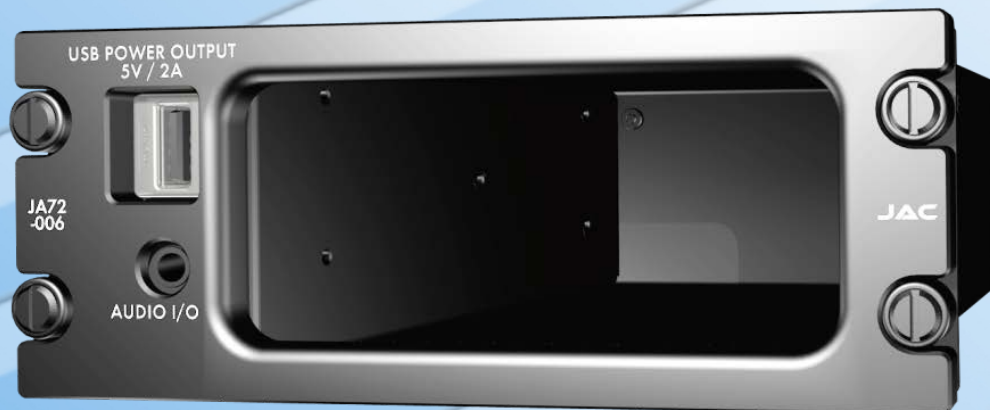




**JUPITER AVIONICS**  
CORPORATION

**JA72-006**

## **Glove Box with USB Charger**



## **Installation and Operating Manual**

**Rev. B**

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## Table of Contents

<b>SECTION 1 - DESCRIPTION</b>	<b>1</b>
1.1 System Overview	1
1.2 Features Overview	1
1.3 Inputs and Outputs	1
1.3.1 Inputs	1
1.3.2 Bi-Directional Ports	1
1.3.3 Output	1
1.4 Specifications	1
1.4.1 Electrical Specifications	1
1.4.2 Mechanical Specifications	2
1.4.3 Environmental Specifications	2
1.4.4 Flammability of Materials	2
<b>SECTION 2 – INSTALLATION</b>	<b>3</b>
2.1 Introduction	3
2.2 Continued Airworthiness	3
2.3 Unpacking and Inspecting Equipment	3
2.3.1 Warranty	3
2.4 Installation Procedures	3
2.4.1 Installation Limitations	3
2.4.2 Cabling and Wiring	3
2.4.3 Mechanical Installation	4
2.4.6 Post Installation Checks	4
2.5 Installation Kit	4
2.5.1 Recommended Crimp tools	4
2.6 Installation Drawings	4
<b>SECTION 3 – OPERATION</b>	<b>5</b>
3.1 Introduction	5
3.2 Front Panel Connectors	5
3.2.1 USB POWER OUTPUT 5V/2A	5
3.2.2 AUDIO I/O	5
3.3 Compatibility	5
<b>Appendix A - Installation Drawings</b>	<b>A1</b>
A1 Introduction	A1
A2 Installation Drawings	A1
<b>Appendix B - Certification Documents</b>	<b>B1</b>
B1 Airworthiness Approval	B2
B2 Instructions for Continued Airworthiness	B2
B3 Environmental Qualification Form	B3



## JA72-006 Glove Box with USB Charger

### SECTION 1 - DESCRIPTION

#### 1.1 System Overview

The JA72-006 Glove Box with USB Charger allows the aircraft owner /operator to use an unused portion of the instrument panel for storage. The interior of the glove box has a soft, high friction finish to minimize noise and movement due to vibration.

A USB 2.0 Type A receptacle is provided to supply 5 Vdc power up to 2 Amps.

A 3.5mm stereo jack is also provided to enable music players to be connected to the aircraft's audio system.

The JA72-006 uses a 6 Dzus high aperture. Other heights and a non-USB version are available.

#### 1.2 Features Overview

The JA72-006 is painted in a baked-on flat black urethane finish to resist scratches and nicks during use.

