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› [Power Queen](#) /

› Power Queen 30 Amp MPPT Solar Charge Controller User Manual

Power Queen P24V30A-MPPT-BT-B

Power Queen 30 Amp MPPT Solar Charge Controller User Manual

Model: P24V30A-MPPT-BT-B | Brand: Power Queen

1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of your Power Queen 30 Amp MPPT 12V/24V Solar Charge Controller. This device is designed to efficiently manage power flow from your solar panels to your battery bank, ensuring optimal charging and system protection. It features Maximum Power Point Tracking (MPPT) technology for high efficiency and built-in Bluetooth for remote monitoring.



Image 1.1: The Power Queen 30 Amp MPPT Solar Charge Controller.

2. KEY FEATURES

- **Intuitive LCD Display & Remote Monitoring:** Features an LCD screen and LED indicators for system status, customizable parameters, and error codes. A built-in Bluetooth module allows remote monitoring of solar panel, battery, and load status via a dedicated application.
- **High Tracking Efficiency:** Utilizes advanced MPPT technology with up to 99% tracking efficiency and 98% peak conversion efficiency, optimizing power harvest from solar arrays.
- **Versatile Battery Compatibility:** Default setting for 12V LiFePO4 batteries, with manual adjustment options for Gel, Sealed, Flooded, and Lead-Acid battery types. Supports both 12V and 24V battery systems.
- **Robust Design & Comprehensive Protection:** Constructed with a die-cast aluminum heat sink for efficient heat dissipation, allowing operation in temperatures from -31°F to 113°F. Includes built-in protections against over-voltage, over-power, short-circuit, reverse connection, reverse-charging, and over-temperature.
- **Enhanced Connectivity:** Equipped with a copper wire connector accessory to improve contact area and current transmission during installation.

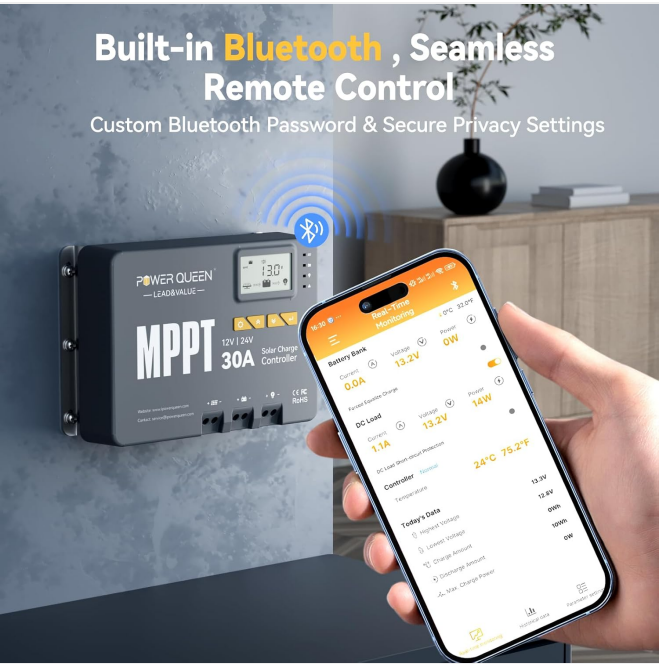


Image 2.1: Built-in Bluetooth for seamless remote control and monitoring.



Image 2.2: Compatibility with 12V/24V battery systems including LiFePO4, FLD, SEL, GEL, and USE.



Image 2.3: Effective cooling performance with a die-cast aluminum heat sink.



Image 2.4: MPPT technology provides 99% tracking efficiency, reducing solar energy waste.

3. SAFETY INFORMATION

Please read all instructions and warnings carefully before installation and operation. Failure to follow these instructions may result in electric shock, fire, or severe injury.

- Ensure all connections are tight and correct to prevent loose connections that can cause excessive heat.
- Always connect the battery first, then the solar panel, and finally the load. Disconnect in reverse order.
- Do not disassemble or attempt to repair the controller yourself. Contact qualified personnel for service.
- Install the controller in a well-ventilated area, away from flammable materials and direct sunlight.
- Wear appropriate personal protective equipment (PPE) during installation, including eye protection and insulated gloves.
- Ensure the solar panel's open-circuit voltage (Voc) does not exceed the controller's maximum input voltage (100V).

Complete Power System Protection

- | | |
|---|---|
|  Battery over-voltage |  Self-overheating |
|  Battery over-discharge |  Load overload |
|  Solar/Battery Reverse polarity connection |  Environmental over-temp |
|  Solar over-voltage |  Load short circuit |



Image 3.1: The controller offers complete power system protection against various electrical faults.

4. PACKAGE CONTENTS

Verify that all items are present in the package:

- Power Queen 30 Amp MPPT Solar Charge Controller (Model: P24V30A-MPPT-BT-B)
- Copper wire connector (accessory)
- User Manual (this document)

5. SETUP

5.1 Mounting the Controller

Mount the controller vertically on a non-flammable surface in a dry, well-ventilated area. Ensure adequate clearance around the unit for heat dissipation. Avoid direct sunlight, high temperatures, and moisture.

