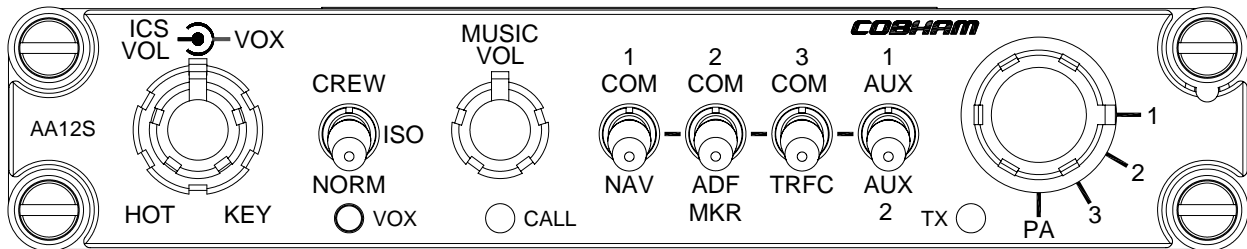




Installation and Operation Manual

AA12S-600 Compact Stereo Audio Controller



SM84

ISSUE 1.02

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**AA12S-600 Compact Stereo Audio Controller
SM84 Installation and Operation Manual**

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AA12S-600 Compact Stereo Audio Controller SM84 Installation and Operation Manual

Section 1 Description

1.1 Introduction

Information in this section consists of product description, design features and specifications for the AA12S-600 Compact Stereo Audio Controller. All derivative product information shall be contained in the applicable manual supplement, which may be obtained from Northern Airborne Technology Ltd. as required.

Review all notes, warnings and cautions.

1.2 Product Description

The AA12S-600 is a compact Dzus-mounted audio controller with an integral 6 - place stereo voice activated intercom. It provides intercom capabilities for two crew members (CREW 1 and CREW 2) and four passengers (PAX 1 – PAX 4). Stereo music inputs are provided to connect either portable or fixed entertainment systems to produce stereo headset output. Connectivity is provided for four COM transceivers, nine COM/NAV receivers and four Direct Audio inputs. The fourth COM position can be used to service a PA or additional AUX receiver.

1.3 Design Features

All microphones have individual VOX gating. Each VOX gate is activated by the corresponding ICS keyline or when the microphone level exceeds the VOX threshold level. The VOX threshold level can be set anywhere between live (HOT) and keyed (KEY).

The unit is supplied to suit a standard NAT bi-directional ICS audio TIE line for multi-unit interface (configuration dependent). The ICS audio is muted to the applicable ICS group when an applicable user's TX keyline is activated.

A stereo music input accepts audio signals from portable entertainment units, CD players or other integrated on-board systems through the airframe connector J101. Stereo output delivers music to stereo, or standard monaural, general aviation headsets (installation specific). Music muting occurs during radio transmit or receive or intercom activity. The music mute level is adjustable for muting that occurs during receive or intercom activity. The music is fully muted (disabled) during radio transmit.

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

- Artificial Side Tone (AST ADJ)
- Crew ICS Balance (CREW ICS BAL)
- Direct Volume (DIR VOL)
- Music Balance (MUSIC BAL)
- Music Left Bass (MUSIC LEFT BASS)
- Music Left Treble (MUSIC LEFT TREB)
- Music Mute Level (MUS MUTE LVL)
- Music Right Bass (MUSIC RIGHT BASS)
- Music Right Treble (MUSIC RIGHT TREB)
- PAX ICS Balance (PAX ICS BAL)
- Receive Balance (RX BAL)
- Receive Volume (RX VOL)
- Receive VOX (RX VOX)



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1.4 Specifications

1.4.1 Electrical Specifications

Input Operating Voltage (28 Vdc Operation)

Normal Operating Conditions

Nominal	+28.0 Vdc
Maximum	+30.3 Vdc
Minimum	+22.0 Vdc
Emergency	+18.0 Vdc

Abnormal Operating Conditions

Nominal	+28.0 Vdc
Maximum	+32.2 Vdc
Minimum	+20.5 Vdc

Input Current 500 mA maximum @ 28 Vdc

Input Operating Voltage (14 Vdc Operation)

Normal Operating Conditions

Nominal	+14.0 Vdc
Maximum	+15.1 Vdc
Minimum	+11.0 Vdc

Abnormal Operating Conditions

Nominal	+14.0 Vdc
Maximum	+16.1 Vdc
Minimum	+10.3 Vdc

Input Current 900 mA maximum @ 14 Vdc

Lighting (+28 Vdc)

Lights Input

Current 5 mA maximum

Lighting (+14 Vdc)

Lights Input

Current 5 mA maximum



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Input Signals

Note: All nominal values are listed with a $\pm 10\%$ tolerance.

