Litime 20A PWM Solar Charge Controller

LiTime 12V/24V 20A PWM Solar Charge Controller User Manual

Brand: LiTime | Model: 20A PWM Solar Charge Controller

1. Introduction and Overview

The LiTime 12V/24V 20A PWM Solar Charge Controller is designed to manage power flow from your solar panels to your battery bank, ensuring efficient and safe charging. This controller features advanced digital PWM control, built-in Bluetooth for remote monitoring, and an IP68 waterproof rating for durability in various environments. It is compatible with multiple battery types, including LiFePO4, Sealed Lead Acid (SLA), Flooded Lead Acid (FLA), and Gel batteries, making it suitable for RVs, home small solar systems, trailers, and campers.

Key features include:

- **Universal Compatibility:** Supports 12V and 24V systems with a maximum solar input of 340W for 12V and 680W for 24V.
- **IP68 Waterproof:** Sealed aluminum casing provides protection against dust and water, suitable for outdoor installation.
- **Integrated Protections:** Includes over-current, over-voltage, over-temperature, battery over-discharge, battery reverse connection, and load port short circuit protection.
- **Built-in Bluetooth:** Allows monitoring and adjustment of settings via the LT Solar App on your smartphone (within 5m range).

2. Safety Instructions

Please read and understand all instructions 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 avoid loose connections that may cause excessive heat.
- Always connect the battery to the charge controller first, then the solar panel, and finally the load. Disconnect in the reverse order.
- Do not attempt to repair or modify the controller. Refer to qualified personnel for service.
- Install the controller in a well-ventilated area, away from flammable materials.

- Wear appropriate personal protective equipment, including eye protection, when working with batteries and solar systems.
- Ensure the battery voltage matches the controller's rated voltage (12V or 24V).

3. What's in the Box

Upon unpacking, please verify that all items listed below are present and undamaged:

- LiTime 20A PWM Solar Charge Controller
- Product Manual
- Heat Shrink Tubing
- Insulated Male/Female Bullet Connectors
- Wall Mounting Screws & Plastic Anchors

