

USER GUIDE

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OFF-GRID 120 Watt 24V Solar Power System

A Complete OFF-GRID Solar Power System for Remote Device Powering

The RLH 120W 24V solar power system is a fully integrated solution that provides powering for remotely located equipment. This system comes complete with a solar panel, solar mounting bracket, battery enclosure, batteries, and interconnect cable ready for installation. It's designed to offer quick installation and reliable off-grid powering.

This system allows for both the battery enclosure and solar panel to be either pole or wall mounted*:

Pole Mount:

- Both the solar panel and battery enclosure are mounted to a pole
- Compatible with pole sizes from 2" to 16"
- Typical Installations: 2" or 4" metal pole, 6" to 16" diameter wooden pole

Wall Mount:

- Both the solar panel and battery enclosure are mounted to a flat surface
- Typical installations: H-Frame, Unistrut, side of wall

**Straps and through bolts not included, as they vary between different installations*

The battery enclosure was designed with additional space to fit additional electronics for which the system will power. The system also includes additional NEMA fittings for running power from the system to other enclosures or locations.

These systems are designed and assembled in the USA and are readily customizable to specialized applications.



OFF-GRID 120 Watt 24V Solar Power System

Key Features

- Complete 24VDC OFF-GRID Solar Power System with additional space for electronics
- 24VDC 120 watt solar panel
- 24VDC 52Ah battery pack
- Integrated solar charge controller with low voltage disconnect
- Pole or wall mountable
- Prewired for rapid installation
- Designed and assembled in USA

Ordering Information

| Description | Part Number |
|---|------------------|
| OFF-GRID Solar Power Supply System, 24 Volts, 120 Watt Panel, 52Ah Battery Pack, Wall/Pole Mount Battery Enclosure with Wall/Pole Mount Solar Panel | RLH-SK120-2452-1 |

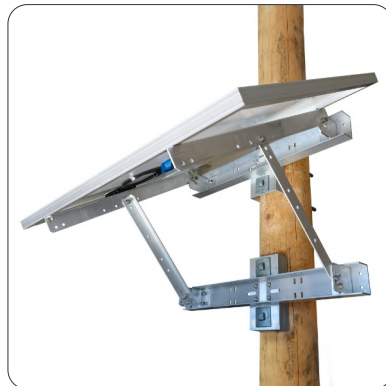
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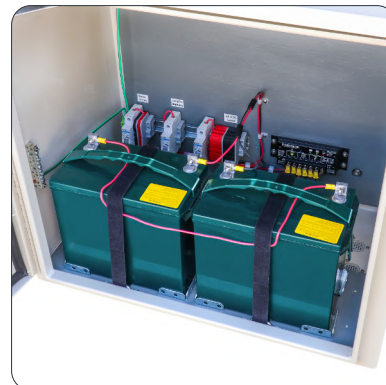
Complete System



Solar Panel & Bracket



Battery Enclosure



Load Compatibility

To see if this system will provide the powering reliability needed follow the steps below to make the proper determination.

