



**JUPITER AVIONICS**  
C O R P O R A T I O N

**JA41-003**

## **High Power Audio Isolation Transformer**



## **Installation Manual**

**Rev A**

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Prepared:	Checked:	Approved:
MPB		



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## JA41-003 High Power Audio Isolation Transformer

### SECTION 1 - DESCRIPTION

#### 1.1 System Overview

The JA41-003 High Power Audio Isolation Transformer provides one speaker audio channel with galvanic isolation for use between bridged output speaker amplifiers and grounded speakers in the aircraft. Input to output signal voltages are 1:1 ratio.

#### 1.2 Features Overview

The JA41-003 has one audio transformer.

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

#### 1.3 Inputs and Outputs

Refer to the JA41-003 connector map drawing for the mating connector designators and contact assignments for the JA41-003 input signals.

##### 1.3.1 Inputs

Name	Qty	Type
INPUT HI/LO	2	Audio inputs

##### 1.3.2 Outputs

Name	Qty	Type
OUTPUT HI/LO	2	Audio outputs

##### 1.3.3 Grounds

Name	Qty	Type
CHASSIS GROUND	1	Ground

##### 1.3.4 Spares

Name	Qty	Type
SPARE	4	Spare

#### 1.4 Specifications

##### 1.4.1 Electrical Specifications

Power Input Not Applicable

##### 1.4.1.1 Audio Performance

###### Rated Input Level

AUDIO INPUT level 21.5 Vrms  $\pm$  10 %

###### Rated Output Power

AUDIO OUTPUT Rated Output Level 18.0 Vrms  $\pm$  20 %

###### Audio Frequency Response

MUSIC input to USER[x] audio frequency response  $\leq$ 3dB from 150 to 10000 Hz



#### Distortion Characteristics

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

#### Input Impedance

Audio Input Impedance	3.2 Ω ± 20 %
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#### Output Impedance

Audio Output Impedance	3.2 Ω ± 20 %
------------------------	--------------

#### Output Load Impedance

Output rated Load Impedance	3.2 Ω ± 20 %
-----------------------------	--------------

#### Audio Noise Level without Signal

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

#### System Polarity

Input to output polarity	Maintained
--------------------------	------------

#### Listening Test

Communications signal	Loud, clear and intelligible
-----------------------	------------------------------

#### 1.4.1.2 Audio Performance, Other

INPUT audio circuitry type	Balanced (Transformer coupled)
OUTPUT audio circuitry type	Balanced (Transformer coupled)
Insertion loss shall be	≤ 2.0 dB (20%)

#### 1.4.2 Mechanical Specifications

Height	2.55 in (64.8 mm) maximum
Overall Width	2.55 in (64.8 mm) maximum
Depth (Including connectors)	5.30 in (134.6 mm) maximum
Weight	1.95 lb (0.88 kg) maximum
Material	Brushed 5032-H32 aluminum with black anodized coating
Connector:	One 9 pin D-Sub with jackposts
Mounting	Bulkhead; 4 10-32 fasteners
Bonding	≤ 2.5 mΩ
Installation kit part number	INST-JA41

#### 1.4.3 Environmental Specifications

The JA41-003 High Power Audio Isolation Transformer has been tested to the DO-160G environmental conditions listed below.

##### Temperature (Cat.C4):

Operating	-45 to +70 °C
Ground Survival	-55 to +85 °C

Shock, Crash Safety (Impulse)(Cat. B)	6 g, 20 g for 11 ms
---------------------------------------	---------------------

##### Vibration

Fixed Wing – Random and Sinusoidal	Cat. [SBM]
Helicopter – Random, unknown helicopter frequencies	Cat. [U2FF1]

## JA41-003 High Power Audio Isolation Transformer

### 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 JA41-003 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/warrantyregistration](http://www.jupiteravionics.com/warrantyregistration).

##### 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



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

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##### 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 JA41-003 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 JA41-003 audio input is routed through a 1:1 transformer to the audio output.

