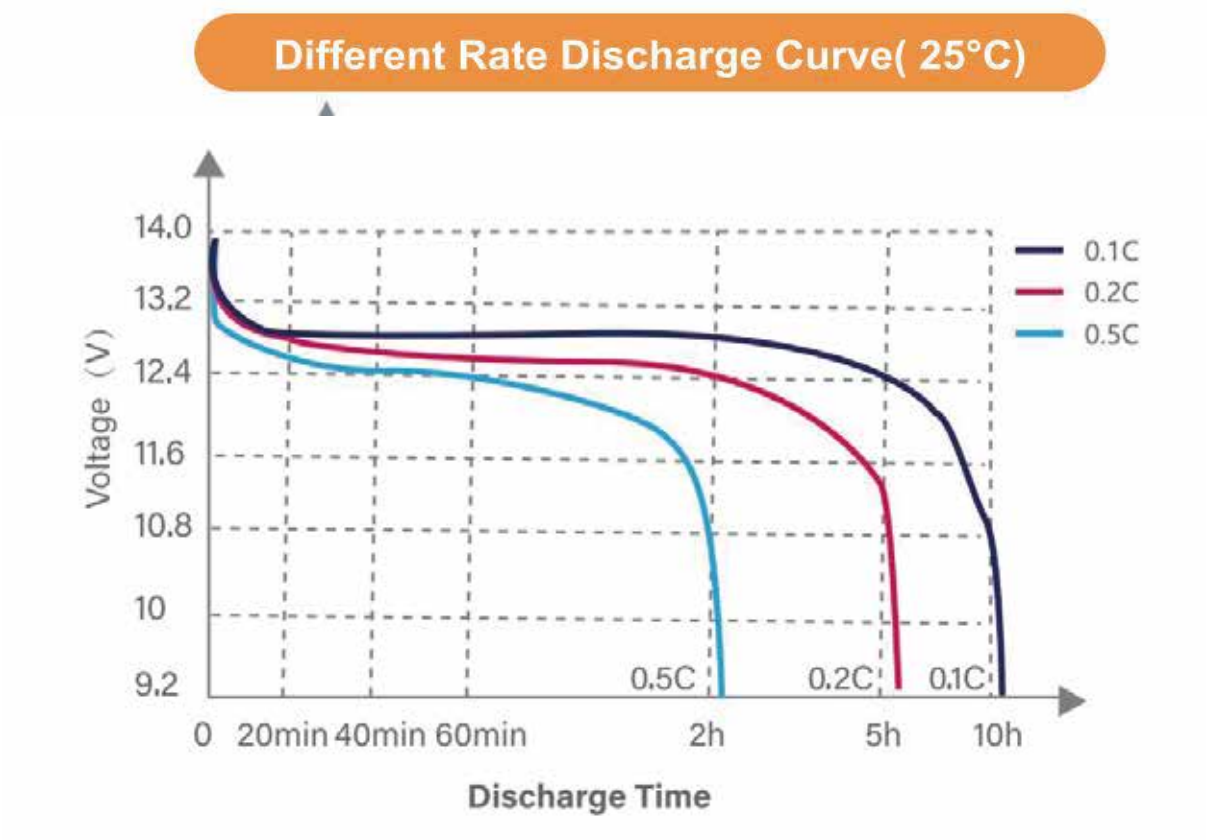
1. Charging Precautions:
   - Use a LiFePO4 battery charger specifically designed for this purpose during recharging.
2. Handling Precautions:
   - Avoid striking the battery with any sharp-edged parts, including Ni-tabs, pins, and needles.
3. Avoid Exposure to Liquids:
   - Do not immerse the battery in water or seawater.
4. Temperature and Heat:
   - Keep the battery away from heat sources such as fire or heaters.
   - Operate the battery within the recommended temperature range.
5. Correct Terminal Connections:
   - Ensure correct polarity during connection; do not reverse the position of positive and negative terminals.
6. Electrical Outlet and Heat Sources:
   - Do not connect the battery directly to an electrical outlet.
   Avoid leaving the battery near heat sources.
7. Handling of Tabs:
   - Avoid bending battery tabs, especially those made of aluminum. They are delicate.
8. Short-Circuit Prevention:
   - Do not short-circuit the battery by directly connecting the positive and negative terminals with metal objects.
9. Transport and Storage:

- Do not transport or store the battery together with metal objects like necklaces or hairpins.

