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› [Reli On](#) /

› [RELiON RB100 Lithium-ion Battery User Manual](#)

Reli On RB100

RELiON RB100 Lithium-ion Battery User Manual

Model: RB100 | Brand: Reli On

1. INTRODUCTION

The RELiON RB100 is a versatile, lightweight, and powerful 12V 100Ah LiFePO4 (Lithium Iron Phosphate) battery. Designed as a group size 31 battery, it offers an optimal balance of size and capacity, making it suitable for a wide range of recreational and commercial applications, including marine, RV, solar, and off-grid systems.

Key Features:

- Waterproof (IP67 Rating):** The battery is designed to completely repel dust and resist water ingress for up to 30 minutes when submerged at 1 meter.
- Constant Power Output:** Unlike traditional lead-acid batteries, the RB100 provides full power throughout its discharge cycle, maintaining a stable voltage.
- Maintenance-Free Operation:** This battery requires no watering or corrosion checks, offering a true plug-and-play experience.
- Lightweight Design:** RELiON lithium batteries are significantly lighter than comparable lead-acid batteries, enhancing performance and agility in various applications.
- Extended Cycle Life:** Expect up to 10 times longer life compared to lead-acid batteries, retaining 80% of rated capacity after 3,500 cycles.

2. SAFETY INFORMATION

Please read and understand all safety instructions before installing or operating the RELiON RB100 battery. Failure to follow these instructions may result in serious injury or damage to the battery and connected equipment.

WARNING: This product may contain materials cautioned by California Proposition 65. For more information, please visit [www.P65Warnings.ca.gov](#).

- Always wear appropriate personal protective equipment (PPE), including safety glasses and insulated gloves, when handling batteries.
- Do not short-circuit the battery terminals.
- Do not disassemble, puncture, or damage the battery.
- Ensure proper ventilation when charging or discharging the battery.

- Use only compatible chargers designed for LiFePO4 batteries.
- Keep the battery away from open flames, heat sources, and flammable materials.
- In case of fire, use a Class D fire extinguisher. Water or foam may be ineffective.

3. PRODUCT OVERVIEW

The RELiON RB100 battery features a robust design with M8 terminals for secure connections. Its compact form factor allows for easy integration into various systems.



Figure 3.1: Angled view of the RELiON RB100 Lithium-ion Battery.



Figure 3.2: Dimensions of the RELION RB100 battery: 13 inches (D) x 8.4 inches (W) x 6.8 inches (H).

Physical Characteristics:

- **Dimensions:** 13"D x 8.4"W x 6.8"H
- **Weight:** Approximately 26.3 pounds
- **Terminal Type:** M8
- **Ingress Protection:** IP67 (Waterproof)

4. INSTALLATION AND SETUP

Proper installation is crucial for the performance and longevity of your RELION RB100 battery. Always ensure the battery is installed in a secure, well-ventilated location, protected from direct sunlight and extreme temperatures.

Installation Steps:

1. **Preparation:** Before installation, ensure all power sources are disconnected and the area is clear of debris. Wear appropriate safety gear.

2. **Mounting:** Secure the battery in an upright position using appropriate battery trays or straps. Ensure it is stable and cannot move during operation.
3. **Wiring:** Connect the positive (+) terminal of the battery to the positive (+) terminal of your system, and the negative (-) terminal to the negative (-) terminal. Use appropriately sized cables and ensure all connections are tight and secure to prevent resistance and overheating.
4. **Multiple Batteries (if applicable):** If connecting multiple RB100 batteries in series or parallel, refer to the detailed wiring diagrams in the official RELiON user manual for your specific configuration.
5. **Initial Charge:** It is recommended to fully charge the battery before its first use.



Figure 4.1: Example of a RELiON RB100 battery being installed in a marine application.



Figure 4.2: Multiple RELiON RB100 batteries securely installed in a boat's battery compartment.

5. OPERATION

The RELiON RB100 battery is designed for efficient and reliable power delivery. Understanding its operational

characteristics will help maximize its performance and lifespan.

