

ROCKSOLAR

6 kW Grid-Tied Solar Panel Kit (7000W Panels)

Commercial User & Installation Manual

Version 2.0 – Professional Edition

Cover Information

Product: ROCKSOLAR 6 kW Grid-Tie Solar Panel Kit

Solar Array Size: 7.04 kW (16 × 440W panels)

Inverter: Growatt MIN 6000TL-XH-US

System Type: Grid-Connected PV System

This manual is designed for:

- Homeowners • Licensed electricians • Solar installers • Utility interconnection approval
-

1. Important Safety Information

⚠ WARNING

Solar photovoltaic systems produce high DC voltage when exposed to sunlight. Installation and service must be performed by qualified personnel only.

Failure to follow instructions may result in:

- Electric shock • Fire hazard • Equipment damage • Personal injury

Always follow national and local electrical codes.

2. Compliance and Certifications

ROCKSOLAR 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 Certification

CEC 2021 – Solar PV Installation Requirements

Installation must comply with the Authority Having Jurisdiction (AHJ).

3. System Overview

The ROCKSOLAR 6 kW Grid-Tie Solar Kit converts sunlight into usable AC electricity for residential and small commercial buildings.

The system operates by:

1. Solar panels producing DC electricity
 2. DC electricity flowing to the inverter
 3. Inverter converting DC to AC electricity
 4. Power supplying home loads
 5. Excess power exporting to the utility grid
-

4. System Components

Main system components included in the kit:

Solar Panels

16 × 440W Monocrystalline Bifacial Modules

Total Array Output: 7040 W

Inverter

Growatt MIN 6000TL-XH-US

Grid-Tie Smart Inverter

Electrical Accessories

• MC4 solar connectors • DC solar cables • Grounding hardware • Monitoring module (depending on configuration)

Mounting hardware may be sold separately depending on the installation package.

5. Technical Specifications

System Specifications

Inverter Capacity: 6 kW

Solar Array Capacity: 7040 W

Number of Panels: 16

Panel Rating: 440 W

Output Voltage: 240VAC

Monitoring Platform: Growatt ShinePhone

System Type: Grid-Tied

Operating Temperature: -25°C to $+60^{\circ}\text{C}$

6. System Architecture Diagram

Professional grid-tie solar system layout.

PV Array DC Disconnect Growatt Inverter AC Panel

Solar Panel Array (DC)

↓

DC Disconnect

↓

Growatt Grid-Tie Inverter

↓

AC Disconnect

↓

Main Electrical Panel



Bi-Directional Utility Meter



Utility Grid

In the final production manual this section contains a vector diagram used for installation reference.

7. Panel String Wiring Configuration

Recommended configuration for the 16 panel array:

String A

Panel 1 → Panel 2 → Panel 3 → Panel 4 → Panel 5 → Panel 6 → Panel 7 → Panel 8

String B

Panel 9 → Panel 10 → Panel 11 → Panel 12 → Panel 13 → Panel 14 → Panel 15 → Panel 16

Each string connects to one MPPT input on the inverter.

String A String B

8. Single-Line Electrical Diagram (SLD)

PV Array (7040W)



DC Disconnect



Growatt 6kW Inverter



AC Disconnect Switch



240V Dedicated Breaker



Main Service Panel



Utility Meter



Utility Grid

This diagram is typically required for permit submissions and utility interconnection applications.

9. Installation Overview

Professional installation workflow:

1. Site survey and shading analysis
 2. Structural roof assessment
 3. Utility interconnection application
 4. Mounting system installation
 5. Solar module installation
 6. DC wiring installation
 7. Inverter installation
 8. AC electrical connection
 9. System commissioning
 10. Inspection and approval
-

10. Roof Layout Planning

Recommended panel arrangement:

Two rows of eight panels.

Row 1 – 8 Panels

Row 2 – 8 Panels

Design considerations:

- South facing roof preferred
 - Tilt between 25°–40° optimal
 - Avoid shading from chimneys or trees
 - Maintain fire code setbacks
-

11. Growatt Inverter Installation

Mount inverter:

- On a solid vertical wall
- Away from direct sunlight
- With adequate airflow
- Within reach of electrical service panel

Minimum clearance around inverter:

Top: 300 mm

Sides: 200 mm

Bottom: 300 mm

12. Growatt Monitoring Setup

Monitoring allows real-time performance tracking.

Setup procedure:

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

Monitoring features:

- Real-time production
 - Daily generation reports
 - Fault notifications
-

13. Operation

During daylight hours the system automatically produces electricity.

Power priority:

1. Solar energy powers home loads
2. Excess energy exports to the grid

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

15. Maintenance

Solar systems require minimal maintenance.

Recommended schedule:

Every 6–12 months

• Clean solar panels • Inspect wiring • Check inverter alerts

After major storms inspect for debris or damage.

16. Troubleshooting

Common issues and solutions.

No production

Check AC breaker and DC connections.

Low production

Clean panels and check for shading.

Inverter error

Refer to Growatt error code list.

Monitoring offline

Reconnect Wi-Fi network.

17. Installer Checklist

Pre-Installation

- Site survey completed
- Structural roof inspection
- Utility application submitted

Installation

- Mounting rails installed
- Panels securely mounted
- DC wiring verified
- Grounding completed

Commissioning

- Inverter startup verified
 - Monitoring connected
 - Production confirmed
-

18. Commissioning Checklist

Electrical Verification

- Measure DC open-circuit voltage
- Verify string polarity
- Confirm AC breaker connection

System Startup

- Turn ON AC breaker
- Connect DC input
- Confirm inverter initialization

Performance Test

- Verify solar generation

- Confirm monitoring data
-

19. Labeling Requirements (CEC 2021)

Required safety labels include:

- PV system disconnect label
- Inverter output label
- Dual power source warning label
- Rapid shutdown label (if applicable)
- PV system directory placard

Labels must be placed near:

- Service panel • Disconnect switches • Inverter location
-

20. Warranty

Solar Panels

25-Year Performance Warranty

Inverter

10-Year Manufacturer Warranty

Register equipment after installation to activate warranty coverage.

21. Customer Documentation Package

Provide the system owner with:

- User manual
- Warranty certificates
- Inverter manual
- Monitoring login details

- Installer contact information
-

22. Technical Support

ROCKSOLAR

Website

<https://rocksolar.io>

Support Email

support@rocksolar.io

23. Disclaimer

This manual provides general guidance for the installation and operation of ROCKSOLAR photovoltaic systems.

All installations must comply with applicable electrical codes and local regulations.

Improper installation may result in equipment damage or safety hazards.

END OF MANUAL