Microphones

Quantity	6
Rated Level	250 mVrms nominal
Impedance	150 Ω nominal
Circuit Type	Single ended
Mic Bias	12.0 Vdc

Receive Audio

Quantity	9
Rated Level	2.5 Vrms nominal
Impedance	1.0 k Ω nominal
Circuit Type	Single ended

Emergency Receive Audio

Quantity	1
Rated Level	2.5 Vrms nominal
Impedance	1.1 k Ω nominal ¹
Circuit Type	Single ended

Direct Audio

Quantity	4
Rated Level	2.5 Vrms nominal
Impedance	1.0 k Ω nominal
Circuit Type	Single ended

Direct Audio (Emergency Mode Operation)

Quantity	1 (DIR 1)
Rated Level	2.5 Vrms nominal
Impedance	1.0 k Ω nominal ¹
Circuit Type	Single ended

Music

Quantity	2
Rated Level	0.4 Vrms nominal
Impedance	10.0 k Ω nominal
Circuit Type	Single ended

¹ Assumes mono or stereo headphones of rated impedance attached to CREW 1 headphones output.



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Transmit Keylines

Quantity	3
Rated Level	Active Low, <20 mA source current

ICS Keylines

Quantity	6
Rated Level	Active Low, <20 mA source current

PAX Call Key

Quantity	1
Rated Level	Active Low, <20 mA source current

Output Signals

Note: All nominal values are listed with a $\pm 10\%$ tolerance.

Headphones

Quantity	6 stereo outputs
Rated Level	≥ 100 mW (≥ 5.5 Vrms) into 300Ω per channel stereo or 150Ω mono
Impedance	$\leq 35 \Omega$ nominal
Circuit Type	Single ended

Headphones (Emergency Mode Operation)

Quantity	1 stereo output (CREW 1)
Rated Level	≥ 0.25 mW into 300Ω per channel stereo
Circuit Type	Single ended

COM 1–4 Microphone

Quantity	4
Rated Level	250 Vrms nominal into 150Ω
Impedance	$\leq 140 \Omega$ nominal
Circuit Type	Single ended

Emergency COM Microphone

Quantity	1
Rated Level	≥ 190 mVrms nominal into $150 \Omega^2$
Circuit Type	Single ended

² Assumes microphone bias and terminating impedance provided by the Emergency Mode Transceiver.



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Keylines

Quantity	4
Rated Level	<1.0 A
Circuit Type	Grounded mechanical or solid state relay contact

Emergency Keyline

Quantity	1
Rated Level	<1.0 A
Circuit Type	Grounded mechanical or solid state relay contact

Bi-Directional Signals

NAT Inter-Communication System Tie Line

Quantity	1
Rated Level	340 mVrms nominal
Impedance	2.0 k Ω nominal
Circuit Type	Single ended

Audio Performance

As per RTCA DO-214, Sections 2.4.x. Product Classification 1b.

Rated Output Power	≥ 100 mW into 300 Ohm (each stereo channel)
--------------------	--

Audio frequency Response

Transceiver Receive Audio	≤ 3 dB variance from 300 - 6000 Hz
Transceiver Sidetone Audio	≤ 3 dB variance from 300 - 6000 Hz
Transmit Mic Audio Out	≤ 3 dB variance from 300 - 6000 Hz
Receiver Receive Audio	≤ 3 dB variance from 300 - 6000 Hz
Intercom & ICS Tie Audio	≤ 3 dB variance from 300 - 3000 Hz
Direct Audio	≤ 3 dB variance from 300 - 6000 Hz
Music Audio	≤ 3 dB variance from 150 - 15000 Hz

Spurious Response	≥ 50 dB of attenuation
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Distortion	$\leq 10\%$ THD+N at Rated Output Power $\leq 3\%$ THD+N at 10% Rated Output Power
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Input-to-Output Crosstalk and Bleed-Through Levels	≥ 55 dB of attenuation
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Input-to-Input Crosstalk	≥60 dB of attenuation
Input-to-Microphone Output Crosstalk	≤1 mVrms
Stability and Short Circuit	No visible spurious or sustained oscillations ≥50 dB attenuation on non-harmonically related responses
Intermodulation Distortion	≥30 dB below
Audio Noise Without Signal	≥30 dB below
Signal Plus Noise Degradation	>9 dB
Absolute (Envelope) Delay	≤10 ms
Output Regulation	≤3 dB variance
Audio Communication	Loud & Clear
Transient Recovery	≤50 ms

1.4.2 Physical Specifications

Dimensions

Panel Height	1.140" (28.96 mm) maximum
Depth	5.680" (144.27 mm) maximum, behind panel
Panel Width	5.750" (146.05 mm) maximum
Width	5.020" (127.51 mm) maximum, behind panel
Weight	1.43 lbs (0.65 kg) maximum
Mounting	Dzus rail, four fasteners, 5.365" horizontal spacing, 0.750" vertical spacing

Faceplate

Text and Lines	white per FED-STD-595-37925
Background	black per FED-STD-595-37038
Material	manufactured from 0.250 ± 0.025" thick acrylic
Lighting	laser-engraved acrylic edge lit with standard blue-white backlighting



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Material and Finish

Metal Components	brushed aluminum with conversion coating
------------------	--

Connectors

Male	44 pin male high-density D-min connector with jackposts
Female	44 pin female high-density D-min connector with jackposts

1.4.3 Environmental Specifications

Temperature	-20 to +55°C (operating) -40 to +70°C (short-time operating) -55 to +85°C (ground survival)
Altitude	25,000 feet maximum
Shock	6 g (operational, 11 ms) 20 g (crash safety impulse, 11 ms) 20 g (crash safety sustained, 3 s)
Vibration	RTCA/DO-160E Section 8 Categories SBM and U2FF1

Section 1 ends



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Section 2 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-600 Compact Stereo Audio Controller.

