AVEO ENGINEERING GROUP

INSTALLATION MANUAL

EyeBeam MB 2 Titania
EyeBeam MB 4 Titania

DOC.NO: AVE-EBMBMC-IM

Table of Contents

Part 0 Manual Administration

0.1 Document Approval

This document has been established in accordance with an alternative procedure to DOA approved under EASA AP429.
This installation manual is applicable for part numbers:

- EyeBeam MB 2 Titania – White/Red- Silver **AVE-EMBILWR-TS0**
- EyeBeam MB 2 Titania – White/Red- Black **AVE-EMBILWR-TB0**
- EyeBeam MB 2 Titania – White/Green- Silver **AVE-EMBILWG-TS0**
- EyeBeam MB 2 Titania – White/Green- Black **AVE-EMBILWG-TB0**
- EyeBeam MB 4 Titania – Silver **AVE-EMBILRGBW-TS0**
- EyeBeam MB 4 Titania – Black **AVE-EMBILRGBW-TB0**
- EyeBeam MB 4 Titania – Silver **AVE-EMBILRGBW-TS0 Mod(1)**
- EyeBeam MB 4 Titania – Black **AVE-EMBILRGBW-TB0 Mod(1)**

Compiled by: _____ 10 – June - 2025
Petr Jaroš
Engineer, Aveo Engineering Group, s.r.o.

Approved by: _____ 10 – June - 2025
Georg Hartl
Head of DO, Aveo Engineering Group, s.r.o.

0.2 Amendment Record Procedure

The master copy of this document shall be kept electronically as a read only document under the control of Aveo Engineering Group, s.r.o. as Master Copy.

ALL amendments to this manual will initiate a raise of issue.

The original issue will be identified by **"01"**, and subsequent issues will be numbered sequentially from 02 to 99 in Table 01 - ***Issue No.*** column.

ALL issues of this document will be approved by Head of DO.

Issue No.	Details	Date	Affected Pages
01	Initial Issue	10 June 2025	ALL

Table 01: Document Amendment Record Table

0.3 Affected Pages Procedure

ALL pages affected by ANY raise of issue of this document will be listed in Table 01 - ***Affected Pages*** Column.

The reason(s) for **EACH** raise of issue and the description of respective change will be provided in Table 01 - ***Details*** Column.

Changes from the previous issue are shown as follows:

a) new text is highlighted with yellow shading: new
b) deleted text is shown with yellow shading and a strike through: ~~deleted~~

Part 1 Installation Data

1.1 Product Info

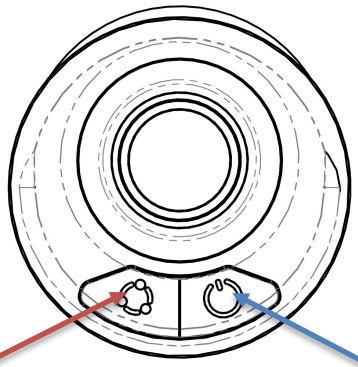
EyeBeam MB Titania™ is interior swivel LED light. It is available in 2 different versions – dual color and four color. All versions have black or natural anodized finish.

- EyeBeam MB 2 Titania – White/Red- Silver **AVE-EMBILWR-TS0**
- EyeBeam MB 2 Titania – White/Red- Black **AVE-EMBILWR-TB0**
- EyeBeam MB 2 Titania – White/Green- Silver **AVE-EMBILWG-TS0**
- EyeBeam MB 2 Titania – White/Green- Black **AVE-EMBILWG-TB0**
- EyeBeam MB 4 Titania – Silver **AVE-EMBILRGBW-TS0**
- EyeBeam MB 4 Titania – Black **AVE-EMBILRGBW-TB0**
- EyeBeam MB 4 Titania – Silver **AVE-EMBILRGBW-TS0 Mod(1)**
- EyeBeam MB 4 Titania – Black **AVE-EMBILRGBW-TB0 Mod(1)**

1.2 Operating Instructions

Operating Voltage range is 9-36VDC. When installed on the aircraft, using the aircraft's power (14 or 28 volts), the light will be at its maximum intensity.

AVE-EMBILWR-TS0 / AVE-EMBILWR-TB0



COLOR CHANGE:
Every single ***SHORT press*** switching colors:

1. WHITE
2. RED

LONG press switches the light OFF

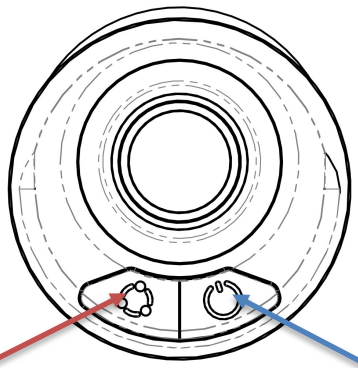
Every single ***SHORT press*** switching in sequence:

1. FULL Brightness (100%)
2. DIM (60%)
3. DIM (30%)
4. OFF

LONG press switches the light **OFF**

If the microswitch is STUCK the light will be switched OFF and after ~10 secs the button backlight starts blinking indicating a problem

AVE-EMBILWG-TS0 / AVE-EMBILWG-TB0



COLOR CHANGE:
Every single ***SHORT press*** switching colors:

1. WHITE
2. GREEN

LONG press switches the light OFF

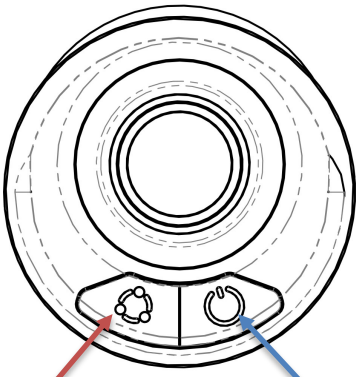
Every single ***SHORT press*** switching in sequence:

