ROCKSOLAR 3500W 48V

Off-Grid Solar System

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1. Introduction

Congratulations on your purchase of the ROCKSOLAR 3500W 48V Off-Grid Solar System. This all-in-one system is designed for reliable, off-grid power for cabins, RVs, remote homes, and backup emergency energy. It combines high-efficiency solar panels, advanced lithium batteries, and a powerful inverter to deliver clean, renewable electricity. With proper installation and care, your system will provide years of uninterrupted service.

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2. System Components

Your ROCKSOLAR 3500W 48V Off-Grid Solar System includes:

- 6 x 440W Philadelphia Rigid Monocrystalline Solar Panels
  High-efficiency panels designed for optimal performance in all climates.
- 2 x 48V 50Ah Deep Cycle LiFePO4 Batteries
  Reliable lithium iron phosphate batteries with integrated Battery Management System (BMS) for safety and longevity.
- 1 x 3.5KW Off-Grid Solar Inverter
  Pure sine wave inverter for clean, stable AC output compatible with sensitive electronics.
- 1 x 10 Ft 10AWG Extension Cables with MC4 Connectors (One Pair Red+Black)
  Weatherproof, UV-resistant copper cable suitable for solar applications.
- 6 x Z-Bracket Mount System (Set of 4)
  Aluminum mounting hardware for securely installing the solar panels.
- 1 x Battery Connection Cable
  Heavy-duty cable for connecting batteries to the inverter.
- 1 x DC Circuit Breaker
  Protects the system from overcurrent and short-circuit conditions.

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3. Safety Guidelines

General Safety:

- Read all instructions carefully before installation.
- Keep children and untrained individuals away from the system.
- Avoid installation or operation in wet conditions.
- Do not disassemble any components unless qualified.

Electrical Safety:

- Disconnect all power sources before installation or maintenance.
- Use insulated tools and wear safety gear such as gloves and goggles.
- Ensure all connections are tight and secure to prevent arcing or overheating.

Battery Safety:

- Do not expose batteries to open flames or excessive heat.
- Avoid physical damage such as punctures, drops, or crushing.
- Store in a well-ventilated area, away from combustible materials.
- Never short-circuit the battery terminals.

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4. Installation Instructions

Note: Installation should be done by a certified technician or under professional guidance. Follow local electrical codes and building regulations.

4.1 Site Selection

- Solar Panels: Choose a location that receives unobstructed sunlight for most of the day. Avoid placing panels near trees, buildings, or other structures that may cast shadows.
- Batteries and Inverter: Install in a cool, dry, indoor environment. Ensure adequate space for ventilation and maintenance access.

4.2 Mounting the Solar Panels

1. Mounting Surface: Securely mount the Z-brackets onto a rooftop, frame, or ground rack.
2. Orientation: Face panels toward true south (Northern Hemisphere) or true north (Southern Hemisphere).
3. Tilt Angle: Adjust panel tilt to match your location's latitude for year-round efficiency.
4. Securing Panels: Use stainless steel hardware to fix panels to the brackets. Check all bolts are tight.

4.3 Battery Installation

1. Placement: Position both batteries on a flat, non-conductive surface.
2. Ventilation: Allow sufficient airflow around batteries.
3. Connection:
    - Connect the batteries in parallel: Positive to Positive, Negative to Negative.
    - Ensure proper polarity.

- Use the included battery connection cable and tighten all terminals.

4. Grounding: Ground the battery bank using an appropriate grounding rod and wire.

4.4 Inverter Installation

1. Location: Install close to the battery bank to minimize voltage drop.
2. Ventilation: Allow at least 6 inches of clearance around the inverter.
3. Mounting: Use screws or a bracket to secure the inverter to a wall or board.
4. Wiring:
    - Connect DC input terminals of the inverter to the battery bank through the DC breaker.
    - Connect AC output to your home's distribution panel or desired load.

