

# GMA 350H/350Hc

## Pilot's Guide



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This manual reflects the operation of GMA 350H/350Hc Audio Panels. Some differences in operation may be observed when comparing the information in this manual to some installations as configuration changes can be made by the installer.

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**CAUTION:** *Incorrect aircraft wiring could short the left channel or both channels to ground if a monaural headset is plugged into the stereo jacks. If wired incorrectly, fail-safe operation will not work.*

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## **Transmitter Grant of Equipment Authorization**

FCC ID: IPH-0163700

IC: 1792A-0163700

IC M/N: GMN-00871

### **NOTE**

This device complies with Part 15 of the FCC rules. Operation is subject to the following conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference which may cause undesired operation

### **NOTE**

This device does not contain any user-serviceable parts. Repairs should only be made by an authorized Garmin service center. Unauthorized repairs or modifications could result in permanent damage to the equipment, and void your warranty and your authority to operate this device under Part 15 regulations.

### **Industry Canada Statement**

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme aux normes RSS sans licence d'Industrie Canada. Son fonctionnement est soumis aux conditions suivantes: (1) cet appareil ne doit pas causer d'interférences et (2) doit accepter toute interférence, y compris les interférences pouvant entraîner un fonctionnement indésirable de l'appareil.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

### **FCC Statement for Mobility Device**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

### **Declaration of Conformity**

Hereby, Garmin declares that this product is in compliance with the Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: [www.garmin.com/compliance](http://www.garmin.com/compliance).

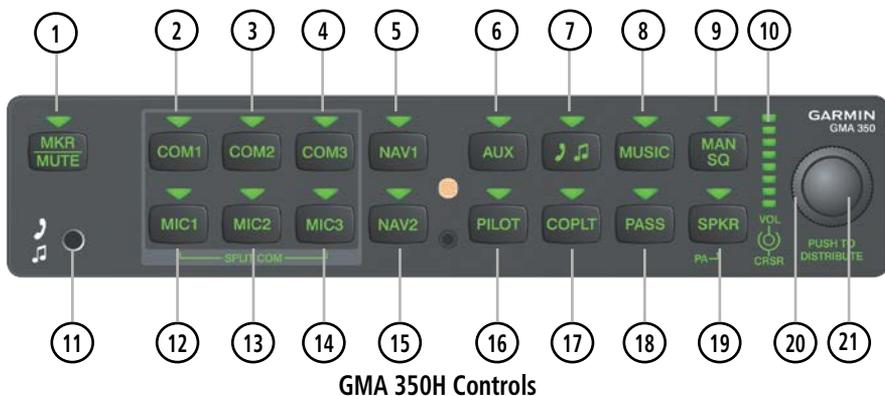


### **Anatel Warning**

Este equipamento opera em caráter secundário, isto é, não tem direito a proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não pode causar interferência a sistemas operando em caráter primário.

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# CONTROLS



GMA 350H Controls



GMA 350H (Traffic) Controls



GMA 350Hc (Bluetooth®) Controls



**NOTE:** When a key is selected, a triangular annunciator above the key is illuminated.

- ① **MKR/MUTE** – Selects marker beacon receiver audio. Mutes the currently received marker beacon receiver audio. Deactivates automatically and marker beacon audio is heard when the next marker beacon signal is received. Also, stops play of recorded COM audio.
- ② **COM1** – When selected, audio from the #1 COM receiver can be heard. Press and hold to enable/disable monitored COM muting during primary COM reception.
- ③ **COM2** – When selected, audio from the #2 COM receiver can be heard. Press and hold to enable/disable monitored COM muting during primary COM reception.
- ④ **COM3** – When selected, audio from the #3 COM receiver can be heard. Press and hold to enable/disable monitored COM muting during primary COM reception.
- ⑤ **NAV1** – When selected, audio from the #1 NAV receiver can be heard.
- ⑥ **AUX** – When selected, audio from the AUX inputs can be heard.
- ⑦  – Selects and deselects audio from a telephone or entertainment device connected to the Front Panel Jack. Audio from a telephone device connected to the rear of the audio panel is used if a device is not connected to the Front Panel Jack. Press and hold to enable/disable  muting during reception.
- ⑧ **MUSIC** – Selects and deselects music entertainment audio. Press and hold to enable/disable **MUSIC** muting during reception.
- ⑨ **MAN SQ** – Manual Squelch annunciator. When lit, squelch is controlled manually.
- ⑩ **Volume Indicator** – Indicates volume/squelch setting relative to full scale.

- ⑪ **Front Panel Jack** – Used for an entertainment or telephone input.
- ⑫ **MIC1** – Selects the #1 transmitter for transmitting. COM1 receive is simultaneously selected when this key is pressed allowing received audio from the #1 COM receiver to be heard. COM2 or COM3 receive can be added by pressing the **COM2** or **COM3** Key. Selection of a second MIC button initiates Split-COM mode (using COM1/COM2 or COM1/COM3). When in Split-COM mode, the pilot is using the lower numbered COM, the copilot is using the higher numbered COM.
- ⑬ **MIC2** – Selects the #2 transmitter for transmitting. COM2 receive is simultaneously selected when this key is pressed allowing received audio from the #2 COM receiver to be heard. COM1 or COM3 receive can be added by pressing the **COM1** or **COM3** Key. Selection of a second MIC button initiates Split-COM mode (using COM1/COM2 or COM2/COM3). When in Split-COM mode, the pilot is using the lower numbered COM, the copilot is using the higher numbered COM.
- ⑭ **MIC3** – Selects the #3 transmitter for transmitting. COM3 receive is simultaneously selected when this key is pressed allowing received audio from the #3 COM receiver to be heard. COM1 or COM2 receive can be added by pressing the **COM1** or **COM2** Key. Selection of a second MIC button initiates Split-COM mode (using COM1/COM3 or COM2/COM3). When in Split-COM mode, the pilot is using the lower numbered COM, the copilot is using the higher numbered COM.
- ⑮ **NAV2** – When selected, audio from the #2 NAV receiver can be heard.
- ⑯ **PILOT** – Controls the pilot intercom system. Press and hold to toggle 3D audio on/off for all headset positions.
- ⑰ **COPLT** – Controls the copilot intercom system. Press and hold to toggle copilot configuration between crew and passenger.
- ⑱ **PASS** – Controls the passenger intercom system. Press and hold to enable/disable passenger muting during reception.

