JA95-N60 Audio Controller

Five Transceiver - Expander - NVG

Installation and Operating Manual

Rev A

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IMPORTANT:

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www.jupiteravionics.com

RECORD OF REVISIONS

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SECTION 1 - DESCRIPTION

1.1 System Overview

The JA95-N60 Audio Controller - Five Transceiver - Expander - NVG is a compact, lightweight panel that allows connection of up to 4 additional radios to the aircraft audio system. The JA95-N60 is compatible with the transceiver connections of any of Jupiter's JA9x series of audio controllers as well as any civil aviation audio controller.

The JA95-N60 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 configuration connector (io) without the necessity of removing the unit from the panel. To facilitate future customizations and certification, no software or complex electronic devices are used in the JA95-N60 design.

1.2 Features Overview

Many of the JA95-N60 input and output levels are adjustable, and several audio paths are selectable.

A configuration connector is provided on the faceplate of the JA95-N60 for configuration of audio levels and routing.

The JA95-N60 has two modes of operation: Normal Mode and Emergency Mode.

The JA95-N60 supports up to five transceivers, each selectable from a rotary switch.

The JA95-N60 allows transmit access for one audio panel.

The JA95-N60 has NVIS Green A Legends and Annunciators.

1.3 Inputs and Outputs

Refer to the JA95-N60 connector maps for the mating connector designators and pin assignments for the input and output signals.

1.3.1 Inputs

Name	Qty	Type
CONFIG DATA TO JA95	1	Data signal
LIGHTS INPUT	1	Analog control signal
TX MIC HI/LO	1	Audio signal
MODE SELECT	1	Multi format signal
TX PTT INPUT	1	Active low discrete (Feature selected from ProCS)
POWER INPUT	1	14 to 28 Vdc power supply
RX HI/LO	5	Audio signal

1.3.2 Outputs

Name	Qty	Type
CONFIG DATA FROM JA95	1	Data signal
MIC HI/LO	5	Audio signal
TX PTT	5	Active low discrete (PA PTT feature selected from ProCS)
RX OUTPUT HI/LO	1	Audio signal (Feature selected from ProCS)

1.4 Specifications

1.4.1 Electrical Specifications

Power Input

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
Input current at 9 Vdc	≤ 2.4 A

1.4.1.1 Audio Performance

Rated Input Level

Microphone input level	250 mVrms ±10%

Rated Output Level

RX rated output	7.75 Vrms±10%
RX rated output, in emergency mode or with power input ≤6 Vdc	2.10 Vrms±10%
Microphone rated output	250 mVrms±10%

Audio Frequency Response

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

Spurious Responses

Audio output spurious response attenuation	≥50 dB

Distortion Characteristics

Audio output distortion at rated power	≤10%

Input Impedance

Microphone input Impedance	150 Ω ±10%
Receive Audio input Impedance	1000 Ω ±10%

Output Impedance

RX output Impedance	≤ 60 Ω
Transceiver Microphone output Impedance	≤ 80 Ω

Output Load

RX Output load	600 Ω ±10%
Transceiver Microphone load	150 Ω ±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

Input to Microphone Output Crosstalk.		
	Input to Microphone Output crosstalk	≤1.0 mV
Audio Noise Level without Signal		
	Noise level below the rated output	≥60 dB
Listening Test		Loud and Clear

1.4.1.2 Audio Performance, Other

RECEIVE AUDIO input circuitry type	differential
RX output HI / LO output circuitry type	single ended
MIC output circuitry type	differential

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, active signal level	0.1 to 10 mA
Active low control input signals have	internal pull-up resistor
Active low control output, active output	≤ +2 Vdc
Active low control output active signal sinks	≤ 1 Adc

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 [47.6 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 lb [0.74 kg] max
Material		brushed aluminum with conversion coating
Connectors (4):	J1	One 37-pin D-Sub male
	J2	One 50-pin D-Sub male
	J3	One 4 pole 3.5mm stereo jack
	J4	One 4-40 stud, 0.5 in max
Mounting		4 Dzus fasteners
Bonding		≤ 2.5 mΩ
Installation kit part number		INST-JA95

1.4.3 Configuration Connector

The JA95-N60 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-N60 requires the Product Configuration Software (ProCS) version v0.70.1 or later. Refer to the release notes from https://www.jupiteravionics.com/productsoftware.php or contact Jupiter Avionics to ensure the correct version is used.

1.4.5 Flammability of Materials

The JA95-N60 complies with the requirements of RTCA/DO-160G Sec 26.3.3 "Flammability", through equivalent flammability testing of materials and the Small Parts Exemption.

1.4.6 Environmental Specifications

The JA95-N60 Audio Controller - Five Transceiver - Expander - NVG has been qualified to the environmental conditions listed below. Environmental categories for which TSO compliance has been demonstrated 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	6 g, 20 g for 11 ms

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-N60 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

2.3.1 Warranty

This product manufactured by JAC is 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-N60 are minimum performance standards. Those installing the JA95-N60, on or in a specific type or class of aircraft, must determine that the aircraft installation conditions are within TSO standards. The JA95-N60 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-N60 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 Legend Replacement

The JA95-N60 NVIS Green A compliant illuminated legends are field replaceable. For further information, refer to the ‘Legend Replacement’ document in Appendix A of this manual.

2.4.5 Post Installation Checks

2.4.5.1 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 all pins for shorts to ground or adjacent pins.

2.4.5.2 Configuration

Ensure that the JA95-N60 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.

2.4.5.3 Power on Checks.

Power up the aircraft’s systems and confirm normal operation of all functions of the JA95-N60. Refer to Section 3 (Operation) for specific operational details.

a) Confirm 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) 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.

c) Check the Emergency operation.

d) Check that all configurations 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-N60 internal adjustments are set from the Product Configuration Software ProCS™. Configuration data is sent to the JA95-N60 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-N60, 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-N60 are not included with the unit.

Quantity	Description	JA95-N60
1	USB A to RS232 9-Pin Cable	CAB-USB-0002
1	Configuration Cable	JA99-001

2.5.2 ProCS™ Setup

The ProCS™ JA95-N60 menu item 'ProCS Setup' provides a drawing showing the cabling arrangement for connecting the JA95-N60 to a computer running the ProCS™.

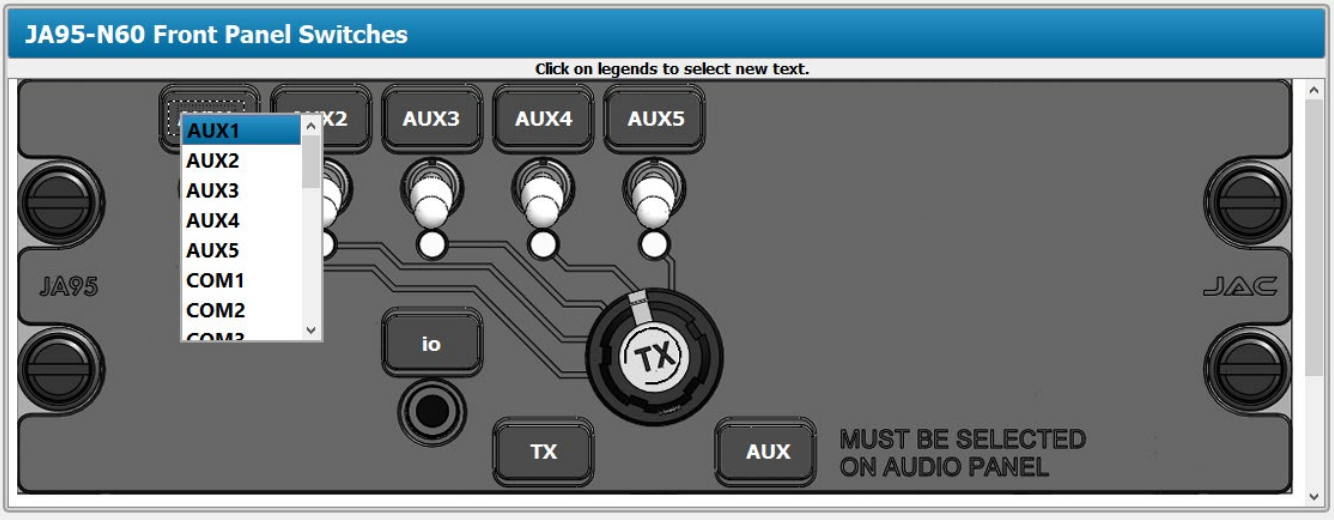
2.5.3 Configurable Settings

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 properly configure the JA95-N60, power must be applied to the unit.

