

GMA 1347D

Installation Manual



(GMA 1347D -00 Shown)

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RECORD OF REVISIONS

Revision	Revision Date	Description
A	5/9/06	Production Release
B	8/14/07	Added the -20 unit
C	1/14/10	Added marker beacon antenna cable termination guidance

CURRENT REVISION DESCRIPTION

Revision	Page Number(s)	Section Number	Description of Change
C	1-1	1.2	Added "DME, ADF, MKR, TEL, AUX" to Equipment Description
	1-2	1.2.2	Added to Interface Summary
	1-7	1.6	Updated warranty statement
	2-1	2.1 & 2.2.2	Updated AC reference
	2-2 – 2-3	2.3.1	Added marker beacon installation guidance

DOCUMENT PAGINATION

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This manual reflects the operation of software version 4.00. Some differences in operation may be observed when comparing the information in this manual to earlier or later software versions.

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GMA 1347D HARDWARE MOD LEVEL HISTORY

The following table identifies hardware modification (Mod) Levels for the GMA 1347D Audio Panel. Mod Levels are listed with the associated service bulletin number, service bulletin date, and the purpose of the modification. The table is current at the time of publication of this manual (see date on front cover) and is subject to change without notice. Authorized Garmin Sales and Service Centers are encouraged to access the most up-to-date bulletin and advisory information on the Garmin Dealer Resource web site at www.garmin.com using their Garmin-provided user name and password.

MOD LEVEL	SERVICE BULLETIN NUMBER	SERVICE BULLETIN DATE	PURPOSE OF MODIFICATION

1 GENERAL DESCRIPTION

1.1 Introduction

This manual presents mechanical and electrical installation requirements for installing the Garmin GMA 1347D audio panel, as part of the Garmin Integrated Flight Deck. The GMA 1347D can be incorporated into a variety of airframes under appropriate TC or STC. Each airframe installation may vary. Use only approved (type or supplemental type) data for specific installation instructions in a particular aircraft.

1.2 Equipment Description

The Garmin GMA 1347D is a vertically oriented panel mounted audio control and marker beacon system. The system delivers reliability and versatility for all audio controlling functions. LED-illuminated push buttons and logical panel layout allow audio selection of NAV, COM, DME, ADF, MKR, TEL, AUX, and automatic warning audio in voice or tone annunciation. LED brightness is adjusted to a level appropriate for ambient cockpit light conditions automatically by the GDU or manually with radio lighting controls, depending upon installation connections. A failsafe circuit connects the pilot's headset and microphone directly to ON-SIDE COM in case power is interrupted or the unit is turned off.

The Garmin GMA 1347D Audio Panel incorporates a microcontroller for processing front panel key commands, annunciator control, input/output functions, and communication.

The GMA 1347D includes a five-position intercom system (ICS) with electronic cabin noise de-emphasis and two stereo music inputs. A dual installation extends the number of ICS positions to ten. The intercom provides two selectable modes of isolation (Intercom ON, Intercom OFF). A pilot-selectable cabin speaker output can be used to listen to the selected aircraft radios. The PA function is pilot selectable and allows communication to the passengers.

The GMA 1347D provides configurable passenger volume and pilot adjustable master and ICS volume.

The GMA 1347D provides digital audio input/output capability to external radios. The unit is capable of digitally interfacing with two transceivers and two receivers. For every channel except COM 3, the unit generates both digital and analog outputs, and combines both digital and analog inputs.

The GMA 1347D provides a digital recorder with playback capability. Recording is selectable via the REC button. Playback is controlled by pressing the PLAY button. The digital clearance recorder can playback up to two and a half minutes of recording.

The marker beacon receiver with dual sensitivity and audio muting with automatic re-arming is included in the unit.

The GMA 1347D (-20) includes a "CABIN" button, enabling cabin to cockpit communications.

1.2.1 Features Summary

- Logical front panel layout
- LED annunciators indicate selected function
- Five position intercom: pilot and four passengers
- Two stereo headset amplifiers: one for the pilot and one for the passengers
- Two stereo music source inputs
- Two selectable intercom operational modes
- VOX control for mic inputs
- Automatic selection of radio audio source when corresponding mic is selected
- **MASQ™** Processing
- COM swap function
- TX indication
- **SmartMute™** marker audio muting
- Speaker output for radios
- Power-off fail safe connection for Pilot PTT, mic and Pilot's Headset-Left to ON-SIDE COM
- Digital audio interface
- Voice Recorder
- Cockpit Call (-20 only)

1.2.2 Interface Summary

The following is an interface summary for the GMA 1347D. See Section 4 and Appendix B for connection details.

- 3 Transceiver Inputs/Outputs (Figure B-4)
- 1 Speaker Output (Figures B-1 and B-2)
- 2 Headset Outputs (Figure B-3)
- 5 Microphone Inputs (Figure B-3)
- 5 Receiver Inputs (Figure B-4)
- 4 Unswitched Inputs (Figure B-4)
- 6 Digital Audio Inputs (Figure B-5)
- 2 Aircraft Power Inputs (Figures B-1 and B-2)
- Discrete Inputs/Outputs (Figure B-6)
- PFD/MFD Reversionary Mode outputs (Figures B-1 and B-2)
- 2 RS-232 Inputs/Outputs (Figure B-5)
- Marker Beacon Antenna Input (Figures B-1 and B-2)
- External Marker Beacon Lamp Driver Outputs (Figure B-6)

1.3 Technical Specifications

It is the responsibility of the installing agency to obtain the latest revision of the GMA 1347D Environmental Qualification Form. This form is available directly from Garmin under the following part number:

GMA 1347D Environmental Qualification Form, Garmin part number 005-00314-79

To obtain a copy of this form, see the dealer/OEM portion of the Garmin web site (www.garmin.com).

1.3.1 Physical Characteristics

Characteristic	Specification
Bezel Height	7.70 inches (196 mm)
Bezel Width	1.30 inches (33 mm)
Rack Height	6.30 inches (160 mm)
Rack Width	1.325 inches (34 mm)
Depth Behind Panel with Connectors (measured from face of aircraft panel to rear of connector backshells)	7.79 inches (198 mm)
GMA 1347D Unit Weight	1.7 lbs. (0.8 kg)
GMA 1347D Rack Weight (Installed with rack and connectors)	2.4 lbs. (1.1 kg)

1.3.2 Electrical Characteristics

Characteristic	Specification
Regulatory Compliance	RTCA/DO-160D Environmental Conditions and EUROCAE/ED-14D
Unit Software	RTCA/DO-178B Level C
CLD (Custom Logic Devices) Compliance	RTCA/DO-254 Level C
Temperature Range	-45°C to +70°C
Power Requirements	Supply Voltage: 28 VDC See the Environmental Qualification Form for details on surge ratings and minimum/maximum operating voltages. Operating Current: 1.75 amps max at 27.5 V
Altitude	55,000 Feet
Audio Panel	Transceiver inputs: 3 Receiver inputs: 5 Unswitched inputs: 4 Input impedance: 500 Ω Input isolation: 60 dB minimum Special functions: Failsafe operation MASQ™ processing
Intercom	Positions: 5 (pilot and 4 passengers per GMA 1347D) Volume controls: 2 (pilot, passengers) VOX level controls: 2 (pilot, passengers) VOX circuits: 5 (one per mic input) Music inputs (stereo): 2 Music input impedance: 5 kΩ Music input level: Less than 500 mVac RMS for full output (typical). 1 Vac RMS MAX (3 Vp-p) Microphone signal processing: 9 pole characteristic and special cabin noise band de-emphasis Intercom isolation modes (-00): 2 (Pilot Isolate, Crew Isolate) Intercom isolation modes (-20): 4 (Pilot Isolate, Crew Isolate, Copilot Isolate, All ICS Mode) Special functions: Recorder with playback (selectable recording of selected COMs) up to 2.5 minutes of recording time. Automatic squelch: 5 (one per mic input) pilot selectable between auto and manual.
Headphone Outputs	Output amplifiers: 2, stereo (pilot, passengers) Fidelity: <u>Power into 150 Ω</u> <u>Distortion</u> 50 mW <0.5% 100 mW <5% Frequency response: Music: 50 Hz to 20 kHz nominal Aircraft radio: 200 Hz to 6 kHz nominal ICS mic: (Special cabin noise band de-emphasis)
Speaker Outputs	Outputs selectable: 1, pilot selectable Output power: 10 watts into 4 Ω or 8 Ω, @ any normal supply voltage. Frequency response: 350 Hz to 6 kHz nominal
Marker Beacon Receiver	Frequency: Crystal controlled at 75 MHz Sensitivity: LO 1000 μV; HI 200 μV Selectivity: 6 dB @ ±10 kHz min, 40 dB @ ±200 kHz max. Input impedance: 50 Ω External lamp drive: 125 mA max each output Other outputs: Middle MKR sense Special functions: SmartMute™ marker audio muting

1.4 Certification

The conditions and tests required for TSO approval of this article are minimum performance standards. It is the responsibility of those installing this article either on or within a specific type or class of aircraft to determine that the aircraft installation conditions are within the TSO standards. TSO articles must have separate approval for installation in an aircraft. The article may be installed only if performed under 14 CFR part 43 or the applicable airworthiness requirements.

1.4.3 TSO/ETSO Compliance

Function	TSO/ETSO	Category	Applicable LRU SW Part Numbers (011-01257-00)	Applicable LRU SW Part Numbers (011-01257-20)	Applicable CLD Part Numbers (011-01257-00)	Applicable CLD Part Numbers (011-01257-20)
Audio Selector Panels And Amplifiers	TSO-C50c ETSO-C50c		All 006-B0203-() except 006-B0203-00 through 006-B0203-29	All 006-B0203-() except 006-B0203-00 through 006-B0203-39	006-C0051-20* 006-C0075-00* 006-C0075-01* 006-C0075-03* 006-C0090-() 006-C0091-()	006-C0090-() 006-C0091-()
Airborne Radio Marker Receiving Equipment	TSO-C35d ETSO-2C35d	Class A	All 006-B0203-() except 006-B0203-00 through 006-B0203-29	All 006-B0203-() except 006-B0203-00 through 006-B0203-39	006-C0051-20* 006-C0075-00* 006-C0075-01* 006-C0075-03* 006-C0090-() 006-C0091-()	006-C0090-() 006-C0091-()

*Not RTCA/DO-254 Level C Compliant

1.4.4 TSO/ETSO Deviations

TSO	Deviation
TSO-C35d	1. Garmin was granted a deviation from TSO-C35d to use RTCA DO-160D instead of RTCA DO-138 as the standard for Environmental Conditions and Test Procedures for Airborne Equipment.
	2. Garmin was granted a deviation from TSO-C35d to use FAR §21.607(d) instead of FAR §37.7 as the general rules governing holders of the TSO authorizations.
TSO-C50c	1. Garmin was granted a deviation from TSO-C50c to use RTCA DO-178B instead of RTCA DO-178A as the standard for Software Considerations in Airborne Systems and Equipment Certification.
	2. Garmin was granted a deviation from TSO-C50c to use RTCA DO-178B instead of RTCA DO-178A to demonstrate compliance for the verification and validation of the computer software.

1.5 Reference Documents

The following publications are sources of additional information for installing the GMA 1347D. Before installing the unit, the technician should read all referenced materials along with this manual.

