



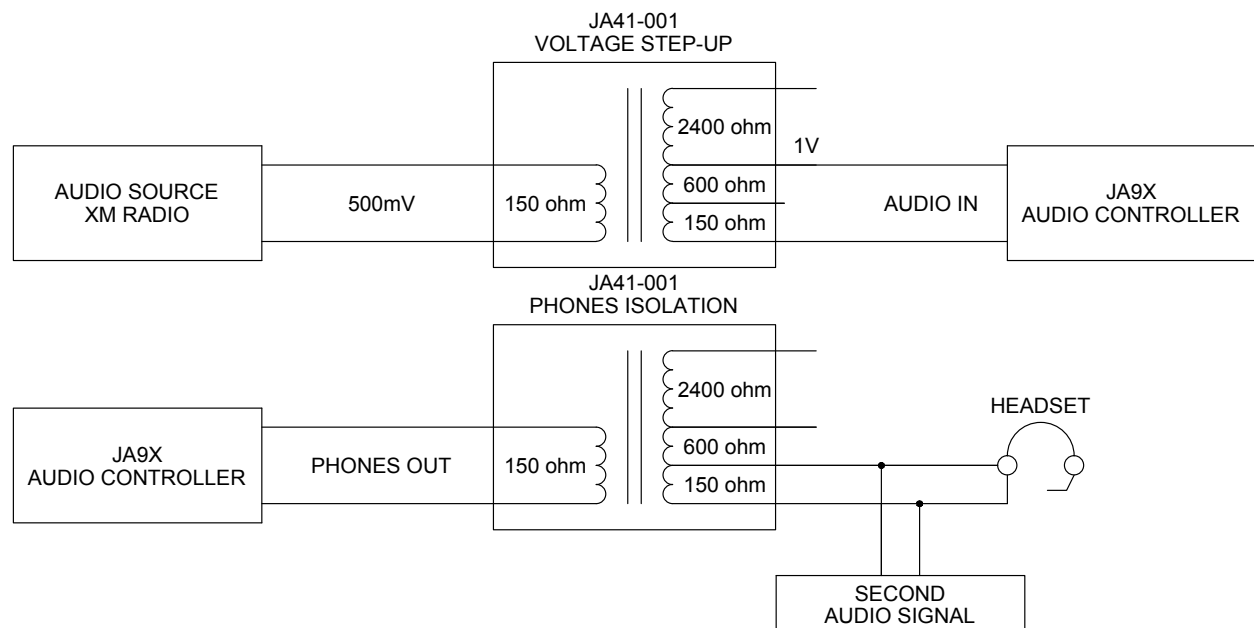
JA41-001 Receive Audio Isolation Transformer Data Sheet



Description

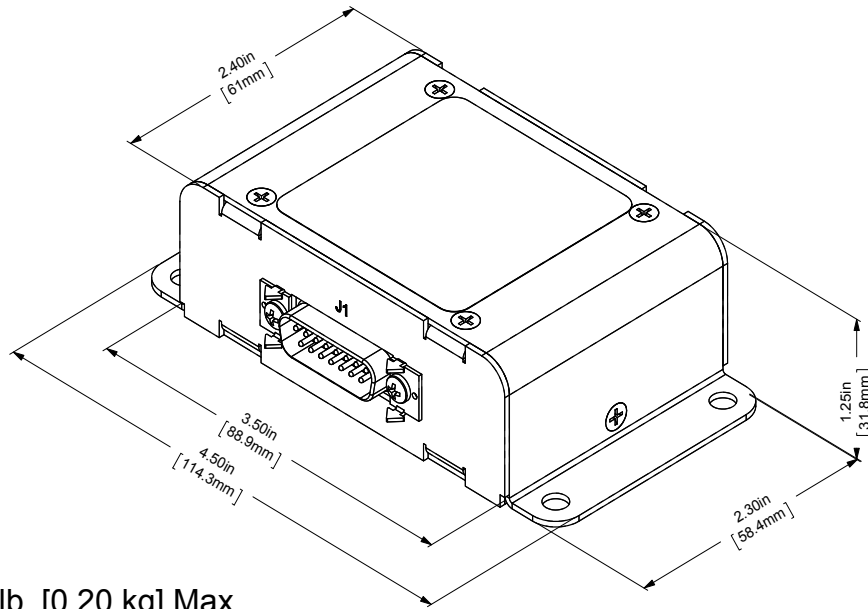
The JA41-001 Receive Audio Isolation Transformer contains dual audio transformers, enabling isolation and voltage / impedance matching between separate audio devices.

