

Inset Heliport Light AV-HLI2

Installation & Service Manual - V3.0



*"We Believe Technology
Improves Navigation."*

Manual Update Register

Version No.	Description	Date	Reviewed	Approved	Design
3.0 (Current)	AV-HLI2 Product update, Manual redesign and content update	June 2021	P. Naidu	W. Evans	M. Sugars
2.0	AV-HLI2 Manual Overhaul	July 2020	P. Naidu	W. Evans	M. Sugars
1.3	General update	February 2017		W. Evans	
1.2	Drawining update	February 2017		W. Evans	
1.1	General update	February 2017		W. Evans	
1.0	AV-HLI2 Manual Launch	December 2016		W. Evans	

Contents

1.0 Introduction	4
2.0 Technology	5
3.0 AV-HLI2 Models	6
4.0 AV-HLI2 Data Sheet.....	7
5.0 Safety Information.....	8
6.0 Operation and Setup.....	9
6.1 Product Overview	9
7.0 Unpacking, Installation, Wiring and Setup.....	10
7.1 Unpacking.....	10
8.2 Installation	10
8.0 Maintenance and Servicing.....	13
9.0 Replacement Parts.....	13
10.0 Trouble Shooting.....	14
11.0 Warranty	14
Notes	15

1.0 Introduction

Congratulations! By choosing to purchase an Avlite light, you have become the owner of one of the most advanced LED heliport lights in the world.

Avlite Systems draws on more than 25 years experience in the design and manufacture of navigation aids, and particular care has been taken to ensure your light gives years of trouble free service.

As a commitment to producing the highest quality products for our customers, Avlite has been independently certified as complying with the requirements of ISO 9001:2015 quality management system.

By taking a few moments to browse through this booklet, you will become familiar with the versatility of your light, and be able to maximise its operating function.

Please remember to complete the Avlite warranty registration at www.avlite.com.

Acronyms and Abbreviations

The following abbreviations will be used throughout this Installation Manual:

cd	candela
ft.	foot
in.	inch
LED	Light Emitting Diode
VAC	Volts, Alternating Current
VDC	Volts, Direct Current
AWG	American Wire Gauge
HLS	Heliport Lighting System
TLOF	Touch Down and Lift Off
FATO	Final Approach and Take Off
AIP	Aim Indicator Point
ADI	Aim Direction Indicator

2.0 Technology

Avlite Systems is a world-class solar lighting systems manufacturer with a proven reputation for rapid, innovative, and agile technology solutions designed specifically for defence, government, civil and humanitarian aid operations in the most remote, toughest environments.

Electronics

Avlite employs leading in-house electronic engineers in the design and development of software and related circuitry. All individual electronic components are sourced directly by Avlite procurement staff ensuring that only the highest quality components are used in our products.

LED Technology

All Avlite lights use the latest advancements in LED (Light Emitting Diode) technology as a light source. The major advantage of LED's over traditional light sources is well established in that they typically have an operational life in excess of 100,000 hours, resulting in substantial savings to maintenance and servicing costs.

Precision Construction

Commitment to investing in the design and construction of injection-moulded parts including optic lenses, light bases and a range of other components ensures that all Avlite products are of a consistent and superior quality.

Optical Performance

Avlite manufactures a range of aviation LED lenses moulded from multi-cavity dies. The company has superior in-house lens manufacturing capabilities to support outstanding optical performance.

Award-winning, Patented Technology

Several United States and Australian patent registrations are held on Avlite's range of innovative designs, with other regional patents pending in Canada, United Kingdom and Europe.

