



User Manual for ROCKSOLAR 3000W 24V Off-Grid Solar System

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1. Introduction

Congratulations on your purchase of the ROCKSOLAR 3000W 24V Off-Grid Solar System. This system is designed to provide reliable and efficient power for off-grid applications, including cabins, RVs, and remote workstations. By harnessing solar energy, you contribute to a sustainable and eco-friendly future.

2. System Components

Your ROCKSOLAR 3000W 24V Off-Grid Solar System includes the following components:

- **Solar Panels:** 4 x 440W Monocrystalline Rigid Solar Panels
- **Batteries:** 2 x 24V 100Ah LiFePO₄ Deep Cycle Batteries with BMS
- **Inverter:** 24V 3000W Pure Sine Wave Power Inverter
- **Charge Controller:** 60A MPPT Solar Charge Controller
- **Cables and Connectors:** 1 x 10 ft 10AWG Extension Cables with MC4 Connectors (One Pair Red+Black)

3. Safety Guidelines

Before installing or operating the system, please adhere to the following safety guidelines:

- **General Safety:**
 - Read and understand all instructions before proceeding.
 - Keep children and unauthorized personnel away from the system components.
 - Do not attempt to disassemble or repair components without professional assistance.
- **Electrical Safety:**
 - Always disconnect the system from power sources before maintenance.
 - Use insulated tools and wear rubber-soled shoes when working with electrical components.
 - Ensure all connections are secure to prevent short circuits.
- **Battery Safety:**
 - Do not expose batteries to open flames or excessive heat.
 - Avoid short-circuiting the battery terminals.
 - Handle batteries with care to prevent punctures or leaks.

4. Installation Instructions

Note: Installation should be performed by a qualified technician or under the guidance of a professional. Ensure compliance with local regulations and standards.

4.1 Site Selection

- **Solar Panels:** Choose a location with maximum sunlight exposure throughout the day, free from obstructions like trees or buildings.
- **Batteries and Inverter:** Install in a dry, well-ventilated area protected from extreme temperatures and moisture.

4.2 Mounting the Solar Panels

1. **Mounting Structure:** Use a sturdy, weather-resistant mounting structure compatible with the panel dimensions.
2. **Angle and Orientation:** Position panels facing true south (in the Northern Hemisphere) at an angle equal to your latitude for optimal performance.
3. **Securing Panels:** Attach panels securely using the pre-drilled holes and appropriate mounting hardware.

4.3 Battery Installation

1. **Placement:** Place batteries on a stable, non-conductive surface.
2. **Ventilation:** Ensure adequate ventilation to dissipate any gases emitted.
3. **Connection:** Connect batteries in parallel to maintain a 24V system voltage. Ensure correct polarity: positive to positive, negative to negative.

4.4 Inverter Installation

1. **Location:** Mount the inverter close to the batteries to minimize voltage drop, ensuring it's in a cool, dry place.
2. **Ventilation:** Allow sufficient space around the inverter for air circulation.
3. **Connection:** Connect the inverter's DC input terminals to the battery terminals, observing correct polarity.

4.5 Charge Controller Installation

1. **Placement:** Install the charge controller between the solar panels and the batteries.
2. **Connection:**
 - **Charge Controller to Batteries:** Connect the charge controller's output terminals to the battery terminals, ensuring correct polarity.
 - **Solar Panels to Charge Controller:** Connect the positive and negative leads from the solar panels to the corresponding terminals on the charge controller.

Note - First of all connect charge controller to the battery before connection of charge controller to Solar panel. Please if you do not know about set up of charge controller to battery check this video. (<https://www.youtube.com/shorts/6nLZ1VLeq8>)

4.6 Wiring and Connections

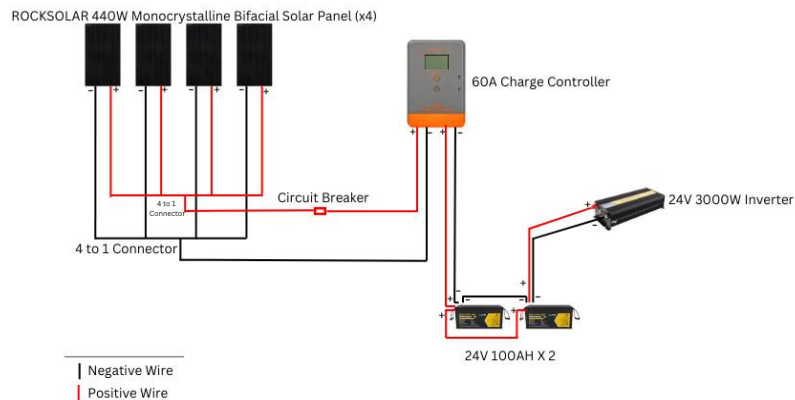
Included Cables:

- **1 x 10 ft 10AWG Extension Cables with MC4 Connectors**
 - Use: Connecting solar panels to the charge controller
 - Type: 10 AWG, stranded copper, weatherproof PV wire
 - Connector: MC4 compatible (standard for solar panel connections)

Recommended Wiring for Additional Connections:

Connection	Recommended Wire Gauge	Notes
Solar Panels → Charge Controller	10 AWG (included)	Rated for solar applications
Charge Controller → Battery Bank	6 AWG or 4 AWG	Use copper wire; size depends on length
Battery Bank → Inverter	2 AWG or 1/0 AWG	Use thick copper cables for high current
Grounding Wires	6 AWG or better	Ensure proper grounding for safety

⚠ Tip: For any wire runs longer than 10 feet, increase the wire gauge to reduce voltage drop.



System Wiring Diagram:

5. System Operation

5.1 Starting the System

1. **Verify Connections:** Ensure all components are correctly connected and secure.
2. **Power On Sequence:**
 - Turn on the charge controller.
 - Turn on the inverter.
3. **Check Indicators:** Monitor the LED indicators on the charge controller and inverter for normal operation status.

5.2 Shutting Down the System

1. **Power Off Sequence:**
 - Turn off the inverter.
 - Turn off the charge controller.
2. **Disconnect:** If necessary, disconnect the solar panels from the charge controller.

5.3 Monitoring System Performance

- **Charge Controller Display:** Provides real-time data on charging status, battery voltage, and load current.
- **Inverter Display:** Shows output voltage, frequency, and load percentage.
- **Regular Checks:** Periodically inspect system performance to ensure optimal operation.

6. Maintenance

- **Solar Panels:** Clean periodically with water and a soft cloth to remove dust and debris.
- **Batteries:** Check for signs of damage or swelling. Ensure terminals are clean and tight.
- **Inverter and Charge Controller:** Keep vents clear of dust. Check for loose connections or signs of wear.

7. Technical Specifications

- **System Power Rating:** 3000W
- **Battery Capacity:** 24V 100Ah x2 (LiFePO₄)
- **Solar Panel Output:** 440W x4
- **Inverter Type:** Pure Sine Wave, 3000W
- **Charge Controller:** MPPT 60A

- **Cable Type:** 10AWG PV Wire (solar panel), additional wiring required as specified

8. Warranty and Support

- **Warranty:** 1-year limited warranty for all major components
- **Support:** Technical support available via email or phone

9. Contact Information

ROCKSOLAR Customer Support

Website: <https://rocksolar.ca>

Email: support@rocksolar.ca

Phone: +1 (855) 560-7625