## 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 **5** for continuity to chassis ground (less than 0.5  $\Omega$ ).
- 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.

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-41003) consists of the following:

<b>Quantity</b>	<b>Description</b>	<b>JAC Part #</b>
1	9 Socket, Tin Plated, D-Sub - Crimp Socket Housing	CON-3460-0009
1	9 Pin Clamshell, Hardware - Plastic D-Sub Hoods	CON-5300-0109

### 2.5.1 Recommended Crimp tools

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

## 2.6 Installation Drawings

The drawings and documents required for Installation can be found in [Appendix A](#) of this manual.





# Installation Manual

## Appendix A - Installation Drawings

### **A1**      **Introduction**

The drawings necessary for installation and troubleshooting of the JA41-003 High Power Audio Isolation Transformer are in this Appendix, as listed below.

### **A2**      **Installation Drawings**

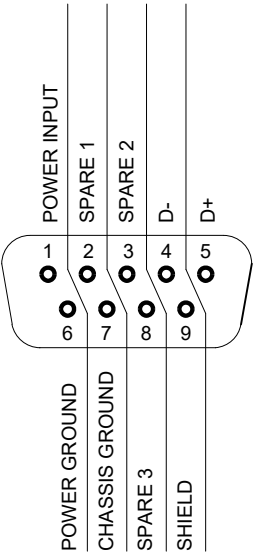
DOCUMENT	Rev
JA41-003 Connector Map	A
JA41-003 Interconnect	A
JA41-003 Mechanical Installation	A



