JA95-092

Audio Controller - Dual ICS Input with Call Switch

Installation and Operating Manual

Rev A

IMPORTANT:

Information in this document is subject to change without notice.

To confirm the current revision status of this manual, visit the JAC website:

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RECORD OF REVISIONS				
Revision	**Rev Date**	**Description**		**ECR**
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SECTION 1 - DESCRIPTION

1.1   System Overview

The JA95-092 Audio Controller - Dual ICS Input with Call Switch is a centralized audio management system that distributes and controls all transceiver, receiver and alert audio in an aircraft. It enables the selected transmission of microphone audio to a transceiver and distributes all intercom audio.

The JA95-092 Audio Controller - Dual ICS Input with Call Switch can be used in a standalone configuration or a star configuration to prevent the loss of the entire system due to the failure of one controller. It provides a passive emergency mode that directs the primary user (pilot) to the COM1 transceiver, NAV1 receiver and Direct Audio receiver.

The JA95-092 is set up on a per-installation basis using a configuration cable and a PC running the product configuration tool to download system configuration settings via the front panel music / configuration connector (♫/io) without the necessity of removing the unit from the panel.

1.2   Features Overview

The JA95-092 features a 37-pin D-Sub connector, which interfaces with the radio receive audio and crew phones, a 50-pin D-Sub connector which interfaces with the power and passenger headset connections. This layout minimizes crosstalk and follows industry standard interconnect for multi-user Audio Controllers.

Many of the input and output levels are adjustable, several audio paths are selectable, and alert audio analog waveforms can be loaded using the configuration program ProCS™ (**Pro**duct **C**onfiguration **S**oftware) to write configuration commands via the JA99-001 configuration cable to the front panel music / configuration connector. The audio waveforms are stored in non-volatile devices. The alert audio feature is intended for use as a secondary alerting system where another device provides the primary annunciation.

The JA95-092 provides intercom functions for up to seven users. It supports up to 5 transceivers and a PA position, each selectable from a rotary switch, and up to 4 receivers (2 on each of 2 toggle switches).

The JA95-092 features individual VOX gating, and supports one Direct Audio input to provide audio at a fixed level to the users.

The JA95-092 has a CVR output and a three channel Alert Generator. Each alert has a separate key input.

The JA95-092 allows transmit access for four crew members (Pilot, Co-pilot, Passenger 1 and Passenger 2).

A Music / Configuration connector is provided on the faceplate of the JA95 for configuration of audio levels and routing. The port can also be used as a music input and is compatible with most music players.

The JA95-092 supports two unidirectional ICS inputs and one output.

The JA95-092 has a CALL OUTPUT switch.

The JA95-092 has two modes of operation: Normal Mode and Emergency Mode.

1.3 Inputs and Outputs

Refer to the JA95-092 connector maps for the mating connector designators and pin assignments for the input and output signals.

1.3.1 Inputs

Name	Qty	Type
ALERT ENABLE	1	Active high discrete
ALERT KEY	3	Active low discrete (selected via ProCS)
CALL	1	Active low discrete (selected via ProCS)
CONFIG DATA TO JA95	1	Data signal
DIRECT AUDIO	1	Audio signal
FRONT PANEL MUSIC	2	Audio signal
ICS INPUT 1/2 HI/LO	2	Audio signal
LIGHTS INPUT	2	Analog control signal
MIC	7	Audio signal
MODE SELECT / CONFIG AUDIO	1	Multi format signal
MUSIC	1	Audio signal
PAX 1 and PAX 2 ICS PTT	2	Active low discrete (selected via ProCS)
PAX 1 and PAX 2 TX PTT	2	Active low discrete (selected via ProCS)
PILOT and COPILOT ICS PTT	2	Active low discrete
PILOT and COPILOT TX PTT	2	Active low discrete
POWER INPUT	1	14 to 28 Vdc power supply
RX HI/LO	9	Audio signal (5 COMs, 4 NAVs)

1.3.2 Outputs

Name	Qty	Type
CVR	1	Audio signal
CONFIG DATA FROM JA95	1	Data signal
ICS OUTPUT HI/LO	1	Audio signal
PHONES	7	Audio signal Note: There are 6 outputs for driving 7 phones.
MF SW (Multifunction Switch)	2	Active low discrete (selected via ProCS)
MIC	6	Audio signal
PTT	6	Active low discrete (PA PTT feature selected from ProCS)
RX COMP OUT	1	Audio signal (selected via ProCS)
CALL OUTPUT	1	Active low discrete

1.4   Specifications

1.4.1   Electrical Specifications

<u>Power Input</u>

Primary nominal voltage	28 Vdc
Secondary nominal voltage	14 Vdc
Maximum voltage	32.2 Vdc
Minimum voltage	10.2 Vdc
Emergency voltage	9.0 Vdc
Input current at 28 Vdc	≤ 0.7 A
Input current at 14 Vdc	≤ 1.4 A

1.4.1.1   Audio Performance

<u>Rated Input Level</u>

Receive audio rated input level	7.75 Vrms ±10%
Direct audio rated input level	7.75 Vrms ±10%
Music rated input level	400 mVrms ±10%
Microphone input level	250 mVrms ±10%
ICS INPUT 1 input level	7.75 Vrms ±10%
ICS INPUT 2 input level	1.2 Vrms ±10%
Intercom Tie Line type 1 input level	340 mVrms ±10%
Intercom Tie Line type 2 input level	1.20 Vrms ±10%
CONFIG AUDIO input level	400 mVrms ±10%

<u>Rated Output Level</u>

Phone rated output	7.75 Vrms±10%
Pilot Phone rated output, in emergency mode or with power input ≤6 Vdc	2.20 Vrms±10%
Phone rated output power, with MUSIC input	3.88 Vrms±10%
Microphone rated output	250 mVrms±10%
CVR rated output	500 mVrms±10%
CVR rated output with input as MUSIC	250 mVrms±10%
CVR rated output with input as PILOT MIC	1.00 Vrms±10%
CVR rated output, in emergency mode,	500 mVrms ±10%
Receive Composite rated output	2.5 Vrms ±10%
ICS OUTPUT rated output	1.2 Vrms ±10%
Intercom Tie Line type 1 rated output	340 mVrms ±10%
Intercom Tie Line type 2 rated output	1.2 Vrms ±10%

<u>Audio Frequency Response</u>

Audio output audio frequency response	≤3dB from 300 to 6000 Hz
Alert audio output audio frequency response	≤3dB from 300 to 3000 Hz

<u>Distortion Characteristics</u>

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

Input Impedance

Microphone input Impedance	150 Ω ±10%
Direct Audio input Impedance	1000 Ω ±10%
Receive Audio input Impedance	1000 Ω ±10%
Music Audio input Impedance	1000 Ω ±10%
ICS INPUT 1&2 Input Impedance	1000 Ω ±10%

Output Impedance

Phone output Impedance	≤ 60 Ω
Transceiver Microphone output Impedance	≤ 80 Ω
CVR output Impedance	≤ 80 Ω
Receive Composite Audio output Impedance	≤ 80 Ω
ICS OUTPUT Impedance	2000 Ω ±20%

Output Load

Phone load	600 Ω ±10%
Transceiver Microphone load	150 Ω ±10%
CVR load	5000 Ω ±10%
Receive Composite Audio load	600 Ω ±10%
ICS OUTPUT rated load	1000 Ω ±10%
ICS OUTPUT maximum load	150 Ω max

Volume Controls

Receive Audio control variation	32 ±3dB
ICS Audio control variation	42 ±3dB

Output Regulation

Output Regulation change in voltage level	≤3 dB
Output Regulation distortion	≤10%

Input to output Crosstalk and Bleed-through Level

Input to Output crosstalk	≤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**

CVR HI / LO output circuitry type (Normal)	differential
CVR HI / LO output circuitry type (Emergency)	single ended
ICS INPUT 1&2 input circuitry type	differential
ICS OUTPUT circuitry type	differential
Microphone inputs designed for MIC type	amplified dynamic
Microphone inputs bias voltage	11 Vdc ±10%
Microphone inputs circuitry type	single ended
MUSIC LEFT HI / LO audio input circuitry type	differential
FRONT MUSIC LEFT / RIGHT audio input circuitry type:	single ended
MUSIC attenuation	40 dB max
RECEIVE AUDIO input circuitry type	differential
PHN HI / LO output circuitry type	single ended
MIC output circuitry type	differential
RX Composite Audio output circuitry type	differential
ICS TIE HI / LO Circuitry Type	differential
PHN HI / LO output music fade in duration	2.5 ± 1.0 seconds
VOX Threshold level range relative to rated MIC input	-30 to +12 dB
VOX Delay Time range	0.5 to 2.0 seconds
Transmit Timer duration	90 ± 30 seconds

1.4.1.3   **Discrete Signals**

Active low control input, active signal level	≤ +3 Vdc
Active low control input, inactive signal level	≥ +10 Vdc
Active low control input, current	≤ 10 mAdc
Active low control output, active output	≤ +2 Vdc
Active low control output, active, current	≤ 1 Adc
ALERT ENABLE signal active signal level	≥ +9 Vdc
ALERT ENABLE signal, when active, sinks	≤ 10 mAdc
ALERT ENABLE signal inactive signal level	≤ +3 Vdc

1.4.1.4   **Lights Input**

LIGHTS INPUT ranges	0 to 28, 0 to 14 and 0 to 5 Vdc
LIGHTS INPUT current	10 mA max.

1.4.2   Mechanical Specifications

Height	1.875 in [47.63 mm] max
Behind panel depth	5.48 in [139 mm] max
Faceplate width	5.75 in [146 mm] max
Behind panel width	5.00 in [127 mm] max
Weight	1.64 lbs. [0.74 kg] max
Material	brushed aluminum with conversion coating
Connectors (3):	One 4 pole 3.5mm stereo jack One 37-pin D-Sub male One 50-pin D-Sub male
Mounting	4 Dzus fasteners
Bonding	≤ 2.5 mΩ
Installation kit part number	INST-JA95
Faceplate	white legends on black
Faceplate legend colour, luminance	white, 1 ± 0.5 fL

1.4.3 Configuration Connector

The JA95-092 configuration connector communication standard for CONFIG DATA TO JA95 data input signal and CONFIG DATA FROM JA95 data output signal is RS-232.

1.4.4 Product Configuration Software Version

Configuration of the JA95-092 requires the Product Configuration Software (ProCS) version v0.66.1 or later. Refer to the release notes from http://www.jupiteravionics.com/productsoftware.php or contact Jupiter Avionics to ensure the correct version is used.