#### 1.3 Inputs and Outputs

Refer to the JA72-006 [connector map](#) for the mating connector designators and contact assignments for the input and bi-directional signals.

##### 1.3.1 Inputs

Name	Qty	Type
D+ and D-	2	Charge sense
POWER INPUT	1	+ 28 Vdc power
SPARE	1	Spare

##### 1.3.2 Bi-Directional Ports

Name	Qty	Type
AUDIO LEFT, AUDIO RIGHT	2	Audio I/O connector, audio
RESERVED	1	Audio I/O connector, reserved
AUDIO LEFT, AUDIO RIGHT	2	Main connector, audio
RESERVED	1	Main connector, reserved

##### 1.3.3 Output

Name	Qty	Type
+5VDC	1	USB power output

#### 1.4 Specifications

##### 1.4.1 Electrical Specifications

###### Power Input

Primary nominal voltage	28.0 Vdc
Maximum voltage	32.2 Vdc
Minimum voltage	22.0 Vdc
Emergency voltage	18.0 Vdc
Power Input - Off	≤ 14 Vdc



	Overvoltage		≥ 42 Vdc for ≥ 5 min
	Input current at 28 Vdc		≤ 0.7 A
1.4.1.1	<u>+5V Output Performance</u>		
	Output rated current		2.00 A
	Output rated voltage		+5 Vdc ± 12 %
	Output capable of ≥ 110 % of rated power for		≥ 2h
	Regulation		≤ 12 %
	Ripple		≤ 280 mVrms
	Short circuit		≥ 1 min
	Dielectric strength		Not Applicable
1.4.2	<u>Mechanical Specifications</u>		
	Height		2.24 in [56.9 mm] maximum
	Behind panel depth (not including connectors)		5.52 in [140.2 mm] maximum
	Width		5.75 in [146.1 mm] maximum
	Weight		1.01 lbs [0.46 kg] maximum
	Enclosure:		5052-H32 aluminum; brushed texture and conversion coating
	Internal Finish		Flat Black Urethane Paint with Soft Touch coating
	Faceplate		6061-T651 Aluminum with flat black urethane paint; white legends
	Connectors (3):	J1 Main J2 Audio I/O J3 USB	One 9-pin D-Sub male, V5 locking One 4 pole 3.5mm jack One USB Type A Female
	Mounting		4 Dzus fasteners
	Bonding		≤ 2.5 mΩ
	Installation kit part number		INST-JA72

### 1.4.3 Environmental Specifications

The JA72-006 Glove Box with USB Charger 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 °C to +70 °C
Ground Survival	-55 °C to +85 °C
Altitude	50,000 ft
Humidity	Cat A (48 hours)
Shock, Crash Safety	15 g, 30 g for 11 ms

### 1.4.4 Flammability of Materials

The JA72-006 complies with the requirements of RTCA/DO-160G Sec 26.3.3 "Flammability", through equivalent flammability testing of materials and the Small Parts Exemption.



## JA72-006 Glove Box with USB Charger

### 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 JA72-006 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 shipping damage and report any problems to the relevant carrier. Confirm that the Authorized Release Certificate or Certificate of Conformance is included. Complete the on-line warranty card from the Jupiter Avionics Corporation (JAC) website – [www.jupiteravionics.com/warranty](http://www.jupiteravionics.com/warranty).

##### 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



---

**CAUTION: The power input circuitry of the unit may be damaged if the installation does not conform to the wiring instructions in this manual.**

---

##### 2.4.1 Installation Limitations

Those installing the JA72, on or in a specific type or class of aircraft, must determine that the aircraft installation conditions. The JA72 may be installed only by following the applicable airworthiness requirements.

##### 2.4.2 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 tag ring or equivalent (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, except power and ground lines, which shall be a minimum of 20 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.

### 2.4.3 Mechanical Installation

The JA72-006 can be mounted in any attitude and location with adequate space for the front panel and sufficient clearance for the connector and wiring harness. It requires no direct cooling.