Typical Application

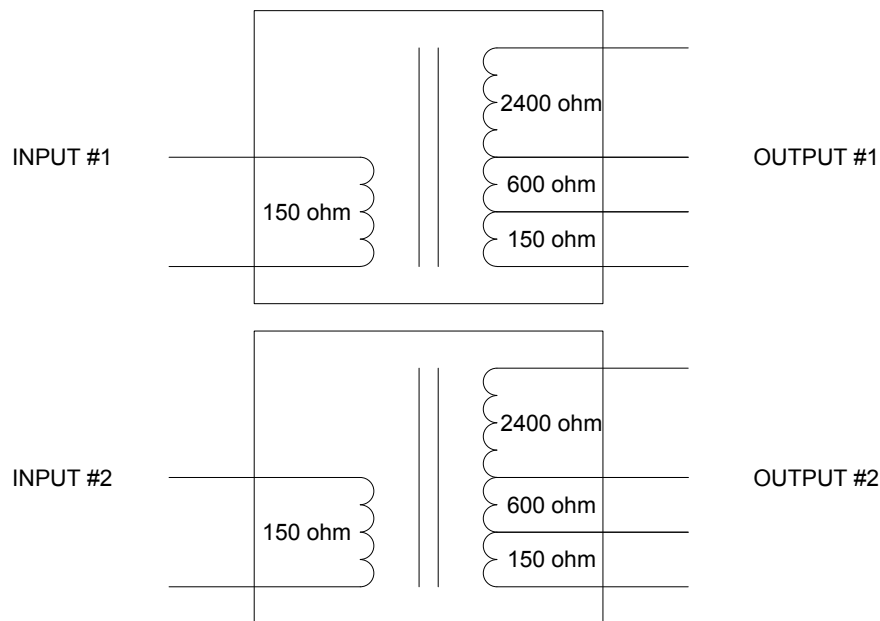


JA41-001 Specifications

Installation



Weight: 0.44 lb. [0.20 kg] Max.



Environment and Performance

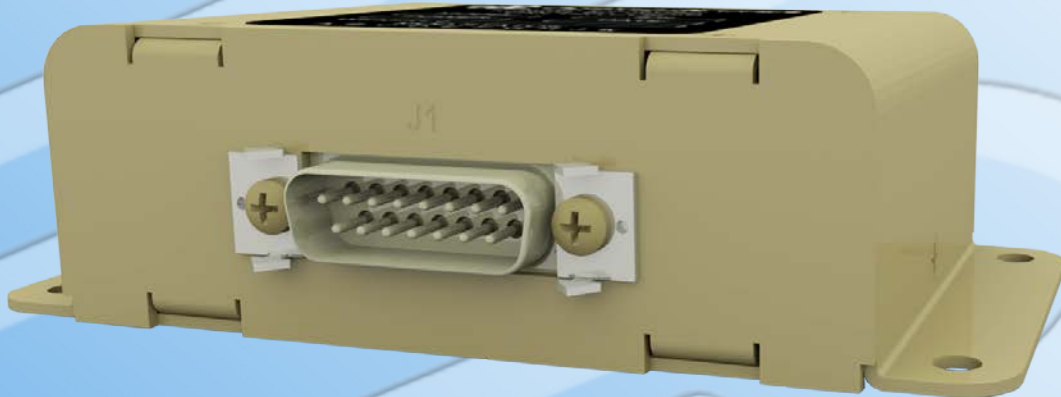
Operating Temperature	-40 C to +70 C
Survival Temperature	-55 C to +85 C
Altitude	50,000 ft. max
Humidity	95%, 48 hrs
Shock	20g (any axis)
TSO Compliance	CAN TSO-C139 (Pending)
Installation Kit	INST-JA41



JUPITER AVIONICS
CORPORATION

JA41-001

Audio Isolation Transformer – 2 Channel



Installation Manual

Rev. B Nov 2013

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IMPORTANT:

Information in this document is subject to change without notice.
To confirm the current revision status of this manual, visit the JAC website:
www.jupiteravionics.com

Record of Revisions			
Revision	Rev Date	Description	ECR
A	Oct 2013	Initial Release	1024
B	Apr 2014	Environmental Specs at 20°C changed	2351

Prepared: MPB	Checked:	Approved:
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JA41-001 Audio Isolation Transformer – 2 Channel

SECTION 1 - DESCRIPTION

1.1 System Overview

The JA41-001 Audio Isolation Transformer - 2 Channel provides two bidirectional audio channels with galvanic isolation for use between radio audio sources and audio controllers in aircraft. Input signal voltages can be stepped up or stepped down by 1:1, 1:2 or 1:4 ratios, depending on how the input and outputs are wired. Channel 1 is the audio path between INPUT 1 and OUTPUT 1 and Channel 2 is the audio path between INPUT 2 and OUTPUT 2.