1.4.5 Flammability of Materials

The JA95-092 complies with the requirements of RTCA/DO-160G Sec 26.3.3 'Flammability', through equivalent flammability testing of materials and the Small Parts Exemption.

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 JA95-092 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/product registration.

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 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

The conditions and tests for CAN-TSO approval of the JA95-092 are minimum performance standards. Those installing the JA95-092, on or in a specific type or class of aircraft, must determine that the aircraft installation conditions are within TSO standards. The JA95-092 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 22 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 JA95-092 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.

2.4.4   In-Line PTT Cordsets

If in-line PTT cordsets (drop cords) are used, be aware that incorrectly configured or improperly shielded in-line PTT cordsets can lead to significant audio problems.

2.4.5   Legend Replacement

The JA95-092 illuminated legends are field replaceable. For further information, refer to the 'Legend Replacement' document in Appendix A of this manual.

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 **19** for lights buss voltage.
b) Check P2 pin **17** for +28 Vdc or +14 Vdc relative to ground.
c) Check P2 pin **34** for continuity to ground (less than 0.5 Ω).
d) Check P2 pins **6 thru 13** for continuity to ground (less than 0.5 Ω) when the relevant switch is closed.
e) Check all pins for shorts to ground or adjacent pins.

2.4.6.2   Configuration

Ensure that the JA95-092 contains the correct configuration settings. This may be done at the factory, on the maintenance bench or in the aircraft before the power on checks are performed. Refer to section 2.5.1.

2.4.6.3   Power on Checks.

Power up the aircraft's systems and confirm normal operation of all functions of the JA95-092. Refer to Section 3 (Operation) for specific operational details.

a) Begin with only the pilot's headset attached. Confirm correct ICS and radio operation for both receive and transmit. Check yoke or cyclic switch action. Check the radio selection and inputs. Do not proceed until the radios are functioning correctly.

b) If there is a music source in the system, turn it on and check for proper mute operation.

c) 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.

d) Check the ICS operation and Emergency operation.

e) Plug in the co-pilot's headset. Check for correct ICS operation. Check yoke or cyclic switch functions.

f) Plug in any remaining headsets, and check for correct ICS operation. Note that an incorrect cordset (drop cord) or improper jack wiring may cause a wide range of problems, from loss of audio to a tone heard in the headset.

g) Check that all configuration settings are correct.

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

2.5   Adjustments and Configuration using ProCS™

All the JA95-092 internal adjustments are set from the Product Configuration Software ProCS™. Configuration data is sent to the JA95-092 via the front panel connector (♫/io), using the Configuration Cables and a computer running the ProCS™ software. For configuration requirements, see section 2.5.1.

For full information on the configuration process, and for installation of ProCS™ on your computer, refer to the ProCS™ manual on the Jupiter Avionics website - www.jupiteravionics.com/productsoftware.

2.5.1   Configuration Cabling Requirements

To configure the JA95-092, it is necessary to load the Product Configuration Software ProCS™ onto a Windows-based computer as described in the ProCS™ manual.

The cables required to configure the JA95-092 are not included with the unit.

Quantity	Description	JAC Part #
1	USB A to RS232 9-Pin Cable	CAB-USB-0002
1	Configuration Cable	JA99-001

2.5.2   ProCS™ Setup

The ProCS™ JA95-092 menu item 'ProCS Setup' provides a Setup drawing showing the cabling arrangement for connecting the JA95-092 to a computer running the ProCS™.

2.5.3   Configurable Settings

A standard unit is shipped from the factory with all internal adjustments configured to the default levels. At installation, it may be desirable to change some of these settings to suit the local operating environment.

Note: To configure the JA95-092, power must be applied to the unit, and the mode (EMER/NORM) switch must be in the NORM position

Within ProCS™, the configurable settings are grouped together into the following sections:
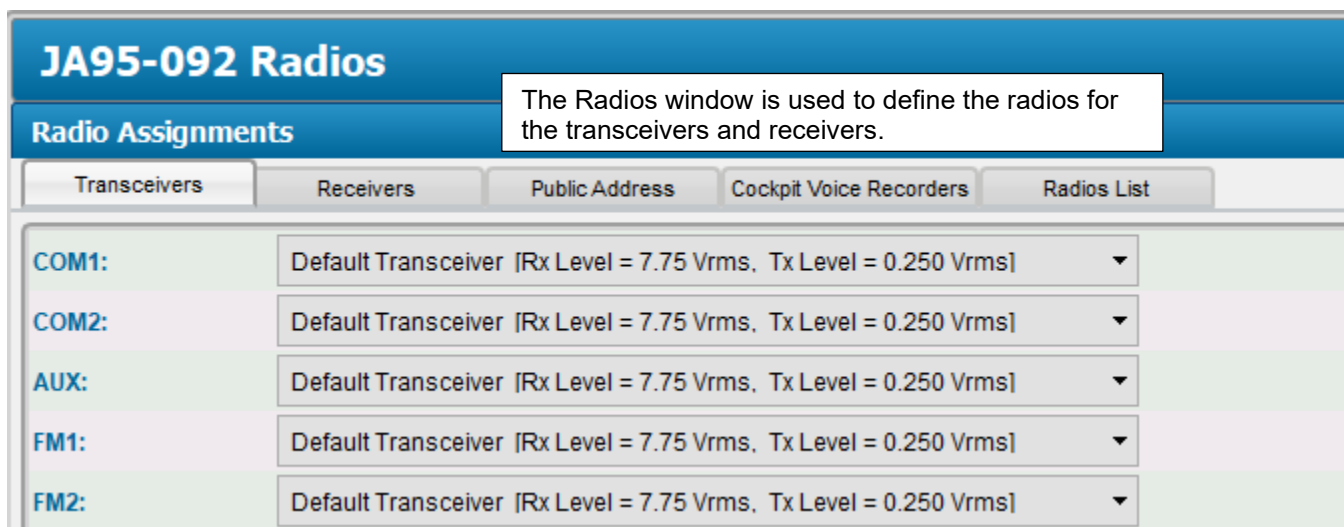
2.5.3.1   Front Panel Switches

The Front Panel Switches window is used to specify the text for each legend.

Note: If the name of a front panel switch is changed using this software, the change will be incorporated in every other section that refers to that switch name, including the connector maps, to give truly customized installation diagrams.

2.5.3.2   Radios

2.5.3.3 Receive Levels

JA95-092 Receive Levels

Input Levels

COM1	Default Transceiver :	10.00 Vrms	1.00 Vrms **[7.75 Vrms]**	Default Level
COM2	Default Transceiver :	10.00 Vrms	1.00 Vrms **[7.75 Vrms]**	Default Level
AUX	Default Transceiver :	10.00 Vrms	1.00 Vrms **[7.75 Vrms]**	Default Level
FM1	Default Transceiver :	10.00 Vrms	1.00 Vrms **[7.75 Vrms]**	Default Level
FM2	Default Transceiver :			
NAV1	Default Receiver :	10.00 Vrms	1.00 Vrms **[7.75 Vrms]**	Default Level
ADF1	Default Receiver :	10.00 Vrms	1.00 Vrms **[7.75 Vrms]**	Default Level
NAV2	Default Receiver :	10.00 Vrms	1.00 Vrms **[7.75 Vrms]**	Default Level
ADF2	Default Receiver :	10.00 Vrms	1.00 Vrms **[7.75 Vrms]**	Default Level
DIRECT	Default Receiver :	10.00 Vrms	1.00 Vrms **[7.75 Vrms]**	Default Level

> The receive and direct audio input level of each of the eleven RX and the DIRECT AUDIO inputs can be adjusted from 1 to 10 Vrms. **(Default 7.75 Vrms)**

Receive Audio Detector

0dB = Rated Input Level

> The Receive Audio Detector threshold can be adjusted from -36 to -12 dB of rated input level. **(Default -24 dB)**

Level: -12 dB ▭ -36 dB   **[-24 dB]**

Output Level

Rated Load Impedance = 600 Ohms

Receive Composite: 0.25 Vrms
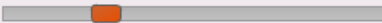
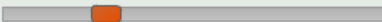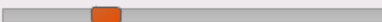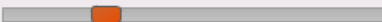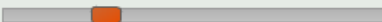> The level of the receive composite audio output (RX COMP OUT) can be adjusted from 0.25 to 2.5 Vrms. **(Default 1.00 Vrms)**

Note: The Receive Composite pin is configured on the Connector Pin Configuration page.
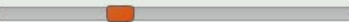
2.5.3.4   Transmit Levels

The level of each of the six Transceiver MIC output signals can be adjusted from 0.01 to 1 Vrms. **(Default 250 mVrms)**

When the Transmit Timeout check box is checked the transmit time-out is enabled (**Default not checked)**

When the FM2 Duplex check box is checked the COM5 (FM2) radio is set to duplex operation (**Default not checked)** (see section 3.3.4)

2.5.3.5   Sidetone Levels

The Receive Sidetone Level can be adjusted from 0 to -12 dB of the rated phone Level. (**Default -6 dB**)

The level of the PA Artificial Sidetone can be adjusted from 0 to -30 dB of the rated phone Level. (**Default -10 dB**)

2.5.3.6 **Connector Pin Configuration**

Multi-Function Switch

The front panel multi-function switch is a green two-position momentary centre-off switch. Its default configuration is as the **pilot's PTT switch**, with '**XMIT**' in the up position, and '**ICS**' in the down position. However, it may be configured to provide a ground to operate different circuitry to suit the needs of the user, and an appropriate legend can be inserted.

JA95-092 Connector Pin Configuration

To ensure pin configuration is set correctly, place the EMER/NORM select to NORM position.

Multi Function Switch

Switch Operation:	● PILOT TX and ICS PTT	○ MF SW OUTPUT PINS

Several of the connector pins can be configured to meet the requirements of specific installations.
Refer to JA95-092 Interconnect sheet 5 of 5.

J1 Contacts Selection

Pin 14/33:	● MUSIC LEFT HI/LO INPUT	○ RX COMP HI/LO OUTPUT	
Pin 16/35:	● ICS OUTPUT HI/LO	○ DIGITAL TIE +/- OUTPUT	

J2 Contacts Selection

Pin 6:	● PAX 1 TX PTT INPUT	○ MF SW 2 OUTPUT (XMIT)	
Pin 11:	● PAX 1 ICS PTT INPUT	○ ALERT 1 KEY INPUT	○ MF SW 1 OUTPUT (ICS)
Pin 12:	● ALERT 2 KEY INPUT	○ CALL INPUT	○ PAX 2 TX PTT INPUT
Pin 13:	● ALERT 3 KEY INPUT	○ PA PTT OUTPUT	○ PAX 2 ICS PTT INPUT

2.5.3.7   Alerts

Warning: The internal audio alerts are intended only to supplement, **not** replace, airframe alerts such as 'low rotor RPM', 'engine out' or 'decision height alerting'. The alert audio feature is intended for use as a secondary alerting system where another device provides the primary annunciation.