3.0 AV-HLI2 Inset Helipad Light

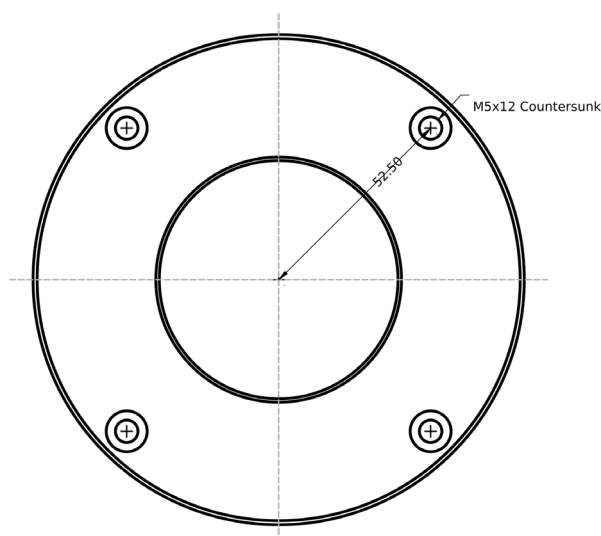
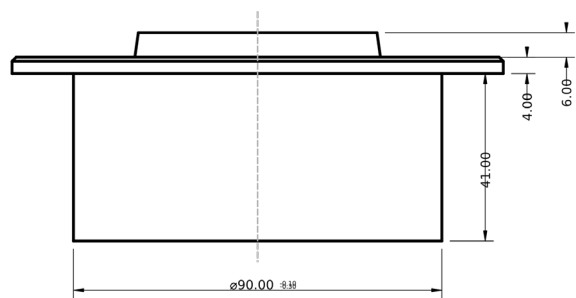
The AV-HLI2 is an inset helipad light designed to comply with ICAO Annex 14, Volume II and FAA EB67D requirements in a compact and low profile fixture. The fixture is available in TLOF, FATO, ADI & AIP configurations to fulfil all surface level and elevated helipad lighting needs.

As an alternative to elevated lights, Avlite’s inset helipad lights are an excellent choice for locations where elevated lights are not suitable or are at risk of causing interference to passing aircraft and maintenance vehicles. The lights can be dimmed from 0-100% to suit the application and are available with optional infrared (IR) visibility for pilots using night vision.

The inset helipad lights are compatible with existing infrastructure and come with a simple plug and play connection making them simple to install.

Note: This installation and service manual must be used in conjunction with the installation manuals of the following components (where applicable):

- AV-HL-CTRL-T1
- AV-HL-CTRL-T2
- AV-PALC



4.0 AV-HLI2 Data Sheet

AV-HLI2

Light Characteristics

Light Source	LED
Available Colours	Green, White, Yellow, Blue, Red, IR
Peak Intensity - Visible (cd)	Complies to: ICAO Annex 14 Vol 2., FAA EB 87, CAP 437
Peak Intensity - IR (mW/str)	240
Intensity Adjustments	Visible Option: 0 to 100% dimmable IR Option: IR continuous on, with LCMS and IR switchable
LED Life Expectancy (hours)	>100,000

Electrical Characteristics

Circuit Protection	Integrated		
Operating Voltage	18 – 30 V		
Power (W)	<table border="1"> <tr> <td>TLOF-G Green 5.3W ADI-W White 5.3W FATO-W White 9.6W TLOF-Y Yellow 5.3W TLOF-B Blue 5.3W TLOF-R Red 5.3W</td> <td>TLOF-G-NVG Green IR 5.5W ADI-W-NVG White IR 5.5W FATO-W-NVG White IR 9.9W TLOF-Y-NVG Yellow IR 5.5W TLOF-B-NVG Blue IR 5.5W TLOF-R-NVG Red IR 5.5W</td> </tr> </table>	TLOF-G Green 5.3W ADI-W White 5.3W FATO-W White 9.6W TLOF-Y Yellow 5.3W TLOF-B Blue 5.3W TLOF-R Red 5.3W	TLOF-G-NVG Green IR 5.5W ADI-W-NVG White IR 5.5W FATO-W-NVG White IR 9.9W TLOF-Y-NVG Yellow IR 5.5W TLOF-B-NVG Blue IR 5.5W TLOF-R-NVG Red IR 5.5W
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Temperature Range	-40 to 55°C (-40 to 131°F)		
Transport and Storage Temperature Range	-40 to 85°C (-40 to 185°F)		

