Saved from manuals.plus.
Open the live page for links to other documents and user manuals.

POWLAND 80A MPPT

POWLAND 80A MPPT Solar Charge Controller User Manual

Model: **80A MPPT** | Brand: **POWLAND**

1. Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of your POWLAND 80A MPPT Solar Charge Controller. This intelligent regulator is designed to maximize power harvest from your solar panels and efficiently charge various battery types, including LiFePO4, AGM, GEL, and flooded lead-acid batteries, with automatic voltage detection for 12V, 24V, 36V, and 48V systems.
Please read this manual thoroughly before installation and use to ensure optimal performance and safety.



Figure 1: POWLAND 80A MPPT Solar Charge Controller Overview
This image shows the front view of the POWLAND 80A MPPT Solar Charge Controller, highlighting its compact design and LCD display.

2. Key Features

- **Universal 12V-48V Auto-Sensing Compatibility:** Seamlessly adapts to any solar setup with automatic voltage detection (12V/24V/36V/48V) and massive 80A charging capacity.
- **99% Max Efficiency MPPT Technology:** Experience industry-leading solar harvesting with our advanced MPPT algorithm that dynamically tracks the maximum power point in real-time, achieving up to 99% conversion efficiency.
- **Multiple Protection Functions:** Engineered with comprehensive safeguards including short-circuit, reverse polarity, overload, open-circuit, overvoltage, overdischarge, and over-temperature protection.
- **Smart LCD Dashboard:** The high-resolution LCD display provides instant visibility into PV input voltage/current, battery temperature/status, charging mode/stage, and system warnings & diagnostics.
- **Wide Battery Compatibility:** Supports LiFePO4, AGM, GEL, and flooded lead-acid battery types with intelligent 3-stage charging (bulk/absorption/float).
- **Communication Ports:** Integrated RS485/USB ports for remote monitoring and firmware upgrades.

