

Aircraft Audio Control Systems

PS ENGINEERING[®]
INCORPORATED
Sound Quality. Sound Engineering.



Flying Never Sounded So Good[®]



Flying Never Sounded So Good[®]

Since its founding in 1985, PS Engineering has grown to become the undisputed leader in the field of aircraft audio control.

In 1985, two electrical engineers, one a pilot the other a circuit designer, found themselves wondering when the revolution would come to the field of audio control. At the time, aircraft intercoms and audio panels had seen virtually no improvement in over a decade. With new digital circuitry and technologies, they believed it was time for the revolution to begin.

Today, according to the Aircraft Electronics Association's Retrofit Survey, PS Engineering is the dominant supplier of audio control systems. More than half of all audio control systems (intercoms and audio panels) purchased today come from PS Engineering.

PS Engineering also supplies audio products to airframe manufacturers, companies such as Raytheon, Lancair, Maule, and SOCATA Aircraft. Like pilots, OEM's have held high regard to the attention that PS Engineering gives to the audio system, and recognize the advantages of a company focusing on one particular area of expertise.

PS Engineering doesn't make GPS, transponders, or autopilots; cockpit audio is our one and only mission. With product focus like this, it's no wonder why PS Engineering holds more patents in the audio control field than any other company.

If these two guys hadn't founded PS Engineering, the community of pilots would probably still be waiting for the revolution to begin.

Take a look at the firsts – PS Engineering has been the source for virtually every major cockpit audio innovation in the field of General Aviation avionics:

- First to provide true hands-free VOX system, the IntelliVox[®] Patent no. 6493450
- First to provide individually adjustable VOX circuitry
- First to use digital signal processing to record aircraft radio for playback in the cockpit, known as the IRS
- First to provide an integrated aural warning system into an audio panel
- First to provide Swap capability, Patent no. 5903227, 6160496
- First to fully integrate music with Soft Mute technology, where music volume is muted, then slowly returns after the radio transmission ends. Patent no. 4941187
- First to introduce an FAA approved stereo audio panel with intercom and marker beacons, all in the same unit
- First to introduce AMP[™], (Active Microphone Processor) a system that removes noise from the microphone.
- First to provide BlueTooth[®] integration

Using the latest technologies and the highest level of quality control, PS Engineering manufactures all of its products in the United States, to the most exacting standards. MADE IN THE USA means something to us.

What sets PS Engineering apart from our competition is that we listen.

Good ideas and PS Engineering go hand and hand. But the sources of those ideas are not always from our staff. In fact, we usually find that the very best ideas come from the community of pilots and avionics shops.

We travel around the country, to air shows and avionics shops, asking questions on how we can improve our systems. We aim to be the most approachable, most responsive avionics manufacturer in the world.

When you see innovation in audio, chances are, it is from PS Engineering.

Cover picture: 2007 Gathering of Mustangs and Legends.

AUDIO PANELS

PMA4000
PMA6000B
PMA7000B
PMA8000 Series
PAC24
PAR100EX
PMA5000EX



JA Jet Center Mooney Panel with Vertical PMA8000B

Why so many audio panels?

The reason we designed all these audio panels wasn't to confuse our customers; but rather to provide solutions to match our customers' needs. We recognized early on that one size does not fit all.

Certified

PMA4000 – A small form-factor was the design goal for this little jewel. Capable of being panel mounted like an intercom or in a 2 1/4" round instrument hole, the PMA4000 also provides a four-place mono intercom with IntelliVOX® and speaker amplifier.

PMA6000B – Low cost solution. This is the only audio panel we know that includes an intercom and a marker beacon receiver selling for less than \$1095.

PMA7000B – This series of audio panels incorporates IntelliVOX® and provides enhanced capabilities such as full duplex wireless telephone, and audiophile stereo music inputs. King KMA24 pin-compatible lends itself to easier upgrade.

PMA8000 Series – Designed as plug-and-play with the GARMIN* GMA340, this audio panel includes a complete full feature set with digital recorder, front panel configuration control, and monitor mode.

PAC24 – This specialty audio panel is suitable for special mission use, such as police/rescue/fire patrol, and includes provisions for observer position.

Experimental

PAR100EX – The most integrated audio panel ever with remote control of aircraft radio, integrated BlueTooth® telephone and music streaming, with 4-place audiophile stereo IntelliVox® intercom.

PMA5000EX – This "Experimental Only" audio panel has the capabilities homebuilders demand as well as some new innovations. Price/Performance was the goal and the this panel delivers in both sectors. The PMA5000EX will find itself operating comfortably from Light Sport Aircraft to RVs.

Compatibility

There are several types of compatibility, pin compatible and plug and play. Pin compatible are the audio panels that use existing connectors in the aircraft, but require additional wiring. Plug and play audio panels are design to allow easy removal and installation of the unit. No additional wiring or mechanical changes are required.

The Monitor Mode

The Monitor Mode is one of the most significant product improvements that we have introduced in a certified audio panel in recent history. This new capability allows the pilot to designate one com as primary and the second com as secondary audio source. When there is activity on the primary com, the secondary com will temporarily mute. As an example, when you are getting a recorded weather broadcast, and ATC wants to speak with you, the less important audio will drop off during the conversation. The Monitor Mode eliminates having to try to decipher two simultaneous radio receptions.

ProSupport

All of our audio panels include PS Engineering's ProSupport Warranty. Depending upon the audio Panel installed, the unit will come with either a 1, 2, or 3 year guarantee that if the Unit was installed by an authorized PS Engineering Dealer or a custom wire harness was purchased from PS Engineering, a warranty exchange unit will be Shipped the same day of the issuance of an RMA.

IntelliVox®

PS Engineering's revolutionary IntelliVOX® intercom squelch protocol harnesses the computational power of microprocessors, and eliminates complicated squelch adjustments. In addition, by using independent, automatic microphone squelch circuits, extraneous cabin noise is minimized. IntelliVOX® means that the system will always be optimized, tailoring itself for different microphones, as well as variations in voice and sound levels in the cockpit. With IntelliVOX® you'll have seamless and clear communications.

*GARMIN and GMA340 are trademarks of Garmin International, Inc. PSEngineering, Inc. is not associated or affiliated with Garmin International, Inc. in any way.

PMA4000

The PMA4000 is an audio panel that provides switching of two coms and two navs. It has a 4-place mono IntelliVox® intercom, and can be configured for PTT intercom. Four unswitched inputs are available.

It also includes a built-in speaker amplifier. Hear aircraft radio audio through the headsets or over the cabin speaker by a press of a pushbutton.

The PMA4000 takes advantage of PS Engineering's revolutionary IntelliVox® intercom squelch protocol. A three-position mode switch allows the pilot to select either ISO or ALL intercom modes. This switch also functions as the on/off switch.

The PMA4000 has independent intercom volume controls for the pilot and the copilot. Because this system was designed with the tandem cockpit in mind, the copilot volume can be mounted in another location. The volume controls only the intercom, the radio volume is adjusted by the radio controls.