Power Supply

Battery Type	High grade Nickel Metal Hydride (NiMH)	Cyclon AGM-TPPL
Battery Capacity (Ah)	8.6	17.2 2.5
Nominal Voltage (V)	3.6	4.0
Programming/ Charger	Integrated (DC)	External (AC)
Charge Port Rated Power	5 W	
Input Voltage	90-264 VAC, 50/60 Hz	

Physical Characteristics

Body Material	Corrosion resistant anodised aluminium
Lens Design	LED optic
Mounting	4 x M5 Screws
Height (mm/inches)	160 / 6.30
Width (mm/inches)	190 / 7.48
Mass (kg/lbs)	0.9 / 1.98
Service Life	Up to 12 years

Environmental Standards

Shock	MIL-STD-202G, Test Condition G, Method 213B
Vibration	MIL-STD202G, Test Condition B, Method 204
Wind Speed	Up to 160kph / 100mph
Humidity	0 to 100%, MIL-STD-810F

Compliance

ICAO	ICAO Annex 14, Vol 1, July 2018
EMC	EN61000-6-4:2012, EN61000-6-2:2019
Quality Assurance	ISO9001:2015
Waterproof	IP68
Trademarks	AVLITE® is a registered trademark of Avlite Systems

Other

Warranty *	2 year warranty
Options Available	AC/DC converter for AC/DC Variety of solar/battery configurations Adaptor Plate for mounting in 8" Shallow Bases according to IEC TS 61827 / FAA AC 5439/150-46D 5" or 8" Shallow Base LCMS Helipad Control System
Terms and Conditions	Please refer to the light installation manual for further specifications. Warranty Terms and Conditions - www.avlite.com

5.0 Safety Information

Before proceeding with installation or service, make sure the following conditions are met:

- Ensure power lines are not 'live' (NO ELECTRICAL HAZARD)
- Avoid touching live circuits!
- Avoid touching any component or any part of the circuitry while the unit is operating. Do not change components or make adjustments inside the unit with power on.
- Make sure the light fixture mounting is vertically aligned to guarantee the required beam pattern of the airfield light.
- Make sure any nearby obstacles do not impede the lights' beam pattern.
- When installing, comply with all local electrical code(s).
- Mains power should always be disconnected when work is being done in close proximity to electrical fittings, and electrical work should only be done by a licensed electrician.
- Operate the light only within the indicated electrical ratings and product usage instructions.
- To ensure that the light and peripheral equipment function safely and correctly, use cable in compliance with the effective local electrical code.
- Do not stare at the LED or shine the LED into your eyes or those of another person.
- Dispose of the product according to the local laws and regulations for your region, for example, at a recycling centre that accepts electronic devices.

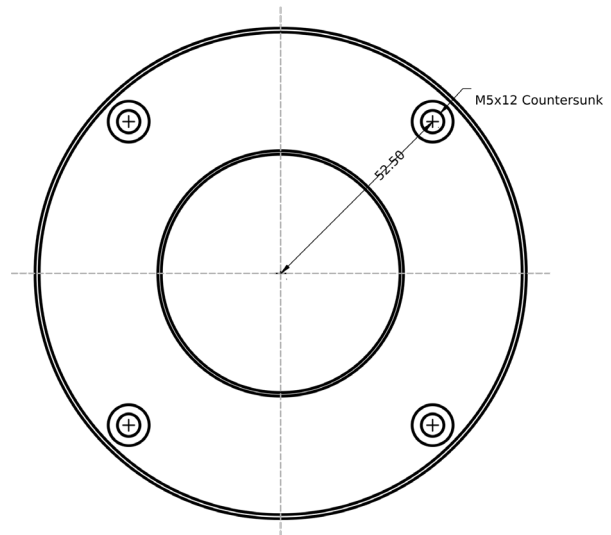
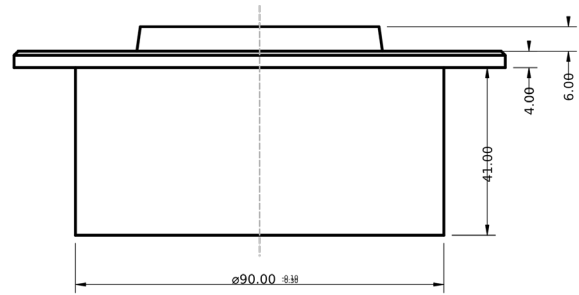
6.0 Operation and Setup

