GI 275

Part 23 AML STC Installation Manual

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RECORD OF REVISIONS

Rev	Revision Date	Description
19	05/13/24	Updated software to v3.20. Added Garmin restrictor.
20	05/15/25	Updated software to v3.40. Added GCO 14 interface. Approved 7-cylinder EIS.
21	07/02/25	Updated for software v3.42.

REV 21 DESCRIPTION OF CHANGES

Section	Description
3.1.1	Updated SSEC Loader Card description and part number in Table 3-3 GI 275 Enablement and Loader Cards.
4.7.5.2	Updated added alternative pipe coupling part number to Figure 4-60 Brass Sensor Installation and Figure 4-62 GPT Sensor Installation.
5.6.8	Added TAT Title and Misc Field Enable settings.
5.7.2	Added new Manifold Pressure sensor configuration that may need calibration.
Appendix B	Added new Manifold Pressure sensor to Figure B-8 GEA 24(B) Sensor Interconnect, Sheet 1. Added new Manifold Pressure sensor to Figure B-10 GEA 110 Sensor Interconnect, Sheet 1. Updated Figure B-27 GCO 14 Interconnect to more accurately reflect harness.
C.19	Added new Manifold Pressure sensor part number.
D.2	Updated Appendix H references to include Model 525.
Appendix H	Updated appendix to include Model 525.
H.1	Updated GI 275 required software to v3.42.
H.5.4.4	Added TAT Title and Misc Field Enable to Table H-9 Additional Setup Configuration Settings.
H.6.1	Added step to verify software.

REV 20 DESCRIPTION OF CHANGES

Section	Description
Page x	Updated acronyms.
1.2	Added GCO 14 TSO IM to Table 1-1 Garmin Manuals and References for GI 275 System.
1.2.2.5	Updated section to approve seven-cylinder reciprocating engines for GI 275 EIS.
1.3.3.3	Added Section 1.3.3.3 GCO 14.
1.4	Updated applicable system architecture diagrams to include optional GCO 14 interface.
2.1.5	Updated section to approve seven-cylinder reciprocating engines for GI 275 EIS.
2.1.5.1	Added EIS parameter limitation for seven-cylinder radial engines.
2.1.12	Added limitation for installation of the GCO 14.

Section	Description
3.1.1	Added GCO 14 to Table 3-5 GI 275 Accessories and GCO 14 Cable Kit to Table 3-6 LRU Installation Kits.
3.2.2	Added [4] to Table 3-14 GI 275 Standby ADI Restrictions per System for G500/G600 systems configured for GFC 600. Added [5] for Embraer EMB-500 and EMB-505 aircraft with G1000/G1000 NXi.
3.2.6	Added GNC 215 to Table 3-19 Garmin LRU HSDB Port Summary and to number 3. Corrected Figure 3-8 HSDB Architecture: Primary ADI with GFC 600, HSI/Standby ADI, and EIS to show HSDB connection between GI 275 EIS and GPS source.
3.3.7	Added guidance to connect standalone GI 275 EIS with GCO 14 to audio panel to receive high CO audio alerts.
3.4.1	Added row for CO Sensor in Table 3-24 GI 275 System Components.
3.4.3	Added columns for seven-cylinder engines and [2] to Table 3-25 EGT and CHT Probe Quantity. Added note to not use P-lead or magneto vent mounted sensors in 7-cylinder engines, and added Tachometer Sending Unit as an RPM sensor method.
3.5	Added GCO 14 to Table 3-28 LRU Current Draw.
4.4.3	Added Section 4.4.3 GCO 14 Carbon Monoxide Sensor.
4.5.1.2	Added Section 4.5.1.2 GCO 14 Cable Harness in New GI 275 Installation.
4.5.1.3	Added Section 4.5.1.3 GCO 14 Cable Harness in Existing GI 275 Installation.
4.7.5.2	Corrected coupling pipe thread part number in Figure 4-60 Brass Sensor Installation and Figure 4-62 GPT Sensor Installation.
4.7.7	Updated section to include tachometer drive sending unit.
5.1	Added new step to configure GI 275s installed.
5.2.2.5	Added Section 5.2.2.5 Default Config.
5.4	Clarified that feature enablements not mentioned in section are not approved.
5.4.2	Added instructions to enable Standby Flight Instrument when the GI 275 is used as a standby instrument for a G500/G600 system.
5.5.3	Added [4] for Table 5-1 ADC Interfaces and Configuration Settings with configuration guidance for installations of a GI 275 Standby ADI to a G500/G600 system with a GFC 600 interface.
5.5.3.1	Added Advanced Configuration Menu with Allow Estimated OAT setting.
5.5.4	Added [8] regarding requiring a GMU interface in certain installations.
5.5.7	Noted that configuring a NAV for A429 ILS Only locks the ADI Direction Bug to ILS/BC.
5.5.9.1	Added notes to Table 5-9 Garmin GFC 600 Autopilot Configuration for configuration requirements.
5.5.17	Added [2] and A429 PFD Sync interface for GDU 1XXX (GIFD) in Table 5-41 PFD Sync Configuration Settings.

Section	Description
5.5.18	Updated selection to “Probe” for GTP 59.
5.5.19	Added Section 5.5.19 CO Indicator.
5.5.22	Consolidated configuration information into Table 5-47 General Purpose A429 Output LRU-Specific Settings.
5.6.1.1	Added Aircraft Symbol Color setting. Added additional guidance for ADI Direction Bug.
5.6.7	Added restriction for GI 275 not to be connected to audio panel when interfaced to a GTN Xi with TAWS A enabled. Updated guidance for when SVT is enabled.
5.6.8	Added G Filter Time Constant setting.
5.7.1	Updated for 7-cylinder engine.
5.7.2	Added Tach Generator as an approved RPM sensor type.
5.8.1.3	Clarified Manual Pitch/Roll requirements and guidance.
5.10.14	Added GCO 14 diagnostics page.
5.10.16	Clarified that clearing the config will not clear a saved default configuration.
5.15.1	Updated database sync procedure to include “DB” icon instead of message.
6.2.4	Added GCO 14 Connection Check.
6.8.1	Added guidance for pitch/roll discrepancies between a GI 275 Standby ADI and PFD.
7.1	Added Figure 7-12 GCO 14 Alert Message Troubleshooting.
7.3	Added entries for 7-cylinder engines, G-Meter, and CO level in Table 7-1 Flight Data Log Descriptions.
A.8	Added Appendix Section A.8 GCO 14.

Section	Description
Appendix B	Added Flag Note 9 of Figure B-1 GI 275 - Power, Lighting, Configuration Module, HSDB, USB Interconnect regarding config module wiring when a GCO 14 is installed. Corrected sensor descriptions in Figure B-8 GEA 24(B) Sensor Interconnect, Sheet 1. Updated Figure B-8 GEA 24(B) Sensor Interconnect, Sheet 2, to include 7th cylinder CHT and EGT sensors and a new RPM tach generator. Updated Figure B-8 GEA 24(B) Sensor Interconnect, Sheet 3, to include electrical current shunt. Corrected sensor descriptions in Figure B-10 GEA 110 Sensor Interconnect, Sheet 1. Updated Figure B-10 GEA 110 Sensor Interconnect, Sheet 3, to include new RPM sensor. Updated Figure B-10 GEA 110 Sensor Interconnect, Sheet 4, to include electrical current shunt and 7th cylinder CHT/EGT sensors. Updated Flag Note 28 to require Century 21 autopilots to include resistor in Figure B-13 Autopilot/Flight Director Interconnect - Century. Added Flag Note 23 to Figure B-17 Autopilot/Flight Director Interconnect - Honeywell (Bendix/King) Sheet 2. Added Figure B-27 GCO 14 Interconnect. Clarified Figure B-29 GDU 620 ARINC 429 Interface for GFC 500 requires interfaces to GFC 500. Clarified Figure B-30 GDL 60 Remote Aircraft Status Interconnect, sheet 1, caption, clarified Flag Note 3, and added note 10 regarding OAT during an RAS query. Added Figure B-31 GSD 41 Interconnect.
C.4	Corrected GPS 175, GNX 375, and GNC 355 interface configuration information.
C.18	Added additional required connection to audio panel in certain installations.
C.19	Added tach generator RPM sensor and included v1 sensor configuration for Surefly Tach2 sensor. Corrected Fuel Pressure sensor and Fuel Flow sensor part numbers.
D.1	Added Appendix Section D.1 G1000 (NXi) EMB-500/EMB-505 with GI 275 Standby System Configuration.
Appendix F	Added references to 7-cylinder configuration throughout.
F.1	Added example graph to Figure F-4 CHT/EGT Graph Examples.
F.3	Added example CHT/EGT page for 7-cylinder configuration to Figure F-11 CHT/EGT Page Examples.
H.3	Reorganized information into a table.
H.4	Referenced new table.
H.6.1	Reorganized information into a table.

DEFINITIONS

WARNING
A Warning means injury or death is possible.

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

NOTE
A Note provides additional information.

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WARNING
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WARNING
This product contains a Lithium-ion battery that must be recycled or disposed of properly. Battery replacement and removal must be performed by an appropriately rated technician.

Acronyms

A	
AC	Advisory Circular
AC	Alternating Current
ADAHRS	Air Data/Attitude and Heading Reference System
ADC	Air Data Computer
ADI	Attitude Direction Indicator
ADS-B	Automatic Dependent Surveillance - Broadcast
AFCS	Automatic Flight Control System
AFMS	Aircraft Flight Manual Supplement
AFM	Aircraft Flight Manual
AGL	Above Ground Level
AHRS	Attitude Heading Reference System
ALT	Altitude
ALTS	Selected Altitude Capture
AML	Approved Model List
AP or A/P	Autopilot
ASI	Airspeed Indicator
ASTM	American Society for Testing and Materials
B	
BNC	Bayonet Neill-Concelman
C	
CDI	Course Deviation Indicator
CDT	Compressor Discharge Temperature
CFR	Code of Federal Regulation
CHT	Cylinder Head Temperature
CWS	Control Wheel Steering
CO	Carbon Monoxide
D	
DB	Database
DC	Direct Current
DG	Directional Gyro
E	
EAR	Export Administration Regulations
ECDI	Electronic Course Deviation Indicator
EFIS	Electronic Flight Instrument System
EGT	Exhaust Gas Temperature
EHSI	Electronic Horizontal Situation Indicator

EIS	Engine Indication System
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
F	
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FD	Flight Director
FIS-B	Flight Information Services-Broadcast
FLTA	Forward Looking Terrain Avoidance
FPM	Feet Per Minute
G	
GA	Go Around
GDC	Garmin Air Data Computer
GDL	Garmin Data Link
GDU	Garmin Display Unit
GEA	Garmin Engine and Airframe
GI	Garmin Indicator
GIFD	Garmin Integrated Flight Deck
GMA	Garmin Marker/Audio
GMC	Garmin Mode Controller
GMU	Garmin Magnetometer Unit
GNC	Garmin NAV and COM
GNS	Garmin Navigation System
GP	General Purpose
GPS	Global Positioning System
GPSS	Global Positioning System Steering
GPT	Garmin Pressure Transducer
GRS	Garmin Reference System
GS	Glideslope
GSB	Garmin Serial Bus
GSU	Garmin Sensing Unit
GTN	Garmin Touchscreen Navigator
GTOW	Gross Takeoff Weight
GTP	Garmin Temperature Probe
GTS	Garmin Traffic System
GTX	Garmin Transponder
GWX	Garmin Weather Radar
H	

HD	High Definition
HSDB	High Speed Data Bus
HSI	Horizontal Situation Indicator
HW	Hardware
I	
IAS	Indicated Airspeed
IAT	Induction Air Temperature
ICA	Instructions for Continued Airworthiness
IFR	Instrument Flight Rules
IGRF	International Geomagnetic Reference Field
ILS	Instrument Landing System
ISA	International Standard Atmosphere
K	
KIAS	Knots Indicated Airspeed
KPH	Kilometers Per Hour
Kts	Knots
L	
LCD	Liquid Crystal Display
LOC	Localizer
LRU	Line Replaceable Unit
M	
MFD	Multi-Function Display
MPH	Miles Per Hour
N	
NAV	VHF Navigator
NPT	National Pipe Thread
O	
OAT	Outside Air Temperature
OBS	Omni-Bearing Selector
P	
PED	Personal Electronic Device
PFD	Primary Flight Display
PIT	Pitch Attitude Hold
P/N	Part Number
POH	Pilot’s Operating Handbook
PSI	Pounds per Square Inch
R	
RAS	Remote Aircraft Status

RPM	Revolutions Per Minute
S	
SAE	Society of Automotive Engineers
SAT	Static Air Temperature
SSEC	Static Source Error Correction
SSID	Service Set Identifier
STC	Supplemental Type Certificate
SVT	Synthetic Vision Technology
SW	Software
SXM	Sirius XM
T	
TAS	Traffic Advisory System
TAT	Total Air Temperature
TAWS	Terrain Awareness and Warning System
TCAD	Traffic Collision Avoidance Device
TCAS	Traffic Alert and Collision Avoidance System
TCDS	Type Certificate Data Sheet
TIS-B	Traffic Information Service - Broadcast
TIT	Turbine Inlet Temperature
TSO	Technical Standard Order
TVS	Transient Voltage Suppressor
U	
USB	Universal Serial Bus
UTC	Universal Time Coordinated
V	
VAC	Volts - Alternating Current
VDC	Volts - Direct Current
VDI	Vertical Deviation Indicator
VHF	Very High Frequency
VFR	Visual Flight Rules
VLOC	VOR/Localizer
VOR	Very High Frequency Omni-directional Range
VS	Vertical Speed
W	
WAAS	Wide Area Augmentation System

TABLE OF CONTENTS

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LIST OF FIGURES

1 GI 275 DESCRIPTION

This installation manual is intended for use by those authorized to perform maintenance and/or avionics installations on approved aircraft. It includes installation data and checkout procedures for the GI 275 Multi-Function Instrument and refers to standards described in Title 14 CFR Part 43. Installation personnel must be familiar with the contents of this manual prior to performing modifications to the aircraft.

Terms frequently used in this manual include:

- GI 275: Unless otherwise specified, refers equally to all variants of the GI 275.
- References made to HSDB and Ethernet are used interchangeably.
- Standalone EIS: GI 275 EIS with no HSDB network connection to a GI 275 ADI.
- Metal aircraft: Aircraft with an aluminum (metallic) airframe, including exterior skin.
- Non-metal aircraft: Aircraft with an airframe constructed from wood or composite, including exterior skin, or aircraft with metal tubular truss airframe and fabric or composite exterior skin.
- Primary EGT: Is the exhaust gas temperature that is displayed independently from the exhaust gas temperature associated with each cylinder. This is typically a probe installed downstream in the exhaust to detect temperature from multiple cylinders and is used for EGT limitations in some aircraft.
- X: An “X” denotes variations of LRUs. Examples include:
  - %æ“GTN 6XX” refers to the GTN 625/635/650“GTX 33X” refers to the GTX 33/33D/330/330D/335.
- ( ): Parenthesis denote an undetermined value. Examples include:
  - %æ“GI ( )” refers to GI 1, GI 2, etc. depending on the context.
  - %æ“AHRS ( )” refers to AHRS 1, AHRS 2, or AHRS 3 depending on the context.
- Throughout this manual references will be made to aircraft class. With regards to usage in this manual, the classes are defined as follows:
  - %æClass I: Single reciprocating engine airplane with GTOW of 6,000 lbs or less.
  - %æClass II: Multi reciprocating engine or turbine engine airplane with GTOW of 6,000 lbs or less.
  - %æClass III: Airplane with GTOW of more than 6,000 lbs.
  - %æClass IV: Commuter category aircraft.

  Refer to AC 23.1309-1E for more information on airplane classes.
- “Standby ADI” refers to any GI 275 configured as a Standby per Section 5.3.4 (i.e., MFD/Standby ADI and HSI/Standby ADI) or a GI 275 configured as a secondary ADI for another system per Section 3.2.2.
- “GEA 24(B)” refers to both GEA 24 and GEA 24B. Specific references exclude the other variant.

1.1 STC Applicability

This manual defines aircraft modifications required to install the GI 275 Multi-Function Instrument under the GI 275 Part 23 AML STC. It is only applicable to aircraft models listed on the Approved Model List. Aircraft modifications per this STC involve the installation of components and LRUs specified in the STC Equipment List, which include sensors common for engine parameters. Installation of components and LRUs not included in the STC Equipment List require a separate airworthiness approval.

The GI 275 Multi-Function Instrument is approved for installation in Class I-IV aircraft, with certain limitations; refer to Section 2.

Applicability of this STC for a particular aircraft must be verified before the modification based on the data contained in this manual. Some aircraft may have been modified or equipped with systems in which the GI 275 interface is not defined nor approved. The installer must make the final determination if this STC is applicable to a given aircraft.

The installation of the GI 275 Multi-Function Instrument in accordance with this STC is a major alteration to the aircraft. Following a major alteration, the aircraft must be returned to service in a means acceptable to the cognizant aviation authority. An example would be compliance with 14 CFR 43.9, 14 CFR 91.417, and submission of an FAA Form 337 “Major Repair and Alteration Airframe, Powerplant, Propeller, or Appliance” completed in accordance with AC43.9-1F Instructions for Completion of FAA Form 337

Consistent with FAA Order 8110.4B and AC 21-40, a permission letter to use this STC data is available for download from the Garmin Dealer Resource Center.

1.2 System Overview

The GI 275 is a multi-function electronic instrument display capable of operating as a standalone display. It features a bright, sunlight readable, 3![-inch diameter color displa
instrument cutout.

The GI 275 Multi-Function Instrument can be configured as the following indicator types:

- Primary Attitude Display Indicator (attitude, altitude, airspeed, and heading)
- Standby Attitude Display Indicator (attitude, altitude, airspeed, and heading)
- Horizontal Situational Indicator (HSI) and Enhanced Horizontal Situational Indicator (EHSI)
- Engine Instrument System Indicator (EIS)
- Multi-Function Display Indicator (MFD)

The following dedicated pages are available on a GI 275 MFD or MFD/Standby ADI:

- CDI (MFD only)
- ADI (MFD/Standby ADI only)
- HSI
- Stormscope
- Terrain
- Moving Map
- Radar Altimeter
- Traffic
- Weather
- Transponder

If the GI 275 is configured as a Primary ADI, no other pages can be displayed.

Primary instruments, such as the Standard Turn Rate Indicator, must be retained unless a Standby ADI is installed. A GTP 59 OAT probe is required to be installed to display standard turn rate indices on the ADI. Refer to Section 2 for limitations.

When the GI 275 provides altitude, airspeed, attitude, or heading, the internal ADAHRS is required as the primary sensor. The backup battery is available for all GI 275 units as an option, and is required for standby displays that are powered by the aircraft’s primary electrical power source.

The GI 275 EIS uses the GEA 24(B) or the GEA 110 adapter and sensors to replace various engine instruments and provide indication of engine parameters. For a single engine, a single GI 275 with multiple pages can be used; however, all alerting gauges must fit on the primary gauge page. If a GEA 110 is installed as part of the GI 275 system, the -01 model of the GEA 110 must be used.

For twin-engine EIS, each engine must have a dedicated GEA 24(B)/110 and each engine must have separate GI 275 indicators. Only one indicator is permitted per engine. If multiple indicators are needed to display all primary alerting gauges, then certain existing gauges must be retained instead.

EIS units may not share a GEA 110/24 interface with G500/600 TXi or G3X systems, respectively. If using a GI 275 for EIS, then the EIS interface may only be connected and displayed on the GI 275 system, and may not be connected or displayed on TXi or G3X systems.

A typical modification to an aircraft instrument panel to install the GI 275 system is shown in Figure 1-1, which illustrates a Primary ADI, HSI, MFD/Standby ADI, and EIS installation.

Figure 1-1 GI 275 System Installation (Before and After Example)

Additional information on the GI 275 system can be found in the Garmin documents listed in Table 1-1. Additional information on Garmin equipment that can be interfaced to the GI 275 system can be found in the Garmin documents listed in Table 1-2. Technical information applicable to the GI 275 system installation can be found in the public documents listed in Table 1-3.

Table 1-1 Garmin Manuals and References for GI 275 System

Document Title	Garmin P/N
GI 275 Part 23 AML STC Maintenance Manual/ICA	190-02246-11
GI 275 Part 23 AML STC Airplane Flight Manual Supplement	190-02246-12
GI 275 TSO Installation Manual	190-02246-00
GI 275 Pilot's Guide	190-02246-01
GSB 15 TSO Installation Manual	190-00303-A3
GEA 110 TSO Installation Manual	190-01825-00
GMU 44B Installation Manual	190-02129-00
GCO 14 TSO Installation Manual	190-03084-00
AHRS / Magnetometer Installation Considerations	190-01051-00

Table 1-2 Garmin Installation Manuals for Other Systems

Document Title	Garmin P/N
G500/G600 TXi Part 23 AML STC Installation Manual	190-01717-B3
G500/G600 Part 23 AML STC Installation Manual	190-00601-06
G3X Touch EFIS Part 23 AML STC Installation Manual	190-02472-01
GTN 6XX/7XX Part 23 AML STC Installation Manual	190-01007-A3
GTN Xi Part 23 AML STC Installation Manual	190-01007-C0
400W Series Installation Manual	190-00356-02
500W Series Installation Manual	190-00357-02
GNS 480 Installation Guide	190-00504-00
GTX 3XX Part 23 AML STC Installation Manual	190-00734-10
GTS 8X5 Part 23 AML STC Installation Manual	190-01279-00
GTS 8X0 / GPA 65 Installation Manual	190-00587-00
GFC 600 Automatic Flight Control System Part 23 AML STC Installation Manual	190-01937-00
GDL 60 Part 23 AML STC Installation Manual	190-02525-10
GDL 69/69A Installation Manual	190-00355-02
GPS 175 Part 23 AML STC Installation Manual	190-02207-A1
GNX 375 Part 23 AML STC Installation Manual	190-02207-A4
GNC 355 Part 23 AML STC Installation Manual	190-02207-A5
GTR 225/GNC 255 TSO Installation Manual	190-01182-02
Garmin Pilot for iOS User's Guide	190-01501-00
Garmin Pilot for Android User's Guide	190-01532-00

Table 1-3 Technical References

Document Title	Document Number
FAA Advisory Circular, Powerplant Guide for Certification of Part 23 Airplanes and Airships	FAA AC 23-16A
FAA Advisory Circular, Installation of Electronic Display in Part 23 Airplanes	FAA AC 23.1311-1C
FAA Advisory Circular, Acceptable Methods, Techniques, and Practices - Aircraft Inspection and Repair	FAA AC 43.13-1B
FAA Advisory Circular, Acceptable Methods, Techniques, and Practices - Aircraft Alterations	FAA AC 43.13-2B
Aerospace Systems Electrical Bonding and Grounding for Electromagnetic Compatibility and Safety	SAE ARP1870
Standard Guide for Aircraft Electrical Load and Power Source Capacity Analysis	ASTM F2490-05

1.2.1 Hardware Variants

The GI 275 is available in three hardware variants: Base, ADAHRS, and ADAHRS+AP. All three variants use the same touchscreen display, control knob, main control board, and metal casing. The backup battery is optional for the GI 275 Base and standard for the GI 275 ADAHRS and ADAHRS+AP variants.

Table 1-4 GI 275 Variant Functionality

Function	GI 275 Base	GI 275 ADAHRS	GI 275 ADAHRS+AP
Primary ADI		ðü	ðü
MFD/Standby ADI		ðü	ðü
MFD	ðü	ðü	ðü
EIS	ðü	ðü	ðü
HSI	ðü*	ðü	ðü
HSI/Standby ADI		ðü	ðü
Autopilot Interface			ðü

*Requires interface to another GI 275 with an internal ADAHRS configured

GI 275 Base

The GI 275 Base unit has one 78-pin D-sub connector and is capable of functioning as an MFD or EIS unit. If a GI 275 Base is configured in a system with a GI 275 ADAHRS or ADAHRS+AP unit, it may be configured as an HSI.

GI 275 ADAHRS

The GI 275 ADAHRS unit includes all the functionality of the GI 275 Base unit with an additional 78-pin D-sub connector, internal ADAHRS circuit board, and pitot/static port fittings. This allows the added functionality of a Primary ADI, MFD/Standby ADI, HSI, or HSI/Standby ADI, excluding non-Garmin autopilot outputs.

GI 275 ADAHRS+AP

The GI 275 ADAHRS+AP unit includes all the functionality of the GI 275 ADAHRS unit in addition to an internal autopilot control/interface circuit board. This allows it to drive an approved non-Garmin autopilot when configured as a Primary ADI or HSI. Garmin autopilots require only a GI 275 ADAHRS unit.

1.2.2 Functions

1.2.2.1 Primary Attitude and Direction Indicator (ADI)

Figure 1-2 shows the GI 275 configured as a Primary ADI. The GI 275 ADAHRS or ADAHRS+AP provides 4-in-1 display of attitude, altitude, airspeed, and heading.

If desired, the Primary ADI can be configured as a basic attitude indicator 3-in-1 display of attitude, altitude, and airspeed only. In this case, the primary heading indicator must be retained or replaced with a GI 275 HSI.

The GI 275 ADAHRS and ADAHRS+AP variants contain an integrated ADAHRS (Air Data and Attitude Heading Reference System), which provides the primary display of attitude, altitude, airspeed, and optional heading data. The attitude data is displayed in the form of a virtual blue sky and brown ground with a white horizon line. Airspeed and altitude data are displayed as tapes vertically along the outer portion of the display. The heading data is displayed horizontally along the bottom of the display.

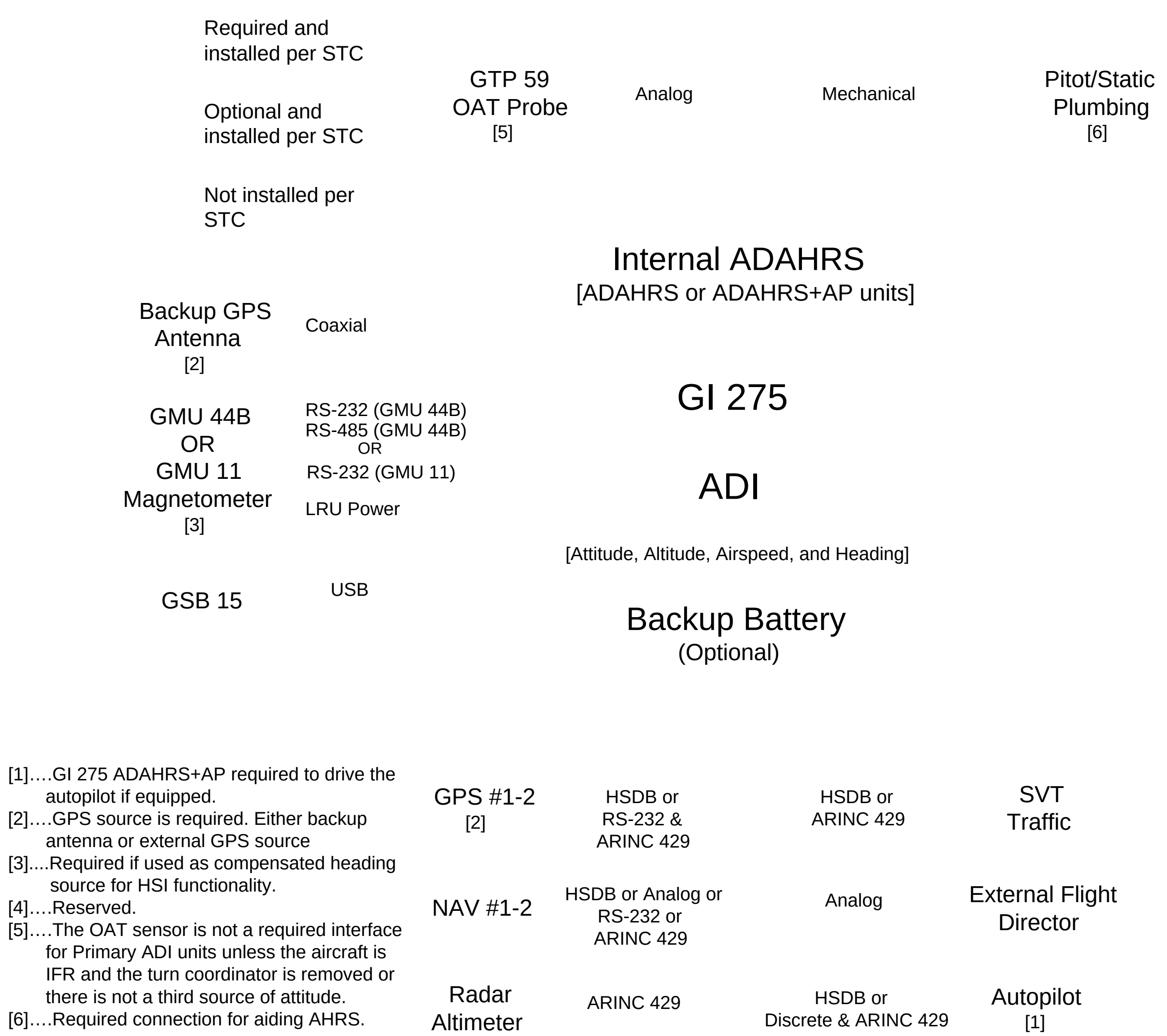


Figure 1-2 GI 275 Primary ADI

Table 1-5 Primary ADI Features by Unit Selection

GI 275 Function Description	Hardware Variant	
	ADAHRS	ADAHRS+AP
Terrain Alerting	ðü	ðü
Connext and LRU status	ðü	ðü
Radar altitude	ðü	ðü
4-in-1 primary ADI	ðü	ðü
Secondary heading	ðü	ðü
Legacy autopilot and flight director interfaces		ðü

An internal backup battery is available for all GI 275 ADAHRS and ADAHRS+AP units. With the backup battery installed, if the aircraft loses power, the battery is capable of providing power to the GI 275, backup GPS antenna, GTP 59 OAT Probe, and magnetometer for at least 60 minutes.

In addition to the Primary ADI, the following additional information can be shown:

- Flight director
- Synthetic Vision Terrain
  - %æRequires: Heading (ARINC label 320), GPS, Terrain database, Obstacle database, SVT Enablement, and the GI 275 Terrain to be configured as Terrain-FLTA.
- Standard turn rate indices (requires OAT interface)
- Slip/skid
- Vertical speed/tape/bug
- Altitude baro setting/bug/trends
- Airspeed bugs/trends
- Vertical and Lateral deviations
- Radar altimeter (for minimums)

Attitude

The GI 275 calculates aircraft attitude using information from its built-in inertial sensors and GPS data. If the GI 275 senses that the attitude solution is valid, but not yet within the internal accuracy limits, “ALIGNING” is displayed. The primary GI 275 attitude functions are comprised of pitch and roll.

Standard Turn Rate Indices

The standard turn rate indicator is displayed at the top of the display on the roll indicator when the requisite airspeed is reached. A standard-rate turn (3° per second) is shown on the indicator by the airplane shaped markers on the roll indicator. The GTP 59 Outside Air Temperature Probe is required for this functionality.

Slip/Skid

The slip/skid information is located near the top of the display under the roll pointer and is indicated by the small white trapezoid.

Air Data

Air data information is provided by the GI 275 unit when it is connected to the aircraft pitot/static system.

The functions provided by the air data are shown below:

- Airspeed indicator
- Barometric altimeter
- Selected altitude setting, bug, and visual altitude alerting
- Secondary vertical speed with references
- AHRS aiding

Heading

The GI 275 can provide stabilized heading based on ADAHRS and magnetometer data, which is displayed as a linear scale along the bottom of the ADI display with a digital readout of the current heading in degrees. Labels on the linear scale denote increments of 30°, with white markings indicating smaller increments for increased awareness.

GPS

The GI 275 requires GPS for attitude aiding. The indicator contains an internal GPS receiver that can be connected to a GPS antenna mounted on the glareshield, or it can receive an input from an external GPS, if available. As installed in this STC, the GI 275 receives the GPS data for aiding via the following methods:

- Glareshield GPS antenna
- GTN 6XX/7XX or GTN Xi series navigator
- GNS 4XXW/5XXW series navigator
- GNS 480 series navigator
- GTX 3X5 transponder with internal GPS receiver (software v3.00 or later)
- GPS 175/GNX 375/GNC 355

Deviations

The GI 275 Primary ADI can display vertical and lateral deviations from a compatible GPS and/or NAV. If an external GPS or NAV is not available, the internal VFR GPS (with installed glareshield antenna) can display lateral deviations for VFR Direct-To navigation only.

1.2.2.2 Horizontal Situation Indicator (HSI)

The GI 275 is designed to replace an existing DG/HSI as a drop-in replacement. The GI 275 HSI provides magnetically stabilized heading based on GMU 11/44B data. The GI 275 HSI can also provide display of course and deviation information from compatible VHF NAV and GPS sources. Air data information is provided by the GI 275 unit when it is connected to the aircraft pitot/static system. The HSI can also be used for heading and course deviations for an autopilot.

The GI 275 HSI provides the option of an enhanced EHSI page with a map underlay, which can display ownship data on a moving map, as well as a CDI/VDI, which shows lateral and vertical course deviations. Both the HSI and EHSI pages can be configured on an MFD or MFD/Standby ADI unit for added versatility. In certain aircraft, the HSI can be installed as a standby indicator. The HSI/Standby ADI must be a GI 275 ADAHRS or ADAHRS+AP unit and will auto-revert to the ADI page in the event a miscompare or no compare occurs between the Primary ADI and the standby. If configured as an HSI/ Standby ADI, a backup battery may be required. Refer to Section 1.2.2.4 and Section 2.1.4 for more information on requirements for standby indicators.

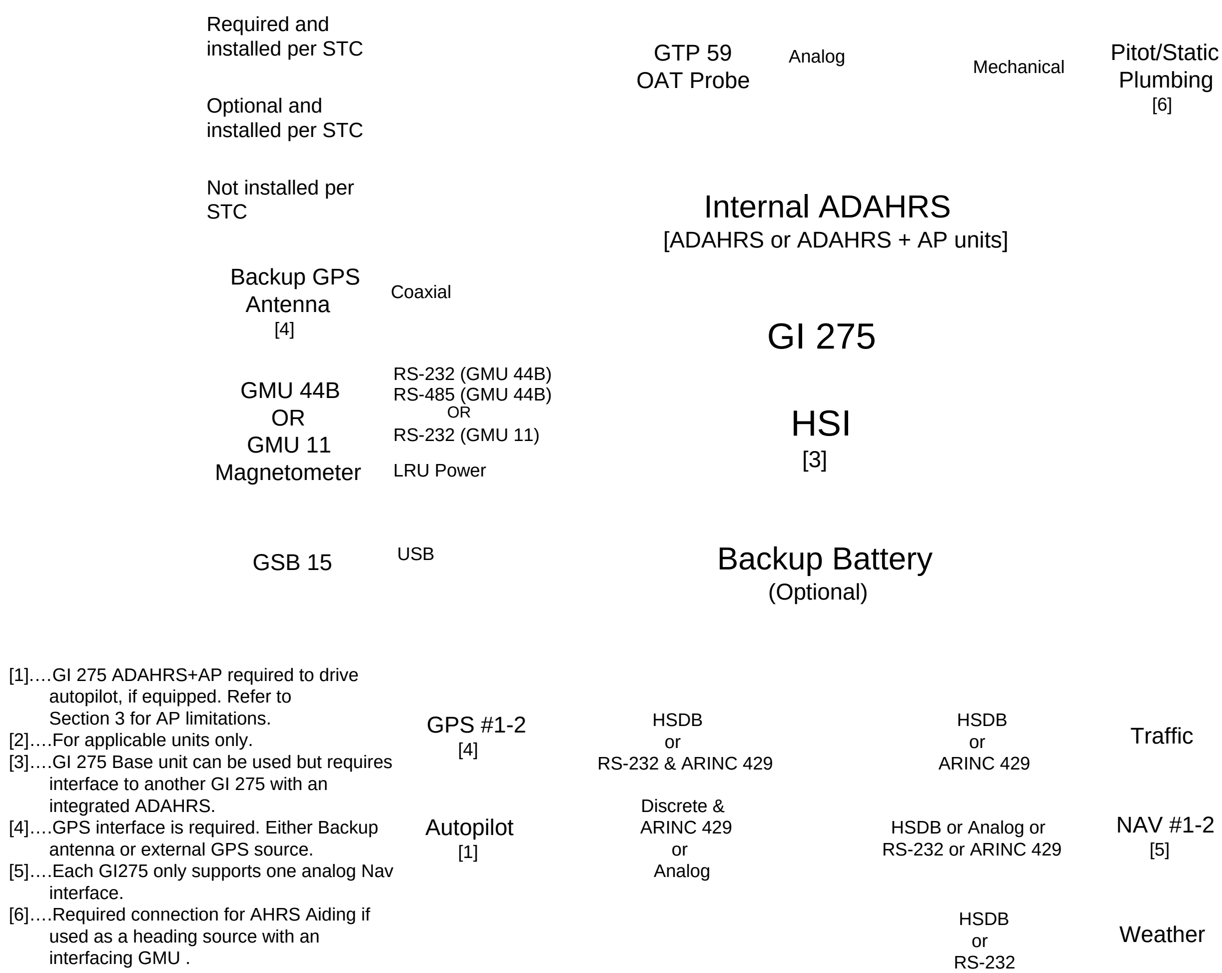


Figure 1-3 GI 275 Horizontal Situation Indicator

Table 1-6 HSI Features by Unit Selection

GI 275 Function Description	Hardware Variant			Requires Full Time Display
	Base	ADAHRS	ADAHRS+AP	
Electronic Horizontal Situation Indicator, EHSI with optional map underlay	ðü*	ðü	ðü	Yes
Weather (FIS-B, SXM)	ðü	ðü	ðü	N/A
Moving map with direct to navigation, terrain, traffic, and weather overlay	ðü	ðü	ðü	N/A
Terrain Alerting	ðü	ðü	ðü	N/A
Direct-to nearest airport with internal GPS	ðü	ðü	ðü	N/A
Connext and LRU status	ðü	ðü	ðü	N/A
Legacy autopilot and flight director interfaces			ðü	N/A

*Requires interface to another GI 275 with internal ADAHRS

1.2.2.3 Multifunction Flight Display (MFD)

The GI 275 can function as a MFD with configurable pages to show information from other interfaced LRUs. MFD pages may be displayed on a MFD/Standby ADI unit for added versatility.

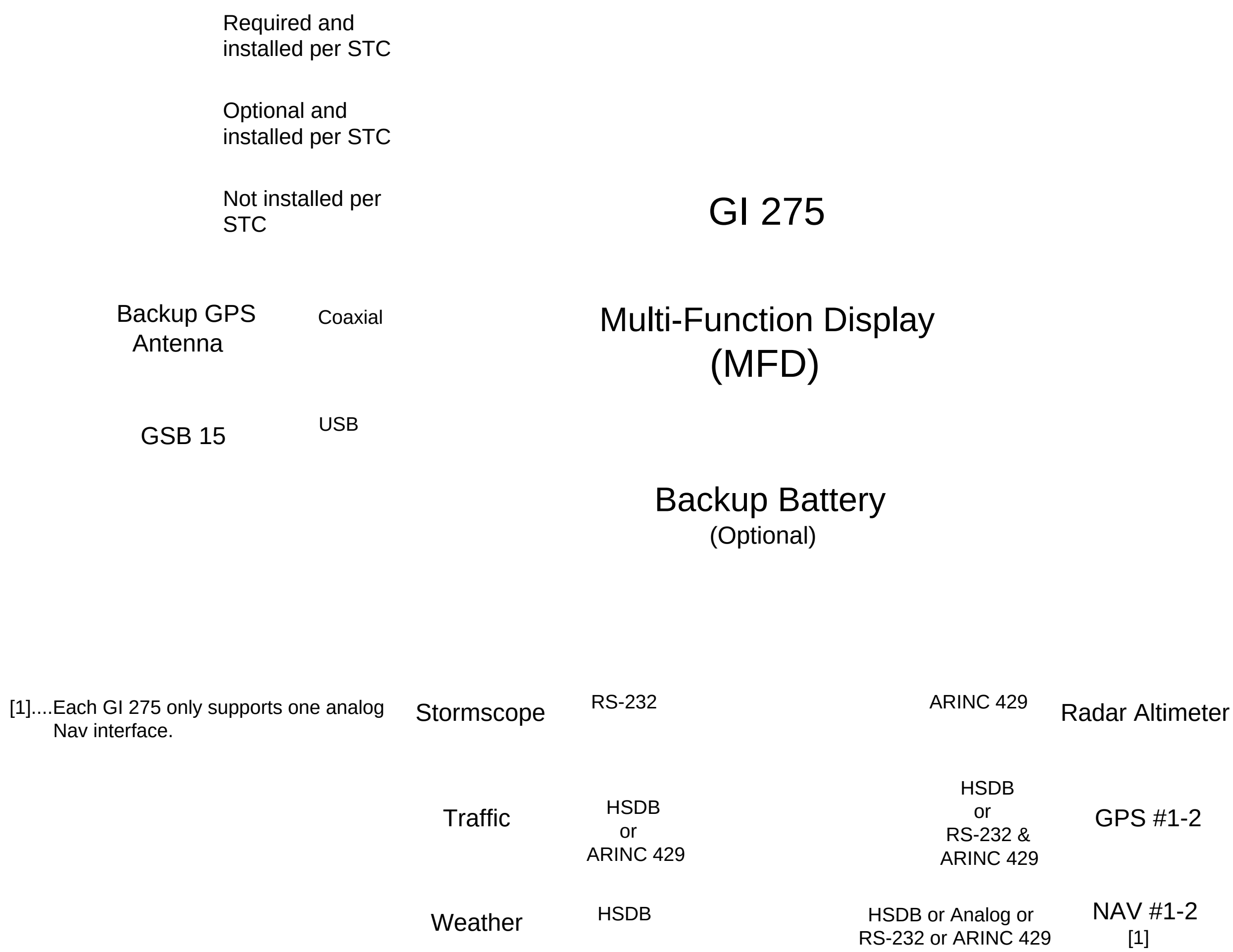


Figure 1-4 GI 275 Multi-Function Display Indicator

Table 1-7 MFD Features by Unit Selection

GI 275 Function Description	Hardware Variant		
	Base	ADAHRS	ADAHRS+AP
Configurable Multi-function Display (MFD)	ðü	ðü	ðü
Electronic Horizontal Situation Indicator, EHSI with map underlay	ðü[1]	ðü	ðü
Electronic Course Deviation Display, ECDI with map underlay	ðü	ðü	ðü
MFD Data Display	ðü	ðü	ðü
Traffic (ADS-B, TCAS with control)	ðü	ðü	ðü
Weather (FIS-B, SXM)	ðü	ðü	ðü
Moving map with direct-to navigation, terrain traffic, and weather overlay	ðü	ðü	ðü
Query map items (limited to waypoint information)	ðü	ðü	ðü
Nearest airport information	ðü	ðü	ðü
Terrain display	ðü	ðü	ðü
Direct-to nearest airport with internal GPS	ðü	ðü	ðü
Connext and LRU status	ðü	ðü	ðü
Radar Altitude	ðü	ðü	ðü
Supplemental EIS display (only the Fuel page for installations with multiple primary EIS displays)	ðü	ðü	ðü
Transponder Control [2]	ðü	ðü	ðü

Notes:

[1] Requires interface to GI 275 with internal ADAHRS.

