LiTime 12V100Ah

LiTime 12V 100Ah Lithium LiFePO4 Battery User Manual

Model: 12V100Ah | Brand: LiTime

1. Introduction

This manual provides essential information for the safe and efficient operation of your LiTime 12V 100Ah Lithium LiFePO4 Battery. Please read this manual thoroughly before installation and use to ensure proper functionality and longevity of the product.

The LiTime 12V 100Ah LiFePO4 battery is designed for various applications including RVs, solar energy systems, backup power, off-grid setups, boats, and trolling motors. It features a built-in 100A Battery Management System (BMS) for comprehensive protection and offers an extended cycle life.

Figure 1.1: LiTime 12V 100Ah Lithium LiFePO4 Battery. This image displays the front view of the black LiFePO4 battery with orange LiTime branding and a lightning bolt logo, indicating its voltage and capacity.

Key Features:

- **Grade A Lithium Cells:** Manufactured with Automotive Grade LiFePO4 Cells with higher energy density and stable performance.
- **Extended Lifespan:** Provides 4000+ cycles at 100% Depth of Discharge (DOD), with a projected 10-year lifetime.
- **Integrated 100A BMS:** Built-in Battery Management System protects against overcharging, over-discharging, over-current, overheating, and short circuits.
- **Capacity Expansion:** Supports up to 4 batteries in series and 4 in parallel (Max 4S4P) for increased capacity and voltage.
- **Lightweight Design:** Weighs approximately 24.25 lbs, significantly lighter than comparable lead-acid batteries.
- **IP65 Waterproof:** Suitable for both indoor and outdoor installations.

2. Safety Information

Adhering to safety guidelines is crucial for preventing damage to the battery and ensuring user safety. Please observe the following precautions:

- Do not use this battery as a starting battery for vehicles. It is designed for energy storage applications.
- This battery is not suitable for use in golf carts.
- When connecting multiple batteries, ensure they are of the same brand, type, voltage, amperage, and BMS, and were purchased within 1-3 months of each other.
- Operate the battery within specified temperature ranges:
  - Charge Temperature: 32°F ~ 122°F (0°C ~ 50°C)
  - Discharge Temperature: -4°F ~ 140°F (-20°C ~ 60°C)

- Storage Temperature: 14°F ~ 122°F (-10°C ~ 50°C)

- Avoid short circuits. Ensure proper polarity when connecting.
- Do not disassemble, puncture, or damage the battery.
- Keep the battery away from fire, heat sources, and flammable materials.
- Use only compatible chargers designed for LiFePO4 batteries.

