INSTALLATION MANUAL

DOC.NO: AVE-WPST-54G-IM

ULTRA GALACTICA
POSITION/NAV/STROBE LED LIGHT

1. Ultra Galactica™

The Ultra Series lights are a very popular choice for certified and general aviation aircraft of any size, due to their compact design and easy installation. With full optical testing for brightness and chromacity, the Ultra also completed the rigorous DO-160F testing regime exceeding all requirements. The Ultra has also become the leading wing light solution for numerous military and law enforcement/surveillance UAVs around the world and is very popular with aircraft manufacturers.

Packed with 30 ultra high brightness LEDs that are the industry state-of-the-art in performance and output lumens, the Ultras still feature the same tiny footprint the popular Aveo e-series wing lights have become so well-known for in the aviation world.

Main Features:

- 3-in-1 Nav/Position/Strobe
- Extremely lightweight at 83 grams
- 9-36 volt DC input range
- No external power supply or strobe unit
- Light synchronization feature
- Unmatched circuit technology
- Advanced computer and goniophotometer engineered optics

List of the major components (by part number) that make up the equipment complying with the standards prescribed in ETSO.

- Ultra Galactica (RED) PN: AVE-WPSTR-54G
- Ultra Galactica (GREEN) PN: AVE-WPSTG-54G

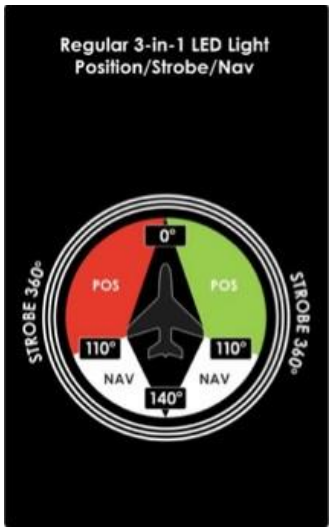
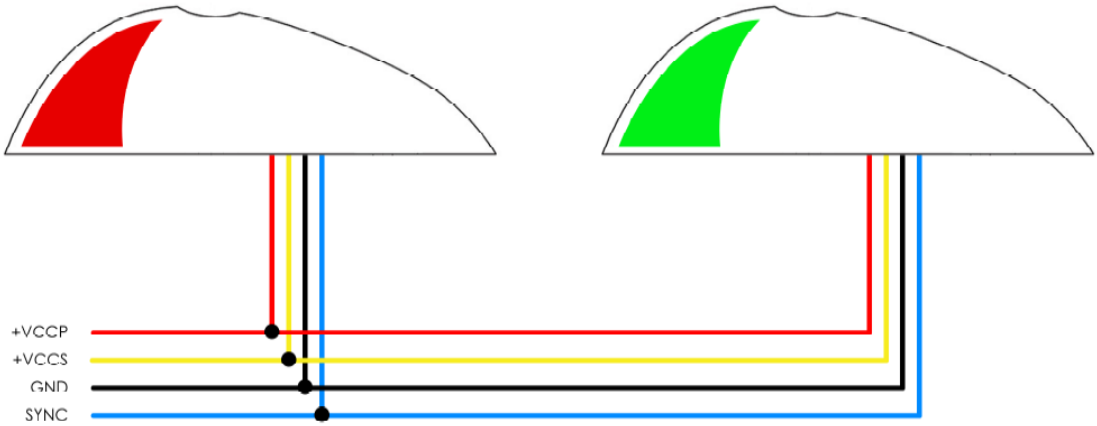


Figure 01: Features of Ultra Galactica

2. OPERATING INSTRUCTIONS

When installed on the aircraft, using the aircraft's power (14 or 28 volts), the light will be at its maximum intensity. (Meet the requirement of **TSO-C30C, Aircraft Position Light** and **TSO-C96A, Anticollision LightSystem**)