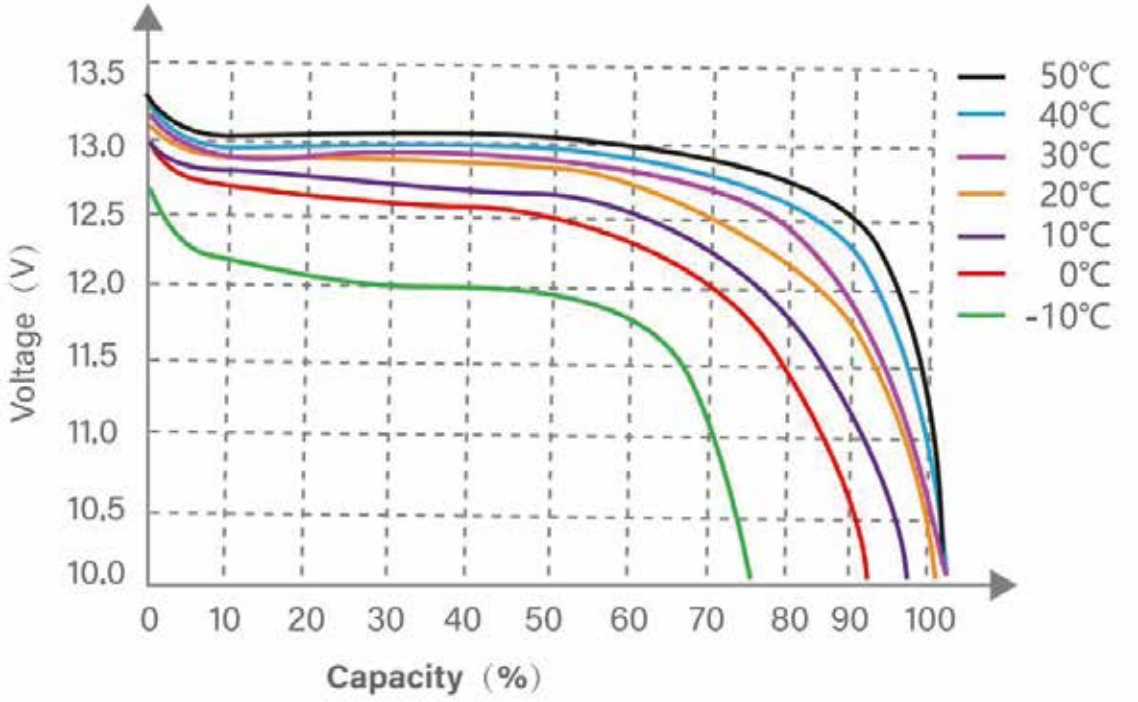
10. Avoid Direct Soldering and Puncture:
    - Do not directly solder the battery, and refrain from piercing the battery with a nail or any sharp object.

By adhering to these precautions, you ensure the safety and longevity of your LiFePO4 battery, preventing potential hazards and maintaining optimal performance. recharging , use the LiFepo4 battery charger specifically

