

# GMA 347

*audio panel pilot's guide*



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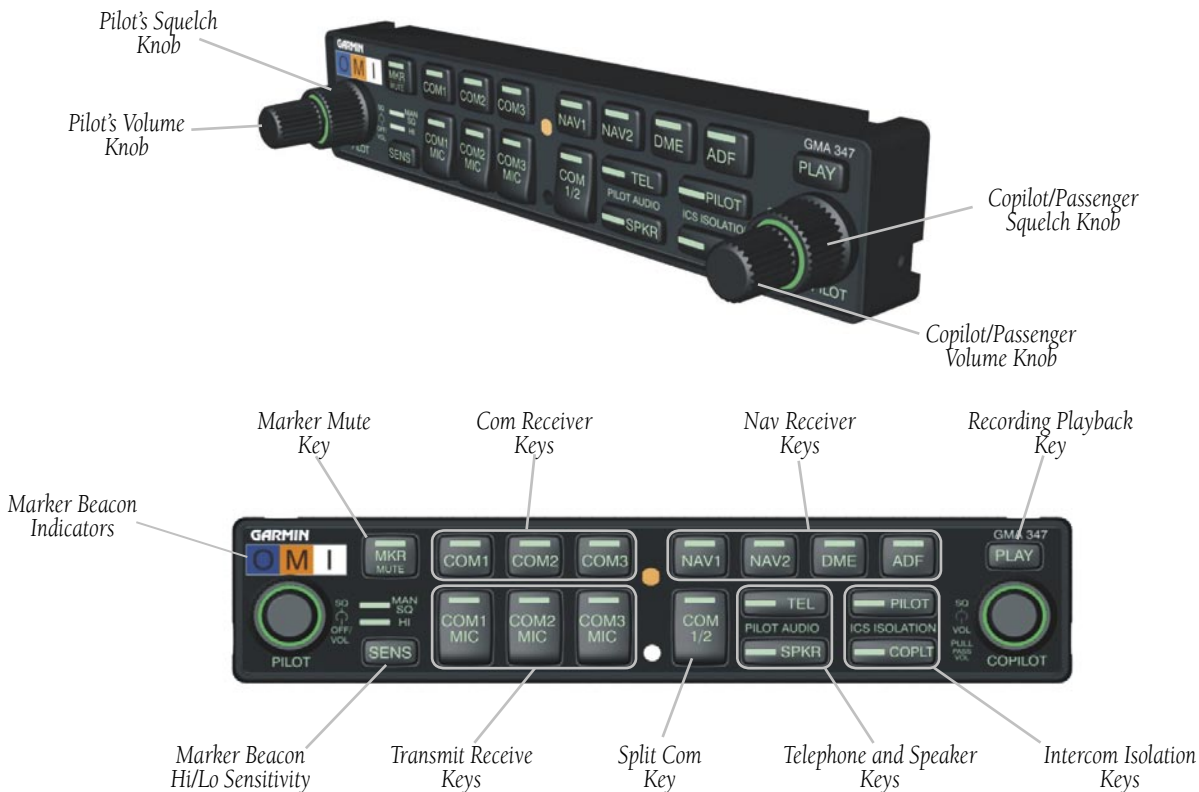
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# Layout





**Volume/Squelch:** Rotating the left (Pilot) volume knob controls the ON and OFF function. (Full CCW detent is OFF) Pressing the left volume knob toggles between manual and automatic squelch.



Pulling the right volume knob controls passenger volume, pushing in controls Copilot volume. Copilot and passenger share the (outer) squelch knob.



**COM receiver keys.** Pressing a COM receiver key selects the receiver, which is heard in addition to the selected transceiver. Pressing again deselects the receiver.



**Transceiver selection keys.** Selects the COM transmitter and associated receiver.



**Split COM operation key.** When active, the Pilot uses the COM 1 transceiver and the Copilot uses COM 2.



**COM Playback key.** Pressing this key plays back the most recent 2-1/2 minutes of received COM.



**Nav receiver keys.** Pressing a Nav receiver key selects the receiver. Pressing again deselects the receiver.



Selects telephone operation.



