



## **AV-OL-CTRL-T1**

### **Obstruction Lighting Controller**

## **INSTALLATION & SERVICE MANUAL**



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Version No.	Description	Date	Reviewed	Approved	Design
1.0	AV-OL-CTRL-T1 Manual Launch	October 2020	P. Naidu	W. Evans	M. Sugars

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# 1.0 Introduction

Congratulations! By choosing to purchase an Avlite product, you have become the owner of one of the most advanced obstruction products in the world.

Avlite Systems draws on more than 25 years of experience in the design and manufacture of navigation aids, and particular care has been taken to ensure your product 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 lighting Control Unit, and be able to maximise its operating function.

Please remember to complete the Avlite warranty registration card accompanying your product.

## 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
LIOL	Low Intensity Obstruction Light
ILAB	ICAO Low Intensity Type A and B
LI	Low Intensity

## 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-OL-CTRL-T1

The AV-OL-CTRL-T1 Obstruction Lighting Controller is an application specific control and monitoring system to provide a full turnkey solution for A0/I1 structures up to 45 meters (150 feet). These include telecommunication and utility towers, wind turbines, cranes, buildings and other tall structures.

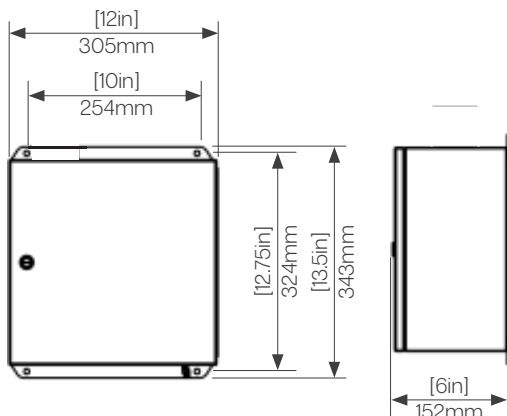
The T1 Obstruction Controller comes as a fully assembled, ready to install central control unit.

For safety and security, the control unit comes with a safety interlock which prevents access to the controller while the system is powered on.

The Control Unit is available in two input power configurations; a universal AC or DC and comes with optional remote monitoring via Star2M with either GSM or SATCOM telemetry.

The best in class system power draw allows tower owners to utilize solar for locations lacking reliable and or cost-effective access to regular utility power. Avlite's experience, knowledge and tools for solar applications provides years of maintenance free, off-grid operation with an emphasis on FAA and ICAO compliance.

**Note: This installation and service manual must be used in conjunction with the installation manuals of the individual components of the obstruction lighting solution.**



### 3.1 Available Options

- Solar Input Power (for 12-48VDC) – Call Avlite for details.
- Cable Kit (for 45m height)
  - 50m of 2.5mm<sup>2</sup>, 3 conductor wire.
- Remote Monitoring and Control
  - Avlite offers remote Star2M™ monitoring via GSM or SATCOM.
  - Operators can remotely monitor the status of their installation from a compatible device. The system can also be configured to send out SMS text messages or e-mail alerts to designated operators should alarm conditions be triggered, such as low voltage or light failure.
  - Please contact Avlite for operational information for the Monitoring & Control options.
- Mounting Bolt Set (includes bolts, nuts, washers)
  - Please contact Avlite for further details.
- Control Unit Mounting Hardware
  - 2" pipe clamps
  - 3/4" pipe clamps



## 4.0 AV-OL-CTRL-T1 Data Sheet

### AC

### DC

#### Electrical Characteristics

Input Voltage	90-264VAC	12-48VDC
Input Frequency	50/60 Hz	N/A

#### Power Consumption (Full Load)

Peak	20VA	6W
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#### Physical Characteristics

Mounting	Wall mounted (mounting accessories available)
Height (mm/inches)	343/13.5
Width (mm/inches)	305/12
Length (mm/inches)	152/6
Mass (kg/lbs)	7.3/16
Service Life	12 years +

#### Intellectual Property

Trademarks	AVLITE® is a registered trademark of Avlite Systems
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#### Compliance

CE	EN61000-6-3:2007, EN61000-6-1:2007 FCC 47 CFR Part 15, subpart B
Quality Assurance	ISO9001:2015
Protection Rating	IP65/NEMA4X

#### Other

Warranty *	3 year warranty
Options Available	SATCOM or GSM Mounting Brackets Solar Input Power (for 12-48VDC) Cable Kit (for 45m height) Monitoring and Control Mounting Bolt Set (includes bolts, nuts, washers) Star2M
Terms and Conditions	Please refer to the individual light installation manuals for further specifications



## 5.0 Safety Information

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

- Ensure the tower or mast is grounded (NO RF OR SHOCK HAZARD)
- Check the mast lighting circuit is not faulty
- 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 mounting pole is vertically aligned to guarantee the required beam pattern of the obstruction light.
- 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.
- To ensure that the light and peripheral equipment function safely and correctly, use cable in compliance with the effective local electrical code.
- Dispose of the product according to the local laws and regulations for your region, for example, at a recycling centre that accepts electronic devices.



