

ROCKSOLAR 10 kW Grid-Tied Solar Panel Kit (11,440 W Panels)

User & Installation Manual

Version 1.0

1. Introduction

Thank you for purchasing the ROCKSOLAR 10 kW Grid-Tied Solar Panel Kit. This system is designed to generate clean renewable electricity for residential or light commercial applications.

The system converts sunlight into electrical energy using photovoltaic (PV) modules and delivers AC power to your home electrical system through a grid-tie inverter.

This manual provides instructions for:

- Safe installation • System configuration • Operation and monitoring • Maintenance • Troubleshooting

Installation must be completed by a licensed electrician or certified solar installer.

2. System Overview

The ROCKSOLAR 10 kW solar system is a grid-connected photovoltaic system designed to offset electricity consumption from the utility grid.

System operation:

Solar Panels → DC Power → Inverter → AC Power → Home Loads → Utility Grid

Excess electricity generated by the system can be exported to the grid under net-metering programs where available.

3. System Components

Typical kit components include:

Solar Panels

26 × 440 W Monocrystalline Bifacial Solar Panels

Total PV Array Size: 11,440 W (11.44 kW)

Inverter

Growatt MIN 10000TL-XH-US Grid-Tie Inverter

Rated AC Output: 10 kW

Electrical Accessories

- Solar DC cables
- MC4 connectors
- Grounding hardware
- Monitoring module (depending on configuration)

Mounting hardware may be sold separately depending on installation requirements.

4. Technical Specifications

Specification	Value
System Size	10 kW Inverter
Solar Array Capacity	11.44 kW
Number of Panels	26
Panel Rating	440 W
AC Output Voltage	240 V
System Type	Grid-Tie
Monitoring	Growatt ShinePhone

5. Safety Information

⚠ WARNING

Solar photovoltaic systems generate high DC voltage when exposed to sunlight.

Only trained professionals should perform installation or maintenance.

Safety Guidelines

- Always disconnect AC and DC power before servicing
- Do not install during rain or severe weather
- Use proper personal protective equipment
- Follow all local electrical codes

Applicable standards:

CSA • UL • CEC • NEC • IEEE 1547 • UL 1741

6. System Architecture

Typical grid-tie solar system layout:

PV Array

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DC Disconnect

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Growatt Grid-Tie Inverter

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AC Disconnect

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Main Electrical Panel

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Utility Meter

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Utility Grid

7. Panel String Configuration

Recommended configuration for the 26-panel system.

String A

13 Panels in Series

P1 → P2 → P3 → P4 → P5 → P6 → P7 → P8 → P9 → P10 → P11 → P12 → P13

String B

13 Panels in Series

P14 → P15 → P16 → P17 → P18 → P19 → P20 → P21 → P22 → P23 → P24 → P25 → P26

Each string connects to a separate MPPT input on the inverter.

8. Installation Overview

Typical installation steps include:

1. Site survey and shading analysis
 2. Roof structure evaluation
 3. Utility interconnection application
 4. Mounting system installation
 5. Solar panel installation
 6. DC wiring connection
 7. Inverter installation
 8. AC electrical connection
 9. System commissioning
 10. Inspection and approval
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9. Solar Panel Installation

1. Install roof or ground mounting rails.

2. Attach solar modules using mid-clamps and end-clamps.
 3. Maintain adequate spacing for ventilation.
 4. Secure all panels according to mounting manufacturer torque specifications.
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10. DC Wiring

Connect solar panels in series using MC4 connectors.

Verify:

- Correct polarity
- Proper locking of connectors
- Cable routing protected from sharp edges

Measure open-circuit voltage before connecting to inverter.

11. Inverter Installation

Mount the inverter:

- On a solid wall
- In a shaded area
- With proper ventilation

Recommended clearance:

Top: 300 mm

Sides: 200 mm

Bottom: 300 mm

12. Electrical Connection

Connect inverter AC output to a dedicated 240 V breaker in the main electrical panel.

Install:

- AC disconnect switch
- Proper grounding conductor
- Overcurrent protection devices

Follow all local electrical codes.

13. Growatt Monitoring Setup

The system supports remote monitoring through the Growatt platform.

Setup procedure:

1. Download Growatt ShinePhone App
2. Create monitoring account
3. Register inverter serial number
4. Connect inverter to Wi-Fi
5. Confirm system communication

Monitoring features include:

- Real-time production
 - Energy history
 - System alerts
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14. System Operation

During daylight hours:

1. Solar panels produce DC electricity
2. Inverter converts DC to AC
3. Power is used by home loads
4. Excess electricity exports to the grid

If the grid fails, the inverter automatically shuts down for safety.

16. Maintenance

Solar PV systems require minimal maintenance.

