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POWLAND 20A-MPPT

POWLAND 20A MPPT Solar Charge Controller User Manual

Model: 20A-MPPT

1. Introduction

This user manual provides detailed instructions for the installation, operation, and maintenance of your POWLAND 20A MPPT Solar Charge Controller. Please read this manual thoroughly before using the product to ensure proper function and safety.
The POWLAND 20A MPPT Solar Charge Controller is designed to efficiently manage power from your solar panels to charge various battery types, ensuring optimal energy utilization and battery longevity. It features advanced MPPT technology, a user-friendly touchscreen interface, and integrated Bluetooth for remote monitoring.

2. Safety Precautions

- Ensure all connections are correct and secure before powering on the controller.
- Do not attempt to disassemble or repair the controller yourself. Refer to qualified personnel.
- Install the controller in a well-ventilated area, away from flammable materials and direct sunlight.
- Always disconnect the solar panel and battery power before performing any wiring or maintenance.
- Wear appropriate personal protective equipment (PPE) during installation.
- This device is designed for 12V/24V auto DC input systems. Verify your system voltage before connection.

3. Product Overview

The POWLAND 20A MPPT Solar Charge Controller is a robust and efficient device for managing your solar power system. Key features include:

- **Advanced MPPT Technology:** Achieves up to 98% conversion efficiency, outperforming PWM charging by 15-30%.
- **Touchscreen Control & LCD Display:** User-friendly interface with LED indicators for easy monitoring and operation.
- **Integrated Bluetooth Module:** Enables remote monitoring and control via a mobile application.
- **Wide Battery Compatibility:** Supports sealed (AGM), gel, flooded, and lithium batteries.
- **Multiple Protections:** Includes reverse connection guard, over-temperature safeguard, overvoltage protection,

short-circuit prevention, and overload protection.

- **Durable Construction:** Crafted from die-cast aluminum with tempered glass, suitable for various environments including RVs and yachts.



Figure 3.1: Front view of the POWLAND 20A MPPT Solar Charge Controller, showing the LCD display and LED indicators.



Figure 3.2: Overview of the multiple protection features, including reverse connection, over-temperature, overvoltage, short-circuit, and overload protection.

4. Setup and Installation

Proper installation is crucial for the safe and efficient operation of your solar charge controller. Follow these steps carefully:

4.1 Mounting Location

Choose a mounting location that is:

- Well-ventilated to allow for heat dissipation.
- Protected from direct sunlight, rain, and excessive dust.
- Close to the battery bank but not directly above it (to avoid corrosive gases).
- Accessible for wiring and maintenance.