### 2.4.6 Post Installation Checks

#### 2.4.6.1 Voltage/Resistance checks.

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

- a) Check P1 pin 1 for +28 Vdc relative to ground.
- b) Check P1 pin 6 (power ground) for continuity to ground (less than 0.5  $\Omega$ ).
- c) Check P1 pin 7 (chassis ground) for continuity to ground (less than 0.5  $\Omega$ ).
- d) Check all pins for shorts to ground or adjacent pins.

#### 2.4.6.3 Power on Checks.

Power up the aircraft's systems and confirm normal operation of all functions of the JA72. Refer to Section 3 (Operation) for specific operational details.

When all performance checks are satisfied, complete the necessary regulatory documentation before releasing the aircraft for service. Refer to [Appendix B](#).

## 2.5 Installation Kit

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

The installation kit (Part # INST-JA72) consists of the following:

<b>Quantity</b>	<b>Description</b>	<b>JAC Part #</b>
1	D-Sub 9-pin connector, hood and 9 crimp pins	CON-3420-0009
1	JA72 Assembly Notes, Installation Kit	DOC-INST-JA72

### 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
Positronic	AFM8 (Daniels)	M22520/2.08 KB-1	

## 2.6 Installation Drawings

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



## JA72-006 Glove Box with USB Charger

### SECTION 3 – OPERATION

#### 3.1 Introduction

This section contains the operating instructions for the JA72-006.

The JA72-006 provides a useful storage space with the added benefits of storing and charging a phone or other device, and connecting a music player or other audio input to the aircraft audio system. The interior of the glove box has a soft, high friction finish to minimize noise and movement due to vibration.

The JA72-006 uses a 6 Dzus high panel height. Other heights and a non-USB version are available.

#### 3.2 Front Panel Connectors

The JA72-006 has two front panel connectors: the USB Power output, and the Audio Input/Output jack.



##### 3.2.1 USB POWER OUTPUT 5V/2A

The Power Output is a USB Type A connector.

This connector is provided to supply 5 Vdc up to 2 Amps for charging cell phones and similar devices.



**Note: This port is not designed to be used for data transfer.**

##### 3.2.2 AUDIO I/O

The Audio I/O jack provides a stereo audio input or output when the interconnect is wired to appropriate audio equipment. It accepts a 3 pole 3.5mm stereo plug with a slim diameter connector housing.

#### 3.3 Compatibility



**CAUTION: Attempting to connect an incompatible plug or device could damage the JA72, the attached device, or both.**

If in doubt regarding compatibility of a specific item, contact Jupiter Avionics ([www.jupiteravionics.com](http://www.jupiteravionics.com)).





# Installation and Operating Manual

## Appendix A - Installation Drawings

### A1 Introduction

The drawings necessary for installation and troubleshooting of the JA72-006 Glove Box with USB Charger are in this Appendix, as listed below.

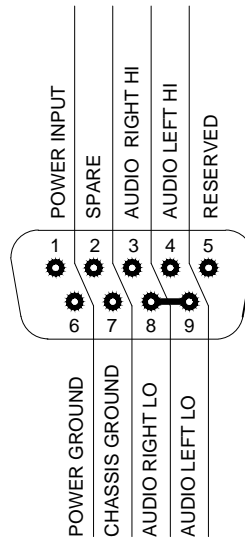
### A2 Installation Drawings

DOCUMENT	Rev
<a href="#">JA72-006 Connector Map</a>	B
<a href="#">JA72-006 Interconnect</a>	B
<a href="#">JA72-006 Mechanical Installation</a>	A

