



INSTALLATION MANUAL

Quark Wheel Inspection Light

AVE-WIIL0-IM

TABLE OF CONTENTS

PART 0 DOCUMENT ADMINISTRATION 3

0.1 DOCUMENT APPROVAL..... 3

0.2 AMENDMENT RECORD PROCEDURE 4

0.3 AFFECTED PAGES PROCEDURE 4

PART 1 INSTALLATION DATA 5

1.1 PRODUCT INFO 5

1.2 OPERATING INSTRUCTIONS 5

1.3 INSTALLATION SCHEMATIC / WIRING DIAGRAM 5

1.4 CONTROL & POWER INPUTS 5

1.5 TECHNICAL SPECIFICATION 6

1.6 TECHNICAL DRAWING 7

1.7 WIRING CHART 8

1.8 OPTIC SIMULATION 9

1.9 EQUIPMENT LIMITATION10

1.10 CARE AND CLEANING OF LIGHTS10

1.11 TESTING OF THE LIGHT BEFORE INSTALLATION10

1.12 NOTES ON INSTALLATION11

1.13 CONTINUES AIRWORTHINESS INFORMATION12

1.14 ROHS COMPLIANCE STATEMENT12

1.15 EU REACH REGULATION (EC) No. 1907/200613


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 part numbers:

- Quark Wheel Inspection Light White **AVE-WILOW-D01**
- Quark Wheel Inspection Light Blue **AVE-WIIOB-D01**

Compiled by:  _____ 07. - Jan. - 2025
Petr Jaroš
Engineer, Aveo Engineering Group, s.r.o.

Approved by: _____ 07. - Jan. - 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	07.Sep.2020	ALL
02	Updated section numbering DO160 Table addition Section 1.13 RoHS Compliance Statement addition Section 1.14 EU REACH Regulation addition	07.January 2025	ALL 6 12 13
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

The Quark™ Wheel Inspection Light - Commonly used as Wheel Well and Landing Gear Strut Light. Available in white or blue color.

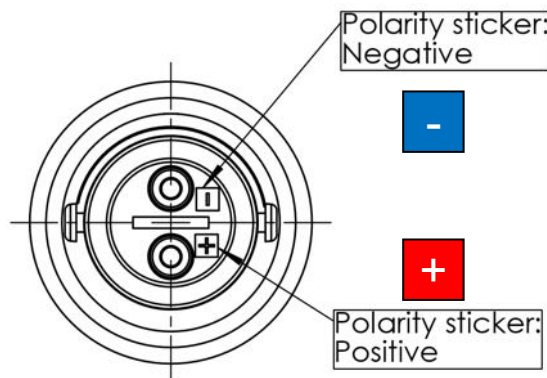
- Quark Wheel Inspection Light White **AVE-WIIOLOW-D01**
- Quark Wheel Inspection Light Blue **AVE-WIIOLOB-D01**

1.2 Operating Instructions

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

Operating Voltage range is +9...+36VDC.

1.3 Installation Schematic / Wiring Diagram



Note: Light works no matter what the input polarity is

1.4 Control & Power Inputs

- BLUE** – Negative power supply line (ground)
RED – Positive power supply line

1.5 Technical Specification

Light characteristics:	Wheel inspection light
Dimensions:	See Section 1.6 Technical Drawing
Voltage range:	9-36V DC, typical 28VDC
Voltage protection:	a. Over-voltage protection: 60V (1s) b. Over-voltage lockout: 38.5V DC c. Under-Voltage protection: Yes
LED quantity:	1 pc
Performance:	
Input current:	0.06A @ 28VDC (+/- 5%)
Input power:	1.68W @ 28VDC (typ)
Ambient temperature:	-55°C...+85°C / -67°F...+185°F
Overheat protection:	Yes
Wiring:	See section 1.3
Weight (max):	80 g / 2.82 oz
Useful life:	15.000 aircraft flight hours

DO160G Test qualified:

