

TCBWORTH 12.8V 100Ah Group 31

TCBWORTH 12.8V 100Ah LiFePO4 Deep Cycle Battery User Manual

Model: 12.8V 100Ah Group 31

Brand: TCBWORTH

1. INTRODUCTION

Thank you for choosing the TCBWORTH 12.8V 100Ah LiFePO4 Deep Cycle Battery. This manual provides essential information for the safe and efficient operation, installation, and maintenance of your battery. Please read it thoroughly before use.

This high-performance lithium iron phosphate battery is designed for a wide range of deep cycle applications, offering superior lifespan, lighter weight, and enhanced safety compared to traditional lead-acid batteries. It features an advanced 100A Battery Management System (BMS) with integrated low-temperature protection.

2. SAFETY INFORMATION

- Always wear appropriate personal protective equipment (PPE) including safety glasses and gloves when handling batteries.
- Do not short-circuit the battery terminals.
- Do not disassemble, puncture, or damage the battery.
- Keep the battery away from fire, heat sources, and flammable materials.
- Ensure proper ventilation during charging and discharging.
- Use only compatible chargers designed for LiFePO4 batteries.
- If the battery is used in a wet environment (e.g., boat), ensure it is housed in a waterproof battery box.
- This battery is not suitable for use as a golf cart battery or a car starter battery.

3. PRODUCT OVERVIEW

The TCBWORTH 12.8V 100Ah LiFePO4 battery is a robust and efficient power solution. It is built to the BCI Group 31 size standard, making it a direct replacement for many lead-acid, AGM, and SLA batteries without requiring complex modifications.

Key Features:

- **High Energy Density:** 3-5 times higher than lead-acid batteries.
- **Lightweight Design:** Weighs approximately 20.7 lbs, significantly lighter than comparable lead-acid batteries.
- **Long Cycle Life:** Up to 10 times longer deep cycle life compared to lead-acid batteries.
- **Integrated 100A BMS:** Provides comprehensive protection against overcharging, over-discharging, over-current, overheating, and short circuits.
- **Low-Temperature Protection:** Features an automatic low-temperature cut-off function to prevent damage in cold conditions.
- **Flexible Configuration:** Supports series and parallel connections for increased voltage or capacity (up to 4S4P).

Product Dimensions:



Image Description: A TCBWORTH 12.8V 100Ah LiFePO4 battery shown with its dimensions: Length (L) 332mm (13.07in), Width (W) 176mm (6.93in), Height (H) 220mm (8.66in). Terminal specifications for M8 Terminal Bolts are also indicated.

- **Dimensions:** 6.93 x 13.07 x 8.66 inches (176 x 332 x 220 mm)
- **Terminal Type:** Screw Terminal (M8 Terminal Bolts)

- **Weight:** Approximately 20.7 lbs

4. SETUP

Initial Inspection:

Upon receiving your battery, inspect it for any signs of physical damage. Verify that all included accessories (e.g., terminal caps, bolts) are present.

Terminal Connections:

Connect cables securely to the battery terminals using the provided M8 bolts. Ensure positive (+) terminals are connected to positive and negative (-) to negative. Overtightening can damage terminals.

Series and Parallel Configuration:

This battery supports up to 4 batteries in series (4S) and 4 batteries in parallel (4P). For series connections, it is recommended to use TCBWORTH batteries specifically designed for higher voltages (24V, 36V, 48V) for a more stable system and longer service life, avoiding complex connections.

Parallel Connection: Connect positive terminals together and negative terminals together to increase overall capacity while maintaining the same voltage.

Series Connection: Connect the positive terminal of one battery to the negative terminal of the next battery to increase the overall voltage. Ensure all batteries are of the same voltage and capacity when connecting in series or parallel.

Video Description: This video from MOSEWORTH US demonstrates the unboxing and initial setup of a LiFePO4 battery, including voltage testing and series connection testing. It shows how to connect multiple batteries in series to achieve higher voltage outputs.

Video Description: This video from Hysincere shows the unboxing process of a LiFePO4 battery, highlighting the included components such as the user manual, M6 terminals, and terminal caps. It provides a visual guide to what to expect when receiving the product.

5. OPERATING INSTRUCTIONS

Charging:

- **Recommended Charging Voltage:** 14.6V.
- **Recommended Charging Current:** Less than 50A.
- Always use a LiFePO4 compatible charger.
- If the battery is completely discharged, charge it within 12 hours.

Discharging:

- **Maximum Continuous Discharging Current:** 100A.
- **Inrush Current:** 200A within 3-5 seconds.

