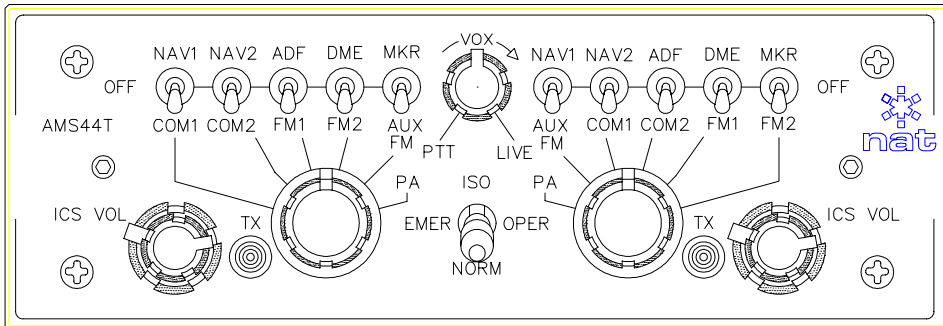
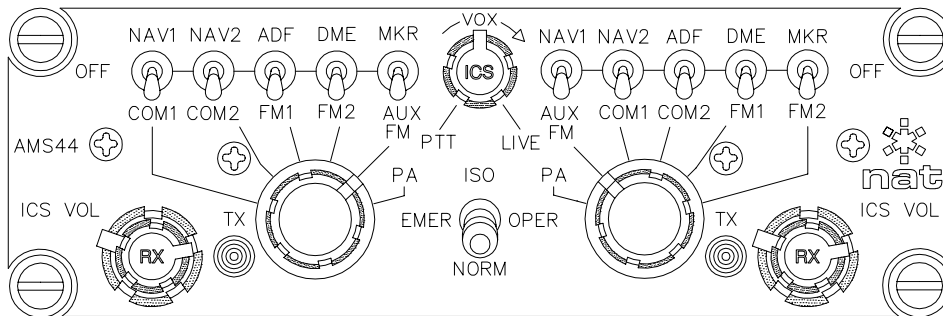




AMS44 and AMS44T Dual Channel Audio Controllers OPERATOR'S MANUAL



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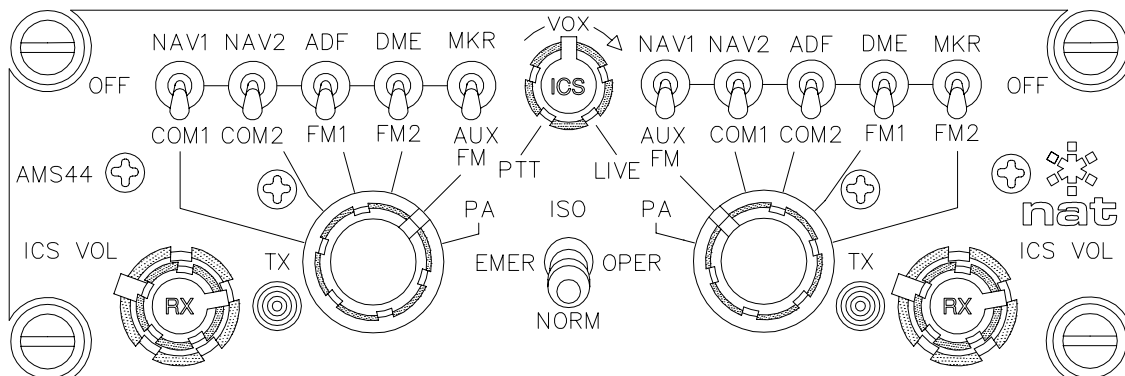
Table of Contents