Both pilot and copilot have transmit capability. The selected com LED shows amber when selected, and flashes during radio transmissions. The transceiver switching is automatic. When the microphone toggle switch selector is in Com 1 position, the receive audio and microphone signals are routed to Com 1. The push button selector controls receive audio and can be used to select multiple Com receivers.

The PMA4000 provides a monaural entertainment input. With our SoftMute™, the music mutes, allowing undistracted communications.

An optional internal digital recorder (p/n 11941) provides up to one minute of stored aircraft radio reception.



Shown actual size



About Squelch

Squelch is the circuitry that keeps out background noise. While all of our systems use "voice activated" (or VOX) squelch, some also have PTT-ICS function for open cockpit aircraft.

The squelch control governs the amount of voice it takes to open the squelch, and be heard on the intercom. PS Engineering has always been a leader in this important circuit.

PTT-ICS – This type of VOX is considered to be a manual type. The associated mics remain off until someone presses a PTT dedicated for intercom use.

Common squelch – When one person speaks, all microphones open. This results in additional cabin noise in the audio system.

Individually gated – Only the microphone that is spoken into opens - keeping the noise out of the audio system. Systems like the PM3000 are individually gated, although a single knob controls the squelch thresholds

Individually controlled – Intercoms like the PM1000II and PMA6000 have independent controls on independent gates.

IntelliVox® – is PS Engineering's patented system automatically senses voice on each microphone, and adjusts the threshold continuously, depending on the ambient noise. This is truly the best of all worlds.

WARRANTY

1-year hassle free exchange program, when installed by an authorized PS Engineering Dealer. After the warranty expires, a fixed repair fee will cover any repair. See Warranty Information in Installation manual for full details.

TECHNICAL SPECIFICATIONS

Approval Basis	FAA-TSO C50c (11942)
Input power	12-28 Volts Current Drain: < 250 mA
Headphone Impedance	150-1000Ω Typical
Audio Distortion	<1% THD @ 38 mW into 150Ω
Speaker Output	3 Watts @ 14 Vdc 10 Watts @ 28 Vdc
Aircraft Radio Impedance	510Ω
±3 dB Mic Freq. Response	300 Hz-6000 Hz
±3 dB Music Freq. Response	200 Hz-18 Khz
Weight	15 Ounces
Dimensions	1.70" H X 2.435" W X 6.50" D

ORDERING INFORMATION

PART NO.

PMA4000 4-Place Intercom 11942

Comm selector panel with 4-place panel mount intercom with Isolate and ALL modes, single music input. Installation hardware includes metal mounting plate, connectors. FAA-TSO

Same as above with 1-minute digital recorder (non-TSO)..... 11941

2 1/4-inch round mounting plate575-004-0001

Allows installation in a standard 2 1/4-inch instrument hole.

PMA6000B



The next generation PMA6000B has been given the benefit of PS Engineering’s 15 years of audio panel control design and manufacturing experiences. It offers a low cost alternative to the more capable audio panel product line that the industry has become to expect from such a focused driven company.

This audio selector panel has our original “Set it and Forget it” manually adjusted VOX intercom and a slew of features to enhance versatility and utility.

Swap function allows selection of Com 1 or Com 2 from remote pushbutton. Fail-safe feature automatically hard-wires the pilot to Com1 in the case of an outage Uses a single 44-pin connector making installation easier.

The PMA6000B holds both FAA TSO as well as EASA ETSO and was designed to be made easier to install using a single 44-pin Sub-d connector

CHECKLIST OF FEATURES:

- 4-place mono intercom PS Engineering’s “Set-it and Forget-it” manual VOX
- Optional built-in marker beacon receiver.
- Split mode for dual audio capability
- Two Com Capability
- Three Intercom isolation modes - Pilot Isolate, All, and Crew
- Two Music inputs with Soft Mute(tm)
- Two Unswitched inputs
- 6 Switched inputs
- A patented “swap” function allows selection of Com 1 or Com 2 from remote push button
- Fail-safe feature automatically hard-wires the pilot to Com1 in the case of an outage
- Uses a single 44-pin connector making installation easier.

Audio Integration

PS Engineering pioneered and perfected the science of audio control panel integration. By bringing the radio audio together with pilot, copilot and passengers’ audio, the audio panel provides a new level of crew resource management. The copilot can be on a different radio than the pilot, who continues to receive navaid identification. Plus, the crew or passengers can be on an airborne telephone, in addition to logical distribution of music on demand. The end effect is a logical and seamless combination of all the aircraft audio, we’ve done our work, so you don’t get lost in a maze of switches and knobs.

WARRANTY

1-year hassle free exchange program, when installed by an authorized PS Engineering Dealer. After the warranty expires, a fixed repair fee will cover any repair. See Warranty Information in Installation manual for full details.

TECHNICAL SPECIFICATIONS

Approval Basis	FAA-TSO C50c, C35d EASA ETSO C50c, C35d
Certification Documents	RTCA DO-160B, DO-178B, DO-143
Intercom	4-place Mono
Transceivers	2 (Com 1, Com 2)
Receiver Inputs	6 (Nav 1, Nav 2, ADF, DME, AUX, MKR)
Marker Beacon	Internal (optional)
Un-switched inputs	2
Power Required	11-33 VDC, 1.5 A
Power consumption	Speaker on, 600mA typ. 1A peak Speaker off 350 mA
Output power	
Speaker:	3 W into 4Ω
Headphone:	50 mW into 150Ω, <1% THD 70 mW into 150Ω, <10% THD
Audio Frequency Response	±3dB, 350Hz-6,000Hz
Entertainment Frequency Response	±3dB, 200Hz-15,000 Hz
Weight	0.8 lb.
Dimensions	6.25" W x 1.3" H x 6.8" deep behind instrument panel
Environmental Conditions	DO-160B A1D1/CAMXXXXXXXBBBBAAAX
Temperature Range	-20 C to +55 , with brief operation at +70 C
Altitude	50,000 feet, unpressurized
Marker Receiver	75 MHz crystal controlled receiver External marker lights and MM sense output

ORDERING INFORMATION

PART NO.

PMA6000B Audio Selector w/ 4-place intercom PMA6000B
Remove Internal Marker Beacon Receiver Option 002

PMA7000B



CHECKLIST OF FEATURES:

- IntelliVox® automatic VOX system with individually gated microphones
- 6-Place hi-fi stereo intercom with Soft Mute™
- Two music mute modes: Mute On and Mute Off
- Built-in Marker Beacon Receiver
- Cellular telephone input with dedicated On/Off hook switches for unprecedented flexibility
- Split mode for dual audio panel capability
- Two hi-fidelity stereo music source inputs
- Three Isolation modes - Pilot Isolate, All, and Crew
- Four unswitched inputs
- Selectable music muting for passengers
- Selectable special intercom mode with "Alternate Intercom Mode"
- RAM (Radio Active Mute) eliminates constant back ground noise from radio static

The PMA7000 series audio panel not only provides a great set of capabilities, it also lends itself nicely for upgrading an existing Bendix/King KMA24 audio panel. The PMA7000B is KMA24 pin compatible, making the cost of the upgrading less expensive. None of the existing wires going to the KMA24 have to be disturb, thus reducing the amount of installation.

