



INSTALLATION MANUAL

Maximus PowerMax 28VAC

AVE-MP-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:

- **Maximus PowerMax 28VAC AVE-MP18LW-T01 Mod(2)**

Compiled by: _____ 06 May 2020
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Approved by: _____ 06 May 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	Effected Pages
01	Initial Issue	17 May 2018	ALL
02	Input Voltage update Weight addition Drawing update Rectangular Candela Distribution addition	31 May 2019	5, 6, 11, 12 6 6, 7 10
03	Distribution list removal PN update Technical specification update Drawing update Text corrections	05 May 2020	4 3,5 6 7 10,11
Table 01: Record of Document Amendments			

0.3 Effected Pages Procedure

ALL pages affected by ANY raise of issue of this manual will be listed in Table 01 - **Effected 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 Maximus PowerMax™ 28VAC

Maximus PowerMax™ 28VAC is a high powered 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.

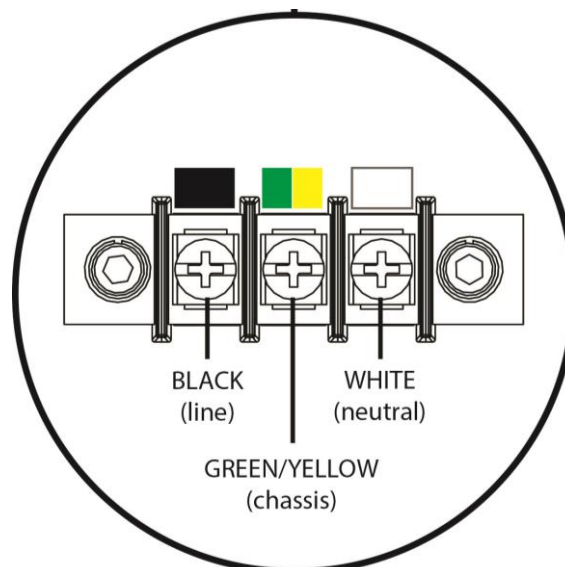
- **Maximus PowerMax 28VAC** - AVE-MP18LW-T01 **Mod(2)**

1.2 Operating Instructions

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

Operating Voltage range is 28VAC@50-400Hz.

