PS ENGINEERING® INCORPORATED

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PMA8000E

**Audio Selector Panel
Marker Beacon Receiver
Stereo Intercom System
with Bluetooth™ Connectivity**
For Dual Audio Panel Installations

Pilot's Guide
and Operation Manual

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Bluetooth™

Covered under one or more of the following Patent No. 4,941,187,
5,903,227, 6,160,496, 6,493,450
FAA-Approved: TSO C50c, C35d
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Flying never sounded so good ®

This pilot's guide provides operating instructions for the PMA8000E Audio Panel for dual panel systems. Please read it carefully before using the equipment so that you can take full advantage of its capabilities.

This guide is divided into main operating sections such as Transceiver Selection, Audio Selector, Intercom, and Marker Beacon Receiver, and special functions. The center section provides a reference that you can remove.
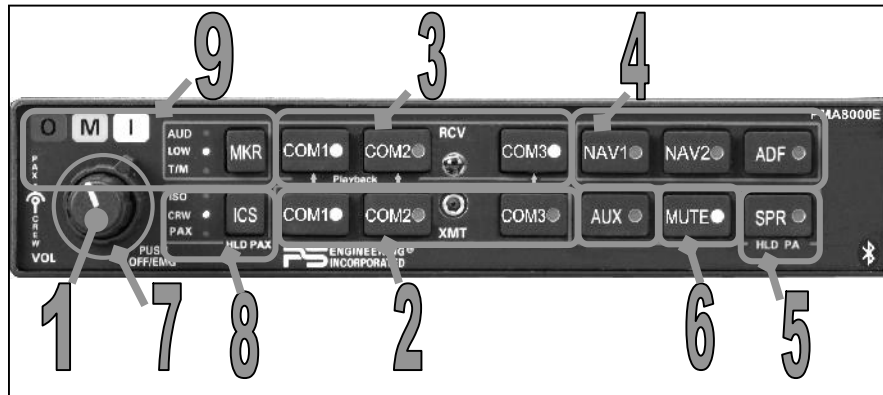
PMA8000E controls

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

The power switch controls all audio selector panel functions, intercom and marker beacon receiver.

When the unit is turned off, either by pressing the volume control, *or* if the breaker is pulled removing power, the PMA8000E is in Fail-Safe mode. In this mode, the crewmember's headset is connected to COM 1 for transmit and receive. The fail safe audio will *only* be heard in the left ear of a stereo headset.

NOTE: In the event of failure in both audio panels, both will default to COM 1. If both crew members attempt to transmit at the same time, the modulation may be compromised, depending on the microphones used. Therefore, only one crew member should transmit if both audio panels fail.

Communications Transmit (XMT) Selection (2)

To select COM 1 COM 2 or COM 3 for transmit, press the button on the bottom row, next to the XMT legend. The bottom and top button indicators light, showing that you will transmit **and** receive on the selected radio.

Only one transmitter can be selected by each crew member at a time. If both the pilot and copilot select the same transmitter, the pilot will have priority for radio push-to-talk.

Swap Mode (Switch from COM 1 to COM 2 or COM 3 remotely)

With a yoke mounted, normally open momentary switch, the pilot can change from the current COM transceiver to the other by depressing this switch. To cancel "Swap Mode," the pilot may either press the yoke mounted switch again, or select a different COM with the XMT buttons. The PMA8000E can be configured by the user to either Swap COM 1/COM 2, or COM 1/COM 2/COM 3. To change this function, press and hold the swap switch, and push and release the COM 3 RCV button momentarily.

Stuck Microphone Protection

The PMA8000E will sense if the pilot or copilot radio PTT remains keyed for more than 32 seconds. When a stuck mic is detected, the key input is ignored, and the other crewmember can transmit normally. If the stuck becomes ungrounded, normal operation is restored.

Communications Receive (RCV) Selection (3)

To listen to the other radio, press the upper button, in the RCV (receive) section. When a com is selected for receive, it will stay selected until manually deselected, even if you select, and then deselect its transmitter.

The PMA8000E gives priority to the pilot's audio panel radio Push-To-Talk (PTT) if both panels have selected the same transmitter.

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 when both flight crew members transmit at the same time on different radios, particularly on adjacent frequencies. PS Engineering makes no warranty about the suitability of dual transmit in all aircraft conditions.

