GARMIN

GI 275

Multi-Function Instrument Installation Manual

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RECORD OF REVISIONS

Revision	Revision Date	Description
3	01/13/20	Updated to include adapter plate info
4	04/08/20	Updated interconnect drawings
5	06/05/20	Removed references to non-applicable LRU
6	06/08/20	Updated Mod Level info
7	08/31/20	Added -50 unit info for IVSI functionality

INFORMATION SUBJECT TO EXPORT CONTROL LAWS

CURRENT REVISION DESCRIPTION

Revision	Page Number(s)	Section Number	Description of Change
7	1-5	1.2.1	Added IVSI unit info
	1-7	1.2.8	Added IVSI unit info
	1-8	1.2.9.2	Added IVSI unit info
	1-13	1.2.11	Added IVSI unit info
	1-15	1.3.2	Updated TCAS note in Table 1-20 footer
	1-19, 1-20	1.3.6	Added IVSI unit info, updated Table 1-23
	1-24	1.5.3	Added IVSI unit info
	2-1, 2-2	2.2	Updated installation materials info
	2-3	2.3	Added IVSI unit info
	4-1	4.2.1	Updated Figure 4-1
	4-2	4.2.1.1	Updated config mode info
	4-6	4.2.4.3	Added IVSI unit info
	4-10	4.2.9	Corrected Inertial-aided Vertical Speed description
	4-14	4.2.13.3	Updated Table 4-11
	4-24–4-26	4.2.16	Updated Table 4-32
	4-44	4.2.27.3	Added IVSI unit info
	4-48	4.2.27.7	Added IVSI unit screenshot to Table 4-18
	4-78	4.3.9.8	Added Century II/III Autopilot gyro alignment procedure
	4-86	4.5.12, 4.5.13	Updated Clear Config info and added Factory Reset info
	5-1	5.2.1	Added a link to battery rundown test info
	6-5	6.1.2	Added note regarding shaded table cells
	A-1, A-3, A-5, A-7	Appdx A	Updated Figure A-1, Figure A-3, Figure A-5 and Figure A-7 for IVSI unit info
	B-27–B-30, B-48, B-49	Appdx B	Updated Figure B-14, added Figure B-27 for IVSI unit info and Figure B-28 for GFC 500 interface

DEFINITIONS OF WARNINGS, CAUTIONS, AND NOTES

WARNING
A warning means injury or death is possible if the instructions are not obeyed.

CAUTION
A caution means that damage to the equipment is possible.

NOTE
A note gives more information.

WARNING
This product, its packaging, and its components contain chemicals known to the State of California to cause cancer, birth defects, or reproductive harm. This Notice is being provided in accordance with California's Proposition 65. If you have any questions or would like additional information, please refer to our web site at www.garmin.com/prop65.

WARNING
Perchlorate material – Special handling may apply.
Refer to www.dtsc.ca.gov/hazardouswaste/perchlorate.

WARNING
Failure to properly configure the EIS gauges per the POH/AFM and other approved data could result in serious injury, damage to equipment, or death.

CAUTION
To avoid damage to the GI 275, take precautions to prevent electrostatic discharge (ESD) when handling the unit, connectors, and associated wiring. ESD damage can be prevented by touching an object of the same electrical potential as the unit before handling the unit itself.

CAUTION
The GI 275 lens is coated with a special anti-reflective coating which is very sensitive to skin oils, waxes and abrasive cleaners. CLEANERS CONTAINING AMMONIA WILL HARM THE ANTI-REFLECTIVE COATING. It is very important to clean the lens using a clean, lint-free cloth and an eyeglass lens cleaner that is specified as safe for anti-reflective coatings.

NOTE

All screen shots used in this document are current at the time of publication. Screen shots are intended to provide visual reference only. All information depicted in screen shots, including software file names, versions, and part numbers, is subject to change and may not be up to date.

NOTE

The GI 275 has a plastic film on the display glass to protect from scratches during shipping and installation. The film should be removed and discarded prior to flight.

NOTE

This device does not contain any user-serviceable parts. Repairs should only be made by an authorized Garmin service center. This product contains a Lithium-ion battery and supports a Lithium-ion battery pack accessory that must be recycled or disposed of properly. Battery replacement and removal must be performed by a licensed A&P technician. 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.

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1 DECLARATION OF DESIGN AND PERFORMANCE

1.1 Introduction

The Declaration of Design and Performance section contains the definition and statement of compliance of the GI 275. The section is written in accordance with European Aviation Safety Agency (EASA) Commission Regulation (EU) No 748/2010 date 3 August 2012.

The full manual is intended to provide mechanical and electrical information for use in the planning and design of an installation of the GI 275 into an aircraft. This manual is not a substitute for an approved airframe-specific maintenance manual, installation design drawing, or complete installation data package. Attempting to install equipment by reference to this manual alone and without first planning or designing an installation specific to your aircraft may compromise your safety and it is not recommended. The content of this manual assumes use by competent and qualified avionics engineering personnel and/or avionics installation specialist using standard maintenance practices in accordance with Title 14 of the Code of Federal Regulation and other relevant accepted practices. This manual is not intended for use by individuals who do not possess the competencies and abilities set forth above.

NOTE

Garmin recommends installation of the GI 275 by a Garmin-authorized installer. To the extent allowable by law, Garmin will not be liable for damages resulting from improper or negligent installation of the GI 275. For questions, please contact Garmin Aviation Product Support at 1-866-606-5482.

1.1.1 Declaration of EFIS Error Contribution

Table 1-1 summarizes the EFIS error contributions required to be specified by the manufacturer in the equipment installation manual per the detailed requirement sections of AS6296. For each function included in the EFIS, the manufacturer shall provide the error contribution information (including units of measure) to facilitate aircraft installation. A suggested format is depicted in Table 1-1.

Table 1-1 Declaration of Electronic Flight Instrument Error Contribution

Function Name	AS6296 Section	Description of Error Parameter	Maximum Displayed Error
Airspeed	4.1.1	Maximum EFIS error contribution if the airspeed data is not Display-Ready Data	N/A
Vertical Velocity (Rate of Climb)	4.1.2	Maximum EFIS contribution	N/A
Altimeter	4.1.3	Maximum EFIS error contribution if the altitude data is not Display-Ready Data	N/A

N/A: Display error contribution not applicable
X: Function not claimed

Table 1-1 Declaration of Electronic Flight Instrument Error Contribution

Function Name	AS6296 Section	Description of Error Parameter	Maximum Displayed Error
Attitude (Bank and Pitch)	4.1.4	Maximum EFIS error contribution if the pitch and roll data is not Display-Ready Data	N/A
Direction Indicator	4.1.5	Maximum EFIS error contribution if the heading or ground track data are not Display-Ready Data	+/- 2 degrees
Max Allowable Airspeed	4.1.6	Maximum EFIS error contribution if the maximum allowable airspeed or maximum allowable Mach data are not Display-Ready Data	X
Mach	4.1.7	Maximum EFIS error contribution if the Mach data is not Display-Ready-Data	X
Turn and Slip	4.18	95% displayed error	X
Airborne Low-Range Radio Altimeter	4.1.9	Maximum EFIS error contribution if the Mach data is not Display-Ready-Data	N/A
Automatic Flight Guidance and Control System	4.1.10	N/A	N/A
Very High Frequency Omnidirectional Range (VOR)	4.2.1	Maximum EFIS error contribution if VOR bearing data is not Display-Ready Data	+/- 2 degrees
		Maximum EFIS error contribution if the VOR course deviation data is not Display-Ready Data	+/- 1 degree
Distance Measuring Equipment (DME)	4.2.2	95% error	X

N/A: Display error contribution not applicable
X: Function not claimed

Table 1-1 Declaration of Electronic Flight Instrument Error Contribution

Function Name	AS6296 Section	Description of Error Parameter	Maximum Displayed Error
Localizer	4.2.3	Maximum EFIS error contribution if the localizer deviation data is not Display-Ready Data	10%
Glideslope	4.2.4	Maximum EFIS error contribution if the glideslope deviation data is not Display Ready Data	10%
Marker Beacon	4.2.5	N/A	X
Automatic Direction Finding (ADF)	4.2.6	Maximum EFIS error contribution if the Mach data is not Display-Ready-Data	X
Stand-Alone-Airborne Navigation Equipment Using the Global Positioning System Augmented By The Satellite Based Augmentation System	4.2.7	N/A	X
Flight Management System Using Multisensor Inputs	4.2.8	N/A	X
Microwave Landing System	4.2.9	N/A	X
VHF Radio	4.2.10	N/A	X
HF Radio	4.2.11	N/A	X
Temperature	4.3.1	Maximum EFIS error contribution	1C, 1F
Fuel Flow	4.3.2	N/A	N/A
Manifold Pressure	4.3.3	N/A	N/A
Fuel, Oil, and Hydraulic Pressure	4.3.4	N/A	N/A
Tachometer	4.3.5	Maximum EFIS error contribution	10 RPM

N/A: Display error contribution not applicable
X: Function not claimed

Table 1-1 Declaration of Electronic Flight Instrument Error Contribution

Function Name	AS6296 Section	Description of Error Parameter	Maximum Displayed Error
Fuel and Oil Quantity	4.3.6	Maximum EFIS error contribution	Fuel 5 LB, 1 LT, 1 Gal, 5 KG
Windshear Warning and Escape Guidance	4.4.1	N/A	X
Weather and Ground Mapping Radar	4.4.2	Maximum EFIS error contribution for bearing	X
		Maximum EFIS error contribution for range	X
		Maximum EFIS error contribution for numerical readouts if the data is not Display-Ready Data	x
Thunderstorm Detection	4.4.3	N/A	N/A
Optional Display Equipment for Weather and Ground Mapping Radar Indicators	4.4.4	N/A	N/A
Terrain Awareness and Ground Proximity	4.5.1	N/A	N/A
Helicopter TAWS	4.5.2	N/A	X
Traffic Collision Avoidance System (TCAS I and II)	4.6.1	N/A	N/A
Traffic Advisory System	4.6.2	N/A	N/A

N/A: Display error contribution not applicable
X: Function not claimed

1.2 Description and Identification

The GI 275 is a multi-function rear mounted instrument that mounts in a 3.125” Round hole (3 ATI Round). The semi-round LCD display allows user interaction through a dual concentric rotary encoder and capacitive touchscreen. The GI 275 provides the following functions:

1.2.1 Core Functions

The following are the core functions of the GI 275 Multifunction Indicator

- Primary Attitude Indicator (Attitude, Altitude, Airspace, and Heading)
- Standby Attitude Indicator (Attitude, Altitude, Airspace, and Heading)
- Horizontal Situational Indicator (HSI) and Enhanced Horizontal Situational Indicator (EHSI)
- Engine Instrument System (EIS)
- Multi-Function Display (MFD)
- Radar Altimeter Display
- IVSI (Instantaneous Vertical Speed Indicator) Function (-50 units only)

1.2.2 Factory Installed ADAHRS/Autopilot Expansion Board Functions

- Basic Attitude Indicator
- 3-in-1 instrument providing attitude, airspeed, and altitude
- 4-in-1 instrument providing attitude, airspeed, altitude, and heading (from remote magnetometer)
- Enhanced Horizontal Situation Indicator (HSI) with moving map, traffic, and weather
- 3rd Party Autopilot Interface, providing heading/course error and gyro output

1.2.3 PFD Functionality

The GI 275 Multifunction Indicator can replace traditional analog instruments by displaying:

ADI:

- Attitude
- Airspeed
- Altitude
- Vertical Speed
- Flight Director

HSI:

- Heading
- Course/Vertical Deviation
- GPS Navigation Information
- Moving Map with Traffic, Weather Overlay

1.2.4 Attitude/Heading and Air Data Functionality Minimum Requirements

When installing a GI 275 with integrated ADAHRS, it must be connected to a GMU 44B to display 4-in-1 compensated heading data. The GTP 59 is required for standard rate turn indices. Air Data information must be provided to the GI 275. This can be accomplished through the GI 275 Pitot/Static inputs or by using an approved external air data source. GPS source input for aiding is optional but highly recommended.

1.2.5 MFD Functionality

The MFD displays:

- Moving Map with Traffic, Terrain, and Weather Overlays
- Weather, FIS-B and SXM
- Traffic, TIS-A, TIS-B, and TAS/TCAS
- Terrain
- Flight plan
- Waypoint information
- System information
- Alerts

1.2.5.1 MFD Recommended Requirements

- VFR GPS Antenna or External GPS navigation source

1.2.6 EIS Functionality

The EIS can provide engine system display for single or twin reciprocating engine aircraft (4 or 6 cylinder). The system can display multiple primary gauges to include full time display of RPM, Fuel Quantity, and Manifold Pressure.

Minimum Requirements (per engine):

- GEA 110 or GEA 24
- RPM Sensor
- Oil Temperature Sensor
- Oil Pressure Sensor
- Manifold Pressure Sensor (if required for aircraft)

1.2.7 Backup ADI

The following configurations are available for GI 275 display backup:

- Full Time ADI
- Standby ADI with Multiple Pages (limitations)

The ADI is configured to be the standby ADI and has the capability to revert, manually or automatically, to display the ADI information when the system detects a discrepancy between the primary sensor data and the standby sensor data. Under normal operating conditions, the standby ADI in this configuration contains MFD pages.

- Standby ADI as the Primary HSI.

The HSI is configured to be the standby ADI and has the capability to revert, manually or automatically to display ADI information when the system detects a discrepancy between the primary sensor data and the standby sensor data. Under normal operating conditions the standby ADI in this configuration contains two HSI pages. When configured as a Standby HSI, the ADI page is also displayed.

The transition to display backup mode occurs during any or all of the following conditions:

- There is a loss of communication with a Garmin primary attitude display.
- The pilot manually activates display backup through a toggle switch, counter-clockwise rotation of the outer knob, or on-screen menu selection.
- An AHRS or ADC fault is caused by mismatched or missing data for units marked as a standby ADI.

During display backup mode, the GI 275 locks to the ADI page.

1.2.8 Unit Identification

The GI 275 can be identified by the following part numbers in the following configurations. The EIS sensors can be ordered separately from Garmin.

Table 1-2 GI 275 Unit Identification

API	Marketing Label	Garmin P/N (Unit Only)	Garmin P/N (Shipping Level)
GMN-01912	GI 275 Basic	011-04489-00	010-01912-00
	GI 275, ADAHRS	011-04489-10	010-01912-10
	GI 275, ADAHRS & AP	011-04489-20	010-01912-20
	GI 275, Class III, ADAHRS	011-04489-30	010-01912-30
	GI 275, Class III, ADAHRS & AP	011-04489-40	010-01912-40
	GI 275 IVSI	011-04489-50	010-01912-50

1.2.9 Accessories

A panel modification guide (115-03278-00) is included with each unit to aid in the installation of the GI 275 when panel cutout modification is needed.

1.2.9.1 Required Accessories

Each of the following accessories are available separately from the GI 275. The 2 Connector Kit is used with all versions of the GI 275 except the 011-04489-00, which uses the Single Connector Kit.

Table 1-3 GI 275 Single Connector Kit (011-04809-00)

Item	Garmin P/N	Quantity
Sub-Assy, Backshell w/Hardware, Jackscrew, 50/78 Pin	011-01855-04	1
Sub-Assy, Config Mdl, w/EEPROM, Jackscrew, 2 Mbit	011-04038-00	1
Cable Assembly, USB-A Recpt to Pigtail, 48"	325-00238-02	1
Connector, Male, HD D-sub, 78 ckt	330-00366-78	1
Connector, Pin, Mil Crimp, Size 22D	336-00021-00	50

Table 1-4 GI 275 Connector Kit 2 (011-04809-01)

Item	Garmin P/N	Quantity
Sub-Assy, Backshell w/Hardware, Jackscrew, 50/78 Pin	011-01855-04	2
Sub-Assy, Config Mdl, w/EEPROM, Jackscrew, 2 Mbit	011-04038-00	1
Cable Assembly, USB-A Recpt to pigtail, 48"	325-00238-02	1
Connector, male, HD D-sub, 78 ckt	330-00366-78	2
Connector, pin, mil crimp, size 22D	336-00021-00	100

1.2.9.2 Optional Accessories

Table 1-5 Optional Accessories

Item	Part Number
GEA 24	010-01042-01
GPS Antenna, BNC	010-12444-10
GEA 110 Engine Adapter	010-01329-01
GMU 44B	010-01708-00
GSB 15 Vertical	010-02201-00
GSB 15 Right Angle	010-02201-01
Backup Battery (included with all versions of the GI 275 except the 011-04489-00)	010-02304-00
GTP 59 Temperature Probe	011-00978-00
KI-256 to 3.125” Round Adapter Kit	011-05285-00
KI-256 to 3.125” Round Adapter Kit	011-05285-01

Table 1-6 Contents of KI-256 to 3.125” Round Adapter Kit (011-05285-00/-01)

Item	Garmin P/N	Quantity
KI-256 to 3.125” Round Adapter Plate (only 1 of either part number will be included)	117-01484-00	1
	125-00618-02	
Screw,6-32x.250,PHP,SS/BO,w/NYL	211-60337-08	4
Screw,6-32x.312,PHP,SS/BO,w/NYL	211-60337-09	4
Screw,8-32x.562,FLHP100,SS/BO	211-63309-13	3
Screw,6-32x.250,FLHP100,SS/BO,w/NYL	211-63337-08	4
Screw,6-32x.312,FLHP100,SS/BO,w/NYL	211-63337-09	4

1.2.9.3 Backup GPS Antenna

The GPS antenna provides a GPS source for navigation in VFR conditions in class I and II aircraft when no external GPS source is present. In class III and IV aircraft, the GPS antenna provides a backup GPS source in the event of a primary navigator failure. Additionally, the backup GPS source can be used for AHRS alignment and stability.

The GPS uses a 96-inch (8-foot) length of RG-316 cable and typically mounts on the glareshield.

Table 1-7 Backup GPS Antenna

Item	Unit Only Part Number	Unit Part Number
Backup GPS Antenna	010-12444-10	011-04036-10

1.2.9.4 GI 275 Backup Battery

The GI 275 battery is a backup power source for the GI 275. The battery charges during normal operation and is used during a main system power failure.

Table 1-8 GI 275 Battery Pack

Item	Battery Pack Only Part Number	Battery Pack Part Number	Weight
GI 275 Battery	010-02304-00	011-04528-00	0.32 lb (0.15 kg)

The backup battery is internal to the GI 275. Captive screws secure a cover plate protecting the battery. The battery pack will not be vented outside the aircraft. The battery comes included (but uninstalled) with GI 275 ADAHRS and GI 275 ADAHRS + AP units and must be installed prior to installation of the unit in the instrument panel (Section 3.8).

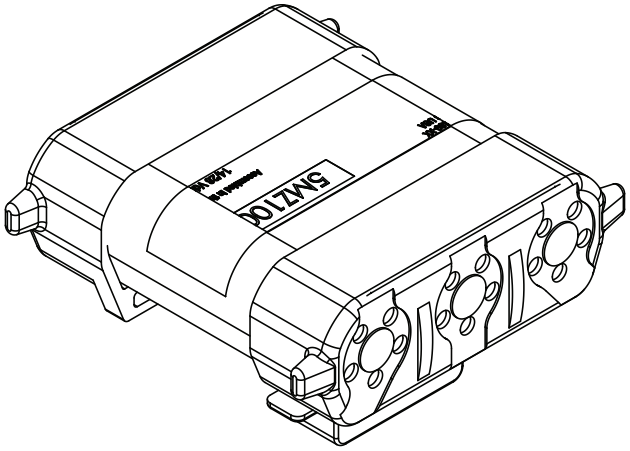

Figure 1-1 GI 275 Backup Battery Pack

1.2.10 Other LRUs and Accessories

1.2.10.1 GEA 110

The GEA 110 is a micro-processor based input/output LRU used to monitor sensor inputs and is designed for aircraft engine assessment. It interfaces with various sensors on the aircraft and communicates airframe and engine information via RS-485 digital interface to the GI 275.

This manual only covers materials and instructions for mounting the GEA 110 to a GI 275. For additional mounting instructions, refer to the GEA 110 TSO Installation Manual.

Table 1-9 GEA 110

Item	Unit Only Part Number	Unit Part Number
GEA 110	010-01329-01	011-03454-01
GEA 110 Connector Kit	N/A	011-03527-50

Table 1-10 GEA 110 Connector Kit for Installation in Fuselage (011-03527-50)

Description	Part Number	Quantity
Sub-Assembly, Backshell with Hardware, Jackscrew, 9/15 pin	011-01855-00	1
Sub-Assembly, Backshell with Hardware, Jackscrew, 50/78 pin	011-01855-04	1
Connector, Hi-Density D-sub, MIL Crimp, 15 ckt	330-00185-15	1
Connector, Hi-Density D-sub, MIL Crimp, 78 ckt	330-00185-78	1
Contact, Pin, MIL Crimp, Size 22D	336-00021-00	100
Sub-Assembly, Config Module, w/EEPROM, Jackscrew, Teflon Harness	011-00979-17	1

1.2.10.2 GEA 24

The GEA 24 is an input/output system used to monitor and power engine and airframe sensors.

Table 1-11 GEA 24 Part Numbers

Model	Assembly Part Number	Unit Only Part Number
GEA 24	010-01042-01	011-02848-01

Table 1-12 Contents of GEA 24 Connector Kit (011-02886-01)

Item	Garmin P/N	Quantity
Backshell w/Hdw, Jackscrew, 9/15 Pin	011-01855-00	1
Backshell w/Hdw, Jackscrew, 25/44 Pin	011-01855-02	1
Backshell w/Hdw, Jackscrew, 37/62 Pin	011-01855-03	1
Backshell w/Hdw, Jackscrew, 50/78 Pin	011-01855-04	1
CAN termination kit	011-02887-00	1
Conn, Plug,D-Sub, Crimp Pin, Commercial, 25 CKT	330-00624-25	1
Conn, Rcpt, D-Sub, Crimp Socket, Commercial, 09 CKT	330-00625-09	1
Conn, Rcpt, D-Sub, Crimp Socket, Commercial, 37 CKT	330-00625-37	1
Conn, Rcpt, D-Sub, Crimp Socket, Commercial, 50 CKT	330-00625-50	1
Contact, Socket, Military Crimp, Size 20	336-00022-02	100
Contact ,Pin, Military Crimp, Size 20	336-00024-00	30

1.2.10.3 GMU 44B Magnetometer Unit

The GMU 44B is a remote mounted device that provides magnetic information to support the function of both the integrated ADAHRS and remote mounted AHRS/ADAHRS. The GI 275 or AHRS provides the operating voltage to the GMU 44B.

Table 1-13 GMU 44B (Software v2.20 and Later)

Item	Unit Only Part Number	Part Number
GMU 44B	010-01708-00	011-04201-00
GMU 44B Connector Kit,	N/A	011-04205-00
GMU 44B Installation Rack	N/A	125-00437-00

Table 1-14 Content of Connector Kit (011-04205-00)

Item	Garmin P/N	Quantity
Screw, 6-32 x 0.25, PHP, Brass with Nylon patch	211-60037-08	3
Connector, Rcpt, WTW, D369 Series, 6 Position, Socket Insert, Key N	330-01430-01	1
Strain relief, D369 Series, 6 Position	330-90056-06	1
Contact, Socket, Mil Crimp, Size 22	336-00055-00	6

Table 1-15 GMU 44B Pin Contacts

Manufacturer	20-24 AWGPart Number
Garmin	336-00055-00
Military	M39029/57-354

1.2.10.4 GTP 59 Temperature Probe

The GTP 59 provides outside air temperature information to the GI 275.

Table 1-16 GTP 59 Standard Kit (011-00978-00)

Item	Garmin Part Number	Quantity
Nut, 5/16”, Hex, Skirt	210-00055-00	1
Screw, 4-40 x .250, PHP, SS/P, w/NYL	211-60234-08	2
Washer, Lock, Self-Sealing, 5/16	212-00026-00	1
Contact, Pin, Mil Crimp, Size 22D	336-00021-00	5
GTP 59 OAT Probe	494-00022-XX	1

1.2.11 GI 275 Physical Characteristics

Table 1-17 GI 275 Physical Characteristics

Characteristics	Specification
Width	3.25 in (82.6 mm)
Height	3.25 in (82.6 mm)
Depth	6.44 in (163.6 mm)
Depth w/Connector	7.40 in (188.0 mm)
Unit Weight w/out Battery (011-04489-00)	1.9 lbs (0.86 kg)
Unit Weight w/out Battery (011-04489-10/-20/-30/-40/-50)	2.1 lbs (0.95 kg)
Unit Weight with Battery (011-04489-10/-30/-50)	2.4 lbs (1.1 kg)
Unit Weight with Battery (011-04489-20/-40)	2.4 lbs (1.1 kg)
Battery Weight (011-04528-00)	0.32 lbs (0.15 kg)
Connector Kit Weight (011-04809-00)	0.29 lbs (0.13 kg)
Connector Kit 2 Weight (011-04809-01)	0.48 lbs (0.22 kg)
KI-256 to 3.125” Round Adapter Kit (011-05285-00) as installed, not including unused fasteners	0.16 lbs (0.07 kg)
KI-256 to 3.125” Round Adapter Kit (011-05285-01) as installed, not including unused fasteners	0.16 lbs (0.07 kg)

1.2.12 Mod Level History

The following table identifies hardware modification (Mod) Levels for the GI 275. 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.

Table 1-18 011-04489-( ) Hardware Mod Level History

APPLICABLE LRU PART NUMBER	MOD LEVEL	SERVICE BULLETIN NUMBER	SERVICE BULLETIN DATE	PURPOSE OF MODIFICATION
011-04489-10 011-04489-30	1			Improves CAN Bus performance across installation variations
011-04489-20 011-04489-40	1			Improves CAN Bus performance across installation variations and improves Pitch and Roll Gyro emulation output performance when utilizing 5 kHz AC references

1.3 Certification Statement

The conditions and tests required for approval of this article are minimum performance standards. Those installing this article either on or within a specific type or class of aircraft must determine that the aircraft installation conditions are within the standards and any accepted integrated functions not specified by the standards. TSO articles, articles approved with 14 CFR part 21.8(d), and any accepted integrated function(s) not specified in the standard must have separate approval for installation in an aircraft. The article may be installed only according to 14 CFR part 43 or the applicable airworthiness requirements. This is an incomplete system intended to provide the functions identified in, and when installed according to the installation manual.

The Appliance Project Identifier (API) for the GI 275 is GMN-01912. The API has been used for project identification with the FAA.

1.3.1 TSO/ETSO Compliance

NOTE

The availability of some TSO functions listed below depends on configuration. Refer to Section 4 for instructions on configuration.

Table 1-19 GI 275 (011-04489-( )) TSO Compliance

TSO/MOPS*	Function Design	Class/Type	System SW Part Numbers	Boot Block SW Part Numbers	Database Part Numbers
TSO-C106/ SAE/AS-8002A	Air Data Computer	N/A	006-B3173-0( ) 006-B3178-0( )	006-B3172-0( ) 006-B3177-0( )	N/A
TSO-C165a RTCA/DO-257A	Electronic Map Display for Graphical Depiction of Aircraft Position	N/A	006-B3173-0( ) 006-B3178-0( )	006-B3172-0( )	Key Region 006-D7262-K( )
TSO-C179b RTCA/DO-311A	Permanently Installed Rechargeable Lithium Cells	Category A-2C	006-B3178-0( )	006-B3172-0( )	Key Region 006-D7262-K( )
TSO-C195b RTCA/DO-317B	ADS-B	N/A	006-B3173-0( ) 006-B3178-0( )	006-B3172-0( )	Key Region 006-D7262-K( )
TSO-C201 RTCA/DO-334	Attitude and Heading Reference System	A4H4T1[1] [2]	006-B3173-0( ) 006-B3178-0( )	006-B3172-0( ) 006-B3177-0( )	Key Region 006-D7262-K( )
TSO-C209 SAE/AS 6296	Electronic Flight Instrument Display	N/A	006-B3173-0( ) 006-B3178-0( )	006-B3172-0( )	Key Region 006-D7262-K( )

[1]Turn Rate output is provided per DO-334, but Turn Rate is not displayed on the GI 275. Standard Turn Rate is displayed on the GI 275.

[2]Performance Category met for all AHRS operating modes. Primary Mode, No GPS mode, and no Air data mode

1.3.2 Declaration of EFIS Functions

Table 1-20 Declaration of EFIS Functions Selected from AS6296

Function Name	AS6296 Section	Legacy TSO/MOPS (Reference Only)	*Declaration (X, C, D, or I)
Airspeed	4.1.1	TSO-C2d/AS 8019	C
Vertical Velocity (Rate of Climb)	4.1.2	TSO-C8e/AS 8016A	C
Altimeter	4.1.3	TSO-C10b/AS 392C/AS8009B	C
Attitude (Bank and Pitch)	4.1.4	TSO-C4c/AS 396B/AS 8001	C
Direction Indicator	4.1.5	TSO-C5f/AS 8021 TSO-C6e/AS 8013A	C
Max Allowable Airspeed	4.1.6	TSO-C46a/TSO-C46a	X
Mach	4.1.7	TSO-C95a/AS 8018	X
Turn and Slip	4.1.8**	TSO-C3e/AS 8004	I
Airborne Low-Range Radio Altimeter	4.1.9	TSO-C87a/ED-30	C
Automatic Flight Guidance and Control System	4.1.10	TSO-C198/DO-325	C
Very High Frequency Omnidirectional Range (VOR)	4.2.1	TSO-C40c/DO-196	C
Distance Measuring Equipment (DME)	4.2.2	TSO-C66c/DO-189	X
Localizer	4.2.3	TSO-C36e/DO-195	C
Glideslope	4.2.4	TSO-C34e/DO-192	C
Marker Beacon	4.2.5	TSO-C35d/DO-143	X
Automatic Direction Finding (ADF)	4.2.6	TSO-C41d/DO-179	X

*codes for Declaration column:
X = Function not included
C = Functions included and meets the requirements of AS6296
D = Function included with approved deviation(s)
I = Incomplete function included and meets a subset of that function's requirement of AS6296
**4.1.8 Turn and Slip: The GI 275 does not support display of turn rate, except for standard turn rate indications.
***4.6.1 Traffic Collision Avoidance System (TCAS II): The GI 275 provides RA/VSI (Arc/VSI) functionality (-50 units only)

Table 1-20 Declaration of EFIS Functions Selected from AS6296

Function Name	AS6296 Section	Legacy TSO/MOPS (Reference Only)	*Declaration (X, C, D, or I)
Stand-Alone Airborne Navigation Equipment Using the Global Positioning System Augmented By The Satellite Based Augmentation System	4.2.7	TSO-C146c/DO-229D	X
Flight Management System using Multisensor Inputs	4.2.8	TSO-C115c/DO-283A	X
Microwave Landing System	4.2.9	TSO-C104/DO-177	X
VHF Radio	4.2.10	TSO-C169a/DO-186B	X
HF Radio	4.2.11	TSO-C170/DO-163	X
Temperature	4.3.1	TSO-C43c/AS 8005	Class IIIb
Fuel Flow	4.3.2	TSO-C44c/AS 407C	Type I and II
Manifold Pressure	4.3.3	TSO-C45b/AS 8042	C
Fuel, Oil, and Hydraulic Pressure	4.3.4	TSO-C47a/AS 408C	C
Tachometer	4.3.5	TSO-C49b/AS 404B	C
Fuel and Oil Quantity	4.3.6	TSO-C55a/AS 405C	C
Windshear Warning and Escape Guidance	4.4.1	TSO-C117a/TSO-C117a	X
Weather and Ground Mapping Radar	4.4.2	TSO-C63d/DO-173 DO-220	X
Airborne Passive Thunderstorm Detection	4.4.3	TSO-C110a/DO-191	C
Optional Display Equipment for Weather and Ground Mapping Radar Indicators	4.4.4	TSO-C105/DO-174	X
Terrain Awareness and Ground Proximity	4.5.1	TSO-C92c/DO-161A TSO-C151b/TSO-C151b	Class A

*codes for Declaration column:
X = Function not included
C = Functions included and meets the requirements of AS6296
D = Function included with approved deviation(s)
I = Incomplete function included and meets a subset of that function's requirement of AS6296
**4.1.8 Turn and Slip: The GI 275 does not support display of turn rate, except for standard turn rate indications.
***4.6.1 Traffic Collision Avoidance System (TCAS II): The GI 275 provides RA/VSI (Arc/VSI) functionality (-50 units only)

Table 1-20 Declaration of EFIS Functions Selected from AS6296

Function Name	AS6296 Section	Legacy TSO/MOPS (Reference Only)	*Declaration (X, C, D, or I)
Helicopter TAWS	4.5.2	TSO-C194/DO-309	X
Traffic Collision Avoidance System (TCAS I and II)	4.6.1***	TSO-C118a/DO-197A TSO-C119d/DO-185B modified and DO-300A modified by the TSO	I
Traffic Advisory System	4.6.2	TSO-C147a/DO-197A as modified	C

*codes for Declaration column:
X = Function not included
C = Functions included and meets the requirements of AS6296
D = Function included with approved deviation(s)
I = Incomplete function included and meets a subset of that function's requirement of AS6296
**4.1.8 Turn and Slip: The GI 275 does not support display of turn rate, except for standard turn rate indications.
***4.6.1 Traffic Collision Avoidance System (TCAS II): The GI 275 provides RA/VSI (Arc/VSI) functionality (-50 units only)

1.3.3 TSO/ETSO Deviations

Table 1-21 GI 275 (011-04489-( )) TSO Deviations

TSO	Deviation
TSO-C106 TSO-C165a TSO-C179b TSO-C195b TSO-C201 TSO-C209	Garmin has been granted a deviation to include product name, part number, serial number, and this statement on the unit's nameplate label: "TSO-209; See Installation Manual for Additional Approvals".
	Garmin has been granted a deviation to use RTCA/DO-160F as the standard for Environmental Qualification and Test Procedures of Airborne Equipment
	Garmin has been granted a deviation to use RTCA/DO-178B as the standard for Software Qualification.
TSO-C106	Garmin has been granted a deviation from TSO-C106 to use SAE AS 8002 Rev A instead of SAE AS 8002 as the Minimum Performance Standard.
TSO-C195b	Garmin has been granted a deviation from TSO-C195 paragraph 3.a.(4) that requires databases used to support moving maps integrated with the SURF application must meet at least 5 meter accuracy and 1 meter resolution.
TSO-C195b	Garmin has been granted a deviation from FTCA/DO-317A section 2.3.1.1.b to display all traffic except traffic that is "grouped" and has lower priority.

1.3.4 Non-TSO Functions

The following are declared non-TSO functions, these non-TSO functions as defined in this manual have been evaluated on a non-interference basis with the claimed TSO functions. The design data for these non-TSO functions has been accepted by the FAA when these non-TSO functions are installed in accordance with the guidance and limitations provided in this manual.

NOTE

The availability of some non-TSO functions listed below depends on configuration. Refer to Section 4 for instructions on configuration.

Table 1-22 GI 275 (011-04489-( )) Non-TSO Functions

Function	Design Assurance	Applicable LRU SW Part Numbers
Traffic Information Service (TIS) Requests and displays traffic data from GTX Mode S Transponder.	RTCA/DO-178B Level D	006-B3173-0( )
Synthetic Vision System per FAA AC 20-167 Displays a computer-generated image of the external scene topography from the pilot's perspective.	RTCA/DO-178B Level C	006-B3173-0( )

1.3.5 Additional Standards

The GI 275 has no Additional Standards.

1.3.6 Design Assurance Levels

Table 1-23 Software Assurance Level (DO-178B)

Function	011-04489-00, 011-04489-10, 011-04489-20	011-04489-30, 011-04489-40, 011-04489-50
Display of Attitude Information	C	B
Display of Heading	C	C
Display of Airspeed	C	B
Display of Barometric Altitude	C	B
Display of Altitude Correction	C	C
Display of Vertical Speed	C	C
Display of OAT	C	C
Display of Information to the Crew	C	B
Display of Propulsion System Information	C	C
Display of Fuel System Information	C	C
Display of Manifold Pressure Indication	C	C
Display of Tachometer Indication	C	C
Display of Cylinder Head Temperature (CHT)	D	D
Display of Exhaust Gas Temperature (EGT)	D	D
Display of Oil Pressure Indication	D	D
Display of Oil Temperature Indication	D	D
Display of Engine Indication Crew Alerting Information	C	C
Display of Fuel Level Indication	C	C
Display of Fuel Flow Indication	C	C
Presentation of Crew Alerting Information	C	C
Display of Electrical System Ammeter Loading	D	D
Display of Electrical System Bus Voltage	D	D
VOR Navigation	C	C
Presentation of Airspeed Limitation Alerting	C	C
Display of approved VNAV (Final Approach)	C	C
ILS/LOC Navigation	C	C
Navigation	C	C

Table 1-23 Software Assurance Level (DO-178B)

Function	011-04489-00, 011-04489-10, 011-04489-20	011-04489-30, 011-04489-40, 011-04489-50
Display of VNAV (Non-Advisory)	C	C
Signals provided to Autopilot	C	C
Display of Terrain and Obstacle Information (not TAWS) on 2D Moving Map Display	D	D
Display of Lateral or Vertical Situational Awareness Information on 2D Moving Map Display	C	C
Display of Supplemental Waypoint Information	D	D
Display of Nearest Waypoint Information	D	D
Display of Nearest Frequency Information	D	D
Display of Nearest Airspace Information	D	D
Display of Time Information (HH:MM:SS)	D	D
Display of Datalink Weather	D	D
Display of ADS-B Derived Traffic Data	C	C
Display of TIS-A Derived Traffic Data	D	D
Display of TAS-Derived Traffic Data or TCAS I-Derived Traffic Data	D	D
Display of Lightning	D	D
Display of Radio Altitude Information	D	D
Display of 3D Terrain and Obstacles	C	C
Display of Flight Path Angle Reference Cue	C	C
Display of the Lateral Field of View Angle on MFD 2D Terrain Display	D	D
Terrain Alerting (not TAWS)	C	C
Flight Director	C	C
Unit Power	C	C
Connext	E	E
Display of TCAS II-Derived Traffic Data	D	D
TCAS II Resolution Advisory	B	B

1.3.7 Transmitter Grant of Equipment Authorization

Table 1-24 Equipment Authorization

Country (Telecommunications Authority)	Authorization
United State (FCC)	FCC ID: IPH-03333
Canada (ISED)	IC: 1792A-03333 IC M/N: GMN-01912

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

lnnovation, Science and Economic Development Canada Compliance

This device complies with Innovation, Science and Economic Development 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 du ministère Innovation, Sciences et Développement économique Canada. Son fonctionnement est soumis aux deux conditions suivantes: (1) ce périphérique ne doit pas causer d'interférences et (2) doit accepter toute interférence, y compris les interférences pouvant entraîner un fonctionnement indésirable de l'appareil.

RF Exposure Compliance Statement

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.

Cet appareil est conforme à la réglementation FCC relative aux limites d'exposition aux radiations applicables en environnement non contrôlé. Cet appareil doit être installé et utilisé à une distance minimale de 20 cm entre le radiateur et le corps. Cet émetteur ne doit pas être placé ou utilisé en conjonction avec d'autres antennes ou émetteurs.

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.

Radio frequency/protocol: 2.4 Ghz @ 8 dBm nominal.

CE

1.3.8 AFM/RFM/AFMS/RFMS/POH Considerations

Refer to Garmin P/N 190-02223-00 for information on the operational capabilities, approvals, and limitations of the Garmin Navigation System when developing an approved AFM, RFM, AFMS, RFMS, and/or POH for GI 275.

1.3.9 Database

For information on certification compliance for databases, refer to Garmin Document P/N 190-01999-00 posted at flyGarmin.com.

1.4 Interface Summary

The following list represents some of the possible LRUs that the GI 275 communicates with:

Table 1-25 Compatible Garmin LRUs

G500/600/(TXi)	GDL 69SXM	GEA 24
GEA 110	GFC 600	GMU 44B
GNC 255	GNC 355	GNS 400W/500W
GNS 480 (CNX 80)	GNX 375	GPS 175
GRA 55/5500	GSB 15	GTN 6XX/7XX
GTX 345	GTX 8XX	

1.5 Performance and Technical Specifications

1.5.1 Environmental Qualification Form Reference

It is the responsibility of the installing agency to obtain the latest revision of the GI 275 Environmental Qualification Form. To obtain a copy of this form, see the dealer/OEM portion of the Garmin web site (www.garmin.com).

The form is available directly from Garmin under the following part number:

GI 275 Environmental Qualification Form, Garmin part number 005-01208-13

1.5.2 General Specifications

Table 1-26 GI 275 General Specifications

Characteristic	Specification*
Operating Voltage	14/28 VDC
Operating Temperature Range	-20°C to +55°C. For more details see the Environmental Qualification Form
Humidity	95% non-condensing
Altitude Range	-1,500 ft to 55,000 ft
Maximum Days of Continuous Operation	49 days

*The GI 275 may require a 5 minute warmup to meet full performance when the ambient temperature is below 0ºC

Table 1-27 Integrated ADAHRS General Specifications

Characteristic	Specification
Aircraft Angular Rate	+/- 250 °/s
Aircraft Pressure Altitude Range	-1,500 ft to +55,000 feet
Aircraft Vertical Speed Range	-20,000 ft per minute to +20,000 ft per minute
Aircraft Airspeed Range	20 knots to 435 knots
Aircraft Mach Range	< 1.00 Mach
Aircraft Total Air Temperature	-85°C to +85°C
Unit Operating Temperature	-20°C to +55°C
Maximum Day of Continuous Power	49

Table 1-28 Wireless Specifications

Characteristic	Specification
Frequency Band	2.4 GHz
Maximum Bluetooth® Transmitter Power	4 dBm (2.5 mW)
Wi-Fi Class	802.11b/g/n
Maximum Wi-Fi Transmitter Power	10 dBm (10 mW)

1.5.3 Power Specifications

Table 1-29 GI 275 Power Specifications

LRU	14 V Current Draw			28 V Current Draw		
	Typical	Maximum	Maximum w/Battery	Typical	Maximum	Maximum w/Battery
GI 275 Base	0.65 A	0.75 A	1.70 A	0.32 A	0.40 A	0.80 A
GI 275 ADAHRS	0.75 A	0.90 A	2.00 A	0.35 A	0.50 A	1.00 A
GI 275 ADAHRS + AP	0.80 A	1.10 A	2.00 A	0.40 A	0.65 A	1.00 A
GI 275 IVSI	0.80 A	1.10 A	2.00 A	0.40 A	0.65 A	1.00 A

1.5.4 Display Specifications

Table 1-30 Display Specifications

Characteristic	Specification
Active Display Size	5.4 square inch (2.69” diameter minus “flat tire”)
Display Format	480 x 433 pixels
Viewing Distance	12” to 30” from display
Viewing Angle (with 10:1 contrast ratio minimum)	Left: 35° from perpendicular at left side Right: 35° from perpendicular at right side Up: 35° up from perpendicular at bottom edge Down: 10° down from perpendicular at top edge

1.5.5 Antenna Specifications

Table 1-31 Backup GPS Antenna Specifications

Characteristic	Specification
Height	0.60 in (15.1 mm)
Width	2.88 in (7.30 mm)
Depth	2.22 in (56.3 mm)
Connector Type	BNC
Cable Length	8.0 ft (96.0 in)
Unit Weight	0.20 lbs (92 g)

1.6 Limitations

1.6.1 Operation

All functions of the GI 275 meet the appropriate:

- Design assurance for a primary or standby system of Part 23 Class I, II, and III aircraft in accordance with AC 23.1309-1E.
- Design assurance for a standby system of Part 23 Class IV aircraft in accordance with AC 23.1309-1E.

1.6.2 Backup GPS

The backup GPS is used for aiding and aligning the internal AHRS and VFR navigation. It is not certified for IFR navigation.

1.6.3 Product Age

For XM Icing Potential, Winds Aloft, and Turbulence, the valid time, not the product age is displayed.

1.6.3.1 Valid Time Indication

For XM Freezing Level, Winds Aloft, and Canada Wind Aloft, the generation time, not the valid time is displayed.

1.7 Operating Instructions

This section contains generic operating instructions for TSO purposes only and is not to be used in place of field operating instructions. Upon system power up, the absence of system messages indicates that the GI 275 is fully operational.

For detailed operating instructions, please refer to the GI 275 Pilot's Guide, Part Number 190-02246-01.

1.7.1 Controls

The GI 275 features a 2.69" circular capacitive touchscreen and an Outer and Inner Knob in the lower left corner. The Inner Knob can be pushed. All operations are done with the Knobs or touchscreen. The touchscreen can be operated with bare fingers or gloves made for capacitive touchscreens.

Figure 1-2 GI 275 Controls (HSI Map Page)

1.7.2 Touchscreen

Table 1-32 Touchscreen Gestures

Gestures	
Touch	Touch is touching the screen briefly with a single finger. A touch can select a menu, activate a command key or data entry field, display map feature information, or select a button.
Touch and Hold	Certain momentary controls (e.g., directional arrow keys, CRS Button, HDG Button) provide a secondary touch and hold function. Touch key and hold finger in place. Lift up once the desired action occurs. Use this gesture for scrolling and increasing/decreasing values continuously.
Swipe	Touch object with finger, slide finger across screen, then lift up. A swipe is a smooth motion used for viewing and scrolling lists, panning across a map, or opening the menu.
Scroll	This is similar to a swipe, except the finger leaves the screen after a quick upward or downward motion. Screen information moves at a fast speed, then slows down as it stops. Scrolls through an item list faster than by pressing the scroll arrow buttons.
Pinch & Stretch	Touch any map or chart with two fingers at the same time. Then, bring fingers together (pinch) or apart (stretch). Stretch to zoom in and pinch to zoom out. Use these gestures to magnify map features or identify multiple objects in close proximity.

1.7.3 Page Navigation

On units not configured as a Primary ADI, a page navigation bar is displayed on the top portion of pages/ indicators when the Outer Knob is adjusted. The text shows the name of the active page, and the circles on the bottom of the bar indicate where in the list the current page is located. Additionally, a Knob function legend is displayed.

Changing pages:

Turn the Outer Knob clockwise to navigate to a page on the right or counterclockwise to navigate to a page on the left. For units with an ADI Page, a rapid Outer Knob counterclockwise turn will immediately navigate to the ADI Page.

1.7.4 Control Types

Annunciator Buttons

Annunciator buttons operate in an on/off state. An 'on' or enabled button displays a green annunciator; an 'off' or disabled button displays a gray annunciator. Touch the annunciator button to change its state.

Figure 1-3 Annunciator Buttons

Datafield Buttons

Datafield buttons can be modified based on information the pilot can enter or change, and often contain cyan alphanumeric text. Touching datafield buttons will either display a pop-up window from which a selection can be made, or display a keypad to supply the data. See the Data Entry discussion in this section for more information.

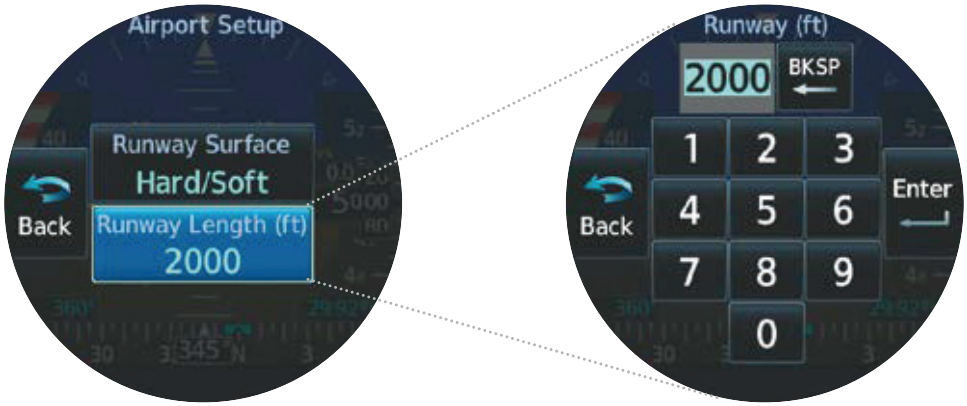

Figure 1-4 Datafield Button

Sliders

Some adjustments are made using horizontal or vertical sliders. To use, touch within the slider box and slide the finger in the desired slider bar direction, then release the finger; or, turn the Inner Knob. The finger may move outside of the slider box during adjustment; slider movement stops when either the finger is released or the slider has reached its maximum travel. Some adjustments can be done using the arrow keys underneath or next to the slider.

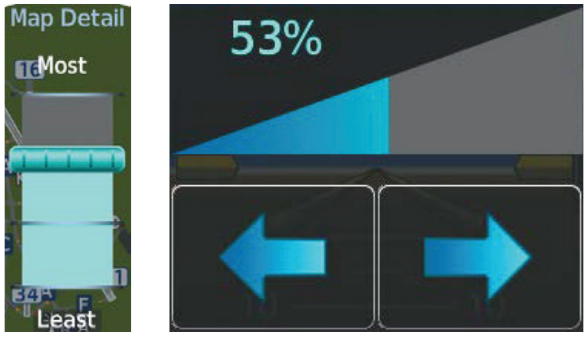

Figure 1-5 Map Detail and Click Volume Slider

1.7.5 PAGE MENUS

It may be necessary to open menus to access specific features.

Opening the menu:

With any page displayed, swipe up starting at the bottom of the screen.

Or:

With any page displayed, push and hold the Inner Knob.

Closing the menu:

From the menu, repeatedly touch the Back Button until the original page is displayed

Or:

From the menu, touch and hold the Back Button.

Or:

From the menu, push and hold the Inner Knob.

Or:

On ADI, HSI, and EIS units with a half-screen menu, touch the screen anywhere off the menu.

1.7.6 MENU NAVIGATION

Various menu items may be located under other menu items. It may be necessary to go through a few levels of intuitively organized menus to access desired functionality.

Selecting a menu item:

1. From the menu, scroll (up and down on most configurations, side-to-side on units configured as primary ADI, HSI, or EIS) to find the desired button.
2. Touch the desired button to select or toggle the highlighted item.

Or:

1. Turn the Outer Knob to move the selection highlight and scroll through the menu.
2. Push the Inner Knob to select or toggle the highlighted item.

1.7.7 DATA ENTRY

Data can be entered by using the touchscreen or knobs.

Entering data:

1. Select a Datafield Button. The keypad is displayed.
2. Touch the desired letters and/or numbers.
3. To enter a negative number, first input the positive value. Then, touch the +/- Button to toggle the negative sign.
4. Touch the Enter Button to save input.

Or:

1. With the keypad displayed, turn the Inner Knob to activate the cursor and enter the first letter and/or number. Turn the Inner Knob clockwise to increase and counterclockwise to decrease.
2. Turn the Outer Knob to move the cursor to the next character position (if applicable).
3. Repeat steps as necessary.
4. Push the Inner Knob to save input.

Or:

1. Highlight a numerical Datafield with the Outer Knob.
2. Turn the Inner Knob clockwise to increase the numerical value, or counterclockwise to decrease the numerical value.

Figure 1-6 Data Entry

1.8 License Requirements

1.8.1 Software License Notification

AES ENCRYPTION

The product may include AES file encryption software, © 2002 DR. Brian Gladman, subject to the following license:

The free distribution and use of this software in both source and binary form is allowed (with or without changes) provided:

- Distributions of this source code include the above copyright notice, this list of conditions, and the following disclaimer.
- Distribution in binary form include the above copyright notice, this list of conditions, and the following disclaimer in the documentation and/or other associated materials.
- The copyright holder's name is not used to endorse products built using this software without specific written permission.

ALTERNATIVELY, provided this notice is retained in full, this product may be distributed under the terms of the GNU General Public License (GPL) in which case the provisions of the GPL apply INSTEAD OF those given above.

DISCLAIMER

The AES file encryption software is provided "as is" with no explicit or implied warranties in respect of its properties, including, but not limited to, correctness and/or fitness for purpose.

1.9 Reference Documents

The following publications are sources of additional information for installing the GI 275. Before installing the GI 275, the technician must read all relevant referenced materials along with this manual.

Table 1-33 Reference Documents

Part Number	Document
005-00721-10	GEA 24 TSO Environmental Qualification Form
005-00851-04	GEA 110 TSO Environmental Qualification Form
005-01090-31	GMU 44B Environmental Qualification Form
005-01208-13	GI 275 Environmental Qualification Form
190-00303-A3	GSB 15 USB Database and Charging Hub Installation Manual
190-00313-10	Jackscrew Configuration Module Installation into a Jackscrew Backshell
190-00313-11	Jackscrew Backshell Installation Instructions
190-01051-00	AHRS/Magnetometer Installation Considerations
190-01501-00	Garmin Pilot for iOS
190-01532-00	Garmin Pilot for Android
190-01535-00	Engine Sensors TSO Installation Manual
190-01825-00	GEA 110 TSO Installation Manual
190-01999-00	RTCA DO-200A List of Applicable Avionics Systems
190-02129-00	GMU 44B Installation Manual

2 INSTALLATION OVERVIEW

2.1 Introduction

This section provides the equipment information for installing the GI 275 and related optional accessories. Installation of the GI 275 must follow the data detailed in this manual. Cabling is typically fabricated by the installing agency to fit each particular aircraft. Always follow acceptable avionics installation practices per advisory circulars AC 43.13-1B CHG 1 and AC 43.13-2B or later FAA approved revisions.

2.2 Installation Materials Required but not Supplied

The GI 275 is intended for use with standard aviation accessories. The following items may be required for installation, but not supplied.

1. Display backup switch comprised of MS27719-22-1 miniature toggle switch and Aircraft Spruce P/N 11-00815 red toggle switch cover.
2. MS26574 or MS22073 push-pull manually resettable circuit breakers or other trip-free, push-pull circuit breaker type as specified in the aircraft manufacturer's parts catalog.
3. MIL-W-22759/16 or MIL-W-22759/18 electrical wire.

NOTE

If using MIL-W-22759/18 wire, provide additional protection and support.

4. MIL-C-27500 shielded cable with M22759/16 wire (TE) or M22759/18 wire (TG) and ETFE jacket (14 AWG).
5. Coaxial cable (MIL-C-39012/26 or equivalent).
6. MS26574 or MS22073 push-pull manually resettable circuit breakers or other trip-free, push-pull circuit breaker type.
7. Wire bundle routing, securing, and management supplies, as required.
8. MS25036 or MS20659 ring terminals.
9. M83519/2-X shield terminators.
10. A-A-59163 (MIL-I-46852C) silicone fusion tape.
11. #8-32 hardware to mount the GI 275 to the panel.
12. 2024-T3 aluminum per AMS-QQ-A-250/5, or 6061-T6 aluminum per AMS 4025, AMS 4027, or AMS-QQ-A-250/11, varying thickness.
13. Air hoses and fittings to connect pitot and static air to the GI 275. The GI 275 has a female 1/8-27 ANPT brass fitting for each pitot and static port. Use appropriate aircraft fittings to connect to pitot and static system lines.
14. TSO-C53a Type C or D hose (e.g., Aeroquip 303 hose with AE102 sleeve and 900591B clamps or Aeroquip AE466) for installation of fuel flow transducers and pressure sensors.
15. 22 or 24 AWG stranded thermocouple extension wire to match K-Type or J-Type probe, with a minimum continuous temperature rating of 400°F and ASTM E230 Standard Limits or NIST ITS 90 electrical qualifications (e.g., Watlow SERV-RITE P/Ns K24-3-507 and J24-3-507).

16. Ethernet cable, aircraft grade category 5 (required only for HSDB interfaces). Only Ethernet cables listed in Table 2-1 can be used. 24 AWG is preferred.

Table 2-1 Approved Ethernet Cable Manufacturers

Manufacturer	Part Number
Carlisle	392404 (24 AWG)
EMTEQ	D100-0824-100 (24 AWG)
	D10004-664 (24 AWG)
Pic Wire and Cable	E10422 (22 AWG) [1]
	E10424 (24 AWG) [2]
	E12424 (24 AWG)
	E51424 (24 AWG)
Thermax	MX100Q-24 (24 AWG)

[1] Not recommended due to larger wire diameter. 24 AWG is preferred.

[2] Not recommended as insulation shrinkage may occur.

17. EIS annunciator indicator(s) capable of displaying warning (red) and caution (yellow) annunciations (Table 2-2).

Table 2-2 Approved EIS Annunciator Manufacturers

Manufacturer	Annunciation	Aircraft System	
		14V	28V
Applied Avionics	Caution/Warning	95-40-17-B4-E1WPN	LED-40-17-BA2-E1WP6 [1]
MII-Spec (Various)	Caution	MS25041-4 Cap MS25237-330 Lamp	MS25041-4 Cap MS25237-327 Lamp
	Warning	MS25041-2 Cap MS25237-330 Lamp	MS25041-2 Cap MS25237-327 Lamp

[1] Requires two 47Ω, 1/4 WATT -55 C to +125 C resistors.(Figure B-20)

2.3 Installation Configurations

Table 2-3 Unit Configurations

Part Number	Unit Configuration
011-04489-00	GI 275 Basic
011-04489-10	GI 275 ADAHRS
011-04489-20	GI 275 ADAHRS & AP
011-04489-30	GI 275, Class III, ADAHRS
011-04489-40	GI 275, Class III, ADAHRS & AP
011-04489-50	GI 275, IVSI

2.4 Special Tools Required

The following tools are required for building the wire harness:

2.4.1 Milliohm Meter

A milliohm meter with an accuracy of +0.1 milliohm (or better) to perform continuity and power/ground checks.

2.4.2 Crimp Tool

A crimp tool meeting MIL specification M22520/2-01 and a positioner/locator are required to ensure consistent, reliable crimp contact connections for the rear D-sub connectors.

Table 2-4 Recommended Crimp Tools

Manufacturer	Hand Crimping Tool	22-28 AWG		22-24 AWG	
		Positioner [1]	Insertion/ Extraction Tool*	Positioner	Insertion/ Extraction Tool
Military P/N	M22520/2-01	M22520/2-09	M81969/14-01 M81969/1-04	M22520/2-08	M81969/1-02
ITT Cannon	995-0001-584	995-0001-739	N/A	N/A	N/A
Positronic	9507	N/A	N/A	9502-5	M81969/1-02
AMP	601966-1	601966-6	91067-1	601966-5	91067-2
Daniels	AFM8	K42	N/A	K13-1	M81969/1-02
Astro	615717	615725	N/A	615724	M81969/1-02

Non-Garmin part numbers shown are not maintained by Garmin and subject to change without notice.
[1] For configuration module pins, verify the crimp tool is set to crimp 28 AWG wire (indenter setting of “4”).

2.4.3 Additional Tools

The following tools may be required:

- Laser Square
- Digital Level
- Protractor
- Plumb Bob
- Aircraft Jack Set
- #30 Drill Bit
- #27 Drill Bit
- 7/64" Allen Wrench
- 9/16" Open End Wrench
- 5/16" Deep Well Socket
- Torque Wrench

2.5 Cabling and Wiring

Cabling and wiring must be installed in accordance with AC 43.13-1B CHG 1 Chapter 11, Sections 8 through 13. The following issues must be addressed:

- Do not expose cabling and wiring to chafing
- Avoid sharp bends in cabling and wiring harnesses
- Make sure ample space is provided for cabling and wiring harnesses and connectors to allow connection and disconnection.
- Do not route cabling and wiring harnesses near electrical noise sources or high current electrical wiring (such as power lines to DC electrical motors)
- Do not route cabling and wiring harnesses near flight control cables
- Do not route cabling and wiring harnesses near heat sources
- Wiring indicated as shielded in Appendix B must be shielded
- Wiring pigtail lengths must not exceed 3.0 inches

2.5.1 Power Distribution

GI 275 LRUs cannot share circuit breakers or ground return wires with each other or with other equipment.

For the purpose of the GI 275 system installation, the "essential bus" is a bus that receives power when the battery master is switched on and is not automatically shed with the loss of a generator or alternator. Power distribution requirements are summarized in Table 2-5.

NOTE

The primary display (i.e., GI 275 Primary ADI or G500/G600 TXi) cannot share a grounding location with the standby indicator.

Table 2-5 Power Distribution

LRU	BUS Requirement
Primary ADI	GI 275 with ADAHRS on essential bus
	No. 1 GI 275 with ADAHRS on the essential bus No. 2 PFD with ADAHRS on the avionics bus If dual essential buses are available, connect No. 2 PFD with ADAHRS to the separate essential bus
HSI	Avionics bus
Standby HSI	Essential bus
Standby ADI	Essential bus
MFD	Avionics bus
EIS	No. 1 EIS display on essential bus No. 2 EIS display on essential bus If dual essential buses are available, connect each EIS display to a separate essential bus
GEA 24	No. 1 GEA 24 on essential bus No. 2 GEA 24 on essential bus If dual essential buses are available, connect each GEA 24 to a separate essential bus
GEA 110	No. 1 GEA 110 on essential bus No. 2 GEA 110 on essential bus If dual essential buses are available, connect each GEA 110 to a separate essential bus

Circuit breakers and switches added as part of GI 275 system installation must be labeled as shown in Table 2-6 (switch), Table 2-7 (single bus), and Table 2-8 (independent buses). Labels must be readable in all lighting conditions. Ambient flood lighting is acceptable. The labeling for each LRU denotes the following where applicable:

- Number designation – LRUs of same type/function in the system
- Letter designation – Differentiates the essential bus

Table 2-6 Switch Labels

Description	Label
Display Backup Switch	DISPLAY BACKUP Position 1: ON Position 2: AUTO

Table 2-7 Breaker Labels - Single Essential Bus

Description	Label		CB Value
	Single LRU	Dual LRU	14/28V System
GI 275 configured as ADI	PFD		5A
GI 275 configured as MFD	MFD		5A
GI 275 configured as Standby ADI	STBY [1]		5A
	STBY/MFD [2]		
GI 275 configured as HSI	HSI		5A
	HSI/STBY [3]		
GI 275 configured as EIS	EIS	EIS 1 EIS 2	5A
GEA 110	ENG SNSR	ENG SNSR L ENG SNSR R	5A
GEA 24	ENG SNSR	ENG SNSR L ENG SNSR R	5A
GSB 15	USB		5A

[1] Label as “STBY” if the GI 275 is configured as a Standby ADI and no MFD pages are configured.
[2] Label as “STBY/MFD” if the GI 275 is configured as a Standby ADI and MFD pages are configured.
[3] Label as “HSI/STBY” if the GI 275 is configured as a Standby HSI.

Table 2-8 Circuit Breaker Labels - Independent Essential Bus

Description	Label		CB Value
	Single LRU	Dual LRU	14/28V System
GI 275 configured as ADI	PFD A PFD B		5A
GI 275 configured as MFD	MFD A MFD B		5A
GI 275 configured as Standby ADI	STBY A [1] STBY B [1]		5A
	STBY/MFD A [2] STBY/MFD B [2]		
GI 275 configured as HSI	HSI A HSI B		5A
	HSI/STBY A [3] HSI/STBY B [3]		
GI 275 configured as EIS	EIS A EIS B	EIS L A EIS L B EIS R A EIS R B	5A
GEA 110	ENG SNSR A [4] ENG SNSR B [4]	ENG SNSR L A ENG SNSR L B ENG SNSR R A ENG SNSR R B	5A
GEA 24	ENG SNSR A	ENG SNSR L A ENG SNSR R B	5A
	ENG SNSR B		
GSB 15	USB A		5A
	USB B		

[1] Label as “STBY A” and “STBY B” if the GI 275 is configured as a Standby ADI and no MFD pages are configured.
[2] Label as “STBY/MFD A” and “STBY/MFD B” if the GI 275 is configured as a Standby ADI and MFD pages are configured.
[3] Label as “HSI/STBY A” and “HSI/STBY B” if the GI 275 is configured as a Standby HSI.
[4] It is not required to connect each GEA 110 to both essential busses (refer to Figure B-9). If it is desired to connect each GEA 110 to only one essential bus, label similarly to GEA 24 in the above table.

2.6 Shielding and Electrical Bonding Considerations

Electrical equipment, supporting brackets, and racks should be electrically bonded to the aircraft's main structure. When surface preparation is required to achieve electrical bond, refer to SAE ARP 1870 section 5. An equivalent OEM procedure may be substituted. The electrical bond should achieve DC resistance less than or equal to 2.5 milliohms to local structure where the equipment is mounted. Verify compliance by inspection using a calibrated milliohm meter.

2.7 Pneumatic Plumbing

The primary ADC must be installed on the Pitot-static connections that go to the previously installed pilot's instruments. If this static source has an alternate static source selector switch, it must be retained.

The installer is required to fabricate pneumatic hose connections and attach the aircraft Pitot and static pressure sources to the ADC. For approved practices while installing hoses and connections, refer to Part 43, appendix E. The ADC has two ports that connect to the aircraft's Pitot-static system. The two ports are labeled on the unit. The ports use 1/8-27 ANPT female threads. The mating fittings must have 1/8-27 ANPT male threads. Use appropriate air hoses and fittings to connect the Pitot-static lines to the unit. Observe the following precautions when connecting the Pitot-static plumbing.

1. Verify the aircraft Pitot and static pressure ports are plumbed directly to the unit Pitot and static pressure input ports.
2. Seal the threads of pneumatic fittings at the connector ports. Verify there are no pneumatic leaks.
3. Avoid fluid or particle contamination anywhere within the Pitot and static lines connected to the ADC.
4. Avoid sharp bends and routing near aircraft control cables.
5. To avoid moisture or debris collection at or near the unit, the ADC should not be the low point of the system.
6. Verify no deformations of the airframe surface have been made that would affect the relationship between static air pressure and true ambient static air pressure for any flight condition.

CAUTION

Check pneumatic connections for errors before operating the ADC. Incorrect plumbing could cause internal component damage.

2.8 Cooling Considerations

The GI 275 internal battery charge capability is limited to a minimum battery temperature of 0º C and a maximum battery temperature of 60º C, the discharge capability is limited to a minimum battery temperature of -20º C and a maximum battery temperature of 80º C.

When multiple units are installed without airflow, the ambient temperature around the GI 275 will increase, and at high ambient temperatures the GI 275 may inhibit or degrade the ability to charge the internal battery until the battery temperature drops below 60º C.

Cooling air must be considered in the avionics/airframe design process since system-cooling requirements vary between different airframes. Considerations include but not limited to ventilation and airflow behind the instrument panel.

2.9 Compass Safe Distance

If the GI 275 is mounted less than 12” from the compass, recalibrate the compass and make the necessary changes for noting correction data.

2.10 Mounting Requirements

The GI 275 is primarily designed to replace existing 3.125” (3 ATI Round) standard flight instruments on the instrument panel. For all GI 275 installations, the instrument panel must be metal construction allowing a ground path for instrument panel installations. For metal and tube-and-fabric aircraft, the ground path is inherently achieved through the metallic airframe structure. For composite aircraft, a ground plane (or reference) must be used to achieve a comparable ground.

The ADAHRS has an extremely sensitive integrated measurement unit. It must be mounted rigidly to the aircraft instrument panel.

The following limits must be met when mounting a GI 275 with integrated ADAHRS:

- Roll: +/- 2° of aircraft level reference
- Pitch: +/- 15° of aircraft level reference
- Yaw: +/- 15° of aircraft centerline

Electrical bonding is achieved with mounting hardware with a direct current (DC) resistance of 20 milliohms.

The GI 275 mounts in the instrument panel from the back side. When installed in the standard mounting configuration, the unit is mounted directly to the instrument panel in a 3.125” cutout. Reference the recommended hardware and panel thicknesses specified in Figure A-6. In most cases, installation of the GI 275 does not require modification to the existing instrument panel if it is replacing an existing 3.125” diameter flight instrument. If modification is required, it will typically be trimming the existing 3.125” cutout in the instrument panel to accommodate the knob on the unit and drilling larger holes for the #8-32 mounting screws (see Section 3.6.2).

When replacing a 3 ATI Square instrument, an adapter plate per Table 1-6 may be used to mount directly to the instrument panel and the GI 275 mounted directly to the adapter plate. Reference the recommended hardware and panel thicknesses specified in Figure A-7.

It is recommended to allow sufficient cable and air hose length for servicing the unit.

2.10.1 Displays

The GI 275 system is limited to a total of 6 GI 275 units installed in a single aircraft. When configuring a standby unit, the system is limited to only allowing one standby unit per side, additionally the standby must be configured for the last sensor selection for the configured side (pilots/co-pilots).

2.10.2 EIS

EIS is limited to 4 and 6 cylinder reciprocating engine equipped aircraft.

2.10.3 GNS 500W TAWS

Only TAWS alerts from the primary GPS system (GPS 1) display on the GI 275. The remote annunciations will not display on the GI 275 if the aircraft’s TAWS system is enabled on a GNS 500W Series System configured as GPS #2

2.10.4 TAWS

Aircraft installations with a TAWS that generates aural and visual annunciations are not inter-operable with the GI 275 internal implementation of SVT-Terrain. Only one TAWS may be installed in the aircraft. If an external TAWS is installed with SVT, the GI 275 must be configured to disable SVT-Terrain aural and visual annunciations.

2.10.5 Standby Instruments

Installations of a GI 275 in aircraft approved for IFR operations require standby attitude, airspeed, and altimeter instruments. The existing pneumatic instruments can be retained for use as standby instruments, another GI 275 3-in-1, or an approved 3rd party electronic standby indicator; however, they must be located next to the pilot's PFD. Standby instruments are not required for aircraft limited to VFR-only operations. The existing non-stabilized magnetic compass must be retained. The magnetic compass must be re-calibrated after the GI 275 is installed and configured. The GI 275 standby instrument must install and maintain the included backup battery.