1. FULL Brightness (100%)
2. DIM (60%)
3. DIM (30%)
4. OFF

LONG press switches the light **OFF**

If the microswitch is STUCK the light will be switched OFF and after ~10 secs the button backlight starts blinking indicating a problem

AVE-EMBILRGBW-TS0 / AVE-EMBILRGBW-TB0



COLOR CHANGE:
Every single ***SHORT press*** switching colors

1. GREEN
2. RED
3. BLUE
4. WHITE

LONG press switches the light OFF

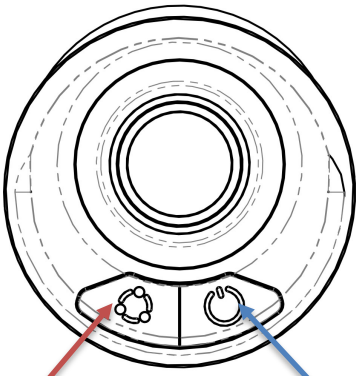
Every single ***SHORT press*** switching in sequence:

1. DIM (20%)
2. FULL Brightness
3. DIM (20%)
4. OFF

LONG press switches the light **OFF**

If the microswitch is STUCK the light will be switched OFF and after ~10 secs the button backlight starts blinking indicating a problem

AVE-EMBILRGBW-TS0 Mod(1) / AVE-EMBILRGBW-TB0 Mod(1)



COLOR CHANGE:
Every single ***SHORT press*** switching colors

1. GREEN
2. RED
3. BLUE
4. WHITE

LONG press switches the light OFF

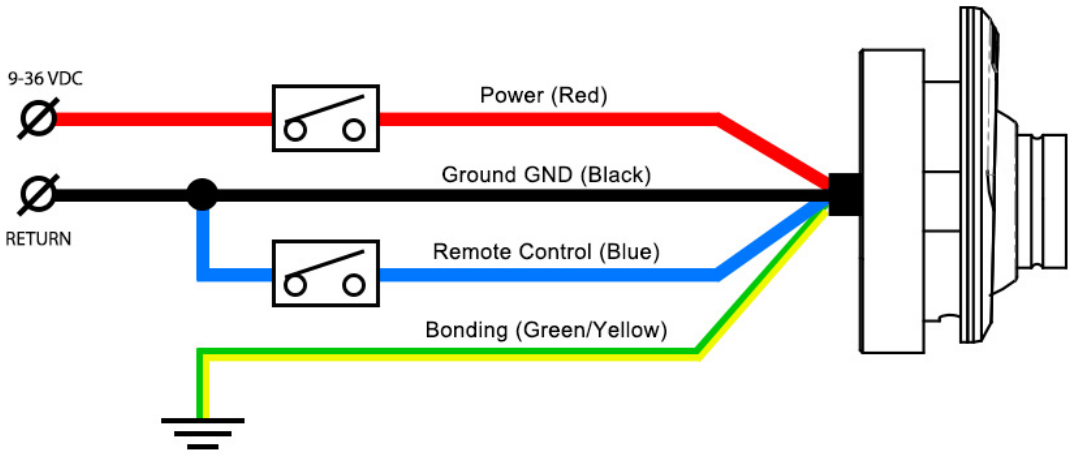
Every single ***SHORT press*** switching in sequence:

1. FULL Brightness (100%)
2. DIM (60%)
3. DIM (30%)
4. OFF

LONG press switches the light **OFF**

If the microswitch is STUCK the light will be switched OFF and after ~10 secs the button backlight starts blinking indicating a problem

1.3 Installation Schematic / Wiring Diagram



1.4 Control & Power Inputs

BLACK – Negative power supply line (ground) – AWG 22
RED – Positive power supply line – AWG 22
BLUE – Remote control – AWG 22
Connecting to GND turns the DIM/WHITE LIGHT ON
Disconnecting from GND turns the LIGHT OFF
GREEN/YELLOW – Bonding – AWG 22

Wires length: 270mm / 10.63 inches

1.5 Technical Specification

Electronic specification - Ambient temperature (25°C):

Operating voltage range: 9-36V DC
Dimensions: See section #1.6 – Technical Drawing
Weight (max): 113 g / 4 oz
Operating temperature: -40°C to +85°C / -40°F to +185°F

Performance (Input current):

AVE-EMBILWR-TS0 / AVE-EMBILWR-TB0

Brightness	***100%***		***60%***		***30%***	
Volts	14V	28V	14V	28V	14V	28V
White	82.9 mA	58.5 mA	51.0 mA	41.5 mA	30.8 mA	30.6 mA
Red	68.2 mA	49.5 mA	43.3 mA	36.4 mA	27.6 mA	27.8 mA

AVE-EMBILWG-TS0 / AVE-EMBILWG-TB0

Brightness	***100%***		***60%***		***30%***	
Volts	14V	28V	14V	28V	14V	28V
White	86.4 mA	60.3 mA	54.4 mA	43.2 mA	33.8 mA	32.2 mA
Green	89.5 mA	62.5 mA	55.1 mA	44.1 mA	33.6 mA	32.3 mA

