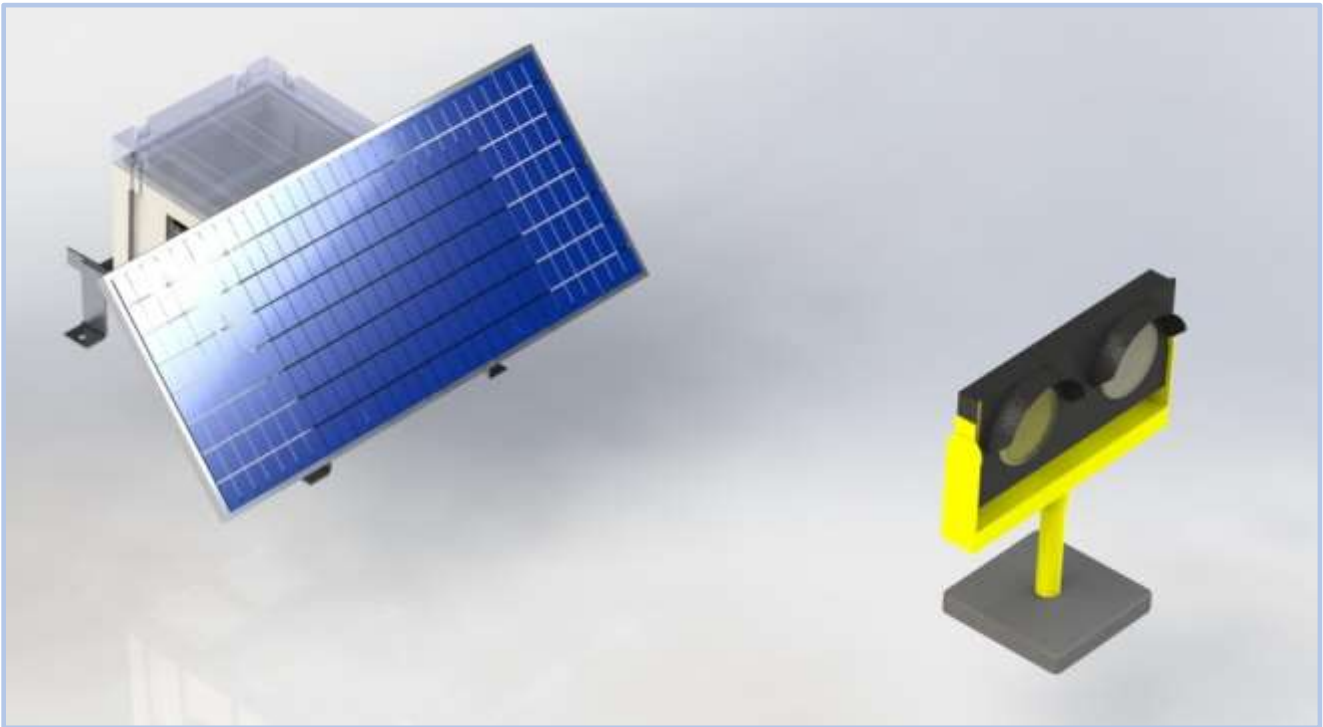


***Elevated Runway Guard Light (ERGL)
Model AV-ERGL-S***

User Manual





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1 Tools and Equipment

The AV-ERGL comes fully assembled, ready to install, and includes the following items:

AV-ERGL Kit

Name	Quantity
Solar Sled Power Supply	1
Elevated Runway Guard Light (ERGL)	1
Frangible Bolts	1 Box of 4
Photocell	1
Mounting Plate	1



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2 Acronyms and Abbreviations

BBA	Battery Box Assembly
cd	candela
DC	Direct Current
EMT	Electrical Metallic Tubing
ERGL	Elevated Runway Guard Light
ft.	foot
Hz	Hertz
ICAO	International Civil Aviation Organization
in.	inch
IR	Infrared
kg	kilogram
lb.	Pound
LED	Light Emitting Diode
LHA	Light Housing Assembly
mm	millimeter
nm	nanometer
NVE	Night Vision Equipment
NVG	Night Vision Goggle
OD	Outside Diameter
PCB	Printed Circuit Board
PCU	Power Control Unit
RCT	Remote Control Transmitter
RF	Radio Frequency
SFL	Sequence Flashing Lights
SHCS	Socket Head Cap Screw
SS	Stainless Steel
TDZ	Touchdown Zone
V	Volt
VAC	Volts, Alternating Current
VDC	Volts, Direct Current

3 Disclaimer

The information contained in this manual is believed to be accurate and up to date, however, Avlite assumes no liability for damages or injuries that may result from errors or omissions, or from the use of information presented herein. Avlite reserves the right to modify this manual at its own discretion without notification to any person or organization. For questions regarding this disclaimer please contact Avlite at:

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4 Warnings and Cautions

Warning

Confirm that the power switch is toggled to the OFF position when power is connected to the Solar Sled. DO NOT connect power to the PCU when the control panel power switch is toggled to the PWR position. This may result in damage to the power sources or the Solar Sled.

