ExpertPower LC32100-16

ExpertPower 16 Pack 3.2V 100Ah LiFePO4 Lithium Prismatic Battery Cell User Manual

Model: LC32100-16

1. Introduction

This manual provides essential information for the safe and effective use of your ExpertPower 16 Pack 3.2V 100Ah LiFePO4 Lithium Prismatic Battery Cells. These cells are designed for deep cycle applications, offering high energy density and a long cycle life. Please read this manual thoroughly before installation and operation to ensure optimal performance and safety.

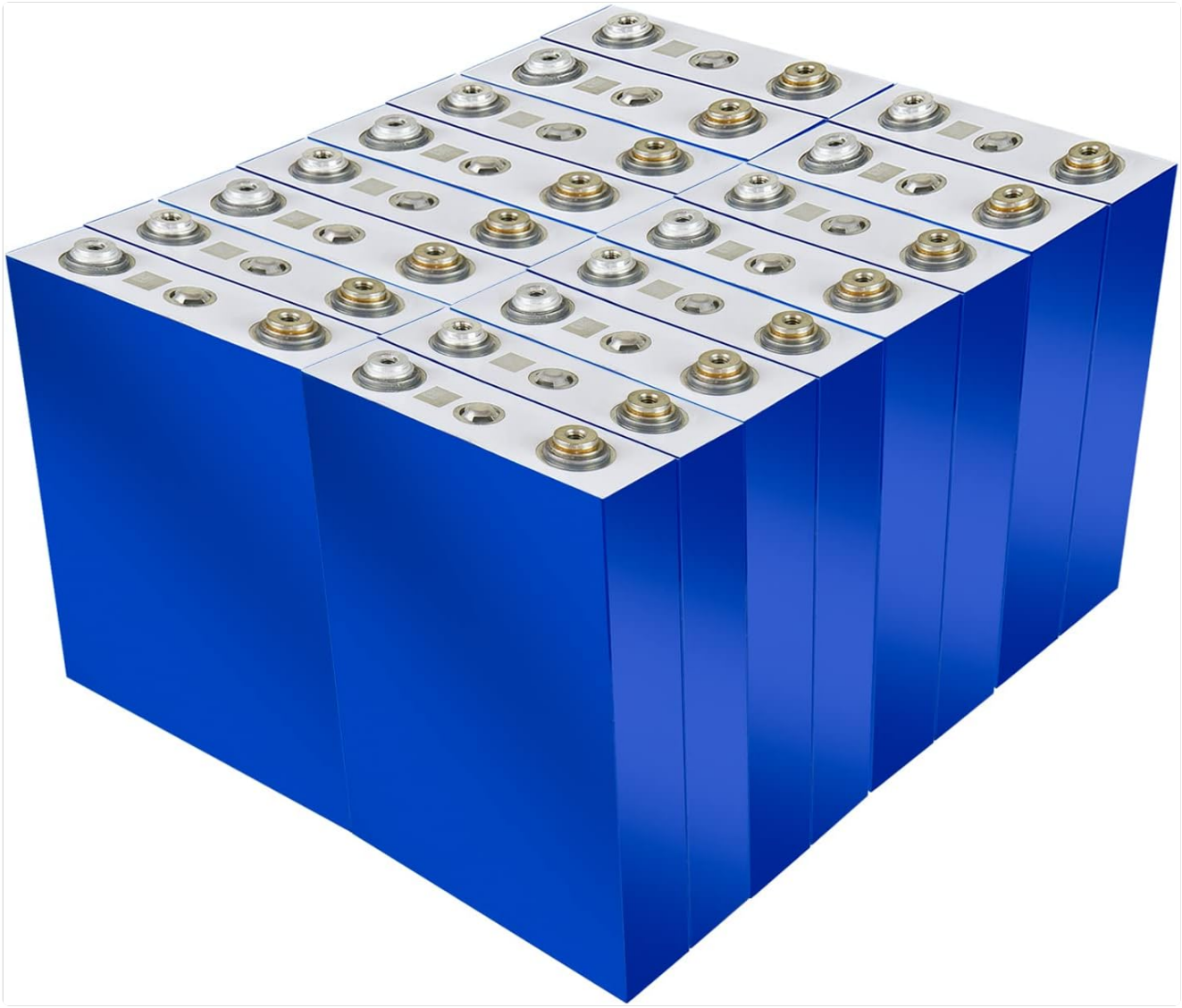


Image 1.1: A stack of 16 ExpertPower 3.2V 100Ah LiFePO4 prismatic battery cells, showcasing their compact, rectangular form factor and top terminals.

2. Safety Information

WARNING: For safety and optimal performance, these cells MUST be used with a Battery Management System (BMS) at all times.