1	Introduction	1
2	General Operation	1
2.1	Audio Alerting Functions.....	1
2.2	Selection of Transmit Functions	2
2.2.1	Transmit Selectors	2
2.2.2	Hand Microphone.....	2
2.3	Transceiver Receive Functions	3
2.3.1	Receive Selection Switches	3
2.3.2	Transceiver Selection Examples	3
2.3.3	Volume Controls.....	4
2.3.4	Passenger Receive Audio Selection	4
2.3.5	Auxiliary Inputs.....	4
2.4	Intercom Functions	4
2.4.1	ICS Modes of Operation.....	5
2.4.2	Passenger ICS Operation	5
2.5	Mode Control.....	6
2.5.1	Emergency Operation	6
2.5.2	Isolation Operation	6
3	Specifications.....	7
3.1	Electrical Specifications.....	7
3.2	Physical Specifications	7
3.3	Environmental Specifications	7

1 Introduction

This manual contains operating instructions and specifications for the AMS44 and AMS44T Dual Channel Audio Controllers. The controls and legends for both models are identical.

2 General Operation



The AMS44 and AMS44T provide one central controller for all the aircraft audio, allowing selection of transmit and receive audio, LIVE, PTT (Keyed), or VOX intercom, interface for an additional handheld transmit microphone (hand mic), and pilot/copilot isolation/ emergency operation. Typical definition of the unit has the 'pilot' on the right side of the controller, and the 'copilot' and passengers on the left side. This can be easily re-configured at the time of installation for alternate seating arrangements.

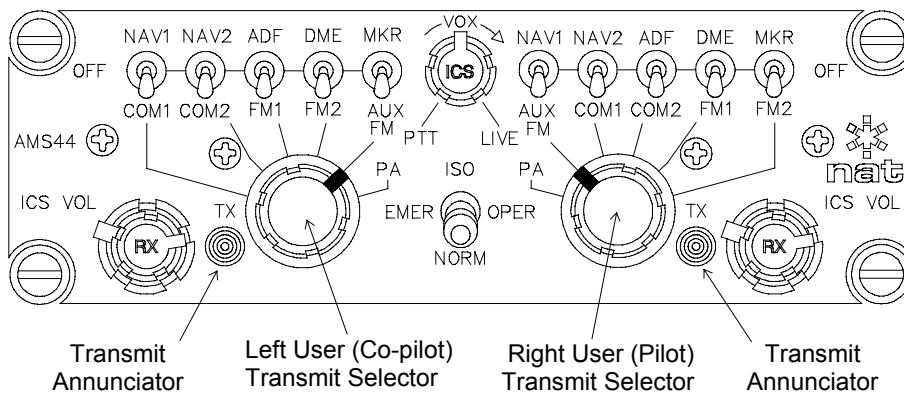
Individual control over receive and transmit functions are provided for both the pilot and copilot (observer), and a common control is provided for LIVE, PTT and VOX ICS operation. An additional control is provided for NORMAL, EMERGENCY, or ISOLATE (pilot cut off from ICS audio) operation.

Sidetone (S/T) level is adjustable internally, and Receive (RX) and Intercom (ICS) levels are adjustable on the front panel. All audio, except the S/T of the radio IN USE and any Type 'B' DIRECT AUDIO input signals, are muted during transmit for clarity. ICS operation allows transmit during any ICS mode by using the PTT switch.

2.1 Audio Alerting Functions

No internal audio alerting is provided in the AMS44 or AMS44T. Two direct (unswitched) inputs are provided to allow airframe alerting signals to be routed to the pilot. See 2.3.5 (Auxiliary Inputs) for more information. DIR AUD #1 is amplified by the Audio controller, and can not be heard when the Mode Switch is in the EMER position. DIR AUD #2 is not amplified, and is audible at all times.

2.2 Selection of Transmit Functions



2.2.1 Transmit Selectors

The transmit selector controls are six position rotary switches, one on each side of the panel to correspond to the user on that side of the aircraft. The controls select the transmit function required by the relevant user. Each rotary selector switch is completely independent of the other, and the pilot and copilot have equal priority during transmit. When the PTT is activated, all audio selected on the side of the controller that is transmitting is muted, except the sidetone of the transceiver in use.