[2] Only compatible with GTX 345 series transponders.

The configurable MFD pages that show the information listed in Table 1-7 can be independently enabled or disabled to show applicable data from connected LRUs, which include:

- HSI (requires GPS or NAV source)
- CDI (requires GPS or NAV source)
- Traffic display (requires traffic source)
- Moving map with weather, terrain, and traffic overlays
- MFD data page with waypoint information (requires GPS/NAV)
- Secondary EIS display (only the Fuel page for installations with multiple primary EIS displays)
- Radar Altitude digital gauge display (requires radar altimeter)
- Transponder Control page (requires GTX 345 series transponder)

1.2.2.3.1 Standalone Course Deviation Indicator (CDI)

The Electronic Course Deviation Indicator provides a display for lateral and vertical deviations and can be configured on any GI 275 variant. The CDI page is displayed on a GI 275 configured as an MFD.

> NOTE
> When the GI 275 is configured as a standalone CDI, the HSI and Enhanced HSI pages must be configured Off.

Required and installed per STC

Optional and installed per STC

Not installed per STC

GI 275

CDI
[2]

Backup GPS Antenna

Coaxial

GSB 15

USB

Backup Battery
(Optional)

[1]….Each GI 275 only supports one analog NAV.
[2]….Supported on MFD configuration.

GPS #1-2

HSDB or RS-232 & ARINC 429

HSDB or Analog or RS-232 or ARINC 429

NAV #1-2
[1]

Figure 1-5 GI 275 Course Deviation Indicator

Table 1-8 CDI Features by Unit Selection

GI 275 Function Description	Hardware Variant			Requires Full Time Display
	Base	ADAHRS	ADAHRS+AP	
Electronic Course Deviation Indicator	ðü	ðü	ðü	No
Direct-to nearest airport with internal GPS	ðü	ðü	ðü	N/A
Connext and LRU status	ðü	ðü	ðü	N/A

1.2.2.4 Standby Indicator

The GI 275 in a standby configuration displays the same information as the Primary ADI and has the same requirements as the Primary ADI. An optional display backup switch is available if installed as an MFD/ Standby ADI or HSI/Standby ADI. Refer to Section 3.2.2 for information.

The Standby ADI will automatically revert to display secondary ADI data in the case of a Primary ADI failure. The MFD/Standby ADI can display MFD pages and the HSI/Standby ADI can display HSI pages under normal operating conditions (i.e., when the Primary ADI is functional) in certain aircraft. Refer to Section 2 for limitations.

> NOTE
> When the Standby ADI is in reversionary mode, all previously configured MFD or HSI pages are unavailable. Only the ADI page will be displayed.

The Standby ADI monitors the primary indicator during normal operation. When the standby indicator senses a discrepancy, it automatically reverts to displaying its secondary ADI data within 1 second. Additionally, a display backup switch may be installed. When this switch is set to AUTO, the standby display functions as outlined above. When the switch is set to ON, the standby display will always display the aircraft’s secondary ADI data whether or not there is a miscompare between the Primary ADI and standby indicator. MFD/HSI pages are disabled when the switch is set to ON.

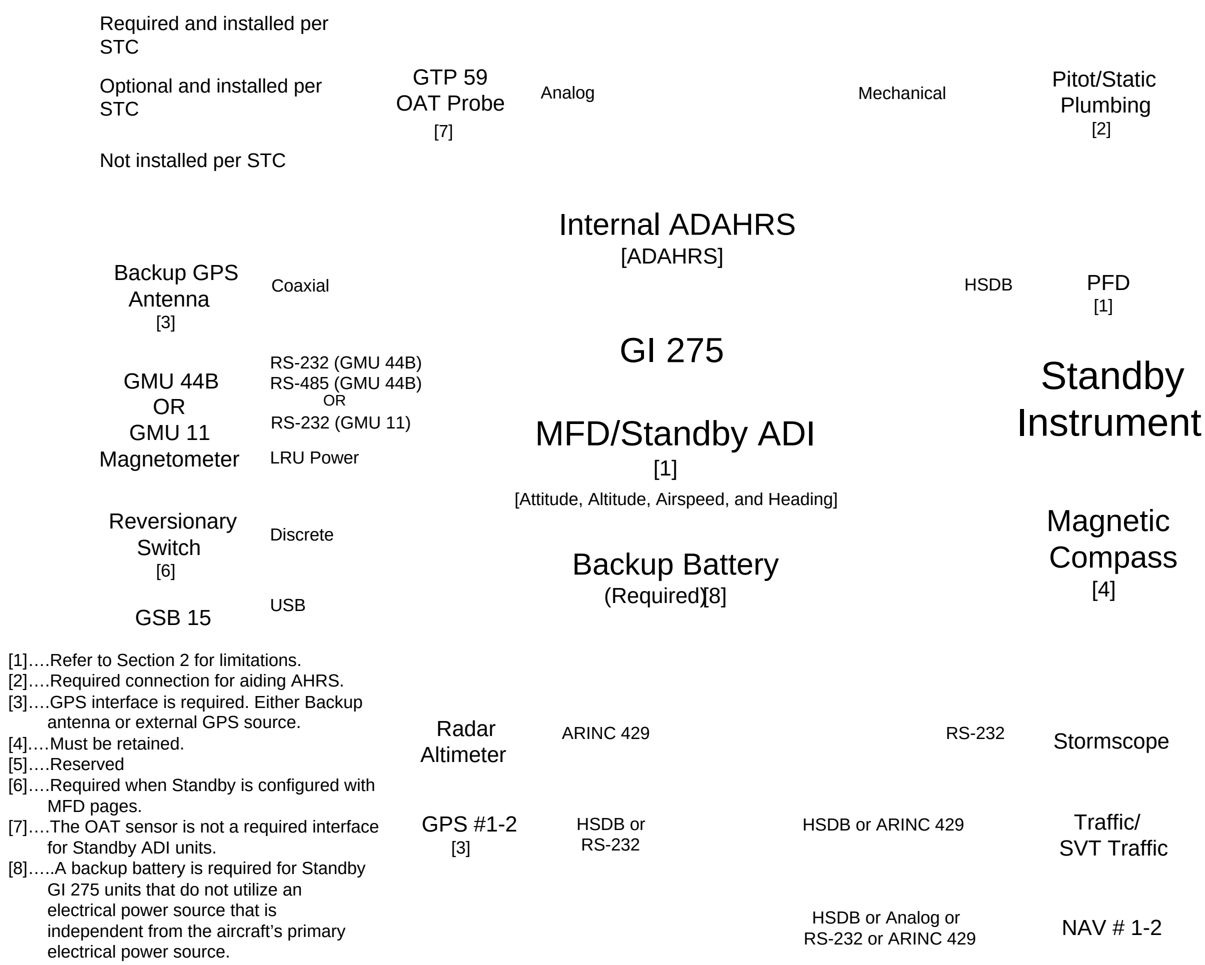


Figure 1-6 GI 275 Standby Indicator

Table 1-9 Standby Indicator Features by Unit Selection

GI 275 Function Description	Hardware Variant		Requires Full Time Display
	ADAHRS	ADAHRS+AP	
Terrain Alerting	ðü	ðü	No
Connext and LRU status	ðü	ðü	No
Multi-function Display (MFD)	ðü[1]	ðü	N/A
4-in-1 Standby ADI Attitude, Altitude, Airspeed, and Heading	ðü	ðü	No (Yes in reversionary mode)

Notes:

[1] Exclusions exist. Refer to Section 2.1.4 for limitations and Section 3.2.2 for standby requirements.

1.2.2.5 Engine Indication System (EIS)

The GI 275 provides EIS display for four-, six-, and seven-cylinder reciprocating engines. GI 275 EIS does not support turbine engines. An EIS installation consists of one GEA 110 or GEA 24(B) per engine and one GI 275 per engine.

The EIS display can drive caution and warning lights that may be required for installation when the indicator is not installed in the primary field-of-view.

The EIS display collects powerplant data and utilizes an automatic monitoring system that interprets and reports the data to the pilot in the form of an alert. The crew can acknowledge the alert, which prompts the indicator to display page one, which contains the data parameter in question. This reduces the amount of information displayed at a given time to the crew, allowing the EIS indicator to work for the pilot by monitoring engine data and notifying the crew with an alert.

The EIS has the capability to configure up to five pages. Each configured parameter with alerting markings on page one is tied to an alert that will be displayed across the bottom of the screen when an exceedance occurs. Additionally, critical performance data is displayed on every page: fuel quantity, RPM, and if applicable, manifold pressure.

GI 275 with EIS offers three aircraft timers: Flight Hours, Hobbs Timer, and Tach Timer. Flight Hours accrue in-air, as the status is derived from weight-on-wheels, GPS speed, or engine RPM. The Hobbs Timer is activated by engine oil pressure (was Engine Time in software v2.11 or earlier). Tach Time (software v2.20 or later) accrues relative to engine cruise RPM.

In addition to this section, the following sections provide information that must be considered for EIS installations:

- Section 2.1.5 - EIS limitations
- Section 3.2.3 - Minimum EIS requirements and available EIS gauges
- Section 3.4.3 - Sensor selection criteria
- Section 5.7.4.2 - Gauge markings and configuration requirements
- Appendix Section C.19 - Approved sensor interface or installation, includes configuration
- Appendix D - Model-Specific Info to determine if a Fuel Pressure Test is required
- Appendix F - EIS gauge layouts

Table 1-10 EIS Features by Unit Selection

GI 275 Function Description	Hardware Variant Base	Requires Full Time Display
Primary EIS (per engine)	ðü	Yes
Supplemental/additional EIS display	ðü	No

Required and installed per STC

Optional and installed per STC

Not installed per STC

Engine RPM

Voltmeter

Oil Temperature

Ammeter

Oil Pressure

Turbine Inlet Temp (TIT)

Manifold Pressure [1]

Carb/Engine Inlet Air Temp

Cylinder Head Temp (CHT) Probes [5]

Comp Discharge Temp (CDT)

Exhaust Gas Temp (EGT) [2] [5]

Fuel Pressure

Fuel Flow [2]

Fuel Quantity Sensor(s)

Outside Air Temp (GTP 59)

Backup GPS Antenna [4]

Coaxial

HSDB

GI 275 [ADI/HSI/MFD]

GSB 15

USB

RS-232 (GEA 24(B)) or RS-485 (GEA 110)

GEA 24(B)/110 [3]

GI 275 Base Unit

EIS #1

HSDB

GDL 60

Single Engine

GPS [4]

HSDB or RS-232

[1]….If equipped.
[2]….Required sensor for Lean Assist.
[3]….Refer to Section 2 for limitations.
[4]….Used for fuel distance estimations.
[5]….Required interface for GI 275 software v2.40 or later.

Figure 1-7 GI 275 Single-Engine EIS Interfaces

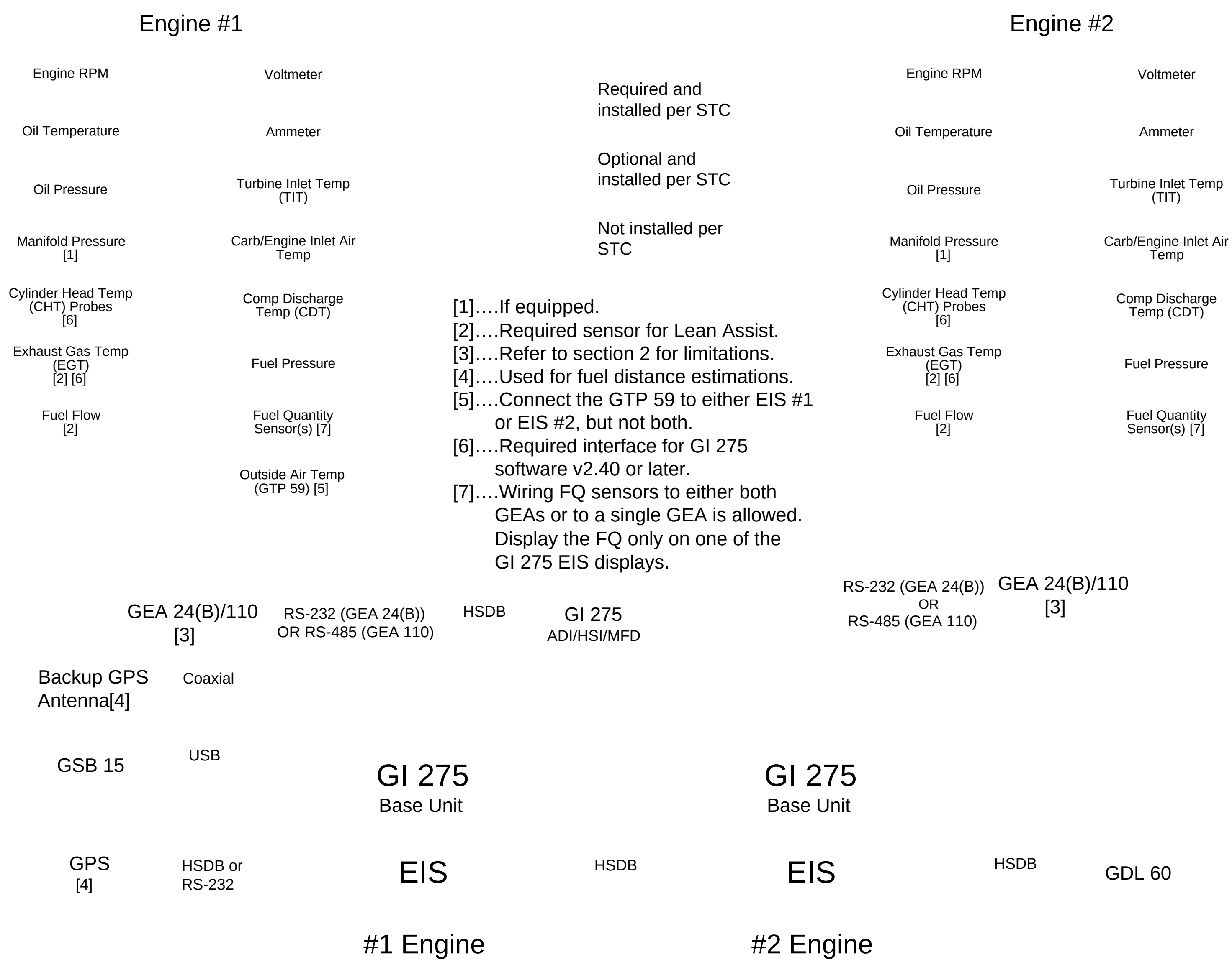


Figure 1-8 GI 275 Twin-Engine EIS Interfaces

1.2.2.6 Wireless Connectivity

With the Garmin Pilot application (iOS and Android) installed on a personal electronic device, users can update databases (refer to Section 5.15 for procedures), sync flight plans to an installed GPS 175, GNX 375, or GNC 355, log flight data, and review traffic, weather, and location data from externally connected LRUs. When paired to the GI 275, the Garmin D2 Delta Pilot watch can display key flight information, such as position, airspeed, and altitude.

> NOTE
> Updating databases is disabled in flight. Databases must be updated while the aircraft is on the ground. The GI 275 is capable of “Fast Syncing” databases only when the aircraft is stationary.

> NOTE
> Visit flyGarmin.com to purchase flight databases. The GI 275 System ID is required when purchasing databases from Garmin. Refer to Section 5.3.2 for instructions on obtaining the System ID.

1.3 Equipment

Equipment installed by this STC is grouped into three categories:

1. Display Sensors
2. Engine Sensors
3. Other Equipment

1.3.1 Display Sensors

1.3.1.1 VFR GPS

The GI 275 contains a VFR GPS that can be used as a backup GPS or as a restricted primary GPS source.

> NOTE
> Credit is not taken for the GI 275 internal GPS for GPS navigation (NAV) in IFR flight; the equipment and operational requirements for IFR must be met by other navigation source(s) in the aircraft.

The VFR GPS will be capable of displaying moving map functions depicting ownship position, velocity, ground speed, ground track, traffic overlay, weather, stormscope, and direct-to only functions in certain instances.

The internal VFR GPS interfaces to a glareshield-mounted GPS antenna, which can be used in the event of a failure of the primary GPS source or to provide VFR only situational information. Only one VFR GPS antenna is needed for all GI 275s. The GPS data will be used by the interfacing GI 275 and it will forward the data to any GI 275 configured to receive the data.

Figure 1-9 VFR GPS Antenna

1.3.1.2 Internal ADAHRS

The GI 275 ADAHRS and ADAHRS+AP variants contain an integrated ADAHRS. The internal ADAHRS units require the pitot/static lines to be connected. Additionally, either the VFR GPS or a GPS source approved by this STC is required.

1.3.1.3 GMU 44B

The GMU 44B Magnetometer senses magnetic field and provides data to the ADAHRS to determine aircraft magnetic heading. The GMU 44B receives power directly from the GI 275 and communicates with the ADAHRS via RS-485 and RS-232. The GMU 44B is applicable for Class I through IV aircraft. Refer to Section 1 of definition of aircraft classes.

Figure 1-10 GMU 44B Magnetometer

1.3.1.4 GMU 11

The GMU 11 Magnetometer senses magnetic fields and provides data to the ADAHRS to determine aircraft magnetic heading. The GMU 11 receives power directly from the GI 275 and communicates with the ADAHRS via RS-232. The GMU 11 is applicable for Class I & II aircraft only. Refer to Section 1 of definition of aircraft classes.

Figure 1-11 GMU 11 Magnetometer

1.3.1.5 GTP 59

The GTP 59 Outside Air Temperature (OAT) Probe is a remote-mounted sensor that interfaces to an ADC or EIS adapter for OAT display and computations. OAT is used to produce true airspeed for AHRS aiding as well as providing standard turn rate indices on the ADI. OAT is used to produce supplemental percent power for the powerplant on EIS units. When interfaced to an ADC, Static Air Temperature (SAT) or Total Air Temperature (TAT) can be displayed. When interfaced to a GEA, only Total Air Temperature (TAT) is displayed as “OAT (EIS)”.

Figure 1-12 GTP 59 OAT Probe

1.3.2 Engine Sensors

Each engine requires a single GEA 24(B) or GEA 110 adapter. The GEA 24(B) or GEA 110 is mounted remotely. Refer to Section 4.7.1 (GEA 24(B)) or Section 4.7.2 (GEA 110) for installation instructions.

1.3.2.1 GEA 24(B) Engine Adapter

The GEA 24(B) is an engine interface and monitoring module that collects signals from the engine sensors and communicates the engine parameters to the GI 275 via RS-232. The GEA 24(B) is approved for single and multi-engine aircraft with a gross takeoff weight of 6000 lbs or less (i.e., Class I & II aircraft). Refer to Section 1 of definition of aircraft classes.

Figure 1-13 GEA 24(B) Engine Adapter
(GEA 24 Shown; GEA 24B Similar)

1.3.2.2 GEA 110 Engine Adapter

The GEA 110 is an engine interface and monitoring module that collects signals from the engine sensors and communicates the engine parameters to the GI 275 via RS-485. The GEA 110 is approved for installation in all aircraft that are approved for EIS under this STC (i.e., Class I, II & III reciprocating engine aircraft). Refer to Section 1 of definition of aircraft classes.

Figure 1-14 GEA 110 Engine Adapter

1.3.2.3 EIS Annunciator

EIS annunciation can be provided by a single warning (red)/caution (yellow) indicator (Figure 1-15) or separate warning and caution lamps (Figure 1-16), which is required for EIS installations when the EIS display is located outside the pilot's maximum field-of-view. Refer to Section 4.4 for field-of-view requirements.

Figure 1-15 EIS Annunciator (Single)

Figure 1-16 EIS Annunciator (Separate)

1.3.2.4 Miscellaneous Engine Sensors

The carburetor temperature probe is a K-Type thermocouple.

Figure 1-17 Carburetor Temperature Probe

The oil temperature probe is a K-Type thermocouple.

Figure 1-18 Oil Temperature Probe

There are two options for fuel flow transducers; refer to Section 3.4.3 for descriptions and restrictions. The fuel flow transducers are installed in-line with the engine fuel delivery system. The display of fuel flow under the GI 275 STC supports the following engines:

1. Fuel injected engines with and without the fuel servo return line (systems with return line will require two fuel flow transducers).
2. Carbureted engines with a fuel pump, without the carburetor return line, and with the carburetor return line (will require two fuel flow transducers).
3. Carbureted engines with gravity-fed fuel delivery system.

Figure 1-19 Fuel Flow Transducer FT-60 (Left) and FT-90 (Right)

The Garmin GPT and brass pressure sensors have NPT pressure ports and Packard style electrical connectors. They are interchangeable, however the sensor configuration must be updated if they are swapped. The mil-spec style sensors are a durable all-metal design featuring a 37 degree flared fitting and round electrical connector.

Refer to Section 3.2.3 and Section 3.4.3 for more information.

Figure 1-20 Pressure Sensors

1.3.2.5 Garmin Restrictor (Optional)

The optional Garmin restrictor (P/N 117-02083-00) may be used to reduce jitter on the manifold pressure gauge caused by the opening and closing of intake valves. It is similar to an AN816-3D fitting with 1/8-27 NPT and AN3-style threads except it features an orifice, silver color, and it is marked “R.016”.

Figure 1-21 Garmin Restrictor

1.3.3 Other Equipment

1.3.3.1 Backup Battery

The backup battery is a lithium-iron battery that is required when the GI 275 is used as a standby indicator that does not utilize an electrical power source that is independent from the aircraft's primary electrical power source. The battery will power the essential display sensors for a minimum of 60 minutes. The battery is charged by the aircraft electrical system when not in use. The backup battery is optional for the GI 275. The backup battery does not backup EIS sensors and displays.

Figure 1-22 Backup Battery

1.3.3.2 GSB 15

The GSB 15 is an optional LRU that mounts into the instrument panel and provides two USB connections to a GI 275 unit. Variants include dual USB Type-A ports, dual USB Type-C ports, and single USB Type-A/single USB Type-C ports. Each variant also has the option to have the connector on the rear or side of the unit.

The USB ports can be used in place of a USB dongle to update the software on the GI 275 system and to charge devices while in-flight.

A decorative cover can optionally be installed.

Figure 1-23 GSB 15 Variants
(Left: Dual Type-A, Center: Single Type-A/Single Type-C, Right: Dual Type-C)

1.3.3.3 GCO 14

The GCO 14 is an optional carbon monoxide sensor that provides CO level information to the GI 275. The GI 275 uses this data to alert the pilot of potentially hazardous levels of CO.

The GCO 14 mounts on the GI 275 and is connected in parallel to both the GI 275 and the configuration module.

Figure 1-24 GCO 14

1.4 System Architecture Examples

The GI 275 can be interfaced with other existing aircraft systems. Refer to Appendix C for equipment compatible with the GI 275. Example installation block diagrams are shown in Figure 1-25 through Figure 1-30.

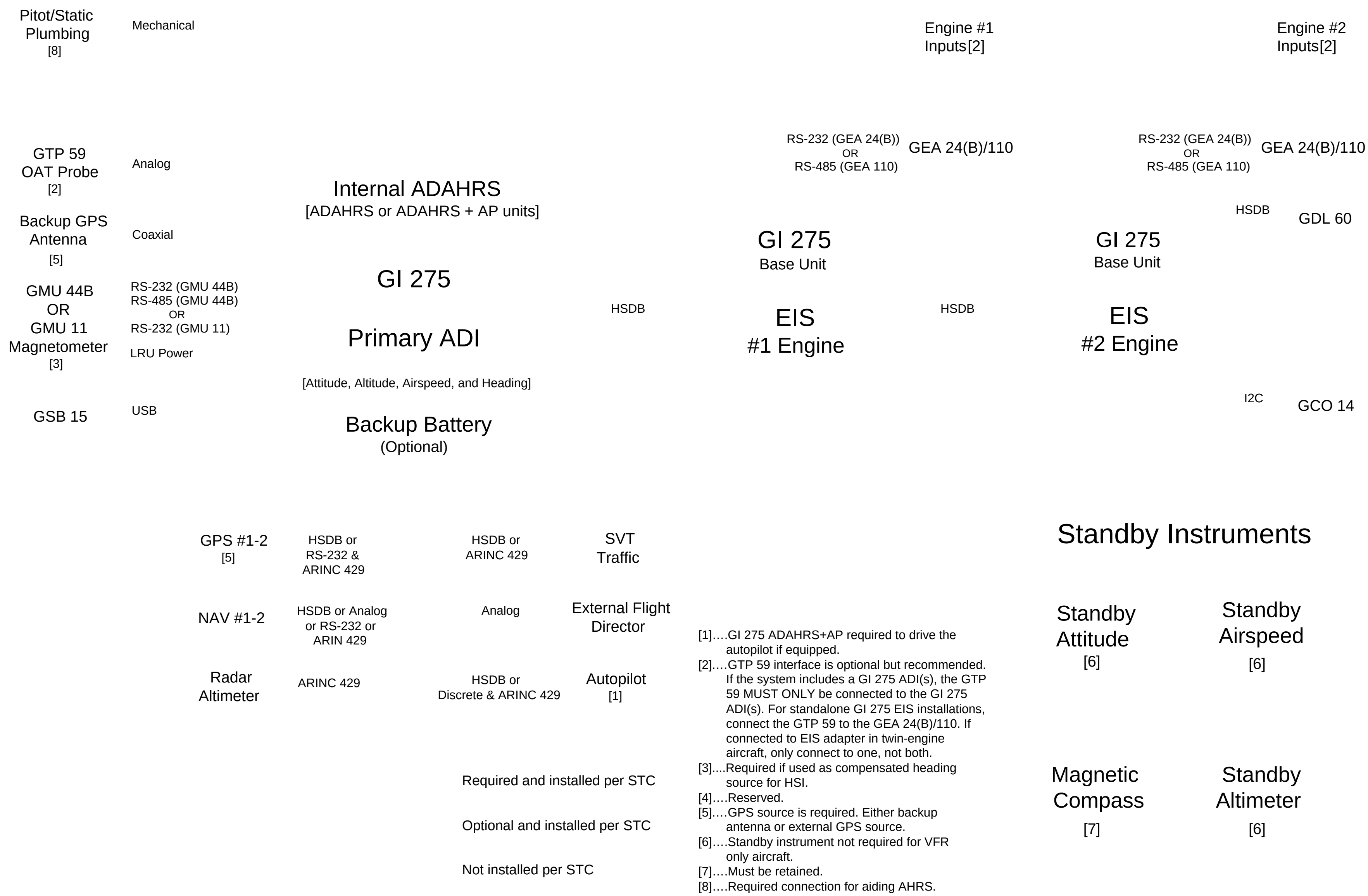


Figure 1-25 GI 275 Primary ADI and Twin-Engine EIS

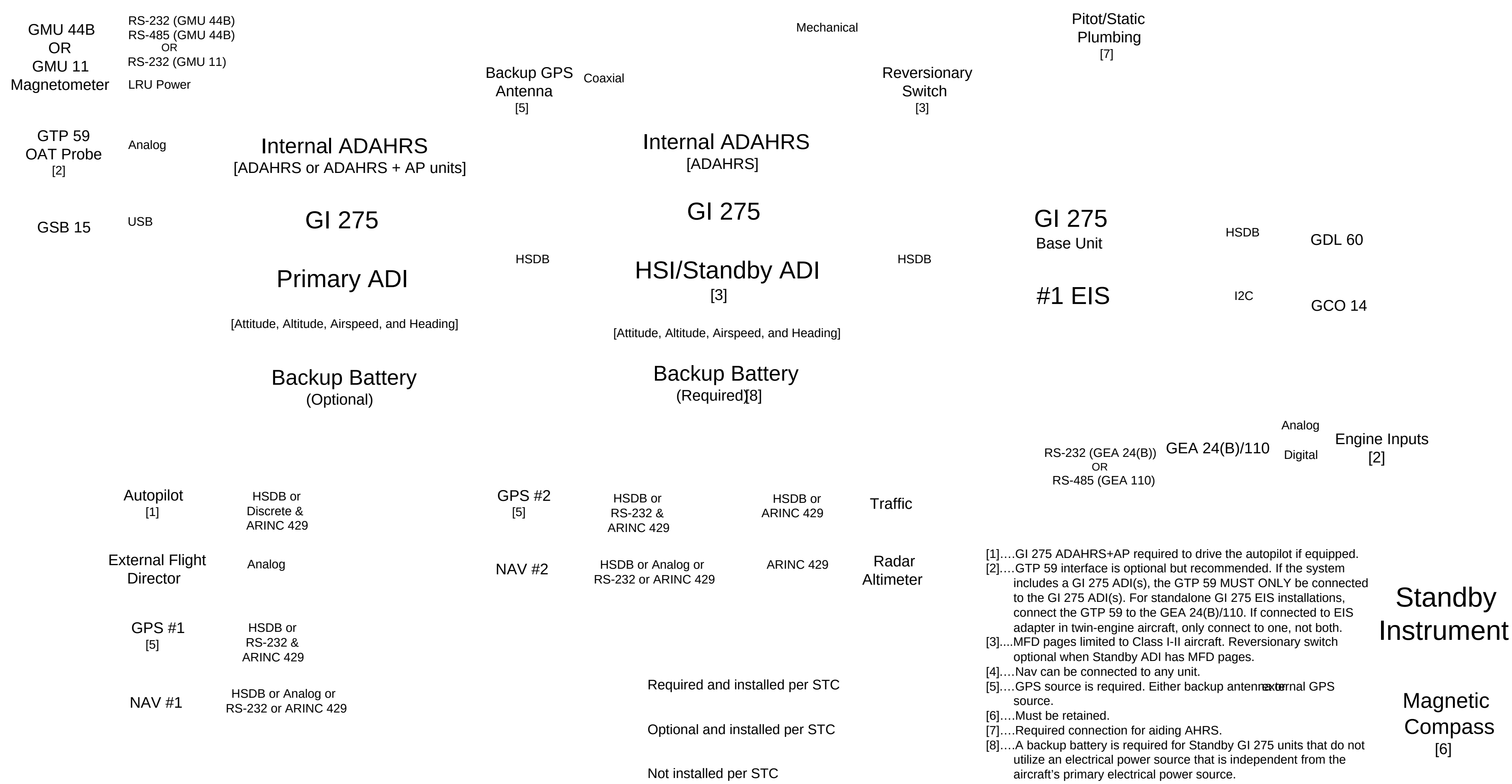


Figure 1-26 GI 275 Primary ADI, Reverting HSI/Standby ADI, and EIS

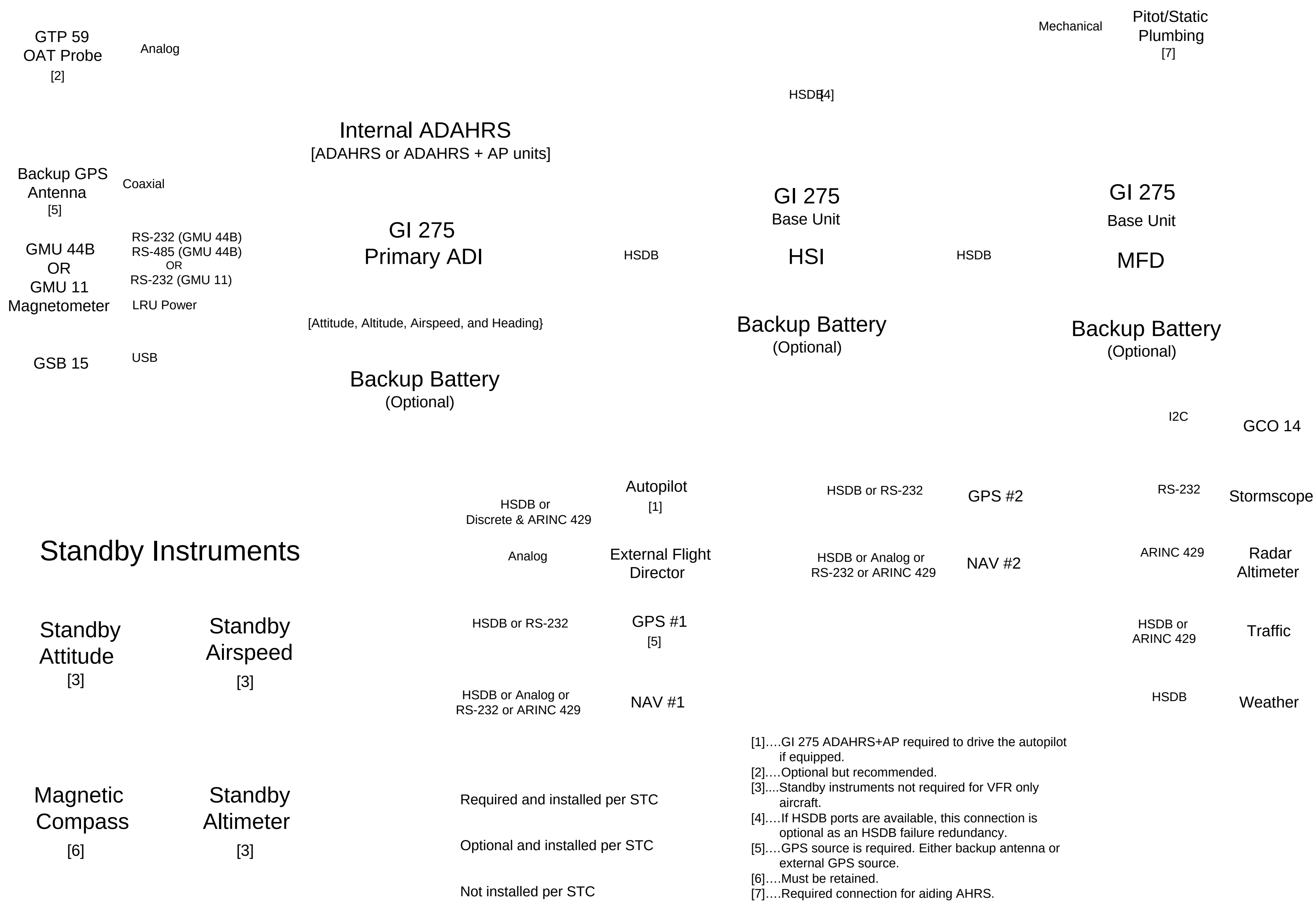


Figure 1-27 GI 275 Primary ADI, HSI, and MFD

Figure 1-28 GI 275 Primary ADI, Reverting MFD/Standby ADI, and HSI

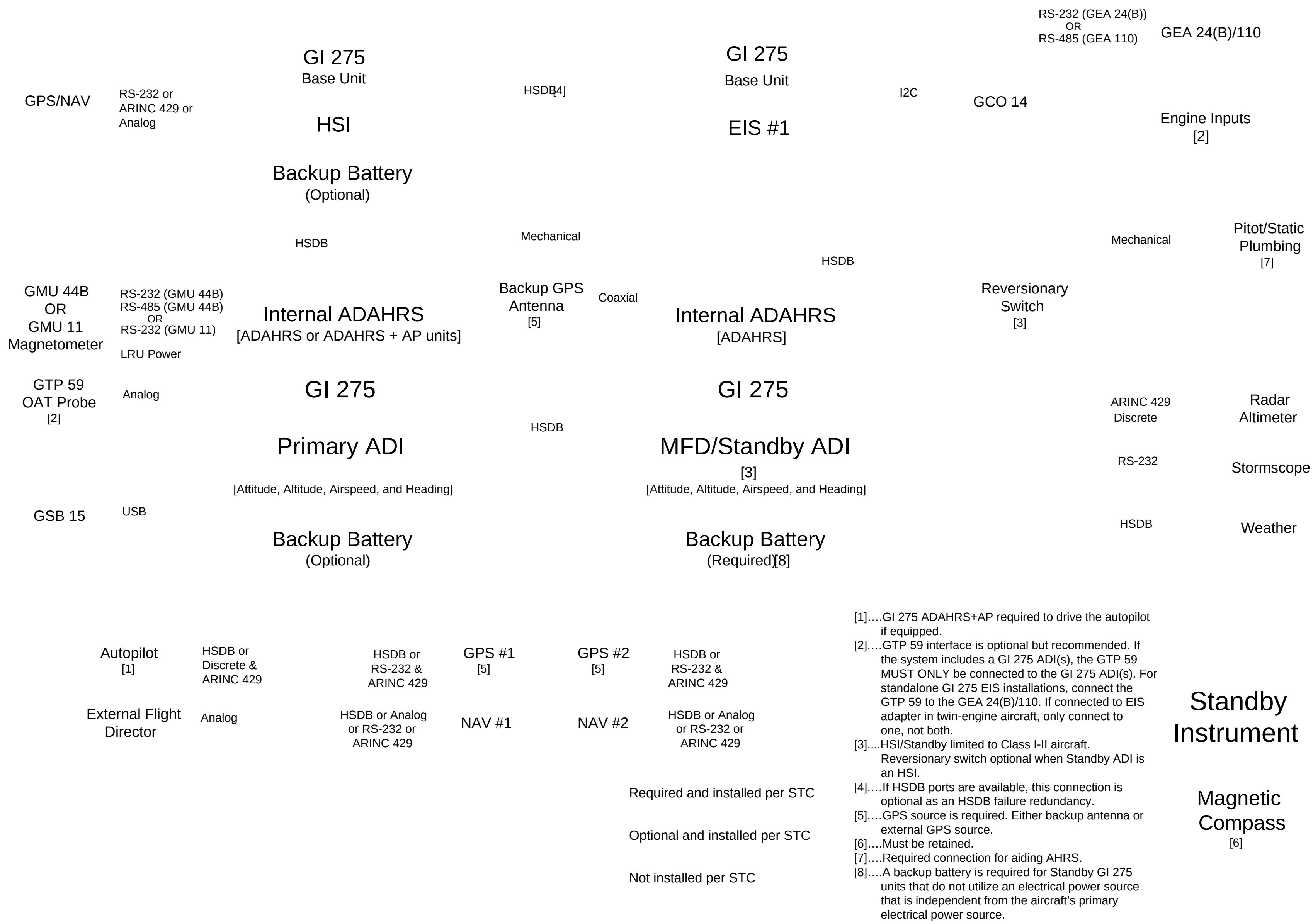
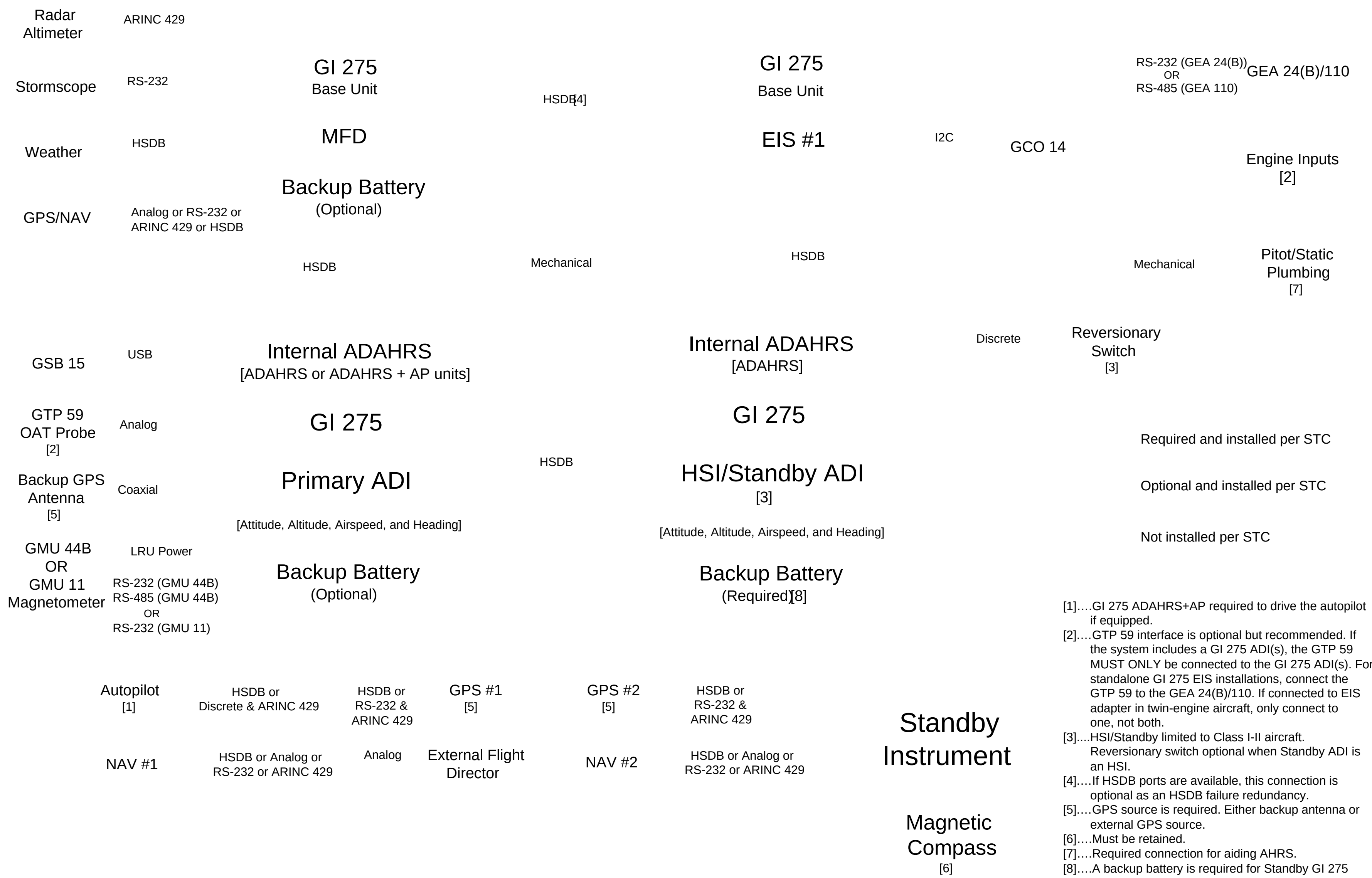


Figure 1-29 GI 275 Primary ADI, Reverting MFD/Standby ADI, HSI, and Single-Engine EIS



[1]….GI 275 ADAHRS+AP required to drive the autopilot if equipped.
[2]….GTP 59 interface is optional but recommended. If the system includes a GI 275 ADI(s), the GTP 59 MUST ONLY be connected to the GI 275 ADI(s). For standalone GI 275 EIS installations, connect the GTP 59 to the GEA 24(B)/110. If connected to EIS adapter in twin-engine aircraft, only connect to one, not both.
[3]....HSI/Standby limited to Class I-II aircraft. Reversionary switch optional when Standby ADI is an HSI.
[4]….If HSDB ports are available, this connection is optional as an HSDB failure redundancy.
[5]….GPS source is required. Either backup antenna or external GPS source.
[6]….Must be retained.
[7]….Required connection for aiding AHRS.
[8]….A backup battery is required for Standby GI 275 units that do not utilize an electrical power source that is independent from the aircraft's primary electrical power source.