### Main Connector

**P1**

9 PIN FEMALE DMIN  
MATING CONNECTOR

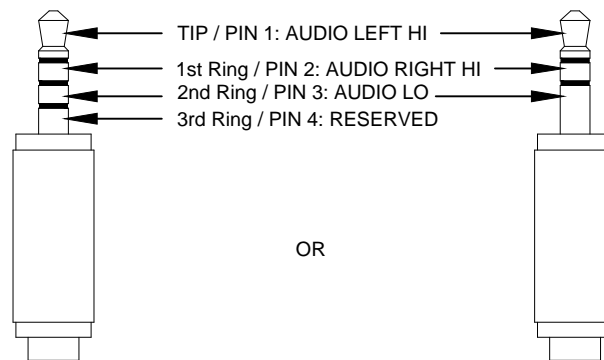


VIEW IS FROM REAR OF MATING CONNECTOR

### Audio I/O Connector

**P2**

3 POLE OR 4 POLE MALE 3.5mm  
MATING CONNECTOR



OR

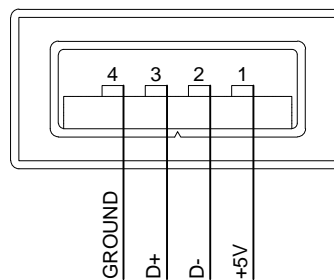
View is from side of mating connector

View is from side of mating connector




### USB Connector

**P3**

USB TYPE A MALE  
MATING CONNECTOR






