Elefast V24_A100

Elefast 24V 100AH LiFePO4 Battery User Manual

Model: V24_A100
Brand: Elefast

1. Introduction and Overview

The Elefast 24V 100AH LiFePO4 Battery is a high-performance, long-lasting power solution designed for a wide range of applications including trolling motors, marine vessels, recreational vehicles (RVs), boats, and solar energy storage systems. Featuring advanced LiFePO4 A+ grade cells and a robust 100A Built-in Battery Management System (BMS), this battery offers exceptional energy density, deep cycle capability, and comprehensive protection features, ensuring stable and durable performance.



Figure 1.1: Elefast 24V 100AH LiFePO4 Battery

This image shows the Elefast 24V 100AH LiFePO4 battery, highlighting its compact design and the Elefast branding on the front label.

2. Product Features

- **A+ Grade Cells & Balanced Voltage:** Constructed with high-energy density LiFePO4 A+ grade cells, offering superior performance and better voltage balance compared to ordinary A grade cells.
- **Optimized for Trolling Motors and RVs:** Capable of handling 300A/1s inrush discharge current and sustaining 1.2C discharge for up to 3 minutes, ideal for high-load applications like motor startup. Features automatic recovery from overload protection within 30 seconds.
- **Fast Charging & Enhanced Power:** Achieves a full charge in approximately 5 hours using a dedicated 29.2V 20amp lithium charger, providing 2560 kWh. A single 24V 100Ah unit offers equivalent power to two 12V 100Ah batteries, simplifying wiring and extending cycle life.
- **Extended Deep Cycle Life & Low Temperature Protection:** Boasts over 20,000 deep cycles. The integrated 100A BMS provides comprehensive protection against overcharging, prolonged over-discharge, overloading, high temperature, and short-circuiting. Includes a low-temperature protection mechanism to safeguard the battery and prolong its lifespan.
- **Versatile Applications & Solar System Compatibility:** Suitable for RVs, boats, camping, trolling motors, solar systems, backup power, and off-grid setups. Supports 2S4P (series & parallel) configurations, allowing capacity expansion from 2560Wh to 20480Wh for solar home systems.
- **Safety & Reliable After-Sales Support:** UL, IEC, CE, and RoHS certified for maximum safety. Elefast

provides 5 years of after-sales service and prompt technical support within 24 hours.



Figure 2.1: Internal Structure and BMS Protection

This image illustrates the internal components of the battery, highlighting the A+ grade battery cells and the 100Ah BMS (Battery Management System) which provides protection against overcharging, over-discharging, overloading, high temperature, short circuits, and includes low temperature protection. It also shows the impressive cycle life ratings.



Figure 2.2: Dimensions and Weight Comparison

This image displays the compact dimensions (7.48"D x 13.58"W x 9.64"H) and lightweight nature (41.9 lbs) of the Elefast 24V 100AH battery, comparing it to two heavier 12V 100AH lead-acid batteries, emphasizing space-saving and ease of handling.

3. Specifications

Specification	Value
Brand	Elefast
Model	V24_A100 (Lifepo4 Battery)
Size	24V100AH No Bluetooth
Product Dimensions	7.48"D x 13.58"W x 9.64"H

Specification	Value
Item Weight	42.5 pounds
Terminal Type	M8
Automotive Fit Type	Universal Fit
Manufacturer	ELEFAST
UPC	762949151808
Battery Type	Lithium Iron Phosphate (LiFePO4)
Required Batteries	1 Lithium Ion battery required

4. What's in the Box

- Elefast 24V 100AH LiFePO4 Battery Body

5. Setup and Installation

Before installation, ensure all components are present and undamaged. Always wear appropriate personal protective equipment (PPE) such as gloves and eye protection.

5.1 Pre-Installation Checks

- Verify the battery voltage and capacity match your system requirements.
- Inspect the battery for any physical damage.
- Ensure the M8 terminals are clean and free of corrosion.

5.2 Connecting the Battery

1. Position the battery in a secure, well-ventilated location that can support its weight and dimensions (7.48"D x 13.58"W x 9.64"H).
2. Connect the positive (+) terminal of the battery to the positive (+) terminal of your system using appropriate gauge cables and M8 connectors.
3. Connect the negative (-) terminal of the battery to the negative (-) terminal of your system.
4. Ensure all connections are tight and secure to prevent arcing and ensure optimal performance.
5. If connecting multiple batteries in series or parallel, refer to the Operating Instructions section for proper configuration guidelines.

6. Operating Instructions

The Elefast 24V 100AH LiFePO4 battery is designed for ease of use and high efficiency. Follow these guidelines for optimal operation.

6.1 Charging the Battery

- Use a dedicated 29.2V 20amp lithium charger for optimal charging performance.
- Charging time to full capacity (2560 kWh) is approximately 5 hours with the recommended charger.
- The battery supports various charging methods including solar panels with a charge controller, a standard battery charger, or a generator with a LiFePO4 charger.