2.2.1.1 Automatic Receive Audio

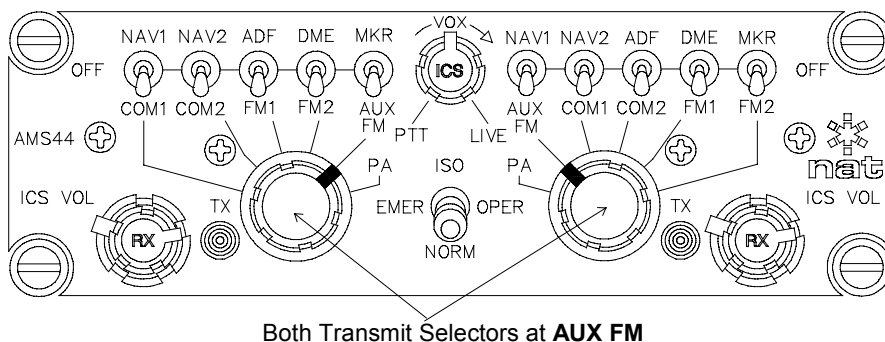
Receive audio is automatically selected as a function of the respective rotary selector switch. No additional switching is needed to establish external communication.

2.2.1.2 Transmit Annunciator

During transmit from either the pilot or copilot position, the appropriate TX annunciator (green) will light on the front panel.

2.2.1.3 TX Selector Example

In the figure that follows, the positions of the rotary selector switches indicate that the left and right sides of the controller are set for transmit operation on the AUX FM transceiver.



2.2.2 Hand Microphone

The hand mic functions without power and will work in emergency or equipment failure situations. The hand mic normally functions on the left side of the controller but can be connected to the right side at the time of installation by changing an internal switch. When the hand mic or transmit PTT switch is activated, the mic involved will be coupled to the radio (or PA) selected. The TX annunciator will not light when the hand mic is used.