Main Connector

P1

9 PIN FEMALE DMIN  
MATING CONNECTOR

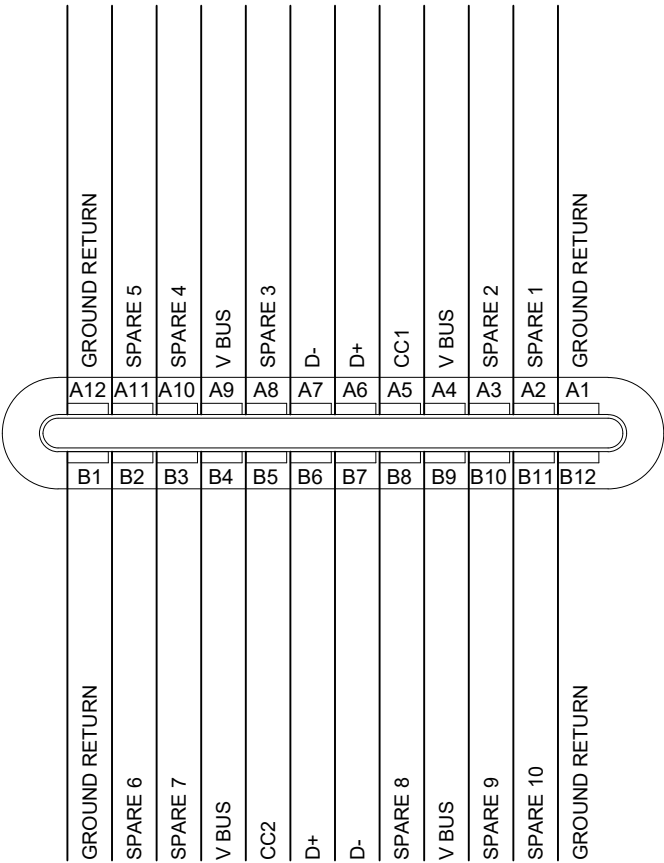


VIEW IS FROM REAR OF MATING CONNECTOR

USB C Connector

P2

USB TYPE C MALE  
MATING CONNECTOR

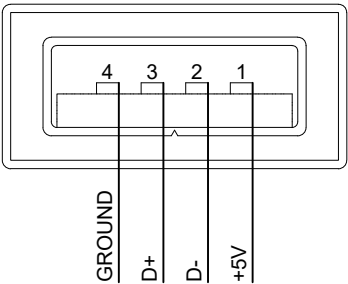


View is from front of mating connector




USB A Connector

P3

USB TYPE A MALE  
MATING CONNECTOR






View is from front of mating connector

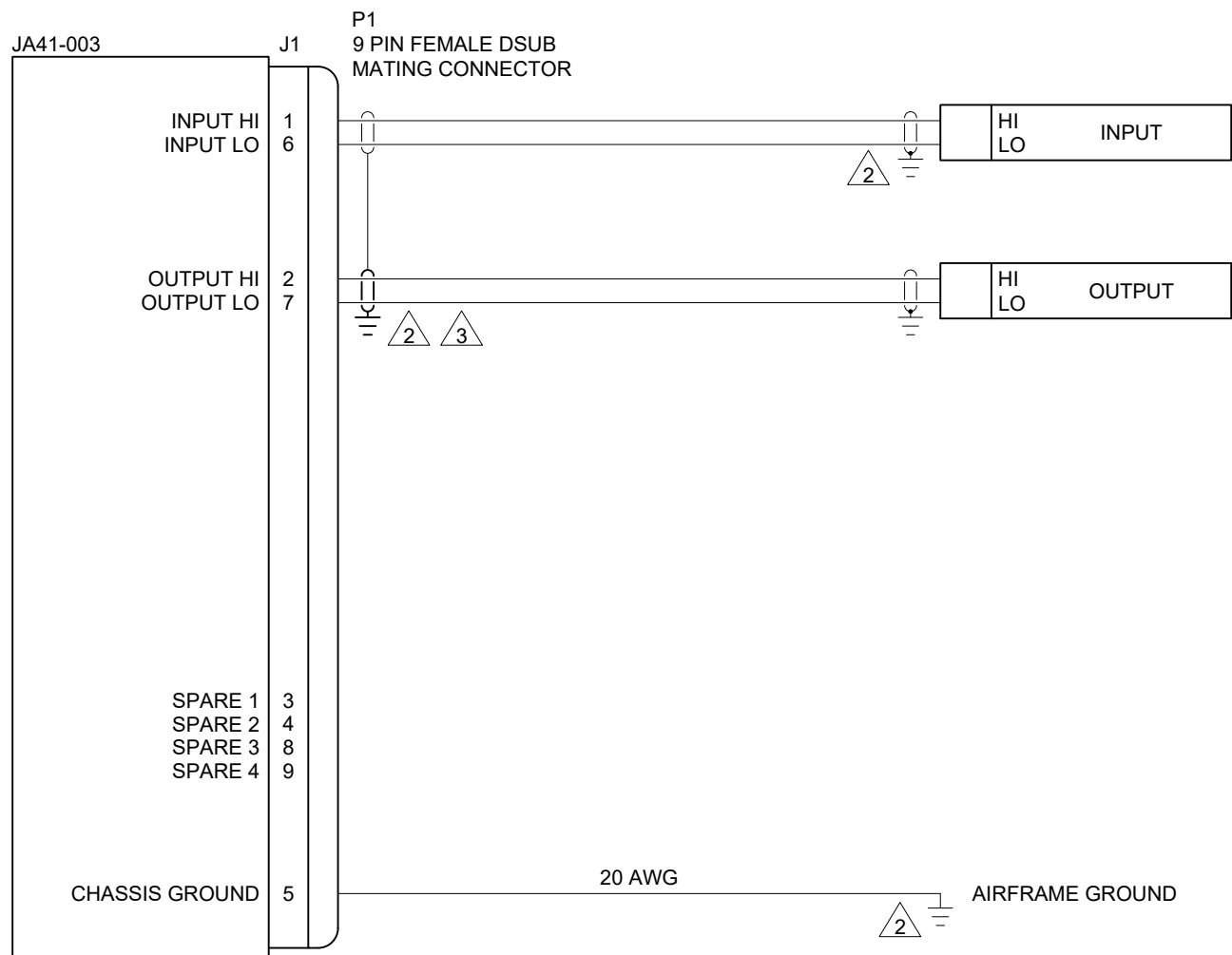
PREPARED	TAT	 <b>JUPITER AVIONICS</b> CORPORATION		
CHECKED				
APPROVED		TITLE Glove Box with USB-A and USB-C Charger - 8 Dzus - Grey		
CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.		NCAGE CODE L00N3	PART NO. JA72-408G	SHEET 1/1
		DOC NO. JA72-408G Connector Map Rev A.dwg		