1. INSTALLATION SCHEMATIC / WIRING DIAGRAM



4. CONTROL & POWER INPUT's:

+VCCP positive position/nav power supply line
+VCCS positive strobe power supply line
GND negative common power supply line (ground)
SYNC strobe synchronization line
(Mutually interconnect on all installed AveoFlash lights)

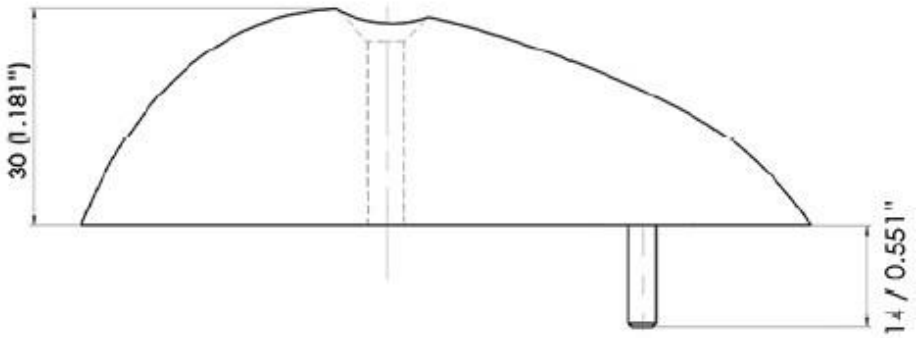
5. TECHNICAL SPECIFICATION

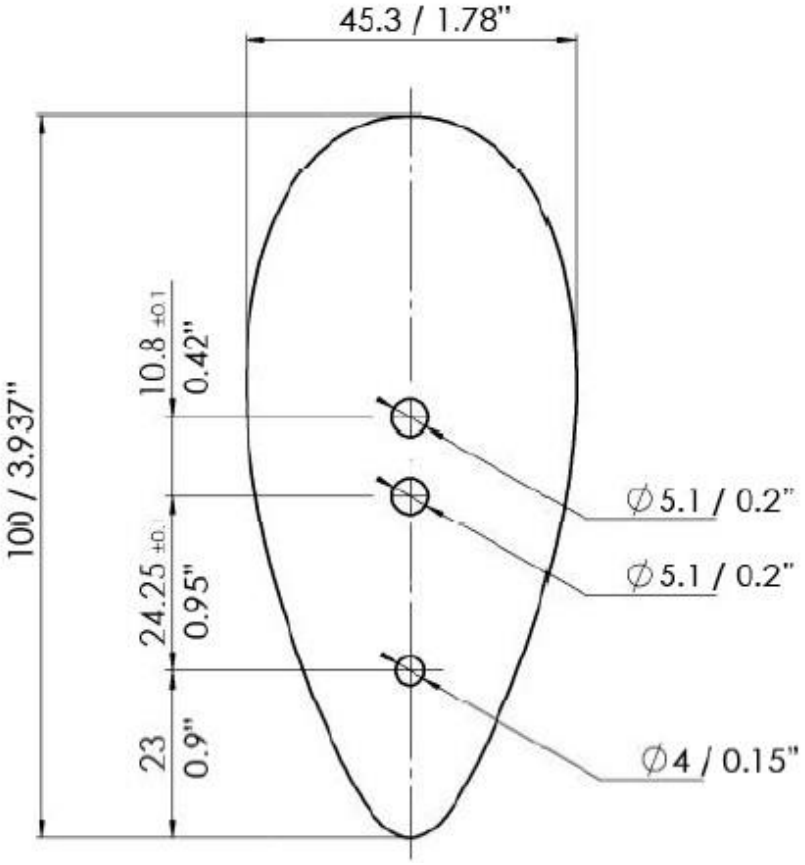
Dimensions:	100 mm x 45 mm x 30 mm 3.94" x 1.77" x 1.18"
Weight:	83 g / 2.93 oz
Operating Voltage Range:	9 – 36 Vdc
Power – position/nav:	7.5 W
Power – strobe:	7.6 W (38 W peak)
Current – position/nav (@12V):	0.6 A
Current – strobe (@12V):	0.65 A (3.2 A peak)
Ambient temperature:	from -55°C to +85°C / from -67°F to +185°F
Repetition Flash Rate of Strobe:	50 cycles per minute
Exceed requirements of:	- TSO C30C, TSO C96a - SAE AS8017a and SAE AS8037 - DO-160F
Recommended size of mounting screw:	5Mx45mm (DIN912) or equivalent