Step 1 – Determine Load Power Draw

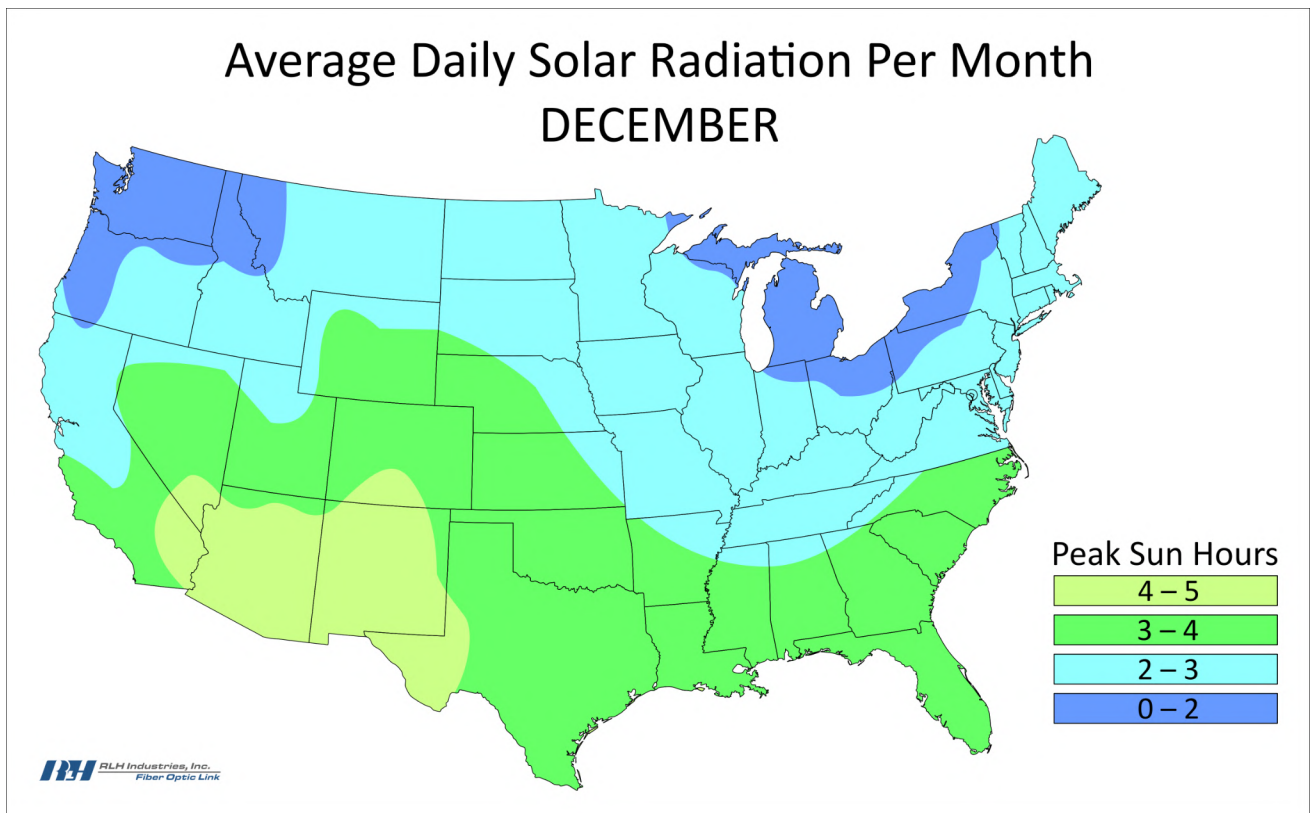
Calculate the power draw of the the equipment needing to be remotely powered. Typically, the easiest and safest way is to use the maximum amperage/wattage listed on the equipment's specification sheets. These figures are typically worst-case scenarios and are recommended for calculating the draw for critical applications. Alternatively, you can measure the draw with a bench test, just keep in mind the draw may fluctuate along with the ambient temperature.

Step 2 – Determine Peak Sun Hours

Determine the Peak Sun Hours based on the geographic location of installation.

- Winter map (recommended)

Use this map for critical applications as it is the worst time of year for solar powering. For ultimate reliability, use these values to ensure the system operates reliably year round.



