ANODYNE ELECTRONICS MANUFACTURING CORP.

SPECIAL NOTICE

This product is now licensed to Anodyne Electronics Manufacturing (AEM) from Northern Airborne Technology (NAT). AEM is responsible for all matters related to this product, including sales, support and repair services.

Please note the transition to convert product manuals and supporting documentation is an ongoing process and is being addressed on an ‘as needed’ basis.

All references to NAT product part numbers (and associated images) are equivalent to AEM product part numbers.

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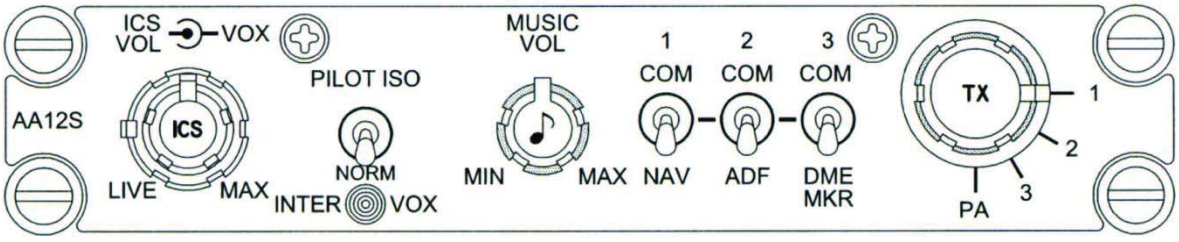
SM69

AA12S Series
Compact Audio Controller



INSTALLATION AND OPERATION MANUAL

Rev: 2.00 April 14, 2012

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The status of this installation and operation manual is controlled by issue shown on the title page. The status of each section is controlled by revision shown in the footer of each page. All revisions affecting sections of this manual have been incorporated into the latest issue.

ISSUE/REVISION RECORD

Manual Issue Number	Section Revision Number	Revision Description	Issue Date
4.01	Section 1 Rev: 1.00 Section 2 Rev: 1.00 Section 3 Rev: 1.00	Update to current templates.	Nov 7, 2008

AEM MANUAL REVISIONS

Section	Revisions Number	Revision Description	Date
All	2.00	Updated template	April 14, 2012

Table of Contents

Section 1.0 Description

1.1 Introduction

Information in this section consists of product description, design features and specifications for the AA12S Series Compact Audio Controller. All derivative product information shall be contained in the applicable manual supplement, which may be obtained from AEM as required.

Review all notes, warnings and cautions.

1.2 Purpose of Equipment

The AA12S is a compact Dzus-mounted audio controller with an integral 4-place stereo voice-activated intercom. It provides intercom capabilities for the pilot, co-pilot and two passengers (PAX). The AA12S accepts stereo music inputs from either portable or fixed entertainment systems to produce high quality stereo headset output.

Radio functions include selectable transmit capability for pilot and co-pilot on 3 COM radios and a PA.

Receive audio selections include COM1, COM2, COM3, MKR, NAV, ADF, and DME.

1.3 Design Features

All four mics have individual VOX gating. Each gate may also be activated with the corresponding ICS keyline.

ICS muting is automatic during radio transmission.

The unit is supplied to suit a standard AEM bi-directional ICS audio TIE line for multi-unit interface (configuration dependent). The crew and PAX are always connected except in the case of Pilot ISO mode, when the pilot is disconnected from the ICS tie line.

If required, one or more receiver audio inputs may be configured at the factory prior to ordering as an unswitched Direct Audio input. A new part number may be assigned. Contact AEM Product Support for further information.

The following audio levels can be adjusted at the time of installation, or during service by an approved dealer, using individual level trimpots.

-ICS Balance
-ICS Bass level
-Music Balance
-Music Bass level
-Music Mute level
-RX Balance
-RX volume level
-Sidetone level

1.4 Specifications

1.4.1 Electrical Specifications

Power Supply	Linear regulator with reverse and over voltage protection.
Input voltage:	11-30 Vdc operating. 30.3 Vdc (maximum) 13.8 Vdc or 27.5 Vdc @ 600 mA (nominal, one input for both) 11.0 Vdc (minimum)
Lighting Voltage	
AA12S-001	27.5 Vdc @ 200 mA max.
AA12S-004	13.5 Vdc @ 400 mA max.

Note: The AA12S is not designed to operate under emergency electrical system conditions for 14 Vdc operation.

Input Signals

Microphone

Quantity	4 (Pilot, Copilot, 2 Passengers).
Rated level	250 mVrms nominal (125 to 500 mVrms)
Impedance	150 Ohm ±10 %
Circuitry type	Unbalanced

TX Keyline

Quantity	2 (Pilot, Copilot).
Rated level	Ground activates keyline, <20 mA source current

ICS Keyline

Quantity	4 (Pilot, Copilot, 2 Passengers).
Rated level	Ground activates keyline, <1 mA source current

Receive Audio

Quantity	7 (3 COM, 4 NAV).
Rated level	2.5 Vrms nominal (1.3 to 5.0 Vrms)
Impedance	1 kOhm ±10 % (1 to 3 kOhm for sidetone)
Circuitry type	Unbalanced

Music Inputs

Quantity	2 (left channel, right channel)
Rated level	1.4 Vrms nominal (850 mVrms to 2.4 Vrms)
Impedance	11 kOhm ±10 %
Circuitry type	unbalanced

Bi-directional Signals

ICS TIE Channel

Quantity:	1
Rated level:	340 mVrms nominal (170 to 680 mVrms)
Impedance:	2 kOhm ±10 %
Circuitry type:	unbalanced

Output Signals

Phones

Quantity	4 (Pilot, Copilot, 2 Passengers)
Rated level	>5.5 Vrms (>100 mW, RX and ICS and music) >0.7 Vrms (TX sidetone, adjustable) 1.5 Vrms nominal (Pilot ISO mode) >0.2 Vrms (Automatic failsafe mode)
Impedance	300 Ohm ±10 %
Circuitry type	transformer, unbalanced

Mic

Quantity	4 (COM1, COM2, COM3 and PA)
Rated level	250 mVrms ±10 %
Impedance	150 Ohm nominal
Circuitry type	direct throughline via relay

Keyline

Quantity	3
Rated level	<1 A
Circuitry type	grounded relay contact

Audio Performance

As per RTCA DO-170 Product Classification: 1a except where noted

*Manufacturers Specification	**Exceeds DO-170 requirement
Rated Output Power	100 mW min. into 300 Ω
Audio frequency Response	
Receive	≤3dB down from 350 - 6000 Hz
Intercom	≤3dB down from 350 - 3000 Hz
ICS Tie	≤3dB down from 350 - 3000 Hz
Music	≤3dB down from 300 - 15000 Hz (Music Bass control at mid setting)
Distortion	≤ 10%, ≤3 % typical (350 to 6000 Hz)
Input	
Input crosstalk	-37 dB max.*
Output crosstalk	-55 dB max.
Mic crosstalk	<200 uVrms*
Audio noise:	-60 dB max**
Output Regulation	≤3 dB variance (350 to 6000 Hz)
Audio Communication	Loud & Clear
ICS Volume controls	≥35 dB*, 40 dB nominal
Music Volume controls	≥35 dB*, 40 dB nominal
Receive Input impedance	1 kΩ ±10 %
Mic Input impedance	150 Ω ±10 %
Music Input impedance	11 kΩ ±10 %
ICS Tie Line	2 kΩ ±10 %