The PMA7000B is the only audio panel that provides an internal intercom that is pin-compatible with the venerable Bendix/King KMA24. While requiring a new harness to provide the intercom functions that the KMA24 lacks, the original KMA24 harness remains intact and minimizes the amount of installation time.

With our legendary 6-place IntelliVox® automatic Voice Operated Relay (VOX) intercom system, adjusting a squelch circuit is a thing of the past. And with over 13 years of field experience, find out just how easy it is to forget you are even using an intercom, it just works! No more clipping or missed syllables.

The PMA7000B has 3-com capability while Com 3 can be converted to a full duplex telephone interface. With "Split Mode", the pilot can be on Com 1 while the copilot is on Com 2, freeing up the pilot to work with ATC.

With all of the patented capabilities that the PMA7000B brings, including Swap Mode™, IntelliVox® automatic VOX circuit and our Soft Mute™ function, as well as our pioneering Split Mode, this moderately priced audio panel will bring capabilities to the avionics stack that will be appreciated for years to come.

The PMA7000B is plug and play with the original PMA7000M-S, the PMA6000M-S, and the KMA28.

TECHNICAL SPECIFICATIONS

Approval Basis	FAA-TSO C35d, C50c EASA ETSO C50c, C35d
Certification Documents	RTCA DO-160C, DO-178B, DO-143, DO-214
Intercom	6-place Stereo
Transceivers	3 - Com 1, Com 2, Com 3 (or Tel Duplex)
Receiver Inputs	5 - Nav 1, Nav 2, ADF, AUX, DME
Marker Beacon	Internal
Un-switched inputs	4
Power Required	11-33 VDC, 1.5 A
Power consumption	Speaker on, 600mA typical. 1A peak Speaker off, 350 mA
Output power	
Speaker:	3 W into 4W (14V) 10W into 4W (28V)
Headphone:	50 mW into 150W w/o clipping 38 mW into 150W, <1% distortion
Audio Frequency Response	±3dB, 300Hz-6,000Hz
Entertainment Frequency Response	±3dB, 20Hz-18,000 Hz
Weight	1.5 lb.
Dimensions	6.25" W x 1.3" H x 6.8" deep behind instrument panel
Environmental Conditions	DO-160C
Temperature Range	A1D1/CA(MN)XXXXXXBBBBTBKXX -15 C to +55 , with brief operation at +70 C
Altitude	50,000 feet, unpressurized
Marker Receiver	75 MHz crystal controlled receiver
External Marker	Lights and MM sense output

WARRANTY

2-year exchange program, when installed by an authorized PS Engineering Dealer. After the warranty expires, a fixed repair fee will cover any repair. See Warranty Information in Installation manual for full details.

ORDERING INFORMATION

PART NO.

PMA7000B Audio Selector with 6-place intercom and Marker Beacon..... PMA7000B
PMA7000B No Marker versions available..... Option 2



PS Engineering takes pride that they have been the innovative leader in aircraft audio control systems. The PMA8000BT demonstrates exactly what can be done when engineers and pilots work hand in hand.

The PMA8000BT has all of the capabilities of the PMA8000B, but adds an easy to use human interface to access special functions, integration of Bluetooth® connectivity, and quick scan front panel for instant audio selection identification.

The Bluetooth® system allows pairing of 8 different devices, such as iPhone, iPads, iPods, and just about any device that has Bluetooth® capability. Two devices can be connected at the same time. The pilot might have a telephone and a music device that can be connected at the same time.

Three functions can be controlled from the front panel: Intercom Function, Monitor Mode, and Music Distribution.

- **Intercom Function** - Standard Intercom Function, using voice annunciations, you can configure your intercom to work as a standard intercom or in an Alternate Mode. In Alternate Mode, everyone is on the intercom: passengers won't hear aircraft radio activity and when the aircraft radio becomes active, the crew will not hear the passengers.
- **Monitor Mode** - This allows the pilot to always hear ATC communications. When the Primary Radio becomes active, it mutes the Secondary Radio.
- **Music Distribution** - Three music distribution modes can be selected. Standard places Music 1 to the Crew and Music 2 to the passengers. Alternate distribution, all will hear Music 1 except when in CREW mode, passengers will hear Music 2. Music 1 can be hardwired or by way of Bluetooth® device.

Seamless interface to a hardwired or Bluetooth® connected phone is accomplished with ease of use in mind. While using the phone, the pilot can receive and transmit on the selected VHF COM, for seamless integration in the cockpit.

PS Engineering's innovative Internal Recording System (IRS) is now standard equipment, a \$130 savings! The pilots can instantly play back radio messages, eliminating the need for the pilot to request "say again," or assure themselves that the last radio call was for them. The playback button is on the front panel. Up to 8 messages can be recorded and played back in sequence.

The new PMA8000BT is backward compatible with our PMA8000B as well as a direct replacement for the GARMIN GMA340.

CHECKLIST OF FEATURES:

- IntelliVox® automatic VOX system with individually gated microphones
- Bluetooth® enabled allows up to two devices to be connected
- 6 - Place hi-fi stereo intercom with Soft Mute
- Monitor Mode allows automatic muting of non-primary radio
- 4 - music mute modes: Mute On, Mute Off, Radio Mute, Intercom Mute
- Dedicated front panel music volume control
- Built-in Marker Beacon Receiver
- Cellular telephone input with "DuTel™" telephone distribution
- Easy front panel control for telephone side tone on/off
- Digital aircraft radio recorder (IRS)
- Front panel utility jack for phone, iPod, or unswitched audio warnings
- Split mode for dual audio panel capability
- 2 - Hi-fidelity stereo music source inputs (no ground loop noise)
- 3 - Isolation modes - Pilot Isolate, All, and Crew
- 5 - unswitched inputs, with front panel unswitched input
- Selectable music distribution for passengers
- Selectable intercom mode with special "Alternate Intercom Mode"
- RAM (Radio Active Mute) eliminates constant back ground noise

TECHNICAL SPECIFICATIONS

Approval Basis	FAA TSO C35d, C50c EASA ETSO C50c, C35d
Certification Documents	RTCA/DO-214 RTCA/DO-143 RTCA/ DO-160D RTCA/DO-178B DO-254
Intercom	6-place Stereo
Transmitter Selections	4 (Com 1, Com 2, TEL Com1/2)
Receiver Inputs:	6 (Nav 1, Nav 2, ADF, DME, MKR, AUX)
Marker Beacon	Internal
Unswitched Inputs	4
Power Requirements	11 to 33 VDC , 2.5 Amp
Output Power	Speaker Output: 3 Watts (14V), 10 Watts (28V.) Headphones: 38 mW each headset, no clipping <1% distortion typical
Audio Frequency Response	± 3 dB, 300 Hz - 6000 Hz
Entertainment Frequency Response	± 3 dB 20 Hz - 18 kHz
Weight	1.85 lb.
Dimensions	Height: 1.3 in. (3.3 cm) Width: 6.25 in. (16.9 cm) Depth: 6.4 in. (17.4 cm)
Environmental Qualification	RTCA DO-160D, A1D1CABSXXXXXXZBABATBXE2XXX
Temperature Range	-15° C to 55° C
Altitude	50,000 feet, non-pressurized area
Marker Receiver	75 MHz, Crystal Controlled
External Marker Outputs	Lights and MM sense output

