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PMA450C

Audio Selector Panel

With

Multi-Bluetooth® Connectivity
Marker Beacon Receiver
IntelliVox® Intercom, IntelliAudio®

and

USB-C Charging System

Pilot's Guide
and
Operation Manual

202-450-0800 Rev. 3, August 2024
Serial Number B45C322 & above

Covered under one or more of the following US Patents
4,941,187; 5,751,817; 5,903,227; 6,160,496; 6,493,450;
FAA-TSO C139a, C35d, C71

Flying never sounded so good ®

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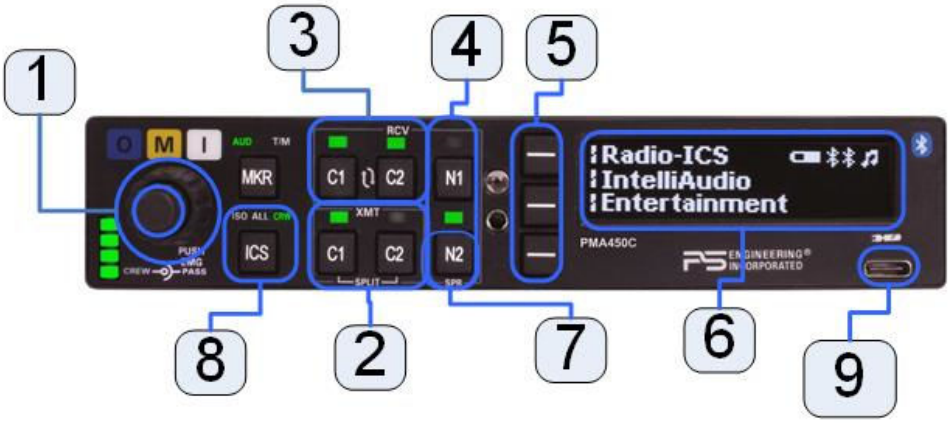
Welcome to the PS Engineering PMA450C, Audio Selector Panel/Marker Beacon Receiver/Intercom System. This Pilot Guide will introduce you to the PMA450C and all of its features and functions. Although the PMA450C is one of the most capable audio panels ever made, the controls and display make it the easiest to operate. Please read this guide carefully before using the equipment so that you can take full advantage of its capabilities.

PMA450C Operating Controls



Operating Controls

Let's take a look at the front panel, what we call the Human-Machine Interface, but you can call it buttons and knobs.

Volume (1)

Starting from the left is Volume Control and on/off (or Emergency—Fail Safe). Pushing the knob turns the PMA450C off or on. It will come on when the avionics master is turned on. When the unit is turned off, the fail safe circuit will connect your pilot headset directly to COM 1. That way, you will never be "No Radio" (NORDO) because of an audio panel problem.

These knobs control the volume for the intercom. The larger knob controls the intercom volume for the passengers, and the small knob in the middle controls the volume for the pilot and copilot positions.

You will see that the green bars to the left of the knobs will light up when you turn the knobs, showing you the relative volume, so you don't have to guess the volume your passengers hear, or see them wince when you talk.

These volume controls do not affect the radio or music volume—unless you want them to. But we'll cover that later.

Com Selector, Transmit (2) and Receive (3)

There are four buttons that control the radios you will transmit and receive. The first thing to know is that you will never find yourself transmitting on a

radio that you aren't listening to. The receiver selection is automatic.

The bottom row (2)(XMT) selects which radio you will transmit on, C1 (COM 1) or C2 (COM 2). When you push the button to select the transmitter, the XMT and RCV indicators turn green.

When you want to transmit on COM 2, just push the C2 XMT button, and both indicators will switch over.

If you want to listen to COM 2 while talking and listening on COM 1. Push the C2 (COM 2) RCV button (3). Its green indicator will light.

Here's a hint. The PMA450C will remember when you were listening to a radio only, and keep listening as you select it for transmit, and then switch back when the XMT is deselected.

Menu Display (6) & Line Select keys (5)

The PMA450C has an Organic Light Emitting Diode (OLED) display and three line-select buttons to access the advanced functionality. Press the line select button to select a specific item on each menu. Items are also toggled on or off by pressing the line select button.

While you are navigating the menus, the screen automatically returns to the "home" screen after a period of inactivity. This delay time is configurable for between 1 and 30 seconds, on the initialization menu. A long press (>1 second) will back-up one menu level.