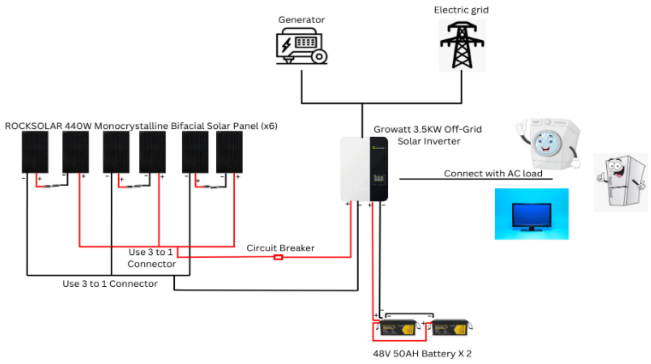
Recommended Wiring Based on Connections:

Connection	Recommended Wire Size	Notes
Solar Panels → Combiner Box or Charge Controller	10 AWG (included)	For up to 10 ft runs; use MC4 connectors
Combiner Box → Inverter	6 AWG or 4 AWG	Choose based on run length and current; use copper wire
Battery Bank → Inverter	2 AWG or 1/0 AWG	Use thick, stranded copper wire for high current; keep cable length as short as possible
Grounding	6 AWG or larger	Ground inverter chassis and panel frame to a proper earth ground

4.5 Wiring and Connections

- Solar Panel Wiring:
    - Connect the 6 panels in a 2S3P configuration (2 in series × 3 in parallel).
    - Use MC4 connectors for weatherproof, safe connections.
- Cabling:
    - Use the included 10AWG cable to connect panels to the inverter's charge controller input.
    - DC Breaker should be placed between solar panels and inverter.

- Ensure grounding of both the panel frame and inverter chassis.



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5. System Operation

5.1 Starting the System

1. Confirm all wiring is complete and double-check polarity.
2. Close the DC breaker to enable solar charging.
3. Turn on the inverter and observe the LCD or LED indicators.
4. Verify that the system is supplying power and charging the batteries.

5.2 Shutting Down the System

1. Turn off the inverter.
2. Open the DC breaker to disconnect solar input.
3. Disconnect the batteries if storing the system for extended periods.

5.3 Monitoring System Performance

- The inverter LCD will show:
    - Input voltage (from batteries)
    - Output voltage and load
    - Fault or warning messages

- Monitor battery voltage regularly. Charge if it drops below 46V.
- Monitor solar input and adjust panel angle seasonally if needed.

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6. **Maintenance**

- **Solar Panels:**
    - Clean monthly using water and a microfiber cloth.
    - Do not use abrasive materials or high-pressure washers.
- **Batteries:**
    - Inspect terminals for corrosion or loose connections.
    - Check the voltage monthly.
- **Inverter:**
    - Clean vents with compressed air.
    - Avoid moisture and ensure firmware is updated if applicable.
- **Wiring:**
    - Check all cables for wear or damage every 3 months.
    - Ensure MC4 connectors are locked and weatherproof.

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7. Technical Specifications:

Component	Specification
Solar Panels	6 x 440W Monocrystalline
Total Solar Capacity	2640W
Batteries	2 x 48V 50Ah LiFePO4
Battery Storage	4.8kWh
Inverter	3500W 48V Pure Sine Wave
Output Voltage	120V AC (Single Phase)
Extension Cable	10 Ft 10AWG (Red+Black, MC4)

Mounting Kit	6 x Z-Bracket Sets (4 pcs each)
DC Protection	1 x Circuit Breaker (Included)

8. Warranty and Support

- **Solar Panels:** 10-Year Limited Warranty against manufacturing defects and 30-Year Performance Warranty
- **Batteries:** 10-Year Limited Warranty
- **Inverter:** 5-Year Warranty
- Warranty applies only with proof of purchase and proper installation.

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9. Contact Information

ROCKSOLAR Customer Support
Website: www.rocksolar.ca
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Phone: +1 (855) 560-7625