



Samson S45

INSTALLATION MANUAL

AVE-S45-001-IM

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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:

 Sar Sar Sar Sar 	mson Drop-In Landing mson Drop-In Taxi mson Drop-In Landing 28VAC 400H mson Drop-In Taxi 28VAC 400Hz	AVE-S45MATSNA-TDA AVE-S45MATSNT-TDA z AVE-S45MATSNA-TDS AVE-S45MATSNT-TDS
Comp	oiled by:	06 – June - 2019 g Group, s.r.o.
Appro	oved by: Georg Hartl Head of DO, Aveo Engineeri	06 - June - 2019 ing 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.

ALL raises of issue will be given a sequential Alphabetic Issue Ident sequentially from 01 to 99 in Table 01 - *Issue No:* Column– Initial Issue of Document will be "**01**"

ALL Issues of this document will be approved by Head of DO

Issue No.	Details	Date	Effected Pages			
01	Initial Issue	01.Dec.2016	ALL			
02	Wiring diagram for AC version addition Dimensional drawing for AC version addition Units addition / Typos corrections Numbering and titles changes (not marked)	01.April 2019	5 8 6, 7 ALL			
03	Technical specification update Dimensional drawing for AC version update Sections 1.7, 1.8, 1.9 and 1.10 were added	06. June 2019	7, 8 9 10,11,12			
Table 01: Document Amendment Record Table						



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 ALL raise of issue and description of change due to raise of issue will be provided for ALL raises of issue in Table 01 - *Details* Column. Changes from the previous issue are highlighted by YELLOW HIGHLIGHTING over new content. AND YELLOW HIGHLIGHTING AND CROSSING OUT of deleted content.

Example (CROSSING OUT)



Part 1 Installation data

1.1 Product Info

Aveo Engineering introduces the exclusive next-generation Samson[™] Drop-In PAR46 replacement for Legacy Lights.

Environmentally Friendly

The Samson uses far less power than competitive products illuminated by mercury-arc, high intensity discharge, or halogen lamps, which means they help to reduce air pollution from carbon emissions. Mercury and Lead-free, this RoHS compliant environmentally-friendly technology helps reduce power consumption and the amount of hazardous waste entering the environment. Finally, a "green" aircraft light!

MAIN FEATURES:

- FAA Approved chromacity
- Highly optimized optics including Aveo RockyReflector[™] System
- Aveo PowerOptimizer[™] advanced LED power supply and controller
- ON/OFF function only

1.2 Installation Schematic / Wiring Diagram

1.2.1 DC version





Recommended wire AWG size: 18

1.2.2 AC version



Recommended wire AWG size: 16



1.3 Technical Specification

1.3.1 DC version

Light characteristics: Landing Light / Taxi Light / PAR46 replacement Voltage range: 18-36V DC Voltage protection: a. Transient voltage: 2 seconds +80V b. Under-voltage lockout: +18V DC, not more; c. Over-voltage lockout: +36V DC, not less. LED quantity: 45pcs **Performance:** a. Output current: 1.25A per LED a. Input current: 7A @ 28V DC b. Output power: 168W c. Input power: 200W +/- 5% **Chromaticity:** Cool White, Aviation White Intensity: 328.000 cd peak, see annex 1, 2, 3, 4 Viewing Angle: 12° Landing (symetrical) 40° x 20° Taxi (asymetrical) -55°C / -67°F Low temperature slope start: -55°C / -67°F...+85°C / +185°F Ambient temperature: **Overheat protection:** Yes **Device RTCA/D0160 qualified:** chapter 4, Temperature - Altitude, Category F2 a. chapter 5, Temperature Variation, Category A b. c. chapter 6, Humidity, Category C d. chapter 7, Operational Shocks and Crash Safety, Category B chapter 8, Vibration, Category U, curves G, W e. f. chapter 9, Explosion proofness, Category H q. chapter 10, Waterproofness, Category R chapter 11, Fluids Susceptibility, Category F h. chapter 12, Sand and Dust, Category D i. chapter 13, Fungus resistance, Category F j. k. chapter 14, Salt spray, Category T chapter 15, Magnetic effects, Category Z ١. chapter 16, Power Input, Category Z m. chapter 17, Voltage Spike, Category A n. chapter 18, Audio Frequency Conducted Susceptibility, Category Z ο. chapter 19, Induced Signal Susceptibility, Category ZC p. chapter 20, Radio Frequency Susceptibility, Category T q. chapter 21, Emission of Radio Frequency Energy, Category H r. s. chapter 22, Lightning induced transient susceptibility test, Category A2E2X chapter 23, Lightning Direct Effects, Category 2A2A t. chapter 24, Icing, Category A и. chapter 25, Electrostatic Discharge (ESD), Category A v. chapter 26, Fire, Flammability, Category C w. Wirina: N/A, Terminal Block – 2 contacts Programmable Soft-Start, less than 50mS; Part number: AVE-S45MATSNA-TDA Landing AVE-S45MATSNT-TDA Taxi Serial number: A00-YYMM-xxxxx Weight: less than 1.93 pounds (874 g) Useful life: not less than 30.000.0 aircraft flight hours. **Dimension:** D=5.63 inch [143mm], H= 2.30 inch [58.4mm].