- ①9 **SPKR** – Selects and deselects the cabin speaker. COM, NAV, AUX, and MKR receiver audio can be heard on the speaker. Press and hold for 2 seconds for Passenger Address (PA). The **SPKR** key flashes during PA.
- ②0 **Cursor (CRSR) Control Knob** – Turn to move the cursor (flashing green or blue annunciator) to the desired source.
- ②1 **Volume (VOL) Control Knob** – Turn the smaller knob to control volume or squelch of the selected source (indicated by the flashing green or blue annunciator). When the volume control cursor is not active press to switch to Blue-Select mode. If the volume control cursor is active, press twice (once to cancel the cursor, twice to activate Blue-Select mode).
- ②2 **NAV** – (GMA 350 H Traffic only) When selected, audio from the **NAV** receiver can be heard.
- ②3 **TRFC** – (GMA 350 H Traffic only) When selected, audio from the traffic audio source can be heard. This is usually the TIS Traffic audio (other traffic alerts maybe heard on other alert inputs regardless of the state of this audio selection). **TRFC** audio is enabled by default on each power cycle.
- ②4 **Bluetooth® Connection Annunciator** – (GMA 350 Hc only) A flashing blue annunciator indicates the unit is discoverable. A solid blue annunciator indicates an active Bluetooth connection.
- ②5 **🎵 Key Annunciator** – (GMA 350 Hc only) Assigns the Bluetooth device to the 🎵 audio source. Press the 🎵 key until the annunciator turns blue. The key annunciator will cycle from OFF to GREEN to BLUE. GREEN selects the wired audio source and BLUE selects the Bluetooth audio source. **NOTE:** The Bluetooth audio can only be assigned to one source at a time. Once the Bluetooth audio is assigned to an audio source, the remaining entertainment audio sources will only cycle between OFF and GREEN.

- 26 **MUS Key Annunciator** – (GMA 350 Hc only) Assigns the Bluetooth device to the **MUS** audio source. Press the **MUS** key until the annunciator turns blue. The key annunciator will cycle from OFF to GREEN to BLUE. GREEN selects the wired audio source and BLUE selects the Bluetooth audio source. **NOTE:** The Bluetooth audio can only be assigned to one source at a time. Once the Bluetooth audio is assigned to an audio source, the remaining entertainment audio sources will only cycle between OFF and GREEN.
- 27 **Control Knob Press and Hold** – (GMA 350 Hc only) Press and hold for two seconds to enable the GMA 350Hc as discoverable for pairing. The Bluetooth Annunciator will flash to indicate that the unit is discoverable. The unit will remain discoverable for 90 seconds or until a successful pair is established. Once a successful pair is established, the audio “Bluetooth paired” is played.

## FEATURES AND OPERATION

The GMA 350H/350Hc Audio Panel provides the traditional audio selector functions of microphone and receiver audio selection. The Audio Panel includes an intercom system (ICS), a marker beacon receiver, and a COM clearance recorder. Ambient noise from the aircraft radios is reduced by Avionics Squelch (ASQ). When no audio is detected, ASQ processing further reduces the amount of background noise. The **MAN SQ** Key toggles between manual and automatic intercom system (ICS) squelch. In automatic ICS squelch mode, threshold adjustments are handled automatically by the system. In manual ICS squelch mode, individual threshold adjustments can be made for the pilot, copilot, and passenger microphones by the crew. The ability to adjust individual thresholds for each ICS position further reduces the amount of background noise from the radios.

Pushbutton keys control audio selection. When a key is selected, a triangular annunciator above the key is illuminated. Annunciator brightness is adjusted automatically by photocell dimming. Key brightness is adjusted by the radio dimming bus control. Three Aux inputs are available for additional avionics or audio devices. During installation, the unit may be configured in various ways depending on aircraft type and the needs of the pilot.

## POWER-UP

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The GMA 350H/350Hc performs a self-test during power-up. During the self-test all Audio Panel annunciator lights illuminate for approximately two seconds. Once the self-test is completed, most of the settings are restored to those in use before the unit was last turned off. For the GMA 350H/350Hc Traffic unit, the **TRFC** audio is automatically enabled when the unit is powered-up, regardless of its state prior to the power cycle.

## MONO/STEREO HEADSETS

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Stereo headsets are recommended when using the GMA 350H/350Hc. Using a monaural headset in a stereo jack shorts the right headset channel output to ground. While this does not damage the Audio Panel, a person listening on a monaural headset hears only the left channel in both ears. If a monaural headset is used at one of the passenger positions, any other passenger using a stereo headset hears audio in the left ear only.

## TRANSCIVERS

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**NOTE:** *Transceiver functions may also be accessed via Voice Recognition commands. Refer to the Voice Recognition section for more information.*

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Audio from the #1, #2, or #3 COM receiver can be selected independently by pressing the respective Key(s) (**COM1**, **COM2**, or **COM3**).

Pressing MIC1, MIC2, or MIC3 selects the #1, #2, or #3 transmitter and simultaneously selects the related COM receiver (COM1, COM2, or COM3) allowing received audio to be heard. The remaining COM receivers can be added by pressing their respective keys. During reception of audio from the COM radio selected for transmission, audio from the other COM radio(s) are muted.

## ENABLING/DISABLING MONITORED COM MUTING

Press and hold COM1, COM2, or COM3 to enable/disable monitored COM muting during reception of audio from the COM radio selected for transmission. The aural message “**Monitor Mute Enabled/Disabled**” is heard.