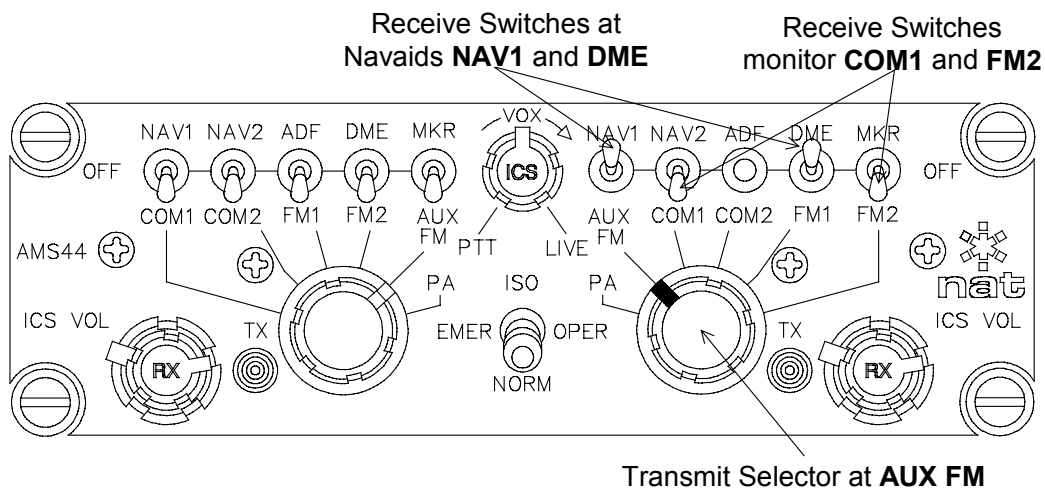
2.3 Transceiver Receive Functions

2.3.1 Receive Selection Switches

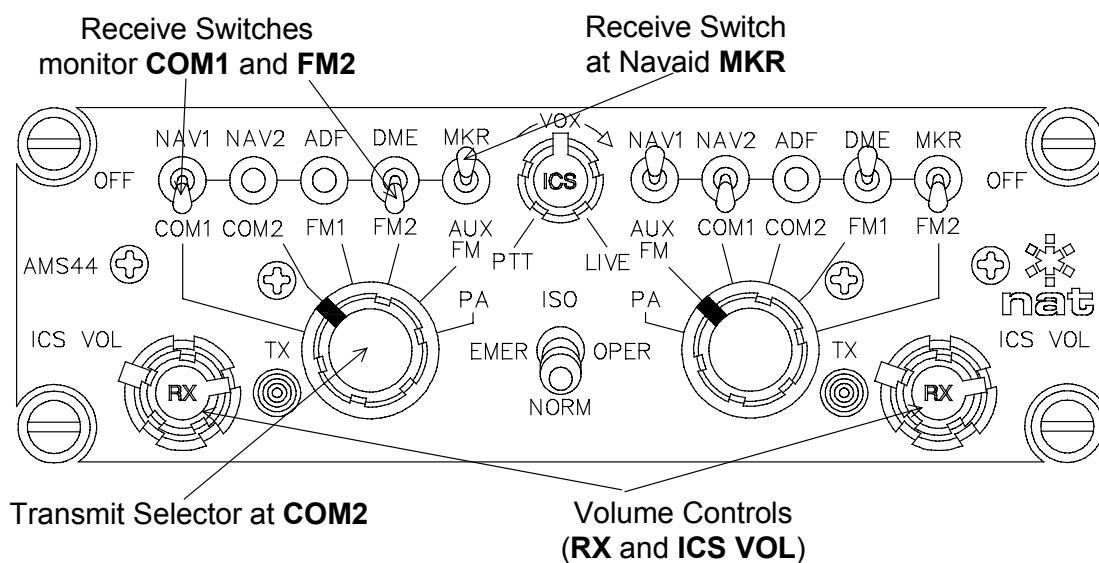
The Receive Audio select switches (white switch bats) are 'center-off' type with the 'up' position selecting the respective navaid receiver audio, and the 'down' position selecting the respective transceiver audio. See section 2.3.3.1 for RX volume control.

2.3.2 Transceiver Selection Examples

In the figure below, the right TX selector is set for transmit and receive operation on the **AUX FM**. The Receive function switches are also selected so the right side can monitor **COM1** and **FM2** transceivers as well as **NAV1** and **DME** nav aids. Note that **PA**, **COM2**, **FM1**, **NAV2**, **ADF**, and **MKR** are not selected.



In the figure below, the right side configuration remains the same. The left side is set up to receive and transmit on **COM2** while monitoring **COM1** and **FM2** transceivers as well as the **MKR** nav aid. Note that **FM1**, **AUX FM**, **PA**, **NAV1**, **NAV2**, **ADF** and **DME** are not selected on the left side.



2.3.3 Volume Controls

The controller features individual master **RX** and **ICS VOL** controls on both the left and right sides of the unit, which can be adjusted to suit the specific user's requirements.

2.3.3.1 RX Volume Control

The **RX** knobs are the smaller, topmost controls of the dual concentric volume control assemblies. The **RX VOL** controls provide adjustment of the RX audio selected by the controller from 10% to full. As in any audio system, it is important to set the individual radio volume controls to a nominal level that is acceptable to both pilots, *then* adjust the respective master **RX VOL** on the audio controller to suit user preference. The RX VOL controls are designed to provide a minimum level, even when set fully ccw.

All receive audio is muted during transmit (**NORM** and **ISO** mode).

2.3.3.2 ICS Volume Control

The **ICS VOL** knobs are the larger, bottom controls of the dual concentric volume control assemblies. The **ICS VOL** controls provide adjustment of the ICS audio selected by the controller. The ICS volume controls provide adjustment from 0 to full output. See also section 2.4.

2.3.4 Passenger Receive Audio Selection

The passengers normally hear the radio audio as selected on the left side of the controller. The passengers can be shifted to the right side by changing the setting of the internal **PAX** switch, accessible through the right side of the controller. The passengers will not hear any radio audio when the red mode switch is in the **EMER** position.

