



JUPITER AVIONICS
CORPORATION

JA94-001

Dual Audio Controller



Operating Manual

Rev. A



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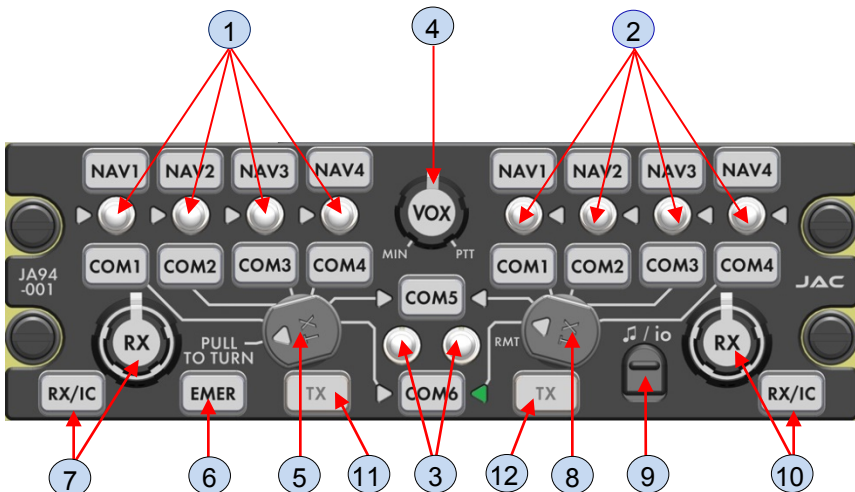
1 Introduction

This manual contains the operating instructions for the JA94-001.

2 Front Panel Controls



Note: The 21 legends and 2 deadfront annunciators are removable and may be replaced with custom ordered parts. For the purpose of this manual the controls will be referred to by the default legend and annunciator names as shown below.



1. Left User Receive select switches, TX select annunciators and associated legends
2. Right User Receive select switches, TX select annunciators and associated legends
3. Left and Right User COM5/COM6 receive select switches, TX select annunciators and associated legends
4. VOX threshold control
5. Left User Transmit Selector Switch and Emergency Switch
6. EMER (Emergency) Legend
7. Left User ICS/RX Volume control and legend
8. Right User Transmit Selector Switch
9. Music/configuration input connector cover (🎵/io)
10. Left User ICS/RX Volume control and legend
11. Left User Transmit Deadfront Annunciator
12. Right User Transmit Deadfront Annunciator



(1) (2) NAV1-COM4 Receive Select Switches and Legends

Each User has four white two-position centre-off toggle switches for the NAV1/COM1 to NAV4/COM4 receivers/transceivers.



When a left or right switch is set to the 'up' position, audio from the receiver associated with the legend above the switch is routed to the phones of that side's user (and passengers if configured.) In the 'down' position, audio from the transceiver associated with the legend below the switch is routed to the phones of that side's user (and passengers if configured.)

The backlit legends are interchangeable to allow customization. The default legends are NAV1, NAV2, NAV3 and NAV4 above the switches, and COM1, COM2, COM3 and COM4 below the switches.

(3) COM5/COM6 Receive Select Switches and Legends

The COM5/COM6 switches are two white two-position centre-off toggle switches. The left-hand switch is associated with the Left User, and the right-hand switch is for the Right User.



To select COM5, the appropriate switch is set to the 'up' position, and for COM6 it is in the 'down' position. Audio from the associated receiver is routed to the phones of that side's user (and passengers if configured).

The backlit legends are interchangeable to allow customization. The default legends are COM5 above the switches and COM6 below the switches.



(4) VOX Threshold Control

The VOX Threshold Control is an unlit rotary knob in the centre top of the panel that is used to set the VOX threshold level of the unit for all users and passengers.