If you see a vertical **bar** next to a button, it indicates the button can perform a function on that menu screen.

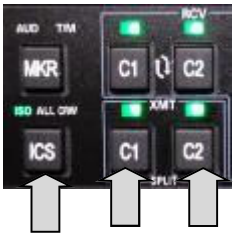
A **split bar** on a line indicates that a *secondary* function is available when that button is held for more than 1 second. For example, on the home screen, this function is:

·Pilot Music on/off is a long press of the middle (Entertainment) button

Split Mode

In the SPLIT mode, the pilot position transmits and receives on COM 1, and the copilot can transmit and receive on COM 2, independently.

Pressing the C1 and C2 XMT buttons together (above the └SPLIT┘ legend), puts the PMA450C into SPLIT com mode.



⇒ The intercom is deactivated automatically when you enter SPLIT mode.

⇒ If you want to talk to the copilot, just push the ICS button until the green LED lights up CRW to turn the intercom on between pilot and copilot.

⇒ Intercom between crew and passengers is not possible in split mode

⇒ Swap Mode is not possible in Split Mode
The spatial component of IntelliAudio ® is defeated in split mode.

To exit SPLIT mode, simply press either the C1 or C2 XMT buttons.

Swap Mode (Switch from Com 1 to Com 2 remotely)

With optionally installed remote swap switch, you can change from the current Com transceiver to the other by pressing this button.

The Swap switch can also serves as a remote intercom mode selector. By holding the swap button for more than 1 second, the ICS mode will change from ISO-ALL-CRW-ISO, etc. each time the button is pressed and held.

IntelliAudio® Dimensional Audio

To activate IntelliAudio, press the lowest line select button, **IntelliAudio ,** then the lower select **IntelliAudio off→on**.

This button offers four modes, **OFF**, **ON**, **AUTO**, and **Monitor**.

If *both* radios are not already selected for reception, the other receiver will be selected for you automatically when IntelliAudio is on.

With IntelliAudio on, radio communication audio signals are digitally processed to "appear" in a different location to the pilot and copilot positions, specifically 10 o'clock for COM 1 and 2 o'clock for COM 2. This improve speech comprehension by locating it in a manner easily differentiated by the brain.

Intercom and other audio is *not* spatially processed, only VHF COM audio for the *pilot and copilot*. Stereo headphones, in stereo mode, are **required**

NOTE: In order for IntelliAudio to function properly, STEREO Headphones must be used, and in the STEREO mode.
IntelliAudio should be OFF unless BOTH pilot and copilot have Stereo headsets in Stereo mode.
ONLY the pilot and copilot headsets receive IntelliAudio

IntelliAudio: Auto

In AUTO mode, IntelliAudio reverts to normal (straight ahead) when one of the radios is quiet for one second. Separation will return as soon as both radios are active. AUTO mode is only active when C1 & C2 are both selected.

Com Monitor Mode

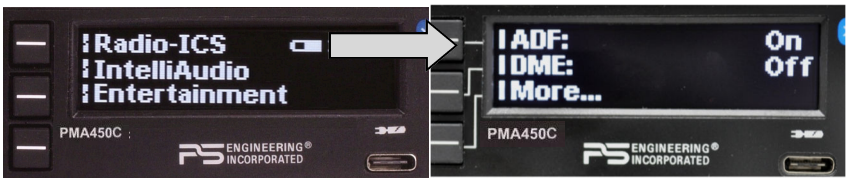
The next function in this menu is the Monitor function, which allows a secondary com radio audio to be muted by the primary radio (selected for trans-

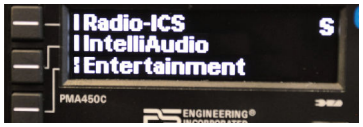
mit). This allows you to get weather information while the ATC communication will instantly mute the weather broadcast.

To toggle the Monitor mode on and off, click the **IntelliAudio** button until **MONITOR** appears**.** The radio indicator selected as *monitored* will blink.

Navaid Selection (4)

Your VHF Navigation receiver audio can be selected directly from the front panel with the N1 and N2 (VHF Navigation receiver 1 and 2) buttons. The selected source is indicated by a green LED.





Additional navigation aid or other audio sources can be selected using the OLED menus.

