PS ENGINEERING® INCORPORATED

Sound Quality. Sound Engineering.

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www.ps-engineering.com

PMA5000EX

Audio Selector Panel

Stereo Intercom System

Flying Never Sounded So Good! ™

Pilot's Guide

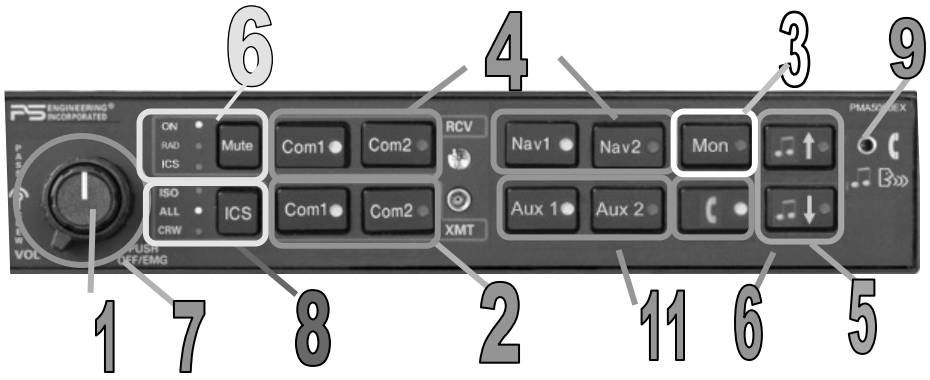
and

Operation Manual

202-550-0100 New Release January 2010

This pilot guide provides detailed operating instructions for the PS Engineering PMA5000EX, Audio Selector Panel/Intercom Systems. Please read it carefully before using the equipment so that you can take full advantage of its capabilities.

This publication covers the operating areas of the PMA5000EX systems. They are Com Transceiver Selection, Receiver Audio Selector, Intercom, and use of the utility jack.



PMA5000EX controls

Power Switch (1) (Push OFF EMG-Fail Safe Operation)

The audio selector panel and intercom functions are turned on by pressing the volume knob on the left side of the unit. The unit can be left on, if you have an avionics master switch in the airplane.

When the unit is turned off, either by pressing the volume control, *or* if the breaker is pulled removing power, the PMA5000EX is in Fail-Safe mode. In this mode, the pilot's headset is connected to COM 1 for transmit and receive, and connected to unswitched input #1 for priority audio alerts. The fail safe audio will *only* be heard in the left ear of a stereo headset.

Communications Transmit (XMT) Selection (2)

To select Com 1 or Com 2 for transmit, simply press the button on the bottom row, next to the XMT legend. Both the bottom and top button indicators will light, showing you that you can transmit **and** receive

on the selected radio. The PMA5000EX automatically selects the receiver, and will not allow you to transmit on a radio without being able to hear the receive audio.

If you want to listen to the other radio, press the upper button, in the RCV (receive) section.

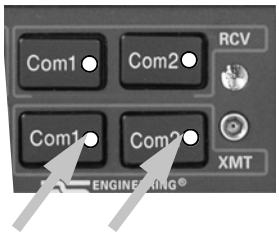
If the **Mon**itor function is activated, the audio from this radio will be muted when the primary radio (selected for transmit) is receiving a signal.

When you have a com selected for receive, it will stay selected until you manually deselect it. For instance, if you set COM 1 for clearance delivery, and COM 2 for Ground Control, transmit on COM 1 to get clearance, but want to contact ground you can switch between transmitters without having to re-select the receivers. In essence, switching the mic selector will not override prior selection of COM receiver audio

Unless the audio panel is in "split" mode, the PMA5000EX gives priority to the pilot's radio Push-To-Talk (PTT). If the copilot it transmitting and the pilot presses his Push-To-Talk (PTT), the pilot is then heard over the radio.

In Telephone ( )mode, the pilot microphone and headphones are connected to the cell phone, but you still hear the COM radios selected. The pilot PTT will switch the pilot mic to the selected com transceiver, and allow continued aircraft communications to continue. (See Page 4—Telephone—for more details)

The copilot will also be able to transmit on the other selected radio with his PTT.



Split Mode

In the split mode, the pilot is on COM 1, while the copilot is able to transmit and receive independently on COM 2. Activating the split mode is straightforward — push both the COM 1 and COM 2 XMT (bottom) buttons at the same time. All four indicators will come on. Select one of the com XMT buttons to exit the split mode.

It is not possible to split the copilot on COM 1, and the pilot on COM 2.

When the split mode is activated, the intercom between the pilot and copilot is inhibited, although the passengers can still talk among

themselves. The crew intercom can be reactivated if desired by pressing the "Mute" button.

Note: Split Mode does not turn off Nav, ADF, or Aux selected audio to pilot. However, the copilot will only hear the selected com receiver and unswitched inputs.

