



A790

LOUD HAILER CONTROLLER



Installation Instructions

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REVISION HISTORY

[09RE410]

REV	SECTION - PAGE -	DESCRIPTION	DATE
n/c		Original document released	Oct 19/09
Issue 1		Correct typo in Table of Contents line in Table 1.1 Added paragraph 1.3.0 Installation Kit Contents	Dec 15/09

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ESD CAUTION



This unit contains static sensitive devices. Wear a grounded wrist strap and/or conductive gloves when handling printed circuit boards.

WARNING AND DISCLAIMER

Changes or modifications not expressly approved by Technisonic Industries could void the user's authority to operate the equipment.

This manual is designed to provide information about the A790. Every effort has been made to make this manual as complete and accurate as possible.

WARRANTY INFORMATION

The Model A790 is under warranty for one year from date of purchase. Failed units caused by defective parts, or workmanship should be returned to:

Technisonic Industries Limited
240 Traders Boulevard
Mississauga, Ontario L4Z 1W7

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Summary of DO-160C Environmental Testing for Technisonic Model A790 Loud Hailer Controller:

CONDITIONS	SECTION	DESCRIPTION OF CONDUCTED TESTS
Temperature and Altitude	4.0	Equipment tested to categories C4 and D1.
Vibration	8.0	Equipment is tested without shock mounts to categories B, M and N.
Magnetic Effect	15.0	Equipment is class Z.
Power Input	16.0	Equipment tested to category B.
Voltage Spike	17.0	Equipment tested to category B.
RF Emission	21.0	Equipment tested to category Z.

INSTALLATION APPROVAL NOTE

Presently, no TSO standard exists for airborne loud hailer equipment. To make it easier for installation agencies to provide their customers with an approved installation supported by an effective Airworthiness Approval, Technisonic has secured Supplemental Type Certificate (STC) Approvals (both US and Canadian) on its Airborne products for many helicopters currently being delivered in the US and Canada, as well as a number of single engine fixed wing aircraft. The above referenced DO-160C test data is also on file and available from Technisonic to support approval requirements in airframes for which Technisonic does not possess an STC.

Approved aircraft types are listed in the attachments to the formal STC documents. These STCs are the exclusive property of Technisonic and require the written authority of Technisonic for their use. To assist Factory Authorized Technisonic Dealers in the certification process, we have placed copies of our Canadian and US STCs on our web site along with a letter of authorization for their use. These documents may be downloaded and used as support for the technical submission to FAA or Transport Canada. Only factory authorized dealers/installers are permitted to download and make use of these documents on behalf of their customers (end users) in support of regulatory agency approval. Please refer to the Technisonic web site www.til.ca for the latest issue of available STCs and letter of authorization for use.

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SECTION 1 – INSTALLATION INSTRUCTIONS

1.1 GENERAL

This section contains information and instructions for the correct installation of the A790 Loud Hailer Controller.

1.2 EQUIPMENT PACKING LOG

Unpack the equipment and check for any damage that may have occurred during transit. Save the original shipping container for returns due to damage or warranty claims. Check that each item on the packing slip has been shipped in the container. Verify that the equipment display and backlighting configuration are the same as those ordered.

1.3 INSTALLATION

The A790 can be installed such that it is placed between the operator's headset and the audio panel (special installation) or as one of the positions on the audio panel (standard installation).

1.3.0 INSTALLATION KIT - CONTENTS

The IN-A790 installation kit (P/N 099968-1) consists of:

1. One 25-pin Cannon D-mating connector (female) complete with crimp pins and hood.

1.3.1 SPECIAL INSTALLATION

This type of installation is recommended where there are no positions available on the audio panel. The operator's microphone and PTT are connected directly to the A790. Controls on the A790 allow the operator to select the PA or the aircraft audio panel. The audio panel is automatically selected in the case of a failure or power loss to the A790. Only one operator can be connected to the A790 in the special installation.