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## 6.0 Operation and Setup

Avlite's AV-OL-CTRL-T1 Obstruction Lighting controller connects to one component: A single L-810 steady burning, Dual Obstruction Light fixture.

The L-810 Dual Light operates as a concurrent fixture where both individual lights operate at the same time. The fixture automatically switches between day and night mode via an integrated Photocell. When powered up, the L-810 Dual Obstruction light constantly checks day/night status using its internal Photocell which then averages the light measurement for 30 seconds. The Dual Light fixture turns on when the ambient light decreases to no less than 376.7 lux and turns off when the ambient light decreases to no more than 645.8 lux.

The Control Unit automatically evaluates the LI Dual light fixture for operation and performance while providing local and remote display of information and alarms; operators can conveniently view the lights' real time status from the web based Star2M™ portal.

The Control unit comes with an alarm contact for remote monitoring of the Dual Light Fixture which receives the associated alarm in the event of a power or LED fault.

## 6.1 System Overview

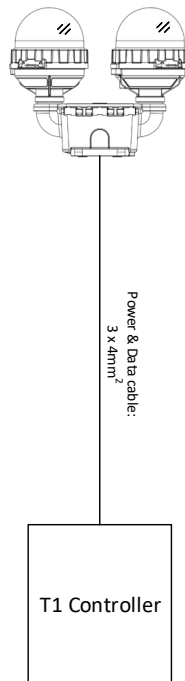
### 6.1.1 T1 Controller

The T1 Control Unit is an essential component of Obstruction Lighting as it provides power and monitoring of the Dual light fixture in the system.

For safety and security, the control enclosure comes with a safety interlock which prevents access to the controller while the system is powered on.

The Controller is available in two input power configurations; a universal AC (90-264 VAC) or DC (12-48 VDC) and comes with remote monitoring via Star2M with either GSM or Satcom telemetry types as options.

### 6.1.2 Interface Wiring





## 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:**

Confirm that the power switch is toggled to the OFF position when power is connected. **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.



**WARNING:**

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



**WARNING:**

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



**CAUTION:**

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 Needed (not supplied)
Flush Cutter
Tongue & Groove Pliers
Silicone Sealant
Cable Jacket Trimmer (optional)
Utility Knife
Electrical Tape
Insulated Terminal Crimper
Wire Strippers 10AWG to 18AWG Range
2.5mm Hex Key
2.0mm Flat Blade Precision Screwdriver
#2 Phillips Screwdriver
Mounting hardware (optional purchase)
Cables (owner supplied or optional purchase)

### 7.2.2 Factory Configuration

- Preassembled T1 Control Unit complete with internal wiring

### 7.2.3 Installation Recommendation

**Note:** The sequence of steps can be adjusted for site requirements.

1. Wire and test the system on ground level.

Conduct a basic functional check to ensure that the control unit is operating as expected.  
Refer to Section 7.3 *Testing Procedure*.



## 2. Mount the Control Unit

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The Control Unit should be mounted in a reasonable location at eye level to ensure that it is easily accessible for servicing and maintenance. There should be plenty of clearance around all sides to allow direct access when the door of the control unit is completely open.

- a. Attach the required mounting hardware to the top and bottom of the Control Unit.



Example of Control Unit mounting hardware

Pre-installed Control Unit tab

- b. Mount the Control Unit (with the previously attached mounting hardware) to the tower or installation structure using the mounting tabs. Secure using the required mounting fixtures.



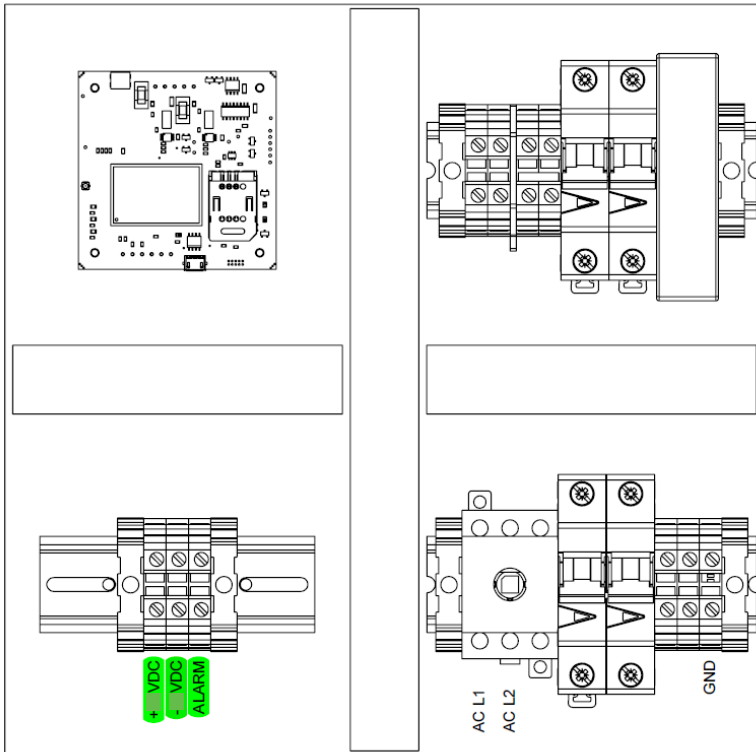
**Note:** Mounting hardware is not included with the control unit.