Warning

DO NOT connect the ERGL directly to the DC output of a generator, or any other unregulated power source. Connecting to an unregulated source may result in damage to the ERGL.

Warning

Do not stare into light emitting diode (LED) beams.

Caution

- LED light housings contain glass components. **Do Not Drop.**
- Battery Box Assemblies (BBA) **must remain** top side up at all times.
- **Never** step on top of the Light Housing Assembly (LHA), BBA.
- **Always** follow the instructions outlined in this manual when cleaning the equipment. Improper cleaning methods and use of unauthorized cleaning agents can damage equipment.

5 Scope

This manual contains installation, operation and maintenance information for the Solar LED Elevated Runway Guard Light (AV-ERGL-S) System.

6 Equipment Overview

6.1 Equipment Characteristics, Capabilities and Features

The Elevated Runway Guard Light (AV-ERGL-S) provides 24-hour unidirectional marking for runways and taxiway intersections with 45 – 50 alternating yellow flashes per minute at the hold position. ERGLs are typically installed in a pair, with one on either side of the taxiway holding position. They operate on 24 VDC and use a photodiode to discriminate night from day, switching the light intensity accordingly.

6.2 General Description

The two AV-ERGL-S optical assemblies use energy efficient LEDs and the light beam elevation is adjustable in one degree increments. The integrated solar module and battery system offer considerable savings in power and installation costs. Angle the solar module to maximize solar collection when charging the battery.

The ERGL system is comprised of two sub-systems:

- LED Elevated Runway Guard Light
- Solar Power Supply

7 Specifications

Physical			
Optical Head	Dimensions:		12.20 in. H x 12.15 in. L x 6 in. W
Operational			
	Voltage:		24 VDC
Low Intensity, ICAO	Intensity (effective Candelas):		300 cd daytime; 30 cd nighttime
Current Draw	V	I	W
Day Mode	24.0V	90.8mA	2.18W
Night Mode	24.0V	46.7mA	1.12W

8 Available Options

- Radio Remote Control
- Solar Input Power

9 Compliance

ICAO compliant model available. Call for details.

10 Installation, Assembly and Setup

ERGL Installation Site Requirements

10.1 Location

Refer to ICAO Annex 14 as well as airport project plans and specifications for specific location information.

10.2 Light Beam Orientation

Refer to ICAO Annex 14 for more information regarding light beam orientation.

11 Power Requirements

Each ERGL feeds to its own 24 VDC battery box.

12 ERGL Assembly and Setup

12.1 Solar Power Supply and ERGL Pads

The installation contractor will design the Solar Power Supply pad, and the pad for the ERGL, according to local codes and conditions. A typical installation is shown here.