2.10.6 Magnetic Interference Survey

NOTE

If mounting the GMU in the location used by an existing flux valve or flux gate, the Magnetic Interference Survey must still be successfully completed.

The GMU must be installed in an area of the aircraft with acceptable amounts of magnetic interference. Use the Garmin Location Survey Tool or the Magnetic Interference Test to identify this location. For details regarding the determination/verification, refer to AHRS/Magnetometer Installation Considerations available at Garmin's Dealer Resource Center.

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 must be prepared that is large enough to accommodate sufficient packing material to prevent movement.

3.2 Wiring Harness Installation

CAUTION

Verify there are no wiring errors before connecting the cables. Incorrect wiring could damage components.

NOTE

Shield terminations to the GI 275 connector backshell must be less than 3.0". Shield terminations for interfaced equipment should be as short as practical. Refer to AC 43.13 for termination techniques.

Install wire in accordance with AC 43.13-1B, chapter 11. Allow adequate space for installation of cables and connectors. For connector and tooling information, refer to Tables 3-1 through 3-4. The installer supplies and fabricates all of the cables according to information in this manual. Cable lengths vary depending on installation. For multiple GI 275 installations, verify wire separation between redundant systems to reduce the possibility of complete system loss due to a single event. Ground and shield terminations of interfaced equipment can vary. For more information, refer to the equipment manufacturer's installation manual. The following considerations should be addressed.

- Cable harness should not be located near controls/control cables, high voltage lines, or fuel lines
- Cable harness should be in a protected area of the aircraft (e.g., isolated from engine rotor burst)
- Cable harness should not be routed near high voltage or electrical noise sources
- Use wire gauge specified in Appendix B
- Position the cable so there is sufficient length to allow the GI 275 to be removed from the panel with the cables attached
- Route and secure the wire bundle as appropriate
- Avoid sharp bends and chafing

Allow adequate space for installation of cables and connectors. The installer must supply and fabricate all of the cables. All electrical connections are made through two 78-pin connector and one BNC connector (BNC connectors are not supplied with the connector kit). Section 6 defines the electrical characteristics of all input and output signals. Required connectors and associated hardware are supplied with the connector kit.

See Appendix B for examples of interconnect wiring diagrams. Construct the actual harness in accordance with aircraft manufacturer authorized interconnect standards.

NOTE

To maintain environmental qualifications (Section 1.5), ensure that all connector positions have a crimp contact inserted, and that all unconnected crimp contacts have a connector seal plug installed. Refer to 190-00313-12 for more information.

NOTE

Non-Garmin part numbers shown are not maintained by Garmin and consequently are subject to change without notice.

Table 3-1 Pin Contact Part Numbers

Manufacturer	Part Number
Garmin P/N	336-00051-00
Military P/N	M39029/56-348

Table 3-2 Recommended Crimp Tools

Manufacturer	Contact Size/Type	Crimping Tool	Turret Die or Positioner
Military P/N	22D Socket	M22520/2-01	M22520/2-07
		M22520/7-01	M22520/7-05

Table 3-3 Recommended Insertion Tools

Use with Contact Size	Plastic Tools		Metal Tools			
	MS Part Number	Color	Angle Type		Straight Type Proprietary Part Number	Color
			MS Part Number	Proprietary Part Number		
22D	M81969/14-01*	Green/ (White)	M81969/8-01	11-8674-24	11-8794-24	Black

*Double end insertion/removal tool.

Table 3-4 Recommended Removal Tools

Use with Contact Size	Plastic Tools		Metal Tools				
	MS Part Number	Color	For Unwired Contacts Proprietary Part Number	Angle Type		Straight Type Proprietary Part Number	Color
				MS Part Number	Proprietary Part Number		
22D	M81969/14-01*	(Green)/White	11-10050-07	M81969/8-02	11-8675-24	11-8795-24	Green/ White

*Double end insertion/removal tool.

3.2.1 Shielded Cable Preparation

1. At the end of the shielded cable, strip back 2.5 inch maximum length of the jacket to expose the braid.
2. Remove the exposed braid.
3. Carefully score the jacket 1/4 inches to 5/16 inches from the end and remove the jacket to leave the braid exposed.
4. Connect a 20 or 22 AWG wire, maximum length 3.0 inches, to the exposed braid of the prepared cable.

Preferred Method

a) Slide a solder sleeve (1) onto the prepared cable. The solder sleeve must accommodate the number of conductors present in the cable assembly. Use M83519/1-2 for two conductors and M83519/1-3 for three conductors. Solder sleeves with pre-installed leads are acceptable.

b) Shrink using a heat gun.

Alternate Method

a) Solder the wire (2) to the exposed braid of the prepared cable.

b) Verify a solid electrical connection through the use of acceptable soldering practices.

c) Slide a piece of shrink tube (1) onto the prepared cable. The shrink tube must accommodate the number of conductors present in the cable.

d) Shrink using a heat gun.

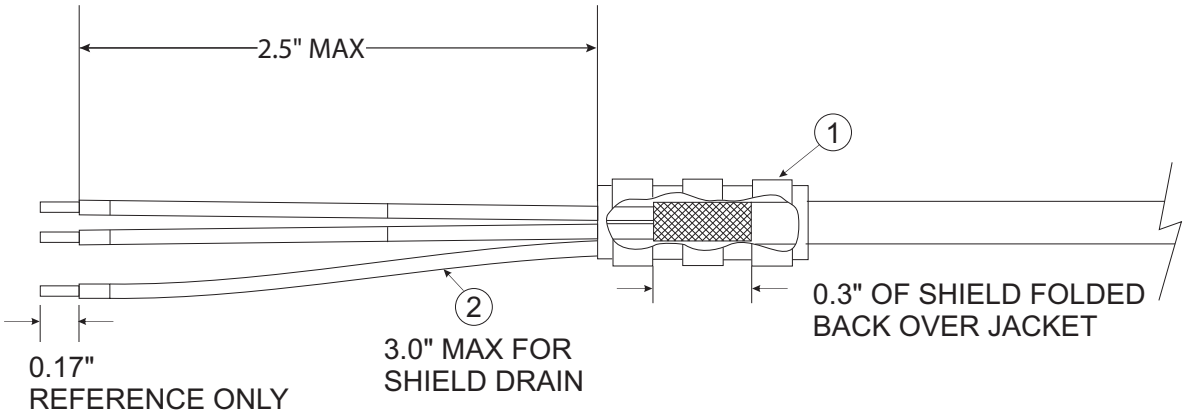

Figure 3-1 Shield Termination

5. Repeat steps 1 through 4 as needed for the remaining shielded cables.

3.2.2 Instructions to Crimp Pins to Wires

1. Strip back approximately 0.17 inches of insulation from each wire.
2. Insert the wire (1) into the pin/socket (2).
3. Crimp with one of the recommended crimping tools.
4. Insert the pin into the connector housing location as specified by the interconnect drawings in Appendix B.
5. Verify the pin is properly engaged in the connector by tugging on the wire.

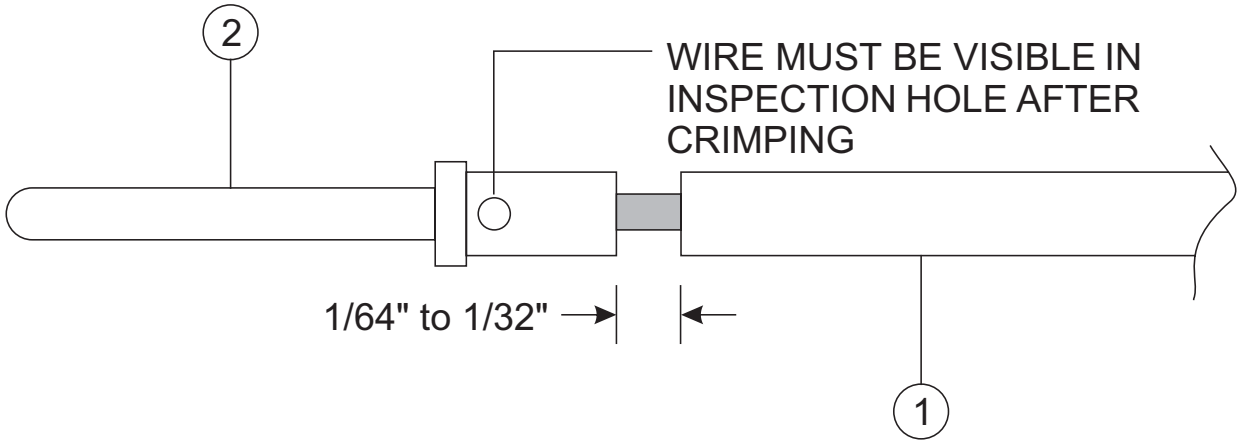

Figure 3-2 Insulation to Pin/Socket Clearance

3.3 Backshell Assemblies

CAUTION

Place the smooth side of the strain relief across the cable bundle. Placing the concave side against the cable bundle will damage wires.

Each tapped hole on the backshell may accommodate up to two ring terminals. It is preferred that only two wires be terminated per ring terminal, P/N MS25036-153. If only a single wire is left or if only a single wire is needed for this connector, use ring terminal, P/N MS25036-149. If more wires exist for the connector, it is permissible to terminate three wires per ring terminal.

1. Wrap the cable bundle with silicone fusion tape where the strain relief clamps the bundle.
2. Place the connector (7) edge inside of the backshell groove (8).
3. Place the smooth side of the backshell strain relief (9) across the cable bundle.
4. Secure using three 4-40 x 0.375 pan head screws (10).
5. Attach the backshell cover (11) to the backshell using the supplied screws (12).
6. Install a ring terminal onto the cable shield drains, grouping wires as appropriate for the connector. The maximum wire length for the shield drain is 3".

7. Place the following items on the 8-32 x 0.312 pan head shield terminal screw (13) in the order shown.
    a) Split washer
    b) Flat washer
    c) First ring terminal
    d) Second ring terminal (if necessary)
8. Insert the screw (13) into the tapped holes on the shield block.

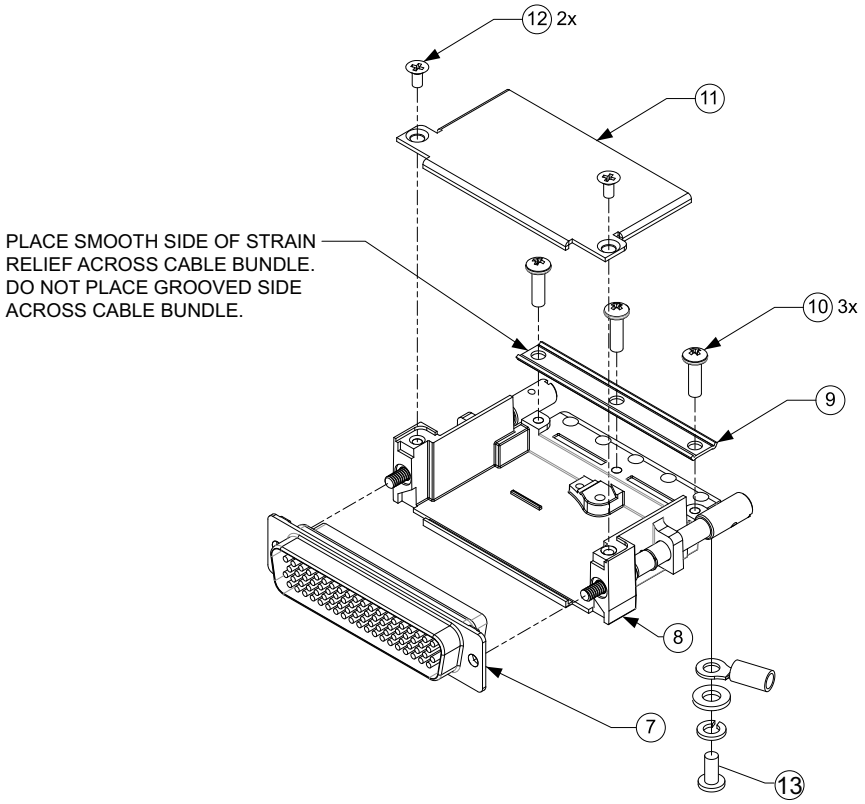

Figure 3-3 Jackscrew Backshell Assembly

3.4 Configuration Module

The backshell assembly houses the configuration module. To assemble:

1. Strip back approximately 0.17 inches of insulation from each wire of the wire harness (2).
2. Crimp a pin (3) or socket (8), as necessary, to each conductor.
3. Insert wires into the connector housing (4).
4. Attach the configuration module (1) to the backshell (5) with screw (9).
5. Plug the wire harness into the connector on the module (1).

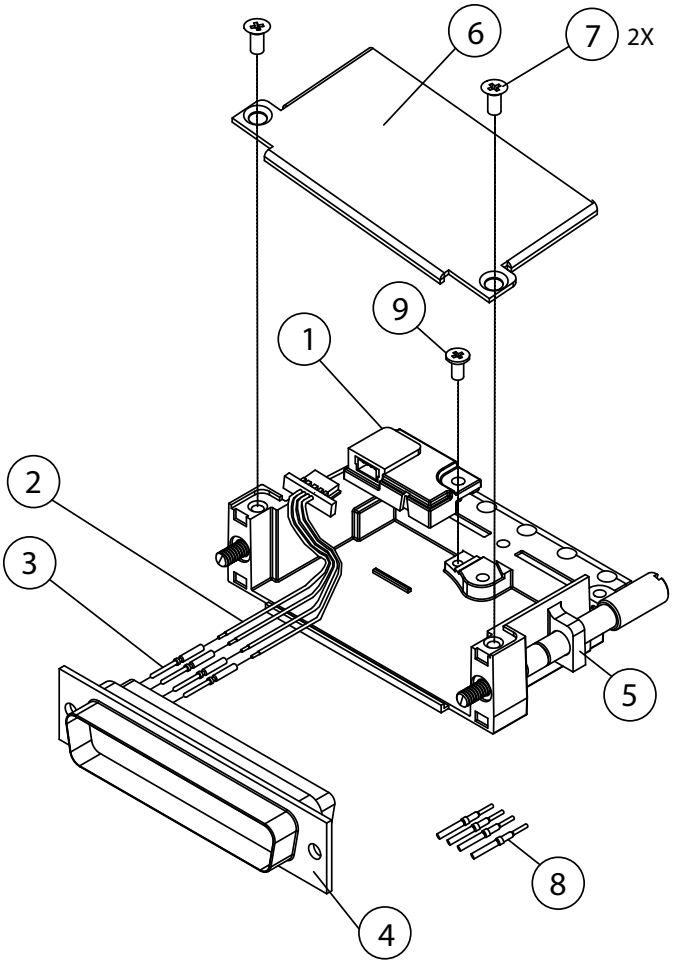

Figure 3-4 Configuration Module Assembly

3.5 Pneumatic Connections

The installer is required to fabricate pneumatic hose connections and attach the aircraft pitot pressure source and aircraft static pressure source to the GI 275.

NOTE

When the GI 275 is being installed as an ADI only, the Pitot/Static connections must be installed. This input is used to aid the AHRS. Incorrect connection or disregarding the connections will cause the attitude to fail. Ensure the P/S connections are connected properly for all ADAHRS installed units.

NOTE

Check pneumatic connections for errors before operating the GI 275. Incorrect plumbing cold cause internal component damage. Observe the following cautions when connecting pneumatic lines.

1. Make sure the aircraft static pressure port is plumbed directly to the unit static pressure input port and the aircraft pitot pressure port is plumbed directly to the unit pitot pressure input port.
2. Seal the threads of pneumatic fittings at the connector ports. Use caution to ensure there are no pneumatic leaks.
3. Use care to avoid getting fluids or particles anywhere within the pitot and static lines connected to the GI 275.

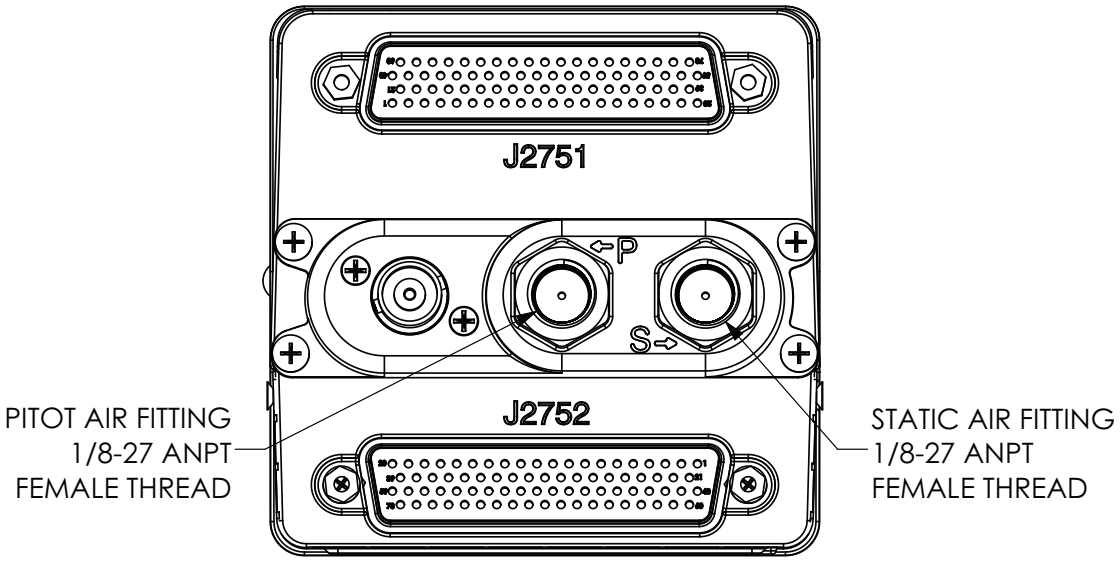

Figure 3-5 GI 275 Pitot and Static Pressure Ports

3.6 Equipment Mounting

3.6.1 Unit Installation and Removal

For final installation and assembly, refer to the outline and installation drawings in Appendix A. The order of the following installation steps may vary by aircraft.

- The GI 275 is installed in the standard mounting configuration by holding the unit flush with the backside of the instrument panel and fastening three #8-32 screws to the panel as shown in Figure A-6.
- If using the optional adapter plate per Table 1-6, the GI 275 is installed by holding the unit flush with the backside of the adapter plate and fastening the three #8-32 flat head screws to the adapter plate as shown in Figure A-7.
- Connect the wiring harnesses and backshell connectors (1 or 2)
- Connect the pneumatic hoses and connectors (if applicable)
- Connect the BNC connector (if applicable)

Removal (the order of the following may vary by aircraft):

- Ensure the current configuration is saved to a USB drive.
- Turn off the GI 275 and remove power.
- Remove the screws retaining the GI 275 in the instrument panel.
- Remove the cable connectors (1 or 2) from the back of the GI 275.
- Disconnect the BNC connector (if applicable).
- Disconnect the pitot-static connections (if applicable).

3.6.2 Panel Modification Guide

The GI 275 panel modification guide (115-03278-00) can be used as a template when marking the panel for cutout (see Figure A-4). The guide can also be mounted to the panel as a hard stop when modifying the instrument panel. A .dxf version of the panel cutout is also available for download at www.garmin.com.

3.6.3 Unit Replacement

Refer to the applicable airframe specific maintenance manual.

3.7 Antenna Installation

The backup GPS antenna is designed for installation on top of an existing instrument panel glareshield. The selected location must offer good visibility of the sky through the windshield. The optimal antenna position is horizontal or as close to horizontal as practical given the shape of the glareshield.

3.8 Backup Battery Installation

The backup battery is internal to the GI 275. Captive screws secure a cover plate protecting the battery. The battery comes included (but not installed) with GI 275 ADAHRS and GI 275 ADAHRS + AP units and must be installed prior to installation of the unit in the instrument panel.

NOTE

This product contains a Lithium-ion battery and supports a Lithium-ion battery pack accessory that must be recycled or disposed of properly. Battery replacement and removal must be performed by a licensed A&P technician.

NOTE

The battery pack comes with 2 end caps, these must be installed with the battery as shown in Figure 3-6.

To install the backup battery in the GI 275:

1. Loosen the four captive screws and remove the battery cover from the top of the unit.
2. Place the battery into the battery cover and press down to ensure it is fully seated into the cover as show in Figure 3-6.
3. Place the battery with cover into the unit and press down to fully seat the assembly.
4. Torque each retention screw to 7 to 9 in-lbs. Ensure the cover is fully seated and that all screws tighten evenly. The cover should be level with the top of the unit after the screws are fully tightened.

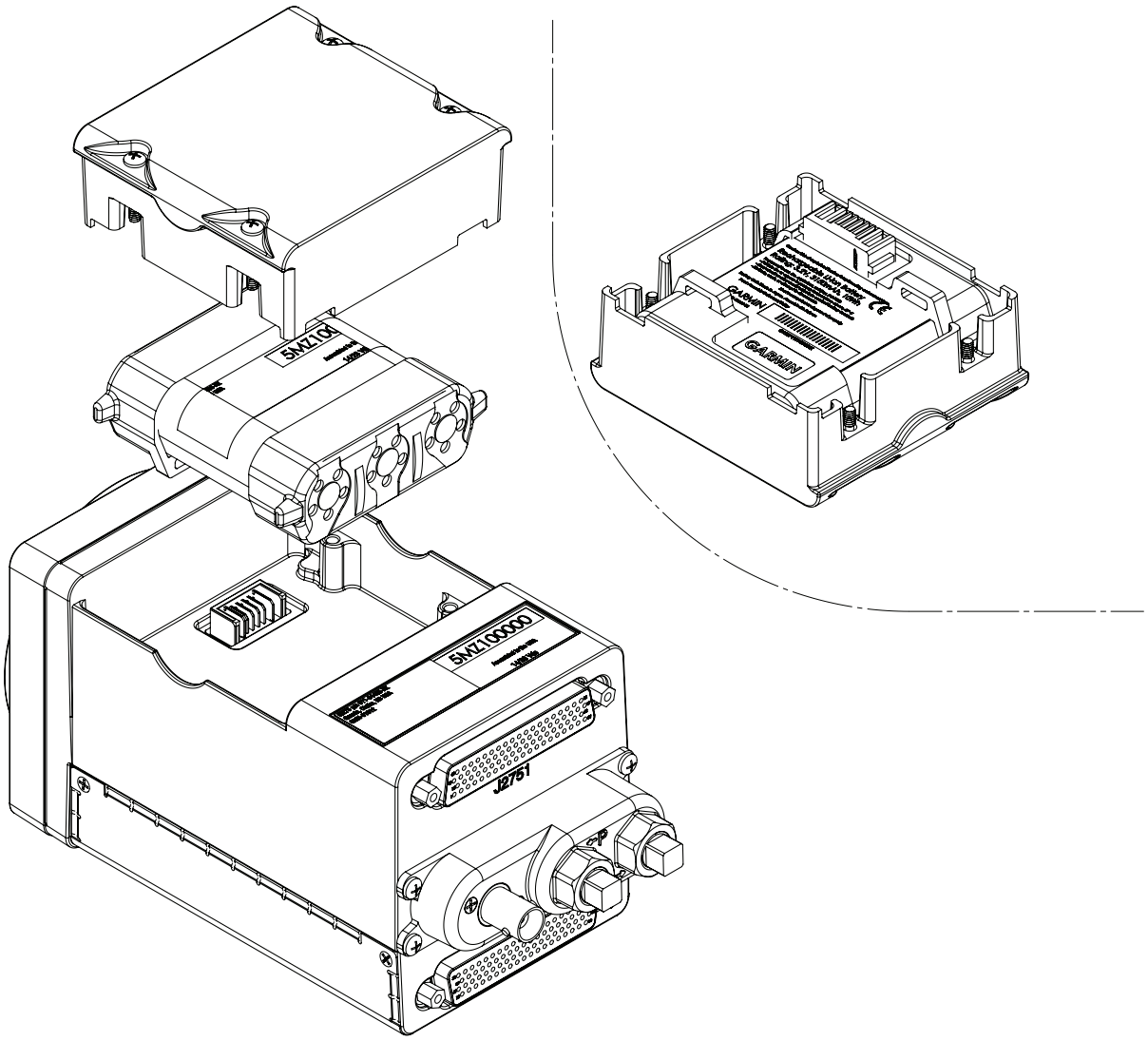

Figure 3-6 Backup Battery Installation

4 POST INSTALLATION CONFIGURATION & CHECKOUT

NOTE

The GI 275 does not provide valid outputs until the aircraft post installation configuration procedures are completed.

For actual aircraft installation/checkout, use only aircraft manufacturer approved checkout procedures.

4.1 Mounting, Wiring, and Power Checks

Verify all cables are properly secured and shields are connected to the shield block of the connectors. Check the movement of the flight and engine controls to verify there is no interference between the cabling and control systems. Verify all wiring is installed as described in this manual.

Prior to installing and powering up the GI 275(s), the wiring harness must be checked for proper connections to the aircraft systems and other avionics equipment. Point to Point continuity must be checked to expose any faults such as shorting to ground or wiring discrepancies. Any faults or discrepancies must be corrected before proceeding.

After accomplishing a continuity check, perform power and ground checks to verify proper power distribution to the GI 275. Any faults or discrepancies must be corrected at this time.

The GI 275 can be installed after completion of the continuity and power checks.

4.2 Configuration Setup

4.2.1 System Configuration Preparation

After all GI 275 components are installed in the aircraft, the system must be configured.

Due to the many different layout options of the GI 275, information contained in this section may not be applicable to every installation. A summary of the steps for system configuration and calibration follows:

1. Assign each GI 275 a unique Unit ID. This must be done prior to configuration of each unit.
2. Verify the GI 275 software level is current.
3. Configure the GI 275 for the particular installation. Follow the configuration flow shown in Figure 4-1, as specified in Section 4.2.2 through Section 4.4. This includes:
   a) Setting the airframe-specific parameters.
   b) Configuring interfaces to external systems.
4. Perform necessary system calibrations, as specified in Section 4.3.
5. Load required and optional databases, as specified in Section 4.13.
6. Perform the ground checks applicable to the installation, beginning in Section 4.11.
7. Perform the flight checks specified in Section 4.13.

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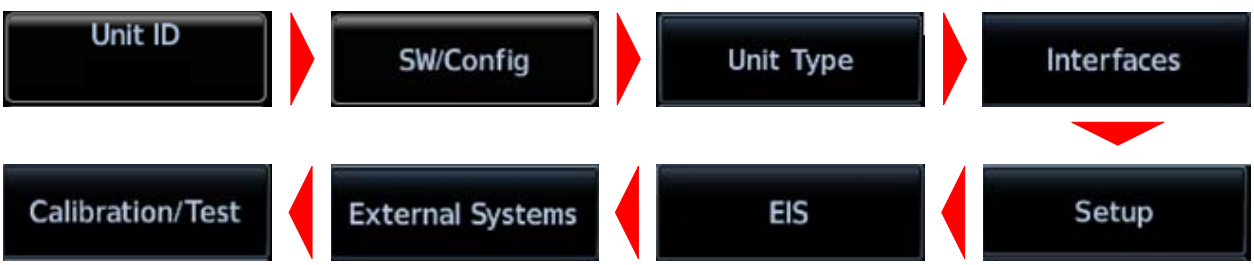


Figure 4-1 System Configuration Flow

4.2.1.1 Entering Configuration Mode

The Configuration mode of the GI 275 can be accessed by holding down the inner knob, located at the bottom-left of the unit, upon initial power-up. Hold the knob in until "CONFIGURATION MODE" appears on the screen, then release the knob, the text in Figure 4-2 will appear.

Figure 4-2 Entering the Configuration Menu

NOTE

*When making configuration selections on the GI 275, in many cases, there is no dedicated Enter selection. The selections made are confirmed by touching the **Back** button to exit the particular screen/page.*

NOTE

When powering on the GI 275 in Configuration mode for the first time, a Unit ID must be assigned before any configuration settings can be changed. Refer to Section 4.2.4.1.

4.2.2 Import Software/Configuration

The ***Import SW/Config*** page is used to update the software for the GI 275 and any LRUs directly interfaced to the GI 275. The Unit ID must be properly configured prior to loading software to the GI 275. After loading software to the GI 275, configure all interfaced LRUs.

NOTE

When connecting a USB drive to the GI 275 (via USB dongle or GSB 15), ensure that the USB icon appears in the bottom-left of the display before proceeding.

4.2.2.1 GI 275 Software

Software updates can be accomplished via USB, or with another GI 275 using the following procedure:

1. Download the latest software update from the Garmin Dealer Resource Center onto a USB drive.
2. Ensure all GI 275s in the system are powered on in Configuration mode.
3. Insert the USB drive into the USB dongle or GSB 15 (if installed).
4. Navigate to the ***Import SW/Config → GI-275 Software*** page.
5. Select **USB** as the Import Source.
6. Select the **Settings** button and toggle on/off the applicable settings.
7. Select the **Update** button.
8. Select the applicable updates or touch the **Select All** button
9. Select **Update Packages ( )**, then **Begin Update**. a restart is required when completed.

Settings

- *Multicast* – Allows software upload to all GI 275s in the system without the need for each unit to have a USB dongle. The default is *Enabled*.
- *Continue on Fail* – Allows unit to continue to upload additional software files even if the current file fails. The default is *Disabled*.

Figure 4-3 Software Update

4.2.2.2 Update External

Software updates for external LRUs in the GI 275 system can be updated via the GI 275 with the following procedure:

1. Download the latest software updates from the Garmin Dealer Resource Center onto a USB drive.
2. Power on all GI 275s and all LRUs in the system in Configuration mode.
3. Insert the USB drive into the USB dongle or GSB 15 (if installed) of the GI 275 that is directly interfaced to the external LRU(s).
4. Navigate to the ***Import SW/Config → Update External*** page.
5. Select the External LRUs to be updated. Details regarding individual LRU selection and current LRU software versions can be found by touching the **Info** button.
6. Touch the **Update packages ( )** button and then the **Begin Update** button. Follow the on-screen instructions to complete the update.
7. A restart of the system may be necessary.

4.2.3 Import Config

4.2.3.1 Import Configuration

Configuration settings can be imported via USB using the following procedure:

1. Power on the GI 275 and all LRUs in the system in Configuration mode.
2. Insert the USB drive containing the configuration files into the USB dongle or GSB 15 (if installed).
3. Navigate to ***Import SW/Config → Import Config***.
4. Touch the **Import Configuration** button.
5. Touch the **Select Files** button and select the configuration file to be imported.
6. Touch the **Select Configuration** button.
7. Select the applicable configurations and then touch the **Back** button.
8. Touch the **Import Config ( )** button and then touch the **Start** button.

4.2.3.2 Export Configuration

Configuration settings can be exported via USB using the following procedure:

1. Power the GI 275 and all LRUs in the system on in Configuration mode.
2. Insert a USB drive into the USB dongle or GSB 15 (if installed).
3. Navigate to ***Import SW/Config → Import Config***.
4. Touch the **Export Config** button.
5. Touch the **Select Name** button and enter a name for the saved file.
6. Touch the **Export Config** button.

4.2.4 Unit Type

The ***Unit Type*** page is used to configure the GI 275 unit as a specific type of display. This includes Unit ID, System ID, and Instrument Type.

4.2.4.1 Unit ID

CAUTION

Failure to follow the procedure to set Unit ID before performing any other configuration steps may result in configuration errors or configuration settings being overwritten by another display.

A Unit ID must be assigned to each installed GI 275 prior to configuring the function of each unit.

- ***Unit ID*** – A unique ID number between 1 – 6 for each GI 275 installed in the system. Unit ID is set to a blank default at the factory and must be manually set. For a single GI 275 installation, set the ID to *GI 1*. For multiple GI 275s, it is recommended that the Primary ADI (if applicable) be set to *GI 1*. Whichever unit is assigned GI 1 should also be set as the Master display (refer to Section 4.2.4.2). Each Unit ID must be unique and set using the following procedure:

NOTE

When the unit is powered on in Configuration mode for the first time, it will automatically prompt the user to assign a Unit ID.

The Unit ID can be configured by following the steps:

1. Verify all GI 275 units are powered off.
2. Power up a single GI 275 in Configuration mode, as described in Section 4.2.1.1.
3. From the home page, select **Unit Type → Unit ID → LRU** and select a unique Unit ID between 1 and 6.
4. Select **Restart** to apply the assignment.
5. Power down the display (do not power back on at this time).
6. Repeat steps 2 through 5 for the remaining installed GI 275s.
7. When all Unit ID assignments have been made, power up all displays in Configuration mode before moving to the next configuration steps. The Unit ID assigned to each display is shown in the lower-left corner of the display on the Configuration mode home page or on the ***Unit Type*** page.

CAUTION

For installations with more than one GI 275, all configuration settings made after the steps in Section 4.2.4.1 must be done with all displays powered on and in Configuration mode.

CAUTION

Once all GI 275s have been configured, the Unit ID should not be changed. Doing so will result in a loss of configuration settings.

4.2.4.2 System ID Source

The ***System ID Source*** page allows the GI 275 to be set as the Master display in the GI 275 system. It also displays the System ID.

4.2.4.3 Unit Configuration

Instrument Type

After the Unit ID has been selected, configure the instrument type. Refer to Section 4.2.27 for available page configurations for each indicator/display type. To set the instrument type, touch the **Instrument Type** button and then select the desired indicator/display. The options are:

- ADI
- MFD
- EIS
- HSI
- IVSI (available and automatically set for -50 units only)

Standby

If the Instrument Type is set to *ADI* or *HSI*, then the Standby selection will be available. If the GI 275 was installed as a Standby ADI, then this should be configured on (i.e., illuminated green). If the display is not intended to be a Standby, then leave the selection configured off.

The Standby ADI can display MFD pages when not in reversionary mode. The Standby HSI can display HSI pages when not in reversionary mode. This is determined by what pages are configured on the ***Page Config*** page (refer to Section 4.2.27).

Unit Location

Select the location of the display installation. Selections are:

- Pilot
- Co-Pilot

4.2.5 Interfaces

This section specifies the configuration and setup of the GI 275. Each display must be individually configured to match all applicable interconnects in APPENDIX B that define each display as either an attitude, EIS, heading, or standby indicator.
The ***Interfaces*** page allows the GI 275 display to be configured to interface to LRUs installed as part of the GI 275 system. The configuration for a particular display will vary based on the following:

- GI 275 unit variant (e.g. GI 275 ADAHRS)
- Instrument Type (e.g., Primary ADI, EIS, etc.)
- Number and type of other GI 275s in the system

Each installed display must be individually configured based on the equipment that is interfaced. Depending on the interface that is selected, further actions may be required by selecting illuminated settings, as shown in Figure 4-4, and configuring them appropriately. Some selections may be grayed out until a preceding selection has been configured

Figure 4-4 Interface and Ports/Config Selections

The configuration tables in this section show available interface options as well as available ports. The port assignments must be made to match the aircraft wiring.

NOTE

The port availability at each LRU configuration will vary depending on previous configuration actions. If a port was previously configured for another LRU, it will be grayed out and not available for selection.

4.2.5.1 GI 275s Installed

The ***GI 275s Installed*** page allows you to indicate which GI 275s are configured as part of the system. By default, the Unit ID of the unit being configured is automatically selected on.

4.2.6 Wireless

The ***Wireless*** page allows you to connect the GI 275 unit to a Wi-Fi or Bluetooth network.

4.2.7 ADC

Configure each GI 275 displaying PFD information in either primary or reversionary backup mode for ADC 1, ADC 2 (if equipped), and ADC 3 (if equipped) per the settings in Table . There is no configuration setting for the OAT sensor, if connected, the GI 275 will utilize the OAT data.

Table 4-1 ADC Interfaces and Configuration Settings

ADC	Interface	Ports/Config - Settings	Port Numbers	Notes
Integrated ADAHRS	Internal			[1]
Air Data from other GI 275	Other GI 275			
GSU 75	GSU 75	ARINC 429 IN	1 Thru 4	[2]
		RS-232 RX/TX	1 Thru 2	
GDC 72	GDC 72	ARINC 429 IN	1 Thru 4	
		RS-232 RX/TX	1 Thru 2	
GDC 74( )	GDC 74	ARINC 429 IN	1 Thru 4	
		RS-232 RX/TX	1 Thru 2	
Other ADC	Other ADC	ARINC 429 IN	1 Thru 4	
G500/G600 TXi	GX00 TXi			[3]

[1] External ADCs must be configured before the GI 275's internal ADAHRS (e.g., GSU 75 is configured as ADC 1, then Internal would be ADC 2). Internal ADAHRS must be selected as default on the ***Sensors*** page. Refer to Section 4.2.28.

[2] The *ARINC 429 IN* is shared with the AHRS portion of the GSU 75.

[3] The number of GDUs configured to the TXi system must be selected on the GI 275 when *GX00 TXi* is selected as a configured ADC.

The configuration data on the GI 275 and the Garmin ADC unit must match. If the configuration data does not match, or is missing from one of the units, use the following procedure:

1. In Configuration mode, navigate to the ***Interfaces → ADC( ) → Configuration*** page.
2. Perform **one** of the following actions:
    a. If the display has a valid configuration and the ADC is missing configuration data, touch **Copy to ADC**.
    b) If the ADC has a valid configuration and the display is missing configuration data, touch **Copy from ADC**.

4.2.8 AHRS

Configure each GI 275 displaying attitude, heading, or CDI information in either primary or reversionary backup mode for AHRS 1, AHRS 2 (if equipped), and AHRS 3 (if equipped) per the settings in Table .

Table 4-2 AHRS Interfaces and Configuration Settings

AHRS	Interface	Magnetic HDG	Ports/Config - Settings	Port Numbers	Notes
Integrated ADAHRS	Internal	GMU 44B	GMU 44B	(RS-232) 1 or 2	[1] [2]
				(RS-485) 1	
		A429 Heading	A 429 HEADING	1 Thru 4	[1]
			Primary	None	[6]
AHRS from other GI 275	Other GI 275				
GSU 75	GSU 75		ARINC 429 IN	1 Thru 4	[2] [4]
			RS-232 RX/TX	1 Thru 2	[4]
GRS 77	GRS 77		ARINC 429 IN	1 Thru 4	
			RS-232 RX/TX	1 Thru 2	
GRS 79	GRS 79		ARINC 429 IN	1 Thru 4	[4]
			RS-232 RX/TX	1 Thru 2	
G500/G600 TXi	GX00 TXi				[5]

[1] External AHRS must be configured before the GI 275's internal ADAHRS (e.g., GSU 75 is configured as AHRS 1, then Internal would be AHRS 2). Internal ADAHRS must be selected as default on the ***Sensors*** page. Refer to Section 4.2.28.

[2] The ARINC 429 IN is shared with the ADC portion of the GSU 75. Selecting a port will change the selection for both the ADC and AHRS port selection.

[3] Must be configured for Port 1 or 2 if used.

[4] The orientation of the GSU 75 and GRS 79 must be configured. Touch **Configuration** to select the orientation.

[5] The number of GDUs configured to the TXi system must be selected on the GI 275 when *GX00 TXi* is selected as a configured AHRS.

[6] Primary heading allows a GI 275 internal AHRS configuration to utilize magnetometer data from the source configured on AHRS 1 interface.

The configuration data on the GI 275 and the Garmin AHRS unit must match. If the configuration data does not match, or is missing from one of the units, use the following procedure:

1. In Configuration mode, navigate to the ***Interfaces → AHRS( ) → Configuration*** page.
2. Perform **one** of the following actions:
    a. If the display has a valid configuration and the AHRS is missing configuration data, touch **Copy to AHRS**.
    b) If the AHRS has a valid configuration and the display is missing configuration data, touch **Copy from AHRS**.

4.2.9 Inertial-aided Vertical Speed

The default setting for Inertial-aided Vertical Speed is Off. This setting must be set to On for IVSI installations.

4.2.10 GPS

Configure the GPS interfaces for GPS 1 and GPS 2 (if equipped) per the settings in Table .

Table 4-3 GPS Interfaces and Configuration Settings

GPS	Interface	Ports/Config - Settings	Port Numbers	Notes
GTN 625/635/ 650/725/750	GTN 6XX		[3]	[1] [2]
	GTN 7XX			
GPS 400W / GNC 420W / GNS 430W /	GNS 4XXW	ARINC 429 IN	1 Thru 4	
		ARINC 429 OUT	1 Thru 2	
		RS-232 RX	1 Thru 2	
GPS 500W / GNS 530W	GNS 5XXW	ARINC 429 IN	1 Thru 4	
		ARINC 429 OUT	1 Thru 2	
		RS-232 RX	1 Thru 2	
GNS 480	GNS 480	ARINC 429 IN	1 Thru 4	
		ARINC 429 OUT	1 Thru 2	
		RS-232 RX	1 Thru 2	
GPS 175	GPS 175			
GNC 355	GNC 355			
GNX 375	GNX 375			
GTX 3X5	GTX 3X5	RS-232 RX	1 Thru 2	
Other GI 275	Other GI 275			

[1] Standalone EIS – Set GPS 1 (if interfaced) to match installed aircraft wiring.
[2] Non-standalone EIS – On the EIS display, set GPS 1 and GPS 2 to *None* (default setting).
[3] Disabling the Transmit Selected Course to the GTN configuration setting will prevent the course selected on the GI 275 from cross-filling to the GTN. Disable this setting when the GI 275 has Course Selection enabled but is not the primary HSI/CDI interfaced to the GTN.

VFR GPS

The built-in VFR GPS can be configured on for VFR navigation only.

TAWS Installations

If a single TAWS-equipped GTN 6XX/7XX or GNS 500W unit is installed, it must be configured as GPS 1. Only TAWS annunciations from GPS 1 are displayed on the GI 275.

GNS 400W/500W Series and GNS 480 Installations

In dual GNS installations, the ARINC 429 OUT port selection is configured the same for both GPS 1 and GPS 2. The GPS 2 ARINC 429 OUT port is automatically set based on the port selection made on GPS 1, or vice versa. Changing the port selection on one will automatically change it on the other. Set the remaining ports for both per the associated aircraft wiring diagram.

4.2.11 NAV

Configure each GI 275 for a NAV source for NAV 1 or NAV 2 (if equipped) per the settings in Table 4-4.

Course Selection

Disabling Course Selection allows the GI 275 to slave to the Selected Course from a VHF navigation unit. Set the Course Selection to Disabled when a third party NAV source is providing the primary Selected CRS data.

Table 4-4 NAV Interfaces and Configuration Settings

NAV	Interface	Ports/Config - Settings	Port Numbers	
Garmin GTN 650	GTN 650		[1] [2]	
Garmin GTN 750	GTN 750			
Garmin GNS 430/530	GNS 430/530	ARINC 429 IN	1 Thru 4	
Garmin GNS 480	GNS 480	ARINC 429 IN	1 Thru 4	
Garmin GNC 255	GNC 255	RS-232 RX/TX	1 Thru 2	
Garmin SL 30	SL 30	RS-232 RX/TX	1 Thru 2	
Collins VIR-32/33	Composite	ILS Energize	Discrete In	1 Thru 4
Honeywell KN-53/KX-155/ KX-155A/KX-165/KX-165A				
NAV from other GI 275	Other GI 275			
ARINC 429	A429	ARINC 429 IN	1 Thru 4	
G500/G600 TXi	GX00 TXi			
Analog Deviation	Analog Deviation			

[1] If Course Selection is disabled, configure CRS A429 port and speed.

[2] Disabling the Transmit Selected Course to the GTN configuration setting will prevent the course selected on the GI 275 from cross-filling to the GTN. Disable this setting when the GI 275 has Course Selection enabled but is not the primary HSI/CDI interfaced to the GTN.

4.2.12 Radar Altimeter

Configure the Radar Altimeter per the settings in Table . ,

Table 4-5 RAD ALT Interfaces and Configuration Settings

Radar Altimeter	Interface	Ports/Config -Settings	Port Numbers	
Garmin GRA 55/5500	GRA 55/5500	ARINC 429 IN	1 Thru 4	
Collins RAC 870	RAC 870	ARINC 429 IN	1 Thru 4	
		RAD ALT Test	Discrete Out	1 Thru 3
Free Flight RA 4500	RA 4500	ARINC 429 IN	1 Thru 4	
Honeywell KRA 405B	KRA 405B	ARINC 429 IN	1 Thru 4	
		RAD ALT Test	Discrete Out	1 Thru 3
Rad Alt from other GI 275	Other GI 275			

4.2.13 Autopilot

All of the autopilots approved for installation have a dedicated selection/setting on the GI 275. Make the applicable selections for autopilots listed in this section (organized in the order of display presentation). During the GI 275 system configuration, leave the GPSS Scaler to HDG set to the default value. If unsure whether the Scaler to HDG is set to the default setting, all the settings can be reset to default by selecting any other autopilot and then re-selecting the installed autopilot.

NOTE

Changing the Autopilot Interface setting will reset all autopilot settings to default.

CAUTION

Only the discrete outputs from the P2752 connector can be connected to the autopilot. The discrete outputs on the main connector cannot be used.

4.2.13.1 Garmin

Configure all GI 275 units in the system to *GFC 600*. The GFC 600 can interface to GI 275 ADAHRS units; a GI 275 ADAHRS+AP unit is not required

Table 4-6 Garmin GFC 600 Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings		Value/Port Numbers
Garmin GFC 600	GFC 600	AUTOPILOT	GFC 600	

4.2.13.2 Bendix

The autopilot computer must be configured for a Collins PN-101 (FD-112C/V) HSI in order to have the correct heading and course error (datum) signals; otherwise, additional adjustments will be required. Refer to *Bendix I.B. 20004 M-4D AFCS Installation Manual* Section II, paragraph 7*, Flight Check and Calibration*, for adjustments that can be made in the 5487G or 5485A flight controller. Refer to *Bendix I.B. 20004* Section II, paragraph 5, *Post Installation Check-Out*, for additional information.

Table 4-7 Bendix M-4C/M-4D Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value / Port Numbers
Bendix M-4C/M-4D	Bendix M-4C/M-4D	HSI Type	Collins PN 101		
		Flight Director	Bendix DH-841	FD Enable	
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

4.2.13.3 Century

Configuration values for all Century autopilots connected with radio couplers will vary based on which radio coupler is used.

Table 4-8 Century 2000 Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value / Port Numbers
Century 2000	Century 2000	HSI Type	NSD 360 DC		
		Flight Director	Century FD		
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
		Gyro Emulation	Century 2000		
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

Table 4-9 Century 21/31 Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value / Port Numbers
Century 21/31	Century 21/31	HSI Type	NSD 360 DC		
		GPSS	Button	Scaler to HDG	1.0
		Gyro Emulation	Century 2000		
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

Table 4-10 Century 41 Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value / Port Numbers
Century 41	Century 41	HSI Type	NSD 360 DC		
		Flight Director	Century FD		
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
		Gyro Emulation	Century 2000		
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

Table 4-11 Century II/III Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value / Port Numbers
Century II / III	Century II / III	HSI Type [1]	Century 1C388C / 1C388MC		
			Century 1C388/M		
			Century 1C388-2		
			Century 1C388-3		
		GPSS	Button	Scaler to HDG	1.0
		Gyro Emulation	Century 52D66/67 [2]		

[1] Select the HSI Type based on the corresponding installed radio coupler.

[2] Set to None if GI 275 is not providing attitude to autopilot.

Table 4-12 Century IV AC Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value / Port Numbers
Century IV AC	Century IV AC	HSI Type	Collins PN 101 [1]		
			Narco HSI 100		
		Flight Director	Century FD		
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

[1] Select the HSI Type if a Collins PN 101 was previously installed; otherwise, select the Narco HSI 100.

Table 4-13 Century IV DC Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value / Port Numbers
Century IV DC	Century IV DC	HSI Type	Century IV		
			NSD 360 DC [1]		
		Flight Director	Century FD		
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

[1] Select the HSI Type if a Century NSD 360 DC was previously installed; otherwise, select *Century IV*.

4.2.13.4 Cessna

Select *Cessna AC* or *Cessna DC* based upon whether the autopilot is strapped for AC or DC course/ heading error inputs.
The NAV 1/NAV 2 lighted switch legend must be removed so that any NAV source indication on the autopilot mode controller is hidden from view.

Table 4-14 Cessna AC Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value / Port Numbers
Cessna 300 IFCS 400 IFCS 400B 800 IFCS	Cessna AC	HSI Type	Cessna G-502A/B		
		GPSS	Button	Scaler to HDG	1.0
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

Table 4-15 Cessna 1000 IFCS Autopilot Configuration (DC)

Autopilot	Interface	Ports/Config - Settings			Value / Port Numbers
Cessna 1000 IFCS	Cessna DC	HSI Type	Cessna G-504A		
		Flight Director	Cessna 1000 IFCS	FD Enable	
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
		Gyro Emulation [1]	Cessna/ARC G519		
			Sperry VG-14A		
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

[1] Configure Gyro Emulation with the following considerations:

- For 1000A Series Computer Amplifier P/Ns 46210-0001, -0002, and -0102 (i.e., for installations that previously utilized a panel mount gyro, such as a G-895B, G-1050A, G-550A, or G-519B), select Cessna/ARC G519.
- For 1000A Series Computer Amplifier P/Ns 46210-0004, -0005, and -0105 (i.e., installations that previously utilized a remote mount gyro, such as a VG-14(A)), select Sperry VG-14A.
- For 1000 IFCS, verify that CA-1050A, PK43, pins 1 and 2 are grounded.

Table 4-16 Cessna DC Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value / Port Numbers
Cessna 300B IFCS 400B IFCS 800B IFCS	Cessna DC	HSI Type	Cessna G-504A		
		Flight Director	Cessna 400B/ 800B IFCS	FD Enable	
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
		Gyro Emulation [1]	Cessna/ARC G519		
			Sperry VG-14A		
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

[1] Configure Gyro Emulation with the following considerations:

- For 300B/400B/800B IFCS and 400B, select Cessna/ARC G519
- For 1000A Series Computer Amplifier P/Ns 46210-0001, -0002, and -0102 (i.e., for installations that previously utilized a panel mount gyro, such as a G-895B, G-1050A, G-550A, or G-519B), select Cessna/ARC G519.
- For 1000A Series Computer Amplifier P/Ns 46210-0004, -0005, and -0105 (i.e., installations that previously utilized a remote mount gyro, such as a VG-14(A)), select Sperry VG-14A.

4.2.13.5 Collins

Table 4-17 Collins AP-106/107 Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value / Port Numbers
Collins AP-106/107	Collins AP-106/107	HSI Type	Collins PN 101		
		Flight Director	Collins FD-106	FD Enable	
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
		Yaw Rate	Yaw Rate (mV/deg/sec)		None
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

4.2.13.6 Honeywell (Bendix/King)

Table 4-18 Honeywell (Bendix/King) KAP 150/KFC 150 Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value/Port Numbers
Honeywell (Bendix/King) KAP 150 KFC 150	KAP 150/ KFC 150	HSI Type	King KI 525		
		Flight Director	King KI 256	FD Enable	
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
		Gyro Emulation	King KI 256		
			Heading Only [2]		
		Yaw Rate	Yaw Rate (mV/deg/sec)		200 [3]
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9
		HDG/CRS Datum Valid	Discrete Out Lo		4 Thru 9

[1] KAS 297B Gain Straps #1 through #4 selections must correspond to the grounded gain straps (P297B1-16/17/34/22) of the KAS 297B being replaced. If a KAS 297B was not previously installed, refer to manufacturer's data for KAS 297B strapping for the specific aircraft model.

[2] Set to "Heading Only" if the GI 275 is not supplying attitude to the KAP/KFC 150.

[3] Yaw rate is only used with the KFC 150. This can be set to *None* for the KAP 150.

Table 4-19 Honeywell (Bendix/King) KAP 100/200 Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value / Port Numbers
Honeywell (Bendix/King) KAP 100/200	KAP100/ KAP 200	HSI Type	King KI 525		
		GPSS	Button	Scaler to HDG	1.0
		Gyro Emulation	King KI 256		
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9
		HDG/CRS Datum Valid	Discrete Out Lo		4 Thru 9

Table 4-20 Honeywell (Bendix/King) KAP 140 Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value / Port Numbers
Honeywell (Bendix/King) KAP 140	KAP 140	HSI Type	King KI 525		
		GPSS	Button	Scaler to HDG	1.0
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9
		HDG/CRS Datum Valid	Discrete Out Lo		4 Thru 9
		GPS Select	Discrete Out Lo		4 Thru 9

Table 4-21 Honeywell (Bendix/King) KFC 225 Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Port Numbers
Honeywell (Bendix/King) KFC 225	KFC 225	ARINC 429 OUT	Low		1 Thru 2
		HSI Type	King KI 525		
		Flight Director	King KFC 225	FD Enable	
			Other GI 275		
		Gyro Emulation	King KI 256		
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9
		HDG/CRS Datum Valid	Discrete Out Lo		4 Thru 9
		GPS Select	Discrete Out Lo		4 Thru 9

Table 4-22 Honeywell (Bendix/King) KFC 250-4" HSI Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value / Port Numbers
Honeywell (Bendix/King) KFC 250 w/065-5015-XX Adapter Card (4" inst.)	KFC 250 (4in)	HSI Type [1]	King KI 525		
			King KPI 552		
		Flight Director	King KCI 310	FD Enable	
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
		Gyro Emulation	King KVG 350		
		Yaw Rate	Yaw Rate (mV/deg/sec)		200
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9
		HDG/CRS Datum Valid	Discrete Out Lo		4 Thru 9

[1] If the King autopilot is installed with a KA 52 or KA 57 autopilot adapter, the HSI Type must be set to *King KI 525*; otherwise, set to *King KPI 552*.

Table 4-23 Honeywell (Bendix/King) KFC 200/250-3" HSI Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value / Port Numbers
Honeywell (Bendix/King) KFC 200 KFC 250 w/065-5016-XX Adapter Card (3" inst.)	KFC 200/250 (3in)	HSI Type	King KI 525		
		Flight Director	King KI 256 [1]	FD Enable	
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
		Gyro Emulation	King KI 256		
		Yaw Rate	Yaw Rate (mV/deg/sec)		200
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9
		HDG/CRS Datum Valid	Discrete Out Lo		4 Thru 9

[1] If the KI 255/256/258 ADI was previously installed, the King KI 256 must be selected.

Table 4-24 Honeywell (Bendix/King) KFC 300 Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value / Port Numbers
Honeywell (Bendix/King) KFC 300	KFC 300	HSI Type	Collins PN 101		
			King KPI 552 [1]		
		Flight Director	King KCI 310	FD Enable	
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
		Gyro Emulation	King KVG 350		
		Yaw Rate	Yaw Rate (mV/deg/sec)		200
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9
		AP Backcourse	Discrete Out Lo		4 Thru 9

[1] Select this HSI Type if a King KPI 552 was previously installed; otherwise, select Collins PN 101.

4.2.13.7 Sperry

Table 4-25 Sperry SPZ-200A/500 Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value / Port Numbers
Sperry SPZ-200A/ 500	SPZ-200A/ 500	HSI Type	Sperry RD-550		
		Flight Director	Sperry SPZ-200A/500	FD Enable	
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
		Gyro Emulation	None		
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

4.2.13.8 S-TEC

If the autopilot has been previously configured to operate with the NSD 360, the HSI Type must be set to *NSD 360 DC* and not *King KI 525*. If the autopilot is configured to operate with any other heading system, it must be configured to either *NSD 360* or *KI 525* (KCS-55) in order to be compatible with the GI 275.

Table 4-26 S-TEC 20/30/40/50/60-1 Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value / Port Numbers
S-TEC 20/30/40/50/60-1	S-TEC 20/30/40/50/60-1	HSI Type [1]	NSD 360 DC		
			King KI 525		
		GPSS	Button	Scaler to HDG	1.0
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9
		GPS Select	Discrete Out Lo		4 Thru 9

[1] If the autopilot was previously configured with “NSD-360,” the HSI Type must be set to *NSD 360 DC*.

Table 4-27 S-TEC 60-2/65/60 PSS Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value / Port Numbers
S-TEC 60-2/65/60 PSS	S-TEC 60-2/65/60 PSS	HSI Type [1]	NSD 360 DC		
			King Ki 525		
		Flight Director [2]	S-TEC ST-670	FD Enable	
			Other GI 275		
		GPSS [2]	Button	Scaler to HDG	1.0
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

[1] If the autopilot was previously configured with “NSD-360,” the HSI Type must be set to *Century NSD 360 DC*.

[2] Flight director and GPSS functionality is not supported by the 60 PSS.

Table 4-28 S-TEC 55X Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Port Numbers
S-TEC 55X	S-TEC 55X	ARINC 429 OUT	Low		1 Thru 2
		HSI Type [1]	NSD 360 DC		
			King KI 525		
		Flight Director	S-TEC 55X	FD Enable	
			Other GI 275		
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9
		GPS Annunciate	Discrete Out Lo		4 Thru 9
		GPS Select	Discrete Out Lo		4 Thru 9

[1] If the autopilot was previously configured with “NSD-360,” the HSI Type must be set to *NSD 360 DC*.

Table 4-29 S-TEC 55 Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value / Port Numbers
S-TEC 55	S-TEC 55	HSI Type [1]	NSD 360 DC		
			King KI 525		
		Flight Director	S-TEC 55X	FD Enable	
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9
		GPS Select	Discrete Out Lo		4 Thru 9

[1] If the autopilot was previously configured with “NSD-360,” the HSI Type must be set to *NSD 360 DC*.

4.2.14 EIS

Configure the EIS per the settings for EIS 1 or EIS 2 (if equipped) in Table 4-30.

Table 4-30 EIS/GEA Configuration Settings

EIS	Interface	Ports/Config - Settings	Port Numbers
GEA 110	GEA 110	RS-485 RX/TX	1
		Annunciations [1]	
GEA 24	GEA 24	RS-232	1 Thru 2
		Annunciations [1]	
EIS from other GI 275	Other GI 275	Annunciations [1]	

[1] External annunciations are required if the GI 275 EIS is installed outside of 15° of the centerline. Refer to Table 4-31 for configuration settings.

4.2.15 Engine Annunciator

Configure the Engine Annunciator Interface per the settings in Table 4-31.

Table 4-31 Engine Annunciator Configuration Settings

Engine Annunciator	Engine Caution	Engine Warning
28V System - VIVISUN LED-40-17-BA2-E1WP6	Discrete Out Lo 1 Thru 9	Discrete Out Lo 1 Thru 9
14V System - VIVISUN 95-40-17-B4-E1WPN		

4.2.16 Traffic

Configure the available Traffic interface to match the particular installation per Table 4-32. Refer to the appropriate Garmin ADS-B installation manuals for more information on installation and configuration requirements for systems with multiple traffic systems.

Table 4-32 Traffic System Configuration Settings

Traffic	Interface	Ports/Config - Settings			Port Numbers		Notes
Traffic from other GI 275	Other GI 275						
L-3 Avionics SKY497 (Active Traffic)	SKY497	ARINC 429 IN			1 Thru 4		[1]
		Control Traffic	De-select				
			Select	TAS STBY/ON	Discrete Out Lo	1 Thru 9	
				TAS TEST	Discrete Out Lo	1 Thru 9	
L-3 Avionics SKY899 (Active Traffic)	SKY899	ARINC 429 IN			1 Thru 4		[1]
		Control Traffic	De-select				
			Select	TAS STBY/ON	Discrete Out Lo	1 Thru 9	
				TAS TEST	Discrete Out Lo	1 Thru 9	
L-3 Avionics SKY899 TCAS I (Active Traffic)	SKY899 TCAS I	ARINC 429 IN			1 Thru 4		
		Control Traffic	De-select				
			Select	TAS STBY/ON	Discrete Out Lo	1 Thru 9	
				TAS TEST	Discrete Out Lo	1 Thru 9	

[1] Refer to Section 4.2.22 to configure the ARINC 429 OUT port to provide data to the traffic system, if applicable.

[2] Set Range Control, Air Filter Control, and Alt Type Control to “On GI 275” unless the installation contains an ACT/TCAS control panel that has that function.

[3] Set to "On GI 275" if the GI 275 controls this function, or set to "Control Panel" if an external ATC/ TCAS control panel will control this function.

[4] In order to be compliant with DO-185B, the ownship icon color must be set to “White” on the Setup ->Ownship Icon Config page.

Traffic	Interface	Ports/Config - Settings			Port Numbers		Notes
Bendix/King Honeywell KTA 870 KMH 820 (Active Traffic)	KTA 870/ KMH 820	ARINC 429 IN			1 Thru 4		[1]
		Control Traffic	De-select				
			Select	TAS STBY/ON	Discrete Out Lo	1 Thru 9	
				TAS TEST	Discrete Out Lo	1 Thru 9	
Bendix/King Honeywell KTA 970 KMH 920 (Active Traffic)	KTA 970/ KMH 920	ARINC 429 IN			1 Thru 4		[1]
		Control Traffic	De-select				
			Select	TAS STBY/ON	Discrete Out Lo	1 Thru 9	
				TAS TEST	Discrete Out Lo	1 Thru 9	
GTS (Active Traffic)	GTS (HSDB)	HSDB	TCAS				
GTS 8XX TAS/TCAS (Active Traffic)	GTS 8XX (A429)	ARINC 429 IN			1 Thru 4		[1]
		Control Traffic	De-select				
			Select	TAS STBY/ON	Discrete Out Lo	1 Thru 9	
				TAS TEST	Discrete Out Lo	1 Thru 9	
GTS 8000 (TCAS II) [4]	A429 TCAS II	ARINC 429 IN			1 Thru 4		[2]
		RA Display Valid			Discrete Out Lo	1 Thru 9	
		Alt Filter Control					[3]
		Alt Type Control					
		Range Control					

[1] Refer to Section 4.2.22 to configure the ARINC 429 OUT port to provide data to the traffic system, if applicable.

[2] Set Range Control, Air Filter Control, and Alt Type Control to “On GI 275” unless the installation contains an ACT/TCAS control panel that has that function.

[3] Set to "On GI 275" if the GI 275 controls this function, or set to "Control Panel" if an external ATC/ TCAS control panel will control this function.

[4] In order to be compliant with DO-185B, the ownship icon color must be set to “White” on the Setup ->Ownship Icon Config page.

Traffic	Interface	Ports/Config - Settings			Port Numbers		Notes
ARINC 735 TCAS (TCAS II) [4]	A429 TCAS II	ARINC 429 IN			1 Thru 4		[2]
		RA Display Valid			Discrete Out Lo	1 Thru 9	
		Alt Filter Control					[3]
		Alt Type Control					
		Range Control					
Avidyne (Ryan) TAS 6XX/ TCAD (Active Traffic)	TAS 6XX/ TCAD	ARINC 429 IN			1 Thru 4		[1]
GTX 345 (ADS-B)	GTX 345	HSDB	ADS-B				
GTS (ADS-B)	GTS ADS-B	HSDB					
GNX 375 (ADS-B)	GNX 375	HSDB					
GTX 33X (TIS-A)	GTX 33X	ARINC 429 IN			1 Thru 4		
		TIS STBY/ON			Discrete Out Lo	1 Thru 9	

[1] Refer to Section 4.2.22 to configure the ARINC 429 OUT port to provide data to the traffic system, if applicable.

[2] Set Range Control, Air Filter Control, and Alt Type Control to “On GI 275” unless the installation contains an ACT/TCAS control panel that has that function.

[3] Set to "On GI 275" if the GI 275 controls this function, or set to "Control Panel" if an external ATC/ TCAS control panel will control this function.

[4] In order to be compliant with DO-185B, the ownship icon color must be set to “White” on the Setup ->Ownship Icon Config page.

4.2.17 GDL 69SXM

Configure the data link interface per the settings in Table 4-33.

NOTE

The minimum required software for the GDL 69SXM is v5.51.

Table 4-33 GDL 69SXM Configuration Settings

Data Link	Interface	Ports/Config - Settings	Port Numbers	Notes
GDL 69SXM	GDL 69SXM	Self-Detect		[1] [2] [3]

[1] Enter the Antenna Gain value and Cable Loss values per *GDL 69/69A Installation Manual* Section 3.4.5.3 (P/N 190-00355-02).

[2] If a GDL 69SXM is connected to the GI 275, the audio output will become muted whenever the airspeed is below the Mute Speed value. If this setting is de-selected, the GDL 69SXM will never be muted based upon airspeed.

[3] If a GDL 69SXM is installed, it is permissible to configure it as a GDL 69SXM In this case, the XM weather from the GDL 69SXM will be displayed on the GI 275 MFD, but no audio control will be available on the display.

4.2.18 Stormscope

Configure the Stormscope interface per the settings in Table 4-34.

Table 4-34 Stormscope Configuration Settings

Stormscope	Interface	Ports/Config - Settings		Port Numbers	
WX-500	WX-500			RS-232 RX	1 Thru 3
Wired to other GI 275	Other GI 275				

4.2.19 PFD Sync

Configure the PFD Sync interface per the settings in Table 4-35.

Table 4-35 PDF Sync Configuration Settings

Interface	Ports/Config - Settings	Port Numbers
HSDB	GDUs Installed	
A429	A429 IN	1 Thru 4
	A429 OUT	1 Thru 2

4.2.20 General Purpose Discrete In

Configure the General Purpose Discrete In ports and speeds per the settings in Table 4-36.

Table 4-36 General Purpose Discrete In Settings

General Purpose Discrete In	Ports/Config - Settings	Port Numbers	
Discrete In	ADC1/ADC2*	Discrete In Lo	1 Thru 6
	AHRS1/AHRS2*		1 Thru 6
	Audio Inhibit		1 Thru 6
	Weight on Wheels		1 Thru 6
	Display Backup		1 Thru 6
	Day/Night		1 Thru 6
	Terrain Inhibit		1 Thru 6

*The discrete cannot be configured on the standby when the indicator has 3 sensors configured.

4.2.21 General Purpose Discrete Out

Configure the General Purpose Discrete Out ports and speeds per the settings in Table 4-37.

Table 4-37 General Purpose Discrete Out Settings

General Purpose Discrete Out	Ports/Config - Settings	Port Numbers	
Discrete Out	GPS 1/2 Source	Discrete Out Lo	1 Thru 9
	On Ground		1 Thru 9
	Terrain Aud Actv		1 Thru 9

4.2.22 General Purpose ARINC 429 (A429) Out

Configure the General Purpose ARINC 429 port(s) and speeds per the settings in Table 4-38. The A429 Out from the GI 275 may be provided to the following LRUs:

- GTX 33/330/335/345 - GP 1 A429 Low Speed **OR** GP 2 A429 Low Speed
- GTS 8XX - GP 1 A429 Low Speed or High Speed
- TAS 6XX/9900BX - GP 1 A429 Low Speed or High Speed
- TRC 497/899 - GP 1 A429 Low Speed **OR** GP 2 A429 Low Speed
- KTA 810/910, KMH 820/920 - GP 2 A429 Low Speed **AND** Integrated AHRS/ADAHRS High Speed OR GP2 A429 High Speed
- ART 2000/2100 - GP 2 A429 High Speed **OR** Integrated AHRS/ADAHRS High Speed

Table 4-38 General Purpose A429 Output Settings

General Purpose A429 Out	Interface	Ports/Config - Settings	Port Numbers	
A429 Out	Present	General Purpose 1 #1	1 Thru 2	Low
				High
		General Purpose 1 #2	1 Thru 2	Low
				High
		General Purpose 2 #1	1 Thru 2	Low
				High
		General Purpose 2 #2	1 Thru 2	Low
				High
		Internal AHRS	1 Thru 2	Low
				High
		Internal ADC	1 Thru 2	Low
				High
		Internal ADAHRS	1 Thru 2	Low
				High

4.2.23 General Purpose RS-232 Out

Configure the General Purpose serial port per the settings in Table 4-39.

Table 4-39 General Purpose Serial Port Setting

General Purpose RS-232 Out	Interface	Ports/Config - Settings	Port Numbers	Notes
Altitude Format 3	Present	Altitude Format 3	1 Thru 3	

4.2.24 Airspeed Switches

Configure the Airspeed Switches per the settings in Table 4-40.

Table 4-40 Airspeed Switches Settings

Switch	Port Numbers		No Data State	Active Cond.	Threshold	A/S Value
Switch #1	Discrete Out	1 Thru 9	Inactive	Less Than		
			Active	Greater		
Switch #2	Discrete Out	1 Thru 9	Inactive	Less Than		
			Active	Greater		
Switch #3	Discrete Out	1 Thru 9	Inactive	Less Than		
			Active	Greater		

4.2.25 Setup

This section describes the setup for airframe, lighting, page configuration, sensors, audio alerts, Terrain/ TAWS, backup battery, and other miscellaneous settings. Ensure all interfaces necessary in Section 4.2.5 have been successfully configured prior to continuing with setup.

4.2.25.1 Airframe Configuration

The vertical speed, altitude, and airspeed units must be configured to match the instruments currently installed in the airplane and designated in the POH/AFM.

Figure 4-5 Airframe Config Page

Roll Pointer

Configures pointer direction. Choose between *Fixed* (down) or *Sky* (up).

The Roll Pointer setting must be configured to match the Standby ADI. The attitude indicator on the Primary ADI includes two pointers (on the Roll Pointer). When banking, one pointer indicates the aircraft bank angle and the other pointer remains stationary. The pointer that indicates bank angle can either point up (sky pointer) or down (fixed pointer).

ADI Style

Configures the layout of the ADI. Choose between *Basic*, *3-in-1*, or *4-in-1*. If *Basic* is selected, the following settings are not available.

BASIC **3-IN-1** **4-IN-1**

Figure 4-6 ADI Styles

NOTE

Recommended settings for the following features are provided in feet per minute (fpm), which is the default. If indicated by the AFM/POH to be in meters per second, the units can be changed in the ALT/VS Units menu. The GI 275 automatically converts the settings in fpm to the equivalent meters per second setting when switched from Feet to Meters.

