AIR COMM SYSTEMS, INC
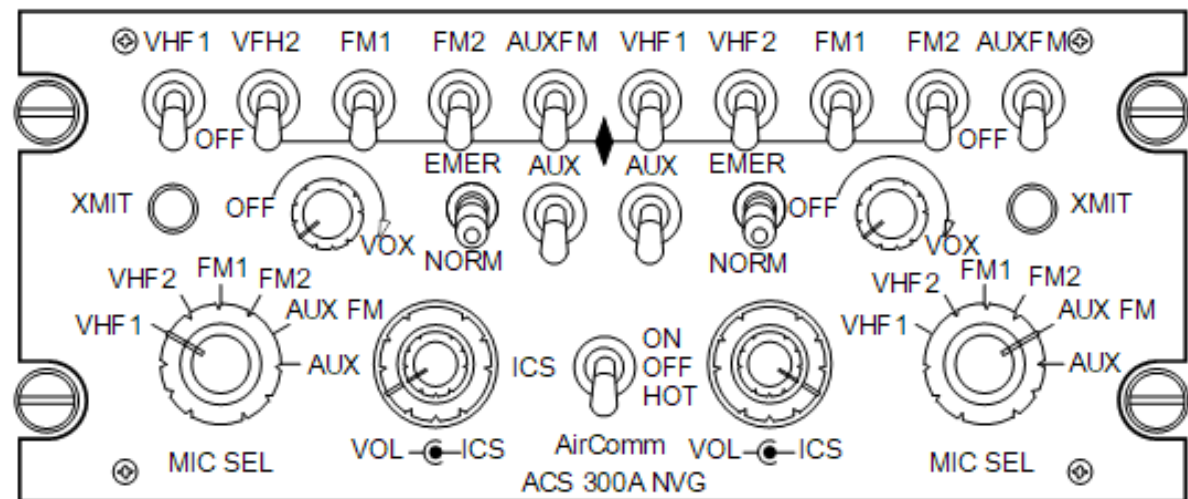
AIRBORNE- AUDIO

Dual Audio Mixer Panel
Installation and Operations Manual

ACS 300A-101   Revision 1.3

ACS 300A-101   Installation and Operations Manual
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■ Physical Specifications

SIZE: 6.31 in.(16.03 cm) W   *WEIGHT:* 2.90 lb
2.62 in.(6.65 cm) H
6.78 in.(17.22 cm) D w/ connector   *MOUNTING:* Dzus rail mount

CONTROLS: Panel mounted - transmit = rotary switch, audio inputs = toggle switch
volume control = dual potentiometer

ILLUMINATION: Edge lit front panel per MIL-P-7738E, type 3. Capable of connection to
dimmer bus for adjustment. Amber transmit light indicates when unit is in
transmit mode.

■ Operating Specifications

INPUTS: 5 receive audio inputs per position. 6 transmit selections per position.

DUTY CYCLE: Continuous   *POWER REQUIREMENTS:* 14V DC or 28V DC +/- 10%

MAXIMUM OPERATING ALTITUDE: 16,500 ft.(5029 m)

OPERATING TEMPERATURE RANGE: -40 C to +85 C (operating)
-65 C to +125 C (storage)

CURRENT DRAIN: 50 mA at 28V (standby) - 1.5 A at 28V (max. signal)