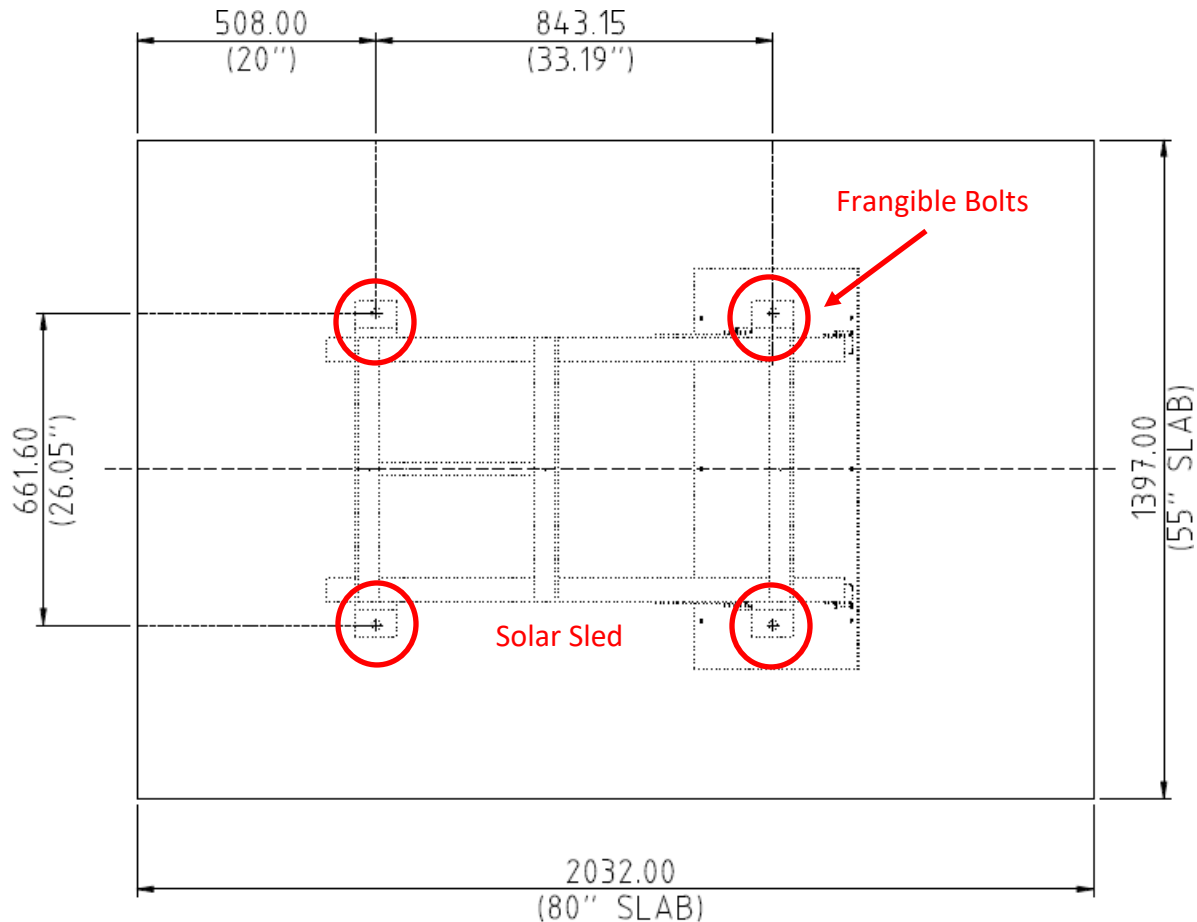


Figure 1: Solar Sled, Top View

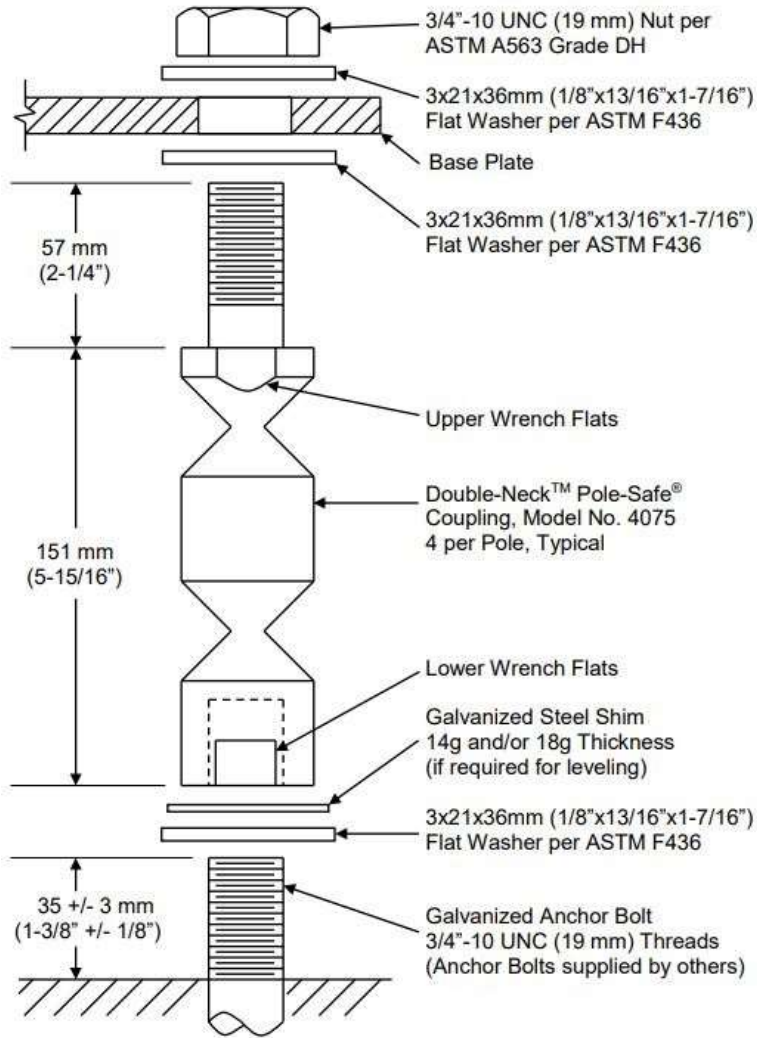


Illustration by: Transpo Industries, Inc.