VS Min

Sets the minimum vertical speed. The vertical speed range must be set to match the range on the V/S indicator that was previously installed. The V/S tape range can be configured for *±2000 fpm*, *±3000 fpm*, or *±4000 fpm*. If a V/S indicator was not previously installed, and a V/S range is not specified in the POH/AFM, set the vertical speed tape range to ±2000 fpm.

VS Max

Sets the maximum vertical speed. The vertical speed range must be set to match the range on the V/S indicator that was previously installed. The V/S tape range can be configured for 2000 fpm, 3000 fpm, or 4000 fpm. If a V/S indicator was not previously installed, and a V/S range is not specified in the POH/AFM, set the vertical speed tape range to ±2000 fpm.

Altitude Bug

Allows an altitude bug (alert) to be set while in Normal mode.

VS Tape

Adds a vertical speed tape on the right edge of the display.

VS Range

Sets the range of the vertical speed tape. Options are *±2000 fpm*, *±3000 fpm*, or *±4000 fpm*.

VS Bug

Allows a vertical speed bug (alert) to be set while in Normal mode.

ALT/VS Units

Configures the units for altitude and vertical speed. Choose between *Feet* (feet per minute for VS) or *Meters* (meters per second for VS) as indicated by the POH/AFM.

IAS Units

Configures the units for indicated airspeed. Choose between *KPH* (kilometers per hour), *KT* (knots), or *MPH* (miles per hour) as indicated by the POH/AFM.

4.2.25.2 Airspeed Configuration

Airspeeds used to configure the IAS tape must be taken from the AFM/POH, aircraft TCDS, or other approved STC applicable to the specific aircraft being modified.
Information and settings available on the ***Airspeeds*** pages (shown in Figure 4-7) for a GI 275 will vary depending on whether the Mode field on the ***Airspeed Configuration*** page is set to *Basic* or *Advanced* ***(Home → Setup → Airframe Configuration → Airspeed Configuration)***.

Figure 4-7 Basic (Left) and Advanced (Right) Airspeed Configuration Type Settings

The Basic setting values are generally found in the AFM/POH for each aircraft. Refer to Table 4-41 for detailed information on obtaining Basic setting airspeed values. Refer to APPENDIX C for information on obtaining advanced setting airspeed values.

CAUTION

*The Mode field on the **Airspeed Configuration** page must be set to "Advanced" for aircraft that have an altitude-variable maximum airspeed limitation.*

NOTE

If the AFM or POH lists both indicated airspeed (IAS) and calibrated airspeed (CAS), use IAS values.

Table 4-41 Airframe-Specific Configuration Data – Configuration Type Basic Setting

Item	Description	AFM/POH Reference Section	Notes
VS0	Stall speed in landing configuration	2 - Limitations	Bottom of white arc on ASI.
VS1	Stall speed in a specific flight configuration	2 - Limitations	Bottom of green arc on ASI.
Vfe	Maximum flap extended speed	2 - Limitations	Top of white arc on ASI; if more than one flap speed is given, use the lowest speed.
Vno	Normal operating speed	2 - Limitations	Top of green arc/bottom of yellow arc on ASI; if the aircraft has no yellow arc but has a green arc that extends to the red radial, set Vno to the same value as Vne.
Vne	Never exceed speed	2 - Limitations	Red radial on ASI.
GLIDE	Glide speed	3 - Emergency Procedures	*Optional.* Set to 0 kt (off) if not listed in the AFM/POH.
Vr	Rotation speed	4 - Normal Procedures	*Optional.* Typically set to rotation speed. Set to 0 kt (off) if not listed in the AFM/POH.
Vx	Best angle of climb speed	4 - Normal Procedures	*Optional.* There are speeds listed for GEAR UP and GEAR DOWN; use the speed listed for GEAR DOWN. Set to 0 kt (off) if not listed in AFM/POH.
Vy	Best rate of climb speed	4 - Normal Procedures	*Optional.* There are speeds listed for GEAR UP and GEAR DOWN; use the speed listed for GEAR UP. Set to 0 kt (off) if not listed in the AFM/POH.
Vle	Maximum landing gear extended speed	2 - Limitations	Set to 0 kt (off) for fixed gear aircraft.
Vmca	Minimum controllable airspeed for twin-engine aircraft with only one engine operational	2 - Limitations	Lower red radial on ASI of light twins. Set to 0 kt (off) for single engine aircraft.
Vyse	Single engine best rate of climb speed for a twin-engine aircraft	3 - Emergency Procedures **OR** 4 - Normal Procedures	Blue radial on ASI of light twins. Set to 0 kt (off) for single engine aircraft.
Vne (Pwr Off)	Applicable to rotary wing aircraft only	N/A	Set to *OFF*.

4.2.26 Lighting

This section outlines configuring the GI 275 lighting in the aircraft. The GI 275 allows display/knob lighting control with or without the Enhanced Lighting mode selection. The Enhanced Lighting mode allows a more customized lighting curve.
Configure Day Mode Curve is the only setting available for configuration when Enhanced Lighting mode is selected. Figure 4-8 shows the ***Lighting*** page.

NOTE

All lighting conditions must be considered when configuring the display for photocell only. If the aircraft is equipped with an instrument panel flood or wash lighting, the installation must be evaluated to verify the flood/wash lighting does not affect the GI 275 lighting level. If the display lighting level is adversely affected by the flood/wash lighting, then the GI 275 must be connected to a lighting bus to control the display brightness.

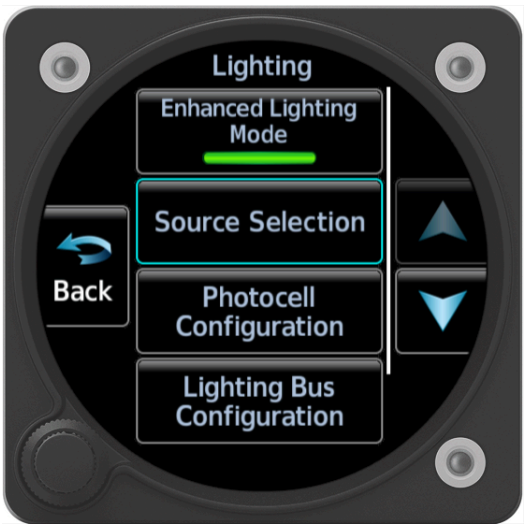


Figure 4-8 Lighting Page

To accurately configure the lighting, the ability to adjust ambient light conditions is required. The installer must have the means to simulate complete darkness in the cockpit. Simply covering the photocells may not allow the installer's eye to properly judge whether the display brightness is too bright or too dim for night use.

The following tables must be used for lighting configuration:

- Table 4-42 - Photocell for display/knobs (Advanced Lighting mode de-selected)
- Table 4-43 - Lighting bus for display/knobs (Advanced Lighting mode de-selected)
- Table 4-44 - Photocell for display/knobs (Advanced Lighting mode selected)
- Table 4-45 - Lighting Bus for display (Advanced Lighting mode selected)
- Table 4-46 - Lighting Bus for knobs (Advanced Lighting mode selected)

Photocell Configuration - Enhanced Lighting De-selected

The Display Lighting and the Knobs Lighting curves must be set individually as noted per Table 4-42.

Table 4-42 Photocell Configuration Procedure

Step	Photocell Curve	
	Display	**Knobs**
1	Under Source Selection, set *Photocell as* the source for Display Source.	Under Source Selection, set *Photocell as* the source for Knobs Source.
2	Under the Photocell Configuration, set the Photocell - Response Time to a low level (e.g., 2 sec) to allow the display to adjust more quickly to light conditions.	
3	Select **Lighting Curve Configure** and then **Display Lighting**. It is recommended to start configuration with a Slope of 50%. This can be done by selecting **Slope** and entering the value (refer to Figure 4-9).	Select **Lighting Curve Configure** and then **Knobs Lighting**. It is recommended to start configuration with a Slope of 50%. This can be done by selecting **Slope** and entering the value (similar to Figure 4-9 for display lighting).
4	Turn on all instrument panel and cockpit lighting.	
5	Minimize photocell input levels by simulating night conditions in the cockpit. Complete steps 6 - 11 with the goal of achieving consistency between all cockpit lighting.	
6	If the display is too bright, lower the Min Level and/or adjust the lighting Slope to achieve the desired brightness.	If the knobs are too bright, lower the Min Level and/or adjust the lighting Slope to achieve the desired brightness.
7	If the display is not bright enough, raise the Min Level to the desired brightness.	If the knobs are not bright enough, raise the Min Level to the desired brightness.
8	Simulate direct maximum sunlight in the cockpit.	
9	Verify that the display produces maximum brightness on the backlight output level. Adjust Max Level if needed.	Adjust the Cutoff percentage as shown in Figure 4-10, such that the knob backlighting is switched off in bright light.
10	Simulate average sunlight conditions/average input conditions in the cockpit (average Source Input Level**%**).	
11	If the display is too bright or too dim, vary the Slope and/or Offset percentage to achieve desired brightness at mid-range lighting input levels.	If the knob is too bright or too dim, vary the Slope and/or Offset percentage to achieve desired brightness at mid-range lighting input levels.
12	Verify that the lighting Slope, Offset**,** and Min Level still maintain the low-light visibility requirements achieved in previous steps. Repeat any steps necessary to re-adjust night lighting settings.	
13	Adjust the Response Time to smooth changes to brightness, as required.	
14	Verify that adjustments made in the preceding steps are appropriate for all expected lighting conditions.	

Figure 4-9 Lighting Curve Slope Configuration

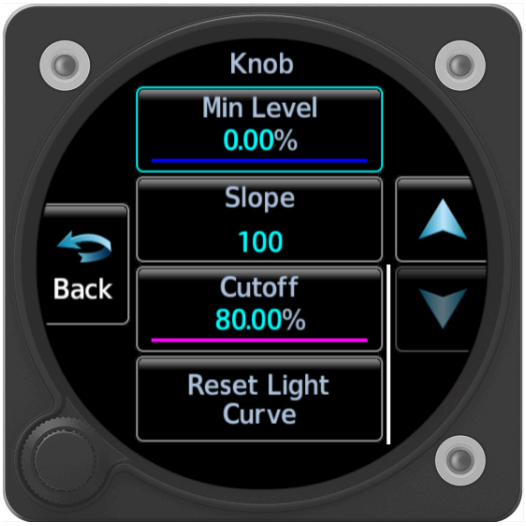


Figure 4-10 Cutoff Percentage Configuration

Lighting Bus Configuration - Enhanced Lighting De-selected

The Display Lighting and the Knobs Lighting curves must be set individually as noted in Table 4-43.

Table 4-43 Lighting Bus Configuration Procedure

Step	Lighting Bus Curve	
	Display	**Knobs**
1	Under Source Selection, set *Lighting Bus* as the source for Display Source.	Under Source Selection, set *Lighting Bus* as the source for Knobs Source.
2	Under Lightning Bus Configuration, set the Input Type to match the aircraft lighting bus voltage and the Response Time to a low level (e.g., 2 sec) to allow the display to adjust more quickly to dimmer bus input changes.	
3	Follow steps 4 - 12 to achieve consistency between all cockpit lighting. Figure 4-11 shows the primary settings on both the display lighting and the knobs lighting curves.	
4	Simulate night conditions in the cockpit.	
5	Set the Transition to *5%*. Below this source input value, the photocell will override the dimmer bus for display backlighting control. **Note**: This also allows the photocell to function as a backup in the event of a lighting bus failure.	
6	Turn the dimmer bus knob to its minimum setting or below the transition % value. **NOTE**: Steps 7 - 9 and 11 will set the photocell functionality when the lighting bus is below the transition % value.	Turn the dimmer bus knob to its minimum setting.
7	If the display is too bright, lower the Min Level and/or adjust the Slope to achieve the desired brightness.	If the knob is too bright, lower the Min Level and/or adjust the Slope to achieve the desired brightness.
8	If the display is too dim, increase the Min Level to achieve desired levels.	If the knob is too dim, increase the Min Level to achieve desired levels.
9	With the dimmer bus still off or below the transition % value, adjust the Offset such that the display remains readable.	With the dimmer bus still off, adjust the Offset such that the bezel knob remains visible.
10	Slowly move the dimmer bus knob towards its maximum setting. Observe the rate of change between the display lighting, bezel knob lighting, and any other cockpit illuminated information over the full range above transition % value of the dimmer bus. Adjust the Slope and/or Offset to obtain consistency.	Slowly move the dimmer bus knob towards its maximum setting. Observe the rate of change between the display lighting, bezel knob lighting, and any other cockpit illuminated information over the full range of the dimmer bus. Adjust the Slope and/or Offset to obtain consistency.
11	With the dimmer bus off, simulate direct sunlight conditions in the cockpit. If the brightness is below the desired level, adjust the Slope setting to achieve maximum desired brightness.	
12	Adjust the Response Time to smooth changes to brightness, as required. This can be done from the ***Lighting Bus Configuration*** page (***Setup*** → ***Lighting*** → ***Lighting Bus Configuration***). You will need to save your configuration when exiting the ***Lighting Curve Configuration*** page.	
13	Verify that adjustments made in the preceding steps are appropriate and functional for all expected lighting conditions.	

Figure 4-11 Display Lighting (Left) and Knob Lighting (Right) Curves

Enhanced Lighting Mode Configuration

The Enhanced Lighting mode can be used to better control the display and knob lighting to match varying lighting conditions. When the lighting bus is selected as the source for the display lighting control, a backup photocell curve will be configured in the event of lighting bus failure.
Configure the Enhanced Lighting function using the instructions contained in Table 4-44, Table 4-45, and Table 4-46.

Table 4-44 Photocell Configuration Procedure - Enhanced Lighting

Step	Display	Knob
1	Under Source Selection, set *Photocell* as the input source for both the Display Source and/or Knob Source.	
2	Under Photocell Configuration, set the Response Time to a level between 2 - 7 seconds.	
3	Select **Enhanced Lighting Mode** on. The button should be highlighted green.	
4		Select **Lighting Curve Configuration** → **Knob Lighting Day Mode** and adjust the Cutoff percentage. This allows for the knob backlighting to be switched off in bright light.
5	Simulate night conditions in the cockpit by using blankets or a similar method, such that the cockpit can be made progressively brighter for steps 6 and 7.	
6	Under **Lighting Curve Configuration** → **Display/Knob Lighting Day Mode**, set the Min Level and Vertex 1 while the panel is experiencing night conditions. The level adjustments can be made by selecting **Vertex ( )** and changing the values (refer to Figure 4-15). Seek consistency between all cockpit lighting. **NOTE**: A vertex represents a specific output value based on a given input value, where the goal is to customize the lighting curve by manipulating the vertices	
7	Set the remainder of the vertices while progressively introducing light to the interior of the aircraft. Set the Max Level as desired. It is recommended to configure the curve to such that the display reaches the desired max output level (%) prior to 100% input. A linear curve for the photocell typically works well (refer to Figure 4-12).	

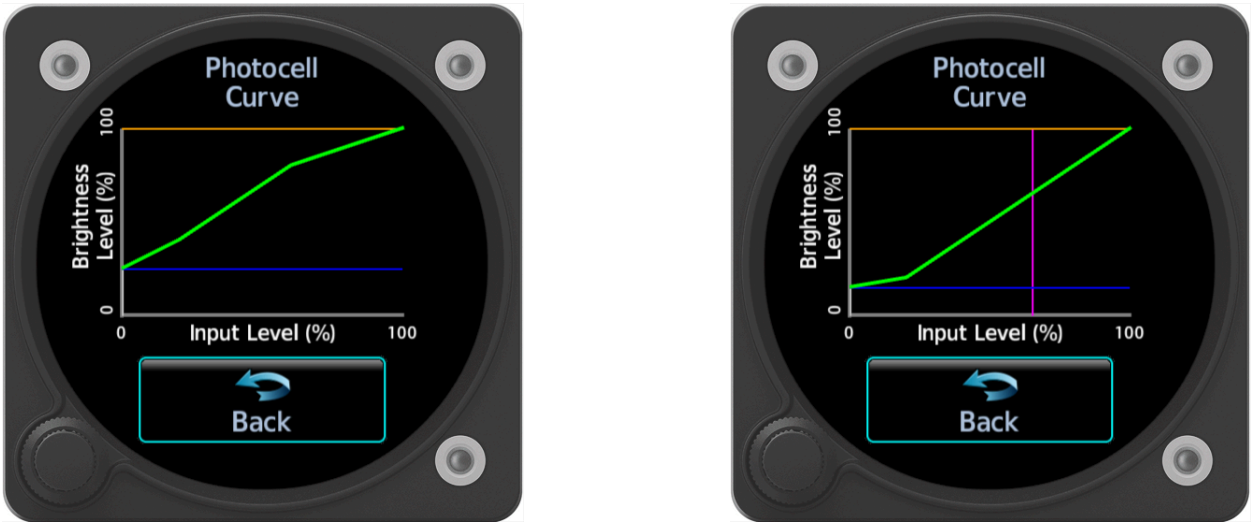


Figure 4-12 Enhanced Lighting Mode Example Photocell Display (Left) and Knob (Right)

Table 4-45 Lighting Bus Configuration Procedure - Enhanced (Display)

Step	Lighting Bus Day Mode Curve - Display
1	Under Source Selection, set Display Source to *Lighting Bus*.
2	Under Lightning Bus Configuration, set the Input Type to match the aircraft lighting bus voltage, and set the Response Time to a value between 2 - 7 seconds.
3	Select **Enhanced Lighting Mode** on. The button should be highlighted green.
4	Select **Lighting Curve Configuration** → **Display Lighting Day Mode** and set the Transition percentage to *5%* (refer to Figure 4-13). Below this set value, the display brightness will be controlled by the photocell.
5	Set the dimmer knob to the off position. The Source Input level (%) must be below the transition point set previously.
6	Select the **Curve – Lightning Bus** button to change it to the Photocell Backup Curve option (refer to Figure 4-14). **NOTE:** The Max Level and the Min Level set in the next steps will also set the max and min levels for the dimmer mode operation curve.
7	Simulate night conditions in the cockpit by using blankets or a similar method, such that the cockpit can be made progressively brighter for steps 8 and 9.
8	Set the Min Level and Vertex 1 while the panel is experiencing night conditions. The level adjustments can be made by selecting **Vertex ( )** and changing the values (refer to Figure 4-15). Seek consistency between all cockpit lighting. **NOTE:** A vertex represents a specific output value based on a given input value, where the goal is to customize the lighting curve by manipulating the vertices.
9	Set the remainder of the vertices while progressively introducing light to the interior of the aircraft. Set the Max Level as desired. It is recommended to configure this curve to make sure the display reaches the desired max output level (%) prior to 100% input. A linear curve for the photocell typically works well.
10	Select the **Curve – Photocell Backup** button to change it to the Lighting Bus option (refer to Figure 4-14). This sets the curve for the dimmer bus functionality.
11	Verify functionality of dimmer knob. Re-adjust Transition point if/as required.

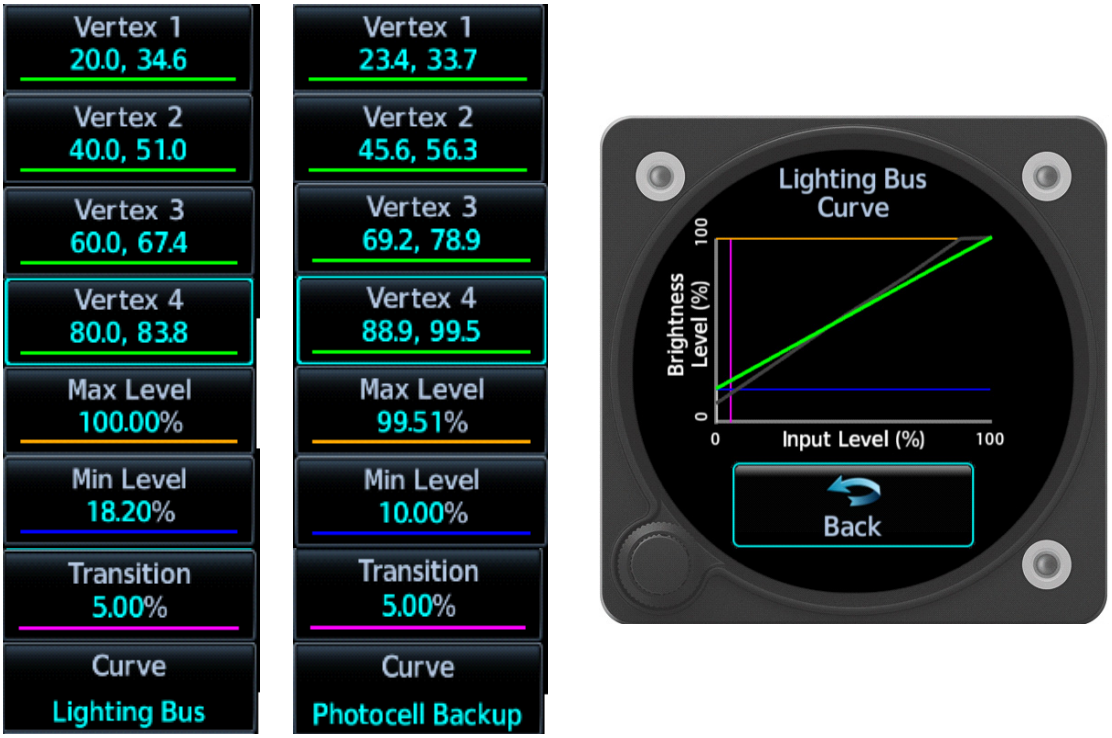


Figure 4-13 Enhanced Lighting Mode Example Lighting Bus - Display

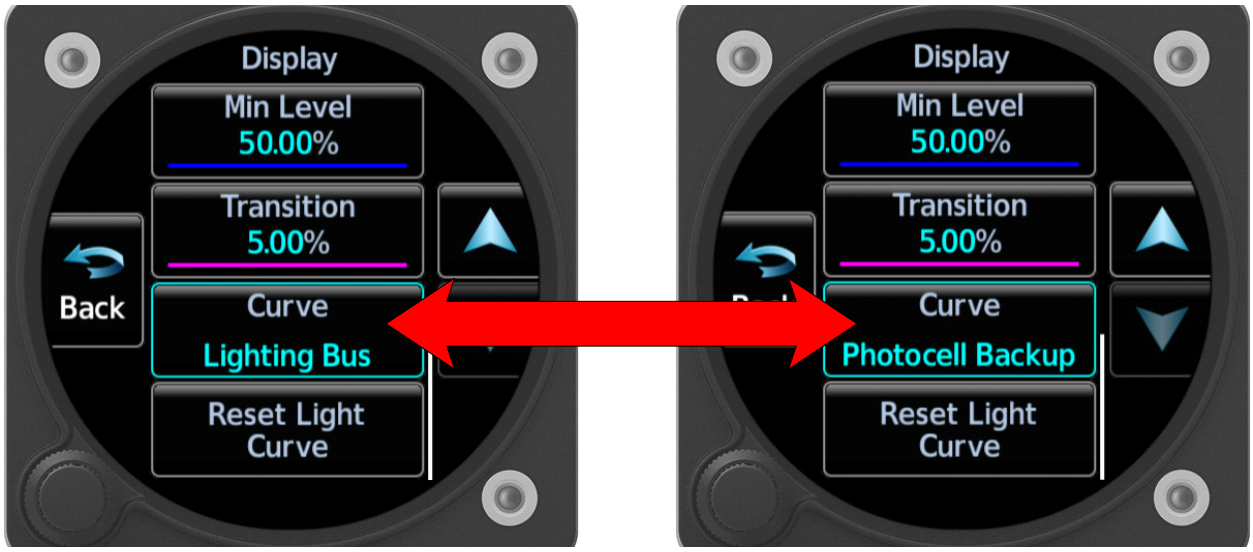


Figure 4-14 Selection Between Lighting Bus and Photocell Backup Curves

Table 4-46 Lighting Bus Configuration Procedure - Enhanced (Knob)

Step	Lighting Bus Day Mode Curve - Knob
1	Under Source Selection, set Keys Source to *Lighting Bus*.
2	Set the Lighting Bus - Input Type to match the aircraft lighting bus voltage, and set the Response Time to a value between 2 - 7 seconds.
3	Select **Enhanced Lighting Mode** on. The button should be highlighted green.
4	Select **Lighting Curve Configuration** → **Keys Lighting Day Mode**.
5	Simulate night conditions in the cockpit by using blankets or a similar method, such that the cockpit can be made progressively brighter for steps 6 and 8.
6	Set the Min Level and Vertex 1 while the panel is experiencing night conditions. The level adjustments can be made by selecting **Vertex ( )** and changing the values (refer to Figure 4-15). Seek consistency between all cockpit lighting. **NOTE:** A vertex represents a specific output value based on a given input value, where the goal is to customize the lighting curve by manipulating the vertices.
7	Set the remainder of the vertices while progressively introducing light to the interior of the aircraft. Set the Max Level as desired. It is recommended to configure this curve to make sure the display reaches the desired max output level (%) prior to 100% input. A linear curve for the photocell typically works well (refer to Figure 4-15).
8	Verify functionality of dimmer knob. Re-adjust Transition point if/as required.

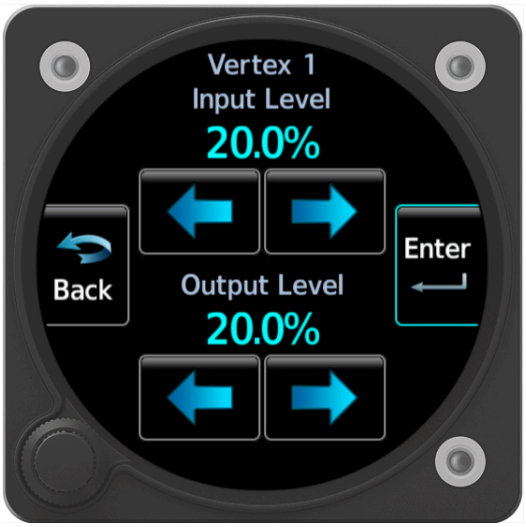


Figure 4-15 Vertex Adjustment Dialog Box

CAUTION

The display must be viewable under all anticipated lighting conditions, including:

- *When the display is in direct sunlight*
- *When the cockpit is bright but the photocell is in heavy shadow (such as flight into a setting sun)*
- *When the cockpit is very dim, the display must not be excessively bright.*

4.2.27 Page Configuration

The ***Page Config*** page contains options that determine which pages will display in Normal mode based on the primary function(s) of the specific display as configured on the ***Unit Configuration*** page (refer to Section 4.2.4.3). In Configuration mode, navigate to the ***Setup → Page Config*** page, as shown in Figure 4-16. Some instrument types contain optional pages that can be toggled on or off or have the order set. Not all instrument types have configurable pages; in this case, the button will not be selectable.

Figure 4-16 Page Config Page - Standby ADI (Left) and EIS (Right)

4.2.27.1 Primary ADI Page Options

When a unit is configured as a Primary ADI, the ***ADI*** page must be displayed at all times; therefore, the ***Page Config*** page will be grayed out. Figure 4-17 depicts possible ADI page styles as configured from the ***Airframe Configuration*** page (refer to Section 4.2.25.1).

Attitude information is displayed in the form of a virtual blue sky and brown ground with a white horizon line. The attitude indicator displays pitch, roll, and slip/skid information. The airspeed tape will be located vertically on the left side of the display and the altitude tape will be located on the right side if configured as a 3-in-1 or 4-in-1 ADI. Magnetic heading will be displayed horizontally on the bottom of display if configured as a 4-in-1 ADI.

Figure 4-17 Primary ADI Page – Basic, 3-in-1, 4-in-1

4.2.27.2 HSI Page Options

The HSI has two selectable pages that can be toggled of or off.

- ***Standard HSI*** page — Provides magnetically stabilized primary heading. Provides display of course and deviation information from compatible VHF NAV and GPS sources.
- ***Enhanced HSI*** page — Provides map underlay capable of displaying ownship on a moving map.

4.2.27.3 Multifunction Display (MFD) Page Options

The MFD contains configurable pages from 1 - 15. To configure a page as a certain function, touch that page and select the appropriate function from the list.

- ***CDI*** page — Displays lateral and vertical deviations.
- ***Standard HSI*** page — Provides magnetically stabilized primary heading.
- ***Enhanced HSI*** page — Provides heading with a map underlay.
- ***Traffic*** page [1] — Provides depiction of traffic (ADS-B and TCAS).
- ***SXM Weather*** page [1] — Provides depiction of SXM weather (with valid subscription).
- ***FIS-B Weather*** page [1] — Provides depiction of FIS-B weather.
- ***Stormscope*** page [1] — Provides depiction of lightning strikes.
- ***Terrain*** page — Provides depiction of terrain.
- ***Map*** page — Displays moving map with ownship icon.
- ***Gauges Main*** page [2] — Displays configured EIS gauges.
- ***Gauges AUX*** page [2] — Displays additional configured EIS gauges.
- ***EGT*** page [2] — Displays exhaust gas temperature for each cylinder.
- ***CHT*** page [2] — Displays each cylinder head temperature.
- ***Fuel*** page [2] — Displays additional fuel gauges.
- ***MFD Data*** page — Displays configurable navigation information. Requires interface to external navigator to populate information.
- ***Radio Altimeter*** page [1] — Displays altitude above terrain.
- ***IVSI*** page [3] — Displays IVSI

Notes:

[1]Page only available when the GI 275 is interfaced to the applicable LRU.

[2] EIS pages only available when fully configured in accordance with Section 4.2.33

[3] IVSI page is only available for 011-04489-50 units

4.2.27.4 Engine Indication System (EIS) Page Options

- ***Gauges Main*** page — Displays configured EIS gauges.
- ***Gauges AUX*** page — Displays additional configured EIS gauges.
- ***EGT*** page — Displays exhaust gas temperature for each cylinder.
- ***CHT*** page — Displays each cylinder head temperature.
- ***Fuel*** page — Displays additional fuel gauges

4.2.27.5 Standby ADI Page Options

The Standby ADI contains configurable pages from 1 - 17. To configure a page as a certain function, touch the **Page ( )** button and select the desired function from the list. The GI 275 will automatically populate the maximum number of pages based on the interfaced equipment. To limit the number of displayed pages in Normal mode, configure unwanted pages to *None*.

NOTE

*When configured as a Standby ADI, the **ADI** page must be configured as Page 1.*

The Standby ADI contains configurable pages from 1 - 16. To configure a page as a certain function, touch that page and select the appropriate function from the list.

- ***ADI*** page [3] — Displays pitch, roll, slip/skip, airspeed tape, altitude tape, and optional heading.
- ***CDI*** page — Displays lateral and vertical deviations.
- ***Standard HSI*** page — Provides magnetically stabilized primary heading. Provides display of course and deviation information from compatible VHF NAV and GPS sources.
- ***Enhanced HSI*** page — Provides map underlay, capable of displaying ownship on a moving map with traffic and weather overlays..
- ***Traffic*** page [1] — Provides depiction of traffic (ADS-B, TIS-A, TCAS).
- ***SXM Weather*** page [1] — Provides depiction of SXM weather (with valid subscription).
- ***FIS-B Weather*** page [1] — Provides depiction of FIS-B weather.
- ***Stormscope*** page [1] — Provides depiction of lightning strikes (requires Stormscope).
- ***Terrain*** page — Provides depiction of terrain.
- ***Map*** page — Displays moving map with ownship icon.
- ***Gauges Main*** page [2] — Displays configured EIS gauges.
- ***Gauges AUX*** page [2] — Displays additional configured EIS gauges.
- ***EGT*** page [2] — Displays exhaust gas temperature for each cylinder in a graph.
- ***CHT*** page [2] — Displays each cylinder head temperature in a graph.
- ***Fuel*** page [2] — Displays additional fuel gauges.
- ***MFD Data*** page — Displays configurable navigation information. Requires interface to external navigator to populate information.
- ***Radio Altimeter*** page [1] — Displays altitude above terrain.

Notes:

[1]Page only available when the GI 275 is interfaced to the applicable LRU.

[2] EIS pages are only available when fully configured in accordance with Section 4.2.33.

[3] The ADI style is configured on the **Airframe Configuration** page (refer to Section 4.2.25.1)

4.2.27.6 Standby HSI Page Options

The Standby HSI has two selectable pages that can be toggled on or off.

NOTE

When configured as a Standby HSI, the ADI page must always be configured as On.

- **ADI** page [1] — Displays pitch, roll, slip/skip, airspeed tape, altitude tape, and optional heading.
- **Standard HSI** page — Provides magnetically stabilized primary heading. Provides display of course and deviation information from compatible VHF NAV and GPS sources.
- **Enhanced HSI** page — Provides map underlay capable of displaying ownship on a moving map with traffic and weather overlays.

Notes:

[1] The ADI style is configured on the **Airframe Configuration** page (refer to Section 4.2.25.1)

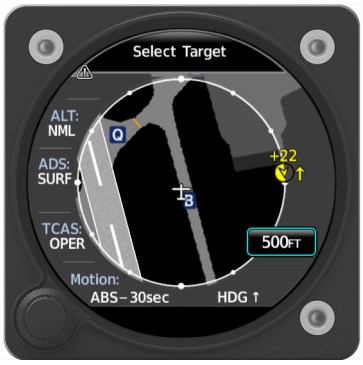
4.2.27.7 GI 275 Normal Page Options

ADI PAGE

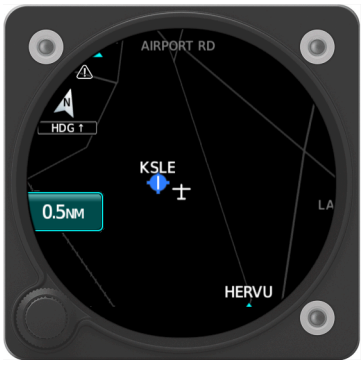
CDI PAGE

HSI PAGE

ENHANCED HSI PAGE

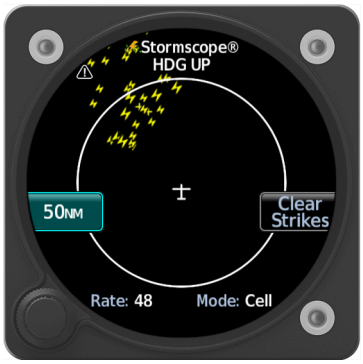


TRAFFIC PAGE



SXM WEATHER PAGES

FIS-B WEATHER PAGE

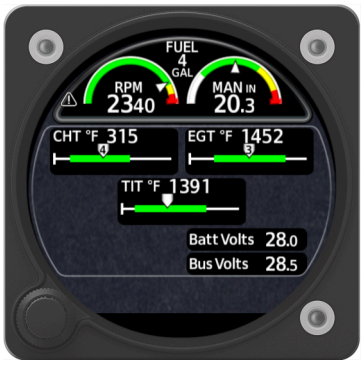


STORMSCOPE PAGE

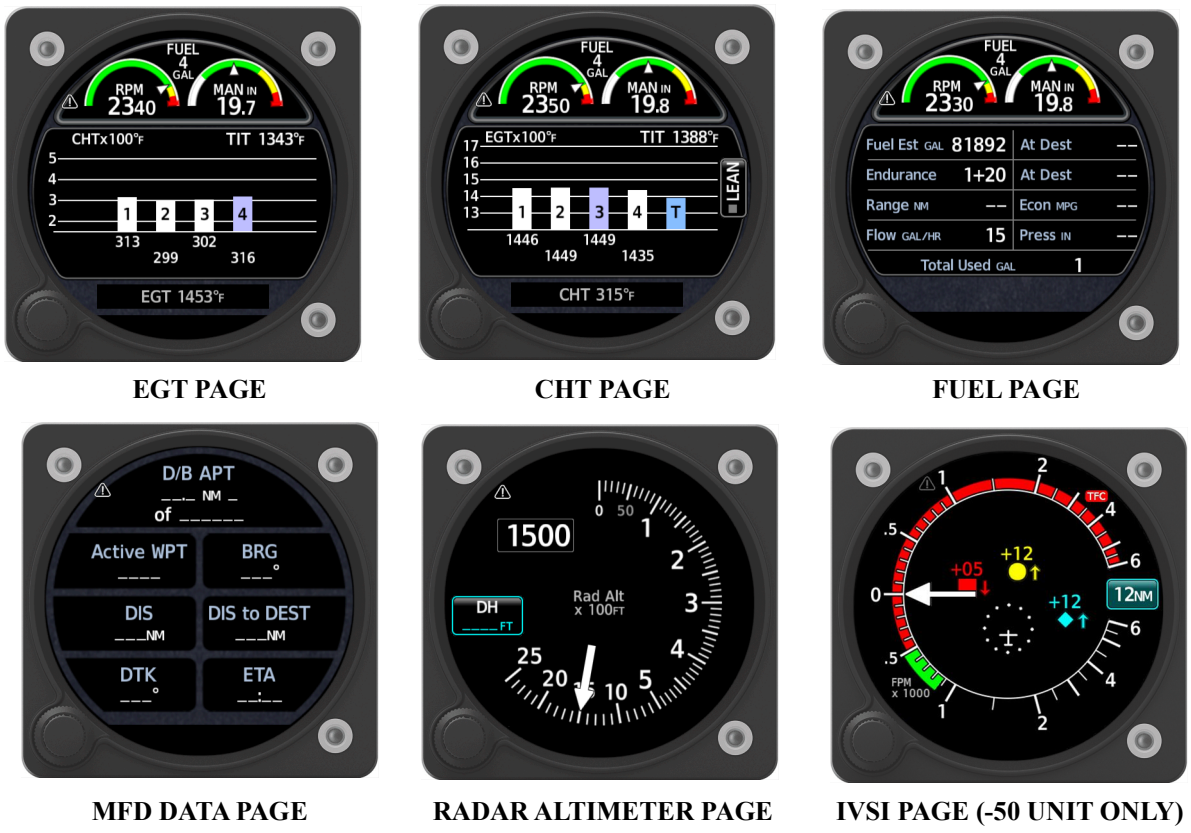
TERRAIN PAGE

MAP PAGE

GAUGES MAIN PAGE



GAUGES AUX PAGE



EGT PAGE | CHT PAGE | FUEL PAGE

MFD DATA PAGE | RADAR ALTIMETER PAGE | IVSI PAGE (-50 UNIT ONLY)

Figure 4-18 GI 275 Normal Mode Pages

4.2.28 Sensors Page

This page allows the selection of the default ADC between ADC 1, ADC 2 (if applicable), and ADC 3 (if applicable) and the default AHRS between AHRS 1, AHRS 2 (if applicable), and AHRS 3 (if applicable). Select the **Defaults** button to reset the selections to the default ADC 1 and AHRS 1.

NOTE

When the GI 275 is interfaced to an external ADC and/or AHRS, the internal ADAHRS must be configured as the default. Refer to Section 4.2.7 and Section 4.2.8.

4.2.29 Audio Alert Config

Audio Out

This determines which GI 275 unit will produce audio.

Voice Type

This makes the selection between Male and Female voices.

Alert Volume

This sets the audio level. Audio alerts must be loud, attention-getting, and clearly intelligible under all cockpit noise conditions. Audio alerts should be set slightly louder than the normal volume of COM and intercom transmissions.

Audio Test

This allows the testing of associated audio clips. Select the ▶ icon on any/all annunciator(s) to verify volume audibility set in the previous step. Adjust Alert Volume as desired to match audio levels of other systems installed in the aircraft.

4.2.30 Terrain/TAWS

If the GI 275 system does not have TAWS B enabled, then configure the Terrain/TAWS for one of the following options (*Terrain-FLTA* is automatically set if SVT is enabled):

Table 4-47

External TAWS	Terrain Mode
Not Installed	Terrain-FLTA
	Terrain-Proximity (Off)
Installed (MapMX)	External
Installed (Other)	
Installed (HSDB)	

The GI 275 is capable of producing aural and visual TAWS alerts. The alerting algorithm relaxes the terrain alerting criteria at nearby airports. An airport is considered to be a "nearby airport" if the runway(s) at the airport meet certain criteria. Select the runway Surface Type and Minimum Length for the aircraft, as described in Table 4-48.

Table 4-48 TAWS Airframe-Specific Configuration Data

Selection	Description	Notes
Runway Surface	Required runway surface type	Set the type of runway surface for which the aircraft is authorized.
Runway Min Length	Minimum runway length for TAWS/Terrain Alerting	Set the shortest distance required for takeoff and landing (typically the distance given for sea level using the coldest temperature given in the POH/ AFM).

4.2.31 Miscellaneous

Traffic Color

Must be set to *White*. This color designates the base color for traffic targets.

Altitude Alerter

When an altitude bug is configured, this sets the distance at which the GI 275 will flash when approaching the altitude bug. Audio alerts require an interface to a compatible audio panel. Choose from *200 FT Chime*, *1000 FT Chime*, or *OFF*.

Database Sync

GI 275 units synchronize databases using the Database Sync in order to minimize user effort when loading/updating databases. The user only has to insert a thumbdrive with databases to be loaded into the GI 275 and the databases will be updated on all connected GI 275 units for all displays with Database Sync enabled, rather than having to update each unit individually. Refer to Section 4.13 for more information on acquiring and loading databases.
The following databases are synchronized across all installed GI 275 units:

- Airport directory
- Aviation
- Obstacle
- SafeTaxi
- Basemap
- Terrain

Make the desired selection between *Pilot Control* and *Disabled* for Database Sync functionality; selecting *Pilot Control* enables Database Sync functionality.

CDI & BARO Sync

With this setting enabled, changing the CDI source or BARO setting on an interfaced PFD or another GI 275 will also change it on the GI 275. Choose from *Always On* or *Pilot Control*.

4.2.32 Battery

This configures whether a backup battery is connected to the GI 275. It allows you set the Low Battery Limit.

4.2.33 EIS

NOTE

This page will not be available unless the GI 275 is configured as EIS, Standby ADI, or MFD.

This section provides data for the configuration of EIS portions of a GI 275 EIS. Prior to beginning EIS configuration, an EIS data source (GEA 24/110) must be configured via the ***Interfaces*** page, per the directions found in Section 4.2.14. If an EIS data source has not been configured, the ***EIS*** page will not be selectable.

There are six subsections of the EIS Configuration. The subsections must be completed in the following order:

1. Engine – Enter single- or multi-engine, number of cylinders, flight hours, and engine hours.
2. Sensors – Select the sensors that are installed in the aircraft for EIS 1 or EIS 2 (if applicable).
3. Pages – Configure Full Time Gauges/Extra Info and EGT pages.
4. Gauges – Configure the gauge markings and layout.
5. Fuel – Enter fuel tank specifications, fuel type, and Quantity Calibration.
6. Diagnostics – View the status of the engine sensors and GEA.

The sections below outline the data required and the data entry procedure for the first three subsections. Fuel Quantity Calibration is outlined in Section 4.3.11.1. Procedures begin assuming the GI 275 is powered on in Configuration mode.

4.2.33.1 Engine

Refer to the aircraft time meter(s), tachometer, and the aircraft records to ensure the times are entered in the correct field and are accurate.

Flight Hours accumulate when the aircraft is in the air. The EIS will increment this value when the engine exceeds 1250 RPM. This value may be the same time displayed on the tachometer. Engine Hours accumulates when the engine is running and the oil pressure exceeds 5 psi.

Obtain the required information for the Engine subsection using Table 4-49, and populate all fields on the ***Engine*** page.

Table 4-49 EIS Configuration - Engine

Engine	**Engine**	**Number of Cylinder**
	Single Engine or Multi Engine	4 cylinders or 6 cylinders
Acft/Eng Time	**Flight Hours**	**Engine Hours**

4.2.33.2 EIS Sensors

Configure each connected EIS sensor as shown in Table 4-51. The following steps are required for this section:

1. Determine all installed EIS sensors that interface to the GI 275 system.
2. Navigate to the ***System Info*** → ***Devices Online*** page and verify that EIS 1/2 has a green square.
3. From the Configuration mode home page, navigate to ***EIS*** → ***Sensors***.
4. Select the Sensor Model configuration shown in Table 4-51 for each connected sensor.

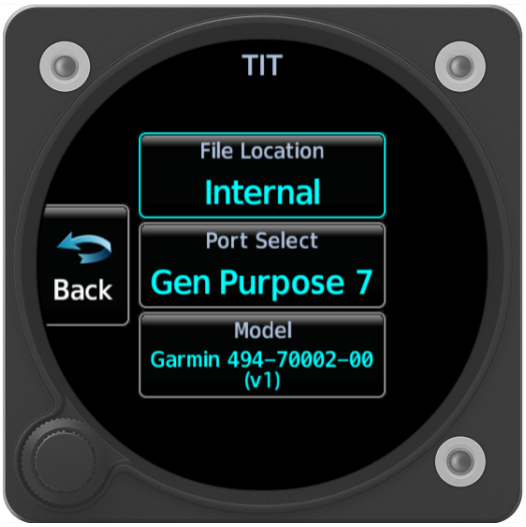


Figure 4-19 Sensor Menu Example

a) Touch **File Location** and select the source.

b) Select the wired GEA port, if applicable, via the **Port Select** field. If not applicable, there will be no Port Select field.

c) Touch **Model** and then select the interfaced sensor. A silver checkmark will appear if the configuration is valid. A yellow triangle will appear if the configuration is not valid.

An example configuration of a TIT sensor is shown in Figure 4-20. The selection sequence is highlighted.

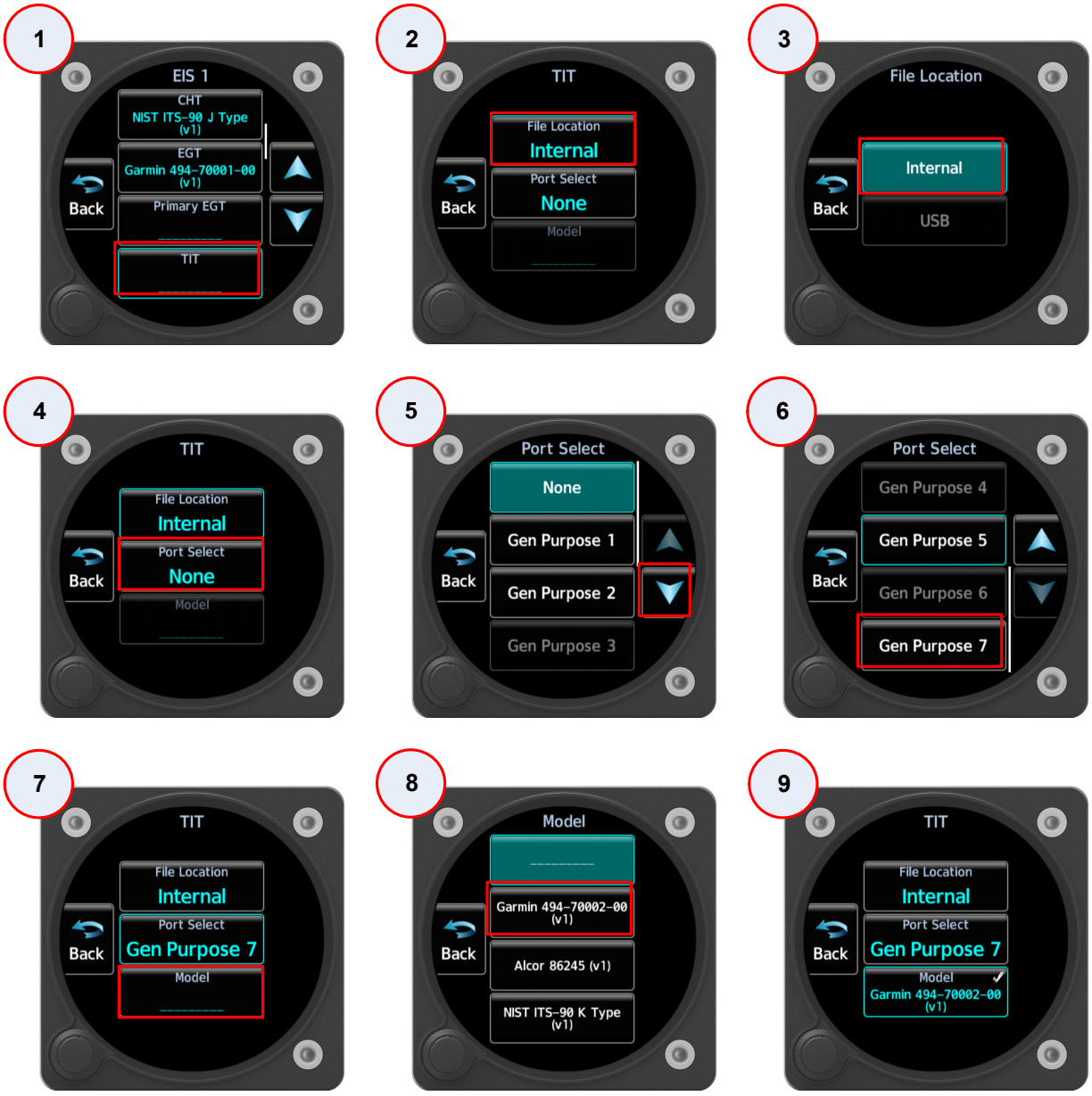


Figure 4-20 TIT Sensor Configuration Example

Additional specific sensor configurations are as follows:

RPM

- The RPM must display the originally intended RPM based on the aircraft/engine performance. The following information can be found either on the engine TCDS or Operator's Manual. Only the P-Lead can be used for geared engines
- Select the RPM sensor type:
  - **P-Lead -** select configuration to match the engine magneto type, two single magnetos or one dual-magneto. Select the engine reduction gear ratio (if applicable) to ensure the RPM gauge displays the AFM/POH values
  - **Mag Vent Pickup**

Shunt - Alternator Load

1. Select the model.
2. The shunt can be calibrated only if it is out of tolerance. For calibration:
   a. With the aircraft alternator OFF, select the installed shunt.
   b) Reselect the Shunt - Alternator Load.
3. Select **Calibrate** to zero the indication.

The displayed shunt value is a static value captured upon entering the ***Shunt*** page; if the electrical load changes, the page must be reloaded to display the new value.

Manifold Pressure

1. Select the sensor ***(Sensor→ Manifold PRESS)***.
2. For the Garmin 011-04202-00 sensor configuration, if the displayed manifold pressure value is incorrect, perform the calibration.
   a. For manifold calibration, select the manifold pressure sensor.
   b) Reselect the manifold pressure sensor, then select **Calibration**.
   c) Enter the local Barometric Pressure, **Current BARO**.
   d) Enter the local field elevation, **Field Elevation**.
   e) Select **Calibrate**.

Fuel Quantity

Select the correct resistive range and aircraft tank configuration. Refer to Section 4.3.11.1 for the calibration procedure.

Fuel Flow

1. Select the sensor model. Most aircraft will use *Low* for less filtering with a more responsive gauge. Select *Hi* if the fuel flow gauge is unsettled (e.g., to smooth carburetor float surges).
2. Enter the nominal fuel flow sensor K-Factor. Use the Floscan 201B-6 sensor configuration for a JPI P/N 700900-1. Use the Floscan 231 sensor configuration for a JPI P/N 700900-2.

For all aircraft with an existing fuel flow limitation, the EIS fuel flow must be within 10% of actual. If the recorded fuel flow and measured fuel flow are out of tolerance, the K-factor must be adjusted in Configuration mode.
To adjust the K-factor, do the following:

1. Ensure the fuel lines are purged of air.
2. Record the displayed fuel flow and the measured fuel flow at the same engine settings.
   - Example: Displayed value is 20 GPH, measured value is 24 GPH
3. Determine the offset ratio: Measured / Displayed.
   - Example: Measured / Displayed = 24 / 20 = 1.2
4. Inverse the ratio.
   - Example: 1 / 1.2 = 0.8333
5. Multiply the inverse by the currently used K-factor in Configuration mode.
   - Example: Current K-factor 68000, adjusted K-factor is 68000 * 0.8333 = 56667
6. Enter the adjusted K-factor and reload the sensor.

The pilot can make adjustments in Normal mode, which is limited to 15%.
Refer to Table 4-50 for the nominal K-factor values.

CAUTION

K-Factor must be in units of pulses per gallon. Different units will result in inaccurate fuel flow and fuel computer results.

Table 4-50 Fuel Flow K-Factor

Sensor	K-Factor
EI FT-60 (Red Cube) (Hi or Lo)	68,000
EI FT-90 (Gold Cube)	33,800
Floscan 201B-6 (Hi or Lo)	[1]
Floscan 231 (Hi or Lo)	[1]
JPI 700900-1 (201)	[1]
JPI 700900-2 (231)	[1]
Beech 102-389012-11 (Hi or Lo)	84,949

[1] Use the tag attached to transducer for K-Factor value. Data must be entered as XX,XXX. For example, if the value is XY.XX, multiply the K-factor value from the tag by 1000 and enter XY,XXX.

Once all the installed sensors have been configured, select **Back** to return to the ***EIS Configuration*** page.

GI 275 EIS gauges display data from the GEA 24/110 when approved sensors are configured in accordance with Table 4-51. EIS sensors that are authorized as "Interface only" require a separate installation approval.

Table 4-51 Approved Sensors

Function	Mfr	Garmin P/N	Description	Sensor Configuration	Authorization
RPM	N/A	N/A	P-lead (w/resistors)	Mag P-Lead **or** Dual Mag P-Lead **or** Geared 0.642:1 P-Lead **or** Geared 0.667:1 P-Lead **or** Geared 0.750:1 P-Lead **or** Geared 16:25 P-Lead **or** Geared 77:120 P-Lead [3]	Interface and installation
	UMA	N/A	T1A9-1	UMA T1A9-1 Slick	Interface only
	UMA	N/A	T1A9-2	UMA T1A9-2 Bendix	
Manifold Press	Garmin	011-04202-00	Garmin 30 PSIA (Brass)	Garmin 011-04202-00	Interface and installation
	Kulite	494-30030-00	APT-20GX-1000-25A (SS)	Kulite 20GX-1000-25A [1] [4] **or** Garmin 494-30030-00 [1] [4]	
	UMA	N/A	T1EU50A	UMA T1EU50A	Interface only
	UMA	N/A	T1EU50A-CS	UMA T1EU50A	
Oil Press	Garmin	011-04202-30	150 PSIG (Brass)	Garmin 011-04202-30	Interface and installation
	Kulite	494-30032-00	APT-20GX-1000-150G (SS)	APT-20GX-1000-150G [4] **or** Garmin 494-30032-00 [4]	
	Beech	N/A	102-389017-1	Beech 102-389017 [1]	Interface only
	Beech	N/A	102-389017-3	Beech 102-389017 [1]	
	UMA	N/A	T1EU150G	UMA T1EU150G	
	UMA	N/A	T1EU150G-CS	UMA T1EU150G	
Oil Temp	UMA	494-70009-00	T3B3-2.5G (K Type)	UMA T3B3	Interface and installation
	UMA	N/A	T3B3	UMA T3B3	Interface only
	UMA	N/A	T3B3A	UMA T3B3	
	UMA	N/A	T3B3-2.5	UMA T3B3	
	Mil-Spec	N/A	MS28034	MilSpec MS28034	
	Varies	N/A	K Type	NIST ITS-90 K Type	

[1] Select the GEA 110 or GEA 24 port that the sensor is connected to in order to access the sensor configuration.

[2] Refer to Section 4.2.33.2 for fuel flow gauge smoothing filter and K-factor selection.

[3] Refer to Section 4.2.33.2 for P-lead magneto type and propeller-to-engine gear ratio selection.

[4] Available for GEA 110 only.

Table 4-51 Approved Sensors

Function	Mfr	Garmin P/N	Description	Sensor Configuration	Authorization
CHT	Alcor	494-70008-00	Alcor 86252 (K Type)	Alcor 86252 **or** Garmin 494-70008-00	Interface only
	Varies	N/A	K Type	NIST ITS-90 K Type	
	Varies	N/A	J Type	NIST ITS-90 J Type	
EGT	Alcor	494-70001-00	Alcor 86255 (K Type)	Alcor 86255 **or** Garmin 494-70001-00	Interface only
	Varies	N/A	K Type	NIST ITS-90 K Type	
Primary EGT	Alcor	494-70001-00	86255 (K Type)	Alcor 86255 [1] **or** Garmin 494-70001-00 [1]	Interface only
	Varies	N/A	K Type	NIST ITS-90 K Type [1]	
TIT & TIT 2	Alcor	494-70002-00	Alcor 86245 (K Type)	Alcor 86245 [1] **or** Garmin 494-70002-00 [1]	Interface only
	Varies	N/A	K Type	NIST ITS-90 K Type [1]	
Carb Temp	UMA	494-70010-00	T3B10-SG (K Type)	UMA T3B10-SG [1] **or** Garmin 494-70010-00 [1]	Interface and installation
	Mil-Spec	N/A	MS28034	Mil-Spec MS28034	Interface only
	Varies	N/A	K Type	NIST ITS-90 K Type	
Fuel Press	Garmin	011-04202-20	75 PSIG (Brass)	Garmin 011-04202-20	Interface and installation
	Garmin	011-04202-10	15 PSIG (Brass)	Garmin 011-04202-10	
	Kulite	494-30031-00	APT-20GX-1000-50G (SS)	Kulite 20GX-1000-50G [1] [4] **or** Garmin 494-30031-00 [1] [4]	
	Kulite	494-30029-00	APT-20GX-1000-15G (SS)	Kulite 20GX-1000-15G [1] [4] **or** Garmin 494-30039-00 [1] [4]	
	UMA	N/A	T1EU70G	UMA T1EU70G	Interface only
	UMA	N/A	T1EU70G-CS	UMA T1EU70G	
	UMA	N/A	T1EU35G	UMA T1EU35G	
	UMA	N/A	T1EU35G-CS	UMA T1EU35G	

[1] Select the GEA 110 or GEA 24 port that the sensor is connected to in order to access the sensor configuration.

[2] Refer to Section 4.2.33.2 for fuel flow gauge smoothing filter and K-factor selection.

[3] Refer to Section 4.2.33.2 for P-lead magneto type and propeller-to-engine gear ratio selection.

[4] Available for GEA 110 only.

Table 4-51 Approved Sensors

Function	Mfr	Garmin P/N	Description	Sensor Configuration	Authorization
Fuel Flow & Return Fuel Flow	Electronics Intl	494-10001-00	EI FT-60	EI FT-60 Hi **or** Garmin 494-10001-00 Hi [2]	Interface and installation
				EI FT-60 Low **or** Garmin 494-10001-00 Low [2]	
	Electronics Intl	494-10001-01	EI FT-90	EI FT-90 Hi **or** Garmin 494-10001-01 Hi [2]	
				EI FT-90 Low **or** Garmin 494-10001-01 Low [2]	
	Beech	N/A	102-389012-11	Beech 102-389012-11 Low **or** Beech 103-389012-11 Hi [2]	Interface only
	Floscan	N/A	201 B-6	Floscan 201 B-6 Low **or** Floscan 201B-6 Hi [2]	
	Floscan	N/A	231	Floscan 231 Low **or** Floscan 231 Hi [2]	
	JPI	N/A	700900-1 (201)	Floscan 201 B-6 Low **or** Floscan 201B-6 Hi [2]	
	JPI	N/A	700900-2 (231)	Floscan 231 Low **or** Floscan 231 Hi [2]	
Shunt - Alternator Load & Battery Charge/ Discharge	Varies	N/A	30Amps 50mV	30Amps 50mV	Interface only
	Varies	N/A	50Amps 50mV	50Amps 50mV	
	Varies	N/A	60Amps 100mV	60Amps 100mV	
	Varies	N/A	75Amps 50mV	75Amps 50mV	
	Varies	N/A	80Amps 50mV	80Amps 50mV	
	Varies	N/A	85Amps 50mV	85Amps 50mV	
	Varies	N/A	100Amps 50mV	100Amps 50mV	
	Varies	N/A	150Amps 50mV	150Amps 50mV	
Bus Volts	Varies	N/A	Aircraft Bus (80V Max)	Bus Max 80 Volts DC	Interface only
Batt Volts	Varies	N/A	Aircraft Battery (80V Max)	Batt Max 80 Volts DC	Interface only

[1] Select the GEA 110 or GEA 24 port that the sensor is connected to in order to access the sensor configuration.

[2] Refer to Section 4.2.33.2 for fuel flow gauge smoothing filter and K-factor selection.

[3] Refer to Section 4.2.33.2 for P-lead magneto type and propeller-to-engine gear ratio selection.

[4] Available for GEA 110 only.

Table 4-51 Approved Sensors

Function	Mfr	Garmin P/N	Description	Sensor Configuration	Authorization
Fuel Quantity (Main & Aux)	Varies	N/A	Left/Single Tank	0-249Ohm Left Main **or** 0-249Ohm Single Main **or** 0-620Ohm Left Main **or** 0-620Ohm Single Main	Interface only
	CiES CC284022-XXXX-XXX	N/A	Left/Single Tank	Digital **or** 0-5Volt	
	Varies	N/A	Right Tank	0-249Ohm Right Main **or** 0-620Ohm Right Main	
	CiES CC284022-XXXX-XXX	N/A	Right Tank	Digital **or** 0-5Volt	
	Varies	N/A	AUX Left/Single Tank	0-249Ohm Left Aux **or** 0-249Ohm Single Aux **or** 0-620Ohm Left Aux **or** 0-620Ohm Single Aux	
	CiES CC284022-XXXX-XXX	N/A	AUX Left/Single Tank	Digital **or** 0-5Volt	
	Varies	N/A	AUX Right Tank	0-249Ohm Right Aux **or** 0-620Ohm Right Aux	
	CiES CC284022-XXXX-XXX	N/A	AUX Right Tank	Digital **or** 0-5Volt	
CDT	Varies	N/A	K Type	NIST ITS-90 K Type [1]	Interface only
IAT	Varies	N/A	K Type	NIST ITS-90 K Type [1]	Interface only
	Varies	N/A	J Type	NIST ITS-90 J Type [1]	

[1] Select the GEA 110 or GEA 24 port that the sensor is connected to in order to access the sensor configuration.

[2] Refer to Section 4.2.33.2 for fuel flow gauge smoothing filter and K-factor selection.

[3] Refer to Section 4.2.33.2 for P-lead magneto type and propeller-to-engine gear ratio selection.

[4] Available for GEA 110 only.

4.2.34 Pages

4.2.34.1 All Pages

Full Time Gauges

Select which gauges will display as half-arc gauges at the top of every EIS page (from left to right) from the following options.

- RPM/MAN – RPMs and manifold pressure will be displayed on every EIS page.
- MAN/RPM – Manifold pressure and RPMs will be displayed on every EIS page.
- FF/CHT – Fuel flow and cylinder head temperature will be displayed on every EIS page.
- CHT/FF – Cylinder head temperature and fuel flow will be displayed on every EIS page.
- FP/CHT – Fuel pressure and cylinder heat temperature will be displayed on every EIS page.
- CHT/FP – Cylinder head temperature and fuel pressure will be displayed on every EIS page.

Full Time Extra Info

Select which extra information will display on each EIS page above the full time gauges from the following options:

- Main Fuel
- Aux Fuel
- Prop Sync
- Off

4.2.34.2 EGT Page

Extra Info

Select which temperature information will be displayed on the bottom of the ***EGT*** page. Selections are:

- CHT
- IAT/CDT

Advanced

Configure Lean Assist setting. The following settings may be adjusted:

Lean – Temp Incr

Select the Lean – Temp Increase threshold. The default is 14.0°F.

Lean – Temp Drop

Select the Lean – Temp Drop threshold. The default is 7.2°F.

Lean – FFlow Hyst

Select the Lean – Fuel Flow Hysteresis threshold. The default is 0.2 gal/hr.

4.2.35 Gauges

4.2.35.1 Gauge Layout

CAUTION

The EIS gauge layout(s) must be accomplished prior to moving on to the next section because gauge marking support can vary based on gauge location on the EIS display.

Obtain the AFM/POH or other approved data to set the gauge markings and gauge ranges. If the existing aircraft gauges that are being replaced do not match the AFM/POH or other approved data, the installer must resolve the discrepancy. Prior modifications may have altered the aircraft limitations and operating parameters.

WARNING

Gauge markings, limitations, and units present in the AFM/POH, this manual, or other approved data must be represented on the EIS gauge. No additional markings are permitted on required gauges.

NOTE

The GI 275 EIS typically utilizes bar gauges instead of full radial gauges. Because of this, colored "arcs" listed in the POH/AFM must be configured as colored "ranges" on the GI 275 instead.

NOTE

Only red or yellow colors are capable of alerting. A red range will alert and can be used for items such as low fuel quantity alerting.

Gauge markings are not approved for the following gauges:

- IAT
- CDT
- Diff

If replacing an existing gauge, markings on the EIS gauge will be replicated. Complete Table 4-52 to gather the marking and range information for each gauge specified in the AFM/POH or other approved data.
If it is a new EIS gauge, only configure the Units and the Gauge Range. All units must match the AFM/POH, if applicable, and values selected must be appropriate for the gauge function.

Table 4-52 Original Gauge Settings

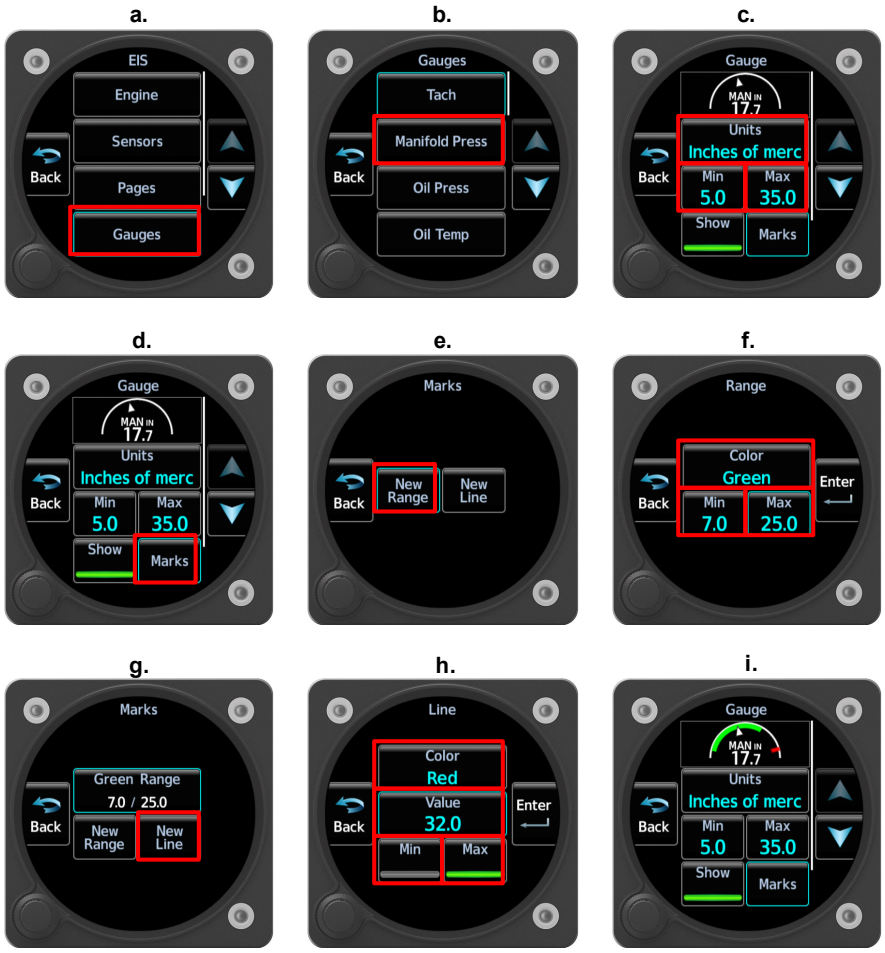
Attribute	Data
Gauge Type	
Units	
Arc(s)	Color: Min: Max:
Minimum Line (minimum safe operating limit)	Color: Min: Max:
Maximum Line (maximum safe operating limit)	Color: Min: Max:
Line/Radial(s)	Color: Min: Max:
Gauge Range	Minimum (lowest value on gauge): Maximum (highest value on gauge):
Other Marking	

Include the settings in Table 4-53 for the specific gauge. If the markings in Table 4-53 conflict with AFM/POH or other approved data, use the AFM/POH or other approved data.

Table 4-53 Additional Gauge Settings

Gauge	Marking
Carb Temp	Blue range from -15°C to 5°C
Fuel Quantity	Red line at 0 (usable fuel)

As an example only, the configuration of a pressure gauge is shown in Figure 4-21, steps a through i.



a. Select **Gauges** from the ***EIS*** page.
b. Select the gauge type to be configured.
c. Configure the gauge units and Gauge Range.
d. Select **Marks**.
e. Select **New Range** to add a range.
f. Configure color, range minimum, and range maximum. Select **Enter** to confirm. Repeat as necessary to configure markings.
g. Select **New Line** to add a line.
h. Configure line color, value, and as a minimum or maximum. Select **Enter** to confirm. Repeat as necessary to configure markings.
i. Verify final gauge presentation.

Figure 4-21 Gauge Configuration Example

Use the following procedure for gauge configuration:

1. Complete Table 4-52 for each gauge specified in the AFM/POH or other approved data, and refer to Table 4-53 for additional settings.
2. Using the information gathered in step 1, configure each gauge as shown in the example in Figure 4-21. The EIS gauge settings must accurately convey the limitations in the AFM/POH or other approved data.
3. Use Table 4-54 as an additional guide to set the gauge ranges. When setting the gauge range, verify the minimum and maximum values are captured within the physical markings of the gauge. It may be necessary to adjust the minimum and maximum gauge range so that the gauge needle has a value represented; refer to Figure 4-22 for an example.