ExpertPower LiFePO4 prismatic cells are designed with safety as a priority. They feature a built-in safety valve for over-temperature protection and a rigid aluminum body. Our cells undergo rigorous testing against various types of damage to ensure reliability.

- **UL 1973 Certified:** These are Grade-A cells, rigorously tested and certified to UL 1973 standards, ensuring consistent performance and reliability.
- **Damage Resistance:** Cells are tested for resistance against puncture, short circuit, impact, liquid exposure, and incendiary conditions.
- **Environmental Responsibility:** These cells are environmentally friendly, containing no heavy metals or toxic materials, and are recyclable after use.

Image 2.1: Visual representation of various safety tests performed on ExpertPower LiFePO4 cells, including resistance to puncture, short circuit, impact, liquid, and incendiary conditions.

General Safety Precautions:

- Do not short-circuit the battery terminals.
- Do not expose cells to extreme temperatures, fire, or water.
- Do not disassemble, crush, or modify the cells.
- Ensure proper ventilation during charging and discharging.
- Always use appropriate personal protective equipment (PPE) when handling batteries.

3. Product Overview and Features

The ExpertPower 3.2V 100Ah LiFePO4 Prismatic Battery Cells offer a robust and efficient power solution. Key features include:

- **High Energy Density:** Prismatic cells provide higher capacity, reducing the number of cells required for a given energy storage.

- **Durable Construction:** Strong aluminum housing protects internal components while maximizing volume efficiency.
- **Reliable Design:** Simple manufacturing processes contribute to highly reliable cells.
- **Long Cycle Life:** Designed for 2500-7000 life cycles and a 10-year lifespan.
- **Low Self-Discharge:** Retains charge for extended periods, suitable for backup power systems.

Image 3.1: An illustration comparing the structural advantages of prismatic cells over cylindrical and pouch cells, emphasizing higher capacity and robust housing.

3.1 Identity Code and Safety Valve

Each cell features an identity code for traceability and quality control, ensuring authenticity. A safety valve is integrated to prevent excessive heat or gas buildup, enhancing operational safety.

Image 3.2: A detailed view of the top of a LiFePO4 cell, indicating the location of the unique identity code for tracking and the safety valve mechanism.

3.2 Package Contents

Your ExpertPower 16 Pack includes the following components:

- 16 x 3.2V 100Ah LiFePO4 Prismatic Cells
- 32 x Screws for terminal connections
- 16 x Short busbars for connecting cells in series or parallel

Image 3.3: An exploded view illustrating the components included in the 16-pack, specifically the prismatic cells, connection screws, and busbars.

4. Setup and Installation

Proper setup is crucial for the performance and longevity of your battery cells. Always ensure a clean, dry, and well-ventilated environment for installation.

4.1 Pre-Installation Checks

1. **Inspect Cells:** Upon receipt, visually inspect all cells for any physical damage.
2. **Verify Voltage:** Measure the voltage of each cell to ensure they are within a close range. Significant voltage differences may require balancing before assembly.
3. **Gather Tools:** Ensure you have the necessary tools, including a multimeter, torque wrench, and appropriate insulated tools.

4.2 Connecting Cells with a Battery Management System (BMS)

A BMS is mandatory for these cells. It protects against overcharge, over-discharge, over-current, and over-

temperature, and balances cell voltages.

1. **Determine Configuration:** Decide whether to connect cells in series (for higher voltage) or parallel (for higher capacity).
2. **Position Cells:** Arrange the cells securely, ensuring proper spacing for ventilation and access to terminals.
3. **Connect Busbars:** Use the provided busbars and screws to connect the cell terminals. Ensure connections are tight but do not overtighten. Refer to the BMS manual for specific wiring diagrams.
4. **Install BMS:** Connect the BMS according to its manufacturer's instructions. This typically involves connecting balance leads to each cell and power leads to the main battery terminals.
5. **Final Check:** Double-check all connections for correct polarity and tightness before applying power.

CAUTION: Incorrect wiring or failure to use a BMS can lead to cell damage, fire, or personal injury.

5. Operating Instructions

Once properly installed with a BMS, your ExpertPower LiFePO4 cells are ready for operation. These cells are suitable for a variety of applications, including solar energy storage, marine, and RV power systems.

5.1 Charging

- Always use a charger specifically designed for LiFePO4 batteries.
- Ensure the charger's voltage and current settings are compatible with your battery pack configuration and BMS specifications.
- The BMS will manage the charging process, preventing overcharging and balancing cell voltages.

5.2 Discharging

- The BMS will protect the cells from over-discharge by disconnecting the load when the voltage drops below a safe threshold.
- Avoid drawing currents that exceed the maximum continuous discharge rate specified by your BMS and cell ratings.