## SPLIT-COM MODE

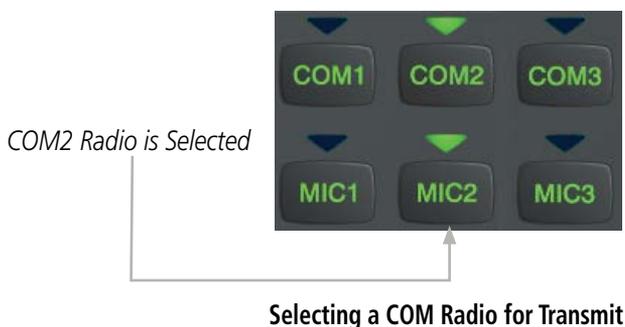


**NOTE:** Split COM performance is affected by the distance between the COM antennas and the separation of the tuned frequencies. If the selected COM frequencies are too close together, interference may be heard during transmission on the other radio.

During Split-COM operation, both the pilot and the copilot can transmit simultaneously over separate radios.

Pressing more than one **MIC** Keys simultaneously initiates Split-COM Mode (i.e., COM1/COM2, COM1/COM3, or COM2/COM3). The respective COM1/MIC1, COM2/MIC2, or COM3/MIC3 annunciators are illuminated indicating Split-COM operation. Split-COM operation is cancelled by pressing one of the selected MIC Keys again.

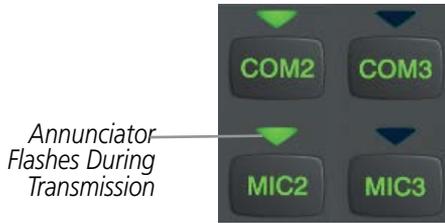
When in Split-COM mode, the pilot is using the lower numbered COM, and the copilot is using the higher numbered COM.



## TRANSMIT INDICATIONS

During COM transmission, the active transceiver (MIC1, MIC2, or MIC3) Key Annunciator flashes approximately once per second.

During Split-COM transmission, the MIC1 or MIC2 annunciator flashes when the pilot’s microphone PTT is pressed. The MIC2 or MIC3 annunciator flashes when the copilot’s microphone PTT is pressed.



**COM Radio Transmit Indication**

## RECEIVERS



**NOTE:** Receiver functions may also be accessed via Voice Recognition commands. Refer to the Voice Recognition section for more information.

Pressing the **NAV1** and/or **NAV2** Key(s) selects/deselects the receiver audio for the corresponding navigation radio source. The selected audio source can be heard over the headset and the speaker (if selected). All radios can be selected individually or simultaneously.



**Selecting a NAV Radio Receiver**



**MUTING MARKER BEACON AUDIO**

During marker beacon audio reception, press the **MKR/MUTE** Key to mute the audio. The MKR/MUTE annunciator remains lit, but the current marker tone is silenced. Audio muting deactivates automatically and marker beacon audio is heard when the next marker beacon signal is received.

**DESELECTING MARKER BEACON AUDIO**

To deselect marker beacon audio, press the **MKR/MUTE** Key twice during marker beacon reception or once if a marker beacon signal is not detected.



**Marker Beacon Key**

**INTERCOM SYSTEM (ICS)**



**NOTE:** *Intercom functions may also be accessed via Voice Recognition commands. Refer to the Voice Recognition section for more information.*

The GMA 350H/350Hc includes a six-position intercom system (ICS), one MUSIC input, and one telephone/entertainment input for the pilot, copilot and passengers. The intercom provides Pilot, Copilot, and Passenger audio isolation.



**Intercom Controls**

Press the **PILOT**, **COPLT**, and/or **PASS** Keys to distribute as required. If the annunciators are lit, those positions will share intercom audio. If an annunciator is NOT lit that position is isolated from the others.

## COPILOT CONFIGURED AS CREW OR PASSENGER



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**NOTE:** *When the copilot position is configured as a passenger, the **COPLT** Key is disabled and the copilot headset is treated as a 'passenger' for intercom and entertainment audio distribution.*

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The copilot position can be configured as crew (**COPLT** Key enabled) or as a passenger (**COPLT** Key disabled). Pressing and holding the **COPLT** Key toggles the copilot position configuration between passenger and crew. The aural message “**Copilot as Passenger**” or “**Copilot as Crew**” is heard.

## INTERCOM MODES



**NOTE:** In the following modes the copilot position is configured as crew.



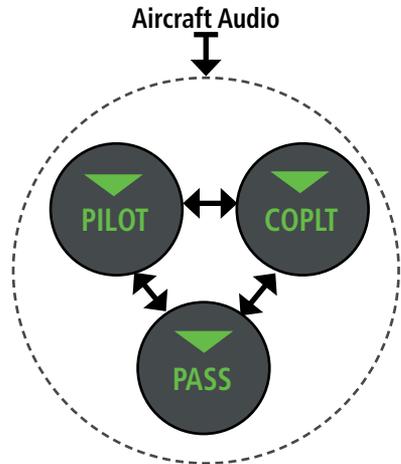
**NOTE:** In the default ICS configuration, only the pilot and copilot positions can hear aircraft alerts.

### ALL INTERCOM MODE

In ‘All Intercom’ mode the Pilot, Copilot, and Passengers hear each other and hear the aircraft audio.