AUDIO OUTPUT: Minimum 250 mW into 600 ohms

FREQUENCY RESPONSE: Within 6 db - 300-3000Hz

ICS INPUT IMPEDANCE: 600 ohms

RECEIVER INPUT IMPEDANCE: 600 ohms - matched to receiver

INPUT ISOLATION: Not less than 45 db between inputs

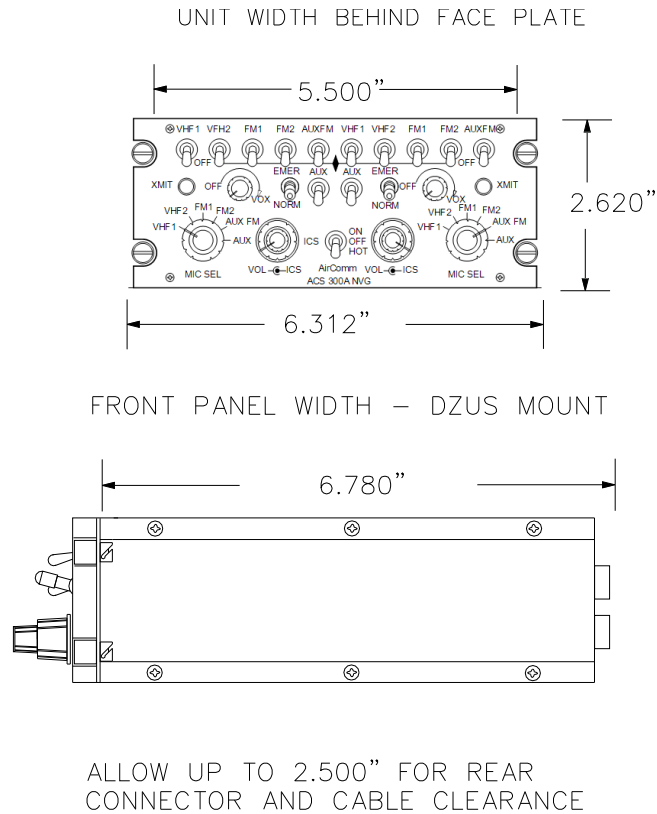*AUDIO MUTING:* Not less than 45 db during transmit/ICS (optional)

MIC SENSITIVITY: 300 mV for rated output

DISTORTION: Less than 10% at 1000 Hz for maximum output

■ **Physical Dimension Outline**

UNIT WIDTH BEHIND FACE PLATE

5.500"

2.620"

6.312"

FRONT PANEL WIDTH — DZUS MOUNT

6.780"

ALLOW UP TO 2.500" FOR REAR
CONNECTOR AND CABLE CLEARANCE

Physical Installation

The ACS 300A is designed to be Dzus mounted and should be installed in the aircraft using the Installation kit that was included with the unit. The above outline drawing of the unit with dimensions will facilitate the installation. The Installation Kit consists of the following:

One (1) 37 pin AMP D-Subminiature female mating connector complete with crimp pins, hood, and slidelock.
One (1) 25 pin AMP D-Subminiature female mating connector complete with crimp pins, hood, and slidelock.

The connector pin configuration of the ACS 300A rear connector and the recommended wire size for the aircraft cable harness is shown on the following page.

ACS 300A-101   Installation and Operations Manual
Interface Schematic

■ Connector Pin-out

ACS 300A
AUDIO PANEL

Pin	Signal
1	14 OR 28VDC POWER IN
2	LEFT MICROPHONE HI
3	LEFT TRANSMIT KEY
4	LEFT ICS KEY
5	LEFT HEADPHONE AUDIO
6	RIGHT MICROPHONE HI
7	RIGHT TRANSMIT KEY
8	RIGHT ICS KEY
9	RIGHT HEADPHONE AUDIO
10	INPUT 1 MIC HI COM1
11	INPUT 1 KEY
12	INPUT 1 AUDIO
13	INPUT 2 MIC HI FM1
14	INPUT 2 KEY
15	INPUT 2 AUDIO
16	INPUT 3 MIC HI FM2
17	INPUT 3 KEY
18	INPUT 3 AUDIO
19	INPUT 4 MIC HI HT1
20	INPUT 4 KEY
21	INPUT 4 AUDIO
22	PA MIC HI
23	PA KEY
24	SHIELDED GROUND
25	LEFT PASSENGER MIC
26	SPARE AUDIO IN
27	RIGHT PASSENGER MIC
28	CENTER PASSENGER MIC
29	LEFT PASSENGER KEY
30	RIGHT PASSENGER KEY
31	CENTER PASSENGER KEY
32	LEFT PASSENGER HEADPHONE AUDIO
33	RIGHT PASSENGER HEADPHONE AUDIO
34	CENTER PASSENGER HEADPHONE AUDIO
35	ICS BUSS
36	LIGHT DIM
37	POWER GROUND