5.2 Wiring Connections

Follow the wiring order precisely to prevent damage to the controller or other components. Use appropriate wire gauges for your system's current and distance.

1. **Connect the Battery:** Connect the battery cables to the battery terminals on the controller (positive to positive, negative to negative). Ensure a secure connection. The controller will power on once the battery is connected.
2. **Connect the Solar Panel:** Connect the solar panel cables to the PV terminals on the controller (positive to positive, negative to negative). Ensure the solar panel's open-circuit voltage does not exceed 100V.
3. **Connect the DC Load (Optional):** If using a DC load directly from the controller, connect the load cables to the load terminals (positive to positive, negative to negative).

5.3 Initial Configuration

After connecting the battery, the controller will automatically detect the system voltage (12V or 24V). You may need to manually set the battery type if it's not LiFePO4 (the default). Refer to the 'Operating Instructions' section for details on navigating the LCD menu and setting parameters.

6. OPERATING INSTRUCTIONS

6.1 LCD Display and Indicators

The LCD display provides real-time system information. LED indicators show the status of solar charging, battery, DC load, and any errors.

User-friendly Interface For Monitoring

- | | | | |
|------------------|-----------------|------------------|-----------|
| ① Solar Panel | ④ Battery State | ⑦ System Voltage | ⑩ Unit |
| ② Charging Stage | ⑤ DC Load State | ⑧ Set Mode On | ⑪ DC Load |
| ③ Solar State | ⑥ Error | ⑨ Communication | ⑫ Battery |



Image 6.1: User-friendly interface for monitoring. Labels indicate Solar Panel, Charging Stage, Solar State, Battery State, DC Load State, Error, System Voltage, Set Mode On, Communication, Unit, DC Load, and Battery.

6.2 Button Functions

Use the buttons below the LCD to navigate menus and adjust settings:

- **Menu Button:** Enters/exits menu, cycles through display screens.
- **Up/Down Buttons:** Navigates menu options, adjusts parameter values.
- **Enter Button:** Confirms selection, saves settings.

6.3 Bluetooth Remote Monitoring

Download the Power Queen monitoring application to your smartphone. Enable Bluetooth on your device and pair with the controller. The app allows you to view real-time data, adjust parameters, and monitor system performance remotely.

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Video 6.2: An overview of Power Queen Lithium Batteries, demonstrating their application in various scenarios. This video

highlights the general product line and its versatility.

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Video 6.3: Showcasing Power Queen's versatile power solutions for various moments. This video provides a general brand perspective on power solutions.

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Video 6.4: A video highlighting the benefits and features of Power Queen LiFePO4 batteries, which are compatible with this charge controller.

7. MAINTENANCE

Regular maintenance ensures optimal performance and longevity of your solar charge controller.

- **Check Connections:** Periodically inspect all wiring connections for tightness and corrosion. Loose connections can cause overheating and damage.
- **Clean the Controller:** Keep the controller clean and free of dust and debris. Use a dry cloth to wipe the exterior. Do not use liquids or solvents.
- **Inspect for Damage:** Check for any physical damage to the casing, terminals, or cables.
- **Monitor Performance:** Regularly check the LCD display or the Bluetooth app for normal operation and any error messages.

8. TROUBLESHOOTING

This section addresses common issues you might encounter with your solar charge controller.

Problem	Possible Cause	Solution
Controller not powering on	Battery not connected or low voltage; reverse polarity connection.	Ensure battery is connected correctly and has sufficient voltage. Check for reverse polarity.
No solar charging	Solar panels not connected; insufficient sunlight; PV voltage too low/high; reverse polarity.	Verify solar panel connections. Check for adequate sunlight. Ensure PV voltage is within specifications (max 100V). Check for reverse polarity.
Load not working	Load not connected; load current too high; battery low voltage; load output disabled.	Check load connections. Ensure load current is within controller limits. Charge battery. Check load output settings on controller/app.
Bluetooth connection issues	App not installed; Bluetooth disabled; interference.	Install the correct Power Queen app. Enable Bluetooth on your device. Move closer to the controller.

9. SPECIFICATIONS

Parameter	Value
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Parameter	Value
Model	P24V30A-MPPT-BT-B
Brand	Power Queen
Rated Charge Current	30 Amp
System Voltage	12V/24V Auto Recognition
Max PV Input Voltage	100V
Tracking Efficiency	Up to 99%
Peak Conversion Efficiency	98%
Display Type	LCD or LED
Operating Temperature Range	-31°F to 113°F (-35°C to 45°C)
Battery Types Supported	LiFePO4 (default), Sealed, Flooded, Gel, Lead-Acid
Included Components	Power Queen 12/24V 30 Amp MPPT Solar Charge Controller, Copper wire connector
Color	Black

10. WARRANTY AND SUPPORT

Power Queen products are designed for reliability and performance. For specific warranty details, please refer to the warranty card included with your product or visit the official Power Queen website.

Customer Support

If you encounter any issues or have questions regarding your Power Queen 30 Amp MPPT Solar Charge Controller, please contact our customer support team:

- **Email:** service@powerqueen.com
- **Website:** www.powerqueen.com

ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page’s manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for

conversion attribution. [Privacy details](#).

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question