Review all notes, warnings and cautions.

2.2 Unpacking and Inspection

Unpack the equipment carefully and locate the warranty card. 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:

- Warranty Card
- Operators Manual
- Certificate of Conformity or Release Certification

2.2.1 Warranty

All Northern Airborne Technology Ltd. products are warranted for 2 years from date of installation by an authorized NAT dealer, to be free of defects in workmanship or performance. This warranty covers all materials and labour, but is exclusive of any transport to deliver the defective unit to and from NAT or its designated warranty repair center, or any labour to remove or re-install the defective unit in the aircraft. Contact NAT for any questions regarding this warranty, its applicability to your units and/or for return authorization. NAT is the final arbitrator concerning warranty administration. Units which have been physically damaged, burned, immersed in water or otherwise abused beyond the scope of normal use will not be considered for warranty. **WARRANTY IS VOID UNLESS THE PRODUCT IS INSTALLED BY AN AUTHORIZED NAT DEALER.** Product for which a warranty card is not returned shall be warranted from date of manufacture.

2.3 Continued Airworthiness

Maintenance of the AA12S-600 Compact Stereo Audio Controller is 'on condition' only. Periodic maintenance of this product is not required.

2.4 Installation Procedures

Installation Notice

This product must be installed in accordance with the installation instructions provided in the latest issue of this Installation and Operation Manual. Check the Publication Index at www.northernairborne.com for the issue status of the manual. The latest issue of the manual may be downloaded from the same website. All risk associated with installation of this product contrary to these instructions shall be the responsibility of the installing agency.



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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:

Do not bundle any lines from this unit with transmitter coax feed lines. Do not bundle any audio, or DC power lines from this unit with 400 Hz synchro wiring or AC power lines. Do not position this unit next to any device with a strong alternating magnetic field such as an inverter, motor or blower, or significant audio interference will result. In all installations, use shielded cable exactly as shown, and ground only as indicated.

Failure to follow the installation and wiring instructions provided in this manual for power and ground connections, including the rating of the circuit breaker, may lead to damage to the power input circuitry of the unit.

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.

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 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.

Unless otherwise noted, all wiring 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. 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.



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2.4.4 Post-Installation Checks

2.4.4.1 Voltage/Resistance Checks

Do not attach the AA12S-600 until the following conditions are met.

Check the following:

- a) Check P101 pin <1> for avionics buss voltage.
- b) For 28 V lighting input, check P101 pin <8> for avionics lighting buss voltage relative to ground (with lighting on).
- c) For 14 V lighting input, check P101 pin <23> for avionics lighting buss voltage relative to ground (with lighting on).
- d) Check P101 pins <16>, <37> and <38> for continuity to ground (less than 0.5Ω).
- e) Check P101 pins <9>, <10>, <11>, <12>, <13>, <14>, <15> and <24> for continuity to ground when the relevant switch is closed.
- f) Check P102 pins <16> and <31> for continuity to ground when the relevant switch is closed.

2.4.4.2 Power On Checks

Power up the aircraft's systems and confirm normal operation of all functions of the AA12S-600. Refer to Section 3 (Operation) for specific operational details.

- a) Begin with only the CREW 1 headset installed. Confirm correct radio operation, both receive and transmit. Check radio audio inputs and selection of same.
- b) If there is a music source in the system turn it on and verify that music is removed in the CREW and ISO modes. 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. Failure to key or correctly modulate a transmitter is often the result of forgetting to connect all required grounds to the radio or external audio system.
- d) Check the ICS modes (NORM, CREW, and ISO) and Emergency operation. Confirm that the ICS is disabled in the CREW 1 headset in ISO mode.
- e) Plug in the CREW 2 headset. Check for correct ICS and transmit operation. Check that CREW 2 loses transmit capability in ISO mode.
- f) Plug in the PAX 1 headset. Check for correct ICS and transmit operation. Check that PAX 1 loses transmit capability in CREW and ISO modes.
- g) Plug in any remaining headsets, and check for correct ICS operation.
- h) To verify proper operation, all functions and levels shall be checked in-flight.
- i) Check preset adjustments are completed before aircraft departure.

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.



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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 on the sides of the unit.