4. When configuring the gauge ranges that include redline markings, the total gauge range must be configured so that the pilot can identify an exceeded value if the gauge passes the redline marking.

a. The range markings of 5 PSI and 110 PSI are not captured within gauge presentation.

b. To capture the range between 5 PSI and 110 PSI, it may be necessary to extend the range.

Figure 4-22 Gauge Range Marking Example

If a gauge range is not specified by the AFM/POH or other approved data, an appropriate range must be defined based on the gauge function, as specified in Table 4-54.

Table 4-54 Gauge Minimum and Maximum Ranges

Gauge	Guidelines
General	If a new gauge is being added, configure the gauge range for the functional range of the parameter (refer to Figure 4-22).
	Unless noted below, the gauge range must include all markings and it must be configured to properly fit the EIS gauge format.
Tachometer	Configure the gauge range minimum and maximum based on the range of the tachometer being replaced.
Manifold Press	The minimum value must be the lower of the following: 10 inHg or 1 inch below the lowest range marking. Use 1 inch above the highest marking as the maximum value.
Oil Press	Use 0 psi as the range minimum. Use 5-10 psi above the highest marking as the range maximum.
Oil Temp	Use 0°F as the range minimum. Use 10°F above the redline as the range maximum.
Fuel (Main/Aux)	Use 0 as the range minimum. Use the same range maximum as the fuel indicator being replaced. It is common for the fuel tank to hold more fuel than the system can measure.
Fuel Flow	Use 0 GPH as the range minimum. Use +10% of the highest marking or +10% of the highest takeoff fuel flow at sea level as the range maximum.
Fuel Press	Use 0.0 psi as the range minimum. Use +10% above the highest marking as the range maximum.
CHT	Use 25°F below the lowest marking as the range minimum. Use 25°F above the highest marking as the range maximum. If no markings are present, use a range of 200°F-500°F.
Primary EGT	Use 1000°F as the range minimum. Use 50°F above the redline as the range maximum. If no markings are present, use a range of 1000°F-1700°F.
Carb	The range must be set to -24°C to 34°C.

Side Text

The GI 275 EIS provides the Side Text feature for twin-engine aircraft. Side Text allows each gauge to be labeled *L* or *R* to more easily differentiate between EIS 1 and EIS 2. In single-engine aircraft, this feature should be set to the default *None*.

Figure 4-23 Side Text Example

4.2.36 Fuel

Main Tank

Configure to *Single Main* or *Left & Right* for the aircraft main tank.

AUX Tank

Configure to *None*, *Single AUX/Tip*, or *Left & Right* for the aircraft auxiliary tank.

AUX Label

Configure to *AUX* or *Tip* for the auxiliary tank label.

Fuel Type

Configure to *Avgas*, *Jet A*, or *Jet B* for the aircraft fuel type.

Quantity Calibration

Refer to Section 4.3.11.1 for the Fuel Quantity Calibration procedure.

Full Capacity

Configure the full capacity of the main tank.

Tab Capacity

Configure the tab capacity of the main tank.

4.2.37 Diagnostics

Sensor Status

Displays information on installed GEAs, including temperature and port configurations. Select between EIS 1 and EIS 2 (if applicable) in the Selected Unit field.

GEA Status

Displays status of configured EIS sensors

4.3 Calibration/Checks

This section provides guidance for calibrating the GI 275 system after the configuration steps have been completed.

4.3.1 Attitude/Heading Calibration Tests

The connected AHRS will not provide valid outputs until the calibration procedures in this section are completed. Prior to completing the Pitch/Roll Offset Compensation (Section 4.3.3) and Magnetometer Calibration (Section 4.3.8) procedures, the annunciation "CALIBRATE AHRS/MAG" will be displayed on the ADI, and the attitude and heading will be displayed. Once the aircraft is moved, the attitude and heading display will show a red "X". This condition is normal and will automatically clear when the two aforementioned calibration procedures are completed.

4.3.2 Calibrate Yaw Offset

Set the yaw offset between -15.0 and 15.0.

4.3.3 Calibrate Pitch/Roll Offset

This procedure must be completed for each installed AHRS. For dual AHRS installations, this procedure can be conducted for each AHRS simultaneously using two different displays. The aircraft must be leveled to within 0.25° of zero pitch and zero roll using the procedures in the aircraft maintenance manual or AFM/POH. The following procedures must be completed with the engine OFF:

1. Select **Calibrate Pitch/Roll** (***Home → Calibration/Test → Attitude/Heading***).
2. Complete the steps listed on the display. Touch the Start button to begin the calibration procedure.
3. Follow the on-screen command prompts.

The magnetometer calibration and compass swing are completed after the initial Engine Run-up Test has been completed.

4.3.4 Manual Pitch/Roll

Allows the pitch and roll values to be set manually.

4.3.5 Engine Vibration Test

This procedure is used to verify that the AHRS is not affected by the engine vibration.

4.3.6 Calibrate Static Pressure

This procedure is used to calibrate the altimeter and is not required for installation.This procedure is used to account for the sensor calibration drifting over time.

4.3.7 Interference Test

This test is to verify the GMU equipment installation, wiring, or ferro-magnetic items are not installed too close to the magnetometer, or other issues that could cause interference with the magnetometer.

4.3.8 Calibrate Magnetometer

Performing the magnetometer calibration removes any previously stored heading offset values. For multiple AHRS installations, the calibration can be done simultaneously using multiple displays.

1. Start the aircraft engine per the POH/AFM.
2. Taxi the aircraft to a desired calibration area.
3. Power on the display(s) in Configuration mode.
4. Navigate to the test page (***Calibration/Test → Attitude/Heading → Calibrate Magnetometer***).
5. Complete the Before Calibration steps listed on the display; touch Next after completing each step to move to the next step.
6. Touch the Start button when it becomes available to start the calibration procedure.
7. Follow the on-screen commands to complete the calibration.
8. Repeat the steps 4 through 7 for each installed AHRS unit if not completed simultaneously.

A successful heading calibration point is a full 18-second countdown followed by instruction to move. Due to the difficulties in executing smooth, accurate turns, the display may incorrectly interpret the approach heading point and instruct to "HOLD POSITION" prior to full completion of a 30° turn. If this condition is encountered, use outside references to complete the approximate 30° turn, instead of using the display instructions of when to complete the turn (use the compass rose radial to make the 30° (±5°) turn increments). Accurately completing each 30° heading point for the required time as instructed will result in a successful calibration.

Due to high winds or excessive airframe vibration, the operator may encounter a condition where the 18-second countdown is restarted without full completion of the previous countdown. If this is experienced more than once for a given heading point, the operator should begin turning to the next station (approximately 30°). A minimum of two successful heading points per quadrant is required. It may sometimes be required to hold at a station after a countdown restart. A maximum of 20 heading points are allowed for the entire calibration procedure. If too many countdown restarts are encountered, the calibration will fail with the message, "TOO MANY STATIONS".

4.3.9 Autopilot Calibration

4.3.9.1 Garmin GFC 600 Autopilot

The autopilot interface to a Garmin GFC 600 must be verified. The following calibration procedure is used to ensure that autopilot information is correctly displayed on the GI 275 Primary ADI.
Complete the following procedure:

1. Power on the aircraft avionics.
2. Engage the autopilot by pressing the **AP** button on the GMC 605.
3. Verify ROL and PIT ALTS are displayed, green lights next to **AP**, **FD**, and **YD** are illuminated on the GMC 605.

NOTE

"YD" is only displayed if the aircraft has a yaw damper installed and configured.

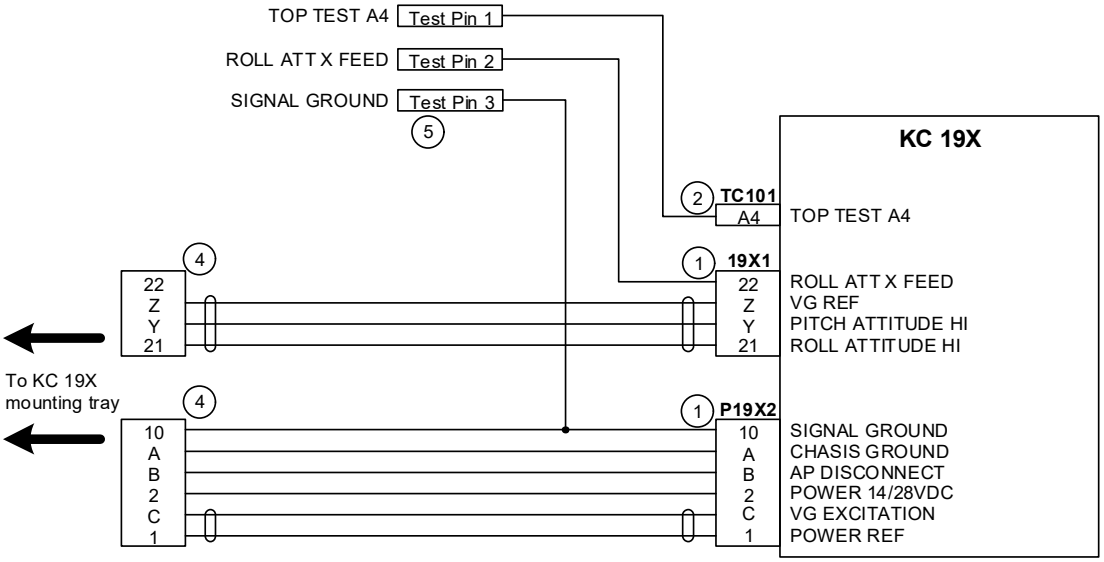
4. Verify that the magenta flight director bars are displayed on the GI 275.
   a. Move the pitch wheel on the GMC 605 and verify that the flight director bars displayed on the GI 275 update accordingly.
5. Adjust the altitude bug on the GI 275.
6. Verify that the ALTS value in the armed section on the GMC 605 updates to the altitude bug value on the GI 275.

4.3.9.2 Honeywell (Bendix/King) KFC/KAP 150, KAP 100 Autopilot

NOTE

The following alignment is only required if the GI 275 is used to provide analog attitude to the autopilot.

The following procedure requires a temporary test harness to be installed as shown in Figure 4-24. The parts required for the test harness installation are listed in Table . A voltmeter accurate to ±1mV at a 5 VDC range is also required.



NOTES

1 THE KC19X CARD EDGE CONNECTORS ARE BOTH ORIENTED SO THE LETTERED SIDE OF THE CONNECTORS FACE UP.

2 A4 IS THE FOURTH CONNECTOR FROM THE LEFT ON THE TOP WHEN VIEWED FROM THE FRONT. TC101 IS NOT APPLICABLE TO THE KC 190/KAP 100.

Figure 4-24 KAP 100 & KAP/KFC 150 Test Harness

Table 4-55 Extension Harness Parts

	Name	Description	Manufacturer	Manufacturer P/N	Qty
1	Main connectors 19X1/19X2 female	Dual edge 44- position	TE Connectivity AMP Connectors	583617-1	2
2	Top side connector TC101 female	Dual edge 20- position	TE Connectivity AMP Connectors	583861-7	1
3	Female crimp connectors	Terminal edge crimp	TE Connectivity AMP Connectors	61668-2	Varies
4	Main connectors 19X1/19X2 male	Dual edge 44- position	Sullins Connector Solutions	EBM22MMWD	2
5	Tip jack [1]	Connector tip jack, red	Cinch Connectivity Solutions Johnson	105-0602-001	3

[1] It is only required to access the signals on the indicated wires with a voltmeter; therefore, any other equivalent option is acceptable.

Gyro Alignment Procedure

1. Remove the KC 19X computer from the mounting rack.
2. Connect the test harness as shown in Figure 4-24 to allow access to the adjustment pots (one on the front and three on the side) and the three signal test pins.
3. Power the GI 275 in Configuration mode.
4. Go to the ***Gyro Output Test*** page as shown in 4.3.9.3 (***Calibration/Test → Autopilot → Gyro Output Test)***.
5. Verify that the internal AHRS test values are 0° pitch and 0° roll and are valid (ie., **Attitude Valid** button illuminated green).
6. Measure the voltage from test pin 2 (J19x1-22) to test pin 3 (J19x2-10) with a digital voltmeter.
7. Adjust the RN potentiometer to obtain a voltmeter reading of 0.0 VDC.
8. Measure the voltage from test pin 1 (TC101-A4) to test pin 3 (J19x2-10) with a digital voltmeter.
9. Adjust the PDN potentiometer to obtain a voltmeter reading of 0.0 VDC. This step is not applicable to the KC 190/KAP 100.
10. Set the internal AHRS Output to a *25*° right bank using the Roll Angle arrow.
11. Use a digital voltmeter to measure the voltage (+) at test pin 2 (J19x1-22) with reference to test pin 3 (J19x2-10).
12. Adjust the RDG potentiometer to obtain a voltmeter reading of -5 ± 0.1 VDC.
13. Set the internal AHRS Output to a 25° left bank using the Roll Angle arrow.
14. Verify that the voltmeter reading is now +5 ± 0.1 VDC.
15. Set the internal AHRS Output to *10*° nose down and Bank to *0*° using the Pitch and Roll Angle arrows.
16. Use a digital voltmeter to measure the voltage (+) at test pin 1 (TC101-A4) with reference to test pin 3 (J19x2-10).
17. Adjust the PDG potentiometer to obtain a voltmeter reading of +2 ± 0.1 VDC. This step is not applicable to the KC 190/KAP 100.
18. Set the internal AHRS Output to *10*° nose up using the Pitch Angle arrow.

19. Verify that the voltmeter reading is now -2 ± 0.1 VDC. This step is not applicable to the KC 190/ KAP 100.
20. When the testing is complete, remove the test harness.

Re-insert and secure the KC 19X computer into the rack.

4.3.9.3 Honeywell (Bendix/King) KFC 200 Autopilot

NOTE

The following alignment is only required if the GI 275 is used to provide analog attitude to the autopilot.

The autopilot interface must be configured for a King KFC 200. The following procedure may be used in place of the KC 295 calibration instructions in *Bendix/King KFC 200 IM/MM* (P/N 006-05134-0002, Rev 2) when using the GI 275 for gyro emulation. If all prerequisites are not met, or all steps are unable to be completed, then this procedure is not authorized for use. The prerequisites are as follows:

- GI 275 is installed for gyro emulation
- Flight Director Type setting *KI 256* is being used
- Maintenance test port is installed per Figure 4-25
- This procedure requires a calibrated voltmeter accurate to 1mV at a 5 VDC range

Complete the following procedure:

1. Power the GI 275 in Configuration mode.
2. Power on the KFC 200 system.
3. KC 290 mode controller adjustments:
   a. Using the ***Gyro Output Test*** page (***Calibration/Test → Autopilot → Gyro Output Test),*** verify the internal AHRS Pitch/Roll Outputs are zero and valid (i.e., **Attitude Valid** button is illuminated green).
   b) Loosen the KC 290 mode controller from its mount to gain access to the pitch/roll adjustment pots on the bottom of the mode controller.
   c) Connect the voltmeter to pins 6 and 1 on the maintenance port.
   d) Adjust the Pitch Adjust pot on the KC 290 until the voltmeter reads 0.0 ± 0.3 VDC.
   e) Connect the voltmeter to pins 5 and 4 on the maintenance port.
   f) Adjust the Roll Adjust pot on the KC 290 until the voltmeter reads 0.0 ± 0.3 VDC.
4. Roll gyro calibration:
   a. Remove the dust cover on KC 295 to gain access to adjustment pots.
   b) Verify the AHRS Roll Output is zero and valid.
   c) Connect the voltmeter to pins 3 and 4 on the maintenance port.
   d) Adjust the Gyro Roll Zero pot on the KC 295 computer until the voltmeter reads 0.0 ± 0.05 VDC.
   e) Set the internal AHRS Roll Output to *25°* right bank and valid.
   f) Adjust the Gyro Roll Gain pot on the KC 295 computer until the voltmeter reads as close to +5 VDC as possible.
   g) Set the internal AHRS Roll Output to *25°* left bank and valid.
   h) Verify the voltmeter reads as close to -5 VDC as possible.
5. Pitch gyro calibration:
   a. Connect the voltmeter to pins 2 and 1 on the maintenance port.

b) Verify that the internal AHRS Pitch Output is zero and valid.

c) Adjust the Gyro Pitch Zero pot on the KC 295 computer until the voltmeter reads 0.0 ± 0.15 VDC.

d) Set the internal AHRS Pitch Output to *10°* nose up and valid.

e) Adjust the Gyro Pitch Gain pot on the KC 295 computer until the voltmeter reads as close to 6 VDC as possible.

6. Flight Director calibration:

a. Verify that the internal AHRS Pitch/roll Outputs are zero and valid.

b) View the ***Flight Director Calibration*** page on the GI 275 (***Calibration/Test → Autopilot → Flight Director)***.

c) Disengage all AP/FD modes, then re-engage the FD only by pressing the **FD** button. The flight director data on the GI 275 must be valid.

d) Adjust the Roll Command Bar Zero pot on the KC 295 computer until the FD Roll command on the GI 275 is as close to 0° as possible.

e) Adjust the Pitch Command Bar Zero pot on the KC 295 computer until the FD Pitch command on the GI 275 is as close to 0° as possible.

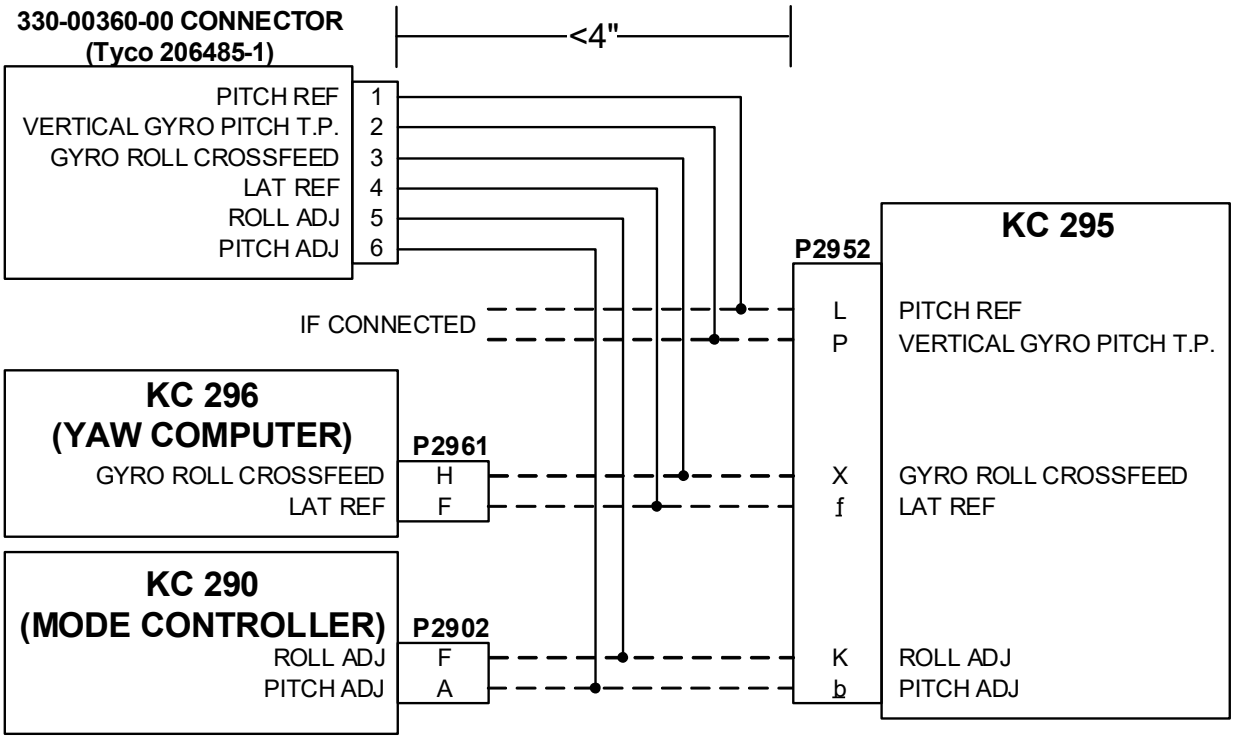


Figure 4-25 KFC 200 Test Port

4.3.9.4 Honeywell (Bendix/King) KFC 225 Autopilot

NOTE

The following procedure is only required if the GI 275 is used to provide analog attitude to the autopilot.

NOTE

The Honeywell KFC 225 Flight Control System Installation and Maintenance Manual specific to the aircraft being modified must be used whenever making flight director adjustments.

The autopilot interface must be configured for a KFC 225. A voltmeter, accurate to 1 mV at a 5 VDC range, is required for the procedure.
Complete the following procedure:

1. Power on the GI 275 the Configuration mode.
2. Go to the ***Gyro Output Test*** page (***Calibration/Test → Autopilot → Gyro Output Test).***
3. Perform the Attitude Gyro Calibration Procedure using GI 275 KI 256 gyro emulation.
    a. Use an extender harness for the KC 225 to gain access to the PIT/ROL adjustment potentiometers on the side of the KC 225 as specified in *Honeywell KFC 225 Flight Control System Installation Manual*.
    b. Select the ***Set Installation Offsets*** page on the KC 225 Remote Terminal Interface (RTI).
    c. Refer to *Honeywell KFC 225 Flight Control System Installation Manual* for instructions regarding how to connect and use the KC 225 RTI.
    d. Verify that the internal AHRS test values are 0° pitch, 0° roll, and Attitude Valid (i.e., Attitude Valid is illuminated green).
    e. Record the values for Pitch and Roll attitude that are displayed on the KC 225 RTI. These are the Pitch/Roll Offset values.

Pitch Offset	Roll Offset

    f. Use the ***Gyro Output Test*** page to select a pitch angle of *10°U*.
    g. Adjust the PIT potentiometer on the side of the KC 225 until the Pitch value on the KC 225 RTI is equal to 10° plus the Pitch Offset value (tolerance ±0.5°). Refer to the example pitch adjustment shown below.
    h. Use the ***Gyro Output Test*** page to select a Pitch Angle of *0°U* and a Roll Angle of *20°R*.
    i. Adjust the ROL potentiometer on the side of the KC 225 until the Roll value on the KC 225 RTI is equal to 20° plus the Roll Offset value (tolerance ±0.5°). Refer to the example roll adjustment shown below.
    j. Use the ***Gyro Output Test*** page to select *0°* pitch/roll.
    k. Engage the autopilot in the default modes (PIT and ROL).
    l. On the KC 225 RTI, select **3. Pitch Attitude**.
    m. To store the pitch attitude calibration, select **ENTER**.
    n. With the autopilot still engaged in the default modes, adjust the potentiometer on the front of the KC 225 until the Roll value on the KC 225 RTI is equal to 0°.
    o. Disengage the autopilot.

p. Verify the roll attitude calibration:
   i. Use the ***Gyro Output Test*** page to select a Pitch Angle of *0°U* and a Roll Angle of *20°R*.
   ii. Verify that the Roll value on the KC 225 RTI is 20° (±0.5°).
   iii. Use the ***Gyro Output Test*** page to select a Pitch Angle of *0°U* and a Roll Angle of *20°L*.
   iv. Verify that the Roll value on the KC 225 RTI is -20° (±0.5°).
   v. If both Roll attitude values are not within tolerance, adjust the ROL potentiometer on the side of the KC 225 until both Roll attitude values are within tolerance.

q. At the completion of test, remove the KC 225 extender harness.

Example Adjustment:

Pitch Offset: 0.67°	Roll Offset: -0.34°
With 10°U pitch, adjust the ***PIT*** potentiometer until the displayed ***Pitch*** value is between 10.17° and 11.17°. (This range is equal to [10° + 0.67°] ±0.5°)	With 20°R roll, adjust the ***ROL*** potentiometer until the displayed ***Roll*** value is between 19.16° and 20.16°. (This range is equal to [20° + (-0.34°)] ±0.5°)

Heading and Course Pointer Calibration

1. Go to the ***Autopilot Test*** page (***Calibration/Test → Autopilot → Test).***
2. Activate the HDG/CRS Valid discrete.
3. Set the Heading Datum (Hdg) and Course Datum (Crs) to *360°*.
4. On the KC 225 RTI, select the Installation Offset function.
   a. Select **1. Heading** on the ***Set Installation Offsets*** page.
   b. Press **ENTER**.
   c. Select **2. Course** on the ***Set Installation Offsets*** page.
   d. Press **ENTER**.

   Press **ENTER** to exit the page.

FD Alignment

1. Verify that the attitude input to the autopilot is level (i.e., zero pitch/roll).
   a. If using the GI 275, verify that the output test values are 0° pitch, 0° roll, and Attitude Valid on the ***Gyro Output Test*** page (***Calibration/Test → Autopilot → Gyro Output Test)***.
   b. If using an analog gyro, verify the gyro is operational and level. This may require an extender harness and tilt table.
2. Go to the GI 275 ***Flight Director*** page to view the FD Pitch and FD Roll values (***Calibration/Test → Autopilot → Flight Director)***.
3. Align FD Pitch as follows:
   a. Verify the FD is engaged, and that the autopilot is not engaged.
   b) Press and hold **CWS**.
   c) Adjust the potentiometer on the front of the KC 225 until the FD Pitch value is as close to zero as possible.
4. Align FD Roll as follows:
   a. Verify the autopilot and flight director are disengaged.
   b) Press and hold the **FD** button on the KC 225.
   c) Adjust potentiometer on the KC 225 until the FD Roll value is as close to zero as possible.

Flight Director Gain Adjustment Procedure

The following adjustment is required for all KFC 225 installations displaying the flight director on the GI 275.

1. Verify that the attitude input to the autopilot is level (i.e., zero pitch/roll).
   a. Using the GI 275, verify that the output test values are 0° pitch, 0° roll, and Attitude Valid on the ***Gyro Output Test*** page (***Calibration/Test → Autopilot → Gyro Output Test)***.
   b. Using an analog gyro, verify that the gyro is operational and level (may require an extender harness and tilt table).
2. Go to the ***Flight Director*** page to view the FD Pitch value (***Calibration/Test → Autopilot → Flight Director)***.
3. Press and hold the **GA** button.
4. Adjust potentiometer on the front of the KC 225 until the FD Pitch value matches the pitch value specified in the autopilot installation data for go-around mode (e.g., 6.00°) as closely as possible.
5. Verify the FD Gain adjustment.
   a. Press **CWS**. The FD Pitch value should be approximately zero.
   b. Make five discrete clicks using the **UP** keys on the KC 225. The FD Pitch value should be approximately +2.5° Up.

Altimeter Calibration Procedure

The following calibration is required if the GI 275 is used to provide analog baro-correction to the autopilot:

1. Power on the GI 275 in Normal mode and set Barometric setting to *29.92 inches*.
2. Perform the Altimeter Calibration Procedure as specified in *Honeywell KFC 225 Flight Control System Installation Manual*, with the following difference:
   a. When instructed to set the barometric setting to 29.92 inches, set the Barometric setting on the GI 275 to *29.92 inches*.

4.3.9.5 Honeywell (Bendix/King) KFC 250 Autopilot

Gyro Alignment Procedure

1. Power on the GI 275 in Configuration mode.
2. Go to the ***Gyro Output Test*** page (***Calibration/Test → Autopilot → Gyro Output Test)***.
3. Set the Attitude Valid selection to valid (i.e., Select the **Attitude Valid** button so that it is illuminated green).
4. Perform the Alignment Procedure as specified in the King installation manual, with the following difference:
   a. It is not necessary to remove the AHRS from the aircraft. To set pitch and roll as directed in the procedure, use the ***Gyro Output Test*** page to set the Pitch Angle and Roll Angle to the desired values (refer to Section 4.3.9.3).

4.3.9.6 Cessna 300B/400B/800B Autopilots

The following steps outline the alignment procedure:

1. Power on the GI 275 in Configuration mode.
2. Go to the ***Gyro Output Test*** page (***Calibration/Test → Autopilot → Gyro Output Test)***.
3. Set the Relays selection to *Attitude Valid*.
4. Perform the Roll Error Output Null Adjustment, Roll Gyro Gain Adjustment, Pitch Error Output Null Adjustment, and the Pitch Gyro Gain Adjustment as described in Cessna autopilot system service manual, with the following difference:
    a. It is not necessary to remove the AHRS from the aircraft. To set pitch and roll as directed in the procedure, use the ***Gyro Output Test*** page to set the Pitch Angle and Roll Angle to the desired values (refer to Section 4.3.9.3).

4.3.9.7 Cessna 1000A Autopilots

The following steps outline the alignment procedure:

1. Power on the GI 275 in Configuration mode.
2. Go to the ***Gyro Output Test*** page (***Calibration/Test → Autopilot → Gyro Output Test)***.
3. Set the Relays selection to *Attitude Valid*.
4. Perform Attitude Gyro System Interface Adjustments as described in the Cessna autopilot system service manual, with the following difference:
    a. It is not necessary to remove the AHRS from the aircraft. To set pitch and roll as directed in the procedure, use the ***Gyro Output Test*** page to set the Pitch Angle and Roll Angle to the desired values (refer to Section 4.3.9.3).

4.3.9.8 Century II/III Autopilots

The following steps outline the gyro alignment procedure:

1. Power on the GI 275 in Configuration mode.
2. Go to the ***Gyro Output Test*** page (***Calibration/Test → Autopilot → Gyro Output Test)***.
3. Set the Relays selection to *Attitude Valid*.
4. Perform the Ground Setup Procedures as described in the Century IIB & III Autopilot Service Manual (Section VIII steps 1 to 14) with the following differences:

NOTE

It is not necessary to use a Gyro Substitute Box as directed in the procedure.

    a. To set the HDG Bug as directed in the procedure, use the ***AP Test*** page (***Calibration/Test → Autopilot → Test)*** to set the HDG to the desired values).
    b. To set roll as directed in the procedure, use the ***Gyro Output Test*** page to set the Roll Angle to the desired values.

4.3.9.9 Analog NAV Calibration

If a Composite NAV connection is interfaced to a GI 275, the displays must be calibrated to each individual NAV radio using the following procedure:

1. Power the GI 275 in Configuration mode.
2. Power on NAV1.
3. Navigate to ***Calibration/Test → Analog NAV***.
4. Select the **Localizer** button.
5. Use an appropriate NAV tester to generate a localizer signal with 0.155 DDM left or right, and tune the NAV radio to the test frequency.
6. Press **Calibrate** and then **OK**.
7. Wait for the calibration to complete (approximately 6 seconds).
8. Verify that the DDM readout is 0.155 ± 0.010.
9. If the DDM readout is not within the specified value, adjust the Gain value manually so that the readout is 0.155 ± 0.010 DDM.
10. Select the **Back** button and then the **VOR** button.
11. Use a NAV radio tester to generate a 0° FROM radial VOR signal, and tune the NAV radio(s) to the test frequency.
12. Press **Calibrate** and then **OK**.

4.3.10 Backup Battery Test

This procedure will analyze the voltage and discharge qualities of the installed backup battery. The procedure is required to be completed when a backup battery is installed in the system. A fault indication message will be displayed in Normal mode until this procedure is completed.

NOTE

*The **Backup Battery Test** page will only be available if a backup battery is configured on the **Battery** page (refer to Section 4.2.32).*

NOTE

The Battery Rundown Test may take up to 120 minutes to complete.

NOTE

The Battery Rundown Test date is reported in UTC.

To complete the Backup Battery Test, complete the following steps:

1. Power the GI 275 in Configuration mode.
2. Navigate to the ***Calibration/Test → Backup Battery Test*** page.
3. Touch the **Before Test Checklist** button.
4. Verify that "Discharging" isn't displayed under Battery State.
5. Select **Test Date** and enter the current date.
6. Complete the on-screen Before Test checklist. Touch each checklist item once completed. Once all checklist items have a green check mark, touch the **Back** button.
7. Select **Start Test** and follow the on-screen commands.
8. The GI 275 will power off automatically when the test is complete.
9. Power up the unit in Configuration mode and verify a PASS was achieved by touching the **Test Results** button and then the **Rundown Test Results** button.

4.3.11 Fuel

4.3.11.1 Fuel Quantity Calibration

This procedure is used to calibrate the GI 275 fuel quantity gauges. It begins with drained fuel tanks, unusable fuel is added, and then fuel is added in specified quantities during the fueling process. Tank calibration takes time and cannot be interrupted once initiated. The Fuel Quantity Calibration procedure is not required to be performed immediately following the setup of the fuel quantity gauge; however, it must be completed before flight.

Fuel calibration is accessed from the Configuration mode home page by selecting (***EIS → Fuel → Quantity Cal)*** or (***Calibration/Test → Fuel → Quantity Cal***).

When determining the number of calibration points and amount of fuel to add at each, it is recommended to take the total usable fuel capacity of each tank and divide it by a number of points that results in an easily measurable amount of fuel to be added at each point (e.g., for a 24 GAL (of usable fuel) tank, divide 24 (gallons of usable fuel) by 6 (calibration points) to equal 4 (gallons of fuel to be added at each point). Take that number of points (6 in the example) and add 1 more for the unusable fuel (Point 1). So, a tank that holds 24 gallons of usable fuel could perform the calibration with 7 points, adding 4 gallons at each point after the unusable fuel is added in the first point.

4.3.11.2 Required Information and Equipment

A calibrated/verified fueling system is required to add known quantities. The aircraft manufacturer's information for aircraft leveling requirements/procedures and the unusable fuel quantity is required. Table 4-56 is used as a guide to configure the fuel quantity gauge(s). If the installation does not include auxiliary tanks, set the Aux Tank field to *None*. Table 4-57 describes each of the settings during the calibration of the fuel quantity.

Table 4-56 Fuel Quantity Gauge(s) - Tanks

Setting	Options
Main Tank	Single Main Left & Right
AUX Tank	None Single AUX/Tip Left & Right
AUX Label	AUX Tip
Fuel Type	Avgas Jet A Jet B
Full Capacity	*Refer to AFM/POH*
Tab Capacity	*Refer to AFM/POH*

Table 4-57 Fuel Quantity Gauge Settings

Setting	Options	Notes
Gauge Max Main	Main Gauge Maximum (0-10000 GAL)	Set to match the maximum range from the gauge being removed. This is configured on the ***EIS*** → ***Gauges*** → ***Fuel (Main)*** page.
Gauge Max Aux	Aux Gauge Maximum (0-10000 GAL)	Set to match the maximum range from the gauge being removed. This is configured under the ***EIS*** → ***Gauges*** → ***Fuel (Aux)***.
Num Points	5 to 15 points	The accuracy of the fuel quantity indication will increase with more calibration points. It is recommended to use at least the same number of points as graduations on the gauge being replaced.
Procedure	Single Main Main L & R (Recom.) AUX/Tip L & R (Recom.) Main L Main R AUX/Tip L AUX/Tip R Single AUX/Tip	Main/Aux L & R settings alternate left then right calibration points to keep the aircraft balanced. The available options are dependent on ”Main Tanks” and “Aux Tanks” settings in Table 4-56.

4.3.11.3 Fuel Quantity Calibration Procedure

Complete the following procedure using a calibrated fueling system:

1. Drain the fuel from the aircraft in accordance with the aircraft manufacturer’s instructions.
2. Level the aircraft in accordance with the aircraft manufacturer’s instructions.
3. Navigate to the ***Fuel*** page (***Calibration/Test*** → ***Fuel***).
4. Configure the fuel tank settings using Table 4-56.
5. Touch the **Quantity Cal** button.
6. Verify the Gauge Max Main and Gauge Max Aux settings are correct using Table 4-57.
7. Touch the **Check gauge max** button. A green checkmark will appear.
8. Touch the **Drain fuel** button if step 1 was completed. A green checkmark will appear.
9. Touch the **Level aircraft** button if step 2 was completed. A green checkmark will appear.
10. Touch the **Num Points** button and enter the number of calibration points to be performed. Refer to Table 4-57 and Section 4.3.11.1 for guidance in determining the number of calibration points.
11. Touch the **Select num points** button. A green checkmark will appear.
12. Touch the Procedure button and select the procedure using Table 4-57.
13. Touch the **Select procedure** button. A green checkmark will appear.
14. When all steps are checked, the **Begin** button will be available. Touch it to begin.
15. Add the amount of unusable fuel determined from the aircraft manufacturer or other approved data using a calibrated/verified fueling system.
16. Touch the corresponding button once the fuel has been added to check it off (refer to Table 4-57).

17. Once the sensor readout has stabilized in the tenths place, touch the corresponding button to check it off (refer to Table 4-57).
    a. It may be required to manually vibrate the area near the fuel sensor to prevent the float from sticking and to improve the sensor response during each calibration point.
18. Touch the **Calibrate** button to set the first point with 0.0 GAL of usable fuel (i.e., tank only has the required amount of unusable fuel).
19. If the Left & Right procedure was selected, repeat steps 15 through 18 for the other tank.
20. Fill the indicated tank with the specified amount of usable fuel using a calibrated fueling system.
    a. The GI 275 will calculate an estimated amount of fuel to be added based on the number of calibration points and the gauge max.
    b) If more than the indicated amount of fuel was added, touch the **Add Fuel Amount** button and enter the actual amount of fuel that was added. The GI 275 will automatically compensate for the difference during the next calibration point for that tank.
21. Touch the corresponding button on the display once the fuel has been added to check it off.
22. Once the sensor readout has stabilized in the tenths place, touch the corresponding button.
23. Touch **Calibrate** to accept that value.
24. Repeat steps 20 through 23 for any other tanks included in the calibration and for each remaining calibration point.
    a. Touch the **View ( ) tank status** button at any point to view a graphical representation of the process (refer to Table 4-57).
    b) Do not add more fuel than the maximum gauge range. The manual entry field will not allow more fuel than the maximum to be entered.
    c) It is common for fuel tanks to hold more fuel than shown on the fuel indicator; however, the indicator will not show fuel above the maximum gauge range.
    d) Some fuel tank designs can hold more fuel when the aircraft is not level, so the maximum gauge range may not be obtainable. Fill the tank as much as possible and enter the actual amount that was added. The final fill point must be within 10% of the gauge range (e.g., if the gauge range is 50 gallons, the final calibration point for that tank must fall between 45 and 50 gallons).
25. Repeat the Fuel Quantity Calibration for any remaining fuel tanks not included in this calibration (e.g., auxiliary tank).

Figure 4-26 Fuel Quantity Calibration Page Example

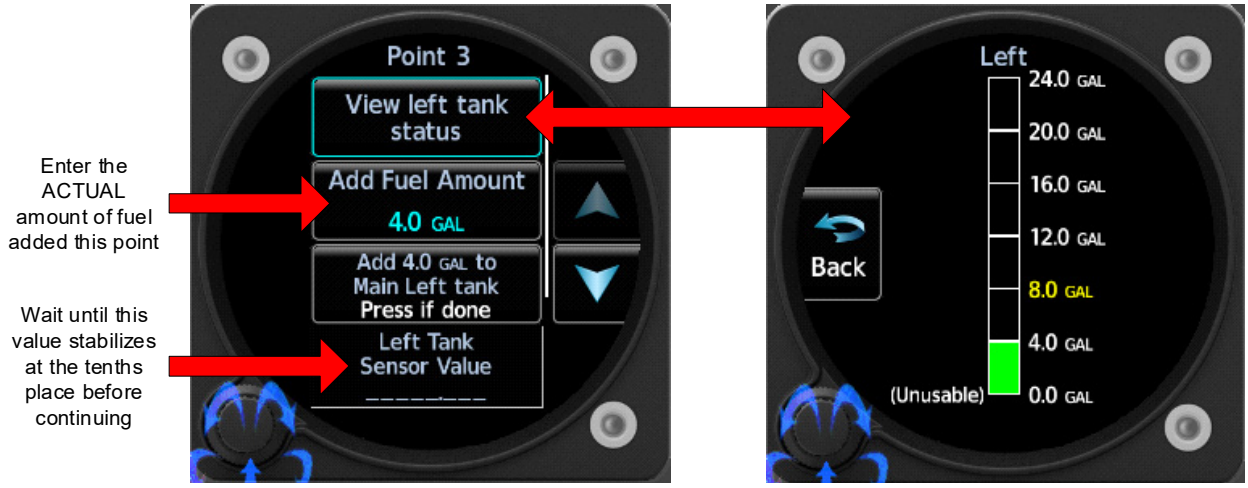


Figure 4-27 Fuel Quantity Calibration Procedure

NOTE

It is recommended that the display configuration be saved to a USB drive immediately after the Fuel Quantity Calibration is completed.

4.4 External Systems

4.4.1 Stormscope Config Status

The ***Stormscope Config Status*** page provides a means to view the configuration status and system information of a configured WX-500 Stormscope. Instructions for configuration of the Stormscope interface are contained in Section 4.2.18.

4.5 Diagnostics

4.5.1 VFR GPS

GPS Signal Strength

This displays information on the VFR GPS, including whether the antenna is connected, GPS signal strength, and GPS coordinates.

4.5.2 Backup Battery Status

This displays the charge, temperature, and cell voltage of an installed backup battery.

Rundown Test Results

This displays the most recent Battery Rundown Test results.

Clear Test Results

This clears the most recent Battery Rundown Test results.

4.5.3 HSDB Status

The ***HSDB Status*** page shows the status of both GI 275 HSDB connections.

4.5.4 Temp/Pwr Stats

The ***Temp/Pwr Stats*** page shows the total number of power ups, operating hours, and CPU temperatures.

4.5.5 Discrete Inputs

The ***Discrete In*** page shows the status (Active/Inactive) of each Discrete Input and how it is configured.

4.5.6 Discrete Outputs

The ***Discrete Out*** page shows the status (Active/Inactive) of each Discrete Output and how it is configured.

4.5.7 Analog Inputs

The ***Analog In*** page shows the voltage of each Analog Input.

4.5.8 GDL69

The ***GDL 69*** page shows information for a configured GDL 69SXM.

4.5.9 ARINC 429

The ***ARINC 429*** page shows the status of each ARINC 429 port.

4.5.10 RS-232

The ***RS-232*** page shows the status (Active/Inactive) of each RS-232 connection and how it is configured.

4.5.11 RS-485

The ***RS-485*** page shows the status (Active/Inactive) of each RS-485 connection and how it is configured.

4.5.12 Clear Config

CAUTION

Selecting the **Clear Config** button will erase all configuration settings and clear the battery rundown time limits.

4.5.13 Factory Reset

Restores unit to factory default settings

4.6 System Info

This provides the option to review a configured device's detailed information, such as serial number, part number, and software versions. LRUs must be configured in order for their data to be displayed.

4.6.1 Devices Online

The ***Devices Online*** page reports the status of installed LRUs. The icon next to each LRU reports one of four colors to indicate the status of each LRU, as described in Table 4-58. Verify that all LRUs connected or configured to each display have a green indicator.

Table 4-58 LRU Status Indicators

Status Color	LRU Condition
Green	The LRU is online. No faults are detected.
Yellow	The LRU is configured, but the GI 275 is not receiving data.
Red	The LRU is configured, but a warning is present.
Black	The LRU is not configured.

4.6.2 Device Info

The ***Device Info*** page provides information for each configured LRU in the GI 275 system. Touch the **Device** button and select an LRU to view information such as serial number, part number, and software version.

4.7 Maintenance

Export Logs

Export logs via USB or Wi-Fi. For wireless connection configuration, refer to Section 4.2.6.

Export Config

Export configuration settings via USB or Wi-Fi. For wireless connection configuration, refer to Section 4.2.6.

Export External LRU Logs

Export logs of external LRUs via USB or Wi-Fi. For wireless connection configuration, refer to Section 4.2.6. This page gives the option to enable or disable the logging of flight data during operation. The default is *Enabled*.

Logging Options

This page gives the option to enable or disable the logging of flight data during operation. The default is *Enabled*.

4.8 Restart Options

Restart All to Config

Restarts GI 275 and all interfaced LRUs in Configuration mode.

Restart All to Normal

Restarts GI 275 and all interfaced LRUs in Normal mode.

GI ( )

Select restart options for that particular GI 275 unit. Options are *Do Not Restart*, *Normal Mode*, and *Config Mode*.

Restart

Restarts the GI 275 according to the above selection. If *Do Not Restart* is selected, the unit will not restart.

4.9 Wireless Connectivity

The GI 275 is capable of connecting to a portable electronic device (PED) via Wi-Fi and Bluetooth to update flight databases (refer to Section 4.13). To configure a wireless connection:

1. Power the unit on in Configuration mode (refer to Section 4.2.1.1).
2. Navigate to ***Interfaces → Wireless***.
3. After up to two minutes, the **Continue** button will become selectable. Select it to continue.

SSID (WiFi name) and Password

An SSID "WiFi name" and password are needed to establish WiFi communication.

1. From any page, open the menu and navigate to ***System → Wireless.***
2. Select the SSID Datafield
3. Input the desired WiFi SSID name for the PED to connect to.
4. Select the Password Datafield
5. Input the desired WiFi password for the PED to use when connecting to the GI 275 (must be eight characters long - no more, no less).

Connext Features

- Database Update - Allows flight databases to be updated via the Bluetooth from Garmin Pilot. The default is Enabled.
- Flight Plan Import - Allows flight plans to be synced from a GPS 175 or GNX 375. The default is Disabled.

Pair a Device

Connect to a Bluetooth-enabled PED with the Garmin Pilot application. Refer to Garmin Pilot for iOS User's Guide or Garmin Pilot for Android User's Guide for more information on the Garmin Pilot application. To pair a device:

1. Open the Garmin Pilot application on the PED and follow in the instructions in the applicable user's guide to enable Bluetooth connectivity.
2. On the GI 275, touch the **Pair a Device** button.
3. Touch the **Bluetooth Name** button and select the device.
4. Touch the **Pair** button. The GI 275 can store up to 10 paired devices. Once a device is paired, it can be connected to automatically in Normal mode to initiate database uploads.

Bluetooth Devices

Manage and delete paired devices.

4.10 Diagnostic Information

Refer to the applicable airframe specific maintenance manual.

4.11 Ground Checks

Refer to the applicable airframe specific maintenance manual.

4.12 Flight Checks

4.12.1 ADI Flight Checks

The following items (applicable to the installation) must be verified during flight:

- Display of attitude, airspeed, altitude, and heading on the GI 275 while maneuvering
- Display of attitude, airspeed, altitude, and heading on the standby instruments
- Navigation using each GPS and VLOC source on the CDI. For navigation receivers, both VOR and ILS must be verified
- Audibility of the altitude alerter chime
- Display of traffic from any interfaced traffic system
- Display of radar altitude. The radar altitude display must be verified at several heights AGL throughout the operating range of the radar altimeter

4.12.2 HSI Flight Checks

The following items (applicable to the installation) must be verified during flight:

- Navigation using each GPS and VLOC source on the CDI. For navigation receivers, both VOR and ILS must be verified
- Display of traffic from any interfaced traffic system
- Display of weather from the GDL 69SXM or FIS-B source

4.12.3 MFD Flight Checks

The following items (applicable to the installation) must be verified during flight:

- Display of attitude, airspeed, altitude, and heading on the GI 275 while maneuvering
- Navigation using each GPS and VLOC source on the MFD CDI. For navigation receivers, both VOR and ILS must be verified
- Display of radar altitude. The radar altitude display must be verified at several heights AGL throughout the operating range of the radar altimeter
- Display of traffic from any interfaced traffic system
- Display of weather from the GDL 69SXM or FIS-B source
- All applicable EIS flight checks in the EIS Flight Checks

4.12.4 EIS Flight Checks

The following items (applicable to the installation) must be verified during flight:

- All gauges/markings clearly convey the respective engine parameters
- All EIS gauges are within their normal operating range
- No “Caution” or “Warning” indications are present
- Gauge indications are appropriate for all flight regimes
- Post-flight check of installed sensors and fittings for leaks

4.13 Database Loading

NOTE

When updating databases on the GI 275, ensure the aircraft has been on the ground since the unit was powered on, otherwise certain database update options are disabled.

The GI 275 system uses several databases depending on its configuration. These databases (and database updates) are available for purchase at flyGarmin.com. Databases are locked to a system ID and cannot be used in more than one system. The system ID is the same for each GI 275 installed in the system.

Databases are updated using a portable electronic device (PED) with the Garmin Pilot application.

After obtaining the appropriate databases from flyGarmin.com, they can be loaded to the GI 275 system by USB drive, Connext (Bluetooth), or through the Database Concierge feature (Wi-Fi).

Automatic Database Updates

The GI 275 will automatically prompt the user to update databases on startup in Normal mode if the following conditions are met:

- A newer database is detected in the standby queue (refer to GI 275 Pilot's Guide for details) or on a connected compatible Garmin LRU
- The newer database is within its effective dates
- The aircraft is on the ground

Follow the on-screen prompts to update a database when prompted. A dedicated page will display during this process.

NOTE

The Basemap and Terrain databases will automatically update when the above conditions are met without user input. In this case, a unit restart is not required.

NOTE

The GI 275 can receive database updates from other compatible LRUs, but it can only provide database updates to other GI 275s, a GPS 175, or a GNX 375.

Load Databases via USB

1. Download appropriate databases from flyGarmin.com onto a USB drive.
2. Power on all GI 275 units in the system in Normal mode.
3. On the display connected to the USB dongle or GSB 15, hold the knob or swipe up from the bottom of the screen to open the menu.
4. Touch the **System** button, then the **USB** button.
5. Select **Enable USB**, then touch the **Back** button.
6. Touch the **Databases** (or **DB**) button.
7. Verify the listed databases that show out-of-date (amber) have updated versions on the USB drive.
8. Touch the **Update** button.
9. Insert the USB drive into the USB dongle or optional GSB 15 and wait for the GI 275 to recognize the drive (USB status will change from "Not Connected" to "Connected" at the top of the screen).
10. Touch the **USB** button.

11. Select the individual databases to update and then touch the **Update Selected** button or touch the **Update All** button.
12. When the databases have finished updating, touch the **Restart Unit** button and remove the drive.

Load Databases via Connext (Bluetooth)

1. Download the appropriate databases on a PED with the Garmin Pilot application.
2. Connect the PED to the GI 275 using the procedure in Section 4.2. If this procedure has been completed previously with the same PED, it may not be necessary to complete again.
3. Power on all GI 275s in the system in Normal mode.
4. On the master display, hold the knob or swipe down from the top of the screen to open the menu.
5. Touch the **System** button, then the **Databases** (or DB) button.
6. Touch the **Update** button.
7. The GI 275 can display "Not Ready" for up to 2 minutes. It will display "Connext Ready" when it is ready to begin the update via Connext.
8. Select the individual databases to update and then touch the **Update** button.
9. When all the databases have finished updating, touch the **Restart Unit** button. You may disconnect the PED at this point.

Transferring Databases via Database Concierge (Wi-Fi)

Database Concierge allows wireless transfer of databases from a mobile device via Wi-Fi while the aircraft is on the ground with the following procedure:

1. Download the appropriate databases on a PED with the Garmin Pilot application.
2. In Normal mode, open the menu and touch S***ystem → Databases (DB) →Update***. The GI 275 internal Wi-Fi will now be available to be connected with a PED.
3. Connect the PED to the GI 275's Wi-Fi network. The SSID and password can be viewed on the Wi-Fi Info page.
4. Follow the on-screen prompts.

NOTE

New databases with current effective dates will replace expired databases on the GI 275, and databases with future effective dates will be added to the internal standby queue for automatic updates in the future.

Load Databases via Database Sync

If a GTN 6XX/7XX with a Flight Stream 510 is installed in the system, and Database Sync is enabled on the GI 275 (refer to Section 5.5.7), then databases on the GI 275 system can be updated by the following procedure:

1. Load the updated database to the compatible Garmin LRU.
2. Power on the GI 275 in Normal mode.
3. Databases will synchronize automatically in the background. A “Database sync transfer in progress” message will appear.

NOTE

*If synchronizing databases only between GI 275 units, and the aircraft is on the ground, selecting the **Fast Sync** button increases database transfer speed and displays transfer progress but disables screen use until the transfers are complete.*

4. When the sync is done, and the aircraft has been on the ground since the MFI has been powered on, a "Database Sync Complete Activate Now?" alert appears. Touch the **Yes** Button. The 'DB Update' Menu appears.
5. Touch the **Update Selected** button.
6. Wait for databases to update. A progress bar is shown for each selected update.
7. When all the database updates are complete, touch the **Restart Unit** button.

Table 4-59 Database Summary

Database	Update Rate
Navigation Database	28 Days
Basemap Database	Periodic (when available)
Obstacle Database with Hotlines	56 Days
Terrain Database	Periodic (when available)
SafeTaxi Database	56 Days
Airport Directory Database	56 Days

4.13.1 Navigation

The navigation database supplies airport, NAVAIDs, and waypoint information.

4.13.2 Basemap

The basemap database provides ground based references such as roads and bodies of water.
The basemap database does not have a scheduled update cycle or expiration date, and updates infrequently. Basemap database updates are available from flyGarmin.com.

4.13.3 Safe Taxi

SafeTaxi diagrams provide detailed taxiway, runway, and ramp information.

4.13.4 Terrain

The terrain database supports terrain awareness functionality.

4.13.5 Obstacles

The fixed-wing obstacle databases provide identification of known obstacles greater than 200 feet AGL, and are available with and without hazardous power lines.
The basic helicopter databases contain all obstacles, and are available with and without hazardous power lines.
The advanced helicopter obstacle database contains all obstacles and power lines.

4.13.6 Airport Directory

The airport directory database provides airfield information and contact information for local aviation services, food, lodging, transportation, and attractions. The database content is provided by selected 3rd parties such as AC-U-KWIK or AOPA. There are multiple options and coverages areas available, but only one airport directory database may be installed at a time.

4.14 Database Update Procedure

The Navigation Database and the ChartView Database are both stored in the GI 275. Refer to airframe specific pilot documentation for instructions on updating the databases.

4.15 Software Loading Procedure

Refer to airframe specific documentation for software uploading procedures.

5 CONTINUED AIRWORTHINESS

Periodic maintenance for the GI 275 is limited to the air data system as listed in Section 5.1, and the battery as listed in Section 5.2. All other maintenance of the GI 275 is "on condition" only.

5.1 GI 275 Air Data Periodic Maintenance

Per Part 43 Appendix E, paragraph (b)(2), Garmin recommends a test procedure equivalent to Part 43 Appendix E, paragraph (b)(1), with two exceptions. The tests of sub-paragraph (iv) (Frictions) and (vi) (Barometric Scale Error) are not applicable because the digital outputs of the GI 275 are not susceptible to these types of errors. This procedure is recommended when the static sytsem is opened up (i.e. whenever the GI 275 is removed or replaced). Garmin also recommends that a leak test be performed following any maintenance action is which the pitot system is opened up.

5.2 GI 275 Battery Periodic Maintenance

For maximum battery longevity, store within a temperature range of -4°F to 68°F (from -20°C to 20°C). The GI 275 battery should be kept partially charged when unused for longer periods of time and should not be stored when completely discharged. Charge the battery to 30% within 1 year of receipt and recharge to 30% every 2 years thereafter if the GI 275 is not in use.

5.2.1 Backup Battery Check

This procedure will analyze the voltage and discharge qualities of the installed backup battery. The procedure is required to be completed when a backup battery is installed in the system. A fault indication message will be displayed in Normal mode until this procedure is completed.

NOTE

*The **Backup Battery Test** page will only be available if a backup battery is configured on the **Battery** page (refer to Section 4.2.32).*

NOTE

The Battery Rundown Test may take up to 120 minutes to complete.

NOTE

The Battery Rundown Test date is reported in UTC.

To complete the Backup Battery Test, complete the following steps:

1. Power the GI 275 in Configuration mode.
2. Navigate to the ***Calibration/Test → Backup Battery Test*** page.
3. Touch the **Before Test Checklist** button.
4. Verify that "Discharging" isn't displayed under Battery State.
5. Select **Test Date** and enter the current date.
6. Complete the on-screen Before Test checklist. Touch each checklist item once completed. Once all checklist items have a green check mark, touch the **Back** button.
7. Select **Start Test** and follow the on-screen commands.
8. The GI 275 will power off automatically when the test is complete.
9. Power up the unit in Configuration mode and verify a PASS was achieved by touching the **Test Results** button and then the **Rundown Test Results** button (see Section 4.3.10).

6 SYSTEM INTERCONNECTS

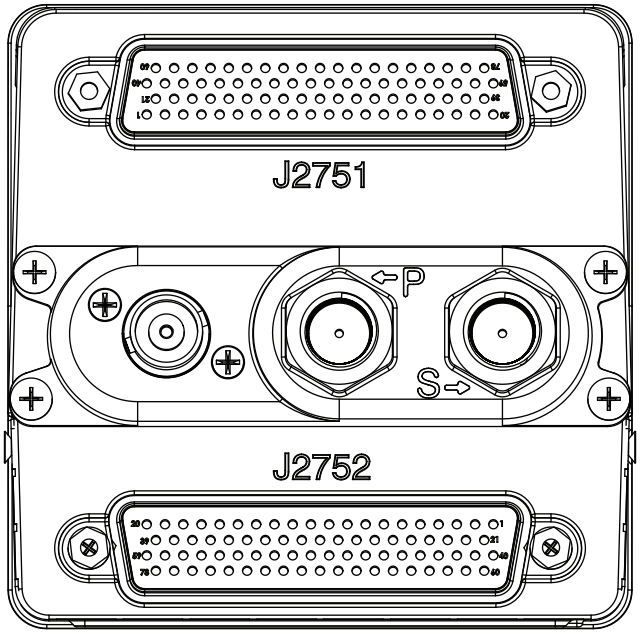


Figure 6-1 View of GI 275 from back of unit

6.1 Pin Function List

6.1.1 J2751

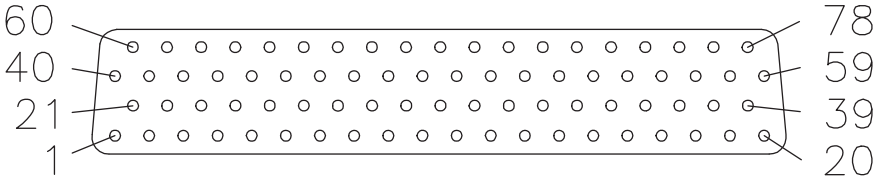


Figure 6-2. J2751 connector, viewed from back of unit

Table 6-1. J2751 Pin List

Pin	Pin Name	I/O
1	CONFIG MODULE GROUND	--
2	AIRCRAFT POWER 1	IN
3	AIRCRAFT POWER 2	IN
4	DISCRETE OUT 1 LO	OUT
5	VOR/LOC COMPOSITE IN LO	IN
6	GLIDESLOPE DEVIATION +UP IN	IN
7	LATERAL -FLAG IN	IN
8	ETHERNET OUT 2A	OUT
9	ETHERNET OUT 2B	OUT

Table 6-1. J2751 Pin List

Pin	Pin Name	I/O
10	OBS STATOR F	OUT
11	GLIDESLOPE +FLAG IN	IN
12	DISCRETE IN 4 LO	IN
13	OBS ROTOR H	IN
14	ARINC 429 IN 2B	IN
15	ARINC 429 IN 4B	IN
16	ARINC 429 OUT 1A	OUT
17	SPARE GROUND	--
18	RS 232 OUT 2	OUT
19	LRU GROUND	--
20	LRU POWER OUT	OUT
21	CONFIG MODULE POWER	OUT
22	LIGHTING BUS HI	IN
23	DISCRETE IN 1 LO	IN
24	DISCRETE OUT 3 LO	OUT
25	LATERAL DEVIATION +LEFT IN	IN
26	LATERAL +FLAG IN	IN
27	ETHERNET IN 2A	IN
28	ETHERNET IN 2B	IN
29	OBS STATOR D	OUT
30	AUDIO OUT HI	OUT
31	GLIDESLOPE -FLAG IN	IN
32	TO/FROM -FLAG IN	IN
33	ARINC 429 IN 1B	IN
34	ARINC 429 IN 3B	IN
35	ARINC 429 OUT 2A	OUT
36	SPARE GROUND	--
37	RS 232 IN 2	IN
38	RS 232 OUT 1	OUT
39	USB DATA LO	I/O
40	CONFIG MODULE DATA	I/O
41	AIRCRAFT GROUND	--

Table 6-1. J2751 Pin List

Pin	Pin Name	I/O
42	LIGHTING BUS LO	IN
43	DISCRETE OUT 2 LO	OUT
44	VOR/LOC COMPOSITE IN HI	IN
45	GLIDESLOPE DEVIATION +DN IN	IN
46	ETHERNET OUT 1A	OUT
47	ETHERNET OUT 1B	OUT
48	AUDIO OUT LO	OUT
49	RS 485 A	I/O
50	TO/FROM +FLAG IN	IN
51	SPARE GROUND	--
52	ARINC 429 IN 1A	IN
53	ARINC 429 IN 3A	IN
54	SPARE GROUND	--
55	ARINC 429 OUT 1B	OUT
56	SPARE GROUND	--
57	RS 232 IN 1	IN
58	USB DATA HI	I/O
59	USB GROUND	--
60	CONFIG MODULE CLOCK	OUT
61	AIRCRAFT GROUND	--
62	DISCRETE IN 2 LO	IN
63	DISCRETE IN 3 LO	IN
64	LATERAL DEVIATION +RIGHT IN	IN
65	ETHERNET IN 1A	IN
66	ETHERNET IN 1B	IN
67	OBS STATOR G	IN
68	OBS STATOR E	OUT
69	RS 485 B	I/O
70	SPARE GROUND	--
71	OBS ROTOR C	IN
72	ARINC 429 IN 2A	IN
73	ARINC 429 IN 4A	IN

Table 6-1. J2751 Pin List

Pin	Pin Name	I/O
74	ARINC 429 OUT 2B	OUT
75	SPARE GROUND	--
76	RS 232 GND 2	--
77	RS 232 GND 1	--
78	USB VBUS POWER	OUT

6.1.2 J2752

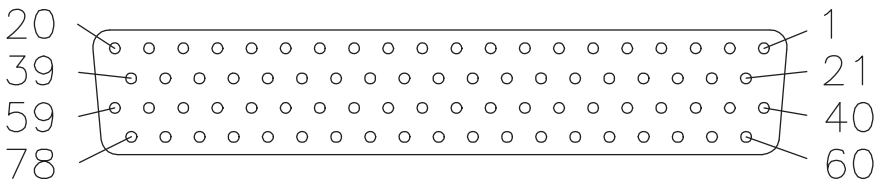


Figure 6-3 J2752 connector, viewed from back of unit

NOTE

Grey shading in tables indicates J2752 connector.

Table 6-2. J2752 Pin List, -10/-30 units only

Pin	Pin Name	I/O
1	DISCRETE OUT 7 LO	OUT
2	SPARE	--
3	N/C	--
4	DISCRETE IN 5 LO	IN
5	N/C	--
6	N/C	--
7	N/C	--
8	N/C	--
9	N/C	--
10	N/C	--
11	N/C	--
12	CAN LO	I/O
13	N/C	--
14	DISCRETE OUT 5 LO	OUT
15	N/C	--
16	N/C	--
17	DISCRETE OUT 9 LO	OUT
18	N/C	--
19	N/C	--
20	DISCRETE OUT 6 LO	OUT
21	OAT PROBE IN LO	IN
22	N/C	--

Table 6-2. J2752 Pin List, -10/-30 units only

Pin	Pin Name	I/O
23	N/C	--
24	N/C	--
25	N/C	--
26	N/C	--
27	N/C	--
28	SPARE GROUND	--
29	N/C	--
30	N/C	--
31	CAN HI	I/O
32	N/C	--
33	SPARE GROUND	--
34	N/C	--
35	N/C	--
36	RS 232 GND 3	--
37	N/C	--
38	N/C	--
39	N/C	--
40	DISCRETE OUT 8 LO	OUT
41	N/C	--
42	N/C	--
43	DISCRETE IN 6 LO	IN
44	N/C	--
45	N/C	--
46	N/C	--
47	N/C	--
48	N/C	--
49	N/C	--
50	N/C	--
51	CAN TERMINATION A	I/O
52	N/C	--
53	SPARE GROUND	--
54	N/C	--

Table 6-2. J2752 Pin List, -10/-30 units only

Pin	Pin Name	I/O
55	N/C	--
56	RS 232 IN 3	IN
57	SPARE GROUND	--
58	N/C	--
59	SPARE GROUND	--
60	OAT PROBE IN HI	IN
61	N/C	--
62	OAT PROBE POWER	OUT
63	N/C	--
64	N/C	--
65	N/C	--
66	N/C	--
67	SPARE GROUND	--
68	N/C	--
69	N/C	--
70	CAN TERMINATION B	I/O
71	N/C	--
72	DISCRETE OUT 4 LO	OUT
73	N/C	--
74	SPARE GROUND	--
75	RS 232 OUT 3	OUT
76	SPARE GROUND	--
77	N/C	--
78	N/C	--

Table 6-3. J2752 Pin List, -20/-40 units only

Pin	Pin Name	I/O
1	DISCRETE OUT 7 LO	OUT
2	SPARE	--
3	GYRO VALID COMMON	--
4	DISCRETE IN 5 LO	IN
5	VERTICAL -FLAG OUT	OUT
6	PITCH AC OUT HI	OUT
7	26 VAC REF LO	IN
8	HDG SYNCHRO X	OUT
9	VERTICAL +UP OUT	OUT
10	LATERAL +RIGHT OUT	OUT
11	RADAR ROLL HI	OUT
12	CAN LO	I/O
13	A/P HEADING ERROR HI	OUT
14	DISCRETE OUT 5 LO	OUT
15	YAW RATE HI	OUT
16	HDG SYNCHRO Y	OUT
17	DISCRETE OUT 9 LO	OUT
18	FD ENABLE HI	IN
19	FD PITCH UP	IN
20	DISCRETE OUT 6 LO	OUT
21	OAT PROBE IN LO	IN
22	AP INTERLOCK RELAY NC	--
23	GYRO VALID RELAY NO	OUT
24	VERTICAL +FLAG OUT	OUT
25	LATERAL SUPERFLAG OUT	OUT
26	ROLL AC OUT HI	OUT
27	10 VAC REF HI	IN
28	SPARE GROUND	--
29	TO/FROM +FLAG OUT	OUT
30	RADAR PITCH LO	--
31	CAN HI	I/O
32	A/P COURSE ERROR HI	OUT

Table 6-3. J2752 Pin List, -20/-40 units only

Pin	Pin Name	I/O
33	SPARE GROUND	--
34	ROLL DC OUT	OUT
35	BARO CORRECTION HI	OUT
36	RS 232 GND 3	--
37	DC REF IN	IN
38	FD ROLL RIGHT	IN
39	TIME MARK A	IN
40	DISCRETE OUT 8 LO	OUT
41	AP INTERLOCK RELAY COMMON	IN
42	GYRO VALID RELAY NC	OUT
43	DISCRETE IN 6 LO	IN
44	VERTICAL SUPERFLAG OUT	OUT
45	ROLL AC OUT LO	--
46	10 VAC REF LO	IN
47	HDG SYNCHRO Z	IN
48	LATERAL +LEFT OUT	OUT
49	TO/FROM -FLAG OUT	OUT
50	RADAR ROLL LO	--
51	CAN TERMINATION A	I/O
52	A/P HEADING ERROR LO	OUT
53	SPARE GROUND	--
54	BARO CORRRECTION LO	IN
55	PITCH DC OUT	OUT
56	RS 232 IN 3	IN
57	SPARE GROUND	--
58	FD PITCH DOWN	IN
59	SPARE GROUND	--
60	OAT PROBE IN HI	IN
61	AP INTERLOCK RELAY NO	OUT
62	OAT PROBE POWER	OUT
63	LATERAL +FLAG OUT	OUT
64	PITCH AC OUT LO	OUT

Table 6-3. J2752 Pin List, -20/-40 units only

Pin	Pin Name	I/O
65	26 VAC REF HI	IN
66	LATERAL -FLAG OUT	--
67	SPARE GROUND	--
68	VERTICAL +DN OUT	OUT
69	RADAR PITCH HI	OUT
70	CAN TERMINATION B	I/O
71	A/P COURSE ERROR LO	OUT
72	DISCRETE OUT 4 LO	OUT
73	YAW RATE LO	--
74	SPARE GROUND	--
75	RS 232 OUT 3	OUT
76	SPARE GROUND	--
77	FD ROLL LEFT	IN
78	TIME MARK B	IN

6.2 Optional Connectors

6.2.0.1 VFR GPS Connector

VFR GPS antenna - BNC connector

6.3 Functional Descriptions

6.3.1 Power Pin Functions

This section covers the power input pinout descriptions.

6.3.1.1 Aircraft Power

Pins 2 and 3 of J2751 are internally connected to form AIRCRAFT POWER 1.

Table 6-4. Aircraft Power

Pin Name	Connector	Pin	I/O
AIRCRAFT POWER 1	J2751	2	In
AIRCRAFT POWER 2	J2751	3	In
AIRCRAFT GROUND	J2751	41	--
AIRCRAFT GROUND	J2751	61	--

Table 6-5. External LRU Power

Pin Name	Connector	Pin	I/O
LRU POWER OUT	J2751	20	Out

Table 6-6 EIS Ground

Pin Name	Connector	Pin	I/O
LRU GROUND	J2751	19	--

6.3.2 Configuration Module

- Located in the P2 connector backshell
- Stores installation-specific configuration information
- Eliminates the need to reconfigure aircraft specific items when replacing a LRU
- Each GI 275 in a system must have a configuration module

Table 6-7 Configuration Module

Pin Name	Connector	Pin	I/O
CONFIG MODULE POWER	J2751	21	Out
CONFIG MODULE GROUND	J2751	1	--
CONFIG MODULE CLOCK	J2751	60	Out
CONFIG MODULE DATA	J2751	40	I/O

6.3.3 Discrete Inputs

Discrete input signals are configurable for active high or active low pins. Typically used pins are annotated for each signal.