Selects cabin speaker. Press and hold 2 seconds for PA mode. SPKR key blinks in PA mode.



**Intercom isolation keys.** Four modes available.



**Marker Beacon System.** Annunciators, Marker Mute key, Marker Sense key and Hi Sense LED. Marker Mute key also turns ON/OFF Music Muting and halts COM playback.



### INTRODUCTION

The Garmin GMA 347 is an audio control panel and marker beacon system. Pushbutton keys control audio selection of COM, NAV, telephone and intercom. With the exception of the **PLAY** key, LED annunciators indicate when a key function is selected. Annunciator brightness is adjusted automatically by photocell dimming. LED-illuminated key brightness is adjusted by the radio dimming bus control. A failsafe circuit connects the pilot's headset and microphone directly to COM 1 in case power is interrupted or the unit is turned off.

The GMA 347 includes a six-position intercom system (ICS) with electronic cabin noise de-emphasis and two stereo music inputs. Two volume controls, one for the pilot and a combined copilot/passenger control, set intercom audio level. The intercom provides four selectable modes of isolation (All, Crew, Pilot, Copilot). A pilot-selectable cabin speaker output is used to listen to selected aircraft radios or to broadcast PA announcements. MASQ™ (Master Avionics Squelch) processing reduces ambient noise from the avionics inputs.

Each microphone input has an automatic squelch threshold. Manual squelch is available by pressing the Pilot side **VOL/SQ** knob. When the MAN SQ annunciation is lit the large squelch knobs control pilot and copilot/passenger squelch threshold. Turning either knob clockwise increases the squelch threshold level, turning counterclockwise decreases the level.

The GMA 347 provides a digital recorder that can play back two and a half minutes of COM audio. Recording is automatic when a COM signal is received. Playback is controlled by pressing the **PLAY** key or a remote mounted switch. Playback can be stopped by pressing the **MKR/MUTE** key.

Upon installation, the unit may be configured in various ways depending on the aircraft type and the needs of the pilot. See the configuration list at the end of this manual. Contact a Garmin-authorized service center for details and assistance in altering the configuration settings.

## Microphones

The GMA 347 Audio Panel can accept up to six (6) microphone inputs, allowing for a two-person crew and up to four (4) passenger intercom stations in the aircraft.



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**NOTE:** *A push-to-talk (PTT) switch must be pressed to transmit on a selected Transceiver.*

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Each microphone input has an automatic squelch threshold. Manual squelch override and PTT keyed ICS operation are also available. Each microphone has a dedicated VOX circuit to ensure that only the active microphone is heard when squelch is broken.

## Mono/Stereo Headsets

The unit can accommodate up to six (6) headsets (pilot, copilot and up to four (4) passengers).



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**NOTE:** *The use of stereo headsets is highly recommended. However, if monaural headsets are plugged into stereo jacks the unit will not be damaged.*

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When wired correctly, the use of a monaural headset in a stereo jack shorts the right headset channel to ground. Anyone 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, anyone else listening on a stereo headset hears audio in the left ear only, unless their headset has a mono/stereo switch set to mono.



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**NOTE:** *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, failsafe operation will not work.*

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## Intercom

The intercom system provides four modes of isolation: Pilot, Copilot, Crew, and All. In Pilot mode, the Pilot is isolated from all other occupants of the aircraft. In Copilot mode, the Copilot is isolated, while the Pilot and Passengers share the intercom.

In Crew Isolation mode, the Pilot and Copilot can communicate with each other while the passengers are able to communicate only with each other. In All mode, there is no isolation and every occupant can communicate with every other occupant.

The passengers cannot transmit over the active COM radio, even if equipped with a PTT key.

### **UNMUTED/UNSWITCHED INPUTS**

The unit provides four (4) unmuted/unswitched inputs that are always present on the headsets or speakers. These inputs are as follows:

- ALTITUDE WARNING
- UNSWITCHED 1
- UNSWITCHED 2
- UNSWITCHED 3

The unit may be configured with preset volume levels for MUSIC 1, MUSIC 2, UNSWITCHED 1, UNSWITCHED 2, UNSWITCHED 3, and ALTITUDE WARNING. See the configuration table at the end of this manual. Contact a Garmin authorized service center for volume level adjustment.