Summary of Environmental Tests

Test title	Specification	Section	Category
Temperature / Altitude	**DO-160F**	**4**	**F1**
Temperature Variation	**DO-160F**	**5**	**A**
Humidity	**DO-160F**	**6**	**C**
Operational Shock	**DO-160F**	**7**	**A**
Vibration	**DO-160F**	**8**	**S & R**
Explosive Atmosphere	**DO-160F**	**9**	**A**
Waterproofness	**DO-160F**	**10**	**S**
Fluid Susceptibility	**DO-160F**	**11**	**F**
Sand and dust	**DO-160F**	**12**	**S**
Fungus	**DO-160F**	**13**	**F**
Salt Spray	**DO-160F**	**14**	**T**
Magnetic Effects	**DO-160F**	**15**	**Z**
Power Input	**DO-160F**	**16**	**B**
Voltage Spike	**DO-160F**	**17**	**B**
Audio Freq. Conducted Susceptibility	**DO-160F**	**18**	**B**
Induced Signal Susceptibility	**DO-160F**	**19**	**AC**
Radiated and conducted Susceptibility	**DO-160F**	**20**	**TT**
Radiated and conducted Emissions	**DO-160E**	**21**	**B**
Lightening Induced Transient Susceptibility	**DO-160F**	**22**	**A2E2X**
Icing	**DO-160F**	**24**	**A**
Electrostatic Discharge	**DO-160F**	**25**	**A**