View is from front of mating connector

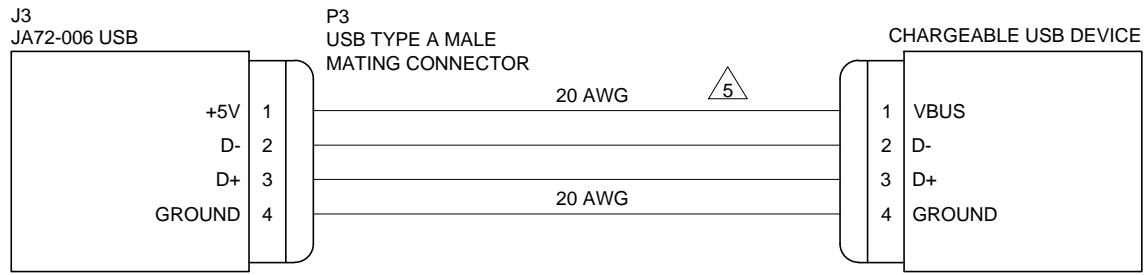
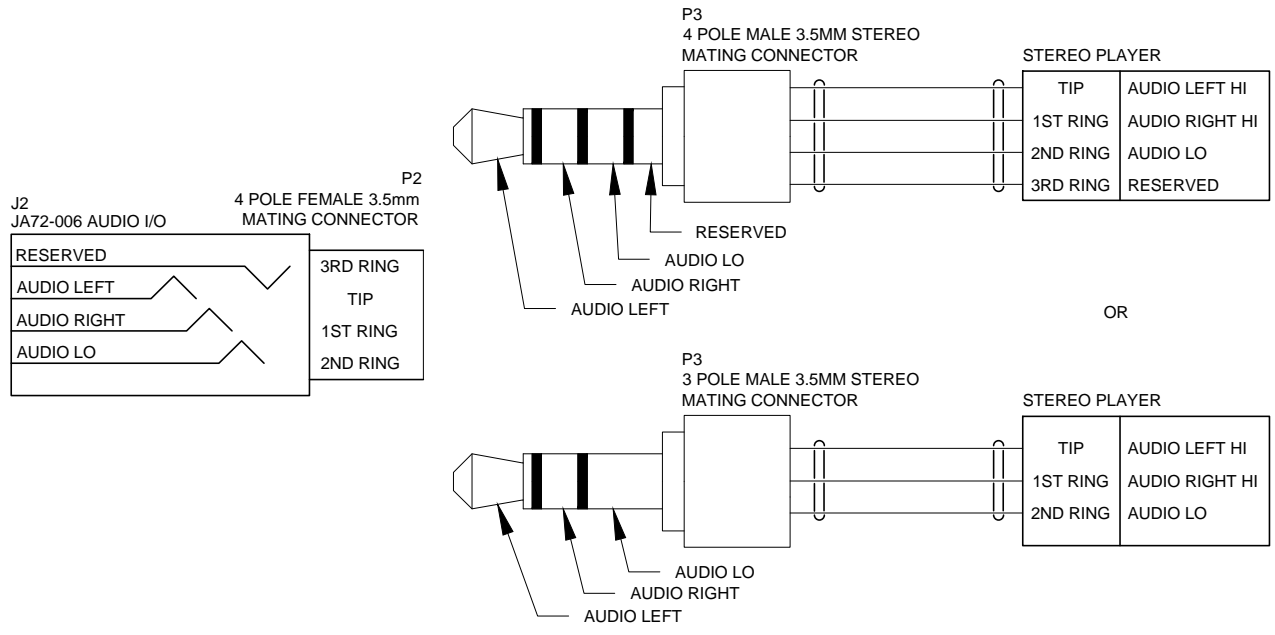
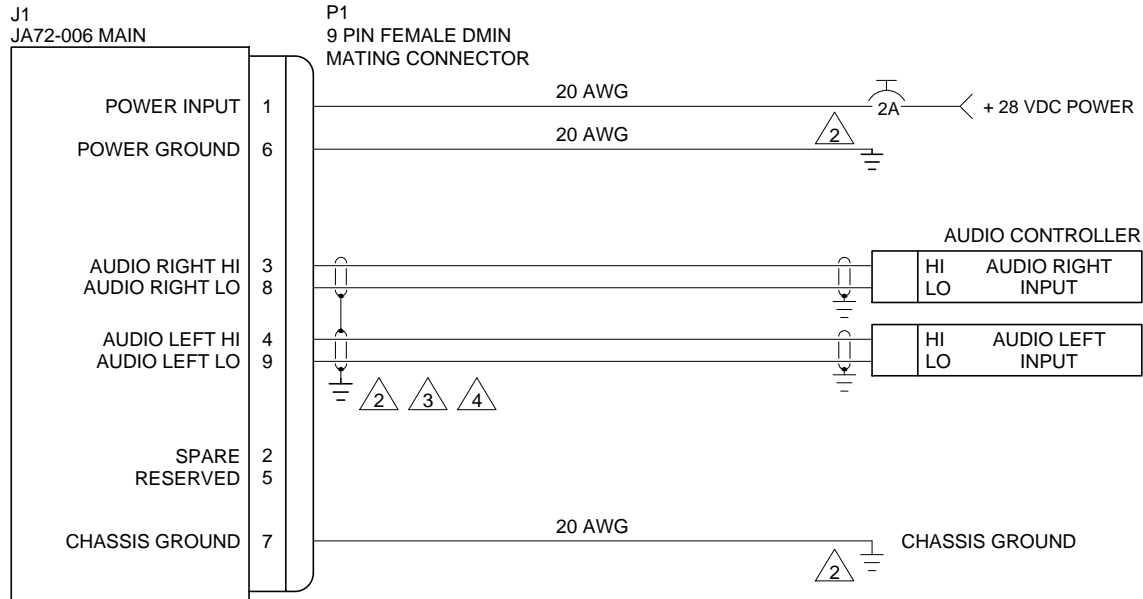
PREPARED	TAT			
CHECKED				
APPROVED		Glove Box with USB Charger P1, P2 and P3 Connector Map		
CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.		NCAGE CODE L00N3	PART NO. JA72-006	SHEET 1/1
		DOC NO. JA72-006 Connector Map Rev B.dwg		