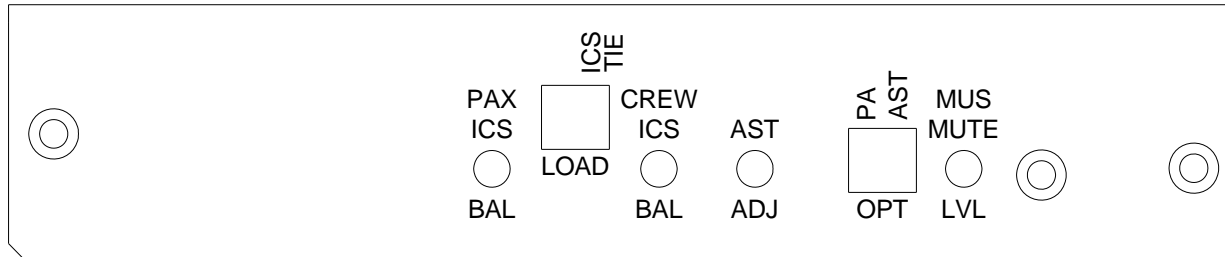


Figure 1: Internal Adjustments – Left Side View

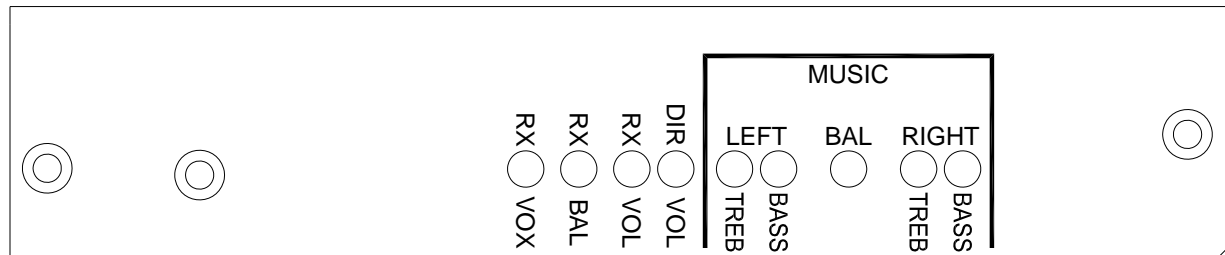


Figure 2: Internal Adjustments – Right Side View

PAX ICS BAL

The PAX ICS audio can be panned left or right using the PAX ICS BAL potentiometer.

ICS TIE LOAD

The ICS Tie Load is enabled at factory by setting the switch to the up position. Set the switch to the down position if the AA12S-600 ICS Tie Line is connected to an external ICS tie line.

CREW ICS BAL

The CREW ICS audio can be panned left or right using the CREW ICS BAL potentiometer.

AST ADJ

The Artificial Sidetone level can be set between -19 and 0 dB from the set RX Volume level by adjusting the AST ADJ potentiometer. The factory preset level is approximately -6 dB.

PA OPT

COM 4/PA auto-receive and sidetone audio can be disabled by setting the PA OPT switch to the down position. This enables the COM 4/AUX 1 RX input to be used for a separate receiver.



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AST OPT

Artificial Sidetone can be enabled for the COM 4/PA transceiver position by setting the AST OPT switch to the down position.

MUS MUTE LVL

The Music Mute Level adjustment sets the level of music attenuation during radio or intercom activity. Adjusting the MUS MUTE LVL potentiometer cw increases the depth of muting while ccw decreases the depth of muting.

RX VOX

The RX VOX potentiometer sets the threshold at which the applicable RX audio signals are enabled onto the appropriate user headphones. The threshold level can be set between live (fully ccw) and -8.5dB from rated input (fully cw)

RX BAL

The summed Auto-Receive, RX, DIR and Artificial Sidetone audio can be panned left or right using the RX BAL potentiometer.

RX VOL

The volume level of the summed Auto-Receive, RX, and Artificial Sidetone audio can be adjusted using the RX VOL potentiometer.

DIR VOL

The direct audio volume level can be adjusted using the DIR VOL potentiometer.

MUSIC LEFT TREB

The left channel music audio treble can be adjusted ± 10 dB at 15000 Hz using the MUSIC LEFT TREB potentiometer.

MUSIC LEFT BASS

The left channel music audio bass can be adjusted ± 9 dB at 100 Hz using the MUSIC LEFT BASS potentiometer.

MUSIC BAL

The music audio can be panned left or right using the MUSIC BAL potentiometer.

MUSIC RIGHT TREB

The right channel music audio treble can be adjusted ± 10 dB at 15000 Hz using the MUSIC RIGHT TREB potentiometer.

MUSIC RIGHT BASS

The right channel music audio bass can be adjusted ± 9 dB at 100 Hz using the MUSIC RIGHT BASS potentiometer.



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2.6 Accessories Required But Not Supplied

Installation kit p/n D44P44SL-IKC (crimp) is required to complete the installation. The kit consists of the D44SL-IKC and the D44PL-IKC.