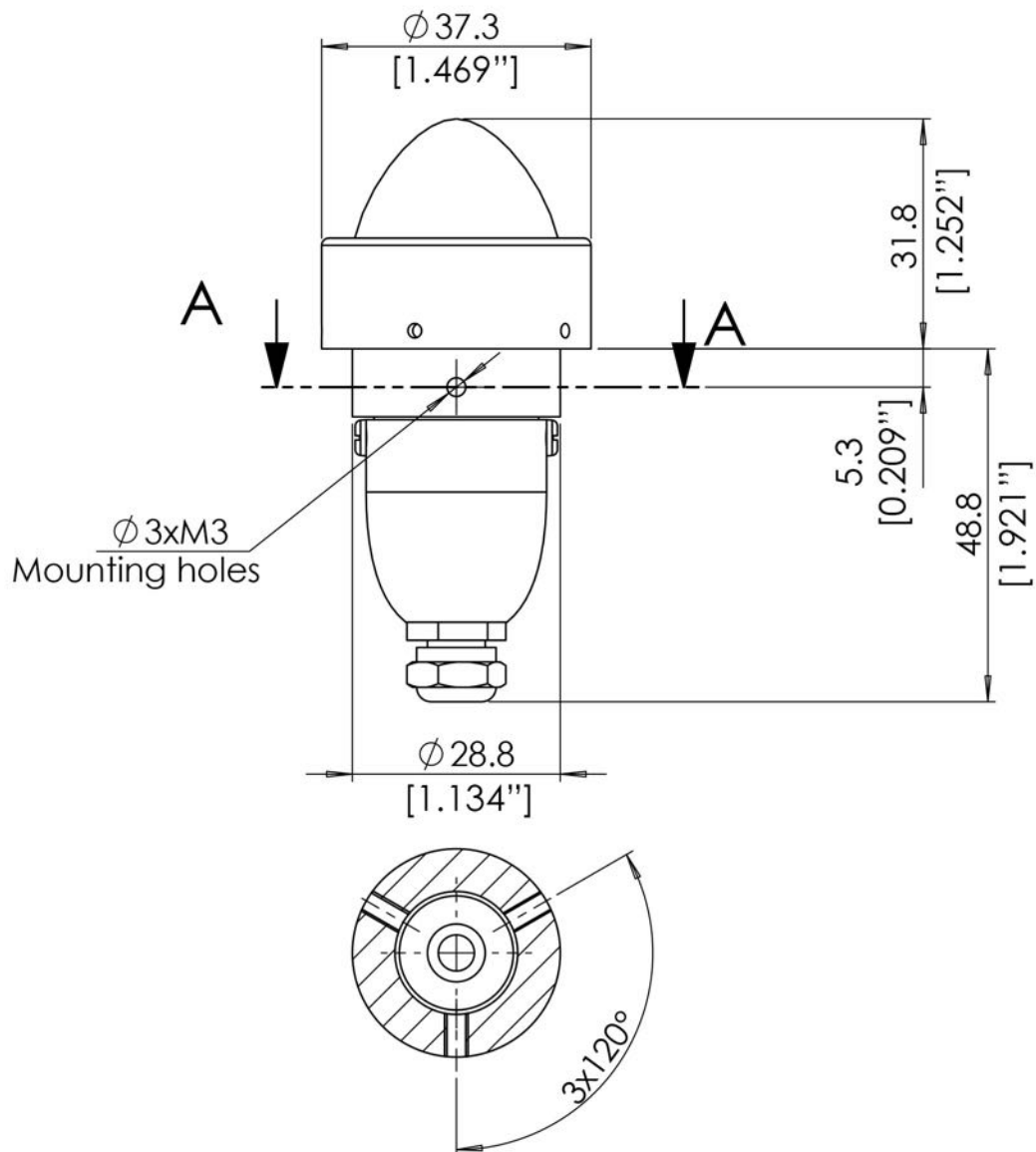
Environment	Section	Category
Temperature / Altitude	4 ***	F2
Temperature Variation	5 ***	B
Humidity	6 ***	C
Operational Shock	7 ***	B*
Vibration	8 ***	U curve J, S curve E
Waterproofness	10 ***	S
Fluid Susceptibility	11 ***	F**
Sand and dust	12 ***	D
Fungus	13 ***	F
Salt Spray	14 ***	S
Magnetic Effects	15	B
Power Input	16	ZXX
Voltage Spike	17	A
Audio Freq. Conducted Susceptibility	18	Z
Induced Signal Susceptibility	19	ZCX
Radiated and conducted Susceptibility	20	TT
Radiated and conducted Emissions	21	H
Lightening Induced Transient Susceptibility	22	A2E2XX
Icing	24	A
Electrostatic Discharge	25 ***	A

* Aircraft Type: 5. Helicopters and All Fixed-wing, Test Type R, 20.0g all direction