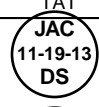
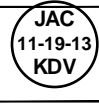
JA72-006 INTERCONNECT WIRING NOTES

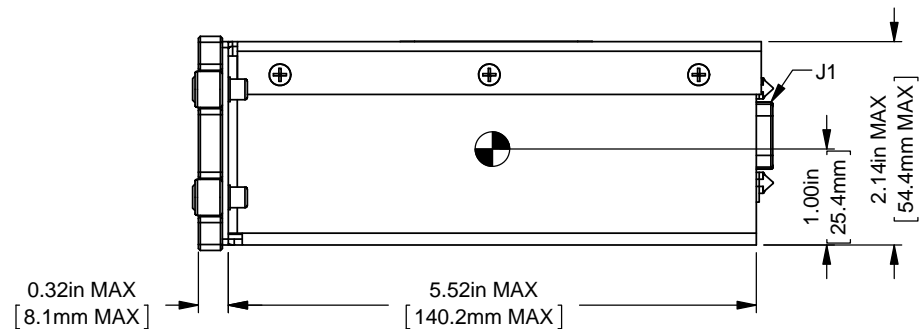
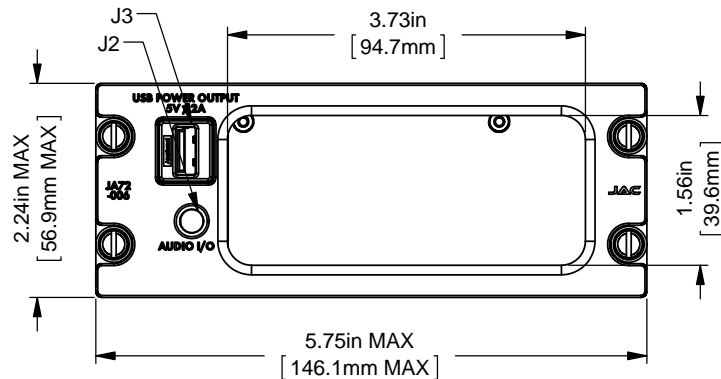
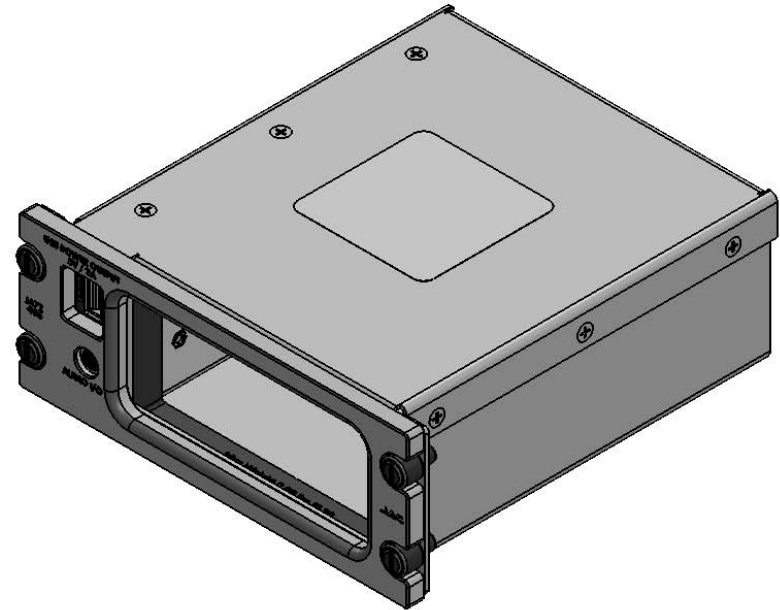
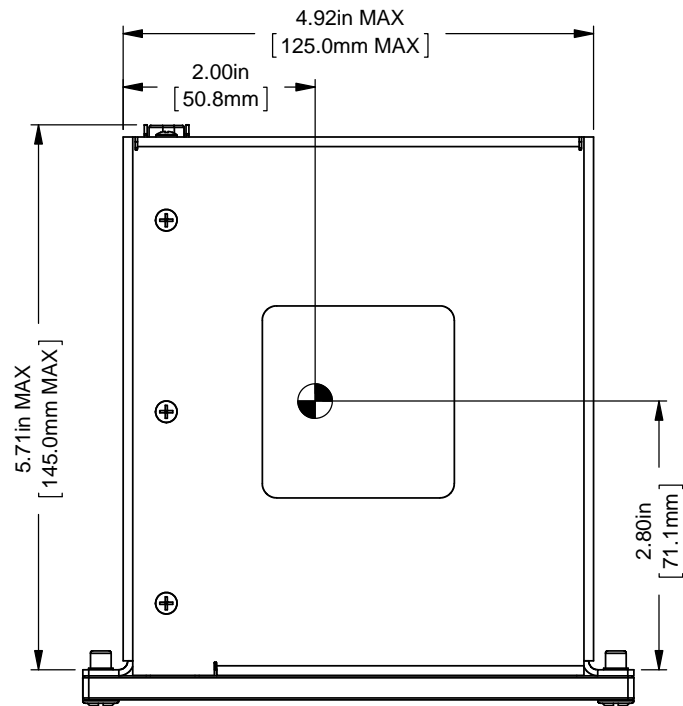
NOTES