WARRANTY

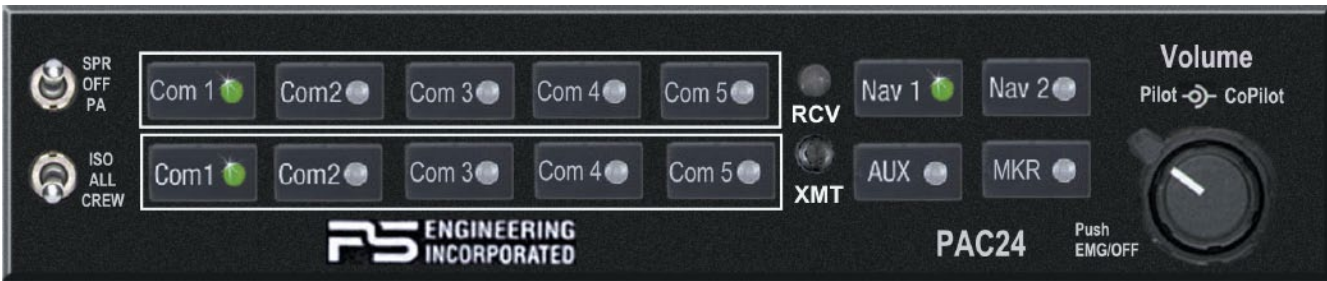
3-year exchange program, when installed by an authorized PS Engineering Dealer. After the warranty expires, a fixed repair fee will cover any repair. See Warranty Information in Installation manual for full details.

ORDERING INFORMATION

PART NO.

PMA8000BT Audio Panel, Marker Beacon, Bluetooth®, stereo intercom050-890-0702
PMA8000B (same as above but without Bluetooth® interface).....050-890-0202

PAC24



The PAC24 was designed as a powerful audio system to meet the needs of airborne law enforcement, EMS, forestry, and special mission aircraft.

Best yet, the revolutionary PAC24 is designed to be easily retrofit into the same installation as a King KMA24H (-71). This makes adding modern, flexible, audio control and a high performance intercom easy and cost effective into aircraft with aging audio panels.

The PAC24 contains PS Engineering's legendary IntelliVOX® intercom and the headphone amplifier is the most powerful and cleanest in its class, delivering 120mW of punch to overcome the loudest cockpit environments.

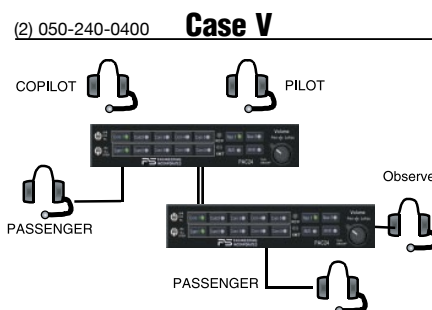
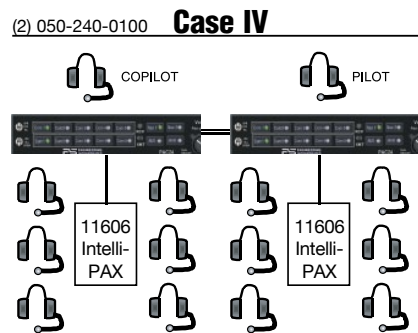
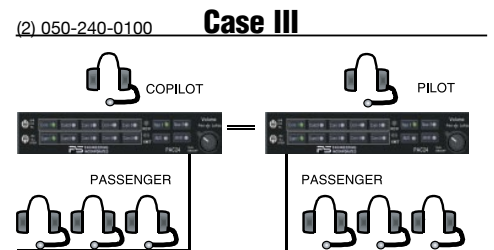
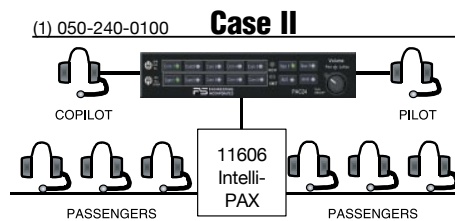
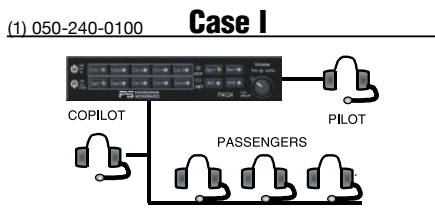
The PAC24 has all the features you expect from PS Engineering, like Swap™, split mode, duplex mode, and 3-year warranty. Designed from the beginning as a dual-capable system, the PAC24

offers outstanding flexibility for crew member and passenger communications. In dual configuration, the pilot's audio panel has command of the ships' intercom if necessary, while the copilot side is able to handle any necessary audio chores.

In cases where the crew wants extra control, the PAC24 can be switched to PTT-ICS mode. This prevents the intercom from activating until a dedicated push to talk switch is activated.

COM 5 has special properties in the PAC24. It can be configured as either a conventional Com 5 transceiver, or as a full duplex telephone capability along with distribution of the telephone call.

An "Observer" version of the PAC24 is also available. This unit allows radio transmission capabilities for a third person when configured as a special mission dual system.



Case	PAC24	Expansion Unit	Pass	Crew Mode
I	Single	No	3	No
II	Single	Yes	6 or 8	Yes
III	Dual	No	6 (3+3)	Yes
IV	Dual	Yes	14	Yes
V	Observer	No	2	No

ORDERING INFO PART NO.

- PAC24050-240-0100
- Audio Selector Panel
- PAC24 Vertical Version050-240-0500
- Audio Selector Panel
- PAC24 Observer050-240-0400
- Audio Selector Panel for dual/Observer install

TECHNICAL SPECIFICATIONS	
Approval Basis	FAA-TSO C50c EASA ETSO C50c, C35d
Certification Documents	RTCA DO-214 DO-160D, DO-178B
Intercom	5-place
Transceivers	5 (Com 1, 2, 3, 4, 5)
Audio Inputs	4 (Nav 1, Nav 2, ADF, DME)
Un-switched audio inputs	2
Power Required	11-33 VDC, 1.5 A
Power consumption	Speaker on, 600mA typ. 1A peak; Speaker off 350 mA
Output power	Speaker 10 W at 28 Vdc; 3W at 13.8Vdc into 4Ω load
Headphone	50 mW into 150, <1% THD; 120 mW into 150, <10% THD
Audio Frequency Response	±3dB, 350Hz-6,000Hz
Weight	0.8 lb.
Dimensions	6.25" W x 1.3" H x 6.8" deep
Environmental Conditions	DO-160D B1CABGMXXXXXZBBATMXXE2XXX
Temperature Range	-20 C to +70, with brief operation at +85 C
Altitude	25,000 feet, unpressurized

PMA5000EX

For Experimental Aircraft Only



Taking the designs we have created for our certified aircraft, PS Engineering designed an audio panel with plenty of capability but at an incredibly low price. This panel was designed specifically for the experimental and LSA owners.

