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**Honeywell**

# **KMA 28B**

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Audio Selector Panel with Marker Beacon Receiver  
High-fidelity Stereo Intercom  
**System Installation and Operation Manual**

FAA-Approved TSO C50c, C35d

JAA-Approved JTSO C50c, 2C35d

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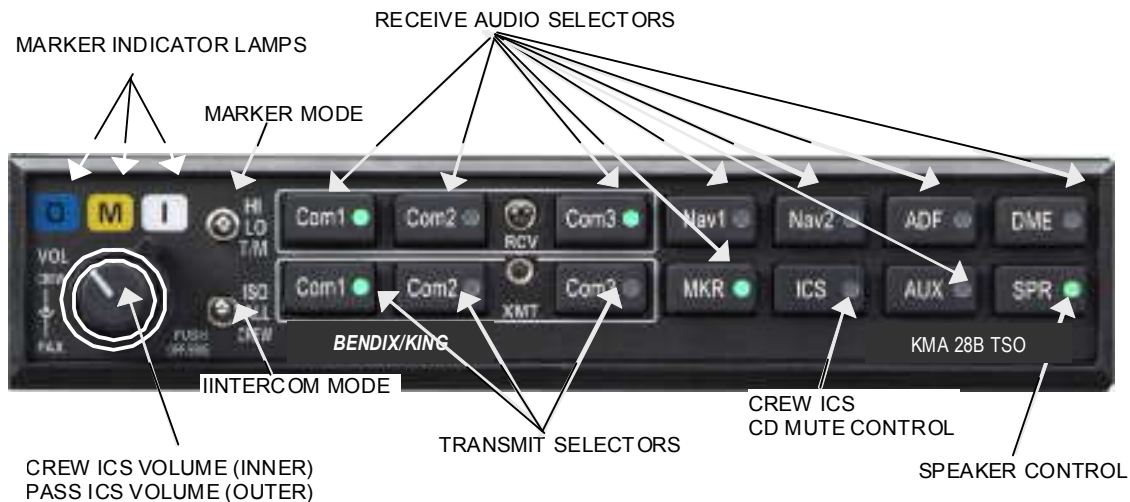
## Section III OPERATION

### GENERAL INFORMATION

#### 3.1 SCOPE

This section provides detailed operating instructions for the Honeywell KMA 28B, Audio Selector Panel/Intercom Systems. Please read it carefully before using the equipment so that you can take full advantage of its capabilities.

This section is divided into four sections covering the basic operating areas of the KMA 28B systems. They are Audio Selector, Transceiver Selection, Intercom, and Marker Beacon Receiver (Marker version only).



**Figure 3-1 KMA 28B controls**

#### 3.2 Power Switch (EMG-Fail Safe Operation)

Unit power is turned on and off by pushing the volume knob. In the OFF or "EMG" position, the pilot is connected directly to Com 1. This allows communication capability regardless of unit condition. Any time power is removed or turned OFF, the audio selector will be placed in the fail-safe mode.

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

#### 3.3 Microphone (XMT) Selection

There are six pushbuttons associated with the communications transceivers. The lower buttons control which transceiver is selected for transmit.

The KMA 28B gives priority to the pilot's PTT. If the copilot is transmitting, and the pilot presses his PTT, the pilot's microphone will be heard over the selected com transmitter.

The KMA 28B-Series has an automatic selector mode. Audio from the selected transceiver is automatically heard in the headsets and speaker (if selected). You can check this function by switching from COM 1 to COM 2 and watch the selected audio light on the selector change from COM 1 to COM 2. This ensures the pilot will *always* hear the audio from the transceiver he is transmitting on.

When switching from COM 1 to COM 2, while COM 2 audio had been selected, Com 1 audio will continue to be heard. This eliminates the pilot having to switch Com 1 audio back on, if desired.

When switching from COM 1 to COM 2 while Com 2 has NOT been selected, Com 1 audio will be switched off. In essence, switching the mic selector will not effect the selection of Com receiver audio.

