



SOLAREA Light

Installation and Maintenance Guide

Thank you for purchasing the SOLAREA Light, an off-grid, standalone, solar-powered area lighting system (Figure 1). Years of engineering, development, and testing ensure that this system meets or exceeds all performance and reliability specifications. Every system that leaves our factory has been quality control tested and inspected to assure you of an easy installation and highly dependable performance.

All mechanical fittings and electrical connections are designed for simple and reliable installation. SOLAREA Light is ready for use immediately after the components are mounted and the integral electrical connectors are joined.



SAL-1 System



SAL-5 System

Figure 1 Examples of the SOLAREA Light (SAL)

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Important Notes and Warnings

This instruction book provides installation, operation, and maintenance instructions for the SOLAREA Light (SAL). The entire contents of this instruction manual should be thoroughly reviewed and understood prior to installing this equipment. Do not discard this instruction book. It contains complete maintenance instructions, a troubleshooting chart, and a spare parts list.

To insure proper operation of this equipment, it is important that the equipment be utilized for its intended use. Any use of this equipment for purposes other than those intended will void all warranties.



CAUTION

Installation and/or troubleshooting should be performed only by qualified personnel. Follow local codes at all times during installation of the SOLAREA Light.



WARNING

Be very careful when working with batteries. Short circuits can draw thousands of amps from the battery, and gel batteries can generate explosive gases. Observe all precautions when working with energized circuitry.



CAUTION

Do not short circuit the PV array or load while connected to the controller. This will damage the controller.

SECTION 1: INTRODUCTION

SOL Inc. is the world's leading manufacturer of commercial-grade solar powered lighting products and systems. We were founded in 1990 as Solar Outdoor Lighting and are headquartered in Palm City, Florida.

SOL develops and markets the most efficient and reliable solar powered systems for lighting applications including parking lot, street lighting, security lighting, general area lighting, trail and pathway lighting, outdoor advertising, billboard and sign lighting, and transit applications. Our solar powered systems help people feel safe, by lighting areas with dependable off-grid solar power. The systems install easily with no trenching or wiring. Our systems are the most reliable solar systems on the market and come with the industry's best warranty. Our patented products are installed worldwide in over 50 countries on 6 continents.



SOL Inc. has an international website which addresses the special needs of solar powered projects outside of the continental United States. International Representatives and Distributors are welcome to visit www.solinternational.com.

Operational Principles

SAL is designed to operate reliably and provide illumination all year long. During the day, the solar array (the photovoltaic panel, or PV panel) replaces the energy used during the previous evening to charge the battery (or batteries) to provide illumination for the following evening. The system is designed with a five day reserve to compensate for days of rainy or cloudy weather.

The battery condition is continuously monitored by the SOLAREA controller, which protects the battery (or batteries) by not allowing the light to turn on after several days of bad weather. This allows the battery (or batteries) to recover to the proper 5-day reserve.

Site Selection and Preparation

Locate SAL in an area where the PV panel can face towards the equator and is not shaded by trees, poles, buildings, or other objects during the day (Figure 2).



Do not locate SAL in an area where there is sufficient ambient or reflected light at night to simulate daylight and cause the system controller to turn off the illumination.