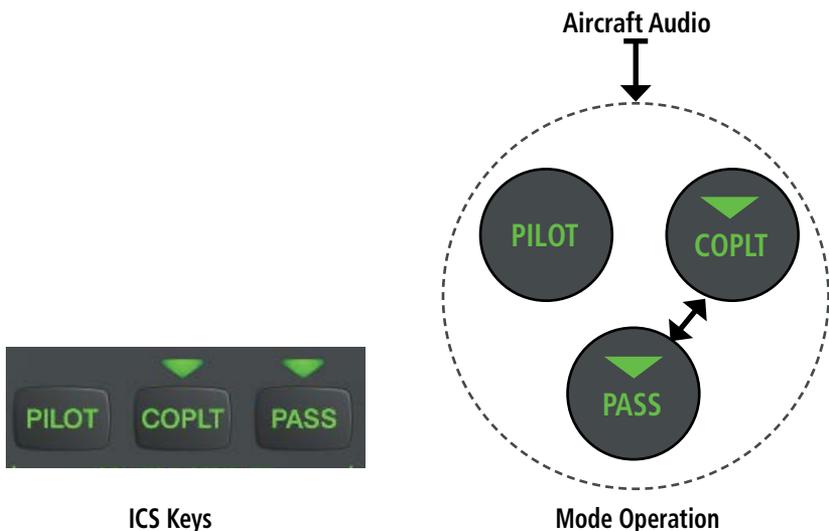
ICS Keys



Mode Operation

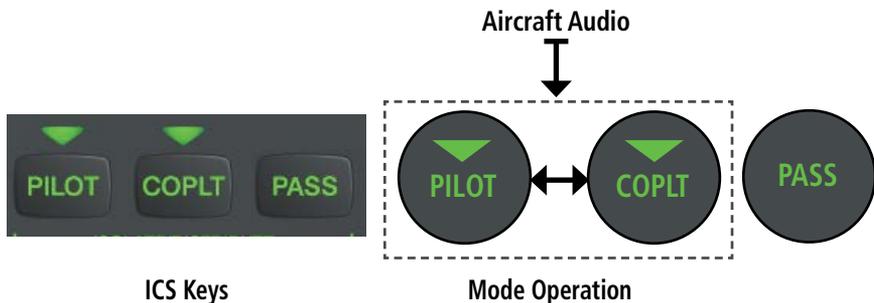
### PILOT ISOLATE MODE

In 'Pilot Isolate' mode the Pilot, Copilot, and Passengers hear the aircraft audio. The Copilot and Passengers also hear each other.



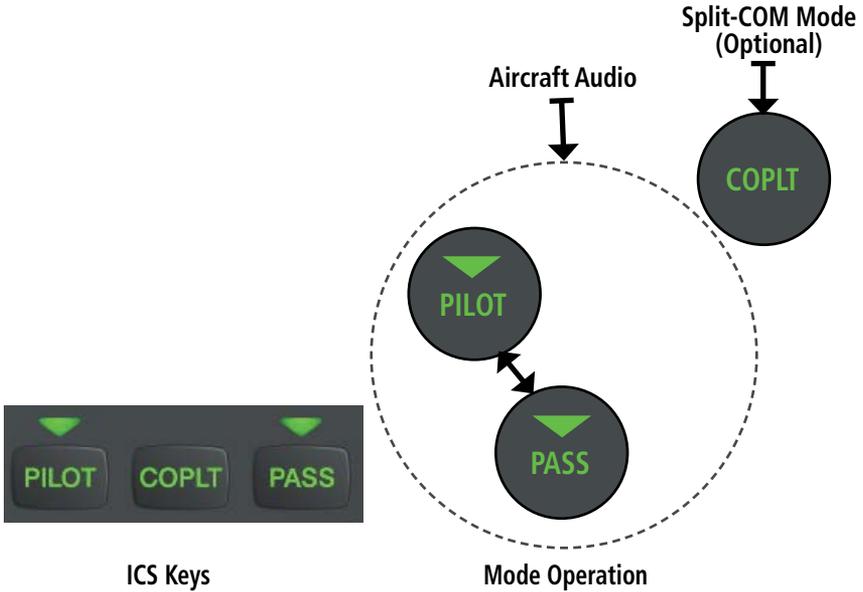
### PASSENGER/CREW ISOLATE MODE

In 'Passenger/Crew Isolate' mode the Pilot and Copilot hear the aircraft audio and each other. The Passengers hear each other.



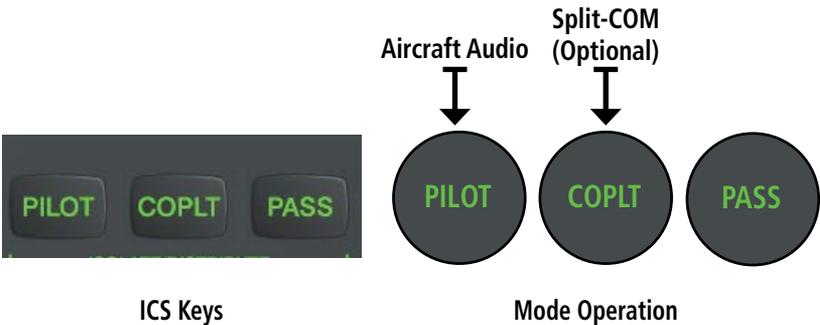
### **COPILOT ISOLATE MODE**

In ‘Copilot Isolate’ mode the Pilot and Passengers hear the aircraft audio and each other. The Copilot has the option to use Split-COM mode.



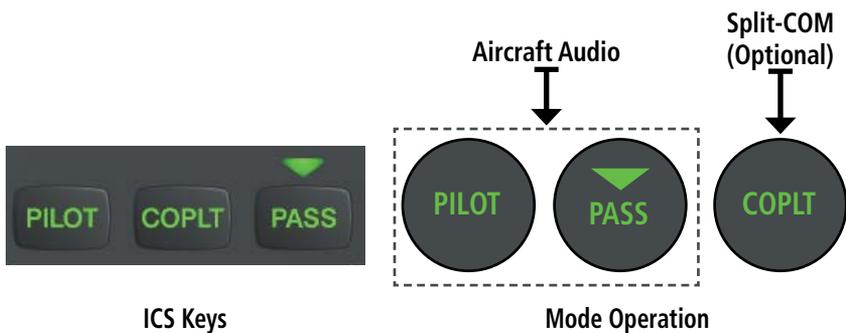
### **ALL ISOLATE MODE**

In ‘All Isolate’ mode the Pilot hears the aircraft audio. The Copilot has the option to use Split-COM mode. The Passengers hear each other.