When you invoke the split mode, the intercom between the pilot and copilot gets turned off to prevent confusion from multiple conversations. However, if conversation between pilot and copilot is desired, push the Mute button to reactivate the intercom. Intercom between the passengers is not affected.

NOTE: Due to the nature of VHF communications signals, and the size constraints in general aviation aircraft, it is probable that there will be some bleed-over in the Split mode, particularly on adjacent frequencies. PS Engineering makes no warranty about the suitability of Split Mode in all aircraft conditions.

Swap Mode (Switch between COM transmitters remotely)

The "swap" button allows you to switch between the COM transmitters without having to reach up to the audio panel, and is a handy way to switch to Ground Control when exiting the runway. This optional switch is usually mounted on the control yoke or a convenient place by the pilot position.

Audio Selector (4)

You select the four switched navigation receivers (Nav 1, NAV 2, AUX 1 and AUX 2) by pressing the desired button, and an indicator will show you which are turned on. AUX 1 and AUX 2 can be any audio source that is desired at the time of installation, such as ADF, or even an audio alert signal you want to control. The DME input (if present) is also shared with AUX 2.

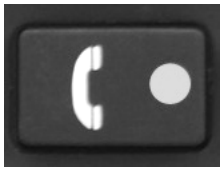
In SPLIT mode, only the pilot will hear selected navigation audio.

AUX Source Muting

AUX 1 and AUX 2 have a temporary muting function. When you select AUX 1 or AUX 2, and want to silence that audio source temporarily you can hold the AUX 1 or 2 button for more than one second, and the audio be deselected for the next 60 seconds. It will then return to the "ON" state. This is useful if you want to silence an audio advisory signal temporarily, but don't want to forget to switch it back on .

Telephone (✆) (9)

The TEL mode serves as a full duplex interface and distribution for telephone systems such as portable cellular phones with earpiece jacks. When you press the Telephone button, it connects the cell phone to the headsets, like adding another person on the intercom loop.



This connects the telephone to the people on the airplane as follows:

In **ALL** intercom mode, all crew and passengers will be heard on the phone when they speak. Com and other selected radio audio is also heard in the headsets. If the pilot or copilot pushes the radio PTT, their mic will be transferred to the selected Com radio. The telephone party will not hear ATC communications, and vice versa.

In **CREW** mode, only the pilot and copilot are connected to the telephone. Passengers will not hear the telephone. The pilot and copilot will also have transmit capability on the other selected transceiver.

In **ISO** intercom mode, when the PMA5000EX is in the **TEL** mode, the pilot position is in the "Phone Booth." Only the pilot will hear or be heard on the telephone. The pilot will also have access to Com 1 or 2, and will transmit on that radio using the PTT. All selected audio is provided to the pilot.

Note: As shipped from PS Engineering, the PMA5000EX does not provide cellular telephone sidetone (the user's voice fed back to the headset). Some cell phones do not provide sidetone. However, telephone sidetone can be enabled by pressing the holding the TEL button for more than three seconds.

Because the cell-phone uses an intercom circuit, all stations on that circuit will lose intercom capability when the cell phone is in use, unless sidetone is present.

IntelliVox® VOX-Squelch

IntelliVox® is PS Engineering's proprietary intercom squelch control. Through the use of digital signal processors, the each individual microphone input is monitored, and opens instantly when human speech is detected. This results in seamless conversations aboard the airplane for crew and passengers, without annoying syllable clipping or fatigue-inducing noise.

No adjustment of the *IntelliVox*® squelch control is necessary. There is no field adjustment. Since this system is designed to block continuous tones, people humming or whistling in monotone may be blocked after a few moments.

For consistent performance, any headset microphone **must** be placed within **¼-inch** of your lips, preferably against them. (ref: *RTCA/DO-214, 1.3.1.1 (a)*). It is important to have the microphone element parallel to your mouth, and not twisted inside the cover.

Note: For optimum microphone performance, we recommend use of a Microphone Muff Kit from Oregon Aero (1-800-888-6910). This will not only optimize VOX performance, but will improve the overall clarity of *all* your communications.

Oregon Aero MicMuff Part Numbers

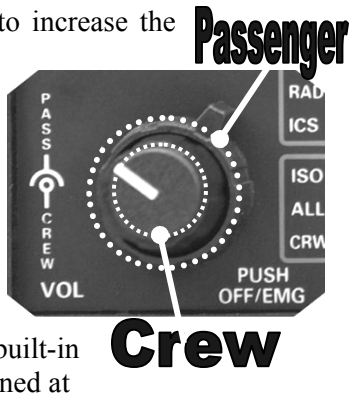
Headset Manufacturer	Model	Part Number
Bose	Dynamic Electret M87	90010 90015 90020
David Clark	H10-30 H10-20, H10-40 H10-13.4, 13X H20-10X	90010 90015 90015 90015
Lightspeed	All	90015
Peltor	7003 ANR Pro, 7000	90010 90015
Pilot	11-20, 11-90, 1776, DXL	90015
Sennheiser	All	90015
Telex	Airman 750, AIR4000 AIR3000, Echelon 100	90010 90015

It is also a good idea to keep the microphone out of a direct wind path. Moving your head through a vent air stream may cause the *IntelliVox*® to open momentarily. This is normal.