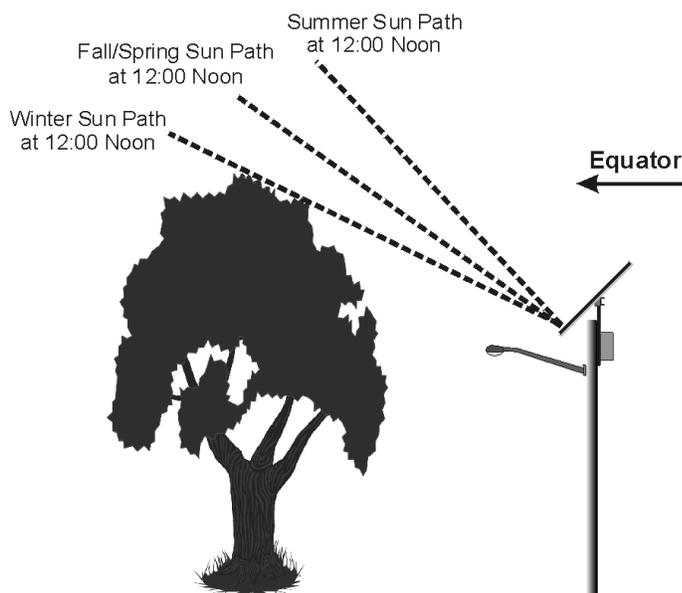


Figure 2 Locating and Positioning SAL

Description

Components of the SOLAREA Light are shown in Figure 3.



The components shown in Figure 3 are for the SAL-1 system. Other systems are similar but have either larger or additional PV panels (with correspondingly larger PV panel mounting hardware) and either one or two batteries.

Refer to the Parts List on page 5 for a complete listing of hardware for each system.

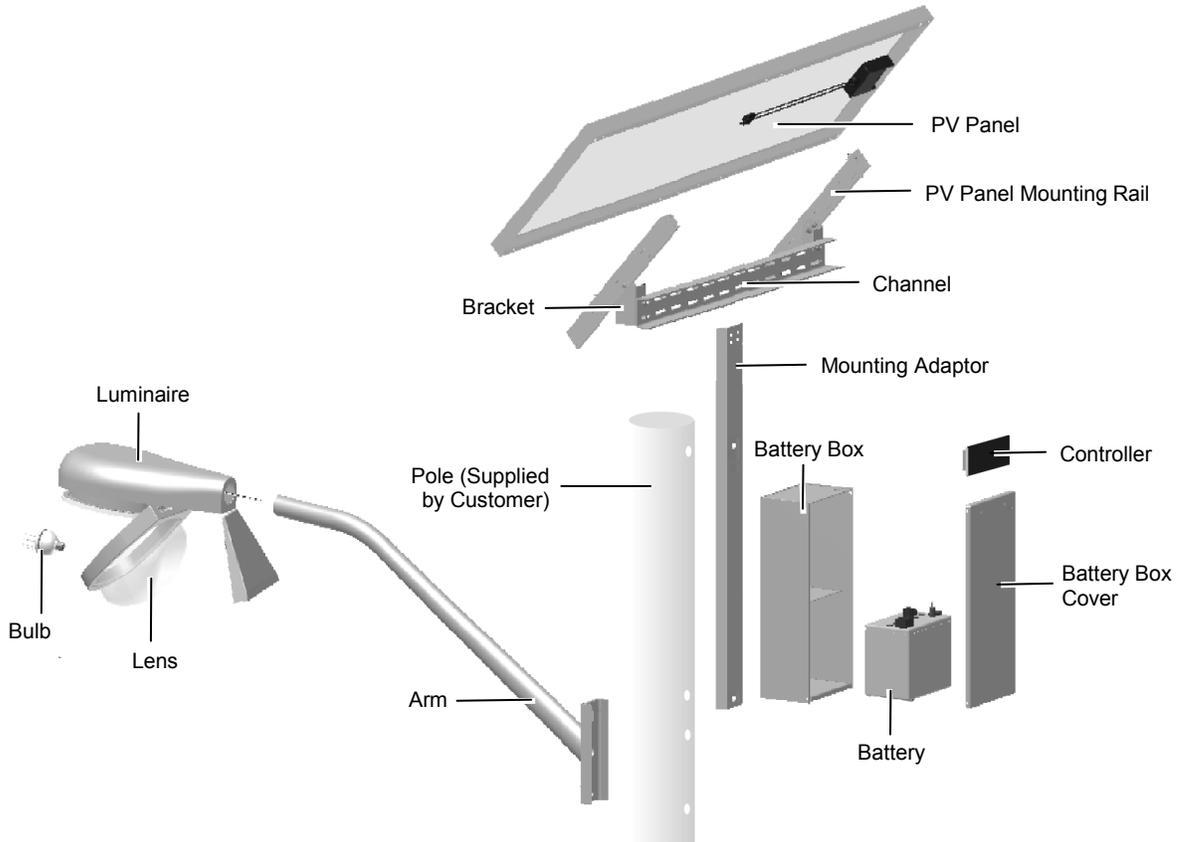


Figure 3 SAL Components (SAL-1 Model Shown)