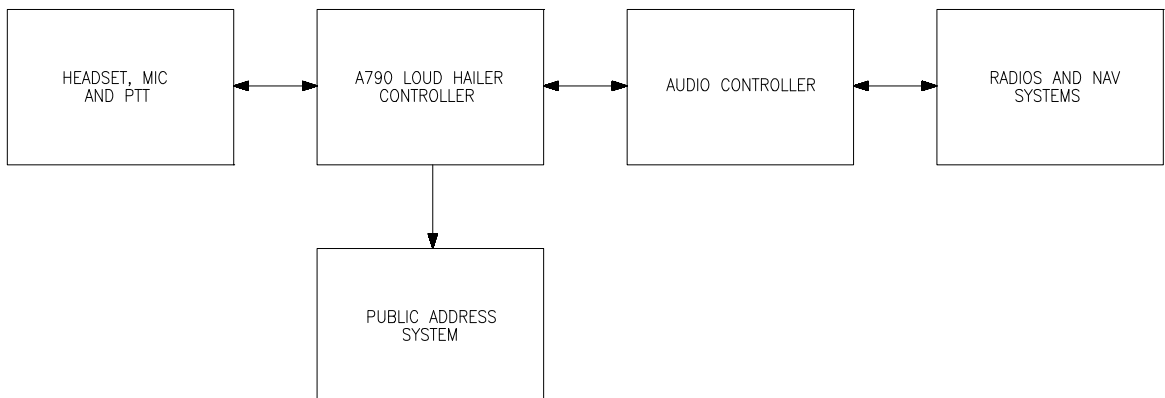


FIGURE 1.1 Special Installation

1.3.2 STANDARD INSTALLATION

In this installation, the A790 is connected to one of the com positions on the aircraft audio panel. Any of the operators connected to the audio panel can use the PA system.

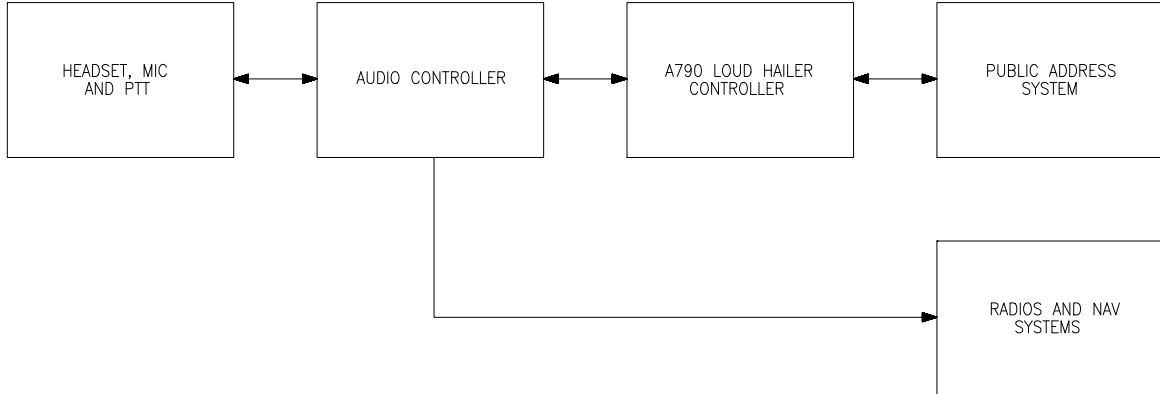


FIGURE 1.2 A790 Standard Installation

1.3.3 A790 25-PIN CONNECTOR PINOUTS (J1)

The following are the pinouts for the 25-pin connector (J1) and the function of each pin.