1.2 Features Overview

The JA41 is comprised of two audio transformers each with three output taps.

The unit features a 15 pin D-Min connector to reduce the cost and weight.

1.3 Inputs and Outputs

Refer to the JA41-001 [connector map](#) drawing for the mating connector designators and contact assignments for the JA41-001 input signals.

1.3.1 Inputs

Name	Qty	Type
INPUT HI/LO	2	Audio inputs, one input per channel

1.3.2 Outputs

Name	Qty	Type
OUTPUT HI/LO	6	Audio outputs, three outputs per channel Typically use only one output per channel

1.4 Specifications

1.4.1 Electrical Specifications

Power Input Not Applicable

1.4.1.1 Audio Performance

Rated Input Level

Rated input level 7.75 Vrms ± 10 %

Rated Output Power

Rated Output Power (1:1) 7.75 Vrms ± 20 %

Rated Output Power (1:2) 14 Vrms ± 20 %

Rated Output Power (1:4) 25 Vrms ± 20 %

Audio Frequency Response

Audio output audio frequency response ≤3dB from 300 to 6000 Hz



Distortion Characteristics

Audio output distortion at rated power	≤ 10 %
Audio output distortion at 10% of rated power	≤ 3 %

Input to Output Crosstalk and Bleed-through Level

Input to Output crosstalk shall be	≤ -55 dB
------------------------------------	----------

Input to Input Crosstalk Level

Input to Input crosstalk	≤ -60 dB
--------------------------	----------

Audio Noise Level without Signal

Noise level below the rated output	≥ 60 dB
------------------------------------	---------

1.4.1.2 Audio Performance, Other

INPUT audio circuitry type	Transformer coupled
OUTPUT audio circuitry type	Transformer coupled

1.4.2 Physical Specifications

Height	1.27 in (32.3 mm) maximum
Overall depth (incl. connector)	2.61 in (66.2 mm) maximum
Width	4.52 in (114.8 mm) maximum
Weight	0.50 lbs (0.23 kg) maximum
Material	Brushed aluminum with conversion coating
Connector:	One 15 pin D-Sub male, V5 locking
Mounting	Bulkhead; 4 10-32 fasteners
Bonding	≤ 2.5 mΩ
Installation kit part number	INST-JA41

1.4.3 Environmental Specifications

The JA41-001 Audio Isolation Transformer has been tested to the environmental conditions listed below. Environmental categories are listed in the [Environmental Qualification Form](#) in Appendix B of this manual.

Temperature:	
Operating	-45 to +70 °C
Survival	-55 to +85 °C
Altitude	50,000 ft
Humidity	Cat A (48 hours)
Shock, Crash Safety	6 g, 20 g for 11 ms
Vibration:	
Fixed Wing	Cat [SBM]
Helicopter	Cat [U2FF1]



JA41-001 Audio Isolation Transformer – 2 Channel

SECTION 2 – INSTALLATION

2.1 Introduction

This section contains unpacking and inspection procedures, installation information, and post-installation checks.

2.2 Continued Airworthiness

Maintenance of the JA41-001 is on condition only. Scheduled inspection and/or periodic maintenance of this unit is not required.

2.3 Unpacking and Inspecting Equipment

Unpack the equipment carefully. Check for any obvious shipping damage and report any problems to the relevant carrier. Confirm that the Certificate of conformity or release certification is included. Complete the on-line warranty card from the Jupiter Avionics Corporation (JAC) website – www.jupiteravionics.com.

2.3.1 Warranty

ALL products manufactured by JAC are warranted to be free of defects in workmanship or performance for 2 years from the date of installation by an approved JAC dealer or agency. This warranty covers the cost of all materials and labour to repair or replace the unit, but does not include the cost of transporting the defective unit to and from JAC or its designated warranty repair centre, or of removing and replacing the defective unit in the aircraft. This warranty does not cover failures due to abuse, misuse, accident, or unauthorized alteration or repairs.

THIS WARRANTY IS VOID IF THE PRODUCT IS NOT INSTALLED BY AN AUTHORIZED JAC DEALER. If the on-line warranty card is not completed, the product will be warranted from the date of manufacture.

Contact JAC for return authorization, and for any questions regarding this warranty and how it applies to your unit(s). JAC is the final arbiter concerning warranty issues.

2.4 Installation Procedures



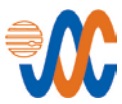
WARNING: Loud noise can cause hearing damage. Set any attached headset volume to minimum before conducting tests, and slowly increase the volume to a comfortable listening level.