Part Number	Document
190-00303-00	G1000 System Installation Manual
190-00303-04	G1000 Line Maintenance and Configuration Manual

1.6 Limited Warranty

All Garmin avionics products are warranted to be free from defects in materials or workmanship for: two years from the date of purchase for new Remote-Mount and Panel-Mount products; one year from the date of purchase for new portable products and any purchased newly-overhauled products; six months for newly-overhauled products exchanged through a Garmin Authorized Service Center; and 90 days for factory repaired or newly-overhauled products exchanged at Garmin in lieu of repair. Within the applicable period, Garmin will, at its sole option, repair or replace any components that fail in normal use. Such repairs or replacement will be made at no charge to the customer for parts or labor, provided that the customer shall be responsible for any transportation cost. This warranty does not apply to: (i) cosmetic damage, such as scratches, nicks and dents; (ii) consumable parts, such as batteries, unless product damage has occurred due to a defect in materials or workmanship; (iii) damage caused by accident, abuse, misuse, water, flood, fire, or other acts of nature or external causes; (iv) damage caused by service performed by anyone who is not an authorized service provider of Garmin; or (v) damage to a product that has been modified or altered without the written permission of Garmin. In addition, Garmin reserves the right to refuse warranty claims against products or services that are obtained and/or used in contravention of the laws of any country.

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International Purchases: A separate warranty may be provided by international distributors for devices purchased outside the United States depending on the country. If applicable, this warranty is provided by the local in-country distributor and this distributor provides local service for your device. Distributor warranties are only valid in the area of intended distribution. Devices purchased in the United States or Canada must be returned to the Garmin service center in the United Kingdom, the United States, Canada, or Taiwan for service.

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2 INSTALLATION OVERVIEW

2.1 Introduction

This section provides hardware equipment information for installing the GMA 1347D Audio Panel, related hardware and suggestions relating to the marker beacon antenna. Installation of the GMA 1347D should follow the aircraft TC or STC requirements. Cabling is fabricated by the installing agency to fit each particular aircraft. The guidance of FAA advisory circulars AC 43.13-1B and AC 43.13-2B, where applicable, may be found useful for making retro-fit installations that comply with FAA regulations. Refer to the G1000 System Installation Manual, Garmin part number 190-00303-00 for further details on the mechanical aspects of the G1000 system.

2.2 Installation Materials

The GMA 1347D is available only as a single unit under the following part number:

NOTE

All units are black, unless otherwise noted.

Item	Catalog P/N
GMA 1347D Unit Only, (011-01257-00)	010-00465-00
GMA 1347D Cabin Unit Only, (011-01257-20)	010-00465-20

2.2.1 Equipment Available

Each of the following accessories are provided separately for the GMA 1347D:

Item	Garmin P/N
Sub Assy, Connector Kit, SB, GMA 1347	011-00813-01
SMP, Install Rack, GMA 1347	115-00427-00
Sub Assy, Bracket Kit, GMA 1347	011-01001-00
Sub Assy, Backplate, GMA 1347	011-00812-00
Sub Assy, Nut Plate Kit, GMA 1347	011-01019-00
Garmin Marker Beacon Antenna Kit**	010-10175-00

** **Note:** A marker beacon antenna approved to TSO C35d that has been installed to meet the requirements of this manual may be approved for use with the GMA 1347D.

2.2.2 Additional Equipment Required

- Marker Beacon Coupler
- Antenna sealant (use manufacturer's instructions, install according to FAA AC 43.13-2B).
- Cables: The installer will fabricate and supply all system cables. Interconnect wiring diagrams are detailed in Appendix B.
- Hardware: #6-32 x 100° Flat Head Screw (6 ea.) and #6-32 Self-Locking Nut (6 ea.). Screws and Nutplates supplied in nutplate kit 011-01019-00.
- Stereo headphone jacks (up to 5), microphone jacks (up to 5), 3.5mm stereo jacks (up to 2), and insulating washers for all.

2.3 Installation Considerations

The GMA 1347D interfaces with the G1000 system, and with various avionics equipment. Fabrication of a wiring harness is required. Sound mechanical and electrical methods and practices are required for installation of the GMA 1347D.

2.3.1 Marker Beacon Antenna Installation

2.3.1.1 Location Considerations

The marker beacon antenna should be mounted on a flat surface on the underside of the aircraft body.

NOTE

Do not install the antenna inside the aircraft. Installing the antenna inside the aircraft limits the antenna reception and increases the antennas susceptibility to radiation from components inside the aircraft.

Mount the antenna so that there is a minimum of structure between it and the ground radio stations. Locate it as far away as possible from transmitter antennas.

2.3.1.2 Marker Beacon Antenna Mounting

Install the antenna according to the antenna manufacturer's instructions. If the antenna is being installed on a composite aircraft, ground planes must sometimes be added. Conductive wire mesh, radials or thin aluminum sheets embedded in the composite material provide the proper ground plane allowing the antenna pattern (gain) to be maximized for optimum performance.

2.3.1.3 Marker Beacon Antenna Cable Installation

Use coaxial cable meeting the applicable aviation regulation for the marker beacon antenna. Any cable meeting specifications is acceptable for the installation. When routing antenna cables, observe the following precautions:

- All cable routing should be kept as short and as direct as possible
- Avoid sharp bends
- Avoid routing cables near power sources (e.g., 400 Hz generators, trim motors, etc.) or near power for fluorescent lighting
- Allow a 12 inch minimum separation between any other cables, including antenna cables (e.g ADF, COM, NAV, GS, MARKER)

2.3.1.4 Marker Beacon Antenna Cable Installation

This section provides guidance for terminating the coaxial cable into the D-Sub connector. See the system interconnect section for pin assignments.

NOTE

Use coaxial cable meeting the applicable aviation regulation for the marker beacon antenna. Route the cable to the D-Sub as described in Section 2.3.1.3.

When terminating the coaxial cable into the D-Sub observe the following guidance (refer to Figure 2-1):

- Keep the distance from the end of the exposed shield to D-Sub as short as possible.
- Ensure the distance from the beginning of the exposed shield to D-Sub is no more than 1.5 inches long.
- Terminate the center conductor by directly connecting it to the D-sub through a crimp pin without a pigtail.

Figure 2-1 below represents a suggested method for terminating the marker beacon coaxial cable using M17/128-RG400 terminated into a 78 Pin high density D-Sub connector. Refer to Table 2-1 for Crimp Tool, Pin, and Crimp Tool Insert part numbers.

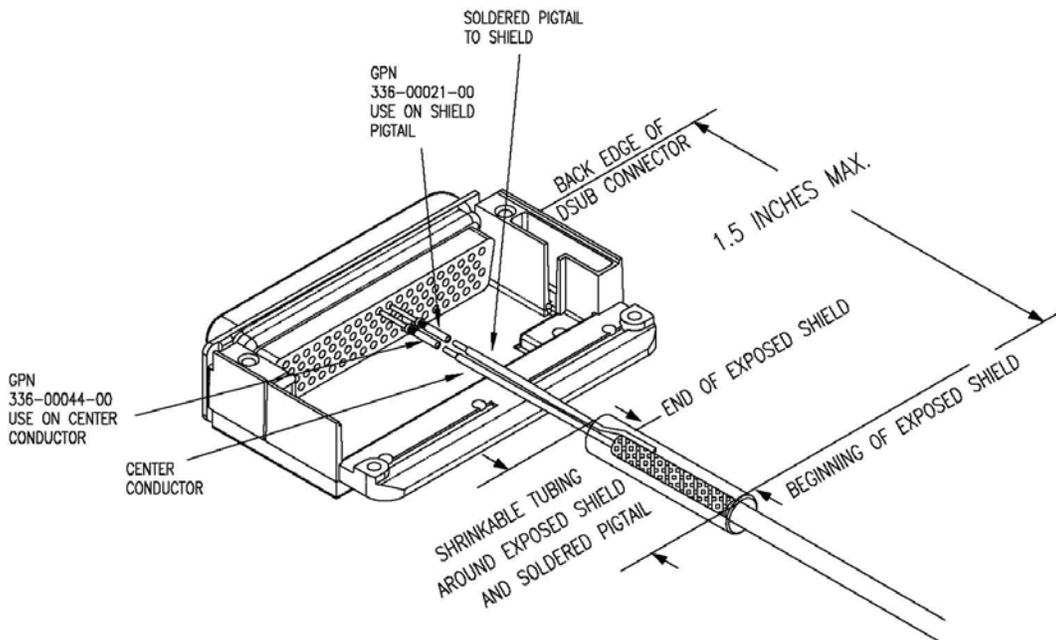


Figure 2-1. GMA Marker Beacon Coaxial Cable D-Sub Termination

Table 2-1. Pin and Crimp Tool Part Numbers

CRIMP TOOL	PIN	CRIMP TOOL INSERT
DANIELS MANUFACTURING CORP DMC M22520/2-01 GAGE AFM8 CRIMPING TOOL	Garmin Part Number 336-00021-00	K42
	Garmin Part Number 336-00044-00	K774

2.4 Cabling & Wiring

Use AWG #24 or larger wire for all connections unless otherwise specified by the aircraft manufacturer or Garmin. The standard pin contacts supplied in the connector kit are compatible with up to AWG #22 wire. In cases where some installations have more than one unit sharing a common circuit breaker, sizing and wire gauge is based on aircraft circuit breaker layout, length of wiring, current draw of units, and internal unit protection characteristics. Do not attempt to combine more than one unit on the same circuit breaker unless it is specified on aircraft manufacturer approved drawings.

In some cases, a larger gauge wire such as AWG #16, #18, or #20 may be needed for power connections. The provided connector kit supplies extended barrel contacts for AWG #16 and #18 wire, if required. Special thin-wall heat shrink tubing is also provided to insulate the extended barrels inside the backshell. If using #16 or #18 barrel contacts, ensure that no two contacts are mounted directly adjacent to each other. This minimizes the risk of contacts touching and shorting to adjacent pins and to ground.

Ensure that routing of the wiring does not come in contact with sources of heat, RF or EMI interference. Check that there is ample space for the cabling and mating connectors. Avoid sharp bends in cabling and routing near aircraft control cables.

2.5 Cooling Air

The GMA 1347D does not have provisions for attaching cooling air and does not generate an excessive amount of heat during typical operations, however the thermal characteristics of the installation should always be assessed. An undesirable thermal condition could be created due to the unit's own internal power dissipation combined with restricted ventilation, or due to heat generated by adjacent equipment. Limiting thermal build up, by means of fan or natural convection is always a good practice and recommended to increase the product life. Refer to the G1000 System Installation manual, Garmin part number 190-00303-00, for information on cooling requirements.

2.6 Mounting Requirements

The GMA 1347D mounting surface must be capable of providing structural support and electrical bond to the aircraft to minimize radiated EMI and provide protection from High-Intensity Radiation Fields (HIRF).

The GMA 1347D is mounted using its own system rack. Figure 2-2 shows the GMA 1347D unit rack. The unit rack is fastened to the aircraft instrument panel using the nutplate kit and bracket kit listed in Section 2.2.1. Refer to Figure A-2, GMA 1347D Connector/Rack Assembly Drawing, for nutplate placement locations. The installer must provide any additional remote mounting equipment.

NOTE

To ensure a sturdy mount, rear support is highly recommended.