<https://www.transpo.com/airports/frangible-fuse-bolts-pole-safe>

Figure 3: Frangible Bolt Installation, Side View

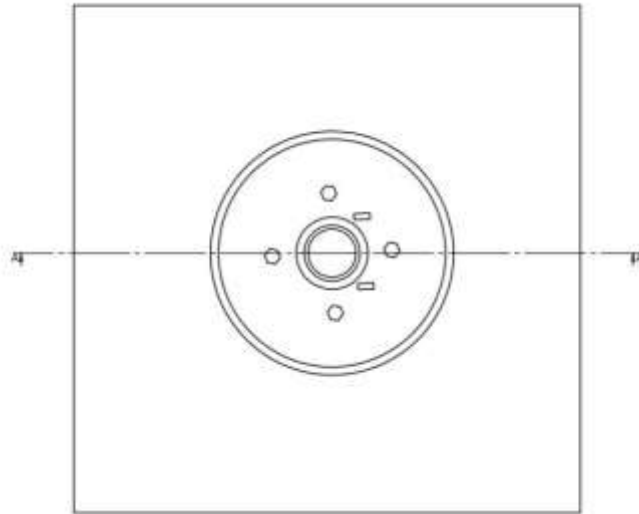


Figure 4: ERGL Cement Pad Base Plate, Top View

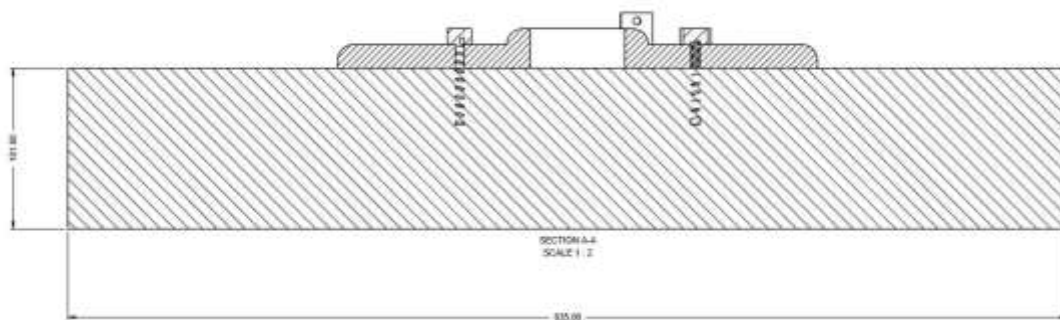


Figure 5: ERGL Cement Pad, Side View

12.2 Solar Power Supply

Perform the following steps to install the solar power supply sled:

1. Unpack the solar power supply sled.
2. Thread the supplied frangible bolts onto previously installed J bolts as shown in Figure 2.
3. Install the solar sled chassis on the frangible bolts as shown in Figure 1.
4. Feed the cable from the ERGL through the cable feed (Figure 6) and connect to the terminal blocks marked Battery + and Battery -. Conventionally, the white insulated wire is +, and the black insulated wire is -.
5. If operating from dusk-to-dawn, completely cover the solar panel to simulate night and wait 30 seconds for the ERGL to illuminate.
6. If using a hand-held controller to operate a radio controlled ERGL, see the product manual for operation.



Figure 6: Solar Panel and Components Rear View



Figure 7: Solar Panel and Components Side View

12.3 Base Can Installation

Complete the following steps to install the ERGL in a base can and connect to the solar power supply:

Note: If not using a base can, mount the base plate directly to the cement pad using standard masonry screws.

1. Remove the unit from the cardboard box and lay it on its side.
2. Run the harness through the frangible column.
3. Install the quick pin into the zero position hole in the column and snug the $\frac{1}{4}$ - 20 x $\frac{5}{8}$ " hex screws to temporarily hold the column.