2.4.1 Cabling and Wiring

All wire shall be selected in accordance with the original aircraft manufacturer's maintenance instructions, or AC43.13-1B Change 1, Paragraphs 11-76 through 11-78. Unshielded wire types shall qualify to MIL-W-22759 as specified in AC43.13-1B Change 1, Paragraphs 11-85, 11-86, and listed in Table 11-11. For shielded wire applications, use Tefzel MIL-C-27500 shielded wire with solder sleeves (for shield terminations) to make the most compact and easily terminated interconnect. Follow the [Connector Map](#) in Appendix A of this manual.

Allow 3" from the end of the shielded wiring to the shield termination to allow the connector hood to be easily installed. Refer to the [Interconnect](#) drawing in Appendix A of this manual for shield termination details. Note that this unit has a 'clamshell' hood that is installed after the wiring is complete.

Maintain wire segregation and route wiring in accordance with the original aircraft manufacturer's maintenance instructions.



Unless otherwise noted, all wiring shall be a minimum of 24 AWG. Refer to the [Interconnect](#) drawing for additional specifications. Check that the ground connection is clean and well secured, and that it shares no path with any electrically noisy aircraft accessories such as blowers, turn-and-bank instruments, or similar loads.

2.4.2 Mechanical Installation

The JA41-001 can be mounted in any attitude and location with adequate space and sufficient clearance for the connector and wiring harness. It requires no direct cooling.

2.4.3 Audio Operation

The JA41-001 Input #1 audio is routed to the Output #1 (1:1), Output #1(1:2) and Output #1 (1:4) audios.

The JA41-001 Input #2 audio is routed to the Output #2 (1:1), Output #2(1:2) and Output #2 (1:4) audios.

2.4.4 Post Installation Checks

2.4.4.1 Resistance checks.

Do not attach this unit until the following conditions are met:

- a) Check P1 pin **8** for continuity to chassis ground (less than 0.5 Ω).
- b) Check all pins for shorts to ground or adjacent pins.

2.4.4.2 Power on Checks.

Power up the aircraft's systems and conform normal operation of all functions of the unit.

- a) Unusual buzzes, hums or other background audio are symptomatic of multiple grounds, or noisy external systems such as blowers or pumps sharing wiring with the audio system. If a transmitter fails to key or correctly modulate it is often the result of not connecting all required grounds to the radio or external audio system.

When all performance checks are satisfied, complete the necessary regulatory documentation before releasing the aircraft for service.

2.5 Installation Kit

The kit required to install this unit is not included with the unit.

The installation kit (Part # INST-JA41) consists of the following:

Quantity	Description	JAC Part #
1	TAG ring	CON-5500-0375
1	Connector Assembly, 15 Socket, D-Subminiature	CON-3420-0015
1	3/4" Inside Diameter, Heat Shrink Tube	WIR-HTSK-0750
1	JA41-001 Assembly Notes, Installation Kit	DOC-INST-JA41

2.5.1 Recommended Crimp tools

Connector Type	Hand crimp tool	Positioner	Insertion/extraction tool
Positronic	9507	9502-3	M81969/1-04



Installation Manual

Appendix A - Installation Drawings

A1 Introduction

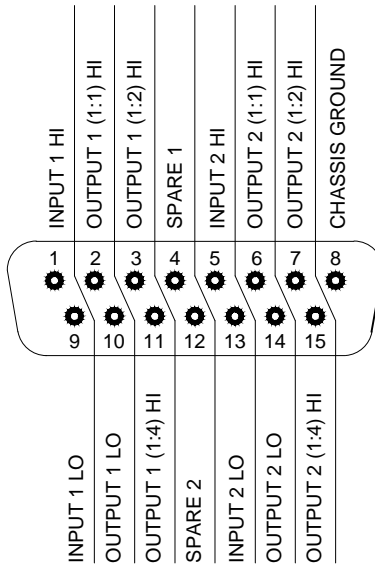
The drawings necessary for installation and troubleshooting of the JA41-001 Audio Isolation Transformer – 2 Channel are in this Appendix, as listed below.

A2 Installation Drawings




DOCUMENT	Rev
JA41-001 Connector Map	A
JA41-001 Interconnect	Ó
JA41-001 Mechanical Installation	A

P1

15 PIN FEMALE DSUB
MATING CONNECTOR



VIEW IS FROM REAR OF MATING CONNECTOR

PREPARED	TAT	 JUPITER AVIONICS CORPORATION		
CHECKED				
APPROVED		NCAGE CODE	PART NO.	SHEET
CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.		L00N3	JA41-001	
		DOC NO.		
		JA41-001 Connector Map Rev A.dwg		