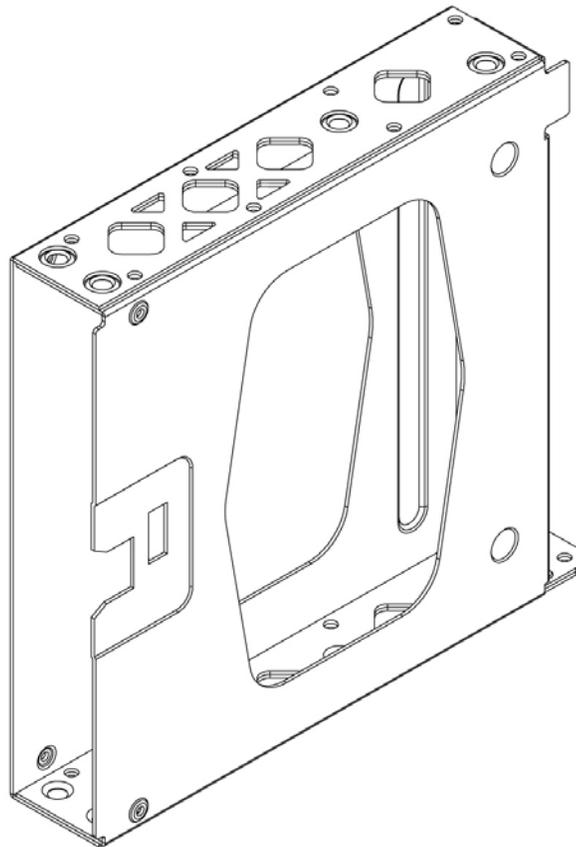


Figure 2-2. GMA 1347D Unit Rack

2.7 Installation Approval Considerations for Pressurized Aircraft

Antenna and cable installations on pressurized cabin aircraft require FAA approved installation design and engineering substantiation data whenever such installations incorporate alteration (penetration) of the cabin pressure vessel by connector holes and/or mounting arrangements.

For needed engineering support pertaining to the design and approval of such pressurized aircraft antenna installations, it is recommended that the installer proceed according to any of the following listed alternatives:

1. Obtain approved antenna installation design data from the aircraft manufacturer.
2. Obtain an FAA approved Supplemental Type Certificate (STC) pertaining to and valid for the subject antenna installation.
3. Contact the FAA Aircraft Certification Office in the appropriate Region and request identification of FAA Designated Engineering Representatives (DERs) who are authorized to prepare and approve the required antenna installation engineering data.
4. Obtain FAA Advisory Circular AC-183C and select (and contact) a DER from the roster of individuals identified thereunder.
5. Contact an aviation industry organization such as the Aircraft Electronics Association and request their assistance.

2.8 Electrical Noise

Because the audio panel is a point in the aircraft where signals from many pieces of equipment are brought together, take care to minimize effects from coupled interference and ground loops.

Coupled interference can sneak into audio system interconnecting cables when they are routed near large AC electric fields, AC voltage sources and pulse equipment (strobes, spark plugs, magnetos, EL displays, CRTs, etc). Interference can also couple into audio system interconnecting cables by magnetic induction when they are routed near large AC current-carrying conductors or switched DC equipment (heaters, solenoids, fans, autopilot servos, etc).

Ground loops are created when there is more than one path in which return currents flow or when signal returns share the same path as large currents from other equipment. These large currents create differences in ground potential between the various equipment operating in the aircraft. These differences in potential can produce an additive effect on audio panel input signals.

The audio panel may “see” the desired input signal plus an unwanted component injected by ground differentials, a common cause of alternator-related noise. This is the main reason why all audio jacks should be isolated from ground. Terminating audio shields just at one end eliminates another potential ground loop injection point.

Single-point grounding cannot be overstressed for the various avionics producing and processing audio signals. Single-point, in this context, means that the various pieces of equipment share a single common ground connection back to the airframe. Good aircraft electrical/charging system ground bonding is also important.

The wiring diagrams and accompanying notes in this manual should be followed closely to minimize noise effects.

3 INSTALLATION PROCEDURE

3.1 Unpacking Unit

Carefully unpack the equipment and make a visual inspection of the unit for evidence of damage incurred during shipment. If the unit is damaged, notify the carrier and file a claim. To justify a claim, save the original shipping container and all packing materials. Do not return the unit to Garmin until the carrier has authorized the claim.

Retain the original shipping containers for storage. If the original containers are not available, a separate cardboard container should be prepared that is large enough to accommodate sufficient packing material to prevent movement.

3.2 Antenna Installation

Install the antenna according to the antenna manufacturer's instructions.

3.3 Antenna Cable Connectors

The antenna cable requires a BNC plug connector on both ends. Follow BNC connector manufacturer instructions for assembly of the BNC connector.

3.4 Electrical Connections

All electrical connections to the GMA 1347D, including the marker beacon antenna and shield ground, are made through two 78-pin D-subminiature connectors (see Figure 4-1). Tables in Section 4 define the electrical characteristics of all input and output signals. Required connector and associated hardware are supplied in the connector kit (P/N 011-00813-01). See figures in Appendix B for interconnect wiring diagrams.

CAUTION

Check wiring connections for errors before inserting the GMA 1347D into the rack. Incorrect wiring could cause internal component damage.

Table 3-1. Pin Contact Part Numbers

Manufacturer	78 pin D-Subminiature Connectors (P3471, 3472)		
	16 AWG (Power Only)	18-20 AWG (Power Only)	22-28 AWG
Garmin P/N	336-00044-01	336-00044-00	336-00021-00
Military P/N	N/A	NA	M39029/58-360
AMP	N/A	NA	204370-2
Positronic	N/A	NA	MC8522D
ITT Cannon	N/A	NA	030-2042-000

Table 3-2. Recommended Crimp Tools

Manufacturer	Hand Crimping Tool	18-20 AWG		22-28 AWG	
		Positioner	Insertion/ Extraction Tool (Note 2)	Positioner	Insertion/ Extraction Tool
Military P/N	M22520/2-01	N/A	M81969/1-04	M22520/2-09	M81969/1-04
Positronic	9507	9502-11	M81969/1-04	9502-3	M81969/1-04
ITT Cannon	995-0001-584	N/A	N/A	995-0001-739	N/A
AMP	601966-1	N/A	91067-1	601966-6	91067-1
Daniels	AFM8	K774	M81969/1-04	K42	M81969/1-04
Astro	615717	N/A	M81969/1-04	615725	M81969/1-04

NOTES

1. Non-Garmin part numbers shown are not maintained by Garmin and consequently are subject to change without notice.
2. Extracting the #16, #18 and #20 contact requires that the expanded wire barrel be cut off from the contact. It may also be necessary to push the pin out from the face of the connector when using an extractor due to the absence of the wire. A new contact must be used when reassembling the connector.
3. For applications using 16 AWG wire, contact Garmin for information regarding connector crimp positioner tooling.

3.5 Backshell Assembly

The GMA 1347D connector kit includes two Garmin backshell assemblies. Garmin's backshell connectors give the installer the ability to quickly and easily terminate shield grounds at the backshell housing using the G1000 Shield Block. To assemble the backshell connectors and grounding system, refer to instructions provided in the Shield Block Installation Instructions (190-00313-09).

3.6 GMA 1347D Unit Installation

CAUTION

Do not use excessive force when inserting the GMA 1347D into the rack. This may damage the connectors, unit, and/or unit rack. If heavy resistance is felt during installation, stop! Remove the GMA 1347D and identify the source of resistance.

For final installation and assembly, refer to the outline and installation drawings shown in Appendix A of this manual.

1. Assemble the backshell as described in Section 3.5.
2. Connect both backshells to the rear plate using the screws provided in the connector kit.
3. Mount the unit rack to a suitable mounting location on the panel using the provided nutplates.
4. Assemble the rear plate into the GMA 1347D unit rack.
5. Insert the GMA 1347D into the rack, noting proper orientation as shown on the installation drawing in Appendix A.
6. Lock the GMA 1347D in place using the appropriate size hex wrench.

3.7 Post Installation Configuration and Checkout

NOTE

The GMA 1347D does not provide valid outputs until the aircraft post installation configuration procedures are completed.

The GMA 1347D must be installed with a Garmin G1000 system and have FAA approved configuration data. Configuration data is loaded to the GMA 1347D from an aircraft-specific G1000 SW Loader Card.

The G1000 PFD serves as the graphical user interface to be used by the installer that is configuring the system. For basic configuration information, refer to the G1000 Line Maintenance and Configuration Manual, Garmin part number 190-00303-04. For actual aircraft installation/checkout, use only aircraft manufacturer approved checkout procedures.

3.8 Continued Airworthiness

Other than for regulatory periodic functional checks, maintenance of the GMA 1347D is “on condition” only.

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4 SYSTEM INTERCONNECTS

4.1 Connector Description

The GMA 1347D has two 78-pin connectors located at the rear of the unit designated J3471 and J3472. J3471 and J3472 are clearly marked on the back of the rack. J3471 and J3472 pins are configured as shown in the following illustration:

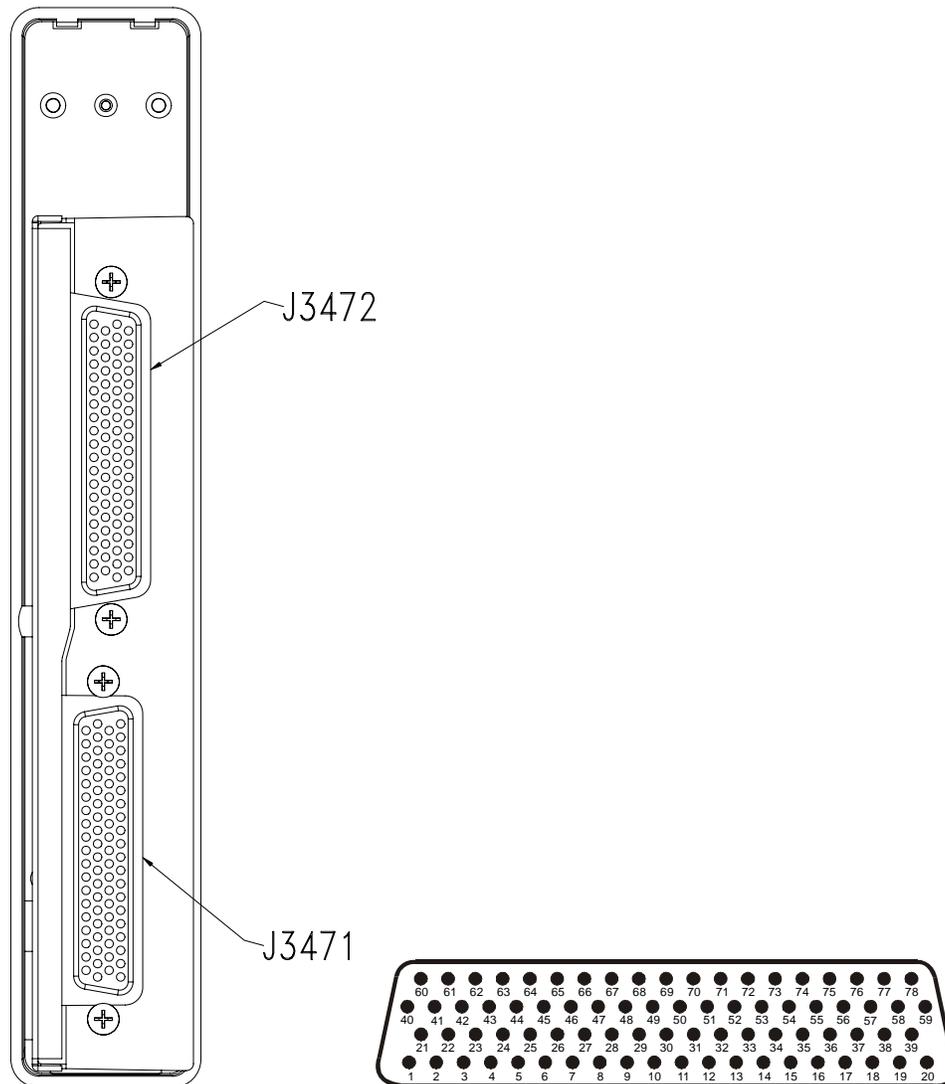


Figure 4-1. Rear Connectors, J3471 and J3472 Viewed From Back of Unit

4.2 Connectors J3471 and J3472

J3471 and J3472 pin assignments are given in Tables 4-1 and 4-2.