Without the traditional functions such as Marker Beacon Receiver, Speaker Amplifier, as well as avoiding the costs of certification, the PMA5000EX provides an unprecedented level of price/performance for the homebuilt.

Sporting a four-place IntelliVox® hi-fi stereo intercom, the world-renown automatic VOX makes inter-cockpit communications completely seamless. With two types of music distribution, four kinds of music muting, and with "Softmute"™ technology, the PMA5000EX provides the flexibility that homebuilders are seeking.

Some experimental aircraft have a significantly higher cabin cockpit din than others, the PMA5000EX IntelliVox® has a configurable "Extreme Noise Capability Mode" making it unlikely that the IntelliVox would trigger prematurely.

The dedicated front panel volume control of music input #1 makes changing the entertainment volume level as easy as pushing up or down on the dedicated music buttons.

The pilot can select between two music distribution modes. Standard music distribution sends music 1 to the Crew and music 2 Passengers. Alternate which sends music 1 to all headsets in ALL mode and when in Crew mode, music 2 turns on for the passengers.

The PMA5000EX has a new innovation from PS Engineering. Aux 1 and Aux 2 switched inputs can be turned on and off like traditional switched inputs, or with an additional push of the button, the selected audio goes off-line for 60 seconds. This function is useful in cases where the audio is an alert that has been recognized, but becomes annoying. After 60 seconds, the audio is restored.

A new "Monitor" (Mon) mode has been added. When selected, the audio from the Com receiver that is not selected for transmit will automatically mute when the selected primary radio audio becomes active. In this way, the pilot may listen to AWOS on Com 2, but prevents the AWOS audio from interfering with the primary Com audio which is typically ATC.

The new PMA5000EX is a direct replacement for the GMA240.

WARRANTY

1-year hassle free exchange program, when installed by an authorized PS Engineering Dealer. After the warranty expires, a fixed repair fee will cover any repair. See Warranty Information in Installation manual.

ORDERING INFORMATION **PART NO.**
PMA5000EX - Audio Selector Panel with 4-Place Intercom050-550-0200

CHECKLIST OF FEATURES:

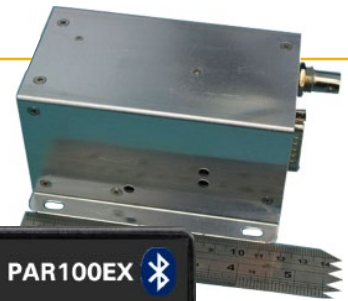
- IntelliVox® automatic VOX system with selectable "Extreme Noise Capability"
- Cellular telephone input with "DuTel" distribution
- Monitor Mode allows automatic muting of non-primary radio
- Front panel utility jack for phone, iPod, or for unswitched audio warnings
- Split mode for dual audio panel capability
- Two Differential, hi-fi stereo music source inputs reduce electrical noise
- Three Isolation modes - Pilot Isolate, All, and Crew
- Four music mute modes: Mute On/Off, Radio Mute, Intercom Mute
- Five unswitched inputs, with front panel unswitched input
- Dedicated front panel music volume control
- Selectable music distribution for passengers
- Two Front panel switched inputs (Aux 1 and 2) with selectable 60 second auto-mute mode

TECHNICAL SPECIFICATIONS

Approval Basis	None
Certification Documents	The PMA5000EX is intended for Experimental Aircraft ONLY
Intercom	4-place Stereo
Transceivers	4 - Com 1, Com 2, TEL, Com 1/2
Receiver Inputs	6 - Nav 1, Nav 2, ADF, AUX, DME, MKR
Marker Beacon	None
Un-switched inputs	4
Power Required	11-33 VDC, 2.5 A
Power consumption	Speaker on, 600mA typical. 1A peak Speaker off, 350 mA
Output power	
Headphone:	50 mW into 150Ω w/o clipping 38 mW into 150Ω, <1% distortion
Audio Frequency Response	±3dB, 300Hz-6,000Hz
Entertainment Frequency Response	±3dB, 20Hz-18,000 Hz
Weight	2.0 lbs.
Dimensions	6.25" W x 1.3" H x 6.9" deep behind instrument panel
Environmental Conditions	None
Temperature Range	-15 C to +55 , with brief operation at +70 C
Altitude	50,000 feet, unpressurized

PAR100EX

For Experimental Aircraft Only



For over a quarter century, PS Engineering, Inc.[®] has been known as a premier innovator of inter-cockpit communication systems for the aviation community. Now, the company has added a new dimension to their communications vision, a VHF communication transceiver that is fully integrated with the audio control panel.

The PAR100EX system combines an audio control panel, 4-place stereo IntelliVox[®] intercom with BlueTooth[®] wireless interface, and a remote mounted, 760-channel VHF aviation communications transceiver. Never before has there been so much communication capability controlled in such a small footprint.

This system saves cockpit space, weight, and money over the stand-alone independent systems while providing the most sought after functionality.

The PAR100EX's low price makes it attractive for the Experimental and Light Sport aviation market. While the radio does hold FCC approved, the PAR100EX is designed for the experimental aircraft and does not hold FAA Approval for certified airplanes.

Seamless integration between the audio panel and the radio was the primary goal for the best user experience possible, with minimal panel space. And an eye to redundancy was part of early adoption of two independent power supplies. One of the internal power supplies if the audio panel functions while a second and independent power supply is for the aircraft radio.

The right half of the PAR100EX is dedicated to the communication radio, with an easy to read LCD display that shows the frequencies of both the active Comm and Standby selections. A press of the knob flip flops the Comm and Standby frequencies. The other function of the right-hand knob is volume and squelch control. The Monitor Function is selected by pressing and holding the Com 2 receive button. When the Comm becomes active, the Standby frequency is muted, assuring the pilot that they will always hear ATC.

The left half of the audio panel is for audio control and intercom functions. The small knob changes the intercom volume while the larger controls the music volume. There are two music inputs that can be hardwired as well as the BlueTooth[®] interface for streaming music. PS Engineering's flexible music muting provides the pilot with the ability to select the best mute mode.

The PAR100EX can be configured as stand alone, as COM 1, or as COM 2. This provides flexibility to allow the aircraft owner to decide if a second radio will be used and in what position.

An integrated Bluetooth[®] system allows the PAR100EX to interface with cellular telephones, giving the aircraft occupants ready access to their telephones. In addition, the Bluetooth[®] will stream music from compatible devices like iPads, and smart phones.