1.4.2 Physical Specifications

Height	1.15” (29.2 mm) max.
Depth	5.80” (147.3 mm) max., behind panel
Width	4.95” (125.7 mm) max, behind panel
Weight	1.2 lbs (0.50 kg)
Mounting	Dzus rail, four fasteners, 5.366” horizontal spacing, and 0.750” vertical spacing
Faceplate	Lighted panel is laser-engraved acrylic edge lit with blue-white backlighting.
Material/Finish	Brushed aluminum with conversion coating
Connectors	One 25-pin female D-min connector with jackposts One 44-pin male high-density D-min connector with jackposts

1.4.3 Environmental Specifications

Temperature:	-20° C. to +55° C
Altitude	50,000 feet
Shock	6g/11ms, 20g/11ms

Qualification of the AA12S Series Compact Audio Controller was completed in accordance with DO-160D Env. Cat. [(A1)(D1)X]BXB[(SMB)(UF)]XXXXXXZBAXXXMXXXX

1.5 Unit Nomenclature

Variants of the AA12S series Compact Audio Controllers are identified as follows:

AA12S-002	Same as AA12S-001 with Faceplate changes (ADF becomes ADF/MKR, DME/MKR becomes TRFC)
AA12S-004	Same as AA12S-001 with 14 Vdc lighting
AA12S-005	Same as AA12S-004 with custom faceplate (ADF becomes ADF/MKR, DME/MKR becomes TRFC).

End of Section 1.0

Section 2.0 Installation

2.1 Introduction

Information in this section consists of unpacking and inspection procedures, installation procedures, post-installation checks and installation drawings for the AA12S Series Compact Audio Controller.

Review all notes, warnings and cautions.

2.2 Unpacking and Inspection

Unpack the equipment carefully. Inspect the unit visually for damage due to shipping and report all such claims immediately to the carrier involved. Check that all items listed below are present before proceeding and report any shortage immediately to your supplier:

- AA12S Series Compact Audio Controller
- Product Information Card
- Certificate of Conformity or Release Certification

2.2.1 Warranty

All Anodyne Electronics Manufacturing Corp. (AEM) products are warranted for 2 years. See the website www.aem-corp.com/warranty for complete details.

2.3 Continued Airworthiness

Maintenance of the AA12S Series Compact Audio Controller is 'on condition' only. Periodic maintenance of this product is not required.

2.4 Installation Procedures

2.4.1 Warnings

WARNING:
High volume settings can cause hearing damage.
Set the headset volume control to the minimum volume setting prior to conducting tests, and slowly increase the headset volume to a comfortable listening level.

2.4.2 Cautions

CAUTION:
The shielding and routing of the MIC and ICS TIE LINES used in the AA12S installation is very critical and poor performance of the aircraft audio system will result if these issues are not handled properly.

The operation of the VOX intercom can be severely degraded by the quality and type or mix of microphones used in the aircraft. If one user has a 'hot' microphone, it will increase the electrical signal to the VOX circuit and the VOX SQUELCH will have to be set to quiet this microphone. The other microphones may not be able to generate enough electrical energy to overcome this VOX SQUELCH setting, and will break up or not be heard at all.

2.4.3 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 solder sleeves (for shield terminations) to make the most compact and easily terminated interconnect. Follow the connector map in Section 2.7 as required.

Coaxial cable shall be selected in accordance with MIL-C-17 unless otherwise specified. Do not use coax cable with PVC insulation. Teflon dielectric cable is encouraged at or above VHF frequencies or where cable runs exceed 8 feet. Note that at VHF frequencies, cables losses due to long cable runs and tight bends may reduce the ERP (Effective Radiated Power) by greater than 50%.

Allow 3" from the end of the shielded wiring to the shield termination to allow the connector hood to be easily installed. Reference the interconnect drawing in Section 2.7 for shield termination details. Note that the hood is a "clamshell" hood, and is installed after the wiring is complete. Aircraft harnessing shall permit the unit to be removed from the panel for easy access to all side adjustments. Do NOT mount the unit until all adjustments have been performed.

Maintain wire segregation and route wiring in accordance with the original aircraft manufacturers Maintenance Instructions. Coaxial cables shall be routed separately from existing wire bundles in the aircraft to minimize electromagnetic coupling effects.

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. Reference 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. Power to this unit must be supplied from a separate circuit breaker or fuse (fast blow), and not attached to any other circuit breaker without additional protection. Verify that the selected circuit breaker size and wire gauge are adequate for the installation using the techniques specified in AC43.13-1B Change 1, Paragraphs 11-47 through 11-51 and 11-66 through 11-69.

2.4.4 Post-Installation Checks

2.4.4.1 Voltage/Resistance Checks

Do not attach the AA12S until the following conditions are met.

Check the following:

a) Check P101, pin <1> for avionics buss voltage.
b) Check P101, pin <16> for continuity to ground (less than 0.5Ω).
c) Check P101, pins <9>, <10>, <11> and <12> for continuity to ground when the relevant switch is closed.
d) Check P301, pin <5> for avionics lighting buss voltage relative to ground (with lighting on).
e) Check P301 pin <17> for continuity to ground.

2.4.4.2 Power On Checks

Power up the aircraft's systems and confirm normal operation of all functions of the AA12S. Refer to Section 3 (Operation) for specific operational details.

a) Install the AA12S and power up the aircraft's systems. Turn on the radios and accessories required for the system.
b) Check for correct radio audio and adjust for an acceptable level.
c) Perform all installed functions, and check the ICS and TX functions for all users. Refer to Section 3 (Operation) for specific operational details.

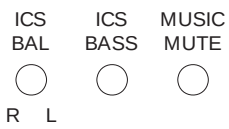
Note: Significantly different headsets may have different microphone characteristics.

Upon satisfactory completion of all performance checks, make all required log book entries, electrical load, weight and balance amendments and other documentation as required by your local regulatory agency before releasing the aircraft for service.

2.5 Adjustments and Connections

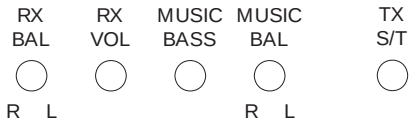
The unit is shipped from the factory with all internal adjustments set to the normal test levels. Once installed in the aircraft, it may be desirable to change some of these settings to best suit the local operating environment. The internal adjustments are located along the sides of the unit.