The *IntelliVox*® is designed to work with normal aircraft cabin noise levels (70 dB and above). Therefore, it may not always recognize speech and clip syllables in a quiet cabin, such as in the hangar, or without the engine running. This is also normal.

Intercom Volume Control (7)

Turn the smaller volume knob clockwise to increase the intercom level for the pilot and copilot to the desired level. The volume knob does not affect selected radio levels, music input levels or passengers' intercom volume level.



Turn the larger knob to set the passengers' intercom volume to the desired level.

Since many general aviation headsets have built-in volume controls, volume also can be fine-tuned at the individual headset.

Mono Headsets in Stereo Installation

The pilot and copilot positions work fine with either a stereo or a mono headset. But, since all passenger headsets are connected together, if one person uses a mono headset, it will cause the other passenger station to become monaural. It will not hurt the audio panel, and it will return to stereo when the headset is removed.

Intercom Modes (8)

Pushing the "ICS" button cycles through the three intercom modes, **All**, Crew (**Crw)**, and **ISO**.

In addition, when the audio panel is in the Split Mode, the Mute button controls the crew intercom activation.

In **All** mode, everybody hears everything, including radios, intercom and music. The crew will hear Music 1, and the passengers will hear Music source 1 or 2, depending on the Alternate Distribution method

selected. This music source will be muted, depending on the selected music muting mode.

In the **Crew** mode, only the pilot and copilot positions hear the aircraft radios, both the selected receivers and the unswitched audio sources. They hear music #1. The passengers can talk to each other, and do not hear the aircraft radios. They will hear Music #2.

In pilot **Isolate** mode (Iso), the pilot is all alone with the aircraft radios, and does not hear any intercom conversation. The copilot and two passengers can speak to each other, and are not bothered by radio traffic. They will hear Music 1.

You have the option of putting music into the pilot headset, by pressing the ICS mode button for more than one second, while already in the ISO mode. The music in ISO mode is indicated by a slow blink of the intercom mode indicator.

Utility Jack

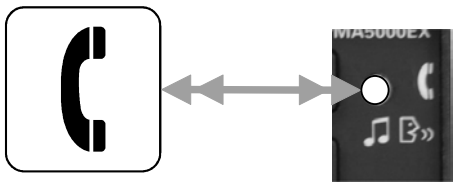
The 2.5 millimeter (3/32") jack on the front of the PMA5000EX has three distinct functions:

- Cell phone input
- Music input
- Advisory audio input

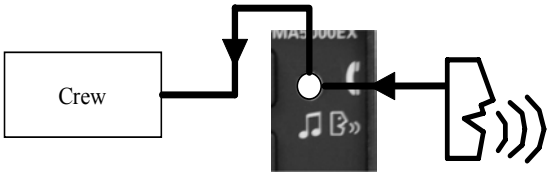
Cellular phone

You can connect most cellular and satellite telephones to the utility jack using a 2.5 mm to 2.5 mm adapter cable (PS Part Number 425-006-7026). This will plug into the jack on your phone and into the audio panel. Then, when you press the TEL button, the phone audio will pass through the audio panel. The cell phone becomes like another person on the intercom, so the ICS mode button controls who hear the conversation. Some cell phones need special adapters and cables. Since the market for these devices is so dynamic, we recommend that you visit the support section at www.ps-engineering.com for the latest information.

When the TEL mode is off, the telephone ringer audio will be heard if it is present on the telephone's output (ringer may be muted by radio and intercom).



Audio Advisory Input



You can use the utility jack as an input for your portable traffic advisory or terrain avoidance unit. Unless you have music playing in Music 1 through the rear connector, we recommend that you turn music muting off, with the "Mute" button, so this audio is not interrupted.

We've built some intelligence into the PMA5000EX, too. If you *do* have music 1 playing, the PMA5000EX will then interpret the jack input as a priority audio, and not mute it.

NOTE

The front jack is no substitute for the required installation of alerts such as the GPS waypoint or autopilot tones. These still must be hard wired into the back by your installer.

Music Input

When you plug an iPod or similar portable music device into the front jack, it is treated as Music #1, and will be muted in accordance with your control option. You can control the music volume from your device, or, set it at the loudest setting, and then use the front panel controls on the PMA5000EX to adjust the music.