Audio Files

The JA95-092 has standard audio signals for each of the three alerts, and the audio files window allows these signals to be customized with other recordings during the configuration process.
The default Alert signals loaded into the unit at the factory are:

JA95-092 Wav File (Sine 300Hz 10 sec) Rev B.WAV

JA95-092 Wav File (Sine 1000Hz 10 sec) Rev B.WAV

JA95-092 Wav File (Sine 3000Hz 10 sec) Rev B.WAV

Saving new Audio Files
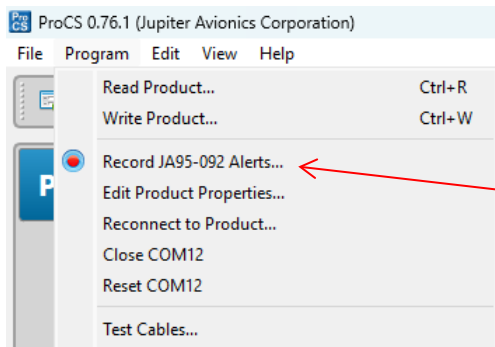
If a new audio file is selected, it may be played using the arrow to the right of the Message line.

It may be uploaded to the JA95-092 using the 'Program' menu and selecting 'Record JA95-092 Alerts…'.

Note that this pane will have different content if a JA95-092 is not connected.

The levels of the three Alert Audio signals are individually adjustable from 0 to -40 dB of the rated phone level (**Default -12 dB**)

2.5.3.8   Audio Muting (During Transmit)

When the Mute RX Audio check box is checked the Receive Audio is muted during transmit (**Default checked**)

When the Mute ICS Audio check box is checked the ICS Audio is muted during transmit (**Default checked**)

When the Mute Alert Audio check box is checked the Alert Audio is muted during transmit (**Default not checked**)

The Mute Music Audio check box is always checked (i.e. Mute Music Audio is always enabled.)

The output levels of the Cockpit Voice Recorder audio may be adjusted as shown.

2.5.3.9   CVR Level

2.5.3.10   Music Levels

The music output level of the four Music input signals to the Phones audio can be adjusted from -40 to 0 dB of rated phone level (**Default 0 dB**).

The attenuation level during muting of the music signal can be adjusted from 0 to -40 dB (**Default -40 dB).**

The 'Configure MUS Switch as Rear Music Selector' check box is always checked **(Default)**.

The Music Input Levels may be adjusted from 0.10 to 1.00 Vrms. (**Default 0.40 Vrms**)

2.5.3.11 ICS Tie Line

2.5.3.12 Lighting Voltage Selection

The rated input level for the lighting voltage may be selected from

+5 Vdc, +14 Vdc or +28Vdc

(**Default +28 Vdc**).

2.5.3.13 VOX

The VOX OFF Delay Time can be adjusted from 0.50 to 2.00 sec (**Default 1 sec**).

When the PAX Drop Cord Enable check box is checked, the VOX circuits for the passenger microphones are configured for use with drop cords (**Default not checked**)

2.5.3.14 Connector Maps

This section contains connector maps and interconnects that are automatically generated to show changes that affect the installation of the JA95-092, such as switch labels and voltages. See section 2.7.1.

2.5.4 Other Configuration Features

The model number, serial number and check sum of the JA95-092 Audio Controller - Dual ICS Input with Call Switch can be entered and viewed in the Comments pane of the JA95-092 Product Information Window for future reference.

2.6   Installation Kit

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

The installation kit (Part # INST-JA95) consists of the following:

Quantity	Description	JAC Part #
2	TAG ring	CON-5500-0625
1	D-Sub 37-pin connector, hood and 37 crimp pins	CON-3420-0037
1	D-Sub 50-pin connector, hood and 50 crimp pins	CON-3420-0050
2	Heat Shrink Tubing	WIR-HTSK-1000

2.6.1   Recommended Crimp tools

Connector Type	Hand crimp tool	Positioner	Insertion/extraction tool
Positronic	9507	9502-3	M81969/1-04
Positronic	AFM8 (Daniels)	M22520/2.08 KB-1	

2.7   Installation Drawings

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

2.7.1   Generation of Custom Drawings

The interconnects and connector maps in Appendix A of this manual are generic drawings based on the standard version of the JA95-092. However, if a unit has been configured using JAC's ProCS™ software to change switch legends or lighting voltages, the software can be used to generate fully customized interconnects and connector maps for use by the installer.

SECTION 3 – OPERATION

3.1   Introduction

This section contains the operating instructions for the JA95-092.

3.2   Front Panel Controls

✅ **Note**: The legends and annunciators are removable and may be replaced with custom ordered parts. For the purpose of this manual the controls will be referred to by the default legend and annunciator names as shown below.
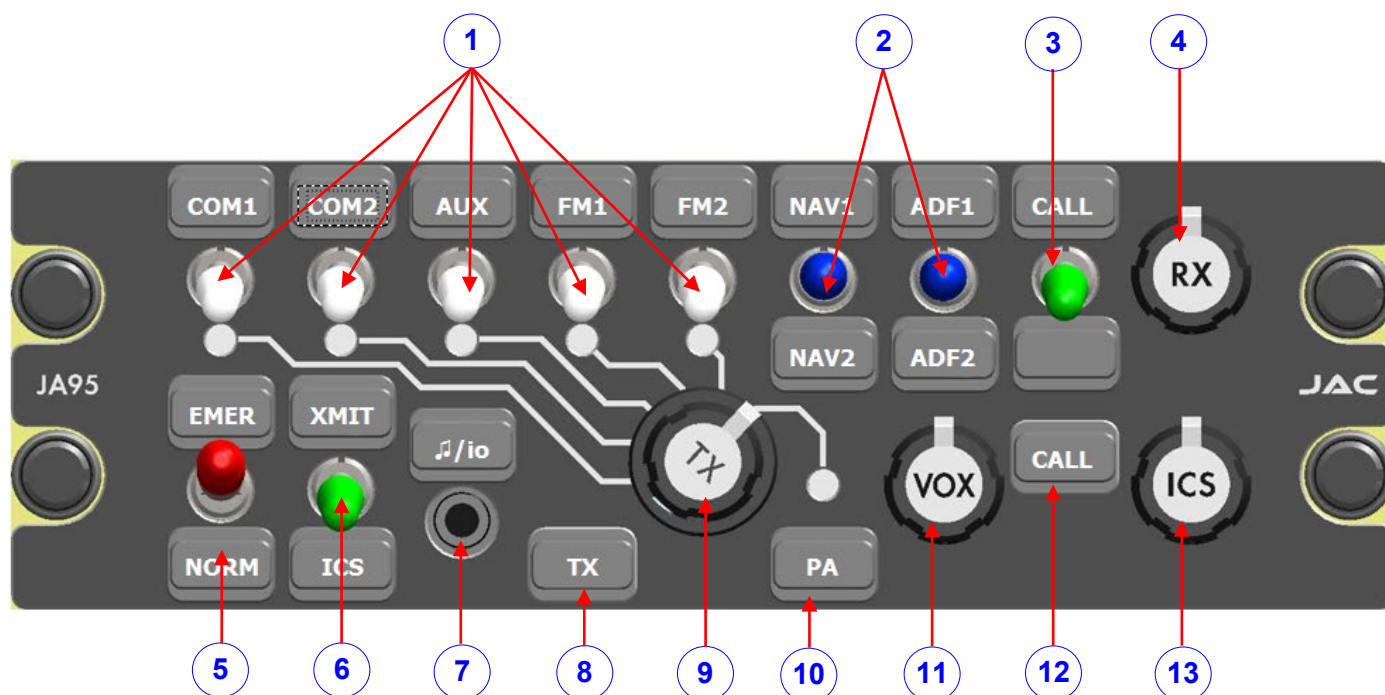
1. Transceiver switches and associated legends
2. Receiver switches and associated legends
3. CALL Switch
4. Receive volume control
5. Mode switch
6. Pilot's Transmit/ICS (Multi-function) switch
7. Music/configuration input connector and legend
8. Transmit annunciator (deadfront)
9. Transmit selector
10. PA legend
11. VOX threshold control
12. CALL annunciator (deadfront)
13. ICS volume control

---

(1)   Transceiver Switches

These are five white two-position toggle switches. When a switch is set to the 'up' position, audio from the associated transceiver is routed to the phones.

The legends (above the switches) are interchangeable to allow customization. (Default – COM1, COM2, AUX, FM1, FM2, PA.)

(2)   Receiver Switches

These are two blue three-position centre-off toggle switches. When a switch is set to the 'up' or 'down' position audio from the selected receiver is routed to the phones.

The legends (two above and two below the switches) are interchangeable to allow customization. (Default – NAV1, NAV2, ADF1, ADF2.)

(3)   CALL Switch

This is a green three-position spring-loaded centre-off toggle switch. When the switch is set to the 'up' position the call output will be active. In the 'down' position, the call output will not be active.

The legends (one above and one below the switch) are (Default – CALL, blank.)

(4)   Receive Volume Control

This is a rotary knob that adjusts the phones volume of the receive audio from minimum (CCW) to maximum (CW). Individual radio volume controls should be set to a nominal level, and then adjusted for changing flight conditions using this control.

(5)   Mode Switch

This is a red two-position locking toggle switch. When set to the 'up' position, the unit is Emergency mode, and when set to the 'down' position, the unit is in Normal mode. The legends are interchangeable to allow customization. (Default – EMER, NORM.)

The switch is lockable to prevent accidental changing of the mode. The switch must be lifted to release the lock.
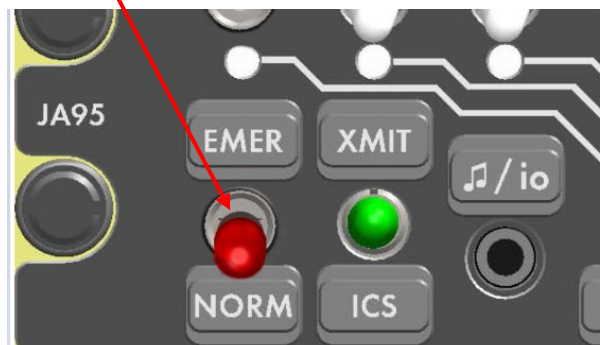
For full information on Emergency and Normal Mode operation, see sections 3.3 and 3.4 below.