Audio Selector (4)

Navigation receiver audio is selected through five momentary, push-button, backlit switches.

The users can identify which receivers are selected by noting which green switch LEDs are lit. Navigation aid audio push buttons are labeled **NAV 1**, **NAV 2**, **ADF** and **AUX** (auxiliary). DME audio (if present) will come through when the **AUX** button is selected. When one of these buttons is pressed, the mode is active, and the LED will illuminate. Press the switch again and it will be "off" and remove that receiver from the audio output.

Marker Audio (**MKR**) can be selected by a momentary press of the **MKR** button. (9).

Cockpit Speaker (5)

This button will place all selected audio on the crewmember's cockpit speaker when this switch is selected.

Depending on installation, important audio alerts such as radar altimeter or autopilot disconnect will come over the speaker even if it is not selected, while other unswitched

inputs, will only be present if the **SPR** button is selected. Consult your professional avionics installer for these important configuration details.

Public Address Function

To activate PA function, press **SPR** button for more than one second one the desired audio panel. The crewmember microphone will be heard on the associated speaker when that crewmember's PTT is used. The other pilot can continue to use their audio panel normally.

During Public Address, the SPR button will flash. To exit PA mode, push and hold **SPR** again. This feature is reset at power cycles.

Intercom Operation

IntelliVox® VOX-Squelch

IntelliVox® is PS Engineering's proprietary intercom squelch control. Through the use of digital processors, each microphone is monitored, and opens instantly when human speech is detected. This results in seamless conversations aboard the

airplane for crew and passengers, without syllable clipping or fatigue-inducing noise.

No adjustment of the *IntelliVox®* squelch is necessary. There is no field adjustment. The system is designed to block continuous tones, therefore 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. 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, www.oregonaero.com). This will not only optimize VOX performance, but will improve the overall clarity of all your communications.

You should also keep the microphone out of a direct wind. Moving your

head through an 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 area, such as in the hangar, or without the engine running. This is also normal.

Intercom Volume Control (7)

The small volume control knob adjusts the loudness of the intercom for the crewmember connected to the audio panel. It has no effect on selected radio levels, music input levels or passengers' volume level.

The larger, outer volume control knob controls intercom volume for the *passengers on the copilot audio panel only*. It has no effect on radio or music levels. The pilot panel outer knob has no effect.

Mono Headsets in Stereo Installation

The pilot and copilot positions work with stereo or mono headsets.

Intercom Modes (8)

In each audio panel, a short press of the ICS button toggles between Isolate (ISO) and Crew (CRW) intercom modes.
In ISO mode, the pilot or copilot hear selected radios, unswitched audio. They do not hear any intercom audio or music.
In CRW mode, the pilot and copilot audio intercom stations are connected. Each crew member continues to hear their selected receiver and unswitched connected to their audio panel. They can listen to the music connected to their panel.
Either audio panel can activate the CREW mode, and if either crew member pushes the ICS button to the ISO mode then both panels will enter the ISO mode.

Passenger Intercom (if equipped)

Intercom mode is indicated by green ISO or CRW LEDs.
If equipped with an expansion unit, passengers can be added to the intercom by holding the ICS button for more than one second. When passengers are on the intercom, the PAX LED is also on along with the ISO or CREW green LED.
To place all aircraft stations on the intercom, the audio panels should be in CRW and PAX (long press either ICS button on either audio panel).

Any time the ICS button is pressed, the intercom mode will drop the passengers. The next press of the ICS button will toggle between ISO and CRW. The passengers can also be removed from the crew intercom by holding the ICS button for more than one second.

NOTE: Passenger intercom requires an IntelliPAX passenger intercom.

Marker Beacon Operation (9)

The Marker Beacon Receiver uses visual and audio indicators to alert you when the aircraft passes over a 75 MHz transmitter.

The Blue lamp, labeled "O", is the Outer Marker lamp and has an associated 400-Hertz 'dash' tone. The lamp and tone will be keyed at a rate of two tones/flashes per second when the aircraft is in the range of the Outer Marker Beacon.

The Amber lamp, labeled "M", is the Middle Marker lamp and is coupled with a 1300 Hertz tone. It is keyed alternately with short 'dot' and long 'dash' bursts at 95 combinations per minute.