JA41-001 INTERCONNECT WIRING NOTES

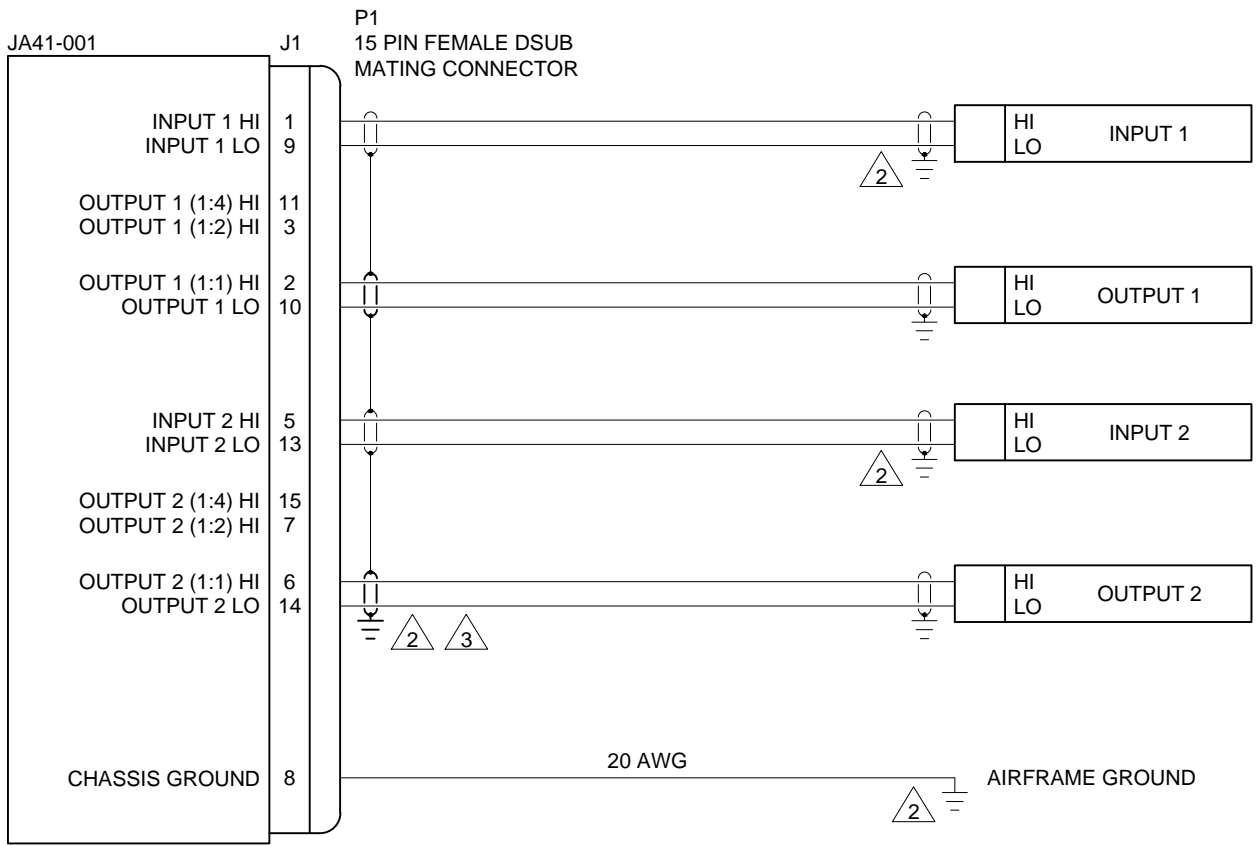
NOTES


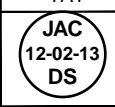

1. ALL WIRE SIZE SHOULD BE 24 AWG MIN UNLESS OTHERWISE SPECIFIED. UNSHIELDED WIRE SHOULD BE SELECTED PER FAA AC43.13-1B CHANGE 1 PARA 11-76 TO 11-78. WIRE TYPES SHOULD BE IN ACCORDANCE WITH MIL-W-22759 AS DESCRIBED IN FAA AC43.13-1B CHANGE 1 PARA 11-85 AND 11-86 AND LISTED IN TABLE 11-11 OR 11-12. ALL SHIELDED CABLE SHOULD BE IN ACCORDANCE WITH MIL-DTL-27500 (REVISION H OR LATER).