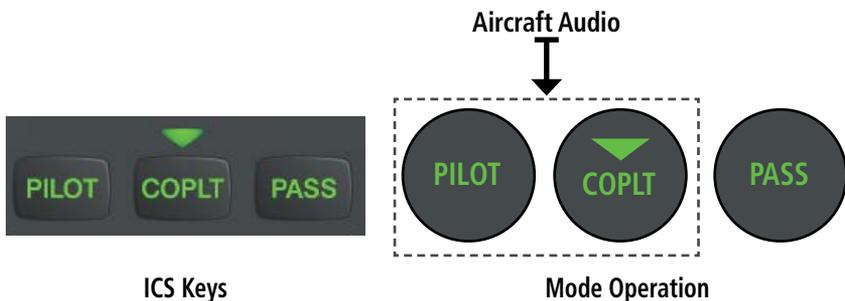
### PILOT & COPILOT ISOLATE MODE

In ‘Pilot & Copilot Isolate’ mode the Pilot and Passengers hear the aircraft audio. The Copilot has the option to use Split-COM mode.



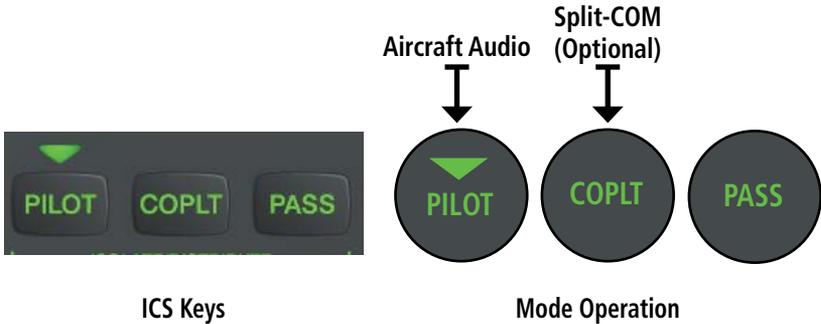
### PILOT & PASSENGER ISOLATE MODE

In ‘Pilot & Passenger Isolate’ mode the Pilot and Copilot hear the aircraft audio. The Passengers hear each other.



### **COPILOT & PASSENGER ISOLATE MODE**

In ‘Copilot & Passenger Isolate’ mode the Pilot can hear the aircraft audio. The Copilot has the option to use Split-COM mode. The Passengers hear each other.

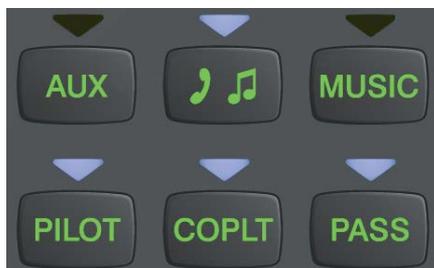


### **INTERCOM VOLUME AND SQUELCH**

The **VOL/CRSR** Knob controls selection and volume or manual squelch adjustment for audio sources that may not be adjustable anywhere else in the system. The small knob controls the volume or squelch. Turning the large knob activates and/or moves the cursor (flashing green annunciator/ or flashing blue annunciator in Blue-Select Mode) to select the audio source to adjust. The cursor will time-out after a few seconds and the position of the cursor will always default back to the **PILOT** Key. Pressing the small knob cancels the cursor.

## BLUE-SELECT MODE (TELEPHONE/ENTERTAINMENT DISTRIBUTION)

The music (MUSIC) and telephone/entertainment (  ) audio are distributed using the Blue-Select Mode. The following example indicates that the pilot, copilot, and passengers will all hear the telephone/entertainment audio.



Blue-Select Mode (Telephone/Entertainment Distribution)

The Blue-Select Mode is entered by pressing the small knob when the volume control cursor (flashing green annunciator) is not active. If the volume control cursor is active, press the small knob twice. The first press will cancel the volume control cursor, the second will activate Blue-Select Mode.

The annunciator over the  Key will be flashing blue. Any combination of the annunciators over the **PILOT**, **COPLT**, and **PASS** buttons may be blue. Select the desired button to turn the blue annunciator on or off to distribute the telephone audio to selected crew/passenger positions. Turn the large knob to select **MUSIC**, and select the crew positions to receive the music audio.

Selecting any key other than **PILOT**, **COPLT**, **PASS**, **MUSIC**, or  will cancel Blue-Select Mode. Pressing the small knob will also cancel Blue-Select Mode. After approximately 20 seconds with no input, the Blue-Select Mode will automatically cancel.

**ADJUSTING INTERCOM VOLUME**

When the cursor is on PILOT, COPLT, or PASS, the Volume Control Knob adjusts the intercom volume for the listener.

**ADJUSTING MANUAL SQUELCH**

When the cursor is on MAN SQ, the Volume Control Knob adjusts the ICS Squelch Threshold (the volume level that must be exceeded to be heard over the intercom).

**ADJUSTING SPEAKER VOLUME**

When the cursor is on SPKR, the Volume Control Knob adjusts the speaker volume of the selected sources (COM, NAV, AUX, MKR).

**ADJUSTING MKR, AUX, , AND MUSIC VOLUME**

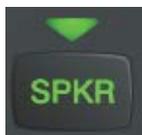
When the cursor is on MKR, AUX, , or MUSIC, the Volume Control Knob adjusts the individual volume of the selected source.



**Volume/Squelch Control**

## SPEAKER

All of the radios can be heard over the cabin speaker. Pressing the **SPKR** Key selects and deselects the cabin speaker. Speaker audio is muted when the PTT is pressed. Certain aural alerts and warnings (autopilot, traffic, altitude) are always heard on the speaker, even when the speaker is not selected.



Speaker Key

## PASSENGER ADDRESS MODE (PA MODE)

Press and hold the **SPKR** Key for 2 seconds to initiate Passenger Address Mode. PA Mode is announced by a rapid blinking of the SPKR annunciator. When in PA Mode the crew can use the PTT “Push-to-Talk” button to deliver announcements over the speaker, to the passenger headsets, or both depending on configuration.

## SPLIT-PA MODE

During Split-PA Mode the pilot can continue to use the radio(s) while the copilot delivers PA announcements. To initiate Split-PA Mode, first enter Split-COM Mode by pressing more than one **MIC** Keys simultaneously, then press and hold the **SPKR** Key for 2 seconds.