2.5.1 Left Side Adjustments



The adjustments found on the left side of the unit are:
- ICS BAL R/L, which controls the ICS Balance
- ICS BASS, which controls the ICS bass level
- MUSIC MUTE, which controls the Music mute level.

2.5.2 Right Side Adjustments



The adjustments found on the left side of the unit are:
- RX BAL R/L, which controls the RX Balance
- RX VOL, which controls the RX volume level
- MUSIC BASS, which controls the Music Bass level
- MUSIC BAL R/L, which controls the Music balance.
- TX S/T, which controls the sidetone level

2.6 Accessories Required But Not Supplied

Installation kit p/n AA12S-IKC (crimp) is required to complete the installation. The kit consists of one 44-Pin D-min Female Crimp Kit (AEM Part No. D44SL-IKC) and one 25-Pin D-min Male Crimp Kit (AEM Part No. D25PL-IKC).

D44SL-IKC consists of

Quantity	Description	AEM Part No.
1	D-min 44 Socket Housing	20-20-044
44	Mini D Crimp Socket	20-26-703
1*	Jack Screw Set	20-27-002
1*	Lock Clip Set	20-27-004
1	25 Pin Connector Hood	20-29-026

D25PL-IKC consists of

Quantity	Description	AEM Part No.
1	D-min 25 Socket Housing	20-11-025
25	MS Crimp Pin	20-26-891
1*	Jack Screw Set	20-27-002
1*	Lock Clip Set	20-27-004
1	25 Pin Connector Hood	20-29-026

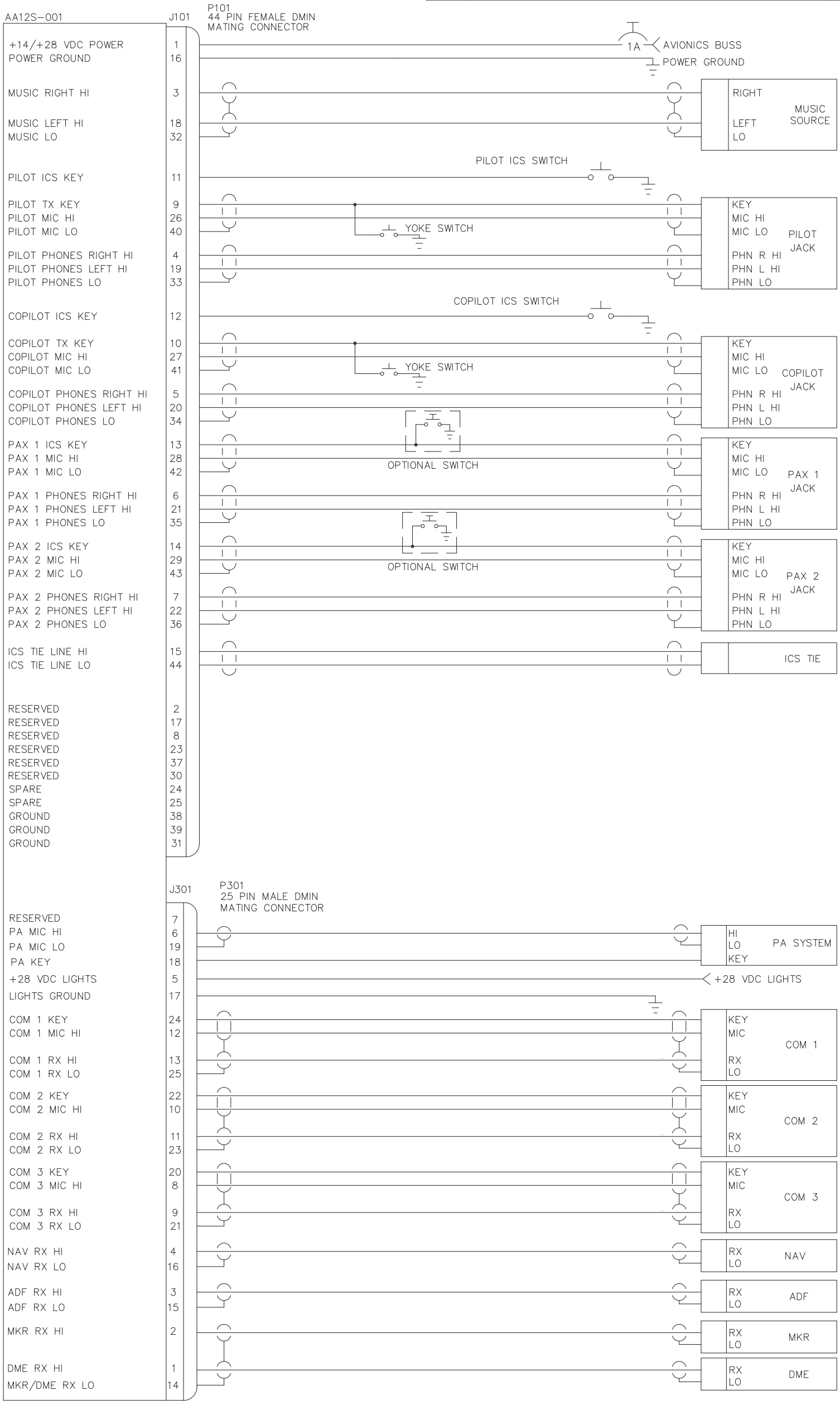
* Use as required.

2.7 Installation Drawings

DOCUMENT	REV.	DESCRIPTION	TYPE	SERIAL NO.
AA12S-001				
AA12S\001\403-0	1.10	Compact Stereo Audio Controller	Interconnect	All
AA12S\001\405-0	1.10	Compact Stereo Audio Controller	Connector Map	All
AA12S\001\905-0	1.10	Compact Stereo Audio Controller	Faceplate	All
AA12S\001\922-0	1.10	Compact Stereo Audio Controller	Mechanical Installation	All
AA12S-004				
AA12S\004\403-0	1.00	Compact Stereo Audio Controller	Interconnect	All
AA12S\004\405-0	1.00	Compact Stereo Audio Controller	Connector Map	All

Section 2.0 ends following the above documents

REVISIONS			
REV	DESCRIPTION	DATE	BY
1.10	DOCCR00670 – J301 WAS J102 AND P301 WAS P102.	MAR 10/04	MWS



NOTES:

1. ALL WIRES SHOULD BE 22 AWG UNLESS OTHERWISE SPECIFIED. ALL WIRE SHOULD BE IN ACCORDANCE WITH MIL–W–22759. ALL SHIELDED WIRE/CABLE SHOULD BE IN ACCORDANCE WITH MIL–C–27500.