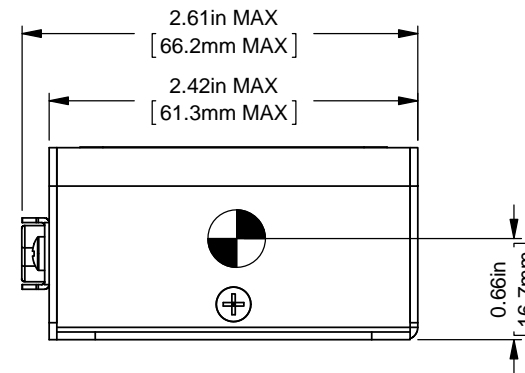
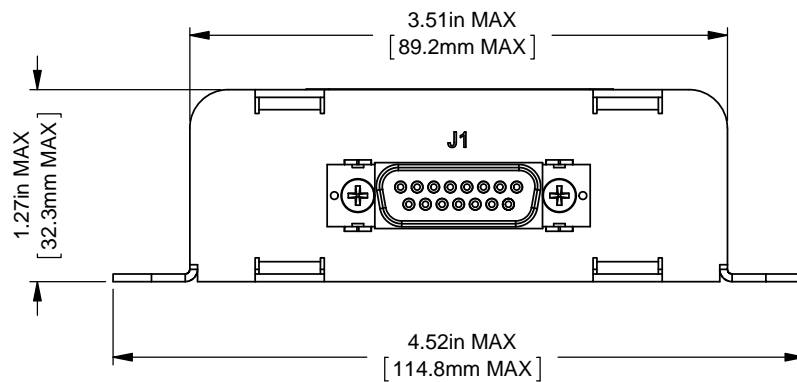
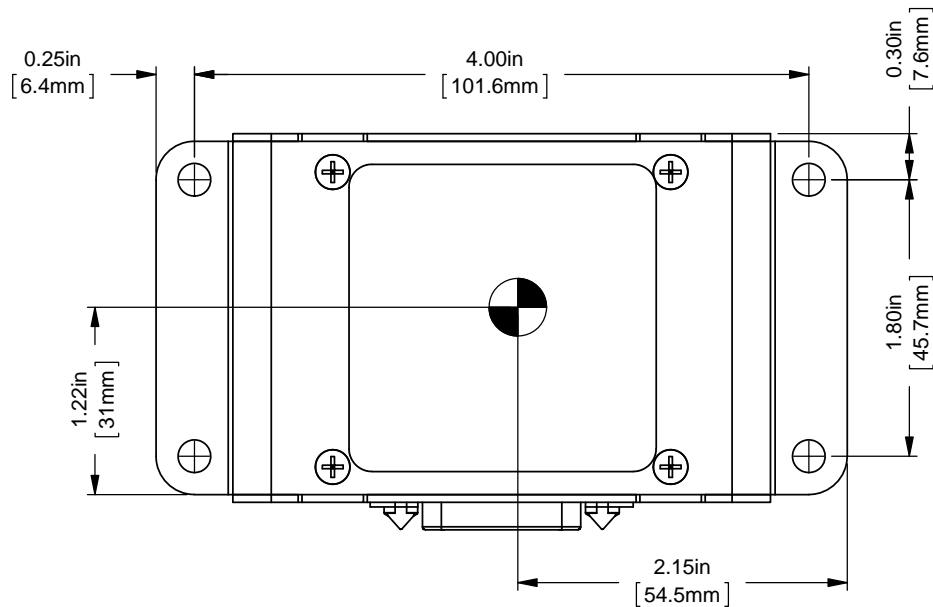
2 CONNECTION TO AIRFRAME GROUND SHOULD BE MADE WITH 20 AWG WIRE. LENGTH NOT TO EXCEED 3 FT (1 M).


3 CABLE SHIELDS AT THE JA41-001 CONNECTOR PINS SHOULD BE TERMINATED TO AIRFRAME GROUND USING A TAG RING P/N: MS27741-5 OR EQUIVALENT.

PREPARED	TAT				
CHECKED					TITLE
APPROVED		NCAGE CODE	PART NO.	SHEET	
CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.		L00N3	JA41-001	1/2	
		DOC NO.			JA41-001 Interconnect Rev A.DWG

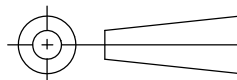


PREPARED	TAT			
CHECKED				
APPROVED		NCAGE CODE L00N3	PART NO. JA41-001	SHEET 2/2
CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.		DOC NO. JA41-001 Interconnect Rev A.DWG		



 CENTER OF GRAVITY
 $\pm 0.03\text{in}$ [0.8mm]
 WEIGHT: 0.50 lbs [0.23 kg] MAX.