Figure 1-30 GI 275 Primary ADI, Reverting HSI/Standby ADI, MFD, and EIS

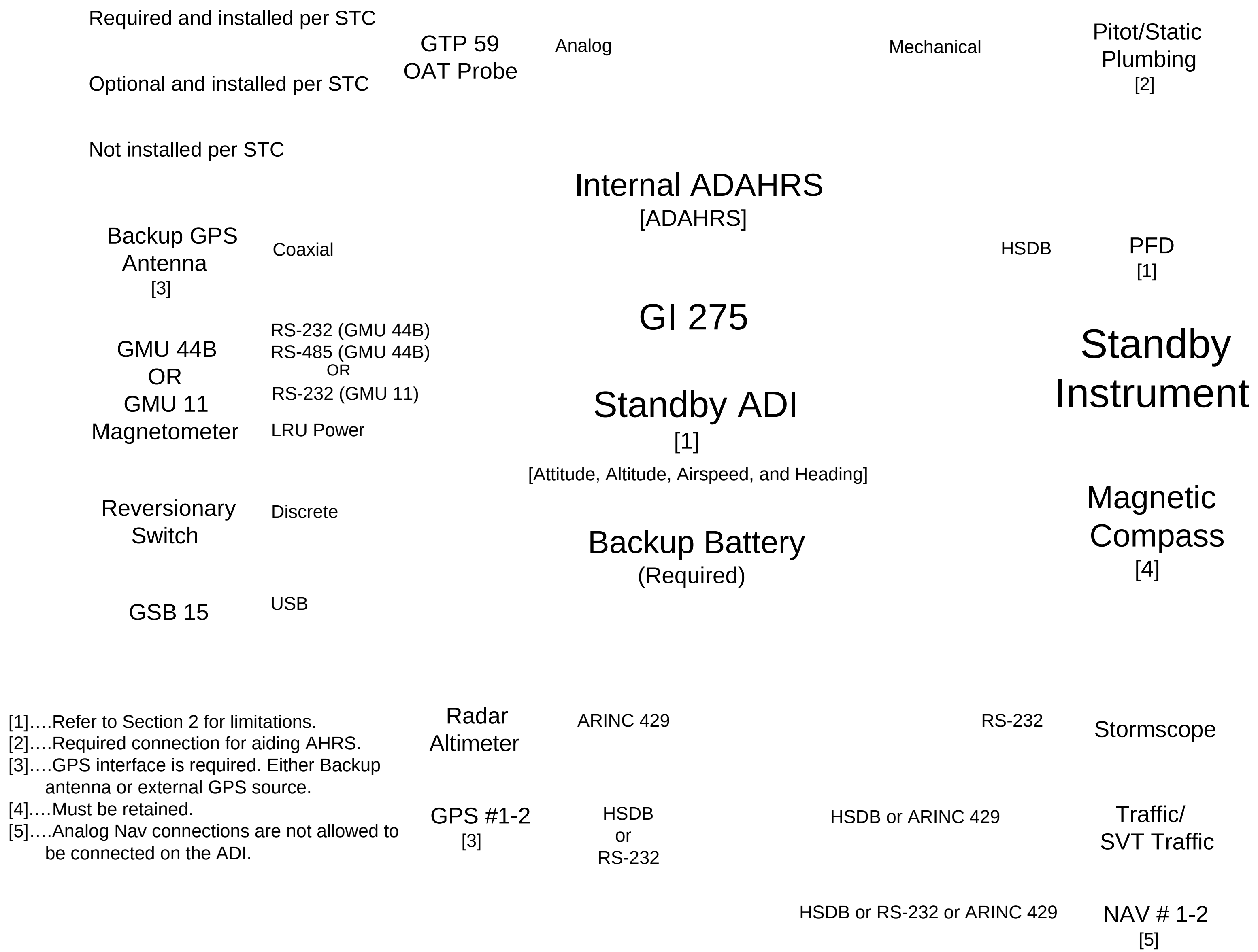
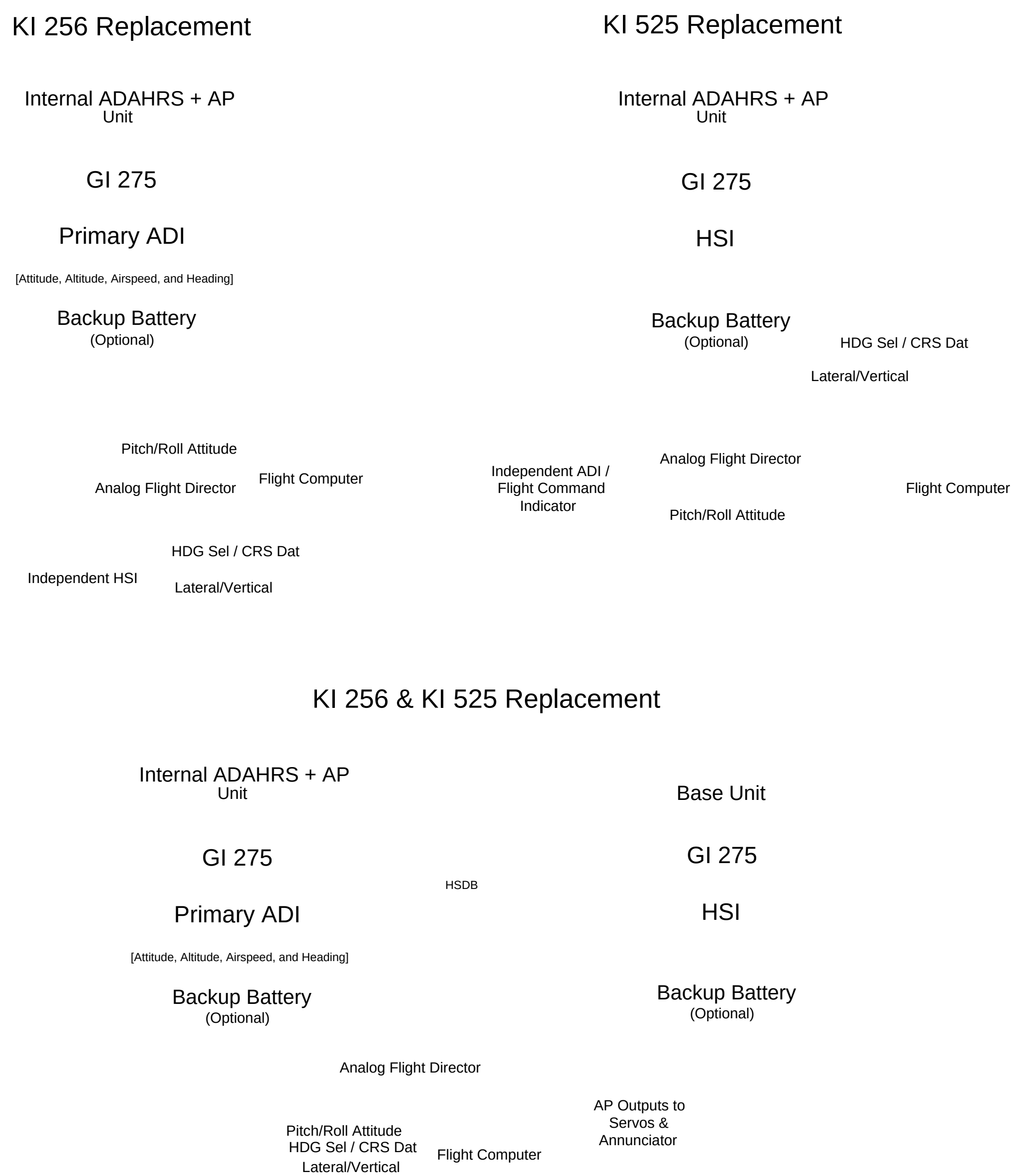


Figure 1-31 GI 275 Standby ADI to Non-GI 275 PFD



Note: The GI 275 is capable of also outputting Lateral and Vertical Deviations to the Flight Computer in any of the shown configurations if the data is available on the GI 275 and the system is wired as such (See APPENDIX B). Refer to Section 5.4 for configuration details when interfacing the GI 275 with third-party Flight Computers.

Note: The Primary ADI and HSI units are not shown with interfaces to typical LRUs. Refer to the previous figures for typical installations of Primary ADI and HSI units.

Figure 1-32 KI 256 and KI 525 Replacement

2 LIMITATIONS

2.1 Installation Limitations

2.1.1 System

Only the equipment or aircraft systems with interface(s) approved by this STC can be connected to the GI 275. Installation of equipment that is not on the STC Equipment List but is interfaced to a GI 275 requires separate airworthiness approval.

Configuration and number of GI 275 displays installed under this STC is limited to a maximum of:

- Six displays total.
- Two EIS displays.

The GI 275 system is limited to a maximum of three ADAHRS or AHRS/ADC sensors installed under this STC. If multiple ADC/AHRS sensors are interfaced to a single GI 275, the internal sensor must be configured as the default sensor (refer to Section 5.6.4).

> CAUTION
> The total weight of new equipment installed in the instrument panel must not exceed the total weight of equipment removed from the panel, unless the total weight of all the equipment installed in the instrument panel is within the weight limits established by the aircraft manufacturer.

The aircraft’s magnetic compass must be retained for all GI 275 installations.

> NOTE
> Refer to Appendix H for limitations applicable to installations of the GI 275 in Cessna 525A aircraft as part of the G600 TXi system.

2.1.2 General Installation

The GI 275 is designed to replace existing 3![-inch gauges. Therefore
will be necessary.

For GI 275 system components that are mounted outside the pressure vessel of pressurized aircraft, wires that penetrate the pressure vessel must use aircraft type design provisions such as spare pins in existing bulkhead connectors or existing cutouts in the aircraft pressure bulkheads. Substantiation for additional holes or cutouts in the aircraft pressure vessel are beyond the scope of the GI 275 AML STC and require separate airworthiness approval.

2.1.3 Primary Attitude Direction Indicator (ADI)

The GI 275 must be configured such that its airspeed tape conveys all operating limitations that were previously conveyed to the pilot by the approved type design airspeed indicator and limitations published in the aircraft POH/AFM.

The pilot’s Primary ADI must be installed in the primary field-of-view of the pilot (±15° from centerline). A secondary GI 275 ADI used for the copilot may be installed on the copilot side of the panel outside of the pilot’s primary field-of-view but in the primary field-of-view of the copilot. Refer to Section 4.4 for additional guidance.

The Primary ADI requires one of the following combinations of standby information:

- Standby display of attitude, altitude, and airspeed.
- Standby display of altitude, airspeed, stabilized heading, and standard turn-rate coordination (existing instruments may be retained).

The pitot-static system must be connected to the Primary ADI. This includes installations with the ADI as a basic, 3-in-1, or 4-in-1 display. A GPS source must be interfaced to the Primary ADI. Approved GPS sources are listed in Appendix Section C.4.

2.1.4 Standby Indicator

The standby indicator must be installed within ±35° from the centerline of the pilot's primary field-of-view. Refer to AC 23.1311-1C for additional guidance.

Refer to Section 2.1.8 for limitations regarding autopilot interface with GI 275 standby attitude indicators.

If the original airspeed indicator is part of an aural airspeed warning system, it may have to be retained to continue to generate warnings. It can only be removed when it is possible to configure GI 275 airspeed discrete outputs to trigger aural airspeed warnings when paired with external devices. The airspeed warning system must continue to operate after the installation of the GI 275 system.

If the original airspeed indicator had variable operating limits that change based on aircraft altitude (e.g., barber pole type airspeed indicators), the original pneumatic airspeed indicator, or an electronic standby capable of replicating the variable limit, must be used.

A GI 275 configured as a standby indicator must have a backup battery installed and maintained per GI 275 Part 23 AML STC Maintenance Manual (P/N 190-02246-11) unless the standby GI 275 unit is powered by an electrical source that is independent from the aircraft's primary electrical power system. Refer to Section 3.2.2 for more information and requirements for configuring a GI 275 as a standby to various systems.

2.1.5 EIS

The existing engine gauges can be replaced by an EIS display only if the functionality, markings, and operational limits of the original gauges are capable of being replicated on the EIS display. The original gauge must not be removed if any operating parameter, marking, or annunciation required by aircraft type design, engine type design, or aircraft POH/AFM (or similar) cannot be replicated on the display or an appropriate placard cannot be installed.

GI 275 EIS is limited to one EIS display for single-engine aircraft and one EIS display per engine for twin-engine aircraft. In twin-engine aircraft with two GI 275 EIS displays and GI 275 MFD, the Fuel page is the only EIS page approved to be displayed on the MFD. All other EIS pages must be disabled on the MFD.

EIS is only approved for air-cooled four-, six-, and seven-cylinder reciprocating engine equipped aircraft. Select aircraft models on the AML have EIS limitations. Refer to notes in Table D-2.

All gauges with red and/or yellow markings, if intended to be replaced by a GI 275 EIS display, must be identically configured on the Main EIS page. In some cases, one GI 275 will not have enough available spaces for gauges on the Main EIS page. Any of the following cases will require the retention of the original gauge(s):

- Three or more of the following gauges have red or yellow marks: Fuel Flow, Fuel Pressure, CDT, IAT, Carb Temp, and CDT/IAT Diff.
- Two of the following gauges have red or yellow marks: Fuel Flow, Fuel Pressure, CDT, IAT, Carb Temp, and CDT/IAT Diff, and one of the following is true:
  - Dual Aux Fuel Tanks are configured and one or more electrical gauges have a red or yellow marking.

%æA Single Aux Fuel Tank is configured and two or more electrical gauges have a red or yellow marking.

- More than two electrical gauges have a red or yellow marking.

The Main EIS page can display up to four strip gauges along with a CHT/EGT/TIT graph and two digital readout gauges. Refer to Section 5.7.4 and Appendix F for more information on gauge layout requirements.

If an oil temperature, oil pressure, or fuel pressure sensor is being replaced, the GI 275 sensor must use the same port(s) as the original sensor, unless otherwise specified.

The GI 275 EIS does not currently support aircraft with:

- Turbine engines.
- Engines with FADEC.
- CDT, IAT, DIFF engine indications for more than one inter-cooler per engine.
- Indications for more than two ammeters per engine (alternator amps, battery charge/discharge).
- Indications for more than two voltmeters per engine (bus volts, battery volts).
- Engine turbochargers that have an oil system separate from the engine oil system and have turbocharger oil pressure or temperature gauge(s).

The Prop Sync Wheel is limited to conventional twin-engine aircraft and prohibited in centerline thrust aircraft (e.g., Cessna Skymaster).

The GI 275 Percent Power display is prohibited from replacing the Cirrus SR22 horsepower display in all models where the existing horsepower gauge is used to control the engine per the POH.

2.1.5.1 Engine Adapter

Only one engine adapter per engine may be installed.

GEA 24(B) installations are limited to single and twin reciprocating engine aircraft with a gross takeoff weight of 6,000 lbs or less and a service ceiling of 32,000 feet or less (Class I & II). The GEA 24(B) must be mounted remotely and cannot be installed within the engine compartment or areas with water or fluids. The GEA 24(B) cannot be interfaced to resistive fuel quantity floats in twin-engine aircraft (i.e., Class II) in some installations. Refer to the aircraft model notes in Table D-2.

GEA 110 installations are limited to single and twin reciprocating engine aircraft with a gross takeoff weight of 12,500 lbs or less and a service ceiling of 41,000 feet or less (Class I, II & III). Refer to Section 4.7.2 for possible installation locations for GEA 110.

EIS units may not share a GEA 110/24(B) interface with G500/G600 TXi or G3X systems, respectively. If using a GI 275 for EIS, then the EIS interface may only be connected and displayed on the GI 275 system, and may not be connected or displayed on TXi or G3X systems.

In installations with a GEA 24(B), GI 275 EIS cannot support display of Carburetor Temperature, TIT, IAT, CDT, or Primary EGT on a seven-cylinder radial reciprocating engine with CHT/EGT displayed for all seven cylinders. In installations with a GEA 110, GI 275 EIS cannot support display of TIT, IAT, CDT, or Primary EGT on a seven-cylinder radial reciprocating engine with CHT/EGT displayed for all seven cylinders.

2.1.5.2 Pressure Sensors

Brass body pressure sensors are not approved for installation in aircraft that have an operational ceiling greater than 32,000 feet. Refer to Figure 1-20 for image and Table C-20 for part numbers.

2.1.6 GMU Restrictions

The GMU 11 Magnetometer is limited to single and multi-engine aircraft with a gross takeoff weight of 6000 lbs or less (i.e., Class I & II aircraft). The GMU 44B Magnetometer is approved for all aircraft on the STC AML.

2.1.7 GPS Source Limitations

A GPS source is required to be interfaced to GI 275 ADAHRS and ADAHRS+AP units unless otherwise specified in the model-specific data in Appendix D. Approved internal and external GPS sources are listed in Appendix Section C.4.

2.1.8 Autopilot Interface

The GI 275 analog attitude output and flight director input must be connected to a pilot-side GI 275 that is configured to display the ADI full-time. The autopilot heading error, course error, and lateral/vertical deviation signals must be connected to a pilot-side GI 275 that is configured as either an ADI capable of displaying course deviations or an HSI.

If the GI 275 is interfaced with the GFC 500, a TSO approved GPS source is required for the GFC to utilize NAV modes; the GI 275 VFR GPS does not provide NAV modes with the GFC 500.

2.1.9 VFR GPS

The VFR GPS can be used with an installed glareshield antenna as a backup GPS source in Class I - IV aircraft or in an aircraft without a primary GPS source. If the aircraft is IFR rated, the aircraft must maintain its equipment for IFR requirements (i.e., NAV sources). The display of primary VFR GPS is for situational awareness only and is not approved for IFR navigation credit.

2.1.10 Transponder Control

The Transponder Control function is only provided when the GI 275 is interfaced to a GTX 345 series transponder. If configured, the Transponder Control page must be set as the final page on an MFD or MFD/Standby ADI unit.

The GI 275 must be the only control source for the GTX 345 if used for the transponder control function; control using another source, such as a GTN, is outside the scope of this STC.

2.1.11 USB Connection

Each installed GI 275 unit must have a dedicated USB connection. This can be accomplished with either the USB pigtail (P/N 325-00238-02) that is included in each GI 275 connector kit or with the optional GSB 15.

The USB pigtail is for maintenance purposes only and is prohibited from being used while in-flight. The USB pigtail must be capped and stowed prior to returning the aircraft to service. The GSB 15 is capable of powering PEDs using its USB ports while in-flight.

2.1.12 GCO 14

The GCO 14 can only be directly connected to a GI 275 Base unit (-00/-60) configured as an EIS display or MFD display (per Section 5.3.4) with only Traffic, SXM Weather, FIS-B Weather, Stormscope, Terrain, Map, Gauges Main, Gauges AUX, CHT/EGT, Fuel, Summary, Radio Altimeter, and/or Transponder pages configured for display per Section 5.6.3.3.

Additionally, the GI 275 unit cannot be installed as a router for any ADAHRS or navigation data. Do not wire any ARINC 429 ADAHRS, ARINC 429 navigation, RS-232 navigation, analog navigation, or composite navigation interfaces to this GI 275 unit. Do not wire the GI 275 unit on the HSDB network between two other displays that transmit/receive ADAHRS or navigation data.

2.1.13 Display of Mach Number

The GI 275 Display of Mach Number on the ADI page is prohibited from replacing or duplicating an existing primary Mach Number gauge.

2.1.14 Class II & III Composite Aircraft

For installations in Class II or Class III aircraft (refer to Section 1 for definition) that have composite structures, this STC only approves installation of the GI 275 ADAHRS (P/Ns 011-04489-10 (Class II) or 011-04489-30 (Class III)) configured as an ADI Only standby (refer to Section 3.2.2), a GMU 44B, and a GTP 59. Additionally, only the following GI 275 interfaces are approved in composite structure Class II and Class III aircraft. GI 275 pins not listed below must remain unconnected. Aircraft limited to this configuration are identified in the Notes column of Table D-2.

- Aircraft Power (connector P2751 – pins 2, 3 [1])
- Aircraft Ground (connector P2751 – pins 41, 61)
- Configuration Module (connector P2751 – pins 1, 21, 40, 60)
- USB pigtail (P/N 325-00238-02) (connector P2751 – pins 39, 58, 59, 78) OR
  GSB 15 (connector P2751 – pins 39, 58, 59)
- Lighting Bus (connector P2751 – pins 22, 42)
- GMU 44B (connector P2751 – pins 19, 20, 49, 69, [18 or 38])
- GTP 59 (connector P2752 – pins 21, 60, 62)
- Backup GPS Antenna (BNC connector)

Notes:

[1] Installation of TVS diodes on GI 275 power input wires is required. Refer to Figure B-1 for Class II & III composite aircraft.

2.1.15 Class IV Aircraft

For installations in Class IV aircraft (refer to Section 1 for definition), this STC only approves installation of the following: GI 275 ADAHRS (P/N 011-04489-30) configured as a full-time, dedicated standby, a GMU 44B, a GTP 59, or a GI 275 Base (P/N 011-04489-00) configured as an MFD with the following pages: Traffic, SXM or FIS-B Weather, Terrain, Map, Stormscope and Rad Alt. Additionally, only the following GI 275 interfaces are approved in Class IV aircraft. GI 275 pins not listed below must remain unconnected. Aircraft identified in Table D-2 as “Limited to MFD or Standby ADI” are restricted to these pins only.

- Aircraft Power (connector P2751 – pins 2, 3)
- Aircraft Ground (connector P2751 – pins 41, 61)
- Configuration Module (connector P2751 – pins 1, 21, 40, 60)
- USB pigtail (P/N 325-00238-02) (connector P2751 – pins 39, 58, 59, 78) OR
  GSB 15 (connector P2751 – pins 39, 58, 59)
- Lighting Bus (connector P2751 – pins 22, 42)
- GMU 44B (connector P2751 – pins 19, 20, 49, 69, [18 or 38])
- GTP 59 (connector P2752 – pins 21, 60, 62)
- GPS source wiring shown in Figure B-4 (connector P2751 only)
- ARINC 429 and RS-232 wiring shown in Figure B-5 (connector P2751 only)
- Backup GPS Antenna (BNC connector)
- HSDB Traffic (connector P2751 – pins 8, 9, 27, 28, 46, 47, 65, 66) OR
  ARINC 429 Traffic Input or Radar Altimeter Input (connector P2751 – pins 14, 15, 33, 34, 52, 53, 72, 73)

2.1.16 Part 121/135 Operations

Aircraft requiring a third attitude instrument for operations under 14 CFR Part 121 or 135 must still comply with the GI 275 standby instrument requirements. Consequently, one additional attitude indicator is required for the co-pilot's position. Aircraft that require the third attitude source are described in 14 CFR §121.2, 14 CFR §135.2, and 14 CFR §121.305(j). The third attitude indication may be a traditional gyro, GI 275, or G500/G600 TXi system.

Single-engine aircraft operated under 14 CFR Part 135 must have two independent electrical sources or a standby battery or generator/alternator capable of supplying 150% of the electrical loads of all required instruments and equipment necessary for safe emergency operations of the aircraft for 60 minutes in accordance with 135.163(f).

For multi-engine aircraft operated under 14 CFR Part 135, the electrical load of all required instruments and equipment necessary for emergency operations must not be greater than one-half of the total generated power in accordance with 14 CFR 135.163(g). List of required instruments and equipment necessary for safe emergency operations must be expanded to include the pilot's PFD, AHRS, ADC, and standby attitude indicator (if installed) when evaluating aircraft electrical loads.

2.2 Operational Limitations

All functions of the GI 275 system meet the appropriate design assurance qualifications for primary flight displays in all aircraft listed on the AML. References listed in Table 1-1 provide a comprehensive list of TSO authorizations by function. The instructions in this manual must be followed in order to ensure an airworthy installation for aircraft operating under Title 14 CFR Parts 91, 121, and 135 with the limitations of those installations listed here.

3 PREPARATION

3.1 Materials and Parts

Equipment must be sourced from both Garmin and commercial vendors for installation of the GI 275. This section provides a description of the equipment and the installation kits available from Garmin and also commercially available parts and their requirements.

3.1.1 Garmin

GI 275 components and applicable installation kits are supplied by Garmin. Refer to the Aviation Price Catalog on flyGarmin.com for details once the selection for a particular aircraft installation is determined. Refer to the latest revision of GI 275 Part 23 AML STC Equipment List (P/N 005-01208-42) for the approved Mod Status of equipment. Engine sensors with Garmin part numbers listed in Table C-20 are available from Garmin.

Table 3-1 GI 275 Units

Unit	Part Number	
	Unit	Catalog
GI 275 Base	011-04489-00	010-01912-00
GI 275 ADAHRS, Class I & II	011-04489-10	010-01912-10
GI 275 ADAHRS, Class III & IV	011-04489-30	010-01912-30
GI 275 ADAHRS+AP, Class I & II	011-04489-20	010-01912-20
GI 275 ADAHRS+AP, Class III & IV	011-04489-40	010-01912-40
GI 275 Base NVIS	011-04489-60	010-01912-60
GI 275 ADAHRS NVIS	011-04489-70	010-01912-70

Table 3-2 GI 275 Connector Kits

Connector Kit	Part Number
GI 275 connector kit (GI 275 Base units)	011-04809-00
GI 275 connector kit 2 (GI 275 ADAHRS & AP units)	011-04809-01 [1]
Configuration Module	011-04038-00 [2]
KI 256 Adapter Kit	011-05285-00 [3]

Notes:

[1] The -01 connector kit includes the same parts as the -00 kit, but has additional quantities for the second connector present on the ADAHRS and ADAHRS+AP models.

[2] Included with -00 and -01 connector kits. Listed for reference only.

[3] Optional adapter for installing a GI 275 in a cutout for a Bendix/King KI 256.

Table 3-3 GI 275 Enablement and Loader Cards

Description	Part Number
GI 275 SVT Unlock Feature Enablement	006-D7986-00
Textron Aviation Model 525(A) Static Source Error Correction (SSEC) Calibration Loader Card	006-B4540-02
Cessna 190/195 Airspeed Calibration Loader Card	006-B4540-01

Table 3-4 GI 275 LRUs

Unit	Part Number	
	Unit	Catalog
GEA 110	011-03454-01	010-01329-01
GEA 24	011-02848-01	010-01042-01
GEA 24B	011-05991-01	010-02770-01
GMU 11	011-04349-01	010-01788-01
GMU 44B	011-04201-00	010-01708-00
GTP 59	011-00978-00	011-00978-00

Table 3-5 GI 275 Accessories

Unit	Part Number	
	Unit	Catalog
Backup Battery	011-04528-00	010-02304-00
GSB 15, Dual Type-A, Rear	011-04937-00	010-02201-10
GSB 15, Type-A & Type-C, Rear	011-04937-20	010-02544-21
GSB 15, Dual Type-C, Rear	011-04937-40	010-02544-41
GSB 15, Dual Type-A, Side	011-04937-01	010-02201-11
GSB 15, Type-A & Type-C, Side	011-04937-30	010-02544-31
GSB 15, Dual Type-C, Side	011-04937-50	010-02544-51
GCO 14	011-06537-00	010-02975-01
Backup GPS Antenna	011-04036-10	010-12444-10
Garmin Restrictor	117-02083-00	

Table 3-6 LRU Installation Kits

Remote LRU Connector Kit	Part Number
GEA 110 connector kit	011-03527-50
GEA 110 sealed connector/configuration module kit	011-03527-51
GEA 110 installation tray	011-03941-00
GEA 24 connector kit	011-02886-01
GSB 15, 2.25-inch mounting kit	011-05043-00
GSB 15 decorative cover kit, unfinished [1]	011-05291-00
GSB 15 decorative cover kit, black powder coat [1]	011-05291-01
GSB 15, 3.125-inch mounting kit	011-05043-01
GSB 15 connector kit	011-05044-00
GMU 44B Universal Mount kit	011-01779-01
GMU 44B install rack	125-00437-00
GMU 11 installation kit	011-04349-90
GCO 14 Cable Kit	011-06537-10

Notes:

[1] The GSB 15 decorative cover is optional and is for aesthetic purposes only.

3.1.2 Commercial

The GI 275 equipment is designed to be installed using standard commercially available parts and accessories. The following may be required for the installations:

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

   MIL-W-22759/18 wire is recommended due to the insulation diameter being more compatible with high-density connectors.

4. MIL-C-27500 shielded cable with M22759/16 wire (TE) or M22759/18 wire (TG) and ETFE jacket (14).
5. MS25036 or MS20659 ring terminals.
6. M83519/2-X shield terminators.
7. A-A-59163 (MIL-I-46852C) silicone fusion tape.Wire bundle routing, securing, and management supplies, as required.
8. 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.
9. Line and fittings, including 1/8-27ANPT male fitting for pitot and static connection and pneumatic line. Refer to aircraft-specific parts catalog for approved pitot and static connector part numbers.
10. 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.
11. 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).
12. Ethernet cable, aircraft grade category 5 (required only for HSDB interfaces). Only Ethernet cables listed in Table 3-7 can be used. 24 AWG is preferred.

Table 3-7 HSDB Cables

Manufacturer	Cable Part Number	Gauge
PIC WIRE AND CABLE	E10422 [1]	22 AWG
	E10424	24 AWG
	E12424	24 AWG
EMTEQ	D100-0824-100	24 AWG
THERMAX	MX100Q-24	24 AWG
CARLISLE IT	392404	24 AWG
Gigaflight Connectivity	GF100T-24CAT5	24 AWG

Notes:

[1] E10422 cable is not recommended because of the larger insulation diameter, making it very hard to work with in the high density connectors. E1042x cable is also not recommended due to insulation shrinkage that can occur.

13. EIS annunciator indicator(s) capable of displaying warning (red) and caution (yellow) annunciations.

Table 3-8 EIS Annunciator

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

Notes:

[1] Requires two 47©, 1/4 WATT -55 C to +125 C resistors. Refer to Figur

14. For resistive fuel probe connection with GEA 24 EIS adapter (not applicable to GEA 24B): 2.2k © (± 1%), 0.25W (or greater) resistors qualified to retain p to MIL-R-10509. Acceptable resistors include:
    - RN60D2201FB14 (ref. Garmin Kit P/N 011-05829-00)
    - RN60C2201DB14
    - RN65E2201FB14
15. Standard heat shrink tubing (M23053/5, X = color)
    - M23053/5-104-X for single conductor wire
    - M23053/5-105-X for insulating twisted-pair wire
    - M23053/5-106-X for insulating triple conductor wire or RG-400 coax
16. For Class II & III composite aircraft , power wiring TVS diode and fuse components:
    - Littelfuse P/N 0225005.MXUP, 2AG cartridge fuses, 125V 5A fast acting (F1/F2 in Figure B-1)
    - Littelfuse P/N 01500274ZXU, in-line fuse holder (F1/F2 in Figure B-1)
    - Littelfuse P/N 15KPA48A, TVS Diode, 48V Vrb, 77.7V Clamp at Ipp (TVS1/TVS2 in Figure B-1)
17. For GDL 60 Remote Aircraft Status installations, RAS relay components:
    - M12883/41-16 Relay Socket
    - M83536/10-15M Relay for 14V Systems
    - M83536/10-024M Relay for 28V Systems

    OR

    - M12883/45-01 Relay Socket
    - M83536/2-024M Relay for 28V systems

3.1.3 Special Tools Required

The following tools are required for building the wire harness.

Milliohm Meter

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

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. Refer to Table 3-9.

Table 3-9 Recommended Crimp Tools

Manufacturer	Hand Crimping Tool	22-28 AWG Positioner [1]	22-28 AWG Insertion/ Extraction Tool	22-24 AWG Positioner	22-24 AWG Insertion/ Extraction Tool
Military P/N	M22520/2-01	M22520/2-09	M81969/14-01	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 are subject to change without notice.

Notes:

[1] For configuration module pins, verify the crimp tool is set to crimp 28 AWG wire.

GSB 15 Installation

A crimp tool is required for the GSB 15 installation. The recommended crimp tool is Molex Hand Crimp Tool (P/N 638190000). For other options, refer to GSB 15 Installation Manual (P/N 190-00303-A3).

3.2 GI 275 Installation Requirements

This section provides installation requirements for the GI 275 system.

3.2.1 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 3-10.

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

Table 3-10 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 busses are available, connect No. 2 PFD with ADAHRS to the separate essential bus.
HSI	• Avionics bus.
HSI/Standby ADI	• Essential bus.
MFD/Standby ADI	• Essential bus.
MFD	• Avionics bus.
EIS Display	• No. 1 EIS display on essential bus. • No. 2 EIS display on essential bus. • If dual essential busses are available, connect each EIS display to a separate essential bus.
GEA 24(B)	• No. 1 GEA 24(B) on essential bus. • No. 2 GEA 24(B) on essential bus. • If dual essential busses are available, connect each GEA 24(B) to a separate essential bus.
GEA 110	• No. 1 GEA 110 on essential bus. • No. 2 GEA 110 on essential bus. • If dual essential busses are available, connect each GEA 110 to a separate essential bus. It is acceptable to connect each GEA 110 to both busses.
GSB 15	• If connected to a GI 275, it is recommended to connect the GSB 15 to same bus as GI 275 to ensure the GSB 15 is powered on with the GI 275. • If not connected to GI 275, connect GSB 15 to avionics bus.

Circuit breakers and switches added as part of GI 275 system installation must be labeled as shown in Table 3-11 (switch), Table 3-12 (single bus), and Table 3-13 (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.
- A/B designation– Differentiates the essential bus.

Table 3-11 Switch Labels

Description	Label
Display backup switch	DISPLAY BACKUP Position 1: ON Position 2: AUTO

Table 3-12 Circuit Breaker Labels - Single Essential Bus

Description	Label		CB Value
	Single LRU	Dual LRU	14V / 28V System
GI 275 configured as Primary Attitude only indicator (Basic)	ATT	ATT 1 ATT 2	5A
GI 275 configured as ADI (3-in-1 or 4-in-1)	PFD	PFD 1 PFD 2	5A
GI 275 configured as MFD	MFD [3]	MFD 1 [3] MFD 2 [3]	5A
GI 275 configured as MFD/Standby ADI	STBY ADI or STBY INST [1] MFD/STBY ADI [2]		5A
GI 275 configured as HSI	HSI [3]	HSI 1 [3] HSI 2 [3]	5A
GI 275 configured as HSI/Standby ADI	HSI/STBY ADI		5A
GI 275 configured as EIS	EIS	EIS 1 EIS 2	5A
GEA 110	ENG SNSR	ENG SNSR L ENG SNSR R	5A
GEA 24(B)	ENG SNSR	ENG SNSR L ENG SNSR R	5A
GSB 15	USB	USB 1 USB 2	5A or 7.5A [4] [5]

Notes:

[1] Label as “STBY ADI” or “STBY INST” if the GI 275 is configured as a Standby ADI and no MFD pages are configured.

[2] Label as “MFD/STBY ADI” if the GI 275 is configured as an MFD/Standby ADI and MFD pages are configured.

[3] Not connected to essential bus. Refer to Table 3-10.

[4] It is acceptable to use a fuse in lieu of a circuit breaker for the GSB 15.

[5] If a GSB 15 Type-C unit (P/Ns 011-04937-20, -30, -40, -50) is installed in a 14V electrical system, a 7.5A breaker or fuse is required.

Table 3-13 Circuit Breaker Labels - Independent Essential Busses

Description	Label		CB Value
	Single LRU	Dual LRU	14V / 28V System
GI 275 configured as Primary Attitude only indicator (Basic)	ATT A ATT B	ATT 1A ATT 1B ATT 2A ATT 2B	5A
GI 275 configured as ADI (3-in-1 or 4-in-1)	PFD A PFD B	PFD 1A PFD 1B PFD 2A PFD 2B	5A
GI 275 configured as MFD	MFD [4]	MFD 1 [4] MFD 2 [4]	5A
GI 275 configured as MFD/Standby ADI	STBY ADI A or STBY INST A[1] STBY ADI B or STBY INST B[1] MFD/STBY ADI A [2] MFD/STBY ADI B [2]		5A
GI 275 configured as HSI	HSI [4]	HSI 1 [4] HSI 2 [4]	5A
GI 275 configured as HSI/Standby ADI	HSI/STBY ADI A HSI/STBY ADI B		5A
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 [3] ENG SNSR B [3]	ENG SNSR L A ENG SNSR L B ENG SNSR R A ENG SNSR R B	5A
GEA 24(B)	ENG SNSR	ENG SNSR L ENG SNSR R	5A
GSB 15	USB	USB 1 USB 2	5A or 7.5A [5] [6]

Notes:

[1] Label as “STBY ADI A” or “STBY INST A” and “STBY ADI B” or “STBY INST B” if the GI 275 is configured as a Standby ADI and no MFD pages are configured.

[2] Label as “MFD/STBY ADI A” and “MFD/STBY ADI B” if the GI 275 is configured as an MFD/Standby ADI and MFD pages are configured.

[3] 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(B) in the above table.

[4] Not connected to essential busses. Refer to Table 3-10.

[5] It is acceptable to use a fuse in lieu of a circuit breaker for the GSB 15.

[6] If a GSB 15 Type-C unit (P/Ns 011-04937-20, -30, -40, -50) is installed in a 14V electrical system, a 7.5A breaker or fuse is required.

3.2.2 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; however, they must be located next to the pilot's PFD. Standby instruments are not required for aircraft limited to VFR-only operations. Refer to Section 2.1.3 for additional Standby and Primary ADI guidance.

The existing non-stabilized magnetic compass must be retained. The magnetic compass must be re-calibrated once the GI 275 is installed and configured.

GI 275s installed as standby instruments must have a backup battery unless powered by an electrical source independent of the aircraft's primary electrical power source. Additionally, a display backup switch may be installed if the GI 275 is configured as an HSI/Standby ADI or a MFD/Standby ADI.

Table 3-14 and Table 3-15 outline aircraft class restrictions and Instrument Type configurations of the standby display when the GI 275 is used as a standby for various systems. MFD pages are not configurable when the indicator is configured as ADI on the Unit Configuration page unless the Standby selection is enabled.

Per this STC, the GI 275 is approved as a standby to the G500/G600 and G500/G600 TXi systems.

CAUTION
Some installations do not permit MFD pages to be displayed on the standby. Refer to Table 3-14.

Table 3-14 GI 275 Standby ADI Restrictions per System

System	Aircraft Class Restriction [1]	Instrument Function [2]
GI 275	CLASS I & II	MFD/STANDBY ADI
	CLASS III	ADI ONLY
G500/G600 TXi w/GSU 75 or GRS 79 & GDC 72 or internal ADAHRS	CLASS I & II	MFD/STANDBY ADI
	CLASS III & IV	ADI ONLY [3]
G500/G600 TXi w/GRS 77 & GDC 74	CLASS I - IV	ADI ONLY [3]
G500/G600 (GDU 620)	CLASS I - IV	ADI ONLY [4]
GX000	CLASS I - IV	ADI ONLY [5]
THIRD-PARTY	CLASS I - IV	ADI ONLY

Notes:

[1] Refer to Section 1 for aircraft class designations.

[2] Refer to Section 5.3.4 for Instrument Type configuration instructions. MFD pages are only configurable when the Standby selection is enabled.

[3] An "ADI Only" GI 275 interfaced with the G500/G600 TXi system must be configured with the Standby button enabled, but all MFD pages must be disabled, with only the ADI page configured. Refer to Section 5.3.4 and Section 5.6.3.

[4] If the G500/G600 is configured for GFC 600, refer to Section 5.4.2.

[5] Embraer S.A. EMB-500 and EMB-505 aircraft with G1000 NXi: Software image must be at P/N 006-B3643-07 or prior.

Embraer S.A. EMB-500 and EMB-505 aircraft with G1000 Legacy: Software image must be at P/N 006-B0734-9A or prior.

Table 3-15 GI 275 HSI/Standby ADI Restrictions

System	Aircraft Class Restriction [1]	Instrument Type [2]
GI 275	CLASS I & II	HSI/STANDBY ADI

Notes:

[1] Refer to Section 1 for aircraft class designations.

[2] Refer to Section 5.3.4 for Instrument Type configuration instructions.

The markings on the standby airspeed indicator must match the TCDS, POH/AFM, or an applicable STC AFMS for the specific aircraft. Verify that the existing airspeed indicator is correctly marked per the applicable documents. The units on the standby altimeter (Hg or millibars) must match those on the current altimeter in the aircraft.

3.2.3 Engine Indication System (EIS)

Installation of the EIS must maintain compliance with the minimum number of gauges required by 14 CFR 91.205 for the type of flight allowed by the aircraft's Type Certificate. The following must be considered for an EIS installation:

CAUTION

Engine damage may occur if length of the oil temp probe is incorrect. Refer to Section 4.7.4.

1. Only install EIS in aircraft that comply with all limitations in Section 2.1.5.
2. Engine RPM, Oil Temperature, Oil Pressure, EGT, CHT, and Manifold Pressure (if installed) must be displayed on the EIS display.
3. Optional EIS gauges listed in Table 3-17 that are not currently installed in the aircraft may be added as approved in this STC.
4. No indication/parameter on the EIS display(s) can be duplicated by any other installed indicator that is not connected to the GEA.
5. Ensure engine sensors can be installed and the corresponding gauges can be displayed. Refer to Appendix F, Table 3-16, and Table 3-17 for gauge layout information. Depending on the number of gauges, a second EIS display may be required (only permitted in single-engine aircraft). Refer to Section 2.1.5.
6. Some turbocharged aircraft require a differential pressure sensor for fuel pressure. This STC provides electrical interface for select differential pressure sensors (refer to Appendix Section C.19), however installation approval is not provided and must be obtained separately.
7. Do not replace an existing gauge if the GI 275 will not provide the functions and markings required by the POH/AFM, TCDS, or other aircraft model-specific data. Refer to Section 5.7.4.2 for available EIS gauge markings. If the EIS gauges cannot be configured as noted in the POH/AFM, the installation does not qualify for EIS unless alternate airworthiness approval is obtained.
8. Annunciator lights, including alternator/generator annunciators operated by a sensor or switch independent of the existing gauge, must remain operative and independent from the GI 275 EIS. If an annunciator is operated by a gauge that might be replaced by the GI 275 EIS, the associated annunciator can be deactivated only if the GI 275 Caution/Warning alert activates for the same condition as the original. The GI 275 Caution/Warning alert is provided on the display or an independent annunciator(s). However, if the new GI 275 EIS gauge does not support a Caution/Warning alert for the same condition, the existing gauge and annunciator must remain installed.
9. If an annunciator is replaced by the GI 275 EIS display, deactivate the existing annunciator so it does not illuminate and then install a placard over the deactivated lens or as close as practical within view of the pilot that states: "X ANNUN DISABLD", with "X" being the deactivated annunciator(s). Modification of the existing annunciator panel is outside the scope of this STC.
10. All placards that were associated with any/all gauges being replaced (non-limitation data) must remain in the proximity of the EIS display.
11. Reused sensors must function through the sensor's entire range. For example, fuel tank floats may have worn resistive elements that will result in performance issues with the gauge display.
12. If the aircraft POH or AFM has a fuel flow limit (i.e., red line), the installer must verify fuel flow accuracy ±10% of the full scale range and adjust the K-Factor if necessary. Obtain the correct fuel flow value using the engine or aircraft manufacturer manuals. If that data is not available, perform a pre-installation static RPM ground check and document the pre-installation fuel flow using the existing fuel flow indicator. Refer to Section 6.8.4 for post-installation K-Factor adjustment.
13. A single display that is a standalone EIS allows for the GPS connection to be optional. Standalone EIS displays that do not have a GPS source connected will display dashes (---) for Fuel Endurance.

For cases where the standard gauge marking configuration cannot be used, aircraft-specific solutions for unique gauge markings are provided in Appendix Section F.6.2.

Table 3-16 Required Gauges for EIS

Indicator	Notes
RPM	
Oil Pressure	
Oil Temperature	
EGT	
CHT	
Manifold Pressure	If applicable.