Following the pin assignment table, additional tables group pin connections by function.

An asterisk (*) following a signal name denotes that the signal is an Active Low. Active Low inputs require a ground to activate. Active Low outputs sink current to ground when active.

Table 4-1. J3471 Pin Assignments

Pin	Pin Name	I/O
1	FAIL SAFE WARN AUDIO IN (-00)	In
	FAIL SAFE PILOT SUMMED AUDIO OUT HI (-20)	Out
2	OXYGEN MASK MIC SELECT*	In
3	TEL RINGER AUDIO IN HI	In
4	TEL RINGER AUDIO IN LO	In
5	REMOTE PASS ICS OUT HI	Out
6	ON-SIDE NAV AUDIO IN HI	In
7	ON-SIDE COM AUDIO IN HI	In
8	ON-SIDE COM AUDIO LO	I/O
9	PILOT HEADSET AUDIO OUT LEFT	Out
10	PILOT HEADSET AUDIO OUT RIGHT	Out
11	PILOT HEADSET AUDIO OUT LO	Out
12	CROSS-SIDE COM AUDIO IN HI	In
13	CROSS-SIDE COM AUDIO LO	I/O
14	CROSS-SIDE NAV AUDIO IN HI	In
15	DME AUDIO IN HI	In
16	DME AUDIO IN LO	In
17	MUSIC IN 1 LEFT	In
18	MUSIC IN 1 RIGHT	In
19	UNSWITCHED AUDIO IN 1 HI	In
20	UNSWITCHED AUDIO IN 2 HI	In
21	REMOTE CREW ICS AUDIO IN HI	In
22	REMOTE CREW ICS AUDIO IN LO	In
23	TEL MIC AUDIO OUT HI	Out
24	PASS ICS KEY*	In
25	ON-SIDE NAV AUDIO IN LO	In
26	ON-SIDE COM MIC AUDIO OUT HI	Out
27	ON-SIDE COM MIC KEY*	Out
28	PILOT MIC AUDIO IN HI	In
29	PILOT MIC KEY* IN	In
30	PILOT MIC IN LO	In
31	PILOT ICS KEY*	In
32	CROSS-SIDE COM MIC AUDIO OUT HI	Out
33	CROSS-SIDE COM MIC KEY*	Out
34	CROSS-SIDE NAV AUDIO IN LO	In
35	ADF AUDIO IN HI	In
36	ADF AUDIO IN LO	In
37	MUSIC IN 1 LO	In

* Denotes Active Low (Inputs: ground to activate; Outputs: grounded when active).

Table 4-1. J3471 Pin Assignments (Continued)

Pin	Pin Name	I/O
38	UNSWITCHED AUDIO IN 3 HI	In
39	UNSWITCHED AUDIO IN LO	In
40	REMOTE PASS ICS AUDIO IN HI	In
41	REMOTE PASS ICS AUDIO IN LO	In
42	TEL AUDIO IN HI	In
43	TEL AUDIO IN LO	In
44	PASS 3 MIC AUDIO IN HI	In
45	PASS 3 MIC AUDIO IN LO	In
46	PASS 1 MIC AUDIO IN HI	In
47	PASS 1 MIC AUDIO IN LO	In
48	PASS HEADSET AUDIO OUT LO	Out
49	COPILOT MIC AUDIO IN HI	In
50	COPILOT MIC KEY* IN	In
51	COPILOT MIC IN LO	In
52	COPILOT ICS KEY*	In
53	RESERVED (-00) SUMMED AUDIO OUT LO (-20)	-- Out
54	ALTITUDE WARN AUDIO IN HI	In
55	ALTITUDE WARN AUDIO IN LO	In
56	MUSIC IN 2 LEFT	In
57	MUSIC IN 2 RIGHT	In
58	COM 3 AUDIO IN HI	In
59	COM 3 AUDIO LO	I/O
60	REMOTE CREW ICS OUT HI	Out
61	REMOTE ICS OUT LO	Out
62	TEL MIC AUDIO OUT LO	Out
63	PASS 4 MIC AUDIO IN HI	In
64	PASS 4 MIC AUDIO IN LO	In
65	PASS 2 MIC AUDIO IN HI	In
66	PASS 2 MIC AUDIO IN LO	In
67	PASS HEADSET AUDIO OUT LEFT	Out
68	PASS HEADSET AUDIO OUT RIGHT	Out
69	COPILOT HEADSET AUDIO OUT LEFT	Out
70	COPILOT HEADSET AUDIO OUT RIGHT	Out
71	COPILOT HEADSET AUDIO OUT LO	Out
72	RESERVED (-00) PILOT SUMMED AUDIO OUT HI (-20)	-- Out
73	RESERVED (-00) COPILOT SUMMED AUDIO OUT HI (-20)	-- Out
74	AUX AUDIO IN HI	In
75	AUX AUDIO IN LO	In
76	MUSIC IN 2 LO	In
77	COM 3 MIC AUDIO OUT HI	Out
78	COM 3 MIC KEY*	Out

* Denotes Active Low (Inputs: ground to activate; Outputs: grounded when active).

Table 4-2. J3472 Pin Assignments

Pin	Pin Name	I/O
1	RESERVED	--
2	RESERVED	--
3	PROGRAM GROUND	--
4	RESERVED	--
5	PROGRAM GROUND	--
6	RS-232 OUT 1	Out
7	RS-232 IN 1	In
8	ON-SIDE COM MIC DIGITAL AUDIO OUT	Out
9	ON-SIDE COM DIGITAL AUDIO IN	In
10	RESERVED	--
11	PROGRAM GROUND	--
12	SPARE	--
13	SPARE	--
14	POWER GROUND	--
15	RESERVED	--
16	POWER GROUND	--
17	COM SWAP*	In
18	PROGRAM GROUND	--
19	SPARE	--
20	RESERVED	--
21	RESERVED	--
22	RESERVED	--
23	PROGRAM GROUND	--
24	RESERVED (-00) RECORDER OFF SELECT* (-20)	In
25	PROGRAM GROUND	--
26	RESERVED	--
27	GMA REMOTE POWER OFF	In
28	ON-SIDE NAV DIGITAL AUDIO IN	In
29	ON-SIDE VOICE ALERT DIGITAL AUDIO IN	In
30	AIRCRAFT POWER 2	In
31	SPARE	--
32	AIRCRAFT POWER 2	In
33	SPARE	--
34	MIDDLE MARKER SENSE	Out
35	SPARE	--
36	REVERSIONARY MODE 1	Out
37	REVERSIONARY MODE COMMON 1	Out

* Denotes Active Low (Inputs: ground to activate; Outputs: grounded when active).

Table 4-2. J3472 Pin Assignments (Continued)

Pin	Pin Name	I/O
38	RS-232 OUT 2	Out
39	RS-232 IN 2	In
40	RESERVED	--
41	SPEAKER AUDIO OUT LO	Out
42	SPEAKER AUDIO OUT HI	Out
43	RESERVED	--
44	PROGRAM GROUND	--
45	RESERVED	--
46	PROGRAM GROUND	--
47	CROSS-SIDE COM MIC DIGITAL AUDIO OUT	Out
48	CROSS-SIDE COM DIGITAL AUDIO IN	In
49	SECONDARY DIGITAL AUDIO CLOCK OUT	Out
50	SECONDARY DIGITAL AUDIO CLOCK IN	In
51	14 V LIGHTING HI	In
52	28 V LIGHTING HI	In
53	AIRCRAFT POWER 1	In
54	SPARE	--
55	AIRCRAFT POWER 1	In
56	REVERSIONARY MODE 2	Out
57	REVERSIONARY MODE COMMON 2	Out
58	RESERVED	--
59	MARKER ANTENNA LO	In
60	RESERVED	--
61	CROSS-SIDE VOICE ALERT DIGITAL AUDIO IN	In
62	RESERVED	--
63	RESERVED	--
64	PA MUTE* OUT	Out
65	RESERVED	--
66	RESERVED	--
67	PROGRAM GROUND	--
68	CROSS-SIDE NAV DIGITAL AUDIO IN	In
69	POWER GROUND	--
70	SPARE	--
71	POWER GROUND	--
72	SPARE	--
73	SPARE	--
74	AIRWAY/INNER MARKER EXT LAMP OUT (-00) CABIN CALL EXT LAMP OUT (-20)	Out Out
75	MIDDLE MARKER EXT LAMP OUT	Out
76	OUTER MARKER EXT LAMP OUT	Out
77	RESERVED (-00) COCKPIT CALL SELECT* (-20)	-- In
78	MARKER ANTENNA HI	In

*Denotes Active Low (Inputs: ground to activate; Outputs: grounded when active).

4.3 J3472 Connector Pin Assignments

This section covers the pin connections of J3472 only.

4.3.1 Aircraft Power and Lighting

Power Input requirements and Lighting Bus inputs are listed in the following tables. The power-input pins accept 11-33 Vdc. AIRCRAFT POWER 2 is for connecting to an alternate power source, such as on aircraft with two electrical buses. Refer to Figure B-1 for power and lighting interconnections.

Table 4-3. Aircraft Power Pin Assignments, J3472

Pin	Pin Name	Description	I/O
53	AIRCRAFT POWER 1	Unit power	In
55	AIRCRAFT POWER 1	Unit power	In
30	AIRCRAFT POWER 2	Unit power	In
32	AIRCRAFT POWER 2	Unit power	In
69	POWER GROUND	Aircraft ground	--
71	POWER GROUND	Aircraft ground	--
14	POWER GROUND	Aircraft ground	--
16	POWER GROUND	Aircraft ground	--
27	GMA REMOTE POWER OFF	ARINC active high signal turns unit off	In

Pins 53 and 55 of J3472 are internally connected to form AIRCRAFT POWER 1. Pins 30 and 32 of J3472 are internally connected to form AIRCRAFT POWER 2. AIRCRAFT POWER 1 and AIRCRAFT POWER 2 are “diode ORed” to provide power redundancy.

4.3.2 Lighting Bus

The GMA 1347D can be configured to track a 28 Vdc or 14 Vdc lighting bus using these inputs. The GMA 1347D can also automatically adjust for ambient lighting conditions based on photocell input on the PFD/MFD by digital means.

Table 4-4. Aircraft Lighting Pin Assignments, J3472

Pin	Pin Name	Description	I/O
51	14 V LIGHTING HI	14V Backlighting input, 0 to 14 Vdc	In
52	28 V LIGHTING HI	28V Backlighting input, 0 to 28 Vdc	In

4.3.3 RS-232 Serial Input/Output

Table 4-5. RS-232 Pin Assignments, J3472

Pin	Pin Name	Description	I/O
6	RS-232 OUT 1	Output level greater than ± 5 Volts	Out
7	RS-232 IN 1	Input level up to ± 25 volts	In
38	RS-232 OUT 2	Output level greater than ± 5 Volts	Out
39	RS-232 IN 2	Input with level up to ± 25 volts	In

The RS-232 outputs conform to EIA/TIA-232C with an output voltage swing of at least ± 5 V when driving a standard RS-232 load. Refer to Figure B-5 for the RS-232 serial data interconnections.