## 3D AUDIO

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3D Audio is useful when multiple audio sources are present. By using different responses in each ear, 3D audio processing creates the illusion that each audio source is coming from a unique location or seat position.

Because this feature uses different signals for left and right channels, it requires wiring for stereo intercom and stereo headsets. If 3D audio is activated when mono headsets are in use, the listener will still hear all audio sources; however, there is no benefit from location separation.

With a single COM selected and 3D Audio enabled, the listener hears the audio source at the 12 o'clock position. If all three COMs are selected, the listener hears the audio sources at the 11, 12 and 1 o'clock positions with the COM numbers increasing clockwise. If two COMs are selected, the listener hears COM1 at the 11 o'clock position and COM2 at the 1 o'clock position. All other intercom positions are processed to sound like their relative seat location. By default, the GMA 350H/350Hc assumes the pilot sits in the right seat. A Garmin authorized service center can make changes to the default configuration.

### ENABLING 3D AUDIO

Press and hold the **PILOT** Key to toggle 3D audio processing on and off for all headset positions. When 3D Audio is enabled, the aural message “3D audio left” is heard in the left ear followed by “3D audio right” in the right ear.

## 3D AUDIO TROUBLESHOOTING

If the aural messages are not heard in only the left and then the right ear respectively the cause may be aircraft wiring or headset settings. Refer to the following table if a headset or aircraft wiring problem is suspected.

<b>3D Audio Troubleshooting</b>		
<b>Symptom(s)</b>	<b>Cause(s)</b>	<b>Solution(s)</b>
"3D audio left" message heard in both ears. "3D audio right" message not heard	<b>1)</b> Mono headset in use	<b>1)</b> Use a stereo headset
	<b>2)</b> Stereo headset in use with mono/stereo switch set to 'mono'	<b>2)</b> Set mono/stereo switch on headset to 'stereo'
	<b>3)</b> Aircraft wiring has left audio wired to both left and right channels of stereo headset jack	<b>3)</b> If after checking solutions #1 and #2 see a service center as soon as possible to inspect/correct wiring. This wiring fault can cause fail-safe audio not to function.
"3D audio left" message heard in both ears, followed by "3D audio right" message heard in both ears	<b>1)</b> Mono headset in use	<b>1)</b> Use a stereo headset
	<b>2)</b> Stereo headset in use with mono/stereo switch set to mono	<b>2)</b> Set mono/stereo switch on headset to 'stereo'
	<b>3)</b> Incorrect aircraft wiring (left/right shorted together)	<b>3)</b> If after checking solutions #1 and #2 see a service center as soon as possible to inspect/correct wiring. This wiring fault can cause fail-safe audio not to function.
"3D audio right" message heard in both ears. "3D audio left" not heard	<b>1)</b> Incorrect aircraft wiring (right channel used for mono instead of left or left/right swapped)	<b>1)</b> See a service center as soon as possible to inspect/correct wiring. This wiring fault can cause fail-safe audio not to function.

<b>3D Audio Troubleshooting</b>		
<b>Symptom(s)</b>	<b>Cause(s)</b>	<b>Solution(s)</b>
"3D audio left" message heard in right ear only followed by "3D audio right" message heard in left ear only	<b>1)</b> Stereo headset is on backwards	<b>1)</b> Verify correct orientation from the left/right indication on each side of the headset or the position of the boom mic (usually attached on left side). If the headset is backwards left/right position information will be swapped.
	<b>2)</b> Incorrect aircraft wiring (left/right channels swapped)	<b>2)</b> See a service center as soon as possible to inspect/correct wiring. This wiring fault can cause fail-safe audio not to function.
"3D audio left" message heard in left ear only, no audio heard in right ear.	<b>1)</b> Aircraft wired for mono intercom	<b>1)</b> See a service center to wire the installation for stereo headsets.
"3D audio right" message heard in right ear only, no audio heard in left ear	<b>1)</b> Incorrect aircraft wiring (right channel used for mono instead of left, or left/right swapped)	<b>1)</b> See a service center as soon as possible to inspect/correct wiring. This wiring fault can cause fail-safe audio not to function.

**3D Audio Troubleshooting**

## CLEARANCE RECORDER AND PLAYER

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The GMA 350H/350Hc contains a digital clearance recorder that records up to 2.5 minutes of the selected COM radio signal. Recorded COM audio is stored in separate memory blocks. Once 2.5 minutes of recording time have been reached, the recorder begins recording over the stored memory blocks, starting from the oldest block.

An optional external Play button controls the play function. Pressing the Play button once plays the latest recorded memory block. The Play function can also be accessed via Voice Recognition commands. Refer to the 'Voice Recognition' section for more information.

Pressing the **MKR/MUTE** Key during play of a memory block stops play. If a COM signal is detected during play of a recorded memory block, play is halted.

Pressing the Play button while audio is playing begins playing the previously recorded memory block. Each subsequent press of the Play button selects the previously recorded memory block.

Powering off the unit automatically clears all recorded blocks.



**Marker Mute Key**

## **VOICE RECOGNITION**

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Voice Recognition allows the pilot (and optionally copilot) to control the GMA 350H/350Hc using spoken commands. To activate Voice Recognition, push and hold the Push-to-Command (PTC) button while speaking a command. When the Push-to-Command button is released, the GMA 350H/350Hc will respond.

If a command is correctly interpreted by the GMA 350H/350Hc, a positive acknowledgement chime will be played, and the pilot should verify that the correct button selection is indicated by the triangular annunciator lights. Alternatively, some commands will be indicated by a voice response from the GMA 350H/350Hc. If the desired modes are not indicated by annunciator lights or a voice response, the pilot should repeat the command by using the Push-to-Command button, or by manually using the front panel controls of the GMA 350H/350Hc.

If a command is incorrectly interpreted by the GMA 350H/350Hc, a negative acknowledgement tone will be played. The pilot should repeat the command by using the Push-to-Command button, or by manually using the front panel controls of the GMA 350H/350Hc. In the event of any abnormal Voice Recognition operation, the front panel controls may be used to override Voice Recognition and manually control the GMA 350H/350Hc.