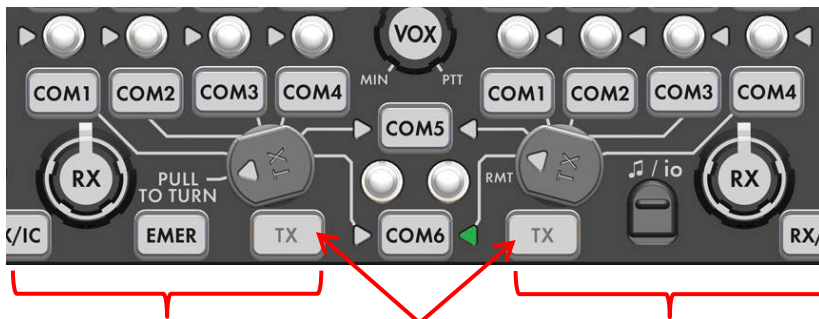
When rotated fully clockwise (cw), the threshold will be at maximum, VOX ICS operation is disabled and ICS PTT input is required for ICS operation.



When rotated fully counterclockwise (ccw), the threshold will be at minimum (almost live).

To adjust the unit for **VOX** (Voice activated) use, the VOX control should be set fully ccw and then slowly rotated cw to the point where no intercom audio can be heard. The VOX control may require adjustment for proper operation as ambient noise changes.

(5) (8) Transmit Selector



Left User Controls

(11) TX Annunciators (12)

Right User Controls

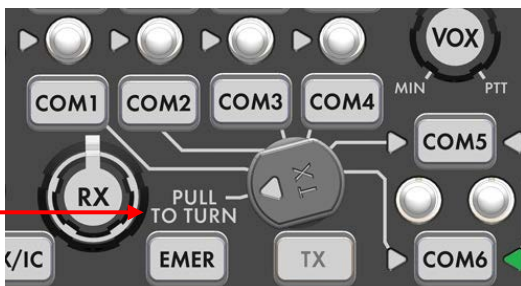
The **Right User** TX selector is an unlit rotary seven-position knob that is used to select transmission for one of the six transceivers, or the RMT (remote) position. Below the knob is a 'TX' deadfront annunciator (12) which will illuminate during transmission. For Remote operation, refer to [section 3.11](#).

Each of the transmit selector positions is linked by a white line to the corresponding transceiver switch and legend, and each transceiver has a transmit select annunciator pointing to the associated switch or legend. The appropriate annunciator will light green to show which transceiver is selected for transmit (right user COM6 in the example above).





The **Left User TX** selector is an unlit rotary 7-position knob that operates in the same manner as the Right User selector, except that position 7, marked **PULL TO TURN** (extreme ccw) is used to select Emergency (EMER) mode.



Below the knob is a 'TX' deadfront annunciator (11) which will illuminate during transmission.

For full information on Emergency mode see [section 4](#).



Note: To prevent accidental selection of Emergency mode, the knob must be pulled towards the user before it can be rotated to the EMER position.

(6) EMER legend

The backlit EMER (Emergency) legend is associated with the Left User TX control only. For full information on Emergency mode see section 4.



(7) (10) RX/ICS Volume control and legend



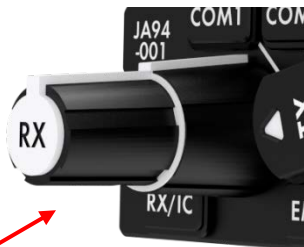
These are two unlit dual rotary knobs that adjust the receive (RX) volume (the smaller, top knob marked RX) and the ICS volume (the larger, bottom knob). Each user can adjust the volumes individually.

Rotating the knobs clockwise (cw) will increase the volume, and counterclockwise (ccw) will reduce it.

Legend

Individual radio volume controls should be set to a nominal level, and then adjusted for changing flight conditions using this control.

Side View





(9) Music/Configuration Connector cover (🎵/io)

This cover is located between the Right User RX/ICS and TX controls. It protects a music input port compatible with most music players, and accepts a 3 pole 3.5mm stereo plug with a slim diameter connector housing.



(This connector is also used during installation to change configuration settings.)