A790 J1(25-Pin D Connections)				
Pin #	Description		Pin #	Description
1	+ 28VDC		14	+ 28VDC
2	PA Power Control		15	PA Power Control
3	Mic Input		16	Aux In Left
4	Aux In Right		17	Backlight
5	PA Power Level Monitor		18	PTT Input
6	PTT Output		19	Ground
7	Control Out		20	Control In
8	RX Data		21	TX Data
9	Ground		22	Ground
10	Mic Output		23	Ground
11	Ground		24	Sidetone Output
12	Ground		25	Ground
13	Audio Output			

TABLE 1.1 Wire connections on the 25-Pin MALE D Connector (J1)

DETAILED DESCRIPTION OF THE 25-PIN MALE D CONNECTOR

1.3.4 +28VDC - Pins 1 & 14

These are the main power pins to the A790. Both pins should be connected to +28 VDC.

1.3.5 PA Power Control - Pins 2 & 15

Both pins are connected together through a dry relay contact when the A790 is switched on. These pins can be used to power up the PA system with either a control input on the amplifier (if supplied) or through another relay controlling the main power to the PA amplifier.

1.3.6 Mic Input - Pins 3

In a special installation, the operator's mic would be connected directly to this pin. In the standard installation, this pin is connected to the mic signal output from the audio panel.

1.3.7 Auxiliary Input Right and Left - Pins 4 & 16

These pins are internally connected in parallel to the stereo aux input jack on the front of the A790. These inputs can be used as another audio source for the PA. For example, the output from one of the radios can be connected allowing an operator on the ground with a handheld to use the aircraft's PA system.

1.3.8 PA Power Level Monitor – Pin 5

This input is specifically intended to be used as part of the power up test on the Powersonix PA systems. The pin should be left unconnected otherwise.

1.3.9 PTT Output - Pin 6

This output is only used in the special installation configuration where it is connected to the PTT input on the audio panel. Leave unconnected in the standard installation.

1.3.10 Control Input / Output - Pins 7 & 20

Do not connect. For factory use only.

1.3.11 PTT Input - Pins 8 & 21

Do not connect. For factory use only.

1.3.12 Ground - Pins 9, 11, 12, 19, 22, 23, & 25

Connect to aircraft ground.

1.3.13 Mic Output - Pin 10

This output is only used in the special installation configuration where it is connected to the microphone input on the audio panel. Leave unconnected in the standard installation.

1.3.14 Audio Output - Pin 13

Connect to the audio input of the PA system.

1.3.15 Backlight - Pin 17

Back lighting input. Can be configured for 0-5VAC or 0-28VDC dimmer bus operation (selecting the wrong voltage will not result in damage). See 1.4 for configuration instructions.

1.3.16 PTT Input - Pin 18

In the special installation, the operator's PTT is connected here. In the standard installation, the PTT output from the audio panel is connected to this pin.

1.3.17 Sidetone Output - Pin 24

This pin is connected to an auxiliary input on the audio panel such as a NAV or MUSIC input when in the special installation configuration. Otherwise in the standard installation, this pin is connected to the selected com audio input on the audio panel.