2.3.5 Auxiliary Inputs

Two Direct Audio inputs are available. They are coupled directly to either the left or right side of the controller at the time of installation. The Direct Audio inputs are normally selected for the right side of the controller when the unit is shipped from the factory.

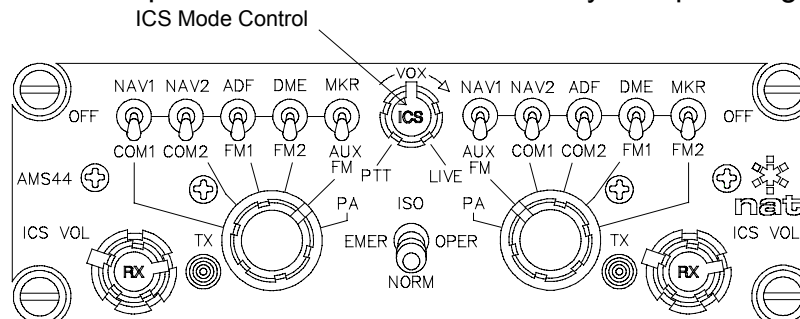
2.4 Intercom Functions

All ICS audio is controlled by the front panel ICS volume controls and may be varied to suit conditions. There are independent volume controls for the left and right sides of the controller. The **ICS VOL** are the larger, aft controls of the dual concentric volume control assemblies. See also section 2.3.3.2.

If the controller is operated in the emergency mode, ICS operation will continue (if there is no fault condition) between the passengers, but not between the pilot and copilot or passengers.

2.4.1 ICS Modes of Operation

Intercom system (ICS) audio may be implemented in three modes between users; **LIVE** (on constantly), **VOX** (voice activated), or **PTT** (active only when switched by ICS PTT switch). The ICS mode is selected by the control (labeled **ICS**) in the middle of the top switch row. It is common to use the **LIVE** mode during ground operations, start-up, etc., and to use **VOX** or **PTT** operation if conditions are so noisy that 'pilot fatigue' will result.



The desired ICS mode is selected by the ICS mode control knob.

PTT ICS (KEYED Operation)*

ICS Mode Control set fully counter-clockwise into the switch detent.

LIVE (Hot Mic Operation)

ICS Mode Control set fully clockwise.

VOX (Voice Activated)

ICS Mode Control set fully clockwise, then slowly rotated counter-clockwise until the intercom just becomes 'quiet'. This setting will vary with ambient noise conditions, and the quality and number of microphones connected in the system.

* KEYED operation is inherent to the pilot and copilot microphone circuits only.

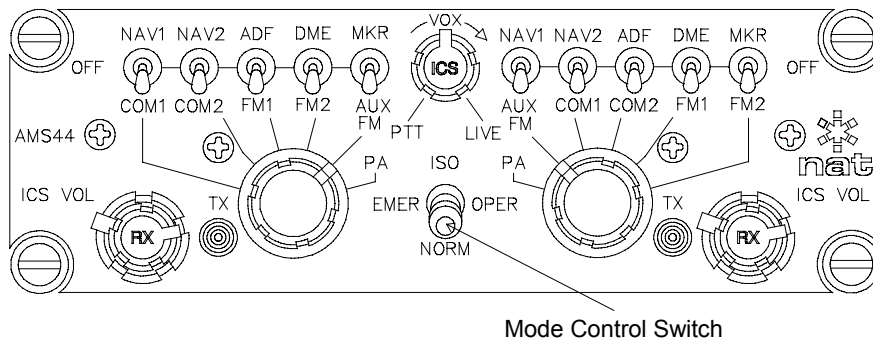
2.4.2 Passenger ICS Operation

Passenger ICS audio is LIVE when the controller is in the **LIVE** or **PTT** mode of ICS operation and are VOX triggered when a VOX setting is selected. *Note that the passengers are always LIVE unless interrupted by an in-line PTT cord, or the controller is set for VOX operation.*

Passenger and copilot (observer) operations can be maximized by using PTT type cord assemblies designed for use with NAT audio controllers.