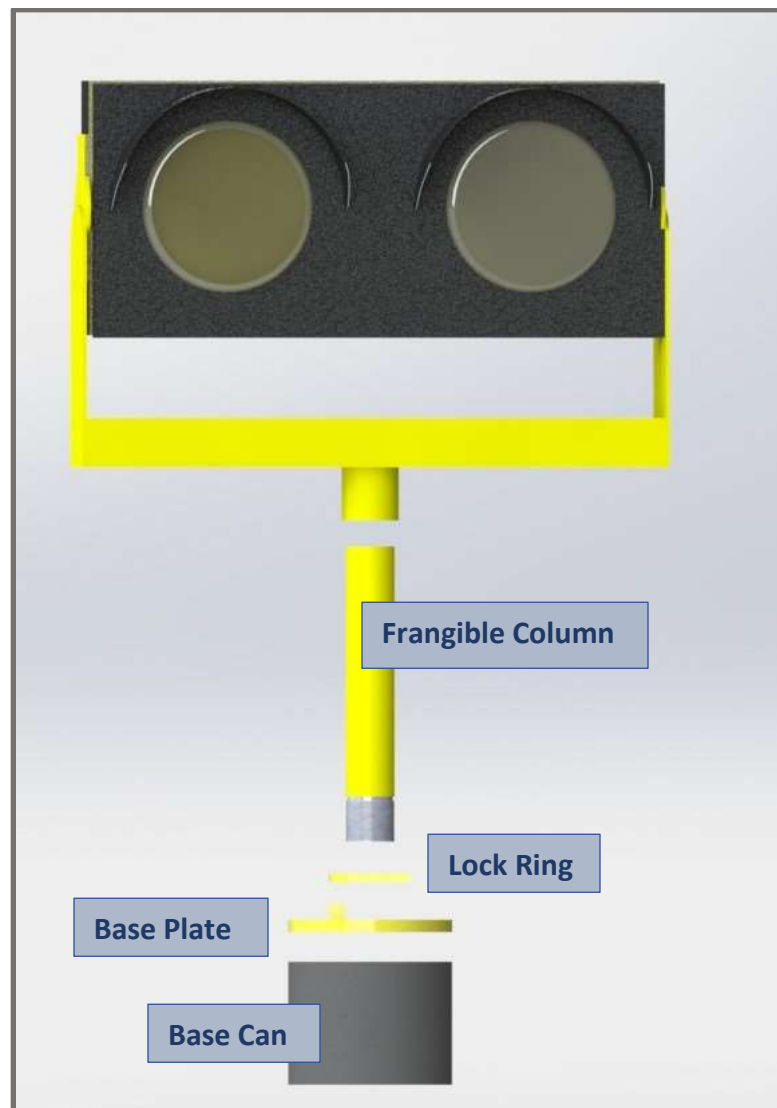


Figure 8: ERGL Base Can

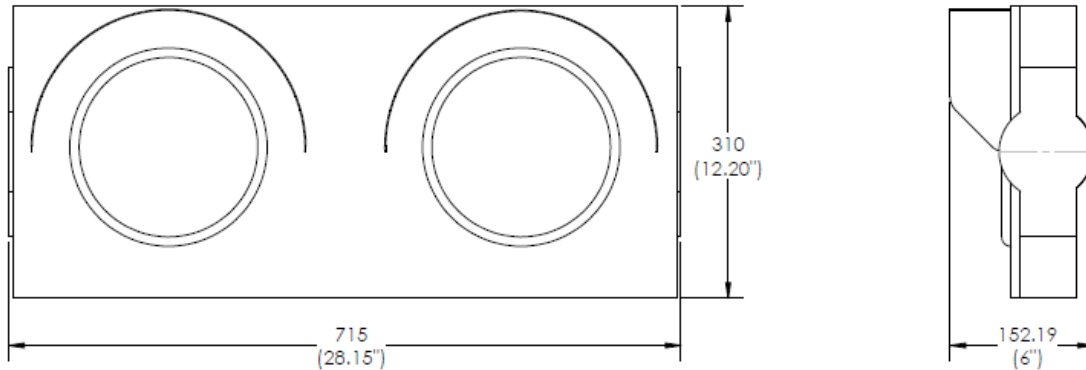
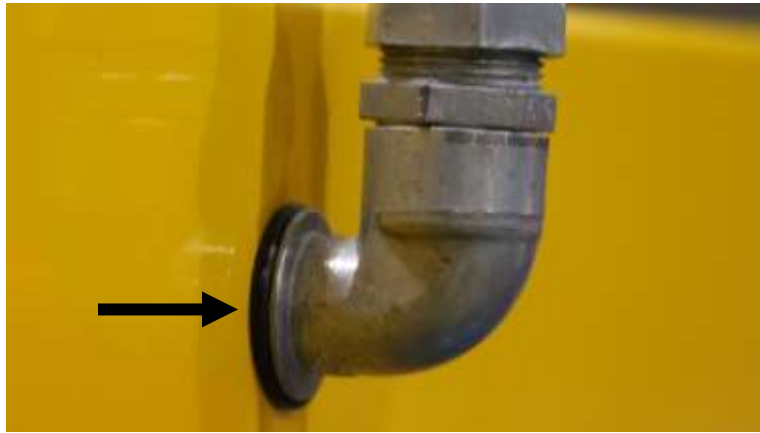