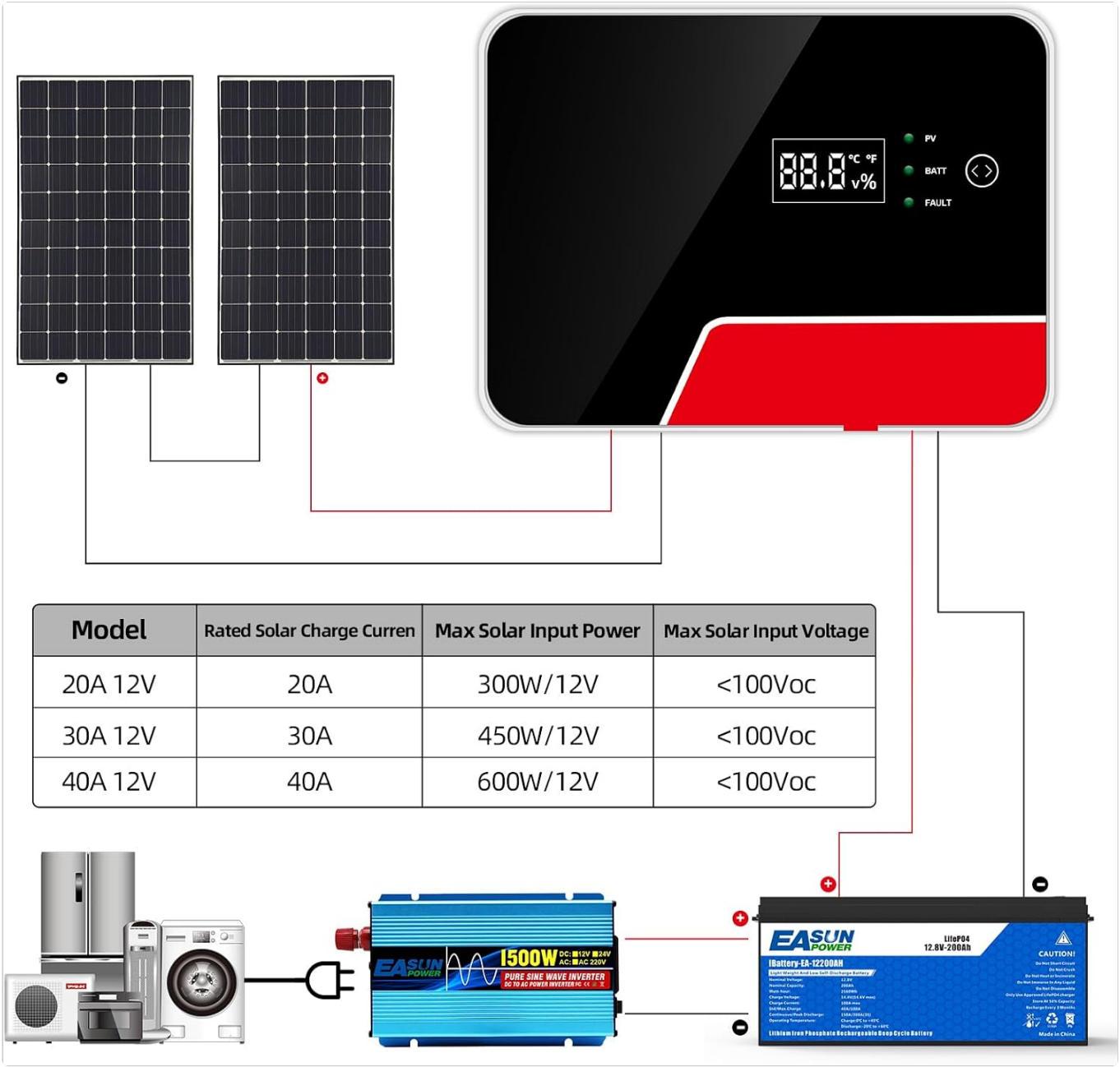


Figure 4.1: The controller features excellent heat dissipation, ensuring silent operation and longevity.

4.2 Wiring Sequence

IMPORTANT: Always connect the battery first, then the solar panel, and finally the load (if applicable). Disconnect in reverse order.

1. **Connect the Battery:** Connect the positive and negative terminals of the battery to the corresponding battery terminals on the controller. Ensure correct polarity. The controller will power on and display battery voltage.
2. **Connect the Solar Panel:** Connect the positive and negative terminals of the solar panel array to the corresponding PV terminals on the controller. Ensure correct polarity. The controller will begin charging if solar power is available.
3. **Connect the DC Load (Optional):** If your model supports a DC load output, connect the positive and negative terminals of your DC load to the load terminals on the controller.



Model	Rated Solar Charge Curren	Max Solar Input Power	Max Solar Input Voltage
20A 12V	20A	300W/12V	<100Voc
30A 12V	30A	450W/12V	<100Voc
40A 12V	40A	600W/12V	<100Voc

Figure 4.2: Typical wiring diagram showing connections for solar panels, battery, and inverter/load. Ensure all connections are secure and correctly polarized.



Figure 4.3: The controller is compatible with Lithium (LI), Sealed (SEL), Gel (GEL), and Flooded (FLD) battery types. Ensure the correct battery type is selected in the settings.

5. Operating Instructions

5.1 LCD Display and Indicators

The LCD display provides real-time system information, while LED indicators show the status of PV input, battery, and any faults.



Figure 5.1: The touchscreen interface allows for user-friendly operation and display of system parameters.

- **PV Indicator:** Green when solar input is active.
- **BATT Indicator:** Green when battery is charging, blinking during certain states, or red for errors.
- **FAULT Indicator:** Red when a system fault is detected.
- **LCD Screen:** Displays voltage, current, temperature, battery state of charge (SOC), and other parameters.

5.2 Bluetooth Monitoring (APP)

The integrated Bluetooth module allows for remote monitoring and parameter adjustment via a dedicated mobile application. Search for the "POWLAND Solar" app on your device's app store.

1. Download and install the mobile application.
2. Ensure Bluetooth is enabled on your mobile device.
3. Open the app and search for available devices. Select your controller.
4. Once connected, you can view real-time data, analyze historical performance, and configure various settings.



Figure 5.2: The built-in Bluetooth module enables remote monitoring, real-time data analysis, and easy configuration via a mobile application.

6. Maintenance

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

- **Check Connections:** Periodically inspect all wiring connections for tightness and corrosion. Loose connections can cause overheating and poor performance.
- **Clean the Controller:** Keep the controller clean and free of dust and debris. Use a dry, soft cloth for cleaning. Do not use liquid cleaners.
- **Inspect for Damage:** Check for any physical damage to the casing, display, or wiring.
- **Monitor Performance:** Regularly check the LCD display or the mobile app for system parameters to ensure normal operation. Note any unusual readings.
- **Battery Health:** Ensure your batteries are well-maintained according to their manufacturer's guidelines.