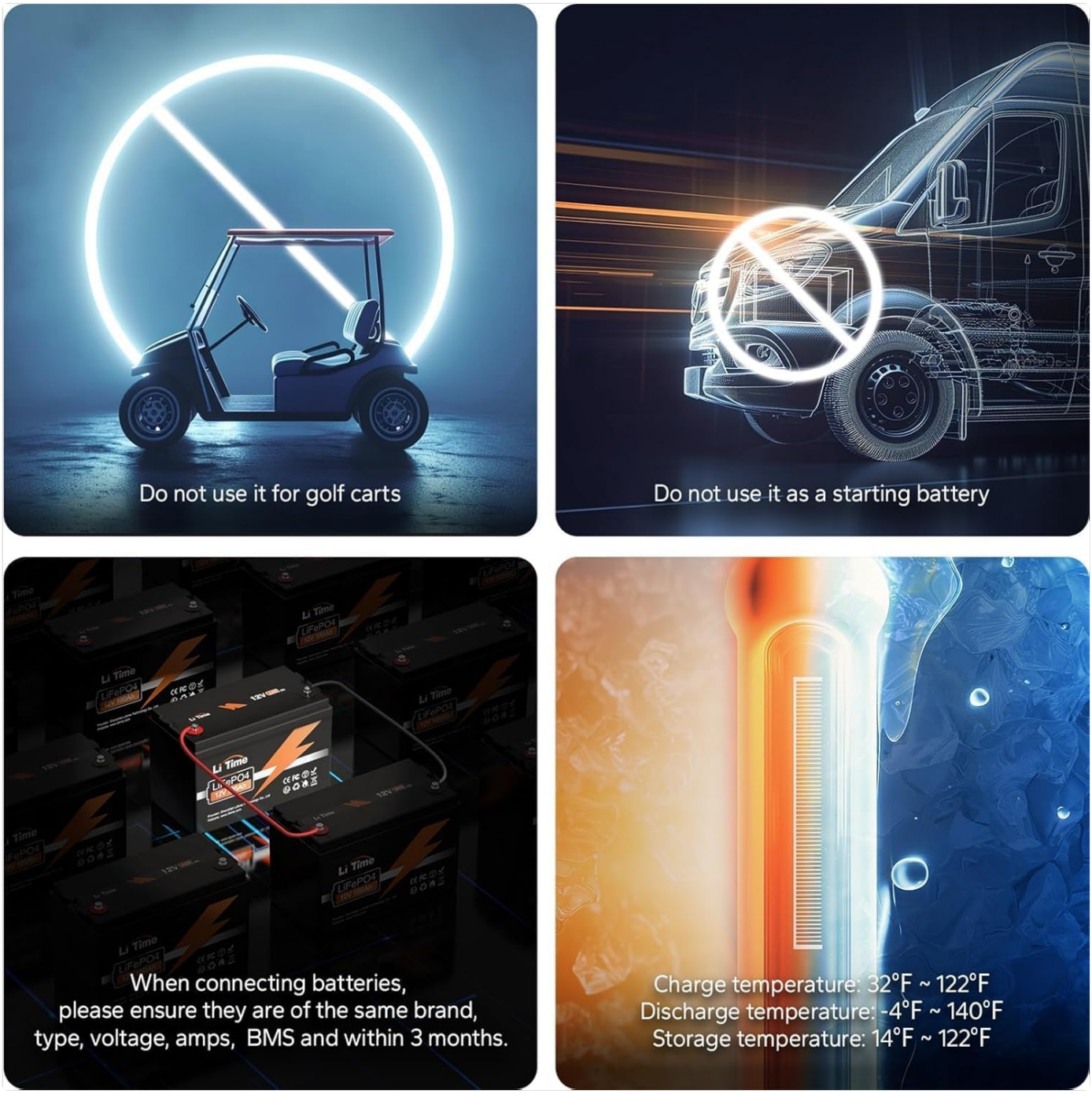

Figure 2.1: Important Safety Warnings. This image illustrates key safety precautions, including not using the battery for golf carts or as a starting battery, and the importance of matching battery specifications for parallel/series connections.

Figure 2.2: Battery Temperature Guidelines. This image shows the recommended charge, discharge, and storage temperature ranges for the LiTime LiFePO4 battery, emphasizing optimal operating conditions.

3. Product Overview and Components

What's in the Box:

- 1 x LiTime 12V (12.8 Volt) 100Ah LiFePO4 Battery

Built-in Battery Management System (BMS):

The integrated 100A BMS provides comprehensive protection for the battery, ensuring its safety and optimizing performance. The BMS protects against:

- Over-current protection
- Short-circuit protection
- Over-charge protection

- Over-discharge protection
- Over-temperature protection

Figure 3.1: BMS Protection Features. This diagram illustrates the internal structure of the LiTime LiFePO4 battery, highlighting the 100A BMS and its protective functions against over-current, short-circuit, over-charge, over-discharge, and over-temperature conditions.

4. Specifications

The following table details the specifications for the LiTime 12V 100Ah LiFePO4 battery, along with comparisons to other models for reference.

Characteristic	Value (12V 100Ah Model)
Brand	LiTime
Item Weight	24.2 pounds
Product Dimensions	13 x 6.77 x 8.43 inches (Group 31 equivalent)
Item Model Number	12V100Ah
Batteries Required	1 x 12V battery
Manufacturer Part Number	L12V100-100-BASIC-4-A100-TC-K
Safety Rating	UL, FCC
Amperage	100 Amps
Nominal Voltage	12.8 Volts
Battery Cell Composition	Lithium-Phosphate (LiFePO4)
Output Power (Max. Continuous)	1280W
Charge Current (Max. Continuous)	100A
Discharge Current (Max. Continuous)	100A
Max. Discharge Current (5 Seconds)	280A
Charge Voltage	14.4V ± 0.2V
Recommended Charge Current	20A (0.2C)
Charge Temperature	0°C to 50°C / 32°F to 122°F
Discharge Temperature	-20°C to 60°C / -4°F to 140°F
Storage Temperature	-10°C to 50°C / 14°F to 122°F

Figure 4.1: Detailed Product Specifications. This image presents a comprehensive table outlining the dimensions, weight, certifications, BMS, and various electrical parameters for different LiTime LiFePO4 battery models, including the 12V 100Ah.