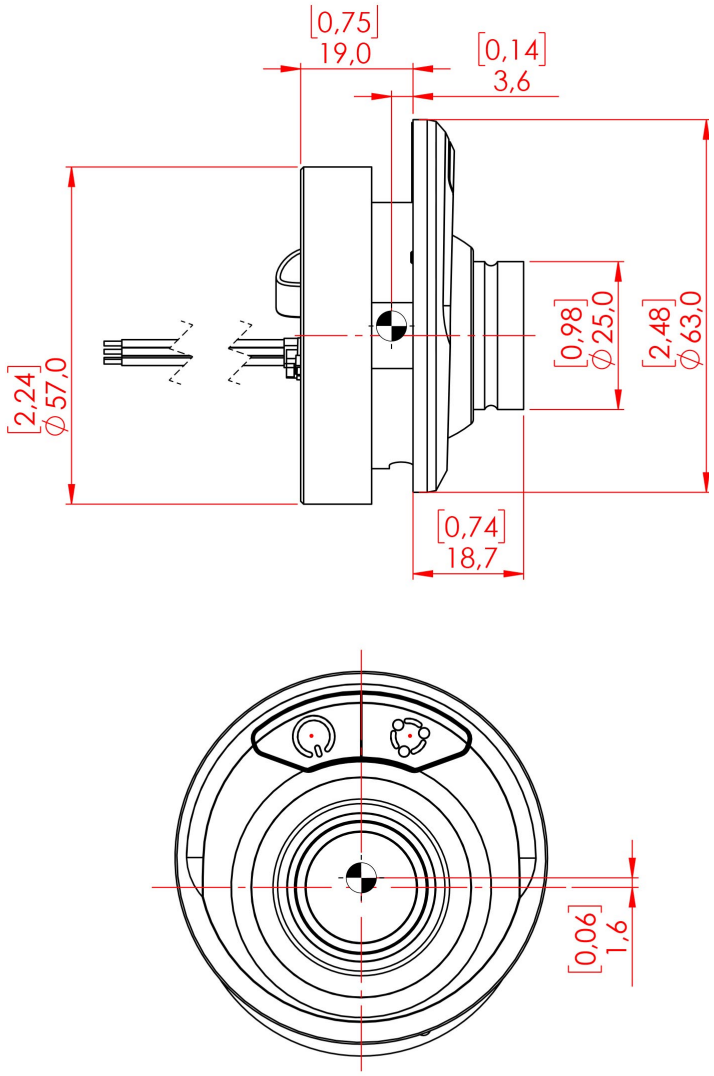
AVE-EMBILRGBW-TS0 / AVE-EMBILRGBW-TB0

Brightness	***100%***		***20%***	
Volts	14V	28V	14V	28V
Red	67.5 mA	49.3 mA	23.2 mA	25.3 mA
White	82.5 mA	58.6 mA	25.0 mA	27.4 mA
Green	87.6 mA	62.2 mA	24.7 mA	27.4 mA
Blue	83.8 mA	59.6 mA	24.9 mA	27.4 mA

AVE-EMBILRGBW-TS0 Mod(1) / AVE-EMBILRGBW-TB0 Mod(1)

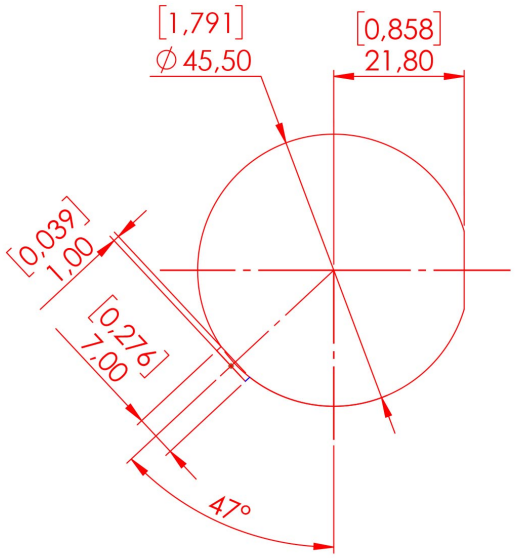
Brightness	*100%*		*60%*		*30%*	
Volts	14V	28V	14V	28V	14V	28V
Red	68.3 mA	49.9 mA	43.9 mA	36.8 mA	28.3 mA	28.3 mA
White	84.3 mA	59.6 mA	52.2 mA	42.5 mA	31.8 mA	31.4 mA
Green	86.4 mA	61.2 mA	52.4 mA	42.9 mA	31.4 mA	31.3 mA
Blue	84.4 mA	59.9 mA	52.1 mA	42.6 mA	31.7 mA	31.4 mA