CAUTION: Ensure that all PTT type cord assemblies have properly shielded mic and phone wiring, or 'crosstalk' will occur.

2.5 Mode Control



The Mode Control switch is a three-position, locking toggle switch that is used to select between **ISO**, **EMER OPER**, and **NORM**. It is identified with a red cap.

2.5.1 Emergency Operation

The center (**EMER OPER**) position of the mode switch places the controller into the emergency operation mode. When switched to the **EMER OPER** position, both pilot and copilot controls are removed from the ICS bus and connected directly to their respective radios. This mode should be selected in the event of a box fault or power failure.

The Emergency function should be tested prior to flight to assure proper operation and allow the radio levels to be set adequately for emergency operation.

2.5.1.1 Emergency Mode Effects

In the **EMER** mode, all functions are retained by the pilot and copilot, except ICS and possibly boom mic operation. If the box or airframe fault prevents the TX annunciator from lighting during transmit (indicating a failure in the mic keying circuit), then the hand mic should be used. A power fault of any kind will prevent the TX annunciator from lighting, giving an immediate indication of failure. If ICS audio is still available, then the power to the controller has not failed and loss of the TX light indicates TX switch failure.

Note that in the **EMER** mode, all switches work exactly as they do during **NORM** operation, except for the RX and ICS volume controls, which will have no effect.

Any selected receive audio is switched to the appropriate user in the 'emergency' mode (red mode switch in the **EMER** position), but not to any passengers in the system. Level will be lower than **NORM** operation because the signals are obtained directly from the radios, bypassing the electronics in the controller. This is provided for failure situations that make operation impossible in the **NORM** mode (i.e., loss of power or amplifier failure, etc.)

2.5.2 Isolation Operation

The mode switch can select an **ISO** function, which prevents the selected user from receiving ICS audio. This is useful when passengers are interfering with critical flight operations (landing, etc.). It can be preselected at installation to isolate the left or right side. Intercom operation for the passengers and copilot is not affected. It is normally set for isolation of the right side when the unit is shipped from the factory.

3 Specifications

3.1 Electrical Specifications

Input Power	Typically +22 to +32 Vdc at 250 mA Nominal +28 Vdc
Lighting	160 mA at 28 Vdc. 600 mA at 5 Vdc.
Mic Requirement	'Carbon equivalent' 250 mV into 150 Ω min. (David Clark M1/DC, M3, M4, M7 recommended)
RX Audio Requirement	25 mW into 600 Ω
Headset Power	250 mW per channel into 600 Ω
Key Logic	Ground seeking for all lines. 'Hard' ground outputs to all transceivers. TX LED on front panel lights when any transmit key input is low <i>except</i> hand mic.
Cross-Talk	De-selected inputs 50 dB min. below full output
Bi-direc. ICS Tie Line	340 mVrms for full output 1.6 k Ω input impedance

3.2 Physical Specifications

	AMS44	AMS44T
Height	1.88" (47.8 mm) max.	2.18" (55.4 mm) max
Depth behind panel	6.77" (172.0 mm) max. excl. mating connectors	7.50" (190.5 mm) max excl. mating connectors
Width: front panel	5.75" (146.1 mm) max.	6.28" (159.5 mm) max.
rear enclosure	5.00" (127.0 mm) max.	6.02" (152.9 mm) max.
Weight	2.3 lbs (1.04 Kg)	2.65 lbs (1.2 kg)
Mounting	Dzus Mount (four fasteners)	Tray Mount

3.3 Environmental Specifications

Temperature	-20 to +55° C (ambient) -55 to +85° C (survival)
Altitude	25,000 feet max.
Humidity	95% Non-condensing
Shock	AMS44 12g (any axis) AMS44T 6g (any axis)
Vibration	AMS44 Conforms to DO-160B category 'P' AMS44T Conforms to DO-160D category 'SM'

NOTES