** Actual fluids: Jet A-1 aviation fuel, Mobil Jet Oil II, Ethylene glycol de-icing fluid

*** Categories of these sections are based on experience, not on explicit tests

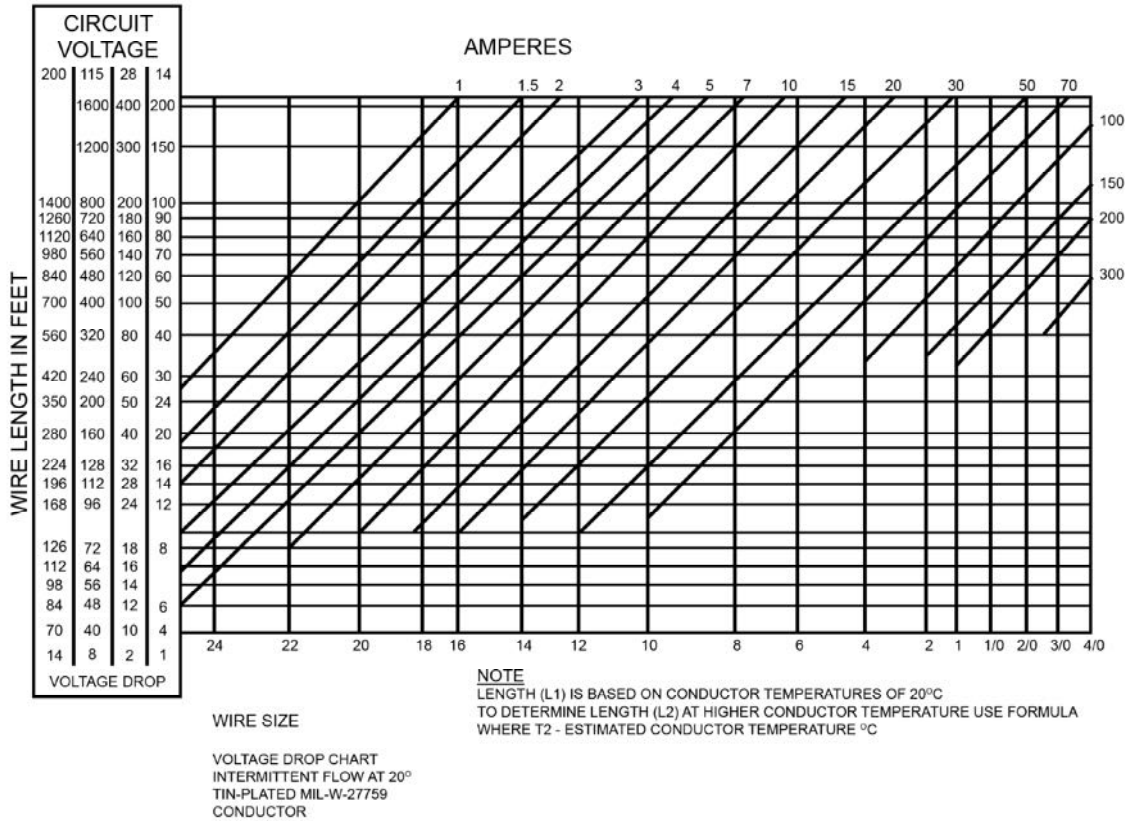
1.6 Technical Drawing



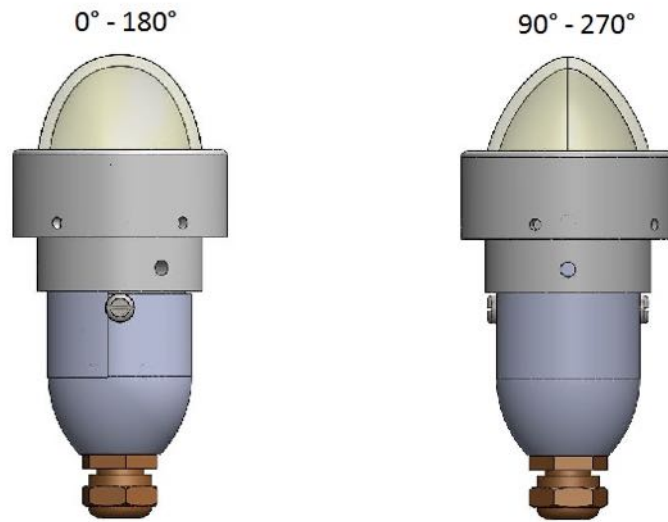
**dimensions in mm [inches]*

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.