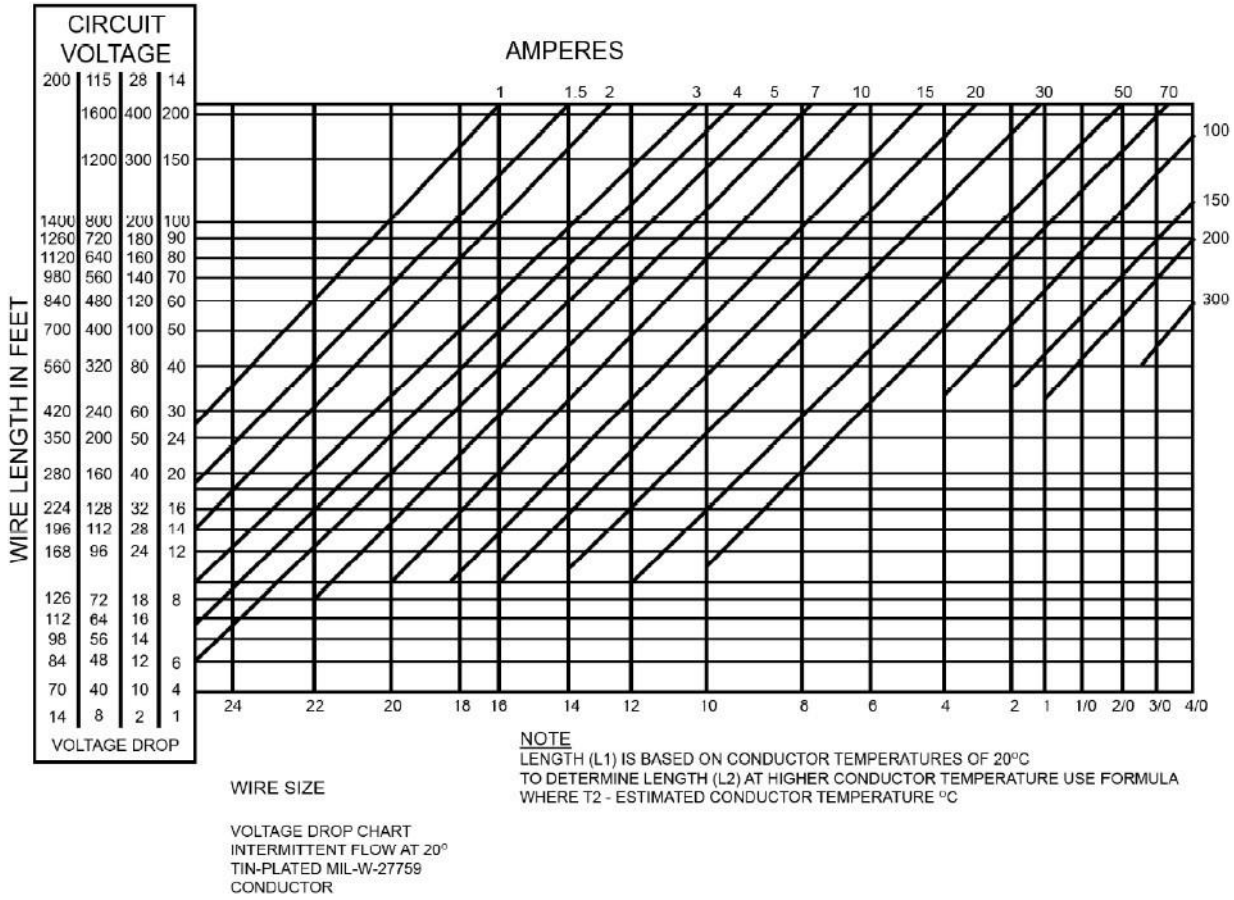
6. TECHNICAL DRAWING





Dimensions are in millimeters / [inches]

7. WIRING CHART



8. EQUIPMENT LIMITATION

***Ultra Galactica*™** should only be powered by 9-36 Vdc, typically a 12 or 24 volt aircraft battery.

This article meets the minimum performance and quality control standards required by the technical standard order ETSO C30c and ETSO C96a. Installation of this article requires separate approval.

Deviations

This article deviates from the ETSO C30c and ETSO C96a by the usage of newer revisions of the following standards:

- SAE AS 8017 rev. B used instead SAE AS 8017 rev. A
- SAE AS 8037 rev. A used instead SAE AS 8037 initial release

9. TESTING OF THE LIGHT BEFORE INSTALLATION

All Aveo Aviation lights undergo rigorous testing prior to being released from our engineering manufacturing department. This testing involves a burn-in time as well as other function testing. No light is released for sale without undergoing this extensive operational testing.

When you receive the Ultra Galactica light, and wish to test the function of the light prior to installation on your aircraft, please note the following:
Please review the written information that is enclosed in the packaging. Warranty information as well as a cautionary note about power supply removal is enclosed with each package.

1. Please review the written information that is enclosed in the packaging. Warranty information as well as a cautionary note about power supply removal is enclosed with each package.
2. Remove the lights from the package. Note that there are four (4) wires coming from each light. These wires are:

   a. Black wire — Ground wire (negative lead)
   b. Red wire — Position/Navigation light function wire (positive lead)
   c. Yellow wire — Strobe light function wire (positive lead)
   d. Blue wire — Use if the synchronization of the Aveo lights is selected

3. Testing of the function of the light can be done with a regular 12V/5A dc power supply (not a battery charger). Connect the black wire to the ground (negative) leads of a power supply, then connect the yellow wire to the positive (+) leads on the power supply. The anti-collision light should start flashing. Connecting the blue wires from each AveoFlash light together (and not to the ground or positive terminals on the battery) should show that the lights are flashing together and indicates the synchronization feature is working properly. When installed on the aircraft, using the aircraft's power (14 or 28 volts), the light will be at its maximum intensity.

After testing, the light can be installed on the aircraft.