DEFINITIONS:

RESERVED:

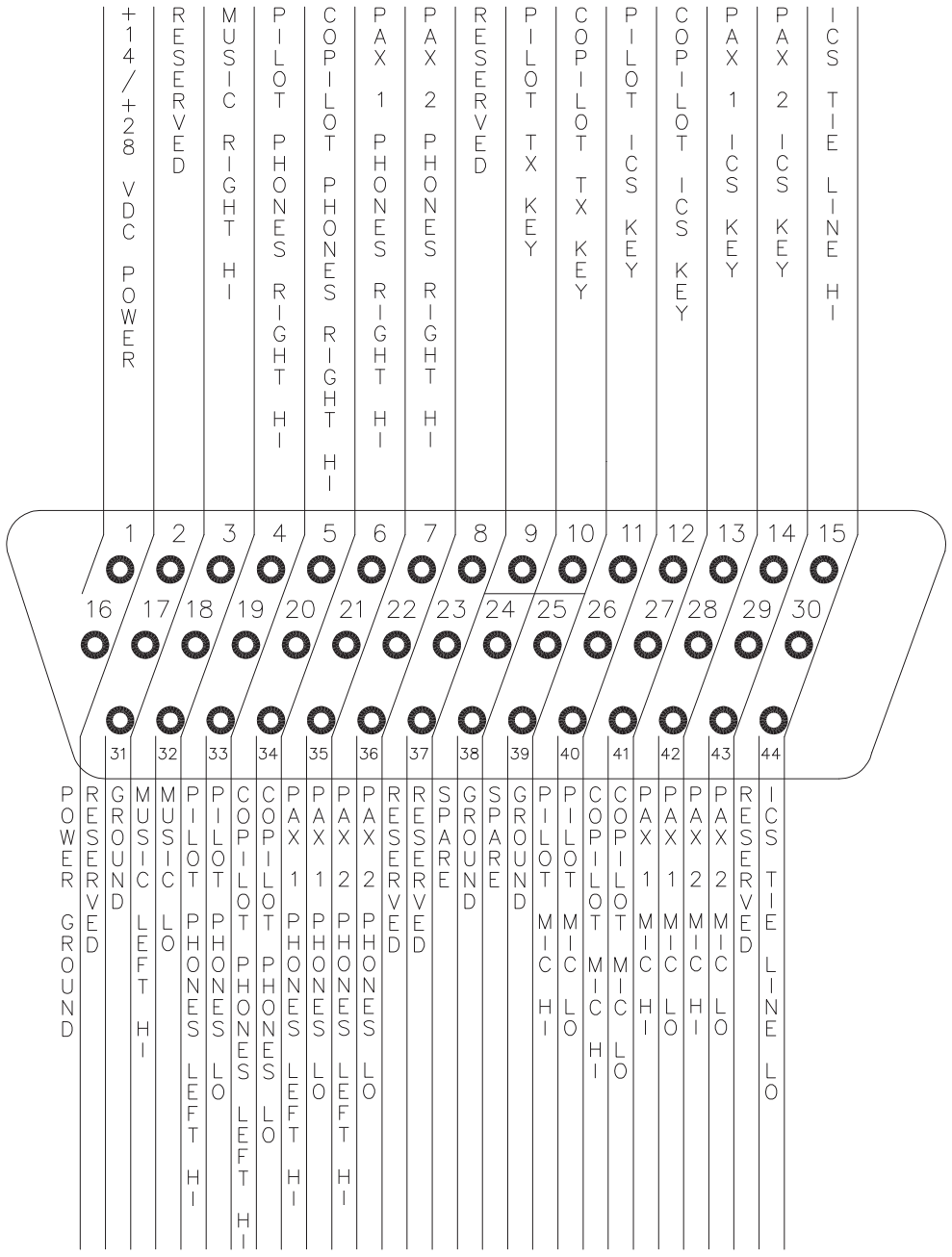
MAY BE CONNECTED AND USED IN FUTURE. THE CIRCUITRY MAY BE PRESENT OR ADDED TO ACTIVATE THE FUNCTION. THE PIN MAY BE USED FOR TEST PURPOSES. THERE IS NO EXTERNAL CONNECTION.

DESIGNED	KV/KEH	nat NORTHERN AIRBORNE TECHNOLOGY LTD.				
DRAWN	TAT					
DATE	SEP 22/03	TITLE	COMPACT STEREO AUDIO CONTROLLER			
CHECKED	NAT 249					
APPROVED	NAT 501	SIZE B	CAGE CODE 3AB01	PART NO. AA12S–001	REV. 1.10	SHEET 1/1
FILE 403–0.DWG		DWG. TYPE INTERCONNECT		DWG. NO. AA12S\001\403–0		