1.6 Technical Drawing



**Dimensions in mm [inches]*

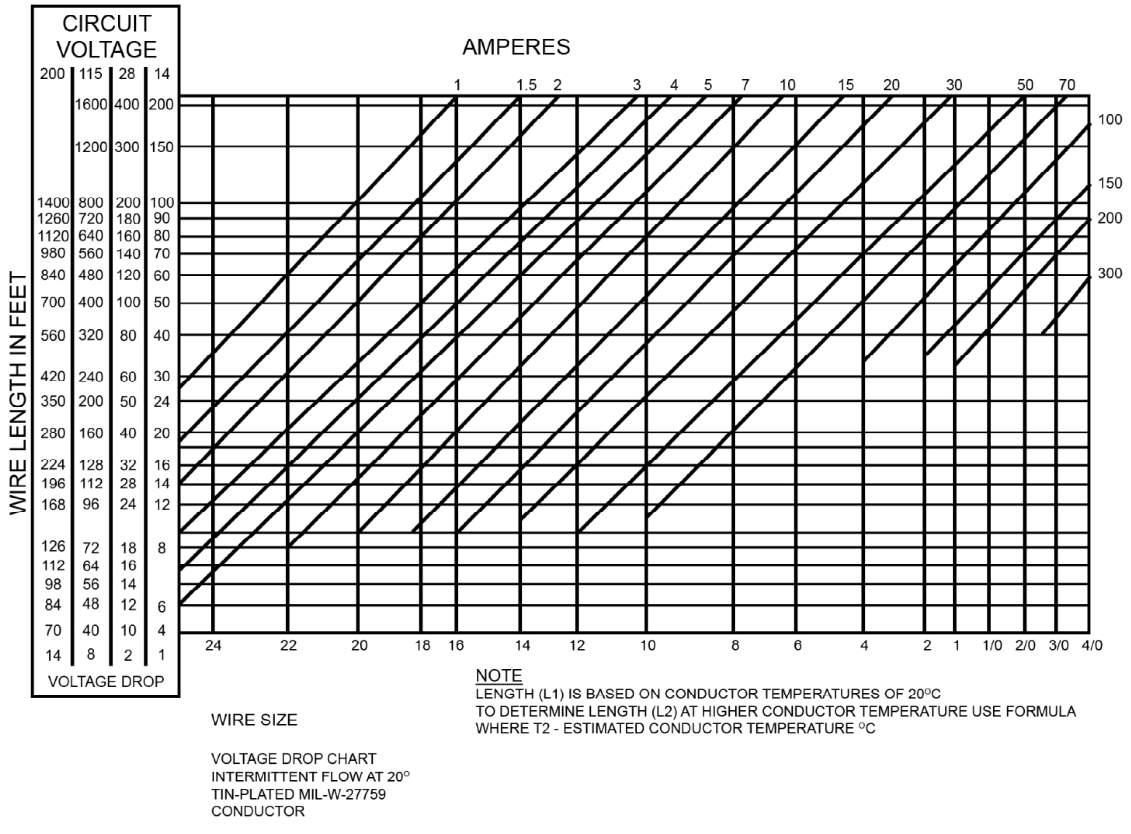
MOUNTING HOLE



**Dimensions in mm [inches]*

1.7 Wiring Chart

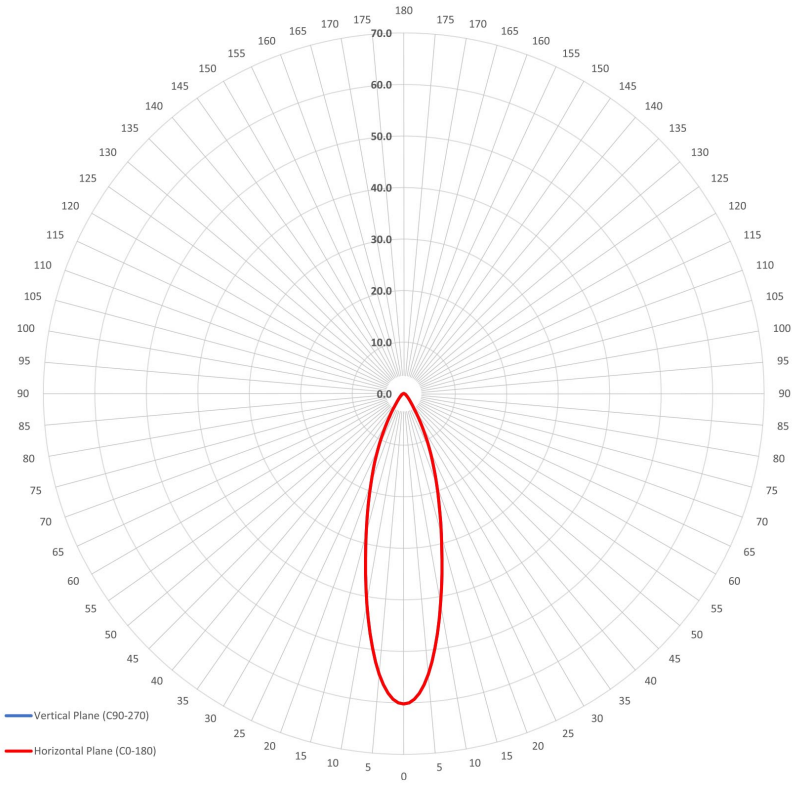
Use diagram below defining the wiring size depending on the current and the wire length. Make sure you add up the current for all connected lights. If current is not given, then divide the power by the voltage.