IMPORTANT NOTES:

1. Under no circumstances should any power supply other than a 9-36 Vdc, or a 12/24 volt battery be used to test the light. Do not use: Battery chargers, battery back-up power devices, or other bench avionics testing methods to test the aviation light. The light is functional between 9 and 36 volts. Use of a battery charger or other power unit to test the light will void the warranty and may damage the light.
2. All power supplies for existing strobe lights, flasher beacons, etc. are required to be removed from the aircraft prior to the installation of the Aveo light.

If you have any questions about the installation of the lights, please refer to our web site: **http://www.aveoengineering.com**, and check FAQ and other links on our aviation lights web page.

10. CARE AND CLEANING OF YOUR AVEO ENGINEERING AVIATION LIGHTS

When you receive your Aveo Engineering Aviation Lights, they will have been factory polished and ready to install on the aircraft. Upon installation, just give the lights a good coat or two of a quality automotive polish. This should protect the lights from dirt and other environmental factors. Once or twice a month, just refresh the polish and hand buff to bring back the lights to factory like new condition.

If the lights need a deeper cleaning, they can be polished with a good automotive cleaner wax and/or a liquid polishing compound. The liquid polishing compounds can normally be found at automotive parts stores or an automotive paint store. After using a polishing compound, just give the lights another coat of an automotive polish and you will again protect the lights against dirt, etc. An electric buffing machine, with a lamb's wool cover, can also be used for deeper cleaning and polishing. Under no circumstances should any petroleum based product be used to clean the lights.

11. NOTES ON INSTALLATION

Please use tapered headed screws for installation. Spread the tightening forces evenly around the mounting hole. Screw size is a M5, stainless steel recommended. Length depends upon placement location on wing tips.

12. CONTINUED AIRWORTHINESS INFORMATION

This product is delivered with EASA Form1 which is for the operator to report any occurrences to Aveo Engineering as the ETSO holder. The form contains the Aveo Engineering telephone number and the occurrence e-mail address (occurrence@aveoengineering.com). **The operator must report immediately** as the ETSO holder must report occurrences having a potential for an unsafe condition within 72 hours.

a. Circuit/Wiring Protection

Each Galactica series light features a **Negative Temperature Coefficient** (NTC) circuit that limits internal temperatures by attenuating operating current (with a corresponding reduction of brightness) when internal temperatures reach a certain threshold. This proprietary circuitry serves to protect the light itself, and associated aircraft wiring, against a thermal runaway condition. It's recommended that the operation of strobes without airflow be limited to avoid heat buildup and this NTC circuitry feature is designed to more than triple the life of the LEDs and electronic components thereby providing an even great margin of safety for continued airworthiness due to the dramatic enhancement of electronics reliability.

b. Periodic Inspection Procedure for Galactica Series

The Aveo Ultra Galactica lights should always be checked for proper operation during preflight. This procedural information is already provided in all general aviation aircraft flight manuals.

The lights should be visually inspected for general condition, proper operation, and correct installation at each annual and/or 100 hour inspection. Any debris or atmospheric deposits accumulated on the surface of the lights should be removed using a UV Wax such as Farecia Profile UV Wax to ensure ongoing optical clarity. In addition refer to section 10 of installation manual for detailed cleaning instructions.

Turn the lights on, first in the steady mode, and then repeat in strobe mode, and do the following:

1. Put on polarized sunglasses or welder goggles to prevent eye damage when looking into the lights.

2. Examine the individual LEDs as per the diagram below. If any of the LEDs fail, the light shall be removed and sent to Aveo Engineering for replacement under the Aveo Warranty Program.