Charging:

- Use a LiFePO4 compatible charger with appropriate voltage and current settings.
- The RB100 can be charged rapidly, typically within 1-5 hours depending on the charger's output.
- Partial charging is acceptable and does not harm the battery, unlike some other battery chemistries.

Discharging:

- The battery provides a consistent voltage output throughout its discharge cycle, ensuring stable power to your devices.
- Avoid deep discharge below the battery's recommended minimum voltage to protect its lifespan. The integrated Battery Management System (BMS) will typically protect against over-discharge.

Lithium vs. Lead-Acid Comparison:

The following table highlights the performance advantages of advanced lithium technology compared to traditional lead-acid batteries:

LEAD IS DEAD

Check out the chart below to compare the performance advantages of advanced lithium technology versus traditional lead-acid batteries.

LITHIUM VS. LEAD-ACID COMPARISON

FEATURE	FLOODED LEAD-ACID	AGM	RELiON LiFePO4
Cycle Life	300 - 400 cycles	300 - 400 cycles	3,500
Max Usable Capacity	50%	50%	85%
Discharge Efficiency	50-90%	50-90%	99%
Maintenance	High	Medium	None
Charge Time	6 - 12 Hours	6 - 12 Hours	1 - 5 Hours
Partial Charging Capable	No	No	Yes
Weight Comparison	100%	100%	50%
Charge Efficiency	80%	85%	99%
Cost	\$	\$\$	\$\$\$

Figure 5.1: Comparison of key features between different battery types.

6. MAINTENANCE

One of the significant advantages of the RELiON RB100 LiFePO4 battery is its minimal maintenance requirement. However, following these simple guidelines will ensure optimal performance and longevity.

- **Cleaning:** Periodically inspect the battery terminals for any signs of corrosion or dirt. Clean them with a dry cloth if necessary. Do not use abrasive cleaners or solvents.
- **Terminal Connections:** Ensure all terminal connections remain tight. Loose connections can lead to increased

resistance and heat.

- Storage:** If storing the battery for an extended period, ensure it is charged to approximately 50% state of charge and stored in a cool, dry place, away from direct sunlight and extreme temperatures.
- Inspection:** Regularly inspect the battery casing for any physical damage. If damage is observed, contact RELiON support.

7. TROUBLESHOOTING

This section provides guidance for common issues you might encounter with your RELiON RB100 battery. For more complex problems, refer to the official user manual or contact RELiON technical support.

Problem	Possible Cause	Solution
Battery not charging	Charger not compatible; Loose connections; Battery Management System (BMS) in protection mode (e.g., low voltage cutoff).	Ensure charger is LiFePO4 compatible and correctly connected. Check all cable connections for tightness. If BMS is in protection, try connecting to a compatible charger to attempt to wake it up. If issues persist, consult the full user manual or RELiON support.
No power output from battery	Battery discharged; BMS in protection mode (e.g., over-discharge, over-current); Loose or corroded terminals.	Check battery voltage. If low, attempt to charge. Verify all connections are secure and clean. If BMS protection is suspected, follow procedures in the full user manual or contact support.
Battery appears swollen or damaged	Physical damage; Internal fault.	Immediately disconnect the battery from all loads and chargers. Do NOT attempt to use or repair. Contact RELiON technical support for assistance and replacement options.

8. SPECIFICATIONS

Detailed technical specifications for the RELiON RB100 Lithium-ion Battery.

Attribute	Value
Model	RB100 (Legacy Series)
Nominal Voltage	12.8V
Nominal Capacity	100Ah
Energy	1280Wh
Dimensions (D x W x H)	13" x 8.4" x 6.8"
Weight	26.3 pounds
Terminal Type	M8
Internal Resistance	30 Ohms

Attribute	Value
Cycle Life	3,500 - 5,000 cycles (to 80% capacity)
Waterproof Rating	IP67
Manufacturer	RELiON
UPC	850025732093

9. WARRANTY AND SUPPORT

RELiON batteries are backed by a comprehensive warranty, reflecting the manufacturer's confidence in their product's durability and performance.