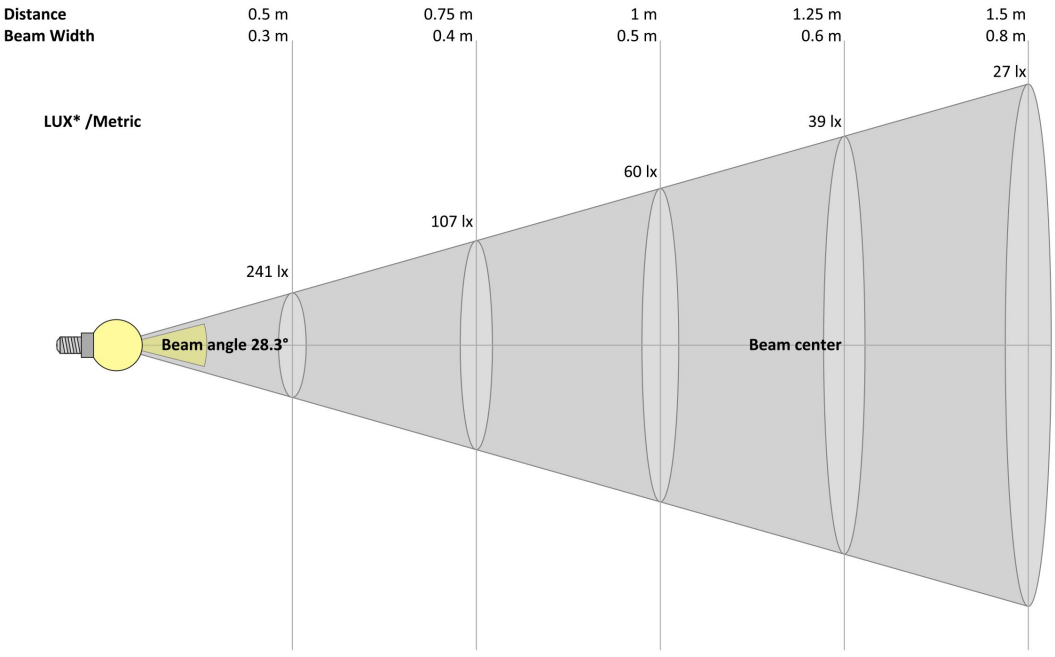
1.8 Optic Simulation

RED MODE

Beam Angle:
28.3° (at 50% of max light intensity)
61.5° (at 10% of max light intensity)
Maximum Brightness
Intensity: 60.2 cd

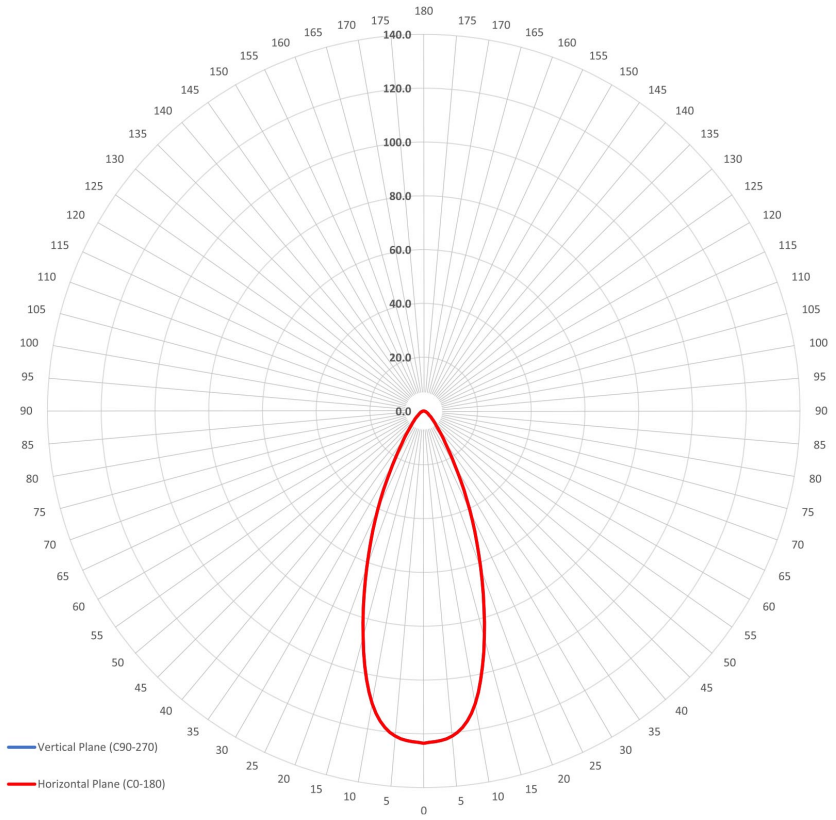


Beam details

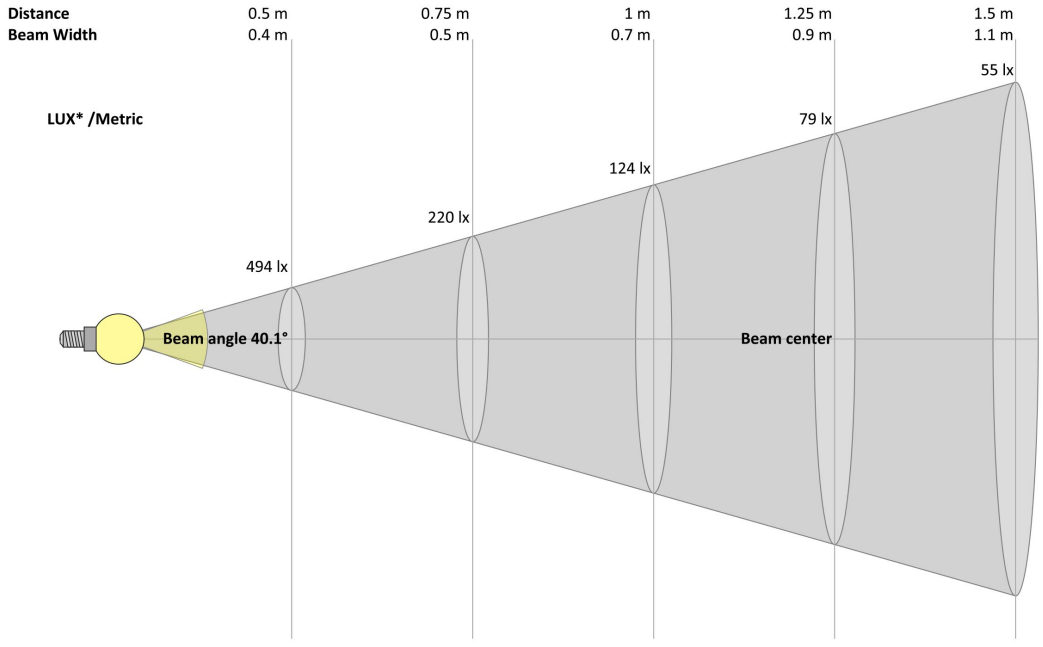


WHITE MODE

Beam Angle:
40.1° (at 50% of max light intensity)
71.2° (at 10% of max light intensity)
Maximum Brightness
Intensity: 124 cd