When the duplex enable, or TELEPHONE mode is implemented during installation, Com 3 becomes the "TEL" position. This is the pilot's "hook" switch, when the system is interfaced to an appropriate approved wireless telecommunication system, such as the AirCell system. Selecting Com 3 for transmit places the pilot microphone and headphones on the cell phone. The pilot PTT will switch the pilot mic to the other selected com transceiver, and allow continued aircraft communications to continue.

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

NOTE: Placing the mic selector switch in the COM 3 –TEL– mode will disable pilot and copilot intercom, as the intercom circuit is transferred to the telephone use. In crew or ISO mode, placing the switch in TEL mode removes the passengers' access to the telephone.

### **3.3.1 Swap Mode (Switch from Com 1 to Com 2 remotely)**

With a yoke mounted, 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. .

## **3.4 Audio Selector**

Receiver audio is selected through seven momentary, push-button, backlit switches. You will always hear the audio from the transceiver that is selected for transmit.

The users can identify which receivers are selected by noting which of the green switch LEDs are illuminated. Push buttons labeled **Nav 1**, **Nav 2**, **MKR** (Marker), **ADF**, **DME**, **AUX** (auxiliary), and **SPR** (Speaker) are "momentary type switches. When one of these buttons is pressed, be active, and the LED will illuminate. Press the switch again and it be in the "off" position and remove that receiver from the audio.

### **3.4.1 Speaker Amplifier**

"**SPR**" stands for speaker. This switch will place all selected audio on the cockpit speaker when this switch is selected. NOTE: Except for the unswitched audio, the speaker amplifier is not active in the "Split Mode."

Unswitched audio, (autopilot disconnect, altimeter warning, etc.) will come through the speaker regardless of the speaker button position.

#### **3.4.1.1 Public Address Function**

To access PA function, a switch is installed to connect the top connector, pin 18, to ground. This places the *pilot* microphone on the speaker output (Pin W) when the PTT is pushed. The copilot can continue to use the selected com radio.

We recommend that the switch transfer the audio from the cockpit speaker to a cabin speaker for public address. This will prevent feedback.

## **3.5 Split Mode**

The split mode can be activated at any time by pressing the desired combination of XMT buttons. For instance, to activate a Com 1/Com 2 split, press and hold the Com 1 button, and then press the Com 2 button while holding the Com 1 button. This places the pilot on Com 1 and the Copilot on Com 2.

Split mode for Com 3 is possible with pilot on Com 1, copilot on Com 2 or 3, if telephone is not enabled.

Pilot on Com 2 or Com 3 and Copilot on Com 1 is not possible.

**Note:**

Due to the nature of VHF communications signals, and the size constraints in general aviation aircraft, it is probable that there will be some bleed-over in the Split mode, particularly on adjacent frequencies.

Honeywell makes no warranty about the suitability of Split Mode in all aircraft conditions.

**Note:** Split Mode does not turn off other (Nav, ADF, etc.) selected audio to **pilot**. However, the copilot will only hear the selected communications receiver.

### **3.5.1 Split Mode ICS**

In split mode, the pilot and copilot are usually isolated from each other on the intercom, simultaneously using their respective radios. Depressing the **ICS** button in Split Mode will activate VOX intercom between the pilot and copilot positions. This permits intercommunication when desired between the crew. Pressing the ICS button again disables this crew intercom function.

## **3.6 Intercom Operation**

### **3.6.1 IntelliVox® VOX-Squelch**

No adjustment of the *IntelliVox*® squelch control is necessary. There is no field adjustment. Through three individual signal processors, 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.

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. (Ref: *RTCA/DO-214, 1.3.1.1 (a)*).

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.

For optimum microphone performance, we recommend 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.