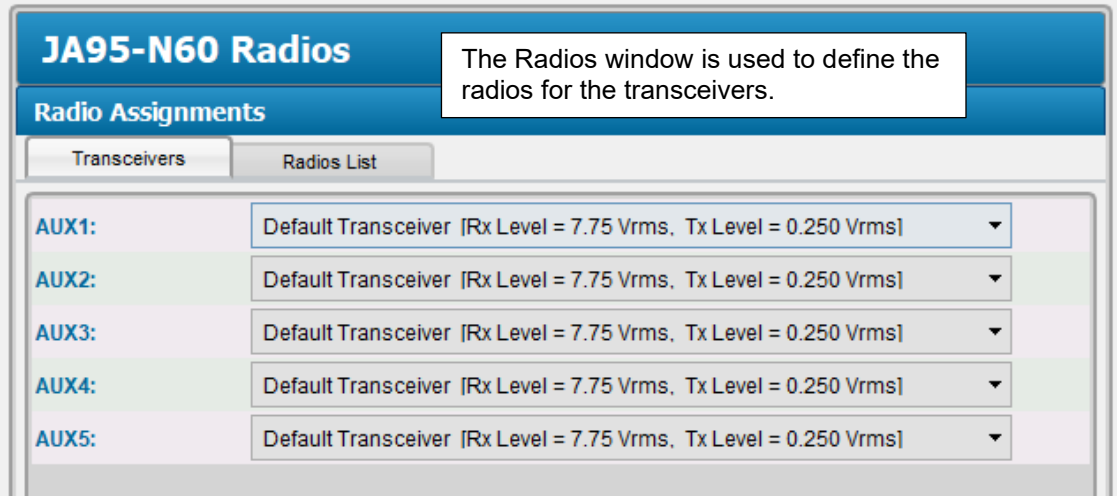
Within ProCS™, the configurable settings are grouped together into the following sections:

2.5.3.1 Front Panel Switches

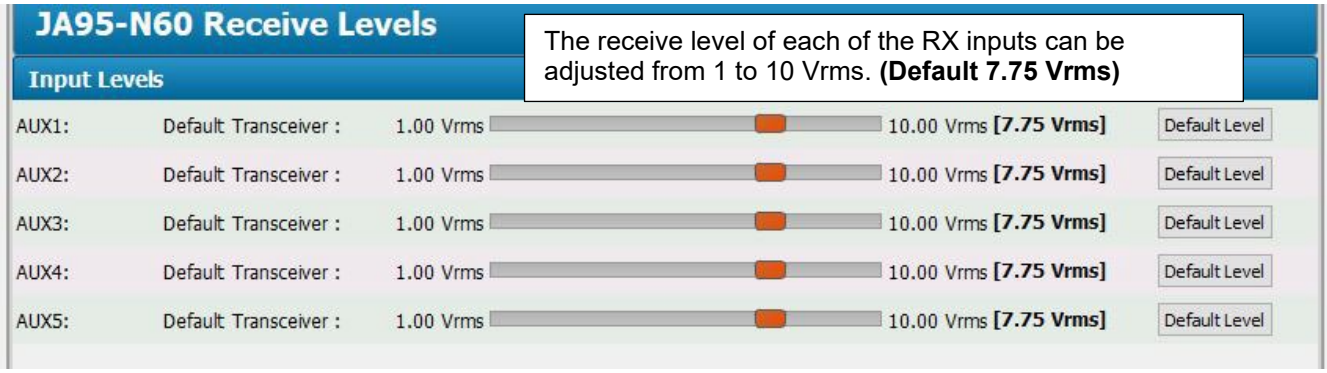


The Front Panel Switches window is used to specify the text for each legend.

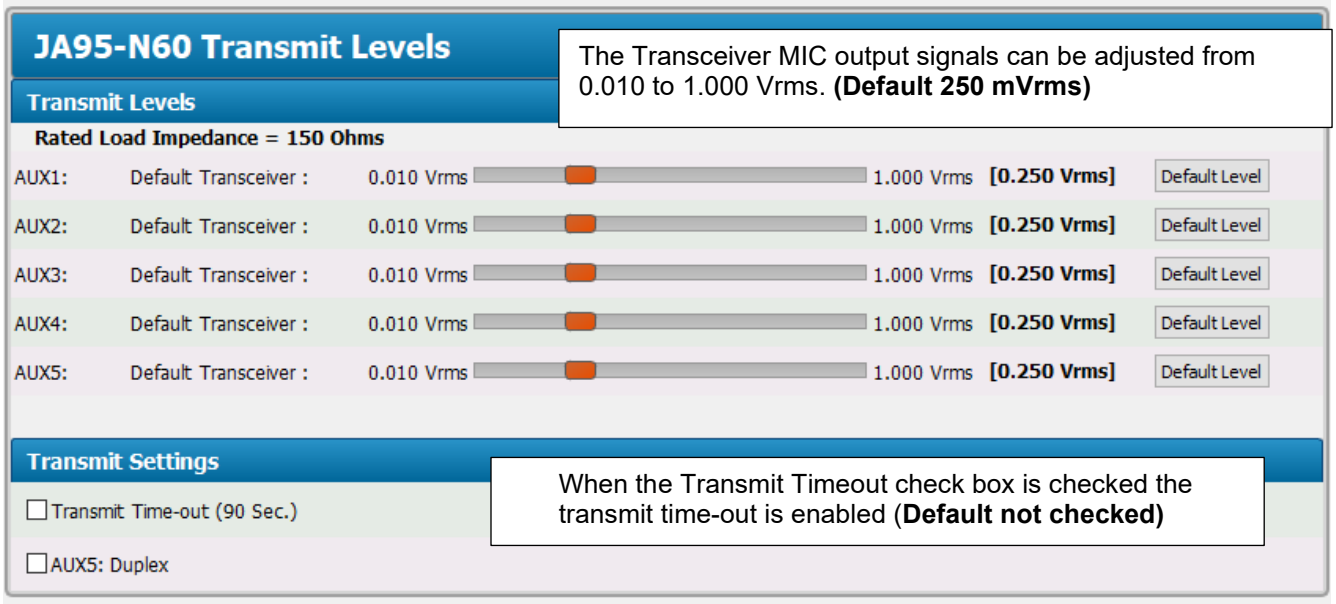
2.5.3.2 Radios



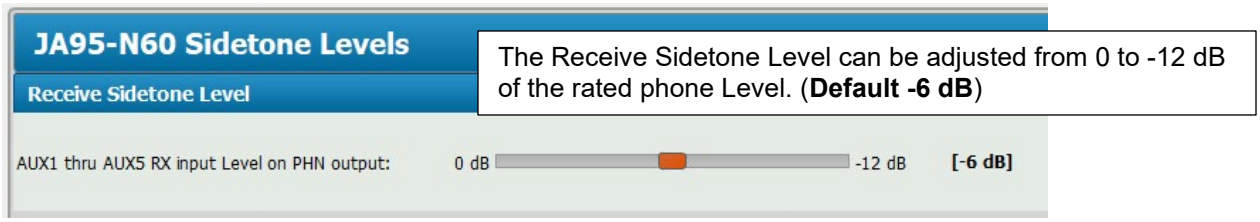
2.5.3.3 Receive Levels



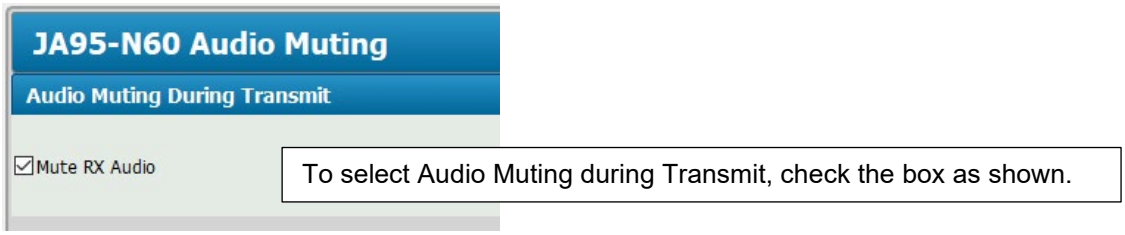
2.5.3.4 Transmit Levels



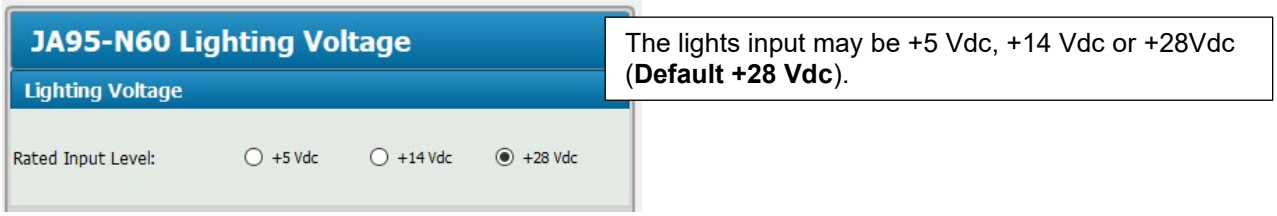
2.5.3.5 Sidetone Levels



2.5.3.6 Audio Muting



2.5.3.7 Lighting Voltage Selection



2.5.4 Other Configuration Features

In the JA95-N60 Product Information Window, the model number, serial number and check sum of the JA95-N60 Audio Controller - Five Transceiver - Expander - NVG can be viewed.