Assembling the PV Panel(s) and PV Top Mounting Assemblies

Arranging the Parts

1. Lay the PV panel (or panels, for SAL-5 and SAL-6 models) upside down on a protected surface.



The cardboard shipping cartons for the PV panel(s) can be used to provide a protected surface.

2. Arrange the panel top mounting assembly parts as shown in Figure 7.



Panel top mounting assembly parts shown in Figure 7 are for SAL-1, SAL-2, SAL-3, and SAL-4 models, which use a single PV panel. Parts for SAL-5 and SAL-6 models are identical except that these models use two PV panels, longer mounting rails, and eight clips.

3. The following fasteners are provided for assembling the PV panel(s) and panel top mounting assembly:

Fastener	Quantity	Wrench	Tightening Torque
1/4" PV Panel Bolts with 1/4" Flat Washers and Flange Nuts	4 or 8	7/16"	15 ft-lbs (20 N-m)
3/8" Hex Head Bolts with 3/8" Flange Nuts	8	9/16"	30 ft-lbs (40 N-m)
#10 Self-Tapping Screw	2		

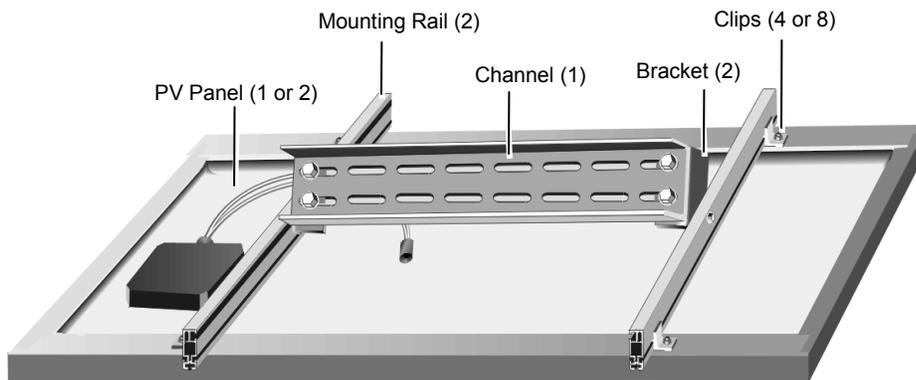


Figure 7 PV Panel and Panel Top Mounting Assembly (for SAL Models with a Single PV Panel)

Attaching the Mounting Rails to the PV Panel(s)

1. Slide two clips (for SAL-1 through SAL-4 models) or four clips (for SAL-5 and SAL-6 models) into each mounting rail. Be sure that the clips are inserted into the side of the rail that contains a single slot, as shown in Figure 8.
2. Secure each clip to the PV panel using a 1/4" PV panel bolt, flat washer, and flange nut as shown in Figure 8 (for SAL-1 through SAL-4 models) or Figure 9 (for SAL-5 and SAL-6 models).
3. Loosely fasten each flange nut.