Table 3-17 Additional Gauges

Indicator [1]	Notes
Fuel Flow	Flow check may be required prior to de-modification; refer to Appendix D.
Primary EGT [2] Turbo/Turbine Inlet Temperature (TIT) [2] Carburetor Temperature Inlet Air Temperature (IAT) Compressor Discharge Temperature (CDT) IAT/CDT Differential (DIFF)	Only required if existing gauge had colored markings, alerts, and/or associated POH/AFM limitations.
Fuel Quantity (Main) Fuel Quantity (Aux)	AUX fuel quantity can only be displayed when main fuel quantity is also displayed. GI 275 interface to fuel quantity sensors is not approved in certain aircraft models. Refer to Appendix D for model-specific information.
Amps/Volts • load meter • battery charge/discharge • bus voltmeter • battery voltmeter	Only two of the four parameters may be gauges with colored markings, alerts, and/or associated POH/AFM limitations (the same parameter cannot be displayed twice).
Prop Sync Wheel	Configure if replacing an existing indicator. Optional if not previously installed.
Percent Power [3]	Percent Power indication can be provided when a Manifold Pressure, RPM, OAT, and Fuel Flow sensor are all installed and interfaced with the GI 275 EIS. Percent Power cannot be configured on the Main EIS page if a Prop Sync Wheel is shown on the other EIS gauge. Percent Power can be configured on the AUX EIS page if a Prop Sync is present.

Notes:

[1] Gauges in this table are required if the existing aircraft gauge had colored markings, alerts, and/or associated POH/AFM limitations. If the number or required gauges exceeds the available space on the display, a second primary EIS display is required. Refer to Appendix F for gauge layouts.

[2] Primary EGT and TIT cannot both be indicated on the GI 275. Only one TIT or Primary EGT sensor can be displayed on the GI 275 EIS.

[3] If there is an existing percent power gauge with colored markings, alerts, and/or associated POH/AFM limitations, then the existing percent power gauge must be retained and percent power must not be configured or displayed on the GI 275.

All EIS sensors approved to interface with the GI 275 are listed in Appendix Section C.19.

Compare the range, markings, and colors in Table 3-18 to the required aircraft parameters. Ensure sensor range is wide enough for each planned gauge. This STC requires that all lines/ranges that are red or yellow generate an alert. Blue, green, and white markings do not generate alerts. If there was no alert associated with the red or yellow line/radials on the original gauge, this STC approves the addition of an alert to the associated line/radial.

The sensor ranges in Table 3-18 are only for reference to help determine if EIS is compatible with the aircraft; specific approved sensors may have different ranges than those shown. If an aircraft gauge has markings outside the available sensor range, but the sensor range includes all limits for the gauge specified by the POH/AFM, TCDS, or other aircraft model-specific data, the gauge may be replaced by the GI 275 EIS per this STC.

Table 3-18 Available EIS Parameters

Display	Display Range	Available Gauge Markings	Available Marking Colors	Approved Units
Tachometer (RPM)	0 – 4000 RPM	Arc	R, Y, B, G, W	RPM
Manifold Pressure	0 – 60 in Hg	Arc	R, Y, B, G, W	in Hg, PSI
Oil Pressure	0 – 150 PSI	Line/Range	R, Y, B, G, W	PSI
Oil Temperature	-24 – 300° F	Line/Range	R, Y, B, G, W	°C, °F
Main Fuel Quantity	0-2980 Gallons	Line/Range	R, Y, B, G, W	GAL
Aux Fuel Quantity	0-2980 Gallons	Line/Range	R, Y, B, G, W	GAL
Fuel Flow	0 – 80 GPH	Line/Range	R, Y, B, G, W	GAL/HR, Pounds/HR
Fuel Pressure	0 – 75 PSI	Line/Range	R, Y, B, G, W	PSI
CHT (1 probe per cylinder or 1 probe per engine)	0 – 900° F	Line/Range	R, Y, B, G, W	°C, °F
EGT (1 probe per cylinder or 1 probe per engine)	0 – 1800° F	None	N/A	°C, °F
Primary EGT (1 probe per engine)	0 – 1800° F	Line/Range	R, Y, B, G, W	°C, °F
TIT #1	0 – 1800° F	Line/Range	R, Y, B, G, W	°C, °F
TIT #2	0 – 1800° F	Line/Range	R, Y, B, G, W	°C, °F
Carb Temperature	-24 – 34° C	Line/Range	R, Y, B, G, W	°C
CDT	32 – 1800° F	Line/Range	R, Y, B, G, W	°C, °F
IAT	-100 – 1800° F	Line/Range	R, Y, B, G, W	°C, °F
CDT/IAT Diff Temp	-100 – 1800° F	Line/Range (Max of 2 Ranges)	R, Y, B, G, W	°C, °F
Load Meter (alternator current) or Ammeter (charge/discharge)	-150 – 150 A	Line/Range	R, Y	Amps
Battery Voltage / Bus Voltage	-80 – 80 VDC	Line/Range	R, Y	Volts
Prop Sync Wheel	N/A	N/A	N/A	N/A
OAT	-125 – 175° C	N/A	N/A	°C, °F
Percent Power	0-100%	N/A	N/A	N/A

3.2.4 GPS Requirements

The GI 275 can be interfaced with up to two independent GPS sources and/or the internal VFR GPS. Minimum GPS requirements are based on the configuration. Refer to Section 2 for limitations.

Refer to Appendix Section C.4 for approved GPS sources. A GPS source is optional unless the indicator is internally equipped with an ADAHRS or the installation has alternative requirements defined in Appendix D.

3.2.5 Display Lighting Control

Lighting on the GI 275 display can be controlled by either the lighting bus or the built-in photocell. The photocell can be used for lighting control for all installations.

If there is a significant reduction in lighting bus load due to the GI 275 system installation, it is recommended that the photocell be used to control the lighting.

3.2.6 HSDB Architecture

The HSDB architecture allows for many connection possibilities. The Ethernet architecture limitations/ options shown in this section are used as a guide for common LRU combinations. Block diagrams are illustrated in Figure 3-2 through Figure 3-9. A summary of Garmin LRUs with HSDB capability and available ports is shown in Table 3-19.

Table 3-19 Garmin LRU HSDB Port Summary

LRU	# of HSDB Ports
GI 275	2
GTN 6XX/7XX	4
GTN Xi	4
GTS 8XX	1
GDL 60	2
GDL 69 series	4
GTX 345	2
GFC 600	2
GPS 175/GNX 375/GNC 355	1
G500/G600 TXi	4
GNC 215	1

The following steps/figures are used as a guide in making HSDB connections (not all possibilities are included):

1. The Primary ADI and the display with the second ADAHRS or standby (if applicable) must be directly connected.
2. When multiple GI 275 indicators are installed, they must be connected to each other directly in series.
3. The GTN 6XX/7XX, GTN Xi, GPS 175, GNX 375, GNC 355, or GNC 215, if installed, must be connected directly to a GI 275 or a GMC 605 (GFC 600) that is directly connected to a GI 275.
4. LRUs not installed under this STC must still meet the installation requirements that are applicable to those LRUs.
5. Choose the figure that most closely represents the aircraft’s equipment and cross out any LRUs not installed. Apply the rules above to complete the HSDB connections, if necessary.
6. In installations without a GFC 600, it is acceptable to connect GI 275 units with other Garmin LRUs using redundant HSDB paths if there are enough available HSDB ports. Redundant HSDB connections provide extra data paths in case of LRU failure. Refer to Figure 3-5 and Figure 3-10 for examples.

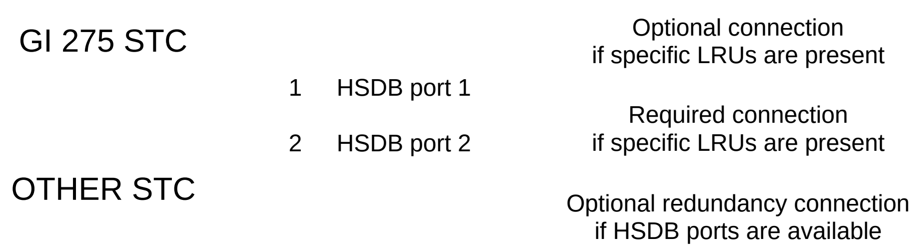


Figure 3-1 HSDB Architecture: Legend

NOTE

The orientation of LRUs and HSDB ports in the following diagrams do not represent the actual orientation of the installation in the aircraft.

GI 275
ADI

1

GPS Source

2

Traffic Source

Figure 3-2 HSDB Architecture: Primary ADI

GI 275
ADI

1

GPS Source

2

Traffic Source

GFC 600

Figure 3-3 HSDB Architecture: Primary ADI with GFC 600 Autopilot

GDU 700/1060
PFD

2

GI 275
Standby ADI

1

GTN Xi

Figure 3-4 HSDB Architecture: Standby ADI for G500/G600 TXi

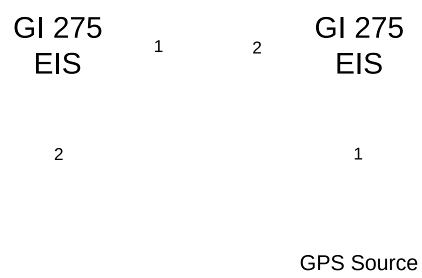


Figure 3-5 HSDB Architecture: EIS

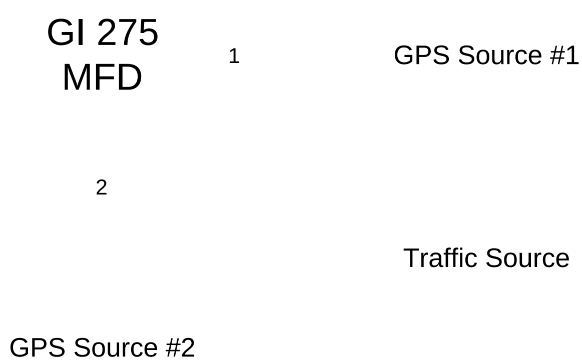


Figure 3-6 HSDB Architecture: MFD

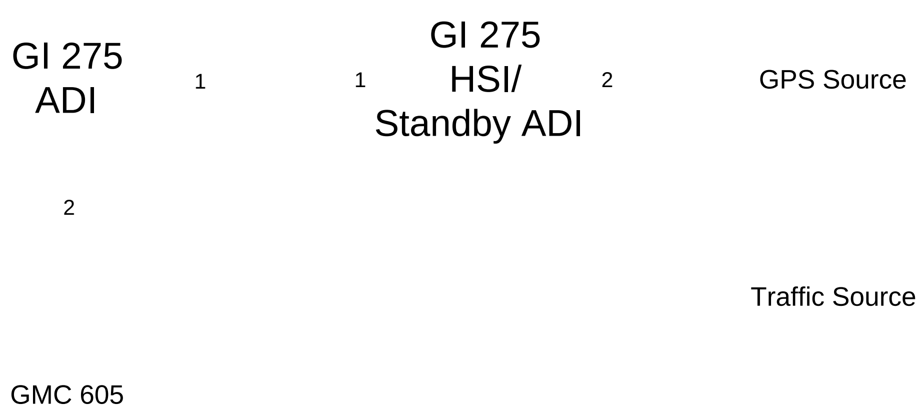


Figure 3-7 HSDB Architecture: Primary ADI with GFC 600 and HSI/Standby ADI

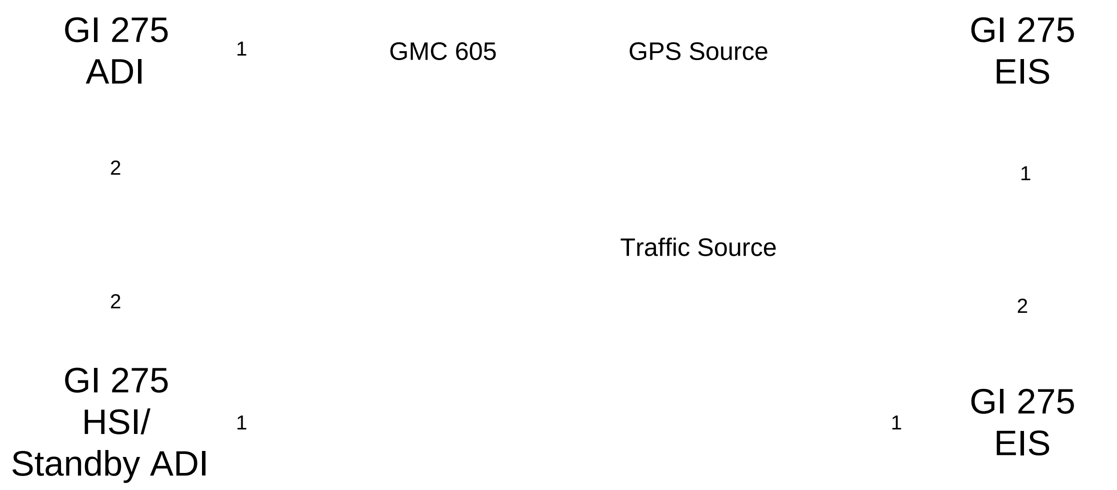


Figure 3-8 HSDB Architecture: Primary ADI with GFC 600, HSI/Standby ADI, and EIS

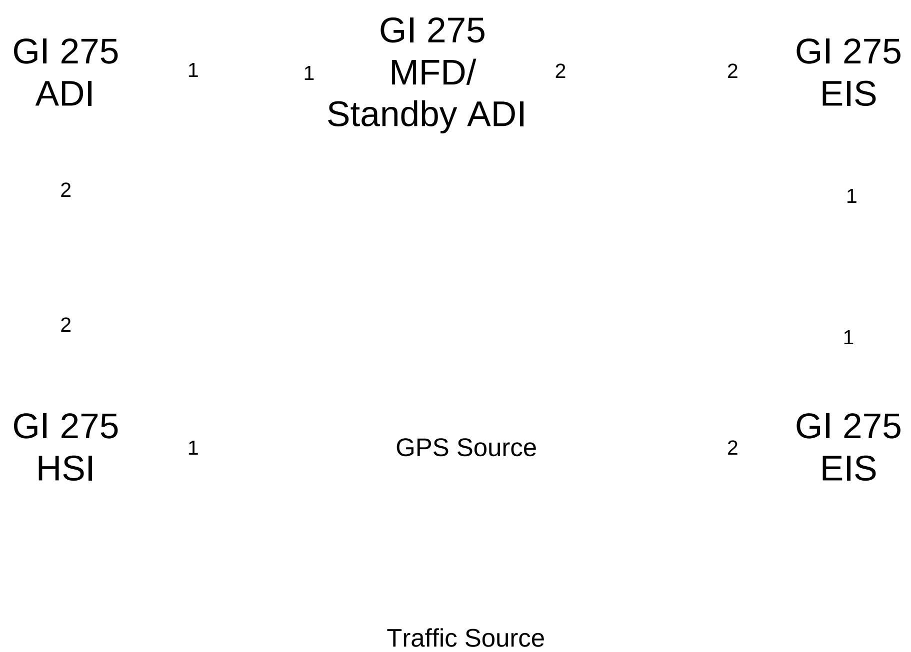


Figure 3-9 HSDB Architecture: Primary ADI, MFD/Standby ADI, HSI, and EIS

Pilot's Primary ADI

1

1

Pilot's Standby ADI (MFD)

2

2

2

1

Pilot's HSI

Co-Pilot's ADI

2

1

Pilot's EIS

1

2

1

GPS Source

2

Pilot's EIS

Traffic Source

Figure 3-10 HSDB Architecture: Primary ADI, MFD/Standby ADI, HSI, EIS, Co-Pilot ADI

3.3 Interfaces to Other Equipment

Information in this section provides details for interfacing to equipment not installed by the GI 275 STC. The information provided must be reviewed when these interfaces are considered.

3.3.1 GPS Source

The GI 275 has a built-in VFR GPS source that can be used with the backup GPS antenna installed. Up to two additional external GPS sources can be interfaced to the GI 275.

3.3.2 Navigation Receiver

The GI 275 attitude display uses data from a navigation receiver to display VOR and ILS information on the HSI. Up to two independent navigation receivers can be interfaced to a display. The third-party composite NAV connection must be directly connected to a GI 275 display when present.

3.3.3 Radar Altimeter

The GI 275 can receive data from a digital radar altimeter system to provide the display of radar altitude. The display can also be configured to allow for the initiation of the radar altimeter self-test for certain radar altimeter models. Radar altimeters must be wired to a discrete output from the GI 275 to enable self-test.

3.3.4 Traffic

The GI 275 can receive data from an ADS-B/TIS/TAS/TCAS I traffic system to display traffic.

Table 3-20 Traffic Interface

Source	Interface Details
Heading	The heading source for existing traffic systems can be the GI 275 (via ARINC 429) or from another approved heading source in accordance with the traffic system installation guidance.
Altitude	The altitude source for existing traffic systems can be the GI 275 (via ARINC 429) or from another approved altitude source in accordance with the traffic system installation guidance.

3.3.4.1 TIS-A

Traffic Information Service-equipped aircraft receive limited traffic information from nearby ground radar uplinks. The GI 275 can interface with a GTX 33X to provide TIS-A. The traffic data can be crossfilled to display on other GI 275 units.

3.3.4.2 TAS / TCAS

The GI 275 can interface with a number of traffic sources that function as Traffic Advisory Systems (TAS) or Traffic Alert and Collision Avoidance Systems (TCAS). The traffic data can be crossfilled to display on other GI 275 units.

3.3.4.3 TIS-B / FIS-B / ADS-B

TIS-B/FIS-B/ADS-B In-equipped aircraft receive traffic information from nearby ADS-B ground stations and ADS-B Out-equipped aircraft. The GI 275 can receive and display weather and traffic services with compatible equipment installed. The traffic data can be displayed on all GI 275 units capable of displaying traffic data. Refer to Appendix Section C.13 for compatible equipment.

3.3.5 Data Link

The GI 275 can interface to a GDL 69/69A SXM to receive SiriusXM weather service with a valid subscription. It does not provide control for music.

3.3.6 WX-500 Stormscope®

The GI 275 can receive data from the WX-500 Stormscope® system to provide the display of lightning data. The GI 275 cannot be used to control the Stormscope® system. A controlling display (e.g., GDU 620, GDU 700/1060, or GTN 6XX/7XX) must be present in the system to display Stormscope data on the GI 275.

3.3.7 Audio Panel

The GI 275 can be interfaced to an audio panel for audio alerting. An interfaced audio panel cannot be controlled via the GI 275.

> NOTE
> If a GCO 14 is connected to a standalone GI 275 EIS unit with no GTN Xi or G500/G600 TXi units in the system configured for audio alerting and connected to the audio panel, then the GI 275 EIS must be connected to the audio panel. In this case, the GI 275 EIS will not display visual alerts for high CO levels but will issue audio alerts.

3.3.8 Transponder Control

The GI 275 can interface to GTX 345 series transponders to provide a Transponder Control page when configured as an MFD or Standby ADI/MFD. This allows the GI 275 to control transponder code, the IDENT function, and the mode of operation for up to two interfaced GTX 345 transponders.

3.3.9 Autopilot

Various autopilot systems can be interfaced to the GI 275. Compatibility of the autopilot system with the GI 275 system must be verified before installation. This STC does not include data for autopilot system installation. The autopilot must be installed per aircraft (or autopilot system) manufacturer data.

The GI 275 ADAHRS + AP can provide AC or DC heading and course datum (error) outputs based on the HSI heading bug and course pointer setting. When enabled, the GI 275 ADAHRS + AP can drive the heading datum output based on GPS steering (GPSS) from the selected navigator, acting as a roll steering converter. The GI 275 will provide analog deviation, associated flags, and ARINC 429 GPSS information based on the navigation source currently selected on the HSI.

Except when interfaced to Garmin autopilots, the GI 275 does not provide altitude preselect functionality. Any existing altitude preselector must be retained and any altitude source being provided to the preselector must also be retained.

Table 3-21 Autopilots and Interfaces

Make and Model		PFD HSI	Native GPSS	GPSS HDG Emulation	Flight Director	GYRO (attitude)	BARO Correction	Yaw Rate
BENDIX	M4C	ðü		ðü				
	M4D	ðü		ðü	ðü			
CENTURY	II / III [3] [4] [7]	ðü		ðü		ðü		
	IV AC, IV DC	ðü		ðü	ðü			
	21,31	ðü		ðü		ðü		
	41	ðü		ðü	ðü	ðü		
	2000	ðü		ðü	ðü	ðü		
CESSNA	400B	ðü		ðü		ðü		
	300 IFCS, 400 IFCS, 800 IFCS	ðü		ðü				
	300B IFCS, 400B IFCS, 800B IFCS	ðü		ðü	ðü	ðü		
	1000 IFCS	ðü		ðü	ðü	ðü		
COLLINS	AP-106/107	ðü		ðü	ðü			
GARMIN [6]	GFC 500 [5]	ðü	ðü		ðü			
	GFC 600 [1] [2]	ðü	ðü		ðü			
HONEYWELL (BENDIX/KING)	KAP 100	ðü		ðü		ðü		
	KAP 140	ðü		ðü			ðü	
	KAP 150	ðü		ðü		ðü	ðü	ðü
	KAP 200	ðü		ðü		ðü		ðü
	KFC 150	ðü		ðü	ðü	ðü	ðü	ðü
	KFC 200	ðü		ðü	ðü	ðü		ðü
	KFC 225	ðü	ðü		ðü	ðü	ðü	
	KFC 250	ðü		ðü	ðü	ðü		ðü
	KFC 300	ðü		ðü	ðü	ðü		ðü
SPERRY	SPZ-200A/500	ðü		ðü	ðü			
S-TEC	20, 30, 40, 50, 60-1	ðü		ðü				
	60-2, 65	ðü		ðü	ðü			
	60 PSS							
	55X	ðü	ðP		ðü			
	55	ðü		ðü	ðü			

Notes:

[1] Garmin autopilots support ALT Preselect.

[2] Garmin autopilots can interface to an ADAHRS unit (-10/-30). They do not require an ADAHRS+AP unit.

[3] If the aircraft has a 1C388-2 or 1C388-3 Radio Coupler, two GI 275 ADAHRS+AP units are required to provide the HSI and GYRO interfaces. Refer to Figure B-13 to ensure the correct combination of GI 275 equipment given the interfacing Radio Coupler.

[4] If the GI 275 is used to provide attitude to the Century II/III autopilot, the GI 275 hardware must be MOD 1 or later.

[5] For interface approval with GFC 500, refer to GFC 500 STC SA01866WI. The GI 275 hardware must be MOD 1 or later.

[6] The GI 275 is capable of displaying mode annunciations for the GFC 500 interface only. Annunciations for the GFC 600 interface are not provided on the GI 275.

[7] The Century II/IIB autopilot is equivalent to the Piper AutoControl III and IIIB autopilots, with the exception of a combined console amplifier used for the AutoControl IIIB. The Century III autopilot is equivalent to the Piper Altimatic III, IIIB, and IIIC autopilots. Refer to Appendix Section C.8 for specific autopilot interface capabilities and version-specific limitations.

3.3.9.1 Autopilot Turn Coordinator

A turn coordinator that interfaces to the existing autopilot must be retained. If the turn coordinator is relocated, the indicator incline must remain the same; otherwise, the autopilot performance will be incorrect. Refer to the turn coordinator installation manual for details. In some circumstances, the turn coordinator may have to be blind-mounted, which requires separate installation approval.

3.3.10 External TAWS

Only one TAWS that generates aural and visual annunciations is permitted in the aircraft. If the aircraft has a TAWS installed, and SVT is enabled on the pilot's Primary ADI, the GI 275 must be configured to prevent conflicting aural and visual annunciations. Combinations of external TAWS sources, GI 275 settings, and the resulting alert sources are shown in Table 3-22.

The GI 275 provides the terrain alerting from a GTN 6XX/7XX, GTN Xi, or GNS 400W/500W; however, the GI 275 does not provide all of the necessary annunciations and therefore the GTN or GNS may still require an external TAWS annunciator panel.

Table 3-22 External TAWS Setup with GI 275

Aircraft Setup				LRU Alert Source				
External TAWS System	SVT	Terrain/ TAWS Mode [2]	External TAWS	PFD Annunciation Text Source	PFD SVT Terrain & Obstacle Shading	MFD Map Impact Area/ Pop-up Alerts	MFD Terrain Proximity Shading	Aural Callouts from LRU
GTN TAWS [1]	Enabled	External	Installed (HSDB)	GTN TAWS	GTN TAWS	GTN TAWS	Terrain page	GTN TAWS
	Disabled	External	Installed (HSDB)	GTN TAWS	N/A	GTN TAWS	Terrain page	GTN TAWS
GNS TAWS [1]	Enabled	External	Installed (MapMX)	GNS TAWS	None	None	Terrain page	GNS TAWS
	Disabled	External	Installed (MapMX)	GNS TAWS	N/A	None	Terrain page	GNS TAWS
Non-Garmin TAWS	Enabled	External	Installed (Other)	None	None	None	Terrain page	Non-Garmin TAWS
	Disabled	External	Installed (Other)	None	N/A	None	Terrain page	Non-Garmin TAWS

Notes:

[1] If GNS/GTN TAWS becomes unavailable, the display will revert to Terrain Proximity.

[2] The Terrain Mode is automatically configured toExternal when any External TAWS setting is configured to anything other than Not Installed.

3.4 Selection of GI 275 System Components

3.4.1 Aircraft Eligibility Checklist

The aircraft must meet the requirements for the GI 275 system installation set forth by this STC. The following checklist is used as a guide to identify if those requirements are satisfied. Complete the checklist before the aircraft is modified.

Table 3-23 Aircraft Eligibility Checklist

Completed	Item	Reference
	GENERAL	
ðq	Verify the aircraft is on the Approved Model List.	Appendix D
ðq	Verify an approved external GPS/navigation data source is installed.	Appendix Section C.4
ðq	Select the GI 275 equipment that will be installed.	Section 3.4
ðq	Identify the equipment that will be interfaced, and verify each interface is approved.	Appendix C
ðq	Determine if the STC limitations applicable to the aircraft are acceptable.	Section 2
ðq	Determine if the aircraft electrical system is adequate.	Section 3.5
ðq	Obtain the current aircraft weight and balance data.	POH/AFM
ðq	Complete baseline flight check of the existing autopilot, if autopilot interface is planned.	Section 6.8.6
	INSTRUMENT PANEL	
ðq	Select the standby instrument(s) and their location(s), if used.	Section 3.2.3 Section 4.4
ðq	Determine the location of each display.	Section 4.4
ðq	Determine the location of the display backup switch, if used.	Section 4.4.1
ðq	Determine the location for each circuit breaker and its placard.	Section 3.2
ðq	Verify the total mass of equipment being installed in the instrument panel is not more than the total mass of the equipment being removed from the panel.	Section 4.4
	EQUIPMENT	
ðq	Determine the GMU 11/44B location, if used, and complete the magnetometer survey.	Section 4.6.2 Section 6.4.1
ðq	Determine the GTP 59 OAT Probe location(s), if used.	Section 4.6.2
ðq	Determine if the backup battery is required and installed.	Section 4.4.2
	EIS	
ðq	Perform Fuel Flow Baseline Check, if required.	Section 3.2.3
ðq	Determine which parameters will be displayed on the EIS, and verify they can be displayed.	Section 3.2.3 Appendix F
ðq	Determine the location of all gauges that must be retained and verify the operating limits for each.	Section 3.2.3
ðq	Determine the GEA 24(B)/110 location(s).	Section 4.7.1 Section 4.7.2
ðq	Select engine sensors for parameters determined to be displayed on the EIS.	Section 3.4.3

Table 3-24 is provided to assist with the selection of GI 275 components. Mark the applicable entry based on the criteria given in the section. Review the relevant wiring diagram(s) to determine the installation.

Table 3-24 GI 275 System Components

	Equipment Selection	Notes	Location
Backup Battery	ðq GI 275 BB (Optional for GI 275 Base)		
USB	ðq GSB 15 ðq Dongle		
CO Sensor	ðq GCO 14		
ADAHRS #1	ðq Integrated (GI 275 ADAHRS and ADAHRS+AP units)		
	ðq GSU 75	[1]	
	ðq GRS 79 and GDC 72	[1]	
	ðq GRS 77 and GDC 74	[1]	
ADAHRS #2	ðq Integrated (GI 275 ADAHRS and ADAHRS+AP units)		
	ðq GSU 75	[1]	
	ðq GRS 79 and GDC 72	[1]	
	ðq GRS 77 and GDC 74	[1]	
Backup GPS	ðq Backup GPS antenna		
OAT Probe	ðq GTP 59 #1		
	ðq GTP 59 #2		
Magnetometer	ðq GMU 44B #1		
	ðq GMU 44B #2		
	ðq GMU 11 #1		
	ðq GMU 11 #2		
Engine Adapter	ðq GEA 110 #1		
	ðq GEA 110 #2 (required for twin-engine aircraft)		
	ðq GEA 24(B) #1		
	ðq GEA 24(B) #2 (required for twin-engine aircraft)		
Engine Annunciation	ðq GI 275 ðq Annunciator(s)	Section 4.4.4	

	Equipment Selection	Notes	Location
Engine Sensors [2]	ðq EGT probe for each cylinder	[1]	
	ðq Single EGT probe (i.e., Primary EGT)	[1]	
	ðq CHT probe for each cylinder	[1]	
	ðq Turbine Inlet Temp Sensor	[1]	
	ðq Induction Air Temp Sensor	[1]	
	ðq Compressor Discharge Temp Sensor	[1]	
	ðq Manifold Pressure Sensor		
	ðq Oil Pressure Sensor		
	ðq Oil Temp Sensor		
	ðq RPM Sensor		
	ðq Carb Temp Sensor		
	ðq Fuel Pressure Sensor		
	ðq Fuel Flow		
	ðq Fuel Quantity	[1]	
	ðq Shunt (Amperage)	[1]	
	ðq OAT	[3]	

Notes:

[1] Not installed under this STC.

[2] Refer to Appendix Section C.19 for STC compatibility.

[3] Interface a single OAT probe to one GEA Engine Adapter for standalone EIS installations only.

External data sources intended for use with the GI 275 must be checked for compatibility before installation. These checks must be accomplished in accordance with procedures and data furnished by the equipment manufacturer.

3.4.2 Attitude and Air Data

ADAHRS is required for ADI and standby functionality. The GTP 59 OAT is optional; however, without the installation of the GTP 59, standard rate turn indicators and outside air temperature will not be present. It is recommended to install a GTP 59 with a GI 275 displaying attitude information. A separate GMU 11 or GMU 44B Magnetometer is required to take credit for the compensated heading.

3.4.3 EIS Equipment

A GEA 24(B) or GEA 110 is required for each aircraft engine if EIS is installed. EIS sensor options and configurations are presented in Appendix Section C.19. Select the sensors required to support the EIS gauges determined in Section 3.2.3. Specific sensors are discussed below.

1. EGT/TIT and CHT

   The number of probes required for aircraft installation when display of all cylinder temperatures is configured is shown in Table 3-25. Only a single CHT probe and a single EGT probe are required for each engine when configured for Single CHT/EGT. The Primary EGT/TIT and CHT indication, if applicable, must be retained. Primary EGT/TIT indication is not compatible with Single CHT/EGT. The primary EGT/TIT probe can be changed, but the installed location must remain the same.

Table 3-25 EGT and CHT Probe Quantity

Aircraft Engines		Single			Twin		
Cylinders per engine		4	6	7 [2]	4	6	7 [2]
Probe Qty [1]	EGT	4	6	7	8	12	14
	CHT	4	6	7	8	12	14
	Primary	As Required					

Notes:

[1] GI 275 EIS also provides a configuration option for Single CHT/EGT, which requires only a single EGT probe and a single CHT probe per engine. TIT and Primary EGT sensors are not compatible with the Single CHT/EGT configuration.

[2] The GEA 24(B) cannot accommodate TIT, IAT, CDT, Primary EGT, or Carb Temp probes if seven EGT and seven CHT probes are connected. The GEA 110 cannot accommodate TIT, IAT, CDT, or Primary EGT probes if seven EGT and seven CHT probes are connected.

All thermocouple lead wires must match the thermocouple type (K- or J-Type). Do not crimp connector pins to a single-strand thermocouple wire. Only use a multi-strand lead wire for connector pins. Copper wire must never be used for thermocouples.

If the POH/AFM has yellow or red markings for CHT, the same probe type must be used to ensure the engine limits are maintained. Bayonet-style CHT probes are preferred and mount in the cylinder head thermowell. Some engines use gasket-style CHT probes that fit in place of the spark plug gasket. Gasket-style probes indicate 50-100 °F more than bayonet-style probes. If gasket-style probes are used. refer to Table 3-24 and Table 3-25 for eligibility when replacing existing gasket-style CHT probes.

Table 3-26 GI 275 Installation with a Single Gasket-Style Probe

Previously Approved CHT Installation	GI 275 with Single CHT
Single CHT gasket-style with yellow/red POH markings	Same markings as in POH/AFM. [1]
Single CHT gasket-style without yellow/red POH markings	Markings not permitted on CHT display. [1]
CHT gasket-style on all cylinders	Required on all cylinders. Refer to Table 3-27.

Notes:

[1] Per Alcor SA522SW STC, FAA 337 Form completion required unless original single CHT system is retained.

Table 3-27 GI 275 Installation with a Gasket-style Probe on Each Cylinder

Previously Approved CHT Installation	GI 275 with CHT Gasket-style On Each Cylinder
Single CHT gasket-style with yellow/red POH markings	Use same markings as POH/AFM.
Single CHT gasket-style without yellow/red POH markings	Markings not permitted on CHT display.
CHT gasket-style on all cylinders	Use same markings as POH/AFM, if applicable.

2. Oil Pressure Sensor

Select the most suitable sensor from Table C-20.

3. Oil Temperature Sensor

Use the engine manufacturer's guidance for probe length/location.

CAUTION

Ensure the oil temperature probe is the correct length. Installation of the incorrect probe may result in engine damage.

4. Manifold Pressure Sensor

Select the most suitable sensor from Table C-20. Engine manifold pressure sensor ports located near an intake valve may produce a jittery manifold pressure indication. Installation of the optional Garmin restrictor will help to stabilize the indication. Refer to Section 4.7.5.

5. Fuel Pressure Sensor

Select the most suitable sensor from Table C-20.

Some fuel injected engines use a fuel pressure sensor to indicate fuel flow. This STC requires that when replacing such a sensor, individual EIS sensors for both fuel flow and fuel pressure must be installed.

Some turbocharged aircraft use a differential pressure sensor. Refer to Section 3.2.3 for more information.

6. Fuel Quantity Sensor

The fuel quantity sensors must be either resistive float sensors with a resistance range between 25-620© or CIES CC Series Fuel Senders. It is permissible to re-use existing fuel quantity wiring. Extension splices are permissible. This STC does not approve alteration of the fuel tank wiring, fuel tank equipment, or grounding provisions for the fuel system. For resistive fuel quantity sensors, the maximum resistance of the tank must be no more than 620©, and t
must be at least 25©.

For resistive float sensors interfaced to a GEA 24, parallel resistors spliced from the fuel excitation pin are required, and the sensor configuration must be set to "0-5 Volt". For new installations of a GEA 24B, use a direct connection to the resistive fuel floats and set the sensor configuration to "0-620ohm". If replacing a GEA 24 with a GEA 24B, use the original parallel resistor wiring and set the sensor configuration to "0-5 Volt". A new fuel quantity calibration must be conducted when a GEA 24 is replaced by a GEA 24B (refer to Section 5.8.5).

Fuel Quantity Tank sensors are correlated to the GEA inputs, with Fuel Quantity 1 being Left Main, Fuel Quantity 2 being Right Main, Fuel Quantity 3 being Left Aux, and Fuel Quantity 4 being Right Aux. These inputs must be used for the desired tank, regardless of the connected GEA (i.e., a multi-engine configuration). Refer to Figure 3-11 for an example of twin-engine fuel quantity wiring to the GEA.

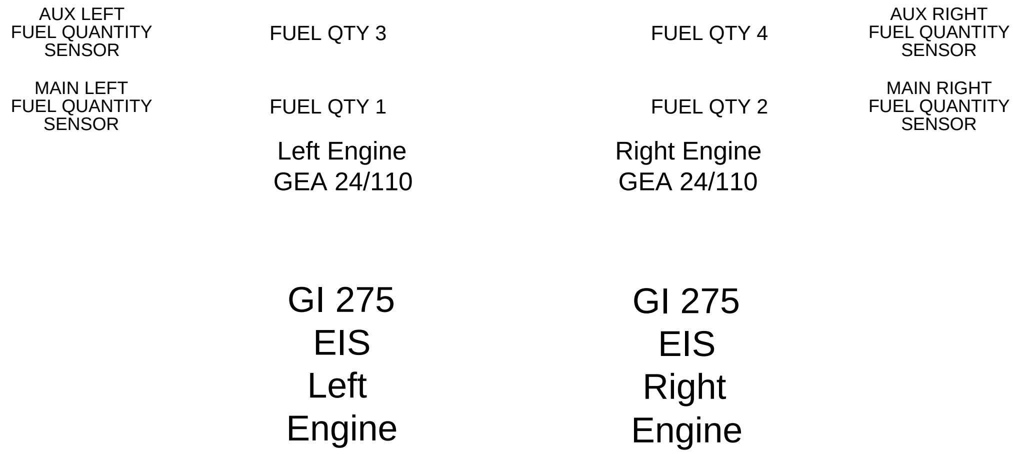


Figure 3-11 Fuel Quantity Wiring in Twin-Engine Installations

Refer to Appendix B for wiring diagrams and Appendix C for compatible part numbers. All CiES CC Series Fuel Quantity Senders approved in STC SA02511SE are compatible.

7. Fuel Flow Sensor(s)

Select a fuel flow sensor that is approved under this STC listed in Appendix Section C.19 and suitable for the engine horsepower and aircraft fuel supply type:

i. Electronics International FT-60 (Red Cube) - For aircraft with up to 350 HP and an engine-driven fuel pump.

ii. Electronics International FT-90 (Gold Cube) - For aircraft with 350-550 HP or with gravity-fed fuel systems.

The fuel flow sensor will introduce a small pressure drop. Refer to Appendix D to determine if a fuel pressure test is required for a specific aircraft model. If required, the installer must perform the Minimum Inlet Pressure Test as documented in AC 23-16 to ensure the minimum inlet fuel pressure and a safety margin are available. Refer to AC 23-16, paragraph 23.955(a) for additional information and procedures. If the AFM/POH has an operating limitation based only on fuel flow, the fuel flow must be accurate within 10% to ensure the limitation is maintained. Refer to Section 6.5.3.2.6 for the fuel flow check procedure, if it is required.

8. RPM Sensor

Methods for RPM sensing appropriate to the engine should be selected as follows:

1. P-lead sensor – One per magneto or two per dual magneto. Resistors must be installed in accordance with Figure B-8 and Figure B-10. Do not use for 7-cylinder engines.
2. Magneto vent mounted sensor – Not compatible with geared engines. One sensor for each engine on non-pressurized magnetos only (e.g., Bendix -20, -21, -200, 1200 series, and Slick 6000, 4000 series). Do not use for 7-cylinder engines
3. Tachometer Sending Unit – Mounts to mechanical tachometer drive port. Only eligible for engines that have a tachometer drive shaft that rotates at 1/2 the crankshaft speed.

9. Shunt

Compatible shunts are listed in Appendix Section C.19. The EIS configuration setting must match the shunt rating and type. The shunt rating is the maximum current and is typically marked on the shunt. The type is the voltage between the shunt posts at maximum current rating. The shunt rating and type may also be found in the aircraft data.

If the shunt rating cannot be determined by part markings or the aircraft data, the following procedure may be used for 50 mV shunts:

1. With the aircraft power ON, no ground-power applied, and a minimal electrical load ON, measure the millivolts between the shunt terminals using a calibrated voltmeter. Record the millivolt measurement (V1).
2. Apply an electrical load (L1) as follows:
   a. If an alternator load meter is installed, the shunt will measure the charging current from the alternator to the main bus. With the engine running, apply an electrical load and measure the current (L1) from the alternator using a calibrated ammeter. Measure and record the new shunt millivolt value (V2).

   b. If a battery ammeter is installed, the shunt will measure the current from the battery to the main bus. Without the engine running, apply an electrical load and measure the current (L1) from the battery using a calibrated ammeter. Measure and record the new shunt millivolt value (V2).
3. Record the millivolt change (V_{change}) between steps 1 and 2. V_{change} = V2 - V1.
4. Determine the shunt rating using the following calculation

$$\text{Shunt Rating (Amps)} = \frac{\text{L1 (Amps) x 50mV}}{V_{change}\ \text{(mV)}}$$

If the shunt value cannot be determined, retain the existing gauge(s) or install an appropriately rated compatible 50 mV shunt. Shunt installation is outside the scope of this STC and must be approved using other means.

10. Outside Air Temperature (OAT)

For standalone EIS installations that display horsepower but do not have an air data computer in the system, an OAT probe can be connected to the GEA 24(B)/110 as an EIS sensor. Refer to Appendix Section C.19 for sensor compatibility.

11. Remote Aircraft Status

For installations with a GDL 60 that wish to utilize the Remote Aircraft Status feature, a number of relay assemblies will need to be installed. A relay assembly consists of a relay socket, a relay bracket, and a relay. Refer to Section 3.1.2 for part numbers. Refer to Figure B-30 for specific interconnect drawings.

NOTE

It is recommended to connect an OAT probe directly to the GEA if it is desired to receive Air Temperature data as part of the Remote Aircraft Status.

3.5 Electrical Load Analysis

An Electrical Load Analysis (ELA) must be completed before the GI 275 is installed to verify that the aircraft electrical system is adequate. The purpose of the ELA is to show compliance with 14 CFR 23.1351 and 23.1353(h) by demonstrating that the maximum electrical system demand does not exceed 80% of the alternator data plate rating and the aircraft battery is capable of providing electrical power to equipment essential for continued safe flight and landing in the event of a complete loss of the primary electrical system. Satisfactory completion of the ELA must be recorded on FAA Form 337.

> NOTE
>
> Certain operating requirements (e.g., 14 CFR Part 135) may impose additional requirements in the event of electrical power loss. It is the installer's responsibility to ensure that the aircraft meets the additional requirements if used for these operations.

Typical current draw of all GI 275 system components is summarized in Table 3-28.

Table 3-28 LRU Current Draw

LRU	Current Draw [1]			
	14V System		28V System	
	Typical	Maximum	Typical	Maximum
GI 275 Base (without battery)	0.65 A	0.75 A	0.32 A	0.40 A
GI 275 Base (with battery)	0.65 A	1.70 A	0.32 A	0.80 A
GI 275 ADAHRS (without battery)	0.75A	0.90 A	0.35 A	0.50 A
GI 275 ADAHRS (with battery)	0.75A	2.00 A	0.35 A	1.00 A
GI 275 ADAHRS+AP (without battery)	0.80 A	1.10 A	0.40 A	0.65 A
GI 275 ADAHRS+AP (with battery)	0.80 A	2.00 A	0.40 A	1.00 A
GEA 110	0.30 A	0.60 A	0.15 A	0.30 A
GEA 24(B)	0.20 A	0.40 A	0.10 A	0.20 A
GCO 14	2 mA	2 mA	2 mA	2 mA
GSB 15 Dual Type-A (charging from both ports)	Varies	2.86 A	Varies	1.43 A
GSB 15 Type-A & C and Dual Type-C (charging from both ports)	Varies	4.86 A	Varies	2.43 A

Notes:

[1] All GI 275 current draws include the GMU 11/44B and GTP 59.