Pin	Signal
1	SHIELDED GROUND
2	INPUT 6 AUDIO HI
3	INPUT 7 AUDIO HI
4	INPUT 8 AUDIO HI
5	LEFT AFT PASS HEADPHONE AUDIO
6	RIGHT AFT PASS HEADPHONE AUDIO
7	CENTER AFT PASS HEADPHONE AUDIO
8	NC
9	NC
10	LEFT AFT PASS KEY
11	RIGHT AFT PASS KEY
12	
13	NC
14	NC
15	NC
16	LEFT AFT PASS ICS KEY
17	RIGHT AFT PASS ICS KEY
18	CENTER AFT PASS ICS KEY
19	NC
20	LEFT AFT PASS MIC HI
21	RIGHT AFT PASS MIC HI
22	CENTER AFT PASS MIC HI
23	INPUT 5 MIC HI
24	INPUT 5 KEY
25	INPUT 5 AUDIO HI

NOT USED

ONLY USED WITH SIX (6)
PASSENGER ICS OPTION
(INTERNAL MODULE)

The ACS 300A wiring harness should be constructed of Tefzel aircraft wire (M22759/16 grade). Power and ground wires should be 18 or 20 AWG, and all other wires may be 22 AWG. Shielded wires should be used where noted. Adequate protection against wear and chafing should be taken by using a braided cable sleeving or jacket. Before completing installation, verify that all cable connector pins are seated properly and that the connector is securely mounted to the unit mating connector.

Pre-fabricated cable harnesses are available from Air Comm to expedite installation — consult our sales department for details.

NOTE: Pins noted NC = No Connection.

■   **Description**

The ACS 300A Dual Audio Mixer Panel is a compact, lightweight unit which provides full audio control and ICS support for Pilot and Co-pilot or observer positions in the aircraft. It has the capability to provide each user with 5 receive audio selections, 6 transmitter selections, Normal and HOT (Hands Free) ICS, and full headphone audio and ICS volume control. In addition, an internal expansion slot excepts a plug-in module (optional) which can give the unit an additional 6 positions of ICS capability, 2 of which also have TX capability.

■   **1- Norm - Emer Switch**

This switch controls the operation of the audio panel in the event of an audio amplifier failure. In the "up" position (NORM) the audio panel is in normal operating mode. In the "down" position (EMER) the unit is in the emergency mode. During Emergency operation,with a receive audio switch in the"down" position the mic select rotary switch selects the mic, key, and unamplified audio in the event of an audio amplifier failure. The side in emergency mode will not have incoming ICS.

■   **2 - Receive Audio Select-Mute Switches**

Normal operation - In the "up" position the audio selected is summed with any other audios selected into the headphone amplifier. It also selects or mutes cross sidetone. In the "down" position the audio selected is muted. Cross sidetone is also muted.

Emergency operation - In the"down" position the mic select rotary switch selects the mic, key, and unamplified audio in the event of an audio amplifier failure. The side in emergency mode will not have incoming ICS.

■   **3 - Volume Controls**

These concentric knobs adjust headphone volume. The larger one adjusts the radio volume while the smaller one adjusts the intercom (ICS) volume. Clockwise rotation increases the volume - counter clockwise rotation decreases the volume. To set volume, transmit on the radio and set the sidetone level slightly on the low side so you will have a tendency to talk up and have higher modulation. Then set the radio volume for comfortable listening. In the event of excessive or inadequate receiver volume the pots located on the rear of the unit may be adjusted for the proper level. **(see Figure 2 on page 8)**

■   **4 - Lighting**

The audio panel is lit by NVG lamps filters which provide night time visibility for all panel legends. They can be connected to a dimmer bus for adjustment.