5.3 Storage

- For long-term storage, charge the battery pack to approximately 50% of its capacity.
- Store in a cool, dry place away from direct sunlight and extreme temperatures.
- The low self-discharge rate of LiFePO4 cells helps maintain charge during storage.

6. Maintenance

ExpertPower LiFePO4 cells require minimal maintenance due to their robust design and the protective functions of a BMS.

- **Regular Inspection:** Periodically inspect the battery pack for any signs of physical damage, loose connections, or corrosion.
- **Terminal Cleaning:** Keep terminals clean and free of debris to ensure good electrical contact.
- **BMS Monitoring:** If your BMS has monitoring capabilities, regularly check cell voltages and temperatures to ensure proper operation.
- **Environmental Conditions:** Ensure the operating environment remains within the recommended temperature range for optimal battery life.

7. Troubleshooting

This section addresses common issues you might encounter. Always consult your BMS manual for specific troubleshooting steps related to its operation.

Problem	Possible Cause	Solution
Battery pack not charging	BMS protection activated (over-discharge, over-temperature), faulty charger, loose connections.	Check BMS status indicators. Verify charger functionality. Inspect all wiring and connections.
Battery pack not discharging (no power output)	BMS protection activated (over-charge, under-voltage), loose connections, faulty load.	Check BMS status. Ensure battery voltage is above minimum threshold. Inspect connections and load.
Individual cell voltage imbalance	Normal over time, or an issue with BMS balancing.	Allow BMS to balance cells during charging. If imbalance persists, consult BMS manual or ExpertPower support.
Unusual heat from cells	Overload, internal short, poor ventilation.	Immediately disconnect load. Ensure adequate ventilation. Check for short circuits. Contact ExpertPower support if heat persists.

If you encounter issues not covered here or require further assistance, please contact ExpertPower technical support.

8. Technical Specifications

The following specifications apply to each individual ExpertPower 3.2V 100Ah LiFePO4 Prismatic Battery Cell:

Specification	Value
Nominal Voltage	3.2 Volts (DC)
Nominal Capacity	100 Amp Hours
Battery Cell Composition	Lithium-Phosphate (LiFePO4)
Life Cycles	2500-7000 cycles
Expected Lifespan	10 Years
Cell Weight	4.37 ± 0.11 lbs (approx. 1.98 kg)
Total Height (with terminals)	7.91 ± 0.04 inch (approx. 20.09 cm)
Shell Height	7.64 ± 0.04 inch (approx. 19.41 cm)
Width	1.44 ± 0.04 inch (approx. 3.66 cm)
Length	5.12 ± 0.04 inch (approx. 13.00 cm)
Center Distance of Terminals	3.15 ± 0.04 inch (approx. 8.00 cm)
Model Number	LC32100-16

