AVEO ENGINEERING GROUP

INSTALLATION MANUAL

AveoMaxx Hercules H30

AVE-H30MW-IM

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Part 0 Document 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 following part numbers:

- **AveoMaxx Hercules H30 – no holder** - AVE-H30MWSSNH-00A
- **AveoMaxx Hercules H30 – with holder O** - AVE-H30MWSSOH-00A
- **AveoMaxx Hercules H30 – with holder Q** - AVE-H30MWSSQH-00A

Compiled by: _____ 22 Sep 2021
Petr Jaroš
Engineer, Aveo Engineering Group, s.r.o.

Approved by: _____ 22 Sep 2020
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 of issue	Affected Pages
01	Initial Issue	22 Sep 2021	ALL

Table 01: Record of Document Amendments

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 AveoMaxx Hercules™

AveoMaxx Hercules™ is a high powered PAR36 LED light use in GA and transport category aircraft. It has been designed to be lightweight and with a low power draw to meet the highest requirements of all certified aircraft.

- **AveoMaxx Hercules H30 – no holder** - AVE-H30MWSSNH-00A
- **AveoMaxx Hercules H30 – with holder O** - AVE-H30MWSSOH-00A
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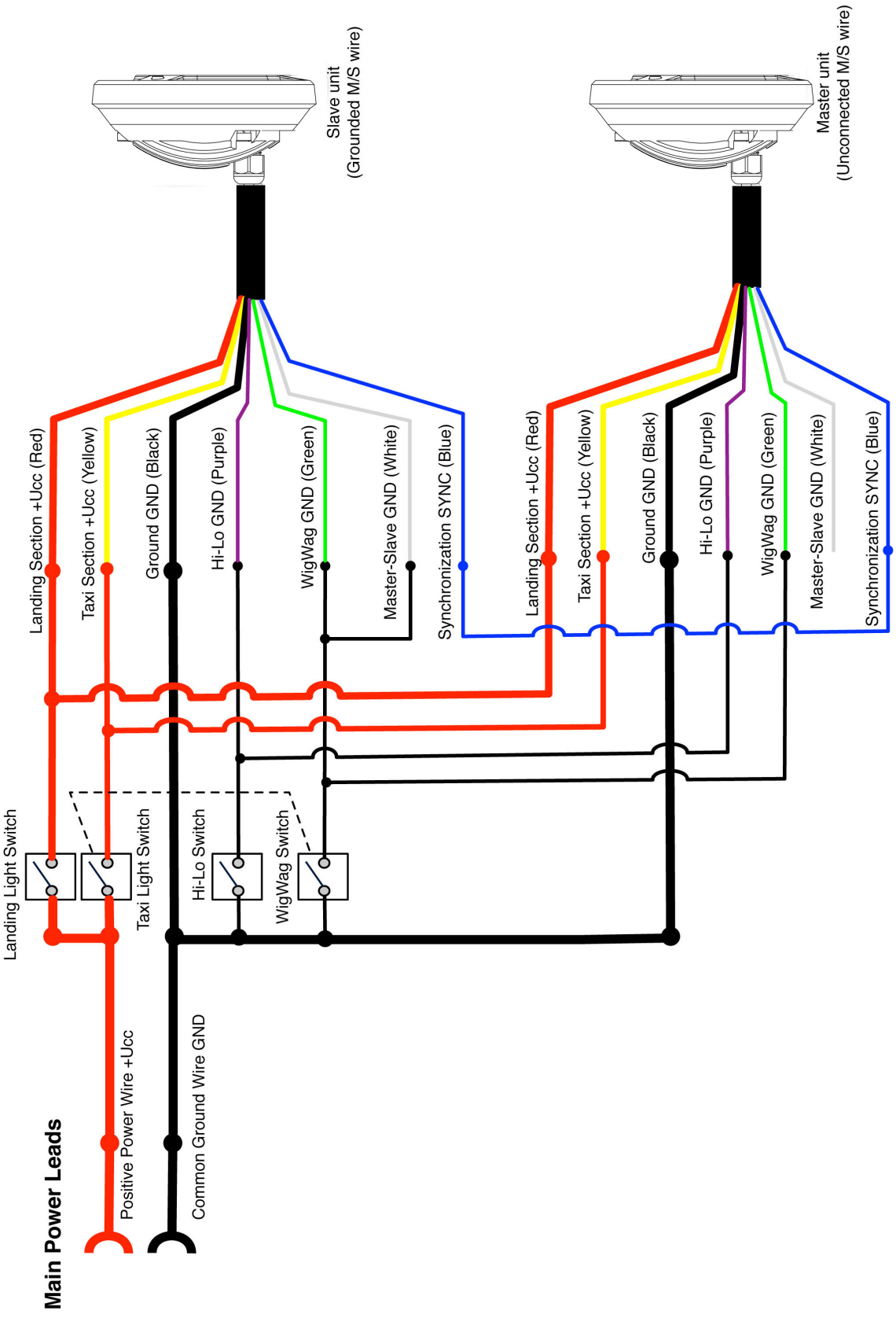
1.2 Operating Instructions