The White lamp, labeled "I", is the Inner marker and has a 3000 Hertz 'dot' tone. The lamp and tone will be keyed at a rate of six times per second.

The audio from the Marker Beacon Receiver can be heard by pushing the "**MKR**" push-button switch momentarily.

A marker **AUD** LED will indicate the marker beacon audio has been selected.

To adjust the volume level, there is a service adjustment located on the top of the unit.

The Marker Sensitivity is controlled by an external switch, labeled MKR HI sense. Of switched to ground, the marker receiver is in high sensitivity, otherwise, the marker is in LOW sense by default, and the "LOW" indicator on the audio panel is illuminated.

Holding the MKR button for one second activates marker test lamp, labeled "T/M" and illuminates all three lamps simultaneously to assure the lamps (internal and external) are in working order. T/M does not activate MM autopilot sense output. Releasing the button returns to the last sensitivity.

Pressing the marker mode select ("T/M") for one second will also cause the marker audio to mute for that beacon. The next beacon received will re-activate the audio.

Bluetooth ® Telephone

In a dual PMA8000E Installation, the **pilot's** Bluetooth transceiver services music for the pilot **only**. It is possible to share the Bluetooth telephone connect with the copilots panel when you are in the CREW intercom mode. When you're in the ISO mode, the pilot's cell phone does not provide sidetone on the Bluetooth connection, the pilot will not hear himself on the telephone, even if sidetone enabled.

If pilot would like privacy, then they can select the ISO mode on his audio panel. Only his headset will be connect to his Bluetooth telephone.

If the pilot would like to include the copilot then they can select the CREW mode and this will allow pilot and copilot to speak on the pilots phone call. The pilot will still have complete access to the aircraft radios, and will transmit on the selected com when he uses the radio push-to-talk.

The copilot can connect their Bluetooth telephone to the copilot's audio panel.

If copilot would like privacy, then they can select the ISO mode on his audio panel. Only his headset will be connect to his Bluetooth telephone.

If the copilot would like to include the pilot then they can select the CREW mode and this will allow pilot and copilot to speak on the pilots phone call.

Cell phone Sidetone

As shipped, the PMA8000E audio panels provide cellular telephone sidetone (the user's voice fed back to the headset). Some cell phones provide sidetone. In PMA8000E audio panels, Telephone sidetone can be disabled by pressing the AUX button for more than one second.

Music Input

When used as a music input Bluetooth music are treated as Music #1. Using the Music function button, it can be distributed to all users, depending on the intercom mode.

Music and Music Muting (6)

The PMA8000E has two independent music inputs at the rear connector. The PMA8000E also has the ability to receive streaming music from a Bluetooth-enabled device.

Music 1 will be heard by the crewmember positions in each audio panel unless they are in the ISOlate mode. The Bluetooth streamed music in the PMA8000E is also Music 1.

The front panel "Mute" button controls the Mute on or off function for Music 1.

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.

Internal Recorder System

The Internal Recording System is a continuous loop recorder, (last message received will be the first heard), the recorder has 45 seconds of recording time, or up to eight messages. The system automatically begins to record the instant the radio selected for transmit becomes active. Only the crewmember will hear the playback audio from their audio panel.

To play back the last recorded message, you press and hold the COM RCV pushbutton associated with the selected radio transmitter for about one second. You must wait for the message to stop playing before accessing the prior message. To cancel the playback, press and hold the playback button for two seconds. The next time the

button is pressed for one second, the next earlier message will be heard. If the radio becomes active while a message is playing, the message playback will stop. The new audio will not be stored. Press play to restart the message you were playing. Messages are lost when a different radio is selected for transmit, or when power is removed from the audio panel.

The playback will stop whenever there is more incoming selected com audio, and the message can be replayed from the beginning. **Note:** an external playback button may also be installed in a convenient location.

Warranty & Service

In order for the factory warranty to be valid, the installations in a certified aircraft must be accomplished by an FAA-(or other ICAO agency) certified avionics shop and authorized PS Engineering dealer.

PS Engineering, Inc. warrants this product to be free from defect in material and workmanship for a period of three (3) years from the date of retail sale by authorized PS Engineering dealer. During the first **twelve (12) months** of the three-year 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. For the remaining **twenty-four (24) months** of the three-year warranty period, PS Engineering will send a no-cost replacement unit at customer shipping expense.

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 three-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
Phone (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.