- 6 active-Low inputs
- 1 active-High inputs

6.3.4 Active-Low Inputs

- Active (low) state: Input signal is < 1.9 VDC and/or resistance to ground < 375 ohm
- Inactive (open/high) state: Input signal is between 8.0 VDC and 36 VDC and/or resistance to ground > 100 kilohm

6.3.5 Active-High Inputs

- Active (high) state: Input signal is between 8 VDC and 36 VDC and/or resistance to ground > 100 kilohm
- Inactive (open/low) state: Input signal is < 1.9 VDC and/or the resistance to ground < 375 ohm

Table 6-8 Discrete Inputs

Pin Name	Connector	Pin	I/O
DISCRETE IN 1 LO	J2751	23	In
FD ENABLE HI*	J2752	18	In
DISCRETE IN 2 LO	J2751	62	In
DISCRETE IN 3 LO	J2751	63	In
DISCRETE IN 4 LO	J2751	12	In
DISCRETE IN 5 LO	J2752	4	In
DISCRETE IN 6 LO	J2752	43	In

*Pin info is for -20, -40 units only. -10, -30 unit pins are N/C

6.3.6 FD Enable In

Signal can be Active-Low or Active-High depending on external unit

- Enabled - Determines whether or not the FD bars display
- Active - Causes the FD bars to display based upon the flight director inputs
- Inactive - Causes the FD bars to be removed
- Disabled - This input is not used when the GDU determines whether or not the FD bars should display

6.3.7 ILS Energize

- Active - Indicates the NAV radio is tuned to the ILS frequency. The HSI will display LOC
- Inactive - The NAV radio is tuned to VOR

6.3.8 Discrete Outputs

Discrete output signals are configured as active high or active low pins.

- 9 active low discrete outputs
- Each is an open drain output and can sink up to 150 mA when active

Table 6-9 Discrete Outputs

Pin Name	Recommended Discrete Assignment	Connector	Pin	I/O
DISCRETE OUT 1 LO	----	J2751	4	Out
DISCRETE OUT 2 LO	----	J2751	43	Out
DISCRETE OUT 3 LO	----	J2751	24	Out
DISCRETE OUT 4 LO	----	J2752	72	Out
DISCRETE OUT 5 LO	----	J2752	14	Out
DISCRETE OUT 6 LO	ATTITUDE VALID	J2752	20	Out
DISCRETE OUT 7 LO	HDG CRS VALID	J2752	1	Out
DISCRETE OUT 8 LO	AP BACKCOURSE	J2752	40	Out
DISCRETE OUT 9 LO	GPS ANNUNCIATE	J2752	17	Out

6.3.9 Autopilot Backcourse*

Provided for the autopilot to indicate when a backcourse is active

Configured as Active-Low - driven low when a localizer is selected as the navigation source for the CDI, and the course pointer is more than 90° from the current aircraft heading - otherwise, it is open.

6.3.10 GPS Annunciate*

Configured as Active-Low - driven low whenever GPS data is selected for display on the HSI, otherwise, it is open.

6.3.11 HDG/CRS Datum Valid

Configured as Active-Low - Driven low whenever heading or GPS track (from any available GPS) is valid, otherwise, it is open.

6.3.12 Attitude Valid

The attitude valid relay provides a validity signal of the internal AHRS data of the GI 275. When the AHRS data passes internal verification, the relay switches valid and will provide the input voltage through the relay to the autopilot.

6.3.13 RS-232

- All RS-232 serial ports are configurable with suggested functions listed in the table
- The RS-232 outputs are compatible with EIA Standard RS-232C, with an output voltage swing of at least +5 V when driving a standard RS-232 load

Table 6-10 RS-232

Pin Name	Connector	Pin	I/O
RS 232 OUT 1	J2751	38	Out
RS 232 IN 1	J2751	57	In
RS 232 GND 1	J2751	77	--
RS 232 OUT 2	J2751	18	In
RS 232 IN 2	J2751	37	Out
RS 232 GND 2	J2751	76	--
RS 232 OUT 3	J2752	75	In
RS 232 IN 3	J2752	56	Out
RS 232 GND 3	J2752	36	--

6.3.14 Shadin Altitude Sentence

The GI 275 can send the following 17-byte message in the Shadin Altitude format over RS-232 at 9600 baud.

- RMS<sp><+/->12345T<+/->12ul<CR>

Table 6-11 Shadin Altitude Sentence

String	Meaning
RMS	ASCII characters
<sp>	Space (20 hex)
<+/->	Sign indicator (2B [“+”] or 2D [“-”])
12345	Altitude in feet
T	ASCII Character
<+/->	Sign indicator
12	Sensor temperature
ul	Checksum of bytes 1 through 14 in hex ASCII (i.e., “FA”)
<CR>	Carriage return (OD hex)

6.3.15 RS-485

- RS-485 serial ports is configurable (unless otherwise specified) with suggested or required functions listed in the table
- Serial ports receive/transmit data from/to various sources
- The RS-485 port is compatible with EIA standards, with a differential output voltage swing of at least +7.5 V when driving a standard RS-485 load

Table 6-12 RS-485

Pin Name	Connector	Pin	I/O
RS 485 A	J2751	49	I/O
RS 485 B	J2751	69	I/O

6.3.16 ARINC 429

Outputs are compatible with the latest ARINC 429 electrical specifications. All ARINC 429 communication label sets can be output on any available port.

Table 6-13 ARINC 429 In

Pin Name	Connector	Pin	I/O
ARINC 429 IN 1A	J2751	52	In
ARINC 429 IN 1B	J2751	33	In
ARINC 429 IN 2A	J2751	72	In
ARINC 429 IN 2B	J2751	14	In
ARINC 429 IN 3A	J2751	53	In
ARINC 429 IN 3B	J2751	34	In
ARINC 429 IN 4A	J2751	73	In
ARINC 429 IN 4B	J2751	15	In

Table 6-14 ARINC 429 Out

Pin Name	Connector	Pin	I/O
ARINC 429 OUT 1A	J2751	16	Out
ARINC 429 OUT 1B	J2751	55	Out
ARINC 429 OUT 2A	J2751	35	Out
ARINC 429 OUT 2B	J2751	74	Out

Table 6-15 GPS Navigator Labels

Label #	Data
100 [1]	Selected Course
203	Pressure Altitude
204	Baro Corrected Altitude
206	Indicated Airspeed
210	True Airspeed
211	Total Air Temp
212	Vertical Speed
213	Outside Air Temp
314	True Heading
320	Magnetic Heading

[1]This label uses proprietary implementation and should not be used to provide selected course to external systems.

Table 6-16 General Purpose 1 Output Labels

Label #	Data
100P [1]	Selected Course
203	Pressure Altitude
204	Baro Corrected Altitude
206	Indicated Airspeed
210	True Airspeed
211	Total Air Temperature
212	Vertical Speed
213	Outside Air Temperature
234	Baro Correction (millibars)
235	Baro Correction (inches of mercury)
312 [1]	Ground Speed
313 [1]	Track Angle (True)
314	True Heading
320	Magnetic Heading
371G [2]	GA Equipment ID
377 [3]	Equipment IN

[1]Labels received from the currently selected navigator will be forwarded. If GPS is not selected on the CDI, labels from the GPS corresponding to the currently selected side (1 or 2) will be forwarded.
[2] This label contains a Binary company ID code of 24 (Garmin) and an equipment hex ID of 25 (EFIS).
[3] This label contains an equipment hex ID of 025 (EFIS).

Table 6-17 General Purpose 2 Output Labels

Label #	Data
100	Selected Course
102	Selected Altitude
164	Radio Height
203	Pressure Altitude
204	Baro Corrected Altitude
205	Mach Number
206	Indicated Airspeed
210	True Airspeed
211	Total Air Temperature
212	Vertical Speed
213	Outside Air Temperature
234	Baro Correction (millibars)
235	Baro Correction (inches of mercury)
314	True Heading
320	Magnetic Heading
324 [1]	Pitch Angle
325 [1]	Roll Angle
371G [2]	GA Equipment ID
377 [3]	Equipment IN

[1] Not transmitted at low-speed on General Purpose 2 Output.
[2] This label contains a binary company ID code of 24 (Garmin) and an equipment hex ID of 25 (EFIS).
[3] This label contains an equipment hex ID of 025 (EFIS).

6.3.17 Ethernet

- Ethernet based HSDB meets the hardware aspects of IEEE standard 802.3 for 10 base T and 100 BASE-TX Ethernet communications
- Ethernet connections auto configure - when an HSDB LRU is selected, no additional configuration is required

Table 6-18 Ethernet

Pin Name	Connector	Pin	I/O
ETHERNET OUT 1A	J2751	46	Out
ETHERNET OUT 1B	J2751	47	Out
ETHERNET IN 1A	J2751	65	In
ETHERNET IN 1B	J2751	66	In
ETHERNET OUT 2A	J2751	8	Out
ETHERNET OUT 2B	J2751	9	Out
ETHERNET IN 2A	J2751	27	In
ETHERNET IN 2B	J2751	28	In

6.3.18 Lighting

- Display configured to track 28 VDC, 14 VDC, 5 VDC, or 5 VAC lighting buses
- Display automatically adjusts for ambient lighting conditions
- Photocell is on the front of the unit

Table 6-19 Lighting

Pin Name	Connector	Pin	I/O
LIGHTING BUS HI	J2751	22	In
LIGHTING BUS LO	J2751	42	In

6.3.19 USB

Table 6-20 USB

Pin Name	Connector	Pin	I/O
USB GROUND	J2751	59	--
USB DATA LO	J2751	39	I/O
USB DATA HI	J2751	58	I/O
USB VBUS POWER	J2751	78	I/O

6.3.20 CAN Bus

Table 6-21 CAN Bus

Pin Name	Connector	Pin	I/O
CAN LO	J2752	12	I/O
CAN HI	J2752	31	I/O
CAN TERMINATION A	J2752	51	I/O
CAN TERMINATION B	J2752	70	I/O

6.3.21 OAT (Outside Air Temperature) Probe

The OAT probe connections are used to power and interface with a GTP 59. Temperature input is used for Outside Air Temperature (OAT) computations. The temperature input is a three-wire temperature probe interface. OAT Power Out and OAT High are connected internally at the OAT probe. A GTP 59 or other supported temperature probe is required for the GI 275 installation. The GTP 59 is a Resistance Temperature Device (RTD).

Table 6-22 OAT Probe

Pin Name	Connector	Pin	I/O
OAT PROBE IN LO	J2752	21	In
OAT PROBE IN HI	J2752	60	In
OAT PROBE POWER	J2752	62	Out

6.3.22 Time Mark Input

- One differential time mark input
- Complies with Attachment 8 of ARINC 743A
- Accurately determines the time of GPS messages sent to the AHRS

Table 6-23 Time Mark Input

Pin Name	Connector	Pin	I/O
TIME MARK A*	J2752	39	In
TIME MARK B*	J2752	78	In

*Pin info is for -20, -40 units only. -10, -30 unit pins are N/C

6.3.23 Message Audio Output

- One 500 ohm audio output that connects to unswitched audio panel inputs provides audible messages to the pilot
- TAWS is enabled - audible alerts include the altitude alerter chimes and internal SVT-Terrain/ TAWS aurals
- Provides non-TAWS aural messages

Table 6-24 Audio Outputs

Pin Name	Connector	Pin	I/O
ALERT AUDIO OUT LO	J2751	48	Out
ALERT AUDIO OUT HI	J2751	30	Out

6.4 Interface Communication

This section provides a summarized listing of communication labels, formats, and data the GI 275 can use to communicate with LRUs. All ARINC 429 communication label sets can be output on any available port.

6.4.1 Integrated ADC

The integrated ADC portion of the ADAHRS is low-speed only.

Table 6-25 Integrated ADC ARINC 429

Label #	Data
162	Density Altitude
203	Pressure Altitude
205	Mach Number
206	Indicated (Computed) Airspeed
210	True Airspeed (Binary)
211	Total Air Temperature (Binary)
212	Vertical Speed
213	Static Air Temperature (Binary)
215	Differential Pressure
217	Static Pressure
230	True Airspeed (BCD)
231	Total Air Temperature (BCD)
233	Static Air Temperature (BCD)
270	Discrete Word #1
271	Discrete Word #2
350	Maintenance Discrete Word
371	GA Equipment ID
377	Equipment ID

6.4.2 Integrated AHRS

The integrated AHRS portion of the ADAHRS is high-speed only.

Table 6-26 Integrated AHRS ARINC 429

Label #	Data
014	Magnetic Heading (BCD)
147	Magnetic Variation
270	Discrete Word #1
271	Discrete Word #2
272	Discrete Word #3
320	Magnetic Heading (Binary)
324	Pitch Angle
325	Roll Angle
326	Body Pitch Rate
327	Body Roll Rate
330	Body Yaw Rate
331	X Acceleration (Body Longitudinal Acceleration)
332	Y Acceleration (Body Lateral Acceleration)
333	Z Acceleration (Body Normal Acceleration)
336	Attitude Pitch Rate
337	Attitude Roll Rate
340	Attitude Yaw Rate
350	Maintenance Discrete Word
364	Vertical Acceleration
365	Inertial Vertical Speed
371	GA Equipment ID
375	Along Heading Acceleration
376	Cross Heading Acceleration
377	Equipment ID

6.4.3 Integrated ADAHRS

The integrated ADAHRS is high-speed only.

Table 6-27 Integrated ADAHRS ARINC 429

Label	Data
014	Magnetic Heading (BCD)
147	Magnetic Variation
162	Density Altitude
203	Pressure Altitude
205	Mach Number
206	Indicated Airspeed
210	True Airspeed (Binary)
211	Total Air Temperature (Binary)
212	Vertical Speed
213	Static Air Temperature (Binary)
215	Differential Pressure
217	Static Pressure
230	True Airspeed (BCD)
231	Total Air Temperature (BCD)
233	Static Air Temperature (BCD)
270	Discrete Word #1
271	Discrete Word #2
272	Discrete Word #3
320	Magnetic Heading (Binary)
324	Pitch Angle
325	Roll Angle
326	Body Pitch Rate
327	Body Roll Rate
330	Body Yaw Rate
331	X Acceleration (Body Longitudinal Acceleration)
332	Y Acceleration (Body Lateral Acceleration)
333	Z Acceleration (Body Normal Acceleration)
336	Attitude Pitch Rate
337	Attitude Roll Rate
340	Attitude Heading Rate

Table 6-27 Integrated ADAHRS ARINC 429

Label	Data
350	Maintenance Discrete Word
364	Vertical Acceleration
365	Inertial Vertical Speed
371	GA Equipment ID
375	Along Heading Acceleration
376	Cross Heading Acceleration
377	Equipment ID

6.4.4 Autopilot Interfaces

- The GI 275 interfaces to numerous autopilots
- AC or DC heading and course datum outputs are provided depending on the HSI heading bug and course pointer setting
- An input for AC reference voltage is provided for autopilots using AC datums

Table 6-28 Autopilot Heading and Course I/O

Pin Name	Connector	Pin	I/O
A/P COURSE ERROR LO*	J2752	71	--
A/P COURSE ERROR HI*	J2752	32	Out
A/P HEADING ERROR LO*	J2752	52	Out
A/P HEADING ERROR HI*	J2752	13	Out
26 VAC REF LO*	J2752	7	In
26 VAC REF HI*	J2752	65	In
10 VAC REF HI*	J2752	27	In
10 VAC REF LO*	J2752	46	In

*Pin info is for -20, -40 units only. -10, -30 unit pins are N/C

Table 6-29 Autopilot ARINC 429 Labels

Label #	Data
100	Selected Course
101G	Selected Heading
116G [1]	Cross Track Distance
117G [1]	Vertical Deviation
121 [2]	Horizontal Command
312 [1]	Ground Speed
314	True Heading
320	Magnetic Heading
326G [1]	Lateral Scale Factor
327G [1]	Vertical Scale Factor

[1]Labels received from the currently selected navigator will be forwarded. If GPS is not selected on the CDI, labels from the GPS corresponding to the currently selected side (1 or 2) will be forwarded.
[2]Label received from the currently selected navigator will be forwarded. If GPS is not selected on the CDI, label will be set to invalid.

Table 6-30 DFCS 1 ARINC 429 Labels

Label #	Data
100	Selected Course
101G	Selected Heading
121 [1]	Horizontal Command
203	Pressure Altitude
204	Baro Corrected Altitude
206	IAS
210	TAS
211	Total Air Temp
212	Vertical Speed
213	Static Air Temp
312 [2]	Ground Speed
313 [2]	Track Angle (True)
314	True Heading
320	Magnetic Heading
324	Pitch Angle
325	Roll Angle
326	Body Pitch Rate
327	Body Roll Rate
330	Body Yaw Rate
333	Body Normal Acceleration
371G [3]	GA Equipment ID
377 [4]	Equipment ID

[1]Label received from the currently selected navigator will be forwarded. If GPS is not selected on the CDI, label will be set to invalid.
[2]Labels received from the currently selected navigator will be forwarded. If GPS is not selected on the CDI, labels from the GPS corresponding to the currently selected side (1 or 2) will be forwarded.
[3]This label contains a binary company ID code of 24 (Garmin) and an equipment hex ID of 25 (EFIS).
[4]This label contains an equipment hex ID of 025 (EFIS).

Table 6-31 DFCS 2 ARINC 429 Labels

Label #	Data
100	Selected Course
101G	Selected Heading
114 [1]	Desired Track (True)
116G [1]	Cross Track Distance
117G [1]	Vertical Deviation
121 [2]	Horizontal Command
173 [3]	Localizer Deviation
174 [3]	Glideslope Deviation
203	Pressure Altitude
206	IAS
222 [3]	VOR Omnibearing
251	Distance to Go
312 [1]	Ground Speed
313	Track Angle (true)
326G [1]	Lateral Scale Factor
327G [1]	Vertical Scale Factor

[1]Labels received from the currently selected navigator will be forwarded unchanged.
[2]Label received from the currently selected navigator will be forwarded. If GPS is not selected on the CDI, label will be set to invalid.
[3]Labels received from the currently selected navigator will be forwarded unchanged. If the navigator receiver is an SL 30 (i.e., RS-232), the appropriate data from the selected navigation receiver will be reformatted into the appropriate ARINC 429 label format.

Table 6-32 DFCS 4 ARINC 429 Labels (available with STEC 1500/2100 enabled)

Label #	Data
100	Selected Course
101G	Selected Heading
121 [1]	Horizontal Command
203	Pressure Altitude
204	Baro Corrected Altitude
206	IAS
210	TAS
211	Total Air Temp
212	Vertical Speed
213	Static Air Temp
312 [2]	Ground Speed
313 [2]	Track Angle (true)
314	True Heading
320	Magnetic Heading
324	Pitch Angle
325	Roll Angle
326	Body Pitch Rate
327	Body Roll Rate
330	Body Yaw Rate
332	Body Lateral Acceleration
333	Body Normal Acceleration
371G [3]	GA Equipment ID
377 [4]	Equipment ID

[1]Labels received from the currently selected navigator will be forwarded. If GPS is not selected on the CDI, label will be set to invalid.
[2]This label contains a binary company ID code of 24 (Garmin) and an equipment hex ID of 25 (EFIS).
[3]This label contains an equipment hex ID of 025 (EFIS).
[4]Labels received from the currently selected navigator will be forwarded. If GPS is not selected on the CDI, labels from the GPS corresponding to the currently selected side (1 or 2), will be forwarded.

Table 6-33 DFCS 5 ARINC 429 Labels

Label #	Data
100	Selected Course
101G	Selected Heading
116G	Cross Track Distance
117G	Vertical Deviation
121 [1]	Horizontal Command
164	Radio Height
173	Localizer Deviation
174	Glideslope Deviation
202	DME Distance
300	Selected Sensor
301	EFIS Mode Status
320	Magnetic Heading
326G	Lateral Scale Factor
327G	Vertical Scale Factor
377 [2]	Equipment ID

[1]Labels received from the currently selected navigator will be forwarded. If GPS is not selected on the CDI, label will be set to invalid.
[2]This label contains an equipment hex ID of 025 (EFIS).

Table 6-34 DFCS 6 ARINC 429 Labels

Label #	Data
100	Selected Course
101G	Selected Heading
102	Selected Altitude
103	Selected Airspeed
104	Selected Vertical Speed
114	Desired Track (True)
116G [1]	Cross Track Distance
117G [1]	Vertical Deviation
121 [1] [3]	Horizontal Command
147	Magnetic Variation
173 [2]	Localizer Deviation
174 [2]	Glideslope Deviation
203	Pressure Altitude
204	Baro Corrected Altitude
206	IAS
222 [2]	VOR Omnibearing
251	Distance to Go
270 [4]	HeliSAS Discretes
312 [1]	Ground Speed
313 [5]	Track Angle (true)
326G [1]	Course Deviation Scale
327G [1]	Vertical Deviation Scale

[1]Labels received from the currently selected navigator are forwarded. If GPS is not selected on the CDI, label is set to invalid.
[2]Labels received from the currently selected navigator are forwarded unchanged. If the navigation receiver is an SL30 (i.e., RS-232), the data is reformatted into ARINC 429.
[3]If GPS is not selected on the CDI, label is set to invalid.
[4]Bit 28 is 1 if Approach is selected, Bit 27 is 1 if GPS is selected. All other bits are not used.
[5]MapMX (RS-232) data from the currently selected navigator is reformatted to ARINC 429 and forwarded.

6.4.5 Deviation Outputs

- Each deviation output provides ±300 mV full scale
- Drives up to a 1 kilohm load

Table 6-35 Deviation Outputs

Pin Name	Connector	Pin	I/O
LATERAL +LEFT OUT*	J2752	48	Out
LATERAL +RIGHT OUT*	J2752	10	Out
VERTICAL +UP OUT*	J2752	9	Out
VERTICAL +DN OUT*	J2752	68	Out

*Pin info is for -20, -40 units only. -10, -30 unit pins are N/C

6.4.6 Deviation Inputs

- Input Impedance: 1Kohm +/-1%
- Deflection Sensitivity 150mV full scale deflection

Table 6-36 Deviation Inputs

Pin Name	Connector	Pin	I/O
LATERAL DEVIATION +RIGHT IN	J2751	64	In
LATERAL DEVIATION +LEFT IN	J2751	25	In
GLIDESLOPE DEVIATION +DN IN	J2751	45	In
GLIDESLOPE DEVIATION +UP IN	J2751	6	In

6.4.7 NAV Composite Inputs

Table 6-37 NAV Composite Inputs

Pin Name	Connector	Pin	I/O
VOR/LOC COMPOSITE IN LO	J2751	5	In
VOR/LOC COMPOSITE IN HI	J2751	44	In

6.4.8 Flag Inputs

The following specifications apply to the Lateral and Glideslope inputs:

- Input Impedance: 1Kohm +/-1%
- Valid sensitivity: 260 +/- 10% flag fully concealed

The following specifications apply to the To/From inputs:

- Input Impedence: 200 ohms +/-1%
- Sensitivity: +/- 40mV flag fully in view

Table 6-38 Flag Inputs

Pin Name	Connector	Pin	I/O
LATERAL -FLAG IN	J2751	7	In
LATERAL +FLAG IN	J2751	26	In
TO/FROM -FLAG IN	J2751	32	In
TO/FROM +FLAG IN	J2751	50	In
GLIDESLOPE -FLAG IN	J2751	31	In
GLIDESLOPE +FLAG IN	J2751	11	In

6.4.9 Flag Outputs

- When valid information is present, each low-level flag output provides 300mV
- Drives up to a 1 kilohm load

Table 6-39 Flag Outputs

Pin Name	Connector	Pin	I/O
LATERAL +FLAG OUT*	J2752	63	Out
LATERAL -FLAG OUT*	J2752	66	--
TO/FROM +FLAG OUT*	J2752	29	Out
TO/FROM -FLAG OUT*	J2752	49	Out
VERTICAL +FLAG OUT*	J2752	24	Out
VERTICAL -FLAG OUT*	J2752	5	Out

*Pin info is for -20, -40 units only. -10, -30 unit pins are N/C

6.4.10 Superflag Outputs

- Each Superflag output provides (Vin - 2.5V) volts relative to ground when valid information is present and where Vin represents the aircraft power supplied to the GI 275
- Supplies up to 250 mA

Table 6-40 Superflag Outputs

Pin Name	Connector	Pin	I/O
VERTICAL SUPERFLAG OUT*	J2752	44	Out
LATERAL SUPERFLAG OUT*	J2752	25	Out

*Pin info is for -20, -40 units only. -10, -30 unit pins are N/C

6.4.11 Flight Director Interface

- Determines whether or not the FD bars display when configured for an external flight director
- Flight director pitch and roll analog inputs allow an external source (typically autopilot) to control the display of the flight director bars
- Validity of the Flight Director input is indicated by an active-high or active-low discrete, or a pitch threshold, depending on configuration

Table 6-41 Flight Director Inputs

Pin Name	Connector	Pin	I/O
FD ROLL LEFT*	J2752	77	In
FD ROLL RIGHT*	J2752	38	In
FD PITCH DOWN*	J2752	58	In
FD PITCH UP*	J2752	19	In

*Pin info is for -20, -40 units only. -10, -30 unit pins are N/C

6.4.12 Gyro Emulation Interfaces

The GI 275 is capable of emulating the standard attitude gyro interfaces that follow:

Collins 332D-11T
Century 52 C77-4 (Triden)
Century 52 C77-4(41)
Century 52 D67/M
Century 52 D77-3
Century 52 D77-4
Century 52 D167/M
Century 52 D188
Century 52 D266
Century 52 D267/M (Triden)
Century 2000
Cessna/ARC G519
King KI 256
King KVG 350
Sperry VG-14A

6.4.13 Analog Pitch/Roll Outputs

The GI 275 provides AC pitch and roll outputs intended for emulating gyros such as the King KI-256 and the Cessna/ARC G519. An input for 10 VAC reference voltage is also provided.

The GI 275 provides DC pitch and roll outputs intended or emulating gyros such as those used in Century autopilots. DC pitch and roll outputs are referenced to DC reference input (pin 37).

The GI 275 provides isolated synchro pitch and roll outputs. When the GI 275 is configured to emulate a remote-mount ARINC 407 gyro (such as the King KVG-350, Collins 332D-11, or the Sperry VG-14A), the isolated synchro outputs are active. An input for 26 VAC reference voltage is also provided.

Refer to Section 4.3 for configuration information.

Table 6-42 Analog Pitch/Roll Outputs

Pin Name	Connector	Pin	I/O
PITCH AC OUT HI*	J2752	6	Out
ROLL AC OUT HI*	J2752	26	Out
PITCH DC OUT*	J2752	55	Out
ROLL DC OUT*	J2752	34	Out
PITCH AC OUT LO*	J2752	64	Out
ROLL AC OUT LO*	J2752	45	Out
10 VAC REF LO*	J2752	46	In
10 VAC REF HI*	J2752	27	In
DC REF IN*	J2752	37	In
26 VAC REF HI*	J2752	65	In
26 VAC REF LO*	J2752	7	In

*Pin info is for -20, -40 units only. -10, -30 unit pins are N/C

6.4.14 HDG Synchro (ARINC 407) Outputs

The GI 275 provides synchro heading outputs. An input for 26 VAC reference voltage is also provided. Refer to the autopilot configurations.

Table 6-43 Synchro (ARINC 407) Outputs

Pin Name	Connector	Pin	I/O
HDG SYNCHRO X*	J2752	8	Out
HDG SYNCHRO Y*	J2752	16	Out
26 VAC REF HI*	J2752	65	In
26 VAC REF LO*	J2752	7	In

*Pin info is for -20, -40 units only. -10, -30 unit pins are N/C

6.4.15 Weather Radar (Stabilization) Outputs

The GI 275 provides weather radar pitch and roll stabilization outputs. When the GI 275 is configured to emulate a remote-mount ARINC 407 gyro (such as the King KVG-350, Collins 332D-11, or the Sperry VG-14A), the weather radar pitch and roll stabilization outputs are active. An input for 26 VAC reference voltage is also provided. The weather radar (stabilization) outputs are capable of driving a 10 kilohm load.

Table 6-44 Weather Radar (Stabilization) Outputs

Pin Name	Connector	Pin	I/O
RADAR PITCH HI*	J2752	69	Out
RADAR ROLL HI*	J2752	11	Out
RADAR PITCH LO*	J2752	30	--
RADAR ROLL LO*	J2752	50	--
26 VAC REF HI*	J2752	65	In
26 VAC REF LO*	J2752	7	In

*Pin info is for -20, -40 units only. -10, -30 unit pins are N/C

6.4.16 Yaw Rate Outputs

The GI 275 provides one analog yaw rate output with configurable values of 100, 200, 333, and 666 mVDC/deg/sec. The output saturates at +4 VDC; polarity is positive voltage for clockwise yaw as viewed from above the aircraft. A configuration of “None” implies that these output pins will be used for barometric corrections as described in the following section.

Refer to Section 4.3.2 for configuration information.

Table 6-45 Yaw Output

Pin Name	Connector	Pin	I/O
YAW RATE HI*	J2752	15	Out
YAW RATE LO*	J2752	73	--

*Pin info is for -20, -40 units only. -10, -30 unit pins are N/C

6.4.17 Baro Correction Outputs

The GI 275 provides one analog barometric output for emulation of the King KEA-130 altimeter barometric pickoff. The output varies from 0 to 5 VDC based on the barometric setting displayed on the GI 275. This interface is intended to be used in installations with the King KFC-225 autopilot. In order for the barometric correction outputs to be active, this output must not be configured to output yaw rate information.

Refer to the autopilot configuration information.

Table 6-46 Baro-Correction Outputs

Pin Name	Connector	Pin	I/O
BARO CORRECTION HI*	J2752	35	Out
BARO CORRECTION LO*	J2752	54	--

*Pin info is for -20, -40 units only. -10, -30 unit pins are N/C

6.4.18 Relays

The GI 275 provides two relays that switch based on the validity of the attitude information provided by the GRS 77. The normally-open (NO) contact on each relay is electrically connected to the common (COMM) contact when the attitude solution is valid. The normally-closed (NC) contact on each relay is electrically connected to the common (COMM) contact when the attitude solution is invalid.

Table 6-47 Relays

Pin Name	Connector	Pin	I/O
GYRO VALID RELAY NO*	J2752	23	Out
GYRO VALID RELAY NC*	J2752	42	Out
GYRO VALID COMMON*	J2752	3	In
AUTOPILOT INTERLOCK RELAY NO*	J2752	61	Out
AUTOPILOT INTERLOCK RELAY NC*	J2752	22	Out
AUTOPILOT INTERLOCK RELAY COMMON*	J2752	41	In

*Pin info is for -20, -40 units only. -10, -30 unit pins are N/C

6.4.19 OBS EZ Zero: 0 degrees

Table 6-48 OBS

Pin Name	Connector	Pin	I/O
OBS STATOR F	J2751	10	Out
OBS ROTOR H	J2751	13	In
OBS STATOR D	J2751	29	Out
OBS STATOR G	J2751	67	In
OBS STATOR E	J2751	68	In
OBS ROTOR C	J2751	71	In

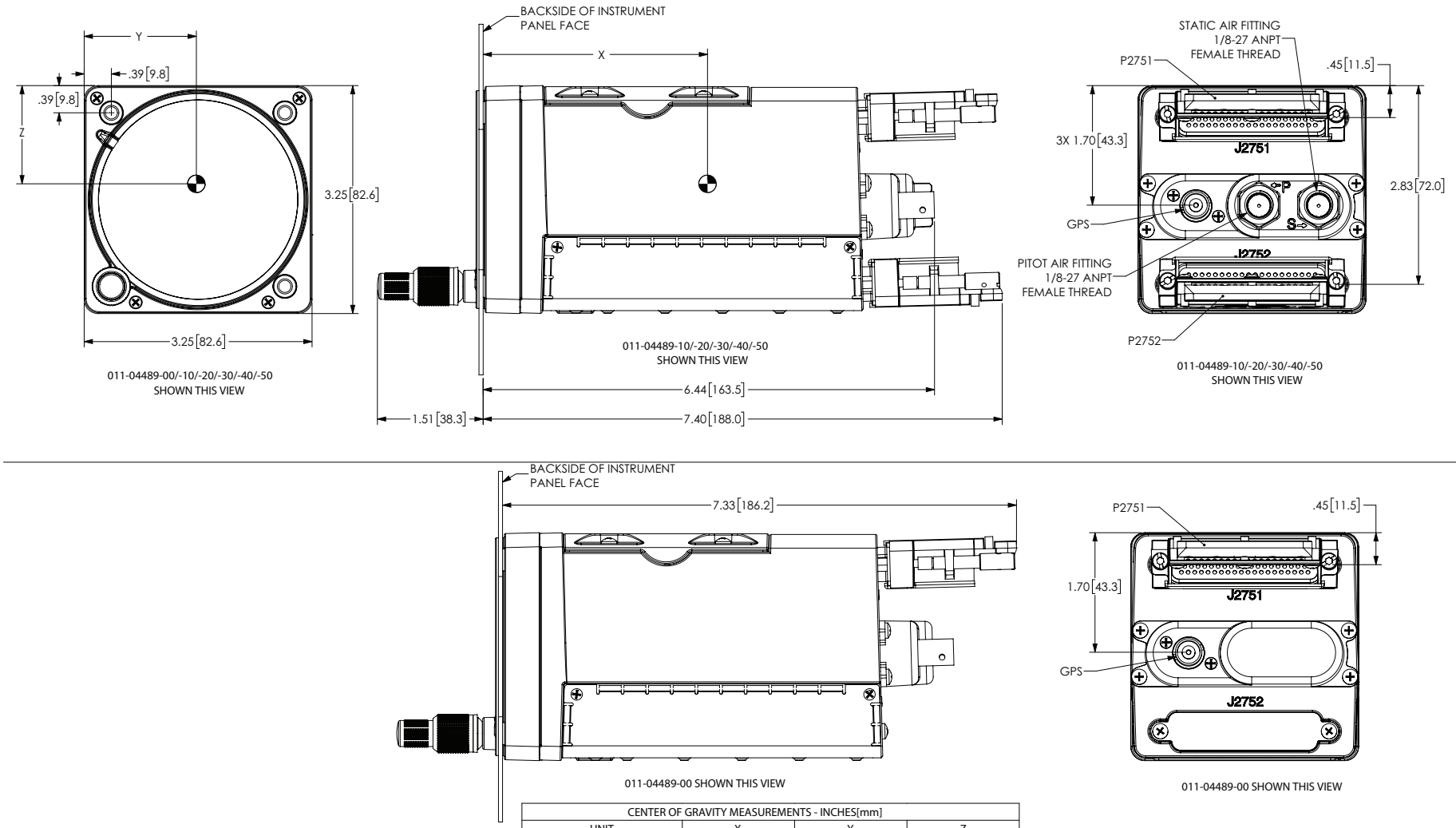
6.5 GTP 59 Connections

- The GTP 59 is connected directly to the GI 275 or GSU/GDC unit using a three-conductor shielded cable
- The GTP 59 provides temperature information to the GI 275 or GSU/GDC

Table 6-49 GTP 59 Wires

Conductor Color	Name	I/O
White	Probe Power Lead	In
Blue	Resistive Element Hi	Out
Orange	Resistive Element Lo	Out

APPENDIX A OUTLINE AND INSTALLATION DRAWINGS



CENTER OF GRAVITY MEASUREMENTS - INCHES[mm]			
UNIT	X	Y	Z
011-04489-00	3.0 [76]	1.6 [41]	1.3 [33]
011-04489-00*	2.9 [74]	1.6 [41]	1.2 [30]
011-04489-10*	3.2 [81]	1.6 [41]	1.4 [36]
011-04489-20*	3.2 [81]	1.6 [41]	1.4 [36]
011-04489-30*	3.2 [81]	1.6 [41]	1.4 [36]
011-04488-40*	3.2 [81]	1.6 [41]	1.4 [36]
011-04489-50	3.3 [84]	1.6 [41]	1.5 [38]
011-04489-50*	3.2 [81]	1.6 [41]	1.4 [36]

*MEASUREMENT INCLUDES BATTERY

NOTES:
1. DIMENSIONS: INCHES[mm]. METRIC VALUES ARE FOR REFERENCE ONLY.
2. DIMENSIONS ARE NOMINAL AND TOLERANCES ARE NOT IMPLIED UNLESS SPECIFICALLY STATED.

Figure A-1 GI 275 Outline Drawing

APPENDIX A OUTLINE AND INSTALLATION DRAWINGS

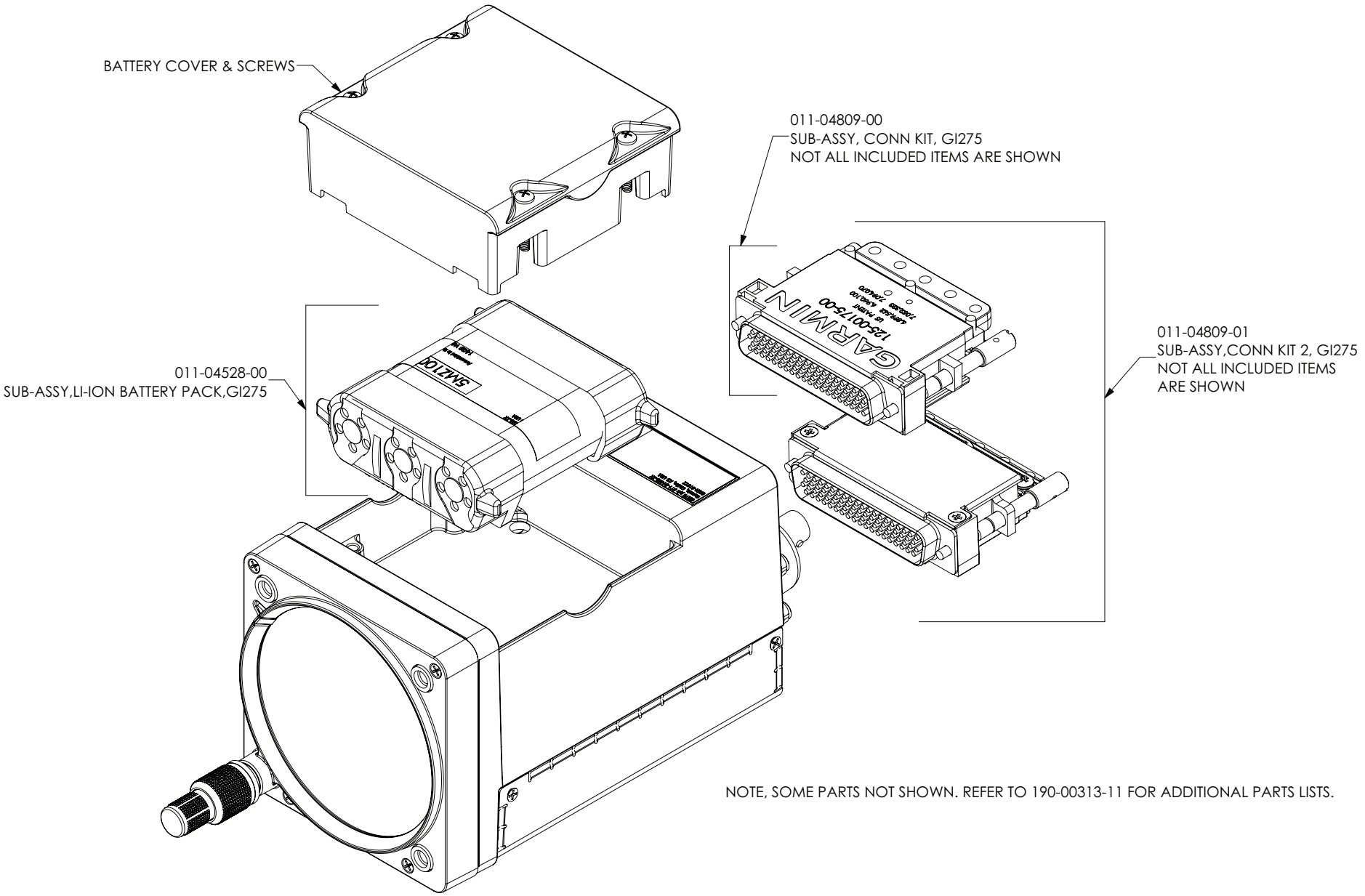


Figure A-2 GI 275 Assembly Drawing

APPENDIX A OUTLINE AND INSTALLATION DRAWINGS

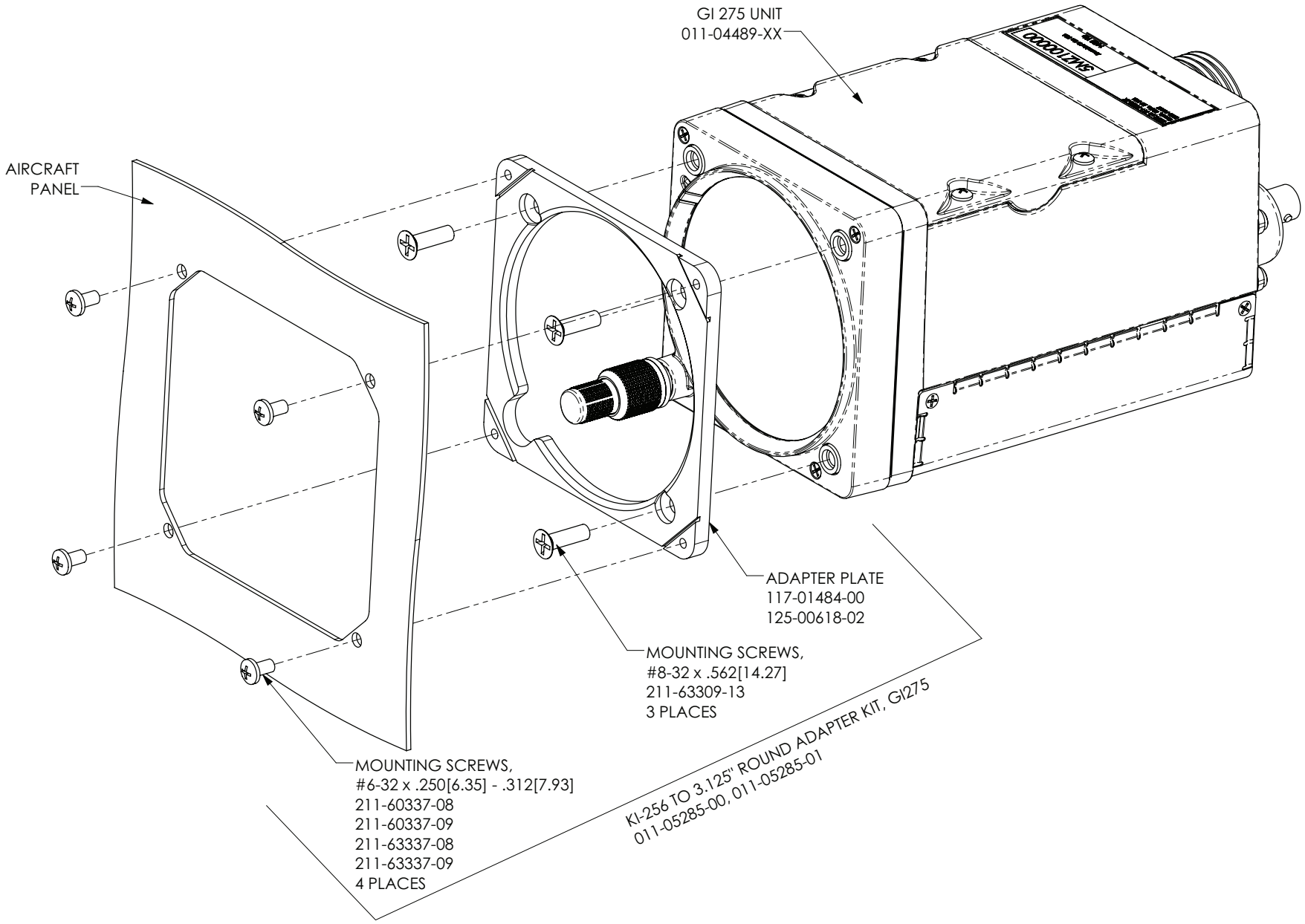


Figure A-3 Adapter Plate Assembly Drawing

APPENDIX A OUTLINE AND INSTALLATION DRAWINGS

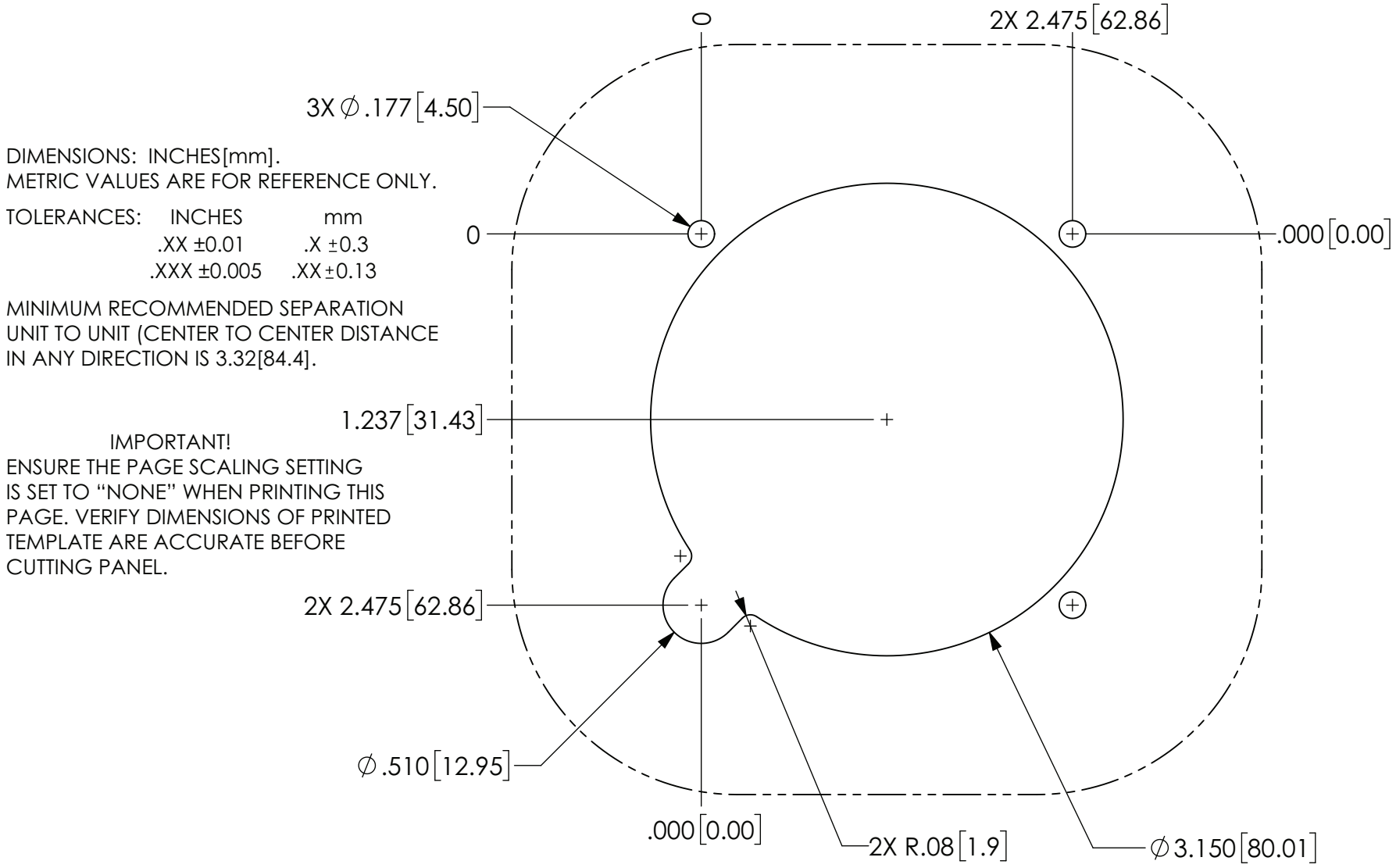


Figure A-4 GI 275 Panel Cutout Drawing

APPENDIX A OUTLINE AND INSTALLATION DRAWINGS

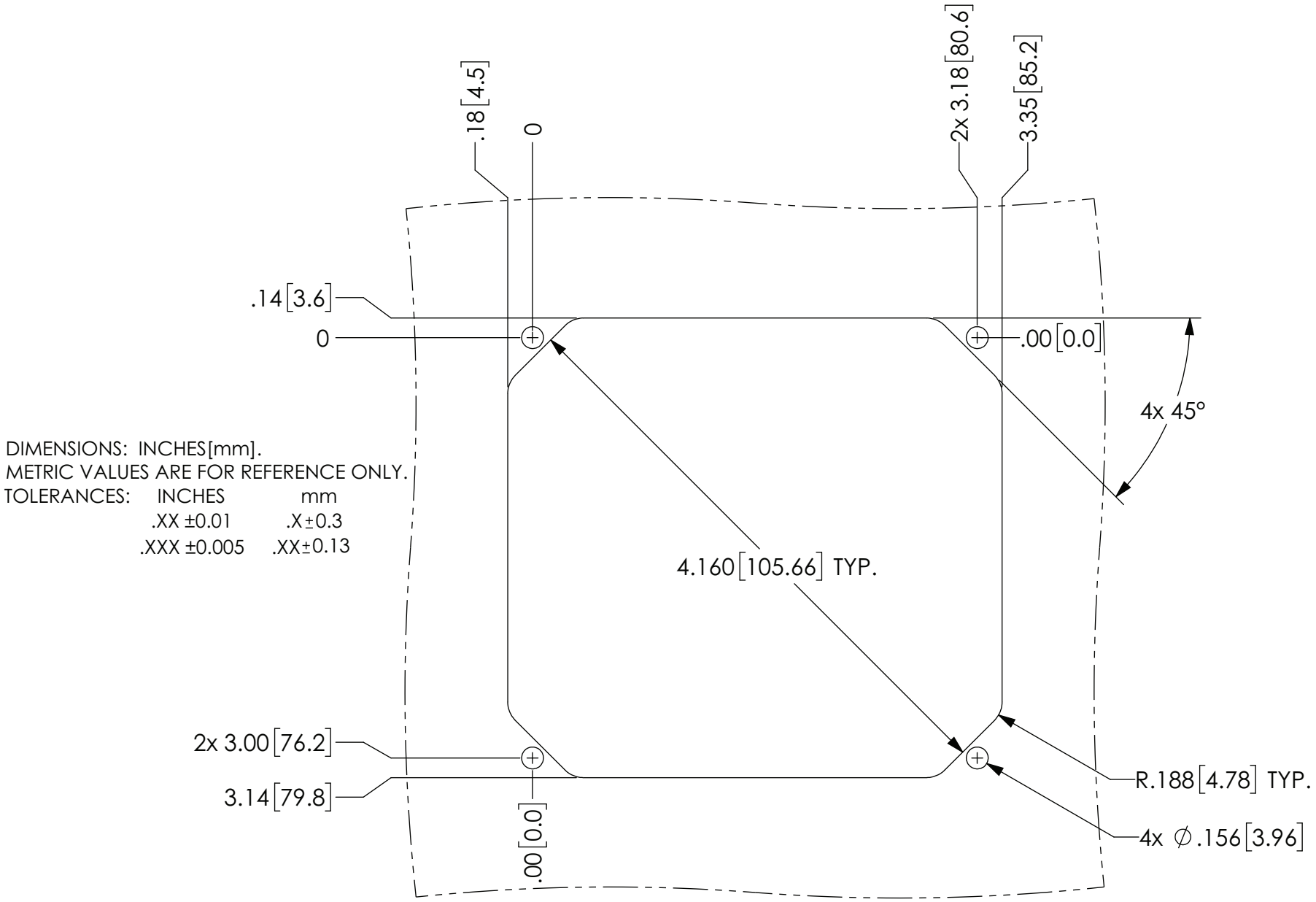
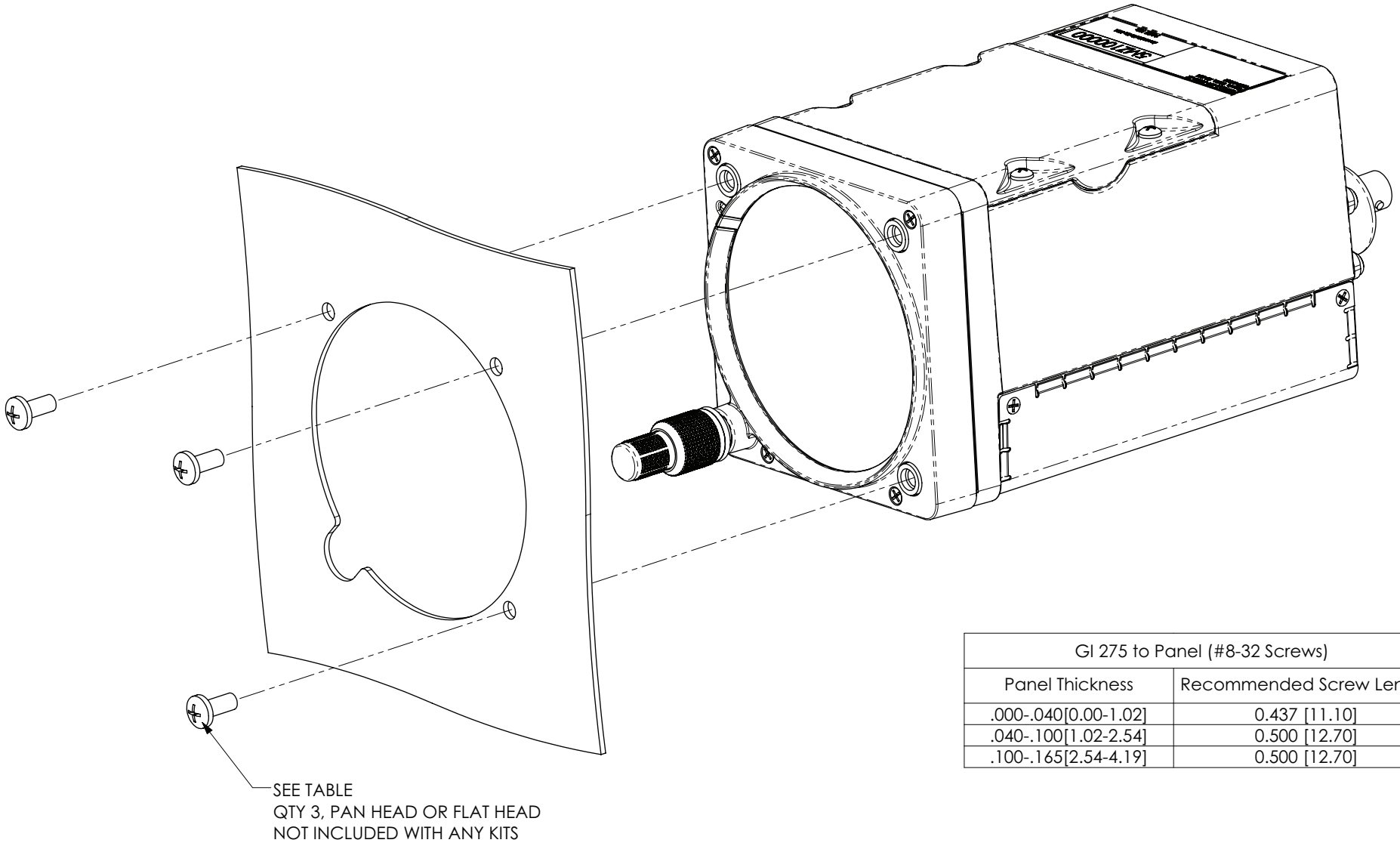


Figure A-5 Adapter Plate (011-05285-00 & 011-05285-01) Panel Cutout Drawing

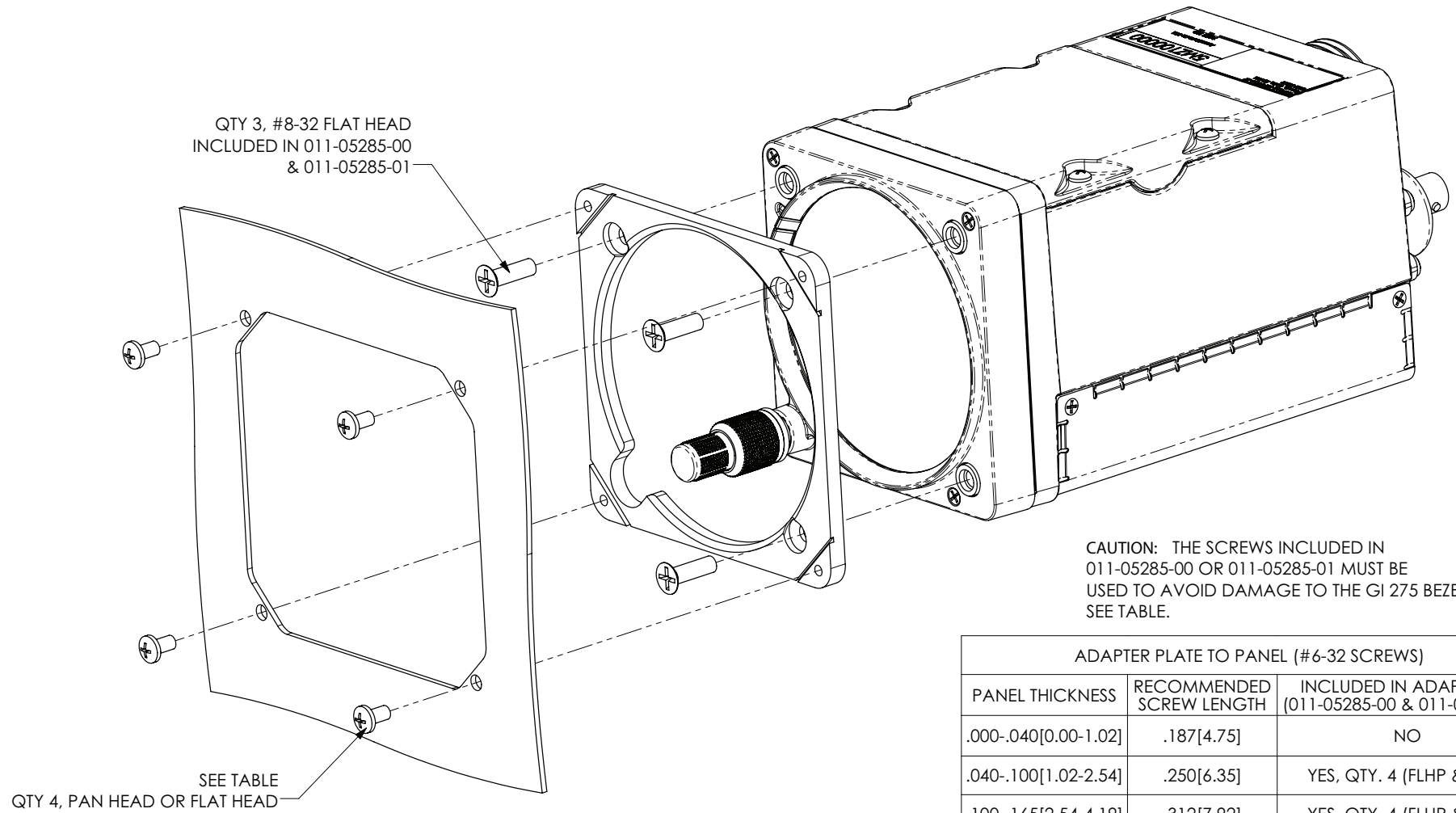
APPENDIX A OUTLINE AND INSTALLATION DRAWINGS



GI 275 to Panel (#8-32 Screws)	
Panel Thickness	Recommended Screw Length
.000-.040[0.00-1.02]	0.437 [11.10]
.040-.100[1.02-2.54]	0.500 [12.70]
.100-.165[2.54-4.19]	0.500 [12.70]

Figure A-6 GI 275 Standard Installation Drawing

APPENDIX A OUTLINE AND INSTALLATION DRAWINGS



CAUTION: THE SCREWS INCLUDED IN 011-05285-00 OR 011-05285-01 MUST BE USED TO AVOID DAMAGE TO THE GI 275 BEZEL. SEE TABLE.

ADAPTER PLATE TO PANEL (#6-32 SCREWS)		
PANEL THICKNESS	RECOMMENDED SCREW LENGTH	INCLUDED IN ADAPTER KIT (011-05285-00 & 011-05285-01)
.000-.040[0.00-1.02]	.187[4.75]	NO
.040-.100[1.02-2.54]	.250[6.35]	YES, QTY. 4 (FLHP & PHP)
.100-.165[2.54-4.19]	.312[7.92]	YES, QTY. 4 (FLHP & PHP)

Figure A-7 GI 275 Installation Drawing with Optional Adapter Plate

APPENDIX B INTERCONNECT DRAWINGS

FIGURE **PAGE**

GENERAL NOTES

[1] ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

[2] AT GI 275, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD LEADS MUST BE LESS THAN 3.0 INCHES. OTHER SHIELD GROUNDS GOING TO AIRCRAFT GROUND MUST BE AS SHORT AS PRACTICAL.

[3] USE APPROVED ETHERNET CABLES LISTED IN SECTION 2 FOR ALL HSDB CONNECTIONS.

[4] PINS OR PORTS THAT ARE MARKED WITH “x” OR “X” INDICATE THERE IS NO SINGLE RECOMMENDED CONNECTION, FIND AN AVAILABLE PORT/PIN TO USE. PIN/PORT CONNECTIONS WILL VARY DEPENDING ON INSTALLATION.

[5] THE UNSHIELDED PORTION OF ALL SHIELDED WIRES AT THE CONNECTORS MUST BE 2.5 INCHES OR LESS IN TOTAL LENGTH, UNLESS OTHERWISE NOTED.

LEGEND

~ REPRESENTS INTERCHANGEABLE PIN OR PORT WITH SIMILAR FUNCTIONING PIN OR PORT. SEE APPENDIX A FOR PIN DESCRIPTION. PINS OR PORTS WITHOUT ~ MUST BE CONNECTED AS SHOWN.

EXAMPLES INCLUDE:

~ DISCRETE IN 2* → INDICATES ANY AVAILABLE ‘DISCRETE IN’ CAN BE USED.

~ RS-232 2 → INDICATES ANY AVAILABLE RS-232 PORT CAN BE USED.

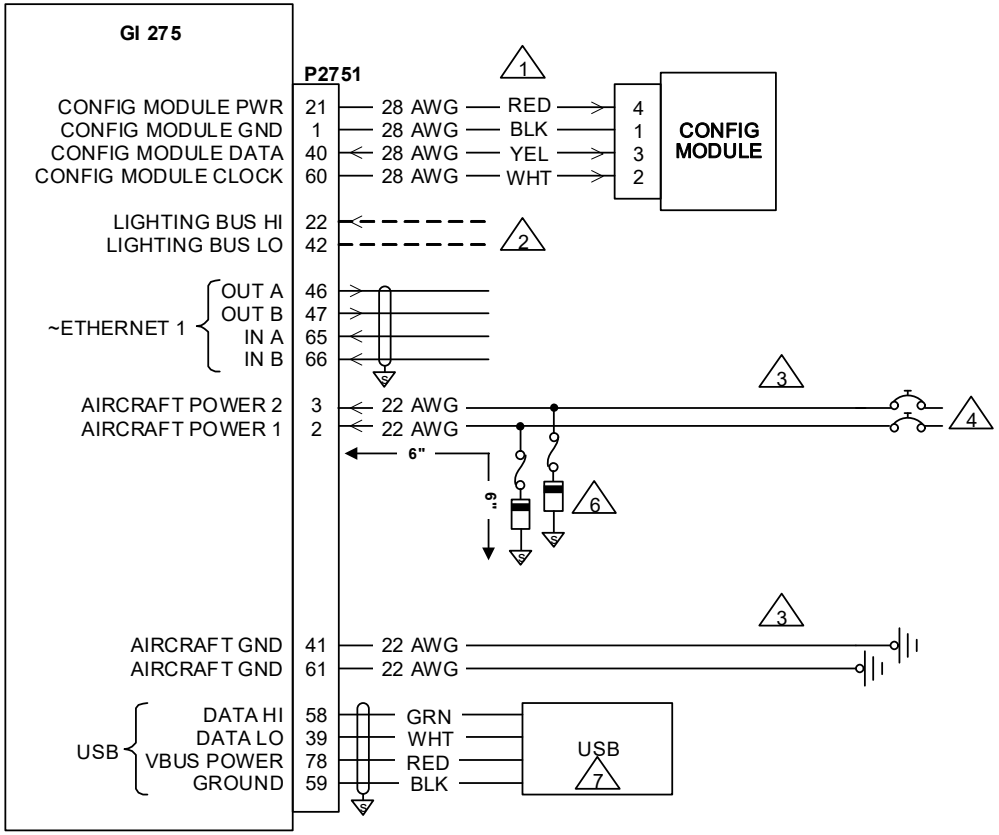
~ GEN PURP → INDICATES ANY AVAILABLE GENERAL PURPOSE PORT CAN BE USED.

* REPRESENTS ACTIVE-LOW PIN.

SHIELD GROUND BLOCK DESIGNATOR.

AIRFRAME GROUND DESIGNATOR.

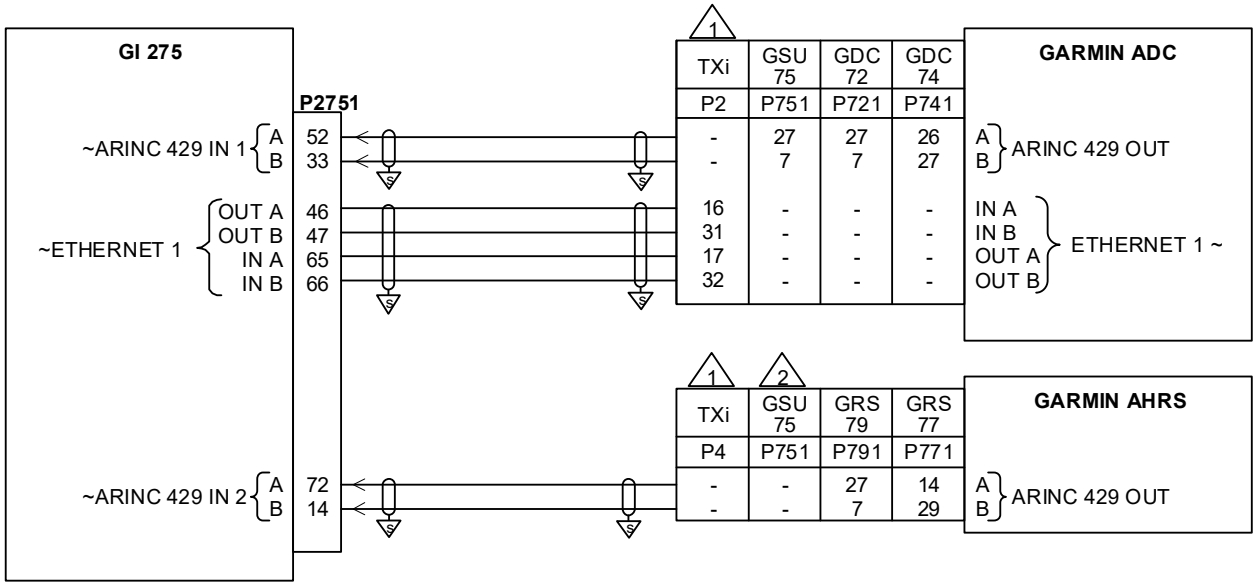
Figure B-1 General Notes for Appendix B Interconnect Examples



NOTES:

1. CONFIGURATION MODULE IS MOUNTED IN THE BACKSHELL OF THE P1 CONNECTOR USING 28 AWG WIRES. CONTACTS SUPPLIED WITH THE CONFIGURATION MODULE MUST BE USED FOR CONNECTING CONFIGURATION MODULE HARNESS TO P1.
2. OPTIONAL LIGHTING BUS CONNECTION (28 VDC, 14 VDC, 5 VDC OR 5 VAC).
3. WIRE GAUGE SHOWN FOR POWER AND GROUND LENGTH LESS THAN 20 FEET. FOR POWER AND GROUNDS GREATER THAN 20 FEET REFER TO AC 43.13-1B, CHAPTER 11 TO DETERMINE THE APPROPRIATE WIRE GAUGE.
4. SEE SECTION 2.5.1 FOR BREAKER SIZING, BUSSING, AND LABELING. AIRCRAFT POWER 2 IS USED FOR WIRING WITH INDEPENDENT POWER BUSSES AND IS NOT REQUIRED.
5. NOTE HAS BEEN REMOVED.
6. TVS/FUSE ONLY REQUIRED ON CLASS II AND ABOVE COMPOSITE AIRCRAFT WITH THE GI 275 CONFIGURED AS A PRIMARY ADI, STANDBY ADI, HSI, STANDBY HSI, OR CDI (MFD). CUT TVS LEADS TO 0.5 INCHES AND INSTALL WITH STRIPE TOWARDS THE POWER BUS. COVER EXPOSED LEADS WITH SHRINK WRAP ONCE SOLDERED.
7. P/N 325-00238-02 CA ASSY, USB-A RECPT TO PIGTAIL, 48" INCLUDED WITH GI 275 CONNECTOR KIT.