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

Standard D-Sub Crimp Tool Chart			
Tool Type	**Hand crimping tool**	**Positioner**	**Insertion/extractor tool**
POSITRONIC	9507-0-0-0	9502-5-0-0	4711-2-0-0
DANIELS	AFM 8	K13-1	91067-2
MIL-SPEC	M22520/2-01	M22520/2-08	M81969/1-02

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-N60. 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.

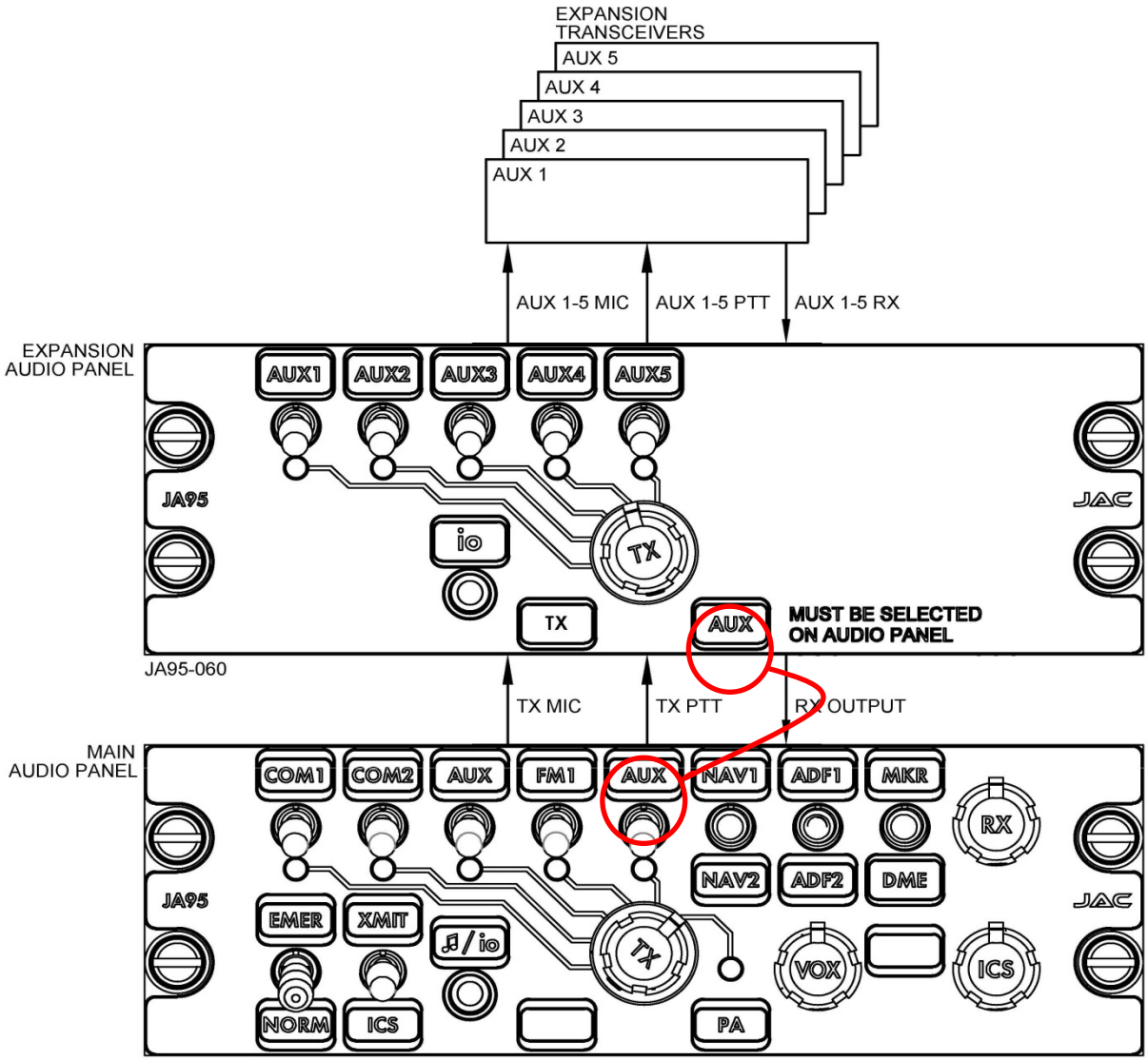
SECTION 3 – OPERATION

3.1 Introduction

This section contains the system diagram and operating instructions for the JA95-N60.

3.2 System Diagram

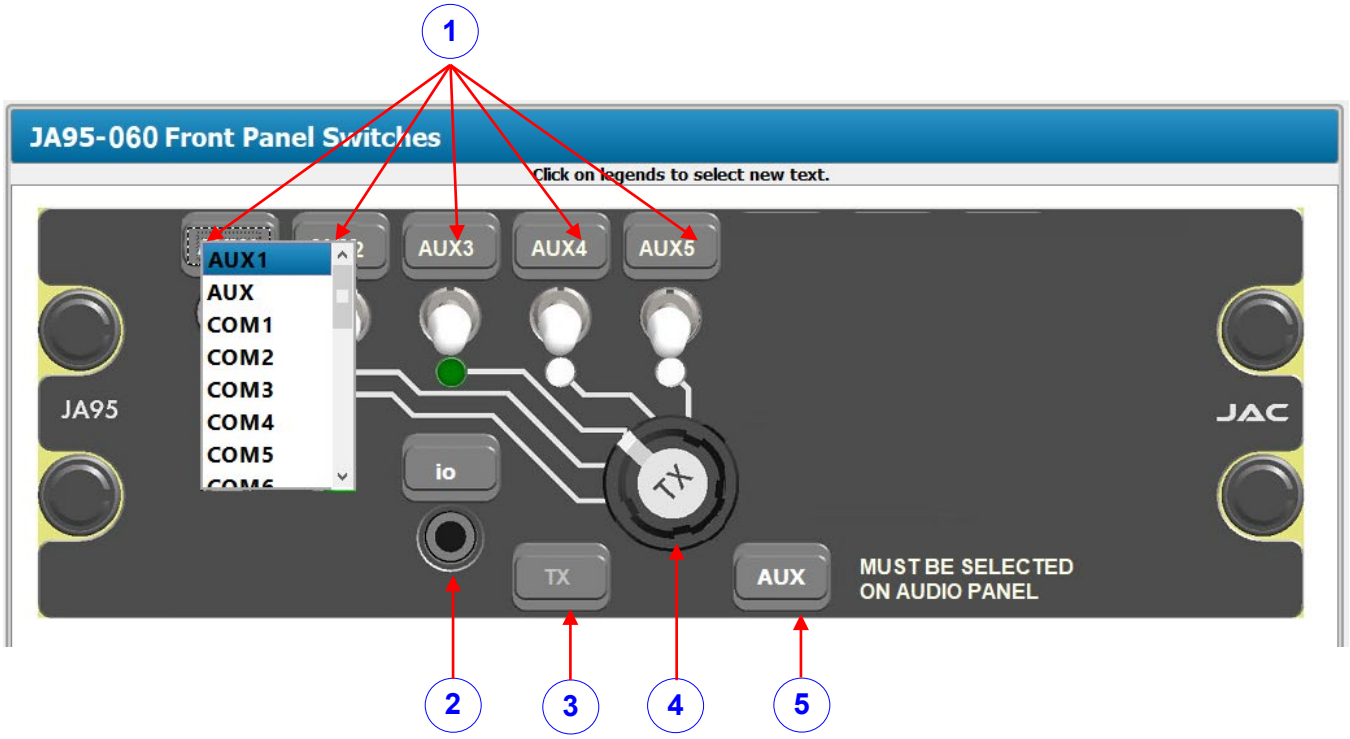
The JA95-N60 Audio Controller - Five Transceiver - Expander - NVG is a compact, lightweight panel that allows connection of up to 4 additional radios to the aircraft audio system. The JA95-N60 is compatible with the transceiver connections of any of Jupiter's JA9x series of audio controllers as well as any civil aviation audio controller.