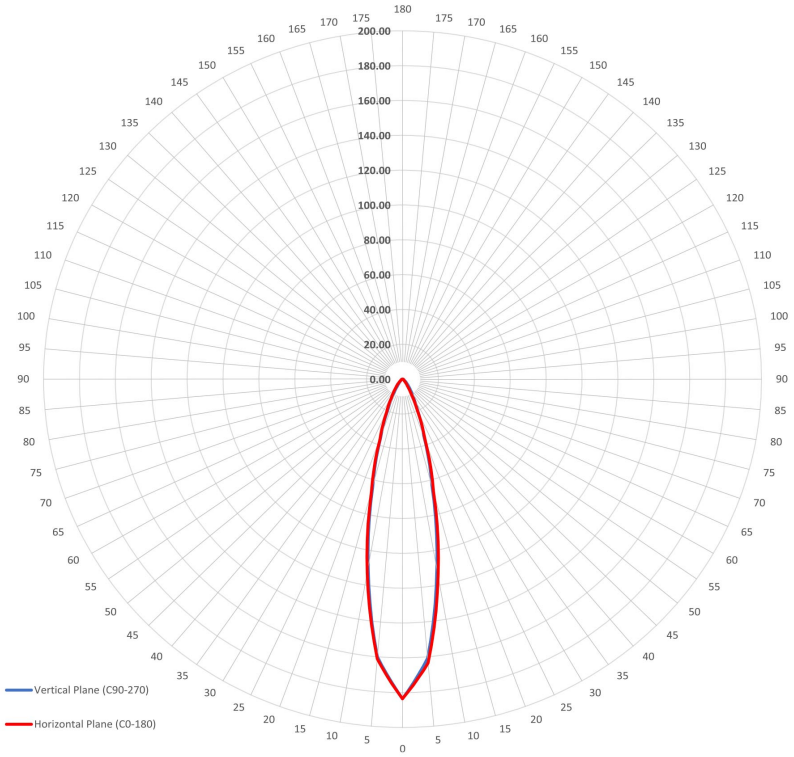


Beam details

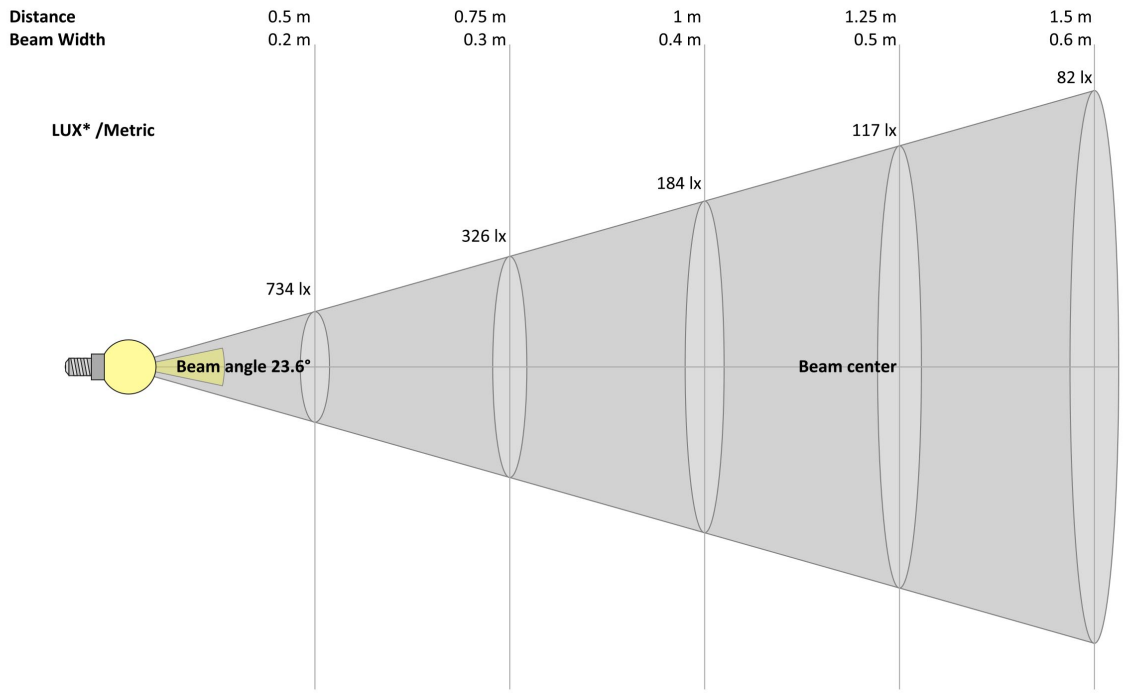


GREEN MODE

Beam Angle:
23.9° (at 50% of max light intensity)
51.4° (at 10% of max light intensity)
Maximum Brightness
Intensity: 187 cd