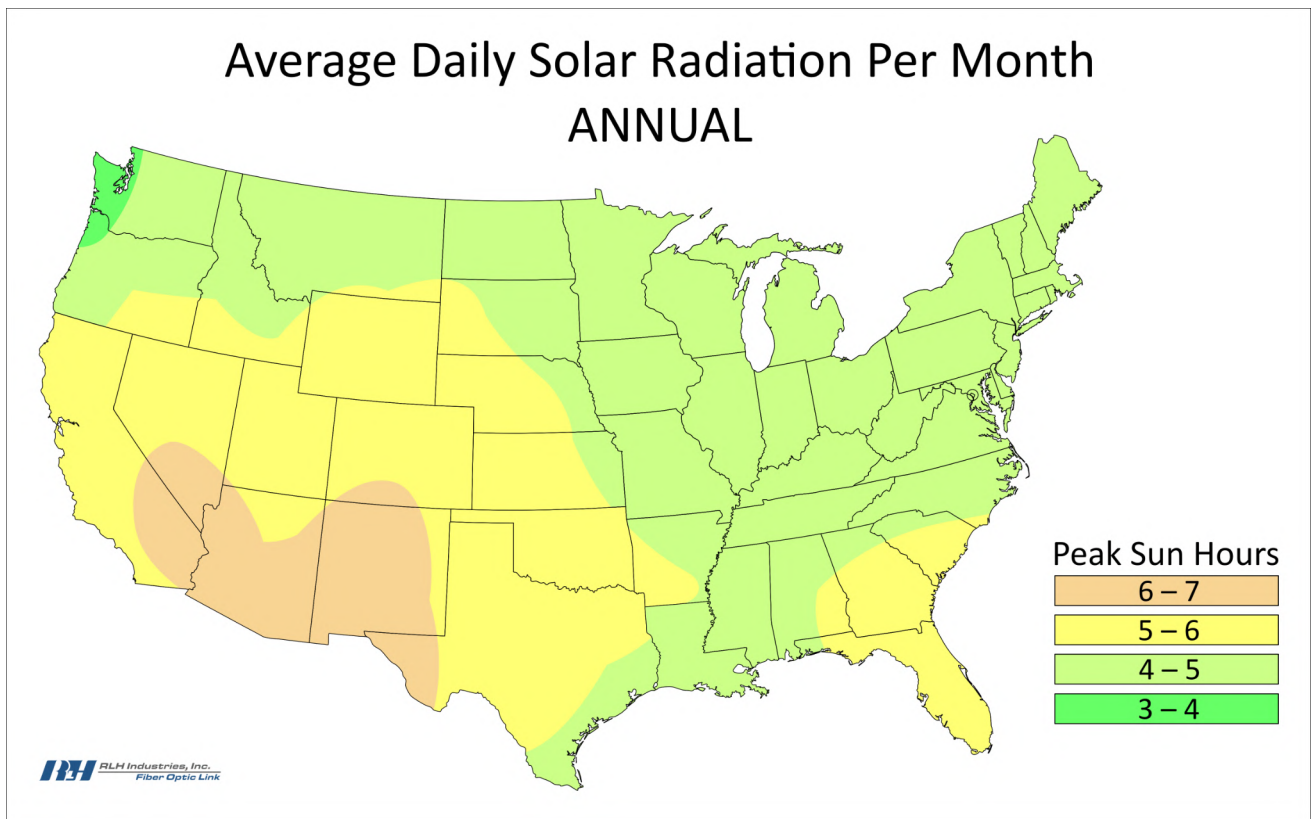
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Load Compatibility (con't)