Press the top line select **RADIO-ICS** and select the desired audio source.

When one of the menu–selected navaid audio sources is selected, the letter "**S**" appears on the main screen as a reminder.

NOTE: Switched Inputs can be renamed at the configuration set up. See page 17 for more information.

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

Speaker Amplifier (7)

If you want to listen to your radios over the cockpit speaker, press and hold the **N2** button (**SPR** is labeled under it) for 1 second or until **SPR** appears in the display.

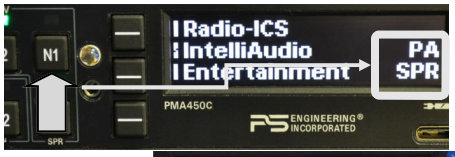
In "Split Mode," audio that the pilot hears will also be present in the speaker.

Unswitched audio will come through the speaker regardless of the speaker button position. *Use of a cell phone will mute the radio audio over the speaker.*

Public Address Function

To access PA function, press and hold the **N1** button for more than 1 second, until the display adds PA.

When the pilot is speaking on the PA through his microphone, all intercom except for the Pilot will be disabled for complete and uninterrupted announcements.



The pilot microphone will be heard on the speaker and headsets when the pilot PTT is used, and **PUBLIC ADDRESS** is displayed.

The copilot can continue to use the selected com radio while the pilot will be heard over the speaker.

To exit PA mode, push and hold the **N1** button again until **PA** is off or cycle power on the audio panel.

Marker Beacon Operation (9)

(050-450-0801 Only)

The Marker Beacon Receiver uses visual and audio indicators to alert you when you cross over an ILS Marker Beacon transmitter.

The Marker receiver is always on, Push the "**MKR**" button to hear the tones. **AUD** will light up green when the marker audio is on.

The Blue lamp, labeled "**O**", is the Outer Marker 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.

If you want to test the marker lights, press and hold the **MKR** button for 1 second, which turns on the indicator labeled "**T/M**" and illuminates all

three lamps simultaneously to assure the lamps (internal and external) are in working order. Releasing the button returns to the last sensitivity.

If you want to mute the audio over a marker station, pressing the **MKR** for one second causes the marker audio to mute for that beacon. The next beacon received will be heard.

Marker Beacon sensitivity can be changed from Low to High sensitivity by pressing and holding the MKR button until "**H**" appears in the display, indicating High sensitivity is activated. Hold the MKR button again to set to Low sensitivity.

Intercom Operation (8)

The PMA450C uses our patented *IntelliVox*® squelch control. It is completely automatic. Through individual signal processing, the ambient noise appearing in all six microphones is constantly being sampled. Non-voice signals are blocked. When someone speaks, only their microphone circuit opens, placing their voice on the intercom.

Since IntelliVox is designed to block continuous tones, people humming or whistling in monotone may be blocked after a few moments.

For consistent performance, any aircraft headset microphone **must** be placed within ¼-inch of your lips, preferably against them. (ref: *RTCA/DO-214A, 1.3.1.1 (a*)).

NOTE

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). It loves airplane noise! Therefore, it may not recognize speech and clip syllables in a quiet cabin, such as in the hangar, or without the engine running. This is normal.

If your cockpit is unusually loud or windy, PS Engineering recommends installation 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.

Intercom Volume Control (1)

The smaller inner volume control knob adjusts the loudness of the intercom for the pilot and copilot. It has no direct effect on selected radio levels, music input levels or passengers' volume level. Go to page 11 to see how to adjust the music volume.

The outer, larger volume control knob controls intercom volume for the passengers. It has no effect on radio or music levels. When you turn the volume

knobs, the green volume bar indicator will show the level of the changing intercom volume.

Adjust the radios (at the radio itself) and intercom volume for a comfortable listening level.

Mono headsets in Stereo Installation

Not recommended, because the benefit of IntelliAudio® is lost. However, if desired, the PMA450C can be installed monaurally by using the LEFT audio connections only (left side contains Fail-Safe audio). Do NOT short left and right together.

NOTE: Mono headsets that short the tip and ring (i.e. older models) will introduce some audio distortion when used. Modern, stereo headsets are recommended in ALL positions. Do not use IntelliAudio® unless both pilot and copilot have stereo headsets.