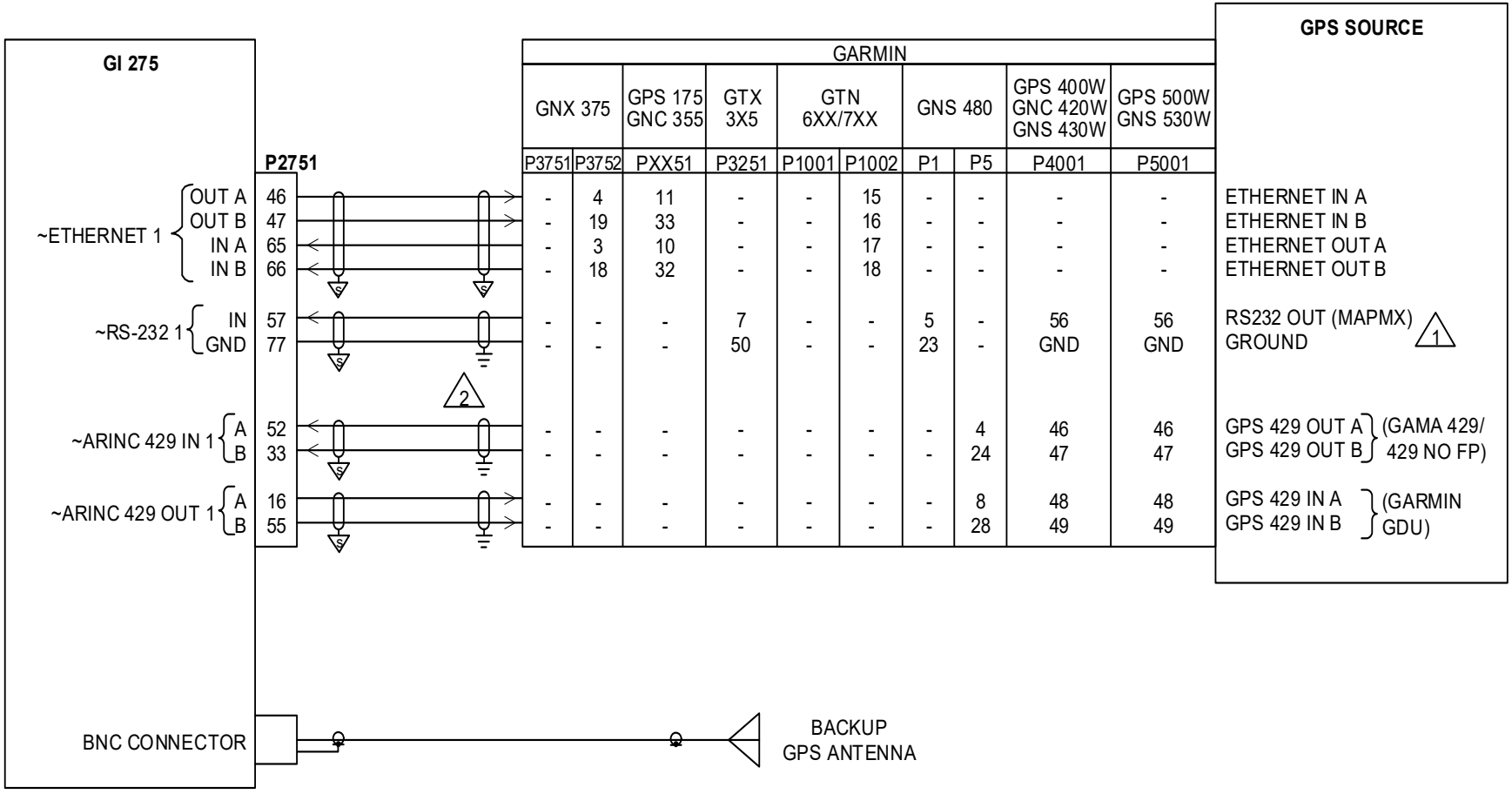
Figure B-2 GI 275 Power, Config Module, Lighting, HSDB Interconnect Example



NOTES:

1. ETHERNET CONNECTIONS MUST BE DIRECTLY CONNECTED WITH TXi. ANY PORT MAY BE USED. ETHERNET INTERFACE PROVIDES ADC/AHRS/PFD SYNC.
2. CONNECTIONS TO THE GSU 75 AND TXI USE ADAHRS A429 SO ONLY ONE CONNECTION IS REQUIRED.

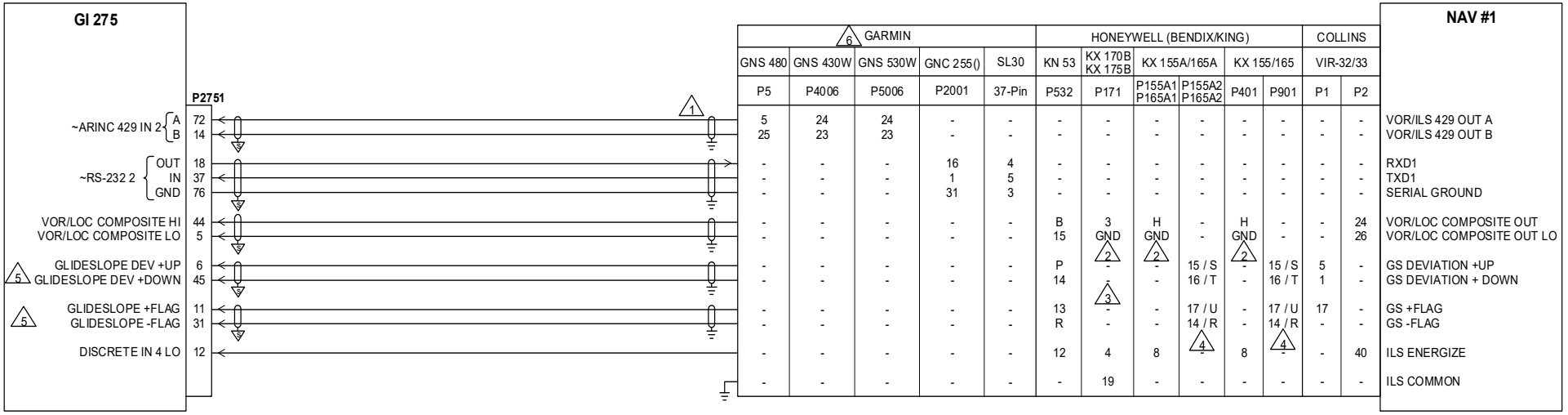
Figure B-3 GI 275 External Attitude and Air Data Interconnect Example



NOTES:

1. FOR PINS IDENTIFIED WITH "GND," CONNECT WIRE TO GROUND AT THE REAR OF THE UNIT.
2. SPLICES AT THE NAVIGATOR MAY BE REQUIRED FOR RS-232 AND ARINC 429 LINES.

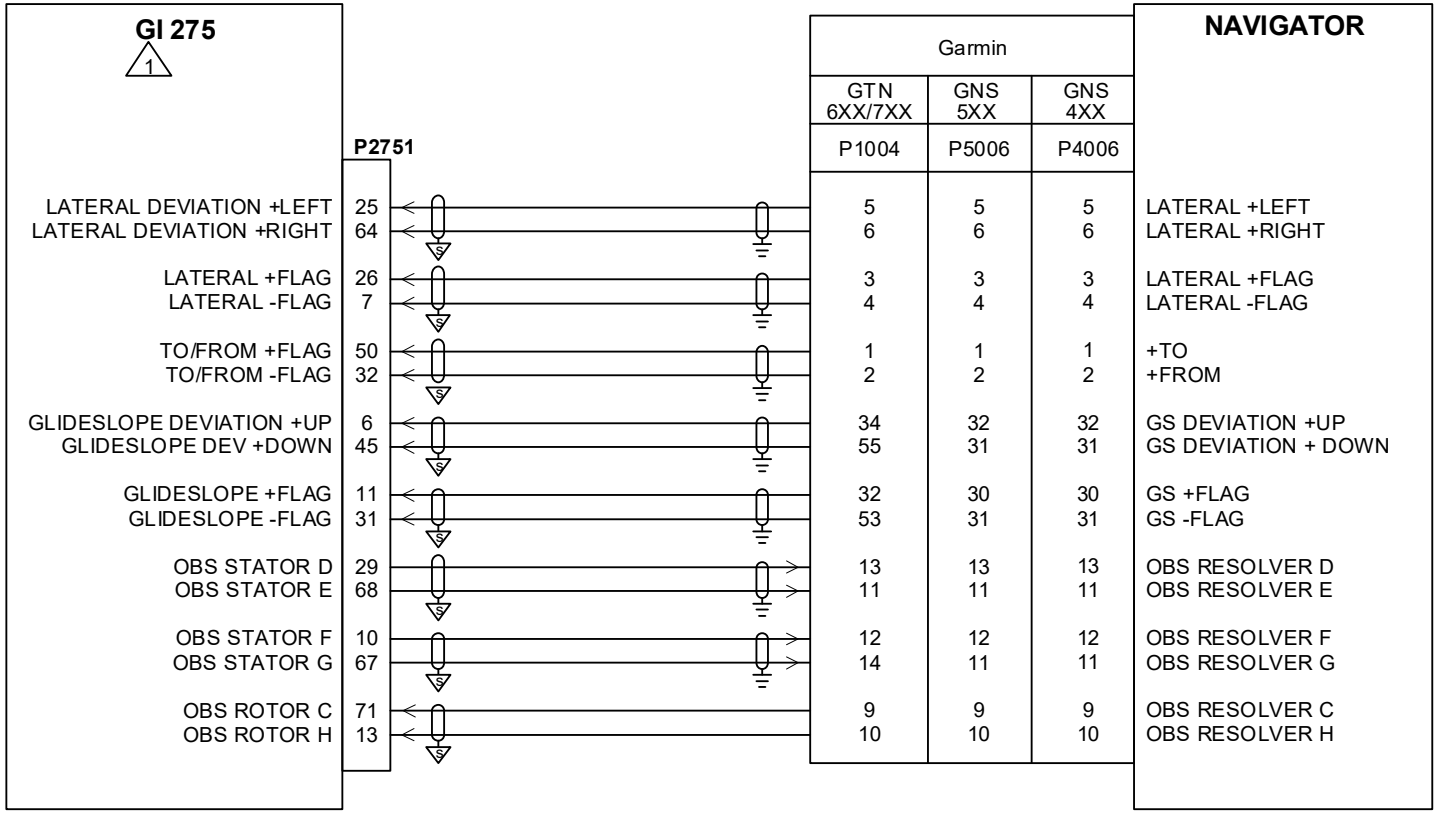
Figure B-4 GI 275 GPS Interconnect Example



NOTES:

1. FOR GNC NAVIGATORS, CONNECT ALL SHIELDS TO SHIELD BLOCK GROUND, NOT AIRFRAME GROUND.
2. THE NAV RECEIVER DOES NOT PROVIDE A VLOC COMPOSITE LO PIN. CONNECT THE VLOC COMPOSITE LO WIRE FROM THE GDU TO GROUND AT THE NAV RECEIVER.
3. KX 170B / KX 175B DO NOT HAVE A GLIDESLOPE OUTPUT. USE A SEPARATE GLIDESLOPE RECEIVER TO DRIVE THESE INPUTS ON THE GDU.
4. KX155/165 NAV UNITS HAVE DUAL GLIDESLOPE OUTPUTS. USE "NUMBERED" OR LETTERED PINS, NOT BOTH. WHENEVER POSSIBLE, USE AN UNUSED SET OF PINS.
5. GLIDESLOPE CONNECTIONS ARE ONLY REQUIRED IF THE NAV RECEIVER CONTAINS THE OPTIONAL GLIDESLOPE RECEIVER.
6. THE GTN 6XX/7XX UTILIZES THE SAME INTERFACE SHOWN IN THE GPS INTERCONNECT, THEREFORE NOT SHOWN IN THE NAV INTERCONNECT.
7. THE OBS RESOLVER CONNECTION ONLY APPLIES IF THE DIGITAL OR COMPOSITE INTERFACE CANNOT BE COMPLETED.

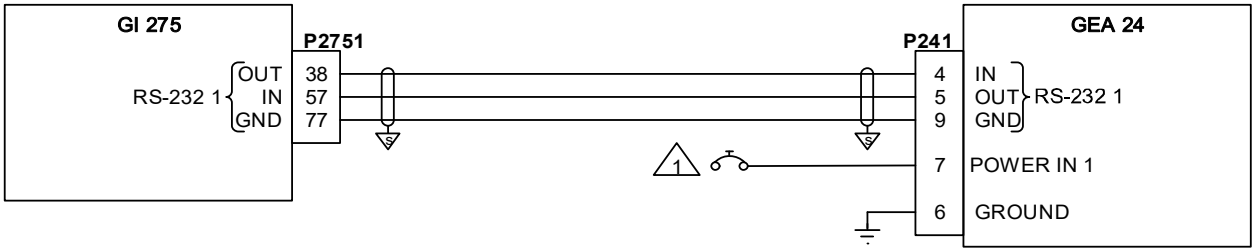
Figure B-5 GI 275 NAV Interconnect Example



NOTES:

1. THIS INTERCONNECT SHOWS ANALOG NAVIGATION CONNECTIONS. THIS ANALOG INTERCONNECT IS NOT USED IF THE NAVIGATOR IS WIRED USING COMPOSITE OR DIGITAL NAV AS SHOWN IN THE PREVIOUS FIGURES.
2. ANALOG NAVIGATION INTERFACES CANNOT BE CONNECTED TO THE GI 275 PRIMARY ADI.
3. IF THE GI 275 IS CONNECTED TO AN AUTOPILOT FOR HEADING AND COURSE ERROR, THE ANALOG NAVIGATION SOURCE CANNOT BE USED. INTERFACE METHODS LISTED IN PREVIOUS FIGURES MUST BE USED.
4. GLIDESLOPE CONNECTIONS ARE ONLY REQUIRED IF THE NAV RECEIVER CONTAINS THE OPTIONAL GLIDESLOPE RECEIVER.

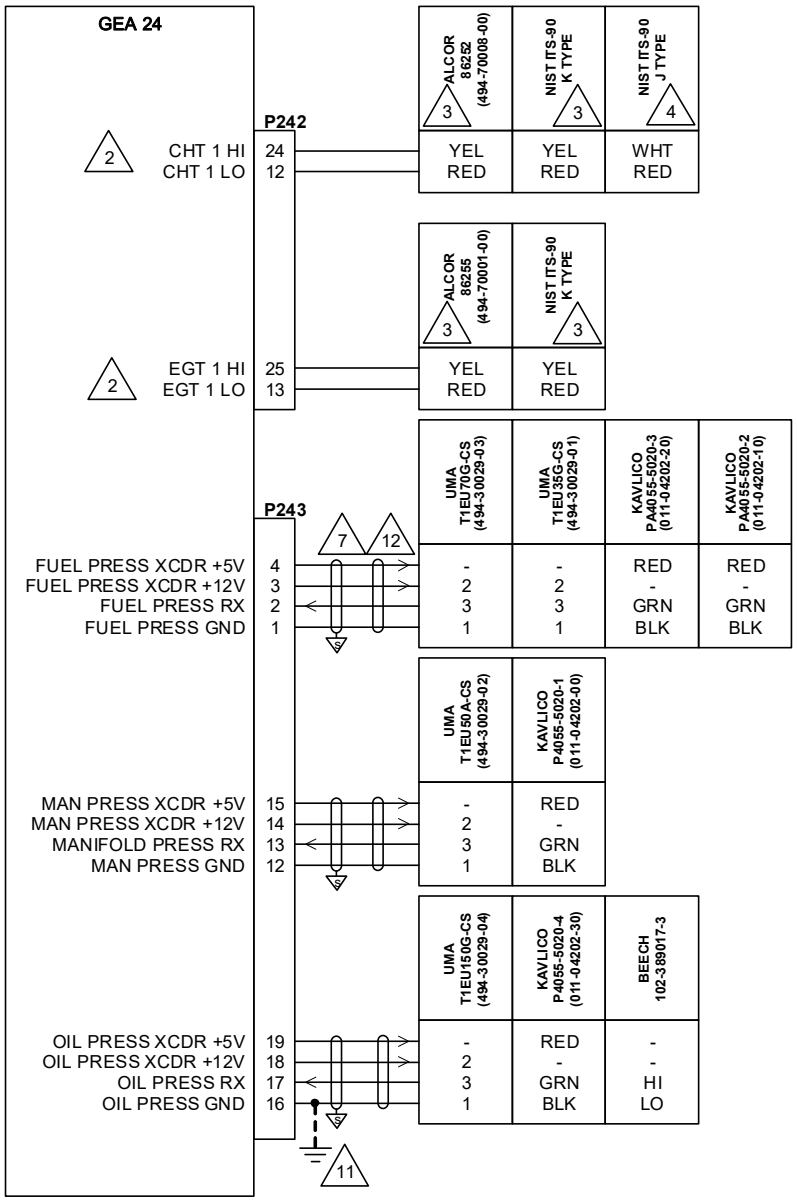
Figure B-6 GI 275 CDI Interconnect Example



NOTES:

1. SEE SECTION 2.5.1 FOR BREAKER SIZING, BUSSING, AND LABELING.

Figure B-7 GI 275 GEA 24 Power Interconnect Example



NOTES:

1. THERE ARE LIMITED PINS AVAILABLE FOR +5V, +10V, AND +12V TRANSDUCER EXCITATION. DEPENDING ON HOW MANY SENSORS ARE CONNECTED TO THE GEA, SPLICING SENSORS TO THE SAME EXCITATION VOLTAGE PIN MAY BE REQUIRED. USE ALL IDENTICAL FUNCTIONING PINS BEFORE SPLICING.
2. SINGLE CHANNEL SHOWN. IDENTICAL WIRING FOR CHANNELS 2-6.
3. USE K-TYPE THERMOCOUPLE WIRE FOR EXTENSIONS.
4. USE J-TYPE THERMOCOUPLE WIRE FOR EXTENSIONS.
5. GEA GROUND PIN IS ONLY REQUIRED FOR MS28034. IF NECESSARY, ANY GEA GROUND PIN MAY BE USED.
6. USE EXISTING WIRING FOR FUEL PROBE RETURN. GEA --- PIN MUST BE TIED TO AIRCRAFT GROUND FOR ALL INSTALLATIONS. ANY WIRING ADDED TO EXTEND EXISTING FUEL QUANTITY SENSOR WIRING MUST BE SHEILDED AND BOTH SHEILD ENDS OF ADDITIONAL WIRING TERMINATED TO AIRCRAFT GROUND. THE SHEILD DRAIN LENGTH MUST BE AS SHORT AS PRACTICAL.
7. MATCH SHIELDING AS SHOWN. SELECT WIRE BASED ON CONDUCTORS REQUIRED AT TRANSDCUER.
8. USE TWO 820 KΩ, 1/4 WATT, -55 C TO +125 C RESISTORS. TWIST PARALLEL RESISTOR LEADS TOGETHER, SPLICE TO WIRES WITH ENVIRONMENTAL SPLICES, AND ENCAPSULATE SPLICES AND RESISTORS WITH ADHESIVE LINED POLYOLEFIN HEAT-SHRINKABLE TUBING.
9. DO NOT EXCEED 6" LENGTH BETWEEN END OF RESISTOR AND CONNECTION TO MAGNETO OR IGNITION SWITCH.
10. CONNECT TO THE MAGNETO P-LEAD LUG. PERMISSIBLE TO USE IGNITION SWITCH INPUTS IF MAGNETO USES COMPRESSION TYPE CONNECTORS.
11. AIRCRAFT GROUND ON GENERAL PURPOSE --- PIN ONLY REQUIRED FOR BEECH 102-389017-3.
12. DO NOT EXCEED 6" LENGTH OF EXPOSED CORE WIRES BETWEEN END OF SHIELD AND TRANSDUCER. THE LENGTH OF NON-METALLIC TRANSDUCER DISCONNECTS, IF INSTALLED, MUST BE INCLUDED IN THIS LENGTH.
13. BOTH FUSES MUST BE THE SAME TYPE AND RATING.
14. USE 1KΩ I NLINE RESISTOR FOR RESISTIVE FLOAT SENSORS ONLY.
15. CARB TEMP SENSORS MUST BE CONNECTED TO MISC TEMP PORT 1.

Figure B-8 GI 275 GEA 24 Sensor Interconnect Example (Sheet 1 of 4)

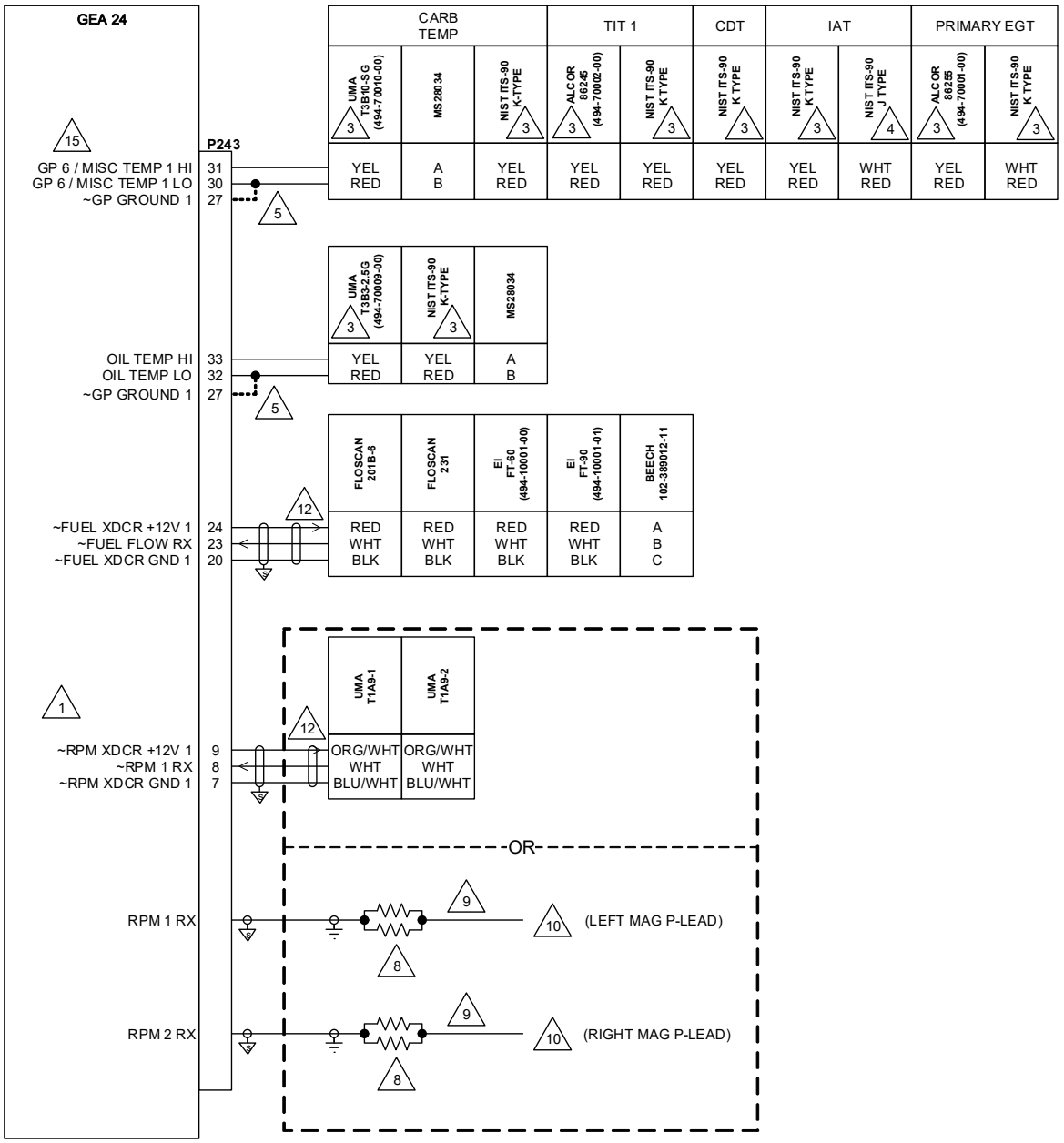


Figure B-8 GI 275 GEA 24 Sensor Interconnect Example (Sheet 2 of 4)

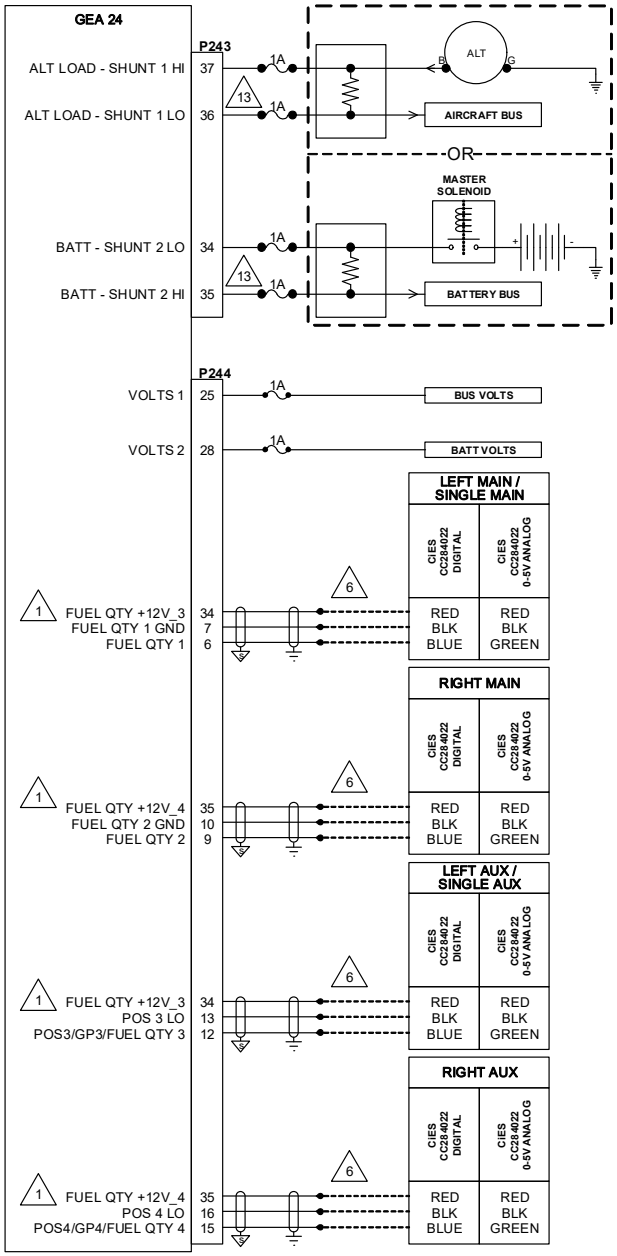


Figure B-8 GI 275 GEA 24 Sensor Interconnect Example (Sheet 3 of 4)

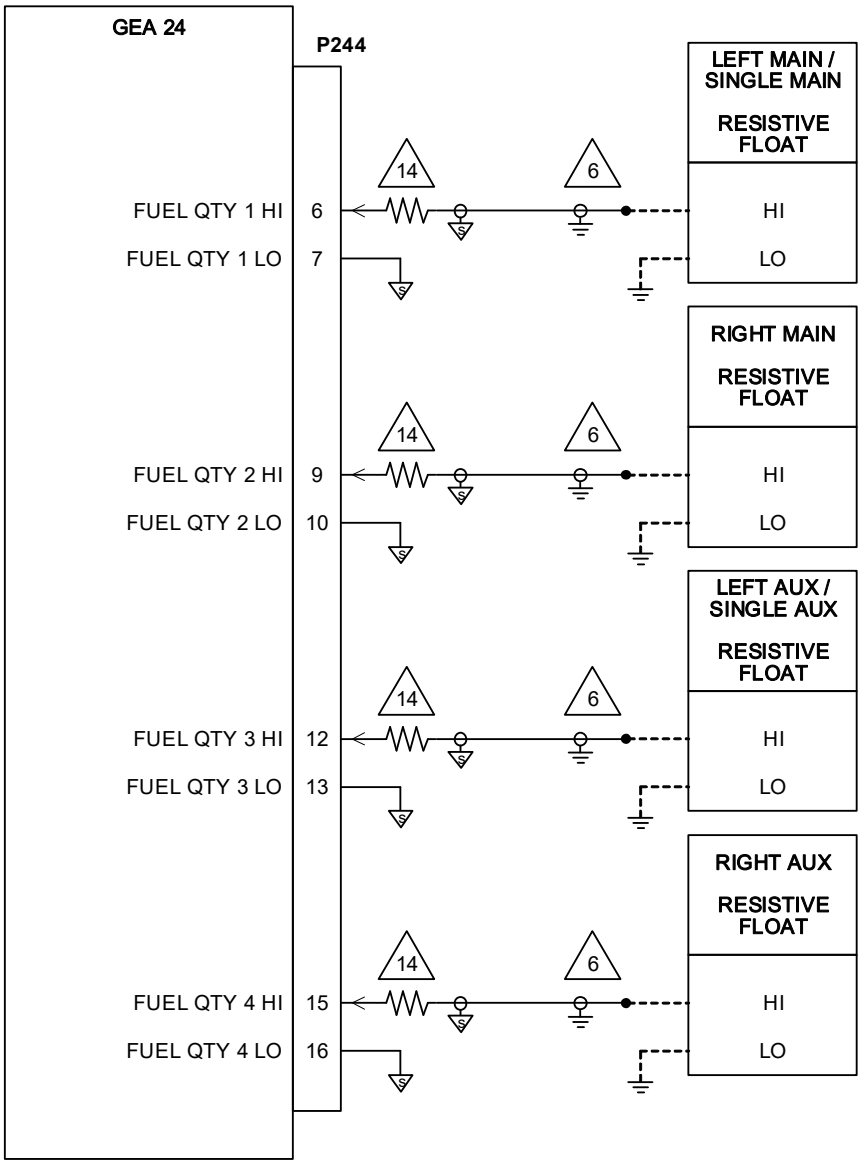
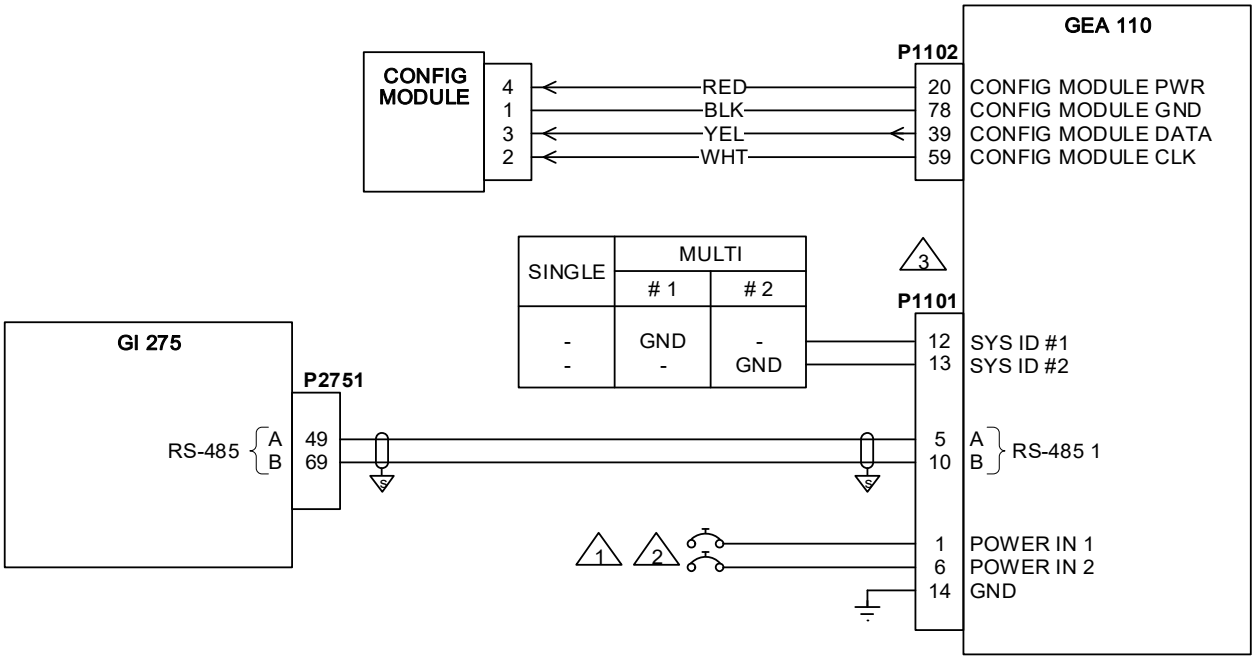


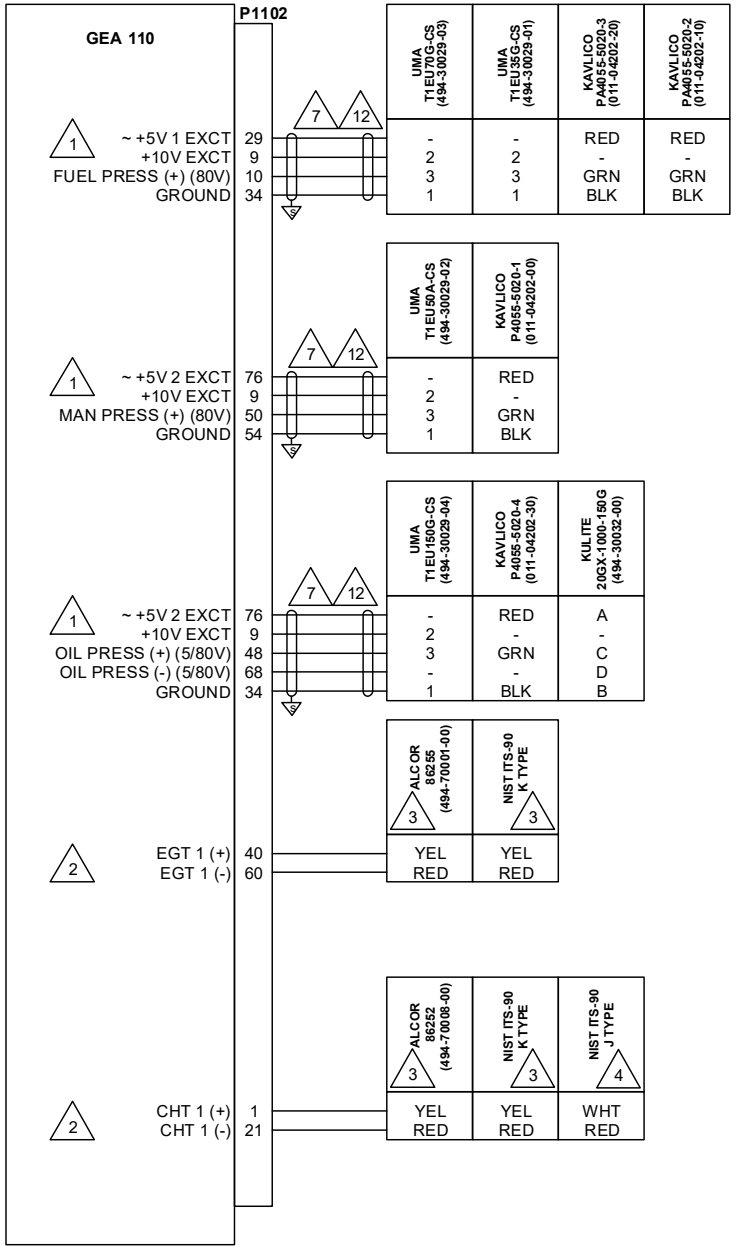
Figure B-8 GI 275 GEA 24 Sensor Interconnect Example (Sheet 4 of 4)



NOTES:

1. SEE SECTION 2.5.1 FOR BREAKER SIZING, BUSSING, AND LABELING.
2. IT IS NOT REQUIRED TO CONNECT POWER IN 1 AND POWER IN 2 TO SEPARATE ESSENTIAL BUSSES. IF ONLY ONE ESSENTIAL BUS IS UTILIZED, THEN CONNECT BOTH TO THE ESSENTIAL BUS.
3. ENSURE THE 15 PIN D-SUB CONNECTOR IS ORIENTED PROPERLY, DAMAGE WILL OCCUR IF THE CONNECTOR IS INSTALLED UPSIDE DOWN.

Figure B-9 GI 275 GEA 110 Power, Config Module Interconnect Example



NOTES:

1. THERE ARE LIMITED PINS AVAILABLE FOR +5V, +10V, AND +12V TRANSDUCER EXCITATION. DEPENDING ON HOW MANY SENSORS ARE CONNECTED TO THE GEA, SPLICING SENSORS TO THE SAME EXCITATION VOLTAGE PIN MAY BE REQUIRED. USE ALL IDENTICAL FUNCTIONING PINS BEFORE SPLICING.
2. SINGLE CHANNEL SHOWN. IDENTICAL WIRING FOR CHANNELS 2-6.
3. USE K-TYPE THERMOCOUPLE WIRE FOR EXTENSIONS.
4. USE J-TYPE THERMOCOUPLE WIRE FOR EXTENSIONS.
5. AIRCRAFT GROUND ON GEA --- PIN ONLY REQUIRED FOR MS28034.
6. USE EXISTING WIRING FOR FUEL PROBE RETURN. GEA --- PIN MUST BE TIED TO AIRCRAFT GROUND FOR ALL INSTALLATIONS. ANY WIRING ADDED TO EXTEND EXISTING FUEL QUANTITY SENSOR WIRING MUST BE SHEILDED AND BOTH SHIELD ENDS OF ADDITIONAL WIRING TERMINATED TO AIRCRAFT GROUND. THE SHIELD DRAIN LENGTH MUST BE AS SHORT AS PRACTICAL.
7. MATCH SHIELDING AS SHOWN. SELECT WIRE BASED ON CONDUCTORS REQUIRED AT TRANSDUCER.
8. USE TWO 820 KΩ, 1/4 WATT, -55 C TO +125 C RESISTORS. TWIST PARALLEL RESISTOR LEADS TOGETHER, SPLICE TO WIRES WITH ENVIRONMENTAL SPLICES, AND ENCAPSULATE SPLICES AND RESISTORS WITH ADHESIVE LINED POLYOLEFIN HEAT-SHRINKABLE TUBING.
9. DO NOT EXCEED 6" LENGTH BETWEEN END OF RESISTOR AND CONNECTION TO MAGNETO OR IGNITION SWITCH.
10. CONNECT TO THE MAGNETO P-LEAD LUG. PERMISSIBLE TO USE IGNITION SWITCH INPUTS IF MAGNETO USES COMPRESSION TYPE CONNECTORS.
11. AIRCRAFT GROUND ON GENERAL PURPOSE --- PIN ONLY REQUIRED FOR BEECH 102-389017-3.
12. DO NOT EXCEED 6" LENGTH OF EXPOSED CORE WIRES BETWEEN END OF SHIELD AND TRANSDUCER. THE LENGTH OF NON-METALLIC TRANSDUCER DISCONNECTS, IF INSTALLED, MUST BE INCLUDED IN THIS LENGTH.
13. BOTH FUSES MUST BE THE SAME TYPE AND RATING.

Figure B-10 GI 275 GEA 110 Sensor Interconnect Example (Sheet 1 of 4)

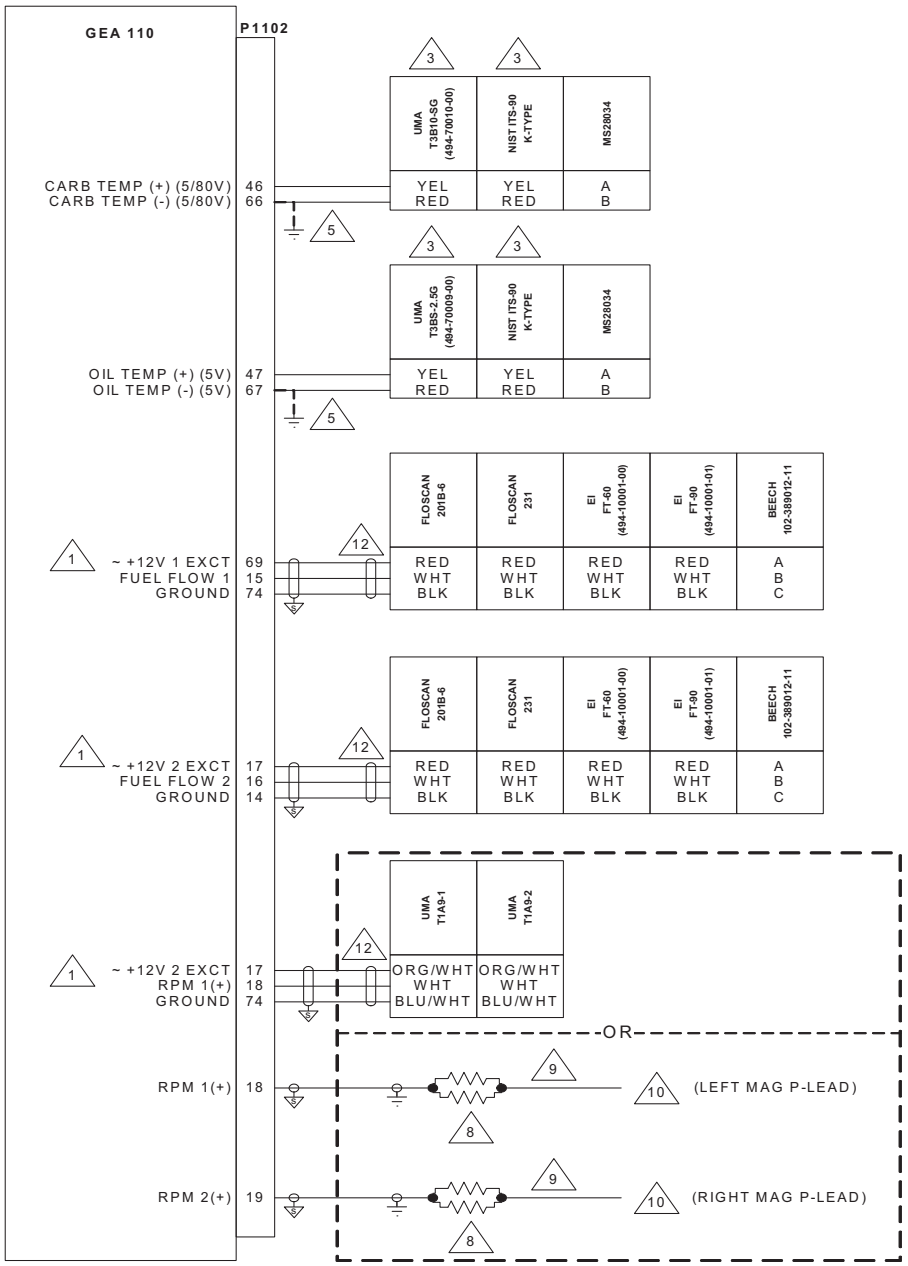


Figure B-10 GI 275 GEA 110 Sensor Interconnect Example (Sheet 2 of 4)

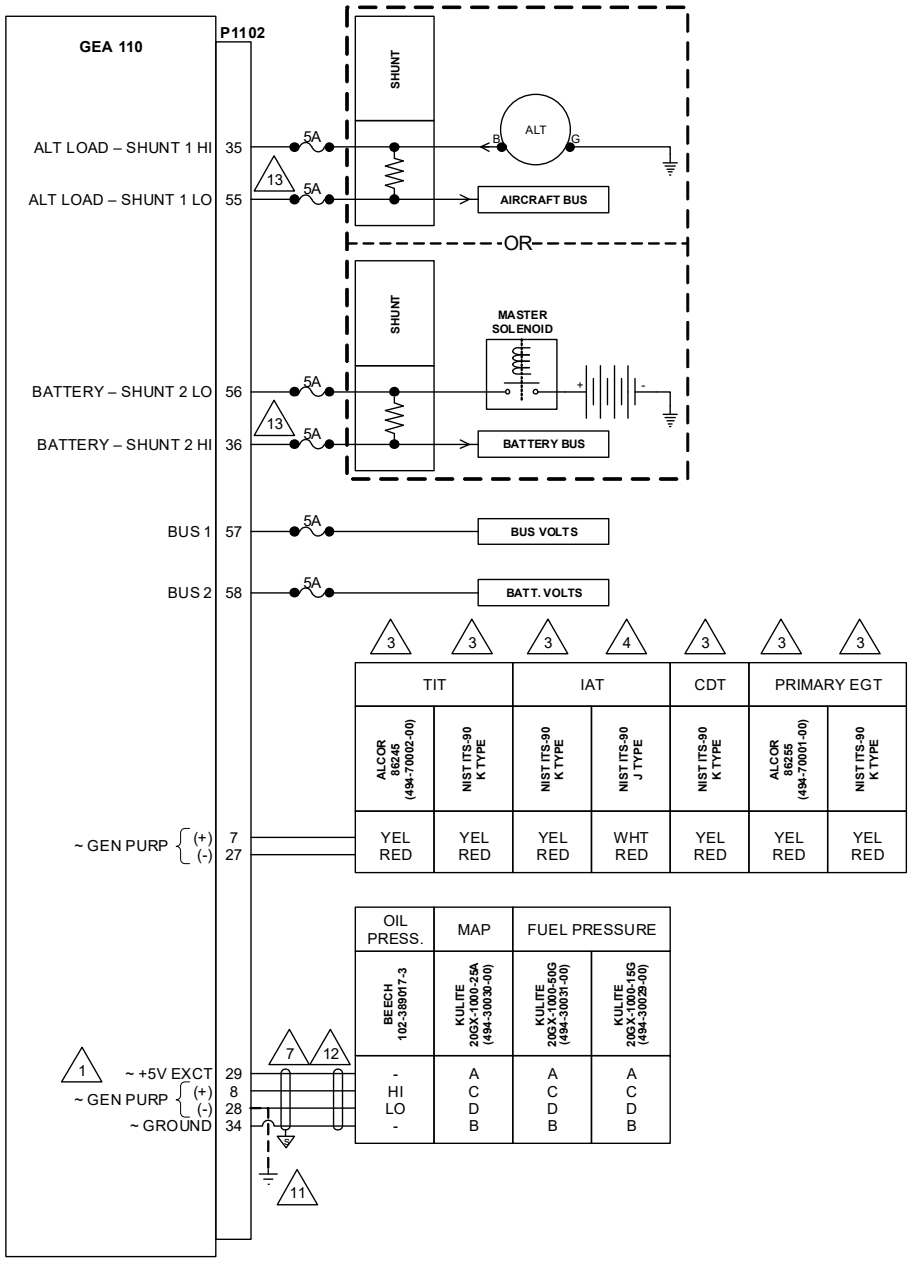


Figure B-10 GI 275 GEA 110 Sensor Interconnect Example (Sheet 3 of 4)

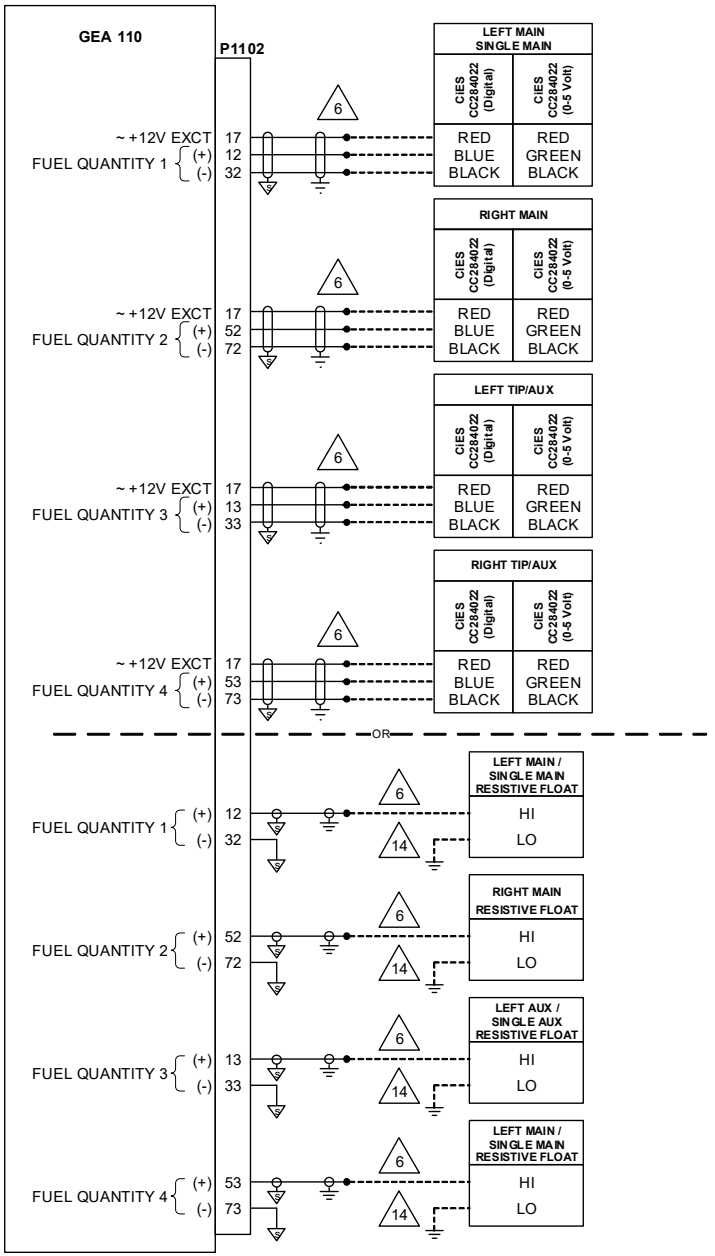
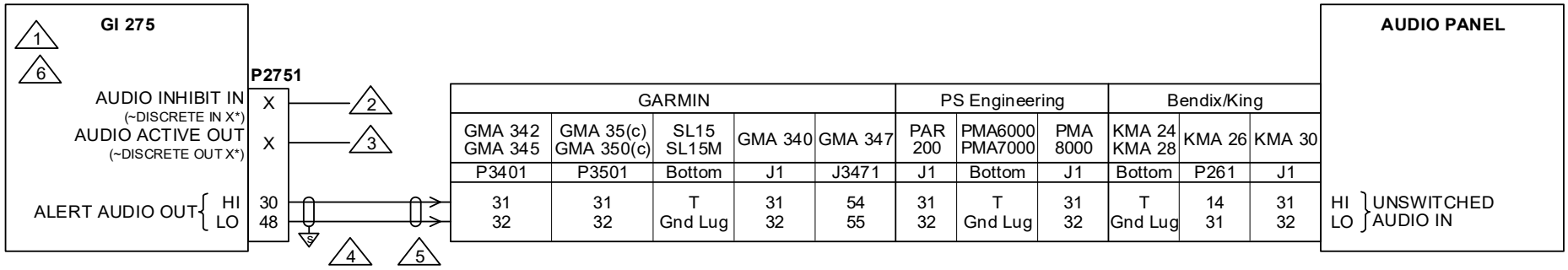


Figure B-10 GI 275 GEA 110 Sensor Interconnect Example (Sheet 4 of 4)

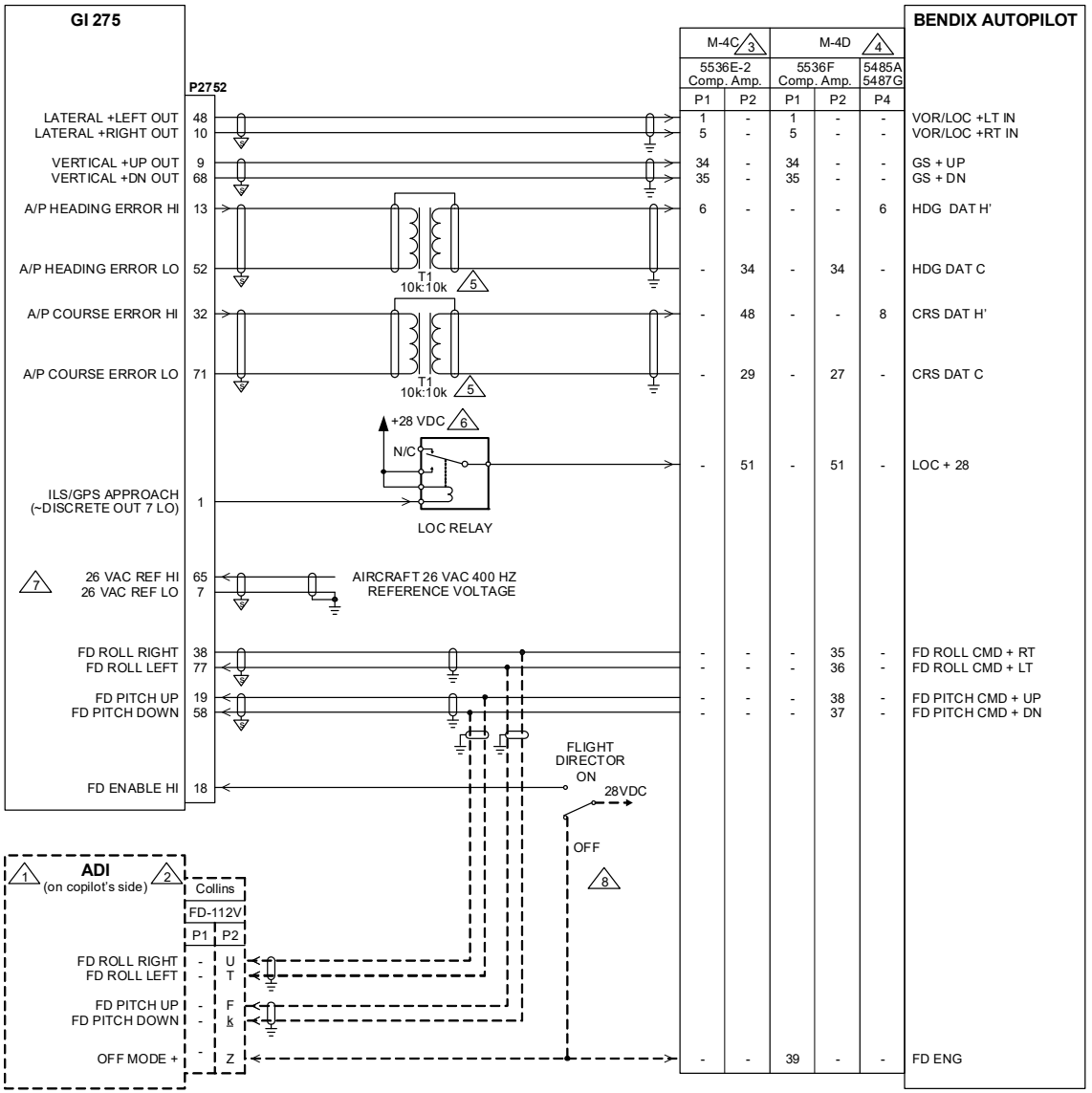


GARMIN					PS Engineering			Bendix/King		
GMA 342 GMA 345	GMA 35(c) GMA 350(c)	SL15 SL15M	GMA 340	GMA 347	PAR 200	PMA6000 PMA7000	PMA 8000	KMA 24 KMA 28	KMA 26	KMA 30
P3401	P3501	Bottom	J1	J3471	J1	Bottom	J1	Bottom	P261	J1
31 32	31 32	T Gnd Lug	31 32	54 55	31 32	T Gnd Lug	31 32	T Gnd Lug	14 31	31 32

NOTES:

1. FOR MULTIPLE GI 275 INSTALLATIONS, ONLY CONNECT THE AUDIO OUTPUT AND ASSOCIATED DISCRETE FROM ONE GI 275. LEAVE THE AUDIO OUTPUT AND DISCRETES FROM OTHER GI UNITS UNCONNECTED.
2. USE THE AUDIO INHIBIT IN DISCRETE INPUT TO INHIBIT GDU GI 275 AURAL ALERTS WHEN A HIGHER PRIORITY SYSTEM IS PLAYING AUDIO MESSAGES.
3. USE THE AUDIO ACTIVE OUT DISCRETE OUTPUT TO INHIBIT AURAL ALERTS FROM LOWER PRIORITY SYSTEMS WHENEVER THE GI 275 IS PLAYING AUDIO MESSAGES.
4. IT IS ACCEPTABLE TO USE OTHER AVAILABLE UNSWITCHED, UNMUTED PORTS. IF AUDIO PANEL DOES NOT HAVE AN AVAILABLE UNSWITCHED INPUT, AUDIO FROM GI 275 MUST BE MIXED WITH AN EXISTING AUDIO SOURCE USING RESISTORS TO ISOLATE THE AUDIO OUTPUT FROM EACH LRU. A TYPICAL VALUE FOR MIXING RESISTORS IS 390Ω 1/4 W. THE AUDIO LEVELS OF EXISTING AUDIO SOURCES WILL HAVE TO BE RE-EVALUATED AFTER MIXING RESISTORS ARE INSTALLED.
5. SHIELDING BETWEEN THE GI 275 AND AUDIO PANEL SHOULD ONLY BE GROUNDED AT THE GI 275. DO NOT GROUND THE SHIELD AT THE AUDIO PANEL.
6. WHEN INSTALLING GI 275 WITH G500/G600 TXi, LEAVE GI 275 AUDIO AND AUDIO DISCRETESUNCONNECTED.

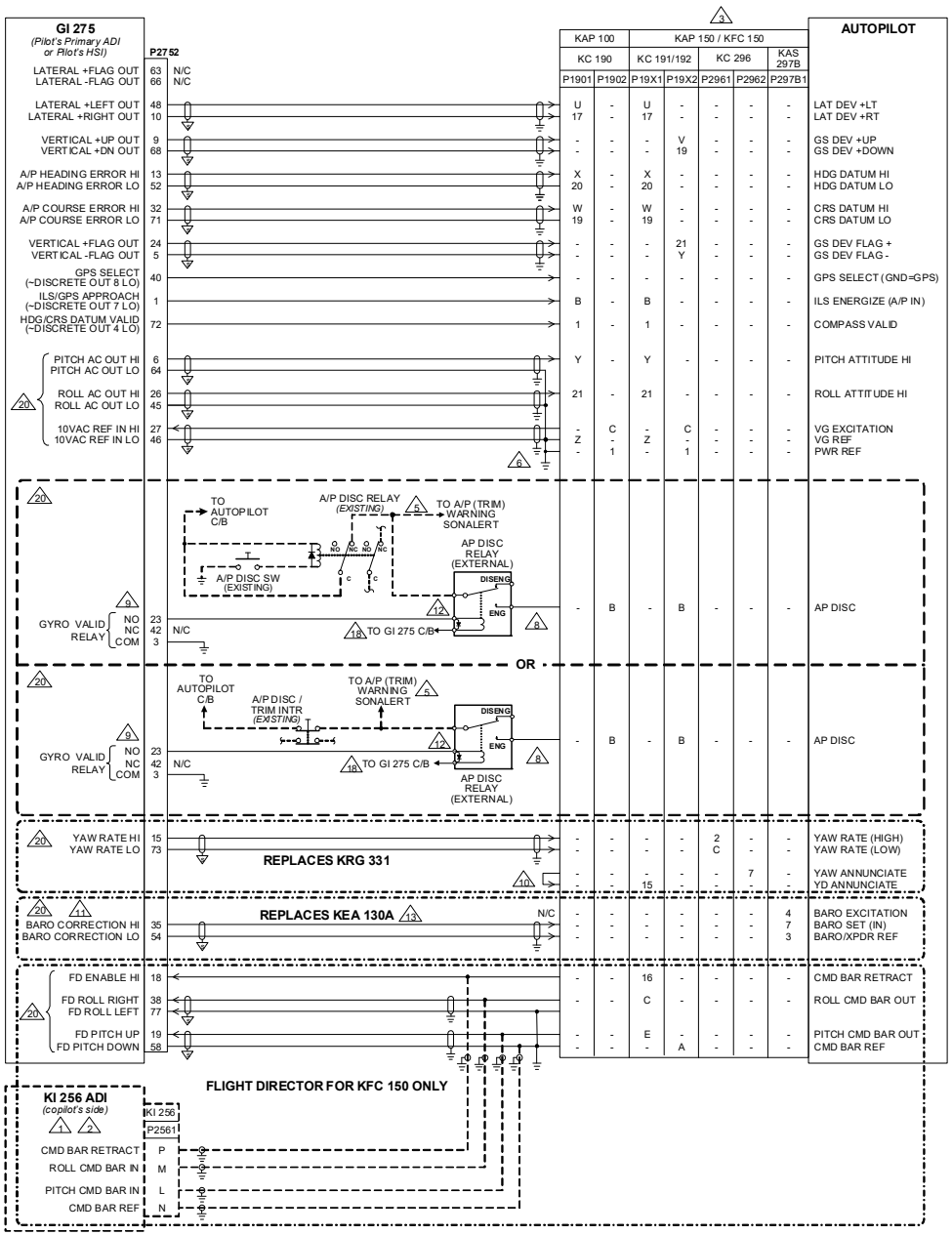
Figure B-11 GI 275 Audio Interconnect Example



NOTES:

1. FLIGHT DIRECTOR WIRING TO EXISTING ADI MUST BE DISCONNECTED IF THIS INDICATOR IS USED AS A STANDBY INSTRUMENT FOR THE GI 275. IF THIS INDICATOR IS BEING RELOCATED TO THE COPILOT'S SIDE, WIRING MAY BE CONNECTED IN PARALLEL TO THIS ADI AND MUST BE CONNECTED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
2. IF THE FLIGHT DIRECTOR IS BEING DISPLAYED ON THE COPILOT'S ADI, THIS FLIGHT DIRECTOR ALIGNMENT MUST BE CORRECTLY ADJUSTED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS PRIOR TO MAKING ANY ADJUSTMENTS TO THE GI 275.
3. ADDITIONAL DROP DOWN RESISTORS MAY BE REQUIRED TO ENSURE THAT THE HEADING AND COURSE ERROR SIGNALS TO THE 5536E( ) COMPUTER-AMPLIFIER ARE WITHIN THE CORRECT OPERATING RANGE. REFER TO BENDIX "I.B. 2004 PART 1 INSTALLATION MANUAL M-4C AFCS" PARAGRAPH 2-5 "TROUBLESHOOTING PROCEDURES FOR PREFLIGHT CHECKOUT."
4. THE AUTOPILOT COMPUTER MUST BE CONFIGURED FOR A COLLINS PN-101 (FD-112C/V) HSI IN ORDER TO HAVE THE CORRECT HEADING AND COURSE ERROR (DATUM) SIGNALS; OTHERWISE ADDITIONAL ADJUSTMENTS WILL BE REQUIRED. REFER TO BENDIX "I.B. 20004 M-4D AFCS INSTALLATION MANUAL" SECTION II PARAGRAPH 7 "FLIGHT CHECK AND CALIBRATION" FOR ADJUSTMENTS THAT CAN BE MADE IN THE 5487G OR 5485A FLIGHT CONTROLLER. REFER TO I.B. 20004 PARAGRAPH 5 "POST-INSTALLATION CHECK OUT" FOR ADDITIONAL INFORMATION.
5. USE TRIAD TRANSFORMER P/N TY-141P OR EQUIVALENT. IN SOME INSTALLATIONS, EXISTING TRANSFORMERS (COLLINS P/N 677-9020-00) MAY BE USED.
6. IT IS NECESSARY TO INSTALL A RELAY TO INVERT THE POLARITY OF THE "ILS/GPS APPROACH" SIGNAL FROM ACTIVE-LOW TO ACTIVE-HIGH FOR INPUT INTO THE 5536E/F COMPUTER AMPLIFIER.
7. THE 115VAC 400 HZ EXCITATION FOR THE AUTOPILOT (P2-40), AND THE 26VAC 400 HZ REFERENCE VOLTAGE FOR THE GDU 700/1060 (P3-41), MUST BE IN PHASE WITH EACH OTHER FOR PROPER FEEDBACK OF THE HEADING AND COURSE ERRORS TO THE AUTOPILOT COMPUTER.
8. ORIGINAL SWITCH AND WIRING MUST BE RETAINED.

Figure B-12 GI 275 Autopilot/Flight Director - Bendix Interconnect Example



NOTES:

1. FLIGHT DIRECTOR WIRING TO EXISTING ADI MUST BE DISCONNECTED IF THIS INDICATOR IS USED AS A STANDBY INSTRUMENT FOR THE GI 275. IF THIS INDICATOR IS BEING RELOCATED TO THE COPILOT'S SIDE, WIRING MAY BE CONNECTED IN PARALLEL TO THIS ADI. THE WIRING TO THIS ADI MUST BE CONNECTED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
2. IF THE FLIGHT DIRECTOR IS BEING DISPLAYED ON THE COPILOT'S ADI, THIS FLIGHT DIRECTOR ALIGNMENT MUST BE CORRECTLY ADJUSTED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS PRIOR TO MAKING ANY ADJUSTMENTS TO THE GI 275.
3. EFIS-ENABLED KC 19X COMPUTER (P/N 065-0042-16) IS NOT SUPPORTED.
4. THE KCI 310 INDICATOR CONTAINS A TEST KEY THAT IS USED TO INITIATE THE KFC 300 SELF TEST. IF THE KCI 310 INDICATOR IS REMOVED, AN EXTERNAL MOMENTARY SWITCH MUST BE INSTALLED TO REPLACE THE FUNCTION OF THE KCI 310 TEST SWITCH. THE SWITCH SHOULD BE LABELED "AP TEST."
5. POWER TO THE SONALERT MUST NOT BE INTERRUPTED BY THE EXTERNAL GI 275 AP DISC RELAY.
6. IF THE GI 275 IS USED TO REPLACE THE ADI AND THE WIRING TO THE EXISTING ADI IS REMOVED, ENSURE THAT GROUND REFERENCE PINS REMAIN JUMPERED AS SHOWN.
7. IF THE MODE CONTROL PANEL DOES NOT SUPPORT THE NAV FLAG, THESE OUTPUTS FROM THE GDU MAY BE LEFT UNCONNECTED.
8. ALL WIRES FROM RELAY TO AP DISC INPUT MUST BE OF THE SIZE SPECIFIED IN THE AUTOPILOT INSTALLATION MANUAL TO SUPPORT THE CURRENT LOAD FROM THE DISCONNECT CIRCUIT.
9. RELAY CONTACTS SUPPORT A MAXIMUM OF 2 AMPERES SWITCHING AND 2 AMPERES CONTINUOUS CURRENT.
10. WHEN THE KRG 331 RATE GYRO IS REMOVED AND REPLACED BY THE GI 275, P2962-7 MUST BE CONNECTED DIRECTLY TO P19X1-15 AS SHOWN.
11. IF THE GI 275 IS USED TO PROVIDE BARO-CORRECTION TO THE AUTOPILOT, THE AUTOPILOT MUST BE RECALIBRATED TO THE ALTITUDE SOURCE.
12. INSTALL EXTERNAL AP DISCONNECT RELAY INTO AP DISCONNECT CIRCUIT AS SHOWN. EXTERNAL AP DISC RELAY CONTACTS MUST SUPPORT THE MAXIMUM CURRENT THROUGH THE AP DISCONNECT WIRING.
13. IF THE ENCODING ALTIMETER IS BEING REPLACED, A BLIND ENCODER MUST BE USED TO SUPPLY GRAY CODE ALTITUDE TO THE AUTOPILOT.
14. GI 275 FD ENABLE INPUT MUST BE PULLED UP TO THE SAME CIRCUIT BREAKER AS THE AUTOPILOT COMPUTER IN ORDER TO ENSURE THAT THE COMMAND BARS ARE REMOVED WHEN THE AUTOPILOT COMPUTER IS NOT POWERED UP.
15. IF THE RATING OF THE AUTOPILOT CIRCUIT BREAKER IS GREATER THAN 5A, AN IN-LINE FUSE WILL BE REQUIRED TO PROTECT THE WIRING TO THE GI 275. THE FUSE MUST BE INSTALLED AT THE POINT THAT POWER IS PICKED OFF FOR THE PULL-UP RESISTOR. IF THE RATING OF THE AUTOPILOT CIRCUIT BREAKER IS 5A OR LESS, NO FUSE IS REQUIRED.
16. ONLY IF ORIGINAL AUTOPILOT HAD 4" INSTRUMENTS.
17. IF KA141 IS INSTALLED
18. AP DISC RELAY MUST BE CONNECTED TO THE CIRCUIT BREAKER FOR THE GI 275 THAT IS PROVIDING ATTITUDE TO THE AUTOPILOT.
19. IF THE KVG 350 IS REMOVED, AN ALTERNATE 26 VAC 400 Hz SOURCE MUST BE UTILIZED. IF ONE DOES NOT EXIST IN THE AIRCRAFT, IT MUST BE INSTALLED.
20. CONNECTIONS MUST BE MADE TO THE PILOT'S PRIMARY ADI ONLY.

