

# Jcord-001 PTT Radio & ICS Adapter



## **Installation and Operating Manual**

**Rev B** 

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## Jcord-001 PTT Radio & ICS Adapter

### **SECTION 1 - DESCRIPTION**

#### 1.1 System Overview

The JCORD-001 PT T Radio & ICS Adapter allows the user access to a handheld radio while maintaining intercom communications with aircraft crew members.

The U-92A/U headset connector allows a standard civilian helicopter headset to be inserted directly into the JCORD-001. The 12 pin connector allows a retractable cable with a 10 Pin Hirose connector in the middle and a Motorola APX connector at the other end.

The 10 pin Hirose connector allows various aircraft intercom adapter cables to be used. The JCORD-001 provides differential audio signal paths to and from the handheld radio and intercom system to allow a noise free installation. Microphone biasing and artificial sidetone are automatically generated when a headset is connected.

The JCORD-001 features essential controls to ensure ease of operation (Momentary ICS PT T, Locked ICS PTT and Radio PTT).

#### 1.2 Features Overview

The JCORD-001 features an open source 12 Pin connector pin-out for future radio adapter cables.

The JCORD-001 has individual controls for Microphone Sidetone and Radio to Intercom level.

The JCORD-001 audio inputs and outputs are differential to minimize noise pickup.

The JCORD-001 provides microphone bias voltage for aircraft headset.

The JCORD-001 is powered entirely by the attached handheld radio.

#### 1.3 Inputs and Outputs

Refer to the Jcord-001 connector maps for the mating connector designators and pin assignments for the input and output signals.

#### 1.3.1 Inputs

	Name	Qty	Туре
	HEADSET MIC +/-	1	Audio signal
	INTERCOM PHONES +/-	1	Audio signal
	RADIO SPEAKER + / -	1	Audio signal
	POWER INPUT	1	5 Vdc power supply
	POWER GROUND	1	5 Vdc power ground
1.3.2	Outputs		
	Name	Qty	Туре
	HEADSET PHONES +/-	1	Audio signal
	INTERCOM MIC +/-	1	Audio signal
	INTERCOM PTT	1	Active low discrete
	RADIO MIC +/-	1	Audio signal
	RADIO PTT	1	Active low discrete



#### 1.4 Specifications

#### 1.4.1 Electrical Specifications

#### Power Input

	Power Input maximum voltage Power Input minimum voltage Power Input current	5.5 Vdc 4.5 Vdc 50 mA	
1.4.1.1	Audio Performance		
Rated Input Lev	el		
	Radio Speaker input level connected to a radio, intercom system Radio Speaker input level connected to a radio and headset only Radio Speaker input level connected to a radio only: Intercom Phones input level connected to a radio, intercom syste Headset Mic input level:	and headset: : m and headset:	5.5 Vrms ± 10% 5.5 Vrms ± 10% 2.82 Vrms ± 10% 7.75 Vrms ± 10% 250 mVrms ± 10%
Rated Output Lo	evel		
	Connected to a radio, intercom system and headset, Headset Phones rated output level:		7.75 Vrms ± 10%
	Connected to a radio and headset only and the Radio PTT switch Headset Phones rated output level:	is activated,	1.25 Vrms ± 10%
	Connected to a radio and headset only, Headset Phones rated out	put level:	5.5 Vrms ± 10%
	Connected to a radio, intercom system, headset and the Intercom Intercom Mic rated output:	PTT switch is a	ctivated, 250 mVrms ± 10%

Connected to a radio, intercom system and headset and the Radio PTT switch is activated, Radio Mic rated output: 10 mVrms ± 10%

#### Audio Frequency Response

	Headset phones output audio frequency response Intercom Mic output audio frequency response	≤ 3dB from 300 to 6000 Hz ≤ 3dB from 300 to 6000 Hz
	Radio Mic output audio frequency response	≤ 3dB from 300 to 6000 Hz
Distortion Chara	cteristics	
	Audio output distortion at rated power	≤ 10%
Input Impedance	2	
	ICS PTT inactive, Headset Mic input Impedance	150 Ω ±10%
	ICS PTT active, Headset Mic input Impedance	<b>75</b> Ω ±10%
	Intercom Phones input Impedance	150 $\Omega \pm 10\%$
	When connected to a radio, ICS and headset:	
	with ICS PT T active, Radio Speaker input impedance	266 Ω ±10%
	with the ICS PT T inactive, Radio Speaker input impedance	495 Ω ±10%
	When connected to radio only, Radio Speaker input impedance	16 $\Omega \pm 10\%$
Output Load Imp	<u>bedance</u>	
Headset phones output audio frequency response≤ 3dB from 30 ≤ 3dB from 30 Radio Mic output audio frequency response≤ 3dB from 30 ≤ 3dB from 30 Distortion CharacteristicsDistortion CharacteristicsAudio output distortion at rated power≤ 10%Input ImpedanceICS PTT inactive, Headset Mic input Impedance150 Ω ±10% ICS PTT active, Headset Mic input ImpedanceICS PTT active, Headset Mic input Impedance150 Ω ±10% IOS n ±10% 		
Stability and Sho	ort Circuit	
	Sustained non-harmonically related responses attenuated	≥ 50 dB