5. Setup and Installation

Capacity Expansion:

The LiTime 12V 100Ah battery supports flexible configurations to meet various power requirements. You can connect up to 4 batteries in series and 4 in parallel (Max 4S4P) to achieve higher capacity and voltage. A maximum system of 16 batteries can build a 48V 400Ah battery system, providing 20.48kWh energy and a maximum 20.48kW load power.

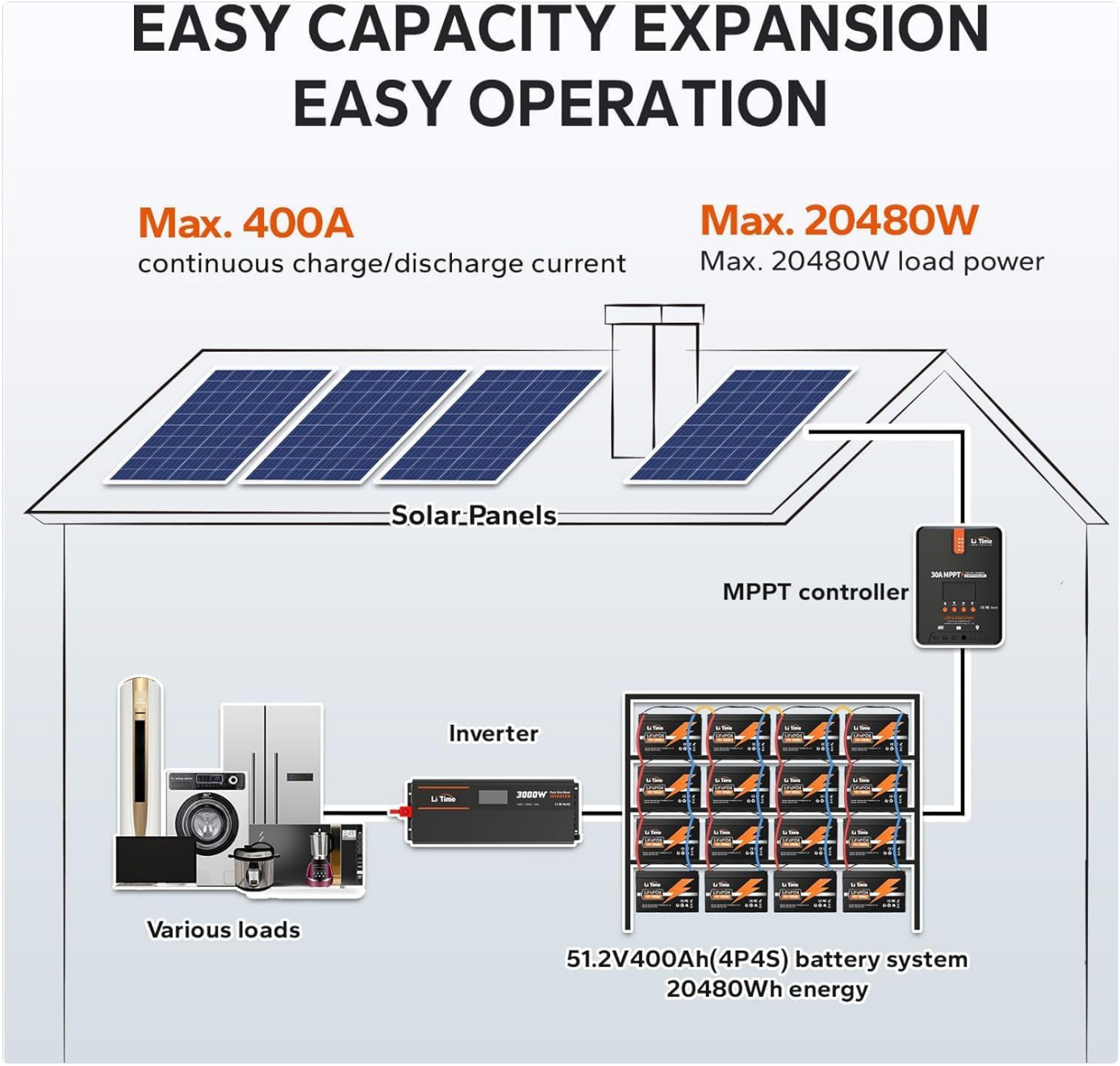

Figure 5.1: Easy Capacity Expansion. This diagram illustrates how multiple LiTime batteries can be connected in series and parallel to create larger battery banks, such as a 48V 400Ah system with solar panels, MPPT controller, and inverter for home or RV use.

