ROCKSOLAR 3000W 12V OFF-GRID SOLAR SYSTEM

User Manual

Version 1.0

Welcome

Thank you for purchasing the ROCKSOLAR 3000W 12V Off-Grid Solar System.

This complete off-grid energy solution is designed to provide reliable solar power for cottages, cabins, RVs, workshops, remote properties, emergency backup systems, and other off-grid applications.

Please read this manual thoroughly before installation and operation.

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1. Safety Information

WARNING

Failure to follow these instructions may result in electrical shock, fire, equipment damage, serious injury, or death.

Always:

- Read all instructions before installation.
- Disconnect all power sources before servicing.
- Use insulated tools.
- Wear eye protection when working around batteries.
- Install equipment in a dry, well-ventilated location.
- Follow local electrical codes and regulations.

Never:

- Short-circuit battery terminals.
- Connect inverter output to utility power.
- Expose equipment to rain or standing water.
- Install equipment near open flames.
- Disassemble batteries, inverter, or charge controller.

2. Package Contents

Quantity	Description
2	ROCKSOLAR 12V 200Ah LiFePO4 Batteries
6	ROCKSOLAR 200W Monocrystalline Solar Panels
1	ROCKSOLAR 3000W Pure Sine Wave Inverter
1	Victron BlueSolar MPPT 150/70 Charge Controller
1 Pair	10AWG Solar Extension Cables with MC4 Connectors
1	Battery Disconnect Switch (200A)
1	Waterproof PV Protection / Disconnect Box
1 Set	Battery Interconnect Cables
1	User Manual

3. System Specifications

Solar Array

Parameter	Specification
Solar Panel Type	Monocrystalline
Number of Panels	6
Panel Rating	200W
Total Solar Capacity	1200W

Battery Bank

Parameter	Specification
Battery Type	LiFePO4
Quantity	2
Nominal Voltage	12V
Capacity	200Ah Each
Total System Voltage	12V
Total Capacity	400Ah
Total Energy Storage	5.12kWh

Inverter

Parameter	Specification
Continuous Output Power	3000W
Surge Capacity	6000W
Input Voltage	12V DC
Output Voltage	120V AC
Waveform	Pure Sine Wave

Charge Controller

Parameter	Specification
Model	Victron BlueSolar MPPT 150/70
Battery Voltage	12V / 24V / 48V Auto Select
Maximum Charge Current	70A
Maximum PV Voltage	150V DC
Maximum Efficiency	99%

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4. System Overview

The solar panels convert sunlight into DC electricity.

The Victron MPPT charge controller regulates charging and maximizes solar energy harvest.

The battery bank stores energy for use during nighttime and cloudy conditions.

The inverter converts DC battery power into household AC power.

Power Flow:

Solar Panels → PV Protection Box → MPPT Charge Controller → Battery Bank → Inverter → AC Loads

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5. Battery Installation

Battery Bank Configuration

Connect the two 12V batteries in parallel:

Positive (+) to Positive (+)

Negative (-) to Negative (-)

Result:

- 12V System Voltage
- 400Ah Capacity
- 5.12kWh Storage Capacity

Install the battery disconnect switch on the main positive cable between the battery bank and inverter.

Important

Ensure all terminals are securely tightened.

Verify correct polarity before energizing the system.

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6. Solar Panel Installation

Solar Array Configuration

Connect all six solar panels in series (6S).

Connection Example:

Panel 1 → Panel 2 → Panel 3 → Panel 4 → Panel 5 → Panel 6

The remaining positive and negative conductors become the solar array output.

Connect the solar array output to the PV Protection Box and then to the MPPT charge controller.

Benefits of Series Wiring

- Higher operating voltage
- Reduced cable losses
- Improved MPPT performance
- Simplified installation

Installation Guidelines

Install panels:

- Facing south in the Northern Hemisphere
- Free from shading
- On structurally sound mounting surfaces

- With adequate airflow underneath

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7. Charge Controller Installation

Victron BlueSolar MPPT 150/70

The MPPT controller automatically tracks the maximum power point of the solar array to maximize energy harvest.

Installation Sequence

Step 1

Connect the battery bank to the charge controller.

Step 2

Verify battery voltage detection.

Step 3

Connect the solar array to the PV input terminals.

Step 4

Verify charging operation.

IMPORTANT:

Always connect the battery bank before connecting solar panels.

Always disconnect solar panels before disconnecting batteries.

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8. LiFePO4 Battery Charging Settings

Recommended settings for ROCKSOLAR LiFePO4 batteries:

Setting	Recommended Value
Battery Type	LiFePO4
Absorption Voltage	14.2V – 14.4V
Float Voltage	13.5V – 13.8V
Equalization	Disabled
Temperature Compensation	Disabled

9. Inverter Installation

DC Connection

Connect inverter cables directly to the battery bank through the battery disconnect switch.

Connection:

Battery Positive (+) → Disconnect Switch → Inverter Positive (+)

Battery Negative (-) → Inverter Negative (-)

Important

Ensure proper polarity.

Incorrect polarity may permanently damage the inverter.

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10. Inverter Operation

Startup Procedure

1. Verify all wiring connections.
2. Turn ON the battery disconnect switch.
3. Turn ON the inverter.
4. Confirm the power indicator is illuminated.
5. Connect AC loads.

The inverter provides:

- 3000W Continuous Output
- 6000W Surge Capacity

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11. Typical Applications

Suitable loads include:

- LED lighting
- Televisions
- Computers

- Routers and networking equipment
- Refrigerators
- Freezers
- Coffee makers
- Small kitchen appliances
- Power tools

Do not exceed 3000W continuous load.

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12. Monitoring

Regularly monitor:

- Battery voltage
- Charging current
- Solar production
- Load consumption
- System alarms

The Victron charge controller supports:

- VE.Direct communication
- VE.Can communication
- GX Devices
- VictronConnect monitoring systems

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13. Maintenance

Monthly

Inspect:

- Battery terminals
- Cable connections
- Solar panel surfaces
- Inverter ventilation openings

Every 6 Months

Inspect:

- MC4 connectors
- Battery cables
- Disconnect switch
- PV protection devices

Clean solar panels using clean water and a soft cloth when necessary.

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14. Troubleshooting

Problem	Possible Cause	Solution
Inverter does not start	Low battery voltage	Recharge battery bank
No solar charging	PV disconnect OFF	Turn ON disconnect
Low charging current	Dirty solar panels	Clean panels
Battery not charging	Loose wiring	Inspect all connections
Inverter overload alarm	Excessive load	Reduce load
System shutdown	Battery protection activated	Recharge batteries

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15. Storage

For seasonal storage:

1. Fully charge batteries.
2. Disconnect all loads.
3. Turn OFF inverter.
4. Open battery disconnect switch.
5. Store equipment in a cool, dry location.

Recharge batteries every 3–6 months during storage.

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16. Warranty

ROCKSOLAR products are covered by their respective manufacturer warranties.

Warranty does not cover:

- Improper installation
- Unauthorized modifications

- Misuse
- Physical damage
- Water damage

Please retain proof of purchase for warranty claims.

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17. Technical Support

ROCKSOLAR Inc.

Website: www.rocksolar.ca

Email: support@rocksolar.ca

Please have the following information available when contacting support:

- Product model number
- Purchase date
- System configuration
- Detailed description of the issue