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 (0.91 M).
3. CABLE SHIELDS AT THE JA72-006 CONNECTOR PINS MAY BE TERMINATED TO AIRFRAME GROUND USING A TAG RING P/N: MS27741-5 OR EQUIVALENT.
4. AUDIO LO's ARE CONNECTED TOGETHER INTERNALLY.
5. CABLE LENGTH NOT TO EXCEED 6 FT (1.82 M).

PREPARED	TAT			
CHECKED				
APPROVED		NCAGE CODE L00N3	PART NO. JA72-006	SHEET 1/2
CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.		DOC NO. JA72-006 Interconnect Rev B.dwg		



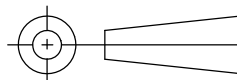
PREPARED	TAT			
CHECKED				
APPROVED		NCAGE CODE L00N3	PART NO. JA72-006	SHEET 2/2
CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.		DOC NO. JA72-006 Interconnect Rev B.dwg		



 CENTER OF GRAVITY  
±0.03in [0.8mm]

WEIGHT: 1.01 lb. 0.46 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 11-19-13 DS  
APPROVED JAC 11-19-13 KDV

CONFIDENTIAL & PROPRIETARY  
TO JUPITER AVIONICS CORP.  
DRAWING NOT TO SCALE



**JUPITER AVIONICS**  
CORPORATION

TITLE

Glove Box with USB Charger

NCAGE CODE  
L00N3

PART NO.  
JA72-006

SHEET  
1/1

DOC. NO.

JA72-006 Mechanical Installation Rev A.SLDDRW



# **Installation and Operating Manual**

## **Appendix B - Certification Documents**





## **B1**      **Airworthiness Approval**

Airworthiness approval of the JA72-006 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 JA72-006 Glove Box with USB Charger. This sample may be modified appropriately for new installations. 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:**

Installed the Jupiter Avionics JA72-006 Glove Box with USB Charger in [aircraft location].

The JA72-006 meets RTCA DO-160G environmental qualifications for this installation. See Section 1 of the JA72-006 Installation Manual.

Installed in accordance with the JA72-006 Installation Manual, Revision [ ], and AC 43.13-2, Chapters 2, and 3.

The JA72-006 Installation Manual provides detailed installation instructions and wiring diagrams (Section 2, and Appendices A and B).

Power is supplied to the JA72-006 through a 1-Amp circuit breaker.

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 JA72-006 Glove Box with USB Charger is "on condition" only. Refer to the JA72-006 Maintenance Manual. Periodic maintenance of the JA72-006 is not required.

The following sample Instructions for Continued Airworthiness (ICA) provides assistance in preparing ICA for the Jupiter Avionics JA72-006 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 JA72-006 Glove Box with USB Charger 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 JA72-006 installed in an [aircraft make and model].

**Applicability:** Applies to a Jupiter Avionics JA72-006 installed in an [aircraft make and model].

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

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

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

**Referenced Publications:** JA72-006 Installation and Operating Manual  
JA72-006 Maintenance Manual  
JA72-006 Operating 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 JA72-006 Glove Box with USB Charger. Refer to Appendix A of this manual for interconnect information. Refer to aircraft manufacturer approved interconnect for actual installation.

## **3. Control, Operation Information**

Refer to section 3 of this manual or to the Jupiter Avionics JA72-006 Operating Manual.

## **4. Servicing Information**

N/A

## **5. Maintenance Instructions**

Maintenance of the JA72-006 is 'on condition' only. Periodic maintenance is not required. Refer to the JA72-006 Maintenance Manual.

## **6. Troubleshooting Information**

Refer to the JA72-006 Maintenance Manual.