4.3.4 Marker Beacon Functions

Marker Beacon connections are listed in the following table. The antenna input is connected to pins 78 (HI or Center Conductor) and 59 (LO or Shield).

Table 4-6. Marker Beacon Pin Assignments, J3472

Pin	Pin Name	Description	I/O
34	MIDDLE MARKER SENSE	2.5-8 Vdc into 4.7 k Ω	Out
74	AIRWAY/INNER MARKER EXT LAMP OUT (-00)	MKR I-HI white 2.5-8 Vdc into 56 Ω	Out
75	MIDDLE MARKER EXT LAMP OUT	MKR M-HI amber. 2.5-8 Vdc into 56 Ω	Out
76	OUTER MARKER EXT LAMP OUT	MKR O-HI blue. 2.5-8 Vdc into 56 Ω	Out
78	MARKER ANTENNA HI	Marker antenna input, 50 Ω	In
59	MARKER ANTENNA LO	Ground reference for pin 78	--

4.3.5 Reversionary Mode

The reversionary mode pins are used in installations having more than one GDU that have a GMA 1347D. The GMA 1347D contains a display backup button. This button is used to switch the PFD and MFD display data.

Table 4-7. Reversionary Mode Pin Assignments, J3472

Pin	Pin Name	Description	I/O
36	REVERSIONARY MODE 1	PFD connect	Out
37	REVERSIONARY MODE COMMON 1	Ground reference for mode 1	--
56	REVERSIONARY MODE 2	MFD connect	Out
57	REVERSIONARY MODE COMMON 2	Ground reference for mode 2	--

4.3.6 Speaker

The speaker output is capable of driving up to 10 Watts into a 4 Ω or 8 Ω speaker.

Table 4-8. Speaker Pin Assignments, J3472

Pin	Pin Name	Description	I/O
41	SPEAKER AUDIO OUT LO	Ground reference for speaker audio	--
42	SPEAKER AUDIO OUT HI	Speaker audio output	Out

4.3.7 Digital Audio

The following Inputs and Outputs are used in a digital installation.

Table 4-9. Digital Audio Pin Assignments, J3472

Pin	Pin Name	Description	I/O
8	ON-SIDE COM MIC DIGITAL AUDIO OUT	COM 1 Mic digital output for GMA #1 COM 2 Mic digital output for GMA #2	Out
9	ON-SIDE COM DIGITAL AUDIO IN	COM 1 digital input for GMA #1 COM 2 digital input for GMA #2	In
47	CROSS-SIDE COM MIC DIGITAL AUDIO OUT	Not used in dual installations	Out
48	CROSS-SIDE COM DIGITAL AUDIO IN	COM 2 digital input for GMA #1 COM 1 digital input for GMA #2	In
28	ON-SIDE NAV DIGITAL AUDIO IN	NAV 1 digital input for GMA #1 NAV 2 digital input for GMA #2	In
68	CROSS-SIDE NAV DIGITAL AUDIO IN	NAV 2 digital input for GMA #1 NAV 1 digital input for GMA #2	In
49	SECONDARY DIGITAL AUDIO CLOCK OUT	Digital data pins for synchronization between two audio panels in a dual installation	Out
50	SECONDARY DIGITAL AUDIO CLOCK IN		In
29	ONSIDE VOICE ALERT DIGITAL AUDIO IN	Digital input for on-side voice alert audio	In
61	CROSS-SIDE VOICE ALERT DIGITAL AUDIO IN	Digital input for cross-side voice alert audio	In
17	COM SWAP*	When enabled, COM1 and COM2 are swapped.	In
18	PROGRAM GROUND		--

*Denotes Active Low (Inputs: ground to activate; Outputs: grounded when active).

4.3.8 PA MUTE

PA MUTE is an output that is grounded when active. It is used to trigger the mute function on an external PA system.

Table 4-10. PA MUTE Pin Assignments, J3472

Pin	Pin Name	Description	I/O
64	PA MUTE* OUT	Output capable of sinking 500 mA to ground	Out

*Denotes Active Low (Inputs: ground to activate; Outputs: grounded when active).

4.4 J3471 Connector Pin Assignments

This section covers the pin connections of J3471 only.

4.4.1 Mic Audio Inputs and Mic Keys

Table 4-11. Mic Audio Inputs and Mic Key Pin Assignments, J3471

Pin	Pin Name	Description	I/O
29	PILOT MIC KEY* IN	Enables audio into the respective transceiver unit	In
28	PILOT MIC AUDIO IN HI	Pilot Mic audio input and ground reference	In
30	PILOT MIC IN LO		In
46	PASS 1 MIC AUDIO IN HI	Passenger 1 Mic audio and ground reference	In
47	PASS 1 MIC AUDIO IN LO		In
65	PASS 2 MIC AUDIO IN HI	Passenger 2 Mic audio and ground reference	In
66	PASS 2 MIC AUDIO IN LO		In
44	PASS 3 MIC AUDIO IN HI	Passenger 3 Mic audio and ground reference	In
45	PASS 3 MIC AUDIO IN LO		In
63	PASS 4 MIC AUDIO IN HI	Passenger 4 Mic audio and ground reference	In
64	PASS 4 MIC AUDIO IN LO		In

* Denotes Active Low (Inputs: ground to activate; Outputs: grounded when active).

4.4.2 Remote ICS Audio and ICS Keys

Table 4-12. Remote ICS Audio and ICS Keys Pin Assignments, J3471

Pin	Pin Name	Description	I/O
31	PILOT ICS KEY*	Enables audio into the intercom system	In
24	PASS ICS KEY*		In
21	REMOTE CREW ICS AUDIO IN HI	Remote crew ICS input and ground reference	In
22	REMOTE CREW ICS AUDIO IN LO		In
40	REMOTE PASS ICS AUDIO IN HI	Remote passenger ICS input and ground reference	In
41	REMOTE PASS ICS AUDIO IN LO		In
60	REMOTE CREW ICS OUT HI	Remote crew audio output	Out
5	REMOTE PASS ICS AUDIO OUT HI	Remote passenger audio output	Out
61	REMOTE CREW ICS OUT LO	Ground reference for remote passenger and crew audio outputs	Out

* Denotes Active Low (Inputs: ground to activate; Outputs: grounded when active).

4.4.3 Com Audio and Mic Keys

Table 4-13. Com Audio and Mic Keys Pin Assignments, J3471

Pin	Pin Name	Description	I/O
27	ON-SIDE COM MIC KEY*	Enables audio into the respective transceiver unit	Out
33	CROSS-SIDE COM MIC KEY*		Out
78	COM 3 MIC KEY*		Out
7	ON-SIDE COM AUDIO IN HI	COM 1 audio input for GMA #1 COM 2 audio input for GMA #2	In
26	ON-SIDE COM MIC AUDIO OUT HI	COM 1 audio output for GMA #1 COM 2 audio output for GMA #2	Out
8	ON-SIDE COM AUDIO LO	Ground reference for COM 1 audio (GMA #1) Ground reference for COM 2 audio (GMA #2)	--
12	CROSS-SIDE COM AUDIO IN HI**	COM 2 audio input for GMA #1 COM 1 audio input for GMA #2	In
32	CROSS-SIDE COM MIC AUDIO OUT HI**	COM 2 audio output for GMA #1 COM 1 audio output for GMA #2	Out
13	CROSS-SIDE COM AUDIO LO**	Ground reference for COM 2 audio (GMA #1) Ground reference for COM 1 audio (GMA #2)	--
58	COM 3 AUDIO IN HI	COM 3 audio input	In
77	COM 3 MIC AUDIO OUT HI	COM 3 audio output	Out
59	COM 3 AUDIO LO	Ground reference for Com 3 audio	--

* Denotes Active Low (Inputs: ground to activate; Outputs: grounded when active).

** Denotes analog inputs not used in digital installations.

4.4.4 Nav Audio

Table 4-14. Nav Audio Pin Assignments, J3471

Pin	Pin Name	Description	I/O
6	ON-SIDE NAV AUDIO IN HI**	Nav 1 audio input for GMA #1 Nav 2 audio input for GMA #2	In
25	ON-SIDE NAV AUDIO IN LO**	Nav 1 ground reference for GMA #1 Nav 2 ground reference for GMA #2	In
14	CROSS-SIDE NAV AUDIO IN HI**	Nav 2 audio input for GMA #1 Nav 1 audio input for GMA #2	In
34	CROSS-SIDE NAV AUDIO IN LO**	Nav 2 ground reference for GMA #1 Nav 1 ground reference for GMA #2	In

** Denotes analog inputs not used in digital installations.

4.4.5 Headset Outputs

Table 4-15. Headset Outputs Pin Assignments, J3471

Pin	Pin Name	Description	I/O
9	PILOT HEADSET AUDIO OUT LEFT	Pilot headset audio output	Out
10	PILOT HEADSET AUDIO OUT RIGHT		Out
11	PILOT HEADSET AUDIO OUT LO	Ground reference for pilot headset	Out
67	PASS HEADSET AUDIO OUT LEFT	Passenger headset audio output	Out
68	PASS HEADSET AUDIO OUT RIGHT		Out
48	PASS HEADSET AUDIO OUT LO	Ground reference for passenger headset	Out

4.4.6 Music Inputs

Table 4-16. Music Inputs Pin Assignments, J3471

Pin	Pin Name	Description	I/O
17	MUSIC IN 1 LEFT	Music 1 input	In
18	MUSIC IN 1 RIGHT		In
37	MUSIC IN 1 LO	Ground reference for music 1	In
56	MUSIC IN 2 LEFT	Music 2 input	In
57	MUSIC IN 2 RIGHT		In
76	MUSIC IN 2 LO	Ground reference for music 2	In

4.4.7 Unswitched Audio Inputs

Table 4-17. Unswitched Audio Inputs Pin Assignments, J3471

Pin	Pin Name	Description	I/O
19	UNSWITCHED AUDIO IN 1 HI	Unswitched audio inputs	In
20	UNSWITCHED AUDIO IN 2 HI		In
38	UNSWITCHED AUDIO IN 3 HI		In
39	UNSWITCHED AUDIO IN LO	Ground reference for unswitched audio	In
54	ALTITUDE WARN AUDIO IN HI	Unmuted/unswitched input	In
55	ALTITUDE WARN AUDIO IN LO	Ground reference for altitude warning	In

4.4.8 Telephone I/O

Table 4-18. Telephone Inputs/Outputs Pin Assignments, J3471

Pin	Pin Name	Description	I/O
3	TEL RINGER AUDIO IN HI	Ringtone audio input	In
4	TEL RINGER AUDIO IN LO	Ground reference for telephone ringer audio input	In
23	TEL MIC AUDIO OUT HI	Transmitted telephone audio output	Out
62	TEL MIC AUDIO OUT LO	Ground reference for telephone Mic audio	Out
42	TEL AUDIO IN HI	Received telephone audio input	In
43	TEL AUDIO IN LO	Ground reference for telephone input	In

4.4.9 AUX, DME and ADF Audio

Table 4-19. AUX, DME and ADF Audio Pin Assignments, J3471

Pin	Pin Name	Description	I/O
74	AUX AUDIO IN HI	Extra switched audio input	In
75	AUX AUDIO IN LO	Ground reference for extra switched audio input	In
15	DME AUDIO IN HI	Distance measuring equipment audio input	In
16	DME AUDIO IN LO	Ground reference for DME audio input	In
35	ADF AUDIO IN HI	Automatic direction finder audio input	In
36	ADF AUDIO IN LO	Ground reference for automatic direction finder audio input	In