REVISIONS			
REV	DESCRIPTION	DATE	BY
1.10	DOCCR00670 – P301 WAS P102.	MAR 10/04	MWS

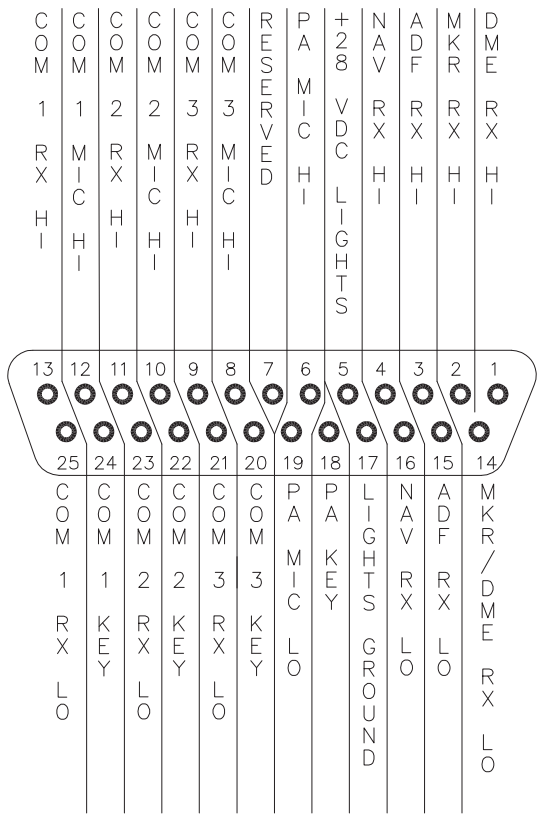
P101

44 PIN FEMALE DMIN
MATING CONNECTOR



P301

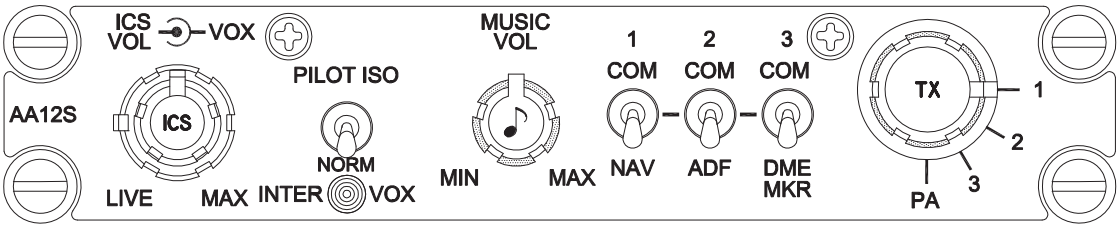
25 PIN MALE DMIN
MATING CONNECTOR



VIEW IS FROM REAR OF AIRFRAME CONNECTOR

DESIGNED	KV/KEH	nat NORTHERN AIRBORNE TECHNOLOGY LTD.				
DRAWN	TAT					
DATE	~~OCT 17/03~~	TITLE	COMPACT STEREO AUDIO CONTROLLER			
CHECKED	NAT 249					
APPROVED	NAT 501	SIZE B	CAGE CODE 3AB01	PART NO. AA12S–001	REV. 1.10	SHEET 1/1
FILE	405–0.DWG	DWG. TYPE	CONNECTOR MAP	DWG. NO.	AA12S\001\405–0	

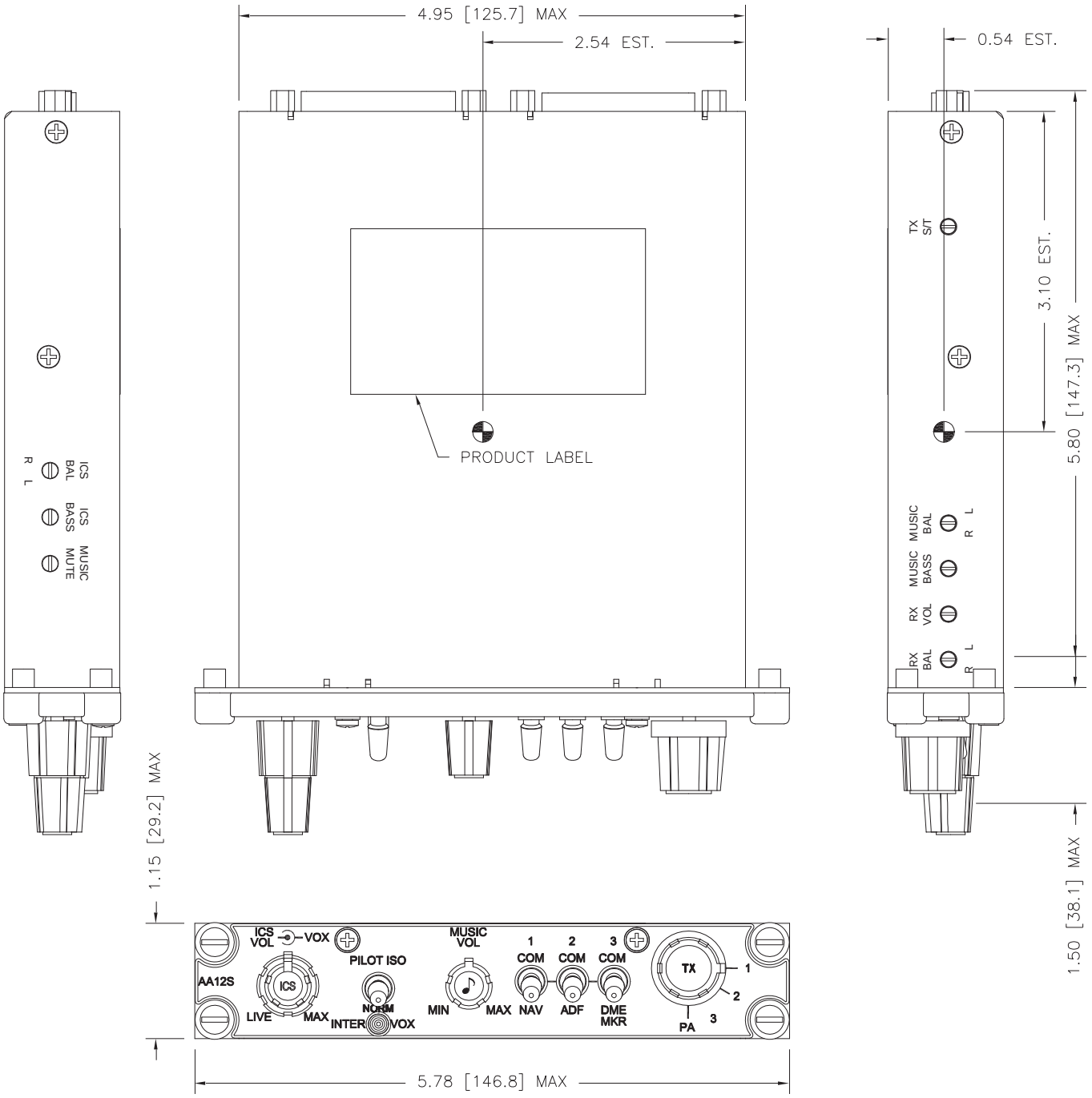
REVISIONS			
REV	DESCRIPTION	DATE	BY
1.10	DOCCR00711 – TEXT POSITIONS LIVE/MAX AND MIN/MAX MOVED.	APR 1/04	TAT



CONFIDENTIAL AND PROPRIETARY TO NAT LTD.