Figure 9: ERGL Optical Head

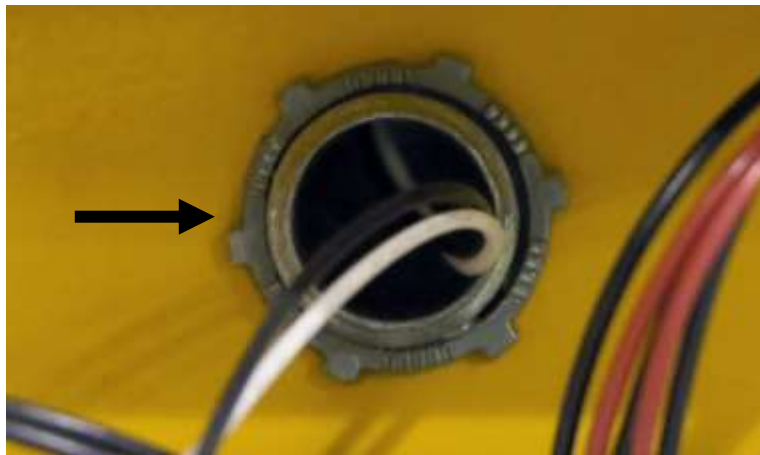
4. Slide the anti-rotation clamp onto the frangible column. Thread the jam nut onto the frangible column.
5. Pass the lower harness through the base plate and thread the base plate onto the frangible column until it is snug.
6. Connect the lower harness to the upper harness. Attach the harness retainer to the bottom of the baseplate.
7. Stand the unit up and line up the base plate holes with the holes in the base can so that the ERGL is pointed in the correct general direction.
8. Connect one end of the tether to the mounting frame. Connect the other end of the tether to the base plate. Install the 5 remaining hex bolts in the baseplate.
9. Tighten the jam nut on the frangible column.
10. Slide the anti-rotation clamp down and pass the bolt through the retaining tab on the guard light base plate.
11. Tighten the bolt and check that the ERGL is secure.
12. Loosen the two bolts securing the guard light to the frangible column and remove the quick pin.
13. Aim the ERGL in the correct direction.
14. Reinstall the quick pin in the correct hole and tighten the two bolts that secure the ERGL to the frangible column.
15. Adjust the vertical position by removing the ¼-20 hex head cap screws in the vertical adjustment holes on each side.
16. Loosen the ½ in. bolt enough to allow the guard light to rotate up and down but do not remove it.
17. Adjust the guard light to the correct vertical angle.
18. Thread the ¼-20 hex head cap screws into the adjustment holes at the correct location.
19. When all of the screws have been threaded, tighten down the ¼-20 socket-head cap screws and the ½ in. bolt.

12.4 Photocell Installation

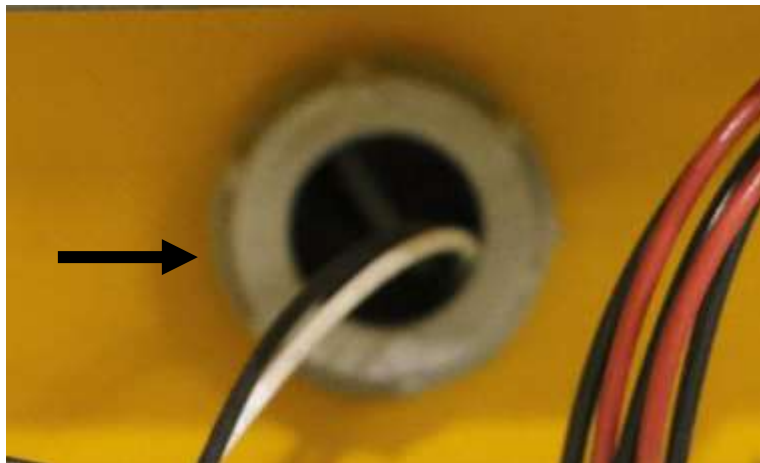
1. Install the photocell in the housing, with the O-ring seal located on the outside.



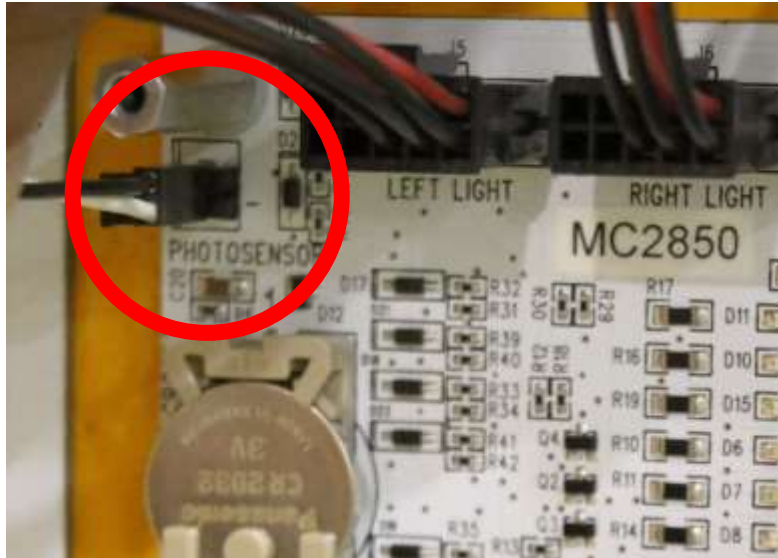
2. On the inside of the housing, thread on the conduit lock nut, ensure it is tight.