**Table 3-1 Mic Muff™ Part Numbers**

Manufacturer	Model	Mic Muff™ Part Number
Bose	Dynamic	90010
	Electret	90015
	M87 Dynamic	90020
David Clark	H10-30	90010
	H10-20, H10-40	90015
	H10-13.4	90015
Lightspeed	15K & 20K	90015
Peltor	7003	90010
	7004	90015
Pilot	11-20 & 11-90	90015
Sennheiser		90015
Telex	Airman 750	90015
	AIR3000	90010

### 3.6.2 Intercom Volume Control

The inner volume control knob adjusts the loudness of the intercom for the pilot and copilot. It has no effect on selected radio levels, music input levels or passengers' volume level.

The outer volume control knob controls intercom volume or the passengers. It has no effect on radio or music levels.

Adjust the radios and intercom volume for a comfortable listening level. Most general aviation headsets today have built-in volume controls; therefore, volume also can be further adjusted at the individual headset.

#### 3.6.2.1 Mono headsets in Stereo Installation

All passenger headsets are connected in parallel. Therefore, if a monaural headset is plugged in to a KMA 28B Stereo installation, one channel will be shorted. Although no damage to the unit will occur, all passengers will lose one channel, unless they switch to the "MONO" mode on the headset. Honeywell modifies headsets to add stereo capability, using high-fidelity speakers. Contact factory for details.

### 3.6.3 Intercom Modes

The lower switch on the left side is a 3-position mode switch that allows the pilot to tailor the intercom function to meet the current cockpit situation best. The description of the intercom mode function is valid only when the unit is not in the "Split" mode. Then, the pilot and copilot intercom is controlled with the ICS button.

**ISO:** (Up Position): The pilot is isolated from the intercom and is connected only to the aircraft radio system. He will hear the aircraft radio reception (and sidetone during radio transmissions). Copilot will hear passengers' intercom and Entertainment 1, while passengers will hear copilot intercom and Entertainment 2. Neither will hear aircraft radio receptions or pilot transmissions.

**ALL:** (Middle Position): All parties will hear the aircraft radio and intercom. Crew will hear Entertainment 1, passengers will hear Entertainment 2. During any radio or intercom communications, the music volume automatically decreases. The music volume increases gradually back to the original level after communications have been completed.

**CREW** (Down Position): Pilot and copilot are connected on one intercom channel and have exclusive access to the aircraft radios. They may also listen to Entertainment 1. Passengers can continue to communicate with themselves without interrupting the Crew and also may listen to Entertainment 2.

Anytime the KMA 28B is in either the COM 1/COM 2, COM 2/COM 1 ("Split Mode"), the pilot and copilot intercom is controlled with the ICS button. The passengers will maintain intercommunications, but never hear aircraft radios.

#### 3.6.3.1 Alternate Intercom Mode

If an external switch is installed, the KMA 28B can be placed into "Alternate Intercom Mode." In this mode, the passengers will not hear aircraft radio in the ALL intercom mode. In addition, the passengers' microphones are not heard by the crew when the radios are active.

### 3.6.4 Entertainment Input

The audio selector panel has provisions for two separate entertainment input devices. Music 1 feeds the pilot and copilot positions. They operate independently in the KMA 28B. The volume control does not affect the music level.

While in the ISO (Isolate) mode, the copilot will hear Entertainment 1 while the four passengers will hear Entertainment #2. The pilot will hear entertainment 1, at a muted level. In normal operation, whenever a person speaks, or if the aircraft radio becomes active, the music will automatically mute and then will gradually return to the original listening level when the intercom or radio conversation ceases.

When in the ALL mode, pilot and copilot will hear Entertainment 1 input while all passengers will hear the Entertainment 2 source. While in the CREW mode, pilot and copilot will hear entertainment input #1 while the passengers may listen to entertainment input #2.

#### 3.6.4.1 Soft Mute and Soft Mute inhibit

The Soft Mute feature assures that the aircraft radio transmissions will not be missed due to entertainment playing. When there is radio reception or intercom conversation, the music level is dropped to a low, or background level. When the radio or intercom traffic ceases, the level gradually returns to normal.