CAUTION: If an unapproved connector or cable is used, damage to the unit or to any attached device may occur. If in doubt, contact JAC for a list of approved cables, music sources and devices.

3 Normal Operation Mode

The JA94-001 is in Normal mode unless EMER mode has been selected via the Left User TX control, or if the power input is off.



Note: Numbers in parentheses refer to the front panel controls shown in section 1.

3.1 Panel Lighting

The legends and annunciators will be illuminated (when appropriate) and dim through the aircraft lighting buss.

3.2 Receiving

When the JA94-001 receives an incoming transmission on a transceiver or receiver that has been selected, either by the white transceiver receive switches (1) (2) or (3) or a transmit selector (5) or (8), the incoming audio will be directed to the user's phones.

The audio level of any incoming transmission will depend upon the level selected by the user's front panel RX volume control – (7) or (10). It will be muted if the unit is transmitting and muting of receive audio during transmit is enabled.

ProCS™ can be configured to route no receive audio, Right User receive audio, or Left User receive audio to passengers.



3.3 Transmitting (Transmit Operation)

To select a transceiver, rotate the Transmit Select Switch (5) or (8) until it aligns with the line leading to the Transceiver Select switch legend (1) (2) or (3) - default legends COM1, COM2, COM3, COM4, COM5 or COM6. The corresponding Transmit Select annunciator will illuminate green.

When the user's TX PTT is activated, the unit will transmit on the selected transceiver, and the deadfront Transmit Annunciator will illuminate 'TX'. All MIC and sidetone audio will be routed to the user's phones, and any music (and RX and/or ICS audio if selected by ProCS™) will be muted for the duration of the transmission.

Passengers 1, 2 and 6 (designated at installation) will transmit on the radio selected by either the Right User or Left User, as configured by ProCS™.

3.3.1 Simulcast Operation



Note: It is important to be aware of the Simulcast configuration of the aircraft.

The ProCS™ configuration program allows the selection of Simulcast Mode. This can be for the left user or the right user or both, and for each user the simulcast radio selections can be selected separately.

If simulcast has been enabled via ProCS™ and the user's Transmit Selector Switch is set to COM 6 (simulcast position), the user will transmit on multiple radios as configured by ProCS™.

3.3.2 Transmit Timeout Operation



Note: It is important to be aware of the Transmit Timeout configuration of the aircraft.

The ProCS™ configuration program allows the selection of Transmit Timeout. If selected, transmissions will timeout after 90 seconds.

3.3.3 COM5 PTT Operation



Note: If the COM5 transceiver has been configured as duplex, it can be used with a cellphone or sat-phone. Check your configuration with the installing agency.

If the unit has been configured for cellphone or sat-phone use and COM5 has been selected for transmit, momentarily activating the TX PTT (either from the faceplate or by some other method) will keep COM5 transmitting. A second momentary activation of the TX PTT, or moving the Transmit Selector away from COM5, will stop COM5 from transmitting.



3.4 VOX Operation

A user's MIC audio is routed to the ICS when the MIC audio level exceeds the VOX threshold (3).

A user's MIC audio is disconnected from the ICS when the MIC audio level falls below the VOX threshold for 0.5 to 2 seconds.

3.5 ICS Operation

ICS audio is the sum of all the MIC audio from users with ICS KEY active or with MIC audio level exceeding the VOX Threshold level.

The ICS audio also includes the audio input on the ICS TIE from other audio controllers.

The ICS audio is output on the phones of each user.

The ICS audio is muted during transmit as configured by ProCS™.

The ICS audio level at the phones is controlled by the ICS volume control (7) or (10).



Note: If **Legacy Passenger ICS Mode** has been selected via ProCS™ for compatibility with a previously installed unit, the passenger microphones are always open when the VOX control is set to PTT and should be controlled by in-line PTT drop-cords.

3.6 ICS Isolation Operation



Note: It is important to be aware of the ICS Isolation configuration of the aircraft.