The text on the JA95-N60 legend (shown here as AUX) should be selected to match the text on the main panel legend representing the expanded transceiver position.

3.3 Front Panel Controls

Note: The NVIS Green A compatible legends and deadfront annunciator are removable and may be replaced with custom ordered parts. The controls will be referred to by the default legend and annunciator names as shown below.

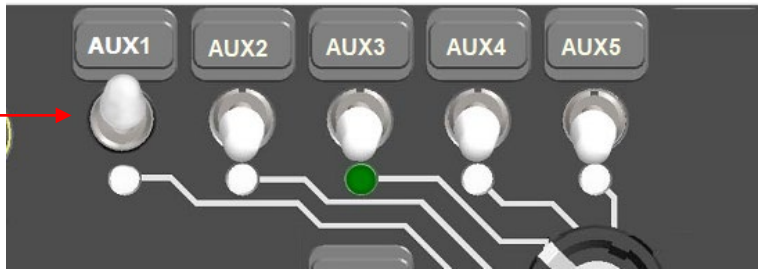


1. Transceiver switches and associated legends
2. Music/configuration input connector and legend
3. Transmit annunciator (deadfront)
4. Transmit selector
5. AUX Legend

(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 – AUX1, AUX2, AUX3, AUX4, AUX5.)



(2) Configuration Connector (io)

This connector is used during installation to change configuration settings.

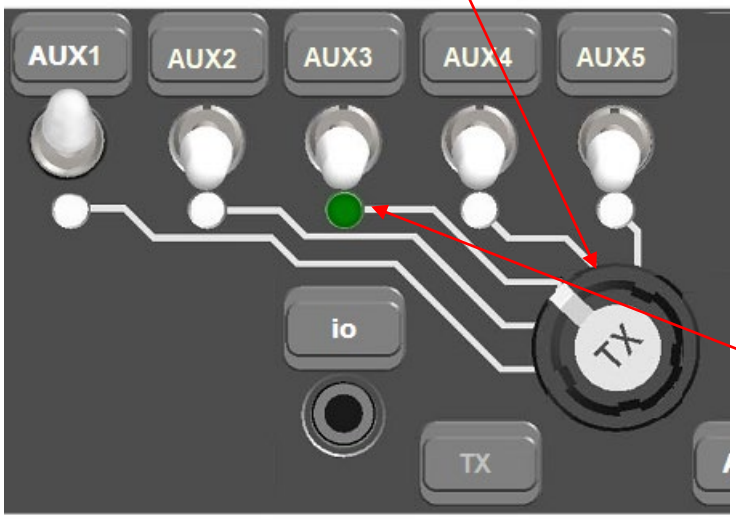
CAUTION: Attempting to connect an incompatible plug or device could damage the unit, the attached device, or both. If in doubt, check with your installing agency.

(3) Transmit Annunciator - TX

This is a deadfront annunciator that will illuminate when the JA95-N60 is transmitting.

The default legend is 'TX', but it is interchangeable to allow customization.

(4) Transmit Selector



This is a rotary six-position control that is used to select transmission via one of the five transceivers.

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 – 'AUX3' in this example.

Note: Transmission on any of the transceivers linked to the JA95-N60 is only possible if the designated transceiver (AUX in these examples) is selected on the main audio panel.

(5) AUX Legend

This is a customizable legend that is intended to remind the operator which transceiver on the main audio panel must be selected to allow transmission on the JA95-N60 Expander - NVG Panel.

The default legend is 'AUX', but it is interchangeable to allow customization to match the legend on the main audio panel.

3.4 Normal Operation Mode

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

The JA95-N60 is in Normal mode when suitable electrical power is supplied to the unit.

3.4.1 Panel Lighting

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

3.4.2 Receiving

Note: Transmission on any of the transceivers linked to the JA95-N60 is only possible if the designated transceiver (AUX in these examples) is selected on the main audio panel.

When the JA95-N60 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 (**4**), the incoming audio will be directed to the user's phones.

3.4.3 Transmitting (Transmit Operation)

Note: Transmission on any of the transceivers linked to the JA95-N60 is only possible if the designated transceiver (AUX in these examples) is selected on the main audio panel.

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 AUX1, AUX2, AUX3, AUX4, or AUX5. The corresponding Transmit Select annunciator will illuminate.

When the TX PTT input is activated, the unit will transmit on the selected transceiver, and the deadfront Transmit Annunciator (**3**) will illuminate 'TX'. All MIC and sidetone audio will be routed to the RX OUTPUT.

3.5 Emergency Operation Mode

Emergency mode is entered automatically if power to the unit is lost.

3.5.1 Auto Emergency Mode

If the unit is in emergency mode because power has been lost to the unit, the AUX1 transceiver will be routed to the RX OUTPUT. The TX microphone and TX transmit key are connected to the AUX1 transceiver. No other function in the JA95-N60 will operate when power is lost. All indicator LEDs, legends and annunciators will be dark.

Installation and Operating Manual

Appendix A - Installation Drawings

A1 Introduction

The drawings necessary for installation and troubleshooting of the JA95-N60 Audio Controller - Five Transceiver - Expander - NVG 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

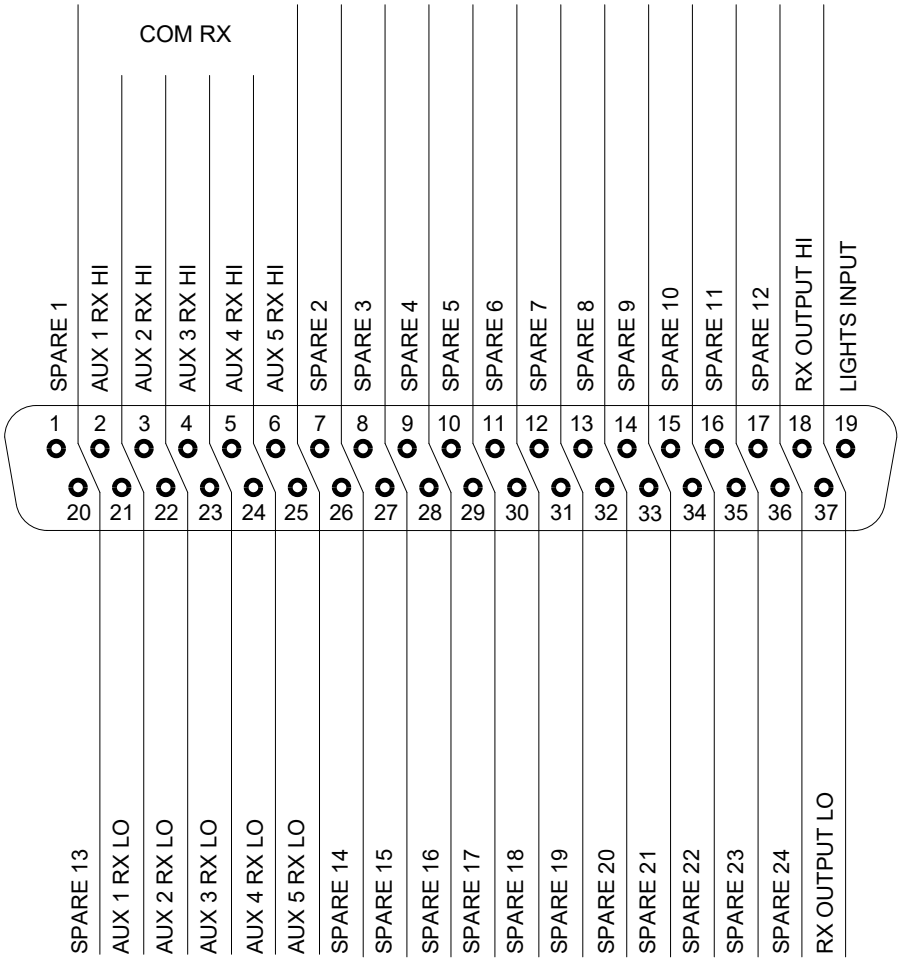
DOCUMENT	Rev
JA95-N60 Connector Map	A
JA95-N60 Interconnect	A
JA95-N60 Mechanical Installation	A
JA95-N60 Equipment Block Diagram	A

Reference Documents	
TOL-CUST-EXTR Legend Replacement	A

RECEIVE CONNECTOR

P1

37 PIN FEMALE DMIN
MATING CONNECTOR



VIEW IS FROM REAR OF MATING CONNECTOR

PREPARED	TAT
CHECKED	
APPROVED	
CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.	