4.4.10 Failsafe Audio

Table 4-20. Failsafe Audio Pin Assignments, J3471

Pin	Pin Name	Description	I/O
1	FAIL SAFE WARN AUDIO IN (-00)	Audio summed to the pilot's headset left when power fails on GMA	In
	FAIL SAFE PILOT SUMMED AUDIO OUT HI (-20)	Audio summed output when power fails on GMA	Out

4.4.11 Summed Audio

Table 4-21. Summed Audio Pin Assignments, J3471

Pin	Pin Name	Description	I/O
53	SUMMED AUDIO OUT LO (-20)	Ground Reference for summed audio output	Out
72	PILOT SUMMED AUDIO OUT HI (-20)	Pilot summed audio output	Out
73	COPILOT SUMMED AUDIO OUT HI (-20)	Copilot summed audio output	Out

APPENDIX A ASSEMBLY AND INSTALLATION DRAWINGS

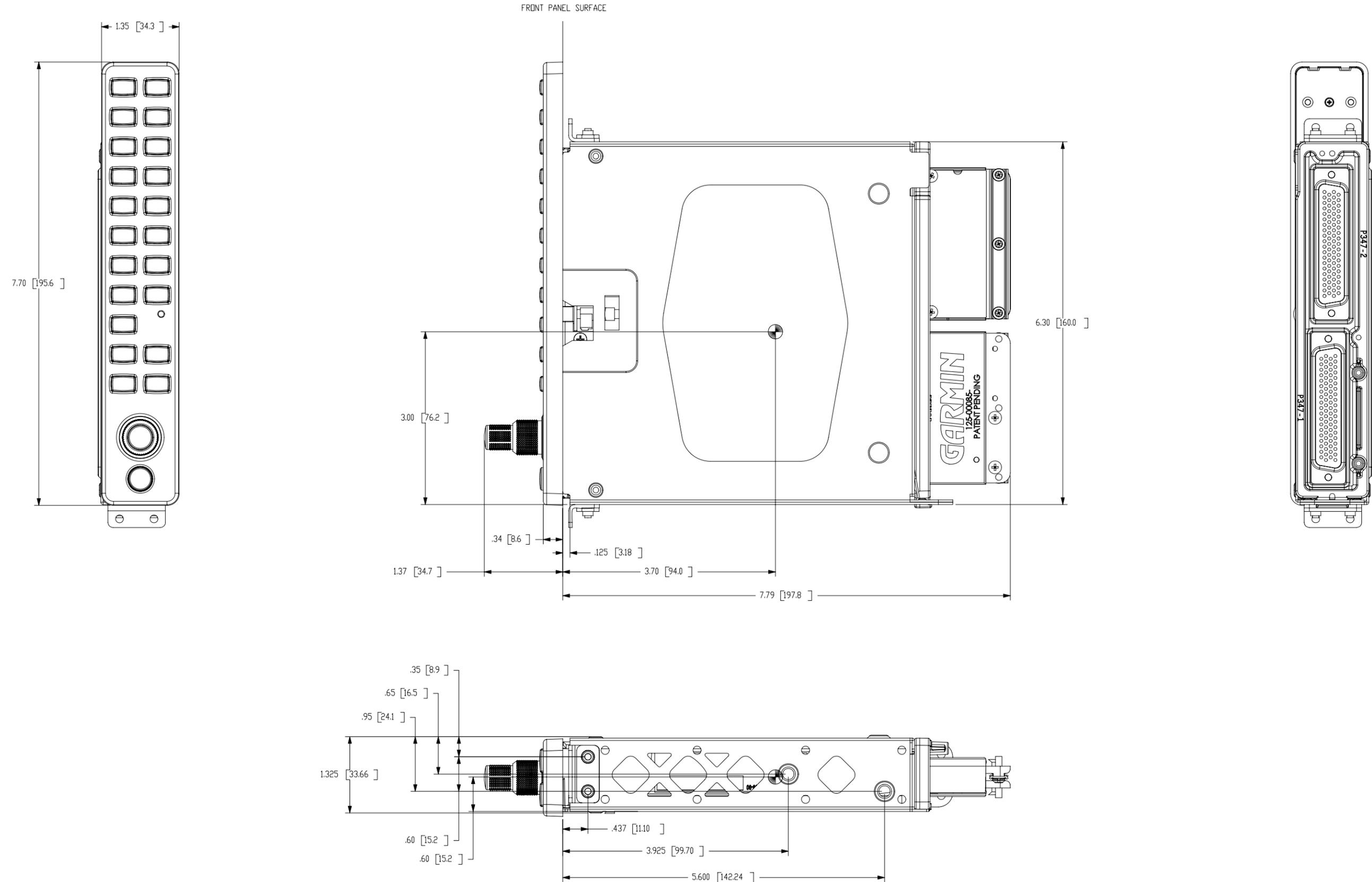


Figure A-1. GMA 1347D Outline Drawing

APPENDIX A ASSEMBLY AND INSTALLATION DRAWINGS

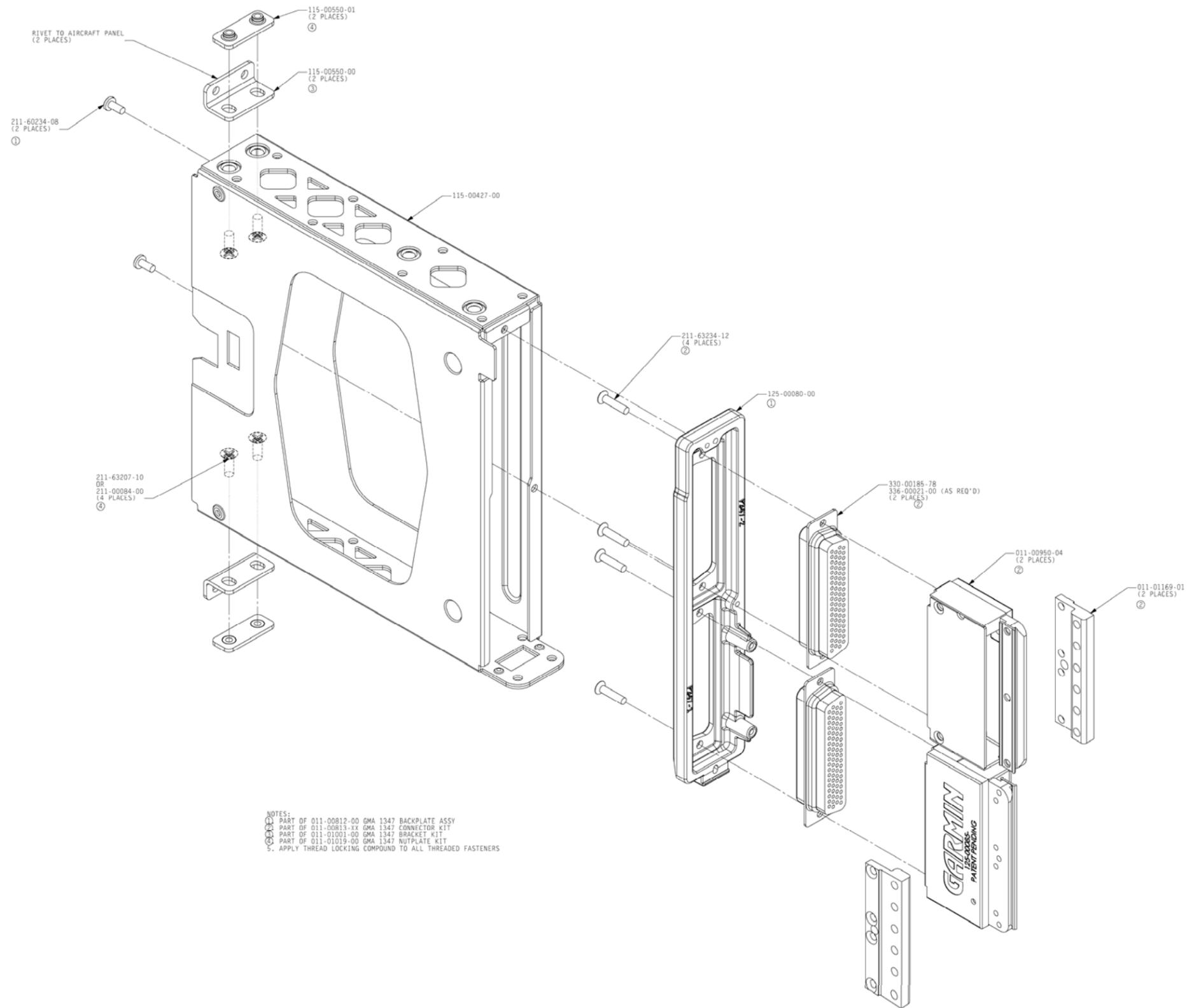
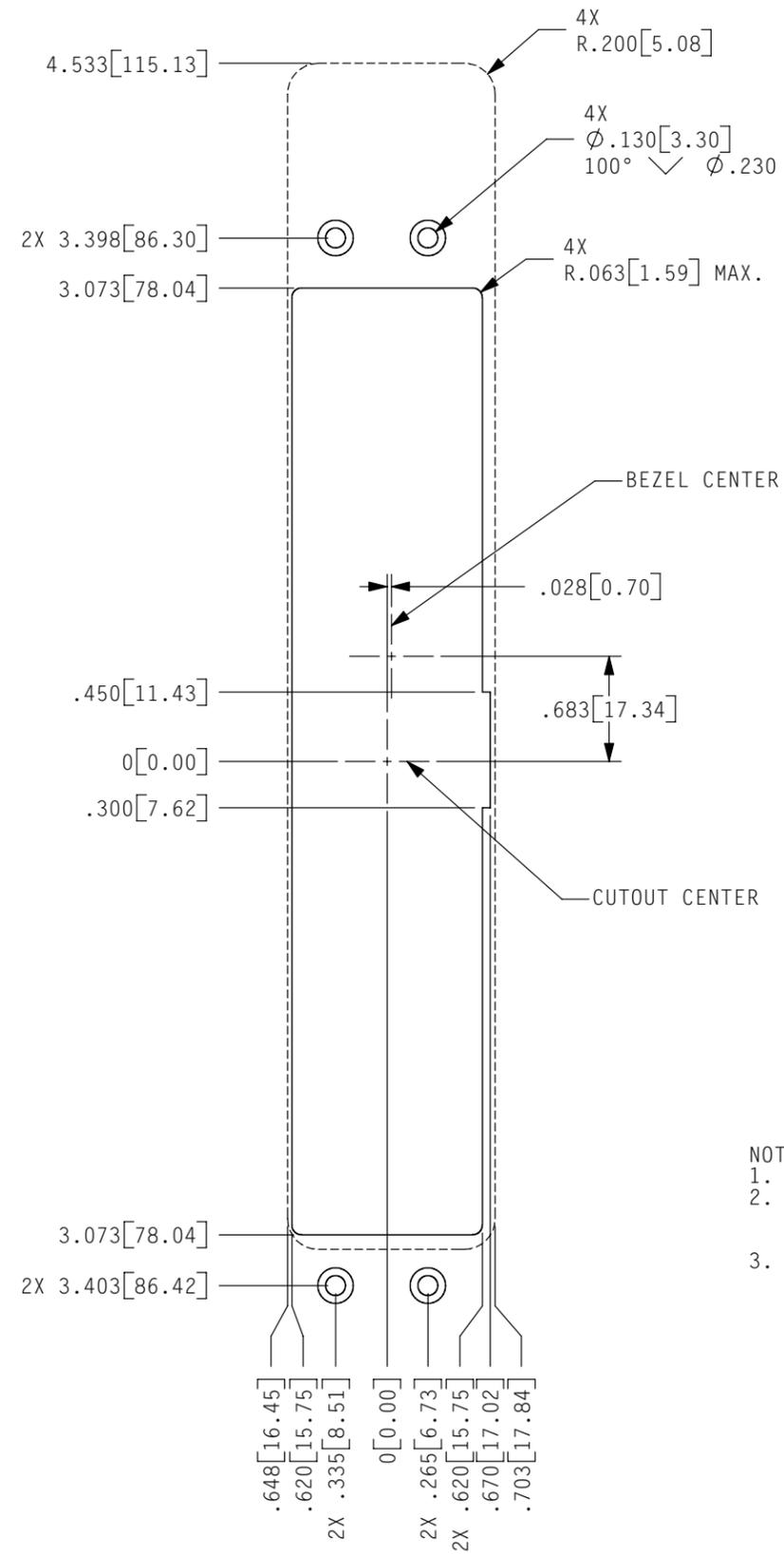