When installed on the aircraft, using the aircraft's power (14 or 28 volts), the light will be at its maximum intensity.

Operating Voltage range is +9…+36VDC.

1.3 Installation Schematic / Wiring Diagram



1.4 Control & Power Inputs

RED (AWG16)	Landing LEDs power
YELLOW (AWG16)	Taxi LEDs power
BLACK (AWG16)	Ground – GND Common
PURPLE (AWG24)	Hi/Lo
GREEN (AWG24)	WigWag
WHITE (AWG24)	Master/Slave
BLUE (AWG24)	Synchro

Length of wires: 550 mm (21.6”)

1.5 Technical Specification

Light characteristics:	PAR36, Multimode (Landing, Taxi, WigWag, Hi-Lo)	
Voltage range:	9-36VDC	
Voltage protection:	a. Transcient voltage:	+80VDC, both polarities
	b. Under-voltage lockout:	+8.5VDC, not more
	c. Over-voltage lockout:	+37VDC, not less
Input current:		
- Landing:	4.36A @14VDC	
	2.56A @28VDC	
- Taxi:	2.6A @14VDC	
	1.52A @28VDC	
- Landing + Taxi:	6.96A @14VDC	
	4.08A @28VDC	
Input power (Hi/Lo):		
- Landing:	61.0W / 37.5W @14VDC	
	71.7W / 38.6W @28VDC	
- Taxi:	36.4W / 22.0W @14VDC	
	42.6W / 23.5W @28VDC	
- Landing + Taxi:	97.4W / 59.5W @14VDC	
	114.24W / 62.16W @28VDC	
Chromaticity:	Cool White	
Low temp. slope start:	-55°C / -67°F	
Ambient temperature:	-55°C...+85°C / -67°F...+185°F	
Overheat protection:	Yes, temperature dependent decrement intensity	
Wiring:	See section 1.4	
Weight:		
AVE-H30MWSSNH-00A	486 g / 1.07 lb	
AVE-H30MWSSOH-00A	517 g / 1.14 lb	
AVE-H30MWSSQH-00A	504 g / 1.11 lb	
Useful life:	not less than 30.000 aircraft flight hours	
Material:		
Housing/Heatsink:	Aluminum Alloy, natural anodizing	
Lens:	Clear PMMA	

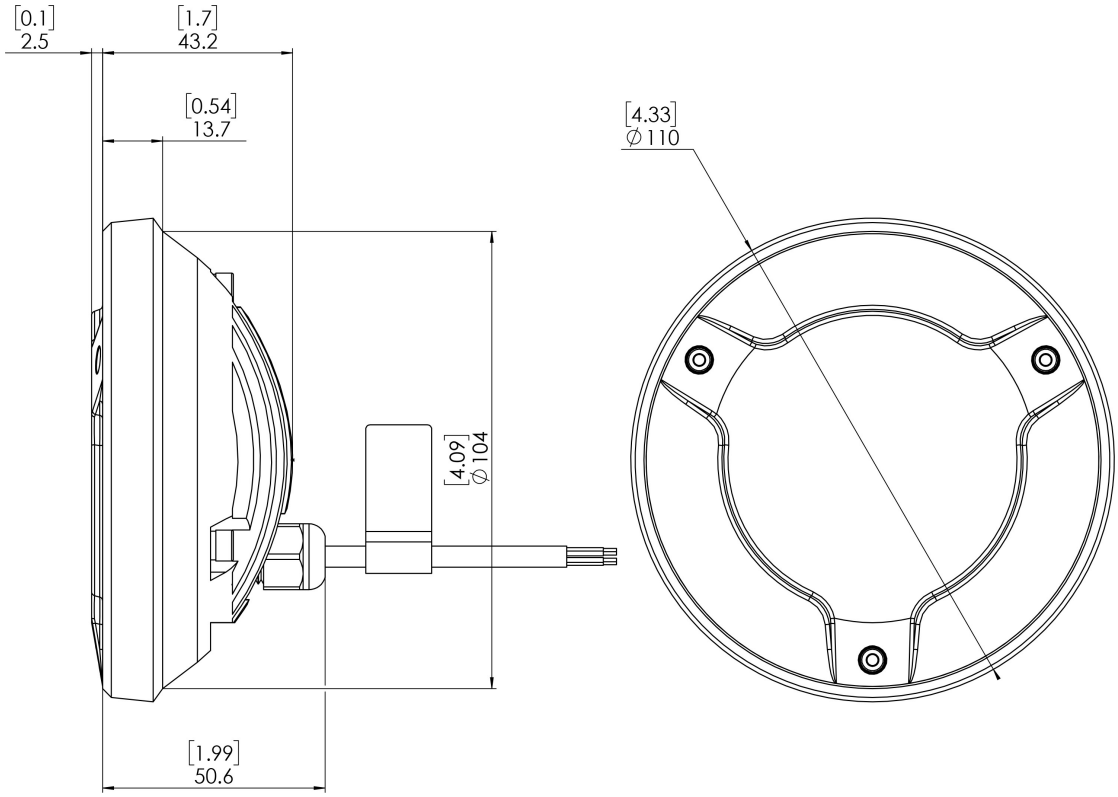
Function description:

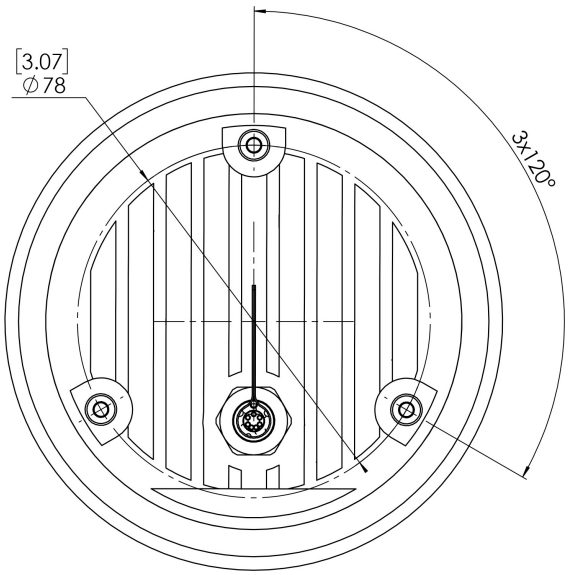
- 1x12 LEDs - Taxi, steady light
- 2x9 LEDs - Landing, steady light
- 1x12 + 2x9 - Taxi+Landing
- Synchro Mastrer function, active – low
- Wig-Wag – Taxi LEDs only
- Master/Slave select sequential and simultaneous Wig-Wag mode
- High/Low power select for Landing and Taxi.

Device RTCA/DO160 qualified:

Environment	Section	Category
Temperature / Altitude	4	F2
Temperature Variation	5	A
Humidity	6	C
Operational Shock and Crash Safety	7	B
Vibration	8	R, curve G
Explosive Atmosphere	9	H
Waterproofness	10	R
Fluids Susceptibility	11	F
Sand and dust	12	D
Fungus	13	F
Salt Spray	14	T
Magnetics Effects	15	Z
Power Input	16	Z
Voltage Spike	17	A
Audio Freq. Conducted Susceptibility	18	Z
Induced Signal Susceptibility	19	ZC
Radiated and Conducted Susceptibility	20	T
Radiated and Conducted Emissions	21	B