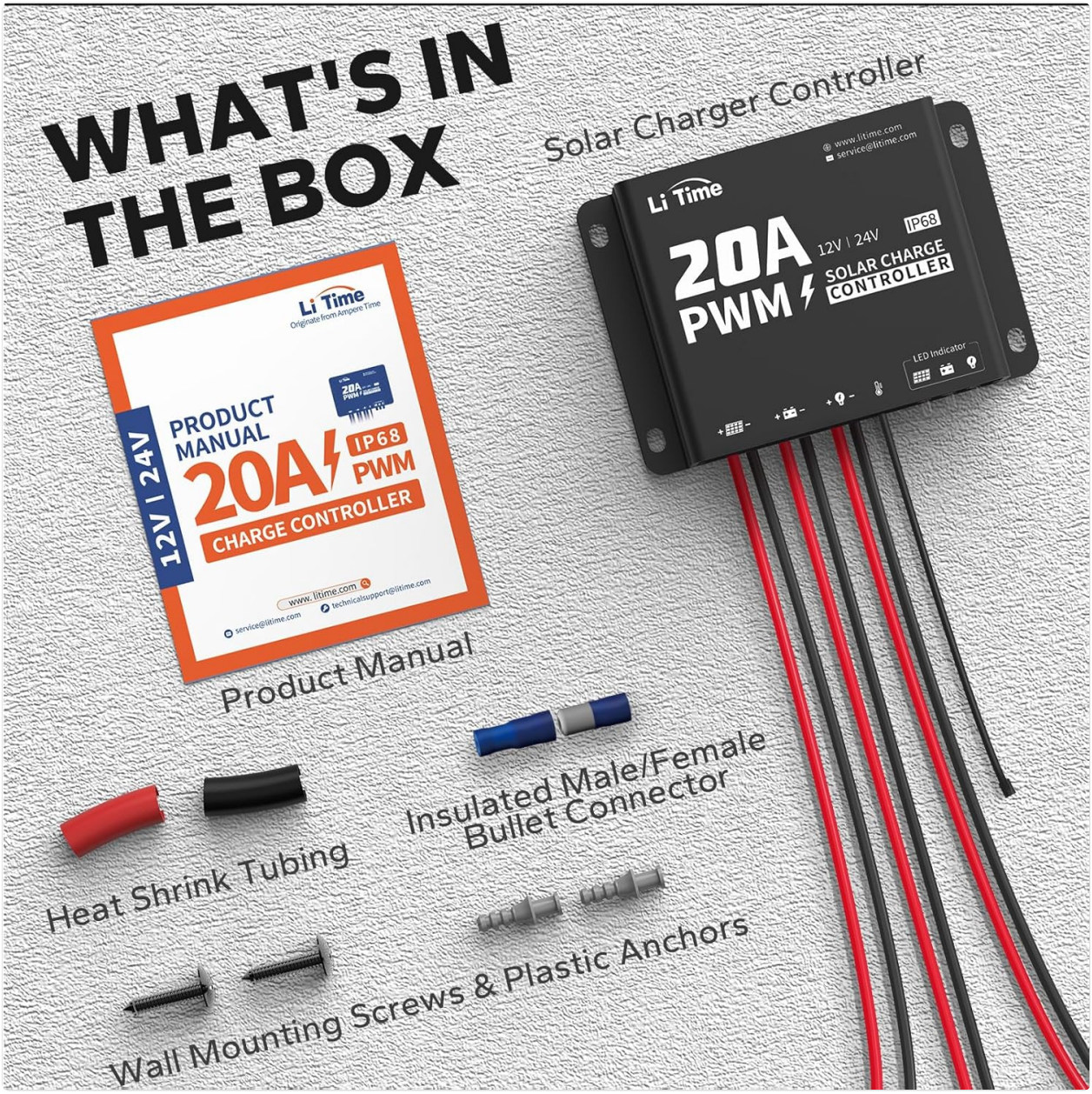

Figure 3.1: Contents of the product packaging.

4. Specifications

Feature	Specification
Model	20A PWM Solar Charge Controller
System Voltage	12V / 24V (Auto-sensing)
Rated Charging Current	20A
Max. Solar Input (12V)	340W
Max. Solar Input (24V)	680W
Battery Types Supported	LiFePO4, SLA, FLA, Gel
Protection Rating	IP68
Communication	Bluetooth (LT Solar App)
Product Dimensions	3.23 x 2.25 x 0.69 inches
Item Weight	5.3 ounces

Figure 4.1: Application scenarios for the LiTime Solar Charge Controller.

5. Setup and Installation

Follow these steps for proper installation of your solar charge controller:

1. **Mounting:** Choose a suitable location for mounting the controller. Its IP68 rating allows for outdoor installation, but ensure it's accessible for wiring. Use the provided wall mounting screws and plastic anchors to secure the controller firmly.
2. **Connect Battery:** Connect the battery cables to the controller's battery terminals (marked with '+' and '-'). Ensure correct polarity. **Always connect the battery first.**
3. **Connect Solar Panel:** Connect the solar panel cables to the controller's solar terminals (marked with '+' and '-'). Ensure correct polarity.
4. **Connect DC Load (Optional):** If using a DC load directly from the controller, connect its cables to the load terminals (marked with '+' and '-'). Ensure correct polarity.

It is recommended to install appropriate fuses or breakers between the solar panel, controller, and battery for safety.

Figure 5.1: Easy and simple connection diagram for the solar charge controller.

Figure 5.2: System compatibility with 12V/24V setups.

6. Operating Instructions

Once properly installed, the controller will automatically begin charging your battery. The LED indicators on the unit provide basic status information:

- **Solar Indicator:** Indicates solar panel activity and charging status.
- **Battery Indicator:** Shows battery charge level and status.
- **Load Indicator:** Indicates if the DC load is active.

For detailed monitoring and advanced settings, use the LiTime Solar App.

7. Bluetooth App Connection

The built-in Bluetooth adapter allows for convenient remote monitoring and configuration via the LT Solar App.

1. **Download App:** Search for "LT Solar App" on your smartphone's app store (iOS or Android) and install it.
2. **Enable Bluetooth:** Ensure Bluetooth is enabled on your smartphone.
3. **Connect:** Open the LT Solar App. The app will scan for nearby LiTime devices. Select your controller from the list to establish a connection.
4. **Monitor & Adjust:** Once connected, you can view real-time system status, charging parameters, and

adjust various settings for your battery type and load.

The Bluetooth range is approximately 5 meters (16 feet). Maintain proximity to the controller for a stable connection.