(6)　　　　　Multi-function (Transmit/ICS) Switch

This is a green two-position centre-off momentary toggle switch.

When in the default XMIT/ICS configuration, this switch acts as the pilot's 'Press-to-talk' (PTT) button. The unit will transmit on the selected transceiver when the switch is held in the 'up' position, and when held in the 'down' position, it will transmit on the intercom.

See section 3.3.7 below for Multi-function Switch operation.
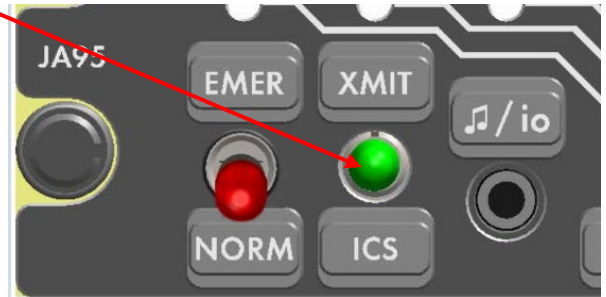
Note: At installation, this switch may be configured to operate in default or alternative mode. Check with your installing agency for confirmation of the operation of this switch. The legends are interchangeable to allow customization.

(7)　　　　　Music/Configuration Connector (♫/io)

This is a music input that is compatible with most music players. It accepts a 3 pole 3.5mm stereo plug with a slim diameter connector housing.

(This connector is also used during installation to change configuration settings.)
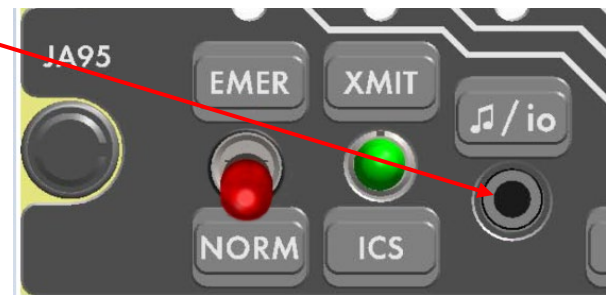
CAUTION: Attempting to connect an incompatible plug or device could damage the unit, the attached device, or both. If in doubt, check with your installing agency.

(8)　　　　　Transmit Annunciator - TX

This is a deadfront annunciator that will illuminate when the JA95-092 is transmitting.

The default legend is 'TX', but it is interchangeable to allow customization.
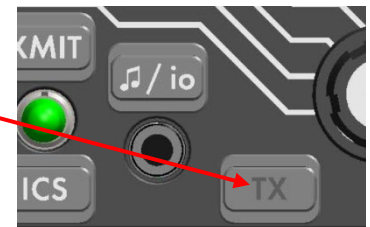
(9)　　　　　Transmit Selector

This is a rotary six-position control that is used to select transmission via one of the five transceivers or the public address system (PA).

Each of the transmit selector positions is linked by a white line to the corresponding transmit select annunciator, transceiver switch and legend.

The appropriate annunciator will light green to show which transceiver is selected for transmit - 'PA' in this example.

(10) PA Legend

This is a customizable legend to mark the PA position for the transmit selector.

The interchangeability allows an appropriate name for this legend to be selected.
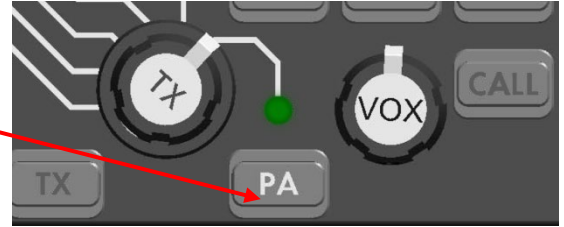
(11) VOX Threshold Control

This is a rotary knob that is used to select the VOX threshold of the unit. See below.

When rotated fully clockwise (cw), the threshold will be at maximum and VOX ICS operation is disabled and ICS PTT input is required for ICS operation.

When rotated fully counterclockwise (ccw), the threshold will be at minimum (almost live).
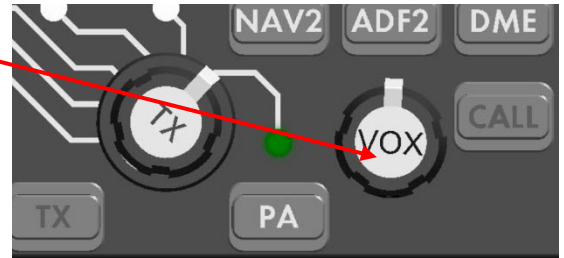
To adjust the unit for **VOX** (Voice activated) use, the VOX control should be set fully ccw and then slowly rotated cw to the point where no intercom audio can be heard. The VOX control should be adjusted for proper operation according to the ambient noise.

(12) CALL Annunciator

This is a customizable deadfront annunciator activated by an external switch.

When enabled, it will illuminate when a ground is applied to the CALL input from another user's audio controller or by a remote 'call' button within the aircraft.

✅ **Note**: Check with your installing agency for confirmation of the operation of this annunciator. The legends are interchangeable to allow customization.

(13) ICS Volume Control

This is a rotary control used to adjust the volume of all ICS audio to suit the ambient conditions. Rotating the control completely cw gives rated level, and completely ccw reduces the output to minimum level.
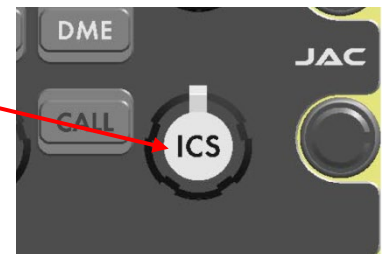
3.3   Normal Operation Mode

✅   **Note**: Numbers in parentheses refer to the front panel controls shown in section 3.2.

The JA95-092 is in Normal mode when the front panel EMER / NORM switch (**4**) is in the NORM position and suitable electrical power is supplied to the unit.

3.3.1   Panel Lighting

The legends and annunciators will be illuminated (when appropriate) and dim through the aircraft lighting buss.

3.3.2   Receiving

When the JA95-092 receives an incoming transmission on a transceiver or receiver that has been selected, either by the white transceiver receive switches (**1**) or the transmit selector (**8**), the incoming audio will be directed to the user's phones.

The audio level of any incoming transmission will depend upon the level selected by the front panel RX volume control (**3**). It will be muted if the unit is transmitting and muting of receive audio during transmit is enabled.

3.3.3   Transmitting (Transmit Operation)

To select a transceiver, rotate the Transmit Select Switch until it aligns with the line leading to the Transceiver Select switch legend (see **1**) - default legends COM 1, COM 2, AUX, FM 1, FM 2, or PA. The corresponding Transmit Select annunciator will illuminate.

When the user's TX PTT is activated, the unit will transmit on the selected transceiver, and the deadfront Transmit Annunciator (**7**) will illuminate 'TX'. All MIC and sidetone audio will be routed to the user's phones, and any music will be muted for the duration of the transmission.

3.3.4   FM2 PTT Operation

✅   **Note**:   If the FM2 transceiver has been configured as duplex, it can be used with a cellphone or sat-phone. Check your configuration with the installing agency.

If the unit has been configured for cellphone or sat-phone use and FM2 has been selected for transmit, momentarily activating the TX PTT (either from the faceplate or by some other method) will keep the FM 2 transmitting. A second momentary activation of the TX PTT, or moving the Transmit Selector away from FM 2, will stop the FM 2 from transmitting.

3.3.5   VOX Operation

A user's MIC audio is routed to the ICS when the MIC audio level exceeds the VOX threshold.

A user's MIC audio is disconnected from the ICS when the MIC audio level falls below the VOX threshold for 0.5 to 2 seconds.

3.3.6   ICS Operation

ICS audio is the sum of all the MIC audio from users with ICS KEY active or with MIC audio level exceeding the VOX Threshold level.

The ICS audio also includes the audio input on the ICS TIE from other audio controllers.

The ICS audio is output on the phones of each user.

The ICS audio is muted during transmit.

The ICS audio level at the phones is controlled by the ICS volume control (**12**).

### 3.3.7 Multi-Function (XMIT / ICS) Switch Operation

✅ **Note**: At installation, this switch may be configured to operate in default or alternative mode. Check with your installing agency for confirmation of the operation of this switch.

Default Operation

When in the default XMIT/ICS configuration, this switch acts as the pilot's 'Press-to-talk (PTT)' button. The unit will transmit on the selected transceiver when the switch is set to the 'up' position, and when set to the 'down' position, it will transmit on the intercom.

Alternative Operation

This switch may be configured to provide a ground signal to operate other equipment.

3.3.8 Music Operation

Music to the phones will be muted by incoming audio (ICS, Receive, Direct or Alert Audio) or if the unit is transmitting. When the incoming audio has ended, the music will gradually return to the previous level.

3.4 Emergency Operation Mode

Emergency mode can be selected by the Mode switch on the front panel, or entered automatically if power to the unit is lost.

3.4.1 Auto Emergency Mode

If the unit is in emergency mode because power has been lost to the unit, the sum of the COM 1 transceiver, NAV 1 receive, and DIRECT AUDIO will be routed to the pilot's phones and the CVR. The pilot's microphone and transmit key are connected to the COM 1 transceiver. No other function in the JA95-092 will operate when power is lost. All indicator LEDs, legends and annunciators will be dark.

3.4.2 Selected Emergency Mode

If the unit is in emergency mode because the EMER / NORM switch is in the EMER position and sufficient power is applied to the JA95-092, the sum of the COM 1 receive, NAV 1 receive, DIRECT AUDIO and Alert audio will be routed to the pilot's phones and the CVR. The pilot's microphone and transmit key are connected to the COM 1 transceiver. The pilot is disconnected from the ICS. The COM 1 transceiver and NAV 1 receiver and DIRECT AUDIO are not available to the other users. All other functions of the JA95-092 will operate. The LEDs, legends and annunciators will retain normal functionality.

Installation and Operating Manual

Appendix A - Installation Drawings

A1   Introduction

The drawings necessary for installation and troubleshooting of the JA95-092 Audio Controller - Dual ICS Input are in this Appendix, as listed below.

Note: A fully customized set of Connector Maps and Interconnects can be created using the ProCS™ software. Refer to the ProCS™ manual for further information.