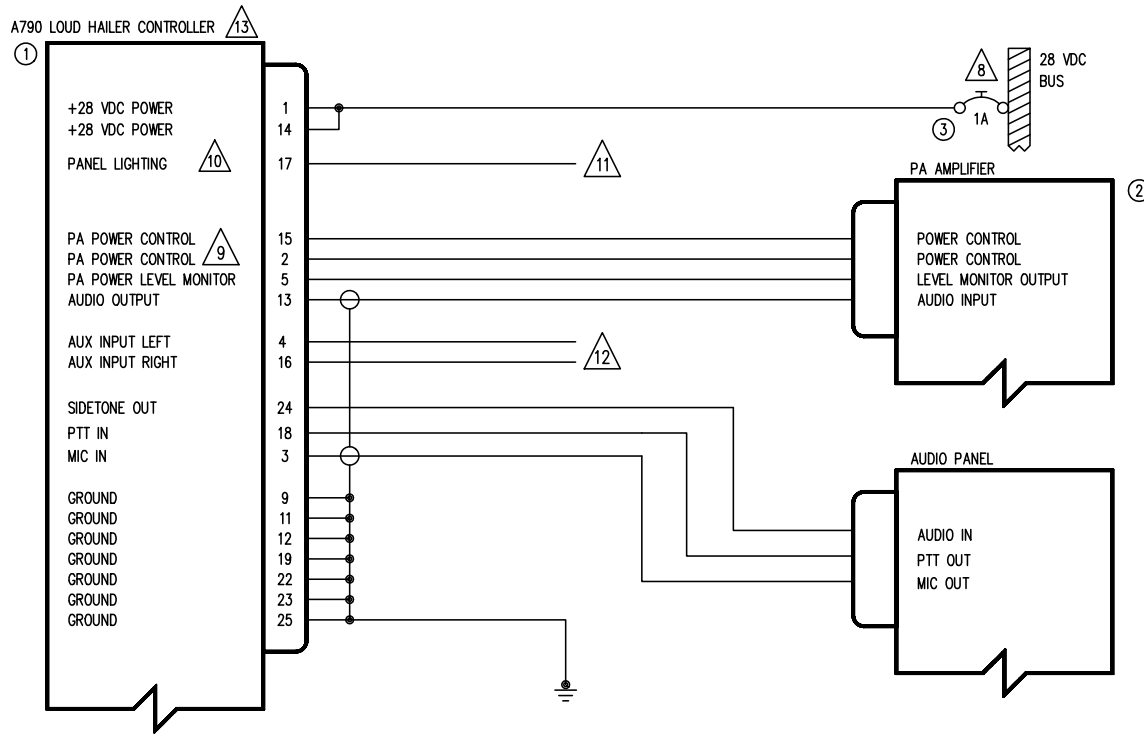
NOTE: See Figure 1.3 for special wiring installation and Figure 1.4 for standard wiring installation.

1.4 CONFIGURATION INSTRUCTIONS

The A790 has two configurable features:

1. Backlighting Voltage. The backlighting voltage can be set to 5VAC or 28VDC.
2. Power Up Auto Test. The A790 can be set to provide a 3 second test tone to the PA amplifier, read back an output level and temporarily display the results whenever the A790 is switched on. This feature is only available for the Powersonix PA system. This setting should be toggled off otherwise.

To invoke the configuration mode, press the SIREN, TRILL and PLAY keys while turning on the A790.