JUPITER AVIONICS CORPORATION

TITLE: Audio Controller - Five Transceiver - Expander - NVG
P1 Connector Map

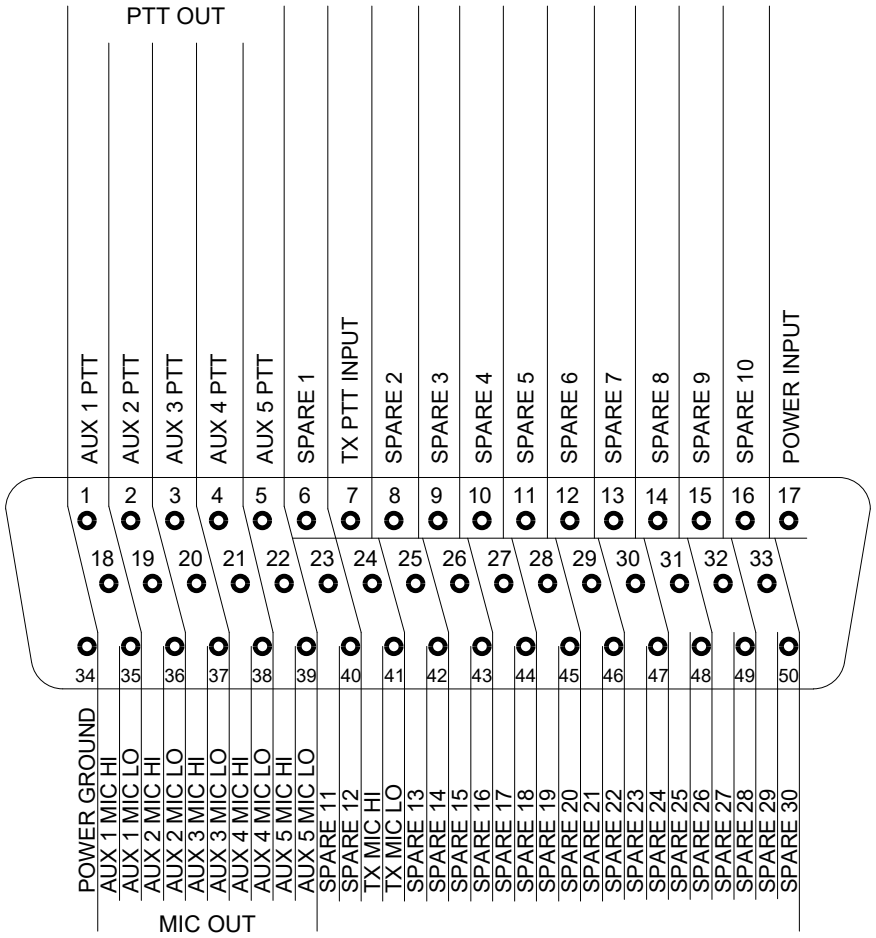
NCAGE CODE	PART NO.	SHEET
L00N3	JA95-N60	1/3

DOC NO.
JA95-N60 Connector Map Rev A.dwg

TRANSMIT CONNECTOR

P2

50 PIN FEMALE DMIN
MATING CONNECTOR



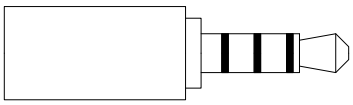
VIEW IS FROM REAR OF MATING CONNECTOR

PREPARED	TAT	JUPITER AVIONICS CORPORATION		
CHECKED		TITLE: Audio Controller - Five Transceiver - Expander - NVG P2 Connector Map		
APPROVED		NCAGE CODE: L00N3	PART NO.: JA95-N60	SHEET: 2/3
CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.		DOC NO.: JA95-N60 Connector Map Rev A.dwg		

FRONT PANEL MUSIC/CONFIGURATION CONNECTOR

P3 ACCEPTS THE FOLLOWING PLUG FORMATS

JA99 CONFIGURATION CABLE
4 POLE MALE 3.5MM STEREO



MATING PLUG NAMES	JA95 SIGNAL NAMES
TIP: TX DATA	CONFIG DATA TO JA95
1ST RING: RX DATA	CONFIG DATA FROM JA95
2ND RING: GROUND	GROUND
3RD RING: CONFIG AUDIO	MODE SELECT / CONFIG AUDIO

PREPARED	TAT	JUPITER AVIONICS CORPORATION
CHECKED		TITLE: Audio Controller - Five Transceiver - Expander - NVG P3 Connector Map
APPROVED		NCAGE CODE: L00N3 / PART NO.: JA95-N60 / SHEET: 3/3
CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.		DOC NO.: JA95-N60 Connector Map Rev A.dwg

JA95-N60 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-N60 CONNECTOR PINS SHOULD BE TERMINATED TO AIRFRAME GROUND USING A TAG RING P/N: MS27741-5 OR EQUIVALENT.

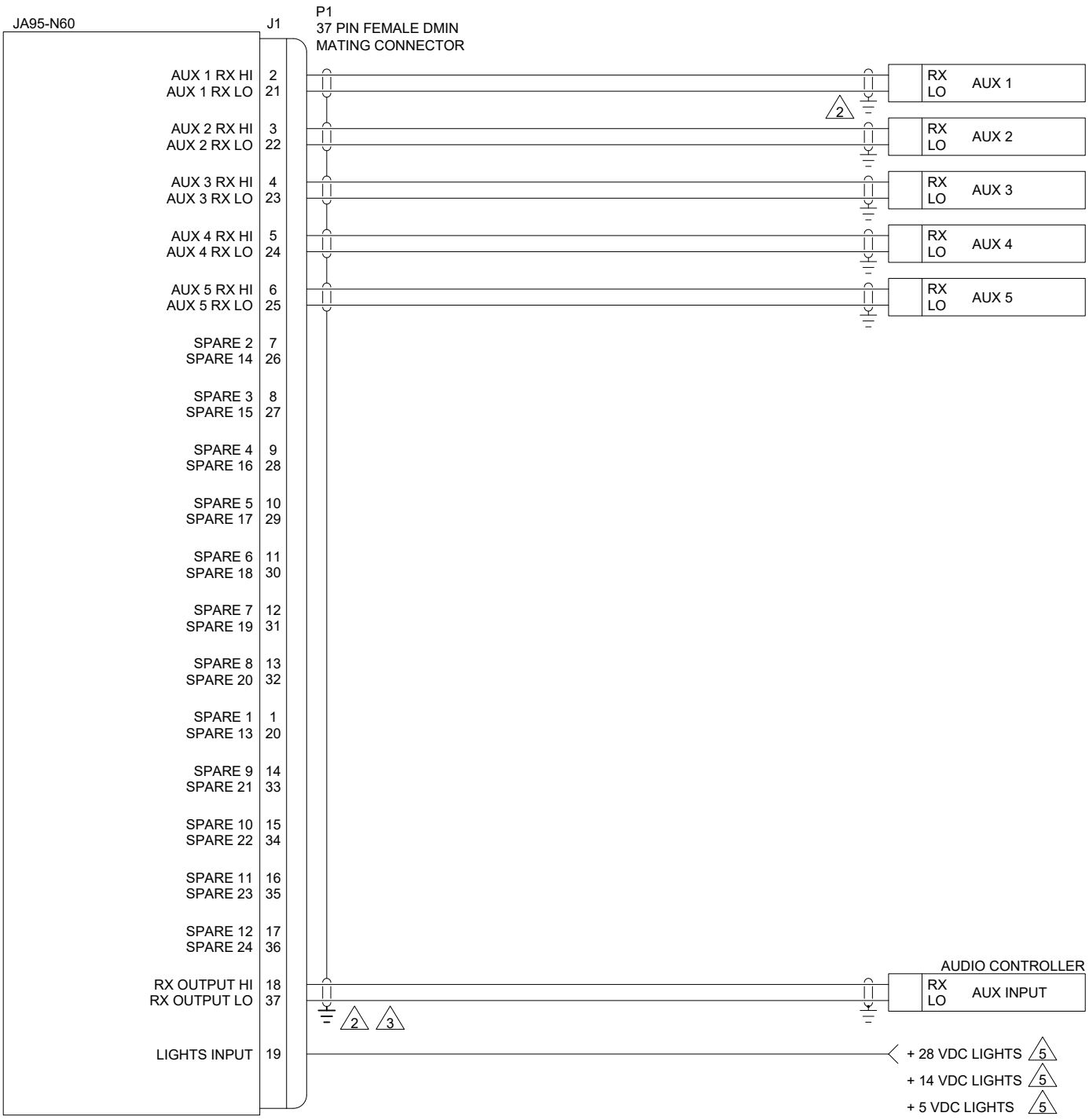
△4 ONLY +28 VDC OR +14 VDC OR +5 VDC LIGHTS INPUT VOLTAGE MAY BE APPLIED AT ONE TIME.

