ROCKSOLAR

11.4 kW Grid-Tie Solar Panel Kit

(12,320 W Panels – 28 × 440 W)

User & Installation Manual Version 1.0

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1. Introduction

Thank you for choosing the ROCKSOLAR 11.4 kW Grid-Tie Solar Panel Kit. This photovoltaic (PV) system converts sunlight into electricity and delivers AC power to your home through a grid-connected inverter.

This manual provides instructions for:

• Safe installation • Electrical wiring • System operation and monitoring • Maintenance and troubleshooting

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

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2. System Overview

The ROCKSOLAR grid-tie solar system produces renewable electricity and reduces dependence on the utility grid.

Power Flow:

Solar Panels → DC Electricity → Grid-Tie Inverter → AC Electricity → Home Loads → Utility Grid

If solar generation exceeds household demand, excess electricity can be exported to the grid under net-metering programs.

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3. System Components

Solar Panels

28 × 440 W Monocrystalline Bifacial Solar Panels

Total PV Array Capacity: 12,320 W (12.32 kW)

Features:

• High efficiency monocrystalline cells • Weather-resistant aluminum frame • Anti-reflective tempered glass • Long service life

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Grid-Tie Inverter

Typical inverter for this system:

Growatt 11.4 kW Grid-Tie Inverter

Key features:

• Multiple MPPT inputs • Up to ~98% efficiency • 240 VAC output • Integrated Wi-Fi monitoring

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Electrical Accessories

Included components may include:

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

Mounting hardware may be sold separately.

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4. Technical Specifications

Specification	Value
Inverter Capacity	11.4 kW
Solar Array	12.32 kW
Solar Panels	28 × 440 W
Output Voltage	240 VAC
System Type	Grid-Tie
Monitoring	Growatt ShinePhone

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5. Safety Information

⚠ Solar PV systems generate high DC voltage whenever exposed to sunlight.

Safety guidelines:

• Disconnect AC and DC circuits before servicing • Use insulated tools • Wear proper PPE • Follow local electrical codes

Applicable standards:

CSA UL CEC NEC IEEE 1547 UL 1741

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6. System Architecture

Solar PV Array (12.32 kW)

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DC Disconnect

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Grid-Tie Inverter

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AC Disconnect

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Main Electrical Panel

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Bi-Directional Utility Meter

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Utility Grid

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7. Panel String Configuration

Recommended configuration for the 28-panel system:

String A – 7 Panels

P1 → P2 → P3 → P4 → P5 → P6 → P7

String B – 7 Panels

P8 → P9 → P10 → P11 → P12 → P13 → P14

String C – 7 Panels

P15 → P16 → P17 → P18 → P19 → P20 → P21

String D – 7 Panels

P22 → P23 → P24 → P25 → P26 → P27 → P28

These four strings must be combined and connected in accordance with the inverter's MPPT input configuration and electrical design limits.

Installers must verify:

• String voltage remains within inverter limits • Combined string current remains within input limits • String balancing and combiner requirements are met

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8. Single-Line Electrical Diagram

PV Array (12.32 kW)

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DC Disconnect

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Grid-Tie Inverter

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AC Disconnect

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240 V Dedicated Breaker

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Main Service Panel

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Bi-Directional Meter

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Utility Grid

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9. Installation Overview

Typical installation steps:

1. Site survey and shading analysis
2. Roof structural inspection
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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10. Roof Layout Planning

Example configuration:

Row 1 – 14 panels

Row 2 – 14 panels

This roof layout supports the electrical design of 4 strings with 7 panels per string.

Design considerations:

• South-facing roof preferred • Tilt angle between 25°–40° optimal • Avoid shading • Maintain fire code setbacks

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11. Inverter Installation

Mount inverter:

• On a solid wall • In a shaded location • With adequate ventilation

Recommended clearance:

Top: 300 mm

Sides: 200 mm

Bottom: 300 mm

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12. Electrical Connection

Connect inverter AC output to a dedicated 240 V breaker.

Required components:

• AC disconnect switch • Grounding conductor • Overcurrent protection

Follow local electrical codes.

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13. Monitoring Setup

Monitoring platform: Growatt ShinePhone

Setup steps:

1. Download the 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 generation • Energy reports • System alerts

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14. Operation

During daylight hours:

Solar Panels → Inverter → Home Loads

Excess power:

Solar → Utility Grid

During power outages the inverter automatically shuts down for safety.

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16. Maintenance

Recommended maintenance every 6–12 months:

• Clean panels • Inspect wiring • Check inverter alerts • Remove debris or snow

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17. Troubleshooting

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

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18. Installer Checklist

Pre-Installation

☐ Site survey

☐ Roof inspection

☐ Utility application submitted

Installation

☐ Mounting rails installed

☐ Panels secured

☐ DC wiring verified

☐ Inverter installed

Commissioning

- [ ] Inverter startup confirmed
- [ ] Monitoring connected
- [ ] Power production verified

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19. Warranty

Solar Panels: 25-Year performance warranty

Inverter: 10-Year manufacturer warranty

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20. Technical Support

ROCKSOLAR

Website: https://rocksolar.io

Support: support@rocksolar.io

END OF MANUAL