TECHNICAL SPECIFICATIONS	
Audio Panel:	
Dimensions	1.3" X 6.25" X 7.15"
Weight	1.34 lbs
Voltage	11 to 32 VDC
Maximum Current	2.5 Amps (5 Amp Pull CB)
Receiver Inputs	4 (Com1, Com2, Aux1, Aux2)
Unswitched Inputs	4
Transmitter Selections	3 (Com1, Com2, Com1/2)
Headphone Impedance/Pwr	50mW into 150 ohms < 1% THD
Intercom Positions	4 places
Music Inputs	2 (Standard Distribution and Music 1 all H/S
Muting Modes	4 (On, Off, Radio Mute, Intercom Mute)
Radio:	
Dimensions	3.4" X 2.5" X 4.7"
Weight	13 Ounces
Frequency Selection	On PAR100EX Display
Channels	760 Channels, 25 KHz Spacing 118.00-136.975Mhz
Frequency Control	PLL Frequency synthesis, Microprocessor controlled. Memory is stored in non-volatile EPROM
Power Output	5 Watts Nominal VSWR Tolerance <2:1
Receiver Sensitivity	-12dB SINAD @ 0.3µV
Receiver Selectivity	-70dB

WARRANTY
2-year exchange program, when installed by an authorized PS Engineering Dealer. After the warranty expires, a fixed repair fee will cover any repair. See Warranty Information in Installation manual for full details.

ORDERING INFORMATION **PART NO.**
PAR100EX Audio Panel, Aviation Radio and 4-place intercom050-760-0100

Intercoms to Go

When selecting an intercom, remember the ol' adage "you get what you pay for." The intercom is an integral part of your communication package, and cutting cost simply doesn't make sense. Consider that the installation costs are practically the same regardless of what intercom you select. While a stereo intercom may take just a bit longer than a mono intercom to install, most of the cost of your intercom system will be in installation labor.

FAA certification is also more of an issue than it has ever been before. Be sure to check the requirements of FAA approval for your particular installation.

PM500EX – Entry level intercom for low noise environments. Single volume and squelch system.

PM1000II – Most popular of our intercoms because of the individual volume and squelch controls, as well as moderate price.

PM1200 – Specialty intercom intended for use in open cockpit aircraft and extremely loud aircraft. Incorporates "AMP" and "IntelliVox®" circuits.

PM3000 – Hi-fi stereo intercom provides "karaoke mode" as well as four or six place capability.

PM500EX
PM1000II
PM1200
PM3000



Digital Recorder

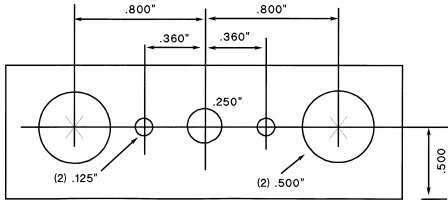
An optional, internal continuous loop digital recorder that records up to one minute of aircraft radio. Pressing the playback button replays the last message. Stores up to 16 messages or one minute. A great tool for confirming what was said, or if a radio call was for you.

All intercoms have a one year ProSupport warranty, when installed by an authorized PS Engineering dealer. Upon dealer request, an exchange unit will be shipped overnight at factory expense. A fixed repair fee applies after the warranty period. See Installation Manual for more details on our limited warranty.

Intercom Modes

Mode	Pilot Hears	Copilot Hears	Passenger Hears	Comments
Isolate	A/C Radio Pilot sidetone (only during radio xmt.)	Copilot Passengers Music #1	Passengers Copilot Music #1	This mode allows the pilot to communicate with the ground without the copilot or the passengers hearing the conversation. Copilot and passengers can continue to communicate with themselves and continue to listen to Music #1.
All	Pilot A/C Radio Copilot Passengers Music #1	Copilot A/C Radio Pilot Passengers Music #1	Passengers A/C Radio Pilot Copilot Music #1	This mode allows the pilot, copilot and passengers to communicate with each other. All will hear aircraft radio. Music is muted (lowered in level) during intercom or radio communications. Music and intercom are disabled during radio transmissions.
Crew	Pilot Copilot A/C Radio Music #1	Pilot Copilot A/C Radio Music #1	Passengers Music #2	While in the Crew mode, the pilot and copilot are on one channel while the passengers are on a separate channel. Additionally, the pilot and copilot will hear Music #1 while the passengers will hear music #2. Only the pilot and copilot will hear the aircraft radio.

PM500EX



For Experimental Aircraft Only

TECHNICAL SPECIFICATIONS

Approval Basis	None
Input power	12 - 28 Volts DC at < 70mA
Headphone Impedance	150-1000 Ohms Typical
Audio Distortion	<10% 75mW into 150 Ohms load
Total available output power	225mW
Aircraft Radio Impedance	1000 Ohms Typical
3 dB Mic Frequency Response	350 Hz-6000 Hz
3 dB Music Frequency Response	200 Hz-15 KHz
Net weight	8.5 ounces
Dimensions	0.90" H x 2.60" W x 4.85" D

The PM500EX is a 4-place, panel mount unit designed as a basic intercom. It is intended for low noise environments and non-certified aircraft. The pilot and passengers will have plenty of audio punch with multiple output amplifiers. It has both ISO and ALL intercom modes.

The volume control adjusts intercom volume and acts as the power switch. The single VOX (squelch) control adjusts the trip level for all microphones. When anyone speaks, the mic circuit opens. After a short delay, the circuit closes again, allowing the headset noise cancellation to be effective.

The PM500EX has an automatic fail-safe interconnect and pilot and copilot transmit functions. Only the person who presses their PTT will be heard over the radio.

An entertainment input provides the pilot and passengers the option to listen to music during flight. When the intercom is active, the music will mute allowing uninterrupted communications. Note: the music is not muted during radio reception.

Because the PM500EX is not FAA certified, this intercom is intended for use in non-certificated aircraft only.

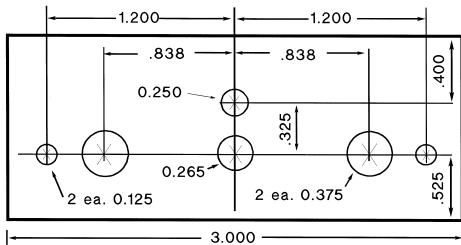
ORDERING INFORMATION

PART NO.

PM500EX Panel Mount (non-TSO) 11801
Four Channel Panel Mount Intercom

Jack Kit 11910
Includes four mic and headphone jacks, insulation washers and music input jack.

PM1000II



TECHNICAL SPECIFICATIONS

FAA TSO	TSO C50c
Input power	13.8 - 27.5 Volts DC
Current Drain	<250 mA (Externally fused at 1 Amp)
Headphone Impedance	150-1000 ohms typical
Audio Output	75 mW into 150 ohm load <10% THD
±3 dB Mic Frequency Response	350 Hz - 6000 Hz
±3 dB Music Frequency Response	200 Hz to 15 kHz
Unit weight	12 Ounces (0.342 kg)
Dimensions	1.25" H x 2.60" W x 5.50" D

The PM1000II is a 4-place panel mount intercom with optional CREW function. Individual volume and squelch (VOX) controls for pilot and copilot helps optimize performance. The passenger's VOX level is set by the copilot's controls.