D44SL-IKC consists of

Quantity	Description	NAT 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

D44PL-IKC consists of

Quantity	Description	NAT Part No.
1	D-min 44 Socket Housing	20-20-044
44	Mini D Crimp Pin	20-26-704
1	Jack Screw Set	20-27-002
1*	Lock Clip Set	20-27-004
1	25 pin Connector Hood	20-29-026

* - Not required for the AA12S-6xx

2.7 Installation Drawings

DOCUMENT	REV.	DESCRIPTION	TYPE
AA12S-600			
AA12S\600\403-0	1.00	Compact Stereo Audio Controller	Interconnect (3 sheets)
AA12S\600\405-0	1.00	Compact Stereo Audio Controller	Connector Map
AA12S\600\922-0	1.20	Compact Stereo Audio Controller	Mechanical Installation

Section 2 ends following the above documents

AA12S-600 INSTALLATION NOTES

NOTES:

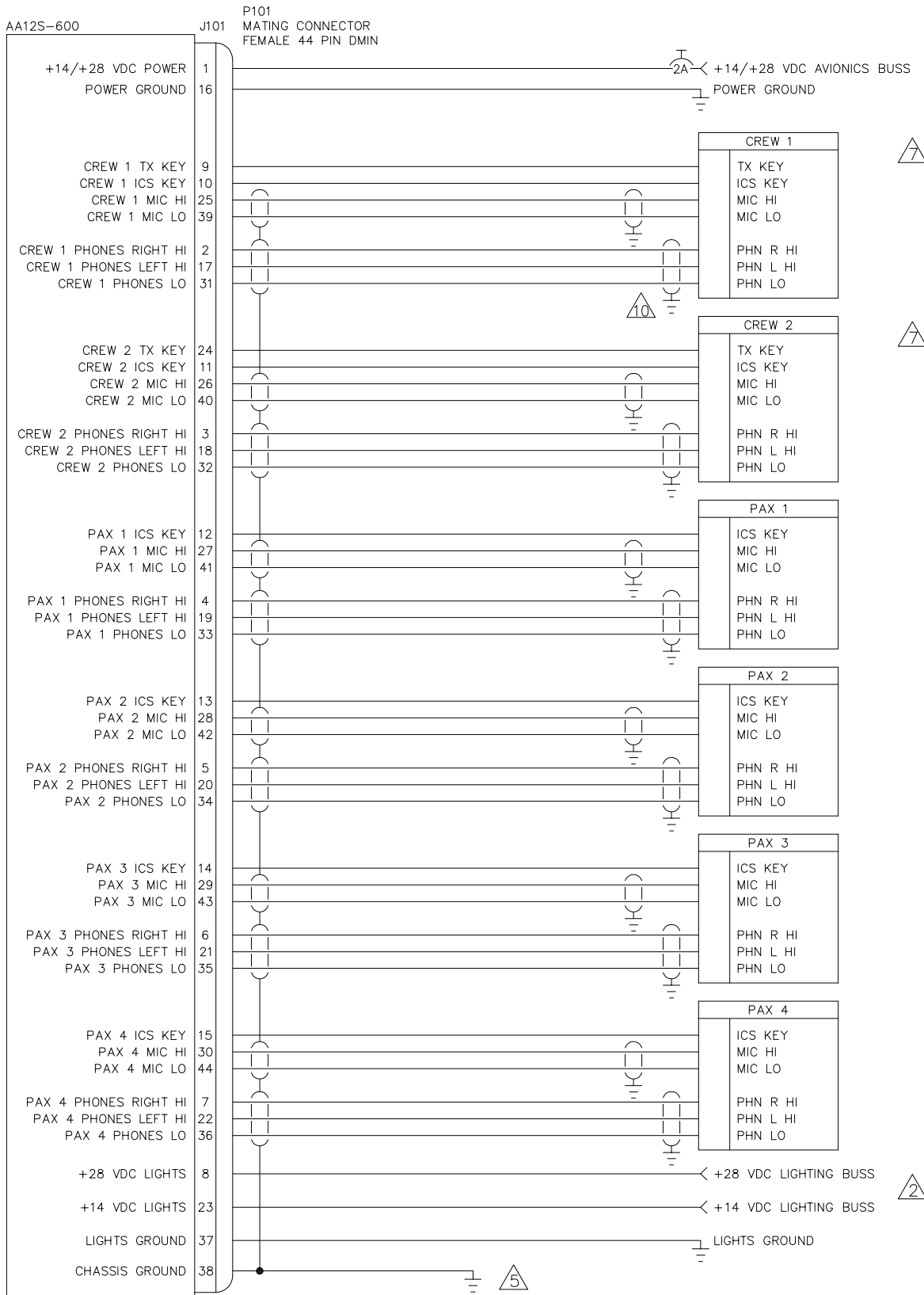
1. ALL WIRES SHOULD BE 22 AWG UNLESS OTHERWISE SPECIFIED. ALL UNSHIELDED WIRE SHALL BE SELECTED IN ACCORDANCE WITH AC43.13-1B CHANGE 1, PARAGRAPHS 11-76 THROUGH 11-78. WIRE TYPES SHOULD BE TO MIL-W-22759 AS SPECIFIED IN AC43.13-1B CHANGE 1, PARAGRAPHS 11-85, 11-86 AND LISTED IN TABLE 11-11. ALL SHIELDED WIRE/CABLE SHOULD BE IN ACCORDANCE WITH MIL-C-27500.
- △2 CONNECT ONLY ONE.
- △3 CONNECT TO DESIRED COM TO CONFIGURE EMERGENCY MODE TRANSCEIVER. JUMPER LENGTH NOT TO EXCEED 4" [10cm].
- △4 OPTIONAL PAX 1/REAR TX AND CALL SWITCHES.
- △5 CABLE LENGTH NOT TO EXCEED 12" [30cm].
- △6 DIR 1 AUDIO IS AVAILABLE IN EMERGENCY MODE.
- △7 CREW 1 REFERS TO THE POSITION NORMALLY OCCUPIED BY THE PILOT. CREW 2 REFERS TO THE POSITION NORMALLY OCCUPIED BY THE COPILOT.
- △8 ADF AND MKR INPUTS ARE SUMMED INTERNALLY AND CONTROLLED BY THE FRONT PANEL ADF/MKR SWITCH.
- △9 REFER TO ADJUSTMENTS PARAGRAPH IN SECTION 2 OF INSTALLATION AND OPERATION MANUAL FOR DETAILS REGARDING PA AND AUX 1 INSTALLATION OPTIONS.
- △10 PROVIDE A SHORT RETURN TO AIRFRAME GROUND.