A2   Installation Drawings

DOCUMENT	Rev
JA95-092 Connector Map	A
JA95-092 Interconnect	A
JA95-092 Mechanical Installation	A
JA95-092 Equipment Block Diagram	A

Reference Documents	
TOL-CUST-EXTR Legend Replacement	A

RECEIVE CONNECTOR

COM RX

NAV RX

P1

37 PIN FEMALE DMIN
MATING CONNECTOR

Top row (pins 1–19):
Pin	Signal
1	CVR HI
2	COM 1 RX HI
3	COM 2 RX HI
4	AUX RX HI
5	FM 1 RX HI
6	FM 2 RX HI
7	NAV 1 RX HI
8	NAV 2 RX HI
9	ADF 1 RX HI
10	ADF 2 RX HI
11	ICS INPUT 1 HI
12	ICS INPUT 2 HI
13	DIRECT AUDIO HI
14	MUSIC LEFT HI / RX COMP OUT HI [1]
15	CALL OUTPUT
16	ICS OUTPUT HI [1]
17	COPILOT PHN HI
18	PILOT PHN HI
19	LIGHTS INPUT

Bottom row (pins 20–37):
Pin	Signal
20	CVR LO
21	COM 1 RX LO
22	COM 2 RX LO
23	AUX RX LO
24	FM 1 RX LO
25	FM 2 RX LO
26	NAV 1 RX LO
27	NAV 2 RX LO
28	ADF 1 RX LO
29	ADF 2 RX LO
30	ICS INPUT 1 LO
31	ICS INPUT 2 LO
32	DIRECT AUDIO LO
33	MUSIC LEFT LO / RX COMP OUT LO [1]
34	SPARE
35	ICS OUTPUT LO [1]
36	COPILOT PHN LO
37	PILOT PHN LO

VIEW IS FROM REAR OF MATING CONNECTOR

NOTE:

[1] CONFIGURABLE CONTACT

JUPITER AVIONICS TEMPLATE AUTOCAD PORTRAIT SIZEA REV B.DWT

TRANSMIT CONNECTOR

P2

50 PIN FEMALE DMIN
MATING CONNECTOR

PTT OUT | PTT IN | ALERT IN

Top row pin labels:

- 1 — COM 1 PTT
- 2 — COM 2 PTT
- 3 — AUX PTT
- 4 — FM 1 PTT
- 5 — FM 2 PTT
- 6 — PAX 1 TX PTT / MF SW 2
- 7 — PILOT TX PTT
- 8 — COPILOT TX PTT
- 9 — PILOT ICS PTT
- 10 — COPILOT ICS PTT
- 11 — PAX 1 ICS PTT / MF SW 1 / ALERT 1 KEY
- 12 — ALERT 2 KEY / CALL / PAX 2 TX PTT
- 13 — ALERT 3 KEY / PA PTT / PAX 2 ICS PTT
- 14 — PA MIC HI
- 15 — PA MIC LO
- 16 — ALERT ENABLE
- 17 — POWER INPUT

Middle row pins: 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33

Bottom row pin labels:

- 34 — POWER GROUND
- 35 — COM 1 MIC HI
- 36 — COM 1 MIC LO
- 37 — COM 2 MIC HI
- 38 — COM 2 MIC LO
- 39 — AUX MIC HI
- 40 — AUX MIC LO
- 41 — FM 1 MIC HI
- 42 — FM 1 MIC LO
- 43 — FM 2 MIC HI
- 44 — FM 2 MIC LO
- 45 — PAX 1 MIC HI
- 46 — PAX 1 MIC LO
- 47 — PILOT MIC HI
- 48 — PILOT MIC LO
- 49 — COPILOT MIC HI
- 50 — COPILOT MIC LO

Lower labels continued: PAX 2 MIC HI, PAX 2 MIC LO, PAX 3 MIC HI, PAX 3 MIC LO, PAX 4 MIC HI, PAX 4 MIC LO, PAX 5 MIC HI, PAX 5 MIC LO, PAX 1 PHN HI, PAX 1 PHN LO, PAX 2 PHN HI, PAX 2 PHN LO, PAX 3 PHN HI, PAX 3 PHN LO, PAX 4 & 5 PHN HI, PAX 4 & 5 PHN LO

MIC OUT | MIC IN | PAX PHN OUT

VIEW IS FROM REAR OF MATING CONNECTOR

PREPARED	TAT	JUPITER AVIONICS CORPORATION
CHECKED		
APPROVED		TITLE: Audio Controller - Dual ICS Input with Call Switch P2 Connector Map

NCAGE CODE	PART NO.	SHEET
L00N3	JA95-092	2/4

CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.

DOC NO.
JA95-092 Connector Map Rev A.dwg

FRONT PANEL MUSIC/CONFIGURATION CONNECTOR

P3 — ACCEPTS THE FOLLOWING PLUG FORMATS   MATING PLUG NAMES   JA95 SIGNAL NAMES

JA99 CONFIGURATION CABLE
4 POLE MALE 3.5MM STEREO
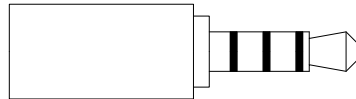
TIP: TX DATA
1ST RING: RX DATA
2ND RING: GROUND
3RD RING: CONFIG AUDIO

CONFIG DATA TO JA95
CONFIG DATA FROM JA95
GROUND
MODE SELECT / CONFIG AUDIO

MP3 STEREO PLAYER,
IPHONE 3GS OR 4
3 POLE MALE 3.5MM STEREO
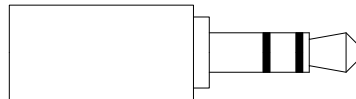
TIP: LEFT MUSIC
1ST RING: RIGHT MUSIC
2ND RING: GROUND

FRONT PANEL MUSIC LEFT
FRONT PANEL MUSIC RIGHT
GROUND

PREPARED	TAT		JUPITER AVIONICS CORPORATION		
CHECKED					
		TITLE	Audio Controller - Dual ICS Input with Call Switch P3 Connector Map		
APPROVED		NCAGE CODE L00N3	PART NO. JA95-092		SHEET 3/4
CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.		DOC NO. JA95-092 Connector Map Rev A.dwg			

(P4) CHASSIS GROUND CONNECTOR

#4 RING TERMINAL
MATING CONECTOR

PREPARED	TAT	JUPITER AVIONICS CORPORATION		
CHECKED		TITLE Audio Controller - Dual ICS Input with Call Switch P4 Connector Map		
APPROVED		NCAGE CODE L00N3	PART NO. JA95-092	SHEET 4/4
		DOC NO. JA95-092 Connector Map Rev A.dwg		

JA95-092 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 (0.9 M).

3. CABLE SHIELDS AT THE JA95-092 CONNECTOR PINS SHOULD BE TERMINATED TO AIRFRAME GROUND USING A TAG RING P/N: MS27741-5 OR EQUIVALENT.

4. CONNECTOR PIN HAS MORE THAN ONE FUNCTION. SEE THE OPTIONS SECTION OF THIS DRAWING FOR ALTERNATE INTERCONNECT WIRING.

5. ONLY +28 VDC OR +14 VDC OR +5 VDC LIGHTS INPUT VOLTAGE MAY BE APPLIED AT ONE TIME.

6. THE FRONT PANEL MUSIC INPUT SHALL NOT BE CONNECTED TO ANY OTHER AUDIO INPUT.

CONNECTOR PIN LEGENDS

LEGEND

RESERVED — INTERNAL CIRCUITS MAY EXIST AND MAY BE ACTIVATED FOR FUTURE USE. NO EXTERNAL WIRE CONNECTION.

PREPARED	TAT	JUPITER AVIONICS CORPORATION		
CHECKED	JAC 08-19-25 TAT	TITLE Audio Controller - Dual ICS Input with Call Switch Interconnect Notes		
APPROVED	JAC 08-19-25 KDV	NCAGE CODE L00N3	PART NO. JA95-092	SHEET 1/5
CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.		DOC NO. JA95-092 Interconnect Rev A.dwg		

JA95-092

J1

P1
37 PIN FEMALE DMIN
MATING CONNECTOR

Signal	Pin		Destination
COM 1 RX HI	2	RX	COM 1
COM 1 RX LO	21	LO	
COM 2 RX HI	3	RX	COM 2
COM 2 RX LO	22	LO	
AUX RX HI	4	RX	AUX
AUX RX LO	23	LO	
FM 1 RX HI	5	RX	FM 1
FM 1 RX LO	24	LO	
FM 2 RX HI	6	RX	FM 2
FM 2 RX LO	25	LO	
NAV 1 RX HI	7	RX	NAV 1
NAV 1 RX LO	26	LO	
NAV 2 RX HI	8	RX	NAV 2
NAV 2 RX LO	27	LO	
ADF 1 RX HI	9	RX	ADF 1
ADF 1 RX LO	28	LO	
ADF 2 RX HI	10	RX	ADF 2
ADF 2 RX LO	29	LO	
ICS INPUT 1 HI	11	HI	PAX PHN OUT - OTHER
ICS INPUT 1 LO	30	LO	AUDIO CONTROLLER
ICS INPUT 2 HI	12	N/C	
ICS INPUT 2 LO	31	N/C	
DIRECT AUDIO HI	13	RX	DIRECT AUDIO
DIRECT AUDIO LO	32	LO	
CVR HI	1	HI	CVR
CVR LO	20	LO	
MUSIC LEFT HI	14	RX	MUSIC LEFT
MUSIC LEFT LO	33	LO	
CALL OUTPUT	15		CALL INDICATOR + 28 V
SPARE	34		
ICS OUTPUT HI	16	HI	PAX MIC IN - OTHER
ICS OUTPUT LO	35	LO	AUDIO CONTROLLER
COPILOT PHN HI	17	PHN	COPILOT
COPILOT PHN LO	36	LO	HEADSET JACK
PILOT PHN HI	18	PHN	PILOT
PILOT PHN LO	37	LO	HEADSET JACK
LIGHTS INPUT	19		+ 28 VDC LIGHTS
			+ 14 VDC LIGHTS
			+ 5 VDC LIGHTS

⚠2 ⚠3 (near pin 37)

MUSIC LEFT ⚠4

LIGHTS: ⚠5 (x3)