Net change to the electrical load with the GI 275 installed must be determined. Net decrease in electrical load requires no further analysis, assuming that the electrical system is within limits. This is likely to occur when existing equipment is removed or older systems are replaced with newer equipment that requires less power to operate. The amended electrical load calculation documenting load reduction should be filed with other aircraft permanent records. A sample net electrical load calculation is shown for a 14V aircraft in Table 3-29.

Table 3-29 Net Electrical Load Change Calculation Example (14 VDC Aircraft)

Equipment Removed		Equipment Added	
Item	Load [A]	Item	Load [A]
KI 227 ADF Indicator [1]	0.00	Garmin GI 275 ADAHRS+AP (PFD), GMU 11, GTP 59	2.00
KI 525A Pictorial NAV Indicator (HSI)	0.36	Garmin GI 275 ADAHRS (HSI)	2.00
KA 51B Slaving Accessory [2]	0.00		
KI 256 Horizon Indicator (ADI)	0.76		
Mid-Continent MD 200-206 VOR/LOC/GS Indicator	0.30		
KG 102A Directional Gyro	3.00		
Shadin ADC 200	1.30		
SUBTOTAL	5.72	SUBTOTAL	4.00
		NET CHANGE	-1.72

Notes:

[1] Received power from ADF receiver, which was left in the aircraft.

[2] Received power from KG 102A, which was also removed. The load for the KA 51B is included as part of the KG 102A load.

A complete Electrical Load Analysis must be performed to show adequate capacity of the alternator/ generator if the electrical load is increased with GI 275 installed. ASTM F 2490-05 Standard Guide for Aircraft Electrical Load and Power Source Capacity Analysis offers guidance on preparing an ELA. Alternatively, electrical loads under different operating conditions can be measured (refer to Section 3.5.1).

3.5.1 Measurement of Electrical Loads

It must be shown that the maximum electrical demand for each alternator does not exceed 80% of the alternator data plate rating. Discussed in this section is the ELA for a single alternator/single battery electrical system determined by load measurement. It must be modified accordingly for aircraft with multiple batteries or alternators. During measurement, applied electrical system loads must account for combinations and durations for probable aircraft operations.

NOTE

Class IV aircraft cannot measure the electrical loads and must perform an ELA.

NOTE

Circuits must be protected and LRU circuit breaker ratings must meet specifications in Section 3.2. Additionally, follow guidelines in AC 43.13-1B, Chapter 11, Section 4.

CAUTION

To avoid damage to equipment, the ammeter must be capable of handling the anticipated load.

The current measurement is best accomplished with an in-circuit or clamp-on calibrated ammeter with 0.5 A or better precision. Continuous rate, as indicated on the alternator and the battery data plate/ nameplate, must be noted.

1. The tabulated form provided in Figure 3-13 can be used to compile a list of electrical loads on the aircraft. Typically, the list is comprised of existing circuit breakers and circuit breaker switches as shown by the example in Figure 3-14. Continuous (e.g., GPS) or intermittent (e.g., stall warning horn, landing gear) loads must be identified.
2. Use the worst-case flight condition and identify which phase of flight each particular load is used in for normal flight operation. Certain loads are mutually exclusive and will not be turned on at the same time (e.g., pitot heat and air conditioning). Use only the worst-case load conditions for each phase of flight.

   NOTE

   Normal operation is when the primary electrical power generating system is operating normally. Emergency operation is when the primary electrical power generating system is inoperative.

3. Use the worst-case flight condition and identify which phase of flight each load is used in for emergency flight operation. At a minimum, the list of equipment must include:
   a. GI 275 ADI (includes GMU 44B or GMU 11 Magnetometer)
   b. GI 275 HSI (if applicable)
   c. GI 275 EIS (if applicable)
   d. AHRS #1 (GRS 77/79) (includes GMU 44B Magnetometer)
   e. COM radio #1
   f. GPS #1
   g. Audio panel [1]
   h. Stall warning system (if applicable)
   i. Pitot heat
   j. Landing light (switched on during landing only)
   k. Instrument panel lighting
   l. Landing gear indication lights
   m. Navigation lights
   n. Strobe lights

Notes:

[1] If the landing gear warning or stall warning audio requires the audio panel, then the audio panel must be included; otherwise, the audio panel is not essential for continued safe flight/landing and may be omitted.

   CAUTION

   The pitot heat must be switched on long enough to take the current measurement and then switched off. Since the pitot probe may get hot, ensure the probe cover is removed. Care must be taken to avoid burns or damage to the unit.

4. The ammeter must be connected in line between the external power source and the master relay circuit, as shown in Figure 3-12. This will eliminate errors due to the charging current drawn by the battery.

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Figure 3-12 Ammeter Placement for Current Measurement

5. With all circuit breakers closed, external power must be applied to the aircraft and voltage set to the nominal alternator voltage (usually 13.8 VDC or 27.5 VDC).
6. The battery master switch must be turned on. Do not measure intermittent electrical loads. It is assumed if any additional current is required beyond the alternator capability, this short-duration demand will be supplied by the battery.
7. The following lighting settings must applied during the entire electrical load measurement:
    a. All instrument panel and flood lights set to maximum brightness.
    b. The GI 275 backlight set to 50% brightness.
    c. All other backlit displays, including GPS navigator, set to 50% brightness.
8. Switch on all continuous electrical loads that are used for the taxiing phase of flight and record the current that is measured by the ammeter (tabulated ELA form in column 1, Figure 3-13). The autopilot circuit breaker must be closed, but the autopilot must not be engaged during the measurement.
9. Switch on all continuous electrical loads that are used for the normal takeoff/landing phase of flight and record the current that is measured by the ammeter (tabulated ELA form in column 2, Figure 3-13). Measurements must be taken with the landing lights ON and OFF. The autopilot circuit breaker must be closed and the autopilot must be engaged.
10. Switch on all continuous electrical loads that are used for the normal cruise phase of flight and record the current that is measured by the ammeter (tabulated ELA form column 3, Figure 3-13). The autopilot circuit breaker must be closed and the autopilot must be engaged.
11. Switch on all continuous electrical loads that are used for the emergency cruise phase of flight and record the current that is measured by the ammeter (tabulated ELA form column 4, Figure 3-13). Measurements must be taken with the landing lights ON and OFF.
12. Switch on all continuous electrical loads that are used for the emergency landing phase of flight and record the current that is measured by the ammeter (tabulated ELA form column 5, Figure 3-13). Measurements must be taken with the landing lights ON and OFF.

The aircraft electrical system is capable of supporting the GI 275 system if the maximum electrical system demand, as documented on the tabulated ELA form, does not exceed 80% of the alternator capacity. It is permissible for the electrical load to exceed 80% of the alternator capacity when the pitot heat and landing light are both switched on during the takeoff/landing phase of flight. In this case, the electrical load must not exceed 95% of the alternator capacity. If the pitot heat is on and the landing light is off, the electrical load may not exceed 80% of the alternator capacity.

NOTE

The Electrical Load Analysis for this installation is only valid for modifications performed under this STC. Subsequent changes to the aircraft electrical system will require a new load analysis.

Date:	Tail Number:		Phase(s) of flight during which circuit/system is used				
			Normal Operation			Emergency Operation	
Circuit/System	Circuit Breaker Number	Operating Time	Taxiing 10 min	TO/Land 10 min	Cruise 60 min	Cruise (Calculated)	Land 10 min

Figure 3-13 Tabulated Electrical Load Form
Sheet 1 of 2

Date: Tail Number:

Circuit/System	Circuit Breaker Number	Operating Time	Phase(s) of flight during which circuit/system is used				
			Normal Operation			Emergency Operation	
			Taxiing 10 min	TO/Land 10 min	Cruise 60 min	Cruise (Calculated)	Land 10 min
Total current used (amps):			(a)	Ldg Lt ON (b1) Ldg Lt OFF (b2)	(c)	(d)	(e)
÷ Alternator rating (amps):							
x 100% = Percent of alternator capacity used:			% (< 80%)	% Ldg Lt ON (< 95%) % Ldg Lt OFF (< 80%)	% (< 80%)	N/A	N/A

Pass/Fail:

Notes:

Figure 3-5 Tabulated Electrical Load Form
Sheet 2 of 2

Date: / /201 Tail Number: N5272K

Circuit/System	Circuit Breaker Number	Operating Time	Phase(s) of flight during which circuit/system is used				
			Normal Operation			Emergency Operation	
			Taxiing 10 min	TO/Land 10 min	Cruise 60 min	Cruise (Calculated)	Land 10 min
Alternator Field	A1	Continuous					
Annunciator Panel	C1	Continuous					
Vacuum Warning	C2	Intermittent					
Stall Warning	C3	Intermittent					
Gear Warning	C4	Intermittent					
Gear Actuator	C5	Intermittent					
Cluster Gauge	D1	Continuous					
Ignition	D2	intermittent					
*, $'$+56	D3	Continuous					
Turn Coordinator	D4	Continuous					
Gear Relay	D5	Intermittent					
Panel Lights	E2	Continuous					
Glareshield Lights	E3	Continuous					
Flap Actuator	E5	Intermittent					
COM 1	F1	Continuous					
GPS/NAV 1	F2	Continuous					
COM 2	F3	Continuous					
GPS/NAV 2	F4	Continuous					
Autopilot [1]	F5	Continuous					
Audio Panel	G1	Continuous					
Radio Blower	G2	Continuous					
ADF	G3	Continuous					
Transponder	G4	Continuous					
GDL 69	H1	Continuous					
TCAD	H2	Continuous					
JPI Engine Monitor	H3	Continuous					
Bose Headsets	H5	Continuous					
Altitude Encoder	J1	Continuous					
Strobe Light	SW1	Continuous					
Nav Lights	SW2	Continuous					
Pitot Heat	SW5	Continuous					
Elevator Trim	SW6	Intermittent					
Boost Pump	SW7	Intermittent					

Figure 3-14 Example of Completed Tabulated Electrical Load Form
Sheet 1 of 2

Date: / /201 Tail Number: N5272K

Circuit/System	Circuit Breaker Number	Operating Time	Phase(s) of flight during which circuit/system is used: Normal Operation			Emergency Operation	
			Taxiing 10 min	TO/Land 10 min	Cruise 60 min	Cruise (Calculated)	Land 10 min
Total current used (amps):			45.7 (a)	60.0 Ldg Lt ON (b1) 44.7 Ldg Lt OFF (b2)	43.5 (c)	34 (d)	48.1 (e)
÷ Alternator rating (amps):		70					
x 100% = Percent of alternator capacity used:			68 % (< 80%)	86 % Ldg Lt ON (< 95%) 64 % Ldg Lt OFF (< 80%)	62 % (< 80%)	N/A	N/A
		Pass/Fail:	PASS	PASS	PASS		

Notes:

[1] During taxi phase, Dutopilot circuit breaker is closed but autopilot is not engaged.

Figure 3-6 Example of Completed Tabulated Electrical Load Form
Sheet 2 of 2

3.5.2 Battery Capacity Analysis

NOTE
A Battery Capacity Analysis is not required if only installing the GI 275 as an MFD.

The capacity of the aircraft battery must be verified if the GI 275 installation increases the electrical load on the system. The capacity of the existing battery is adequate if it supports loads essential to the continued safe flight and landing for a minimum of 30 minutes. For aircraft with a maximum service ceiling greater than 25,000 feet and certified with FAR 23.1353(h) at amendment 23.62, the battery must support 60 minutes of continued safe flight. Otherwise, the battery must be replaced with a battery that has sufficient capacity.

Refer to ASTM F 2490-05 *Standard Guide for Aircraft Electrical Load and Power Source Capacity Analysis* for more information.

Verification of the battery capacity can be accomplished following these steps:

1. Battery Capacity (de-rated) – 75% of the battery capacity (as indicated on battery nameplate) is assumed available (this value has units of Amp Hrs). Ensure the value is converted to Amp Mins.
2. Normal Operation Load – Worst-case cruise condition (cruise at night) during normal operation is assumed with 5 minutes given to the pilot to shed non-essential loads. Any automatic load shedding can be considered immediate and does not need to be considered in the calculations. Multiply the normal operation load (Amps) by t_1 (mins) [t_1 = 5 min].
3. Emergency Landing Load – Electric load during the approach and landing with failed generator/alternator. This load is assumed to drain the battery for 10 minutes and needs to be determined. Multiply the emergency landing operation load (Amps) by t_2 (mins) [t_2 = 10 min].
4. Emergency Cruise Load – Minimum load necessary to maintain flight in cruise after the generator/alternator has failed needs to be determined.

The following equation determines the battery capacity for emergency cruise expressed as time (t_3).

$$t_3 = \frac{\text{Battery Capacity - Normal Operation - Emergency Landing}}{\text{Emergency Cruise Load}} = \frac{(1) - (2) - (3)}{(4)}$$

The duration of the entire emergency flight on battery power is:

$t = t_1 + t_2 + t_3$

$t = 5\text{ min} + 10\text{ min} + t_3$

$t = 15\text{ min} + t_3$

EMERGENCY POWER OPERATION CALCULATION EXAMPLE

Date: 08/04/2017 Registration No.: N5272K

POWER SOURCE	QTY. INSTALLED	VOLTAGE	MANUFACTURER	MODEL
ALTERNATOR	1	13.75 VDC	PRESTOLITE	AL 12-P70
BATTERY	1	12.00 VDC	GILL	G-35

Assumptions:

1. Most severe operating condition is considered to be night IFR with the pitot heat operating.
2. Load demands are shown for steady state operation and do not include inrush current draw.
3. Load shedding is accomplished manually by the pilot within five minutes of warning annunciation.
4. Loads measured using a calibrated Extech DC ammeter clamped on the cable between battery terminal and master relay.

Analysis:

(1) Battery Capacity

0.75×35 Amp hrs = 26.25Ah $\times$ 60 min = 1575 A-min

(2) Normal Operation Load [t_1 = 5 minutes duration]

Current drawn in normal cruise 43.5 A

Load 5 min $\times$ 43.5 A = 217.5 A-min

(3) Emergency Landing Load [t_2 = 10 minutes duration]

Current drawn in emergency landing 48.1 A

Load 10 min $\times$ 48.1 A = 481 A-min

(4) Emergency Cruise Load.

Current drawn in emergency cruise 34.0 A

(5) Battery capacity for emergency cruise

$$t_3 = \frac{(1) - (2) - (3)}{(4)} = \frac{1575 - 217.5 - 481}{34} = 25.8 \text{ minutes}$$

(6) Total duration of flight on emergency (battery) power

$t = t_1 + t_2 + t_3$

t = 5 min + 10 min + 25.8 min = 40.8 min

Results:

The total required flight duration on emergency power is 30 minutes. The existing battery capacity provides 40.8 minutes for emergency flight duration. The battery is adequate.

4 INSTALLATION

4.1 Wire Routing and Installation

GI 275 LRU connector definitions and pin functions are defined in Appendix A. System installation requires fabrication of electrical wire harnesses. When fabricating and installing each harness:

- Reference the aircraft manufacturer (electrical) standard practices manual and equipment manufacturer documentation for guidance on wire type, gauge, routing, and wire identification. Methods, techniques, and practices defined in AC 43.13-1B Chapter 11, Aircraft Electrical Systems, are acceptable.
- Refer to the equipment manufacturer for any specific shield requirements, or follow general practices and guidance in this manual if none exist.
- For all existing wiring that is overbraided, the overbraid must be maintained and include the new wire added between the GI 275 and the existing system. It is acceptable to install new overbraid containing the new wire provided that the existing wire and overbraid routing is maintained. The overbraid should be terminated in the same or better manner at each connector. If pigtails are used, they should be kept as short as possible and no longer than the original overbraid.
- Ensure the wiring does not contact sources of heat or RF/EMI interference (power sources) and is not routed near moving components of aircraft controls or other systems. Wire routing must preclude accidental impact or damage.
- Provide adequate space for the LRU or sensor connector(s). Include additional wire length to create a service loop for maintenance, where appropriate.
- Shield terminations must be as short as possible and not exceed 3.0 inches unless otherwise specified. Shields may be connected to the metal connector backshell when the backshell is grounded to the airframe chassis ground, unless otherwise specified by equipment manufacturer. Alternately, the shield termination may be directly connected to the airframe ground.
- The GEA 24(B)/110 wiring must be routed away from any windows. Installed GI 275s must not share any circuit breakers or ground returns. The standby instruments must not share any circuit breakers or ground returns with any GI 275.
- When installed as a Primary ADI or Standby ADI, the GI 275 wiring should be routed independently from the PFD or electronic standby instrument.
- Intermediate connections must be minimized to maintain certified electromagnetic compatibility. All shields must have continuity at intermediate connections (e.g., bulkhead connectors, terminal blocks, splices, etc.). If intermediate connectors are installed, unless otherwise specified, the shield must be terminated at both sides of the intermediate connector backshells (if metal connector) or to airframe ground on both sides of the intermediate connectors.

NOTE

Interconnect diagrams in this manual only show end-to-end connections and do not show intermediate connections that may be present in an aircraft.

4.1.1 Shielded Cable Preparation

Prepare all of the shielded cables in accordance with Figure 4-1. When terminating shield drains, a maximum of two shields can be daisy-chained together. The daisy-chaining method may only be used if the six tapped holes in the shield block are insufficient to ground all shields.

1. At the end of the shielded cable, strip back a 2.5-inch maximum length of the jacket to expose the braid.
2. Remove this exposed braid.
3. Carefully score the jacket 1/4 to 5/16 inches from the end and remove the jacket to leave the braid exposed.

NOTE

Solder sleeves with pre-installed shield drains may be used instead of separate shield terminators and individual wires.

4. Connect a 20 or 22 AWG wire (2) to the exposed shield of the prepared cable assembly. Refer to Figure 4-1. Refer to AC 43.13-1B for termination techniques.

NOTE

Solder Sleeves with pre-installed lead: A preferred solder sleeve is the Raychem S03 Series with the thermochromic temperature indicator. These solder sleeves come with a pre-installed lead and effectively take the place of items (2) and (3). For detailed instructions on product use, refer to Raychem installation procedure.

5. Slide a shield terminator (3) onto the prepared cable assembly.
6. Connect the shield wire (2) to the shield using a heat gun approved for use with solder sleeves. The chosen size of solder sleeve must accommodate both the number of conductors present in the cable and the shield wire (2) to be attached.
7. Crimp contacts onto the cable wires.
8. Repeat steps 1 through 7 as needed for the remaining shielded cables.
9. Wrap the cable bundle with silicone fusion tape A-A-59163 (MIL-I-46852C) at the point where the backshell strain relief and cast housing will contact the cable bundle.
10. Install a ring terminal onto the cable shield termination wires (2), grouping wires as applicable for the connector.

2.5" MAX

3

0.17"

0.31" OF EXPOSED SHIELD

2

SHIELD DRAINS AS SHORT AS PRACTICAL
(NO LONGER THAN 3”)

PREFERRED METHOD

SHIELD DRAIN COMPONENTS AS SHORT
AS PRACTICAL (3" MAX COMBINED)

2

3

2.5" MAX

2

0.17"

0.31" MAX OF EXPOSED SHIELD

ALTERNATE METHOD (DAISY-CHAIN)

Figure 4-1 Shield Termination Methods

4.2 Pitot-Static Routing

The GI 275 Primary ADI and/or standby displays must be connected to the aircraft pitot-static system using lines and fittings, as specified in the model-specific aircraft parts manual. Lines must be labeled next to the GI 275. When installing pneumatic lines and fittings:

> CAUTION
>
> Check connections for errors before operating the equipment. An incorrect connection can result in equipment damage.

- Reference the aircraft manufacturer standard practices manual or equipment manufacturer documentation for guidance. Methods, techniques, and practices defined in AC 43.13-1B Chapter 12, Section 4, Pitot/Static Systems, are acceptable.
- Do not route lines near moving components of the aircraft control systems, other systems with moving components, or sources of heat, including high temperature lines.
- The GI 275 must not be at a low point in the pitot-static system pneumatic lines.
- The routing of the pneumatic lines from the GI 275 to the existing pitot-static system must continuously slope down without low points until they connect to the existing pneumatic system.
- If added pneumatic lines cannot be routed to continuously slope down, a “drain” must be installed at the low point of each pneumatic line. The “drain” can be comprised of a TEE fitting.
- Any added “drains” must be opened and discharged at least every 12 calendar months.
- The performance of existing drains must remain unaffected by connected equipment.
- Pitot and static ports mounted on the aircraft surface must not be changed or relocated. The aircraft surface where these ports are located must remain undeformed and free from defects.

When making pitot-static system connections:

- The GI 275 Primary ADI must be connected to pitot-static lines that were previously connected to the pilot's instruments (primary source).
- In aircraft with a single pitot-static system:
    - The standby instruments can be connected to the same pitot-static source as the pilot's instruments.
- For aircraft equipped with a dual pitot-static system:
    - The standby instruments must be connected to the pitot-static source that is independent from the pilot’s instruments. If the existing primary flight display is connected to both pitot-static systems, the standby instruments may be connected to either pitot-static system.

Whenever the pitot-static system is modified, a Pitot-Static Leak Test must be performed. To perform the test, follow the procedure outlined in the relevant aircraft maintenance manual. AC 43-6D, Appendix E, is an acceptable means of compliance when no other manufacturer data is available.

> NOTE
>
> Aircraft must retain the alternate static source selector switch, if it was previously equipped.

> NOTE
>
> For reference only, airspeed indicators and altimeters depicted in Figure 4-2 through Figure 4-5 are manufactured by Thommen Aircraft Equipment.

Figure 4-2 Pitot-Static Connections for Single GI 275 Installation
(Aircraft with a Single Pitot-Static System and/or Less than 6,000 lbs MTOW)

Figure 4-3 Pitot-Static Connections for Single GI 275 Installation
(Aircraft with a Dual Pitot-Static System)

Figure 4-4 Pitot-Static Connections for Dual GI 275 Installation
(Aircraft with a Single Pitot-Static System)

Figure 4-5 Pitot-Static Connections for Dual GI 275 Installation
(Aircraft with Dual Pitot-Static System)

4.3 Equipment Bonding

All installed items listed in Table 4-1 must be electrically bonded to the same airframe ground plane and meet the listed milliohm requirement. The GMU 44B and GTP 59 must be either electrically bonded to an airframe ground plane or electrically isolated per aircraft model-specific requirements in Appendix D.

The resistance must be verified with a calibrated milliohm meter with ±0.1 (or better) accuracy wi all connector(s) disconnected.

All existing third-party remote equipment interfaced to a GI 275 must be electrically bonded to the airframe ground. It is not acceptable to interface the GI 275 equipment to existing third-party equipment that relies only on power ground return wires as an electrical ground.

The back of the aircraft instrument panel that is in direct contact with the GI 275 and GSB 15 must be prepared for bonding around each fastener hole used to mount the instrument, as shown in Figure 4-6.

Figure 4-6 Instrument Panel Surface Preparation

Electrical bonding can be achieved with mounting hardware (e.g., rivets, bolts, nuts, washers, etc.) or via bond straps. Bonding surfaces must be clean of any primer, grease, or dirt. If mounting hardware is used to create the electrical bond, the area under the head of the bolt or washer must be free of primer and a spot face prepared that is at least 0.125 inches wider than the head of the bolt or the washer. Any exposed area still visible after the bond is completed must be primed and finished with the original coating or other suitable film. Rivets used to mechanically attach brackets and shelves provide an inherent electrical bond through the rivets and require no additional bond preparation. The top or bottom side of the Garmin racks or equipment flanges do not need any special bond preparations. Reference the aircraft manufacturer (electrical) standard practices manual for procedures on electrical bond preparation, or follow SAE ARP 1870 Aerospace Systems Electrical Bonding and Grounding for Electromagnetic Compatibility and Safety, Section 5, Detail Requirements.

Table 4-1 Bonding Requirements

Unit	Value
GI 275 Base GI 275 ADAHRS GI 275 ADAHRS+AP	2.5 m© (from unit to instrument panel).
Engine Annunciator(s)	10 m© (from unit to instrument panel).
GEA 110 GEA 24(B)	2.5 m ©(from unit to local structure).
GTP 59 GMU 44B	2.5 m ©or electrically isolated per Appendix D (from unit to local structure).
GMU 11	None, except when overbraid is required. Overbraid bond must meet 2.5 m© per Section 4.6.1.
GSB 15	2.5 m ©(from unit to instrument panel or local structure).

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 face sheet on honeycomb shelves must be metal when equipment is mounted to the shelf. The honeycomb material between the face sheets is not conductive; therefore, care must be taken to ensure proper bonding of the equipment. The top and bottom face sheets must be grounded to each other and at least one of face sheets must be grounded to the airframe.

4.3.1 Vibration Mounts

For instrument panels with vibration mounts, verify the mounts are grounded to the metallic airframe structure with a bonding jumper. Ensure the jumper meets the following specifications:

- The cross-sectional area of the strap is greater than 0.016 square inches (approximately 20,800 circular mils).
- The braid is a 7/16” or wider tubular braid (P/N QQB575R30T437, 24,120 circular mils) or a 3/4” or wider flat braid (P/N QQB575F36T781, 20,800 circular mils).
- The braid contains a terminal lug (mil-spec MS20659-130) at each end.
- The strap length is as short as possible, not exceeding 6 inches.

Ensure each terminal lug is secured to its respective mating surface with a #10 steel bolt and one flat washer (P/N AN970-3). Lugs and washers should be center-aligned and flush on all outside edges. These components should be in full contact with the mating surface.

4.3.2 Aluminum Surface Preparation

In order to prepare the aluminum surface for proper bonding, the following general steps should be followed. For a detailed procedure, refer to SAE ARP1870 Sections 5.1 and 5.5.

1. Clean grounding location with solvent.
2. Remove non-conductive films or coatings from the grounding location. When area is cleaned around fastener heads or washers, the area cleaned should be 0.125 inches wider than the footprint of the washer or the bolt head.
3. Apply a chemical conversion coat, such as Bonderite M-CR 1200S Aero, to the bare metal.
4. Once the chemical conversion coat is dry, clean the area.
5. Install bonding aluminum tape or equipment at grounding location.
6. After the bond is complete, if any films or coatings were removed from the surface, re-apply a suitable film or coating to the surrounding area.

4.4 Instrument Panel Installations

The GI 275 is primarily designed to replace existing 3-inch diameter flight instruments on the instrument panel. For all GI 275 installations, the instrument panel must be constructed from metallic materials.

The GI 275 must be electrically bonded to the aircraft instrument panel with a direct current (DC) resistance specified in Table 4-1. Electrical bond is accomplished through GI 275 surface to backside of instrument panel surface contact.

The GI 275 display(s) used as the pilot’s Primary ADI or HSI must be located such that it is within the pilot’s field-of-view and also within reach of the pilot. A secondary GI 275 used as the copilot ADI or HSI is not required to be installed in the pilot's field-of-view but must be located such that it is within the copilot’s field-of-view and also within reach of the copilot The GI 275 display(s) must not interfere with the installation of flight control systems or control lock devices.

FAA AC 23.1311 defines the pilot’s field-of-view as the ability to view the flight instruments with “minimum head and eye movement”. Figure 4-7 provides an example of the pilot’s field-of-view based on a distance of 30 inches from the pilot eye to the instrument panel, as recommended in AC 23.1311.

30.0

LEFT

UP

35°

21.0 MAX

40°

PRIMARY MAXIMUM FIELD-OF-VIEW

PRIMARY FIELD-OF-VIEW

HORIZONTAL

PRIMARY FIELD-OF-VIEW

PRIMARY MAXIMUM FIELD-OF-VIEW

15°

8.0 MAX

PILOT
FIELD-OF-VIEW
CENTERLINE

15°

8.0 MAX

15°

NORMAL 0°

21.0 MAX

20°

DOWN

RIGHT

9(57,&$/),(/'

+25,=217$/),(/'

PER AC23.1311-1C , PRIMARY FIELD-OF-VIEW IS BASED ON THE VERTICAL AND HORIZONTAL VISUAL FIELDS FROM DESIGN EYE REFERENCE POINT THAT CAN BE ACCOMMODATED WITH EYE ROTATION ONLY.THIS AREA IS NORMALLY RESERVED FOR PRIMARY FLIGHT INFORMATION AND HIGH PRIORITY ALERTS, E.G. GI 275 PRIMARY ADI, GI 275 HSI AND EIS ANNUNCIATOR (IF INSTALLED).

PER AC23.1311-1C PRIMARY MAXIMUM FIELD-OF-VIEW IS BASED ON THE VERTICAL AND HORIZONTAL VISUAL FIELDS FROM DESIGN EYE REFERENCE POINT THAT CAN BE ACCOMMODATED WITH EYE ROTATION AND MINIMAL HEAD ROTATION. THESE AREAS IS NORMALLY USED FOR IMPORTANT AND FREQUENTLY USED INFORMATION, E.G. GI 275 STANDBY, GI 275 MFD AND GI 275 EIS.

Figure 4-7 Example of Pilot Field-of-View Installation

NOTE

Display location must not affect the readability of any existing or added switches under all lighting conditions, including switches that maybe blocked from the instrument flood lights.

In Figure 4-7, the pilot’s field-of-view centerline is coincident with:

1. A projection of the centerline of the pilot’s seat onto the instrument panel; or
2. The center of control yoke or stick in neutral position if the control yoke or stick are offset from the centerline of the pilot’s seat.
3. Per AC 23.1311, it is acceptable for the pilot field-of-view centerline to deviate horizontally from the actual centerline by ±2.0 inches.

NOTE

If the GI 275 EIS is installed outside the pilot's field-of-view, and a PFD capable of annunciating EIS warnings and cautions is not installed, a remote annunciator(s) will be required as an engine caution and warning advisory. The annunciator(s) must be located within the pilot's primary field-of-view. Refer to Section 4.4.4.

4.4.1 GI 275 Multifunction Indicator

CAUTION

It must be verified that the original airspeed indicator is not part of an existing airspeed warning system when considering instrument removal or replacement. If it is part of the airspeed warning system, this system must continue to operate following the installation of the GI 275 system.

NOTE

If applicable for the installation, ensure the backup battery is installed prior to installation of the GI 275 unit in the instrument panel. The backup battery is required if the GI 275 is installed as a primary or standby attitude display. Refer to Section 4.4.2 for battery installation procedure.

When replacing existing "six pack" 3-inch diameter flight instruments, GI 275 displays can be positioned at any location vacated by the existing instruments except for the GI 275 Primary ADI. The GI 275 Primary ADI must be installed at the top-center of the "six pack" arrangement. For aircraft instrument panels that do not have a "six pack" type arrangement, the general rule is that the GI 275 ADI should coincide with the pilot's point-of-view centerline. The other GI 275 display(s) must be within the pilot's field-of-view. AC 23.1311-1C requires that the primary flight information instruments be installed within the primary field-of-view. GI 275 EIS units in twin-engine aircraft must be located adjacent to each other and oriented (i.e., vertically or horizontally) the same as the previously approved installation.

If installed, the display backup toggle switch that allows for the control of reversion between the primary and standby displays must be located in the vicinity of the reverting display.

PILOT FIELD-OF-VIEW
CENTERLINE
GI 275 PRIMARY ADI
GI 275 STANDBY ADI
GI 275 MFD
GI 275 EIS
GI 275HSI
8.00 MAX
8.00 MAX
21.00 MAX
PRIMARY FIELD-OF-VIEW
PRIMARY MAXIMUM FIELD-OF-VIEW

Figure 4-8 Example of GI 275s in "Six Pack" Instrument Panel (Single-Engine)

PILOT FIELD-OF-VIEW
CENTERLINE

GI 275 PRIMARY ADI

GI 275 EIS (ENGINE #1)

GI 275 STANDBY

GI 275 MFD

GI 275 EIS (ENGINE #2)

GI 275HSI

8.00 MAX

8.00 MAX

21.00 MAX

PILOT PRIMARY FIELD-OF-VIEW.

PILOT PRIMARY MAXIMUM FIELD-OF-VIEW

Figure 4-9 Example of GI 275s in “Six Pack” Instrument Panel (Multi-Engine)

PILOT FIELD-OF-VIEW
CENTERLINE

GI 275 PRIMARY ADI

GI 275HSI

GI 275 STANDBY

GI 275 MFD

GI 275 EIS

8.00 MAX

8.00 MAX

21.00 (REF)

21.00 (REF)

PRIMARY FIELD-OF-VIEW

PRIMARY MAXIMUM FIELD-OF-VIEW

Figure 4-10 Example of GI 275s in Non-“Six Pack” Instrument Panel (Single-Engine)

Table 4-2 GI 275 Multifunction Indicator Weight & Size

Item	Weight lb. (kg)	Dimensions in. (mm) Height	Width	Depth
GI 275 Base (P/N 011-04489-00, -60)	1.9 (0.86)	3.25 (82.6)	3.25 (82.6)	6.44 (163.5)
GI 275 Base with connector kit	2.19 (0.99)			7.40 (188.0)
GI 275 ADAHRS (P/N 011-04489-10, -30, -70)	2.4 (1.09) [1]	3.25 (82.6)	3.25 (82.6)	6.44 (163.5)
GI 275 ADAHRS with connector kit	2.88 (1.31) [1]			7.40 (188.0)
GI 275 ADAHRS+AP (P/N 011-04489-20, -40)	2.4 (1.09) [1]	3.25 (82.6)	3.25 (82.6)	6.44 (163.5)
GI 275 ADAHRS+AP with connector kit	2.88 (1.31) [1]			7.40 (188.0)

Notes:

[1] Includes the weight of the backup battery. If the battery is not installed, subtract 0.32 lbs (0.145 kg).

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67$7,& $,5),77,1*
$137
)(0$/(7+5($'

Figure 4-11 GI 275 Multifunction Indicator Dimensions

In most cases, installation of the GI 275 does not require modification to the existing instrument panel if it is replacing an existing 3-inch diameter flight instrument. Simply remove the existing 3-inch diameter flight instrument and install the GI 275 unit as shown in Figure 4-12 or Figure 4-13.

CAUTION

The instrument panel coating that surrounds the fastener holes and contacts directly with the GI 275 unit must be removed prior to installation in accordance with Section 4.3.2.

If modification is required, typically it will be simply trimming the existing 3-inch cutout on the instrument panel to accommodate the knob on the unit. It may also be necessary to enlarge the instrument panel fastener holes. Refer to Figure 4-15 for the recommended fastener hole diameter.

Figure 4-12 GI 275 Installation (Pan Head Screw)

Figure 4-13 GI 275 Installation (Countersunk Head Screw)

The GI 275 Primary ADI can be installed directly into an existing Bendix/King KI 256 cutout without modifying the instrument panel using the optional Plate Adapter KI-256 to GI 275 (P/N 117-01484-00).

Figure 4-14 GI 275 Installation with KI 256 Adapter

If new cutouts for the GI 275 are required, the dimensions and minimum spacing are shown in Figure 4-15.

Figure 4-15 GI 275 Cutout

When fabricating a new instrument panel, it must:

1. Use the same thickness, material type, and corrosion protection as the original instrument panel.
    a. If existing instrument panel material isn't known, 2024-T3 aluminum per AMS-QQ-A-250/5, 6061-T6 aluminum per AMS 4025, AMS 4027, or AMS-QQ-A-250/11 must be used.
    b. Corrosion protection must be in accordance with aircraft model-specific standard practices manual, or alternatively chemical conversion coating per MIL-DTL-5541 Type II, or MIL-DTL-81706 Type II, and high-solids chemical and solvent resistant epoxy primer per MIL-PRF-23377, Class N.
2. Be manufactured using methods and procedures defined in an aircraft standard practices manual, maintenance manual, or structural repair manual. Methods, techniques, and practices defined in AC 43.13-1B Chapter 4, Section 4, Metal Repair Procedures, are acceptable.
3. Maintain the form of the existing instrument panel, including the location of fasteners, and retain all elements of the instrument panel structure (if comprised of multiple parts assembled together), such that every feature of the instrument panel is preserved or duplicated.
    a. Multiple individual pieces of instrument panel assembly must not be combined.
    b. Single pieces must not be split into smaller components.
4. Remain at the location where it was originally installed in the aircraft, use the same type of fasteners as specified in the aircraft model-specific parts catalog, and retain the same instrument panel installation method as defined by aircraft type design.
5. Retain the lighting for all previously installed instrument(s) that will be re-installed.

Installation and placement of the required placards and limitations must be in accordance with the applicable aircraft data and aircraft type TCDS.

If any placards were relocated as a result of a display installation, verify the following:

- The font size of the new placard is the same as the placard it is replacing.
- The color of the new placard is identical to the color of the placard it is replacing.
- The text on the new placard is identical to the text on the placard that it is replacing (it can be arranged differently as required by space constraints, but the wording must be the same).
- The new placard must be legible and not obscured to the pilot by the glareshield, in all flight control positions, or by any other component in the flight deck.

If new switch labels were added as a result of the GI 275 installation, verify the following:

- The font size and label is legible from the pilot's seat.
- The labels are legible in all ambient light conditions. In particular, the labels are legible with ambient flood lighting in darkness.
- The switch label must be legible and not obscured to the pilot by the glareshield, in all flight control positions, or by any other component to include the switch position.

For VFR aircraft, the following is applicable when installing the GI 275:

- Standby instruments are not required.
- Electrical bonding and wire routing must be considered for aircraft with non-metallic airframes.

No additional placard is required if the aircraft is already limited to VFR operation prior to installation of the GI 275; otherwise, the installation of the GI 275 must include the following on a placard:

- The text on the placard must read, "AIRCRAFT LIMITED TO VFR".
- The font size must be a minimum of 0.25 inches high (minimum 18 point font).
- The placard must be located in plain view near the pilot's PFD (pilot-side instrument panel).

Refer to Appendix D for aircraft models limited to VFR operations with the GI 275 system that previously did not have this limitation.

4.4.2 Backup Battery

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 must be installed in the GI 275 unit prior to installation in the instrument panel.

Table 4-3 Backup Battery Weight and Size

Item	Weight lb. (kg)	Dimensions in. (mm)		
		Height	Width	Depth
GI 275 Backup Battery	0.32 (0.145) [1]	2.36 (60.0)	2.60 (66.0)	1.13 (28.7) (connector end) 0.85 (21.5) (non-connector end)

Notes:

[1] Weight includes the silicone end cap.

Figure 4-16 Backup Battery Dimensions

To install the backup battery in the GI 275:

1. Remove the four screws and cover plate from the top of the GI 275 unit.
2. Place the two included end caps onto each end of the battery.

   CAUTION

   The battery end caps are required for installation of the backup battery in the GI 275.

3. Insert the battery into the GI 275 ensuring the battery connector aligns with the GI 275 connector.
4. Press down to fully seat the battery. It should be level with the top of the unit when fully seated.
5. When the battery is installed correctly, the GI 275 will power on. Power off the unit before continuing with the installation.
6. Replace the cover and torque the screws to 8 ± 1 in-lbf. Ensure the cover is fully seated.

Figure 4-17 GI 275 Backup Battery Installation

4.4.3 GCO 14 Carbon Monoxide Sensor

The GCO 14 can be mounted either on the P2751 wiring harness near the D-sub connector or directly on the P2751 D-sub connector backshell. The GCO 14 must be installed per Section 4.4.3.2 or Section 4.4.3.3 prior to the GI 275 unit being mounted to the instrument panel.

Table 4-4 GCO 14 Weight and Dimensions

Item	Weight lbs. (kg)	Dimensions in. (mm)		
		Height	Width	Length
GCO 14	0.063 (0.028)	0.9 (22)	1.2 (31)	1.5 (37)

4.93
0.194

17.85
0.703

37.39
1.472

31.42
1.237

Dimensions:
[mm]
INCHES

Figure 4-18 GCO 14 Dimensions

4.4.3.1 GCO 14 Airflow Guidance and Considerations

It is critical to ensure the GCO 14 is exposed to the same carbon monoxide (CO) levels as the air circulating in the main portion of the cabin. Avionics cooling, physical barriers, and cabin airflow patterns may interfere with the diffusion of CO from the air volume in the main cabin to the air volume behind the instrument panel. Careful consideration is required to ensure the GCO 14 installation environment experiences the same CO levels as the cabin air volume. Failure to ensure this could result in delayed alerting response times or even lack of alerts in the event of CO buildup.

> NOTE
>
> If a GTN Xi is installed in the same system, then the GCO 14 should be installed on the GTN Xi because the cooling fan creates airflow that is better suited to ensure an accurate and representative CO environment. Refer to GTN Xi Part 23 AML STC Installation Manual (P/N 190-01007-C0) for more information on installing the GCO 14 on the GTN Xi.

The preferred location for the GCO 14 is on GI 275 units located between the pilot and co-pilot at the instrument panel. For tandem cockpits, the GCO 14 should be installed on a GI 275 unit in the pilot instrument panel. If there is an existing fan that draws air from the cabin, placing the GCO 14 close to it provides a better representation of the cabin air environment.

Avoid positioning the GCO 14 near air outlets that draw direct outside air for cooling the cabin/avionics. Avoid installing the GCO 14 in an enclosure that separates it from the cabin. If both these cases are unavoidable, consider installing a fan that directs cabin air to the GCO 14.

4.4.3.2 GCO 14 Wire Harness Mounting

To install the GCO 14 using the wire harness mounting method:

1. Align the GCO 14 over the harness approximately 6 inches or less from the P2751 connector backshell with the GCO 14 connector facing towards the backshell.
2. Secure with two tie wraps (shown) or lacing cord.

Figure 4-19 GCO 14 Cable Mounting

4.4.3.3 GCO 14 Backshell Mounting

To install the GCO 14 using the backshell mounting method:

1. Align GCO 14 to holes on D-sub connector.
2. Secure with supplied screws, Garmin P/N 211-60239-21, 8-32 x 1.125, PHP, SS/P, with pre-applied nylon thread locking patch.
3. Torque screws to 10 ±1 in-lbf.

Figure 4-20 GCO 14 Backshell Mounting

4.4.4 EIS Annunciator

EIS annunciation is required if the GI 275 EIS is located outside the pilot's maximum field-of-view.

The EIS annunciator(s) must be located within the pilot's primary field-of-view. Refer to Figure 4-7 for the definition of the pilot's field-of-view.

Two types of EIS annunciators are approved for installation.

4.4.4.1 EIS Annunciator

The Applied Avionics EIS annunciator provides a red "ENGINE" warning and yellow "ENGINE" caution.

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2) $1181&,$725

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Figure 4-21 EIS Caution and Warning Annunciator Installation

4.4.4.2 Separate EIS Annunciators

The Mil-Spec annunciators must be installed side-by-side with the caution (yellow) annunciator on the left and the warning (red) annunciator on the right. Install using the following procedure:

1. Drill the cutouts to the dimensions in Figure 4-22.
2. Insert MS25041 assembly without the lens holder from the forward side of the panel and secure.
3. Install lamp on the lens holder.
4. Install and secure lens holder on the indicator.
5. Install a placard or label as outlined in Section 6.6.