Recommended checks every 6–12 months:

- Clean solar panels
 - Inspect wiring
 - Check inverter status
 - Remove debris or snow buildup
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17. Troubleshooting

Problem	Possible Cause	Solution
No power production	AC breaker off	Turn breaker on
Low production	Dirty panels	Clean panels
Inverter error	Electrical issue	Check error code
Monitoring offline	Wi-Fi disconnected	Reconnect network

18. Installer Checklist

Pre-Installation

- Site survey completed
- Roof inspection
- Utility application submitted

Installation

- Mounting system installed
- Panels secured
- DC wiring verified

Inverter installed

Commissioning

Inverter startup confirmed

Monitoring connected

Power production verified

19. Commissioning Checklist

Electrical Verification

Verify string voltage

Confirm polarity

Check grounding continuity

Startup

AC breaker ON

DC input connected

Inverter initialization complete

20. Warranty

Solar Panels

25-Year performance warranty

Inverter

10-Year manufacturer warranty

Keep all purchase records and serial numbers.

21. Technical Support

ROCKSOLAR

Website: <https://rocksolar.io>

Support: support@rocksolar.io

22. Disclaimer

This manual provides general guidance for installation and operation of the ROCKSOLAR solar system. All installations must comply with local electrical codes and utility requirements.

Improper installation may void warranties and create safety hazards.

23. Professional Solar System Diagrams

Grid-Tie System Architecture

Solar PV Array (11.44 kW)

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DC Disconnect

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Growatt MIN 10000TL-XH-US Inverter

↓ AC Output

AC Disconnect Switch

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Main Electrical Panel

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Bi-Directional Utility Meter

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Utility Grid

This diagram represents the standard architecture used in residential grid-connected solar systems.

24. Panel String Wiring Diagram

Recommended configuration for the 26-panel array:

String A

Panel 1 → Panel 2 → Panel 3 → Panel 4 → Panel 5 → Panel 6 → Panel 7 → Panel 8 → Panel 9 →
Panel 10 → Panel 11 → Panel 12 → Panel 13

String B

Panel 14 → Panel 15 → Panel 16 → Panel 17 → Panel 18 → Panel 19 → Panel 20 → Panel 21 →
Panel 22 → Panel 23 → Panel 24 → Panel 25 → Panel 26

Each string connects to separate MPPT inputs on the inverter.

Installers must verify string voltage does not exceed inverter maximum input voltage.

25. Single-Line Electrical Diagram (SLD)

PV Array (11.44 kW)

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DC Disconnect

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Growatt 10 kW Inverter

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AC Disconnect Switch

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240V Dedicated Breaker

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Main Electrical Service Panel

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Bi-Directional Utility Meter



Utility Grid

This SLD format is commonly used for:

- Utility interconnection applications
- Electrical permit submissions
- Installer documentation

26. Safety Certifications and Compliance

ROCKSOLAR solar systems are designed to comply with major North American electrical standards.

Applicable standards include:

CSA – Canadian Standards Association

UL – Underwriters Laboratories

CEC – Canadian Electrical Code

NEC – National Electrical Code

IEEE 1547 – Grid Interconnection Standard

UL 1741 – Inverter Safety Standard

CEC 2021 – Solar PV Installation Requirements

All installations must comply with local inspection authorities and electrical regulations.

27. CEC 2021 Labeling Requirements

Solar PV systems must include proper safety labels.

Required labels typically include:

- PVDC Disconnect Label
- Inverter Output Label
- Dual Power Source Warning Label
- Rapid Shutdown Label (if required)

- Solar PV System Directory Placard

Example warning label:

WARNING – ELECTRIC SHOCK HAZARD – TERMINALS ON BOTH LINE AND LOAD SIDES MAYBE ENERGIZED.

Labels must be installed near service panels, disconnect switches, and inverter locations.

28. Roof Layout Planning Guide

Proper panel layout improves system efficiency and simplifies installation.

Recommended layout for 26 panels:

Row 1 – 13 Panels

Row 2 – 13 Panels

Design considerations:

- South-facing roof preferred
 - Tilt angle between 25° and 40° optimal
 - Avoid shading from chimneys or trees
 - Maintain fire code roof setbacks
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29. Installer Tools and Equipment

Professional installers typically use the following tools:

- MC4 solar crimping tool
- Digital multimeter
- Torque wrench
- Wire strippers
- Insulated screwdrivers
- Label printer for electrical markings
- Personal protective equipment (PPE)

30. Installer Best Practices

To ensure safe and reliable solar installations:

- Use certified mounting systems
 - Follow torque specifications for mounting hardware
 - Route cables away from sharp edges
 - Secure cables using UV-rated clips
 - Maintain proper grounding and bonding
 - Document serial numbers of all equipment
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31. System Performance Expectations

Actual production depends on:

- Sun exposure
 - Roof orientation
 - Temperature
 - Shading
 - System losses
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32. Customer Documentation Package

Provide the system owner with the following documents:

- ROCKSOLAR user manual
- Growatt inverter manual
- Warranty certificates
- Monitoring login credentials
- Installer contact information

Keeping these records simplifies warranty claims and maintenance.

END OF MANUAL