DEFINITIONS:


- N/C: NO CONNECTION. THE PIN IS NOT CONNECTED TO ANYTHING INTERNALLY, AND THEREFORE SHALL HAVE NO CONNECTION EXTERNALLY.
- N/C SPARE: NO CONNECTION INTERNALLY, BUT A SPARE WIRE SHALL BE INSTALLED IN THE WIRE HARNESS.
- RESERVED: MAY BE CONNECTED AND USED IN THE 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.
- RESERVED SPARE: RESERVED, BUT INSTRUCTIONS SHALL BE FOLLOWED TO ACTIVATE THE CIRCUITRY. A SPARE WIRE SHALL BE INSTALLED IN THE WIRE HARNESS.

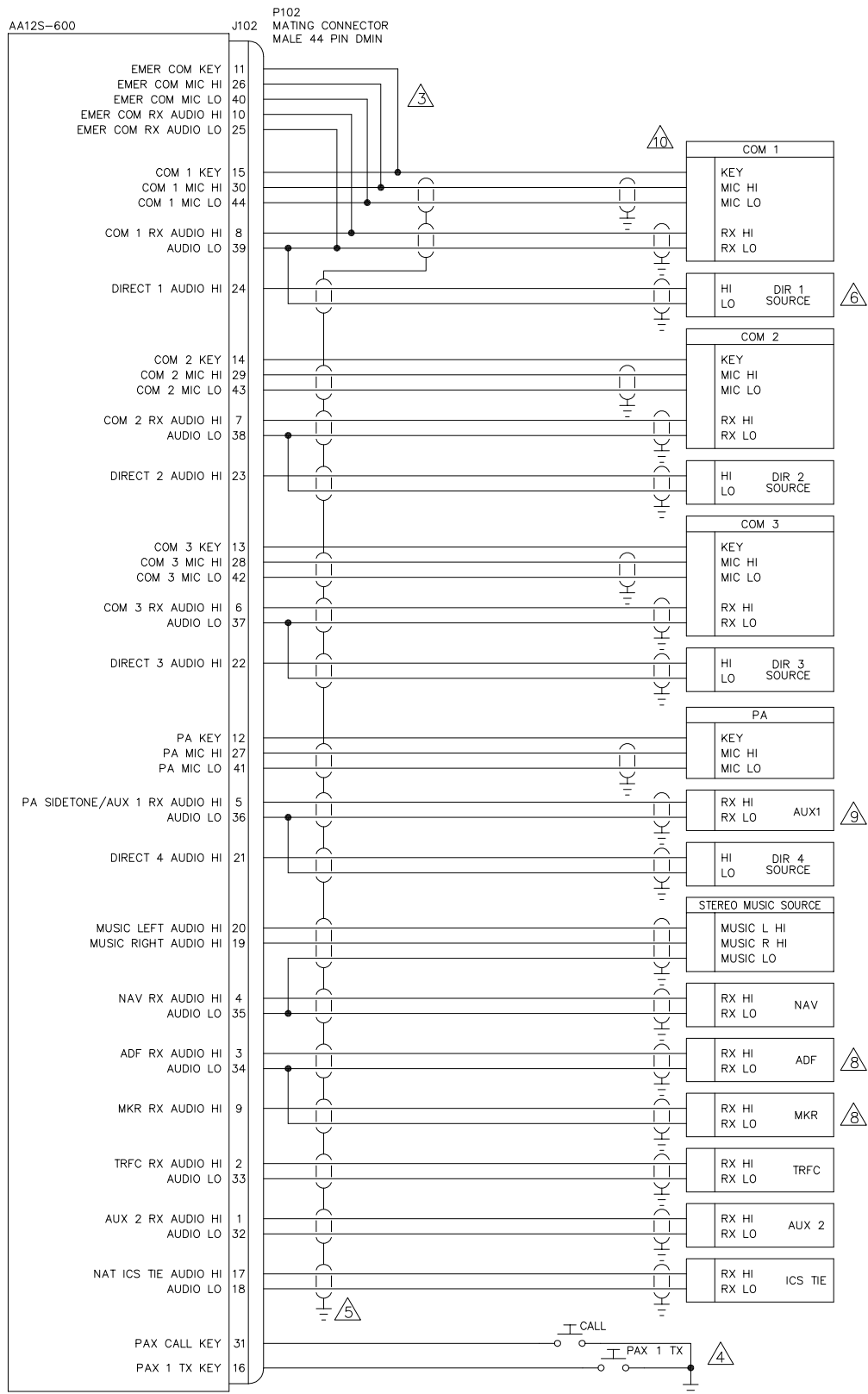
CONFIDENTIAL AND PROPRIETARY TO NAT LTD.