1 2 FOR 28V AIRCRAFT

3 4 FOR 14V AIRCRAFT

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ITEM	OTY	PART NUMBER	DESCRIPTION
1	1	MS25041-4-327	ANNUNCIATOR, YELLOW, PRESS TO T(67 FOR 28V AIRCRAFT
2	1	MS25041-2-327	ANNUNCIATOR, RED, PRESS TO 7(67 FOR 28V AIRCRAFT
3	1	MS25041-4-330	ANNUNCIATOR, YELLOW, PRESS TO 7(67 FOR 14V AIRCRAFT
4	1	MS25041-2-330	ANNUNCIATOR, RED, PRESS TO 7(67 FOR 14V AIRCRAFT

Figure 4-22 EIS Caution and Warning Annunciators Installation

4.4.5 GSB 15

The GSB 15 is a USB database and charging hub. The GSB 15 is designed to be mounted on a vertical surface, where moisture and fluids are less likely to be trapped inside the USB ports but still be visible and accessible to the user.

The preferred location for the GSB 15 is the instrument panel. Other locations are acceptable provided that they do not interfere with the safe operation of the aircraft. Units installed outside of crew-controlled areas of the aircraft are not approved for USB connections. Refer to Figure B-26 for interconnect diagram.

There are six variants of the GSB 15. Variants include dual USB Type-A ports, dual USB Type-C ports, and single USB Type-A/single USB Type-C ports. Each variant also has the option to have the connector on the rear or side of the unit.

Table 4-5 GSB 15 Weight and Size

Item	Weight lb. (kg)	Dimensions in. (mm)		
		Height	Width	Depth
GSB 15 Rear Connector (P/N 011-04937-00, -20, -40)	0.16 (0.07)	1.50 (38.1)	1.50 (38.1)	0.92 (31.1) [1]
GSB 15 Side Connector (P/N 011-04937-01, -30, -50)	0.16 (0.07)	1.55 (39.37) [1]	1.50 (38.1)	0.85 (21.4)
2.25” Mounting Kit	0.11 (0.05)			
3.125” Mounting Kit	0.20 (0.09)			
GSB 15 decorative cover, unfinished	0.03 (0.01)			
GSB 15 decorative cover, black	0.03 (0.01)			

Notes:

[1] Allow for an approximately 0.4 inches (10 mm) for the connector.

Figure 4-23 GSB 15 Dimensions
(P/N 011-04937-00 Shown, Others Similar)

If a new cutout for the GSB 15 is required on the instrument panel, the dimensions of the cutout is shown in Figure 4-24. Note that the location of the GSB 15 on the instrument panel is not required to meet any particular field-of-view requirements. When installing without the decorative cover, a minimum of two screw holes are required. When installing the decorative cover, four screw holes are required.

Figure 4-24 GSB 15 Cutout Dimensions

CAUTION

The instrument panel coating that surrounds the fastener holes and contacts directly with the GSB 15 unit must be removed prior to installation. Refer to Section 4.3.

Figure 4-25 GSB 15 Installation in Cutout

The GSB 15 can be installed directly into an existing flight instrument cutout without modifying the instrument panel using the GSB 15 2.25” Mounting Kit (P/N 011-05043-00) or GSB 15 3.125” Mounting Kit (P/N 011-05043-01).

CAUTION

The instrument panel coating that surrounds the fastener holes and contacts directly with the GSB 15 Mounting Kit (Item 2) must be removed prior to installation. Refer to Section 4.3.

Figure 4-26 GSB 15 Installation with Mounting Kit

4.4.5.1 GSB 15 Decorative Cover

NOTE
If using the unfinished version of the decorative cover, finishing methods that require less than 120° C are recommended. If the finishing method (such as powder coating) exceeds 120° C, it is recommended to pre-heat the cosmetic piece to 200° C or greater before applying a finish in order to prevent cosmetic defects.

Perform the following steps to install the Decorative Cover Kits listed in Table 3-6.

1. Install GSB 15 unit per Section 4.4.5.
2. Install the intermediate piece using the two provided screws.
3. Peel off the tape liners from the intermediate piece.
4. Install the cosmetic piece.

For best results, install the decorative cover as specified below:

- Recommended installation temperature: 70-100°F (21-38°C).
- Minimum installation temperature: 50°F (10°C).
- Recommended screw torque: 4-6 in-lbf.
- After removing the tape liners from the intermediate piece, avoid touching the exposed adhesive.
- Before installing, clean the inside of the cosmetic piece with a 50-90% isopropyl alcohol and water mixture. Allow it to fully dry before proceeding.
- When installing the decorative cover, apply an evenly distributed minimum force of 7 lbf (3 kgf or 30 N).
- The adhesive will fully cure within 72 hours (90% strength after 24 hours).

Figure 4-27 GSB 15 Decorative Cover Installation

4.5 Backshell Assembly

Prepare the shielded cables to be connected to the LRU in accordance with Section 4.1.1, then terminate the cables to the LRU jackscrew backshell assembly using the following procedure. Refer to Figure 4-28 and Figure 4-29.

1. Terminate the crimped pin/socket contacts (4) in the D-sub connector (7) in accordance with the aircraft wiring drawings.
2. Place the smooth side of the backshell strain relief clamp (9) across the cable bundle and secure using three 4-40 x 0.375 pan head screws (10).

   CAUTION

   Place smooth side of strain relief (9) across cable bundle. DO NOT place grooved side across cable bundle. Placing the grooved side of the strain relief across the cable bundle may damage wires.

3. Terminate the ring terminals (6) to the tapped holes on the backshell (8) by placing items on the 8-32 x 0.312 pan head shield terminal screw (13) in the following order before finally inserting the screw into the tapped holes on the shield block:
   a. split washer (14)
   b. flat washer (15)
   c. first ring terminal (6)
   d. second ring terminal (6) (if needed)

   NOTE

   Each tapped hole on the backshell (8) may accommodate only two ring terminals (6). It is preferred that a maximum of two wires (2) be terminated per ring terminal. Two wires per ring terminal will necessitate the use of a ring terminal, #8, insulated, 14-16 AWG (MS25036-153). If only a single wire is left or if only a single wire is needed for this connector a ring terminal, #8, insulated, 18-22 AWG (MS25036-149) can accommodate this single wire. If more wires exist for the connector than two per ring terminal, it is permissible to terminate three wires per ring terminal.

12 [

11

PLACE SMOOTH SIDE OF STRAIN RELIEF ACROSS CABLE BUNDLE. DO NOT PLACE GROOVED SIDE ACROSS CABLE BUNDLE.

10 [

9

8

7

Figure 4-28 Jackscrew Backshell and Shield Block Assembly

NOTES

1 PLACE SMOOTH SIDE OF STRAIN RELIEF ACROSS CABLE BUNDLE. DO NOT PLACE GROOVED SIDE ACROSS CABLE BUNDLE.

2 PREFERRED SHIELD TERMINATION METHOD SHOWN.

Figure 4-29 Shield Block Termination on Jackscrew Backshell Assembly

4.5.1 Configuration Module Installation

GI 275 connector assemblies serve as housing for configuration modules. This section lists configuration module assemblies and installation procedures for installations.

4.5.1.1 Configuration Module Without GCO 14

Refer to Figure 4-30 for details and item numbers referenced in the following procedure.

1. Strip back approximately 0.17 inches of insulation from each wire of the 4-conductor wire harness (3). It is the installer’s responsibility to determine the proper length of insulation to be removed.
2. Crimp a pin (4) to each conductor.
3. Ensure that the wire is visible in the inspection hole, and that the insulation is 1/64 to 1/32 inches from the end of the contact.
4. Insert newly crimped pins and wires (3, 4) into the connector housing (5) location. For details, refer to the applicable interconnect drawings.
5. Attach the module (1) to the backshell (6) using a pan head screw (10).
6. Plug the 4-conductor wire harness (3) into the connector on the module (1).
7. Orient the connector housing (5) so that the 4-conductor wire harness (3) is on the same side of the backshell (6) as the module (1).
8. Attach the cover (7) to the backshell (6) using two screws (8).

Figure 4-30 Jackscrew Backshell Assembly
(Potted Configuration Module)

4.5.1.2 GCO 14 Cable Harness in New GI 275 Installation

CAUTION
Lengthening of the GCO 14 cable harness is not permitted.

NOTE
Shield drain lugs can go in any 8-32 drain wire hole the GCO 14 is not occupying.

Refer to Figure 4-31 for the following procedures.

1. Attach the 4-pin connector (2) of included cable harness to the GCO 14.
2. Attach the other 4-pin connector (3) to the GI 275 configuration module.
3. Secure the configuration module (1) to the backshell (6) using the pan head screw (10).

To prepare the cable harness for crimp pin installation:

1. Strip at least 0.17 inches of insulation from all wires going to connectors. It is the responsibility of the installer to determine the proper length of insulation to be removed.
2. Insert the wire into the supplied pin and crimp with one of the recommended (or equivalent) crimping tools listed in Table 3-9.
3. Insert the pins into the P2751 connector housing location as specified in Figure B-27.
4. Install ring terminals, #8, insulated, onto the shield drain wires, grouping wires as appropriate for the connector.
5. Secure ring terminals with two screws, 8-32 (drain lugs) to shield block.
6. Verify the pins are properly engaged into the connector by gently tugging on the wire.

7

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2

3 1 10

6

4

5

Figure 4-31 GCO 14 with Cable Harness

4.5.1.3 GCO 14 Cable Harness in Existing GI 275 Installation

When connecting a new GCO 14 to a previously installed GI 275, the configuration module wiring must first be removed with the following procedure (refer to Figure 4-30 for this procedure):

1. Ensure the configuration is saved per Section 5.2.2.4 in case of configuration module damage.
2. Ensure the GI 275 is powered off. If the GI 275 is connected to a GDL 60, remove power from the GDL 60 by opening its circuit breaker.
3. Disconnect the P2751 connector from the GI 275 unit.
4. Remove the backshell connector cover (7) by removing the two screws (8).
5. Remove the retaining screw (10) and extract the configuration module (1) from the backshell (6).
6. Disconnect the 4-conductor wire harness (3) from the configuration module.
7. Remove the four pins (4) from the connector housing (5).
8. Install the GCO 14 wiring harness per Section 4.5.1.2.

4.5.2 GSB 15 Connector Assembly

Prepare the shielded cables to be connected to the LRU in accordance with Section 4.1.1, then terminate the cables to the LRU ground lug using the following procedure:

1. Terminate the crimped pin/socket contacts in the locking connector in accordance with the aircraft wiring drawings.
2. Attach the locking connector to the GSB 15, paying attention to the keying and latching features of the connector.
3. If the data transfer functionality is intended to be used, terminate the shield drain ring terminal to the ground lug on the back of the GSB 15 unit using the 4-40 x 0.125 pan head screw. This step is not required if the GSB 15 will be used for charging only.

4.5.3 GMU 44B Connector Assembly and Shield Termination

The parts listed in Table 4-6 are required for the GMU 44B connector harness. Some parts for this installation are included in the GMU 44B connector kit and some are to be provided by the installer.

Table 4-6 GMU 44B Connector Assembly

Figure 4-32 Ref	Description	Conn Kit Qty [1]	Part Number
1	Shield Termination (method optional)	0	Parts used depend on method chosen
2	Shield Extension Wire, 1.9 inch length	0	M22759/16-22
3	Shield Extension Wire, 2.0 inch length	0	M22759/16-22
4	Contact, Socket, Mil Crimp, Size 22	6	336-00055-00
5	Connector, Receptacle, WTW, D369 Series, 6 Position, Socket Insert, Key N	1	330-01430-01
6	Strain relief, D369 Series, 6 Position	1	330-90056-06
7	3-conductor cable	0	M27500-22TE3T14
8	2-conductor cable	0	M27500-22TE2T14
9	Self-Clinching Plastic Cable Tie Strap	0	AS33671 or similar

Notes:

[1] Quantity included in GMU 44B Connector Kit (P/N 011-04205-00).

5

6

2

2X 1

9

8

ITEM 6 CABLE TIE SLOT
0.112 MIN X 0.041 MIN INCHES

3

7

Figure 4-32 GMU 44B Connector Harness

1. On one end of each shielded cable (7 and 8), strip back approximately 1.6 inches of jacket to expose the shield. Use caution when cutting the jacket to avoid damaging the individual braids of the shield.
2. Trim away approximately 1.3 inches of shield, leaving approximately 0.3 inches of shield. Fold this remaining shield back over the jacket.
3. Cut one 22 AWG shield extension wire (2) approximately 1.9 inches long so the end of the shield extension wire lines up with the end of the previously prepared shielded cable (7) from step 1.
4. Strip back approximately 0.25 inches of insulation from one end of the shield extension wire (2).
5. Cut a second 22 AWG shield extension wire (3) approximately 2.0 inches long.
6. Strip back approximately 0.25 inches of insulation from both ends of this shield extension wire (3) to daisy chain the prepared shielded cables (7 and 8).
7. Connect the shield extension wire to the previously prepared shields using an approved shield termination technique. Refer to AC 43-13 for termination techniques.

   Preferred Method:

   a. Slide a solder sleeve (1) onto the prepared cable assembly and shrink using a heat gun. The chosen size of solder sleeve must accommodate the number of conductors present in the cable assembly. Reference the following MIL-Specs for 2-conductor and 3-conductor solder sleeves (M83519/1-2, M83519/1-3, respectively).

   Secondary Method:

   a. Solder the prepared cable assembly. Ensure a solid electrical connection through the use of acceptable soldering practices.

   b. Slide a piece of shrink tube (1) onto the prepared wire assembly and shrink using a heat gun. The chosen size of shrink tube must accommodate the number of conductors present in the cable.

1.6 INCHES

2

1

8

3

1

7

0.17 INCHES
FOR REF. ONLY

0.3 INCHES OF
SHIELD FOLDED
BACK OVER JACKET

Figure 4-33 GMU 44B Shield Termination

8. Strip back approximately 0.17 inches of insulation from each wire of the shielded cables (7 and 8) and shield extension wire (2).
9. Crimp a socket (4) to each conductor of the shielded cables and shield extension wire. It is the responsibility of the installer to find the proper length of insulation to be removed. Wire must be visible in the inspection hole after crimping and the insulation must be 1/64 to 1/32 inches from the end of the contact as shown in Figure 4-34.

INSPECTION HOLE
WIRE MUST BE VISIBLE AFTER CRIMPING

4

1/64 to 1/32 INCH

2, 7, 8

Figure 4-34 GMU 44B Connector Insulation/Socket Clearance

10. The 6-pin plastic connector is comprised of a connector (5) and strain relief (6). Insert each crimp socket (4) into the appropriate location inside of the receptacle. Refer to Appendix Section A.4 for correct pinout of connector.
11. (Optional) It is recommended to wrap the cable bundle with Silicone Fusion Tape (Garmin P/N 249-00114-00, or a similar version). Using this tape is at the discretion of the installer.
12. Snap the strain relief (6) on the connector body (5).
13. Use a cable tie (9) to secure the cables to the strain relief.

4.6 Display Sensors

Display sensors consist of GMU 11/44B Magnetometers and GTP 59 OAT Probe. When installed in a metallic aircraft, the display sensors must be electrically bonded to a nearby metallic structure, with the exception of the GMU 11 when overbraid is not required. Resistance must be in accordance with Section 4.3 with the connector disconnected. When installed in a non-metallic aircraft, the display sensors and display sensor connectors must be separated from any electrically conductive components by a minimum of 0.5 inches. Non-conductive doublers or barriers may be required to isolate the sensors.

4.6.1 GMU 11/44B

The GMU 11 and GMU 44B are very sensitive magnetic sensors. Before they are installed, their location must be surveyed to verify that they pass a Magnetic Interference Test (refer to Section 4.6.1.1). Follow the GMU separation guidelines presented in Table 4-7 when selecting an acceptable location. For aircraft model-specific GMU 11/44B installation requirements, refer to Appendix D.

NOTE
For metal and tube-and-fabric aircraft, the GMU must be electrically bonded to the aircraft metallic structure that forms the ground plane, with the exception of the GMU 11 when overbraid is not required.

NOTE
For composite aircraft, the GMU 11/44B must not be electrically bonded to the aircraft ground plane. If the structure is conductive at the mounting location, provisions must be made to electrically isolate the GMU from the conductive structure per instructions in this section.

CAUTION
A Magnetic Interference Survey must be successfully accomplished for locations in which a flux valve or flux gate was previously installed, as it may not be adequate for the GMU.

Table 4-7 GMU Recommended Distance from Sources of Magnetic Interference

Source of Magnetic Interference In Order of Importance	Min. Distance feet [meters]
1. Electric relays and motors, including servo motors	10.0 [3.0]
2. Ferromagnetic (i.e., iron, steel, or cobalt materials) mass heavier than 1 kg (e.g. landing gear)	8.2 [2.5]
3. Ferromagnetic mass less than 1 kg total (e.g., control cables)	3.0 [1.0]
4. Electrical devices that draw a current of more than 100 mA	3.0 [1.0]
5. Electrical conductors that pass a current of more than 100 mA	3.0 [1.0]
6. Electrical devices that draw a current of less than 100 mA	2.0 [0.6]
7. Magnetic measuring device other than another GMU (e.g., existing flux gate, even if not powered)	2.0 [0.6]
8. Electrical conductors passing less than 100 mA current	1.3 [0.4]

Aircraft must be leveled for installation of the GMU 11/44B. This is accomplished by following procedures in the relevant aircraft maintenance manual. After the aircraft is leveled, the GMU 11/44B must be:

1. Horizontal within 3.0° of the aircraft level reference in pitch and roll.
2. Pointing forward within ±0.5° of the aircraft longitudinal axis (butt line). Alignment within ±2.0° is acceptable, but requires the post-installation heading compensation.
3. GMU 11: Oriented such that the bottom of the unit faces downwards (towards Earth).

NOTE
Proper alignment of the GMU installation assures that the sensor points forward as required.

NOTE
The GMU installation should be located in areas where there is minimal flex from the installed orientation (e.g. aircraft with large wingspan may have significant wing flex during flight and thus the wing tip is unsuitable for the GMU installation location).

GMU 11/44B sensitivity requires that:

- Electrical conductors within 3 feet of the GMU 44B or within 10 feet of the GMU 11 are installed as a twisted shielded pair, not a single-wire conductor, and grounded at both ends, if possible.
- Non-magnetic materials are used to mount the GMU 11/44B and that any magnetic fasteners within 20 inches are replaced with non-magnetic equivalents (e.g., non-magnetic stainless steel or zinc-plated steel screws). Fastener replacement is outside the scope of this STC; refer to the aircraft structural repair manual or standard practices manual.

The GMU 11/44B must not be mounted on an access panel or inspection cover. The GMU 11/44B can be installed either in the wing or fuselage.

In general, wing mounting of the GMU is preferred. Fuselage mounting is less desirable because of numerous potential disturbances that can interfere with the accurate operation of the GMU. To reduce the effect of electric current in the wing skin:

1. The GMU 11/44B wiring must have a dedicated power ground return as a twisted pair with the power source back into the fuselage.
2. The wingtip lights must not have a power ground referenced to the chassis of the light assembly that would then be referenced back to the airframe ground via the light assembly mounting. Electrically isolated light assembly can only be used if demonstrated to have adequate protection against direct effects of lightning.

If installed in the fuselage, the preferred location is the fuselage tail section. However, it must maintain a minimum of 2 feet of separation from the cabin or cargo compartments. Truss-type steel fuselage frames are a significant source of magnetic interference and, therefore, are not recommended as a GMU 11/44B installation location.

If the aircraft has wingtip tanks or removable fairings, the GMU 11/44B must be separated by at least a single intermediate rib from the main fuel tank or tip tank, and the tip tank must be metallic in construction.

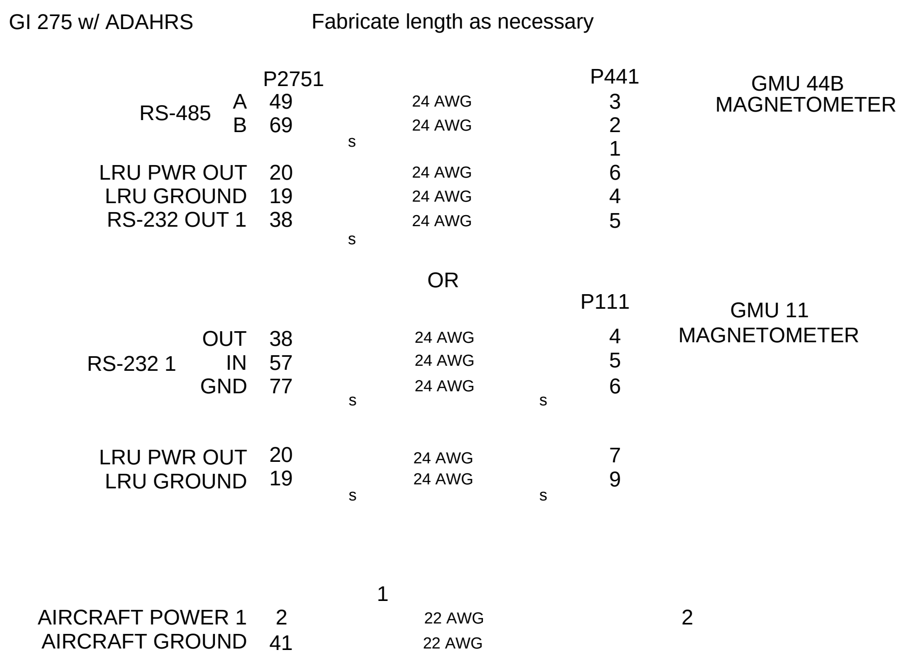
For installations with dual GMU 11s or dual GMU 44Bs, co-locating the two GMUs close to each other in the tail or in one wing is recommended, as this reduces the likelihood of heading splits or miscompares when operating on the ground in the vicinity of local magnetic anomalies.

4.6.1.1 Magnetic Interference Test

The Magnetic Interference Survey is used to identify an aircraft location with acceptable levels of magnetic interference to mount the GMU 11/44B. This section describes the materials, precautions, setup, and procedures required to successfully conduct the magnetic interference survey

Required Materials

1. DC Power Source - A DC power source capable of supplying 7 - 34 VDC/1 A is required to supply power to the GI 275 and magnetometer during the Magnetic Interference Test.
2. GI 275 - The GI 275 is required to run the Magnetic Interference Test in installations with a GMU 11 and recommended in installations with a GMU 44B. Installations with a GMU 44B can use the GMU 44 Location Survey Tool and a PC in lieu of the GI 275 display. Refer to AHRS/ Magnetometer Installation Considerations (P/N 190-01051-00).
3. Stopwatch or Watch with a Second Hand - During the survey test sequence, it is required to use a stopwatch or watch with a second hand to measure the time for turning equipment on and off.
4. Magnetic Interference Test Cable - In order to perform the magnetic interference survey, it is required to use a test cable fabricated by the installer. Fabricate a test cable in accordance with Figure 4-35.



NOTES

1 POWER AND GROUND WIRES FOR THE GI 275 ARE NOT REQUIRED IF A CHARGED BACKUP BATTERY IS INSTALLED PER SECTION 4.4.2.

2 THE GI 275 CAN BE CONNECTED TO AIRCRAFT POWER OR AN EXTERNAL DC POWER SOURCE CAPABLE OF SUPPLYING 7 - 34 VDC / 1A.

Figure 4-35 Magnetic Interference Test Harness

Performing the Magnetic Interference Test

This section describes the setup and procedure required to successfully complete the GMU location survey using the GI 275.

Prepare the aircraft and GMU 11/44B for the location survey by completing the following steps:

1. Prepare a detailed Test Sequence List with start and stop times for exercising all aircraft components and devices that may affect the operation of the GMU through movement of ferrous metal parts or electrical inductance. Aircraft components included on the list will vary depending on aircraft model. An example survey sequence is provided in Table 4-8.
2. Position the aircraft in a magnetically quiet area. This step may involve repositioning large metal objects including aircraft and ground support equipment away from the survey area.
3. Position the GMU in the aircraft location to be surveyed following the guidance in Section 4.6.1. Secure using non-ferrous material, if necessary.

CAUTION

Do not permanently install the GMU prior to successfully completing the Magnetic Interference Test. An unsurveyed location may be unsuitable for permanent installation and cause the GMU to function incorrectly.

Before beginning the survey, ensure that all items listed on the test sequence are in their pre-exercise states (e.g., control surfaces neutral, flaps up, lights off). Perform the survey by completing the following steps:

1. Connect the test harness to the GI 275 and GMU as shown in Figure 4-35.
2. Power up the aircraft (master switch, avionics bus, etc.).
3. Power on the GI 275 in Configuration mode (refer to Section 5.1.1).
4. If prompted, set the Unit ID per Section 5.3.1.
5. Navigate to the Interfaces page from the Configuration mode home page.
6. Configure AHRS 1 per Section 5.5.4.
7. Perform the Magnetic Interference Test per the instructions in Section 6.4.4.

If the check fails, the installation is considered unreliable until the source of magnetic interference is identified and fixed. The Magnetometer Interference Test must be repeated until passed. When the Magnetometer Interference Test fails, record the three magnetometer maximum deviation values and their corresponding timestamps. A maximum deviation value greater than 5.0 mGauss in either the X or Y axes, or greater than 8.0 mGauss in the Z axis, indicates a problem that must be resolved. Compare the corresponding timestamps with the prepared test sequence to identify which action produced the failure. Contact Garmin Support for assistance.

Three common reasons for a failed Magnetometer Interference Test are:

- Equipment, wiring, or ferro-magnetic items are installed too close to the magnetometer.
- An electronic device has become grounded through the aircraft structure instead of the proper ground wire in a twisted shielded pair, especially if the ground return path through the aircraft structure passes near the GMU 11/44B.
- The Interference Test was not run for a long enough duration. At least 25 seconds are required for the test to properly complete.

Table 4-8 Example Magnetic Interference Test Sequence List

A/C Reg.:_______________ Survey data file name:________________________________

Elapsed Time (sec)	Elapsed Time (min:sec)	Action
0	0:00	Test begins (calibration period – no activity permitted)
20	0:20	Calibration period ends
30	0:30	Aileron full right
40	0:40	Aileron full left
50	0:50	Aileron level
60	1:00	Rudder full right
70	1:10	Rudder full left
80	1:20	Rudder neutral
90	1:30	Elevators full up
100	1:40	Elevators full down
110	1:50	Elevators neutral
120	2:00	Flaps down
140	2:20	Flaps up
160	2:40	Landing gear up
180	3:00	Landing gear down
190	3:10	Speed brake up
200	3:20	Speed brake down
210	3:30	Navigation lights on
220	3:40	Navigation lights off
230	3:50	Landing lights on
240	4:00	Landing lights off
250	4:10	Taxi lights on
260	4:20	Taxi lights off
270	4:30	Air conditioning on
280	4:40	Air conditioning off
290	4:50	Landing lights and taxi lights on
300	5:00	Landing lights and taxi lights off
310	5:10	Strobes on
320	5:20	Strobes off
330	5:30	Recognition lights on
340	5:40	Recognition lights off
350	5:50	Turn on all wingtip lights simultaneously
360	6:00	Turn off all wingtip lights simultaneously
370	6:10	Beacon on
380	6:20	Beacon off
390	6:30	AP engaged in a pitch and roll made (to engage servo clutches)
400	6:40	AP disengaged
410	6:50	Pitot heat on
420	7:00	Pitot heat off
430	7:10	End of test

4.6.1.2 GMU 11 Installation

The GMU 11 must be mounted horizontally. It can be mounted with connector facing forward, aft, left, or right relative to the aircraft longitudinal axis. The orientation must be configured to match the installation (refer to Section 5.5.4).

Table 4-9 GMU 11 Weight and Size

Item	Weight lb. (kg)	Dimensions in. (mm)		
		Height	Width	Depth
GMU 11 unit only	0.16 (0.0725)	0.93 (2.36)	2.74 (6.96)	3.78 (9.60)
Install rack and connector	0.142 (0.0643)			

Figure 4-36 GMU 11 Dimensions

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	011-04349-01	GMU 11 MAGNETOMETER UNIT
2	4	MS51957-XX [1] [2]	SCREW, MACHINE, PAN HEAD, CROSS-RECESSED CORROSION RESISTANT STEEL, 0.138-32 UNC-2A
3	4	NAS1149CN632R	WASHER
4	4	MS21044C06 [3]	NUT SELF-LOCKING, HEXAGON REGULAR HEIGHT, 250°F, 125 KSI Ftu AND 60 KSI Ftu

Notes:

[1] MS51957 screws can be substituted by any other equivalent aerospace steel screws.

[2] Torque 0.138-32 UNC-2A screws 8.0 ± 1.0 in-lbf.

[3] Nuts can be substituted by any suitable aerospace steel nutplates.

Figure 4-37 GMU 11 Mounting Hardware

4.6.1.2.1 GMU 11 Custom Mounting Shelf

A custom mounting shelf for the GMU 11 can be fabricated from 2024-T3 aluminum per AMS-QQ-A-250/5 or 6061-T6 per AMS-QQ-250/11, minimum 0.032 inches thick. The mounting shelf shall not span greater than 12.0 inches in width or length without direct attachment to the structure. If the mounting platform does span greater than 12.0 inches, add the necessary stringers, doublers, bulkhead flange reinforcement, etc., to provide adequate support. Existing honeycomb core sandwich panels with aluminum face sheets are adequate and do not require additional reinforcement. If corrosion protection methods are not specified by the model-specific aircraft standard practices manual, the shelf must be conversion coated per MIL-DTL-5541 Type II or MIL-DTL-81706 Type II and primed with high-solids chemical and solvent resistant epoxy primer per MIL-PRF-23377, Class N. An example of a custom mounting shelf is shown in Figure 4-38.

NOTE

A minimum of 3.0 inches between the connector end of the GMU 11 and any object must be maintained to ensure clearance for connector and wire harness.

1.50 MAX

Ø0.138 (4 PLACES)

2.00

2

2.28

1

0.50

MS20426AD4

AIRFRAME (REF)

MATERIAL:
2024-T3 PER AMS-QQ-A-250/4 OR 6061-T6
PER AMS-QQ-250/11
THICKNESS: MIN 0.032 IN

NOTE:
1 MINIMUM HEIGHT IS 1.0 INCH
2 MAXIMUM FASTENER SPACING IS 3.5 INCHES

Figure 4-38 Example GMU 11 Mounting Shelf

4.6.1.3 GMU 11 Mounting in Non-Metallic Wingtip

4.6.1.3.1 Overview

In some installations, it is desirable to mount the GMU 11 Magnetometer in the wingtip of a metal aircraft that has non-metallic (e.g., fiberglass) wingtip covers. If this is the case, the following requirements must be met:

- The aircraft must have wingtip navigation lights installed.
- Heavy overbraid must be installed over the wiring from the GMU 11 to where the wiring exits the wingtip.
- The overbraid must be terminated at this wingtip exit point using a #10 terminal lug and stud.
- The GMU 11 must be mounted to a metal rib that does not enclose a fuel bay.
- There must be at least one intermediate rib between the rib that encloses the fuel bay and the rib on which the GMU 11 is installed.
- The GMU 11 mounting bracket must be electrically bonded to the wing using fasteners or rivets.

4.6.1.3.2 Overbraid Fabrication and Installation

The length of overbraid required is approximately equal to the length of the GMU 11 service loop (measured from the wing rib to the collar of connector P111) plus 4 inches.

Refer to Figure 4-39 and Figure 4-40 while completing the following overbraid installation procedure:

> NOTE
> It is recommended that this procedure is completed prior to terminating wires to connector P111. If this procedure is completed before assembly of P111, proceed to step 3.

1. Disconnect P111 from the GMU 11.
2. De-pin wires from P111 to facilitate placing overbraid over wire bundle.
3. Slide the overbraid over wire bundle extending from wing rib.
4. Terminate the end nearest the metal wing rib with the overbraid in accordance with one of the two methods in Section 4.6.1.3.3 using a #8 terminal lug.
5. Secure the overbraid pigtail to the shield block when assembling P111 (refer to Section 4.5).
6. Terminate the end nearest the GMU 11 with the overbraid in accordance with one of the two methods in Section 4.6.1.3.3 using a #10 terminal lug.
7. Secure the overbraid pigtail to a #10 terminal stud. Refer to Section 4.6.1.3.4 for stud location instructions.

4.6.1.3.3 Overbraid Termination Methods

Overbraid must be terminated with an appropriate lug by one of the two following approved methods. Whichever method is used, overbraid pigtail length must not exceed 6 inches. Refer to Figure 4-40.

Method A

1. Carefully separate overbraid wire strands by hand to create an opening in the overbraid for passage of the GMU 11 connector and cables.

   CAUTION

   Do not cut an opening in the overbraid strands. Loose overbraid wire ends can chafe the cable and cause the GMU 11 to malfunction.

2. Trim the overbraid pigtail to a maximum length of 2 inches.
3. Terminate the braid pigtail in an appropriate terminal lug.

Method B

1. Comb out a maximum of 2 inches of overbraid pigtail.
2. Twist the pigtail and terminate it in an appropriate terminal lug.

4.6.1.3.4 Overbraid Terminal Bonding

Electrical bond preparation for all aluminum-to-aluminum interfaces must be done in accordance with SAE ARP1870A Section 5.1 and re-finished in accordance with Section 5.5. The overbraid terminal lug must be electrically bonded to a #10 stud installed in accordance with AC 43.13-1B Section 11-189, as well as the following restrictions:

1. If possible, use an existing tooling hole to install the stud.
2. If no suitable tooling hole exists, use an existing fastener (#10 or larger).
3. If there is no suitable fastener, install a new #10 stud as follows:
   a. When adding a new stud hole to the rib, the center of the hole must be located a minimum of 1 inch away from any existing, non-stiffened rib holes.
   b. The new stud hole must be located such that the terminal lug face, neck, or attaching hardware will not intrude into the flange bend radius of any rib edge or stiffened rib hole. Refer to SAE AS25036 for terminal lug dimensions.
4. Verify overbraid terminal bonding by checking resistance between the overbraid and the rib with the GMU 11 connector disconnected. Resistance should be less

Figure 4-39 GMU 11 Overbraid Installation

!(; 6:9;
!(; 7 ;
!(; 6 ;

!2 $ & ;

6 ;

NOTES

[1] Install #10 grounding hardware in accordance with AC 43.13-1B Section 11-189. If there is an existing hole located in an appropriate area it may be utilized for the grounding hardware. If there is no existing hole usable for this purpose, then drill and de-burr a 0.196-0.206 inch hole.

[2] MS25036-103 terminal lug (or equivalent).

[3] Terminal lug face or connecting hardware must not interfere with bend radius of rib edge or stiffened holes. Stud hole must be located a minimum of 1 inch from unstiffened holes. Refer to SAE AS25036 for lug dimensions.

[4] The exposed cable not having overbraid in the wingtip areas must be 6 inches or less.

Figure 4-40 GMU 11 Overbraid Termination

4.6.1.4 GMU 44B Installation

When installing the GMU 44B, ensure the bend radius of the pig tail harness must be at least 1.5 inches. Additionally, there must be at least 3 inches of space above the GMU 44B for removal.

Table 4-10 GMU 44B Weight and Size

Item	Weight lb. (kg)	Dimensions in. (mm)		
		Height	Diameter	Flange
GMU 44B unit only (P/N 011-04201-00)	0.30 (0.14)	1.49 (37.8)	Ø2.27 (57.6)	Ø3.30 (83.8)
GMU 44B w/install rack and connector	0.39 (0.18)			

Figure 4-41 GMU 44B Dimensions
(shown with rack)

The GMU 44B Universal Mount offers flexibility in installation. Combined with the GMU 44B Install Rack, it allows for convenient heading and level alignments.

A custom bracket can be fabricated in lieu of using the GMU 44B Universal Mount. The bracket must be fabricated in accordance with the requirements applicable to the replacement equipment shelf detailed in Figure 4-43 and be a minimum of 0.032 inches thick. The GMU 44B install rack must be installed regardless of whether the GMU 44B Universal Mount or custom bracket is used.

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Figure 4-42 GMU 44B Installation (Universal Mount Example)

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Figure 4-43 GMU 44B Installation (Fabricated Bracket Example)

GMU 44B installations in a non-conductive (i.e., composite) airframe must maintain a minimum of 0.5 inches of clearance from any conductive structure or component. If the conductive structure in composite airplanes is the only option for the GMU 44 installation, it must be electrically isolated. This can be accomplished using the clickbond fixtures.

Refer to the aircraft model-specific maintenance manual, structural repair manual, or standard practices manual for the selection of materials and processing.

The GMU 44B can be mounted using composite base aluminum threaded studs bonded to the aircraft structure. CB4000 or CB4017 bonded composite base studs manufactured by Click Bond, Inc. (2151 Lockheed Way, Carson City, NV 89706-0713) are examples of parts that can be used to install the GMU 44 bracket in airplanes with composite airframes. Non-conductive bond gap must be 0.020 inches minimum between GMU 44B bracket mounting and aircraft structure. The GMU 44B bracket must not extend past the perimeter of the non-conductive bond gap.

NOTE

Ensure enough epoxy material is used to assure a minimum puck thickness of 0.02 inches.

In some installations, it is desirable to mount the GMU 44B Magnetometer in the wingtip of a metal aircraft that has non-metallic (e.g., fiberglass) wingtip covers. If this is the case, the following requirements must be met:

- The aircraft must have wingtip navigation lights installed.
- Heavy overbraid must be installed over the wiring from the GMU 44B to where the wiring exits the wingtip.
- The overbraid must be terminated at this wingtip exit point using a #10 terminal lug and stud.
- The resistance between the overbraid and that structure must be
- The GMU 44B must be mounted to a metal rib that does not enclose a fuel bay.
- There must be at least one intermediate rib between the rib that encloses the fuel bay and the rib on which the GMU 44B is installed.
- The GMU 44B mounting bracket must be electrically bonded to the wing using fasteners or rivets.

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Figure 4-44 GMU 44 Series Connector Wire Overbraid Installation

4.6.2 GTP 59

An effective location for the GTP 59 OAT Probe is on or near an access panel on the bottom of the wing, or in areas where it would mostly be shaded in straight and level flight.

For composite aircraft, the probe must be mounted on an access panel or inspection cover. A typical installation example is shown in Figure 4-47. If the access panel or inspection cover is conductive, a non-conductive doubler must be used and a minimum 0.5 inches of clearance maintained between the GTP 59 probe/terminal lug and any conductive element of aircraft structure. A typical installation example is shown in Figure 4-48.

For metal and tube-and-fabric aircraft, electrical bond between GTP 59 and nearby aircraft metallic structure must achieve a direct current (DC) resistance less than or
disconnected. It may be necessary to use a bonding strap to electrically bond the probe. Bonding strap must:

1. Have the cross-sectional area greater than 0.016 square inches (approx 20,800 circular mils). QQB575R30T437 7/16” tubular braid (24,120 circular mils) or QQB575F36T781 3/4” flat braid (20,800 circular mils) meet this requirement.
2. Be as short as possible, not to exceed 6 inches. When installed, the strap must not loop back on itself.
3. Use MS20659-130 lug and #10 stud (or larger) attached to local aircraft metallic structure with minimum thickness of 0.032 inches.
4. Use a 5/16 stud size terminal lug connected directly to GTP 59 probe.

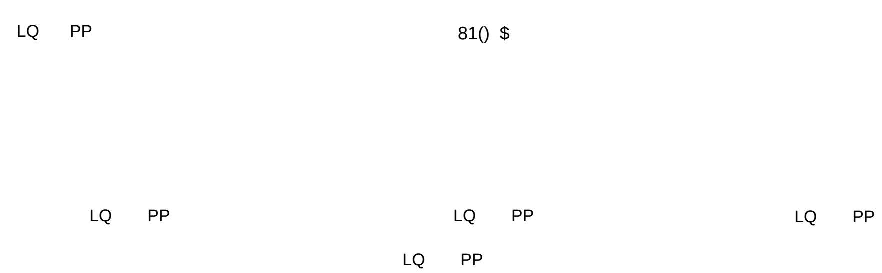

Figure 4-45 GTP 59 OAT Probe Dimensions

For metal and tube-and-fabric aircraft, if the GTP 59 is installed in an access panel in Lightning Zone 2A (refer to Appendix G), the access panel must be at least 0.032-inch thick aluminum; if the access panel is less than 0.032-inch thick aluminum, a doubler that is at least 0.032-inch thick aluminum (per Figure 4-46) must be installed.

For aircraft with metallic airframes, a doubler is required when the GTP 59 probe is installed in the skin. The doubler must be a minimum of 2 inches and at least one gauge thicker than the skin with a minimum doubler thickness of 0.032 inches. The doubler material and installation must be provisioned by the aircraft structural repair manual or standard practices manual, or alternatively:

1. Use the same material as the aircraft skin. If the material used in the construction of the aircraft skin is not known, 2024-T3 aluminum per AMS-QQ-A-250/5 can be used.
2. If corrosion protection methods are not specified by the model-specific aircraft standard practices manual, the doubler material must be chemical conversion coated per MIL-DTL-5541 Type II or MIL-DTL-81706 Type II and primed with a high-solids chemical and solvent resistant epoxy primer per MIL-PRF-23377, Class N.

The GTP 59 probe must not be mounted in a fuel tank area (wet or dry). An air scoop or a ducted inlet are an adequate location for the GTP 59 probe. The probe must be located no closer to the inlet edge than the width of its narrowest opening.

The probe has no icing protection. Temperature measurements may be incorrect if ice accumulates on the probe, which in turn may affect computations of true airspeed, delta-ISA, Engine Percent Power, or other data that depend on the measurement of air temperature.

It is recommended the GTP 59 probe is installed in Lightning Zone 3, although Zone 2A may be an acceptable location for certain aircraft.

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Figure 4-46 GTP 59 Installation in Metallic Aircraft

For composite aircraft, the GTP 59 probe must be installed in Lightning Zone 3 and installed such that it is electrically isolated. For aircraft model-specific information regarding acceptable lightning zones for the GTP 59, refer to Table D-2. Refer to Appendix G for lightning zone details. Regardless of its location, the probe must protrude into the air flow when the aircraft is in flight and be kept away from direct sources of heat (e.g., engine exhaust, direct sunlight, cabin exhaust, etc.) to provide an accurate air temperature measurement.

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Figure 4-47 GTP 59 Installation in Composite Aircraft (Non-Conductive Access Panel)

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Figure 4-48 GTP 59 Installation in Composite Aircraft (Conductive Access Panel)

4.6.3 Backup GPS Antenna

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.

Installation of the backup GPS antenna is optional. When installed, the antenna cannot obstruct or limit the pilot's vision (even though the antenna has a low profile). The optimal antenna position is horizontal or as close to horizontal as practical given the shape of the glareshield.

Fastener holes for non-removable antenna installation, as depicted in Figure 4-50, must not penetrate through the ventilation or defrost channels built into the glareshield, if present. If the glareshield is part of the instrument panel structure, fastener holes may only be drilled if allowed by the aircraft maintenance manual or structural repair manual.