Intercom Modes (8)

The **ICS** button cycles through the frequently used intercom modes, from left to right, then right to left as: **ISO**, **ALL**, **CRW** and **CRW**, **ALL**, **ISO**. The green indicator shows which mode is currently active.

ISO (Pilot Isolate): The pilot is isolated from the intercom and connected only to the aircraft radio system. Pilot will hear the aircraft radio reception (and sidetone during radio transmissions). Copilot and passengers can talk together but neither will hear aircraft radio receptions or pilot transmissions. The pilot can hear music if desired.

ALL: Everybody hears the aircraft radio and intercom. Crew and passengers will hear selected Music. During any radio or intercom communications, the music automatically mutes, and increases gradually back to the original level when it is quiet. The music muting can be triggered by radio only, radio and intercom, or nothing, for a "Karaoke" mode.

CRW (CREW): Pilot and copilot can talk to each other and have exclusive access to the aircraft radios. They may also listen to Music sources. Passengers can continue to communicate with themselves without interrupting the crew and may listen to music as configured.

Alternate Intercom and Copilot as Passenger (CPX) Modes

What if the folks in back do not want to listen to the radio chatter, but want to converse with the pilot and copilot positions? That is where our Alternate Intercom Mode comes in handy. This mode allows intercom conversations

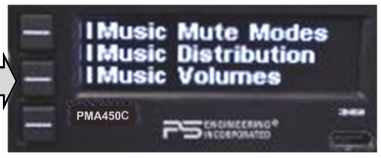
between crew and passengers, without affecting the crew's radio communications. The passengers do not hear the aircraft radio audio, and passengers microphones are blocked from the crew while the radio is active. Passengers can still talk to each other while the crew is listening to the radio.

To activate the Alternate Intercom Mode, press **RADIO-ICS→ Intercom**: to switch between Standard, **Alternate** modes and CP Pax modes.

Okay, now the person in the copilot seat does not wish to interact with the aircraft operation. When you configure the PMA450C as "Copilot as Passenger," the intercom station wired as copilot will be a passenger only.

To enable the Copilot as PAX Mode, press **RADIO-ICS→ Intercom**: to switch between Standard, Alternate and **CP Pax** modes. This is indicated by **CPX** on the display.

The position will have intercom with the pilot, except when there is radio traffic, and never hear any radio audio. The intercom microphone to the pilot position will not be heard while there is radio audio present. Copilot seat becomes "front" and passenger becomes "rear" for the Music distribution menu. In this configuration, CREW mode cannot be activated. CPX shows on the home screen to remind you that the copilot position is now functioning as a passenger position.



Both of these modes will reset to normal at power off, unless you change the option in the user setup menu (see page 18).

Music Control, Distribution and Muting

Push and hold the middle line select button on the main menu to toggle the music on or off for the pilot. When music is active for the pilot, a music icon **(♫)** appears in the display. If you don't hear your music in the pilot seat, look for that icon (also check the volume level).

The PMA450C has two independent music inputs at the rear connector, *and* the ability to receive streaming music from the two internal Bluetooth modules depending on how you have configured the audio panel.

The Music 1, Music 2, Bluetooth or a combination of inputs can be selectively delivered to the pilot, copilot and/or passengers using the music

distribution menu.

Press **Entertainment** → **Music Distribution**→ and select desired combination.

If you do not have a Bluetooth music device paired to the audio panel, the Bluetooth option will not appear.

Because of the unprecedented flexibility of the PMA450C which has two (2) Bluetooth modules built-in, BT1 should be connected to a phone while BT2 must be connected to an iPad or other music streamers. (NOTE: although phones can be connected to BT2, they can only act as streaming devices for music, not calls. Shown above, the pilot is connected to their phone (BT1) while the copilot is connected to the phone and to BT 2, which can send audio from Foreflight or music. BT2 can not be connected to a phone for telephone use, only entertainment.

NOTE: **BT2** should be used for applications that provide voice announcements or checklists to avoid clipping of words.

NOTE:

All music devices should be turned off for takeoff, landing, or any critical phase of flight. FAA Regulation 14 CFR 91.21 restricts the use of portable electronic devices.

§91.21 "(a) Except as provided in paragraph (b) of this section, no person may operate, nor may any operator or pilot in command of an aircraft allow the operation of, any portable electronic device on any of the following U.S.-registered civil aircraft. . .