System Installation Examples:

Below are examples of how to integrate the LiTime battery into a power system. Note that some components like solar panels, circuit breakers, and battery monitors are sold separately.

Figure 5.2: System Installation Overview. This image provides a general guide on how to install a LiTime battery system, showing connections between solar panels, MPPT charge controller, and the battery bank.

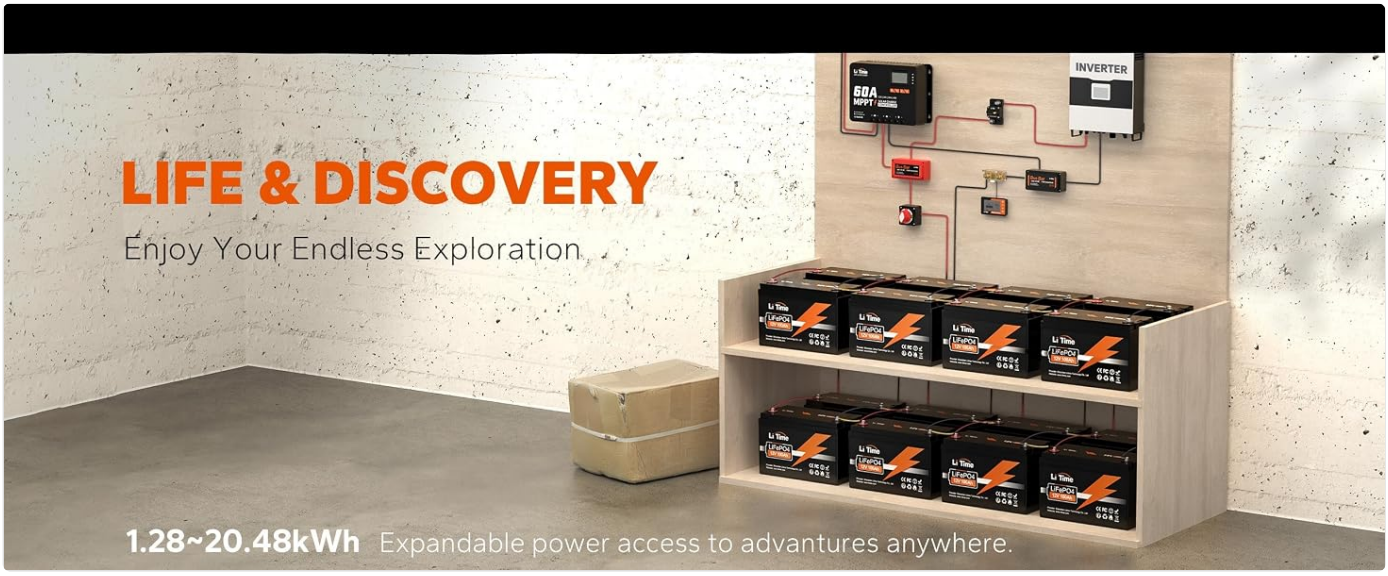

Figure 5.3: Step 1: Battery-MPPT Connection. This detailed diagram illustrates the wiring from the battery bank to the MPPT charge controller, including a bus bar, shunt, battery monitor screen, and a switch for safety.

Figure 5.4: Step 2: Battery-Inverter Connection. This diagram shows the connection from the battery bank to a pure sine wave inverter, emphasizing the use of a breaker for protection.