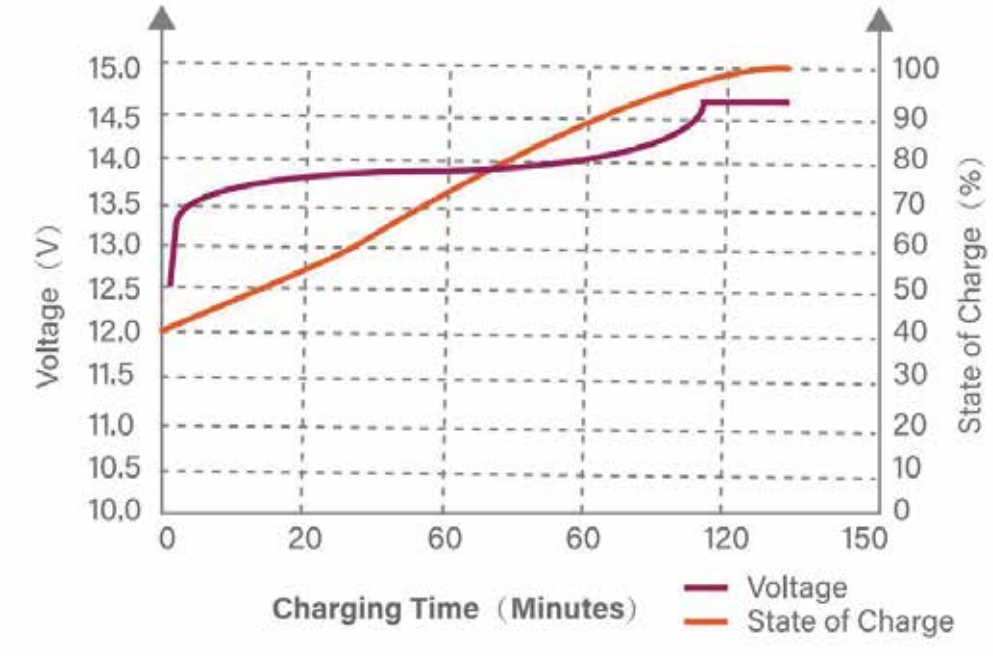
09 DISCHARGE CURVE



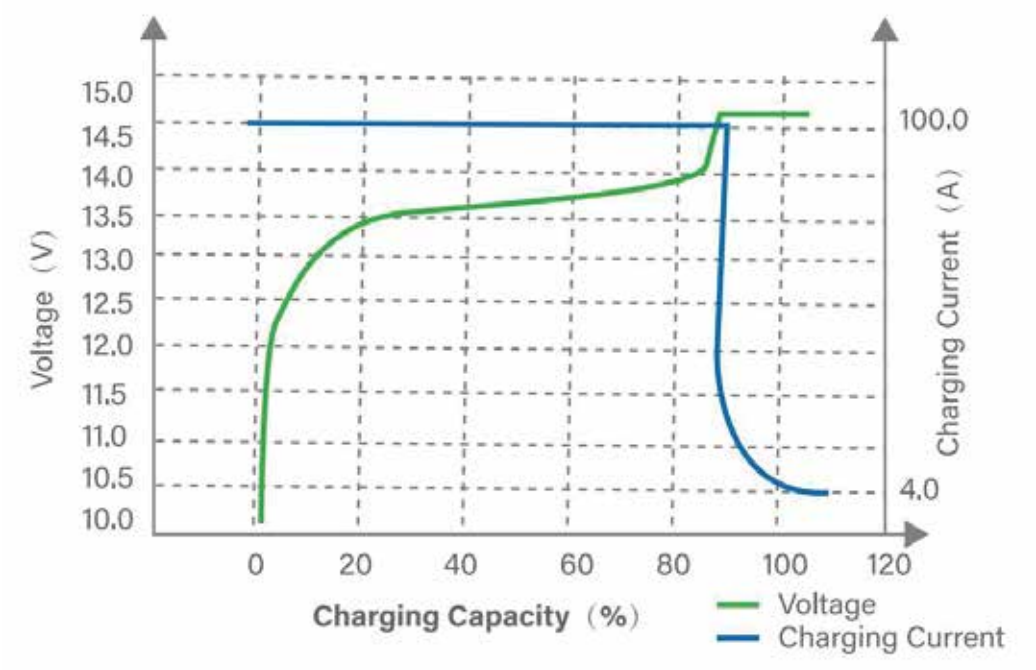
Different Temperature Discharge Curve(0.5°C)



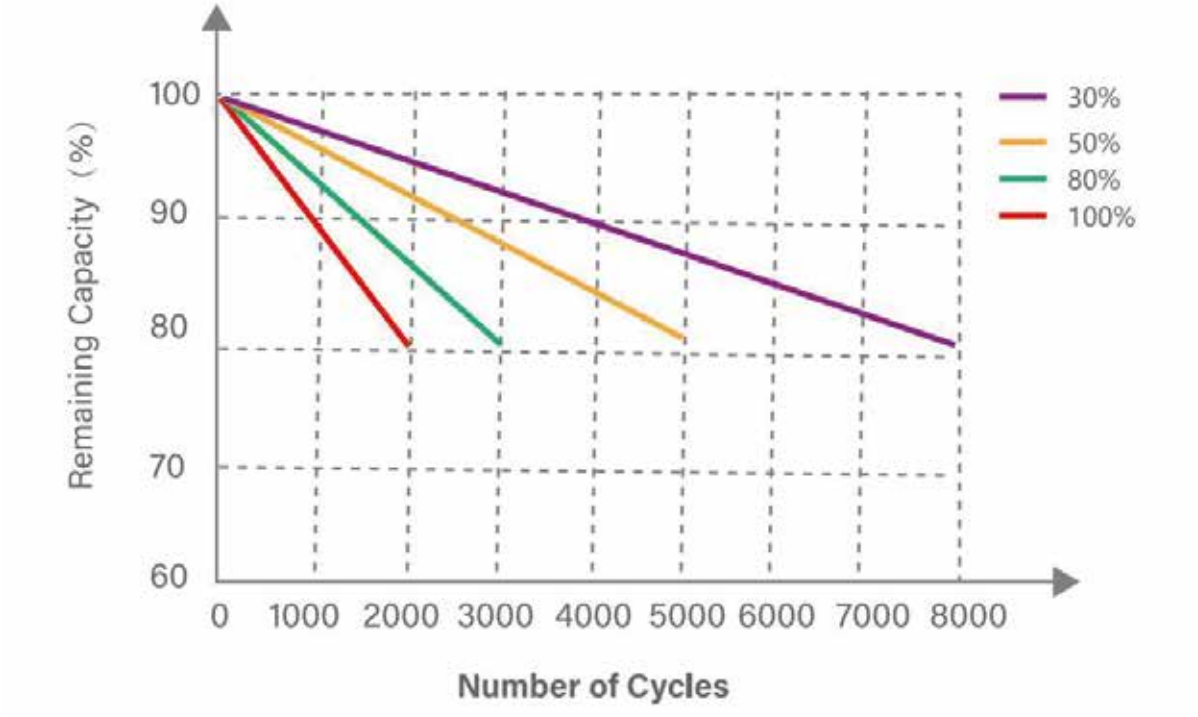
State Of Charge Curve(0.5C , 2.5°C)