The standard PM1000II (11922) (expandable to 10 places) has Pilot Isolate (ISO) and ALL modes, while the PM1000II (11920) has CREW mode.

With multiple VOX circuits, unwanted cabin noise is reduced from the intercom, because fewer mics are activated at any one time. It also provides the ability to independently adjust the trip levels to account for dissimilar mics and voices.

It's easy to balance between the intercom and radio audio. A 2-color LED shows green while power is on and turns red during radio transmissions, which also acts as a stuck mic indicator.

And enjoy mono music input with our SoftMute™ circuit, never miss a radio call while enjoying your favorite tunes.

ORDERING INFORMATION

PART NO.

PM1000II 4-Place Intercom, FAA-TSO 11922
4-place panel mount intercom with Isolate and all modes, single music input. Installation hardware includes four sets of headset jacks, a music jack and reversible (horizontal and vertical) metal mounting plate.
Same as above with 1-minute digital recorder (non-TSO)..... 11906

PM1000II 4-Place Intercom with Crew, FAA-TSO 11920
4-place panel mount intercom with Isolate, Crew and all modes, dual music input. Installation hardware includes six sets of headset jacks, two music jacks and reversible (horizontal and vertical) metal mounting plate.
Same as above with 1-minute digital recorder (non-TSO)..... 11908

With experience in cockpits such as the P-51, PV-2, B-17, T-6, T-28, Pitts S2B, Stearmans, and experimental aircraft, we know that these types of cockpits can be an almost impossible place to communicate.

That's why we invented AMP™ (Active Microphone Processor). This electronic filtering system actually strips out a large portion of the noise. Coupled with our IntelliVox®, the PM1200 clearly increases the intelligibility in an otherwise impossible environment.

With a powerful output amplifier, the PM1200 packs a whopping 120mW of audio punch per headset (28 VDC systems). This allows pilots the option of wearing earplugs under headsets or helmet.

For pilots who prefer the Push-To-Talk (PTT) type of intercom (ICS), the PM1200 can be switched from IntelliVox control to PTT-ICS operation by pressing the copilot volume knob. To toggle back into IntelliVox® mode, simply press the copilot volume control knob again.

The PM1200 has the ISO and ALL intercom modes, and can be purchased in the standard panel mount configuration or purchased in a blind mount version, allowing vintage aircraft owners to keep their avionics suite in original condition.

ORDERING INFORMATION	PART NO.
PM1200 2-place high performance intercom (TSO-Pending).....	11960
With AMP™ and IntelliVox®, specifically designed for high noise environment. Includes jack kit.	
PM1200 for blind mounting (TSO-Pending)	11961
Designed for remote mount, to keep classic panels looking original. Includes jack kit.	

The FAA-TSO approved PM3000 brings new heights to audio performance, at a reachable price. With a simplified interface, it clearly outperforms more complicated competitors.

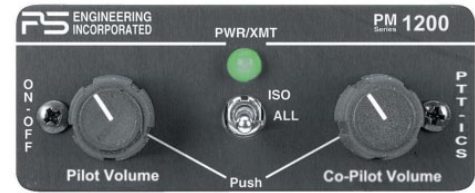
The PM3000 can be configured to meet almost any general aviation aircraft requirement. The 4-place PM3000 (p/n 11931A) provides both ISO and ALL modes and music input, while the 6-place version (p/n 11932) adds CREW mode and provides two music inputs. All music inputs have our Softmute™ circuit along with front panel selectable Karaoke mode.

PM3000 earned the motto: "Set it-forget it, it is the most forgettable intercom you'll ever use." Constant squelch adjustments are eliminated with PS Engineering's unsurpassed VOX circuit design. The PM3000's single squelch knob controls multiple VOX circuits. This provides simplified operation, and makes for a surprisingly quiet intercom.

Both pilot and copilot have transmit capability, with Only the person who presses the PTT being heard over the radio. A 2-color LED shows green when on and red during transmissions.

ORDERING INFORMATION	PART NO.
PM3000 4-Place Stereo Intercom, FAA-TSO.....	P/N 11931A
Four-place panel mount intercom with Isolate and all modes, with a single differential music input, two unswitched inputs and dimable LED. Installation hardware includes four sets of headset jacks, a music jack and reversible (horizontal and vertical) metal mounting plate.	
Same as above with 1-minute digital recorder (non-TSO).....	P/N 11933
PM3000 6-Place Stereo Intercom with Crew, FAA-TSO.....	P/N 11932
Six-place panel mount intercom with Isolate, Crew and all modes, dual music input. Installation hardware includes six sets of headset jacks, two music jack and reversible (horizontal and vertical) metal mounting plate.	
Same as above with 1-minute digital recorder (non-TSO).....	P/N 11934

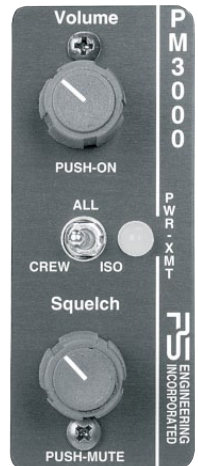
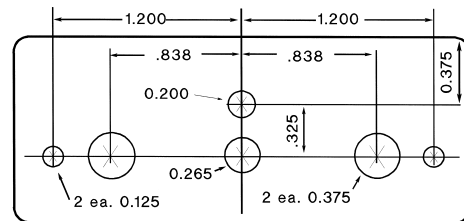
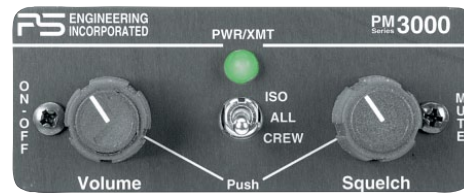
PM1200



TECHNICAL SPECIFICATIONS

Approval Basis	None
Input power	13.8 - 27.5 Volts DC
Current Drain	< 250 mA (Externally fused at 1 Amp)
Output	120 mW into 150 Ω @ 27.5 VDC 70 mW @ 13.75 VDC
Headphone Impedance	150-1000 ohms (typical)
Aircraft Radio Impedance	500-1000 (typical)
3 dB Music Frequency Response	200 Hz to 15 kHz
Unit weight	12 Ounces (0.342 kg)
Dimensions	1.25" H x 3.00" W x 5.80" D
Temperature	-20°C to +55°C

PM3000



TECHNICAL SPECIFICATIONS

Approval Basis	TSO C50c
Input power	12-28 VDC, Current Drain: < 250 mA
Headphone Impedance	150-1000 Ω Typical
Audio Distortion	<10%THD @150 mW into 150 Ω (Typical <1% THD at normal level)
Aircraft Radio Impedance	510 Ω
+3 dB Microphone Freq. Response	300 Hz - 6000 Hz
+3 dB Music Freq. Response	200 Hz - 15Khz
Weight	12 Oz.
Dimensions	1.25" H X 3.00" W X 5.50" D
FAA-TSO C50c	RTCA/DO-214, DO160C A1D1/CA(MN)XXXXXXBBBBTBKXXX

IN-FLIGHT ENTERTAINMENT



PXE7300 PAV80

Affordable Audio/Video Systems

Until PS Engineering, Inc. ventured into the In-Flight Entertainment (IFE) market place, very few systems, were either designed specifically for single/twin/turboprop aircraft, or they were just plain too expensive.