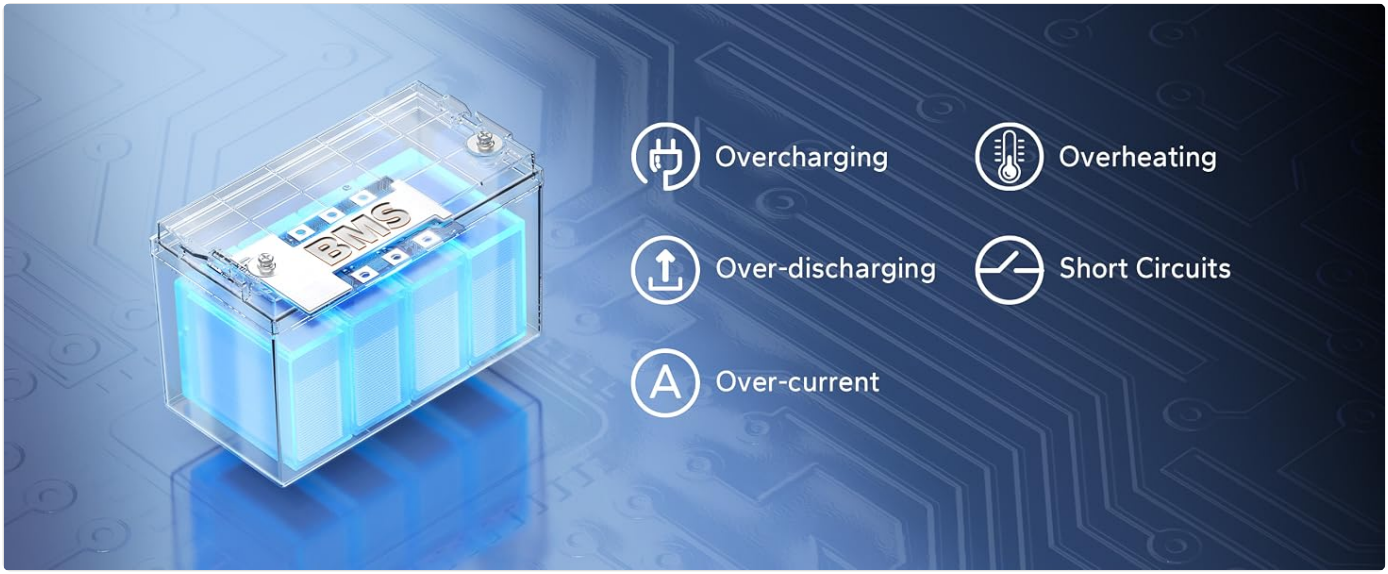

Figure 5.5: Step 3: Solar Panels-MPPT Connection. This diagram illustrates the wiring from solar panels to the MPPT charge controller, including a circuit breaker for safety.

6. Operating Instructions

Charging the Battery:

The LiTime 12V 100Ah LiFePO4 battery can be charged using a compatible LiFePO4 charger, solar panels with an MPPT controller, or a generator.

- **LiFePO4 Charger:** Use a dedicated LiFePO4 charger with a recommended charge current of 20A (0.2C) and a charge voltage of 14.4V ± 0.2V. A full charge from drained can take approximately 5 hours with a 20A charger.
- **Solar Panel:** Connect solar panels to an MPPT charge controller, then to the battery. Ensure the solar panel system provides adequate wattage (e.g., ≥400W for a sunny day) for efficient charging.
- **Generator:** A generator can be used with a compatible DC-DC charger to charge the battery.