Audio Noise Le	evel without Signal			
	Noise level below the rated output		≥ 60 dB	
1.4.1.2	Audio Performance, Other			
	Headset Mic input designed for micro Headset MIC input bias voltage: Headset MIC input circuitry type: Radio SPEAKER input circuitry type: Intercom Phones input circuitry type: Headset Phones output circuitry type: Radio MIC output circuitry type: Intercom MIC output circuitry type:	ophone types: ::	amplified dynamic / electret ≥ 9 Vdc Differential Differential Differential Differential Differential Differential	
1.4.1.4	Discrete Signals			
	Radio PTT output (when active) outp	out:	≤ 2 Vdc	
1.4.2	Mechanical Specifications			
	Height		1.27 in [32.3 mm]max	
	Depth		2.42 in [61.5 mm] max	
	Width		4.52 in [114.8 mm] max	
	Weight		0.38 lb [0.17 kg]	
	Material		Polycarbonate plastic with Soft-Feel clear coat	
	Connectors (2): J1 - Radio Connector J2 - Headset Connector		12 pin HR10A jack U-92A/U female	
	Mounting		Handheld or ClothingClip	
	Installation kit		N/A	

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## Jcord-001 PTT Radio & ICS Adapter

### **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 Jcord-001 is on condition only. Scheduled inspection and/or periodic maintenance of this unit is not required.

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 - <u>www.jupiteravionics.com/warranty</u>

#### 2.3.1 Warranty

This product manufactured by JAC is warranted to be free of defects in workmanship or performance for 1 year from the date of purchase from 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.

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 the headset volume to minimum before conducting tests, and slowly increase the volume to a comfortable listening level.

**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 Jcord-001, on or in a specific type or class of aircraft, must determine that the aircraft installation conditions meet standards. The Jcord-001 may be installed only by following the applicable airworthiness requirements.

#### 2.4.2 Cabling and Wiring

The Jcord-001 plugs directly into a standard aircraft audio system. All wires to said connector 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. Follow the Connector Map in Appendix A of this manual.

#### 2.4.3 Mechanical Installation

Refer to the Jcord-001 Interconnect.



#### 2.4.4 In-Line PTT Cordsets

When using in-line PTT cordsets (drop cords), ensure that the drop cord is live (does not require PTT action to operate). Be aware that incorrectly configured or improperly shielded in-line PTT cordsets can lead to significant audio problems.

- 2.4.5 Post Installation Checks
- 2.4.5.1 Power on Checks.

Power up the aircraft's systems and confirm normal operation of all functions of the Jcord-001. Refer to Section 3 (Operation) for specific operational details.

- a) Confirm correct ICS and radio operation for both receive and transmit.
- b) Check the ICS operation.

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

#### 2.5 Adjustments

The trimpots for adjusting the settings of the Jcord-001 are accessed by removing the rear cover and clothing clip from the unit.

The clothing clip is removed by lifting the metal tongue towards the clip, and then sliding the clip upwards towards the top of the unit.

The rear cover is then accessible, and can be removed by first removing the five screws as shown.



WITH REAR COVER AND CLIP REMOVED



Each level is adjusted by rotating the relevant trimpot clockwise (cw) to increase the value, and counterclockwise (ccw) to decrease the value.

#### Radio Mic Level

The level of the Headset Mic, as output on the Radio Mic, can be adjusted from 2 to 30 mVrms.

The factory default setting is 10 mVrms

#### b) Radio to Intercom Level

The level of the Radio Speaker, as output on the Intercom Mic Audio, can be adjusted:

with ICS PTT inactive - 100 to 300 mVrms (Default **250 mVrms**). with ICS PTT active - 63 to 108 mVrms (Default **86 mVrms**).



#### 2.6 Radio Cables

CAB-JCRD-0001 connects to handheld radio and is supplied separately.

CAB-WJ2-0004 connects to handheld radio cable and the aircraft intercom system and is supplied with the Jcord-001

See Jupiter Avionics website for additional radio cables.

#### 2.7 Installation Drawings

The drawings and documents required for Installation can be found in Appendix A of this manual.



## SECTION 3 – OPERATION

#### 3.1 Introduction

This section contains the operating instructions for the Jcord-001.

#### 3.2 Controls and Connectors

The Radio PTT switch is a domed momentary switch that allows the user to transmit on a connected handheld or portable radio.

The ICS PTT switch is a three position centre-off rocker switch that allows the user to connect to the aircraft ICS. The action of the lower section of the rocker switch is momentary, and the upper portion permits the user to lock the ICS PTT switch.

For further information on the connector and cabling options, refer to the JCORD-001 Interconnect in Appendix A of this manual.