### **COM MUTING**

The COM muting on receive and COM muting on transmit options are enabled in the Configuration mode.

#### **COM Muting on Receive**

The COM Muting on Receive option mutes all secondary COM audio when a primary COM signal is detected.

When the COM muting on receive option is enabled, only the primary COM radio audio is recorded by the digital clearance recorder.

#### **COM Muting on Transmit**

The COM Muting on Transmit option mutes all secondary COM audio while the primary COM radio is transmitting.



## Telephone

The GMA 347 provides a 2-way telephone interface. Operation depends on the state of the **TEL** key and ICS mode. See the ICS Isolation Modes & Telephone Distribution table in the operation section of this manual. Telephone communication is much like using the intercom, allowing both parties to talk at once.

The TEL channel may be disabled in Configuration mode. Contact a Garmin-authorized service center for details.

## Auxiliary Entertainment Inputs

The GMA 347 provides two stereo entertainment inputs; MUSIC 1 and MUSIC 2. Two 3.5 mm stereo phone jacks should be installed in a convenient location for this purpose. These inputs are compatible with popular portable entertainment devices such as MP3 and CD players. The headphone outputs of these devices are plugged into the MUSIC 1 or MUSIC 2 jacks.

Only the pilot and copilot hear MUSIC 1. MUSIC 2 is a non-muted input heard only by the passengers. MUSIC 1 and MUSIC 2 characteristics are affected by the active intercom mode. Refer to the ICS Isolation Modes and Telephone Distribution table.

MUSIC 1 is always soft-muted when an interruption occurs from an aircraft radio. Soft muting is the gradual return of MUSIC 1 to its original volume level. When the **MKR/MUTE** key is pressed and held for two seconds, the pilot hears two beeps to indicate that MUSIC 1 muting by COM has been disabled. Pressing and holding the **MKR/MUTE** key again for two seconds sends one beep to the pilot to indicate COM muting is restored. This setting reverts to Mute at the next power up.

MUSIC 1 can also be configured to mute during ICS activity. Contact a Garmin-authorized service center to configure MUSIC 1 muting by the ICS.

## SYSTEM OPERATION

### Multifunction Controls

The Pilot side volume knob controls the ON and OFF function, the pilot's intercom volume plus manual and automatic squelch.



When pressed, manual squelch is selected and the **MAN SQ** LED is ON indicating that squelch is adjusted manually. When pressed again the **MAN SQ** LED turns OFF and squelch is automatic.

The Copilot side volume knob controls the Copilot and passenger intercom volume level.



The **MKR/MUTE** key selects marker audio and “Smart Mutes” the marker signal. That is, the marker tone is silenced, then waits for the next marker tone. It also turns ON/OFF Music Muting, plus cancels the COM audio playback.



The **SPKR** key turns the cabin speaker ON and OFF. Pressing and holding for 2 seconds selects PA mode. The **SPKR** key LED blinks when PA is active.



### Power ON/OFF

The GMA 347 may be powered ON and OFF with the avionics master switch.

To control the ON and OFF function with the Pilot ICS volume, rotate the knob clockwise out of the detent to turn ON and counterclockwise into the detent to turn OFF.

During power-up, the unit undergoes a self-test, illuminating all panel annunciator lights for two (2) seconds. Once the self-test is complete, the unit is ready for use with the same keys selected when the system was last powered OFF.

### Voice Recorder

The voice recorder feature records all the audio heard on any selected COM radio. Recording begins automatically unless the external RECORDER OFF function is activated. Playback is heard by anyone listening on the selected radios.

Pressing the **PLAY** key plays back the most recent message. Pressing the **PLAY** key again stops that message and skips to the next preceding message. The **MKR/MUTE** key cancels the playback. In Split COM mode, the pilot's or the copilot's COM audio is recorded and played back to the selected headset.