- Warranty:** The RELiON RB100 battery typically comes with a 10-year warranty. Please refer to the official RELiON warranty policy for full terms and conditions.
- Official User Manual:** For detailed instructions, wiring diagrams, and advanced troubleshooting, please download the official User Manual PDF from the RELiON website or via the provided link: [RELiON RB100 User Manual \(PDF\)](#).
- Customer Support:** For technical assistance, warranty claims, or any other inquiries, please contact RELiON customer support through their official website or authorized distributors.

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Related Documents - RB100

 The cover of the RELiON Standard Products User Manual. It features a dark background with a hexagonal pattern. The text "RELiON" is in a white box at the top, followed by "STANDARD PRODUCTS" and "USER MANUAL" in a smaller white box.	<p>RELiON Standard Products User Manual: Care, Installation, and Operation Guide</p> <p>Comprehensive user manual for RELiON Lithium Iron Phosphate (LiFePO4) batteries. Covers safety, installation, storage, charging, discharging, BMS operation, and warranty registration for various RELiON models.</p>
 The cover of the RELiON Legacy Series User Manual. It features a dark blue background with a repeating hexagonal pattern. The text "RELiON" is in a white box at the top, followed by "LEGACY SERIES" and "USER MANUAL" in a smaller white box.	<p>RELiON Legacy Series User Manual - Battery Care and Installation Guide</p> <p>Official user manual for RELiON Legacy Series Lithium Iron Phosphate (LiFePO4) batteries. Provides essential information on safe handling, installation, operation, storage, charging procedures, BMS functions, and warranty registration.</p>

 <p>RELION LITHIUM IRON PHOSPHATE (LiFePO4) BATTERIES</p> <p>It is important that the Relion LiFePO4 batteries are properly charged to ensure the life of these batteries. This document provides the recommended charging procedures for the Relion LiFePO4 batteries. It also provides information on how to inspect the batteries and what to do if there is a problem.</p> <p>Where to Charge your LiFePO4 Battery</p> <p>It is recommended that the Relion LiFePO4 batteries are charged at a slow rate. The recommended charge rate is 10% of the battery capacity per hour. This means that a 100Ah battery should be charged at a rate of 10A. It is important to note that the battery should not be charged at a rate faster than 10% of the capacity per hour. This is because the battery will overheat and may catch fire if it is charged too fast.</p> <p>Charging Temperature</p> <p>The recommended charging temperature is between 10°C and 30°C. It is important to note that the battery should not be charged at temperatures below 10°C or above 30°C. This is because the battery will not charge properly at these temperatures. It is also important to note that the battery should not be charged at temperatures above 30°C for extended periods of time. This is because the battery will overheat and may catch fire if it is charged at high temperatures for extended periods of time.</p> <p>ReliOn Premier Blood Glucose Test Strips - User Information</p> <p>Comprehensive guide to ReliOn Premier Blood Glucose Test Strips, covering intended use, test principles, storage, handling, test procedures, performance characteristics, accuracy, precision, and troubleshooting for ReliOn Premier meters.</p>	<p>RELION Lithium Iron Phosphate (LiFePO4) Battery Charging Instructions</p> <p>Comprehensive guide to charging RELION Lithium Iron Phosphate (LiFePO4) batteries, covering charger inspection, charging guidelines, temperature considerations, charge profiles (1-stage and 2-stage), parallel and series system charging, and operational parameters for various system voltages.</p>
 <p>RELION InSight Series Manual</p>	<p>RELION InSight Series Battery Manual: 48V030-GC2 & 24V060-GC2 User Guide</p> <p>Comprehensive user manual for RELION's InSight Series LiFePO4 batteries, including models 48V030-GC2 and 24V060-GC2. Covers specifications, installation, operation, charging, and safety.</p>
 <p>PORTABLE BATTERY ANALYZER Model No. IT27-20 USER MANUAL</p>	<p>RELION Portable Battery Analyzer IT27-20 User Manual</p> <p>Comprehensive user manual for the RELION Portable Battery Analyzer (Model IT27-20). Covers technical specifications, product structure, operation, battery installation, charging, software updates, setup, storage, and safety precautions.</p>