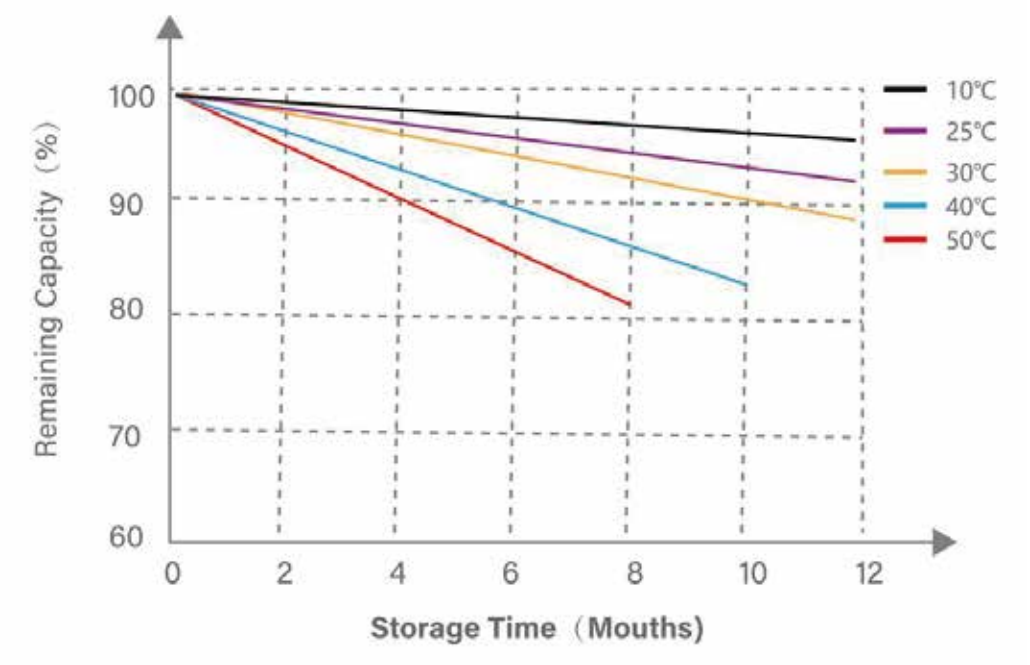
Charging Characteristics(0.5C,2.5°C)



Different DOD Discharge Cycle Life Curve(0.5°C)



Different Temperature Self Discharge Curve



10 APPLICATION

- RV , Camper , Trailer , Caravan , Camping Truck , Bus etc .
- Solar System + Wind Power System
- Home Energy System
- Boat，Kayaka & Fishing
- Wireless Lawn Movers , Vacuum Cleaner & Washing Machine
- Portable Video Camera & Portable Personal Computer
- Car Audio System，Toys & Consumer Electronics
- Light Equipment
- Emergency Lighting Equipment
- Fire Alarm & Security Systems
- Electric Equipment & Telemeter Equipment Portable

Amp Garden

Dear valued customer,

Your feedback is crucial to us!
If you've enjoyed our product, please take a moment to share your experience with a review. Your insights help us improve and assist fellow customers in making informed decisions.
Thank you for being part of our community!

Please Read The Manual Carefully Before Using The Equipment.

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