## Transceivers



*NOTE: Audio level is controlled by the selected COM radio volume control.*

Pressing **COM1 MIC**, **COM2 MIC**, or **COM3 MIC** key selects the transmitter and receiver audio for the selected transceiver source. The active com audio is always heard on the headphones.



Also, each audio source can be selected independently by pressing the **COM1**, **COM2** or **COM3** receiver keys. When selected this way, they remain active as audio sources regardless of which transceiver has been selected for microphone use.



When a microphone is keyed, the active transceiver's MIC key LED blinks approximately once per second indicating that the radio is transmitting.

## Split Com and PA Mode

Pressing the **COM 1/2** key activates the Split COM mode. In this mode the pilot uses COM 1 for MIC audio while the copilot uses COM 2. The pilot and copilot can transmit simultaneously over separate radios. The pilot can still listen to COM 3, NAV 1, NAV 2, DME, ADF and MKR as selected. The Split COM mode is cancelled by pressing the **COM 1/2** key a second time.



When in the Split COM mode the copilot may make PA announcements while the pilot continues using COM 1 independently. PA mode is entered by pressing and holding the **SPKR** key for two seconds while in the Split COM mode. The copilot's voice is then heard over the cabin speaker when keyed. A second press of the **SPKR** key returns the copilot to normal Split COM operation.

When in PA mode, the **SPKR** LED blinks at a faster rate than that of the **COM MIC** key indicators.



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**NOTE:** *Garmin makes no expressed or implied guarantees regarding the suitability of the Split COM feature in any given installation.*

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### Transmit Interlock

An aircraft installation with transmit-interlock activated operates in the following way. When one or another transmitter is keyed, all other receivers are cut off so that they won't pick up the active COM transmitter interference. This is the preferred option for single pilot operation.

For aircraft with two pilots aboard, transmit-interlock may interfere with communications. When the pilot or the copilot transmit, no audio is heard on any other receiver. This means that if the pilot is communicating with ATC while the copilot transmits on another radio, all pilot reception is lost during the time of copilot transmission.

If the installation does not have transmit-interlock activated, all the receivers are listening all the time whether any radio is transmitting or not. Split COM performance varies significantly across installations. In small aircraft, interference is affected by both the distance between antennas and the tuned frequency separation.

If the transceivers interfere with each other, transmission by one radio produces static or squeal, thus loss of communication from any other radio.

Split COM can be disabled in the Configuration mode. Contact a Garmin-authorized service center for Split COM and transmit-interlock configuration.

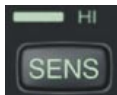
### COM SWAP

A remote mounted pushbutton switch may be used to transfer the active microphone between COM1 MIC and COM2 MIC. Pressing the switch has no effect when COM3 or Split COM is active.

Contact a Garmin-authorized service center for details on the remote COM swap option.

## MARKER BEACON RECEIVER

The GMA 347 marker beacon receiver and indicators are part of the ILS system. The marker beacon lamps operate independently of any audio selection and cannot be turned off. The GMA 347 can drive external marker lamps if required and also provides an autopilot middle marker sense output.



Prior to beginning an ILS approach, select high or low marker sensitivity with the **SENS** key. The **HI** LED above the **SENS** key illuminates for high sensitivity and remains off for low sensitivity.

Pressing the **MKR/MUTE** key prior to an approach allows the marker audio tones to be heard in the headsets. When the **MKR/MUTE** key illuminates, the marker audio will be heard. Pressing the key again while audio is heard will mute the marker audio until the next beacon is received.



Once the **MKR/MUTE** key is pressed, when a marker beacon tone is received, pressing the **MKR/MUTE** key during the tone SmartMutes the audio. That is, the audio turns off and returns when the next marker signal is received.

The marker beacon signal sensitivity threshold can be set in Configuration mode. Contact a Garmin-authorized service center for adjustment.