When the external control signal ICS ISOLATE is active: the LEFT or RIGHT User, as configured by ProCS™, are isolated from the ICS signal of the passengers and the other User; when configured as both the LEFT and RIGHT user, the LEFT and RIGHT Users will be connected to each other via an ICS but are isolated from the Passengers ICS.

In Isolate Mode, the selected user's MIC audio input is disconnected from the ICS TIE output, the user's phones are disconnected from the ICS TIE input circuit, and the music to the user's PHN output will be muted.

3.7 Direct Audio Operation

DIRECT AUDIO 1 and, when configured by ProCS™, the DIRECT AUDIO 2 & 3, are routed to the LEFT USER Phones.

DIRECT AUDIO 2 and, when configured by ProCS™, the DIRECT AUDIO 1 & 3 are routed to the RIGHT USER Phones.



3.8 Music Operation

Music to the phones will be muted by incoming audio (ICS, Receive, or Direct Audio) or if the unit is transmitting. When the incoming audio has ended, the music will gradually return to the previous level.

3.9 Rear Hand Mic Operation

When configured by ProCS™, the Rear Hand MIC audio and PTT signal are connected to the Transceiver as selected by the left or right TX Select switch. The Rear Hand MIC is assigned to left or right user's controls by ProCS™ in the Passenger and Rear Hand MIC settings.

3.10 Cockpit Voice Recorder (CVR) Operation

The RIGHT CVR output consists of the sum of the RIGHT USER MIC input (independent from VOX control setting) and the RIGHT USER PHONE output, and the LEFT CVR output is the sum of the LEFT USER MIC input (independent from VOX control setting) and the LEFT USER PHONE output.

3.11 Remote RMT Operation

A remote transmit selector may be linked to the JA94-001 to allow remote selection for transmission via the right user controls. (This remote selector could be on the right user's cyclic control.) When a remote transmit selector is installed and the RIGHT USER TX SELECT switch is in the RMT position, then the RIGHT USER will transmit on the radio or radios as selected by the remote transmit selector.



Note: It is important to be aware of the Remote Operation configuration of the aircraft.



4 Emergency Operation Mode

The JA94-001 operates in Emergency Mode automatically (**Auto Emergency Mode**) when the power to the unit is off, or when the left Transmit Selector Switch is in the EMER position (**Selected Emergency Mode**).

4.1 Left User Emergency Mode

In emergency mode, the Left User phone and MIC signals are connected by mechanical relay contacts to the COM2 transceiver and the NAV2 receiver. Left User PTT is routed directly to COM2 PTT and the LEFT USER MIC is routed to the COM 2 MIC.

The sum of COM 2 RX, NAV 2 RX and Direct Audio 1 (and Direct Audio 2 if configured by ProCS™) is routed to the LEFT USER PHN output. The LEFT USER PHN is routed to the LEFT CVR output.

4.2 Right User Emergency Mode

In emergency mode, the Right User phone and MIC signals are connected by mechanical relay contacts to the COM1 transceiver and the NAV1 receiver. Right User TX PTT is routed directly to COM1 PTT, and the RIGHT USER MIC is routed to the COM 1 MIC. The Right User is disconnected from the ICS.

The sum of COM 1 RX, NAV 1 RX and Direct Audio 2 (and Direct Audio 1 if configured by ProCS™) is routed to the RIGHT USER PHN output. The RIGHT USER PHN is routed to the RIGHT CVR output.

4.3 Auto Emergency Mode

The unit will enter emergency mode automatically if power to the unit is off.

Other than Emergency operation described above, no functions of the JA94-001 will operate when power is lost. Legends and annunciators will not be illuminated.

4.4 Selected Emergency Mode

If the JA94-001 retains power, the unit can be placed into emergency mode by rotating the Left User TX control to the EMER position (pull to turn).

Emergency mode conditions will apply (see above) but all other functions of the JA94-001 will operate. The LEDs, legends and annunciators will retain normal functionality



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