3. Thread the plastic anti-chafe bushing.



4. Insert the connector into the header on the board, making note that the wedge on the connector needs to be captured by the latch on the header.



5. Aim the photocell with the lens pointed towards the northern sky by loosening the adjusting screw and rotating the photocell. Once oriented, retighten the screw.



13 Operation

Refer to the user manual for the Radio Controller to read about operating the radio controller used for the AV-ERGL system. Please note that the Avlite RF Radio Control Group Number must be specified when ordering the AV-ERGL. If using a hard wired control system configuration, instructions for operation will depend on the existing control system.

When used with a parallel-powered power supply the control board receives two inputs. The first input is 20-21 VDC from the voltage power supply, the second input comes from a photocell that measures ambient light level. Once the ERGL Control Board knows the ambient light level, it chooses from between the daytime full intensity and nighttime low intensity settings.

14 Maintenance

The following tips help assure long, reliable operation:

- Clean optical windows with clean water and a soft cloth.
- Inspect and maintain grounding at each emplacement.
- Visually inspect all wiring harnesses and electrical connections and replace when damaged.

15 Replacement Parts

If replacement parts are required, please call a local Avlite distributor and reference the Product or Configuration code called out in the Product Configuration and Options section of this manual.

15.1 Replacing a Broken Frangible Column

Complete the following steps to replace a broken frangible column:

1. The frangible column will break $\frac{1}{2}$ " above the baseplate. Remove the anti-rotation clamp.
2. Use a pipe wrench to remove the lower portion of the frangible column.
3. Use a 2/12 in. spanner wrench to remove the remaining column section via the access hole.

16 Troubleshooting

16.1.1 Problem	16.1.2 Possible Cause
Light does not operate.	
More than 5 LEDs are out.	Restart the guard light. If LEDs are still out when restarted, replace the light engine.
Only 1 Light Engine flashes.	Reboot system. Switch light engine plugs to see if problem follows light engines or the control board. Replace the light engine if the problem follows the light engine. Replace the control board if the problem follows the control board.
Flashing erratically.	
Does not switch day/night modes.	Reboot system. Cover the photodiode and wait 60 seconds to see if there is any change. Unplug the photodiode and place a jumper across the photodiode connector at the control board. If the jumper works, replace the photodiode. If the jumper does not work, replace the control board.
Guard light has been knocked down.	The broken frangible column threads can be removed from the baseplate with a spanner wrench. Check the upper and lower wire harnesses and replace any harness that has been nicked or damaged. Install a new frangible column.

17 Warranty

17.1 Activating the Warranty

This product is covered under the below set of warranty terms and conditions from the date of shipment. Please contact a local Sealite representative with purchase details and serial numbers.

Avlite Systems will repair or replace your lantern in the event of electronic failure for a period of up to three years from the date of purchase. Avlite Systems will repair or replace any ancillary or accessory products in the event of failure for a period of up to one year from the date of purchase, as per the Terms and Conditions below. The unit must be returned to Avlite freight prepaid.

17.2 Terms and Conditions

17.2.1 Warranty Terms

1. Avlite Systems warrants that any Avlite aviation products fitted with telemetry equipment including but not limited to AIS, GSM, GPS, or RF (“Telemetry Products”) will be free from defective materials and workmanship under normal and intended use, subject to the conditions hereinafter set forth, for a period of twelve (12) months from the date of purchase by the original purchaser.
2. Avlite Systems warrants that any rotationally-moulded products (Roto-Moulded Products) and accessory products (Accessory Products) will be free from defective materials and workmanship under normal and intended use, subject to the conditions hereinafter set forth, for a period of twelve (12) months from the date of purchase by the original purchaser.
3. Avlite Systems warrants that any Avlite aviation products other than the Telemetry Products, Roto-Moulded Products and Accessory Products (Avlite Products) will be free from defective materials and workmanship under normal and intended use, subject to the conditions hereinafter set forth, for a period of three (3) years from the date of purchase by the original purchaser.
4. Avlite Systems warrants that any Avlite obstruction products other than the Telemetry Products, Roto-Moulded Products and Accessory Products (Avlite Products) will be free from defective materials and workmanship under normal and intended use, subject to the conditions hereinafter set forth, for a period of five (5) years from the date of purchase by the original purchaser.
5. Avlite Systems will repair or replace, at Avlite’s sole discretion, any Telemetry Products, Roto-Moulded Products, Accessory Products or Avlite Products found to be defective in material and workmanship in the relevant warranty period so long as the Warranty Conditions (set out below) are satisfied.
6. If any Telemetry Products or Avlite Products are fitted with a rechargeable battery, Avlite Systems warrants the battery will be free from defect for a period of one (1) year when used within original manufacturer’s specifications and instructions.