The front panel ICS switch controls muting of entertainment source #1 (for pilot and copilot). Pushing this button places the ICS in Karaoke (or sing along) mode, which inhibits the soft mute feature. This allows the music to continue uninterrupted by intercom or radio traffic when cockpit workload is appropriate. Pushing the button again will release the mute inhibit function.

The passenger music, source #2, can be placed in the Karaoke mode if a remote switch is installed in the aircraft. See wiring information for details.

**Table 3-2 Intercom Modes**

Mode	Pilot Hears	Copilot Hears	Passenger Hears	Telephone	Comments
<b>Isolate</b>	A/C Radios Pilot Sidetone (during radio transmission) Entertainment 1 is Muted	Copilot and passenger intercom Entertainment #1	Passenger and Copilot intercom Entertainment #2	"Phone Booth" mode Pilot has exclusive use of the telephone. In TEL, Pilot & Copilot connected to Com 1 for PTT TX and receive. Others hear Tel if off hook.	This mode allows the pilot to communicate without the others bothered by the conversations. Copilot and passengers can continue to communicate and listen to music
<b>All</b>	Pilot Copilot A/C Radio Passengers Entertainment #1	Copilot Pilot A/C Radio Passengers Entertainment #1	Passengers Pilot Copilot A/C Radio Entertainment #2	All have access to phone through Hook Switch. Pilot access through TEL switch. All hear telephone audio if off hook.	This mode allows all on board to hear radio reception as well as communicate on the intercom. Music and intercom is muted during intercom and radio communications
<b>Crew</b>	Pilot Copilot A/C Radio Entertainment #1	Copilot Pilot A/C Radio Entertainment #1	Passengers Entertainment #2	Pilot and copilot don't have phone access, unless mic sel in TEL. Passengers have phone through Hook Switch, Passengers hear phone audio.	This mode allows the pilot and copilot to concentrate on flying, while the passengers can communicate amongst themselves.

### 3.7 Telephone Mode

The Com 3 mode can serve as a full duplex interface for telephone systems such as AirCell or portable cellular phones with earpiece jacks, if the installation is correctly configured. When interfaced with an approved airborne telecommunications system, the KMA 28B can serve as a audio control and distribution center. Each intercom position has a "hook switch." The pilot's hook switch is the "Com 3" button on the audio panel, the others are discrete switches mounted adjacent to the headset jacks. When Com 3 is active in the duplex mode, the TX button will blink about twice as fast as the normal transmit rate.

When the intercom is in **ALL** mode, the pilot can speak on the phone only if the **Com 3 is selected for transmit (Com 3 XMT button activated)**. If any passenger places his or her switch into the "off-hook" position all passengers will also be heard on the phone. All will hear selected audio. Com 1 audio is automatically heard in the headsets. 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 **CREW** mode, the pilot and copilot are may use the telephone, with their respective hook switch (the pilot selects Com 3 on the XMT selector). Any passenger who places their switch into the off-hook position will also have access to the phone, and all four passengers will hear the conversation.

In **ISO** intercom mode, when the KMA 28B is in the **Com 3** mode, the pilot position is in the "Phone Booth." Only the pilot will hear the telephone, and only he will be heard. He will also have access to Com 1 or 2, and will transmit on that radio using the PTT. All selected audio is provided. If any other passenger goes "off hook" they will hear the phone.

**Note: Because the cell phone uses an intercom circuit, all stations on that circuit will lose intercom capability when the cell phone is in use.**

### 3.8 Marker Beacon Operation

The optional 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/ashes per second when the aircraft is in the range of the Outer Marker Beacon.

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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 selecting the "MKR" push-button switch. To adjust the volume level, there is a service adjustment located on the top of the unit.

A three-position switch is used to set the receiver sensitivity and to test the indicator lamps. Use "**HI**" sensitivity initially. This allows you to hear the outer marker beacon about a mile out. Then select the "**LO**" sensitivity to give you a more accurate location of the Outer Marker. The momentary down switch position is marker test, labeled "T/M" and illuminates all three lamps simultaneously to assure the lamps (internal and external) are in working order. TST does not activate MM sense output.

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