Table 4-11 Backup GPS Antenna Weight and Size

Item	Weight lb. (kg)	Dimensions in. (mm)		
		Height	Width	Depth
Backup GPS Antenna	0.20 (0.092)	0.60 (15.2)	2.88 (73.2)	2.22 (56.4)

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LQ PP

LQ PP

Figure 4-49 Backup GPS Antenna Dimensions

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Figure 4-50 Backup GPS Antenna Installation (Non-Removable Installation Example)

2.0

REF. GLARE SHIELD,
INSTRUMENT PANEL
EXISTING

1
1
2 2
1
2
3 2
1

QTY	ITEM	PART NUMBER	DESCRIPTION
1	3	A-A-55126 3	FASTENER TAPE, SYNTHETIC, ADHESIVE BACKED, A-A-55126 CLASS 1/2, TYPE 1, LOOP 1.0 INCH WIDE
	2		FASTENER TAPE, SYNTHETIC, ADHESIVE BACKED, A-A-55126 CLASS 1/2, TYPE 1, HOOK 1.0 INCH WIDE
1	1	011-04036- 0	BACKUP GPS ANTENNA

NOTES

1. DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.

2 PEEL OFF ADHESIVE PROTECTING FILM AND PRESS THE FASTENER TAPE IN TO BOND. SURFACES MUST BE CLEAN AND FREE FROM OIL OR OTHER CONTAMINANTS. LOOP FASTENER IS BONDED TO GLARE SHIELD AND HOOK FASTENER IS BONDED TO ANTENNA. TAPE FASTENER MUST BE 2.0 INCHES OR LONGER.

3 GPS ANTENNA KIT, GARMIN PART NO. 010-12444-00 INCLUDES DUAL LOCK FASTENER, GARMIN PART NO. 252-00433-00 WHICH CAN BE USED INSTEAD OF A-A-55126 FASTENER TAPE.

Figure 4-51 Backup GPS Antenna Installation (Removable Installation Example)

4.7 Engine Indicating System

The aircraft must retain all engine indications for engine and aircraft operations within the limits defined in the Pilot's Operating Handbook or other approved manual.

Only the GI 275 EIS sensors specified in this section are approved for installation as part of the GI 275 STC. Installation of other sensors requires separate airworthiness approval from the cognizant authority. The following sections contain information applicable to EIS sensor installation:

- List of compatible sensor interfaces – Appendix Section C.19.
- Selection of aircraft specific sensors – Appendix Section C.19.
- Sensor configuration – Section 5.7.2 and Appendix Section C.19.
- Interconnect diagrams of sensor connections to the GEA 24(B)/110 – Appendix B.

NOTE
This STC does not approve any modifications to the engine firewall.

In addition to the data in this manual, the installation of each probe/sensor and wire must be accomplished in accordance with the sensor manufacturer's instructions or as recommended by the engine manufacturer. Wire routing and clamping must follow procedures defined in the aircraft maintenance manual or standard practices manual. Practices defined in Chapter 11, Electrical Systems, of AC 43.13-1B Aircraft Inspection and Repair are acceptable.

Sensors must be connected using hoses and fittings approved as part of the aircraft or engine type certificated design or standard aircraft parts (AN/MS).

Sensors must not be mounted directly to the engine or engine baffle unless otherwise instructed in this manual.

CAUTION
Check hose routing for sharp bends. Check sensors and fittings for leaks during engine run-up; correct any leaks prior to flight.

4.7.1 GEA 24(B)

The GEA 24(B) must be installed in the fuselage cabin environment where it is protected from accidental damage by occupants and rapid thermal change. It can be mounted directly or indirectly (i.e., via a support structure) on the aircraft structure. It can be mounted in any orientation, but vertical with the connectors pointing down is preferred. The unit should be mounted so that the connectors and status LED is viewable and where it can be inspected and serviced.

CAUTION
The GEA 24(B) cannot be mounted in the engine compartment or where it could be exposed to moisture or fluids.

If provisioned by the aircraft structural repair manual or standard practices manual, the GEA 24(B) can be mounted on the engine firewall (opposite surface of the powerplant), fuselage frames, or stringers. The GEA 24(B) wiring must be routed through existing pass-through holes in the firewall or use existing bulkhead connectors using procedures defined in the aircraft maintenance manual or standard practices manual.; otherwise, separate airworthiness approval is required for added holes in the engine firewall.

The GEA 24(B) must not be placed directly below fluid lines (e.g., fuel lines, oil or hydraulic lines). It also must be installed as far away as practical from heat sources.

If installing the GEA 24(B) on the avionics shelf or the instrument panel, ensure the new fastener holes maintain a minimum of 2D edge distance and 3D spacing from existing holes. Additionally, ensure the combined weight of the GEA 24(B) and existing equipment remain within the established weight limit of the shelf or instrument panel.

If an avionics shelf or suitable platform for the GEA 24(B) is not available, a support structure can be fabricated. The support structure must:

- Be electrically bonded to the airframe per Section 4.3.
- Be made from 2024-T3 aluminum per AMS-QQ-A-250/5, minimum 0.040 inches thick.
- Be protected from corrosion by applying conversion coating per MIL-DTL-5541 Type II or MIL-DTL-81706 Type II and primed with epoxy primer per MIL-PRF-23377, Class N.
- Be fabricated in accordance with methods outlined in AC 43.13-2B chapters 1 and 2 and AC 43.13-1B chapter 4.
- Allow a minimum clearance of 3.0 inches between the connector end of the GEA 24(B) and any structures for proper wire harness routing.
- Maintain a maximum load capacity of 3.0 lbs.

An example of the support bracket for a GEA 24(B) is shown in Figure 4-52.

Figure 4-52 Example Support Structure

Table 4-12 GEA 24(B) Weight and Size

Item	Weight lb. (kg)	Dimensions in. (mm)		
		Height	Width	Depth
GEA 24 unit	0.71 (0.322)	1.9 (48.3)	6.5 (165.1)	3.0 (76.2)
GEA 24B unit	0.74 (0.336)			
GEA 24 with connector	1.60 (0.725)			5.0 (127.0)

2X 0.20 5.1

2X 6.40 162.6

NOTE:
1. DIMENSION: INCHES[mm]. METRIC VALUES ARE FOR REFERENCE ONLY.
2. DIMENSIONS ARE NOMINAL AND TOLERANCES ARE NOT IMPLIED UNLESS SPECIFICALLY STATED

2.00 50.8

2X 0.42 10.7

4.98 126.6

2.94 74.7

3.4 86
CENTER OF GRAVITY

0.2 4
CENTER OF GRAVITY

2.00 50.8

1.1 27
CENTER OF GRAVITY

6.80 172.7

0.04 1
TYPICAL THICKNESS
BENEATH FASTENER HEAD

Figure 4-53 GEA 24(B) Dimensions

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	011-02848-01	GEA 24 REMOTE MOUNTED ENGINE INTERFACE UNIT
		011-05991-01	GEA 24B REMOTE MOUNTED ENGINE INTERFACE UNIT
2	4	MS35207-XX [1] [2]	SCREW, MACHINE, PAN HEAD, CROSS-RECESSED, CARBON STEEL, CADMIUM PLATED, #10-32 UNF-2A
3	8	NAS1149F0363P	WASHER
4	4	MS21044N3 [3]	NUT SELF-LOCKING, HEXAGON REGULAR HEIGHT, 250°F, CADMIUM PLATED, STEEL, #10-32

Notes:

[1] Screws can be substituted by any other equivalent aerospace steel screws.

[2] Torque 0.190-32 UNF-2A screws 13.5 ± 1.0 in-lbf.

[3] Nut can be substituted by any suitable aerospace steel self-locking nuts or nutplates.

Figure 4-54 GEA 24(B) Mounting Hardware

4.7.2 GEA 110

The GEA 110 is mounted directly to the airframe in the aircraft fuselage or the engine compartment with or without an optional installation tray. If the aircraft does not have any suitable platform for the GEA 110, the shelf or support structure shown in Figure 4-52 can be used to mount the GEA 110.

Installing the GEA 110 in the fuselage or engine compartment offers the convenience of reduced wire length when connecting engine sensors. The GEA 110 can be mounted at any orientation, but a vertical orientation with connectors pointing down is preferred in locations exposed to moisture or fluids. Sealed connector kit (P/N 011-03527-51) must be used if the GEA 110 can come into contact with fluids or when mounted in the engine compartment.

The GEA 110 must not be placed directly below fluid lines (e.g., fuel, oil, hydraulic). If it is mounted close to the aircraft powerplant, the GEA 110 must not block or alter the flow of air required for engine cooling. It must be installed as far away as practical from heat sources.

If provisioned by the aircraft structural repair manual or standard practices manual, the GEA 110 can be mounted on the engine firewall or on a bulkhead that is supporting the powerplant installation. The GEA 110 wiring must be routed through existing pass-through holes in the firewall or use existing bulkhead connectors using procedures defined in the aircraft maintenance manual or standard practices manual. Separate airworthiness approval is required for added holes in engine firewall.

GEA 110 electrical connector screws must be torqued to 5 ± 0.5 in-lbf.

Table 4-13 GEA 110 Weight and Size

Item	Weight lb. (kg)	Dimensions in. (mm)		
		Height	Width	Depth
GEA 110 unit	1.21 (0.55)	7.75 (196.8) [1]	4.81 (122.2) [1]	1.63 (41.4)
GEA 110 with tray and connector	2.11 (0.96)			2.13 (54.1)

Notes:

[1] Includes tray.

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LQ PP LQ PP

LQ PP

Figure 4-55 GEA 110 Dimensions

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Figure 4-56 GEA 110 Installation (Mounted Directly to Airframe Example)

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ð Z/s d^ Z /E^d >> W Z D/>rZrðóíõò ;E ^DWðóíõò•ZZd/sKdEU&KhZ< EdzWKZUW Z>> d/KEU D/>r^d rðîðìï W Z d/KE &KZ E /E^d >> d/KE K& Z/s D/^^/E> ^U Z E ^U/Z &Z<DdU^dZh dhZ ^X

ñ dKZYh Xíòðìrïî hE rî ^ íZX ñ^> í&X/ñE X

Figure 4-57 GEA 110 Installation (Mounted on a Tray Example)

4.7.3 Carburetor Air Temperature

The sensor location will vary for different carburetors. This STC provides the basis for airworthiness approval only for the temperature sensor installed in the existing port with 0.2500-28UNF-2A thread.

Refer to the engine or carburetor manufacturer data for temperature sensor location, if required.

1

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3 3
1

4
1

5 REF. EXISTING 0.2500-28UNF-2A
THREADED PORT IN CARBURETOR WALL

1	4		CARBURETOR, EXISTING
1	3	MS35769-2	GASKET, METALLIC, ENCASED, ANNULAR, COPPER, Ø1/4 ID×Ø1/2 OD
1	2	MS20995	WIRE, SAFETY OR LOCK
1	1	T3B10-SG	PROBE, CARBURETOR TEMPERATURE
QTY	ITEM	PART NUMBER	DESCRIPTION

NOTES

WHEN INSTALLED, FACE OF THE SENSOR THREADED BOSS IS FLUSH WITH THE INSIDE OF CARBURETOR BARREL. WASHER(S) IF REQUIRED TO SPACE THE SENSOR ACCORDINGLY.

T3B10-SG TEMPERATURE SENSOR HAS 0.2500-28UNF-2A THREAD. INSTALL WITH MEDIUM STRENGTH THREADLOC EXERCISE CAUTION TO PREVENT FUEL CONTAMINATION.

SPLIT FACE OF THE GASKET FACES NON-ROTATING SURFACE.

SAFETY WIRE PROBE IN ACCORDANCE WITH SECTION 7, SAFETYING OF CHAPTER 7, AIRCRAFT HARDWARE, CONT CABLES AND TURNBUCKLES OF AC43-13-1B, AIRCRAFT INSPECTION AND REPAIR.

SENSOR INSTALLATION IN EXISTING CARBURETOR PORT ONLY. ADDITION OF NEW TAPPED HOLES TO CARBURET BARREL NOT ALLOWED.

Figure 4-58 Carburetor Temperature Sensor Installation Example

CAUTION

Fuel and air passages must remain free of contaminants during work near and around the carburetor.

4.7.4 Oil Temperature

CAUTION

Severe engine damage may occur if the incorrect probe length or type is installed. Use the engine manufacturer’s guidance for proper oil temperature probe length and type.

When installing the oil temperature sensor, use the engine manufacturer’s guidance for probe length and location. The unbroken side of the crush washer must face the sensor flange. The sensor is torqued finger tight plus one-half turn and safety wired in accordance with practices defined in Section 7, *Safetying*, of Chapter 7, *Aircraft Hardware, Control Cables and Turnbuckles*, of AC 43.13-1B, *Aircraft Inspection and Repair*.

Figure 4-59 Oil Temperature Sensor Installation Example

4.7.5 Pressure

The manifold pressure, oil pressure, and fuel pressure sensors all have similar installation requirements and processes.

4.7.5.1 Replacing Existing Sensors/Instruments

- Do not remove fittings with small orifices that are installed in existing hoses or plumbing. It may limit fluid loss and fire damage in the event of a hose failure.
- If the sensors/instruments were installed on the cold side of the firewall, reuse the lines and fittings. This STC does not approve the routing of new fuel or oil lines into the cockpit.
- Connect the manifold, oil, and fuel pressure lines to the same pressure port as the original gauge so that the EIS gauges match the values in the POH/AFM.
- Do not remove previously installed devices in the oil and fuel pressure lines that were designed to absorb pressure shock/surge (snubber).
- If a Garmin restrictor is not being installed, reuse the existing manifold tubing if it has a vent hole. If a Garmin restrictor is installed, refer to Section 4.7.5.3. Install the manifold pressure sensor so that it is not at the low point in the line.
- Inspect the condition of all existing tubes, hoses, and fittings that are being reused; replace as necessary.
- Replace the fuel and oil hoses with new hoses if they are used by the sensors installed under this STC and are located in the engine compartment.
- Install oil and fuel pressure sensors in the same compartment as the sensor being replaced. This ensures the same ambient reference pressure is used and the indication is consistent with the previous gauge.
- Verify that the supply voltage and sensor configuration are correct if a different sensor is installed (e.g., if a brass sensor is replaced by a GPT sensor).

4.7.5.2 Installing Pressure Sensors

- Install sensors in accordance with the applicable installation example. Refer to Figure 4-60 (brass), Figure 4-61 (mil-spec), and Figure 4-62 (GPT).Fuel and oil hoses installed in the engine compartment must meet TSO-C53a Type C or D (fire resistant). Only use approved aircraft fittings (e.g., AN/AS-spec or Mil-spec) and hoses (e.g., Aeroquip 303 or Aeroquip AE 466). All hoses must be rated for the pressure and temperature and be compatible with the fuel or oil.
- Do not install sensors directly below fittings or components that may leak flammable fluid.
- Thread sealant must be used for the NPT threads. To reduce the risk of system contamination, a minimal amount of sealant should be applied, leaving at least two threads at the end of the fitting clear of sealant.
- Sensor hoses must be routed as far away from the aircraft exhaust system as practical and no closer than 6 inches.
- Line fittings, routing, alignment, bonding, and support spacing must be installed as defined in the aircraft maintenance manual or Section 8-31 of AC 43.13-1B Aircraft Inspection and Repair.

WARNING

Ensure the pressure sensor installation does not introduce thread sealant or debris into the aircraft system.

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Figure 4-60 Brass Sensor Installation
(Coupling Mount Example)

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8
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1

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	1$6) 3	:$6+(5)/$7 67((/ &$' 3/$7(' ,1&+ 7+,&. ,' 2'
	06	6&5(: 0$&+,1(3$1 +($' &5266 5(&(66(' 81) $,1&+ /21*
	06 %	6/((9(&2035(66,21 78%( ),77,1* ƒ)/$5(' ' 78%(2'
	06 :'*	&/$03 /223 7<3(&86+,21(' ' 78%(
	06 /	187 6(/) /2&.,1* 5('8&(' +(;$*21 5('8&(' +(,*+7 5,1* %$6(81-) %
	$1	187 78%(&283/,1* 6+257 ' 78%(2' 81-) %
		35(6685(75$16'8&(5 9(17(' *$*(
47< ,7(0	3$57 180%(5	'(6&5,37,21

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> DW d, ^ E^KZ K z ;/d D í• dK DKhEdX > DW EKd dK >K < s Ed ,K> ^ /E ^ E^KZ

/& ,K^ KZ dh /E' /^ WZ s/Kh^>z /E^d >> U h^ WWZKs /Z Z &d &/dd/E'^ ; XPXU dK KEE d d, ^ E^KZX

Figure 4-61 Mil-Spec Style Sensor Installation
(Housing Mount Example)

R R FI#) R R1;R='R
R R 8 # R D6))K) R%=8?B)DD1=; RFI#)R+1FF1;- R6!B)' R RFI#)R='R
R R ;!D + ?R M!D/)B R+6!F RDF))6 R%!'R?6!F)' R R1' R R=' R R1;%/RF/1%5R
R R 8D R D%B)M R8!%/1;) R?!;R/)!' R%B=DDRB)%)DD)'R I;+ ! R R1;%/R6=;-R
R R 8D M'- R %6!8? R6==?RFQ?) R%ID/1=;)' R RFI#)R
R 8D M'- R %6!8? R6==?RFQ?) R%ID/1=;)' R RFI#)R
R R 8D 6 R ;IF RD)6+ 6=%51;- RB)'I%)'R/)O!-=; RB)'I%)'R/)1-/F RB1;-R#!D)R I;4+ #R
R R !; 'R %=I?61;- R?1?) R R!;?FR D))R;=F)R R
R R !; R ;IF RFI#)R%=I?61;- RD/=BF R RFI#)R='R I;4+ #R
!; R !'!?F)B R)6#=MR R')- R?1?)RF=RFI#) R R;?FRF=R RI;4+ !R
R R !; R !'!?F)B R)6#=MR R')- R?1?)RF=RFI#) R R;?FRF=R RI;4+ !R
!; R !'!?F)B RDFB!1-/F R?1?)RF=RFI#) R R;?FRF=R RI;4+ !R
R R OO ?B)DDIB)RFB!;D'I%)B R-?FR

H>R@C*L*<GR,7J2(R*<HC"@9*<GR>C2*<HRG0*RE*<E>CRE>R3GR2ER<>GREGC"2.0GRJ@ R

@C*EEJC*RE*<E>CR0"ER R<@GR@2@*RG0C*"(RE**R"((3G2><"7R2<,>C:"G2><R2<RG02ERE*&G2><RC*7"H*(R
H>RE*<E>CR7>&"G2><R"<(R2<EH"77"G2>< R

H>R&><<*&HRE*<E>CRG>R@C*L2>JE7PR2<EH"77*(R0>E*R>CRHJ$3<.RJE*R"(*AJ"G*REH"<("C(R"C9PR<"LP
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"7H*C<"G2L*R:*G0>(RG>RC*G"3<RH0*RE*<E>CR2ER&7"9@3<.RG0*R E*<E>CR$>(P

Figure 4-62 GPT Sensor Installation
(Housing Mount Example)

4.7.5.3 Installing the Optional Garmin Restrictor

The Garmin restrictor (P/N 117-02083-00) will reduce manifold pressure indicator jitter caused by a nearby intake valve.

Install the Garmin restrictor into or inline with the same manifold pressure port (i.e., cylinder head or induction system port) as the manifold pressure gauge that is being replaced in accordance with applicable guidance in Section 4.7.5.1 and Section 4.7.5.2, except remove tubing with a vent hole and other restrictors. Do not connect any other equipment to the restrictor.

4.7.6 Fuel Flow

Refer to Figure 4-63 to determine the fuel flow transducer installation for the specific aircraft fuel system.

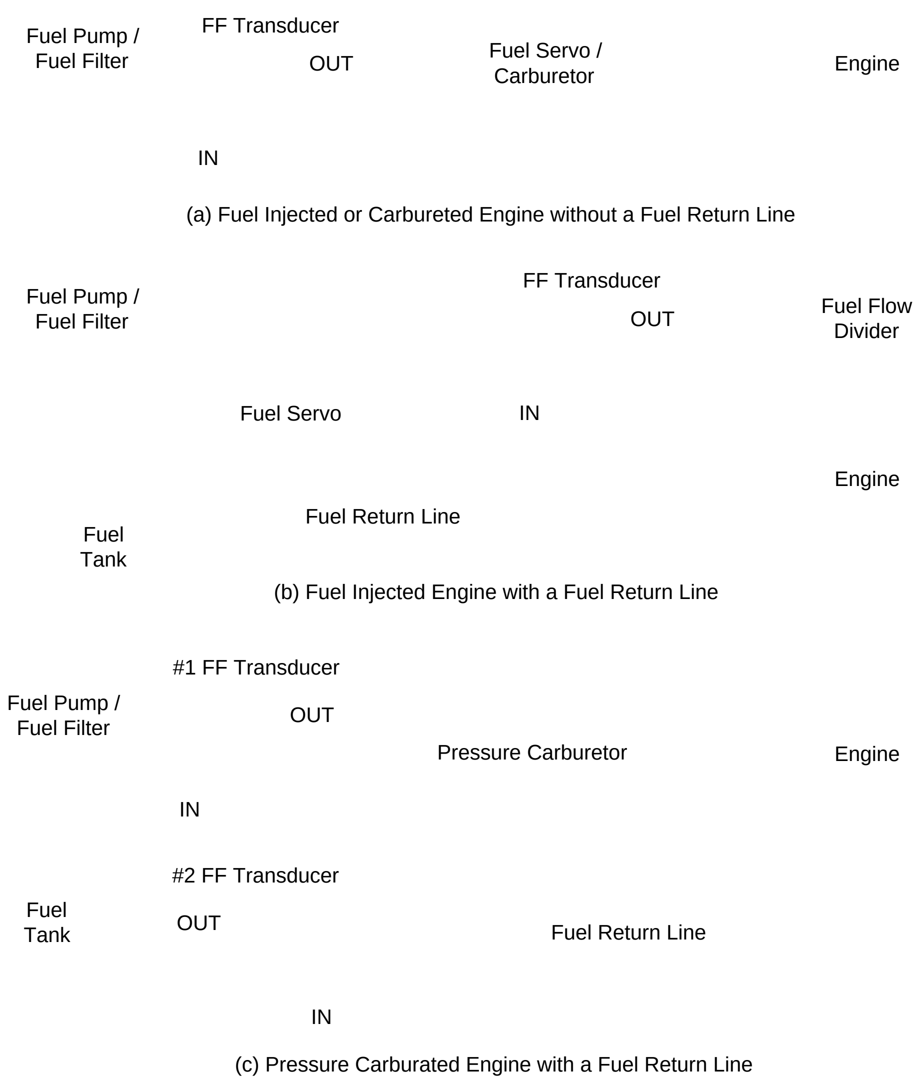

Figure 4-63 Fuel Flow Installation Configurations

NOTE

The fuel flow sensor will introduce a small pressure drop. Refer to Appendix D to determine if a fuel pressure test is required for the aircraft model.

The fuel flow transducer can be mounted by clamping the hoses connected to the transducer or by using a bracket. If mounting with clamps, the unit placement must be no further than 6 inches from the clamp to the nearest face of the transducer.

- The transducer can be installed in the following orientations:
  - %æThe wires pointing up.
  - %æThe cap with five bolts pointing up.
  - %æThe output port pointing up.
  - %æAny combination thereof.
- The flow must follow the direction marked on the ports.
- The hose connected to the IN port should be straight for a minimum of 4 inches.
- The length of hose connected to the OUT port should be level or slope up. It must not slope down more than 4 inches per foot.

If mounting the transducer with a bracket, the bracket must be fabricated. The bracket can be fastened at the top of the engine using the existing engine crankcase fasteners. The amount of available space between the top of the engine and the engine cowling needs to be considered in the design of the bracket. The location of the bracket and position of the fuel flow transducer must result in as few bends in the fuel lines as possible.

The bracket must be fabricated from 300 series austenitic stainless steel (annealed per AMS 5901 or ½ hard per AMS 5517), sheet thickness 19 gauge minimum (0.044 inches), and installed as provisioned by the aircraft structural repair manual or standard practices manual. Methods, techniques, and practices defined in Chapter 4, Metal Structure, Welding and Brazing, of AC 43.13-1B Aircraft Inspection and Repair are acceptable.

Hoses and fittings connected to fuel flow transducer must meet the following:

- The fuel flow transducer must be connected with new hoses and the hoses must not be subject to movement that could loosen the fittings.
- The hoses must have the same internal diameter as the hose being replaced and meet TSO-C53a Type C or D (fire-resistant) specifications.
- Fuel-compatible thread sealant must be used for the NPT threads. To reduce the risk of fuel system contamination, a minimal amount of sealant should be applied, leaving at least two threads at the end of the fitting clear of sealant. Before connecting any hoses, thoroughly clean and flush the transducer and hoses to ensure they are free of any loose material.
- Fitting torque must not exceed 15 ft-lbf or two full turns past finger-tight, whichever occurs first.
- The transducer and fuel hoses must be routed as far away from the aircraft exhaust system as practical. The transducer must be protected with Aeroquip AE102-( ) fire-sleeve if within 6 inches of any exhaust component.
- Line fittings, routing, alignment, bonding, and support spacing must be installed as defined in the aircraft maintenance manual or Section 8-31 of AC 43.13-1B Aircraft Inspection and Repair.

WARNING

Ensure the fuel flow transducer installation does not introduce thread sealant or debris into the fuel system.

CAUTION

Do not blow pressurized air through the flow transducer.

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%2/7 (1*,1(%/2&. (;,67,1*

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Figure 4-64 Example Fuel Flow Transducer Installation

4.7.6.1 Fuel Flow EMI

NOTE
The installation of EI FT-60/90 fuel flow sensors must be checked for EMI in accordance with the procedure defined in Section 6.7.

If the fuel flow gauge fluctuates during the EMI checkout procedure (refer to Section 6.7), an EI FT-60 or EI FT-90 fuel flow sensor must be installed with shield bracket and wire overbraid. Refer to Figure 4-64 for the installation that illustrates how the fuel flow sensor cover plates are shielded by the bracket (7). The overbraid must cover the unshielded portion of the sensor wiring and must be terminated such that the overbraid is connected to the fuel flow sensor and the shielding of the wire. Refer to Figure 4-65 for overbraid installation.

GEA 110

Total Length <6"

P2

~ +12V 1 EXCT 69
FUEL FLOW 1 15
GROUND 74

s

RED
WHT
BLK

EI
FT-60/90

Orientation
optional

Terminate
overbraid to Bracket

Figure 4-65 Fuel Flow Overbraid

4.7.7 RPM

The GI 275 system can use the electrical signal generated by the primary magneto coils or “P-Lead” to display RPM. Both magneto P-Lead signals, left and right, must be connected to the GEA 24(B)/110. The connection is made at the ignition switch if the magneto does not have a ring terminal stud; otherwise, the connection can be made at the magneto or at the ignition switch, whichever minimizes the length of wire required to connect the GEA 24(B)/110. The wire length between the P-Lead connection and the resistors must not exceed 6 inches. Shielded wires must be used as shown in Appendix B.

If the P-Lead on TCM/Bendix magnetos was used, torque the P-Lead nut between 15 and 17 in-lbf. If the P-Lead on Slick magnetos was used, torque P-Lead nut between 13 and 15 in-lbf.

This STC only provides interface approval to magnetic pickup RPM sensors and mechanical tachometer drive sending unit sensors. It does not provide installation approval for either magnetic pickup sensors or tachometer drive sending units. For TCM/Bendix magnetos, the magnetic pickup must be installed in the vent hole furthest from the distributor cap. Refer to Figure 4-66.

Figure 4-66 TCM/Bendix Magneto Vent Hole

For Slick magnetos, the magnetic pickup must be installed in the vent hole furthest from the distributor cap. Refer to Figure 4-67.

Figure 4-67 Slick Magneto Vent Hole

Following the installation of the P-Lead signal wires, verify the continuity of each magneto P-Lead to ground while the ignition key is off. If there is evidence of discontinuity in the magneto P-Lead grounding circuit, it must be corrected before further engine maintenance or checks. Continuity can only be measured if the magneto points are open or the wire is disconnected from the magneto. Use a magneto timing light to ensure the ohmmeter will not measure false continuity through the points or coil windings.

CAUTION

Do not turn the propeller and stay clear of the propeller arc when installing the P-Lead signal wires.

WARNING

The P-Lead sensor wiring must include the resistors as shown in Appendix B. The resistors prevent magneto shut-off in the event of a shorted RPM P-Lead wire. The resistors must be installed as close as practical to the P-lead connection, near either the magneto or the ignition switch.

4.7.8 CHT, EGT, TIT Probes

Garmin stocks certain probes to simplify the EIS sensor ordering process. Sensor part numbers are cross-referenced with Alcor STC SA522SW part numbers. The GI 275 STC does not provide installation approval for CHT, EGT, and TIT probes; however, the data in STC SA522SW is adequate for many installations.

For GI 275 software v3.10 or later, display of Single CHT/EGT is available. Use the same location as factory installed probes. If not previously installed, refer to STC SA522SW. Refer to Section 3.4.3 for additional information.

4.7.9 EIS OAT

The GTP 59 OAT probe can be interfaced directly to a GEA engine adapter unit as an EIS sensor in a standalone EIS configuration. Refer to Section 4.6.2 for installation considerations for the GTP 59 OAT sensor.

4.8 Remote Aircraft Status Relay Installation

Relays are required if a GDL 60 is installed and the Remote Aircraft Status (RAS) feature is desired. The quantity of relays required depends on the aircraft electrical system architectures, as shown in Figure B-30.

RAS 1 relay must be installed adjacent to the battery. For other relays (RAS 2 and on), it is recommended install them at the circuit breaker panel or in vicinity of the circuit breaker panel. Installation in a location which exposes the relays directly to outside environment is not permitted.

When drilling new fastener holes for the relay bracket, avoid drilling new fastener holes on fatigue-critical structures (e.g., wing and empennage structures) or pressurized fuselage (i.e. pressurized bulkheads, frames and skin).

When drilling new fastener holes on an existing platform for the relay bracket, the new holes must maintain 2D edge distance (D is the fastener diameter) and 3D distance from existing holes.

Before installing the relay bracket, apply a chemical conversion coating per aircraft structure repair manual or SAE ARP 1870 Section 5.1. Priming of the relay bracket is optional. If primer is applied, prime the relay bracket per aircraft structural repair manual.

The relay bracket shall be electrically bonded. The electrical bond shall achieve direct current (DC) resistance of 2.5 milliohms or less between bracket faying surface and aircraft structure. Electrical bonding is achieved through the fasteners as follows:

- If using screw/nuts/washers, use cadmium plated steel hardware and ensure the area underneath each hardware is burnished a minimum of 1/4 inch greater than the hardware diameter. The surface preparation shall be per SAE ARP 1870, Section 5.
- If using rivets, a minimum of three rivets shall be installed per aircraft structural repair manual.

Relays/sockets approved for installation are listed in Section 3.1.2.

4.8.1 Relay Installation Examples

Example 10A relay brackets are shown in Figure 4-68. Example 5A relay brackets are shown in Figure 4-69. The bracket can be either flat or L-angle. The bracket can be fabricated from 6061-T6 or 2024-T3 aluminum, min 0.032 inch thick. Fabrication methods, techniques, and practices provided by aircraft structural repair manual or standard practices defined in advisory circular AC43.13-1B, Aircraft Inspection and Repair, are acceptable.

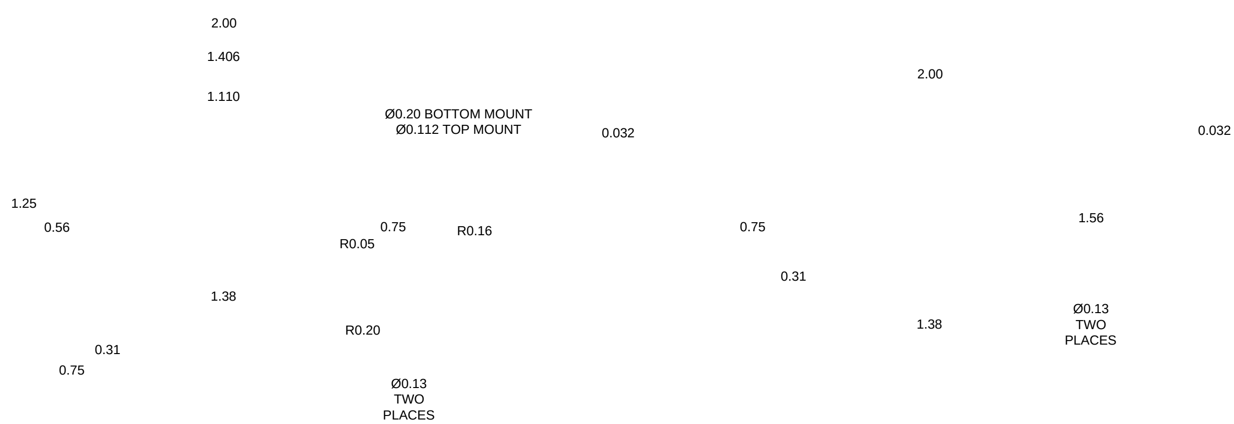


Figure 4-68 10A Relay Bracket Examples

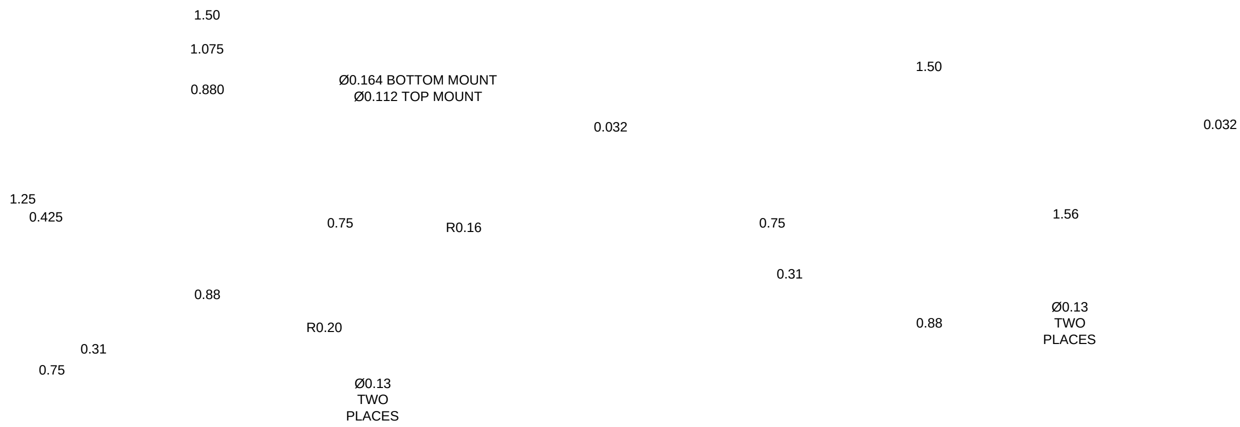


Figure 4-69 5A Relay Bracket Examples

If more than one relay is required, the relay bracket can be extended to house multiple relays. Examples of multiple relay brackets are shown in Figure 4-70.

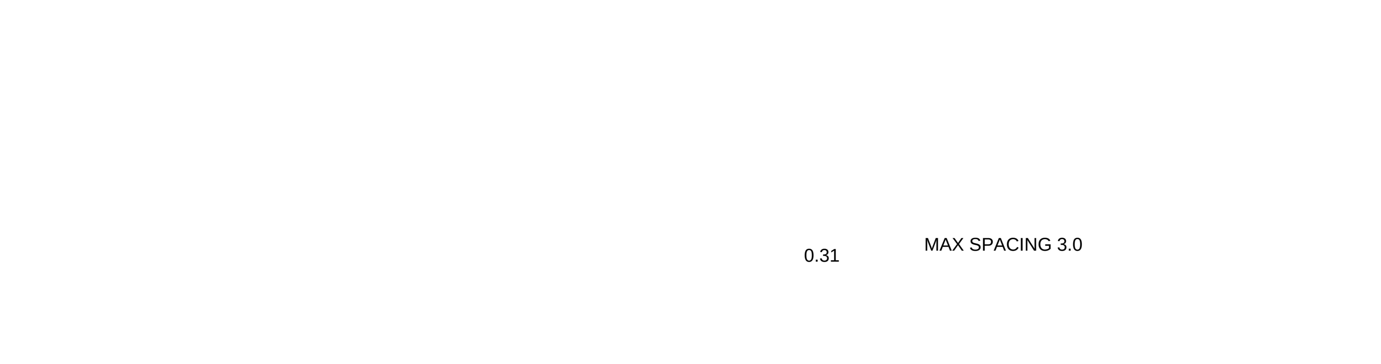


Figure 4-70 Multiple Relay Bracket Examples

4.9 TVS and Fuse Assembly

A TVS and fuse assembly is required for Class II & III composite aircraft. Refer to Section 2.1.14 for additional limitations. Refer to Section 3.1.2 for a list of parts required for the installation.

> **CAUTION**
> Ensure proper orientation of the TVS during installation. Ensure both sides of the pigtail containing the fuse/TVS are secured in the harness such that no tension is placed on the pigtail wires. Refer to Figure 4-71.

To install the TVS and fuse:

1. Solder the TVS onto the exposed wire from the fuse holder.
2. Solder the other end of the TVS to the other wire (with the ring terminal attached). The total wire length of the environmental splice shall not exceed 10 inches.
3. Install heat shrink over the exposed TVS and solder joints.
4. Attach the ring terminal to the new lead, as shown in Figure 4-71.
5. Install the fuse into the fuse holder and close the holder by screwing the two halves together.
6. Re-attach the ring terminal to the backshell of the connector.

> E'd, dK
Es/ZKED Ed >
^ W > / í ì — D y

í

^K> Z ds^ dK t/Z E Ks Z
yWK^ > ^ t/d, ^,Z/E< dh

&h^ ,K> Z E &h^

í ^dZ/W KE ds^ Dh^d dKt Z WKt Z h^

Figure 4-71 TVS and Fuse Installation

4.10 Weight and Balance

The aircraft weight and balance record must be updated after the GI 275 system is installed by following the procedures typically detailed in Section 8 of the aircraft maintenance manual. Practices defined in Chapter 10, Section 2, Weighing Procedures of AC 43.13-1B Aircraft Inspection and Repair are acceptable.

The aircraft Equipment List must be updated to include items that are added, removed, or relocated. The updated list must be dated, include the name (and certificate number) of the person that updated the list, and be retained with aircraft records. A sample calculation is shown in Table 4-14 below.

Table 4-14 Weight and Balance Calculation Example

Aircraft Weight and Balance Calculated: 11/06/2019	Empty Weight [lb]	CG [in]	Moment [lb-in]	Useful Load [lb]
	2306.70	138.83	320233.96	1093.30
ITEMS REMOVED	Weight [lb]	Arm [in]	Moment [lb-in]	
VSI	0.85	116.90	99.37	
CDI	1.30	116.60	151.58	
Clock and OAT	0.30	117.40	35.22	
Sandel HSI	3.60	114.10	410.76	
HSI gyro remote	4.90	181.00	886.90	
Magnetometer (Old)	0.40	151.00	60.40	
Attitude Indicator	2.20	114.50	251.90	
Altimeter	1.10	116.10	127.71	
Total removed	14.65		2023.84	
ITEMS ADDED	Weight [lb]	Arm [in]	Moment [lb-in]	
GI 275 ADAHRS (Primary ADI)	2.88	115.80	333.50	
GI 275 ADAHRS (HSI/Standby ADI)	2.88	113.10	325.73	
GMU 44B, install rack, and universal mount	0.50	146.00	73.00	
Total added	6.26		732.23	
Change	-8.39		-1291.61	
Updated Aircraft Weight and Balance Calculated: 11/06/2019	Empty Weight [lb]	CG [in]	Moment [lb-in]	Useful Load [lb]
	2298.31	138.73	318942.35	1084.91

5 SYSTEM CONFIGURATION

5.1 System Configuration Preparation

Once 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. Follow the configuration flow shown in Figure 5-1. 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. On each GI 275, touch Interfaces → GI 275 and select each GI 275 in the system (this should be the same on each unit).
3. Verify the GI 275 software level matches GI 275 Part 23 AML STC Equipment List (P/N 005-01208-42) by touching System Info → Device Info. If necessary, update the software in accordance with Section 5.2.
4. Configure the GI 275 for the particular installation, as specified in Section 5.2 through Section 5.9. This includes:
    a. Setting the airframe-specific parameters.
    b. Configuring interfaces to external systems.
5. Perform necessary system calibrations, as specified in Section 5.8.
6. Load required and optional databases, as specified in Section 5.15.
7. Perform the ground checks applicable to the installation, beginning in Section 6.2.
8. Verify all placards have been relocated, as specified in Section 6.6.
9. Perform the flight checks specified in Section 6.8.
10. Update the aircraft documentation, as specified in Section 6.9.

Figure 5-1 System Configuration Flow

5.1.1 Entering Configuration Mode

The Configuration mode of the GI 275 can be accessed by pressing and holding down the inner knob, located at the bottom-left of the unit, upon initial power-up. The knob must be held until the Garmin logo with “Configuration Mode” below it appears. For installations with multiple GI 275s, all other units can be easily powered on in Configuration mode by touching Restart Options !’ Restart All to Config.

Figure 5-2 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 Back 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 5.3.1.

5.2 Software / Configuration

The SW/Config page is used to update the software for the GI 275 and any LRUs directly interfaced to the GI 275. The approved software version and part numbers can be found in the most recent revision of GI 275 Part 23 AML STC Equipment List (P/N 005-01208-42). 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 (whether via USB dongle or GSB 15), ensure that the USB icon appears on the left side of the display before proceeding. If the icon doesn't appear after 1 minute, remove the drive, re-insert it, and wait for the icon to appear.

NOTE
Backloading software from v3.20 will result in loss of magnetometer calibration and pitch/roll offset calibration. Refer to Section 5.8.1.2 for pitch/roll offset calibration and Section 6.4.1 for magnetometer calibration.

5.2.1 Loader Card

Software updates for the GI 275 and external LRUs can be accomplished via USB.

NOTE
If loading software to a unit with current software v2.60 or earlier, refer to the procedure in Section 5.2.1.2.

NOTE
The following procedures are also applicable to loader cards for installing airspeed calibration curves and static source error correction curves. Refer to Appendix D for model-specific airspeed calibration curves/static source error correction curves requirements. Refer to Section 5.5.3 for instructions on enabling error correction.

Figure 5-3 Software Update

5.2.1.1 Loading Software to Units with Current Software v3.01 and Later

1. Follow procedure in Section 5.2.2.4 to export configuration settings.
2. Create a Software Loader Card using software and instructions available on the Garmin Dealer Resource Center.
3. Power on all GI 275s and all applicable LRUs in the system in Configuration mode.
4. Insert the USB drive into the USB dongle or GSB 15 (if installed).
5. Touch SW/Config !’ Loader Card
6. Select the applicable updates or touch Select All.
7. Touch Update Packages ( ) !’ Begin Update.
8. Once the installation is complete, touch Restart now.

5.2.1.2 Loading Software v3.01 and Later to Units with Current Software v2.60 and Earlier

1. Follow procedure in Section 5.2.2.4 to export configuration settings.
2. Create a Software Loader Card using software and instructions available on the Garmin Dealer Resource Center.
3. Power on all GI 275s and all applicable LRUs in the system in Configuration mode.
4. Insert the USB drive into the USB dongle or GSB 15 (if installed).
5. Touch SW/Config !’ Loader Card.
6. Touch Info next to “GI 275 SYS”.
7. Touch GRMN Key X.XX and System X.XX to select them and then touch Back.
8. Touch Update Packages (2) !’ Begin Update.
9. Once the installation is complete, touch Restart now.
10. Touch SW/Config !’ Loader Card.
11. Select the applicable updates or touch Select All.
12. Touch Update Packages ( ) !’ Begin Update.
13. Once the installation is complete, touch Restart now.