CONNECTOR PIN LEGENDS

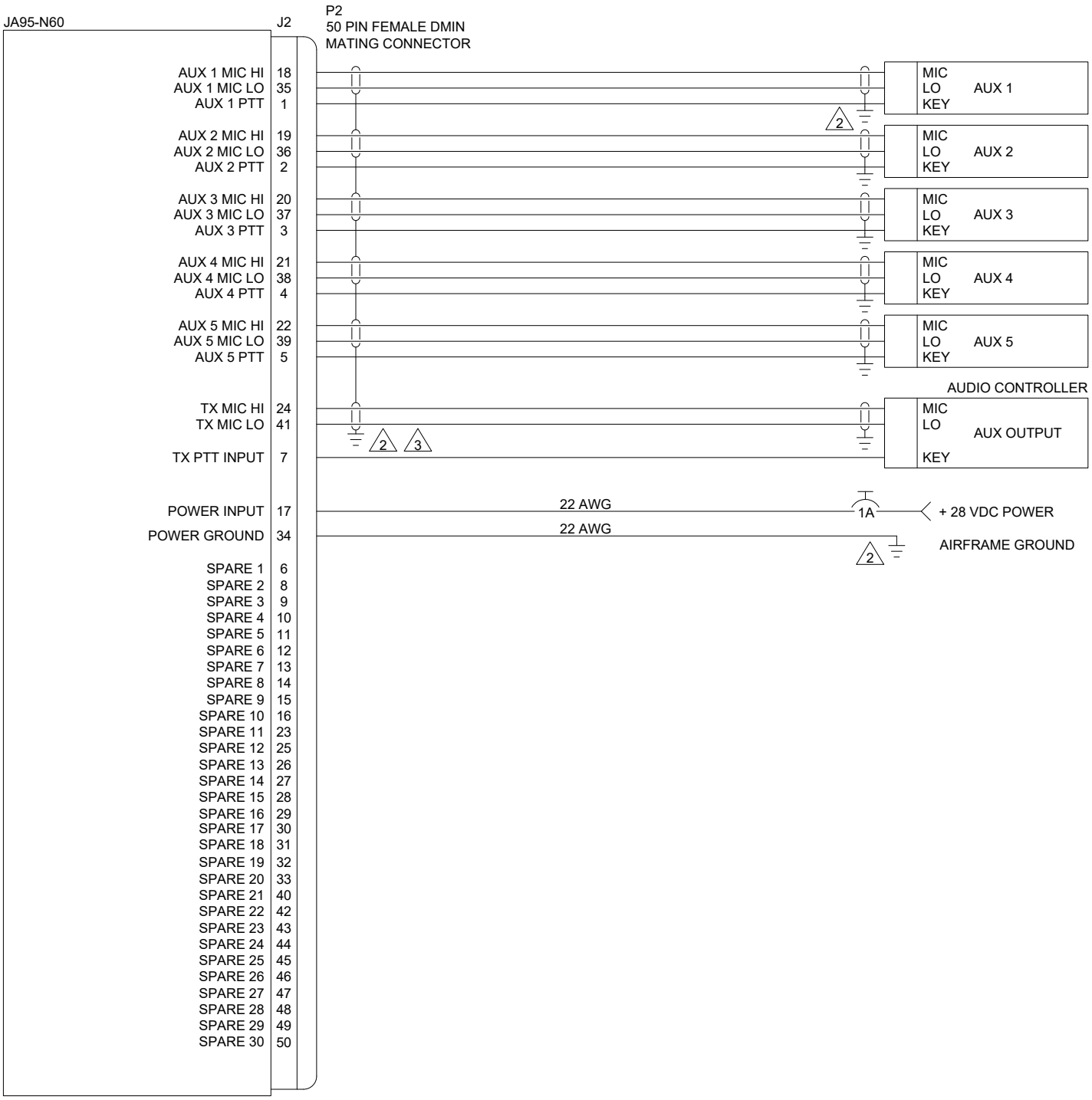
LEGEND

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

PREPARED	TAT	JUPITER AVIONICS CORPORATION
CHECKED	JAC 06-07-22 AH	TITLE: Audio Controller - Five Transceiver - Expander - NVG Interconnect Notes
APPROVED	JAC 06-07-22 KDV	NCAGE CODE: L00N3 / PART NO.: JA95-N60 / SHEET: 1/4
CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.		DOC NO.: JA95-N60 Interconnect Rev A.dwg

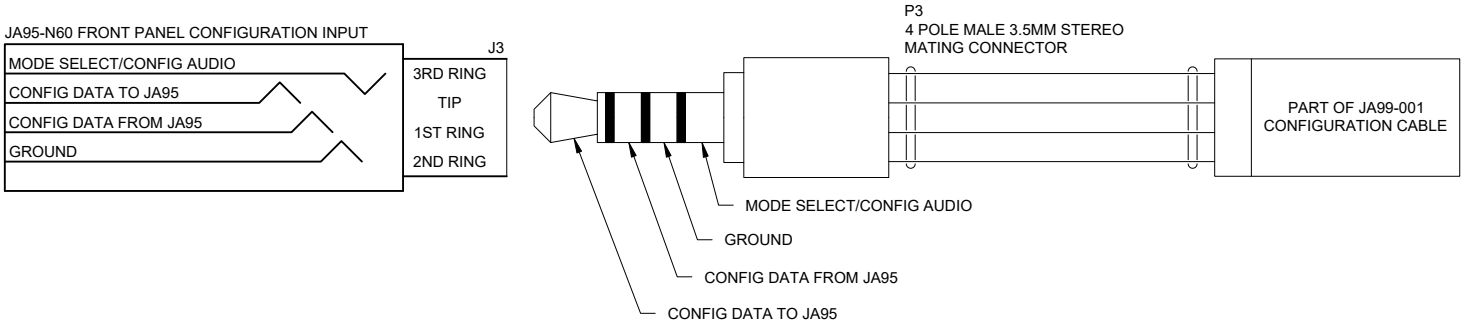


PREPARED	TAT	JUPITER AVIONICS CORPORATION
CHECKED	JAC 06-07-22 AH	TITLE: Audio Controller - Five Transceiver - Expander - NVG J1 Interconnect
APPROVED	JAC 06-07-22 KDV	NCAGE CODE: L00N3 / PART NO.: JA95-N60 / SHEET: 2/4
CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.		DOC NO.: JA95-N60 Interconnect Rev A.dwg

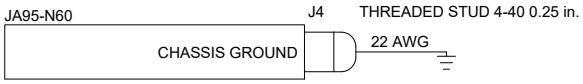


PREPARED	TAT	JUPITER AVIONICS CORPORATION
CHECKED	JAC 06-07-22 AH	TITLE: Audio Controller - Five Transceiver - Expander - NVG J2 Interconnect
APPROVED	JAC 06-07-22 KDV	NCAGE CODE: L00N3 / PART NO.: JA95-N60 / SHEET: 3/4
CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.		DOC NO.: JA95-N60 Interconnect Rev A.dwg