The inset heliport light fixture is available in DC configuration with AC available. The FATO and TLOF circuits are based on a daisy chained architecture (with or without the aid of junction boxes). Each light circuit is connected to the Primary Controller individually.

6.1 Product Overview

External

Power	
Positive (+24 VDC)	Red
Ground	Blue
Dimming (0-10 VDC)	White



7.0 Unpacking, Installation, Wiring and Setup

7.1 Unpacking

Unpack all hardware and inspect for damage. If there is any damage, please contact your Avlite Office. Retain original packing material for possible future use in shipping.

7.2 Installation



WARNING:

DO NOT connect directly to an unregulated power source. Connecting to an unregulated source may result in damage.



WARNING:

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



WARNING:

LED lights contain glass components. Do Not Drop. Always follow the instructions outlined in the product manual when cleaning the equipment. Improper cleaning methods and use of unauthorized cleaning agents can damage equipment.

7.2.1 Tools Required

Tools required for assembly & installation

- 5mm Allen Key

7.2.2 Location

Refer to your regional specifications for site requirements for heliport lights.

7.2.3 Cabling Requirements

The minimum cable requirements are set out in the relevant AV-HL-CTRL Installation and Service Manual.

7.2.4 Installation Recommendation

Electrical inspection and test

The inset light is manufactured with a 3 core input fly lead, of default length. One end of the input cable is molded into the light fixture and the other end is terminated with colour coded ferrules. Refer to 6.1 Product Overview for details on each conductor and their function.

To test the light fixture, connect a 24VDC source to the two input power wires in accordance with the table in section 6.1 Product Overview and apply power, this should result in the light turning on at full (100%) intensity. If dimming is required, connect a variable 0-10VDC source to the remaining conductor. Dimming occurs in accordance with the following table:

Intensity	Voltage
100%	<0.5V
30%	3.5V
10%	8.5V
0%	>9.5V

Preparation of installation location

The AV-HLI2 can be installed in either a 5" (inch), 8" (inch) or direct mounting configuration.

5" Configuration: For installation in tarmac or concrete helipads it is recommended to use the Avlite 5" (inch) inset shallow base taking into consideration site specific bearing load, leveling and thermal bonding.

For installations using the 5" inset base configuration, please see mechanical specifications:

8" Configuration: For installations where there are pre-existing 8" mounting locations or 8" mounting is desired then the Avlite 5" to 8" adaptor ring, 8" inset shallow base is required.

Note: Reuse of the M10x15 screws is not recommended

For installations using the 8" inset base configuration, the installation location of each light needs to be prepared in accordance with the below mechanical specifications:

Direct Mounting:

For installations where direct mounting of the light fixture to a metal helipad surface is desired, the mounting surface of each light must be prepared in accordance with the following mechanical specification ensuring the mounting surface is level and has adequate heat dissipation characteristics.

Electrical Installation

The procedure for connecting the inset light fixture to the corresponding electrical connections is as follows:

- Feed input and output cables through corresponding side mounted gland on inset base
- Connect each conductor of input cable to separate joint connector (not supplied). One for +24VDC, one for GND (0VDC) and one for Dim (0-10V) control line.
- Connect each conductor of output cable to corresponding joint connector
- Connect each conductor of light fly lead to corresponding joint connector as per table
- Tighten each cable gland to ensure sealing

Note: Do not cut or modify the fly lead attached to the AV-HLI2 light fixture

Mechanical Installation

5" Configuration:

The procedure for installing an inset light fixture to a 5" base is as follows:

- Ensure the M5 screw holes and flange area on the 5" inset base are clean
- Lower the light fixture onto the inset base, ensuring all electrical connections are properly terminated and fly lead is free and clear of the mounting surface
- Align the screw holes of the inset light fixture with those of the inset base and fasten using silicone greased M10x15 counter sunk screws
- Tighten screws to 4.9 Nm

8" Configuration:

The procedure for installing the adaptor ring onto the inset light fixture and fitting to a 8" base is as follows:

- Ensure the M10 screw holes and flange area on the 8" inset base are clean Insert the provided O-ring into the O-ring groove of the adaptor ring
- Lower the light fixture onto the inset base, ensuring all electrical connections are properly terminated and fly lead is free and clear of the mounting surface
- Align the screw holes of the inset light fixture with those of the inset base and fasten using silicone greased M5x12 counter sunk screws
- Tighten screws to 4.9 Nm

Direct Mounting:

The procedure for installing an inset light fixture to a pre-prepared mounting surface is as follows:

- Ensure the M5 screw holes and flange area are clean
- Lower the light fixture onto the mounting surface, ensuring all electrical connections are properly terminated and fly lead is free and clear of the mounting surface
- Align the screw holes of the inset light fixture with those of the mounting surface and fasten using silicone greased M10x15 counter sunk screws
- Tighten screws to 3.5 Nm

Note: Continuous Immersion of the light (body) into water/fluids:

It is required to install the light in such way that no frequent or continuous immersion of the light or parts in water or other fluids take place. Therefore it is recommended to use the shallow base, either connected to a drained duct system or by inserting the cables (sheated cable OD 7-13mm) through the cable glands and tightening them with 12 Nm torque. When inserting the lights in the shallow base, ensure the provided sealing "O-ring" is in the correct position below the flange of the light and in the chamfer of the shallow base. Apply anti-seizing to the 4 screws and tighten the screws with 4.9 Nm crosswise.

Note: Intrusion of water through the supply cable:

The open ends of the power supply cables of the light and on the construction side shall not be immersed into water at any time of the installation. If this accidentally happens, the lines need to be dried by unstripping the cable ends and storing them in a drying agent (eg. a bag with silica gel and tyrap) for a minimum of 5 days. For connection, we recommend the usage of gel filled joints suiting 0.75mm² up to 4mm² wiring. If an intrusion of water in the bases or pits cannot be avoided, the joints should be placed in such way that no immersion in water or other fluids can take place.

8.0 Maintenance and Servicing

Designed to be almost maintenance free the inset helipad light requires minimal attention, though the following maintenance and servicing information is provided to help ensure the life of your Avlite product.

- Occasional cleaning of the lens may be required using a cloth and warm soapy water.
- Monthly check of the torque of the light head to its mounting.

9.0 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 the corresponding product data sheet.

10.0 Troubleshooting

Problem	Possible Cause	Solution
Light will not activate.	<ul style="list-style-type: none">• No power at unit• Unit is damaged	<ul style="list-style-type: none">• Remove light from mount• Ensure 24VDC supply source is active• Check that 24VDC is present at joint connector feed the light fixture• Check polarity of supply line wires is correct• Measure voltage of Dim line and check against the table dimming table• If measured voltage on Dim line is less than 0.5V, remove dim line connection and check light functionality• Otherwise replace the light fixture
Intensity does not match.	<ul style="list-style-type: none">• No Analog Input connection• Incorrect Analog input voltage	<ul style="list-style-type: none">• Remove light from mount• Measure voltage of Dim line and check against the table dimming table• If measured voltage does not match the expected value disconnect the light from the Dim line and re-measure• If measured voltage on the Dim line still does not match expected value, inspect the dim line wiring• Otherwise replace the light fixture

11.0 Warranty

Refer to Avlite website at www.Avlite.com.

Contact Us!

Avlite's solutions are easy-to-install and scalable. We have a solution for every budget.



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