■ **5 - Mic Selector**

This rotary switch performs three functions simultaneously. It (a) connects the mic to the selected transmitter   (b) selects the associated keyline, and   (c) selects the associated audio (if not already selected using the audio select-mute switch). The audio selected also allows for cross sidetone if the other mic select switch has selected the same transmitter.

■ **6 - Transmit Indicator**

When the transmit key is activated this NVG indicator lights up show that the audio panel is in the

transmit mode.

■ **7 - ICS Switch**

This switch selects the ICS mode. In the "up" position (ICS) each side of the audio panel is connected to the common ICS bus. This enables each side to communicate with the other side when their respective ICS PTT switches are keyed.

In the "center" position (OFF), the ICS bus is disconnected and both sides are isolated.

The ICS switch also provides for "Hands Free" operation. In the "down" position (HOT ICS) , both headphone mics are active and signals are fed into the ICS bus without having to key the respective ICS PTT switches.

■ **8 - VOX POT**

The high-power VOX is controlled by this knob. In order to use the VOX feature, the ICS ON/OFF/PVT toggle switch must either be in the "ON" or "PVT" position. If the toggle switch is in the "OFF" position, the Audio Mixer Panel is isolated from the ICS buss, and no ICS communication is possible. Once the ICS switch is in the "ON" or "PVT" position, the VOX can be activated by turning the knob clockwise past the On/Off detent and threshold set to activate with voice.

The moment you begin talking the VOX circuitry activates and relays your voice transmission. When you stop speaking the VOX circuit turns off to reduce unwanted background noise. Turning the knob clockwise adjusts the threshold. If the knob is turned fully clockwise the VOX circuit will always be active and you will hear background noise. If the knob is adjusted just past the On/Off detent then the VOX circuit cannot be activated and you will revert to normal keyed ICS. Adjust the threshold level to match the ambient noise conditions of the aircraft at the time for proper operation.

While in the VOX mode, if you wish to quickly isolate yourself from the ICS buss, you simply put the ICS ON/OFF/PVT toggle switch in the "OFF" position.

- ### Figure 1 - Front Panel Controls
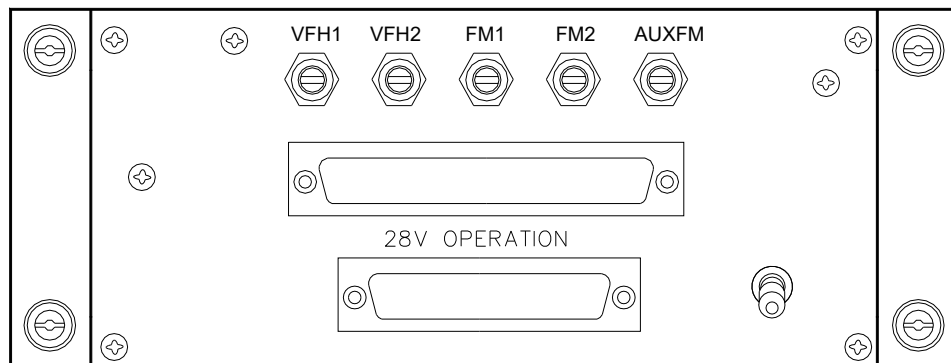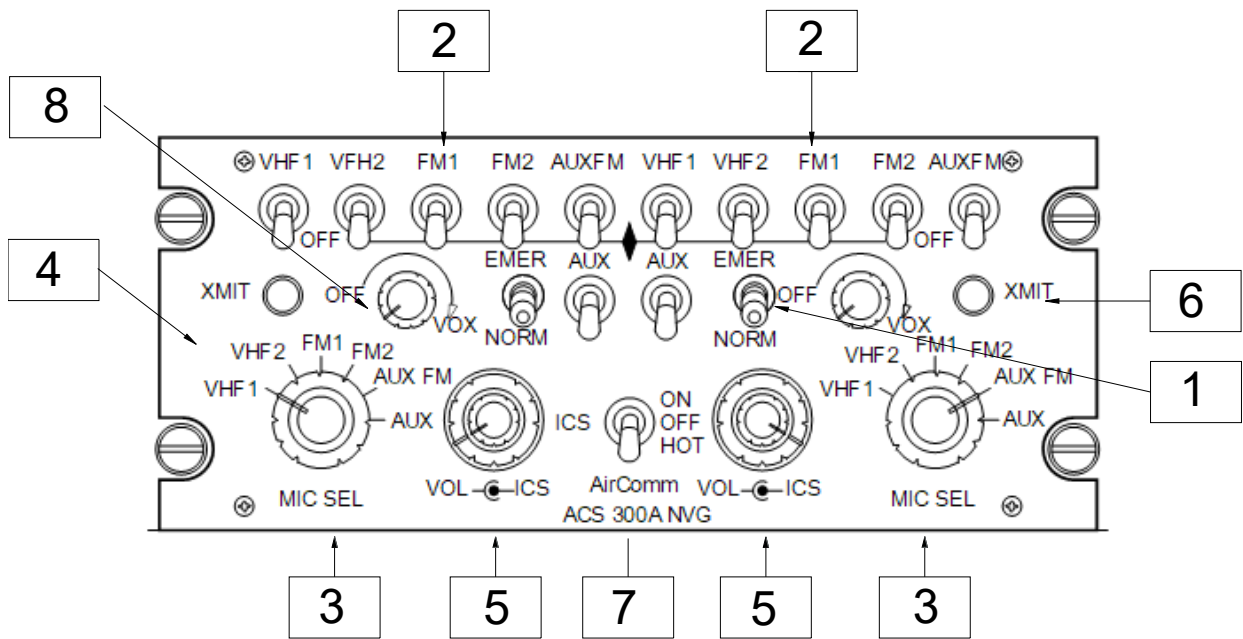
- ### Figure 2 - Rear Panel Adjustment