Alternate Music Distribution

This mode allows you to configure your music to be either *independent* of the intercom mode, or to make Music 2 *dependent* on the intercom mode.

An external switch (or installation strap) must be installed to use the Alternate Music Distribution mode. In the Alternate Distribution mode, Music 2 will be active *only* when the intercom is in the CREW mode, and only the passengers will hear it. This distribution is similar to other brands of audio panels, and allows the passengers to have their music source come on only when they are not hearing the crew.

When the music is independent (the standard distribution method), Music 1 will always go to the pilot and copilot positions, and is never heard by the passengers. Music 2 is always heard by the passengers, and never by the pilot and copilot.

This mode is useful if your passengers have a different interest in entertainment or are watching a DVD, but do not want to be excluded from the intercom conversations.

Music Muting

There is a separate SoftMute ® muting circuit for each music input (#1 and #2).

The front panel "Mute" button has four modes, and *only* controls the Mute function for **music 1**. Music 2 muting is controlled by an external switch, and has two modes.

The SoftMute™ circuit will cut the music out whenever there is conversation on the radio, the intercom, or both, depending on the "Mute" mode selected. When that conversation stops, the music returns to the previous level comfortably, over a second or so.

The mute mode functions are controlled through sequential pushes of the Mute button, and include LED indication of the mode selected.

MUTE ON — music **will** mute with *either* intercom *or* radio – MUTE **ON** LED is lit.

RADIO MUTE — Intercom will **not** mute music, radio *will* mute music. **RAD** LED indicator is on

INTERCOM MUTE — Radio will **not** mute music, intercom *will* mute music - **ICS** LED is ON.

MUTE OFF — "Karaoke" mode - music will not mute except during outgoing transmissions. - All Indicators off.

The passenger's intercom also has a SoftMute™ circuit. If the passengers hear the radio, or talk on the intercom, the music will mute. If the audio panel is in CREW mode, then the radio reception will not affect the passenger music.

Music 1 Volume

In general, we recommend adjusting the entertainment volume at the sources, and only using this as a master gain control. However, the Music 1 volume can be adjusted from the front panel, if desired, by pressing Music volume up, and music volume down buttons.

The music can be turned completely off, so if you are not hearing

what you expect, try increasing the volume as described above. It will take about 10 seconds to go from minimum to maximum volume.

Warranty & Service

In order for the factory warranty to be valid, the installations must be accomplished by an FAA- (or other ICAO agency) certified avionics shop and authorized PS Engineering dealer. If the unit is being installed by a non-certified individual, a factory-made intercom harness must be used for the warranty to be valid.

PS Engineering, Inc. warrants this product to be free from defect in material and workmanship for a period of one (1) years from the date of retail sale by authorized PS Engineering dealer. During the warranty period, PS Engineering, Inc., at its option, will send a replacement unit at our expense if the unit should be determined to be defective after consultation with a factory technician.

All transportation charges for returning the defective units are the responsibility of the purchaser. All domestic transportation charges for returning the exchange or repaired unit to the purchaser will be borne by PS Engineering, Inc. The risk of loss or damage to the product is borne by the party making the shipment, unless the purchaser requests a specific method of shipment. In this case, the purchaser assumes the risk of loss.

This warranty is not transferable. Any implied warranties expire at the expiration date of this warranty. PS Engineering SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. This warranty does not cover a defect that has resulted from improper handling, storage or preservation, or unreasonable use or maintenance as determined by us. This warranty is void if there is any attempt to dissemble this product without factory authorization. This warranty gives you specific legal rights, and you may also have other rights, which may vary from state to state. Some states do not allow the exclusion of limitation of incidental or consequential damages, so the above limitation or exclusions may not apply to you.

All items repaired or replaced under this warranty are warranted for the remainder of the original warranty period. PS Engineering, Inc. reserves the rights to make modifications or improvements to the product without obligation to perform like modifications or improvements to previously manufactured products.

Factory Service

The units are covered by a one-year limited warranty. See warranty information. Call PS Engineering, Inc. at (865) 988-9800 before you return any unit. This will allow the service technician to provide any other suggestions for identifying the problem and recommend possible solutions.

After discussing the problem with the technician and you obtain a Return Authorization Number, ship product to:

PS Engineering, Inc.
Attn: Service Department
9800 Martel Rd.
Lenoir City, TN 37772
(865) 988-9800 FAX (865) 988-6619
Email: contact@ps-engineering.com

Units that arrive without an RMA number, or telephone number for a responsible contact, will be returned un-repaired. PS Engineering is not responsible for items sent via US Mail.

PS ENGINEERING® INCORPORATED

RECORD

PMA5000EX Serial Number: _____

Date of Purchase: _____

Installed by: _____