- Annual average

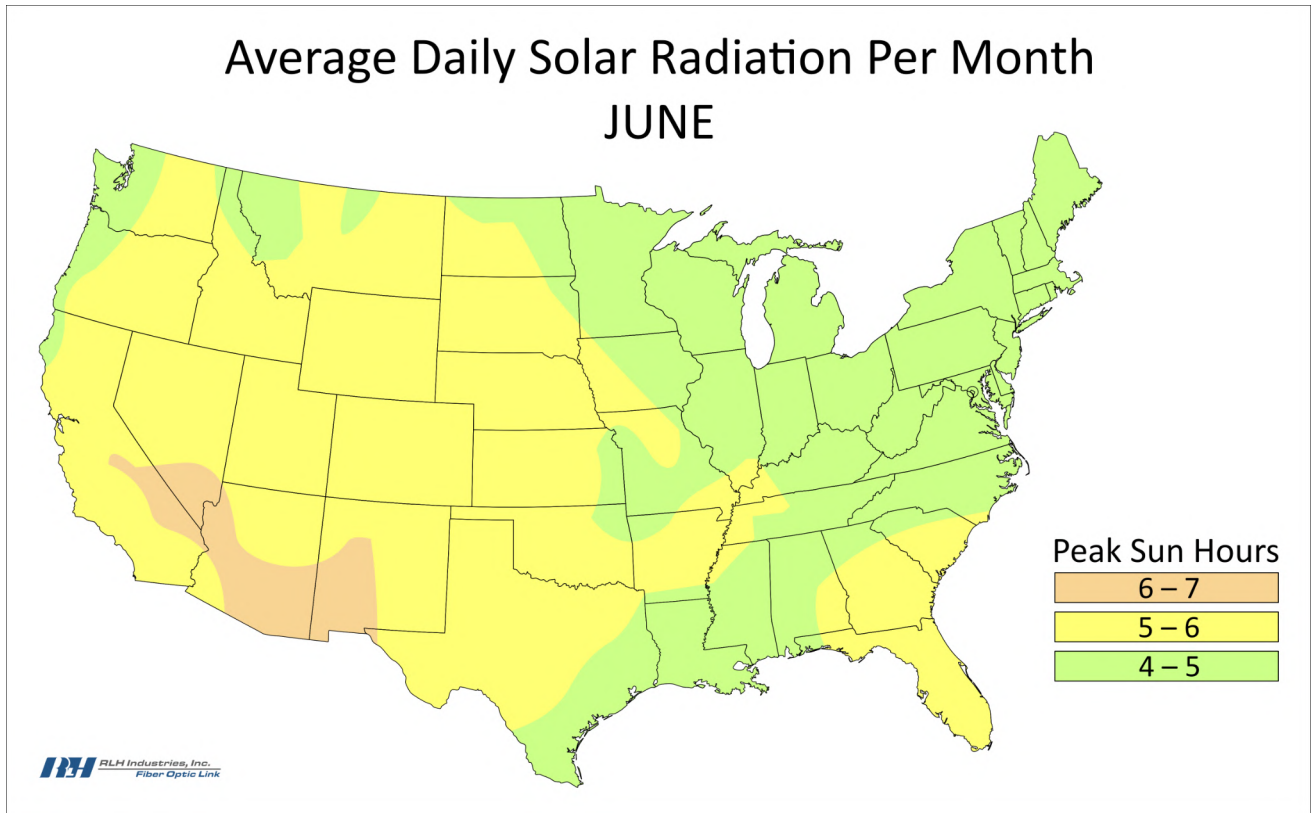
Use this map for semi-permanent installations for non-critical applications where outages of the powered equipment would be tolerable.



Load Compatibility (con't)

- Summer map

Use this map for temporary or seasonal deployments in the summer months.



Step 3 – Determine Amount of Backup Time Needed

Determine the amount of backup time necessary to account for storms and poor weather conditions for solar power. Needs will vary by geographic location and reliability requirements. Areas with frequent rain and storms will require more backup time for reliable operation.

Load Compatibility (con't)

Step 4 – Look Up Maximum Load Requirements

Look up the maximum load this system will support and see if it meets the requirements for your application.

| Maximum Load | Peak Sun Hours* | | | | | | | |
|---------------|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Backup Days 1 | 0.21A / 5.04 watts | 0.42A / 10.08 watts | 0.62A / 14.88 watts | 0.83A / 19.92 watts | 1.04A / 24.96 watts | 1.08A / 25.92 watts | 1.08A / 25.92 watts | 1.08A / 25.92 watts |
| Backup Days 2 | 0.21A / 5.04 watts | 0.42A / 10.08 watts | 0.54A / 12.96 watts | 0.54A / 12.96 watts | 0.54A / 12.96 watts | 0.54A / 12.96 watts | 0.54A / 12.96 watts | 0.54A / 12.96 watts |
| Backup Days 3 | 0.21A / 5.04 watts | 0.36A / 8.64 watts | 0.36A / 8.64 watts | 0.36A / 8.64 watts | 0.36A / 8.64 watts | 0.36A / 8.64 watts | 0.36A / 8.64 watts | 0.36A / 8.64 watts |
| Backup Days 4 | 0.21A / 5.04 watts | 0.27A / 6.48 watts | 0.27A / 6.48 watts | 0.27A / 6.48 watts | 0.27A / 6.48 watts | 0.27A / 6.48 watts | 0.27A / 6.48 watts | 0.27A / 6.48 watts |
| Backup Days 5 | 0.21A / 5.04 watts | 0.22A / 5.28 watts | 0.22A / 5.28 watts | 0.22A / 5.28 watts | 0.22A / 5.28 watts | 0.22A / 5.28 watts | 0.22A / 5.28 watts | 0.22A / 5.28 watts |
| Backup Days 6 | 0.18A / 4.32 watts | 0.18A / 4.32 watts | 0.18A / 4.32 watts | 0.18A / 4.32 watts | 0.18A / 4.32 watts | 0.18A / 4.32 watts | 0.18A / 4.32 watts | 0.18A / 4.32 watts |
| Backup Days 7 | 0.15A / 3.6 watts | 0.15A / 3.6 watts | 0.15A / 3.6 watts | 0.15A / 3.6 watts | 0.15A / 3.6 watts | 0.15A / 3.6 watts | 0.15A / 3.6 watts | 0.15A / 3.6 watts |