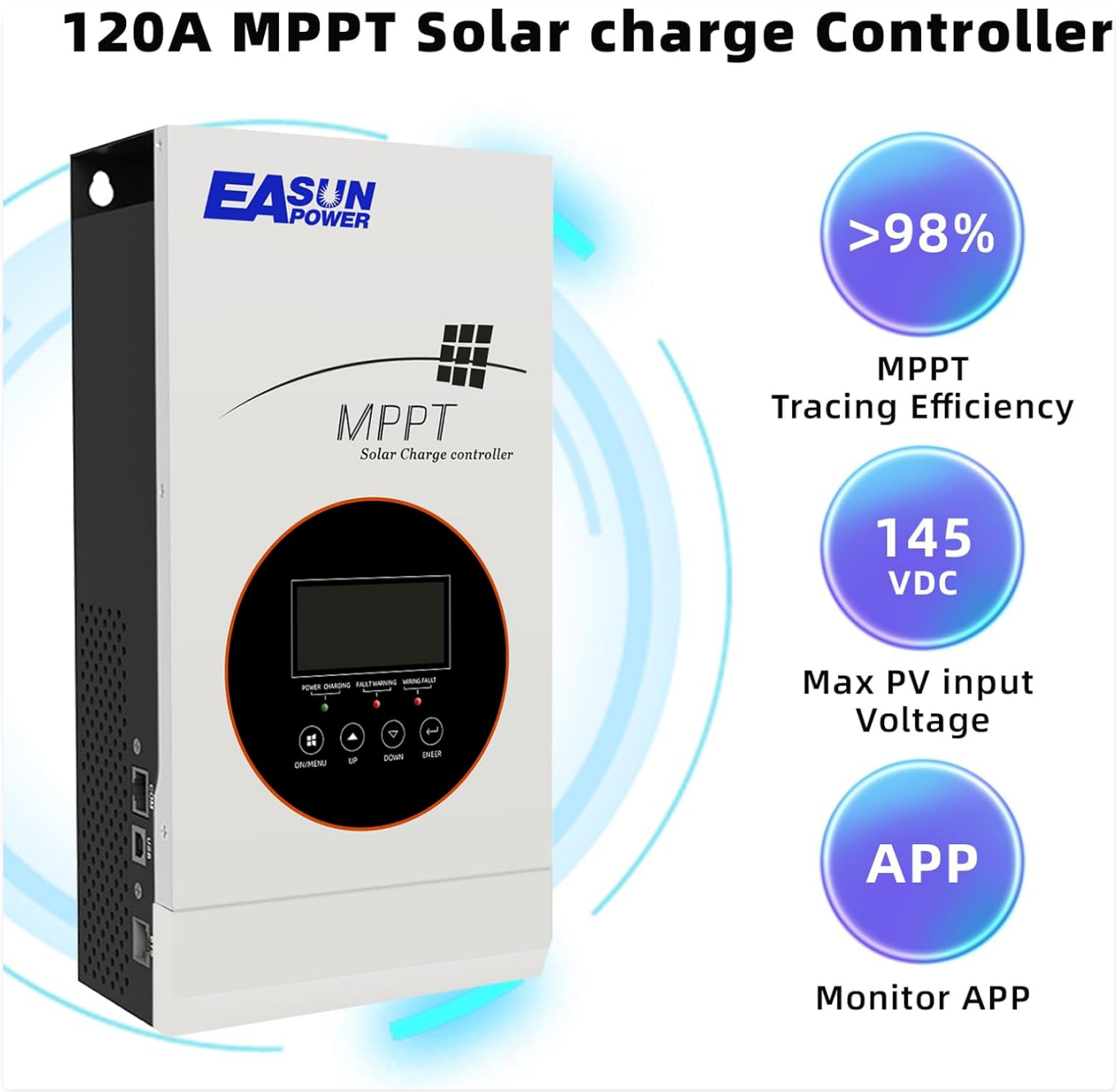

Figure 2: Key Features of the 80A MPPT Solar Charge Controller
This image highlights the MPPT tracing efficiency, maximum PV input voltage, and APP monitoring capability of the solar charge controller.

3. Package Contents

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

- POWLAND 80A MPPT Solar Charge Controller
- Battery Temperature Sensor
- USB Communication Cable
- RS485 Communication Cable
- User Manual (this document)



Figure 3: Included Components
This image displays the POWLAND 80A MPPT solar controller, battery temperature sensor, USB/RS485 communication cables, and user manual included in the package.

4. Setup and Installation

4.1 Safety Precautions

- Ensure all power sources are disconnected before installation.
- Wear appropriate personal protective equipment (PPE), including insulated gloves and eye protection.
- Install the controller in a well-ventilated, dry, and cool environment, away from flammable materials.
- Ensure proper grounding of the system.
- Use appropriate wire gauges for all connections to prevent overheating.

4.2 Mounting the Controller

Mount the controller vertically on a non-flammable surface, ensuring adequate clearance around the unit for proper ventilation. Avoid direct sunlight exposure and high humidity areas.

4.3 Wiring Connections

Follow the wiring sequence carefully to prevent damage to the controller or batteries:

1. **Connect the Battery:** Connect the battery cables to the controller's battery terminals (BAT+ and BAT-). Ensure correct polarity. The controller will automatically detect the battery voltage (12V/24V/36V/48V).
2. **Connect the Solar Panels (PV Array):** Connect the solar panel cables to the controller's PV terminals (PV+ and PV-). Ensure correct polarity. The maximum PV input voltage is 145VDC.

3. **Connect the Load (Optional):** If using a DC load directly from the controller, connect it to the load terminals (LOAD+ and LOAD-).
4. **Connect Temperature Sensor:** Plug the included battery temperature sensor into the designated port on the controller. Place the sensor as close as possible to the battery for accurate temperature compensation.
5. **Connect Communication Cables (Optional):** For remote monitoring or firmware updates, connect the USB or RS485 cables to the respective ports.