Figure A-2. GMA 1347D Connector/Rack Assembly Drawing

APPENDIX A ASSEMBLY AND INSTALLATION DRAWINGS



- NOTES:
1. DIMENSIONS: INCHES [mm]
 2. IF THE FRONT LIP OF THE MOUNTING RACK IS BEHIND THE SURFACE OF THE AIRCRAFT PANEL, THE UNIT CONNECTORS MAY NOT FULLY ENGAGE.
 3. RACK MUST BE INSTALLED FROM BACK OF AIRCRAFT PANEL ONLY. MAXIMUM AIRCRAFT PANEL THICKNESS IS .125 [3.2].

Figure A-3. GMA 1347D Recommended Panel Cutout Dimensions

APPENDIX B INTERCONNECT DRAWINGS

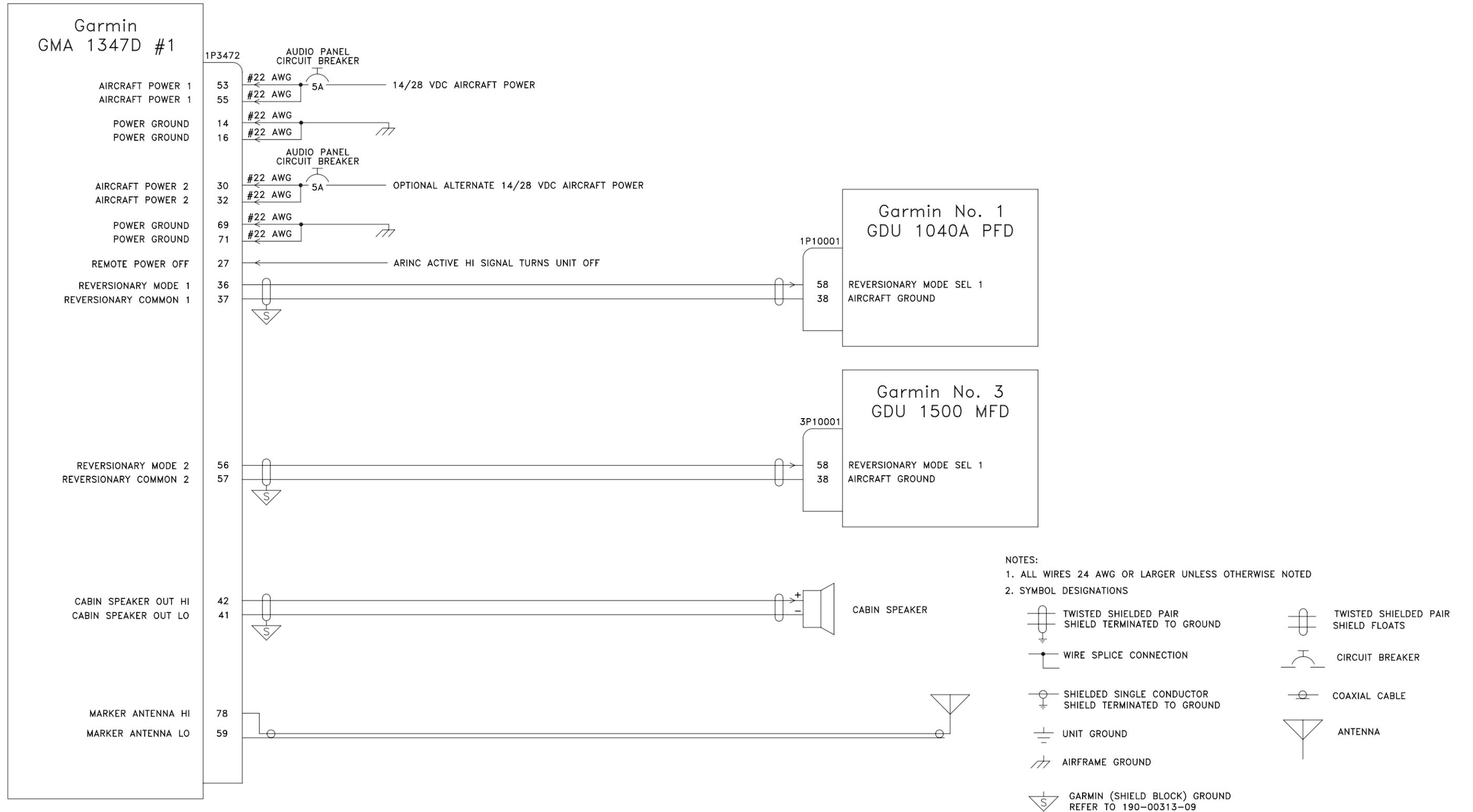


Figure B-1. GMA 1347D Power, Antenna and Reversionary Mode Interconnect Wiring Diagram

APPENDIX B INTERCONNECT DRAWINGS

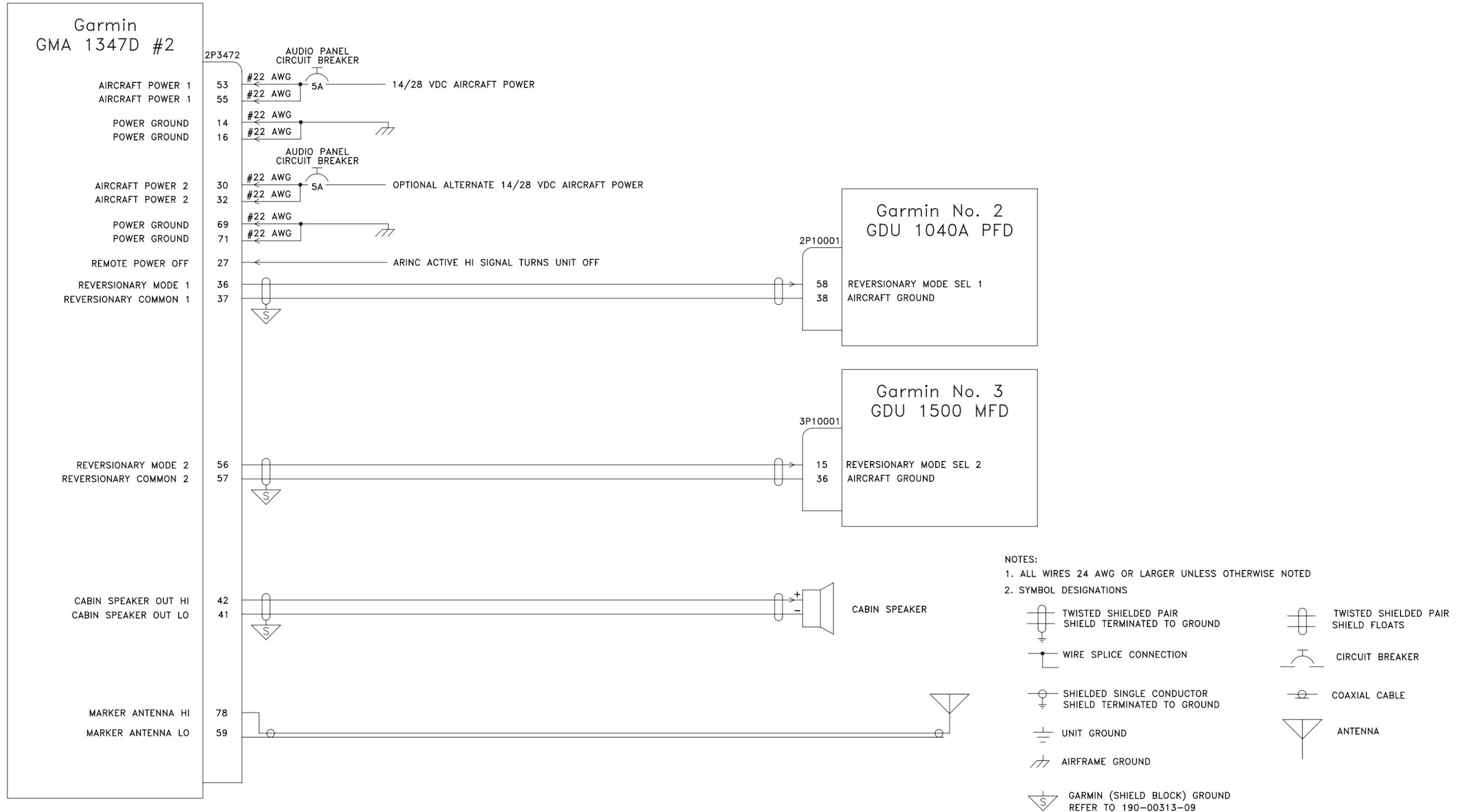


Figure B-2. GMA 1347D Power, Antenna and Reversionary Mode Interconnect Wiring Diagram