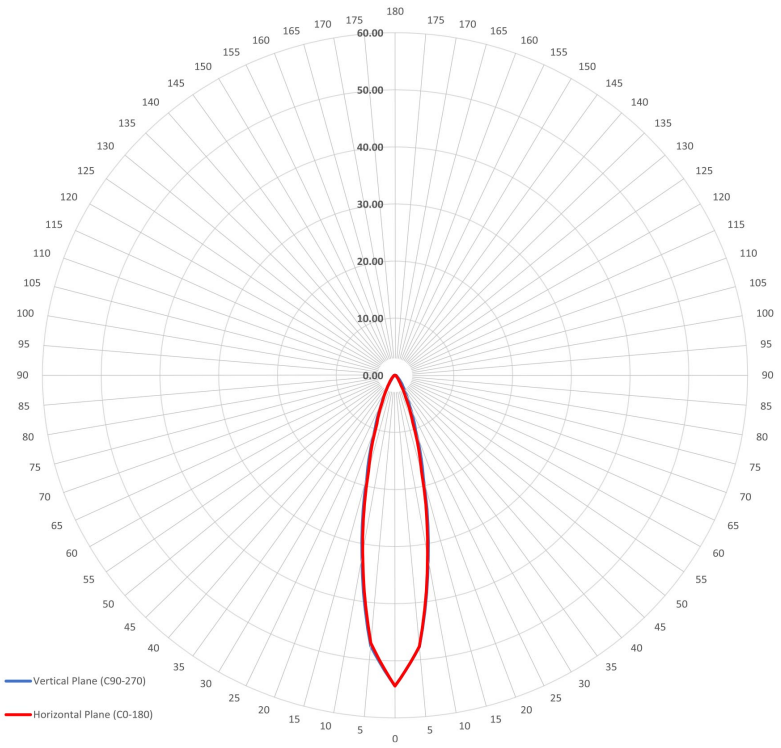


Beam details

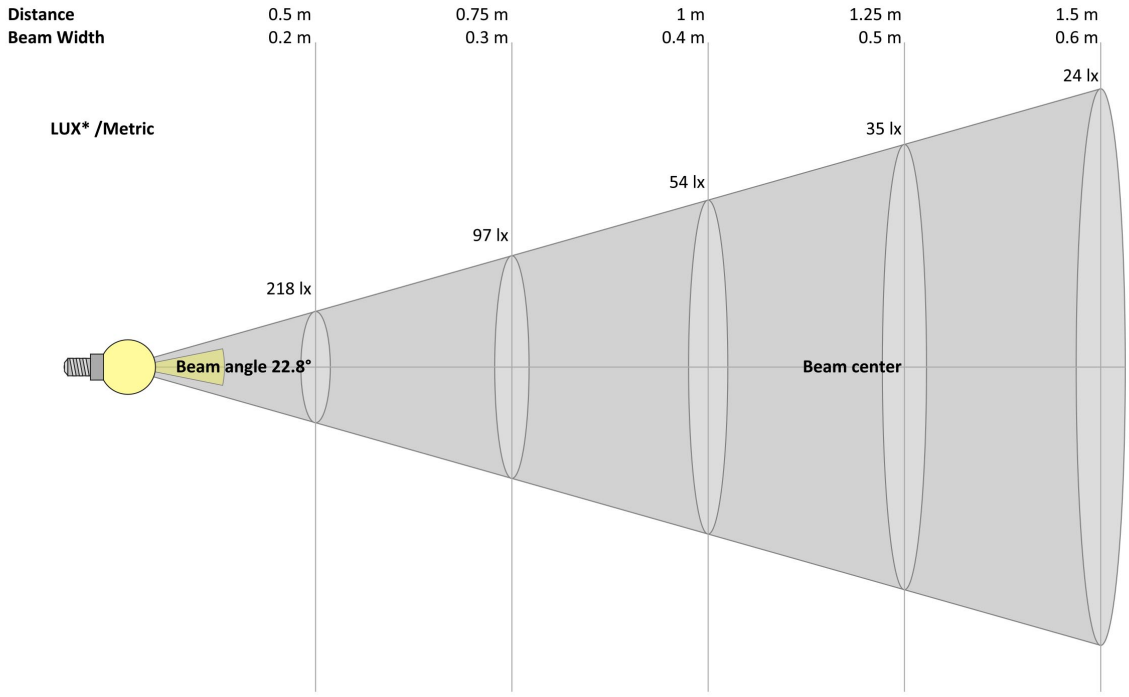


BLUE MODE

Beam Angle:
22.4° x 23.1° (at 50% of max light intensity)
46.9° x 50.4° (at 10% of max light intensity)
Maximum Brightness
Intensity: 55.6 cd



Beam details



1.9 Equipment Limitation

EyeBeam MB Titania™ should only be powered by 9-36VDC.

1.10 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.

If the lights require a deeper cleaning, they should be polished with a quality lamb's wool sheet and can also be used for deeper polishing. Under no circumstances should any petroleum-based product be used to clean the lights.