PREPARED	TAT	
CHECKED	JAC 08-19-25 TAT	
APPROVED	JAC 08-19-25 KDV	

JUPITER AVIONICS CORPORATION

TITLE
Audio Controller - Dual ICS Input with Call Switch
J1 Interconnect

NCAGE CODE	PART NO.	SHEET
L00N3	JA95-092	2/5

DOC NO.
JA95-092 Interconnect Rev A.dwg

JA95-092

J2

P2
50 PIN FEMALE DMIN
MATING CONNECTOR

Signal	Pin		
COM 1 MIC HI	18		MIC
COM 1 MIC LO	35		LO COM 1
COM 1 PTT	1		KEY
COM 2 MIC HI	19		MIC
COM 2 MIC LO	36		LO COM 2
COM 2 PTT	2		KEY
AUX MIC HI	20		MIC
AUX MIC LO	37		LO AUX
AUX PTT	3		KEY
FM 1 MIC HI	21		MIC
FM 1 MIC LO	38		LO FM 1
FM 1 PTT	4		KEY
FM 2 MIC HI	22		MIC
FM 2 MIC LO	39		LO FM 2
FM 2 PTT	5		KEY
PILOT MIC HI	24		MIC PILOT
PILOT MIC LO	41		LO HEADSET JACK
COPILOT MIC HI	25		MIC COPILOT
COPILOT MIC LO	42		LO HEADSET JACK
PILOT TX PTT	7		PILOT TX SWITCH
PILOT ICS PTT	9		PILOT ICS SWITCH
COPILOT TX PTT	8		COPILOT TX SWITCH
COPILOT ICS PTT	10		COPILOT ICS SWITCH
PAX 1 MIC HI	23		MIC
PAX 1 MIC LO	40		LO PAX 1
PAX 1 PHN HI	30		PHN HEADSET JACK
PAX 1 PHN LO	47		LO
PAX 2 MIC HI	26		MIC
PAX 2 MIC LO	43		LO PAX 2
PAX 2 PHN HI	31		PHN HEADSET JACK
PAX 2 PHN LO	48		LO
PAX 3 MIC HI	27		MIC
PAX 3 MIC LO	44		LO PAX 3
PAX 3 PHN HI	32		PHN HEADSET JACK
PAX 3 PHN LO	49		LO
PAX 4 MIC HI	28		MIC
PAX 4 MIC LO	45		LO PAX 4
PAX 4 & 5 PHN HI	33		PHN HEADSET JACK
PAX 4 & 5 PHN LO	50		LO
PAX 5 MIC HI	29		MIC
PAX 5 MIC LO	46		LO PAX 5
			PHN HEADSET JACK
			LO
PA MIC HI	14		MIC PA SYSTEM
PA MIC LO	15		LO
PAX 1 TX PTT	6		PAX 1 TX PTT
PAX 1 ICS PTT	11		PAX 1 ICS PTT
ALERT 2 KEY	12		ALERT 2 KEY
ALERT 3 KEY	13		ALERT 3 KEY
ALERT ENABLE	16		+ 28 VDC ALERT POWER
POWER INPUT	17		+ 28 VDC POWER
POWER GROUND	34		AIRFRAME GROUND

22 AWG (POWER INPUT)
22 AWG (POWER GROUND)

1A

PREPARED	TAT		
CHECKED	JAC 08-19-25 TAT		
APPROVED	JAC 08-19-25 KDV		

JUPITER AVIONICS CORPORATION

TITLE: Audio Controller - Dual ICS Input with Call Switch
J2 Interconnect

NCAGE CODE	PART NO.	SHEET
L00N3	JA95-092	3/5

CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.

DOC NO.
JA95-092 Interconnect Rev A.dwg

OPTION: PROGRAMMING FROM JA99-001

JA95-092 FRONT PANEL MUSIC/CONFIGURATION INPUT

	J3
MODE SELECT/CONFIG AUDIO	3RD RING
CONFIG DATA TO JA95	TIP
CONFIG DATA FROM JA95	1ST RING
GROUND	2ND RING

P3
4 POLE MALE 3.5MM STEREO
MATING CONNECTOR

PART OF JA99-001
CONFIGURATION CABLE

MODE SELECT/CONFIG AUDIO
GROUND
CONFIG DATA FROM JA95
CONFIG DATA TO JA95

OPTION: STEREO PLAYER

JA95-092 FRONT PANEL MUSIC/CONFIGURATION INPUT

	J3 ⟨6⟩
RESERVED	3RD RING
FRONT PANEL MUSIC LEFT	TIP
FRONT PANEL MUSIC RIGHT	1ST RING
GROUND	2ND RING

P3
3 POLE MALE 3.5MM STEREO
MATING CONNECTOR

STEREO PLAYER

TIP	LEFT MUSIC
1ST RING	RIGHT MUSIC
2ND RING	GROUND

GROUND
FRONT PANEL MUSIC RIGHT
FRONT PANEL MUSIC LEFT

PREPARED	TAT	JUPITER AVIONICS CORPORATION		
CHECKED	JAC 08-19-25 TAT	TITLE Audio Controller - Dual ICS Input with Call Switch Interconnect Options		
APPROVED	JAC 08-19-25 KDV	NCAGE CODE L00N3	PART NO. JA95-092	SHEET 4/5
CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.		DOC NO. JA95-092 Interconnect Rev A.dwg		

OPTION: RX COMPOSITE OUT

JA95-092

P/O J1

P/O P1
37 PIN FEMALE DMIN
MATING CONNECTOR

RX COMP OUT HI | 14
RX COMP OUT LO | 33

HI
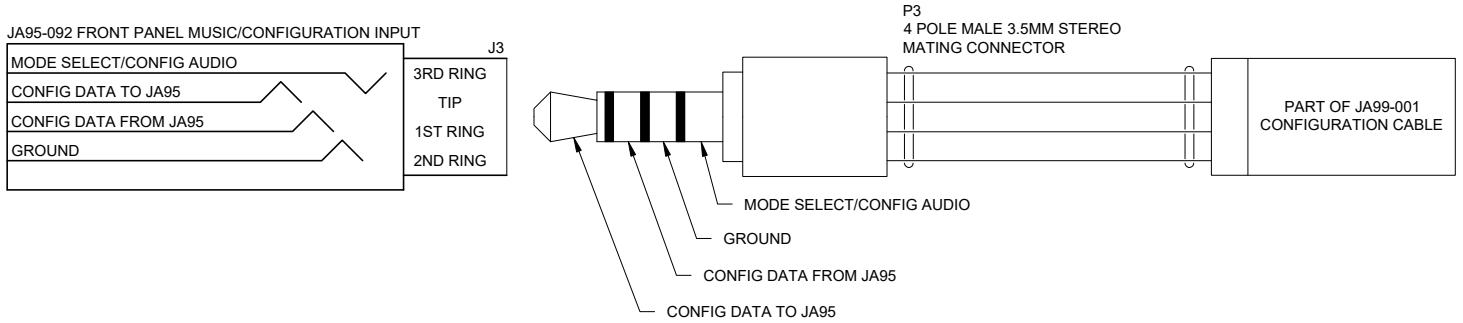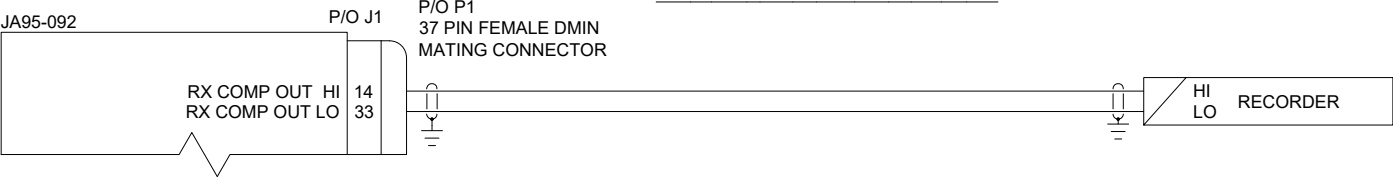LO   RECORDER

OPTION: MULTI-FUNCTION SWITCH OUTPUTS (MF SW 1 & MF SW 2)

JA95-092

P/O J2

P/O P2
50 PIN FEMALE DMIN
MATING CONNECTOR

MF SW 2 (UP POSITION) | 6
MF SW 1 (DOWN POSITION) | 11

MF SW 2
MF SW 1

OPTION: CALL INPUT

JA95-092

P/O J2

P/O P2
50 PIN FEMALE DMIN
MATING CONNECTOR

CALL | 12
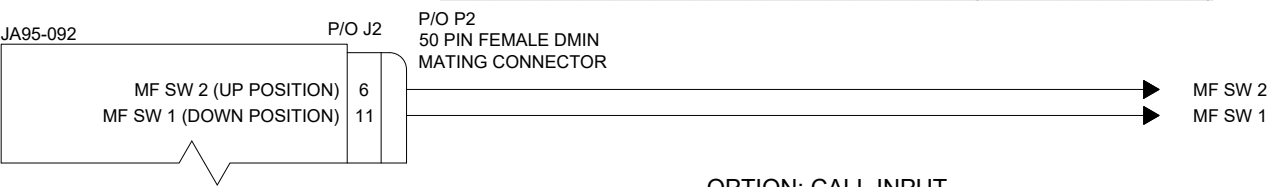
CALL
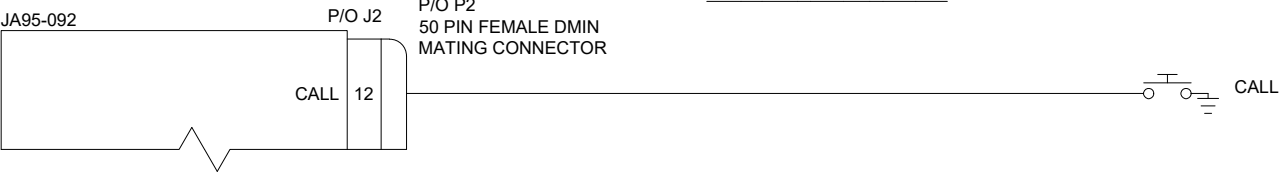
OPTION: CONFIGURABLE SWITCH INPUTS (ALERT 1 KEY, PAX 2 TX PTT, PAX 2 ICS PTT)

JA95-092

P/O J2

P/O P2
50 PIN FEMALE DMIN
MATING CONNECTOR

ALERT 1 KEY | 11

PAX 2 TX PTT | 12

PAX 2 ICS PTT | 13

ALERT 1 KEY

PAX 2 TX PTT

PAX 2 ICS PTT
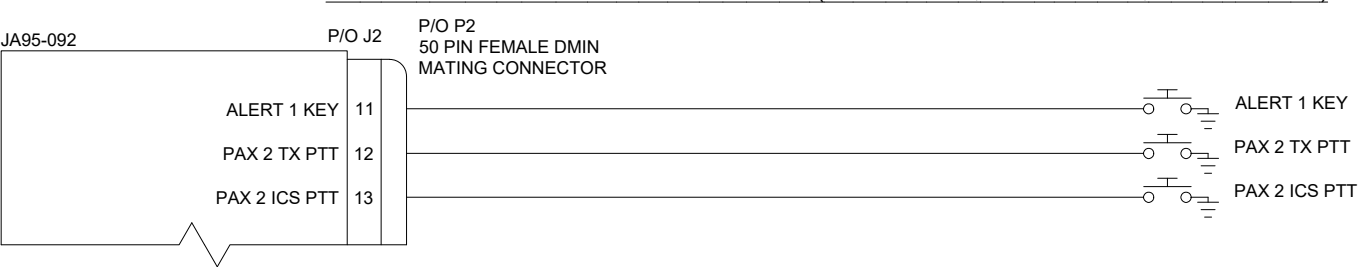
OPTION: PA SYSTEM KEY (PA PTT)

JA95-092

P/O J2

P/O P2
50 PIN FEMALE DMIN
MATING CONNECTOR

PA PTT | 13

KEY   PA SYSTEM

OPTION: CHASSIS GROUND

JA95-092

J4

THREADED STUD 4-40 0.25 in.