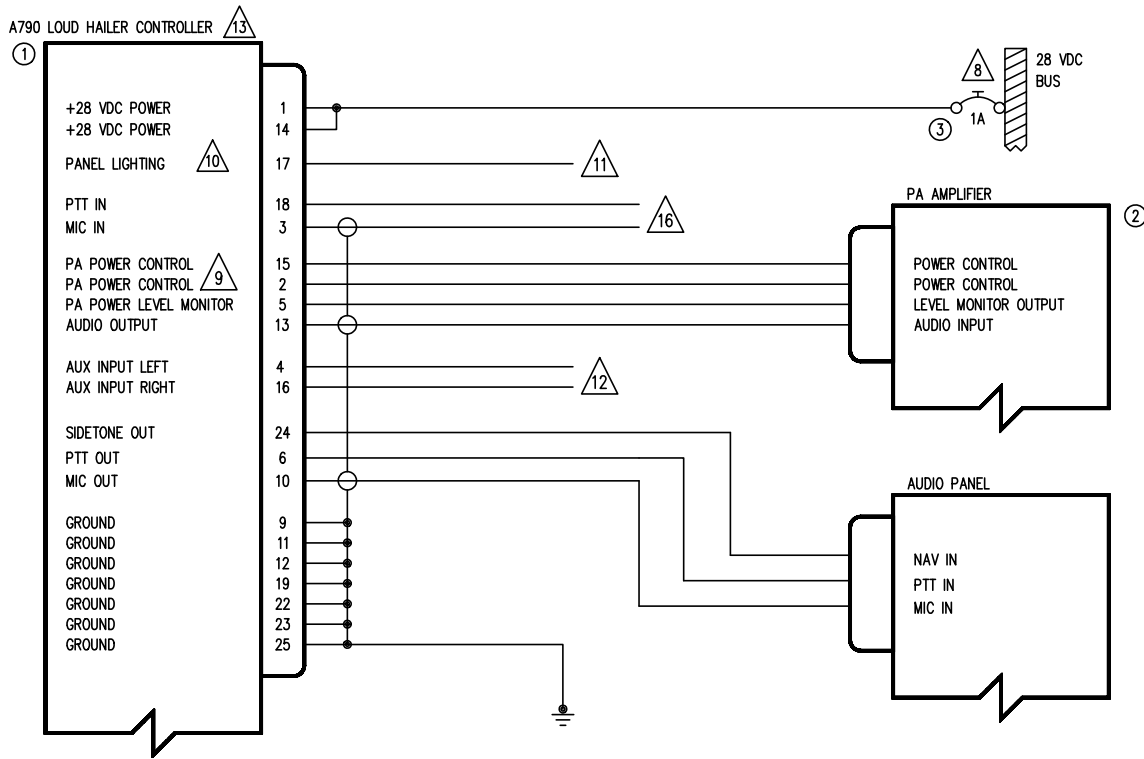


QTY	ITEM	PART NUMBER	DESCRIPTION	SPEC	MATERIAL
1	1	A790	LOUD HAILER CONTROLLER	TECHNISONIC INDUSTRIES LIMITED	
1	2	PSAIR42	PA AMPLIFIER	POWERSONIX OR EQUIVALENT	
1	3	7274-11-1	CIRCUIT BREAKER, 1 AMP	KLIXON	

NOTES:

- 1) ALL WIRE IAW MIL-W-22759 UNLESS OTHERWISE SPECIFIED.
- 2) ALL CABLE IAW MIL-C-27500 UNLESS OTHERWISE SPECIFIED.
- 3) COAXIAL CABLE IAW MIL-C-17 UNLESS OTHERWISE SPECIFIED. DO NOT USE COAX WITH PVC INSULATION.
- 4) FABRICATION & INSTALLATION OF WIRING HARNESS IAW AC 43.13-1A CHAPTER 11, SECTION 3, PARA 445 TO 462 AND SECTION 7.
- 5) GROUNDING AND BONDING IAW AC 43.13-1A CHAPTER 11, SECTION 3, PARA 452.
- 6) ALL SINGLE WIRE TO BE #22 AWG MINIMUM AND ALL SHIELDED WIRE TO BE #24 AWG MINIMUM, UNLESS OTHERWISE SPECIFIED.
- 7) INSTALLATION OF ANTENNA IAW AC 43.13-1A CHAPTER 2, SECTION 3, CHAPTERS 5 & 6, AND AC 43.13-2A CHAPTER 3. IF POSSIBLE, THE ANTENNA SHOULD BE LOCATED A MINIMUM OF 12 FT FROM AIRCRAFT NAVIGATION RECEIVER ANTENNAS AND A MINIMUM OF 4 FEET FROM AIRCRAFT COMMUNICATIONS AND ELT ANTENNAS. BE CAREFUL NOT TO CHOSE SEPARATIONS THAT CLOSELY APPROXIMATE 1/4 OR 1/2 OR WHOLE NUMBER MULTIPLES OF THE NAVIGATION OR COMMUNICATIONS SYSTEM WAVELENGTH.
- 8) AN EQUIVALENT CIRCUIT BREAKER OR FUSE MAY BE USED.
- 9) THESE PINS CONNECT TOGETHER WHEN THE A790 IS SWITCHED ON AND ARE FLOATING WHEN THE A790 IS OFF.
- 10) THE A790 IS AVAILABLE WITH 28V OR 5V PANEL LIGHTING. SET THE CONFIGURATION FOR THE CORRECT VOLTAGE.
- 11) CONNECT TO THE APPROPRIATE AIRCRAFT DIMMING BUSS.
- 12) OPTIONAL AUXILIARY INPUTS CAN CONNECTED TO ANOTHER AUDIO SOURCE.
- 13) INSTALLATION OF TRANSCEIVER IAW AC 43.13-1A CHAPTER 2, SECTION 3 AND AC 43.13-2A, CHAPTER 2. PR 3 1/2 DZUS RAIL OR EQUIVALENT MAY BE USED.
- 14) TEST THE SYSTEM IN ACCORDANCE WITH THE POST-INSTALLATION TEST PROCEDURE IN THE INSTALLATION AND OPERATING INSTRUCTIONS MANUAL.
- 15) REFER TO THE AIRCRAFT STRUCTURAL REPAIR MANUAL AND THE MAINTENANCE MANUAL FOR INSTRUCTIONS AND INFORMATION PERTINENT TO THIS INSTALLATION.