The following table lists the available Voice Recognition commands, the associated actions, and the voice response if applicable:

Control	Example Phrase	Action
COM	"COM one"	Toggles COM1 audio
	"MIC one"	Selects MIC1/COM1 audio
	"COM one MIC"	Selects MIC1/COM1 audio
	"COM two"	Toggles COM2 audio
	"MIC two"	Selects MIC2/COM2 audio
	"COM two MIC"	Selects MIC2/COM2 audio
	"COM three"	Toggles COM3 audio
	"MIC three"	Selects MIC3/COM3 audio
	"COM three MIC"	Selects MIC3/COM3 audio
	"Split COM"	Selects split COM1/2 mode
	"Split COM one, two" or "Split one, two"	Selects split COM1/2 mode
	"Split COM one, three" or "Split one, three"	Selects split COM1/3 mode
	"Split COM two, three" or "Split two, three"	Selects split COM2/3 mode
"Monitored COM mute" OR "Mute Monitored COM"	Mutes monitored COM on primary COM reception (refer to Page 8). Voice Response: "Monitor mute enabled".	
"Disable monitored COM mute" "Monitored COM mute disable" "Disable mute monitored COM" OR "Mute monitored COM disable"	Disables monitored COM mute on primary COM reception (refer to Page 8). Voice Response: "Monitored mute disabled".	
<b>AUX</b>	"AUX" OR "Auxiliary"	Toggles AUX audio
<b>NAV</b>	"NAV one"	Toggles NAV1 audio
	"NAV two"	Toggles NAV2 audio
<b>TRFC</b>	"Traffic"	Toggles TRFC audio (GMA 350H/350Hc Traffic only)

Control	Example Phrase	Action
	"Telephone" "Phone" OR "Jack"	Toggles  (TEL/JACK) input
	"Telephone mute" "Mute telephone" "Phone mute" "Mute phone" "Jack mute" OR "Mute Jack"	Mutes TEL/JACK on radio reception. Voice Response: "Tel and jack mute enabled".
	"Disable telephone mute" "Mute telephone disable" "Disable phone mute" "Mute phone disable" "Disable jack mute" "Mute jack disable" "Telephone mute disable" "Disable mute telephone" "Phone mute disable" "Disable mute phone" "Jack mute disable" OR "Disable mute jack"	Disables TEL/JACK mute on radio reception. Voice Response: "Tel and jack mute disabled".
<b>MUSIC</b>	"MUSIC"	Toggles MUSIC input
	"MUSIC mute" OR "Mute MUSIC"	Mutes MUSIC on radio reception Voice Response: "Music 1 mute enabled"
	"Disable MUSIC mute" "MUSIC mute disable" "Disable mute MUSIC" OR "Mute MUSIC disable"	Disables MUSIC mute on radio reception. Voice Response: "Music 1 mute disabled".

Control	Example Phrase	Action
<b>ICS Isolation</b>	"Pilot"	Toggles PILOT button
	"Copilot"	Toggles COPLT button
	"Passenger" OR "Pass"	Toggles PASS button
	"Passenger mute" "Pass mute" "Mute passenger" OR "Mute pass"	Mutes passengers during radio reception. Voice Response: "Passenger mute enabled".
	"Disable passenger mute" "Disable pass mute" "Disable mute passenger" "Disable mute pass" "Passenger mute disable" "Pass mute disable" "Mute passenger disable" OR "Mute pass disable"	Disables muting of passengers during radio reception. Voice Response: "Passenger mute disabled".
<b>Copilot Configuration</b>	"Copilot as passenger" OR "Copilot as pass"	Configures Copilot as a passenger. Voice Response: "Copilot as passenger".
	"Copilot as crew"	Configures Copilot as flight crew. Voice Response: "Copilot as crew".

Control	Example Phrase	Action
<b>Manual Squelch</b>	"Manual squelch" OR "Man squelch"	Toggles manual squelch mode
	"Manual squelch threshold up" "Man squelch threshold up" "Manual squelch volume up" OR "Man squelch volume up"	Increases manual squelch threshold
	"Manual squelch threshold down" "Man squelch threshold down" "Manual squelch volume down" OR "Man squelch volume down"	Decreases manual squelch threshold
<p><b>NOTE:</b> Finer manual squelch adjustment may be made using the dual concentric knobs on the GMA 350. The voice command "Up" or "Down" is equivalent to three clicks of the inner knob.</p>		
<b>Speaker (SPKR)</b>	"Speaker"	Toggles SPKR on/off
<b>PA</b>	"P - A"	Toggles PA on/off
<b>Marker Beacon (MKR/MUTE)</b>	"Marker" "Mute marker" OR "Marker mute"	Same action as pressing MKR/MUTE (refer to page 4).
<b>COM Clearance Recorder</b>	"Play" "Read back" OR "Say again"	Same action as pressing PLAY (refer to page 5).
<b>Cursor</b>	"Cursor off" "Cursor cancel" OR "Cancel cursor"	Cancels cursor when cursor is flashing
<b>Volume Adjustments</b>	"(Desired selection*) volume up"	Increases volume of desired selection
	"(Desired selection*) volume down"	Decreases volume of desired selection

Control	Example Phrase	Action
<b>Volume Adjustments</b>	"(Desired selection*) volume	Displays the current volume but does not change it
<p>* Desired selection = "Speaker", "pilot", "copilot", "passenger", "pass", "marker", "aux", "auxiliary", "telephone", "phone", "jack", or "music".</p> <p><b>NOTE:</b> Finer volume adjustment may be made using the dual concentric knobs on the GMA 350. The voice command "Up" or "Down" is equivalent to three clicks of the inner knob.</p>		
<b>Distribution (Blue Mode)</b>	"Distribute telephone to (desired position(s) **)" OR "Distribute phone to (desired position(s) **)" OR "Distribute jack to (desired position(s) **)"	Distributes TEL/JACK to desired positions.
	"Distribute music to (desired position(s) **)"	Distributes MUSIC to desired position(s)
<p>** Desired position(s) = "All", "none", "pilot", "copilot", "passenger", "pass", or any combination of pilot, copilot, passenger, or pass.</p> <p><b>NOTE:</b> The word "to" may be omitted from distribution phrases.</p>		
<b>3D Audio</b>	"Three-D audio"	Enables 3D audio (refer to page 21) Voice Response: "Three-D audio left, three-D audio right"
	"Standard audio"	Enables standard audio (disables 3D audio) Voice Response: "Standard Audio"

### Voice Recognition Commands

## ENTERTAINMENT INPUTS

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The GMA 350H/350Hc provides two stereo telephone/entertainment inputs:

- The telephone/entertainment () Key controls a telephone or entertainment device connected to the rear of the audio panel or to the Front Panel Jack.
- The **MUSIC** Key controls the Entertainment Music audio input.