# Operation

Mode	PILOT LED	COPLT LED	TEL LED	Pilot Hears	Copilot Hears	Passenger Hears	Input to Phone
ALL	OFF	OFF	OFF	Selected radios; pilot; copilot; passengers; MUSIC 1	Selected radios; pilot; copilot; passengers; MUSIC 1	Selected radios; pilot; copilot; passengers; MUSIC 2	None
	OFF	OFF	ON	Selected radios; pilot; copilot; passengers; MUSIC 1; TEL audio	Selected radios; pilot; copilot; passengers; MUSIC 1; TEL audio	Selected radios; pilot; copilot; passengers; MUSIC 2; TEL audio	Pilot; copilot; passengers
PILOT	ON	OFF	OFF	Selected radios; pilot	Copilot; passengers; MUSIC 1; TEL audio	Copilot; passengers; MUSIC 2; TEL audio	Copilot; passengers
	ON	OFF	ON	Selected radios; pilot; TEL audio	Copilot; passengers; MUSIC 1	Copilot; passengers; MUSIC 2	Pilot

ICS Isolation Modes & Telephone Distribution

<b>Mode</b>	<b>PILOT LED</b>	<b>COPLT LED</b>	<b>TEL LED</b>	<b>Pilot Hears</b>	<b>Copilot Hears</b>	<b>Passenger Hears</b>	<b>Input to Phone</b>
<b>COPILOT</b>	OFF	ON	OFF	Selected radios; pilot; passengers; MUSIC 1	Copilot; TEL audio	Selected radios; pilot; passengers; MUSIC 2	Copilot
	OFF	ON	ON	Selected radios; pilot; passengers; MUSIC 1; TEL audio	Copilot	Selected radios; pilot; passengers; MUSIC 2; TEL audio	Pilot; passengers
<b>CREW</b>	ON	ON	OFF	Selected radios; pilot; copilot	Selected radios; pilot; copilot	Passengers; MUSIC 2; TEL audio	Passengers
	ON	ON	ON	Selected radios; pilot; copilot; TEL audio	Selected radios; pilot; copilot; TEL audio	Passengers; MUSIC 2	Pilot; copilot

**ICS Isolation Modes & Telephone Distribution (Cont'd)**

## GMA 347 PROGRAMMING OPTIONS

Programming options include variable configurations that can be arranged by a Garmin authorized service center. Options include a crew operable pushbutton or toggle switch, and fixed configurations that cannot be changed by the crew. Configurations include the following:

- Com Swap. An external pushbutton Swaps Com 1 MIC and Com 2 MIC.
- External Marker Beacon Lights. The GMA 347 can drive another set of marker lamps on the instrument panel.
- Marker Beacon Volume and sensitivity are adjustable.
- Deactivate MASQ™ (master squelch). Software configuration enables/disables master squelch. Level of MASQ™ is also adjustable.
- PA Muting option enables/disables PA output.
- Record Playback. Two separate options: An external pushbutton activates voice recorder playback. Also, the recorder can be controlled with a toggle switch to enable/disable recording.
- Auxiliary audio. An external switch controls the auxiliary audio input.
- Enable or Disable Internal Sidetone. Software configuration enables/disables Internal sidetone.
- Enable or Disable COM muting on transmit and COM muting on receive. When configured this way, audio on unselected COMs is muted while the selected COM is transmitting or receiving audio.
- Record COM 2. Allows recording of Copilot audio in place of Pilot audio (COM1) during Split Com mode.
- Pilot and Copilot MIC volume levels over Speaker (during PA mode) are adjustable.



- ICS Muting option stops playing Music 1 during ICS activity.
- Enable or disable DME and ADF Input.
- Enable or Disable Split COM function.
- Enable or Disable COM 3 function.
- Enable or Disable the telephone channel
- Enable or Disable Speaker function.
- Adjust the volume level of Music 1 and Music 2, Unswitched 1, Unswitched 2, Unswitched 3, Speaker, and Altitude Warning.
- Speaker always selected on power up.
- Disable beep sound for pushbutton recognition.
- Allow toggling of Music 1 muting during COM/NAV activity.



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**CAUTION:** *When the GMA 347 Audio panel is turned OFF or inoperative, certain autopilots will not operate. No warning tone is supplied when the autopilot disengages, and the middle marker sense signal is not supplied.*

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