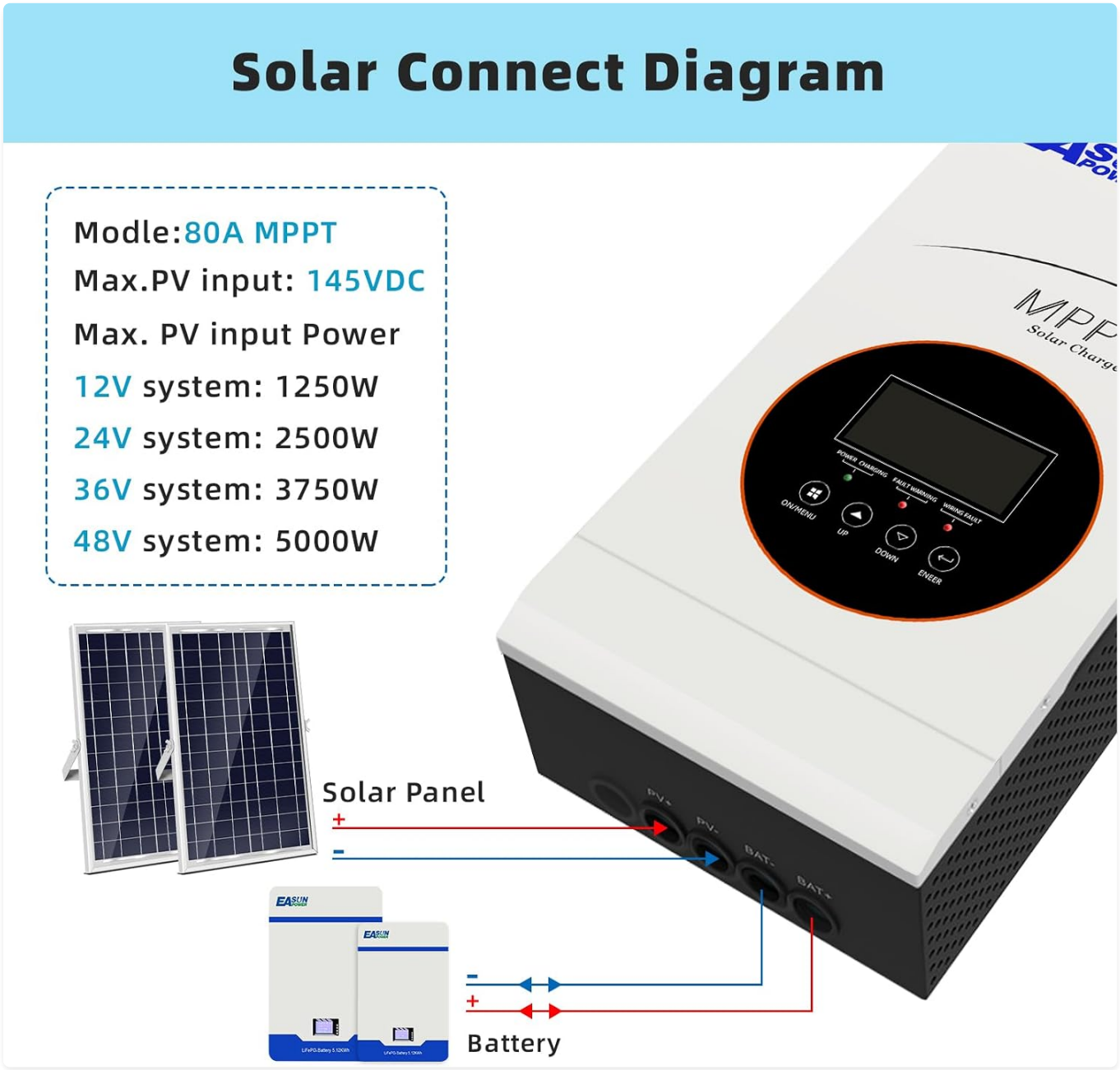

Figure 4: Solar Connection Diagram

This diagram illustrates the correct wiring sequence for connecting solar panels and batteries to the POWLAND MPPT solar charge controller, including maximum input power for different system voltages.