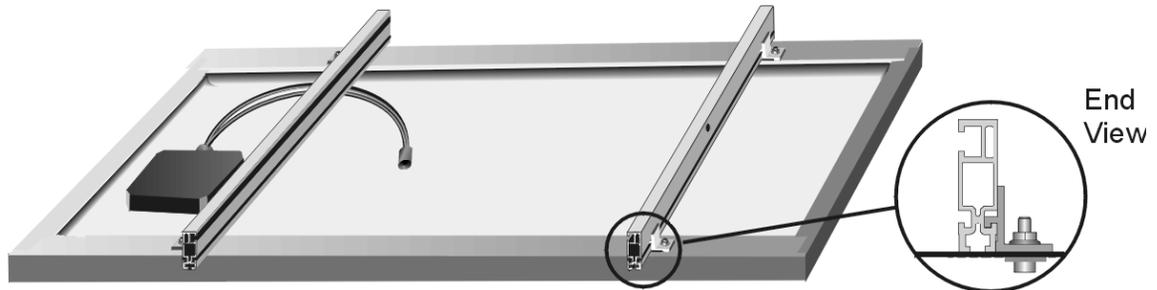


Figure 8 Attaching the Mounting Rails for a Single PV Panel (SAL-1 through SAL-4 Models)

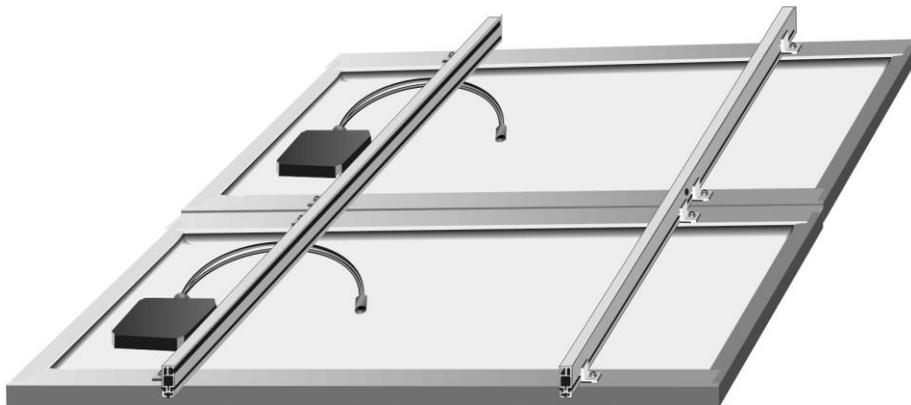


Figure 9 Attaching the Mounting Rails for Two PV Panels (SAL-5 and SAL-6 Models)

Attaching the Brackets to the Mounting Rails

1. Slide one 3/8" hex head bolt into the upper inner slot of each mounting rail.
2. Place the curved slot of a bracket onto the bolt, and loosely fasten the bracket to the mounting rail by means of a 3/8" flange nut.



The brackets are different, for mounting on the left and right sides. Orient the brackets as shown in Figure 10.

3. Place a second 3/8" hex head bolt through the hole at the outside of the mounting rail and through the adjoining hole on the bracket (Figure 10). Loosely fasten the bolt by means of a 3/8" flange nut.
4. Insert (but do not tighten) the #10 self-tapping screw into the remaining hole on the bracket.
5. Repeat Steps 2 through 4 for the second bracket.

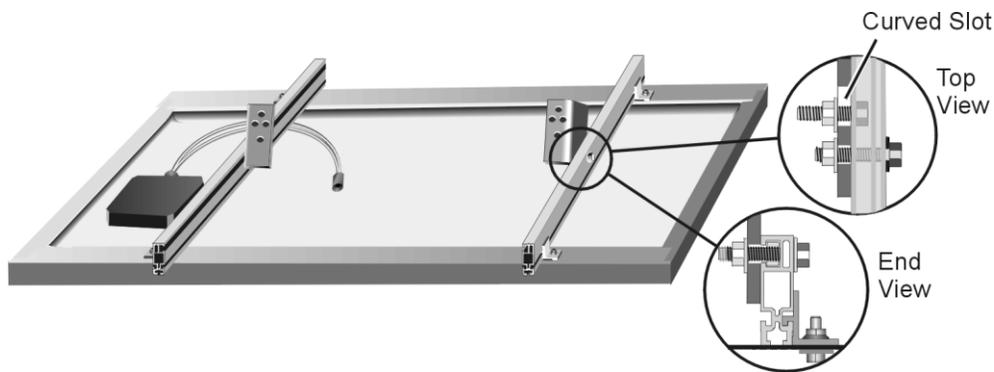


Figure 10 Attaching the Brackets to the Mounting Rails

Attaching the Channel to the Brackets

1. Position the channel over the brackets as shown in Figure 11.
2. Loosely fasten the channel to the brackets, using four 3/8" hex head bolts and flange nuts.