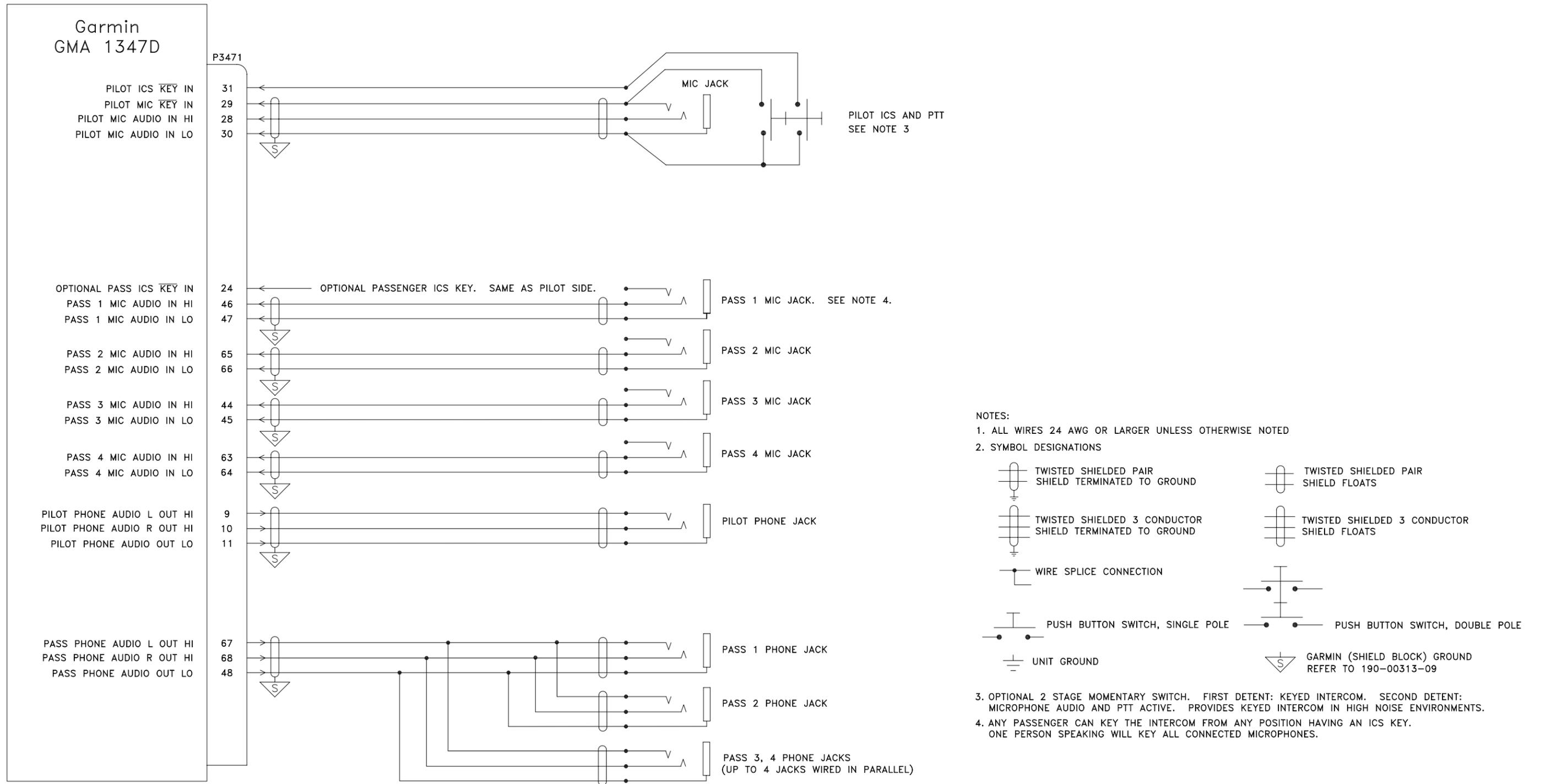


Figure B-3. Mic and Phone Jack Connections, Interconnect Wiring Diagram

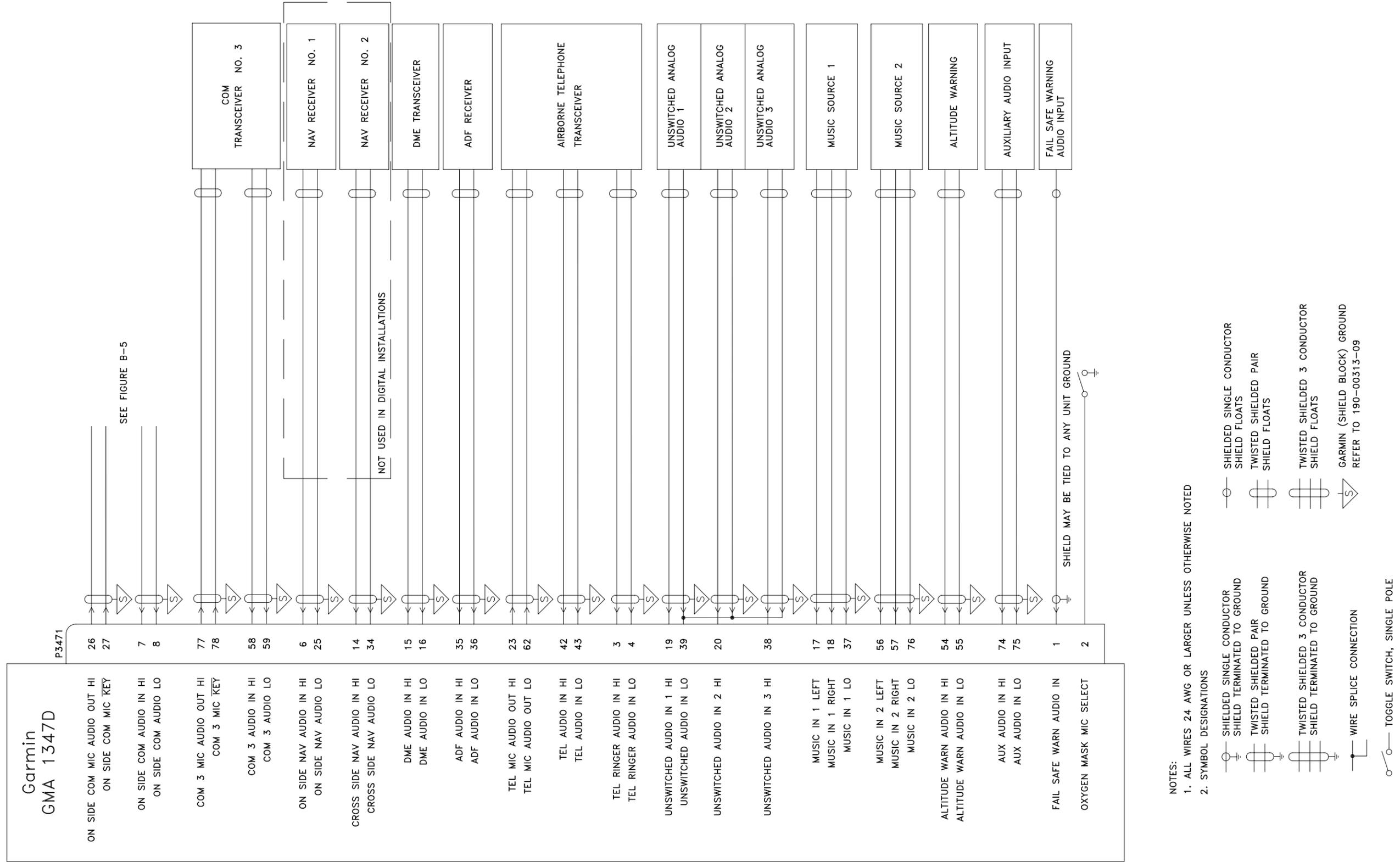


Figure B-4. Transceiver Analog Connections, Interconnect Wiring Diagram

APPENDIX B INTERCONNECT DRAWINGS

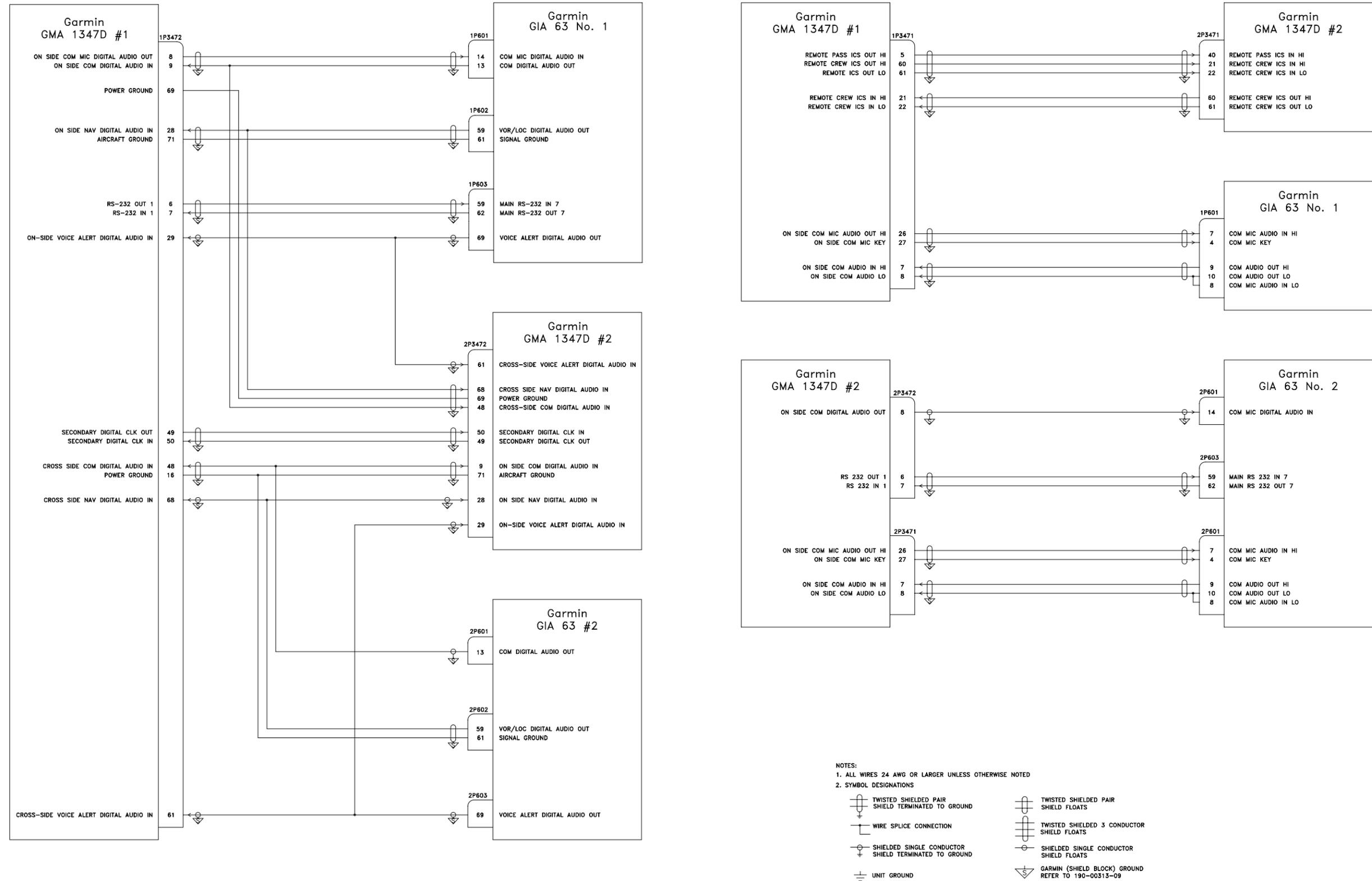


Figure B-5. Transceiver Digital Connections, Interconnect Wiring Diagram

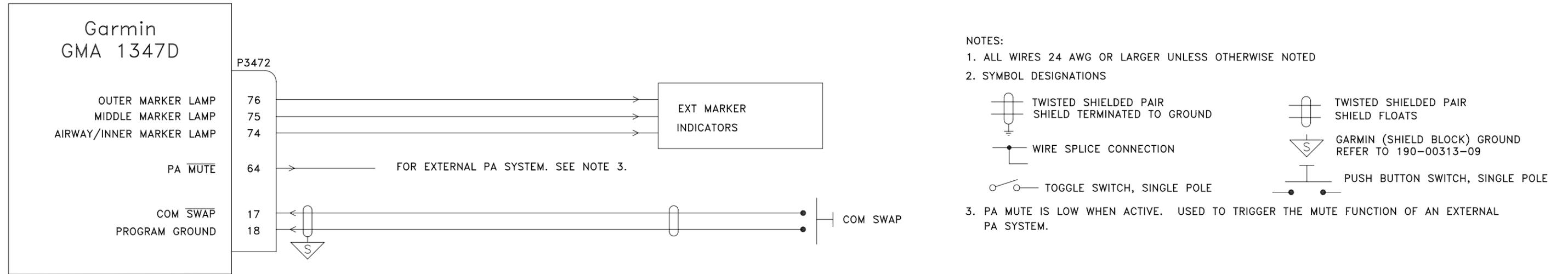


Figure B-6. Discrete Lines, Interconnect Wiring Diagram