7. Troubleshooting

This section provides solutions to common issues you might encounter.

Problem	Possible Cause	Solution
Controller not powering on.	No battery connected or battery voltage too low. Reverse polarity connection.	Ensure battery is connected correctly and has sufficient voltage. Check polarity.
No solar charging.	Solar panels not connected, insufficient sunlight, or PV input voltage too low/high.	Check PV connections and polarity. Ensure adequate sunlight. Verify PV voltage is within controller's operating range.
FAULT indicator is red.	System fault (e.g., overvoltage, short circuit, over-temperature).	Check error code on LCD (if available) or app. Disconnect all power, inspect wiring for shorts, allow unit to cool if overheating. Reconnect in proper sequence.
Bluetooth connection issues.	Bluetooth not enabled on phone, app issues, or interference.	Ensure Bluetooth is on. Restart app/phone. Move closer to controller. Check app permissions.

8. Specifications

Detailed technical specifications for the POWLAND 20A MPPT Solar Charge Controller.

Parameter	Value (20A-MPPT Model)
Charging Technology	MPPT
Rated Solar Charge Current	20A
Battery System Voltage	12V/24V Auto
Max Solar Input Power	300W/12V, 600W/24V
Max Solar Input Voltage	<100Vdc
No-load Loss	12mA/12V; 10mA/24V
Operating Temperature	-35°C to +45°C (-31°F to 113°F)

Parameter	Value (20A-MPPT Model)
IP Protection	IP43
Communication Port	RS485(RJ12) + Bluetooth (APP)
Dimensions (L x W x H)	Approx. 7.48 x 4.92 x 2.36 inches (190 x 125 x 60 mm)
Item Weight	3.08 pounds (1.4 kg)

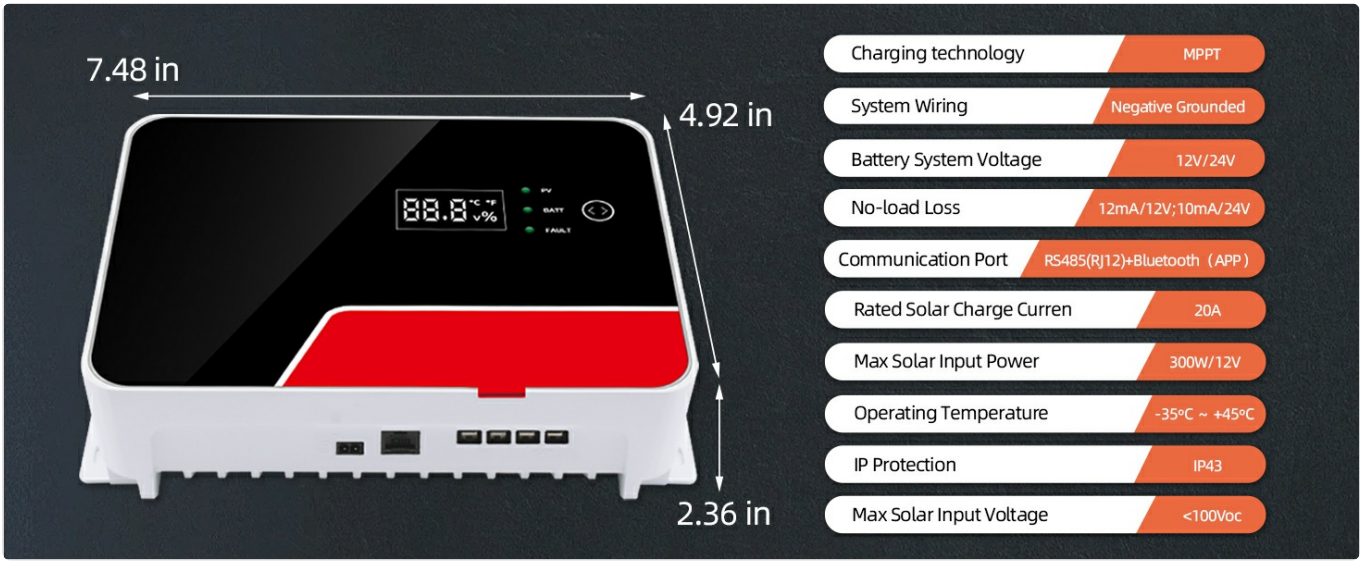


Figure 8.1: Detailed dimensions and key specifications for the 20A-MPPT model.



Figure 8.2: The controller is designed to operate reliably across a wide temperature range, from -35°C to +45°C.

9. Warranty and Support

For warranty information and technical support, please refer to the official POWLAND website or contact their customer service directly. Keep your purchase receipt as proof of purchase for warranty claims.

POWLAND is committed to providing high-quality products and excellent customer service. If you encounter any issues not covered in this manual, please reach out to their support team for assistance.

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