15115-BFRE1R-1

15KW Complete Offgrid Solar Kit User Manual

Model: 15115-BFRE1R-1 | Brand: Generic

1. Introduction

This manual provides essential information for the installation, operation, and maintenance of your 15KW Complete Offgrid Solar Kit. This comprehensive system is designed to provide reliable off-grid power for residential applications, offering significant energy independence. It includes high-efficiency solar panels, a robust inverter, a large capacity lithium battery, and all necessary components for a complete setup.
For optimal performance and safety, please read this manual thoroughly before attempting any installation or operation. Professional installation by a qualified electrician or solar technician is highly recommended.

2. Safety Information

WARNING: Installation and maintenance of this solar power system involve high voltages and currents. Improper handling can result in serious injury or death. Always follow local electrical codes and safety regulations.

- Ensure all power sources are disconnected before working on the system.
- Wear appropriate personal protective equipment (PPE), including insulated gloves, safety glasses, and non-conductive footwear.
- Do not attempt to open or repair components unless specifically instructed. Refer to qualified service personnel.
- Keep children and unauthorized personnel away from the installation area.
- Proper grounding of all components is essential for safety.
- Avoid direct contact with live terminals or wires.

3. System Components Overview

Your 15KW Complete Offgrid Solar Kit includes the following primary components:

3.1. Main System Components

Image: Overview of the 15KW Complete Offgrid Solar Kit components. This image displays all major parts of the kit, including the solar panels, the Sol-Ark inverter, the OMO Freedom lithium battery, mounting hardware, and various cables and connectors.

- **Solar Panels (28x 550W Bifacial Mono):** These panels capture sunlight and convert it into DC electricity. Bifacial panels can generate power from both sides, increasing efficiency.
- **Sol-Ark Hybrid/Offgrid All-in-One Inverter (15k 48V):** This central unit manages power flow, converting DC power from the panels and battery into usable AC power for your home. It includes a built-in MPPT charge controller.
- **OMO 32KWh 48V Freedom Series Heated Lithium Battery:** A high-capacity lithium iron phosphate (LiFePO4) battery for energy storage, featuring Bluetooth connectivity and an LCD readout for monitoring.

3.2. Installation Accessories and Wiring

- **Iron Ridge Mounting Rails / Splices / Legs / Fasteners and Bolts:** Complete hardware for securely mounting the solar panels on your roof or ground array.
- **Solar Combiner Box:** A junction box for combining the output of multiple solar panel strings before connecting to the inverter. Designed for future expansion.
- **Anderson Plug Battery Cable Set:** Pre-terminated cables for connecting the battery to the inverter.
- **Gutter Box:** An enclosure for electrical connections, providing protection and organization.
- **Spool 500' PV Direct Burial 10AWG Solar Wire:** Wire specifically designed for solar applications,

suitable for direct burial.

- **Spool 100' AC Output / Input / Generator Cabling - 6 AWG:** Heavier gauge wire for AC connections, including output to your home, input from grid/generator.
- **Spool 20' 4/0 AC Main Line:** Very heavy gauge wire for main AC connections, ensuring minimal power loss.
- **MC4 Crimp Kit:** Tools and connectors for making secure MC4 connections on solar wiring.

4. Setup and Installation

The installation of a complete off-grid solar system is complex and requires specialized knowledge. It is strongly recommended that installation be performed by a certified solar installer or licensed electrician.

4.1. Pre-Installation Checklist

1. Verify all components listed in Section 3 are present and undamaged.
2. Review local building codes and electrical regulations. Obtain necessary permits.
3. Plan the layout for solar panels, inverter, and battery bank, considering sunlight exposure, ventilation, and accessibility.
4. Ensure the mounting surface (roof or ground) can support the weight of the solar array.

4.2. General Installation Steps (Overview)

1. **Mounting System Installation:** Securely install the Iron Ridge mounting rails according to manufacturer instructions and site-specific plans.
2. **Solar Panel Installation:** Mount the 550W Bifacial Mono Solar Panels onto the rails. Connect panels in series or parallel strings as per the system design, ensuring proper polarity. Use the MC4 Crimp Kit for secure connections.
3. **Combiner Box Wiring:** Route solar panel strings to the Solar Combiner Box. Ensure proper fusing and overcurrent protection.
4. **Inverter Placement and Wiring:** Install the Sol-Ark Inverter in a cool, dry, well-ventilated area. Connect the DC input from the combiner box to the inverter.
5. **Battery Bank Connection:** Connect the OMO Freedom Lithium Battery to the inverter using the Anderson Plug Battery Cable Set. Ensure correct voltage and polarity.
6. **AC Wiring:** Connect the inverter's AC output to your home's electrical panel using the provided AC cabling. Connect any AC input (e.g., generator) if applicable. Utilize the Gutter Box for organized wiring.
7. **Grounding:** Properly ground all components of the system according to electrical codes.
8. **System Commissioning:** After all connections are verified, follow the Sol-Ark inverter's specific commissioning procedure to power up the system safely.