DESIGNED	KEH	NAT NORTHERN AIRBORNE TECHNOLOGY LTD.				
DRAWN	TAT					
DATE	MAR 23/09	TITLE COMPACT STEREO AUDIO CONTROLLER				
CHECKED	NAT 255					
APPROVED	NAT 114	SIZE A	CAGE CODE 3AB01	PART NO. AA12S-600	REV. 1.00	SHEET 1/3
FILE	403-0.DWG	DWG. TYPE INTERCONNECT		DWG. NO. AA12S\600\403-0		




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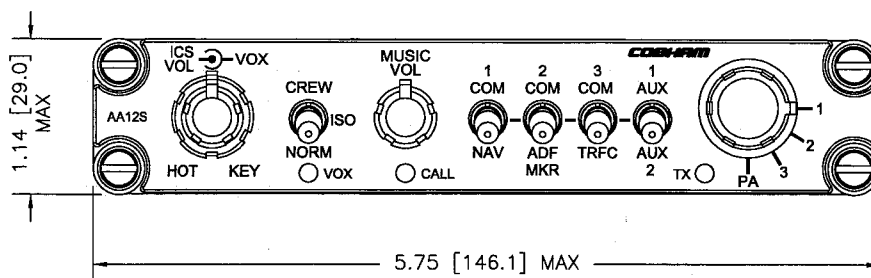
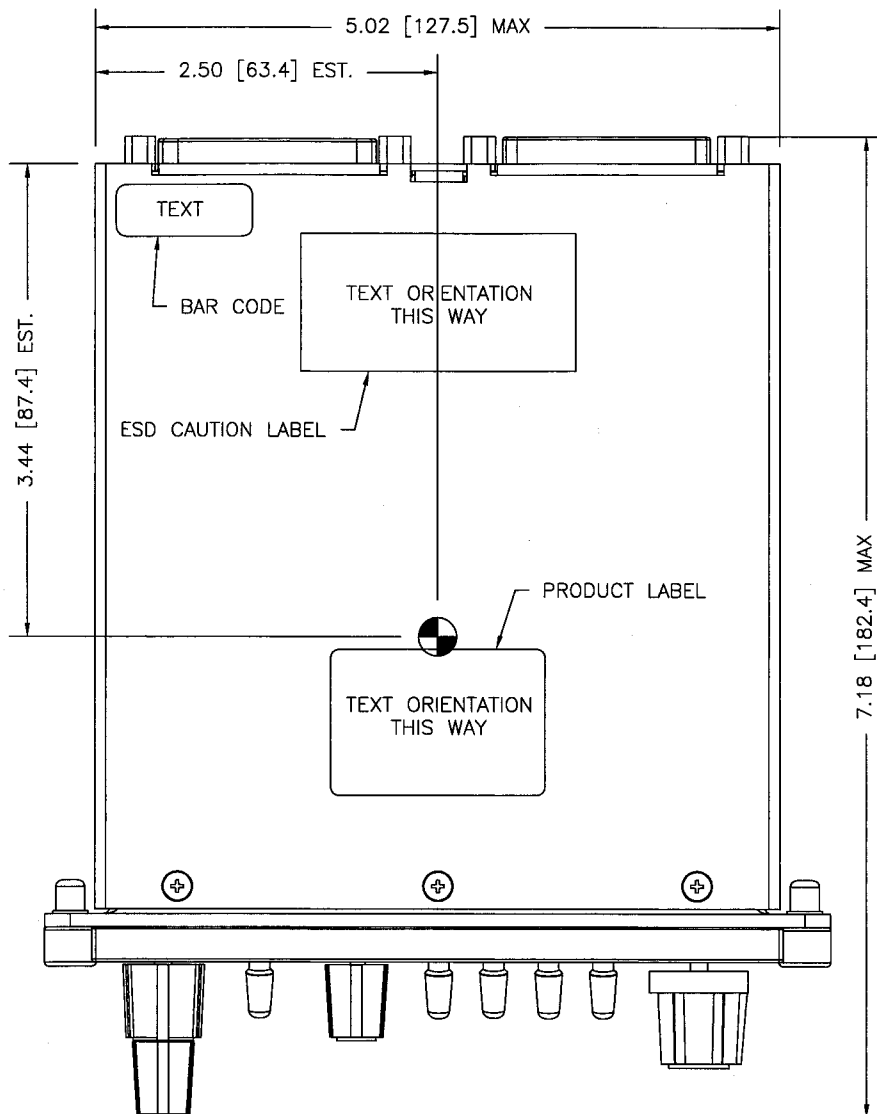
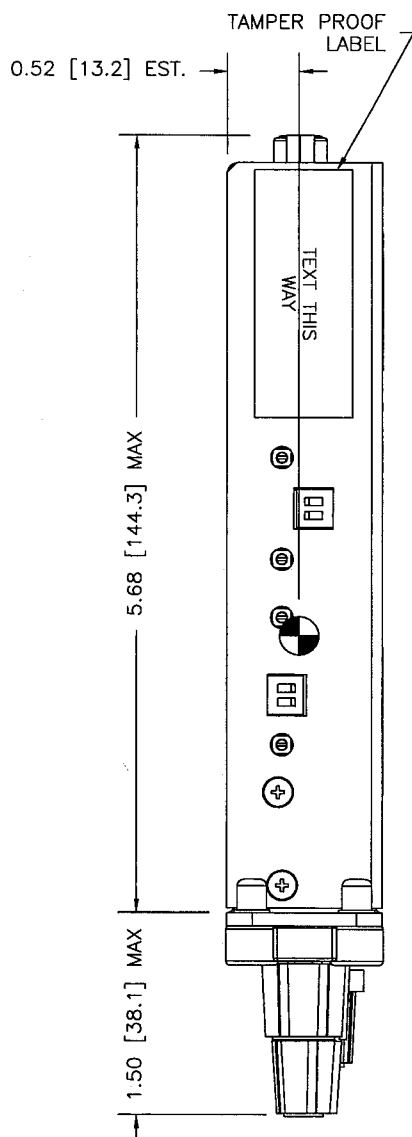
DESIGNED	KEH	 NAT NORTHERN AIRBORNE TECHNOLOGY LTD.				
DRAWN	TAT					
DATE	MAR 23/09	TITLE				COMPACT STEREO AUDIO CONTROLLER
CHECKED	NAT 255					
APPROVED	NAT 114	SIZE	CAGE CODE	PART NO.	REV.	SHEET
		A	3AB01	AA12S-600	1.00	2/3
FILE	403-0.DWG	DWG. TYPE	INTERCONNECT	DWG. NO.	AA12S\600\403-1	