Figure 6.1: Charging Methods

This image illustrates three primary ways to charge the Elefast LiFePO4 battery: via a solar panel with a charge controller, a dedicated battery charger, or a generator with a LiFePO4 charger. It emphasizes choosing only one charging method at a time.

6.2 Discharge Capabilities

- The battery can handle a 300A/1s inrush discharge current, making it suitable for applications with high momentary power demands like motor starting.
- It can withstand up to 3 minutes of 1.2C discharge capability.
- The BMS will automatically recover from overload protection within 30 seconds, minimizing downtime.

6.3 Series and Parallel Connections

The Elefast 24V 100AH battery supports configurations up to 2S4P (2 in series, 4 in parallel) to achieve higher voltage or capacity. When connecting multiple batteries:

- Ensure all batteries are of the same brand, model, and capacity.
- Charge all batteries to the same voltage level before connecting them in series or parallel.
- Use appropriate cabling and fusing for the combined voltage and current.
- For series connections, connect the positive of one battery to the negative of the next.

- For parallel connections, connect positive to positive and negative to negative.

7. Maintenance

The Elefast 24V 100AH LiFePO4 battery is largely maintenance-free due to its advanced design and integrated BMS.

- **Regular Inspection:** Periodically check the battery terminals for cleanliness and tightness. Ensure there are no loose connections or signs of corrosion.
- **Cleaning:** If necessary, clean the battery casing with a dry or slightly damp cloth. Do not use harsh chemicals or abrasive cleaners.
- **Storage:** For long-term storage, store the battery in a cool, dry place, ideally at a state of charge between 50% and 80%. Avoid extreme temperatures.
- **Temperature Management:** The built-in BMS provides low-temperature protection, automatically disconnecting when the temperature is below 32°F (0°C) and below -4°F (-20°C) for discharge, and resuming when the temperature rises to 0°F (-17.8°C). Ensure the operating environment stays within the recommended temperature ranges for optimal performance and longevity.



Figure 7.1: Low Temperature Protection

This image highlights the battery's low temperature protection feature, showing its minimum and maximum operating temperatures for charging and discharging, and explaining how the BMS automatically disconnects and reconnects to protect the battery in extreme cold.

8. Troubleshooting

The integrated 100A BMS provides robust protection against common issues. If you experience problems, consider the following:

Problem	Possible Cause	Solution

Problem	Possible Cause	Solution
Battery not charging	Charger not connected, charger fault, battery in low-temperature protection, over-discharge protection activated.	Check charger connections and functionality. Move battery to warmer environment if below 32°F (0°C). If deeply discharged, try a low-current charge to reactivate BMS.
Battery not discharging/no power output	Overload protection, short-circuit protection, low-temperature protection, over-discharge protection, loose connections.	Reduce load. Check for short circuits. Move battery to warmer environment. Recharge battery. Tighten all terminal connections. BMS typically resets automatically after 30 seconds for overload.
Reduced capacity or runtime	Battery not fully charged, high power draw, extreme operating temperatures.	Ensure battery is fully charged. Reduce power consumption of connected devices. Operate within recommended temperature ranges.
Battery feels unusually hot	Overloading, internal fault.	Disconnect load immediately. Allow battery to cool down. If problem persists, contact Elefast support. The BMS should activate high-temperature protection.

If troubleshooting steps do not resolve the issue, please contact Elefast customer support for further assistance.

9. Applications

The Elefast 24V 100AH LiFePO4 battery is highly versatile and suitable for a wide array of applications requiring reliable and long-lasting power:

- **Trolling Motors:** Provides consistent power for extended periods, with high inrush current capability for motor startup.
- **Marine Applications:** Ideal for boats, yachts, and other marine vessels, offering a lightweight and durable power source.
- **Recreational Vehicles (RVs) & Camping:** Powers onboard appliances, lighting, and other systems for off-grid adventures.
- **Solar Energy Systems:** Excellent for residential or commercial solar installations, supporting efficient energy storage and discharge.
- **Backup Power:** Reliable solution for emergency power needs in homes or businesses.
- **Off-Grid Devices:** Powers various remote or portable devices where grid power is unavailable.