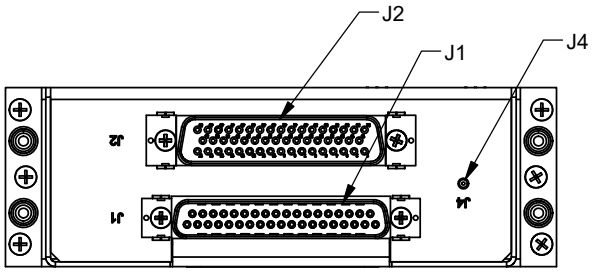
OPTION: PROGRAMMING FROM JA99-001

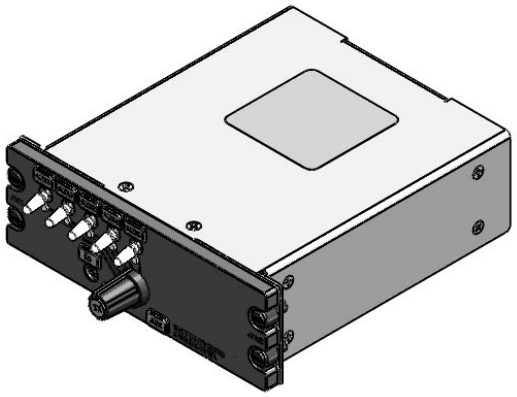


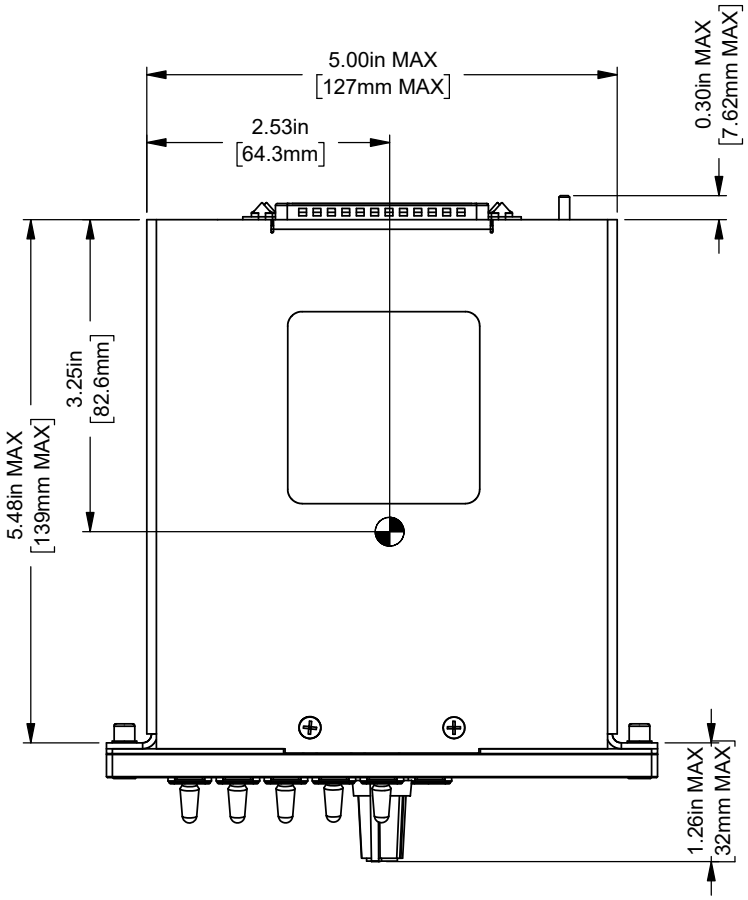
OPTION: CHASSIS GROUND

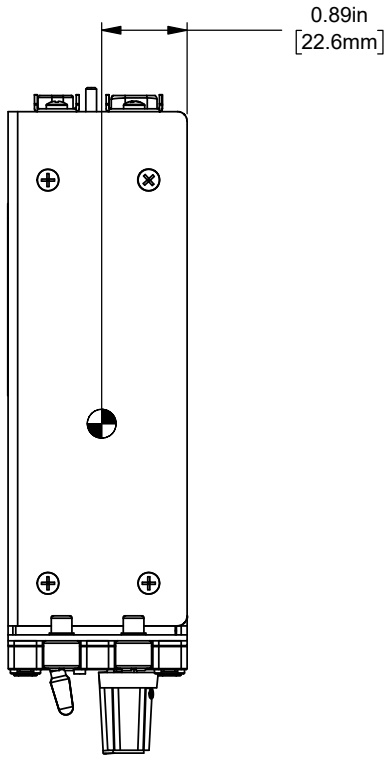


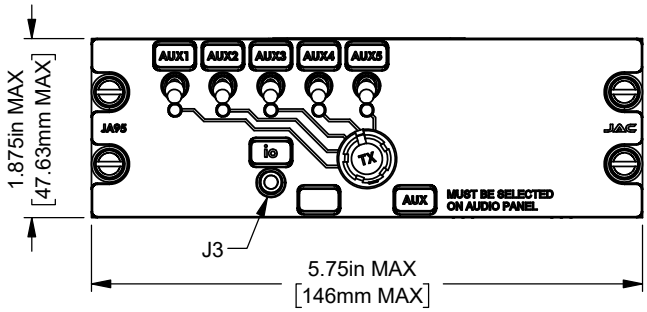
PREPARED	TAT	JUPITER AVIONICS CORPORATION
CHECKED	JAC 06-07-22 AH	TITLE: Audio Controller - Five Transceiver - Expander - NVG Interconnect Options
APPROVED	JAC 06-07-22 KDV	NCAGE CODE: L00N3 / PART NO.: JA95-N60 / SHEET: 4/4
CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.		DOC NO.: JA95-N60 Interconnect Rev A.dwg







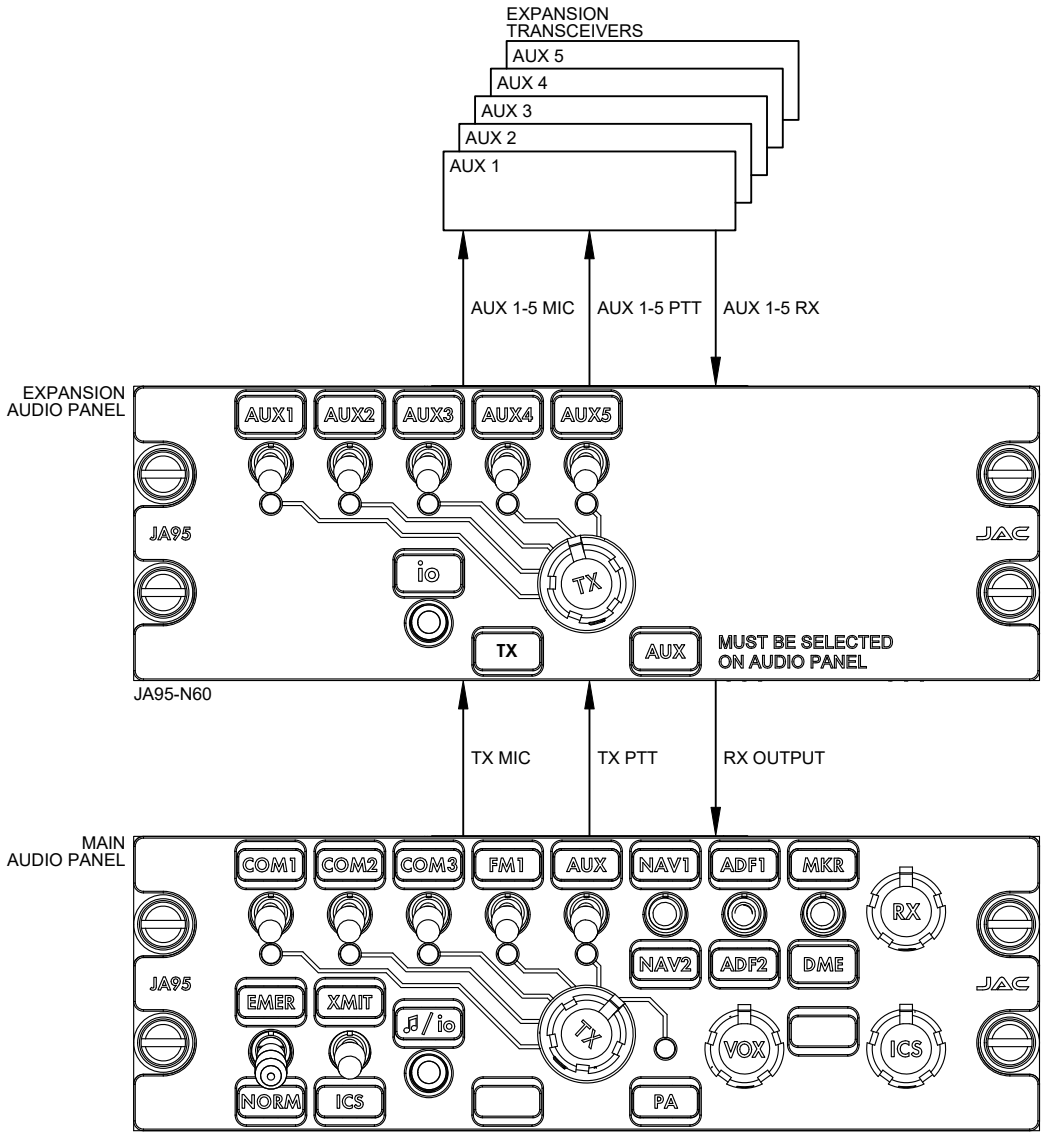




CENTER OF GRAVITY
±0.03in [0.8mm]

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 06-07-22 AH	TITLE: Audio Controller - Five Transceiver - Expander - NVG
	APPROVED	JAC 06-07-22 KDV	NCAGE CODE: L00N3 / PART NO.: JA95-N60 / SHEET: 1/1
MATERIAL: N/A	CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.		DOC. NO. JA95-N60 Mechanical Installation Rev A.SLDDRW
FINISH: N/A	DRAWING NOT TO SCALE		



PREPARED	TAT
CHECKED	JAC 06-07-22 AH
APPROVED	JAC 06-07-22 KDV
CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.	