17.2.2 Warranty Conditions

This Warranty is subject to the following conditions and limitations:

1. The warranty is applicable to lanterns manufactured from 1/1/2009.
2. The warranty is void and inapplicable if:
 - a. the product has been used or handled other than in accordance with the instructions in the owner's manual and any other information or instructions provided to the customer by Avlite;
 - b. the product has been deliberately abused, or misused, damaged by accident or neglect, or in being transported; or
 - c. The defect is due to the product being repaired or tampered with by anyone other than Avlite or authorized Avlite repair personnel.
3. The customer must give Avlite Systems notice of any defect with the product within 30 days of the customer becoming aware of the defect.
4. Rechargeable batteries have a limited number of charge cycles and may eventually need to be replaced. Typical battery replacement period is 3-4 years. Long term exposure to high temperatures will shorten the battery life. Batteries used or stored in a manner inconsistent with the manufacturer's specifications and instructions shall not be covered by this warranty.
5. No modifications to the original specifications determined by Avlite shall be made without written approval of Avlite Systems.
6. Avlite lights can be fitted with 3rd party power supplies and accessories but are covered by the 3rd party warranty terms and conditions.
7. The product must be packed and returned to Avlite Systems by the customer at his or her sole expense. Avlite Systems will pay return freight of its choice. A returned product must be accompanied by a written description of the defect and a photocopy of the original purchase receipt. This receipt must clearly list model and serial number, the date of purchase, the name and address of the purchaser and authorized dealer and the price paid by the purchaser. On receipt of the product, Avlite Systems will assess the product and advise the customer as to whether the claimed defect is covered by this warranty.
8. Avlite Systems reserves the right to modify the design of any product without obligation to purchasers of previously manufactured products and to change the prices or specifications of any product without notice or obligation to any person.
9. Input voltage shall not exceed those recommended for the product.
10. Warranty does not cover damage caused by incorrect replacement of battery in solar lantern models.
11. This warranty does not cover any damage or defect caused to any product as a result of water flooding or any other acts of nature.
12. There are no representations or warranties of any kind by Avlite or any other person who is an agent, employee, or other representative or affiliate of Avlite, express or implied, with respect to condition of performance of any product, their merchantability, or fitness for a particular purpose, or with respect to any other matter relating to any products.

17.3 Limitation of Liability

To the extent permitted by acts and regulations applicable in the country of manufacture, the liability of Avlite Systems under this Warranty will be, at the option of Avlite Systems, limited to either the replacement or repair of any defective product covered by this Warranty. Avlite Systems will not be liable to Buyer for consequential damages resulting from any defect or deficiencies in accepted items.

17.4 Limited to Original Purchaser

This Warranty is for the sole benefit of the original purchaser of the covered product and shall not extend to any subsequent purchaser of the product.

17.5 Miscellaneous

Apart from the specific warranties provided under this warranty, all other express or implied warranties relating to the above product are hereby excluded to the fullest extent allowable under law. The warranty does not extend to any lost profits, loss of good will or any indirect, incidental or consequential costs or damages or losses incurred by the purchaser as a result of any defect with the covered product.

17.6 Warrantor

Avlite Systems has authorized distribution in many countries of the world. In each country, the authorized importing distributor has accepted the responsibility for warranty of products sold by distributor. Warranty service should normally be obtained from the importing distributor from whom you purchased your product. In the event of service required beyond the capability of the importer, Avlite Systems will fulfil the conditions of the warranty. Such product must be returned at the owner's expense to the Avlite Systems factory, together with a photocopy of the bill of sale for that product, a detailed description of the problem, and any information necessary for return shipment.

18 Customer Feedback

Thank you for your purchase. We welcome your feedback and recommendations.

Please send your comments to:

Sealite USA t/a Avlite Systems

61 Business Park Drive

Tilton, New Hampshire 03276

USA

Email: info@sealiteusa.com

Telephone: +1 (603) 737-1311

19 Revision History

Revision	Author	Date	Description of Change
B	SW	9/17/2018	Dimensioned Drawing of ERGL Optical Head
C	RC	05/30/2019	Added Photocell Installation
D	RC	07/06/2020	Added Current Draw to Section 7. Specifications