### JA41-003 INTERCONNECT WIRING NOTES

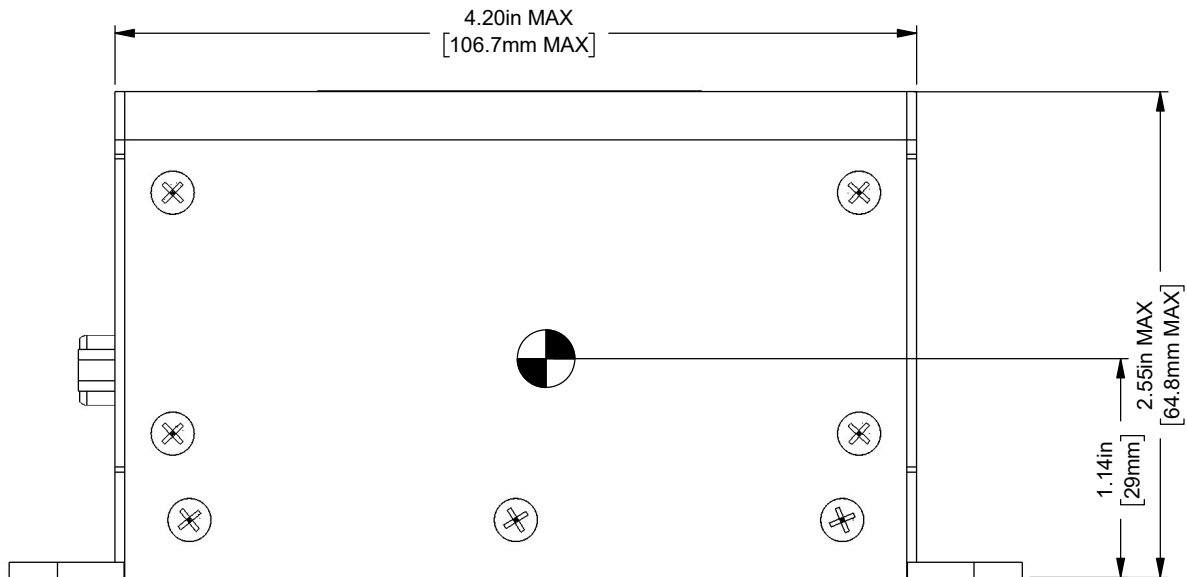
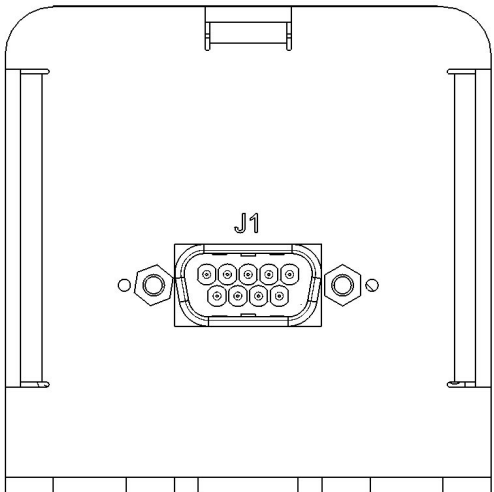