1.3 Installation Schematic / Wiring Diagram



Recommended wire AWG size: **16**

1.4 Control & Power Inputs

BLACK	Line
WHITE	Neutral
GREEN/YELLOW	Chassis

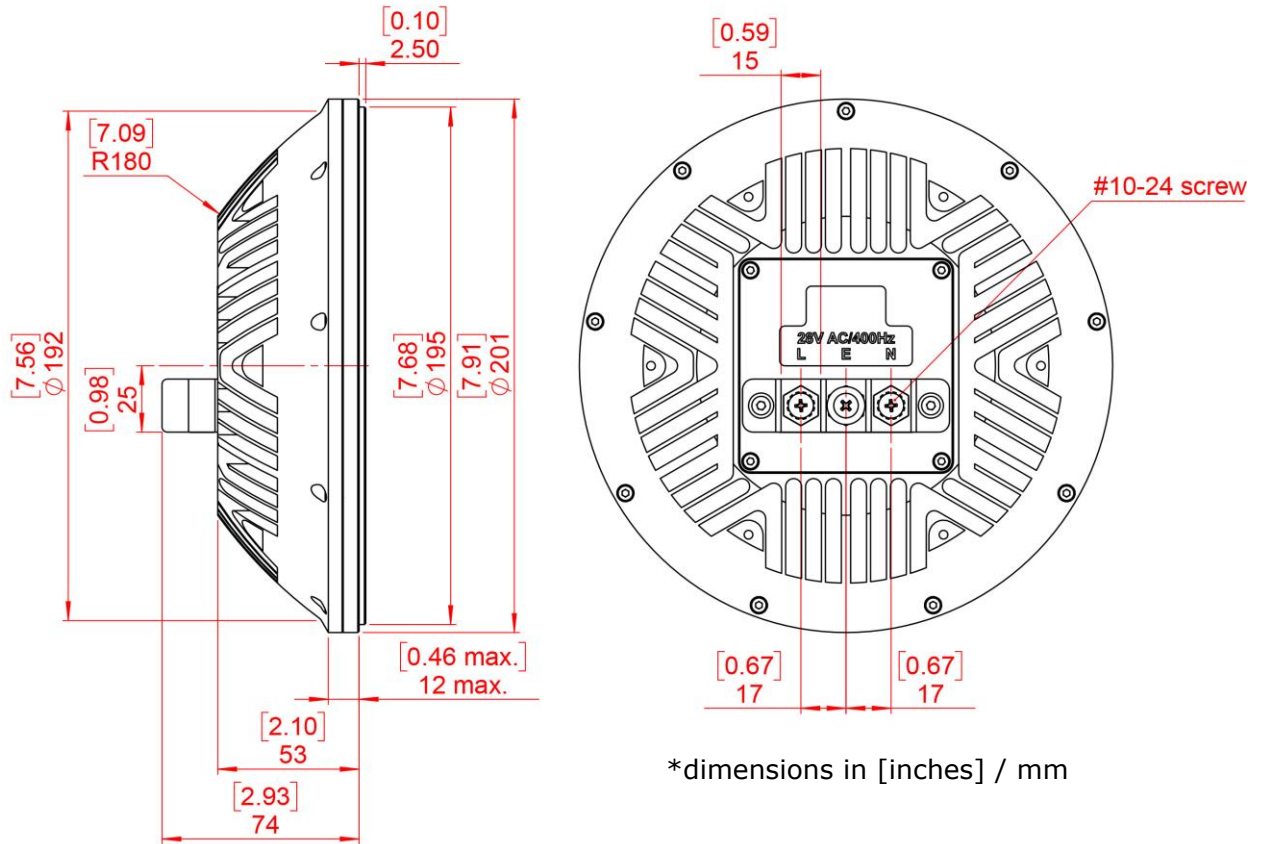
1.5 Technical Specification

Light characteristics:	Landing Light / PAR64 replacement
Voltage range:	28VAC@50-400Hz
Voltage protection:	a. Transient voltage: 2 second +40VAC b. Over-voltage lockout: +30VAC, not less.
LED quantity:	18 pcs
Performance:	a. Output current: 0.85A per LED b. Output power: 170.5W max c. Input current: 7.5A @ 28V AC (rms) max d. Input power: 210 W (rms)
Chromaticity:	Cool White, Color shade 1D0
Viewing Angle:	10° Landing (symmetrical)
Low temp. slope start:	-55°C / -67°F
Ambient temperature:	-55°C...+85°C / -67°F...+185°F
Overheat protection:	Yes
Wiring:	N/A, Terminal Block – 3 contacts
Weight:	1.76 kg 1.369 kg

Device RTCA/DO160 qualified:

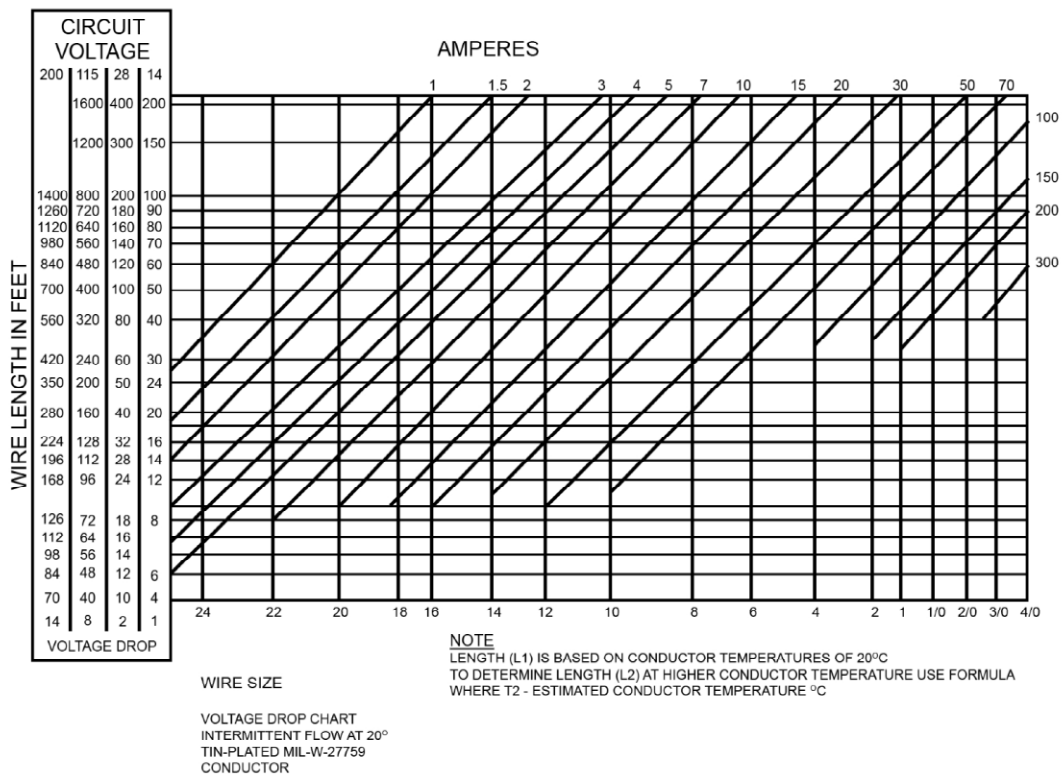
- chapter 4, Temperature - Altitude, Category ~~E2~~ F2
- chapter 5, Temperature Variation, Category A
- chapter 6, Humidity, Category C
- chapter 7, Operational Shocks and Crash Safety, Category B
- chapter 8, Vibration, Category R, curves G
- chapter 9, Explosive Atmosphere, Category A
- chapter 10, Waterproofness, Category S
- chapter 11, Fluids Susceptibility, Category F
- chapter 12, Sand and Dust, Category D
- chapter 13, Fungus resistance, Category F
- chapter 14, Salt spray, Category S
- chapter 15, Magnetic effects, Category Z
- chapter 16, Power Input, Category A (CF)
- chapter 17, Voltage Spike, Category A
- chapter 18, Audio Frequency Conducted Susceptibility, Category R (CF)
- chapter 19, Induced Signal Susceptibility, Category AC
- chapter 20, Radio Frequency Susceptibility, Category RR
- chapter 21, Emission of Radio Frequency Energy, Category H
- chapter 24, Icing, Category A
- chapter 25, Electrostatic Discharge (ESD), Category A