■ **GENERAL DESCRIPTION:**

The Audio Mixer Panel consists of a Dzus mounting located in the cockpit or cabin area which provides access to multiple radios for transmitting and receiving. It also provides intercom, both keyed and VOX between other audio mixer panels or slave units located elsewhere in the aircraft.

■ **PURPOSE:**

To provide instructions for the maintenance and inspection of the Air Comm Systems, Inc. Model ACS-300 Series Audio Mixer Panels.

This Manual provides instructions supplementing the aircraft maintenance manual. These instructions only supersede the aircraft manual in the indicated areas.

■ **OPERATIONAL CHECK:**

The Audio Mixer Panel should be checked prior to first flight each day per current operations manual.

■ **MAINTENANCE:**

Check security and condition of Dzus mounted panel(s), check associated wiring hareness at periodic inspections such as annual/100 hour IAW FAR43 Appendix D(i).

■ **On Condition.**
Send Audio Mixer Panel(s) to qualified repair facility for any repairs. Contact Air Comm Systems, Inc. Phone 909-0422-4630 or FAX 909-422-0509 for nearest factory authorized repair facility.

■ **Warranty Information**

Air Comm Systems, Inc. warrants each new product to be free from defective material and workmanship and agrees to remedy any defect or to furnish a new part in exchange for any defective unit provided an examination discloses such defect occurred under normal use and service, and provided the defective unit is delivered to us, with transportation charges prepaid, within 1 year from the date of acceptance of equipment by the owner. Each unit required and claimed defective must be returned to:

Air Comm Systems, Inc.
37610 Sky Canyon Dr., Hangar 51
Murrieta, CA 92563
Ph: 951-677-0101
Fx: 951-677-0701
Info@AirCommSystems.com

This warranty does not extend to any products which have been subjected to misuse, neglect, accident, or in violation of instructions furnished, nor does it extend to units which have been repaired or altered outside of our factory except where such repairs are specifically authorized in writing by us.This warranty is in lieu of all other warranties expressed or implied, and no representative or person is authorized to assume for us any other liability in connection with the sale of our products.