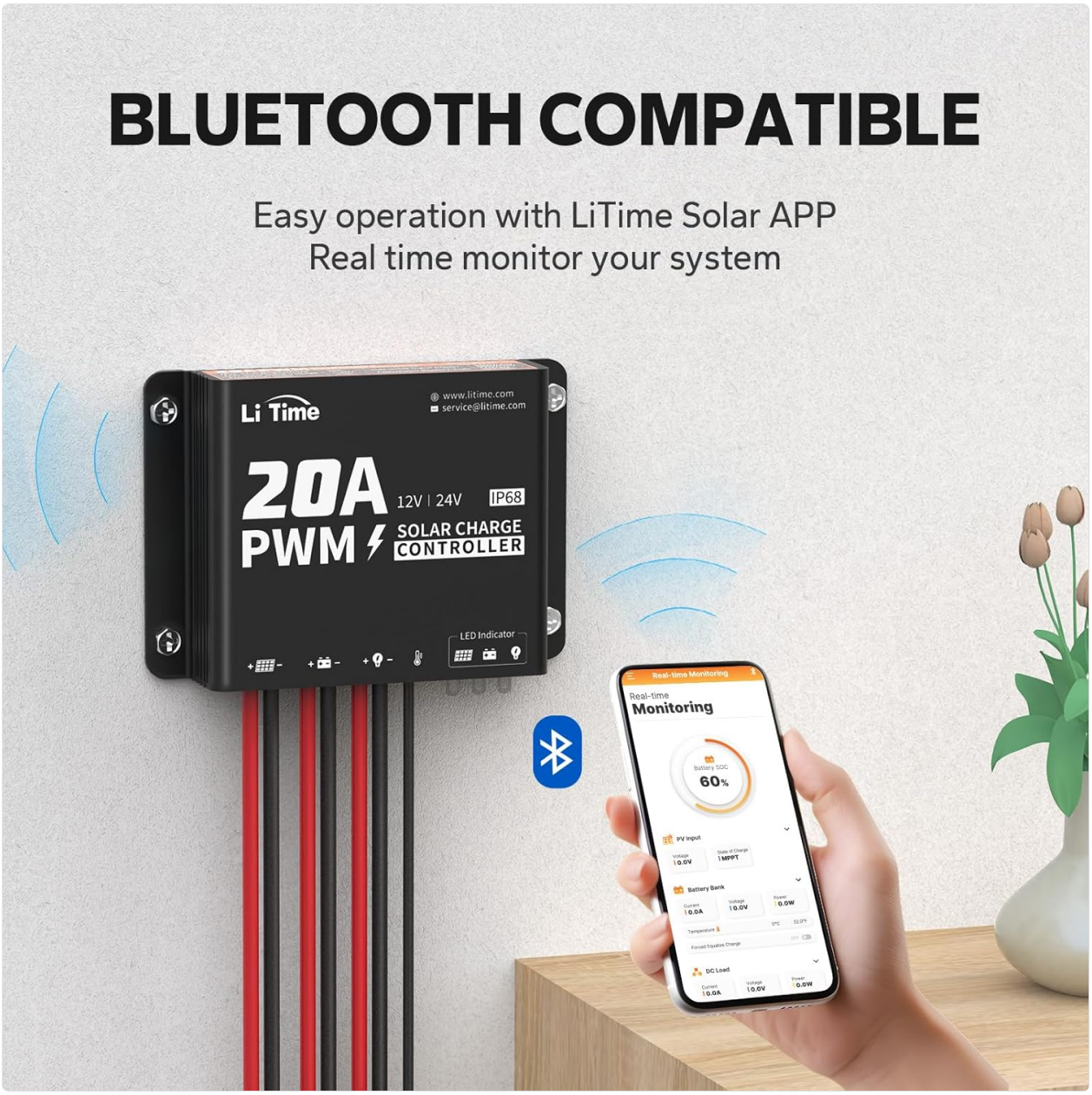

Figure 7.1: Bluetooth connectivity and app monitoring.

8. Battery Type Configuration

The controller is pre-configured for LiFePO4 batteries by default. If you are using a different battery type (SLA, FLA, Gel), you must configure the settings using the LT Solar App.

- Connect to the controller via the LT Solar App (refer to Section 7).
- Navigate to the battery settings section within the app.
- Select your specific battery type (SLA, FLA, Gel) from the available options. The app may also allow for custom parameter adjustments for advanced users.
- Save the changes. The controller will then optimize its charging algorithm for the selected battery type.

Figure 8.1: Compatible battery types.

Figure 8.2: Default battery setting and maximum solar input power.