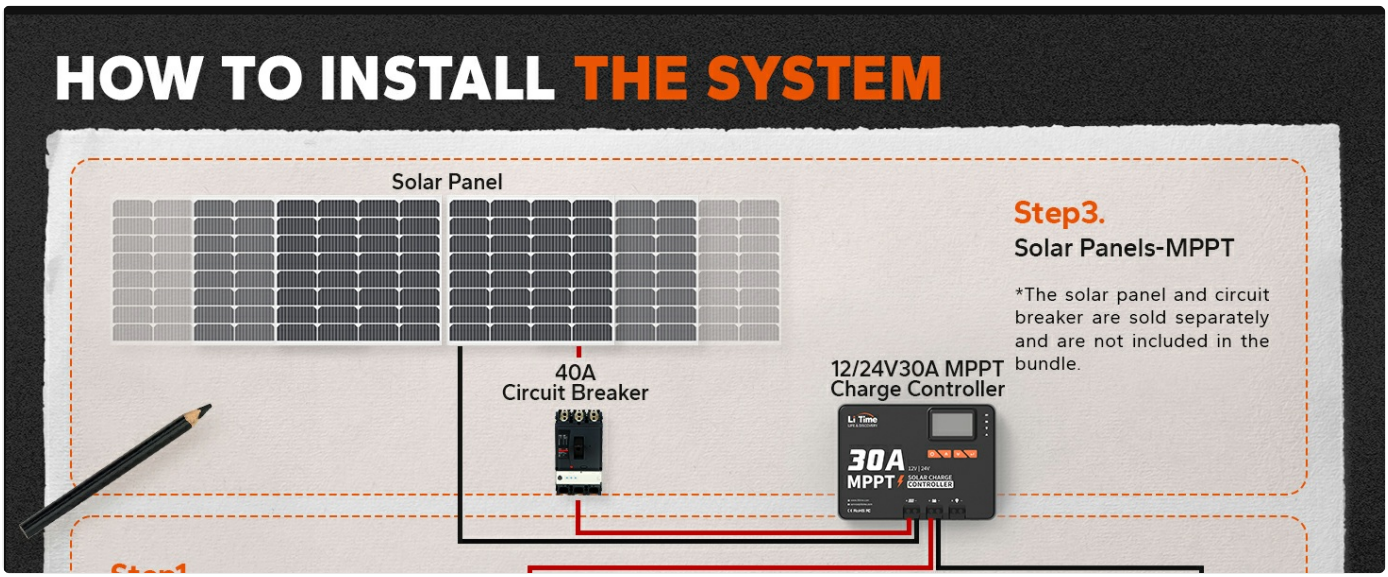

Figure 6.1: Charging Options. This image displays three methods for charging the LiTime LiFePO4 battery: using a dedicated LiFePO4 charger, solar panels with an MPPT controller, or a generator with a DC-DC charger.

Typical Applications:

This battery is ideal for various energy storage applications:

- **RV and Camper Power:** Provides reliable power for appliances and electronics in recreational vehicles.

- **Solar Energy Storage:** Stores excess energy generated by solar panels for off-grid or backup power.
- **Backup Power Systems:** Ensures continuous power supply during outages.
- **Off-Grid Applications:** Suitable for remote cabins, tiny homes, and other off-grid setups.
- **Marine Use:** Powers trolling motors and other electrical systems on boats.

Model	 12V 100Ah	 12V 200Ah	 12V 200Ah Plus	 12V 230Ah Plus	 12V 300Ah	 12V 400Ah	 24V 100Ah
Size (L*W*H Inch)	13*6.77*8.43 (Group 31 equivalent)	21*8.2*8.5	21*8.2*8.5	19*6.7*9.5	20.55*9.45*8.58	20.47*10.59*8.66	21*8.2*8.5
Weight Approx.	24.25 lbs	44 lbs	45.59 lbs	45.22 lbs	64.15 lbs	80.25 lbs	40.59 lbs
Certifications	UL, FCC, CE, RoHS, UN38.3	UL, FCC, CE, RoHS, UN38.3	UL, FCC, CE, RoHS, UN38.3	UL, FCC, CE, RoHS, UN38.3	UL, FCC, CE, RoHS, UN38.3	UL, FCC, CE, RoHS, UN38.3	UL, FCC, CE, RoHS, UN38.3
BMS	100A	100A	200A	200A	200A	250A	100A
Output Power (Max. Continuous)	1280W	1280W	2560W	2560W	2560W	3200W	2560W
Charge Current (Max. Continuous)	100A	100A	200A	200A	200A	250A	10A
Discharge Current (Max. Continuous)	100A	100A	200A	200A	200A	250A	10A
Max. Discharge Current (5 Seconds)	280A	280A	400A	600A	400A	500A	280A
Charge Voltage	14.4V ± 0.2V	14.4V ± 0.2V	14.4V ± 0.2V	14.4V ± 0.2V	14.4V ± 0.2V	14.4V ± 0.2V	28.8V ± 0.4V
Recommend Charge Current	20A (0.2C)	40A (0.2C)	40A (0.2C)	40A (0.2C)	40A (0.2C)	40A (0.2C)	20A (0.2C)
Charge Temperature	0°C to 50°C / 32°F to 122°F	0°C to 50°C / 32°F to 122°F	0°C to 50°C / 32°F to 122°F	0°C to 50°C / 32°F to 122°F	0°C to 50°C / 32°F to 122°F	0°C to 50°C / 32°F to 122°F	0°C to 50°C / 32°F to 122°F
Discharge Temperature	-20°C to 60°C / -4°F to 140°F	-20°C to 60°C / -4°F to 140°F	-20°C to 60°C / -4°F to 140°F	-20°C to 60°C / -4°F to 140°F	-20°C to 60°C / -4°F to 140°F	-20°C to 60°C / -4°F to 140°F	-20°C to 60°C / -4°F to 140°F
Storage Temperature	-10°C to 50°C / 14°F to 122°F	-10°C to 50°C / 14°F to 122°F	-10°C to 50°C / 14°F to 122°F	-10°C to 50°C / 14°F to 122°F	-10°C to 50°C / 14°F to 122°F	-10°C to 50°C / 14°F to 122°F	-10°C to 50°C / 14°F to 122°F
Low-Temperature Protection	N/A	N/A	N/A	Yes (32°F/0°C)	N/A	N/A	N/A