1.11 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 ***EyeBeam MB Titania™*** light, and wish to test the function of the light prior to installation on your aircraft, please note the following:

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 light from the package. Note that there are three (4) wires:

Black (-)	Negative lead
Red (+)	Positive lead
Blue	Remote control
Green/Yellow	Bonding

3. Testing of the function of the light can be done with a regular 14V or 28V/5A dc power supply (not a battery charger). Connect the black wire to the ground (negative) leads of a power supply, and then connect the red wire to the positive (+) leads on the power supply. The EyeBeam MB Titania light should be powered and the backlight should light up. 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 14 or 28 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

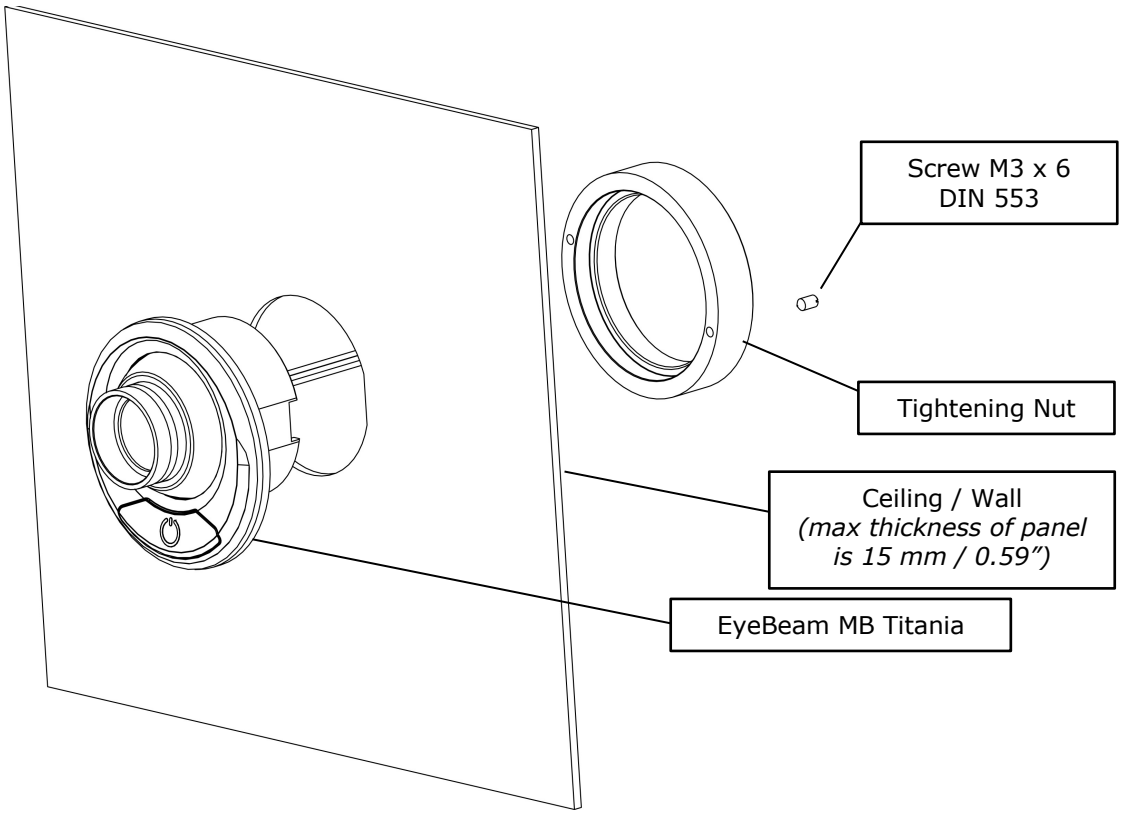
36 volts. Use of a battery charger or other power unit to test the light will void the warranty and may damage the light.

If you have any questions about the installation of the lights, please refer to our web site: www.aveoengineering.com

1.12 Notes on Installation

Mount EyeBeam on the wall as it is described on the image below:

1. Insert the reading light through the ceiling partition.
2. Secure the light by tightening the nut.
3. After tightening, lock the nut using an M3×6 screw according to DIN 553.



1.13 Continues Airworthiness Information

Periodic Inspection Procedure for EyeBeam MB Titania series.

The ***EyeBeam MB Titania***™ 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 hours inspection. In addition, refer to section 1.10 of installation manual for detailed cleaning instructions.

1.14 RoHS Compliance Statement

Scope

This statement clarifies Aveo Engineering's compliance with European Union Directive 2015/863/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment ("RoHS") that took effect on June 4, 2015. The RoHS Directive restricts the sale of electronic equipment containing certain hazardous substances in the European Union including:
Cadmium(Cd): 0.01%
Mercury: 0.1%
Lead(Pb) : 0.1%
Hexavalent chromium (Cr6+) : 0.1%
Polybrominated biphenyls (PBB): 0.1 %;
Polybrominated diphenyl ethers (PBDE): 0.1 %
Bis(2-Ethylhexyl) phthalate (DEHP): 0.1% (added in 2015);
Benzyl butyl phthalate (BBP): 0.1% (added in 2015);
Dibutyl phthalate (DBP): 0.1% (added in 2015);
Diisobutyl phthalate (DIBP): 0.1% (added in 2015)

Compliance

Aveo Engineering certifies that all products sourced from manufacturing facilities comply with the environmental standards set forth by the Directive 2015/863/EU, recast amendment of RoHS Directive 2011/65/EU Article (4), and do not contain any of the above-mentioned, 10 hazardous substances above the specified limits. All products manufactured by Aveo Engineering are RoHS-compliant. With regards to RoHS-2 CE marking, product packaging is labeled attesting conformity if required.

References

Directive 2015/863/EU of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

1.15 EU REACH Regulation (EC) No. 1907/2006

Aveo Engineering declares that no chemicals are produced and that none of the chemicals used during the production process or needed for the product maintenance or service, is listed on the current European Chemicals Agency's Candidate list of Substances of Very High Concern for Authorization.