#### 3.3 Normal Operation Mode

The Jcord-001 PTT Radio & ICS Adapter can allow the user to access a handheld radio with or without a headset. With a headset the Jcord-001 can maintain intercom communications with aircraft crew members.

The different connection choices for the Jcord-001 contribute to its versatility.

3.3.1 Jcord-001 and Handheld Radio only



- Radio Receive Operation When connected to a radio only, the radio speaker audio is routed directly to the Jcord-001 internal speaker.
- Radio Transmit Operation When connected to a radio only, activating the Jcord Radio PTT switch also activates the Radio PTT output, and connects the internal Jcord Mic to the Radio Mic output.



#### 3.3.2 Jcord-001, Handheld Radio and Headset



- Radio Receive Operation When connected to a radio and headset only, the Jcord routes the radio speaker audio directly to the Headset Phones.
- **Radio Transmit Operation** When connected to a radio and headset only and the Jcord Radio PTT switch is activated, the Headset Mic audio is level controlled and routed to the Radio Microphone. The Headset Mic audio will be also routed to a Sidetone amplifier and then to the Headset Phones.

#### 3.3.3 Jcord-001, Handheld Radio, Headset and Aircraft Intercom System.



- **Radio Receive Operation** When connected to a radio, intercom system and headset, the radio speaker audio is level controlled and routed to the aircraft intercom system and to the headset phones.
- **Radio Transmit Operation** When connected to a radio, intercom system and headset, and the Radio PTT switch is activated, the Headset Mic audio is level controlled and routed to the Radio Microphone. The Headset Mic audio is also routed to the aircraft intercom system.
- Intercom Operation When connected to a radio, intercom system and headset, and the ICS PTT switch is activated, the Headset Mic audio is routed to the aircraft intercom system. Audio from the aircraft intercom system is routed to the headset phones.



## **Installation and Operating Manual**

## **Appendix A - Installation Drawings**

#### A1 Introduction

The drawings necessary for installation and troubleshooting of the Jcord-001 PTT Radio and ICS Adapter are in this Appendix, as listed below.

#### A2 Installation Drawings

DOCUMENT	Rev
Jcord-001 Connector Map	Α
Jcord-001 Interconnect	С
Jcord-001 Equipment Block Diagram	В
Jcord-001 Mechanical Installation	F

### Radio Connector





#### View is from front of mating connector

Pin #	Description
Pin 1	INTERCOM PTT
Pin 2	INTERCOM PHONES +
Pin 3	+5VDC POWER
Pin 4	INTERCOM PHONES -
Pin 5	RADIO PTT
Pin 6	POWER GROUND
Pin 7	RADIO SPEAKER +
Pin 8	RADIO SPEAKER -
Pin 9	RADIO MIC +
Pin 10	RADIO MIC -
Pin 11	INTERCOM MIC +
Pin 12	INTERCOM MIC -

	PREPARED	KV			
				CORPORATION	
	CHECKED		TITLE	PTT Radio & ICS Adapter	
				P1 Connector Map	
	APPROVED		NCAGE CODE	PART NO.	SHEET
			L00N3	JCORD-001	1/2
	CONFIDENTIAL & PROPRIETARY		DOC NO.	-	
	TO JUPITER AVI	ONICS CORP.	JCORD-001 Cor	nector Map Rev A	
JUPITER AVIONICS TEMPLATE AUTOCAD PORTRAIT SIZEA REV B.DWT					

### Headset Connector



JUPITER AVIONICS TEMPLATE AUTOCAD PORTRAIT SIZEA REV B.DWT



TIP / PIN 1: HEADSET MIC +

1st Ring / PIN 2: HEADSET PHONES + 2nd Ring / PIN 3: HEADSET MIC -3rd Ring / PIN 4: HEADSET PHONES -

View of Headset mating connector

PREPARED	KV			
CHECKED				
		TITLE	PTT Radio & ICS Adapter	
			P2 Connector Map	
APPROVED		NCAGE CODE	PART NO.	SHEET
		L00N3	JCORD-001	2/2
CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.		DOC NO.		
		JCORD-001 Connector Map Rev A		



















## REAR VIEW WITH REAR COVER AND CLIP REMOVED



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	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	PREPARED	TAT			
	TOLERANCES: 1 DEC PLACE: ± 0.1	CHECKED	JAC 01-27-20		W CORPORATION	
WEIGHT <sup>,</sup> 0.37 lbs [166.1 d] MAX	2 DEC PLACE: ± 0.01 3 DEC PLACE: ± 0.005 ANGLES: ± 0.5 DEG	CHECKED	SDB	TITLE	PTT Radio & ICS Adapter	
			JAC			
		APPROVED	KDV	L00N3	JCORD-001	1/1
	MATERIAL: N/A		& PROPRIETARY	DOC. NO.		
	FINISH: N/A	DRAWING NO	DT TO SCALE	JCORD-001	Mechanical Installation Rev F.SLDDRW	

L JUPITER AVIONICS TEMPLATE SOLIDWORKS PORTRAIT SIZEB REV B.DRWDOT