Figure B-13 GI 275 Autopilot/Flight Director - Honeywell (Bendix-King) Interconnect Example (Sheet 1 of 6)

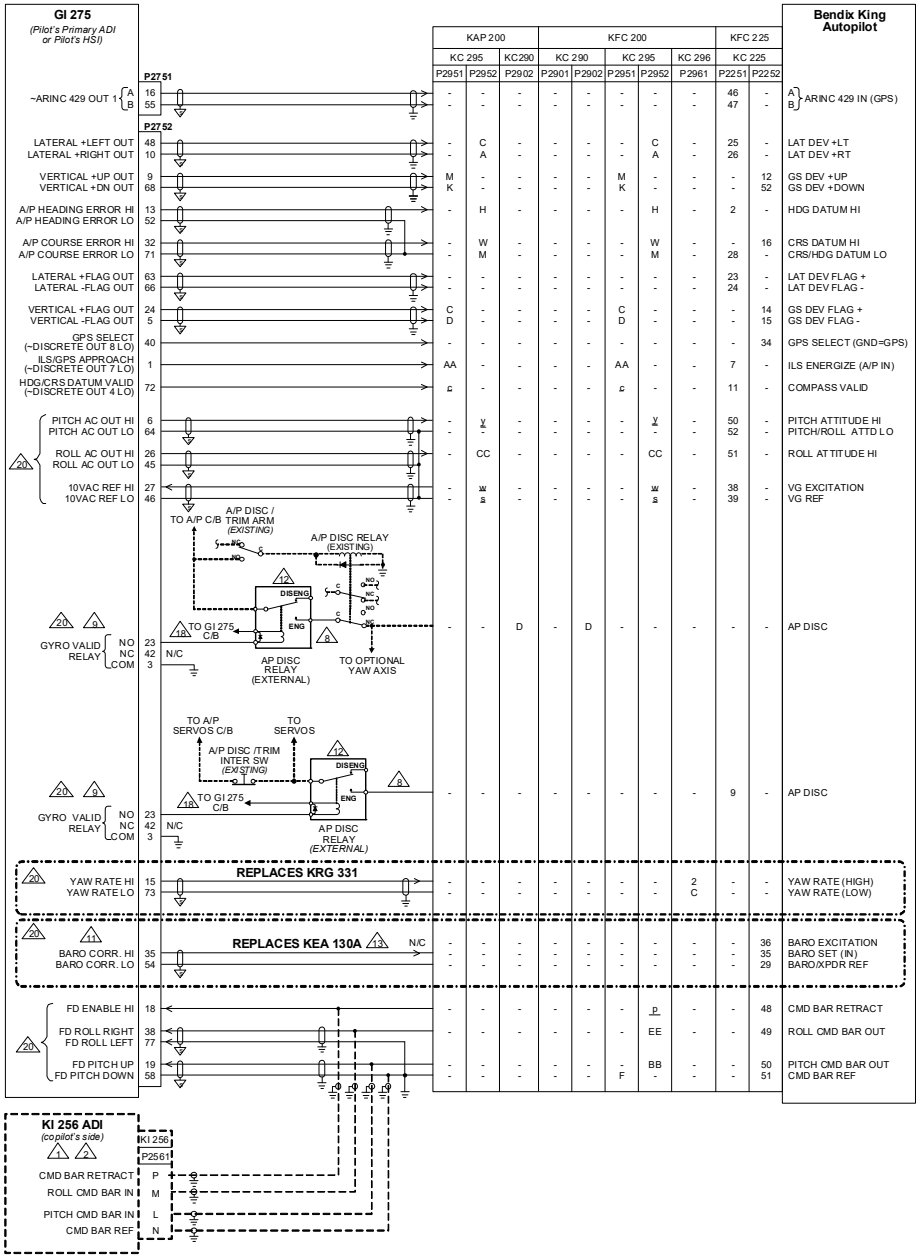


Figure B-13 GI 275 Autopilot/Flight Director - Honeywell (Bendix-King) Interconnect Example (Sheet 2 of 6)

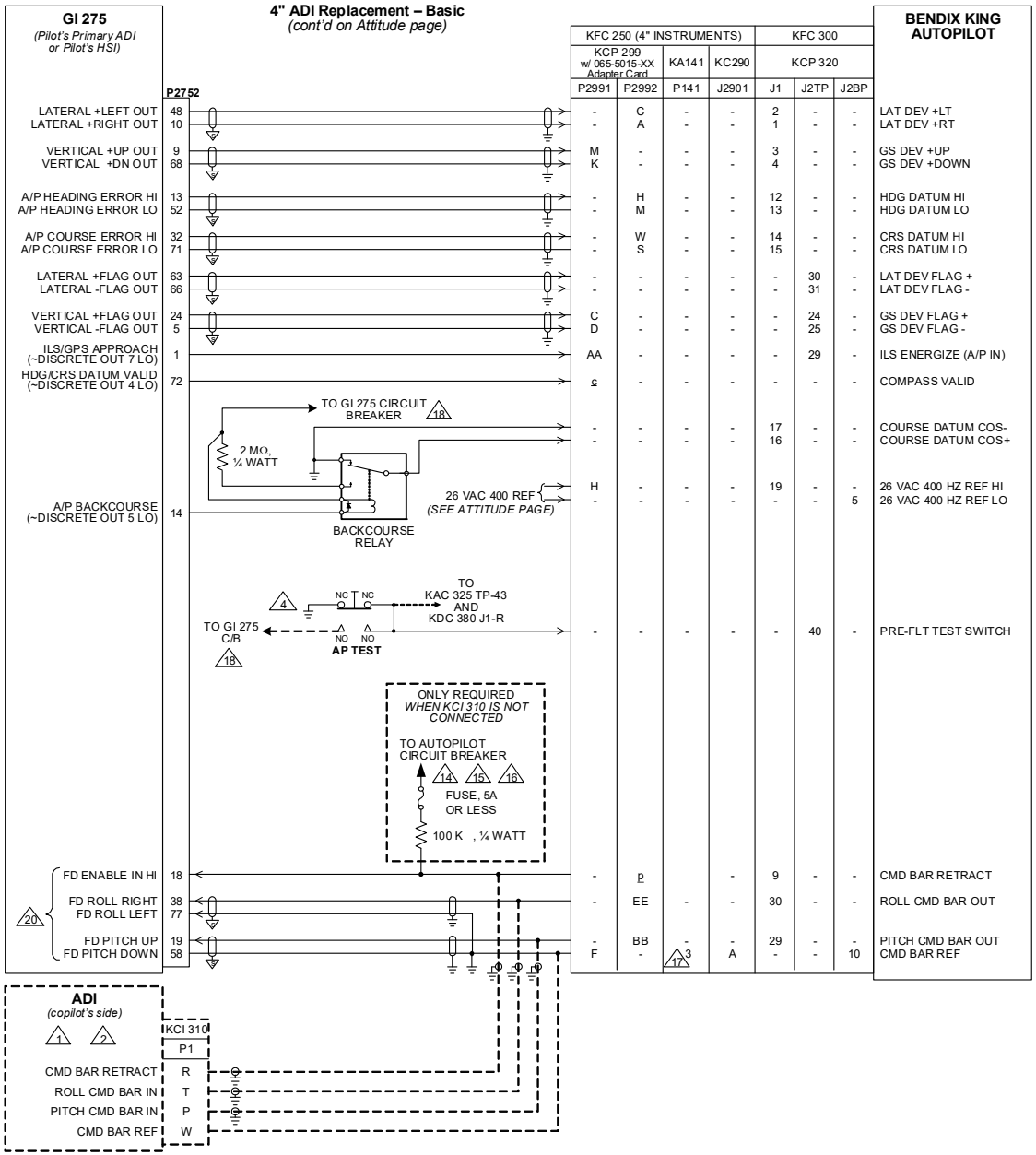


Figure B-13 GI 275 Autopilot/Flight Director - Honeywell (Bendix-King) Interconnect Example (Sheet 3 of 6)

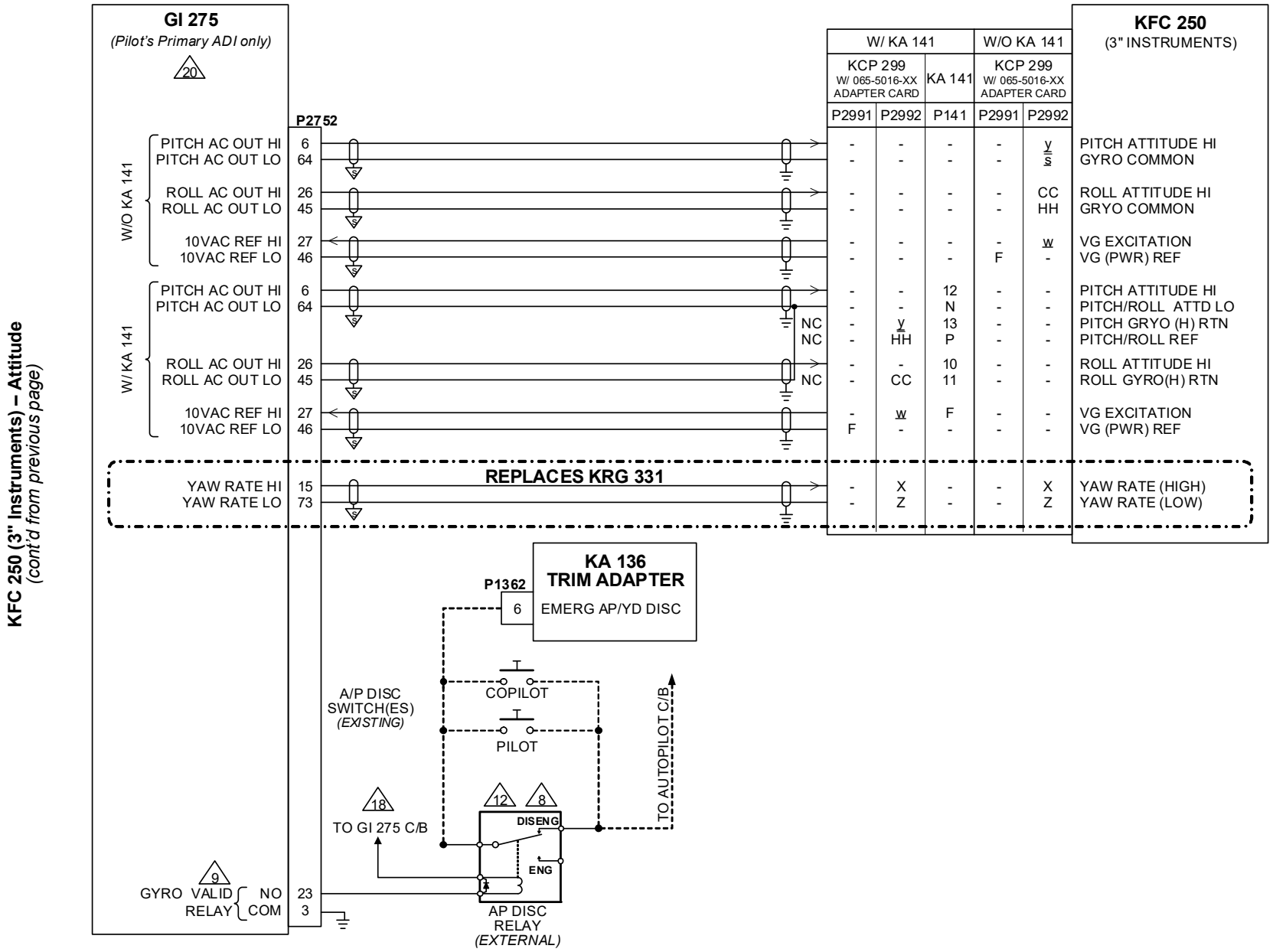


Figure B-13 GI 275 Autopilot/Flight Director - Honeywell (Bendix-King) Interconnect Example (Sheet 4 of 6)

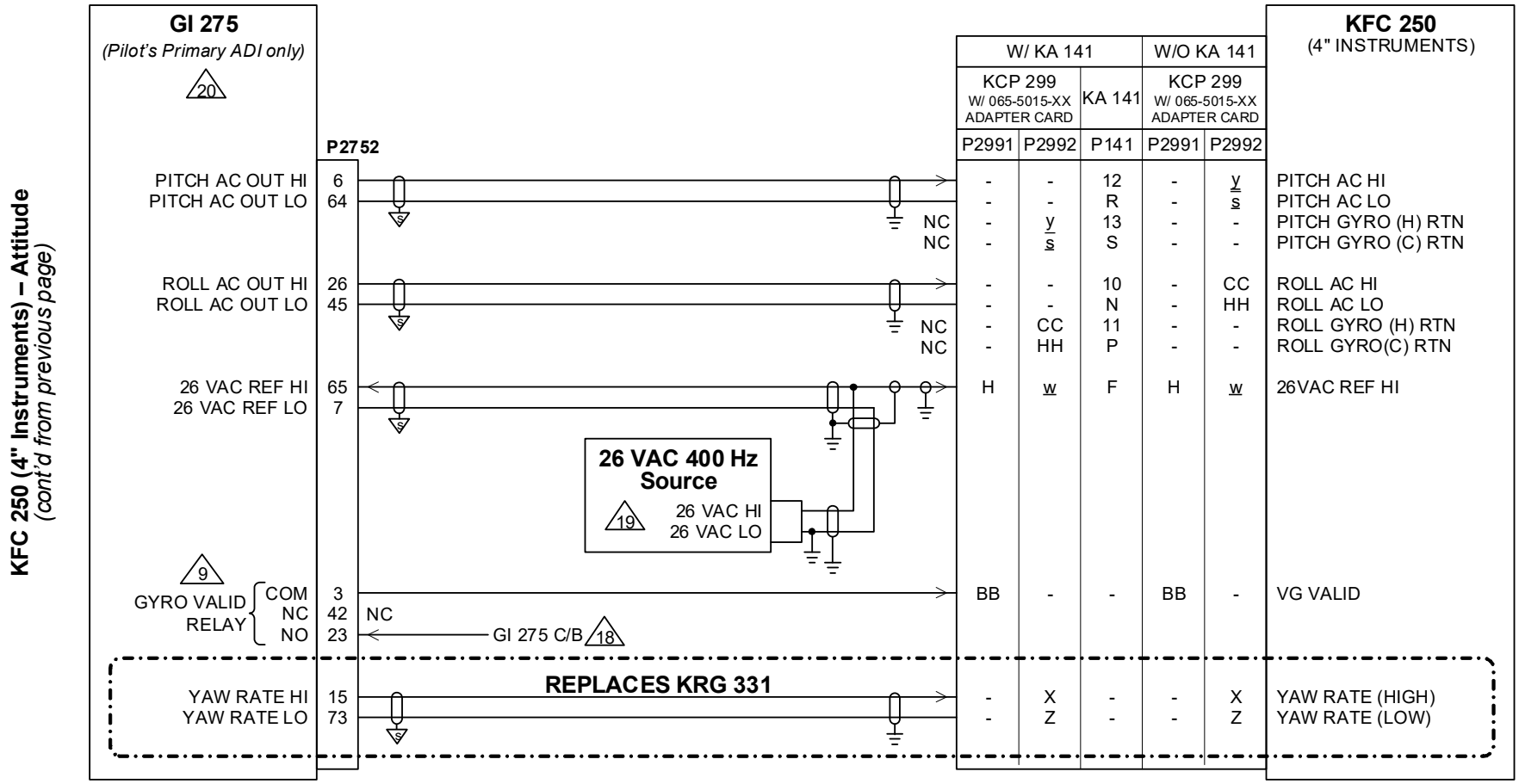


Figure B-13 GI 275 Autopilot/Flight Director - Honeywell (Bendix-King) Interconnect Example (Sheet 5 of 6)

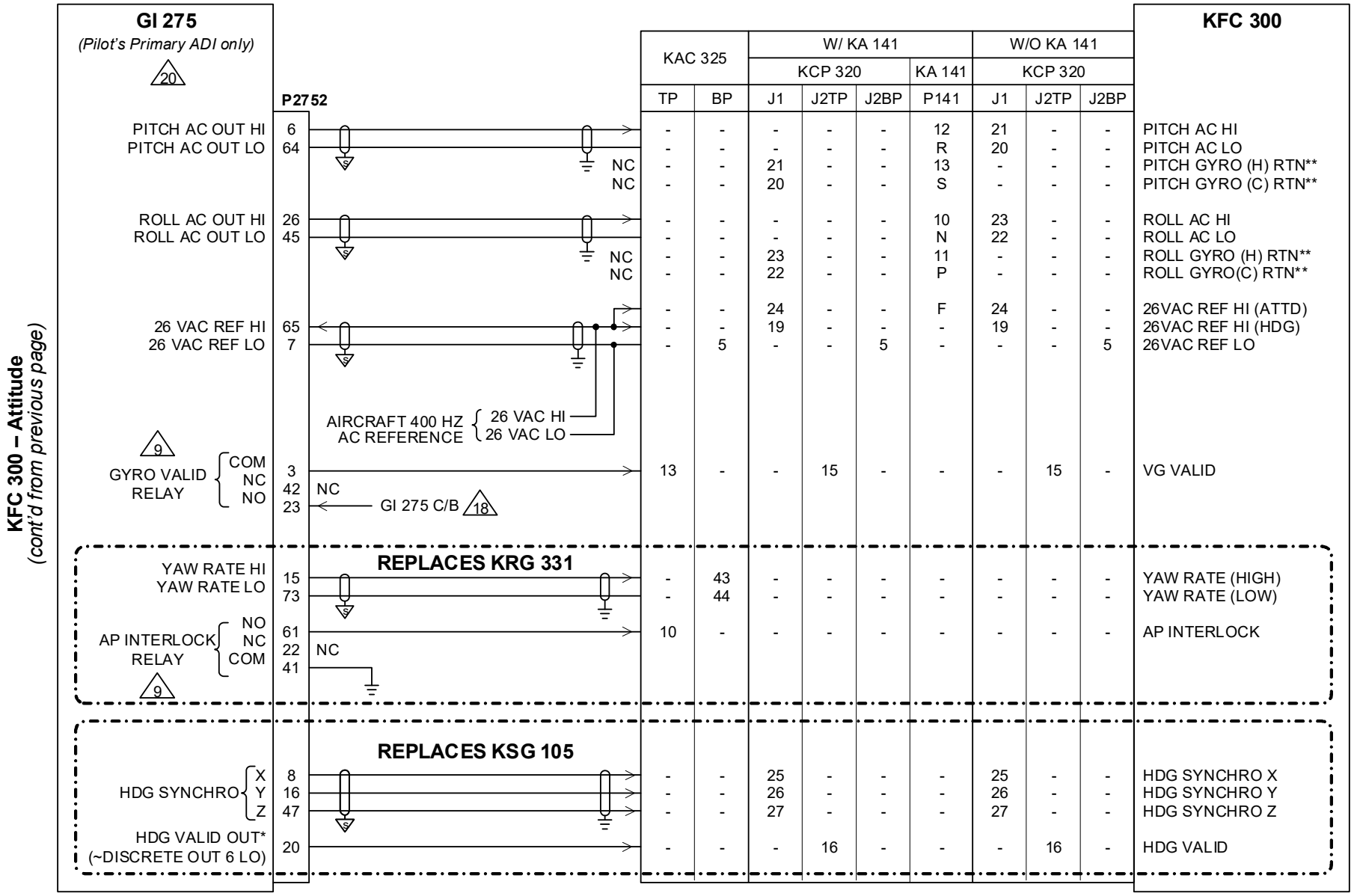
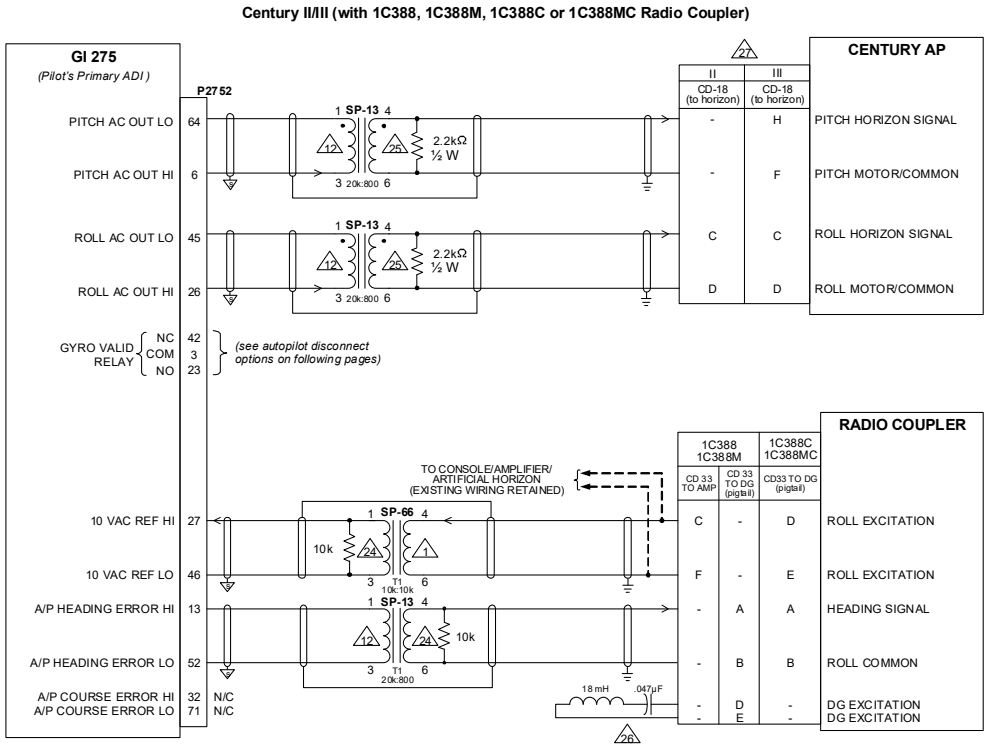


Figure B-13 GI 275 Autopilot/Flight Director - Honeywell (Bendix-King) Interconnect Example (Sheet 6 of 6)



NOTES:

1. USE MIL-T-27 TYPE TF5S21ZZ TRANSFORMER TRIAD MAGNETICS P/N SP-66.
2. FLIGHT DIRECTOR WIRING TO EXISTING ADI MUST BE DISCONNECTED IF THIS INDICATOR IS USED AS A STANDBY INSTRUMENT FOR THE GI 275. THIS ADI MUST BE LOCATED ON IN ACCORDANCE WITH SECTION 3.2. IF THIS INDICATOR IS BEING RELOCATED TO THE COPILOT'S SIDE, WIRING MAY BE CONNECTED IN PARALLEL TO THIS ADI AND MUST BE CONNECTED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
3. IF THE 52C77/-2/-3/-4 ADI IS CONNECTED WITH THE GI 275, THE 18.0 Ω OR 30.0 Ω RESISTOR MUST NOT BE INSTALLED.
4. IF THE FLIGHT DIRECTOR IS BEING DISPLAYED ON THE COPILOT'S ADI, THIS FLIGHT DIRECTOR ALIGNMENT MUST BE CORRECTLY ADJUSTED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS PRIOR TO MAKING ANY ADJUSTMENTS TO THE GI 275.
5. ENSURE ANY JUMPERS AT CD185 PINS 8, 9 AND 17 ARE REMOVED TO CONFIGURE COMPUTER FOR NSD 360A.
6. USE RESISTOR P/N RE65G() OR RE65N() (PER MIL-PRF-18546) CHASSIS MOUNT POWER RESISTOR MEETING THE FOLLOWING SPECIFICATIONS:
   - 18.0 Ω FOR CENTURY IV AND 14 VDC SYSTEMS WITH CENTURY 41 AND 2000, OR 30.0 Ω FOR 28 VDC SYSTEMS WITH CENTURY 41 OR 2000 AUTOPILOTS.
   - MINIMUM POWER RATING OF 10 WATTS.
   - MAXIMUM TOLERANCE OF +/- 5%.

   LOCATE RESISTOR ON METALLIC SECONDARY STRUCTURE WITHIN INSTRUMENT PANEL AREA NEAR GI 275.
7. DIODE INSTALLED FOR CENTURY IV SYSTEM ONLY. USE 1N4444 OR EQUIVALENT.
8. MAKE THIS CONNECTION FOR CENTURY 41 AND 2000 SYSTEMS ONLY.
9. MAKE THIS CONNECTION FOR CENTURY IV SYSTEMS ONLY.
10. THE 5KHZ SIGNAL IS ONLY REQUIRED FOR AC AUTOPILOTS.
11. SPLICE BOTH WIRES TOGETHER INTO PIN B OF CD33 TO AMP.
12. USE MIL-T-27 TYPE TF5S21ZZ TRANSFORMER TRIAD MAGNETICS P/N SP-13.
13. FOR CENTURY 21 AUTOPILOT: IF OPTIONAL A/P DISC SWITCH IS INSTALLED, REMOVE THE EXISTING CONDUCTOR FROM CD194 – 11. CONNECT CD194 – 11 TO THE GI 275 RELAY WIRING AS SHOWN.
14. FOR CENTURY 21 AUTOPILOT: IF OPTIONAL A/P DISC SWITCH IS NOT INSTALLED, REMOVE THE EXISTING CONDUCTOR FROM CD194 PINS 11 AND 12. INSTALL WIRING TO THE GI 275 RELAY (WITHOUT SWITCHES) AS SHOWN.
15. REMOVE THE EXISTING CONDUCTOR FROM CD189 - 3. CONNECT CD189 - 3 TO THE GI 275 RELAY AS SHOWN.
16. FOR CENTURY 31, 41, AND 2000 INSTALLATIONS ONLY.
17. CONNECTIONS MUST BE MADE TO THE PILOT'S PRIMARY ADI ONLY.
18. RETAIN EXISTING WIRE FROM CD-34 PIN K TO CD-58 PIN C.
19. RELOCATE EXISTING WIRE FROM CD-20 PIN 1 TO NEW AP DISC RELAY AS SHOWN.
20. RELOCATE EXISTING WIRE FROM CD-76 PIN B TO NEW AP DISC RELAY AS SHOWN. EXTEND EXISTING WIRE IF NECESSARY.
21. INSTALL EXTERNAL AP DISCONNECT RELAY INTO AP DISCONNECT CIRCUIT AS SHOWN. EXTERNAL AP DISC RELAY CONTACTS MUST SUPPORT THE MAXIMUM CURRENT THROUGH THE AP DISCONNECT WIRING.
22. ALL WIRES FROM RELAY TO AP DISC INPUT MUST BE OF THE SIZE SPECIFIED IN THE AUTOPILOT INSTALLATION MANUAL TO SUPPORT THE CURRENT LOAD FROM THE DISCONNECT CIRCUIT.
23. AP DISC RELAY MUST BE CONNECTED TO THE CIRCUIT BREAKER FOR THE GI 275 THAT IS PROVIDING ATTITUDE TO THE AUTOPILOT.
24. USE 10.0 KOHM, ½ W RESISTOR SUCH AS P/N RN65E2201FB14.
25. USE 2.2 KOHM, ½ W RESISTOR SUCH AS P/N RN65E2201FB14.
26. FOR NEW INSTALLATIONS, USE INDUCTOR P/N 5800-183-RC AND CAPACITOR P/N M29014/05-2273.
27. USE CD-18 THAT WAS DIRECTLY CONNECTED TO THE HORIZON INDICATOR BEING REPLACED.

Figure B-14 GI 275 Autopilot/Flight Director - Century Interconnect Example (Sheet 1 of 4)

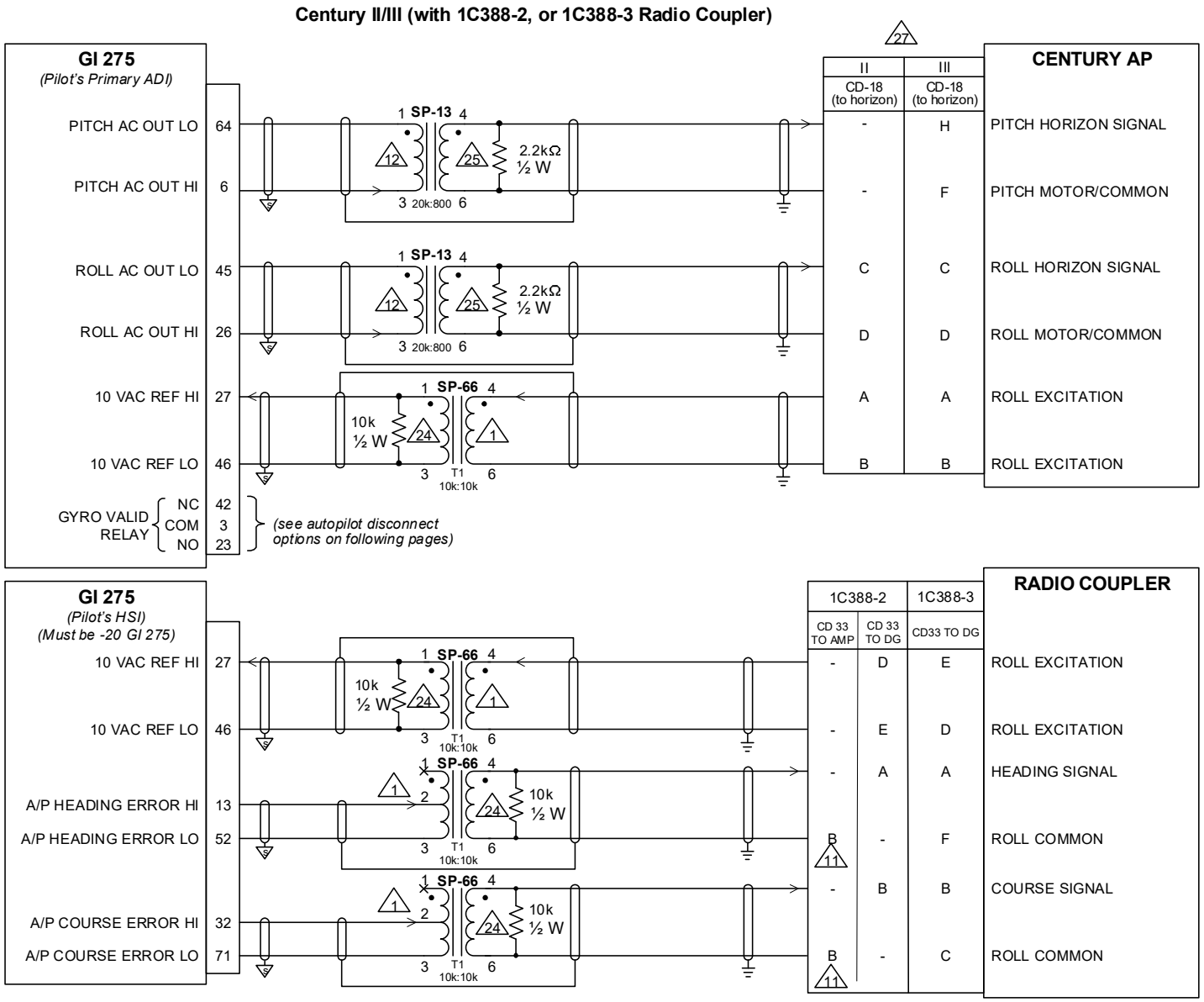
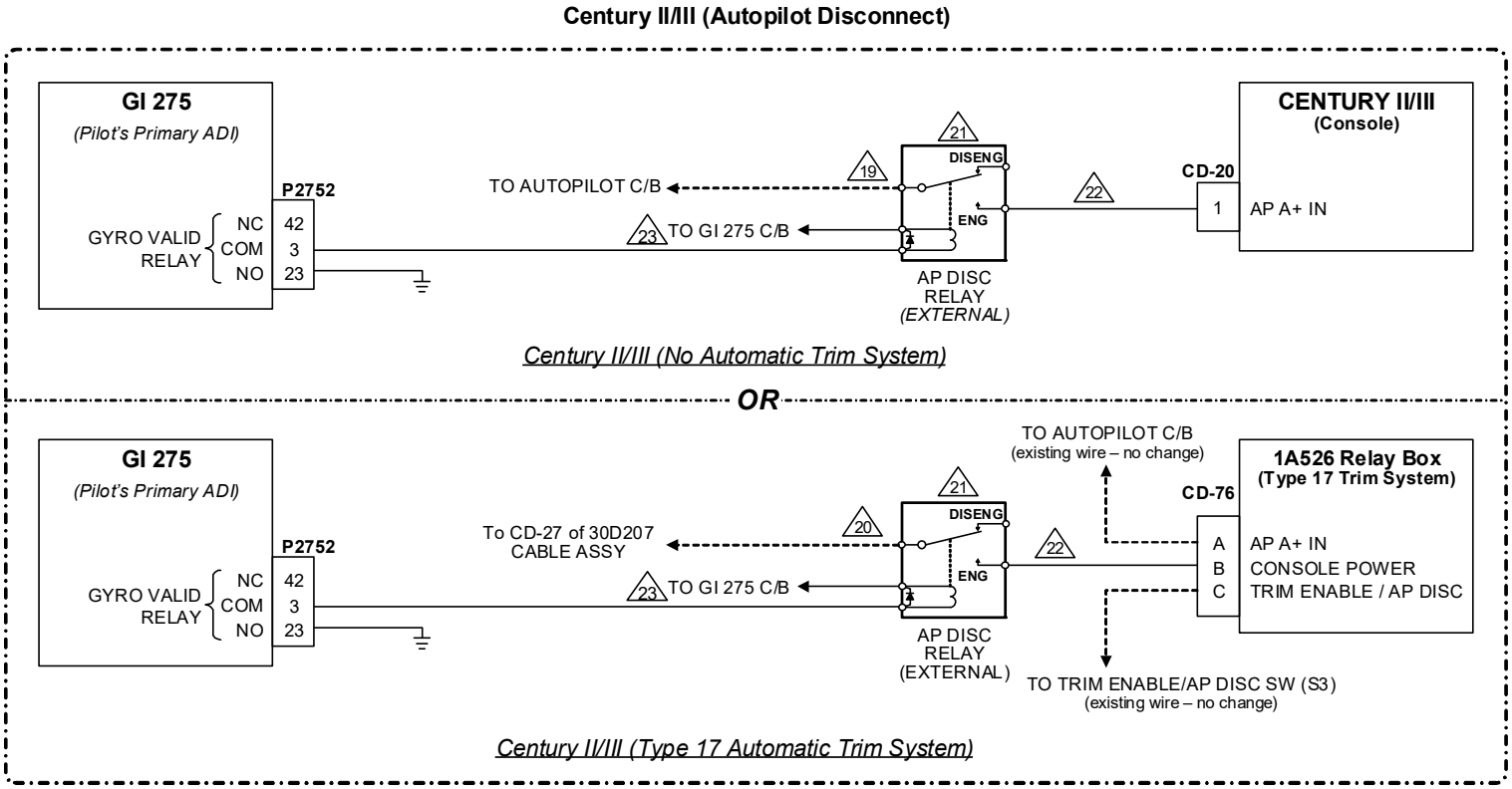


Figure B-14 GI 275 Autopilot/Flight Director - Century Interconnect Example (Sheet 2 of 4)



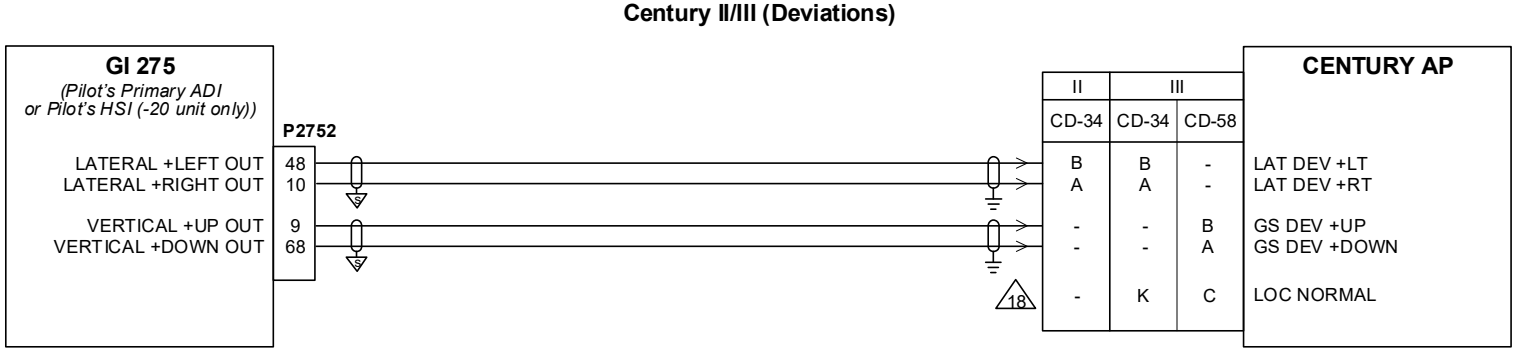


Figure B-14 GI 275 Autopilot/Flight Director - Century Interconnect Example (Sheet 3 of 4)

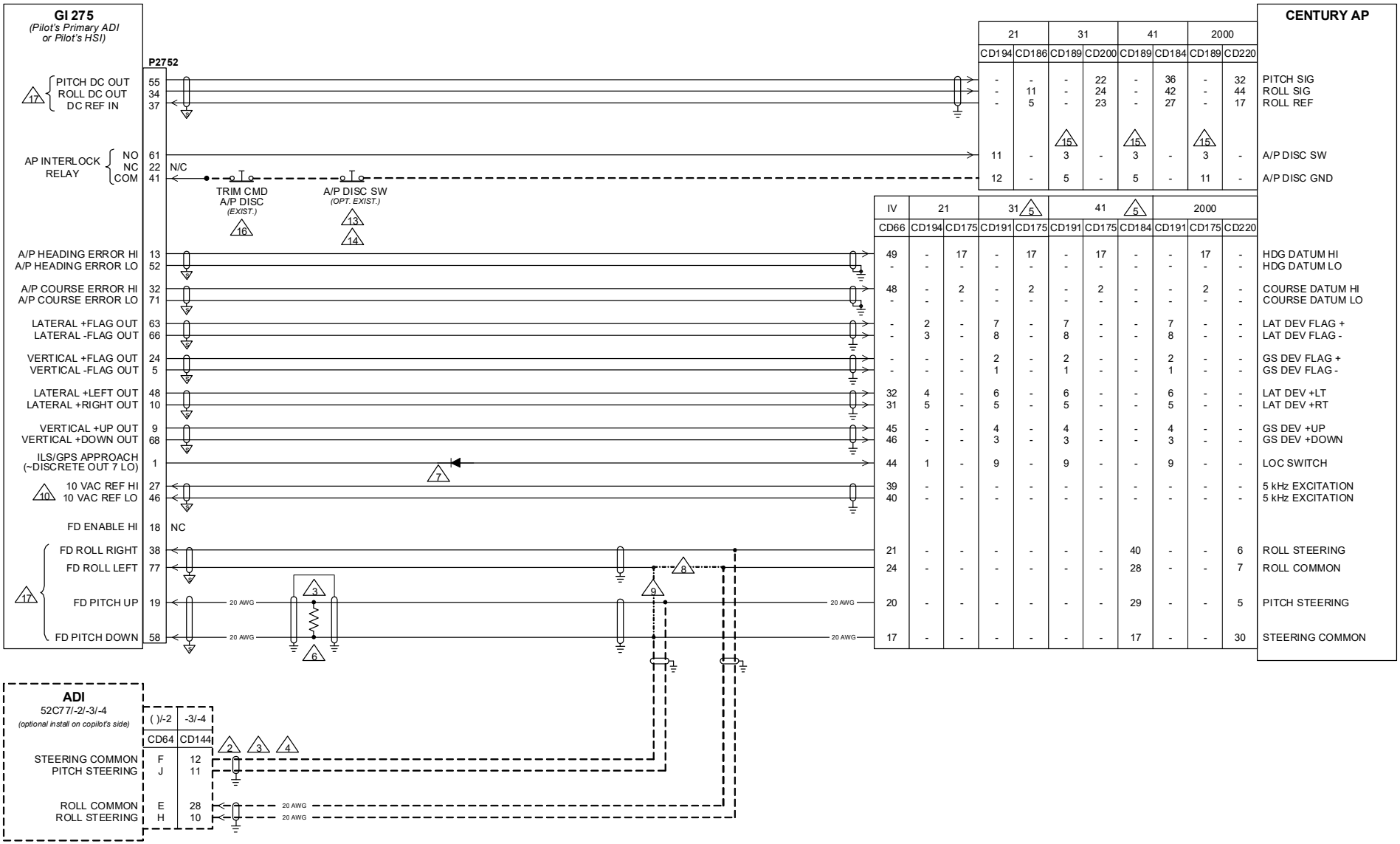
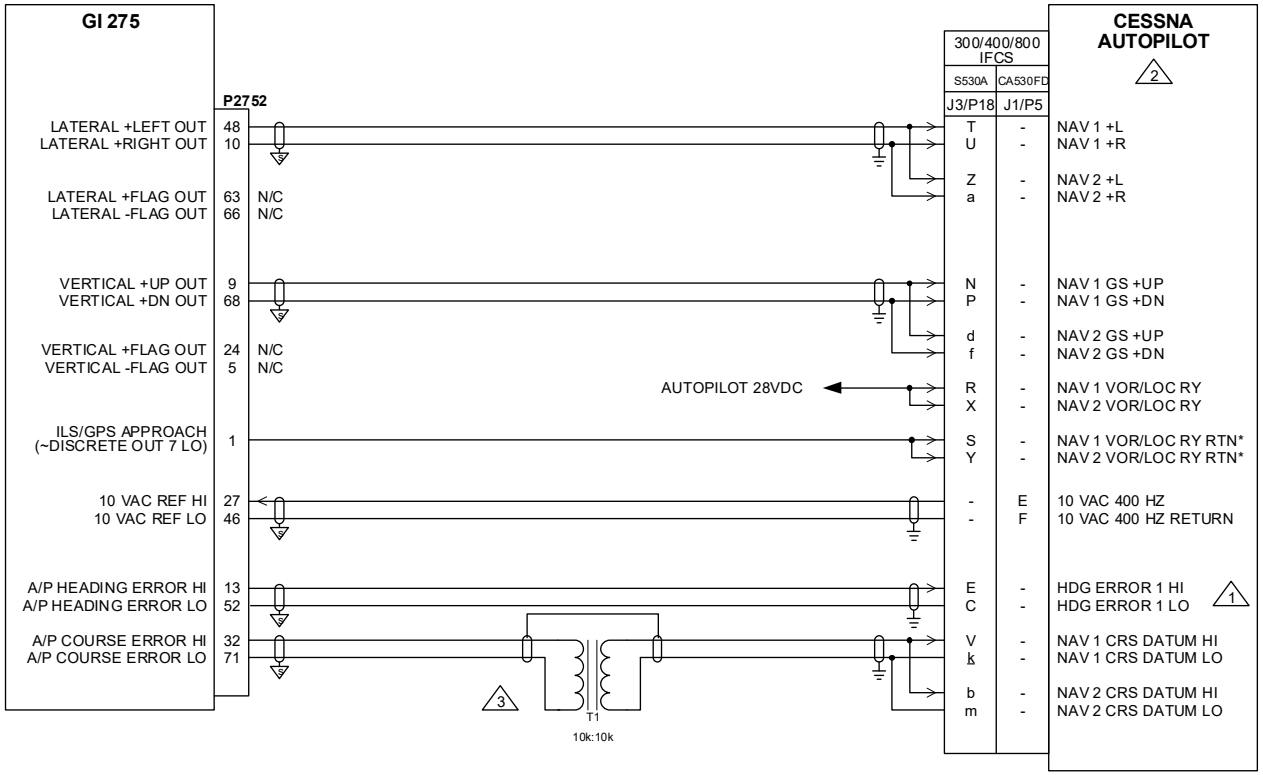


Figure B-14 GI 275 Autopilot/Flight Director - Century Interconnect Example (Sheet 4 of 4)



NOTES:

1. TUNE RESISTANCE POTS ON HEADING ERROR HI AND COURSE ERROR HI TO END OF TRAVEL IN ORDER NOT TO AFFECT THE HEADING AND COURSE ERROR SIGNALS.
2. THE NAV1/NAV2 LIGHTED SWITCH LEGEND MUST BE OBSCURED SUCH THAT ANY NAV SOURCE INDICATION ON THE AUTOPILOT MODE CONTROLLER IS HIDDEN FROM VIEW.
3. INSTALL TRANSFORMER P/N TY-141P OR EQUIVALENT.
4. FLIGHT DIRECTOR WIRING TO EXISTING ADI MUST BE DISCONNECTED IF THIS INDICATOR IS USED AS A STANDBY INSTRUMENT FOR THE GI 275. THIS ADI MUST BE LOCATED ON IN ACCORDANCE WITH SECTION 3.2. IF THIS INDICATOR IS BEING RELOCATED TO THE COPILOT'S SIDE, WIRING MAY BE CONNECTED IN PARALLEL TO THIS ADI AND MUST BE CONNECTED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
5. MAINTAIN EXISTING CONNECTION BETWEEN AUTOPILOT COMPUTER AND MODE SELECTOR.
6. JUMPER IS REQUIRED FOR DC HEADING/COURSE ERROR SIGNALS.
7. THE ILS/GPS APPROACH DISCRETE OUTPUT MUST ALSO BE CONNECTED TO THE BACK COURSE RELAY – REFER TO MANUFACTURER'S DOCUMENTATION FOR ADDITIONAL DETAILS.
8. ATTITUDE TEST SWITCH NOT USED IN ALL INSTALLATIONS. FOR INSTALLATIONS WHICH USE AN ACCELERATION SENSOR TEST SWITCH CIRCUIT, THE GI 275 "PITCH AC OUT HI" PIN MUST BE DIRECTLY CONNECTED TO THE DEPICTED "PITCH INPUT" PIN ON THE AUTOPILOT.
9. REMOVE EXISTING WIRE FROM THE "A/P DISABLE IN" PIN AND CONNECT THIS REMOVED WIRE TO THE GI 275 "ATTITUDE VALID RELAY COM" PIN.
10. PIN 32 MUST BE UNCONNECTED FOR ALL INSTALLATIONS. IF A G-895A INDICATOR WAS PREVIOUSLY INSTALLED, VERIFY THAT WIRING ON PIN 32 IS REMOVED.
11. GI 275 GYRO VALID RELAY BECOMES PART OF EXISTING INTERLOCK CIRCUIT AS DEPICTED. SPLICE INTO EXISTING ACTUATOR INTERLOCK WIRING AS DEPICTED. GI 275 GYRO VALID RELAY IS REQUIRED FOR ALL INSTALLATIONS, EVEN IF PREVIOUS GYRO DID NOT UTILIZE GYRO VALID CIRCUIT (I.E. G-519/550). SEE AIRCRAFT WIRING DIAGRAMS TO ENSURE THAT ACTUATOR INTERLOCK CIRCUIT IS PROPERLY RETAINED.
12. MAINTAIN EXISTING CONNECTION BETWEEN AUTOPILOT COMPUTER AND AIRCRAFT WIRING.
13. CONNECTIONS MUST BE MADE TO THE PILOT'S PRIMARY ADI ONLY.

Figure B-15 GI 275 Autopilot/Flight Director - Cessna Interconnect Example (Sheet 1 of 4)

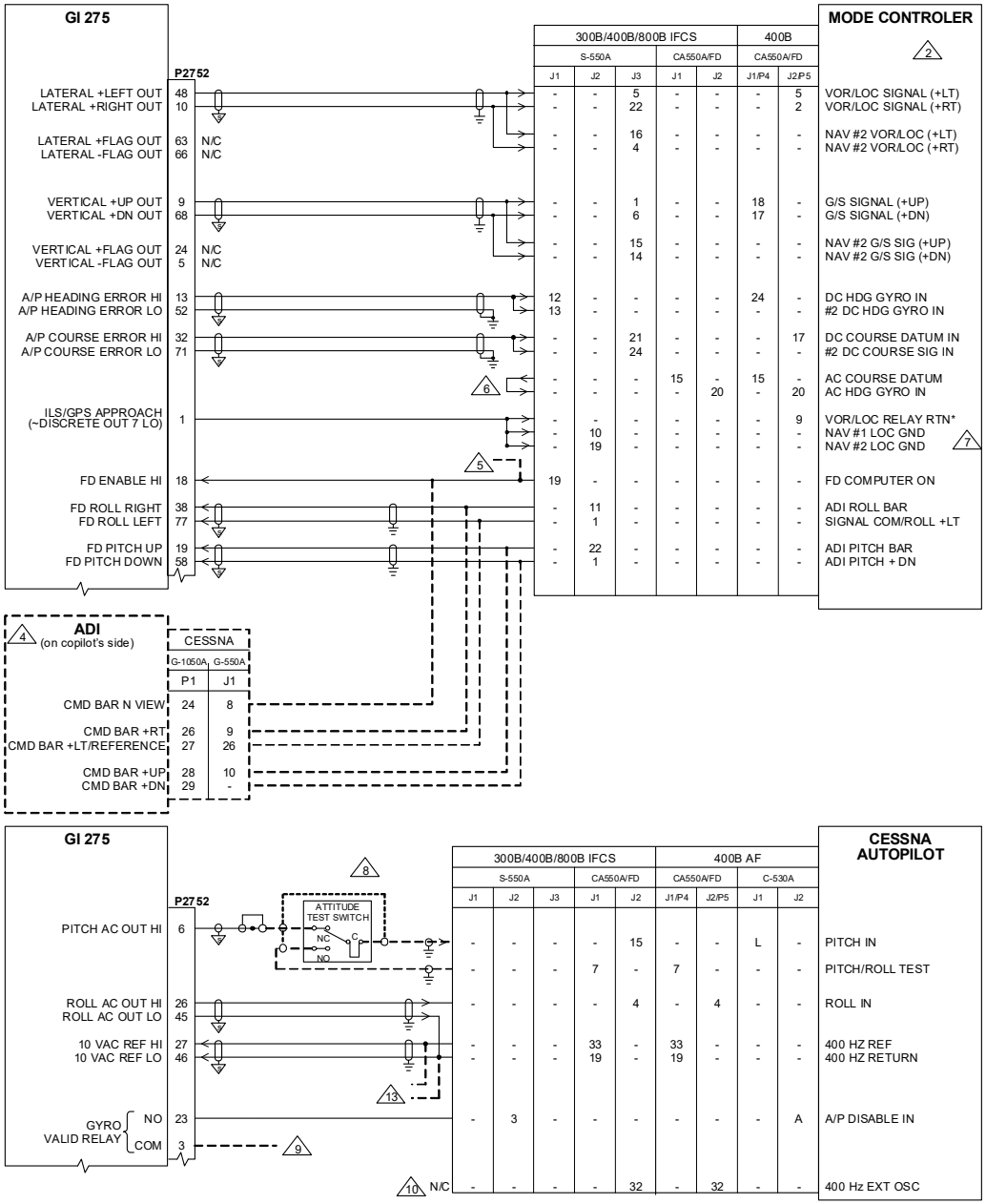


Figure B-15 GI 275 Autopilot/Flight Director - Cessna Interconnect Example (Sheet 2 of 4)

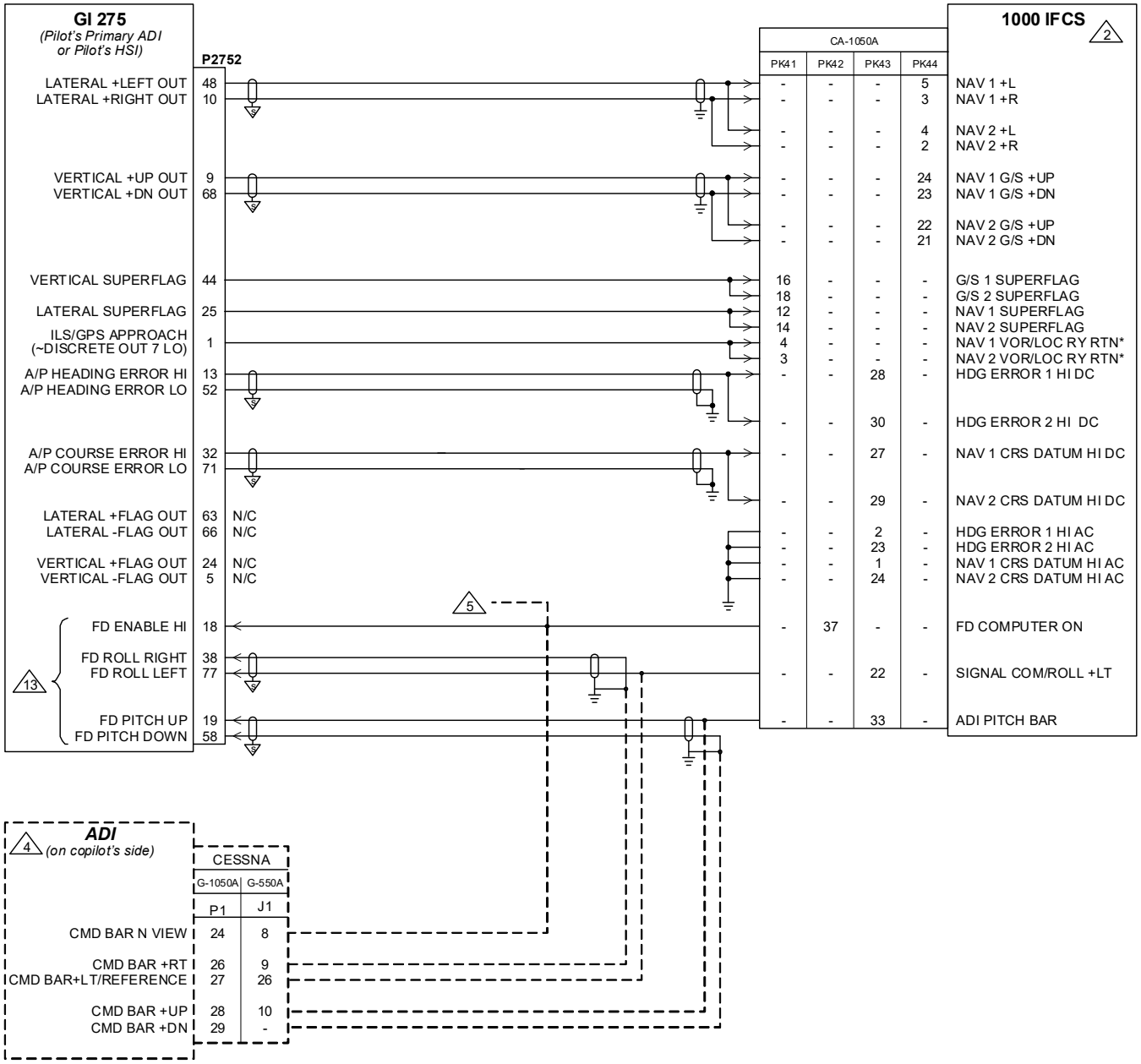


Figure B-15 GI 275 Autopilot/Flight Director - Cessna Interconnect Example (Sheet 3 of 4)

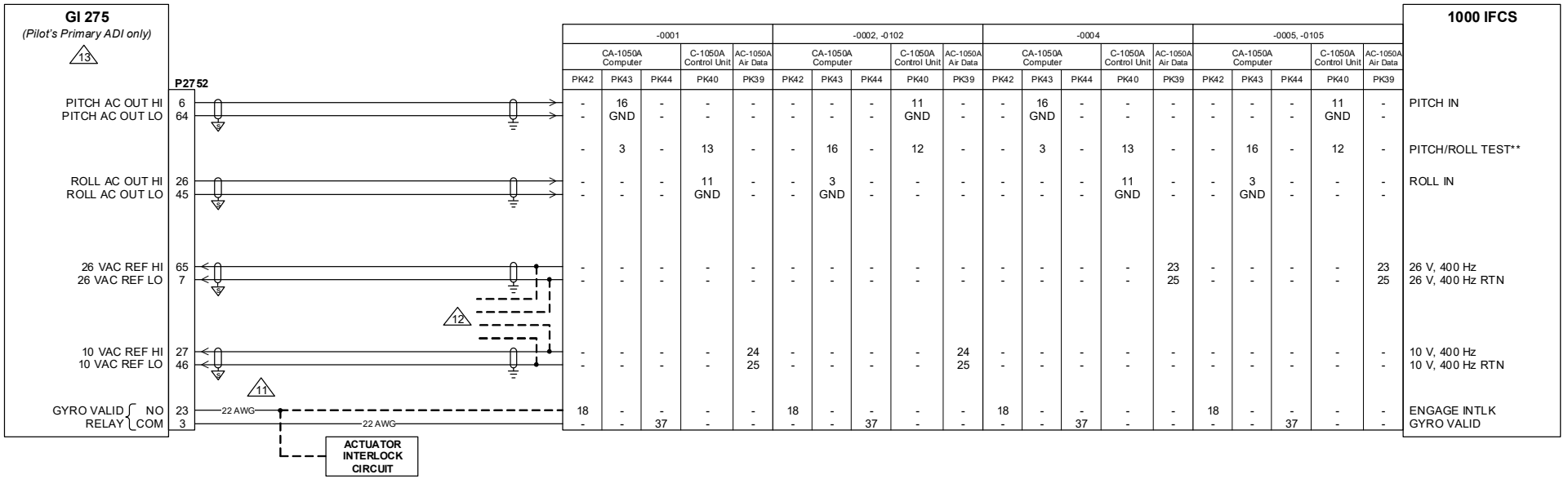
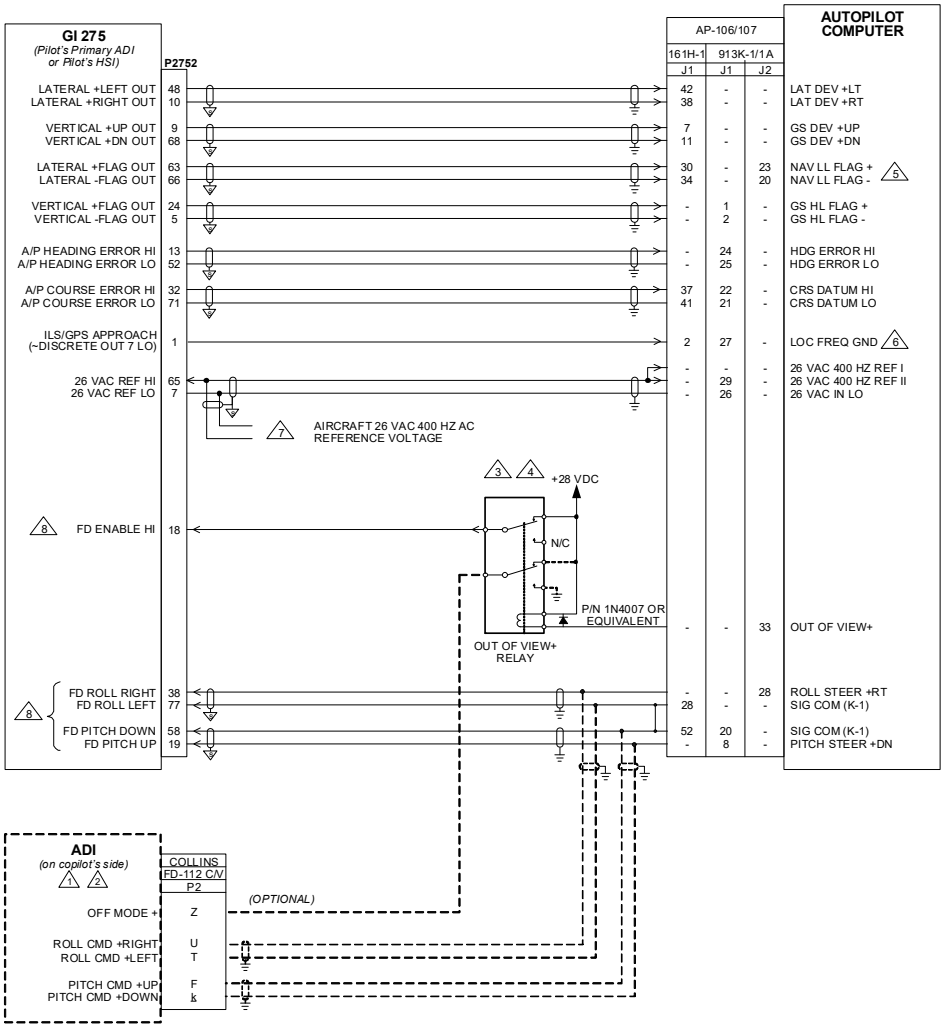


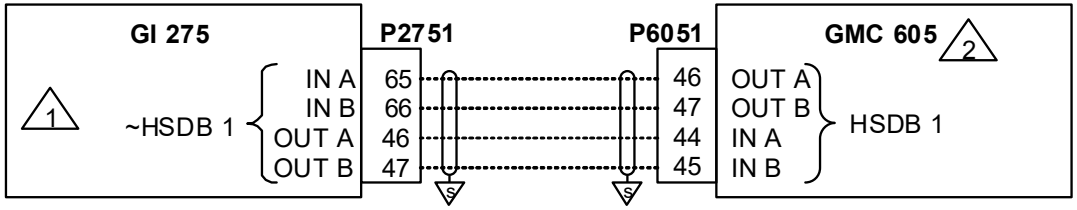
Figure B-15 GI 275 Autopilot/Flight Director - Cessna Interconnect Example (Sheet 4 of 4)



NOTES:

1. IF THE FLIGHT DIRECTOR IS BEING DISPLAYED ON THE CO-PILOT'S ADI, THIS FLIGHT DIRECTOR ALIGNMENT MUST BE CORRECTLY ADJUSTED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS PRIOR TO MAKING ANY ADJUSTMENTS TO THE GI 275.
2. FLIGHT DIRECTOR WIRING TO EXISTING ADI MUST BE DISCONNECTED IF THIS INDICATOR IS USED AS A STANDBY INSTRUMENT FOR THE GI 275. THIS ADI MUST BE LOCATED ON IN ACCORDANCE WITH SECTION 3.2. IF THIS INDICATOR IS BEING RELOCATED TO THE COPILOT'S SIDE, WIRING MAY BE CONNECTED IN PARALLEL TO THIS ADI AND MUST BE CONNECTED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. .
3. IT IS NECESSARY TO INSTALL A RELAY TO INVERT THE POLARITY OF THE "OUT OF VIEW+" SIGNAL FROM ACTIVE-LOW TO ACTIVE-HIGH FOR INPUT INTO THE GI 275. USE M39016/6-204M OR 207M OR EQUIVALENT. RELAY COIL MUST NOT DRAW MORE THAN 50 MA.
4. IF THE OPTIONAL COPILOT'S ADI IS INSTALLED, THE "OFF MODE+" SIGNAL MUST BE DISCONNECTED FROM THE AUTOPILOT (J2-33) AND ISOLATED USING A RELAY AS SHOWN.
5. CONNECT LATERAL + FLAGS FROM 161H-1 TO 913K-1A FOR 913K-1A SYSTEMS ONLY.
6. SEE STRAPPING INFORMATION IN INSTALLATION BOOK 523-0764806, PAGE 4 (REVISED 27 JUNE 1984 - 913K-1/1A STRAPPING OPTIONS) AND PAGE 11 (REVISED 1 MARCH 1977 - 161H-1 STRAPPING OPTIONS). STRAP FOR NEGATIVE-LOGIC LOCALIZER FREQUENCY SIGNAL INPUT. ALTERNATIVELY, CONNECT A RELAY TO INVERT THE SIGNAL FROM THE GI 275 FOR ACTIVE-HIGH OUTPUT.
7. 26 VAC 400HZ REFERENCE POWER FOR THE GI 275 AND AUTOPILOT MUST BE FROM THE SAME SOURCE AND IN PHASE.
8. CONNECTIONS MUST BE MADE TO THE PILOT'S PRIMARY ADI ONLY.

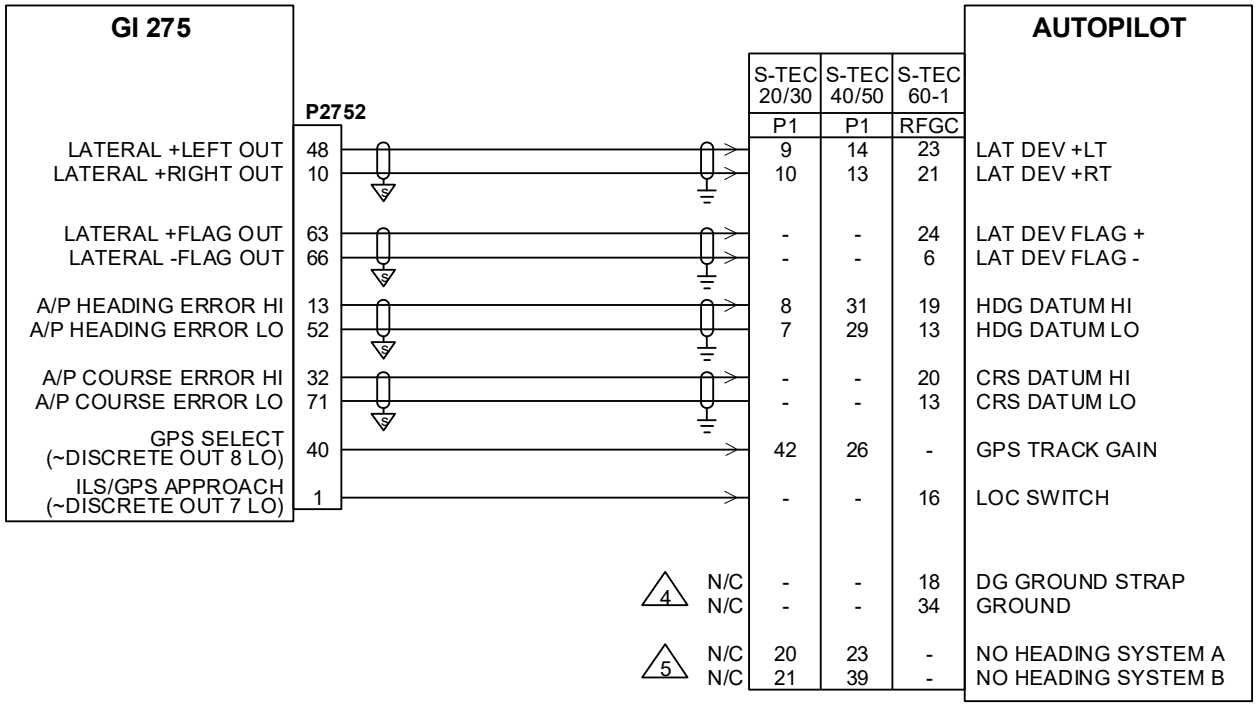
Figure B-16 GI 275 Autopilot/Flight Director - Collins Interconnect Example



NOTES:

1. ANY AVAILABLE ETHERNET PORT MAY BE USED.
2. GI 285 MUST BE USED FOR AUTOPILOT MODE ANNUNCIATIONS.

Figure B-17 GI 275 Autopilot/Flight Director Garmin GFC 600 Interconnect Example



NOTES:

1. FLIGHT DIRECTOR LOGIC OUTPUT FROM THE 55/55X (P2-4) MUST NOT BE CONNECTED TO ST-645 REMOTE ANNUNCIATOR (P1-20). IF THE ST-645 WAS PREVIOUSLY INSTALLED, THE WIRE CONNECTING THE 55/55X COMPUTER P2-4 TO ANNUNCIATOR P1-20 MUST BE REMOVED OR CAPPED AND STOWED.
2. TO SUPPORT THE FLIGHT DIRECTOR INTERFACE WITH THE GI 275, THE PILOT-ACCESSIBLE PARALLAX POT CONNECTIONS MUST BE REMOVED.
3. ALT SEL JUMPER MUST NOT BE INSTALLED IF THE GI 275 IS PROVIDING THE ALTITUDE PRESELECT FUNCTION.
4. IF THE GI 275 IS REPLACING A DIRECTIONAL GYRO, ENSURE THE “DG GROUND STRAP” JUMPER IS REMOVED.
5. IF THE GI 275 IS BEING INSTALLED IN AN AIRCRAFT THAT HAD NO HEADING SYSTEM, ENSURE THAT THE “NO HEADING SYSTEM” JUMPER IS REMOVED.
6. THE ST-670 (P/N 01180 FOR THE KI-256) IS REQUIRED TO SUPPORT THE FLIGHT DIRECTOR DISPLAY FROM THE S-TEC 60-2, AND 65 AUTOPILOTS.
7. THE FLIGHT DIRECTOR CANNOT BE DISPLAYED ON AN ADI ON THE CO-PILOT’S SIDE BECAUSE THERE IS NO WAY TO ADJUST THE FLIGHT DIRECTOR OFFSET FOR THIS ADI AFTER THE PARALLAX POT IS REMOVED.
8. CONNECTIONS MUST BE MADE TO THE PILOT’S PRIMARY ADI ONLY.