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

Refer to Section 2 of this manual - the JA72-006 Installation and Operating 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 JA72-006 Installation and Operating 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**

JA72-006 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 JA72-006 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:  
----------------------	---	--

<b>Nomenclature</b>	<i>Glove Box with USB Charger</i>
<b>Type/Model/ Part No.:</b>	JA72-006
<b>TSO No.:</b>	<i>To Be Applied for: CAN-TSO-C71; FAA TSO-C71</i>
<b>Manufacturer's Build Configuration:</b>	JA72-006 Build Configuration Rev A
<b>Manufacturer's Test Report:</b>	JA72-006 Test Report (Qualification - Final) Rev A
<b>Manufacturer's Specification and/or Other Applicable Specification:</b>	JA72-006 Declaration of Design and Performance Rev A
<b>Manufacturer:</b>	Jupiter Avionics Corporation
<b>Address:</b>	1959 Kirschner Road, Kelowna, BC, Canada, V1Y 4N7
<b>Revision &amp; Change No of DO-160:</b>	Rev. G dated December 8, 2010
<b>Dates Tested:</b>	TBD

CONDITIONS	SECTION	DESCRIPTION OF TESTS CONDUCTED
Temperature	4.5	Equipment to be tested to Category C4
Ground Survival Low Temperature	4.5.1	Equipment to be tested to Category C4 (-55 °C)
Short-Time Operating Low Temperature	4.5.1	Equipment to be tested to Category C4 (-45 °C)
Operating Low Temperature	4.5.2	Equipment to be tested to Category C4 (-45 °C)
Ground Survival High Temperature	4.5.3	Equipment to be tested to Category C4 (+85 °C)
Short-Time Operating High Temperature	4.5.3	Equipment to be tested to Category C4 (+70 °C)
Operating High Temperature	4.5.4	Equipment to be 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 to be tested to Category (A1)(D1)
Altitude	4.6.1	Equipment to be tested to Category D1 (50,000 ft)
Decompression	4.6.2	Equipment to be 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 to be tested to Category A (48 h)
Operational Shock and Crash Safety	7.0	
Operational Shock	7.2.1	Equipment to be identified as Category B (15 g for 11 ms)
Crash Safety (impulse)	7.3.1	Equipment to be tested to Category B (30 g for 11 ms)
Crash Safety (sustained)	7.3.3	Equipment to be tested to Category B (30 g for 3 sec)
Vibration <sup>1</sup>	8.0	Equipment to be 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 to be tested to Category Z ( $\leq 0.3$ m)
Power Input	16.0	Equipment to be tested to 2 Volts Peak to Peak Ripple at 400Hz – Unit shall not exceed 1/10% of the output voltage 50% Overvoltage for 5 minutes – After which, output voltage and current returns to normal 80% Voltage – Operates electrically 80% to 50% Gradual reduction – Operates reliably 50% to 0% Gradual reduction – No fire or smoke
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 identified as Category X, no test performed
Radio Frequency Susceptibility	20.0	Equipment to be tested to Category RR R (20 V/m CW&SW) and (150 V/m PM) R (30 mA)
Radio Frequency Emission	21.0	Equipment to be tested between 90 kHz to 1500 Mhz with not more than 200 uV between any cable terminal and ground.
Lightning Induced Transient Susceptibility	22.0	Equipment to be tested to Category [A3J33] Waveform Set A, Test Level 3 Waveform Set J, Test Levels 33
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 to be identified as Category C.



CONDITIONS	SECTION	DESCRIPTION OF TESTS CONDUCTED
Other Tests	N/A	
Power Output		Equipment to be tested with 10% more output current for a period of two hours
Regulation		Equipment to be tested with varied load impedance from maximum rated load to 20% of maximum rated load – Unit shall not exceed 12% regulation
Short Circuit		Equipment to be tested with output short circuited for 1 minute – Following test, unit will deliver rated output power for 8 hours
Dielectric Strength		No test performed. Unit does not have isolation transformers in the design.

**REMARKS**

<sup>1</sup> The frequencies of the critical resonances changed after exposure to the vibration test conditions.