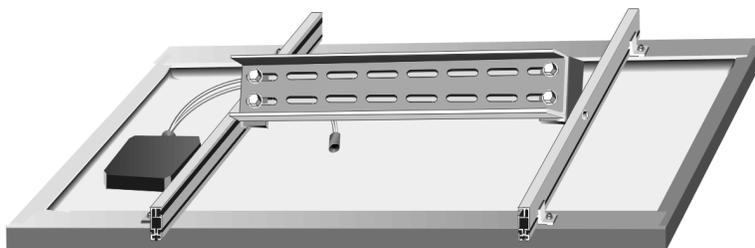


Figure 11 Attaching the Channel to the Brackets

Attaching the Mounting Adaptor and Battery Box to the PV Panel Rack Assembly

Attaching the Mount and Battery Box

1. Place the mounting adaptor on the channel as shown in Figure 12.
2. Loosely fasten the mounting adaptor to the channel, using four 3/8"–16 hex head bolts.
3. Position the battery box on the mounting adaptor so the slots on the tabs point upward when the PV panel is inverted, as shown in Figure 13.
4. Securely fasten the battery box to the mounting adaptor, using four 1/4"–20 x 1/2" hex head bolts. Tighten each bolt to a torque of 15 ft-lbs (20 N-m)



Avoid stripping the threaded holes on the mount. Do not over-tighten the bolts.