UNLESS OTHERWISE SPECIFIED
 DIMENSIONS ARE IN INCHES
 ANGLES ARE IN DEGREES
 TOLERANCES:
 1 DEC PLACE: ± 0.1
 2 DEC PLACE: ± 0.01
 3 DEC PLACE: ± 0.005
 ANGLES: ± 0.5 DEG



MATERIAL: N/A
 FINISH: N/A

PREPARED TAT
 CHECKED JAC 09-30-13 DS
 APPROVED JAC 10-03-13 KDV
 CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.
 DRAWING NOT TO SCALE

TITLE
 NCAGE CODE L00N3
 PART NO. JA41-001
 DOC. NO. JA41-001 Mechanical Installation Rev A.SLDDRW



Audio Isolation Transformer

SHEET 1/1



Installation Manual

Appendix B - Certification Documents



B1 Airworthiness Approval

Airworthiness approval of the JA41-001 may require completion of a TCCA Major Modification Report per CAR STD (AWM) 571 Appendix L, or a FAA Form 337. The sample wording for a description of the work is provided to assist the Installing Agency in preparing Instructions for Continued Airworthiness (ICA) when installing a Jupiter Avionics JA41-001 Audio Isolation Transformer. It is the installer's responsibility to determine the applicability of the method used. Installations performed outside Canada must follow the applicable aviation authority's regulations

Sample Wording:

Install the Jupiter Avionics JA41-001 Audio Isolation Transformer in [aircraft location].

The JA41-001 meets RTCA DO-160G environmental qualifications for this installation. See Section 1 of the JA41-001 Installation Manual.

Installed in accordance with the JA41-001 Installation Manual, Revision [], and AC 43.13-2, Chapters 2, and 3.

The JA41-001 interfaces with existing aircraft radios per the Installation Manual instructions.

The JA41-001 Installation Manual provides detailed installation instructions and wiring diagrams (Section 2, and Appendices A and B).

No power is required for the JA41-001. The net electrical load is unchanged.

Aircraft equipment list, weights and balance amended. Compass compensation checked and found to conform to applicable regulations.

B2 Instructions for Continued Airworthiness

Maintenance of the JA41-001 Audio Isolation Transformer is "on condition" only. Refer to the JA41-001 Maintenance Manual. Periodic maintenance of the JA41-001 is not required.

The following sample Instructions for Continued Airworthiness (ICA) provides assistance in preparing ICA for the Jupiter Avionics JA41-001 unit installation as part of a Type Certificate (TC) or Supplemental Type Certificate (STC) project to comply with CAR STD (AWM) 523/527/525/529.1529 or FAR 23/25/27/29.1529 "Instructions for Continued Airworthiness".

Items that may vary by aircraft make and model are shown in brackets ("[]") and should be filled in as appropriate. Some of the checklist items do not apply, in which case they should be marked "N/A" (Not Applicable).

Instructions for Continued Airworthiness, Jupiter Avionics JA41-001 Audio Isolation Transformer in an [Aircraft Make and Model]

1. Introduction

[Aircraft that has been altered: Registration number, Make, Model and Serial Number]

Content, Scope, Purpose and Arrangement: This document identifies the Instructions for Continued Airworthiness for a Jupiter Avionics JA41-001 installed in an [aircraft make and model].

Applicability: Applies to a Jupiter Avionics JA41-001 installed in an [aircraft make and model].

Definitions/Abbreviations: None, N/A.

Precautions: None, N/A.

Units of Measurement: None, N/A.

Referenced Publications: JA41-001 Installation and Operating Manual
JA41-001 Maintenance Manual
STC/TC # [applicable STC/TC number for the specific aircraft installation]

Distribution: This document should be a permanent aircraft record.



2. Description of the System/Alteration

Jupiter Avionics JA41-001 Audio Isolation Transformer with interface to external transceivers and [include other equipment/systems as appropriate]. Refer to Appendix A of this manual for interconnect information. Refer to aircraft manufacturer approved interconnect for actual installation.

3. Control, Operation Information

N/A

4. Servicing Information

N/A

5. Maintenance Instructions

Maintenance of the JA41-001 is 'on condition' only. Periodic maintenance is not required. Refer to the JA41-001 Maintenance Manual.

6. Troubleshooting Information

Refer to the JA41-001 Maintenance Manual.

7. Removal and Replacement Information

Refer to Section 2 of this manual - the JA41-001 Installation Manual. If the unit is removed and reinstalled, a functional check of the equipment should be conducted.

8. Diagrams

Refer to Appendix A of this manual - the JA41-001 Installation Manual - for installation drawings and interconnect examples.

9. Special Inspection Requirements

N/A

10. Application of Protective Treatments

N/A

11. Data: Relative to Structural Fasteners

JA41-001 and appropriate mounting hardware installation, removal and replacement should be in accordance with applicable provisions of AC 43.13-1B and AC 43.13-2A.

12. Special Tools

N/A

13. This Section is for Commuter Category Aircraft Only

A. **Electrical loads:** Refer to Section 1 of the JA41-001 Installation and Operating Manual.

B. **Methods of balancing flight controls:** N/A.

C. **Identification of primary and secondary structures:** N/A.

D. **Special repair methods applicable to the airplane:** N/A.

14. Overhaul Period

No additional overhaul time limitations.