1.3.2 AC version

Light o	characteristic	:s: Landing	g Light / Taxi	Light / PAR46 replacement		
Voltag	e protection	24-30V				
ronag		a. Transient v	oltage: 2 s	seconds +40VAC		
		b. Under-volta	age lockout:	+24V AC not more;		
		c. Over-voltag	e lockout:	+30V AC, not less.		
LED qu	uantity:	45pcs				
Perfor	mance:	a. Input curre	<mark>nt: 6.5A @ 28</mark>	8V AC (RMS)		
		b. Output pow	ver: <mark>168W</mark>			
		c. Input power	r: 147,5W +/	- 5%		
Chromaticity: Cool White, Color shade 1C0						
Intens	Intensity: 240.000 cd peak, see annex 5, 6, 7, 8					
viewir	ig Angle:		y (symetrical) Taxi (acumot			
Low to	mporaturo c	40° <mark>x 20°</mark>	-55°C / -67°			
Δmhie	nt temperature s	iope start.	-55°C / -67°l	' F +85°C / +185°F		
Overh	eat protectio	n:	Yes			
••••			100			
Device	RTCA/DO16	50 qualified:				
a.	chapter 4, Ter	mperature - Alt	titude, Catego	ory F2		
b.	chapter 5, Ter	nperature Vari	ation, Catego	bry A		
с.	chapter 6, Hu	midity, Catego	ry C			
d.	chapter 7, Op	er 7, Operational Shocks and Crash Safety, Category B				
e.	chapter 8, Vib	er 8, Vibration, Category U, curves G, W				
f.	chapter 9, Exp	, Explosion proofness, Category H				
g.	chapter 10, W	Waterproofness, Category R				
h.	chapter 11, FI	Fluids Susceptibility, Category F				
I. ;	chapter 12, S	Sand and Dust, Category D				
ן. ג	chapter 13, Fi	Fungus resistance, Category F				
к. I	chapter 15 M	Salt spray, Category I Magnetic effects, Category 7				
m	chapter 16 Pr	ower Input Ca	tearry 7			
n.	chapter 17, V	rower πιραι, category Δ Voltage Spike Category Δ				
0.	chapter 18, A	udio Frequency	Conducted S	Susceptibility, Category Z		
р.	chapter 19, Ir	duced Signal S	Susceptibility,	, Category ZC		
q.	chapter 20, R	20, Radio Frequency Susceptibility, Category T				
r.	chapter 21, Emission of Radio Frequency Energy, Category H					
s.	chapter 22, Li	ghtning induce	ed transient su	usceptibility test, Category A2E2X		
t.	chapter 23, Li	ghtning Direct	Effects, Cate	gory 2A2A		
u.	chapter 24, Ic	ing, Category	Α			
۷.	chapter 25, El	Electrostatic Discharge (ESD), Category A				
w.	chapter 26, Fi	re, Flammabilit	ty, Category (C		
Wiring		N/A Terminal	Block - 3 cor	ntacts		
Progra	nmahle Soft-9	Start loss than	50mS1	intacts		
Part n	umber:	AVE-S45MATS	SNA-TDS Lanc	lina		
		AVE-S45MATS	INT-TDS Taxi			
Serial	number:	A00-YYMM-xx	XXX			
Weigh	t:	less than 1.93	pounds (874	lg)		
Useful	life:	not less than 3	30.000.0 airci	raft flight hours.		
Dimen	ision:	D=5.63 inch [143mm], H=	2.30 inch [58.4mm].		



1.4 Technical Drawing

1.4.1 DC version



1.4.2 AC version





1.5 Wiring Chart



1.6 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.

1.7 Equipment Limitation

Samson Drop-In[™] VAC should only be powered by 24-30 V AC. **Samson Drop-In[™] VDC** should only be powered by 18-36 V DC.

1.8 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 Samson Drop-In[™] VAC or VDC 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.

VAC version:

Note that there is connector with 3 colors: Black – Line White – Neutral Green/Yellow – Chassis

VDC version:

Note that there is connector with 2 colors: Blue – Ground Red – Power

3. Testing

VAC version:

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 Samson Drop-In light should start lighting. When installed on the aircraft, using the aircraft's power (24-30 V AC), the light will be at its maximum intensity.

VDC version:

Testing of the function of the light can be done with a regular 28VDC 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 Samson Drop-In light should start lighting. When installed on the aircraft, using the aircraft's power (18–36 V DC), the light will be at its maximum intensity.

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

IMPORTANT NOTES:

VAC version:

Under no circumstances should any power supply other than a 24–30 V AC, 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 between 24 and 30 volts. Use of a battery charger or other power unit to test the light will void the warranty and may damage the light.

VDC version:

Under no circumstances should any power supply other than a 18–36 V DC, 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 between 18 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

1.9 Notes on Installation

The light replaces the original bulb. Utilize the original installation method and verify a firm fit after installation.

1.10 Continued Airworthiness Information

a. Circuit/Wiring Protection

the 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

The Samson Drop-In[™] 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. In addition refer to section 1.6 of installation manual for detailed cleaning instructions.

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 more than 3 LEDs in total or two adjacent LEDs failed, the light shall be removed and sent to Aveo Engineering for replacement under the Aveo Warranty Program.



Annex 1 - Samson Drop-In Landing DC - Polar Candela Distribution

Polar Candela Distribution Plot cd - 0.0 /5,e+,064 7e+0<mark>05</mark> 1.5e+005 2e+<mark>005</mark> 2.5e+005

Зе**+0**05

3.5e+005



Annex 2 – Samson Drop–In Landing DC - Rectangular Candela Distribution





Annex 3 - Samson Drop–In Taxi DC - Polar Candela Distribution





Annex 4







Annex 5 – Samson Drop–In Landing AC - Polar Candela Distribution









Annex 7 - Samson Drop-In Taxi AC - Polar Candela Distribution





Annex 8 - Samson Drop-In Taxi AC - Rectangular Candela Distribution