PXE7300 – This system adds a built-in AM/FM stereo receiver. Includes PS Engineering, Inc.'s unique internally mounted antenna.

PAV80 – This multi-tasking complete entertainment system includes the PXE7300 capability plus the added dimension of DVD video. Includes display and remote control.

PXE7300

CHECKLIST OF FEATURES:

- Nine preset channels
- Speed search function and 9 Preset stations
- Data display with high contrast LEDs
- Output compatible for use with intercoms or audio panels
- Plays CD, MP3, MP3pro, CD-R and CD-RW
- AM/FM Stereo radio receiver
- No additional antenna required, internally mounted antenna included

TECHNICAL SPECIFICATIONS

Approval Basis	FAA-STC-PMA
Certification Documents	RTCA DO-160D, DO-178B, DO-214
Power Required	11-33 VDC, 3.0 A
Power Consumption	650mA typ. 1A peak
Audio Power Out	7.5 VRMS into 20KΩ
Auxiliary Audio Summing	4 sources , ±3dB, 300Hz-6,000Hz
Audio Frequency Response	±3dB, 300Hz-6,000Hz
Entertainment Frequency Response	±3dB, 20Hz-18,000 Hz
Weight	2.4 lb.
Dimensions	6.25" W x 1.3" H x 7.70"
Environmental Conditions	DO-160D A1D1/CA(MN)XXXXXXBBBT BKXX
Temperature Range	-20 C to +55, with transient operation at +70 C.
Altitude	25,000 feet, unpressurized
Software Criticality	DO-178 Level E
Hardware Criticality	DO-254 Level E
FM Receiver	87.7 – 107.9 MHz
AM Receiver	530 – 1710 kHz Superhetrodyne



The PXE7300 is an affordable In-Flight Entertainment (IFE) system for the owner-flown market. This single unit combines three of the most requested entertainment media types, CD, MP3 and AM/FM radio, in a package designed from the knobs to the connector for certified aircraft use.

The AM/FM radio provides the pilot with the ability to select his favorite radio stations while airborne. The scan function provides sensitivity adjustment to get the most clear stations.

The built-in CD/MP3 player allows up to 20 hours of your favorite music, allowing the pilot to create his own playlist. The PXE7300 will display the track, artist and title information, and the easy access to track selection means maximum enjoyment without distraction.

Designed as an aviation system from the ground up, the PXE7300 meets tough international standards for environmental conditions, as well as audio performance. FAA for Installation certification is under the STC-PMA approval.

ORDERING INFORMATION

PART NO.

PXE7300 IFE System with AM/FM Radio 11970
Option 2 European Tuning

PAV80

Now you can have complete multimedia entertainment at your fingertips. The PAV80 system incorporates AM/FM radio, CD/MP3/MP3Pro for music, plus DVD video. The PAV80 system is a panel mounted player unit, which contains



the DVD/CD mechanism, as well as the AM/FM radio. A 5.6-inch Liquid Crystal Display (LCD) video terminal provides full color pictures. Up to four displays can be used, using an optional video distribution amplifier.

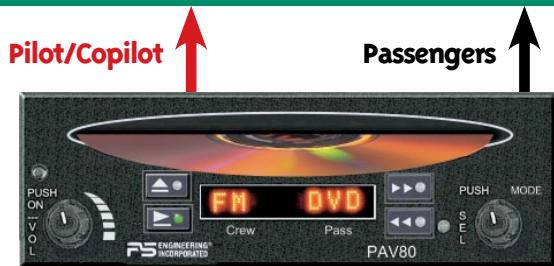
One of the most intriguing features of the PAV80 is its multifunction capability. When coupled to an audio control system, such as the PMA7000B or PMA8000 series, the pilot and copilot can listen to the radio, while the DVD movie audio is provided to the passengers or visa versa. This feature gives the aircraft occupant's unprecedented control over their audio entertainment. Music in front, movies in back, and a full intercom conversation, with aircraft radio muting of the entertainment as desired (with compatible system).

By taking full advantage of the independent inputs designed into our audio panels, we have tailored the IFE outputs the way today's aircraft are used in cross-country travel. The PAV80 was designed specifically as a general aviation entertainment system. It was designed by pilots for pilots, and incorporates the most requested features in an IFE system.

CHECKLIST OF FEATURES:

- 2-inch tall panel-mounted with front panel alphanumeric display
- Standard NTSC and S-VIDEO output compatible with most displays
- Built-in 1 amp 12 volt power supply to power PVT801 external display
- Up to 4 video displays from one disc (optional distribution amplifier)
- Two Independent audio outputs (DVD and radio)
- Remote Control for video and secondary audio functions
- AM/FM Stereo radio receiver
- Backward compatible with PXE7300
- Plays DVD, CD, MP3, MP3Pro, CD-R and CD-RW disks
- Video auxiliary input for games, etc. on display
- No antenna needed outside aircraft, internal antenna supplied
- Vibration-resistant DVD player
- No RFI emissions to interfere with communications or other avionics
- Audio output compatible with most intercoms and audio systems
- Worldwide DVD regions, NTSC or PAL available

Audio Panel



MUSIC #1	MUSIC #2
DVD	DVD
Radio	DVD
DVD	Radio
A-AUX	DVD
DVD	V-AUX
OFF	DVD



ORDERING INFORMATION PART NO.

PAV80 DVD-IFE includes one PVT801 and remote control	PAV80
5.6" LCD Display	PVT801
Distribution Amplifier capable of driving four PVT801s.....	PVA802
Euro Version	PAV80E

TECHNICAL SPECIFICATIONS

Approval Basis	FAA STC PMA
Related Documents	RTCA/DO-214 RTCA/DO-160D RTCA/DO-178B (Criticality Level E) RTCA/DO-254 (Criticality Level E) SAE AS8034
Power Required	11 to 33 VDC, 3 Amp
Power Consumed	2A typical
Audio Output	38 mW each channel, no clipping <1% THD
Music Freq. Response, 3 dB	± 3 dB, 14 Hz -22 kHz
Video Output	NTSC Composite Video Signal
Weight (With Rack & Connectors)	2.8 lb. (1.27 kg)
Dimensions	Height 2.0 in. (5.1 cm) Width 6.25 in. (15.9 cm) Depth 7.7 in. (19.8 cm)
Environmental Qualifications	B1BABRSXXXXXXZBBBXXMXXXXXX
Temperature Range	Operating -15° C to 55° C Storage -40° C to 85° C
Altitude	Up to 25,000 feet
FM receiver	North America AM: 530 - 1710 kHz, 10 kHz steps FM: 87.7 - 107.9 MHz, 200 kHz steps European (—0200) AM: 531 - 1602kHz, 9kHz steps FM: 87.5 - 107.9MHz, 100kHz steps
S-video available	



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Specifications and information subject to change without notice.