JUPITER AVIONICS CORPORATION

TITLE: Audio Controller - Five Transceiver - Expander - NVG Equipment Block Diagram

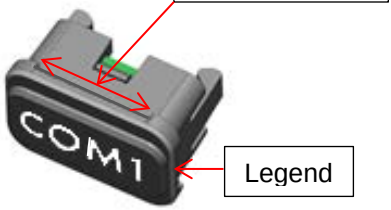
NCAGE CODE	PART NO.	SHEET
L00N3	JA95-N60	1/1

DOC NO.: JA95-N60 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.

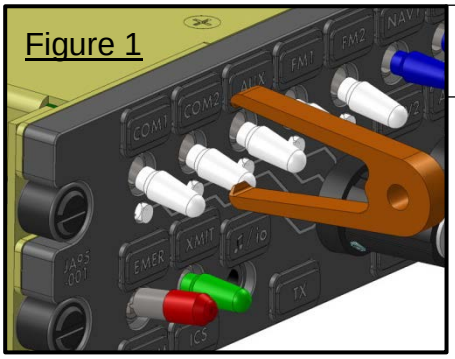
The internal circuitry ensures that, although the legends are individually illuminated, the illumination is consistent and uniform throughout all legends, and never needs to be balanced. This means that if it is a requirement to change the labelling due to damage or for a different project, there is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



Legend Removal

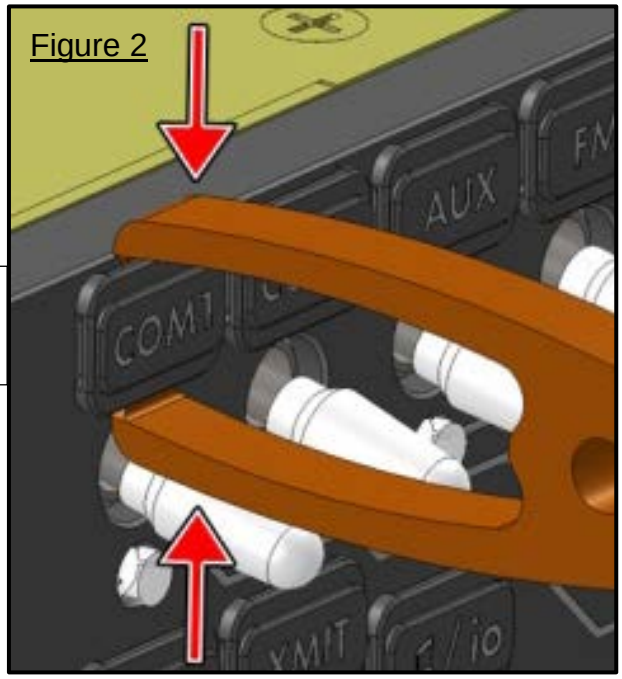
Caution: Take care not to scratch or otherwise damage the faceplate or the legend.

Figure 1



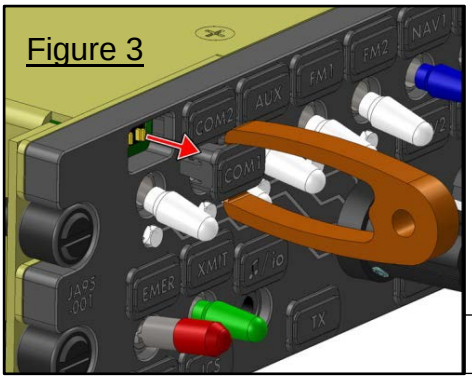
To facilitate legend removal, JAC provides a legend extractor tool - part # TOL-CUST-EXTR (figure 1) that fits into the recesses on the legend.

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-N60 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-N60 Audio Controller - Five Transceiver - Expander - NVG. 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:

Removed the existing [model] audio panel and replaced with a Jupiter Avionics JA95-N60 Audio Controller - Five Transceiver - Expander - NVG in [aircraft location].

The JA95-N60 is approved to CAN-TSO-C139. The JA95-N60 meets RTCA DO-160F environmental qualifications for this installation. See Section 1 of the JA95-N60 Installation Manual.

Installed in accordance with the JA95-N60 Installation Manual, Revision [ ], and AC 43.13-2, Chapters 2, and 3.

The JA95-N60 interfaces with existing aircraft systems per the Installation Manual instructions.

The JA95-N60 Installation Manual provides detailed installation instructions and wiring diagrams (Section 2, and Appendices A and B).

Power is supplied to the JA95-N60 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-N60 Audio Controller - Five Transceiver - Expander - NVG is "on condition" only. Periodic maintenance of the JA95-N60 is not required.

The following sample Instructions for Continued Airworthiness (ICA) provides assistance in preparing ICA for the Jupiter Avionics JA95-N60 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 JA95-N60 Audio Controller - Five Transceiver - Expander - NVG 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-N60 installed in an [aircraft make and model].

Applicability: Applies to a Jupiter Avionics JA95-N60 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-N60 Installation and Operating Manual
JA95-N60 Maintenance Manual
JA95-N60 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-N60 Audio Controller - Five Transceiver - Expander - NVG 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-N60 Operating Manual.

4. Servicing Information

N/A

5. Maintenance Instructions

Maintenance of the JA95-N60 is 'on condition' only. Periodic maintenance is not required. Refer to the JA95-N60 Maintenance Manual.

6. Troubleshooting Information

Refer to the JA95-N60 Maintenance Manual.

7. Removal and Replacement Information

Refer to Section 2 of this manual - the JA95-N60 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-N60 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-N60 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-N60 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:	Checked:	Approved:
KDV	JAC 06-07-22 KDV	JAC 06-08-22 MQS

Nomenclature	Audio Controller - Five Transceiver – Expander - NVG		
Type/Model/ Part No.:	JA95-N60		
TSO No.:	CAN-TSO-C139; TSO-C139		
Manufacturer's Build Configuration:	*JA95-N60 Build Configuration Rev A* [1]		
Manufacturer's Test Report:	*JA95-001 Test Report (Qualification - Final) Rev B* *JA95-060 Test Report (Environmental - Vibration - 20181204) Rev A* *JA95-060Test Report (Environmental - Operational Shock & Crash Safety - 20181206) Rev A* *JA95-N60 CAN-TSO Design Change Assessment Rev A*		
Manufacturer's Specification and/or Other Applicable Specification:	*JA95-001 Declaration of Design and Performance Rev D* *JA95-N60 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 to Dec 27, 2012 Dec 4 to Dec 7, 2018

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	7.0	
Operational Shock	7.2.2	Equipment tested to Category B (6 g for 11 ms)
Crash Safety (impulse)	7.3.2	Equipment tested to Category B (20 g for 11 ms)
Crash Safety (sustained)	7.3.3	Equipment tested to Category B (20 g for 3 sec)
Vibration[2]	8.0	Equipment tested to Categories:
Fixed Wing - Sine		SM
Fixed Wing - Random		SB
Helicopter - Random, unknown		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	16.0	Equipment tested to Category:
DC Equipment		Z (+28 Vdc equipment), B (+14 Vdc and + 28 Vdc equipment)
DC Current Ripple		X, no test performed
DC Inrush		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	19.0	Equipment tested to Category [ZC]
Magnetic Fields into Equipment		20 A at 400Hz
Magnetic Fields into Cables		30 A-m at 400Hz
Electric Fields into Cables		1800V-m at 400Hz
Voltage Spikes into Cables		L=3.0m

CONDITIONS	SECTION	DESCRIPTION OF TESTS CONDUCTED
Radio Frequency Susceptibility[3] 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[3]	21.0	Equipment tested to Category H
Lightning Induced Transient Susceptibility[3] 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 This product is a derivative of the JA95-001. All tests were performed on a JA95-001 and JA95-060. A similarity analysis between the two products is detailed in the Jupiter Avionics Corp. document: *JA95-N60 CAN-TSO Design Change Assessment Rev A*

2 During exposure to vibration test conditions the following critical resonances changed frequency greater than 1.5%:

Axis	Initial Freq. [Hz]	Final Freq. [Hz]
Lateral	141.5	144.5
	191.3	199.8
Vertical	71.13	74.41
	86.97	82.28
	99.50	103.2

3 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*