"(b)(5) Any other portable electronic device that the operator of the aircraft has determined will not cause interference with the navigation or communication system of the aircraft on which it is to be used."

You can refer to Advisory Circular 91.21-1C for more information, at www.faa.gov.

Music Muting

The PMA450C SoftMute™ circuit mutes the music whenever there is conversation on the radio, the intercom, or both, depending on the "Mute" mode you have selected. When that conversation stops, the music returns to the previous level over a second or so.

The mute mode functions are controlled through Music Mute Menu which has **three** modes for music inputs, **ALL**, **Mute Off** & **Radio** mute.

- **ALL** – music **will** mute with *either* intercom *or* radio communication
- **Mute Off** – music will *not* mute except during outgoing radio transmissions.
- **Radio** – *Radio* will mute music, but intercom will **not** mute music.

The PMA450C defaults to *Mute*

ALL when turned on, unless Mute Recall mode is enabled in setup (See page 18).

In addition to the panel mute menu, a remote switch may be installed to allow the passengers local access to their Mute Off mode. When this switch is grounded, the menu choice is overridden.

Music Volume (1)

You can adjust the music volume for crew and passengers from the Entertainment menu of the PMA450C:

Press **Entertainment** → **Music Volumes** → set desired user's volume for using the small knob. The LED Volume bar and the numeric volume will show the volume level.

Music in Pilot ISO mode

When the isolate (ISO) mode is activated, the music for the pilot is automatically disabled. If desired, the pilot can elect to hear Bluetooth, Music #1 or #2, in the ISO mode by toggling the Entertainment line select with a long press or holding the Entertainment line-select button, while in the ISO mode.

Bluetooth® connections

The first thing to know is that the PMA450C has two Bluetooth Modules, (BT1 and BT2 by default). When you search from your Bluetooth-equipped phone or music source you will see BT1 and BT2 followed by the unit serial number (these can be renamed in the user settings menu. The last four digits are the unit serial number by default).

Pairing Bluetooth devices

The audio panel is discoverable, and will not require a PIN unless you set up that function in the user menu.

When Bluetooth is paired, Bluetooth icons and the battery status of a device is displayed in the upper right corner of the home display.

The picture at right shows the PMA450C paired for music/audio/phone input from two Bluetooth devices.

Once paired, the audio panel will accept streamed music and telephone calls from the music source and/or smartphone.

The PMA450C can be paired with up to eight individual devices, and will automatically reconnect with the first two it finds. When more than eight are paired, the PMA450C will drop a device to allow the new device to be added.

When the PMA450C is first powered on, an auto connect sequence attempts

to connect the BT to previously paired devices. During this period connection times may vary from 10 seconds to 1 minute. Although the PMA450C can store up to eight devices, we recommend limiting the number if practical. During start-up, the PMA450C will look for each previously paired device which may slow connection time.

Hint, if your old phone is not recognized by the PMA450C, you may need to reset from the Bluetooth menu.

Pairing separate music and telephone devices

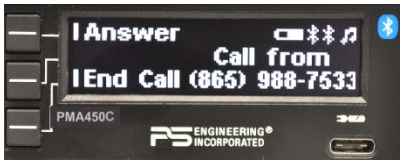
It is possible to use a different music source (iPad, iPod with Bluetooth adapter, Bluetooth enabled laptop, etc.) and telephone.

NOTE: A previously paired iOS Hands Free device may experience from one to several connect/disconnects sequences when the PMA450C is first powered on. This is normal and will result in the device remaining connected when the auto connect process is completed.

If two iOS devices are paired and connected to the PMA450C, and one of them does not auto connect on the next power cycle (perhaps it isn't in the airplane, or the Bluetooth is turned off), it will be ignored until it is reconnected manually.

Bluetooth® Telephone Mode

The PMA450C serves as a full duplex interface for telephone systems such as portable cellular phones with Bluetooth connectivity.



Warning:

United States FCC Regulations contained in 47 CFR § 22.925 currently contain prohibition on airborne operation of cellular telephones. "Cellular telephones installed in or carried aboard airplanes, balloons or any other type of aircraft must not be operated while such aircraft are airborne (not touching the ground). When any aircraft leaves the ground, all cellular telephones on board that aircraft must be turned off."

When the Bluetooth-enabled cell phone rings, the incoming call menu opens, showing caller ID (if provided), and you can answer by pushing the top line-select button.