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DESIGNED	KEH	 NAT NORTHERN AIRBORNE TECHNOLOGY LTD.				
DRAWN	TAT					
DATE	MAR 23/09	TITLE	COMPACT STEREO AUDIO CONTROLLER			
CHECKED	NAT 255					
APPROVED	NAT 114	SIZE	CAGE CODE	PART NO.	REV.	SHEET
FILE	403-0.DWG	A	3AB01	AA12S-600	1.00	3/3
		DWG. TYPE	INTERCONNECT		DWG. NO. AA12S\600\403-2	

REVISIONS			
REV	DESCRIPTION	DATE	BY
1.10	DOCCR02924 - UPDATED TO WED LABELS.	MAR 31/10	MWS
1.11	ECR10544 - LEADER CORRECTION.	MAY 11/10	MWS
1.20	ECO10660 - CHANGED LOCKING HARDWARE.	OCT 21/10	MWS



CENTER OF GRAVITY

- NOTES:
- DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5M-1994
 - WEIGHT: 1.43 lbs. (0.65 Kg) MAX
1.17 lbs. (0.53 Kg) MIN

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TOLERANCES UNLESS STATED OTHERWISE 0.X=+/-0.030 0.XX=+/-0.010 0.XXX=+/-0.005 0.XXXX=+/-0.002 ANGLE=+/- 0.5 DEG.	DIMENSIONS IN INCHES THIRD ANGLE PROJECTION 	DESIGNED	MH	NAT NORTHERN AIRBORNE TECHNOLOGY LTD.
		DRAWN	TAT	
		DATE	JUN 24/09	TITLE
		CHECKED	NAT 284	NAT 131
WEIGHT: SEE NOTE 2.		APPROVED	NAT 117	SIZE
MATERIAL:			A	CAGE CODE
FINISH:		FILE	922-0.DWG	MECH. INSTALLATION
				DWG. NO.
				AA12S-600
				REV. 1.20
				SHEET 1/1
				AA12S\600\922-0