15. Airworthiness Limitation Section

N/A

B3 Environmental Qualification Form

See next pages.



Prepared: KDV	Checked: 	Approved: 
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Nomenclature	Audio Isolation Transformer - 2 Channel
Type/Model/ Part No.:	JA41-001
TSO No.:	N/A
Manufacturer's Build Configuration:	JA41-001 Build Configuration Rev A
Manufacturer's Test Report:	JA41-001 Test Report (Qualification) Rev A
Manufacturer's Specification and/or Other Applicable Specification:	JA41-001 Declaration of Design and Performance Rev A
Manufacturer:	Jupiter Avionics Corporation
Address:	1959 Kirschner Road, Kelowna, BC, Canada, V1Y 4N7
Revision & Change No of DO-160:	Rev. G dated December 8, 2010
Dates Tested:	2013 Sep to 2013 Oct

CONDITIONS	SECTION	DESCRIPTION OF TESTS CONDUCTED
Temperature	4.5	Equipment tested to Category C4
Ground Survival Low Temperature	4.5.1	Equipment tested to Category C4 (-55 °C)
Short-Time Operating Low Temperature	4.5.1	Equipment tested to Category C4 (-45 °C)
Operating Low Temperature	4.5.2	Equipment tested to Category C4 (-45 °C)
Ground Survival High Temperature	4.5.3	Equipment tested to Category C4 (+85 °C)
Short-Time Operating High Temperature	4.5.3	Equipment tested to Category C4 (+70 °C)
Operating High Temperature	4.5.4	Equipment tested to Category C4 (+70 °C)
In-Flight Loss of Cooling	4.5.5	Equipment identified as Category X, no test performed
Altitude	4.6	Equipment tested to Category (A4)(D1)
Altitude	4.6.1	Equipment tested to Category D1 (50,000 ft)
Decompression	4.6.2	Equipment tested to Category A1 (8,000 to 50,000 ft)
Overpressure	4.6.3	Equipment tested to Category A1 (-15,000 ft)
Temperature Variation	5.0	Equipment to be tested to Category B (5 °C/min)
Humidity	6.0	Equipment tested to Category A (48 hours)
Operational Shock and Crash Safety	7.0	
Operational Shock	7.2.1	Equipment identified as Category B (6 g for 11 ms)
Crash Safety (impulse)	7.3.1	Equipment tested to Category B (20 g for 11 ms)
Crash Safety (sustained)	7.3.3	Equipment tested to Category B (20 g for 3 sec)
Vibration ¹	8.0	Equipment tested to Categories:
Fixed Wing - Sine	8.5.1	SM
Fixed Wing - Random	8.5.2	SB
Helicopter - Random, unknown	8.8.3	U2FF1



CONDITIONS	SECTION	DESCRIPTION OF TESTS CONDUCTED
Explosive Atmosphere	9.0	Equipment identified as Category X, no test performed
Waterproofness	10.0	Equipment identified as Category X, no test performed
Fluids Susceptibility	11.0	Equipment identified as Category X, no test performed
Sand and Dust	12.0	Equipment identified as Category X, no test performed
Fungus	13.0	Equipment identified as Category X, no test performed
Salt Fog Test	14.0	Equipment identified as Category X, no test performed
Magnetic Effect	15.0	Equipment tested to Category Z (≤ 0.3 m)
Power Input	16.0	Equipment identified as Category X, no test performed
Voltage Spike	17.0	Equipment identified as Category X, no test performed
Audio Frequency Susceptibility	18.0	Equipment identified as Category X, no test performed
Induced Signal Susceptibility	19.0	Equipment to be tested to Category [ZCX]
Magnetic Fields into Equipment	19.3.1	20 A at 400Hz
Magnetic Fields into Interconnect	19.3.2	30 A·m at 400Hz
Electric Fields into Interconnect	19.3.3	1800 V·m at 400Hz
Voltage Spikes into Interconnect	19.3.4	3.0 m
Radio Frequency Susceptibility	20.0	Equipment identified as Category X, no test performed
Radio Frequency Emission	21.0	Equipment identified as Category X, no test performed
Lightning Induced Transient Susceptibility	22.0	Equipment identified as Category X, no test performed
Lightning Direct Effects	23.0	Equipment identified as Category X, no test performed
Icing	24.0	Equipment identified as Category X, no test performed
Electrostatic Discharge	25.0	Equipment identified as Category X, no test performed
Fire, Flammability	26.0	Equipment identified as Category C.

REMARKS

¹ The frequencies of the critical resonances changed after exposure to the vibration test conditions.