Battery Management System (BMS) Functions:

The integrated 100A BMS provides critical protection and management for the battery:

- **Overcharge Protection:** Prevents damage from excessive charging voltage.

- **Over-discharge Protection:** Protects cells from being drained too low.
- **Over-current Protection:** Safeguards against excessive current draw.
- **Overheating Protection:** Monitors and manages internal temperature.
- **Short Circuit Protection:** Automatically disconnects in case of a short circuit.
- **Low-Temperature Cut-off:** Prevents charging and discharging when temperatures are too low to protect the cells.
- **Auto Overload Protection & Recovery:** Automatically manages overloads without manual intervention.

Note: This model does not include Bluetooth functionality.



Image Description: An exploded view of the TCBWORTH 12.8V 100Ah LiFePO₄ battery showing the internal Grade A cells and the 100A upgraded BMS. Icons illustrate various protections: Over-Charge, Over-Discharge, Over-Current, Short-Circuit, High-Temperature, and Low-Temperature Protection.

Video Description: An official TCBWORTH video showcasing the 12V 100Ah LiFePO₄ Lithium Battery, highlighting its features and compact design. It provides a quick overview of the product.

6. APPLICATIONS

The TCBWORTH 12.8V 100Ah LiFePO₄ battery is versatile and suitable for numerous applications:

- **Recreational Vehicles (RV):** Provides reliable power for onboard appliances and systems.
- **Solar Energy Systems:** Excellent for energy storage in off-grid or grid-tied solar setups.
- **Marine & Boat Applications:** Powers trolling motors, electronics, and other marine equipment.
- **Camping & Outdoor:** Ideal for portable power needs during outdoor adventures.
- **Off-Grid Living:** A dependable power source for remote cabins or homes.
- **Uninterruptible Power Supply (UPS):** Can be integrated into UPS systems for backup power.
- **Other Uses:** Suitable for radio equipment, sump pumps, and various 12V applications.



Image Description: A collage of images demonstrating the versatility of the TCBWORTH 12.8V 100Ah LiFePO4 battery across different applications, including RVs, solar systems, marine use, and off-grid setups.

Video Description: This video from WOXABHSL highlights the features and various applications of their 12V 100Ah LiFePO4 battery, including its use in RVs, boats, and solar systems. It emphasizes the battery's portability and safety features.

Video Description: This video from KEPWORTH showcases their 12V 100Ah lithium battery, detailing its specifications, charging ports, and various applications such as RVs, trolling motors, camping, and solar systems. It also highlights the low-temperature cut-off protection and internal cell structure.

7. MAINTENANCE

- Keep the battery terminals clean and free from corrosion.

- Regularly check cable connections for tightness.
- Store the battery in a cool, dry place when not in use.
- For long-term storage, charge the battery to 30-50% capacity and recharge every 3-6 months.
- Avoid exposing the battery to extreme temperatures.

8. TROUBLESHOOTING

If you encounter issues with your TCBWORTH LiFePO4 battery, consider the following:

- **Battery Not Charging:** Check charger compatibility and connections. Ensure the battery is not in low-temperature cut-off mode.
- **Battery Not Discharging:** Verify connections to the load. Check if the BMS has activated protection due to over-discharge, over-current, or low temperature.
- **Low Voltage Output:** Ensure the battery is adequately charged. Check for loose connections or excessive load.
- **Overload Protection:** If the battery enters overload protection mode, reduce the load and allow the battery to recover automatically.

For persistent issues, contact TCBWORTH customer support.

9. SPECIFICATIONS

Specification	Value
Nominal Voltage	12.8V
Nominal Capacity	100Ah
Energy	1280Wh
Max Continuous Discharge Current	100A
Inrush Current (3-5 seconds)	200A
Recommended Charging Voltage	14.6V
Recommended Charging Current	<50A
BMS Protection	Overcharge, Over-discharge, Over-current, Overheating, Short Circuit, Low-Temp Cut-off
Dimensions (L x W x H)	13.07 x 6.93 x 8.66 inches (332 x 176 x 220 mm)
Weight	20.7 lbs
Terminal Type	Screw Terminal (M8)
Automotive Fit Type	Universal Fit (BCI Group 31)

10. WARRANTY & SUPPORT

For warranty information, technical support, or any questions regarding your TCBWORTH 12.8V 100Ah LiFePO4 battery, please refer to the official TCBWORTH website or contact their customer service directly. Keep your purchase receipt for warranty claims.