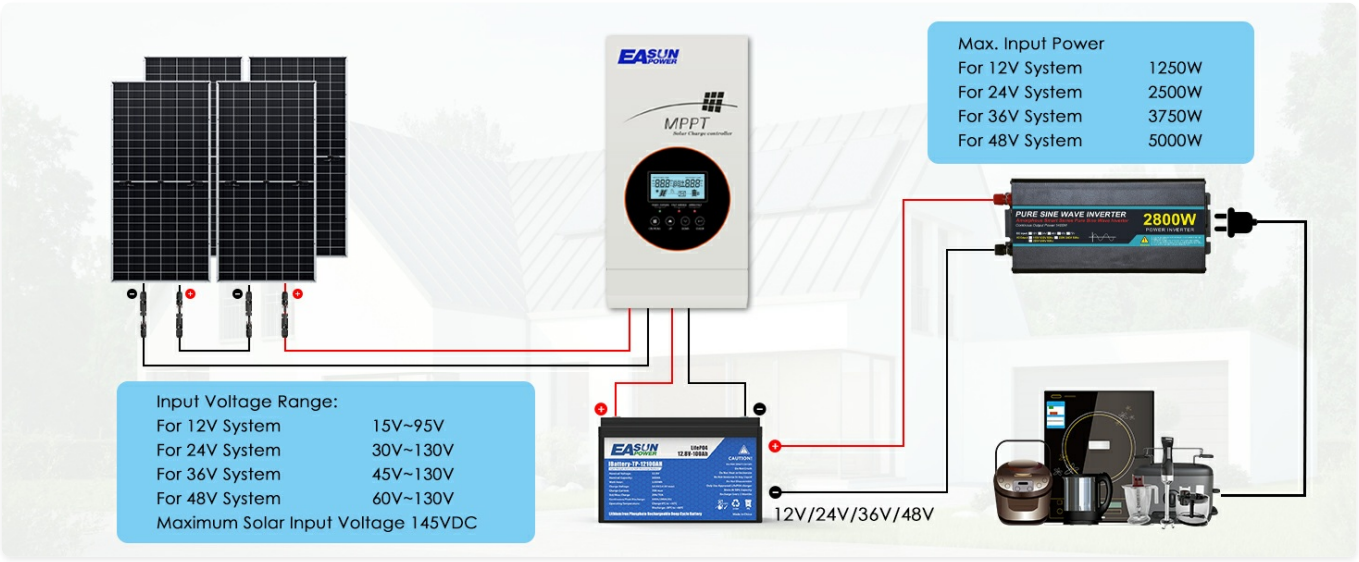

Figure 5: Detailed System Connection

This image provides a more detailed connection diagram showing solar panels, the MPPT controller, battery, and an inverter/load, along with input voltage ranges for various system types.

4.4 Parallel Operation

Multiple POWLAND 80A MPPT controllers of the same model can be connected in parallel to charge a single battery bank, increasing the overall charging capacity. Ensure that inter-controller communication is established via RS485 linkage between units and that each controller has a dedicated solar input (no array sharing).