FIGURE 1.3 A790 Wiring Special Installation



QTY	ITEM	PART NUMBER	DESCRIPTION	SPEC	MATERIAL
1	1	A790	LOUD HAILER CONTROLLER	TECHNISONIC INDUSTRIES LIMITED	
1	2	PSAIR42	PA AMPLIFIER	POWERSONIX OR EQUIVALENT	
1	3	7274-11-1	CIRCUIT BREAKER, 1 AMP	KLIJXON	

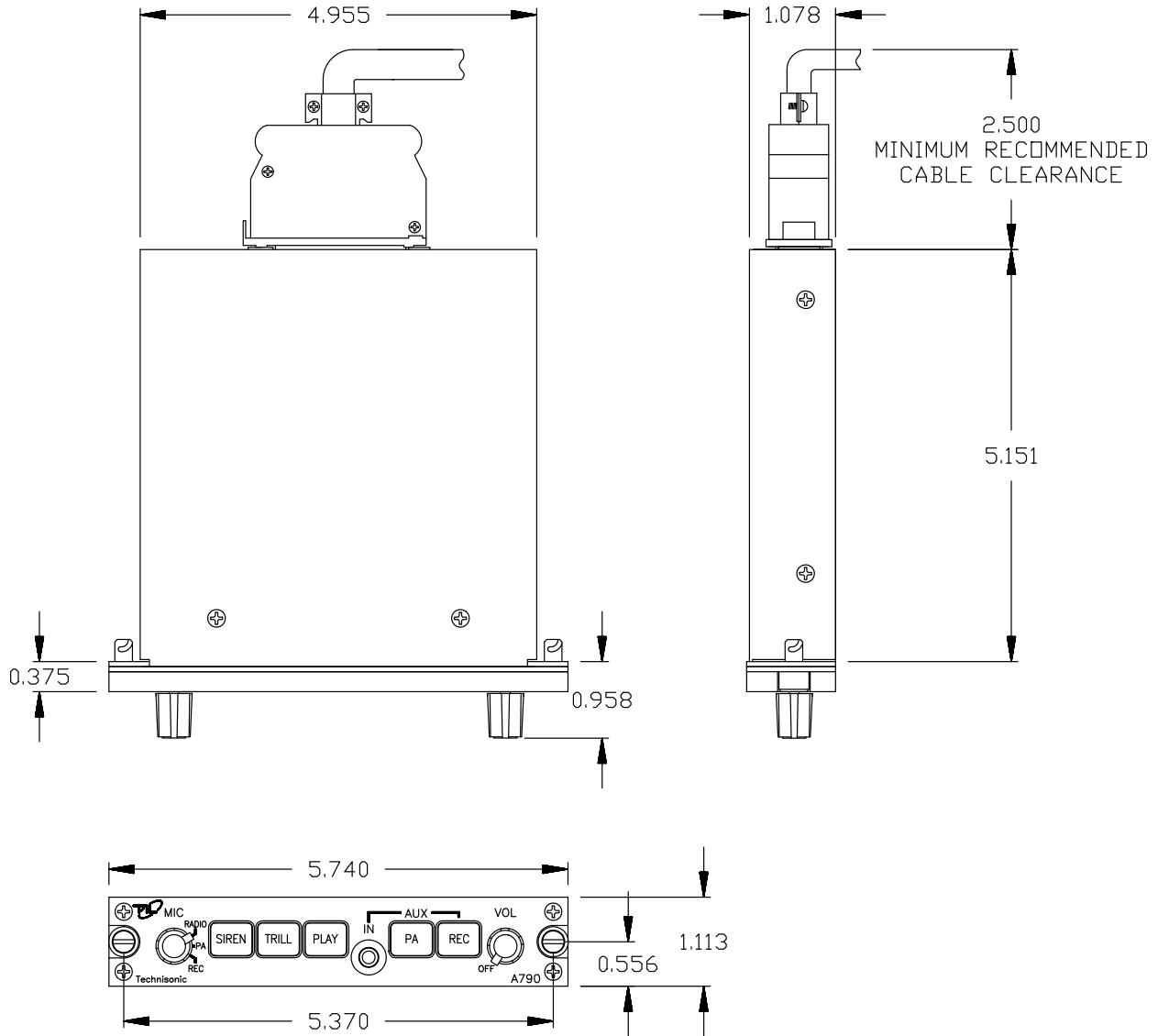
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IF POSSIBLE, THE ANTENNA SHOULD BE LOCATED A MINIMUM OF 12 FT FROM AIRCRAFT NAVIGATION RECEIVER ANTENNAS AND A MINIMUM OF 4 FEET FROM AIRCRAFT COMMUNICATIONS AND ELT ANTENNAS. BE CAREFUL NOT TO CHOSE SEPARATIONS THAT CLOSELY APPROXIMATE 1/4 OR 1/2 OR WHOLE NUMBER MULTIPLES OF THE NAVIGATION OR COMMUNICATIONS SYSTEM WAVELENGTH.
- 8) AN EQUIVALENT CIRCUIT BREAKER OR FUSE MAY BE USED.
- 9) THESE PINS CONNECT TOGETHER WHEN THE A790 IS SWITCHED ON AND ARE FLOATING WHEN THE A790 IS OFF.
- 10) THE A790 IS AVAILABLE WITH 28V OR 5V PANEL LIGHTING. SET THE CONFIGURATION FOR THE CORRECT VOLTAGE.
- 11) CONNECT TO THE APPROPRIATE AIRCRAFT DIMMING BUSS.