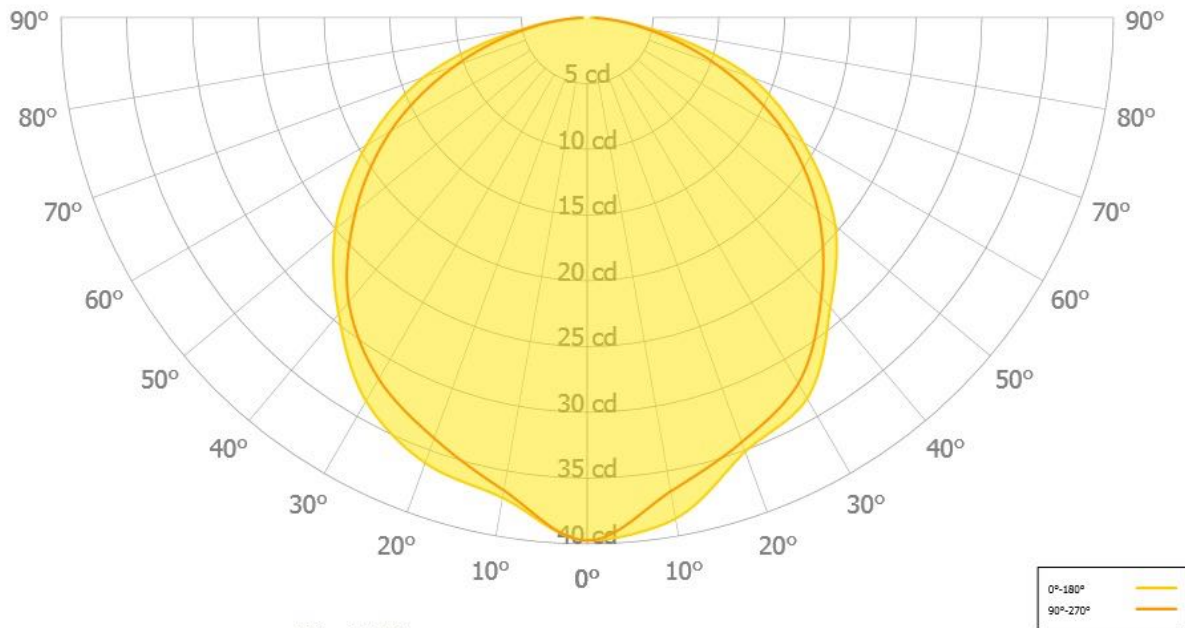


1.8 Optic Simulation



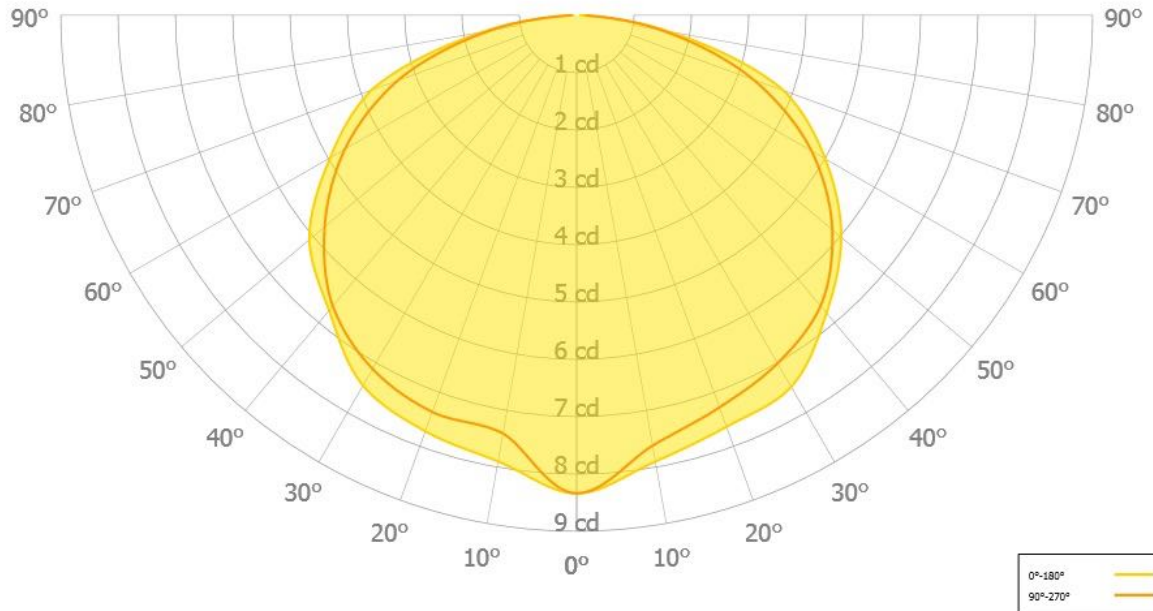
Quark – White
PN: AVE-WILOW-D01

40 cd



Quark – Blue
PN: AVE-WIIOB-D01

8.5 cd



1.9 Equipment Limitation

Quark™ Wheel Inspection light should only be powered by 9-36VDC.

1.10 Care and Cleaning of 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 **Quark™** 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 two (2) contact pins:
 - Blue (-)** Negative lead
 - Red (+)** Positive lead
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 blue contact pin to the ground (negative) leads of a power supply, and then connect the red contact pin to the positive (+) leads on the power supply. The Quark light should start lighting. 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

Spread the tightening forces evenly around the mounting hole.

1.13 Continues Airworthiness Information

Periodic Inspection Procedure for Quark Series

The **Quark™ Wheel Inspection** 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. ~~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 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.