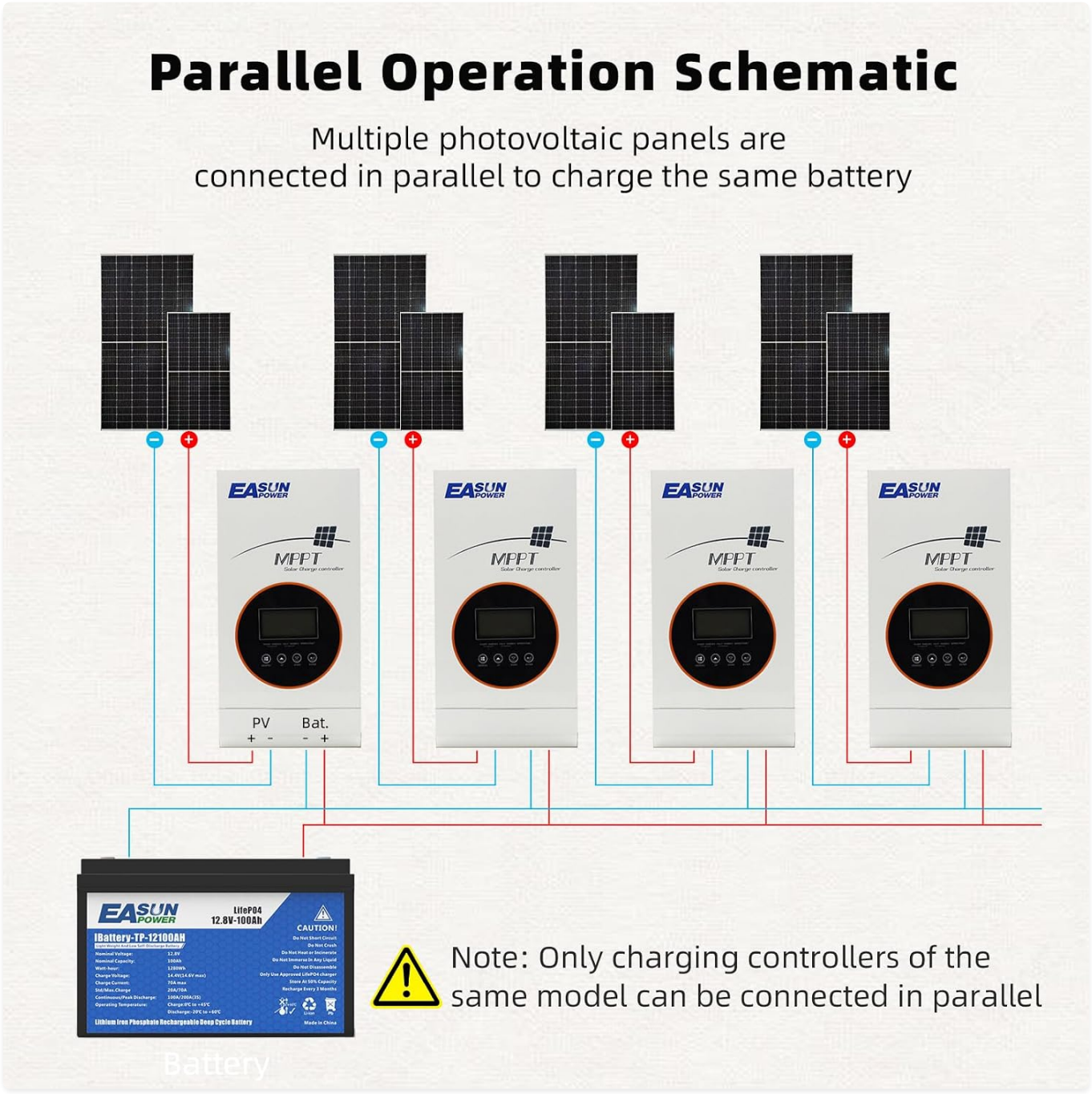

Figure 6: Parallel Operation Schematic

This schematic shows how multiple POWLAND MPPT controllers can be connected in parallel to charge a single battery, emphasizing that only controllers of the same model should be used for parallel connection.

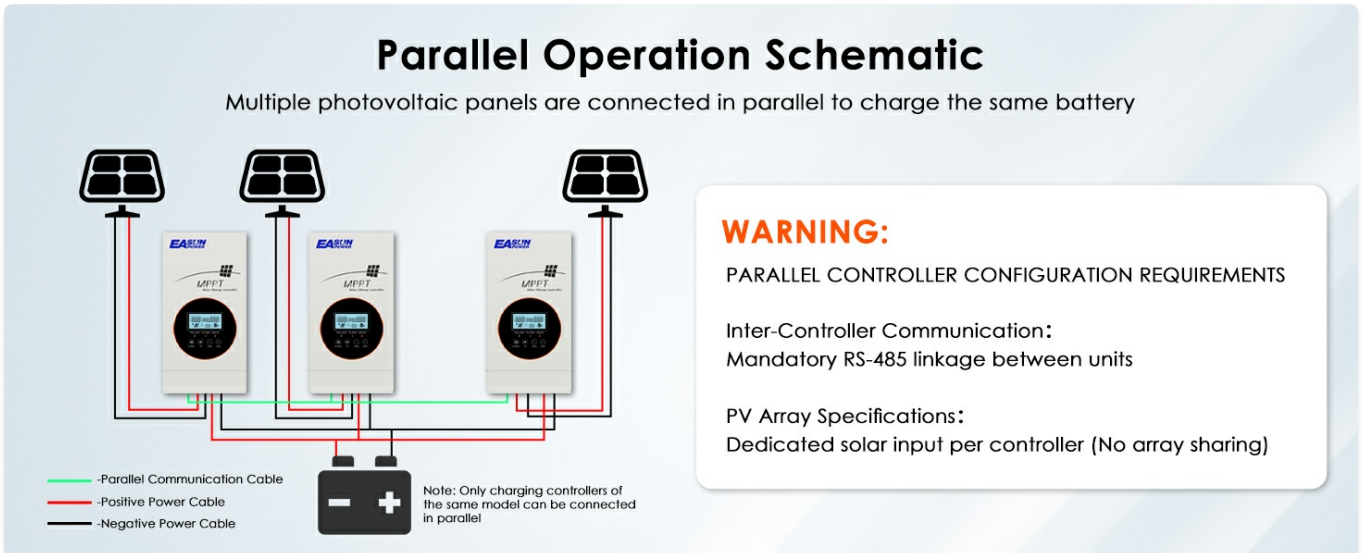

Figure 7: Parallel Operation Requirements
This image details the specific requirements for parallel controller configuration, including mandatory RS-485 linkage and dedicated PV array input per controller.