- 12) OPTIONAL AUXILIARY INPUTS CAN CONNECTED TO ANOTHER AUDIO SOURCE.
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- 14) TEST THE SYSTEM IN ACCORDANCE WITH THE POST-INSTALLATION TEST PROCEDURE IN THE INSTALLATION AND OPERATING INSTRUCTIONS MANUAL.
- 15) REFER TO THE AIRCRAFT STRUCTURAL REPAIR MANUAL AND THE MAINTENANCE MANUAL FOR INSTRUCTIONS AND INFORMATION PERTINENT TO THIS INSTALLATION.
- 16) CONNECT TO OPERATORS HEADSET MIC AND PTT.

FIGURE 1.4 A790 Wiring Standard Installation

1.5 HARDWARE INSTALLATION

The A790 is designed to mount in a standard 5.75" DZUS rail rack. See Figure 1.5 for physical dimensions. As with all avionics installations, be sure to provide sufficient cooling or ventilation.



ALL DIMENSIONS ARE IN INCHES

FIGURE 1.5 A790 Outline Drawing

1.6 POST INSTALLATION TEST PROCEDURE

Follow the post installation procedure outlined in the PA System Installation Instructions. Check each feature of the A790 for proper function. Confirm there is no interference from or to other equipment in the aircraft.

NOTES