The Front Panel Jack can be used as an entertainment input or a telephone input (in which case, it operates simultaneously with the rear telephone interface). The Front Panel Jack is a 3.5-mm stereo jack that is compatible with popular portable entertainment devices such as MP3s, CD players, and cell phones. The headphone outputs of the entertainment devices are plugged into the Front Panel Jack.

Distribution of the entertainment inputs are configured in Blue-Select Mode.

## TELEPHONE AND ENTERTAINMENT MUTING

Telephone and entertainment muting can be enabled or disabled by the user, however it is always muted during alerts.

### ENABLING/DISABLING MUTING

Press and hold the **MUSIC** or () Key for two seconds to toggle muting on and off. The aural message “**Music 1 Mute Enabled/Disabled**”, “**Tel Mute Enabled/Disabled**”, or “**Bluetooth Mute Enabled/Disabled**” is heard.

## BLUETOOTH® (GMA 350Hc ONLY)

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**NOTE:** Pairing is only necessary during the first attempt to connect a Bluetooth device to the GMA 350Hc. Once paired, the GMA 350Hc and the device will connect automatically.

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### PAIRING A BLUETOOTH DEVICE WITH THE GMA 350HC

Press and hold the inner knob for two seconds. The Bluetooth Annunciator flashes to indicate the unit is discoverable and the aural message “**Bluetooth discoverable**” is heard. The GMA 350Hc will remain discoverable for 90 seconds or until a successful pair is established. Once paired, the Bluetooth Annunciator turns steady green and the aural message “**Bluetooth paired**” is heard.

### ASSIGNING AN AUDIO SOURCE TO THE BLUETOOTH DEVICE

Press the  or **MUS** key until the annunciator turns blue (the audio from the Bluetooth source will not be heard until this step is complete). The key annunciator cycles OFF-GREEN-BLUE. GREEN selects the wired audio source. BLUE selects the Bluetooth audio source. The BLUE source assignment will persist through Bluetooth audio connection disruptions. **NOTE:** The Bluetooth audio can only be assigned to one source at a time. Once the Bluetooth audio is assigned to an audio source, the remaining entertainment audio sources will only cycle between OFF and GREEN.

Bluetooth audio will maintain a separate volume level and Blue Select distribution from the wired audio source. If the Bluetooth connection is supporting a phone call, all intercom positions listening to that source can also speak on the call through the headset MICs.

## ADDITIONAL BLUETOOTH CONTROL FUNCTIONS

In addition to the 2 second press and hold of the inner knob discussed above, the knob has two additional functions that are intended to be seldom or never used. The following functions are available if needed for troubleshooting:

- Press and hold the inner knob for 5 seconds to turn off the Bluetooth radio. The aural message “**Bluetooth off**” is heard. This function electrically turns off the radio, not just the audio source selection. In the event that Bluetooth radio interference with communication or navigation equipment is suspected, the Bluetooth radio can be powered off without powering off the entire audio panel. A subsequent 5 second press and hold turns the radio back on.
- Press and hold the inner knob for 10 seconds to clear the memory of paired devices (up to 10 are stored). Once cleared, the aural message “**Bluetooth list cleared**” is heard. This function is used as a troubleshooting method when a device is not pairing, or to remove a device that is no longer needed.

## CONNECTING BLUETOOTH TO A GARMIN VIRB

The GMA 350Hc supports Bluetooth wireless delivery of pilot headphone audio to versions of the Garmin VIRB action camera that support Bluetooth mic audio input for recording.

Pairing a Garmin VIRB to the GMA 350Hc works like pairing other Bluetooth audio devices. Once connected, pilot headphone audio will be delivered to the VIRB via Bluetooth. In a connection to the Garmin VIRB, the GMA is the source. Therefore, selecting an entertainment button is not required. The PILOT annunciator turns blue to indicate this connection.

## BLUETOOTH® RECORDING MODE

Bluetooth® Recording Mode enables the option to record pilot headphone audio to a Bluetooth® recording device, such as an action camera, personal digital audio recorder, or a smart phone or tablet app. Bluetooth® Recording Mode takes all audio routed to the pilot's headphones (such as radio, music and intercom audio) and also outputs that audio to a paired Bluetooth® device. Bluetooth® Recording Mode requires a device that supports HFP.

To enable Bluetooth® Recording Mode, first connect the Bluetooth® digital recorder to the GMA. Then press the **PILOT** key and the small knob simultaneously. The PILOT annunciator will turn blue to indicate Bluetooth® Recording Mode is enabled, and the audio clip “**Bluetooth Recording Mode Enabled**” will play.

This setting is persistent. Once enabled for a device, the GMA will automatically enable Bluetooth® Recording Mode for future connections to that device (until disabled). The same process for enabling Bluetooth® Recording Mode is used for disabling it. When disabled, the audio clip “**Bluetooth Recording Mode Disabled**” will play.



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**NOTE:** When connected to a Garmin VIRB X, Bluetooth Recording Mode will always be enabled (does not require manual enabling).

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## FAIL-SAFE OPERATION

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If there is a failure of the GMA 350H/350Hc or when power is not applied, a fail-safe circuit connects the pilot's headset and microphone directly to the COM1 transceiver. Audio is not available on the speaker during Fail-safe operation.





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