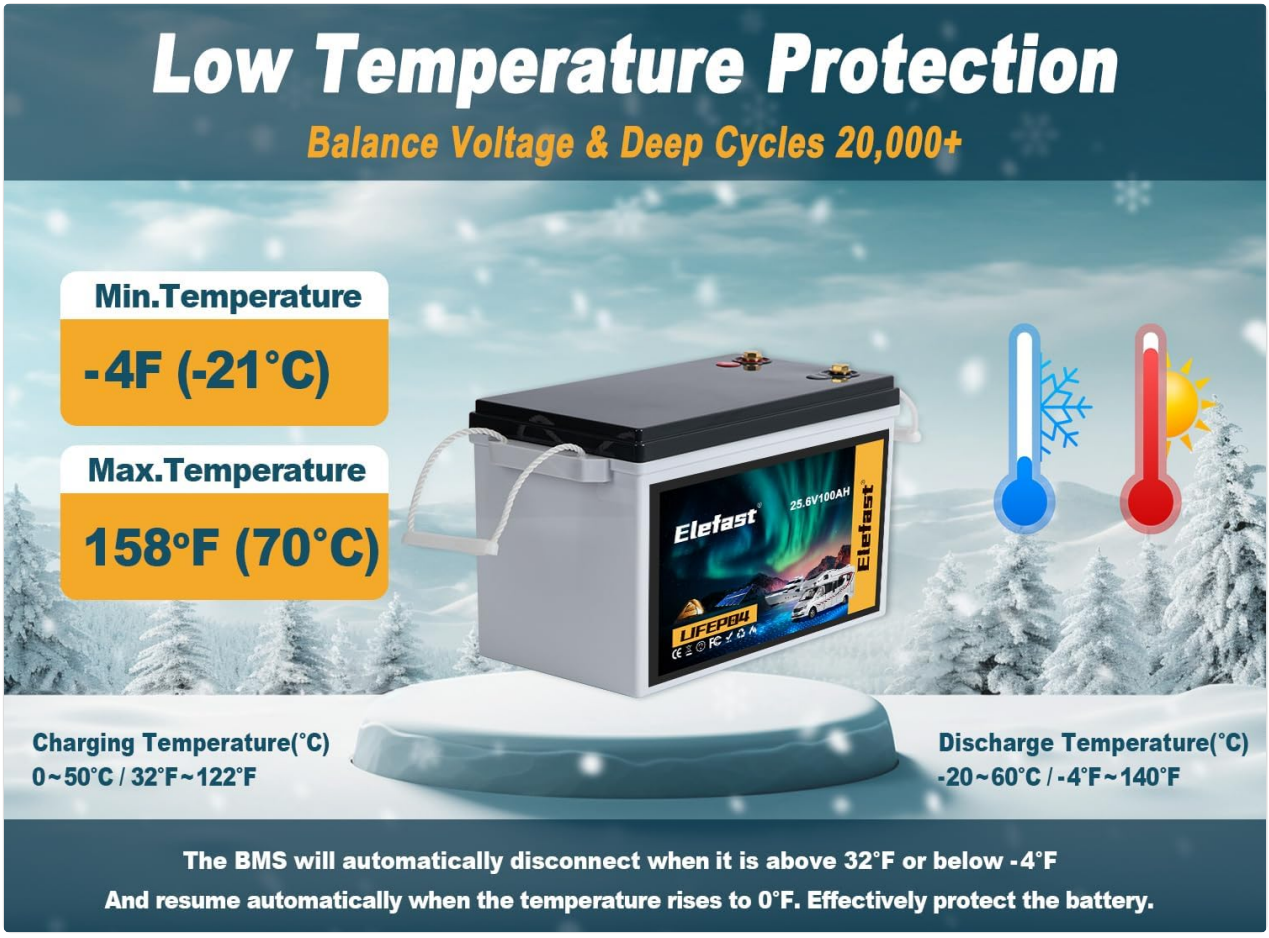


Figure 9.1: Ideal for Trolling Motors and RVs

This image showcases the Elefast battery's suitability for marine applications, specifically trolling motors, and recreational vehicles, highlighting its balanced voltage and durability for these uses.



Figure 9.2: High Energy RV Battery and Other Uses

This collage image demonstrates the wide range of applications for the 24V100AH battery, including RVs, trolling motors, marine vessels, solar systems, and home energy storage.

10. Safety Information

Your Elefast LiFePO4 battery is designed with multiple safety features. Adhering to these safety guidelines is crucial for safe operation and longevity.

- **Built-in BMS:** The 100A Battery Management System (BMS) provides critical protections against:
  - Overcharging
  - Prolonged Over-discharge
  - Overloading
  - High Temperature
  - Short-circuiting
  - Low-temperature protection
- **Certifications:** The battery is UL, IEC tested, and CE, RoHS certified, ensuring compliance with international safety standards.
- **Avoid Short Circuits:** Never short-circuit the battery terminals. This can cause severe damage to the battery and pose a fire hazard.
- **Temperature Extremes:** Do not expose the battery to temperatures outside its specified operating range. While the BMS offers protection, prolonged exposure to extreme conditions can degrade performance.
- **Physical Damage:** Avoid dropping, puncturing, or otherwise physically damaging the battery. Damaged batteries can be dangerous.
- **Ventilation:** Ensure adequate ventilation around the battery, especially during charging and heavy discharge, to prevent heat buildup.
- **Water Exposure:** While the battery has some water resistance (IP65), avoid submerging it in water or exposing it to excessive moisture.
- **Disassembly:** Do not attempt to disassemble or modify the battery. This will void the warranty and can lead to serious injury or damage.

11. Warranty and Support

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

- **Warranty Period:** Elefast provides 5 years of after-sales service for this product.
- **Technical Support:** For any product-related problems or questions, the Elefast technical team is available to provide fast feedback within 24 hours.
- **Contact Information:** Please refer to the contact details provided on the Elefast official website or your purchase documentation for direct support.

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