The ICS button controls who is on the telephone.

In **ALL** intercom mode, all crew and passengers will be heard on the phone when they speak. Everybody will hear selected audio. Com audio is automatically heard in the headsets.

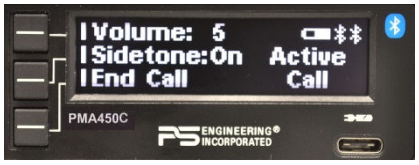
In **CREW** mode, the pilot and copilot are connected to the telephone. The pilot and copilot will have transmit capability on the other selected transceiver Com 1 or 2, simply by using their respective PTT switch.

In **ISO** intercom mode, when the PMA450C is in the **TEL** mode, the pilot position is in the "Phone Booth." Only the pilot will hear the telephone, and only he will be heard. There will not be telephone sidetone in ISO. The pilot

will also have access to Com 1 or 2, and will transmit on that radio using the PTT. All other selected audio is provided.

NOTE

PS Engineering does not guarantee compatibility with personal cellular telephones.



Cellular telephone sidetone

Some cell phones do provide sidetone, and when combined with audio panel sidetone audio distortion may occur. In PMA450C Telephone sidetone can be enabled or disabled on the Telephone menu which is active when a call is in progress.

Bluetooth Reset

If your Bluetooth devices have trouble connecting, it may be necessary to reset the Bluetooth Module. The PMA450C Bluetooth Reset function is accessible from the user setup menu. (See also User Setup Menu, page 18)

During the unit boot up process (while the version numbers appear on the screen), hold the lower line select button until the setup screen appears.

This places the unit into the "User Setup Mode→**Bluetooth→BT 1 Config**.", and allows resetting the Bluetooth Module.

When **Unpair All** is pushed, BT 1 is reset and ***ALL*** Bluetooth devices are erased from BT1. To reset BT 2, select the BT 2 Config and follow the instructions as BT 1 reset. **In each case you will need to "forget" the PMA450C in your mobile device**

Wired telephone/Satcom mode

The PMA450C can accommodate a wired telephone input as well as a Bluetooth connection. However, only one can be active at a time. The Bluetooth icons are absent from the wired menu.

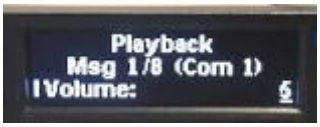
The wired telephone screen menu is activated when audio is detected from the phone. Sidetone and telephone volume can be controlled from this menu. The telephone audio distribution is the same as Bluetooth, above.

This menu will switch off 25 seconds after the *incoming* conversation ends, or press End Call.

NOTE: The PMA450C does NOT answer or hang up the wired phone from this menu.

Recorder and playback (3)

The PMA450C has an internal recorder. This digital system stores the last incoming audio from the radio you have selected for transmit. It can store as many as 8 incoming messages, and up to 45 seconds of audio. The pilot and copilot hear the playback.



The radio recording is automatic.

To play back the last recorded message, press and hold the COM Receive pushbutton associated with the selected radio transmitter. You can either wait for the message to finish playing before accessing the prior message, or cancel the current playback and step backward. To cancel the playback, press and hold the COM receive button for two seconds. The next time the button is pressed for one second, the next earlier message is received.

The screen displays a status message to indicate that playback is in progress. The playback will stop whenever there is more incoming selected COM audio, and the message can be replayed from the beginning by pressing the selected COM receive button again.

USB Charging Port (10)

The PMA450C contains a USB-C charging port that is capable of providing 5VDC, 3 amps of current (15W) to charge the batteries in smart phones and tablets used as Personal Electronic Devices. This is NOT a data transfer jack.

User Setup menus

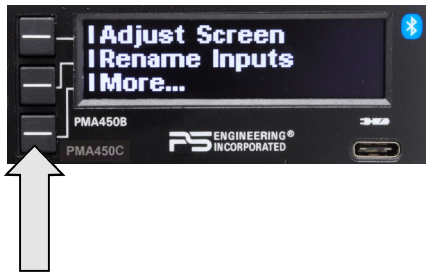
The PMA450C has many user adjustable functions accessible from a setup menu.