### 3. Route LI light fixture to Control Unit cables

The AC version of the Control Unit with remote monitoring is shown throughout this installation procedure. Details regarding the DC installation are shown on page 17.

Wiring Instructions - Power and Data Cable:

- Connect the red positive conductor from the low intensity light fixture to the +VDC terminal block in the Control Unit
- Connect the black negative conductor from the low intensity light fixture to the -VDC terminal block in the Control Unit
- Connect the green alarm conductor from the low intensity light fixture to the Alarm terminal block in the Control Unit



Refer to the AV-OL-KT-A0/I1 Installation and Service Manual for recommended cable sizes.

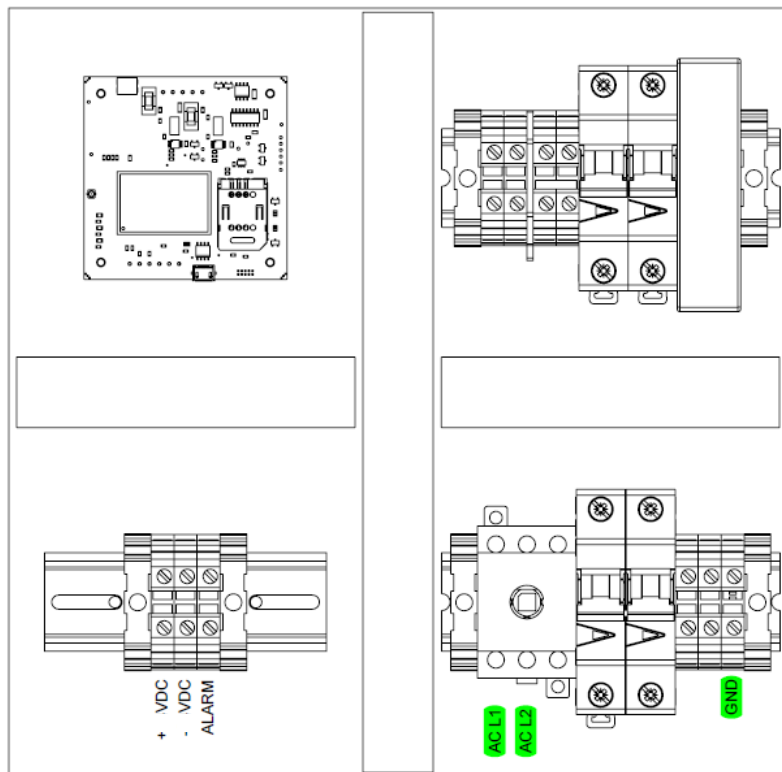


#### 4. Wiring the Control Unit:

##### AC Installation:

Avlite has supplied a cord grip for installation of the power cord in the bottom of the Control Box. Connect the incoming power conductors to the appropriate terminals (L1 and L2) on the power switch in the Control Box.

The grounding conductor will be connected to the green/yellow GND terminal block adjacent to the power switch.



##### DC Installation:

Connect the positive conductor to terminal 1 on terminal block 1.

Connect the negative conductor to terminal 3 on terminal block 1.



## 7.3 Testing Procedure

**Note:** Avlite recommends that all testing be done during the day. TPower the system on.

1. Check that no circuit breakers have tripped.
2. Cover each light fixture in the low intensity obstruction light and ensure they turn on.
3. Uncover each light fixture in the low intensity obstruction light and ensure they turn off.
4. For 01 & 02 Variants only:  
Trip the breaker for the low intensity light fixture and ensure that the corresponding alarm is received (if monitoring is installed)

# 8.0 Maintenance and Servicing

Refer to the individual light manuals for light maintenance.

Inspect the Control Unit for evidence of dust or water penetration. Repair gaskets or conduit entries as required.

Inspect Control wiring for failing insulation, open conductors or other wiring flaws and repair as required.

# 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
<b>LI Dual Obstruction</b> Light will not activate	<b>Wiring of Light to Power supply</b>	<ul style="list-style-type: none"><li>• Check the wiring of the light and ensure proper connectivity with power supply.</li><li>• If wiring functions properly, use an alternate power source to check the light.</li><li>• Replace light if necessary.</li></ul>
	<b>Incorrect Power supply specifications</b>	<ul style="list-style-type: none"><li>• Ensure that the Power supply has the right polarity and voltage range.</li></ul>
	<b>Malfunctioning internal Photocell</b>	<ul style="list-style-type: none"><li>• Cover the photocell and ensure that the light turns ON.</li></ul>
	<b>Cable to Control Unit</b>	<ul style="list-style-type: none"><li>• Check Control Unit to LI Dual Obstruction light cable connections at both ends.</li><li>• Inspect cable for breaks.</li></ul>

# Notes

# Avlite Solution Verticals available



Airfield



Heliport



Obstruction



We believe technology improves navigation™

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