Figure 6.2: Life & Discovery - Expandable Power. This image shows a large battery bank of LiTime LiFePO4 batteries integrated into a home solar power system, demonstrating its scalability for various applications.

7. Maintenance

Proper maintenance ensures the longevity and optimal performance of your LiTime LiFePO4 battery:

- **Regular Inspection:** Periodically check battery terminals for corrosion and ensure connections are secure.
- **Cleaning:** Keep the battery clean and free of dust and debris. Use a dry cloth for cleaning.
- **Storage:** If storing the battery for an extended period, ensure it is charged to approximately 50-70% capacity. Store in a cool, dry place within the recommended storage temperature range (14°F ~ 122°F / -10°C ~ 50°C).

- **Avoid Deep Discharge:** While the BMS protects against over-discharge, it is good practice to avoid consistently draining the battery to 0% to maximize cycle life.

8. Troubleshooting

This section addresses common issues and provides guidance for resolution.

Battery Not Charging or Discharging:

- **Check Connections:** Ensure all cables are securely connected to the battery terminals and other system components (charger, inverter, load).
- **Verify Charger Compatibility:** Confirm that the charger used is specifically designed for LiFePO4 batteries and meets the recommended voltage and current specifications.
- **BMS Protection Mode:** The built-in BMS may activate protection modes (e.g., over-discharge, over-charge, over-temperature, short-circuit) to safeguard the battery. If the battery stops functioning unexpectedly, it might be in a protection state.
    - *Over-discharge Protection:* If the battery has been deeply discharged, the BMS may enter a low-voltage protection mode. Connect a compatible LiFePO4 charger to reactivate the battery. Some chargers may require a minimum voltage to initiate charging.
    - *Over-temperature Protection:* If the battery's internal temperature exceeds safe limits, the BMS will shut down. Allow the battery to cool down to within the operating temperature range before attempting to use or charge it again.
    - *Short-circuit Protection:* If a short circuit occurs, the BMS will immediately cut off power. Disconnect the short, then reconnect the battery to reset the BMS.
- **Battery Voltage:** Use a multimeter to check the battery's voltage. If it's significantly below the nominal 12.8V, it may require a specific charging procedure to recover from deep discharge.

Reduced Runtime:

- **Load Assessment:** Verify that the connected load does not exceed the battery's continuous discharge current (100A) or maximum continuous output power (1280W). High loads will deplete the battery faster.
- **Charging Efficiency:** Ensure the battery is being fully charged. Check the charger's output and charging time.
- **Temperature:** Extreme temperatures (especially very cold) can temporarily reduce battery performance. Operate within recommended temperature ranges.

If you continue to experience issues, please refer to the Warranty and Support section for contact information.

9. Warranty and Support

LiTime is committed to providing high-quality products and excellent customer service.

Warranty Information:

The LiTime 12V 100Ah LiFePO4 battery comes with a**5-year warranty** from the date of purchase. This warranty covers defects in materials and workmanship under normal use and service conditions.

Figure 9.1: Warranty and Support Icons. These icons represent LiTime's commitment to a 5-year service warranty and 24-hour prompt customer support.

Customer Support:

LiTime provides professional technical support and online customer service with fast feedback within 24 hours. If you have any product-related issues or questions, please do not hesitate to contact the LiTime support team directly.

For support, please visit the official LiTime website or contact their customer service through the details provided on your purchase documentation.

You can also find more information and products at theLiTime Amazon Store.