* Backup days are days where no charging occurs, but the load continues to run. Poor weather conditions are typically the primary concern when factoring how many backup days are required

* Assumes a continuous load

*This assumes a maximum depth of discharge of 50%.

*These values are general guidelines. Always make sure to check your local site conditions to ensure any potential sunlight obstructions are removed prior to installation.

System Components

| NAME | QTY | Description |
|---------------------------------------|-----|---|
| Solar Panel: | 1 | 120 watt solar panel with 34V output (regulated by charge controller) |
| Solar Panel Bracket: | 1 | Solar bracket for use with wall mounting (lag bolts) or pole mounting (U-bolts, straps, & lag bolts) |
| Solar Panel Bracket Lag Shoe*: | 2 | Utility/Telecom Pole adapter, used with solar bracket for through bolting mounting on large diameter poles |
| Battery Enclosure: | 1 | 24x24x16 aluminum enclosure with integrated battery trays, terminals, breakers, solar charge controller, & NEMA fittings; prewired for rapid installation |
| 52Ah 12 Volt Batteries: | 2 | Sealed lead acid batteries for use for in series wiring as shown in the quick installation guide |
| H4 Solar Cable: | 1 | 25' solar cable with H4 connectors to attached to panel, and pigtails to connect to solar charge controller inside the enclosure |

*Lag Bolts, Throughbolts, U-bolts, and straps not included.

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| | | |
|---------------------------------|---|--|
| Solar Module: | Power Output: | 120 watts |
| | Voltage MPP Vmpp(V): | 34v |
| | Cell: | Monocrystalline Silicon |
| Solar Bracket: | Double arm with support bracket, for side of pole or wall mount | |
| | 0-90° setting angle | |
| | Designed to withstand wind speeds of 90mph | |
| Battery Enclosure: | Snow loading 1.1kN/m ² | |
| | Construction: | Powder-coated aluminum 5052-H32 |
| | Exterior Dimensions: | H 24" x W 24" x D 16" |
| | Venting: | Weather and dustproof vents |
| | Door: | Hinged Door with weatherproof gasket seal |
| Battery: | Security: | Quarter-turn latches with 1 padlock ring |
| | Type: | Maintenance free AGM sealed lead acid battery |
| | Amp Hours: | 52Ah |
| | Volts DC: | 12VDC |
| | Weight: | 40.35 lbs (each) |
| Solar Charge Controller: | Charging Method: | 4 stage series PWM |
| | Charging Stages: | Bulk, absorption, float, equalize |
| | Charging Method: | 4 stage series PWM |
| | Low Voltage Disconnect: | @ 23 Volts (Reconnect at 25.2V) |
| | Tropicalization: | Hardened for field use with anodized aluminum enclosure, epoxy encapsulation, marine-rated terminals |

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Contact

| | | |
|---|---|------------------------------|
| By Mail: | Att: Sales RLH Industries, Inc. 936 N. Main St. Orange, CA 92867 | |
| By Phone: Sales / Service Mon - Fri, 6am - 6pm, PST | Local | 714-532-1672 |
| | Toll Free | 800-877-1672 866-DO-FIBER |
| | By Email: info@fiberopticlink.com | |
| By FAX: | 714-532-1885 | |

Tech Support

| | | |
|-----------|----------------------------|------------------------------|
| By Email: | support@fiberopticlink.com | |
| By Phone: | Toll Free | 855-754-2497 855-RLH-24X7 |