During the unit boot up process, press the lower line select button until the setup screen appears. This will place the unit into the “User Configurable Mode- home screen”. This allows adjustment for:

- Adjust Screen (OLED) & Timeout
- Rename Switched Inputs
- Bluetooth functions
- Adjust radio volumes
- Recall Mute Modes
- Recall Alternate and Copilot as passenger Intercom Modes

Cycle the PMA450C power to exit setup mode.

OLED Screen Adjustment



The first items are adjustments to the display, allowing the installer or user to tailor the display to suit the cockpit conditions.

There are two functions: Display Brightness & Display Timeout.

The display will vary in real time while adjustments are made. LED bar & numeric indication will vary.

To change the display:

Press the line select for the desired item

Turn the small, inner knob to change the brightness as desired.

Cycle the PMA450C power to exit setup screen.

Display Timeout

This is a feature that allows the user to adjust how quickly the screen menus timeout (revert to main menu) and can be configured from 1 second to 30 seconds by turning the inner knob.

For a user who is unfamiliar with the product, this will give them enough time to learn the system. After becoming more familiar, the user can speed up the menu screen timeout as desired. A long press of the line select will also back up a menu level.

Cycle the PMA450C power to exit setup screen.

Display Refresh Rate (S/N B45C322 & above)

The rate at which the OLED display refreshes or redraws can be adjusted to accommodate the frame rates of various video recorders, in case you want to video the instrument panel, without missing pixels.

From the Adjust Screen menu, adjust the Refresh Rate while watching the screen from your video camera, and select the rate that will provide the best picture quality. The rate is adjustable from 63Hz to 292Hz, the default is 116Hz.

This is available starting with version (v 1.017) shown on startup page.

Rename “Switched” Inputs

The system is factory set to default as ADF, DME as shown.

The two inputs are from top to bottom:

- Switched input #1 J1, Pin 7 with respect to (wrt) Pin 8 (Default ADF)
- Switched input #2 J1, Pin 21 wrt Pin 22 (Default DME) which is combined with input #3 J1, Pin 23 wrt Pin 43

You can to rename these inputs. There is a maximum 9 letters per line,

and *A — Z, a — z and 0 – 9 are* available.

- Press the line select for desired input.
- Turn the large outer knob to select the letter to change.
- Turn the small, inner knob to increment or decrement the letter.
- You can clear the whole line quickly by turning the outer knob to move the cursor all the way to the right until the line clears.

Cycle the PMA450C power to exit setup mode.

Bluetooth Setup (BT1 and BT2)

There are two Bluetooth modules in the PMA450C. There are three Bluetooth 1 functions that can be changed in the user setup screen, Unpair All, Pair PIN code, and device ID.

Unpair All (Bluetooth Reset) When this is pushed, all Bluetooth devices are erased from BT1, and can then be added back as desired. This is useful in some cases where the unit or operator lose track of the devices paired, and cannot get them to connect.

PIN: The 4 digit pass code can be changed to any number desired. The default is 0000. This is useful if the owner wants to restrict access to the audio panel Bluetooth functions.

Some phones will not pair if a Personal Identification Number (PIN) is required. To disable the PIN Enter configuration menu, select Bluetooth. Select PIN code for editing. Press PIN button one more time. “Bluetooth Reset” will appear on screen. When the menu returns, the PIN code will report “Disabled”.

To re- enable the PIN code for a different device, press the PIN button. “Bluetooth Reset” will appear on screen. When the menu returns, the last stored PIN code will be shown.

ID: As shipped from the factory, the modules are labeled as BT 1 and BT 2, with the last four numbers of the serial number.

The PMA450C can be renamed using this mode to show up on the devices with a personalized identifier.

Recall Options

As shipped by the factory, the PMA450C automatically defaults to “**Mute On**.” This ensures that the music will always be muted until intentionally changed by the pilot. The PMA450C defaults to Standard Intercom from Alternate Intercom on power up.

Owners who want the PMA450C to remember the last music mute state can set the “**Recall Mute.**”

The intercom mode options Standard, Alternate Intercom and CPX mode set can “**Recall ICS**” in the user setup menu.

Volume Adjustments

The Marker Beacon receiver Switched receiver and speaker audio volume can be adjusted from the menu.

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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. If the unit is being installed by a non-certified individual in an experimental aircraft, 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 two (2) years from the date of retail sale by authorized PS Engineering dealer. During the first **twelve (12) months** of the two-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 **twelve (12) months** of the two-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 two-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.

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