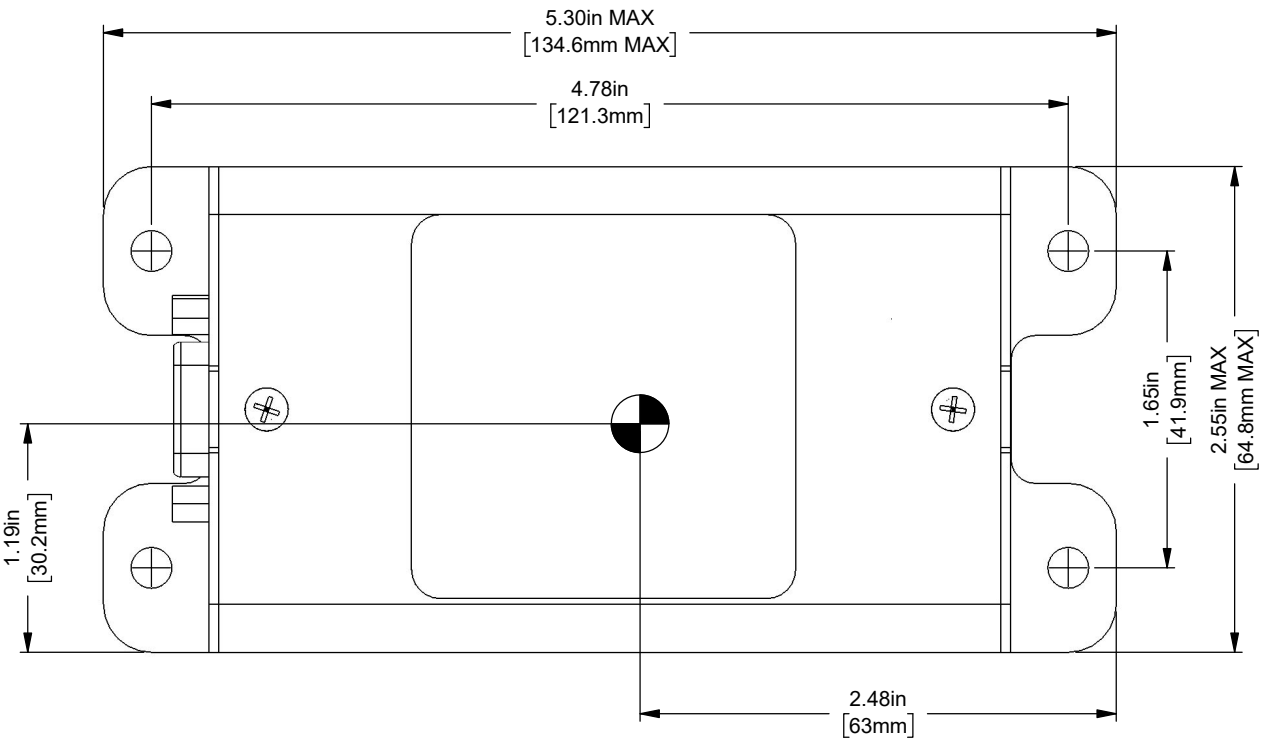
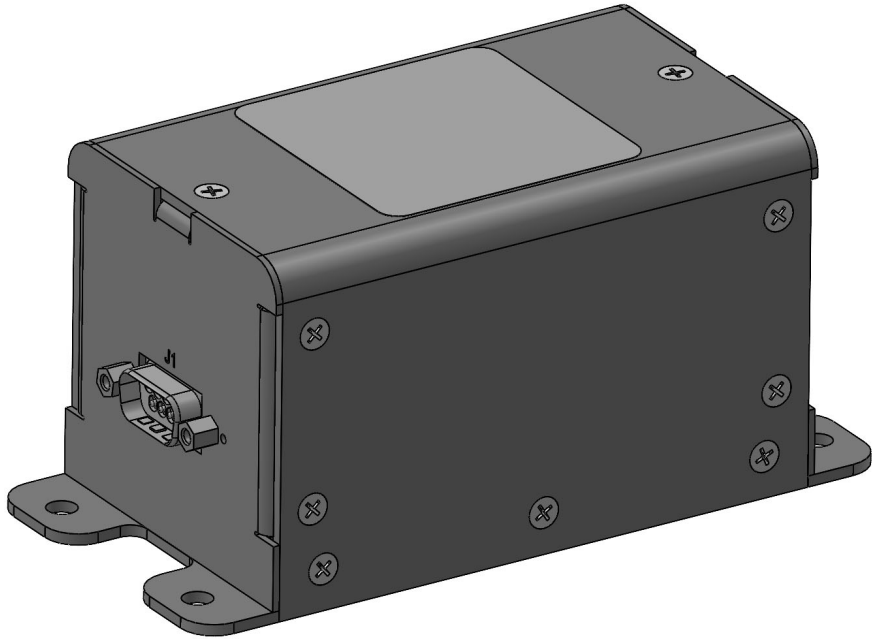
#### NOTES