5. Operating Instructions

5.1 LCD Display Overview

The high-resolution LCD display provides real-time information about your solar charging system. Key indicators include:

- PV input voltage and current
- Battery temperature and status
- Charging mode/stage (Bulk, Absorption, Float)
- System warnings and diagnostics
- Output power and battery capacity
- MPPT solar charge controller work pattern



Figure 8: Backlight LCD Screen and Display Information

This image details the information displayed on the LCD screen, including PV input voltage, battery voltage, equalization status, setting programs, warning codes, output current, output power, battery capacity, and MPPT work pattern. It also points out the battery temperature sensor terminal, USB, and RS485 communication ports.

5.2 Battery Type Selection

The controller supports various battery types. Ensure the correct battery type is selected in the settings for optimal charging and battery lifespan. Refer to the controller's menu for specific instructions on selecting battery types (LiFePO4, AGM, GEL, Flooded).

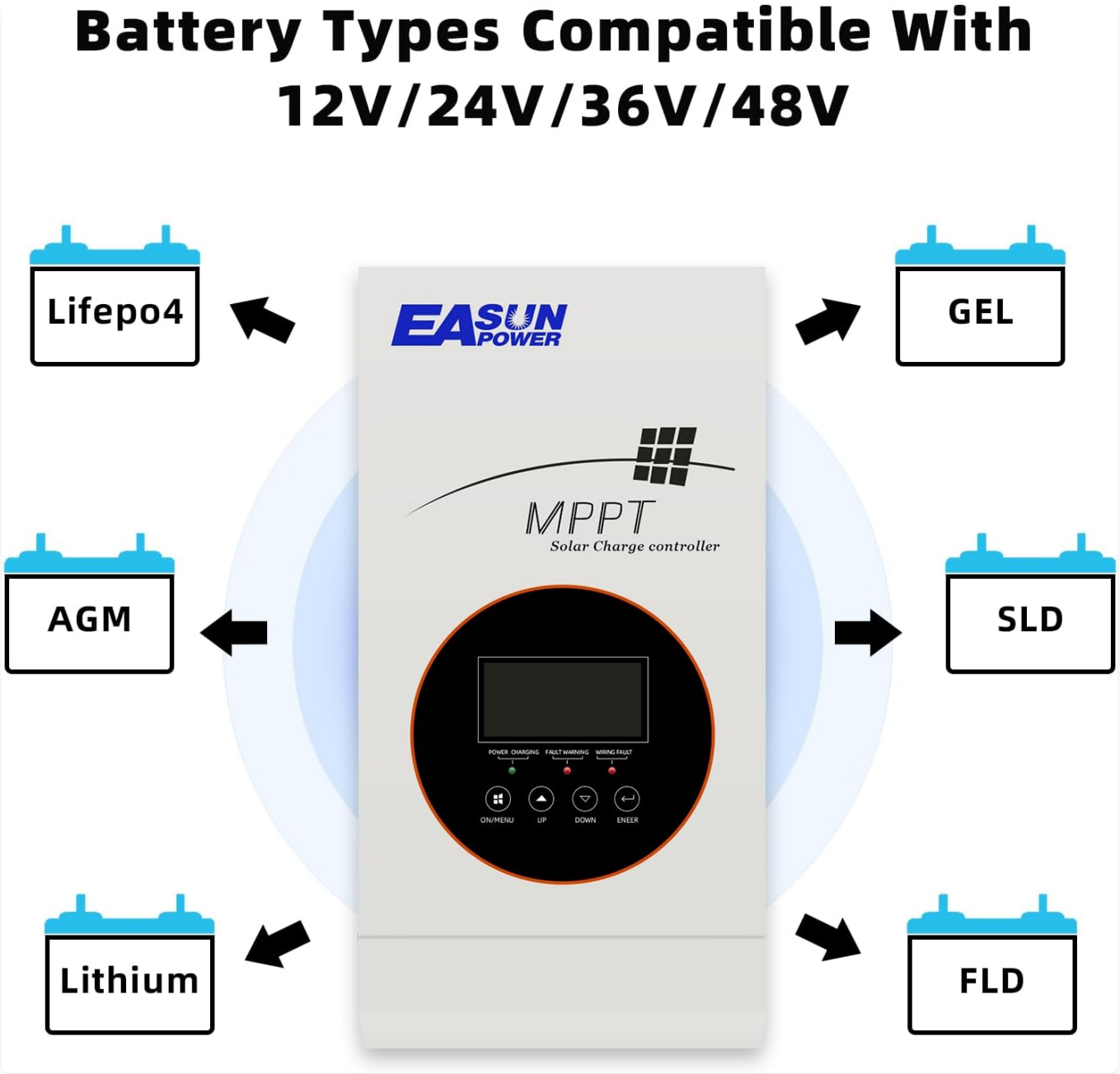

Figure 9: Compatible Battery Types

This image visually represents the various battery types compatible with the POWLAND MPPT solar charge controller, including Lifepo4, GEL, AGM, SLD, Lithium, and FLD, for 12V/24V/36V/48V systems.

5.3 Charging Stages

The controller utilizes an intelligent 3-stage charging process to optimize battery health and performance:

- **Bulk Charge:** Delivers maximum current to rapidly charge the battery until it reaches a set voltage.
- **Absorption Charge:** Maintains a constant voltage while the current gradually decreases, ensuring the battery is fully charged without overcharging.
- **Float Charge:** Reduces the voltage to a lower level to maintain the battery at full charge and compensate for self-discharge, preventing overcharge.

6. Maintenance

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

- **Cleanliness:** Keep the controller clean and free from dust and debris. Use a dry cloth for cleaning.

- **Connections:** Periodically check all wiring connections for tightness and corrosion. Loose connections can cause overheating and poor performance.
- **Ventilation:** Ensure that the ventilation openings are not blocked to allow for proper heat dissipation.
- **Battery Inspection:** Regularly inspect your batteries for any signs of damage, swelling, or leaks. Ensure battery terminals are clean.
- **Firmware Updates:** Check the manufacturer's website for any available firmware updates to ensure your controller has the latest features and bug fixes.

7. Troubleshooting