CHASSIS GROUND

22 AWG
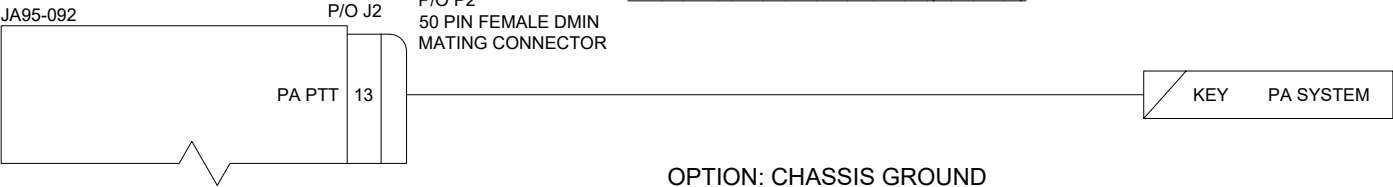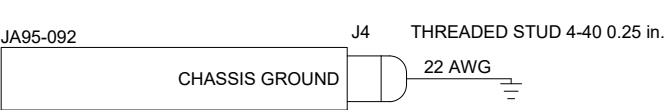
OPTION: ICS LOOP BACK

REQUIRED FOR STAND-ALONE INSTALLATION

JA95-092

P/O J1

P/O P1
37 PIN FEMALE DMIN
MATING CONNECTOR

ICS INPUT 2 HI | 12
ICS INPUT 2 LO | 31

ICS OUTPUT HI | 66
ICS OUTPUT LO | 35

PREPARED	TAT
CHECKED	JAC 08-19-25 TAT
APPROVED	JAC 08-19-25 KDV

JUPITER AVIONICS
CORPORATION

TITLE
Audio Controller - Dual ICS Input with Call Switch
Interconnect Options

NCAGE CODE	PART NO.	SHEET
L00N3	JA95-092	5/5

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TO JUPITER AVIONICS CORP.

DOC NO.
JA95-092 Interconnect Rev A.dwg

J2

J1

J4

5.00in MAX
[127mm MAX]

2.53in
[64.3mm]

0.30in MAX
[7.62mm MAX]

0.89in
[22.6mm]

5.48in MAX
[139mm MAX]

3.25in
[82.6mm]

1.26in MAX
[32mm MAX]

1.875in MAX
[47.63mm MAX]

JA95

EMER XMIT

NORM ICS

COM1 COM2 AUX FM1 FM2 NAV1 ADF1 CALL

NAV2 ADF2

TX PA

RX

VOX CALL ICS

JAC

J3

5.75in MAX
[146mm MAX]
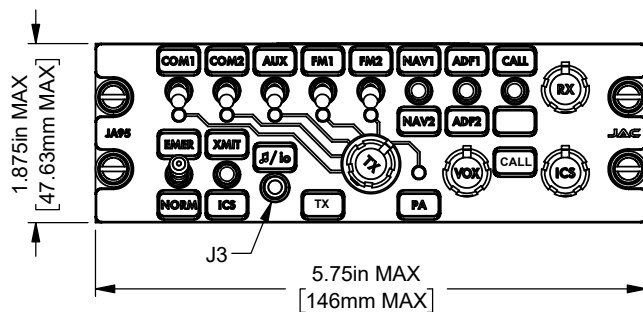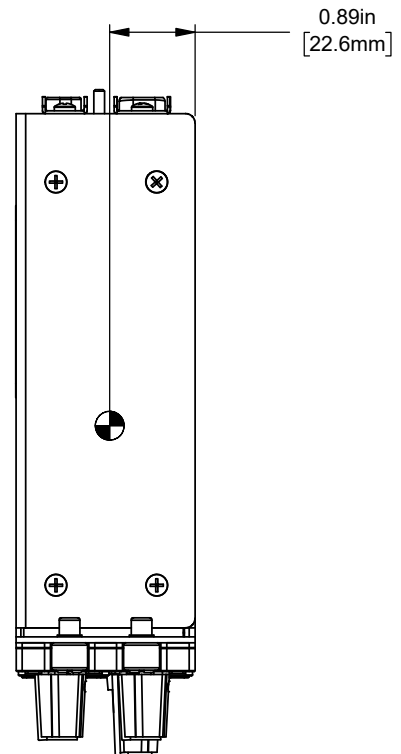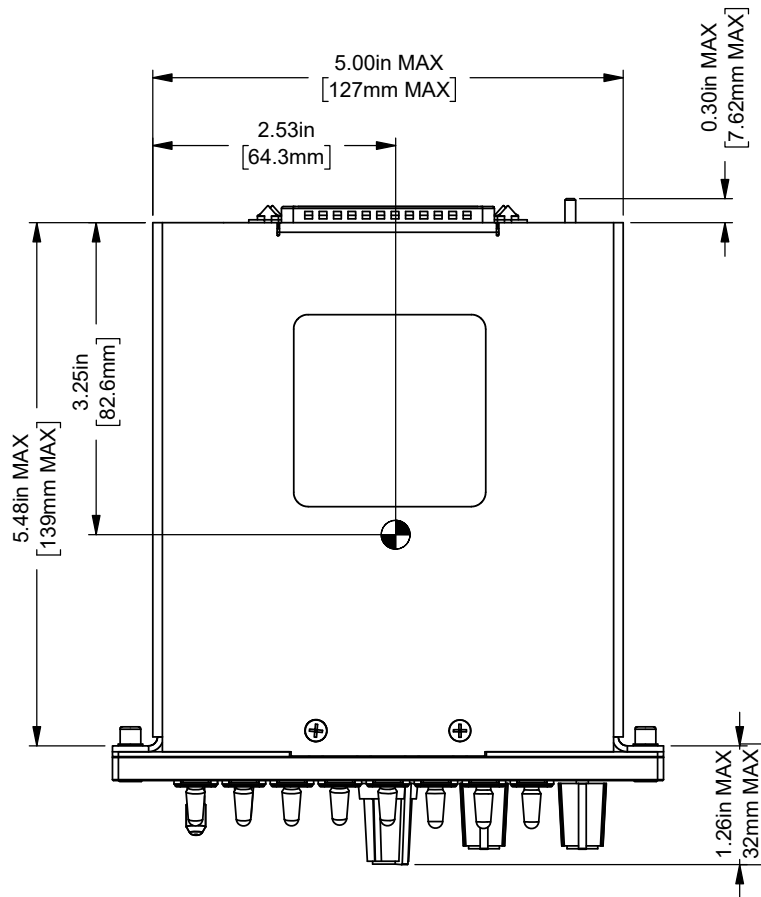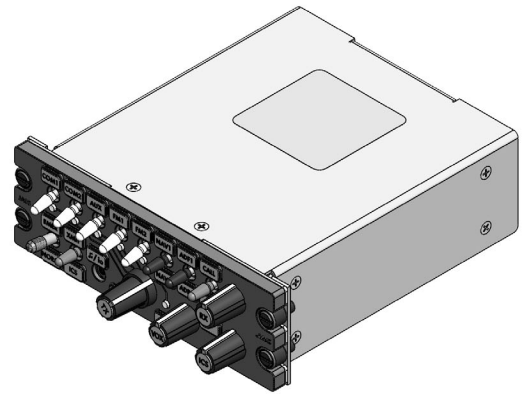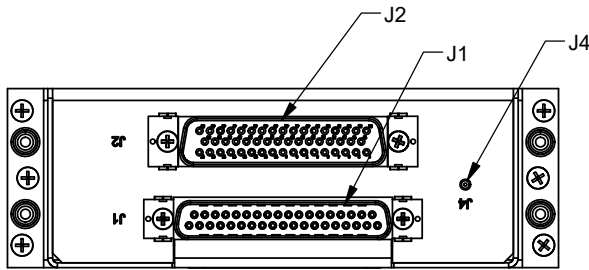
⬤ CENTER OF GRAVITY
±0.03in [0.8mm]

WEIGHT: 1.64 lbs [0.74 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	PREPARED	TAT	JUPITER AVIONICS CORPORATION		
	CHECKED	JAC 08-18-25 TAT	TITLE Audio Controller - Dual ICS Input with Call Switch		
	APPROVED	JAC 08-18-25 KDV	NCAGE CODE L00N3	PART NO. JA95-092	SHEET 1/1
MATERIAL: N/A	CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.		DOC. NO. JA95-092 Mechanical Installation Rev A.SLDDRW		
FINISH: N/A	DRAWING NOT TO SCALE				
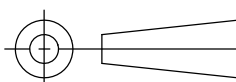
OTHER AUDIO PANEL(S)

RECORDING DEVICE

CVR

PILOT PHONE,
MICROPHONE, TX PTT, ICS PTT

PILOT

COPILOT PHONE,
MICROPHONE, TX PTT, ICS PTT

COPILOT

ICS
INPUT 1 & 2

RX COMP
OUT /1\

CVR

CALL
INPUT

CALL
OUTPUT

PAX 1

ICS
OUTPUT

PAX 2

PASSENGER
PHONES, MICROPHONE

14 - 28 VDC POWER

5, 14 or 28 VDC LIGHTS

/1\
PAX 1 & 2 TX AND ICS PTT

PAX 3

/1\
ALERT 1, 2 & 3 KEY

/1\
MULTI-FUNCTION SWITCH
OUTPUTS 1 & 2

PAX 4

PAX 5

RX AUDIO
TX AUDIO
TX PTT

RX AUDIO

MUSIC /1\
DIRECT AUDIO

PA
FM2
FM1
AUX
COM 2
COM 1

ADF 2
ADF 1
NAV 2
NAV 1

MUSIC
DIRECT AUDIO

/1\ CONFIGURABLE FUNCTION

PREPARED	TAT		JUPITER AVIONICS CORPORATION
CHECKED	JAC 09-16-25 TAT	TITLE	Audio Controller - Dual ICS Input with Call Switch Equipment Block Diagram
APPROVED	JAC 09-22-25 KDV		
		NCAGE CODE L00N3	PART NO. JA95-092

SHEET
1/1

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TO JUPITER AVIONICS CORP.