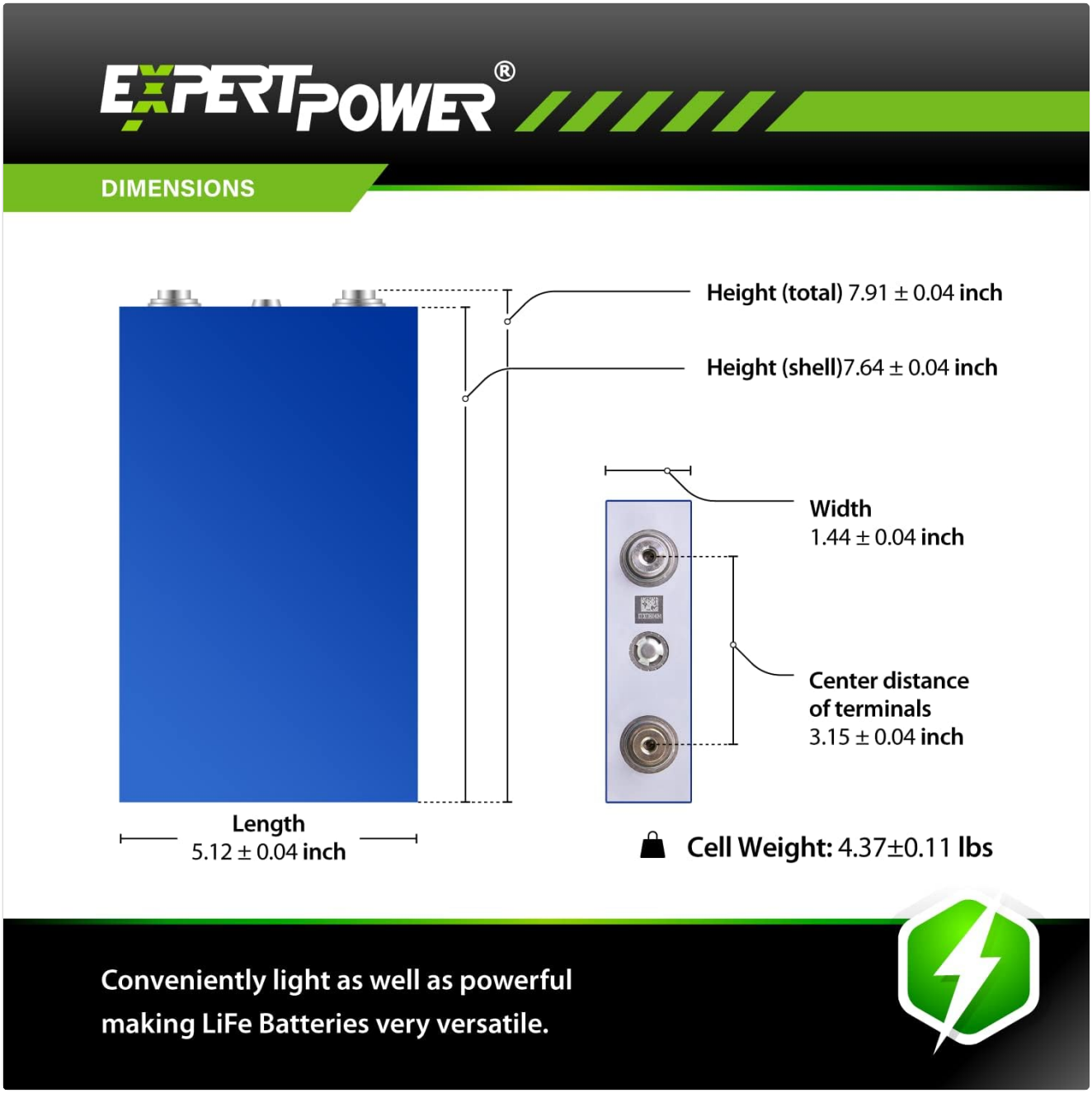


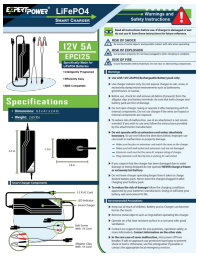
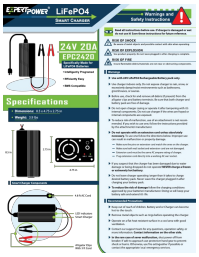
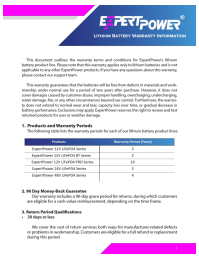
Image 8.1: A technical drawing detailing the length, width, total height, shell height, and terminal center distance of an ExpertPower LiFePO4 prismatic cell.

9. Warranty and Support

ExpertPower is committed to providing high-quality products and customer satisfaction. For information regarding product warranty, please refer to the official ExpertPower website or contact customer service directly.
Expert technical support and service are available to assist with installation, maintenance, and any questions you may have regarding your LiFePO4 battery cells.
Contact Information:

- For support, visit the ExpertPower Store on Amazon.
- Refer to your purchase documentation for direct contact details.

Related Documents - LC32100-16

	ExpertPower Prismatic Cell Warranty and Usage Guide Detailed warranty information, usage guidelines, return policy, and exclusions for ExpertPower 3.2V LiFePO4 prismatic cells (100Ah, 230Ah, 304Ah) including models LC32100, LC32230, LC32304.
	EXPERTPOWER EPC125 12V 5A LiFePO4 Smart Battery Charger: User Guide & Safety Instructions Learn how to safely and effectively use the EXPERTPOWER EPC125 12V 5A LiFePO4 Smart Battery Charger. This guide provides essential safety instructions, operating procedures, specifications, and troubleshooting tips for optimal battery charging.
	ExpertPower EP48100 48V 100Ah LiFePO4 Deep Cycle Battery | Technical Specifications & User Guide Detailed specifications, features, operation, safety, and configuration guide for the ExpertPower EP48100 48V 100Ah LiFePO4 Deep Cycle battery. Learn about its BMS, charging, and installation.
	ExpertPower 24V 20A LiFePO4 Smart Charger Manual and Safety Instructions Comprehensive guide to connecting, operating, and maintaining the ExpertPower 24V 20A LiFePO4 Smart Charger. Includes safety warnings, specifications, and troubleshooting tips.
	ExpertPower Lithium Battery Warranty Information and Terms Detailed warranty terms and conditions for ExpertPower's lithium battery product line, including warranty periods, return policies, RMA guidelines, and exclusions.
	ExpertPower 10KW and 6.5KW Inverter Firmware Update Instructions A comprehensive guide to updating the firmware on ExpertPower 10KW and 6.5KW inverters. Learn how to connect your PC, select the correct COM port, and initiate the update process using the ReflashTool.exe.