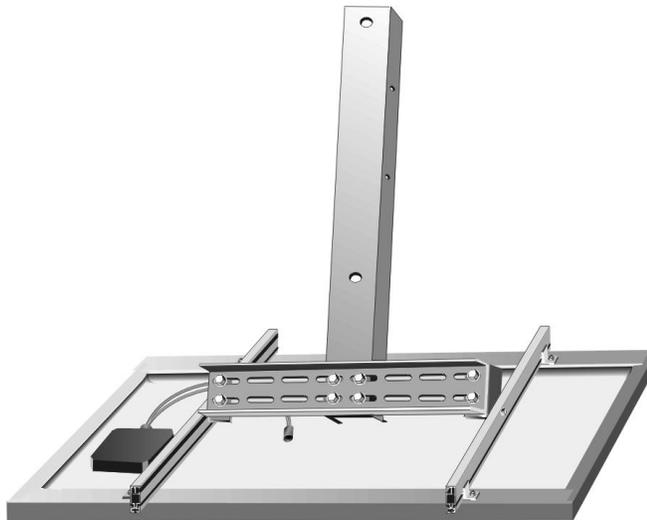


Figure 12 Attaching the Mounting Adaptor to the PV Panel Rack Assembly

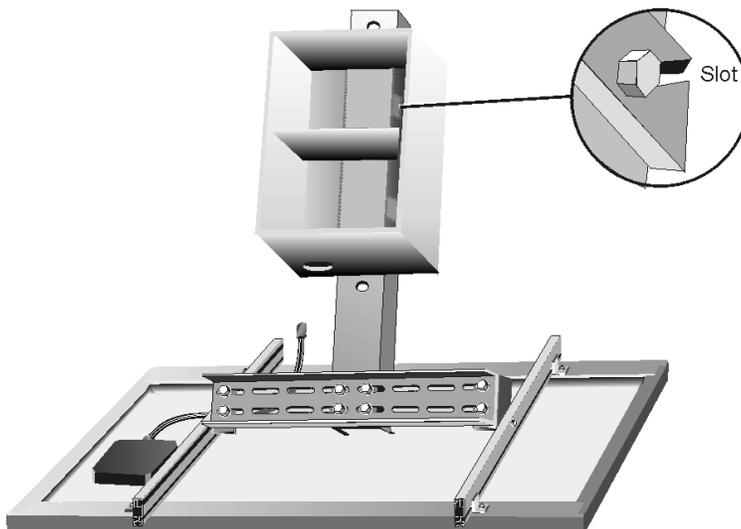


Figure 13 Attaching the Battery Box to the Mounting Adaptor

Fastening the Mounting Adaptor Into Position

1. Position the mounting adaptor so that it is perpendicular to the channel and at either a 45° angle (for locations outside of 20° latitude) or a 90° angle (for locations within 20° latitude), as shown in Figure 14.
2. While holding the mounting adaptor in position, tighten all of the 3/8" fasteners that secure the mounting brackets to the mounting rails, the channel to the mounting brackets, and the mounting adaptor to the channel.



Tighten all of the 3/8" fasteners to a torque of 30 ft-lbs (40 N-m).

3. Tighten the #10 self-tapping screws on each bracket to lock the bracket into the 45° or 90° angle.

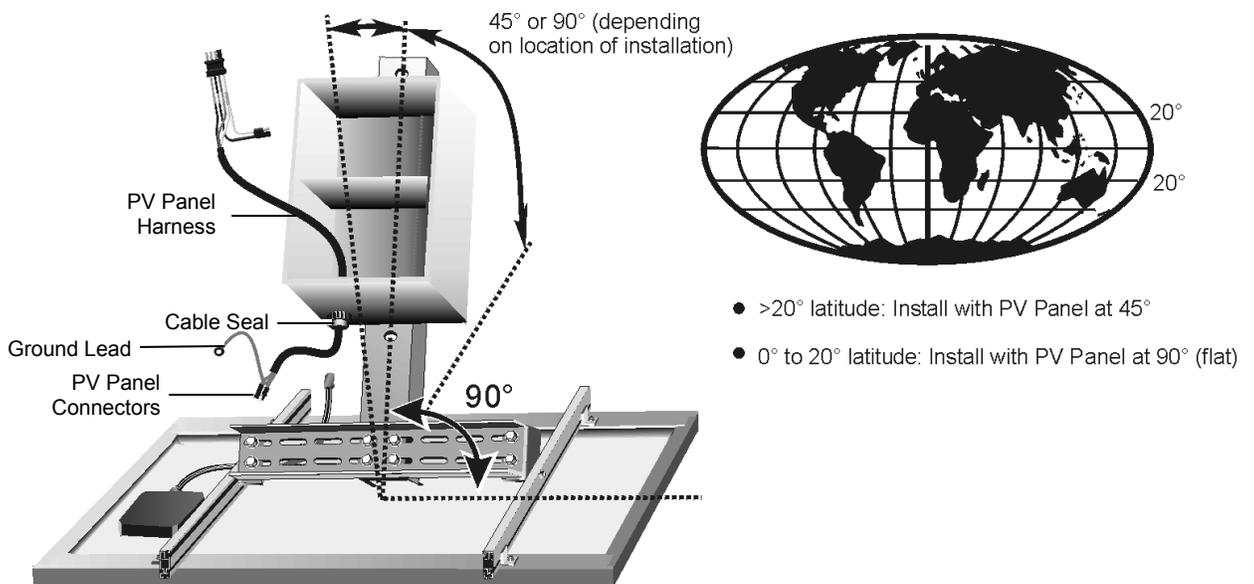


Figure 14 Positioning the Mounting Adaptor

Installing the PV Panel Harness in the Battery Box

1. Insert the PV panel harness and cable seal into the hole on the battery box as shown in Figure 14. Position the cable so there is at least 12 inches (30.5 cm) of cable inside of the battery box.
2. Tighten the cable seal.
3. Secure the ground lead to the PV panel frame, using a #6 sheet metal screw.
4. Plug the two PV panel leads into the PV panel connectors.



SAL-5 and SAL-6 models have two sets of PV panel leads and PV panel connectors. Be sure that each set is connected.

5. Secure excess PV load cable and any loose PV panel leads to the channel using the provided cable clips.