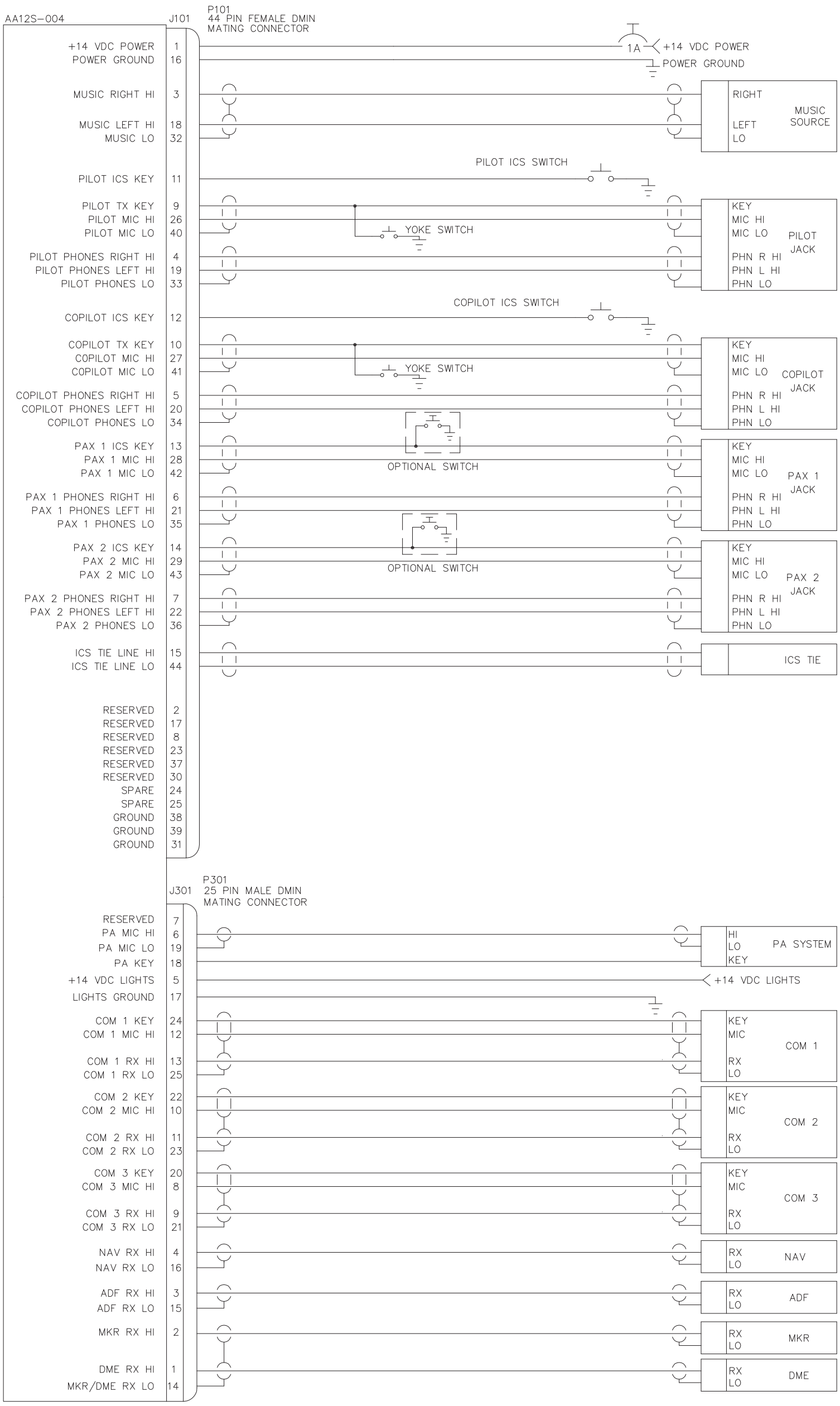
DESIGNED	KV	nat NORTHERN AIRBORNE TECHNOLOGY LTD.				
DRAWN	TAT					
DATE	~~SEP 5/03~~	TITLE	COMPACT STEREO AUDIO CONTROLLER			
CHECKED	NAT 265 NAT 249					
APPROVED	NAT 501	SIZE A	CAGE CODE 3AB01	PART NO. AA12S–001	REV. 1.10	SHEET 1/1
FILE	905–0.DWG	DWG. TYPE	FACEPLATE	DWG. NO.	AA12S\001\905–0	

REVISIONS			
REV	DESCRIPTION	DATE	BY
1.10	DOCCR00879 – CHG'D ADJ HOLE LABELS ON COVER.	JUN 23/04	MWS



NOTES:
1. DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5M–1994

DIMENSIONS ARE INCHES [mm]	DESIGNED	KEH	NORTHERN AIRBORNE TECHNOLOGY LTD.
THIRD ANGLE PROJECTION	DRAWN	TAT	
	DATE	NOV 4/03	TITLE: COMPACT STEREO AUDIO CONTROLLER
MASS: 1.2 lbs. (0.5 Kg) MAX	CHECKED	NAT 249	
MATERIAL: –	APPROVED	NAT 501	SIZE: A; CAGE CODE: 3AB01; PART NO.: AA12S–001; REV.: 1.10; SHEET: 1/1
FINISH: CHROMATE CONVERSION	FILE: 922–0.DWG	DWG. TYPE: MECH. INSTALLATION	DWG. NO.: AA12S\001\922–0



NOTES:

1. ALL WIRES SHOULD BE 22 AWG UNLESS OTHERWISE SPECIFIED. ALL WIRE SHOULD BE IN ACCORDANCE WITH MIL–W–22759. ALL SHIELDED WIRE/CABLE SHOULD BE IN ACCORDANCE WITH MIL–C–27500.

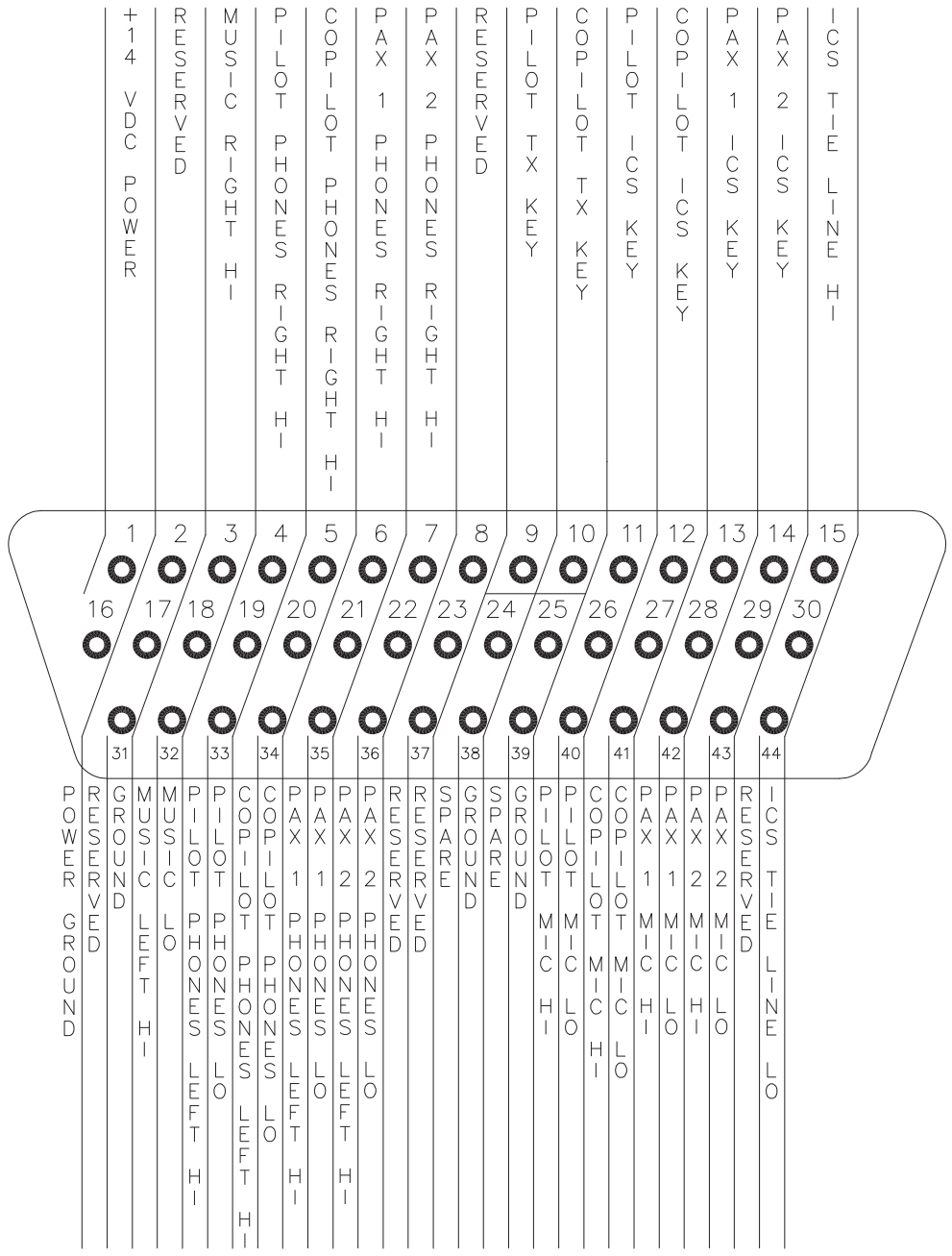
DEFINITIONS:

RESERVED: MAY BE CONNECTED AND USED IN FUTURE. THE CIRCUITRY MAY BE PRESENT OR ADDED TO ACTIVATE THE FUNCTION. THE PIN MAY BE USED FOR TEST PURPOSES. THERE IS NO EXTERNAL CONNECTION.

DESIGNED	KV/KEH	nat NORTHERN AIRBORNE TECHNOLOGY LTD.				
DRAWN	MWS					
DATE	MAR 02/04	TITLE: COMPACT STEREO AUDIO CONTROLLER				
CHECKED	NAT 114, NAT 249					
APPROVED	NAT 501	SIZE: B	CAGE CODE: 3AB01	PART NO.: AA12S–004	REV.: 1.00	SHEET: 1/1
FILE: 403–0.DWG		DWG. TYPE: INTERCONNECT		DWG. NO.: AA12S\004\403–0		

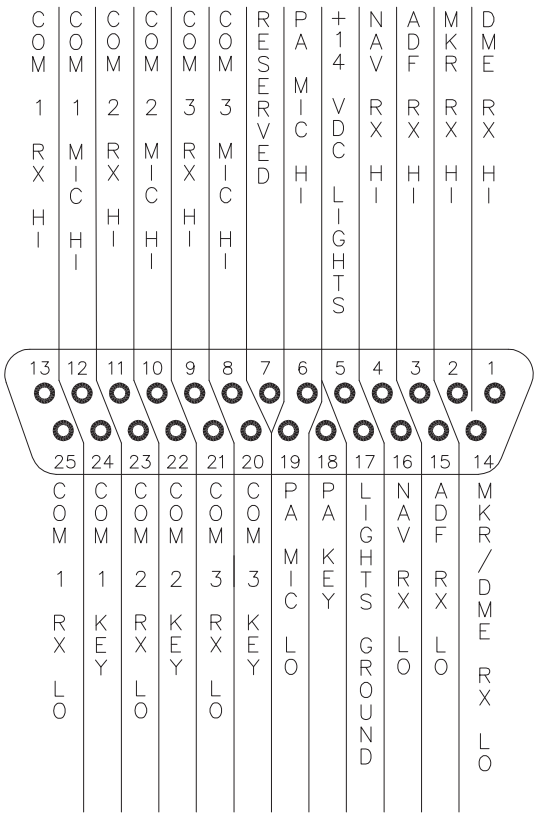
P101

44 PIN FEMALE DMIN
MATING CONNECTOR



P301

25 PIN MALE DMIN
MATING CONNECTOR



VIEW IS FROM REAR OF AIRFRAME CONNECTOR

DESIGNED	KV/KEH	nat NORTHERN AIRBORNE TECHNOLOGY LTD.				
DRAWN	MWS					
DATE	MAR 02/04	TITLE: COMPACT STEREO AUDIO CONTROLLER				
CHECKED	NAT 114 / NAT 249					
APPROVED	NAT 501	SIZE: B	CAGE CODE: 3AB01	PART NO.: AA12S–004	REV.: 1.00	SHEET: 1/1
FILE	405–0.DWG	DWG. TYPE: CONNECTOR MAP		DWG. NO.: AA12S\004\405–0		

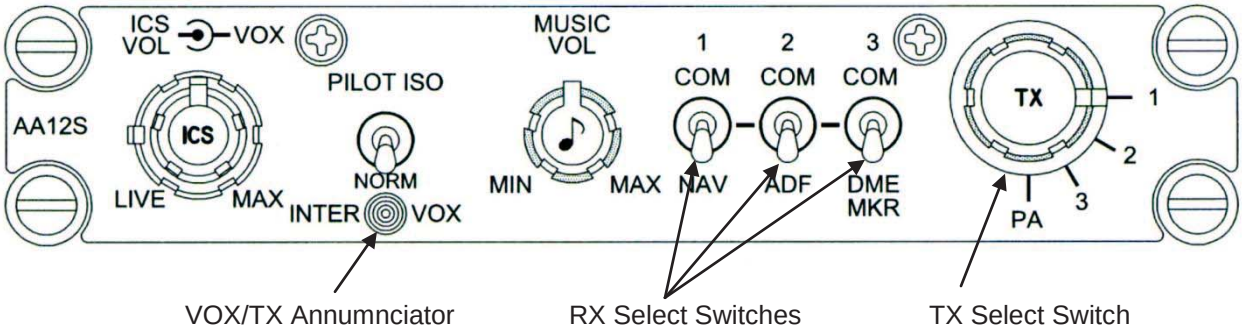
Section 3.0 Operation

3.1 Introduction

Information in this section consists of functional and operational procedures for the AA12S Series Compact Audio Controller.

3.2 General Information

The AA12S is a compact Dzus-mounted audio controller with an integral 4-place stereo voice-activated intercom. It provides intercom capabilities for the pilot, copilot and two passengers (PAX). The AA12S accepts stereo music inputs from either portable or fixed entertainment systems to produce high quality stereo headset output.



Radio functions include selectable transmit capability for pilot and copilot on 3 COM radios and a PA. Receive audio selections include COM1, COM2, COM3, MKR, NAV, ADF, and DME.

3.3 Controls and Indicators

3.3.1 Radio Selection

3.3.1.1 Receive

The AA12S is typically configured to select the RX audio from three transceivers and up to four additional receivers.

The RX Select switches are white double-throw centre-off switches. Receiver audio can be selected by setting the appropriate RX select switch to the down position.

Transceiver audio can either be selected by setting the appropriate RX select switch to the up position, or as a function of the TX select switch. The transceiver that is selected by the TX select switch is also automatically selected for receive. Receive/sidetone audio for the selected COM is automatically provided.