Figure B-18 GI 275 Autopilot/Flight Director - S-TEC Interconnect Example (Sheet 1 of 3)

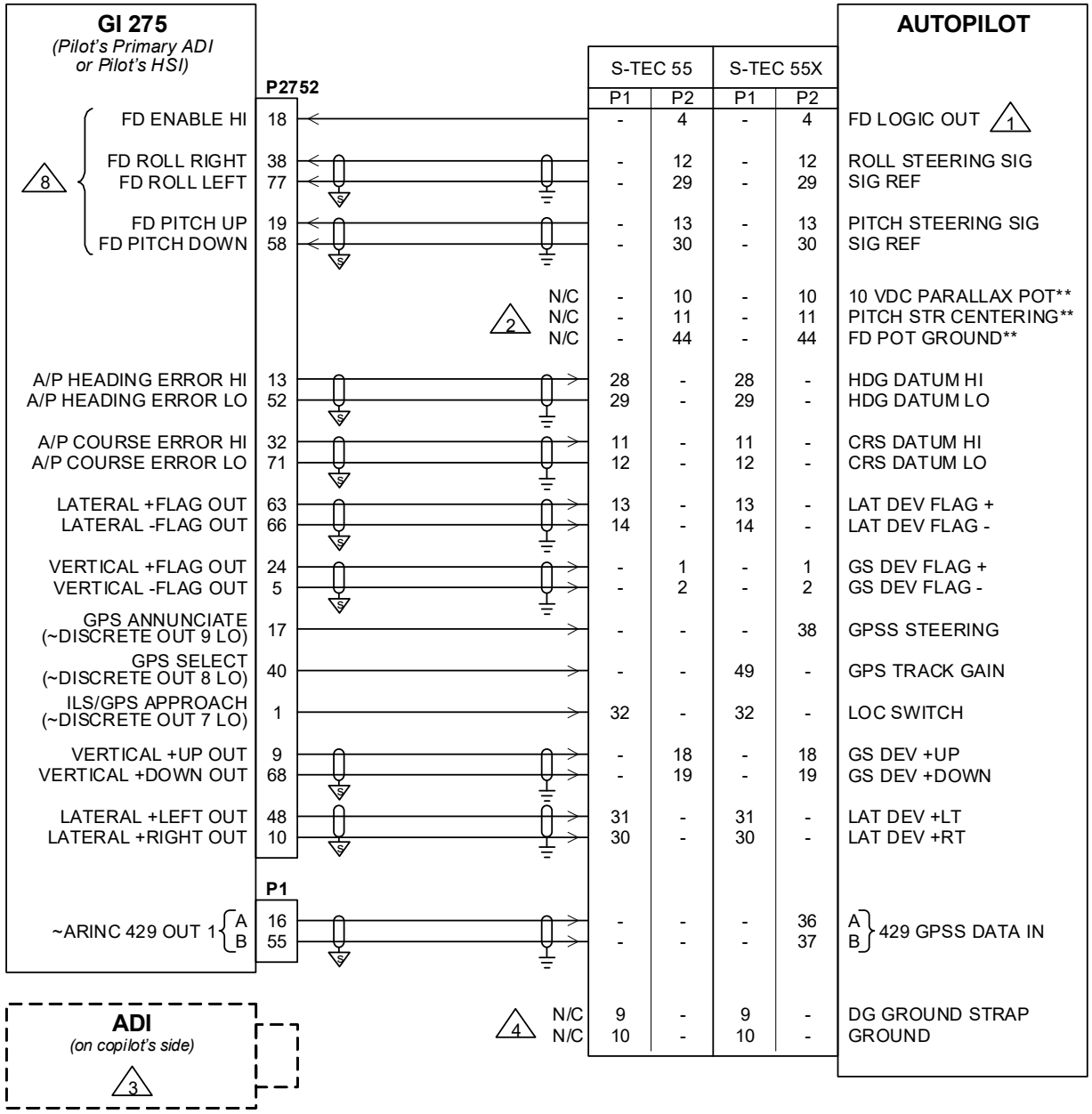


Figure B-18 GI 275 Autopilot/Flight Director - S-TEC Interconnect Example (Sheet 2 of 3)

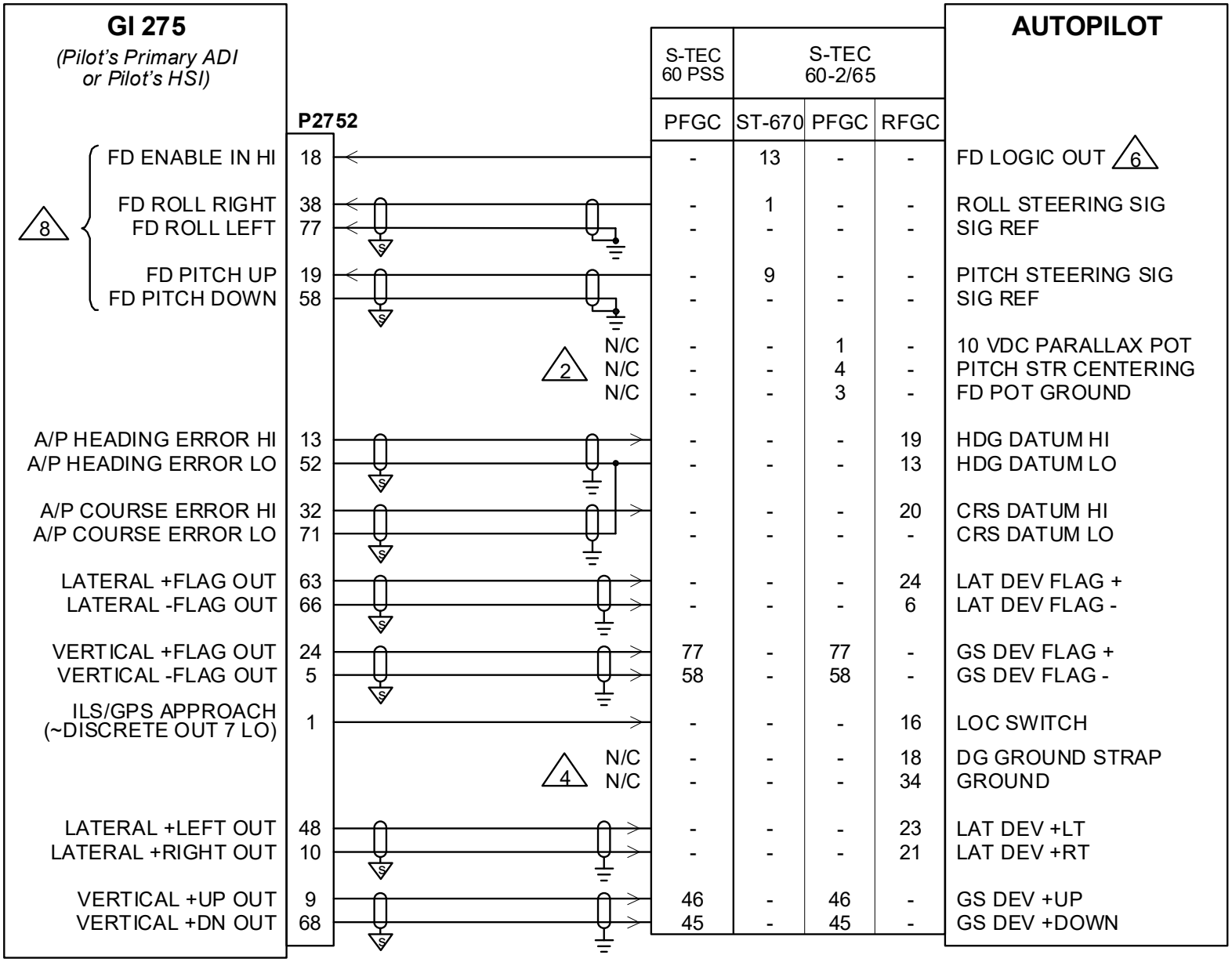
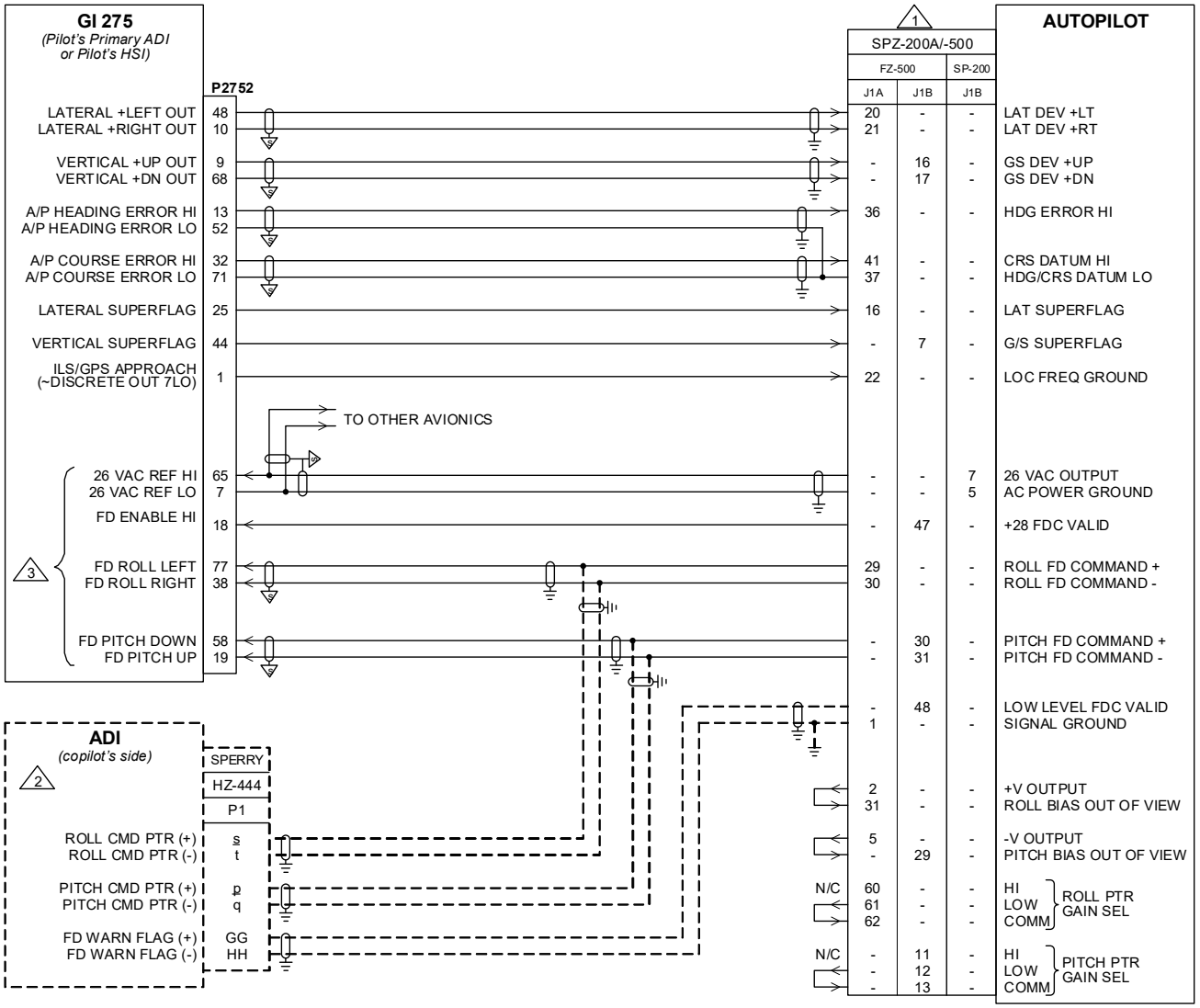


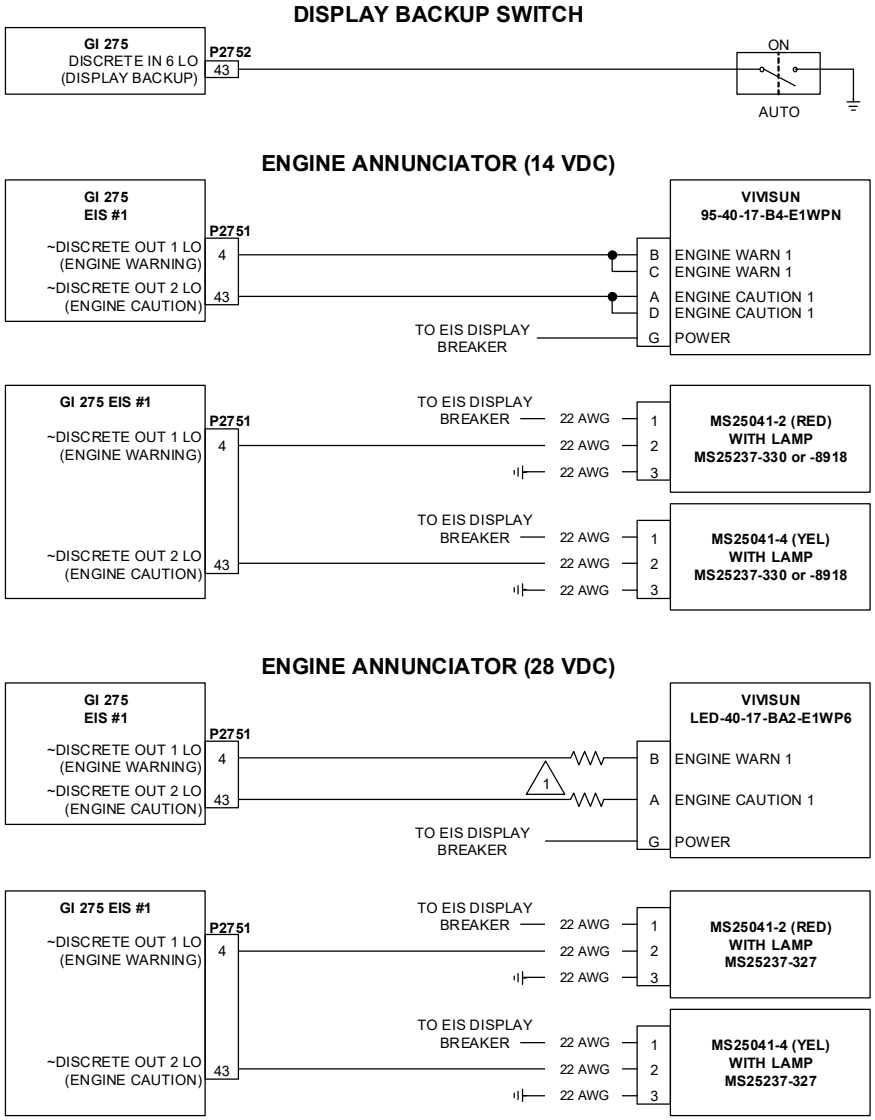
Figure B-18 GI 275 Autopilot/Flight Director - S-TEC Interconnect Example (Sheet 3 of 3)



NOTES:

1. EXISTING ACTIVE-HIGH HDG VALID SIGNAL FROM HSI TO FD COMPUTER MUST BE SUPPLIED DIRECTLY FROM DG ONCE EXISTING HSI IS REMOVED.
2. FLIGHT DIRECTOR WIRING TO EXISTING ADI MUST BE DISCONNECTED IF THIS INDICATOR IS USED AS A STANDBY INSTRUMENT FOR THE GI 275 – THE DISPLAY OF THE FLIGHT DIRECTOR MUST BE DISABLED IN THIS CASE. IF THIS INDICATOR IS BEING RELOCATED TO THE COPILOT'S SIDE, WIRING MAY BE CONNECTED IN PARALLEL TO THIS ADI AND THE FLIGHT DIRECTOR MAY BE ENABLED. THE WIRING TO THIS ADI MUST BE CONNECTED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
3. CONNECTIONS MUST BE MADE TO THE PILOT'S PRIMARY ADI ONLY.

Figure B-19 GI 275 Autopilot/Flight Director - Sperry Interconnect Example



1 USE 470Ω, ¼ WATT RESISTOR

2. IF AN ENGINE ANNUNCIATOR IS REQUIRED FOR INSTALLATION IN A MULTI-ENGINE AIRCRAFT, MAKE THE CONNECTIONS TO EIS #1 ONLY. THE LEFT-MOST ENGINE (FROM THE PILOT'S POINT-OF-VIEW) SHOULD BE CONFIGURED AS EIS #1.

Figure B-20 GI 275 External Switches and Annunciators Interconnect Example

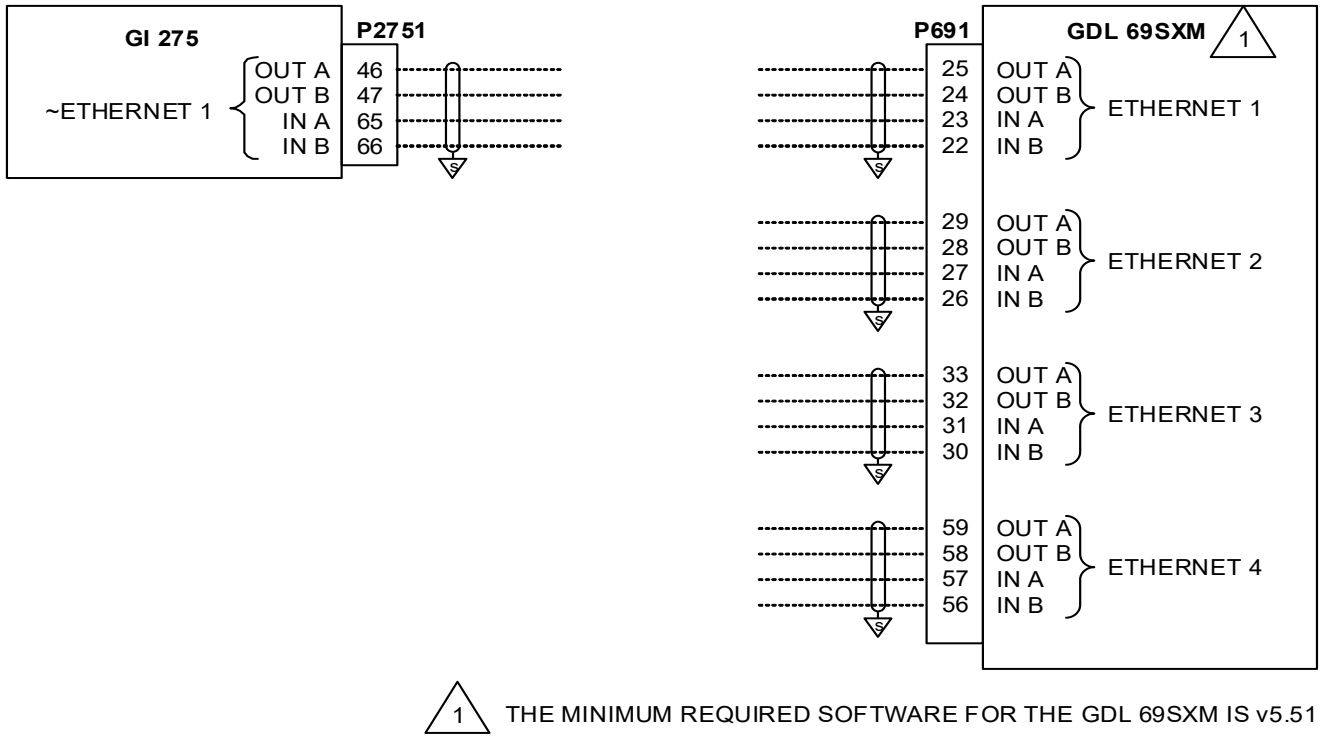


Figure B-21 GI 275 GDL 69SXM Interconnect Example

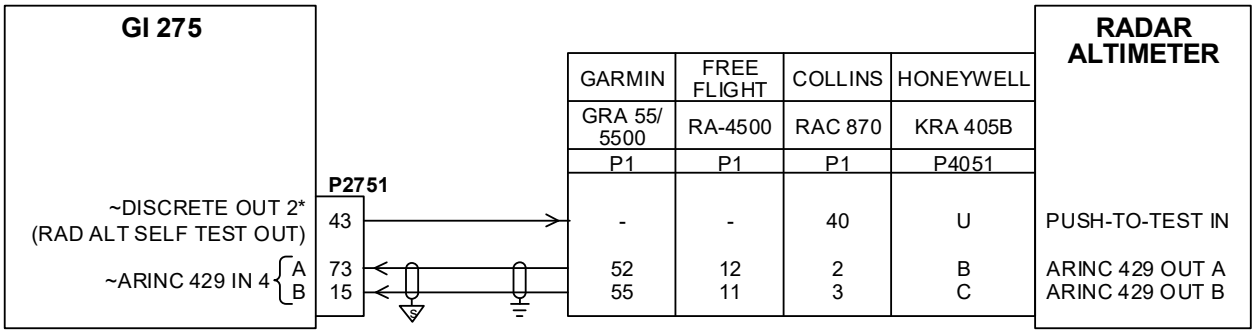


Figure B-22 GI 275 Radar Altimeter Interconnect Example

Figure B-23 GI 275 Serial Altitude Output Interconnect Example

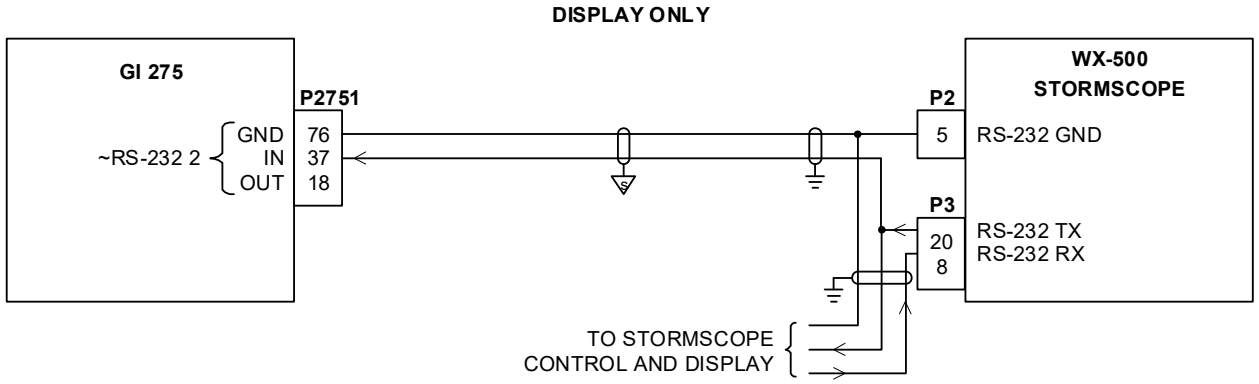
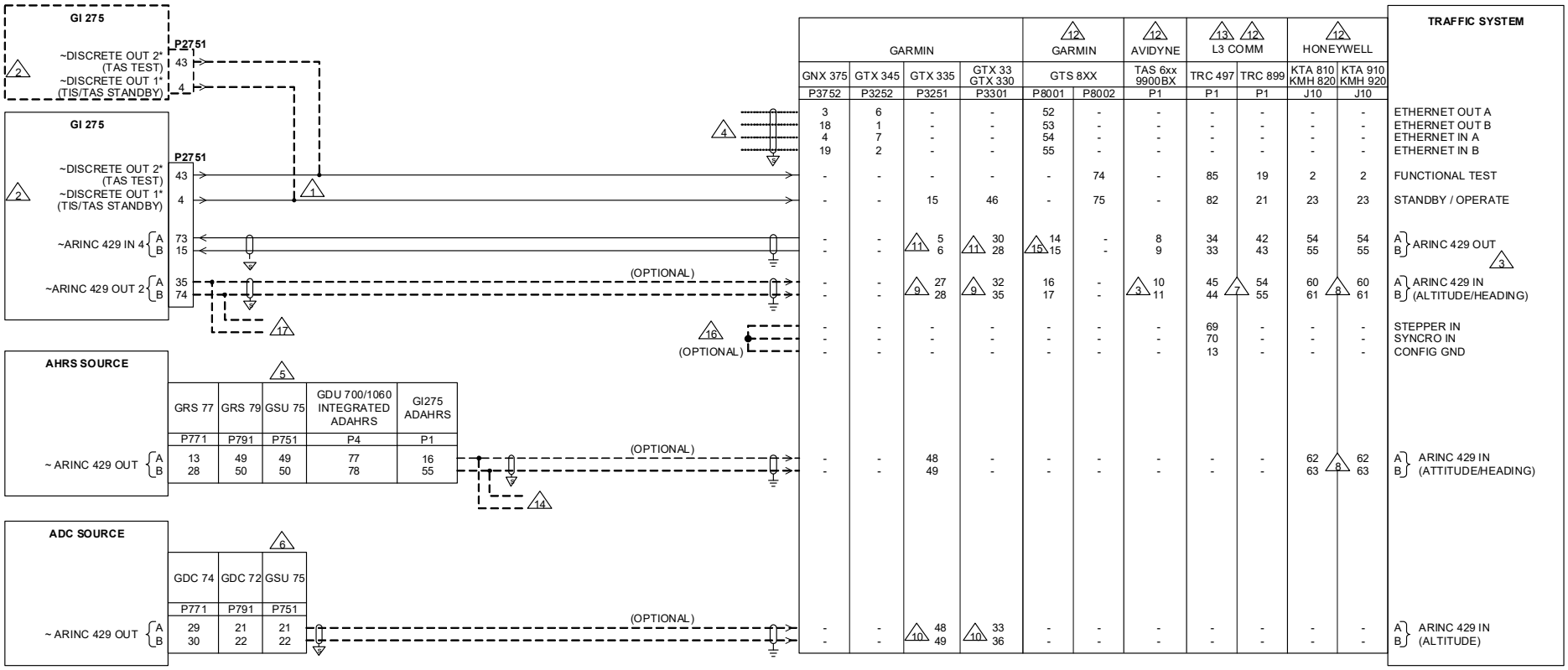


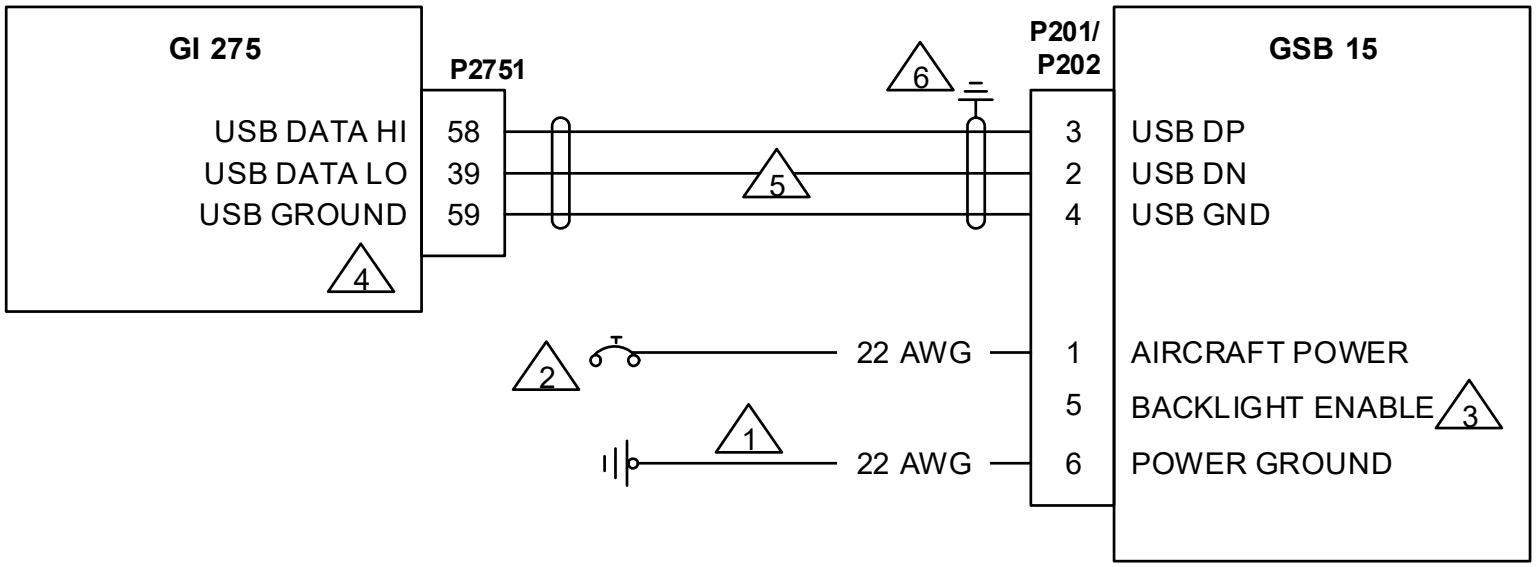
Figure B-24 GI 275 Stormscope Interconnect Example



NOTES:

1. FOR HONEYWELL TRAFFIC SYSTEMS, DO NOT SPLICE "TAS TEST" OR "TIS/TAS STANDBY".
2. TAS TEST AND TIS/TAS STANDBY DISCRETE CONNECTIONS ARE ONLY REQUIRED IF THE GI 275 IS INTERFACED USING ARINC 429 AND CONFIGURED FOR "CONTROL TRAFFIC". DISCRETE CONNECTIONS ARE NOT REQUIRED FOR HSDB INTERFACE.
3. FOR THE TCAD TO ACCEPT ARINC 429 HEADING AND ALTITUDE, PROCESSOR P/N 70-2420-5 OR LATER IS REQUIRED. THE BUS SPEED MUST BE THE SAME FOR ARINC 429 RX 1 AND RX 2.
4. RESERVED.
5. USE ONLY AHRS OR ADAHRS OUTPUT OF GSU 75.
6. USE ONLY ADC OUTPUT OF THE GSU 75.
7. IF DESIRED, ALTITUDE AND HEADING MAY BE PROVIDED BY THE GI 275 TO THE SKYWATCH SYSTEM. ANY AVAILABLE ARINC 429 INPUTS ON THE TRAFFIC COMPUTER MAY BE USED IF THOSE SHOWN ARE ALREADY USED. THE TRAFFIC SYSTEM MAY HAVE TO BE CONFIGURED TO ACCEPT ALTITUDE AND HEADING VIA ARINC 429 (LOW-SPEED). REFER TO THE MANUFACTURER'S INSTALLATION MANUAL FOR ADDITIONAL INFORMATION.
8. IF DESIRED, ALTITUDE, ATTITUDE, AND HEADING MAY BE PROVIDED BY THE GI 275 TO THE HONEYWELL TRAFFIC SYSTEM. THE HONEYWELL TRAFFIC SYSTEM WILL NOT ACCEPT HEADING/ATTITUDE AND ALTITUDE ON A SINGLE ARINC 429 INPUT. CONSEQUENTLY, HEADING/ATTITUDE (HIGH-SPEED) AND ALTITUDE (LOW-SPEED) MUST BE PROVIDED TO SEPARATE INPUTS. THE TRAFFIC SYSTEM MUST BE CONFIGURED TO ACCEPT ARINC 429 ALTITUDE, HEADING, AND ATTITUDE. REFER TO THE MANUFACTURER'S INSTALLATION MANUAL FOR ADDITIONAL INFORMATION.
9. IF DESIRED, ALTITUDE, TEMPERATURE, HEADING, SPEED, AND SELECTED COURSE INFORMATION MAY BE PROVIDED BY THE GI 275 TO THE TRANSPONDER.
10. IF THE GI 275 IS THE ONLY ALTITUDE SOURCE FOR THE GTX, IT IS RECOMMENDED THAT THE GTX ALSO BE CONNECTED DIRECTLY TO AN EXTERNAL AIR DATA SOURCE SO THAT THE TRANSPONDER WILL CONTINUE REPORTING ALTITUDE IN THE EVENT OF A GI 275 FAILURE.
11. IF ANOTHER TRAFFIC SOURCE IS WIRED TO THE GI 275, DO NOT WIRE THE GTX ARINC OUTPUT TO THE GI 275.
12. DO NOT WIRE TO THE GI 275 IF A GTX 345 IS INSTALLED. THESE TRAFFIC SYSTEMS MUST BE WIRED IN ACCORDANCE WITH THE GTX 345 INSTALLATION MANUAL FOR PROPER CORRELATION AND DISPLAY.
13. TRC 497 SOFTWARE v1.6 OR HIGHER IS REQUIRED.
14. SPLICE WITH WEATHER RADAR STABILIZATION OUTPUT (IF INSTALLED) IS ALLOWED.
15. ARINC OUT TO THE GI 275 IS NOT USED IF CONNECTED VIA ETHERNET.
16. THESE STRAPS SET THE HEADING INPUT SOURCE TO ARINC 429. REFER TO THE MANUFACTURER'S INSTALLATION MANUAL FOR ADDITIONAL STRAPPING INFORMATION.
17. SPLICE WITH GPS NAVIGATOR ARINC OUTPUT (IF INSTALLED) IS ALLOWED.

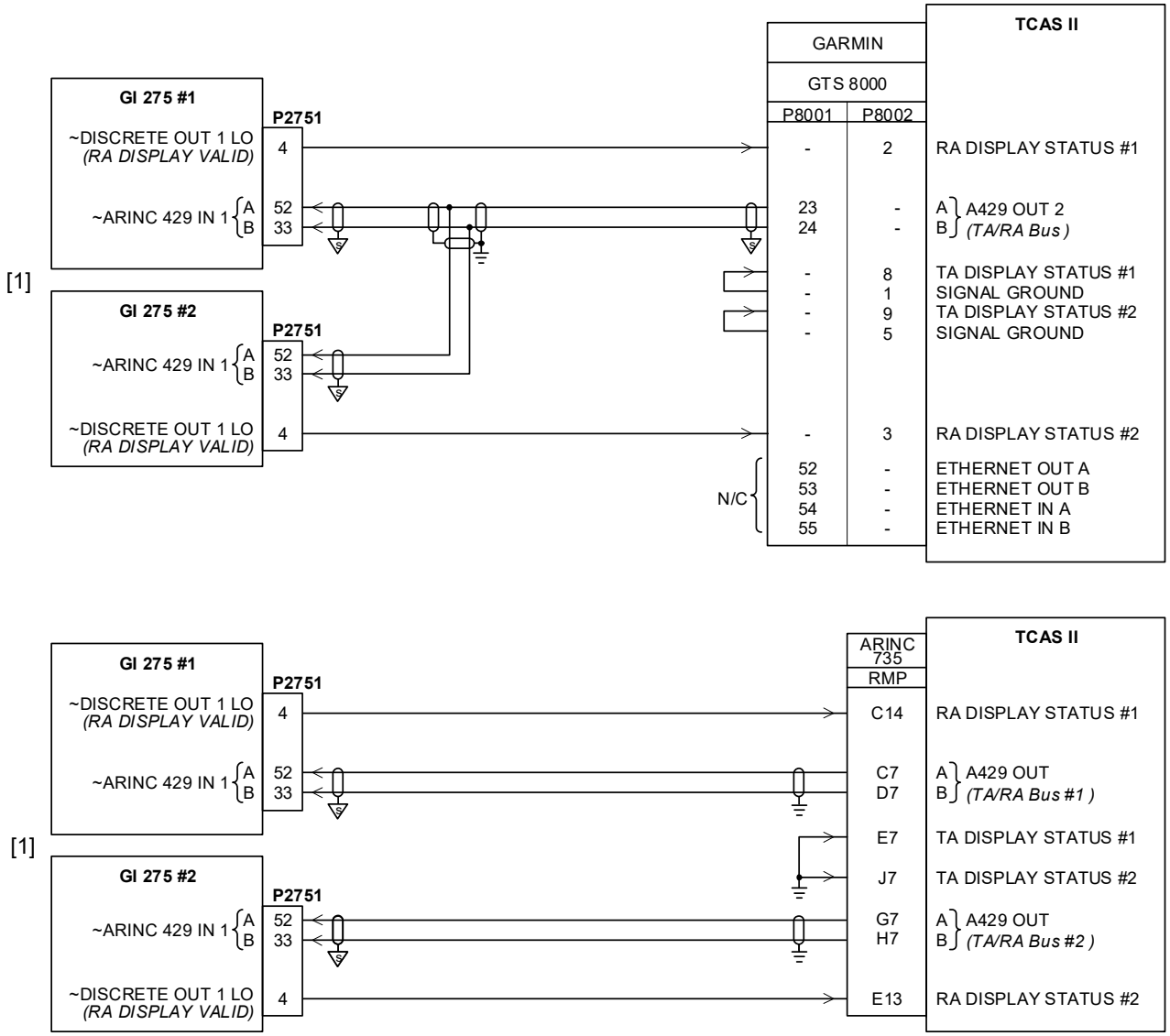
Figure B-25 GI 275 Traffic Advisory System Interconnect Example



NOTES:

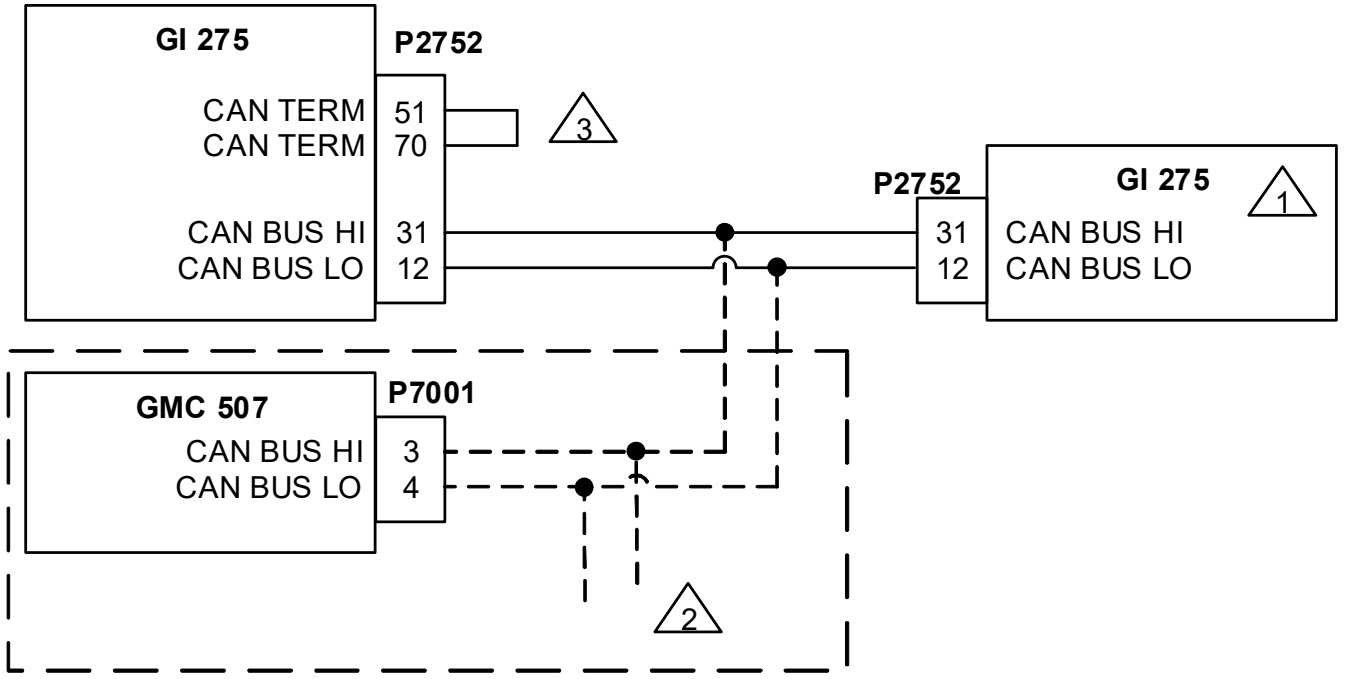
1. WIRE GAUGE SHOWN FOR POWER AND GROUND LENGTH LESS THAN 20 FEET. FOR POWER AND GROUNDS GREATER THAN 20 FEET REFER TO AC 43.13-1B, CHAPTER 11 TO DETERMINE THE APPROPRIATE WIRE GAUGE.
2. REFER TO SECTION 2.5.1 FOR BREAKER SIZING, BUSSING, AND LABELING.
3. TO DISABLE BACKLIGHT, GROUND BACKLIGHT ENABLE PORT, USE 22 AWG WIRE.
4. PIN 78/P2751 SHOULD NOT BE CONNECTED. WHEN REPLACING A USB PIGTAIL WITH THE GSB 15, LEAVE THE PIN UNCONNECTED.
5. MUST USE ETHERNET CABLE. REFER TO TABLE 2-1 FOR APPROVED CABLES.
6. USE TWISTED SHIELD PAIR WIRING WITH A MAXIMUM OF 6 FEET. TERMINATE SHIELDING 0.01 INCHES FROM THE GSB 15 CONNECTOR.
7. USB DATA CABLES MUST BE 10 FEET LONG OR LESS.

Figure B-26 GI 275 to GSB 15 Interconnect Example



[1] IF AN HSDB CONNECTION EXISTS BETWEEN THE GI 275 #1 AND GI 275 #2 UNITS, THE GI 275 UNITS WILL SHARE ARINC 429 TCAS II INFORMATION. CONSEQUENTLY, WHEN VERIFYING THE ARINC 429 CONNECTION TO EACH INDICATOR, MAKE SURE THE OTHER INDICATOR IS POWERED OFF.

Figure B-27 GI 275 IVSI Interconnect Example



1. A SECOND OPTIONAL GI 275 UNIT MAY BE CONNECTED ON THE CAN BUS AS A BACKUP FOR THE GFC 500 SYSTEM IF DESIRED.

2. THE GI 275 HAS THE CAPABILITY OF PROVIDING CAN BUS FUNCTIONALITY WHEN INTERFACED WITH THE GFC 500. REFER TO THE APPLICABLE GFC 500 INSTALLATION DATA FOR DETAILS AND CONSIDERATIONS REGARDING CAN BUS WIRING.

3. CAN BUS TERMINATION SHOULD ONLY BE USED ON A GI 275 THAT IS AT THE END OF THE CAN BUS BACKBONE. REFER TO THE APPLICABLE GFC 500 INSTALLATION DATA FOR DETAILS AND CONSIDERATIONS REGARDING CAN BUS WIRING.

Figure B-28 GI 275 to GFC 500 Interconnect Example

APPENDIX C ADVANCED AIRSPEED SETTINGS

C.1 Overview

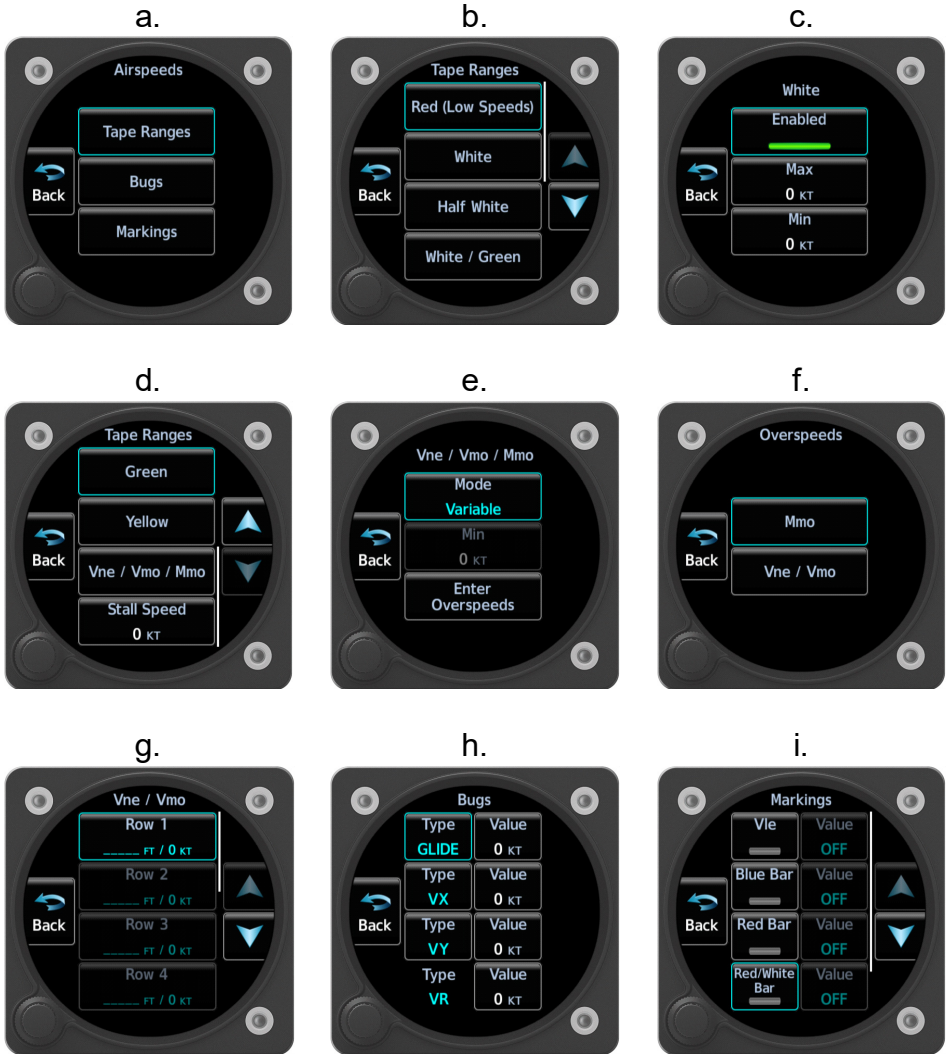
The Advanced Configuration Type allows the configuration of the airspeed tape on the GI 275 ADI to match any airspeed indicator. Color bands, markings, and bugs may all be individually configured. As an additional option, Vne may be configured as *Fixed* or *Variable* with up to ten altitude and IAS level pairs entered in Variable mode.

C.2 Configuration Page Layout

In Configuration mode, navigate to the ***Airspeed Configuration*** page (***Setup → Airframe Configuration → Airspeed Configuration***). Set the Mode to *Advanced* and touch the **Configuration** button. The following settings may be changed in the configuration pages:

- Airspeed Tape Ranges - Set airspeed ranges and overspeed values (if *Variable* is selected for the Vne/Vmo/Mmo)
- Bugs - Set bugs as required
- Markings - Set markings as required

Figure C-1 shows a summation of the configuration. Refer to the following sections for more detail.



a. Touch **Tape Ranges**.

b. Select an applicable range.

c. Touch **Enabled** and configure the Min and Max per the POH. Touch **Back** and repeat for each applicable range. Refer to Appendix Section E.3.

d. Scroll down and touch **Vne/Vmo/ Mmo**.

e. If overspeeds are fixed, enter Min Vne speed. If variable, set Mode to *Variable* and select **Enter Overspeeds**.

f. Select **Mmo** or **Vne/ Vmo** per the POH.

g. Configure Mmo or Vne/Vmo. Refer to Appendix Section E.4

h. From the ***Advanced Airspeed*** page, select **Bugs** and configure the bugs per the POH. Refer to Appendix Section E.5

i. From the ***Advanced Airspeed*** page, select **Markings** and configure the markings per the POH. Refer to Appendix Section E.6

Figure C-1 Advanced Airspeed Configuration Pages

C.3 Arc Ranges

C.3.1 Configuration

The information listed in Table C-1 must be obtained for every installation. Figure C-2 illustrates airspeed tape arc ranges for the GI 275. The POH/AFM column lists a suggested location for obtaining this information. Arc ranges are typically shown on the airspeed indicator that is being replaced, but should be checked for accuracy if records indicate it has been replaced. Vne, whether fixed or variable, will be displayed as the beginning of the red band on the IAS tape.

Figure C-2 shows a visual correlation between arcs defined in POH/AFM Type Data and those configured in the GI 275.

NOTE

These ranges must match the Type Data (POH/AFM or aircraft specifications) for the specific aircraft being modified.

NOTE

If the airspeed values are listed in the Type Data (POH/AFM or aircraft specifications) for both IAS and CAS, use the IAS values.

NOTE

Do not configure two arc ranges to overlap each other. Gaps are acceptable between ranges, but overlaps are not.

Table C-1 Advanced Airframe-Specific Configuration Data – Arc Ranges

Arc Color	Description	POH/AFM Section	Notes
RED (LOW SPEEDS)	Low speed awareness	2 - Limitations	If the aircraft has a defined WHITE or GREEN arc, set the RED tape to ON. Set the Max value of the RED tape to the lowest value of the WHITE or GREEN arc (Vs0). A RED low-speed awareness tape will appear below the lowest marked stall speed. If the aircraft does not have a defined WHITE or GREEN arc, set the RED line to *OFF*, and enter the lowest stall speed in the Stall Speed setting at the bottom of the page.

Table C-1 Advanced Airframe-Specific Configuration Data – Arc Ranges

Arc Color	Description	POH/AFM Section	Notes
WHITE	Full flap operational range	2 - Limitations	Set the Min value to the bottom of the POH/AFM defined range. If WHITE and GREEN arcs overlap, set the Max value to the beginning of the WHITE/GREEN arc. If WHITE and GREEN arcs do not overlap, set the Max value to the top of the POH/AFM or aircraft specification defined range. If a WHITE arc is not defined by the AFM/POH or aircraft specifications, set both the Min and Max values to the aircraft stall speed in the landing configuration (Vs0). This setting will not display WHITE arc, but the system needs it to characterize aircraft performance.
HALF WHITE	Standard operational range	2 - Limitations	If the HALF WHITE arc range is not defined by the AFM/POH or aircraft specification, set to *OFF*. This may sometimes be called a “narrow WHITE arc.”
WHITE/ GREEN	Overlap between standard operational and flaps operational ranges	2 - Limitations	If a WHITE/GREEN arc is not defined by the AFM/POH or aircraft specification, set to *OFF*. If WHITE and GREEN arcs overlap, configure to the range they overlap within.
GREEN	Standard operational range	2 - Limitations	If the GREEN arc is not defined by the AFM/POH or aircraft specification, set to *OFF*. If WHITE and GREEN arcs overlap, set Min value to the Max of WHITE/GREEN. If the YELLOW arc is defined, set to the Min of the YELLOW arc (Vno). If the YELLOW arc is not defined, set Max value to Vno/Vne.
YELLOW	Caution / smooth air operational range	2 - Limitations	If the YELLOW arc is defined by the AFM/ POH or aircraft specification, set Min value equal to Maximum structural speed (Vno). Max value should be configured to Vne or the highest value of Vne if variable. If the YELLOW arc is not defined, set to *OFF*.
Vne/Vmo/ Mmo	Never exceed speed / max operating speed / max operating mach number	2 - Limitations	If defined as a fixed value, set to *Fixed*, and enter POH/AFM defined Vne/Vmo as the Min value. If variable with altitude, set to *Variable* and set overspeeds in accordance with Appendix Section C.4.

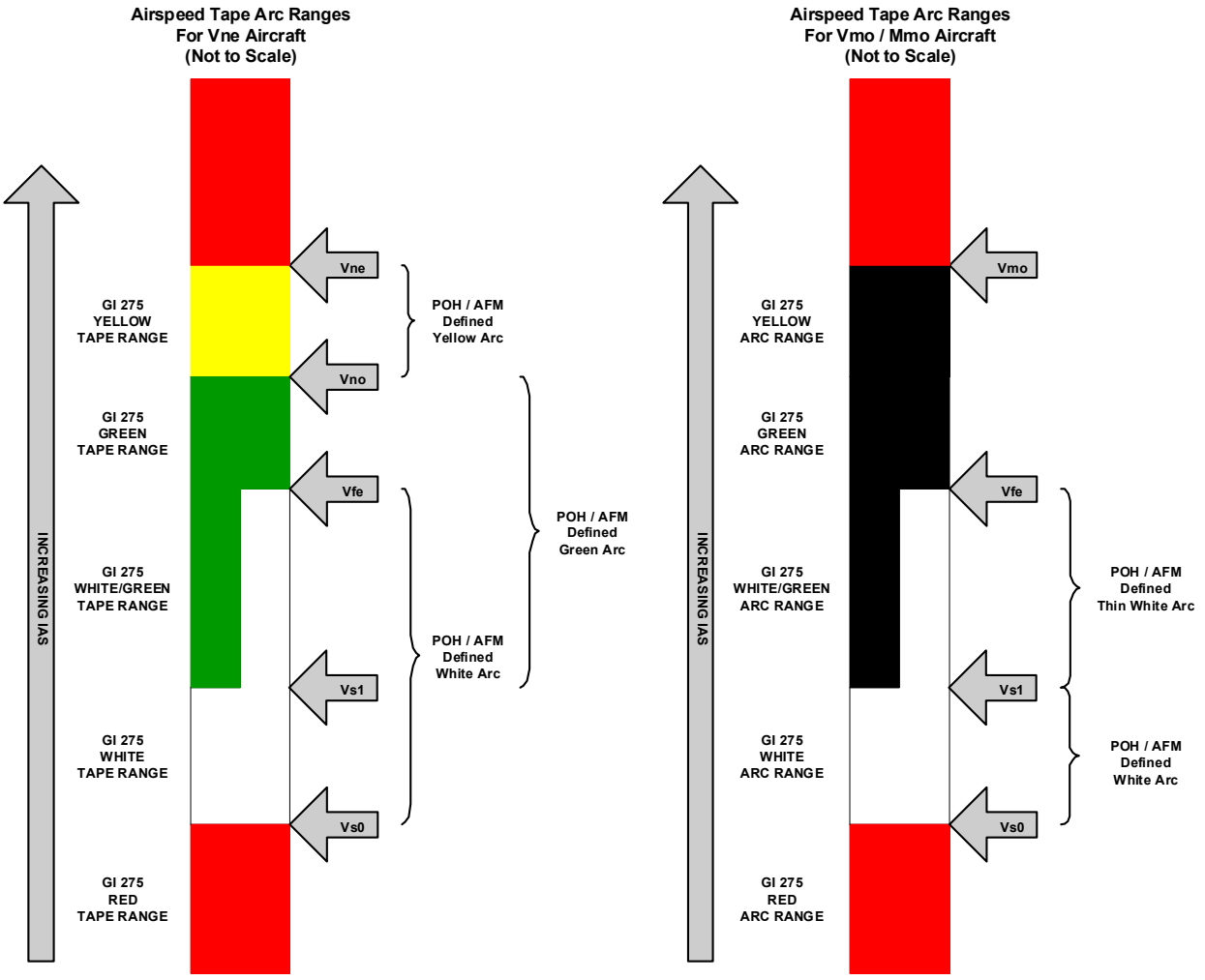


Figure C-2 Airspeed Tape Arc Range Diagrams

C.3.2 Airspeed Tape Arc Range Example

Section 2 (Limitations) of the Beech Bonanza (A36) POH/AFM defines a white arc (61-124 KIAS), green arc (68-167 KIAS), and a yellow arc (167-205 KIAS). As the white and green arcs overlap, they must be entered in separately.

- Where there is no overlap in the POH/AFM defined white arc range, configure the **WHITE** tape to this range (61-68 KIAS)
- Where there is overlap of the POH/AFM defined white and green arcs, configure the **WHITE/ GREEN** tape to this range (68-124 KIAS)
- Where there is no overlap in the POH/AFM defined green arc, configure the **GREEN** tape to this range (124-167 KIAS)
- Because the POH/AFM defined yellow arc does not overlap any other arcs, configure the **YELLOW** tape to this range (167-205 KIAS)

C.4 Overspeeds

C.4.1 Overspeeds Configuration

NOTE

If the POH/AFM defines multiple Vne points, and the last point defines Vne at the aircraft operating ceiling, the POH/AFM defined points must be used to configure the GI 275.

NOTE

If the Vne is defined as varying with altitude, and the Vne at the operating ceiling is not defined, then the last ALT/IAS point entered must be calculated at the aircraft's operating ceiling as a linear line from the last ALT/IAS point. ***In all cases, the last point entered must define Vne/Vmo at the operating ceiling.***

If the aircraft has a designated Mmo and Mmo level, or is specified as having a Vne/Vmo that varies with altitude, set the Vne/Vmo/Mmo selection to *Variable* and configure the GI 275 airspeed tape to the aircraft specifications using the **Enter Overspeeds** button. If only the Mmo/Mmo Level or the variable Vne is defined, then those fields that are undefined, respectively, should not be configured.

NOTE

The **Enter Overspeeds** *button does not appear unless Vne/Vmo/Mmo Mode is set to "Variable".*

The Mmo Value and Mmo Level fields define a minimum altitude where Mmo is a limiting factor on performance. Above the Mmo Level, Mmo may define the start of the red band. The Vne/Vmo altitude and IAS section defines limitations on IAS at specified altitudes. The first ALT/IAS point entered will define Vne/Vmo at all altitudes below the altitude specified.

If Vne/Vmo is only defined once, then this single point should be entered with the ALT field being the aircraft's operating ceiling.

However, if Vne/Vmo is defined as varying with altitude, then at least two points will be required – the last two of which will define a linear line for all altitudes past the last point entered. As such, the last point entered must define Vne/Vmo at the aircraft's operating ceiling.

These overspeed configurations must match the Type Data (POH/AFM) for the specific aircraft being modified.

C.4.2 Overspeeds Configuration Examples

Example 1

Section 2 (Limitations) of the Columbia 400 POH/AFM defines Vne at 12,000FT as 230 KIAS and at FL250 as 174 KIAS. As such, the configuration should be entered as follows:

- 12,000FT at 230KT
- 25,000FT at 174KT

Example 2

Hypothetically, if the Vne was not defined at the operating ceiling, the configuration would then rely on the POH/AFM Section 2 statement that Vne decreases by 4.4 KT per 1,000 feet of altitude above 12,000 feet. Here the calculation for Vne at the aircraft operating ceiling would be:

*Vne= 230 KT – [(25,000FT – 12,000FT) * 4.4 KT / 1,000 FT] = 172.8 KT*

As such, the configuration entered would be:

- 12,000FT at 230KT
- 25,000FT at 172KT

C.5 Bugs

The information obtained in Table C-2 must be obtained for each installation. The POH/AFM column lists a suggested location for obtaining this information. If a marking is not defined for the aircraft, then it should be configured as *OFF*.

NOTE

These markings must match the Type Data (POH/AFM or aircraft specification) for the specific aircraft being modified.

NOTE

If the airspeed values are listed in the Type Data (POH/AFM) for both IAS and CAS, use the IAS values.

Table C-2 Advanced Airframe-Specific Configuration Data – Bugs

Bug	Description	POH/AFM Section	Notes
GLIDE	Glide speed	3 – Emergency Procedures	*Optional*. Set to 0 KT if not listed in the POH/AFM.
VX	Best angle-of-climb speed	4 – Normal Procedures	*Optional*. Set to 0 KT if not listed in the POH/AFM. If there are two speeds listed (gear up/gear down), use the speed listed for gear down.
VY	Best rate-of-climb speed	4 – Normal Procedures	*Optional*. Set to 0 KT if not listed in the POH/AFM. If there are two speeds listed (gear up/gear down), use the speed listed for gear up.
VR	Rotation speed	4 – Normal Procedures	*Optional*. Typically set to rotation speed. Set to 0 KT if not listed in the POH/AFM.

Alternately, by pressing the **Type** buttons, the bugs can be changed to VREF, V1, and V2.

Table C-3 Advanced Airframe-Specific Configuration Data – Alternate Bugs

Bug	Description	POH/AFM Section	Notes
VREF	Landing reference speed	4 – Normal Procedures	[1]
V1	Commit to fly speed	4 – Normal Procedures	[1]
V2	Takeoff safety speed	4 – Normal Procedures	[1]
VR	Rotation speed	4 – Normal Procedures	[1]

Notes:

[1] These speeds generally apply to only high-performance airplanes and must be calculated before each flight. The recommended default value is 0 KT.

C.6 Markings

The information obtained in Table C-4 must be obtained for each installation. The POH/AFM column lists a suggested location for obtaining this information. If a marking is not defined for the aircraft, then it should be configured as *OFF*.

NOTE

These markings must match the Type Data (POH/AFM or aircraft specification) for the specific aircraft being modified.

NOTE

If the airspeed values are listed in the Type Data (POH/AFM) for both IAS and CAS, use the IAS values.

Table C-4 Advanced Airframe-Specific Configuration Data – Markings

Marking	Description	POH/AFM Section	Notes
Vle	Maximum landing gear extended speed	2 – Limitations	Set to *OFF* for fixed gear aircraft.
Blue Bar	Typically marks the single engine best rate-of-climb speed for a twin-engine aircraft	3 – Emergency Procedures	Blue radial on ASI of light twins. Set to *OFF* for single-engine aircraft.
Red Bar	Typically marks the minimum controllable airspeed for twin-engine aircraft with only one engine operational (Vmca)	3 – Emergency Procedures	Lower red radial on ASI of light twins. Set to *OFF* for single-engine aircraft.
Red/White Bar	Varies. Sometimes used as a fixed point Vne marking	2 – Limitations	If a fixed red bar is shown in the POH/AFM, set to given value. Otherwise, set to *OFF*.
White Triangle	A small white triangle. Meaning varies by airframe	2 – Limitations	If defined in POH/AFM, set to given value. Otherwise, set to *OFF*.

C.7 Airspeed Tape Configuration Examples

This section compares two examples of GI 275 airspeed tape configuration with their respective existing ASI configuration and tape definitions.

NOTE

In all cases, the specific aircraft's Type Data (POH/AFM) must be considered the definitive source for Arc Range, Marking, and Bug configuration values.

C.7.1 Beechcraft Bonanza A36 (Example)

CURRENT ASI

AFM Definitions		
Marking	**Value**	**AFM Section**
White arc Green arc Yellow arc Red line	56-123 KIAS 62-166 KIAS 166-204 KIAS 204 KIAS	2 – Limitations
Glide	110 KIAS	3 – Emergency Procedures
Vx Vy Vr	78 KIAS 96 KIAS 70 KIAS	4 – Normal Procedures
Vle	153 KIAS	2 – Limitations

Figure C-3 Beechcraft Bonanza A36 Current ASI and Tape Markings

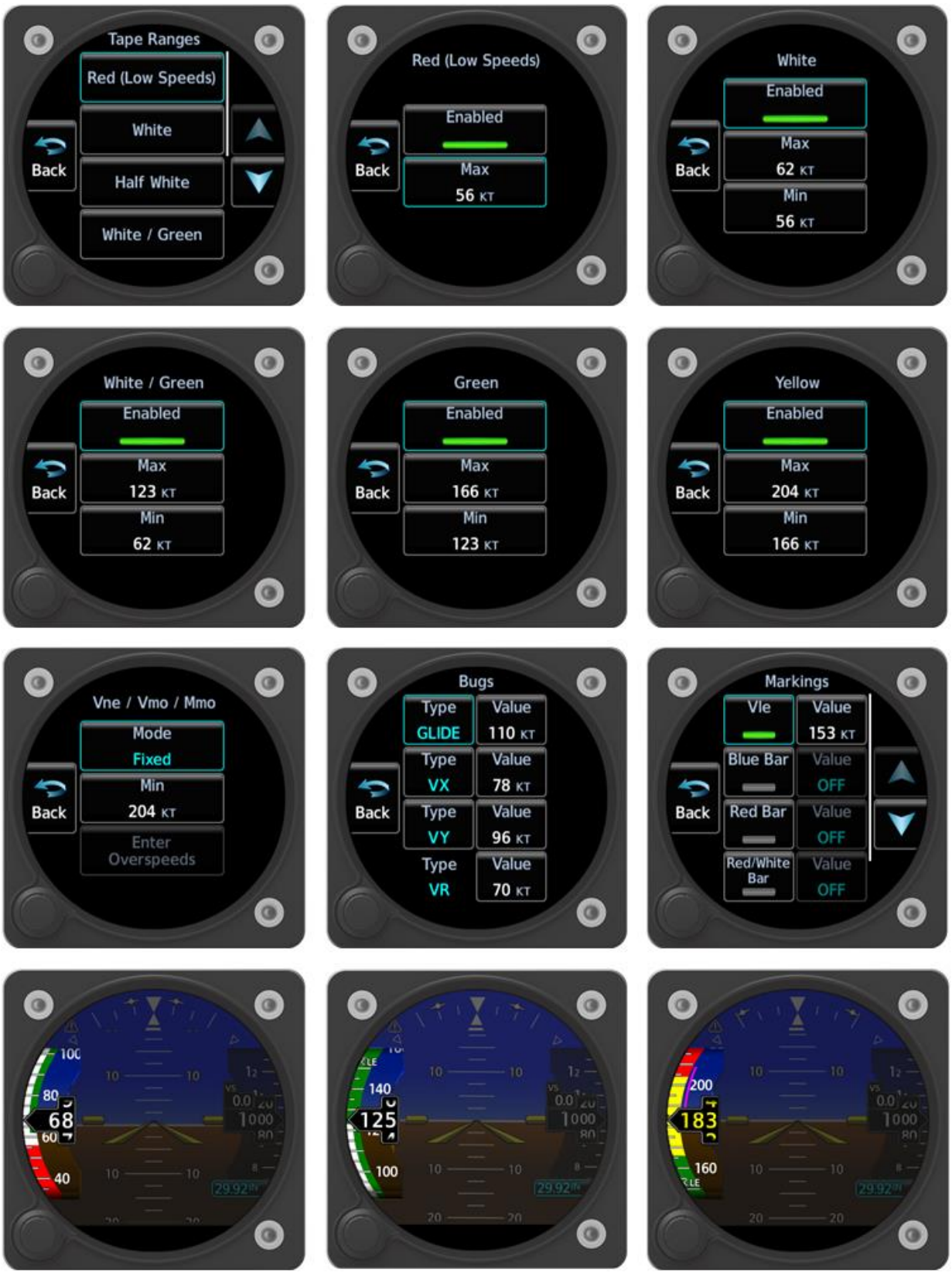
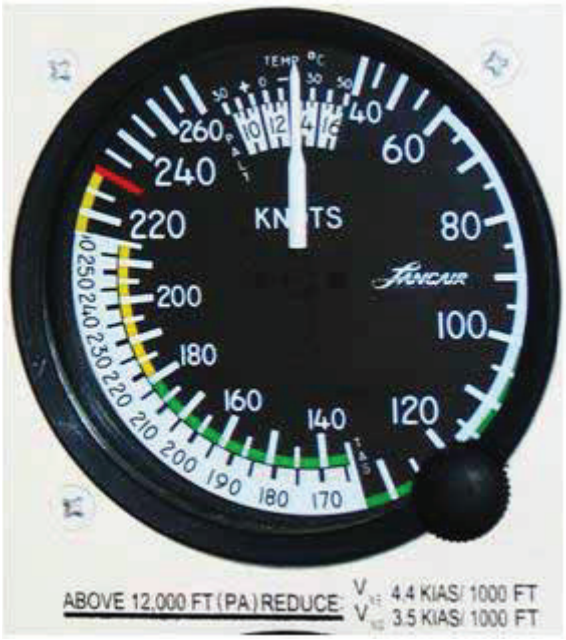


Figure C-4 Beechcraft Bonanza A36 Equivalent IAS Tape and Airspeed Configuration

C.7.2 Columbia 400 (Example)



CURRENT ASI

POH/AFM Definitions		
Marking	**Value**	**POH/AFM Section**
White arc Green arc Yellow arc Red line	60-117 KIAS 73-181 KIAS 181-230 KIAS 230 KIAS	2 – Limitations
Vne [1] Vne @ FL250	230 KIAS 174 KIAS	2 – Limitations
Glide	108 KIAS	3 – Emergency Procedures
Vx Vy Vr	82 KIAS 110 KIAS 110 KIAS	4 – Normal Procedures

[1] Decrease 4.4 knots for each 1000 feet above 12,000 feet (Press. Alt.)

Figure C-5 Columbia 400 Current ASI and Tape Markings

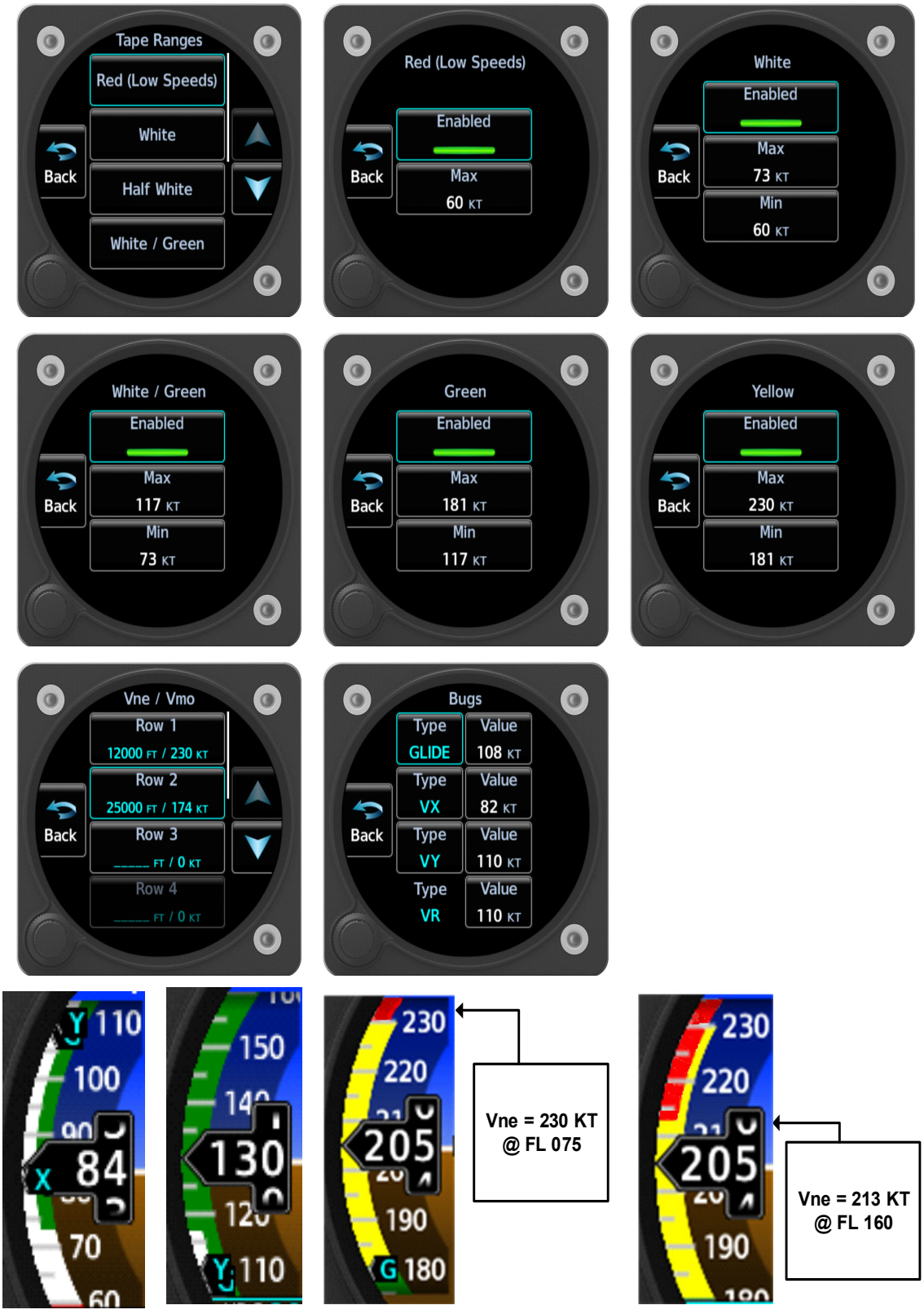


Figure C-6 Columbia 400 Equivalent IAS Tape and Airspeed Configuration


GARMIN