DOC NO.
JA95-092 Equipment Block Diagram Rev A.dwg

Field-Replaceable Legends

Jupiter Avionics Corporation (JAC) products have field-replaceable illuminated legends. This permits easy customization, and allows the same units to be used in multiple different configurations with only minimal changes.

The internal circuitry ensures that, although the legends are individually illuminated, the illumination is consistent and uniform throughout all legends, and never needs to be balanced. This means that if it is a requirement to change the labelling due to damage or for a different project, there is no need for costly and time-consuming illumination checks.

Extractor tool recess
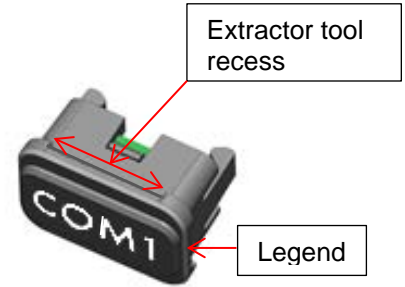
Legend

Legend Removal

⚠️ **Caution**: Take care not to scratch or otherwise damage the faceplate or the legend.
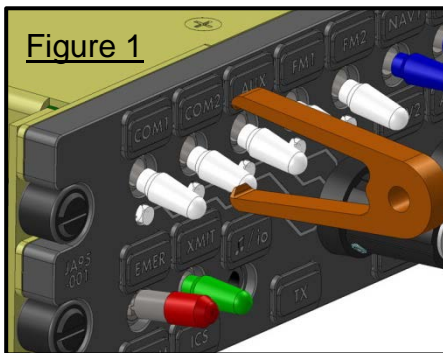
Figure 1

To facilitate legend removal, JAC provides a legend extractor tool - part # TOL-CUST-EXTR (figure 1) that fits into the recesses on the legend.

Figure 2

To remove a legend, hold the extractor firmly between the forefinger and thumb, and use a tweezer-like action to grip the legend (figure 2).
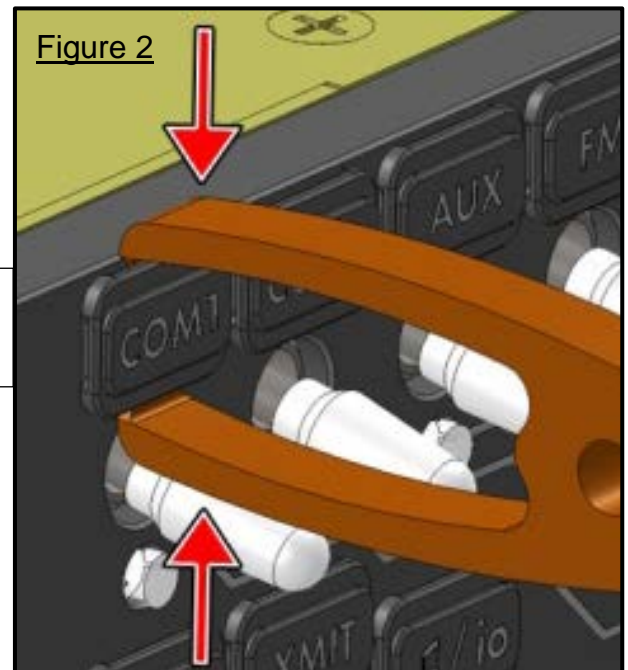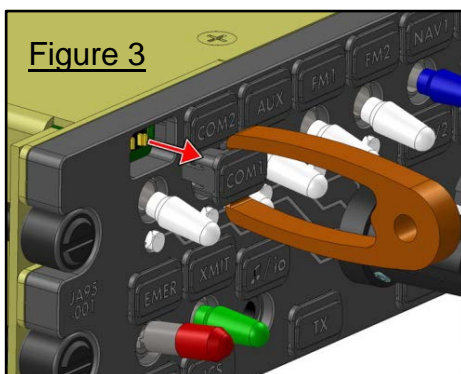
Figure 3

Pull the legend away from the faceplate as shown in figure 3.

Legend Replacement

To replace a legend, align the text correctly, and then apply gentle pressure until the body of the legend support seats firmly into the faceplate.

Once the new legend is in place, ensure that it has seated correctly by checking that it illuminates. The unit is now ready for use.

Installation and Operating Manual

Appendix B - Certification Documents

B1   Airworthiness Approval

Airworthiness approval of the JA95-092 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 replacing an existing audio panel with a Jupiter Avionics JA95-092 Audio Controller - Dual ICS Input with CALL Switch. 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

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Sample Wording:

Removed the existing [model] audio panel and replaced with a Jupiter Avionics JA95-092 Audio Controller in [aircraft location].

The JA95-092 is approved to CAN-TSO-C139. The JA95-092 meets RTCA DO-160F environmental qualifications for this installation. See Section 1 of the JA95-092 Installation Manual.

Installed in accordance with the JA95-092 Installation Manual, Revision [ ], and AC 43.13-2, Chapters 2, and 3.

The JA95-092 interfaces with existing aircraft radios per the Installation Manual instructions.

The JA95-092 Installation Manual provides detailed installation instructions and wiring diagrams (Section 2, and Appendices A and B).

Power is supplied to the JA95-092 through an existing [ ]-Amp circuit breaker that was previously used by the original audio panel. 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 JA95-092 Audio Controller - Dual ICS Input with Call Switch is "on condition" only. Refer to the JA95-092 Maintenance Manual. Periodic maintenance of the JA95-092 is not required.

The following sample Instructions for Continued Airworthiness (ICA) provides assistance in preparing ICA for the Jupiter Avionics JA95-092 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 JA95-092 Audio Controller - Dual ICS Input 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 JA95-092 installed in an [aircraft make and model].

Applicability: Applies to a Jupiter Avionics JA95-092 installed in an [aircraft make and model].

Definitions/Abbreviations: None, N/A.

Precautions: None, N/A.

Units of Measurement: None, N/A.

Referenced Publications: JA95-092 Installation and Operating Manual
                     JA95-092 Maintenance Manual
                     JA95-092 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 JA95-092 Audio Controller - Dual ICS Input with Call Switch 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

Refer to section 3 of this manual or to the Jupiter Avionics JA95-092 Operating Manual.

4. Servicing Information

N/A

5. Maintenance Instructions

Maintenance of the JA95-092 is 'on condition' only. Periodic maintenance is not required. Refer to the JA95-092 Maintenance Manual.

6. Troubleshooting Information

Refer to the JA95-092 Maintenance Manual.

7. Removal and Replacement Information

Refer to Section 2 of this manual - the JA95-092 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 JA95-092 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

JA95-092 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 JA95-092 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: JAC 09-22-25 AH	Approved: JAC 09-22-25 KDV

Nomenclature	Audio Controller - Dual ICS Input with Call Switch
Type/Model/ Part No.:	JA95-092
TSO No.:	CAN-TSO-C139
Manufacturer's Build Configuration:	*JA95-092 Build Configuration Rev A*
Manufacturer's Test Report:	*JA95-001 Test Report (Qualification - Final) Rev A[1]* *JA95-092 CAN-TSO Design Change Assessment Rev A[2]*
Manufacturer's Specification and/or Other Applicable Specification:	*JA95-092 Derivative 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. F dated December 6, 2007	**Dates Tested:**	Sept 28 - Dec 27, 2012

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 [(A1)(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 tested to Category B (5 °C/min)
Humidity	6.0	Equipment tested to Category A (48 hours)

CONDITIONS	SECTION	DESCRIPTION OF TESTS CONDUCTED

Operational Shock and Crash Safety
 	
    Operational Shock
    Crash Safety (impulse)
    Crash Safety (sustained)
	7.0	
		
		Equipment tested to Category B (6 g for 11 ms)
		Equipment tested to Category B (20 g for 11 ms)
		Equipment tested to Category B (20 g for 3 sec)

Vibration[3]
    Fixed Wing - Sine
    Fixed Wing - Random
    Helicopter - Random, unknown
	8.0	Equipment tested to Categories:
		SM
		SB
		U2FF1

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 < D < 0.3 m)

Power Input
 	
    DC Equipment
 	
    DC Current Ripple
    DC Inrush
	16.0	Equipment tested to Category:
		Z (+28 Vdc equipment),
		B (+14 Vdc and + 28 Vdc equipment)
		X, no test performed
		X, no test performed

Voltage Spike	17.0	Equipment tested to Category A (600Vp, 10 us)
Audio Frequency Susceptibility	18.0	Z (+28 Vdc equipment), B (+14 Vdc equipment)

Induced Signal Susceptibility
    Magnetic Fields into Equipment
    Magnetic Fields into Cables
    Electric Fields into Cables
    Voltage Spikes into Cables
	19.0	Equipment tested to Category [ZC]
		20 A at 400Hz
		30 A-m at 400Hz
		1800V-m at 400Hz
		L=3.0m

CONDITIONS	SECTION	DESCRIPTION OF TESTS CONDUCTED
Radio Frequency Susceptibility[4] Radiated Conducted	20.0	Equipment tested to Category [RR] R (20 V/m CW&SW) and (150 V/m PM) R (30 mA)
Radio Frequency Emission[4]	21.0	Equipment tested to Category H
Lightning Induced Transient Susceptibility[4] Pin Injection Cable Bundle	22.0	Equipment 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 identified as Category X, no test performed
Other Tests	N/A	N/A

REMARKS

[1] Test information can be found in Jupiter Avionics document:
JA95-001 Test Report (Qualification - Final) Rev A

[2] All tests were performed on the JA95-001 Build Configuration Rev D. A similarity analysis between the two products is detailed in the Jupiter Avionics Corp. document:
JA95-092 CAN-TSO Design Change Assessment Rev A

[3] During exposure to vibration test conditions the following critical resonances changed frequency greater than 2.5%:

Orientation	Initial Freq.	Final Freq.
Horizontal	72.5 Hz	75.0 Hz
Vertical	338 Hz	329 Hz
	203 Hz	208 Hz
Lateral	140 Hz	136 Hz
	156 Hz	168 Hz
	169 Hz	157 Hz
	265 Hz	285 Hz

[4] Testing of Radio Frequency Susceptibility, Radio Frequency Emission and Lightning Induced Transient Susceptibility was conducted at CKC Laboratories in Bothell, WA, USA.
Reference report: *JA95-001 Test Report (CKC Labs DO-160F Section 20, 21, 22 – 2012-11-26 to 30) Rev A*