1.6 Technical Drawing

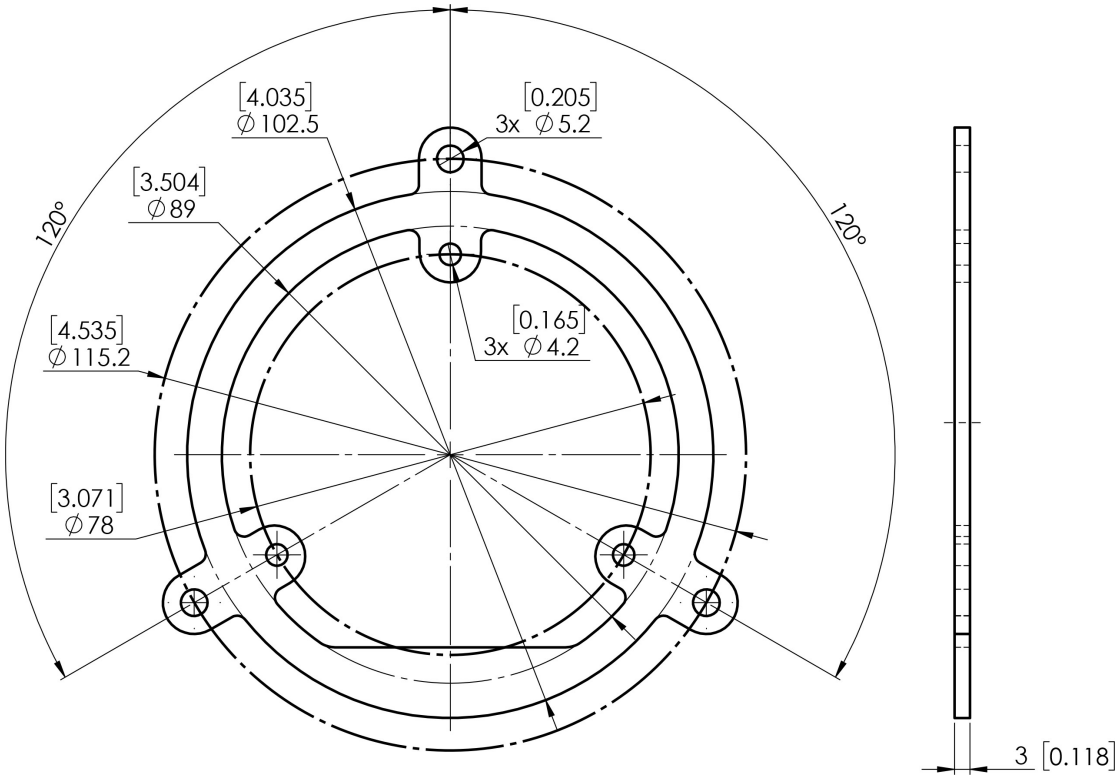




*dimensions in [inches] / mm

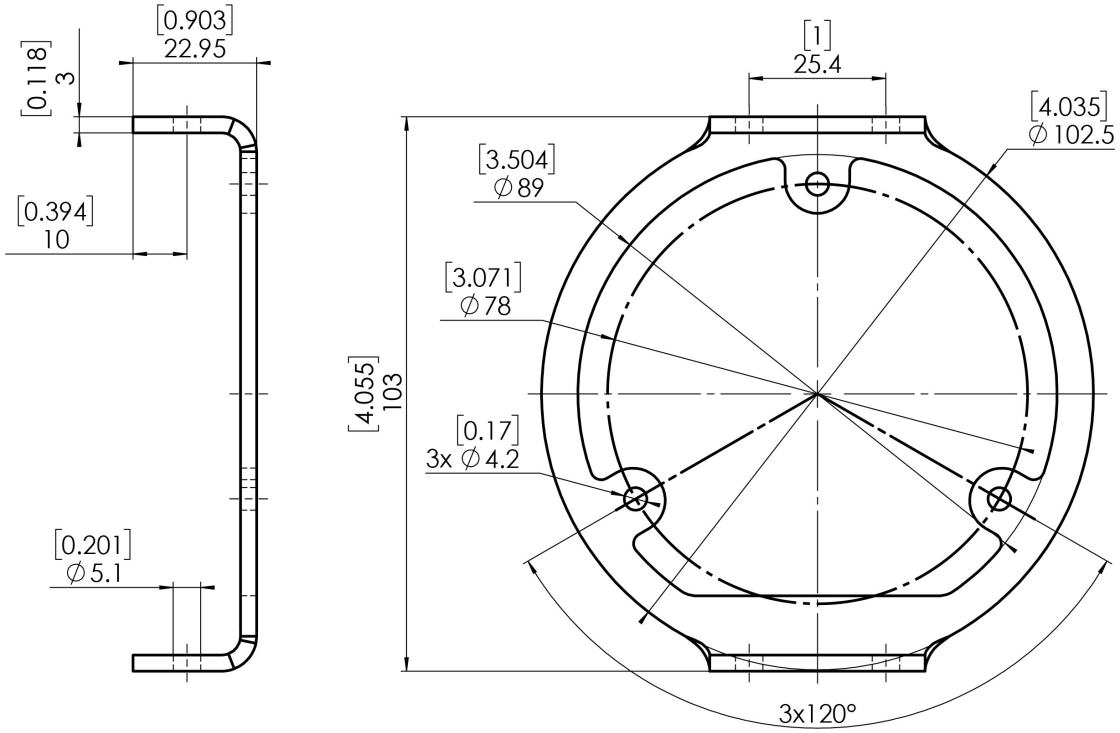
Q-holder

for AVE-H30MWSSQH-00A



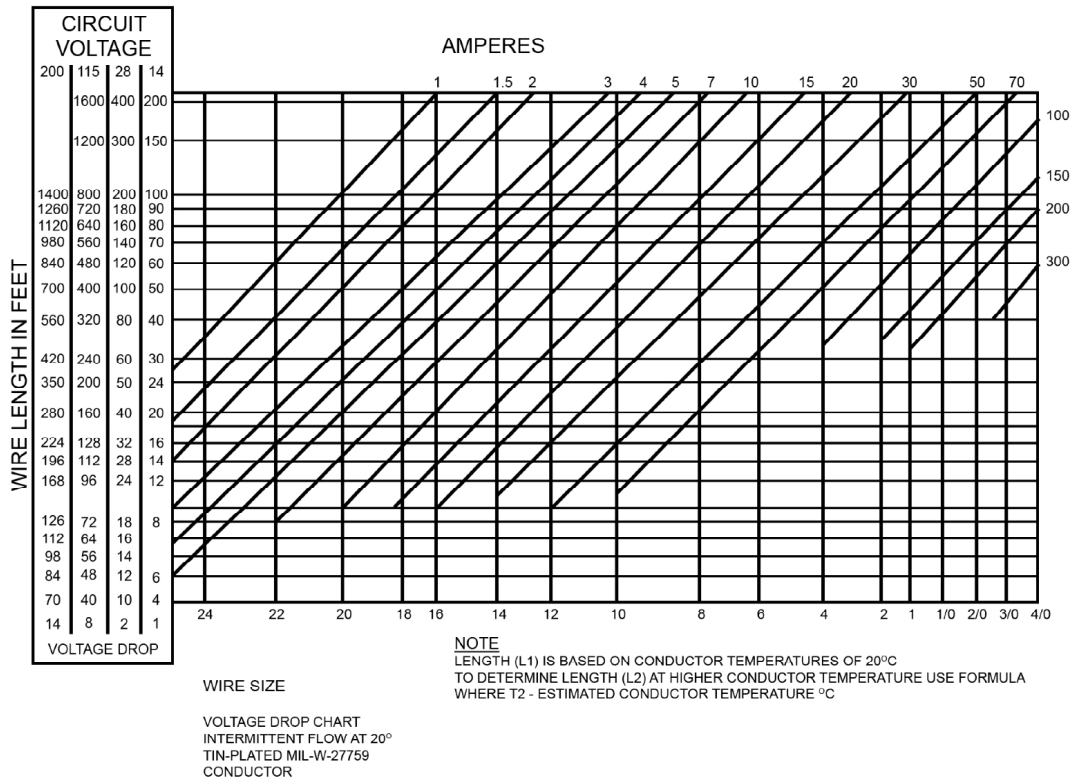
O-holder

for AVE-H30MWSSOH-00A



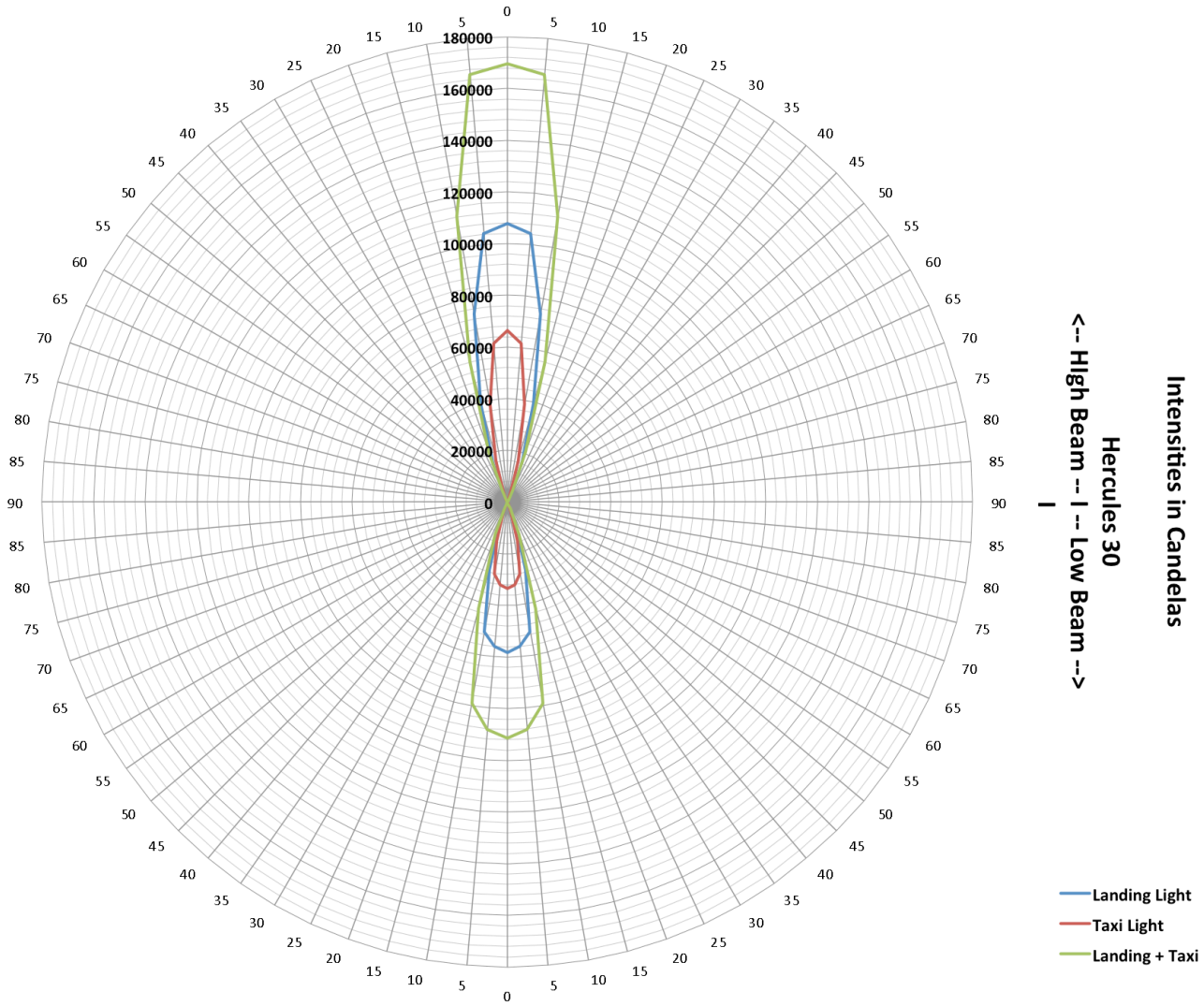
1.7 Wiring Chart

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

Landing Hi:	108.000 cd
Landing Lo:	58.000 cd
Taxi Hi:	66.000 cd
Taxi Lo:	33.000 cd
Landing + Taxi Hi:	170.000 cd
Landing + Taxi Lo:	92.000 cd



1.9 Equipment Limitation

AveoMaxx Hercules should only be powered by 9-36VDC

1.10 Care and Cleaning of Lights

Aveo Engineering Aviation Lights are factory polished and delivered as ready to install on the aircraft.

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

1.11 Testing the Lights 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 ***AveoMaxx Hercules*** 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 8 wires:

RED	Landing LEDs power
YELLOW	Taxi LEDs power
BLACK	Ground – GND Common
PURPLE	Hi/Lo
GREEN	WigWag
WHITE	Master/Slave
BLUE	Synchro

3. Testing of the function of the light can be done with a regular 14VDC or 28VDC power supply (not a battery charger). Connect the ground wire to black wire and then connect the power wire to the red wire. The landing light section should start lighting. Disconnect the power wire. Connect the power wire to the yellow wire. The taxi light section should start lighting. When installed on the aircraft, using the aircraft's power (14VDC or 28VDC), the light will be at its maximum intensity.

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

IMPORTANT NOTES:

Under no circumstances should any power supply other than a *9-36VDC*, *14 volt 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 9-36

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 Continued Airworthiness Information

Circuit/Wiring Protection

Each AveoMaxx Hercules 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.

Periodic Inspection Procedure

The AveoMaxx Hercules 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 during inspection as defined in the aircraft maintenance manual (AMM). 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.

For inspection turn the lights on 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. If any LED failed, the light shall be removed and sent to Aveo Engineering for replacement under the Aveo Warranty Program.

1.13 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.

1.14 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.