1.6 Technical Drawing

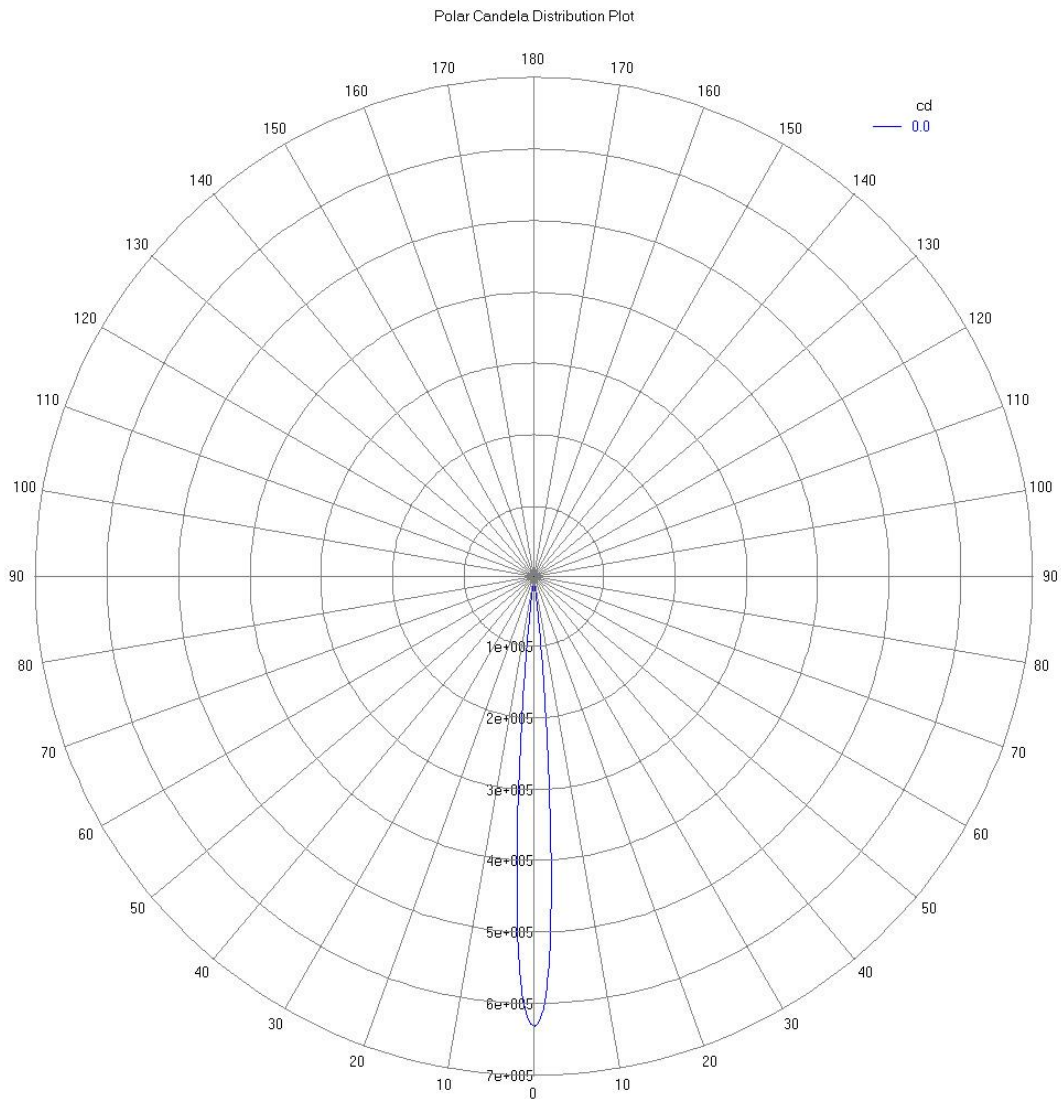


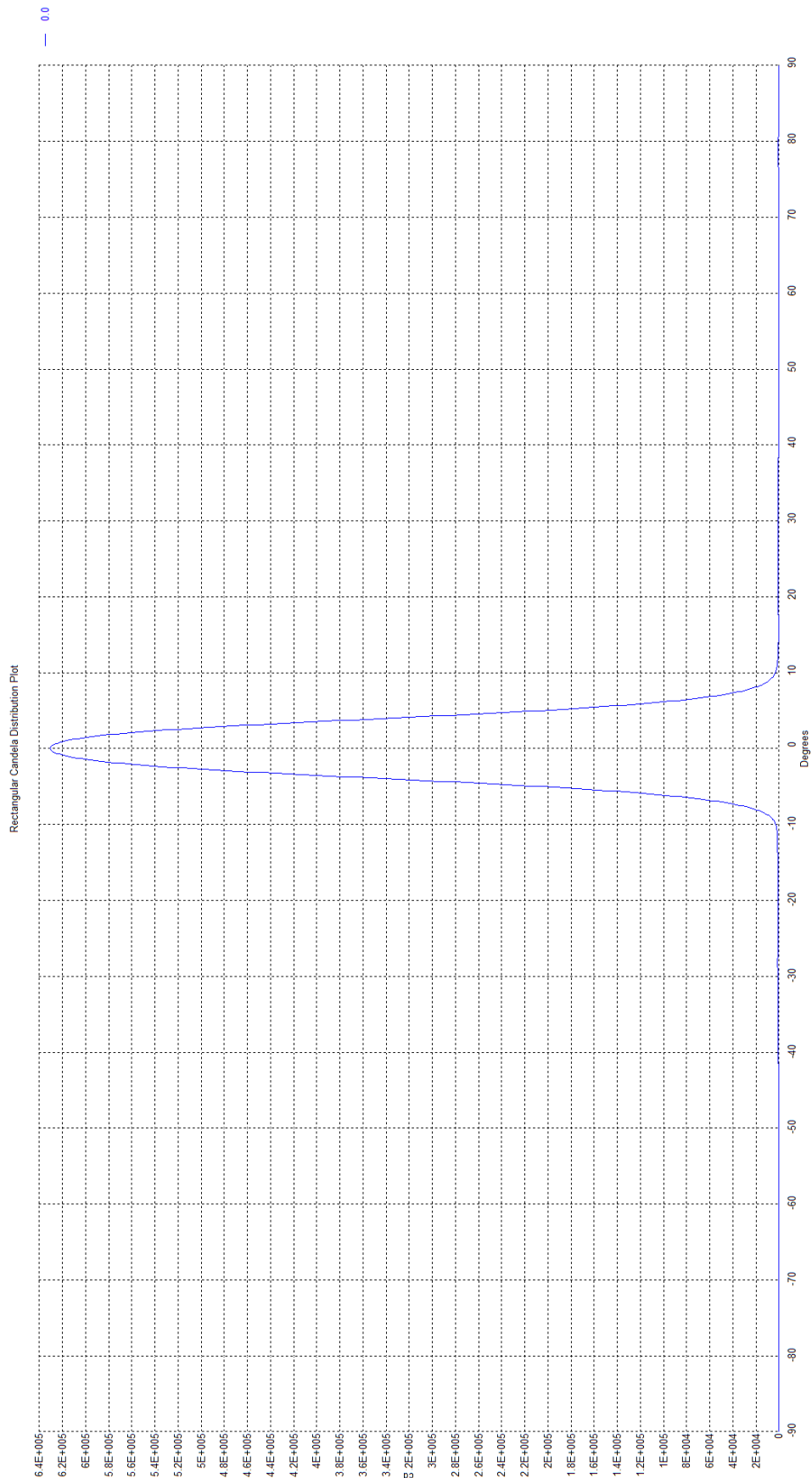
*dimensions in [inches] / mm

1.7 Wiring Chart



1.8 Optic Simulation





1.9 Equipment Limitation

Maximus PowerMax™ 28VAC should only be powered by 28VAC@50-400Hz.

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 **Maximus PowerMax™ 28VAC** 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 is **connector terminal block** with 3 colors:
 - Black – Line
 - White – Neutral
 - Green/Yellow – Chassis
3. Testing of the function of the light can be done with a regular 28VAC power supply (not a battery charger). Connect the line wire to black pole, neutral wire to the white pole, and then connect the chassis to the green/yellow pole. The Maximus PowerMax light should start lighting. When installed on the aircraft, using the aircraft's power (28 VAC@50-400Hz), 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 28V AC @ 50-400Hz, or a 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 at 28 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

Spread the tightening forces evenly around the mounting hole. Stainless steel screw is recommended. Length depends upon placement location on aircraft.

1.13 Continued Airworthiness Information

a. Circuit/Wiring Protection

Each **Galactica Maximus** 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.

b. Periodic Inspection Procedure ~~for Galactica Series~~

The Maximus PowerMax™ 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 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 Farecla Profile UV Wax to ensure ongoing optical clarity. In addition refer to section 10 of installation manual for detailed cleaning instructions.

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 as per the diagram below. If any of the conditions as indicated on the diagram are exceeded, the light shall be removed and sent to Aveo Engineering for replacement under the Aveo Warranty Program.

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.