Refer to the detailed installation manual provided with your Sol-Ark Inverter and OMO Battery for specific wiring diagrams and step-by-step instructions.

5. Operating Instructions

Once installed and commissioned, your off-grid solar system will automatically manage power generation and consumption. Here are key operational aspects:

- **Monitoring:** Use the LCD readout on the OMO Freedom Battery and the Sol-Ark Inverter's display (or

associated mobile app/software) to monitor system performance, battery state of charge, power generation, and consumption.

- **Battery Management:** The OMO battery's integrated Battery Management System (BMS) protects against overcharge, over-discharge, and over-temperature. The heated feature ensures optimal performance in colder climates.
- **Inverter Modes:** The Sol-Ark inverter typically operates in various modes (e.g., self-consumption, battery priority, grid-tie with backup) which can be configured via its interface. Consult the Sol-Ark manual for detailed mode settings.
- **Load Management:** Be mindful of your energy consumption, especially during periods of low solar irradiance (e.g., cloudy days, night). The system is designed for a typical mid-sized home using around 2000 KWH per month, but heavy loads can deplete the battery faster.

6. Maintenance

Regular maintenance ensures the longevity and efficiency of your solar power system.

- **Solar Panels:** Periodically clean solar panels to remove dirt, dust, leaves, or snow that can reduce efficiency. Use soft brush and water. Avoid abrasive cleaners.
- **Connections:** Annually inspect all electrical connections for corrosion, looseness, or damage. Tighten as necessary.
- **Inverter:** Ensure the inverter's ventilation openings are clear of obstructions. Keep the area around the inverter clean and dry.
- **Battery:** Monitor battery health via the LCD or Bluetooth app. Ensure the battery is kept within its recommended operating temperature range.
- **Vegetation:** Trim any trees or vegetation that may shade the solar panels.

7. Troubleshooting

This section provides basic troubleshooting steps for common issues. For complex problems, contact qualified service personnel.

Problem	Possible Cause	Solution
No power output from inverter	Inverter off; DC/AC breakers tripped; Battery low; Solar input insufficient	Check inverter status display; Reset breakers; Check battery charge; Verify solar panel connections and sunlight.
Low power generation	Shaded panels; Dirty panels; Faulty panel/string; Inverter error	Clear shading; Clean panels; Inspect panel connections; Check inverter error codes.
Battery not charging	Inverter/charge controller settings; Battery connection issue; Solar input problem	Verify inverter settings; Check battery cables and connections; Ensure solar panels are producing power.
Unusual noises from inverter	Loose components; Fan obstruction; Internal fault	Power down and inspect for loose parts (if safe); Clear fan vents; Contact support if noise persists.

8. Specifications

Key technical specifications for the 15KW Complete Offgrid Solar Kit:

- **System Type:** Complete Offgrid Solar Kit
- **Solar Array Capacity:** 15.4 KW (28x 550W Bifacial Mono Solar Panels)
- **Inverter:** Sol-Ark Hybrid/Offgrid All in ONE Inverter 15k 48V (Included MPPT Charge Controller built in)
- **Battery:** OMO 32KWh 48V Freedom Series Heated Battery with Bluetooth and LCD Readout
- **Nominal System Voltage:** 48 Volts (DC)
- **Estimated Daily Production:** ~69.3 KWh (based on 4.5 hours sun)
- **Recommended Monthly Usage:** ~2000 KWh
- **Charging Port Type:** MPPT
- **Display Type:** LCD or LED (on battery/inverter)
- **Model Number:** 15115-BFRE1R-1

9. Warranty and Support

For warranty information and technical support, please refer to the documentation provided by the individual component manufacturers (Sol-Ark, OMO, etc.) or contact your point of purchase. Keep your purchase receipt and product serial numbers readily available for any warranty claims or support inquiries.
Manufacturer: Ozark Mountain Offgrid