This section provides solutions to common issues you might encounter with your POWLAND 80A MPPT Solar Charge Controller.

Problem	Possible Cause	Solution
Controller not powering on	Battery not connected or low voltage; reverse polarity; faulty wiring.	Check battery connections and voltage. Ensure correct polarity. Verify wiring integrity.
No charging from solar panels	PV input voltage too low/high; reverse PV polarity; shaded panels; faulty panels/wiring.	Check PV voltage within acceptable range (Max 145VDC). Verify PV polarity. Clear any shading. Inspect PV wiring.
Battery not fully charged	Incorrect battery type setting; insufficient solar input; battery degradation.	Verify battery type setting. Ensure adequate solar panel capacity. Test battery health.
Over-temperature warning	Poor ventilation; excessive ambient temperature; heavy load.	Improve ventilation around the controller. Reduce load if possible. Relocate to a cooler area.
Error code displayed	Specific system fault.	Refer to the controller's LCD display section (Figure 8) for common error codes and their meanings. Consult the full user manual for a complete list of error codes and troubleshooting steps.



Figure 10: Multi-Protection Functions

This image illustrates the various protection functions integrated into the controller, such as photovoltaic input overcurrent, photovoltaic array short circuit, reversed photovoltaic polarity, overvoltage protection for batteries, overdischarge protection for batteries, and over-temperature protection.

8. Specifications

Parameter	Value
Model	80A MPPT
System Voltage	12V/24V/36V/48V Auto
Max. Charge Current	80A
Max. PV Input Voltage	145VDC

Parameter	Value
MPPT Efficiency	>99%
Conversion Efficiency	Up to 99%
Battery Types Supported	LiFePO4, AGM, GEL, Flooded Lead-Acid
Display Type	LCD
Communication Ports	USB, RS485
Item Weight	7.02 pounds (3.18 kg)
Package Dimensions	14.13 x 9.06 x 6.02 inches

9. Warranty and Support

POWLAND provides comprehensive customer support for its products. For technical assistance, installation guidance, or troubleshooting, please contact our support team.

- **Technical Support:** Backed by 24/7 technical support. Email us for immediate assistance with installation or troubleshooting.
- **Warranty Information:** Please refer to the warranty card included in your package or visit the official POWLAND website for detailed warranty terms and conditions.

For further information or to explore other POWLAND products, visit the official POWLAND Store on Amazon.

© 2024 POWLAND. All rights reserved.

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

Open the live page

https://manuals.plus/asin/B0F32R51ZK

More documents and user manuals: **https://manuals.plus/**