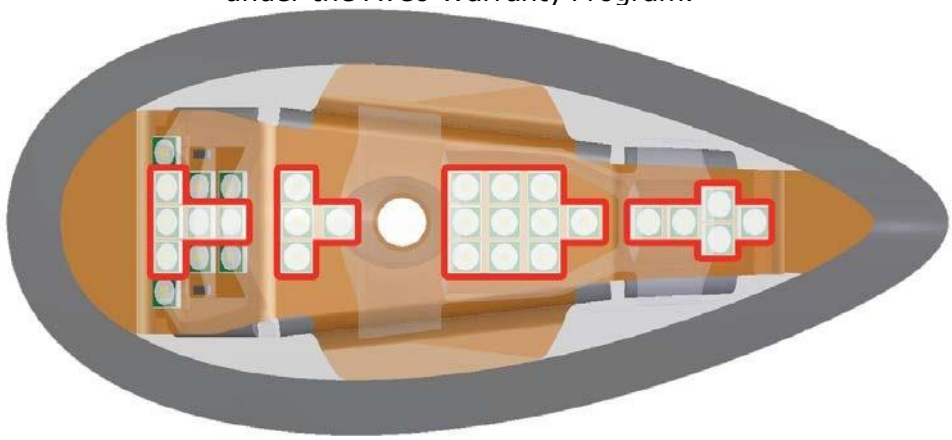


Figure 1: Strobe LEDs

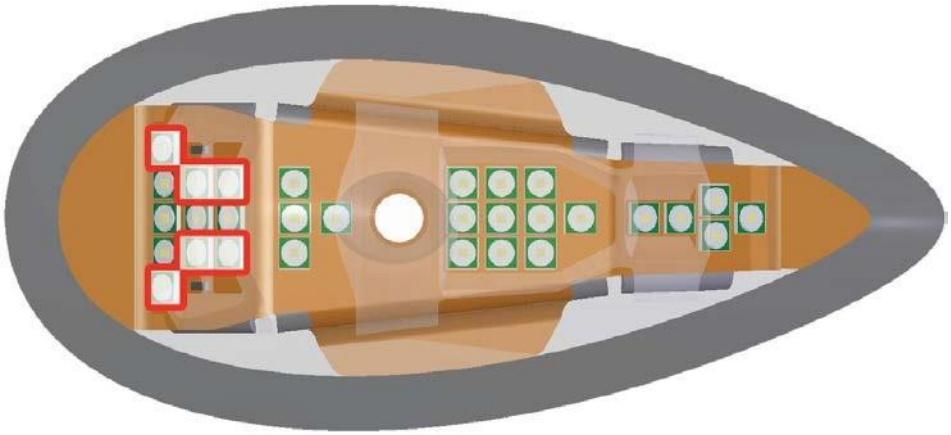


Figure 2: Position LEDs (colored)

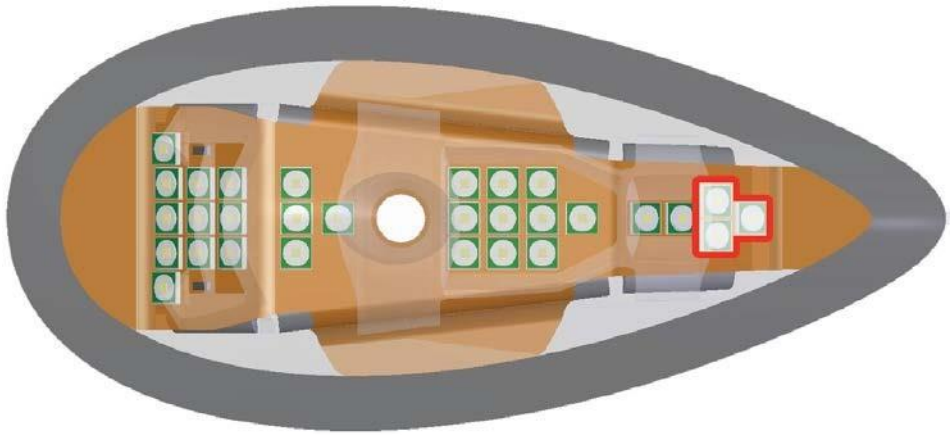


Figure 3: Position LEDs (white)