1. ALL WIRE SIZE SHOULD BE 20 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 JA41-003 CONNECTOR PINS SHOULD BE TERMINATED TO AIRFRAME GROUND USING A TAG RING P/N: MS27741-5 OR EQUIVALENT.

PREPARED	TAT	 <b>JUPITER AVIONICS</b> CORPORATION		
CHECKED				
APPROVED		<b>TITLE</b> High Power Audio Isolation Transformer		
CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.		NCAGE CODE L00N3	PART NO. JA41-003	SHEET 1/2
		DOC NO. JA41-003 Interconnect Rev A.DWG		



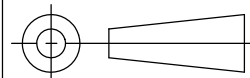
PREPARED	TAT	 <b>JUPITER AVIONICS</b> CORPORATION		
CHECKED				
APPROVED		<b>TITLE</b> High Power Audio Isolation Transformer		
CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.		NCAGE CODE L00N3	PART NO. JA41-003	SHEET 2/2
		DOC NO. JA41-003 Interconnect Rev A.DWG		



 CENTER OF GRAVITY  
±0.03in [0.8mm]

WEIGHT: 1.95 lbs [0.88 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

CHECKED

APPROVED

TAT

JAC  
03-03-25  
SK

JAC  
03-03-25  
KDV



JUPITER AVIONICS  
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TITLE

High Power Audio Isolation Transformer

NCAGE CODE  
L00N3

PART NO.  
JA41-003

SHEET  
1/1

DOC. NO.

JA41-003 Mechanical Installation Rev A.SLDDRW

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TO JUPITER AVIONICS CORP.  
DRAWING NOT TO SCALE



# **Installation Manual**

## **Appendix B - Installation Documents**



## **B1                      Airworthiness**

Airworthiness approval of the JA41-003 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 JA41-003 Audio Isolation Transformer – 2 Channel. 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 JA41-003 High Power Audio Isolation Transformer in [aircraft location].

Installed in accordance with the JA41-003 Installation Manual, Revision [ ], and AC 43.13-2, Chapters 2, and 3.

The JA41-003 interfaces with existing aircraft radios per the Installation Manual instructions.

The JA41-003 Installation Manual provides detailed installation instructions and wiring diagrams (Section 2, and Appendices A and B).

No power is required for the JA41-003. 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 JA41-003 High Power Audio Isolation Transformer is "on condition" only. Refer to the JA41-003 Maintenance Manual. Periodic maintenance of the JA41-003 is not required.

The following sample Instructions for Continued Airworthiness (ICA) provides assistance in preparing ICA for the Jupiter Avionics JA41-003 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 JA41-003 High Power 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 JA41-003 installed in an [aircraft make and model].

**Applicability:** Applies to a Jupiter Avionics JA41-003 installed in an [aircraft make and model].

**Definitions/Abbreviations:** None, N/A.

**Precautions:** None, N/A.

**Units of Measurement:** None, N/A.

**Referenced Publications:** JA41-003 Installation Manual  
JA41-003 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 JA41-003 High Power 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 JA41-003 is 'on condition' only. Periodic maintenance is not required. Refer to the JA41-003 Maintenance Manual.

## **6. Troubleshooting Information**

Refer to the JA41-003 Maintenance Manual.

## **7. Removal and Replacement Information**

Refer to Section 2 of this manual - the JA41-003 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 JA41-003 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**

JA41-003 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 JA41-003 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