9. Maintenance

The LiTime PWM Solar Charge Controller is designed for low maintenance. However, periodic checks can ensure optimal performance and longevity:

- **Inspect Connections:** Periodically check all wiring connections to ensure they are secure and free from corrosion. Loose connections can lead to power loss or overheating.
- **Clean Controller:** Although IP68 rated, occasionally wipe down the controller's exterior to remove any accumulated dust or debris. Do not use harsh chemicals or abrasive cleaners.
- **Monitor Performance:** Use the LT Solar App to regularly monitor system performance, battery voltage, and charging current to detect any anomalies early.
- **Environmental Check:** Ensure the controller's mounting location remains suitable, especially if exposed to extreme weather conditions.

Figure 9.1: IP68 water and dust proof design for outdoor use.

10. Troubleshooting

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

- **No Charging:**
  - Check all wiring connections for proper polarity and tightness.
  - Ensure solar panels are receiving adequate sunlight and are not shaded.
  - Verify battery voltage is within the controller's operating range.
  - Check for blown fuses or tripped breakers in the system.
- **Low Charging Current:**
  - Inspect solar panels for dirt, debris, or damage.
  - Ensure the solar panel's voltage and current output match the controller's specifications.
  - Verify the battery type setting in the LT Solar App is correct.
- **Controller Overheating:**
  - Ensure the controller is mounted in a location with sufficient airflow.
  - Check for excessive load or short circuits in the system. The controller has over-temperature protection and will automatically restart once cooled.
- **Bluetooth Connection Issues:**
  - Ensure Bluetooth is enabled on your phone and the app has necessary permissions.

- Move closer to the controller (within 5m range).
- Restart the LT Solar App or your phone.

The controller features multiple protections including PV overvoltage, PV overcurrent, battery over-discharge, battery reverse connection, load port short circuit, and high-temperature protection. If a fault occurs, the controller will attempt to clear the fault and resume normal operation automatically.

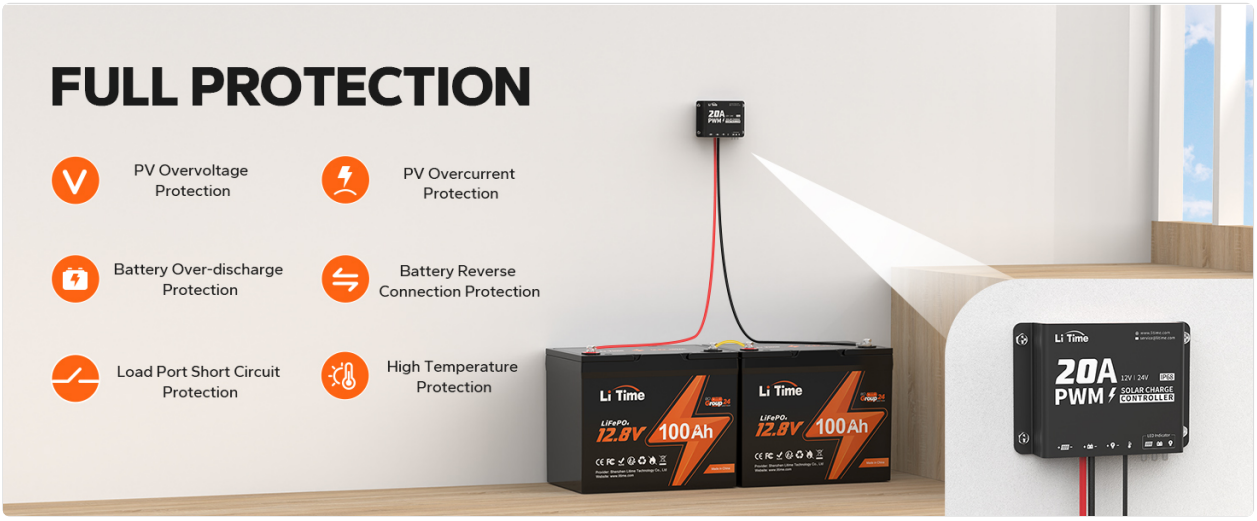

Figure 10.1: Full protection features of the controller.

11. Warranty and Support

LiTime provides a **2-year warranty** for this product, ensuring a worry-free experience. This warranty covers defects in materials and workmanship under normal use.

For technical support, troubleshooting assistance, or warranty claims, please contact LiTime customer service. Our professional technical support team is available to provide quick responses within 24 hours.

You can find more information and contact details on the official LiTime website or through your purchase platform.