When a switch is in the centre-off position, no transceiver/receiver audio is selected.

3.3.1.2 Transmit

The TX select switch is a 4-position rotary control that provides radio selection for up to three transceivers and a PA. By selecting the desired transceiver and pressing the external TX PTT switch, the AA12S is activated for transmit operation, connecting the respective mic to the selected transceiver. The transceiver that is selected by the TX select switch is also automatically selected for receive. The front panel annunciator will illuminate green to indicate transmit operation (see section 3.3.1.3.)

TX selections are available only to the pilot and copilot. Activation of either TX PTT input connects the user's MIC to the selected COM, and activates the output PTT to the selected COM. When PTT is pressed, all audio except the sidetone of the selected COM and NAV inputs is removed from the headphone of the particular PTT user. The sidetone of the active COM is provided from the COM radio.

The PA position provides PA mic audio and PA keyline to an external amplifier (e.g. AA21, AA23, PA250) for use as either a Loudhailer or Passenger Address system.

A priority transmission feature allows the pilot to override the co-pilot.

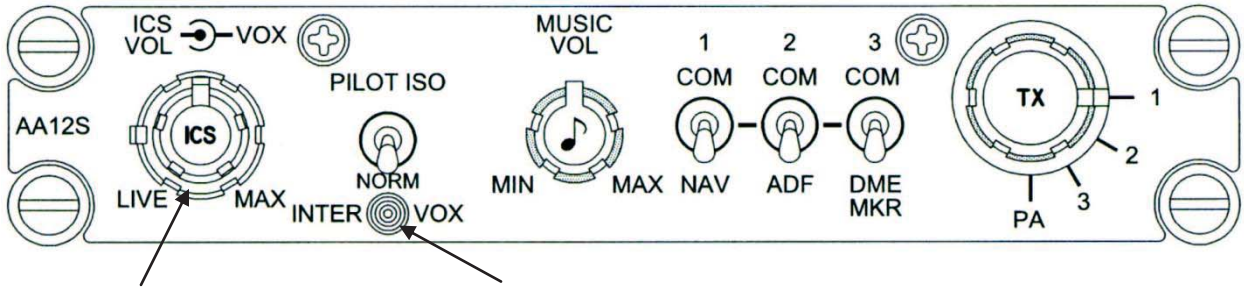
3.3.1.3 VOX/TX Annunciator

The VOX/TX Annunciator is a bicolour LED that indicates the intercom status.

During VOX activity, the annunciator LED is illuminated red. If TX is keyed with no ICS or sidetone, the annunciator LED is illuminated green. If TX is keyed with mic or sidetone, the combination of red and green will cause the LED to appear amber.

Note: If the LED is still illuminated green after transmission is concluded, this indicates a possible stuck mic.

3.3.2 Intercom



ICS VOL/VOX Squelch Control VOX/TX Annunciator

The VOX and ICS VOL control is a fluted concentric knob, with the ICS volume on the centre knob, and the VOX control on the outer knob.

3.3.2.1 VOX Control

The VOX control is used to set the level of audio required to activate the microphones.

The AA12S provides three modes of intercom operation, selected by the position of the VOX control.

LIVE ICS When the VOX control is positioned fully counter-clockwise (ccw), all mics will be live, and any sound picked up by the microphone(s) will be processed by the ICS system

KEYED ICS When the VOX control is positioned fully clockwise (cw), the intercom will be in a keyed-only mode.

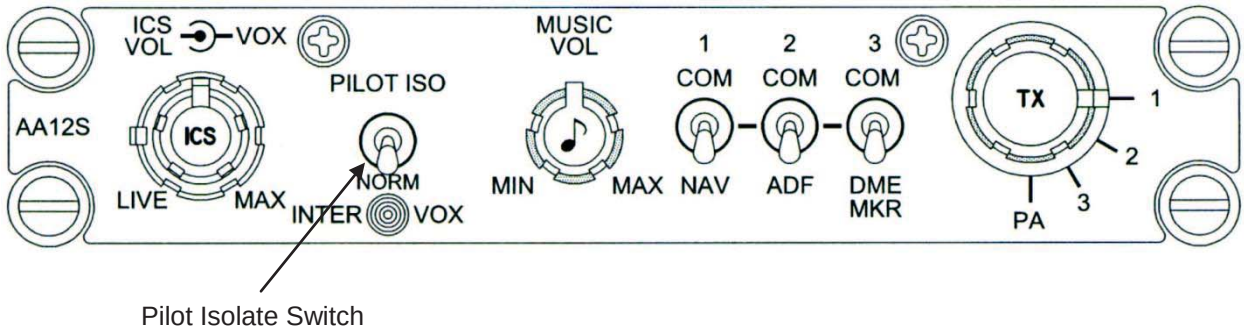
VOX ICS When the VOX control is positioned between fully cw and fully ccw, the intercom is in VOX mode. To establish the VOX threshold, rotate the control ccw until the LED turns red, and then rotate the control cw until the LED goes dark. Continue turning the control cw until the desired voice sensitivity is set.

3.3.2.2 ICS Volume Control

The ICS VOL control, which has a line to mark rotational position, is at minimum volume when fully ccw. As the knob is rotated cw, the ICS volume for crew and PAX increases.

The ICS is muted during transmit operations.

3.3.3 PILOT ISO / NORM Modes



Pilot Isolate Switch

The PILOT ISO/NORM control is a red, two-position toggle switch that allows selection of either NORM (Normal) or PILOT ISO (Pilot Isolate).

In NORM mode (default) everyone on the system can talk to each other, listen to music, and hear all selected radio audio.

The PILOT ISO mode separates the pilot from the intercom network, allowing confidential radio communications without interference from the copilot or passenger intercom or music, while maintaining complete control of all the radio functions of the audio panel. The copilot and passengers retain normal intercom and music functions.

Note: In PILOT ISO mode, the receive/sidetone levels may require adjustment at the audio source.

3.3.4 Entertainment Audio

The AA12S accepts stereo music input from portable entertainment units, CD players or other integrated on-board systems. The stereo output delivers music to stereo, or standard monaural, general aviation headsets (installation dependent).

Music muting occurs during any radio or intercom activity.

3.3.5 Automatic Fail-safe

In the event of a power failure, automatic fail-safe operation will be activated. This routes the pilot's phones, mic audio, and mic PTT directly to the COM radio selected by the position of the TX rotary selector switch, and selected audio inputs. Copilot and passengers will have no ICS, music, or receive functions.

In the unlikely event of an AA12S circuit failure that results in a communication failure, the automatic fail-safe mode can be enabled by pulling the AA12S circuit breaker.

Notes: 1) In Automatic Fail-Safe mode, the receive/sidetone levels may require adjustment at the audio source.

2) The pilot should confirm that all aspects of Automatic Fail-Safe operation are working before accepting the aircraft into service.

End of Section 3.0