5.2.2 Config Options

5.2.2.1 GFC 500 Manifest

A GFC 500 Software Manifest diagnostic is provided on the GI 275 when interfaced with the GFC 500 system. This allows synchronization of GFC 500 LRU software versions upon a mismatch between the systems. Ensure that the GI 275 and GFC 500 software manifest versions are synchronized using the Sync button after uploading software to all LRUs. Refer to the GFC 500 STC for approval and interface information.

5.2.2.2 Summary

A configuration summary can be saved to a USB drive by touching SW/Config !’ Config Options !’ Summary !’ Save Summary. The file will detail configuration settings for all GI 275s in the system and can be viewed on a computer web browser.

> NOTE
>
> Files will be saved to a “aircraft_cfg” folder on the USB drive.

A configuration summary can be viewed by touching SW/Config !’ Config Options !’ Summary !’ View Summary and then selecting the desired option.

5.2.2.3 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.

> NOTE
>
> Unit ID must be set before importing configuration. Refer to Section 5.3.1.

2. Insert the USB drive containing the configuration files into the USB dongle or GSB 15 (if installed).
3. Touch SW/Config !’ Config !’ Import Configuration.
4. Touch Select Files and select the configuration file to be imported.
5. Touch Select Configuration, select the applicable configurations, and then touch Back.
6. Touch Import Config ( ) and then touch Start.

5.2.2.4 Export Config

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. Touch SW/Config !’ Config !’ Export Configuration.
4. Touch Select Name, enter a name for the saved file, and touch Enter.
5. Touch Export Config.

> NOTE
>
> Files will be saved to a “aircraft_cfg” folder on the USB drive.

5.2.2.5 Default Config

The GI 275 can internally store a default configuration. This allows for easy reversion to a default configuration state if settings are accidentally altered or if a different configuration needs to be used temporarily.

Save Default Config

Sets the current unit configuration as the default config state and stores internally. Only one configuration can be stored at a time. Selecting this while a default config exists will give the option to overwrite.

Load Default Config

Changes the unit configuration to match the internally stored default config state. A restart is required after loading a default config.

Export Default Config

Exports the default configuration file to a USB drive. Exporting a default configuration file to a USB drive will overwrite any other exported default configurations on the drive (but not configurations exported per Section 5.2.2.4).

5.3 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, Airframe Info, and Unit Configuration.

5.3.1 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. Unit IDs must be unique for each unit in the system.

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 5.3.2). Each Unit ID must be unique and set using the following procedure:

NOTE

When the GI 275 is powered on in Configuration mode for the first time (or after configuration settings are cleared), it will automatically prompt the user to assign a Unit ID. This cannot be skipped.

Alternatively, 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 per Section 5.1.1.
3. Touch Unit Type → Unit ID → LRU and select a unique Unit ID between 1 and 6.
4. Touch 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 on the left side 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 5.3.1 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.

5.3.2 System ID Source

The System ID Source page is used to set a GI 275 unit as the Master, which will generate the System ID for the whole GI 275 system (generally, GI 1 is designated the Master). To set as the Master, touch the Master button and select Yes to confirm the change. The System ID will display below the button.

> CAUTION
>
> Changing the designated Master display will change the GI 275 System ID. This will cause any previously unlocked features and installed databases to become unavailable. New feature unlocks will be required for the new System ID. Databases will also have to be re-installed; a new subscription may be required for some databases.

> NOTE
>
> Feature unlocks and databases will not become unavailable until the system is rebooted after the designation is changed.

5.3.3 Airframe Info

The Airframe Info page is used to configure the GI 275 for a Fixed Wing or Rotorcraft installation in a single or multi engine aircraft. Set the Category to Fixed Wing per this STC. Configure the Engine Config as either Single Engine or Multi Engine.

5.3.4 Unit Configuration

Instrument Type

> NOTE
>
> Verify installation specifications for the instrument type are followed as described in Section 4.4.

After the Unit ID has been selected, configure the instrument type. Refer to Section 5.6.3 for available page configurations for each indicator/display type. To set the instrument type, touch Unit Type !’ Unit Configuration !’ Instrument Type and then select the desired indicator/display. The options are:

- ADI
- MFD
- EIS
- HSI

Standby

If the Instrument Type is set to ADI or HSI, then the Standby selection will be available. When the GI 275 is configured as a standby, additional pages may be configured (refer to Section 5.6.3). The GI 275 can be configured as a Standby ADI in one of three ways:

- Standby ADI Only: MFD pages are not desired or not approved per Section 3.2.2.
  a. Touch Instrument Type and select ADI and then touch Standby to enable it (i.e., illuminated green).
  b. From the Configuration mode home page, touch Setup ➔ Page Config ➔ Clear All Pages ➔ Enter.
- MFD/Standby ADI: MFD pages are desired and approved per Section 3.2.2.
  a. Touch Instrument Type and select ADI and then touch Standby to enable it (i.e., illuminated green).
- HSI/Standby ADI: HSI pages are desired and approved per Section 3.2.2.
  a. Touch Instrument Type and select HSI and then touch Standby to enable it (i.e., illuminated green).

Unit Location

Select the location of the display installation. Selections are:

- Pilot
- Co-Pilot

NOTE

When configured for Co-Pilot unit selection, the output of Baro correction is suppressed.

5.4 Feature Enable

The GI 275 system capabilities can be further enhanced by feature enablement options. Feature enablement options not mentioned in this section may not be enabled.

5.4.1 Synthetic Vision Terrain

The system allows Synthetic Vision (SVT) to be enabled on any unit that displays attitude.

Follow these procedures to enable the SVT feature:

1. Obtain the System ID (alphanumeric).
   - In Configuration mode, Touch Unit Type !’ System ID Source.
   - In Normal mode, open the menu and touch System !’ Info.
2. Log in to the associated flyGarmin.com account.
3. Select the GI 275 SVT feature and enter the System ID to download the enablement to a USB drive.
4. Power on all GI 275s in Configuration mode.
5. Insert the USB drive into the USB pigtail or GSB 15 (if installed).

   NOTE

   When connecting a USB drive to the GI 275 (whether via USB dongle or GSB 15), ensure that the USB icon appears on the left side of the display before proceeding. If the icon doesn’t appear after 1 minute, remove the drive, re-insert it, and wait for the icon to appear.

6. On the display connected to the USB drive, touch Feature Enable.
7. Touch SVT to enable the feature (it will be illuminated green).
8. A system message will appear alerting the user that SVT has been enabled.
9. Restart all GI 275s for the enablement to take effect.

5.4.2 Standby Flight Instrument

The GI 275 Standby Flight Instrument feature enablement allows for the GI 275 to provide additional standby interface features with the G500/G600 TXi system. This setting provides additional ADC STBY and AHRS STBY sensor configurations in the Interfaces menu that must be configured.

When interfaced to a G500/G600 TXi system, do not enable Standby Flight Instrument unless model-specific data is provided in Appendix H.

When a GI 275 is installed as a standby indicator for the G500/G600 (GDU 620) system with an interfaced GFC 600 autopilot, enable Standby Flight Instrument.

5.5 Interfaces

This section specifies the configuration and setup of the GI 275 in order to interface to all required and optional equipment allowed by this AML STC. Each display must be individually configured to match all applicable interconnects (refer to Appendix B) that define each display as either an ADI, HSI, MFD, EIS, 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 as well as previously installed equipment that is approved to interface to the GI 275 under this STC. Refer to Appendix C for equipment compatibility.

The configuration for a particular display will vary based on the following:

- GI 275 unit variant (i.e., Base, ADAHRS, or ADAHRS+AP).
- 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 interfaced equipment.

Depending on the interface that is selected, further actions may be required by selecting the setting, as shown in Figure 5-4, and configuring them appropriately. Some selections may be grayed out until a preceding selection has been configured.

Figure 5-4 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, then that port will be grayed out and not available for selection.

NOTE
Interfaces not shown in the following tables are not approved per this STC.

5.5.1 GI 275s Installed

The *GI 275s Installed* page is used to identify which GI 275s are installed as part of the system, allowing data to be crossfilled between units via HSDB.

Verify the following for each installed GI 275:

- The Unit ID must be set and must be unique, as described in Section 5.3.1.
- The the current assigned Unit ID for each display is denoted on the *GI 275s Installed* page by a grayed out selection.

Perform the following steps to configure the GI 275 system:

1. Power on all GI 275s in the system in Configuration mode.
2. Touch **Interfaces → GI 275s Installed**
3. Select the Unit ID for each GI 275 in the system.
4. Repeat step 2 and 3 on each GI 275 unit.
5. Once each unit's *GI 275s Installed* page has been configured, touch **System Info → Devices Online** and ensure each Unit ID in the system shows a green square.

5.5.2 Wireless

The *Wireless* page allows you to connect the GI 275 unit to a Bluetooth connection or to generate a Wi-Fi signal. Refer to Section 5.14 of *GI 275 Pilot's Guide* for more information on wireless functionality.

The Wi-Fi functionality should only be enabled on one Garmin LRU at a time.

5.5.3 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 5-1.

Table 5-1 ADC Interfaces and Configuration Settings

ADC	Interface	Ports/Config - Settings	Port Numbers	Notes
Integrated ADAHRS	Internal			[1]
Air Data from another GI 275	Other GI 275			[1]
GSU 75	GSU 75	A429 IN	1 Thru 4	[1] [4]
GDC 72	GDC 72	A429 IN	1 Thru 4	[1]
GDC 74	GDC 74	A429 IN	1 Thru 4	[1] [4]
G500/G600 TXi	GX00 TXi			[1] [2]
GSU 25 (G3X Touch)	GSU 25	RS232 RX	1 Thru 3	[1] [3]

Notes:

[1] External ADCs must be configured before any GI 275 internal ADAHRS. Refer to Table 5-2 for a guidance on the order that ADC sensors should be configured.

[2] 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. Ensure that PFD Sync is set to HSDB if bug syncing with the TXi is desired. Refer to Section 5.5.17.

[3] The GSU 25 port must match for ADC and AHRS interface settings. Refer to the G3X Touch STC SA01899WI for further interface details, including wiring diagrams.

[4] If the GI 275 is a Standby ADI in a G500/G600 (GDU 620) system with a GFC 600 autopilot interface, Standby Flight Instrument should be enabled (refer to Section 5.4.2) and the ADC STBY interface should be configured as Internal.

Table 5-2 ADC Configuration Priority

Config Order	Source	Interface	Notes
1	1st external sensor	GSU 75 GDC 72 GDC 74 GX00 TXi GSU 25	
2	2nd external sensor	GSU 75 GDC 72 GDC 74 GX00 TXi GSU 25	
3	Internal ADAHRS from GI 275 Primary ADI	Internal [1] Other GI 275	Configure as Internal if configuring that unit's internal sensor. Otherwise, configure as Other GI 275.
4	Internal ADAHRS from GI 275 Standby ADI	Internal [1] Other GI 275	Configure as Internal if configuring that unit's internal sensor. Otherwise, configure as Other GI 275.
5	Internal ADAHRS from GI 275 HSI	Internal [1] Other GI 275	Configure as Internal if configuring that unit's internal sensor. Otherwise, configure as Other GI 275.

Notes:

[1] If an internal sensor is configured, it must be set as that unit's default sensor. Refer to Section 5.6.4 for instructions and example configurations.

Default Sensor

Configure default sensors per the guidance in Section 5.6.4.

5.5.3.1 Advanced Configuration Menu

Error Correction

The Error correction menu allows for configuring corrections on Pressure Altitude or IAS. Pressure Altitude and IAS must both be set to Uncorrected, unless model-specific data is provided in Appendix D.

For example, Cessna 190/195 aircraft replacing a Kollsman airspeed indicator must use the Cessna 190/195 airspeed correction loader card and have IAS error correction set to Corrected. Refer to Section 5.2.1 and Appendix D for model-specific limitations.

Filtering Time Constants

Verify that the Filtering Time Constants settings are configured to the default settings (shown below):

- Airspeed Lo: 0.152 SEC
- Airspeed Hi: 0.152 SEC
- Airspeed Transition to Lo: 999 KT
- Airspeed Transition to Hi: 999 KT
- Vertical Speed: 1.35 SEC

External Pressure Input

Configuration of the ADC to use external pressure inputs is not approved per this STC.

Allow Estimated OAT

Ensure Allow Estimated OAT is enabled.

5.5.4 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 5-3.

Table 5-3 AHRS Interfaces and Configuration Settings

AHRS	Interface	Magnetic HDG	Ports/Config - Settings	Port Numbers	Notes
Integrated ADAHRS	Internal	GMU 11	RS-232	1 or 2	[1] [2] [8]
		GMU 44B	RS-232 TX	1 or 2	[1] [8]
			RS-485 RX	1	
		A429 Heading	A429 IN	1 Thru 4 [6]	[1] [4]
		Primary			[1] [5]
AHRS from other GI 275	Other GI 275				[1]
GSU 75	GSU 75		A429 IN	1 Thru 4	[1] [9]
GRS 77	GRS 77		A429 IN	1 Thru 4	[1] [9]
GRS 79	GRS 79		A429 IN	1 Thru 4	[1]
G500/G600 TXi	GX00 TXi				[1] [3]
GSU 25 (G3X Touch)	GSU 25		RS232 RX	1 Thru 3	[1] [7]

Notes:

[1] External AHRS must be configured before any GI 275 internal ADAHRS. Refer to Table 5-2 for a guidance on the order that ADC sensors should be configured.

[2] The Orientation setting for the GMU 11 must be configured. Select the direction that the GMU 11's connector is facing when installed (e.g., if the GMU 11 is mounted with the connectors facing to the right, select Right Wing).

[3] The number of GDUs configured in the TXi system must be selected on the GI 275 when GX00 TXi is selected as a configured AHRS. Ensure that PFD Sync is set to HSDB if bug syncing with the TXi is desired. Refer to Section 5.5.17.

[4] A429 Heading allows the GI 275 internal AHRS configuration to utilize an A429 input from an interfaced EFIS for magnetometer data. ARINC label 320 is required. When the GI 275 is installed as the primary heading source and not receiving heading from a primary AHRS source, a GMU is required.

[5] Primary heading allows a GI 275 internal AHRS configuration to utilize magnetometer data from the sourced configured as AHRS 1.

[6] Configure the A429 IN Speed to Low for GAD 29 interface.

[7] The GSU 25 port must match for ADC and AHRS interface settings. Refer to the G3X Touch STC SA01899WI for further interface details, including wiring diagrams.

[8] If the GI 275 internal AHRS is configured as AHRS 2 in a G500/G600 TXi system and the GI 275 is configured as a PFD on the copilot side, then a direct GMU interface is required.

[9] If the GI 275 is a Standby ADI in a G500/G600 (GDU 620) system with a GFC 600 autopilot interface, Standby Flight Instrument should be enabled (refer to Section 5.4.2) and the AHRS STBY interface should be configured as Internal.

Table 5-4 AHRS Configuration Priority

Config Order	Source	Interface	Notes
1	1st external sensor	GSU 75 GRS 77 GRS 79 GX00 TXi GSU 25	
2	2nd external sensor	GSU 75 GRS 77 GRS 79 GX00 TXi GSU 25	
3	Internal ADAHRS from GI 275 Primary ADI	Internal [1] Other GI 275	Configure as Internal if configuring that unit's internal sensor. Otherwise, configure as Other GI 275.
4	Internal ADAHRS from GI 275 Standby ADI	Internal [1] Other GI 275	Configure as Internal if configuring that unit's internal sensor. Otherwise, configure as Other GI 275.
5	Internal ADAHRS from GI 275 HSI	Internal [1] Other GI 275	Configure as Internal if configuring that unit's internal sensor. Otherwise, configure as Other GI 275.

Notes:

[1] If an internal sensor is configured, it must be set as that unit's default sensor. Refer to Section 5.6.4 for instructions and example configurations.

Inertial-Aided Vertical Speed

Inertial-aided Vertical Speed is an optional configuration setting that provides additional responsiveness for the display of Vertical speed using the GI 275 attitude data to aid the vertical speed indication. Touch to enable. Disabled by default.

5.5.5 GPS

Configure each GI 275 for a GPS source for GPS 1 and GPS 2 (if equipped) per the settings in Table 5-5.

Table 5-5 GPS Interfaces and Configuration Settings

GPS	Interface	Ports/Config - Settings			Notes
		Port	Number	Speed	
GTN 625/635/650 GTN 625Xi/635Xi/650Xi	GTN 6XX				[1]
GTN 725/750 GTN 725Xi/750Xi	GTN 7XX				[1]
GPS 400W / GNC 420W / GNS 430W /	GNS 4XXW	A429 IN	1 Thru 4	High	
		A429 OUT	1 Thru 2	Low	
		RS-232 RX	1 Thru 2		
GPS 500W / GNS 530W	GNS 5XXW	A429 IN	1 Thru 4	High	
		A429 OUT	1 Thru 2	Low	
		RS-232 RX	1 Thru 2		
GNS 480	GNS 480	A429 IN	1 Thru 4	High	
		A429 OUT	1 Thru 2	Low	
		RS-232 RX	1 Thru 2		
GPS 175	GPS 175	RS-232 RX	1 Thru 2		
GNX 375	GNX 375				
GTX 3X5	GTX 3X5				
Other GI 275	Other GI 275				
GNC 355	GNC 355				
Generic MapMX	MAPMX	RS-232 RX	1 Thru 2		[2]

Notes:

[1] Disabling the Transmit Selected Course to the GTN configuration setting will prevent the course selected on the GI 275 from crossfilling to the GTN 6XX/7XX or GTN Xi. Disable this setting when the GI 275 has Course Selection enabled but is not the primary HSI/CDI interfaced to the GTN. Enable this setting if the GI 275 is installed as the primary HSI/CDI interface or is installed in a system with an interfaced GI 275, G500/G600 TXi, or G3X as the PFD.

[2] The Generic MAPMX GPS format may be used for Garmin GNS 4XXW/5XXW and GNS 480 interfaces if there are not enough data ports. This interface only requires RS-232 and provides the GI 275 with GPS position for moving map and AHRS aiding.

TAWS Installations

If a single TAWS-equipped GTN 6XX/7XX, GTN Xi, 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.

5.5.6 VFR GPS

The VFR GPS antenna must be installed to enable the VFR GPS per this STC. Set VFR GPS to Internal if the antenna is directly connected to the unit. Otherwise, set to Other GI 275

Enable Allow for SVT to allow display of SVT on the ADI when using the VFR GPS, when applicable.

The built-in VFR GPS is only approved for VFR navigation.

5.5.7 NAV

Configure each GI 275 for a NAV source for NAV 1 or NAV 2 (if equipped) per the settings in Table 5-6.

Table 5-6 NAV Interfaces and Configuration Settings

NAV	Interface	Ports/Config - Settings				Notes
		Port		Number	Speed	
Garmin GTN 650 Garmin GTN 650Xi	GTN 650					[1] [2]
Garmin GTN 750 Garmin GTN 750Xi	GTN 750					[1] [2]
Garmin GNS 430W/530W	GNS 430/530	A429 IN		1 Thru 4	Low	[1]
Garmin GNS 480	GNS 480	A429 IN		1 Thru 4	Low	[1]
Garmin GNC 255	GNC 255	RS-232 RX/TX		1 Thru 2		[1]
Garmin GNC 215	GNC 215 GNS 430/530 GNC 255	 A429IN RS-232 RX/TX		 1 Thru 4 1 Thru 2	 Low	[5]
Garmin SL 30	SL 30	RS-232 RX/TX		1 Thru 2		[1]
Collins VIR-32/33 Honeywell KN-53/KX-155/ KX-155A/KX-165/KX-165A	Composite	ILS Energize	Discrete In Lo	1 Thru 4		
NAV from other GI 275	Other GI 275					
G500/G600 TXi	GX00 TXi					
Third-Party NAV	A429 ILS Only	A429 IN		1 Thru 4	[4]	[3]

Notes:

[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 crossfilling to the GTN 6XX/7XX or GTN Xi. Disable this setting when the GI 275 has Course Selection enabled but is not the primary HSI/CDI interfaced to the GTN. Enable this setting if the GI 275 is installed as the primary HSI/CDI interface or is installed in a system with an interfaced GI 275, G500/G600 TXi, or G3X as the PFD.

[3] A429 ILS Only interface is limited to the GI 275 Primary ADI unit only and is prohibited for Standby ADI/MFD units and HSI units. When configured, the ADI Direction Bug is automatically set to ILS/BC and cannot be changed.

[4] Set to Low or High speed to match the third-party navigator A429 output format.

[5] Interface selection depends on wiring. Select GNC 215 for HSDB, GNS 430/530 for ARINC 429, or GNC 255 for RS-232.

Course Selection

Disabling Course Selection allows the GI 275 to slave to the Selected Course from an external source. Set the Course Selection to Disabled when an external system is providing the primary Selected Course data. Set the Course Selection to Enabled when the GI 275 is the primary source for selected course data or if the GI 275 is configured as a Standby ADI in a G500/G600 TXi system. The Pilot Control configuration setting for Course Selection is not currently approved under this STC.

5.5.8 Radar Altimeter

Configure the Radar Altimeter per the settings in Table 5-7.

Table 5-7 RAD ALT Interfaces and Configuration Settings

Radar Altimeter	Interface	Ports/Config -Settings			
			Port	Number	Speed
Garmin GRA 55/5500	GRA 55/5500	A429 IN		1 Thru 4	Low
Collins RAC 870	RAC 870	A429 IN		1 Thru 4	Low
		Rad Alt Test	Discrete Out Lo	1 Thru 9	
Free Flight RA 4500	RA 4500	A429 IN		1 Thru 4	Low
Honeywell KRA 405B	KRA 405B	A429 IN		1 Thru 4	Low
		Rad Alt Test	Discrete Out Lo	1 Thru 9	
Rad Alt from other GI 275	Other GI 275				

5.5.9 Autopilot

All of the autopilots approved for installation per this STC 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 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.

The followings settings should only be configured on the GI 275 ADAHRS+AP that is directly connected to a third-party autopilot. All other GI 275s in the system should select Other GI 275 as the autopilot interface.

5.5.9.1 Garmin

Garmin autopilots can interface to a GI 275 ADAHRS unit (a GI 275 ADAHRS+AP unit is not required).

Table 5-8 Garmin GFC 500 Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings		Value / Port Numbers	Speed	Notes
GFC 500	GFC 500	AUTOPILOT	GFC 500			[1] [2] [3]
		Settings	Roll Only			
			Pitch + Roll			
		A429	GFC 500 OUT	1 Thru 2	Low	
			EFIS IN	1 Thru 4	Low	
			NAV IN	1 Thru 4	Low	

Notes:

[1] Refer to GFC 500 STC SA01866WI for interface approval with the GI 275. If two GI 275s are both interfaced to a GFC 500, both units must configure the Autopilot interface to GFC 500. The second unit will default as “Backup 1”.

[2] Ensure that the GFC 500 and GI 275 software manifest are synchronized (SW/Config !’ Config Options !’ GFC 500 Manifest !’ Sync).

[3] Configure CDI & BARO Standby SYNC to Always On when interfaced to a G500/G600 TXi PFD. Refer to Section 5.6.8.

Table 5-9 Garmin GFC 600 Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings		Value / Port Numbers	Notes
GFC 600	GFC 600	AUTOPILOT	GFC 600		[1] [2] [3]

Notes:

[1] If the GI 275 is in a G500/G600 (GDU 620) system that is configured for a GFC 600 autopilot interface, set the Autopilot interface on the GI 275 to None.

[2] If the GI 275 is not in a G500/G600 (GDU 620) system, all GI 275s in the system must configure the Autopilot interface to GFC 600.

[3] If the GFC 600 is connected to an interfaced G500/G600 TXi, then the GI 275 may be configured to display the GFC 600 Flight Director but will not provide redundancy for the GFC 600 in the case of TXi display failure. If a GTN 6XX/7XX/Xi is also interfaced, then the CDI Key must be disabled on the GTN or the GI 275 must not be configured to GFC 600.

5.5.9.2 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 5-10 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		
			None [1]		
		Flight Director	Bendix DH-841 [2]	FD Discrete Enabled	
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
			Discrete	GPSS Discrete	Discrete In 1 Thru 6
				Scaler to HDG	1.0
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

Notes:

[1] For Bendix M-4C, set to None.
[2] For Bendix M-4D, set to Bendix DH-841.

5.5.9.3 Century

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

Table 5-11 Century 2000 Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value/Port Numbers
Century 2000	Century 2000 [1]	HSI Type	NSD 360 DC		
		Flight Director	Century FD		
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
			Discrete	GPSS Discrete	Discrete In 1 Thru 6
				Scaler to HDG	1.0
		Gyro Emulation	Century 2000		
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

Notes:

[1] Refer to Section 5.8.2.9 for calibration.

Table 5-12 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
			Discrete	GPSS Discrete	Discrete In 1 Thru 6
				Scaler to HDG	1.0
		Gyro Emulation	Century 2000		
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

Table 5-13 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
			Discrete	GPSS Discrete	Discrete In 1 Thru 6
				Scaler to HDG	1.0
		Gyro Emulation	Century 2000		
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

Table 5-14 Century II/III Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value/Port Numbers
Century II / III	Century II / III	HSI Type [1] [2]	Century 1C388C / 1C388MC		
			Century 1C388/M		
			Century 1C388-2		
			Century 1C388-3		
		GPSS [2]	Button	Scaler to HDG	1.0
			Discrete	GPSS Discrete	Discrete In 1 Thru 6
				Scaler to HDG	1.0
		Gyro Emulation [3]	Century 52D66/67		

Notes:

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

[2] Configure for both GI 275 ADI and GI 275 HSI units.

[3] Configure only for GI 275 ADI unit.

Table 5-15 Century IV AC Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value/Port Numbers
Century IV AC	Century IV AC	HSI Type [1]	Collins PN 101		
			Narco HSI 100		
		Flight Director	Century FD		
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
			Discrete	GPSS Discrete	Discrete In 1 Thru 6
				Scaler to HDG	1.0
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

Notes:

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

Table 5-16 Century IV DC Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value/Port Numbers
Century IV DC	Century IV DC	HSI Type [1]	Century IV		
			NSD 360 DC		
		Flight Director	Century FD		
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
			Discrete	GPSS Discrete	Discrete In 1 Thru 6
				Scaler to HDG	1.0
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

Notes:

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

5.5.9.4 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 obliterated from view so that any NAV source indication on the autopilot mode controller is hidden from view.

Table 5-17 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
			Discrete	GPSS Discrete	Discrete In 1 Thru 6
				Scaler to HDG	1.0
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

Table 5-18 Cessna DC Autopilot Configuration (1000 IFCS)

Autopilot	Interface	Ports/Config - Settings			Value/Port Numbers
Cessna 1000 IFCS	Cessna DC	HSI Type	Cessna G-504A		
		Flight Director	Cessna 1000 IFCS	FD Discrete Enabled	
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
			Discrete	GPSS Discrete	Discrete In 1 Thru 6
				Scaler to HDG	1.0
		Gyro Emulation [1]	Cessna/ARC G519		
			Sperry VG-14A		
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

Notes:

[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.

Table 5-19 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 Discrete Enabled	
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
			Discrete	GPSS Discrete	Discrete In 1 Thru 6
				Scaler to HDG	1.0
		Gyro Emulation	Cessna/ARC G519		
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

5.5.9.5 Collins

Table 5-20 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 Discrete Enabled	
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
			Discrete	GPSS Discrete	Discrete In 1 Thru 6
				Scaler to HDG	1.0
		Yaw Rate	Yaw Rate (mV/deg/sec)		None
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

5.5.9.6 Honeywell (Bendix/King)

Table 5-21 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 Discrete Enabled	
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
			Discrete	GPSS Discrete	Discrete In 1 Thru 6
				Scaler to HDG	1.0
		Gyro Emulation	King KI 256		
			Heading Only [1]		
		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

Notes:

[1] Set to “Heading Only” if the GI 275 is not supplying attitude to the KAP/KFC 150.

Table 5-22 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
			Discrete	GPSS Discrete	Discrete In 1 Thru 6
				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 5-23 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
			Discrete	GPSS Discrete	Discrete In 1 Thru 6
				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 5-24 Honeywell (Bendix/King) KFC 225 Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Port Numbers
Honeywell (Bendix/King) KFC 225	KFC 225	A429 OUT	Low		1 Thru 2
		HSI Type	King KI 525		
		Flight Director	King KFC 225	FD Discrete Enabled	
			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 5-25 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 KPI 552		
			King KI 525		
		Flight Director	King KCI 310	FD Discrete Enabled	
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
			Discrete	GPSS Discrete	Discrete In 1 Thru 6
				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

Notes:

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

Table 5-26 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 [1]	King KI 256	FD Discrete Enabled	
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
			Discrete	GPSS Discrete	Discrete In 1 Thru 6
				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

Notes:

[1] Set the Flight Director to King KI 256, if the KI 255/256/258 ADI was previously installed.

Table 5-27 Honeywell (Bendix/King) KFC 300 Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value/Port Numbers
Honeywell (Bendix/King) KFC 300	KFC 300	HSI Type [1]	Collins PN 101		
			King KPI 552		
		Flight Director	King KCI 310	FD Discrete Enabled	
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
			Discrete	GPSS Discrete	Discrete In 1 Thru 6
				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

Notes:

[1] Set the HSI Type to King KPI 552 if a King KPI 552 was previously installed; otherwise, set it to Collins PN 101.

5.5.9.7 Sperry

Table 5-28 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 Discrete Enabled	
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
			Discrete	GPSS Discrete	Discrete In 1 Thru 6
				Scaler to HDG	1.0
		Gyro Emulation	None		
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

5.5.9.8 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 5-29 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
			Discrete	GPSS Discrete	Discrete In 1 Thru 6
				Scaler to HDG	1.0
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9
		GPS Select	Discrete Out Lo		4 Thru 9

Notes:

[1] Set the HSI Type to NSD 360 DC if the autopilot was previously configured with a NSD-360. Set the HSI Type to King KI 525 if the autopilot was previously configured with a KI 525. Alternatively, set the HSI Type to NSD 360 if the autopilot reference voltage is 5VDC or to King KI 525 if the autopilot reference voltage is 0VDC.

Table 5-30 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 Discrete Enabled	
			Other GI 275		
		GPSS [2]	Button	Scaler to HDG	1.0
			Discrete	GPSS Discrete	Discrete In 1 Thru 6
				Scaler to HDG	1.0
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9

Notes:

[1] Set the HSI Type to NSD 360 DC if the autopilot was previously configured with a NSD-360. Set the HSI Type to King KI 525 if the autopilot was previously configured with a KI 525. Alternatively, set the HSI Type to NSD 360 if the autopilot reference voltage is 5VDC or to King KI 525 if the autopilot reference voltage is 0VDC.

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

Table 5-31 S-TEC 55X Autopilot Configuration

Autopilot	Interface	Ports/Config - Settings			Value/Port Numbers
S-TEC 55X	S-TEC 55X	A429 OUT	Low		1 Thru 2
		HSI Type [1]	NSD 360 DC		
			King KI 525		
		Flight Director	S-TEC 55X	FD Discrete Enabled	
			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

Notes:

[1] Set the HSI Type to NSD 360 DC if the autopilot was previously configured with a NSD-360. Set the HSI Type to King KI 525 if the autopilot was previously configured with a KI 525. Alternatively, set the HSI Type to NSD 360 if the autopilot reference voltage is 5VDC or to King KI 525 if the autopilot reference voltage is 0VDC.

Table 5-32 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 Discrete Enabled	
			Other GI 275		
		GPSS	Button	Scaler to HDG	1.0
			Discrete	GPSS Discrete	Discrete In 1 Thru 6
				Scaler to HDG	1.0
		ILS/GPS Approach	Discrete Out Lo		4 Thru 9
		GPS Select	Discrete Out Lo		4 Thru 9

Notes:

[1] Set the HSI Type to NSD 360 DC if the autopilot was previously configured with a NSD-360. Set the HSI Type to King KI 525 if the autopilot was previously configured with a KI 525. Alternatively, set the HSI Type to NSD 360 if the autopilot reference voltage is 5VDC or to King KI 525 if the autopilot reference voltage is 0VDC.

5.5.10 AHRS Emulation

Configure the AHRS Emulation interface per the settings in Table 5-33. The Gyro Emulation setting will be disabled if Gyro Emulation is configured for the autopilot.

Table 5-33 AHRS Emulation Configuration Settings

Gyro Emulation	Ports/Config - Settings		Port Numbers
None			
Heading Only			
Century 2000			
Cessna/ARC G519	HDG Valid	Discrete Out Lo	4 Thru 9
King KI 256			
King KVG 350			
Sperry VG-14A			

5.5.11 EIS

Configure the EIS per the settings for EIS 1 or EIS 2 (if equipped) in Table 5-34. For twin-engine EIS, EIS 1 must be configured as left or front engine and EIS 2 must be configured as right or rear engine.

For twin-engine EIS, the first GI 275 display should have EIS 1 configured according to Table 5-34 and EIS 2 configured as Other GI 275. The second GI 275 display should have EIS 1 configured as Other GI 275 and EIS 2 configured according to Table 5-34.

Table 5-34 EIS/GEA Configuration Settings

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

Notes:

[1] Annunciations are required if the GI 275 EIS is installed outside of 35° of the centerline. Refer to Section 4.4.4 for installation information. Refer to Table 5-35 for configuration settings.

5.5.11.1 Engine Annunciator

Configure the Engine Annunciator Interface per the settings in Table 5-35. In multi-engine aircraft and in single-engine aircraft with two EIS displays, only configure the annunciator discretes on EIS 1. Configure the annunciator discretes on EIS 2 as None.

Table 5-35 Engine Annunciator Configuration Settings

Aircraft System	Engine Annunciator	Engine Caution	Engine Warning
28V	LED-40-17-BA2-E1WP6	Discrete Out Lo 1 Thru 9 [1]	Discrete Out Lo 1 Thru 9 [1]
	MS25041		
14V	95-40-17-B4-E1WPN		
	MS25041		

Notes:

[1] Use GI 275 EIS Discrete Out Lo ports. Refer to Figure B-20.

5.5.12 Transponder

Configure the available interfaces for Transponder 1 and Transponder 2 per Table 5-36 to provide the Transponder Control page. Only the GTX 345 series transponder is compatible for the Transponder Control feature. Refer to the GTX 345 Installation Manual for configuration details for the GTX 345 unit.

Table 5-36 Transponder Configuration Settings

Transponder	Interface	Ports/Config - Settings	
Garmin GTX 345	GTX 345	Mode 1 Code	4 Digit
		VFR Code Recall	Enabled/Disabled [1]

Notes:

[1] With VFR Code Recall enabled, touching the VFR button on the XPDR page in Normal mode a second time will revert to the previously entered code.

5.5.13 Traffic

Configure the available Traffic interface to match the particular installation per Table 5-37. Refer to the appropriate Garmin ADS-B STC installation manual for more information on installation and configuration requirements for systems with multiple traffic systems. When configuring the traffic interface, first select the type of traffic system installed. Then select the appropriate interface and configure per the settings in Table 5-37.

Table 5-37 Traffic System Configuration Settings

Traffic Source	Type	Interface (Type)	Ports/Config - Settings			Port Numbers	
Traffic from other GI 275	Active Traffic/ TIS-A	Other GI 275					
L-3 Avionics SKY497	Active Traffic	SKY497	A429 IN [1]			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
L-3 Avionics SKY899	Active Traffic	SKY899	A429 IN [1]			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
L-3 Avionics SKY899 TCAS I	Active Traffic	SKY899 TCAS I	A429 IN [1]			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

Traffic Source	Type	Interface (Type)	Ports/Config - Settings			Port Numbers	
Bendix/ King Honeywell KTA 870 KMH 820	Active Traffic	KTA 870/ KMH 820	A429 IN [1]			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
Bendix/ King Honeywell KTA 970 KMH 920	Active Traffic	KTA 970/ KMH 920	A429 IN [1]			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
GTS 8XX	Active Traffic	GTS (HSDB)					
		GTS 8XX (A429)	A429 IN [1]			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
	ADS-B	GTS ADS-B					
Avidyne (Ryan) TAS 6XX/ TCAD	Active Traffic	TAS 6XX/ TCAD	A429 IN [1]			1 Thru 4	
GTX 345	ADS-B	GTX 345	Active Traffic	TAS/TCAS			
GNX 375	ADS-B	GNX 375					
GTX 33X	TIS-A	GTX 33X	A429 IN [1]			1 Thru 4	
			TIS STBY/ON			Discrete Out Lo	1 Thru 9

Notes:

[1] Refer to Section 5.5.22 to configure the ARINC 429 OUT port to provide data to the traffic system, if applicable.

5.5.14 GDL 60

Configure the data link interface per the settings in Table 5-38.

Table 5-38 GDL 60 Configuration Settings

Data Link	Interface	Ports/Config - Settings	Port Numbers	Notes
GDL 60	GDL 60	Connected to	HSDB Port 1-2 Other LRU	[1]

Notes:

[1] Select the appropriate HSDB port if directly connected to the configured GI 275 unit. Select Other LRU if the configured GI 275 is connected to the GDL 60 via another LRU. If Remote Aircraft Status is desired, the GDL 60 must be directly connected to the GI 275 EIS unit.

5.5.15 GDL 69

Configure the data link interface per the settings in Table 5-39.

Table 5-39 GDL 69 Configuration Settings

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

Notes:

[1] The GI 275 will only display data from the GDL 69/69A SXM. Another LRU must be used to configure the GDL 69/69A SXM. Refer to GDL 69/69A Installation Manual (P/N 190-00355-02) for more information.

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

[3] Only second generation GDL 69/69A SXM models are compatible with the GI 275.

5.5.16 Stormscope

Configure the Stormscope interface per the settings in Table 5-40.

Table 5-40 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			

5.5.17 PFD Sync

Configure PFD Sync as HSDB if interfaced to a G500/G600 TXi system via HSDB. PFD Sync allows the TXi GDUs and GI 275 displays to sync the heading bug, course bug, and baro correction.

To configure ARINC 429 PFD Sync in a GDU 620 and GFC 500 system, set the PFD Sync settings within the GFC 500 menu. Refer to Figure B-29 and Appendix Section C.16.

Table 5-41 PFD Sync Configuration Settings

PFD	Interface	Ports/Config - Settings		Port Numbers		Notes
GDU 700/1060	HSDB	GDUs Installed	GDU 1 Thru 4			
GDU 4X0	G3X Touch			RS-232	1 Thru 3	[1]
GDU 1XXX (GIFD)	A429			A429 IN	1	[2]
				A429 OUT	1	

Notes:

[1] Refer to STC SA01899WI for more details on the GI 275 Standby interface with the G3X Touch. GI 275 must not be interfaced with a GFC 500, must have the IAS bug disabled (refer to Section 5.6.1), and must have terrain alerting disabled (refer to Section 5.6.7) when interfaced as a standby with G3X Touch.

[2] Refer to Figure B-31 for approved Garmin Integrated Flight Deck GSD 41 interface.

5.5.18 OAT

Configure OAT as Probe if connected to a GTP 59 probe.

Table 5-42 OAT Configuration Settings

OAT Probe	Interface	Ports/Config - Settings	Port Numbers	Notes
GTP 59	Probe			

5.5.19 CO Indicator

Table 5-43 Carbon Monoxide Indicator Settings

CO Indicator	Interface	Settings		Notes
GCO 14	GCO 14	Connected To	Other	[1]
			This GI 275	
		Aircraft Type	Non-Pressurized	
			Pressurized	

Notes:

[1] If the GI 275 directly connected to the GCO 14 is configured as an EIS display and there are no other GI 275, GTN Xi, or G500/G600 TXi units configured for audio alerting and connected to the audio panel, then the GI 275 EIS must be connected to the audio panel. In this case, the GI 275 EIS will not display visual alerts for high CO levels but will issue audio alerts.

5.5.20 General Purpose Discrete In

Configure the General Purpose Discrete In ports and speeds per the settings in Table 5-44.

Table 5-44 General Purpose Discrete In Settings

General Purpose Discrete In	Ports/Config - Settings	Port Numbers	
Discrete In	Audio Inhibit	Discrete In Lo	1 Thru 6
	Display Backup	Discrete In Lo	5 Thru 6

5.5.21 General Purpose Discrete Out

Configure the General Purpose Discrete Out ports and speeds per the settings in Table 5-45.

Table 5-45 General Purpose Discrete Out Settings

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

5.5.22 General Purpose ARINC 429 (A429) Out

Configure the General Purpose ARINC 429 port(s) and speeds per the settings in Table 5-46. The A429 Out from the GI 275 may be provided to the following LRUs. Refer to Appendix C for required information on each LRU settings.

Table 5-46 General Purpose A429 Output Settings

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

Table 5-47 General Purpose A429 Output LRU-Specific Settings

LRU	Settings	A429 OUT	Speed	Notes
GTX 33/330/335/345	Gen Purp 1	Port 1 or 2	Low	
	Gen Purp 2	Port 1 or 2	Low	
GTS 8XX	Gen Purp 1	Port 1 or 2	Low or High	
TAS 6XX/9900BX	Gen Purp 1	Port 1 or 2	Low or High	
TRC 497/899	Gen Purp 1	Port 1 or 2	Low	
	Gen Purp 2	Port 1 or 2	Low	
KTA 810/910, KMH 820/920	Gen Purp 2	Port 1 or 2	Low	[2]
	Internal AHRS or ADAHRS	Port 1 or 2	High	[1] [2]
	Gen Purp 2	Port 1 or 2	High	[2]
ART 2000/2100	Gen Purp 2	Port 1 or 2	High	
	Internal AHRS or ADAHRS	Port 1 or 2	High	[1]

Notes:

[1] SDI must be set to 00 (Default).

[2] Configure both Gen Purp 2 Low Speed and Internal AHRS/ADAHRS High Speed or configure Gen Purp 2 High Speed.

5.5.23 General Purpose RS-232 Out

Configure the General Purpose serial port per the settings in Table 5-48.

Table 5-48 General Purpose Serial Port Setting

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

5.5.24 Airspeed Switches

These settings are not approved per this STC.

5.6 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 5.5 have been successfully configured prior to continuing with setup. Some pages contained in this section may not be applicable to every installation or may not be available.

5.6.1 Airframe Configuration

5.6.1.1 Indicator Setup

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.

Roll Pointer

Configures pointer direction. Configure as Fixed (down) or Sky (up) per the POH/AFM.

The Roll Pointer setting must be configured to match the installed 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 5-5 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.

ADI Aircraft Symbol / FD Format

When an autopilot is configured, the FD Format selection will be available. Otherwise, the ADI Aircraft Symbol selection will be available. These settings set the type of aircraft symbol displayed on the ADI page in Normal mode.

The ADI ACFT Symbol options are Chevron, Standard, or Pilot Control, with Chevron being the default. If Pilot Control is selected, the symbol can be changed in Normal mode.

The FD Format options are Single Cue, Dual Cue, or Pilot Control. If Pilot Control is selected, the symbol can be changed in Normal mode. If the GI 275 is interfaced to a non-GFC 500/600 autopilot, configure as Single Cue. Configuration of Dual Cue with Garmin GFC 600 requires approval of GFC 600 STC SA01844WI. If the GI 275 is interfaced to a G500/G600 TXi with software v3.41 or earlier, the FD Format must be configured as Single Cue.

Figure 5-6 ADI Aircraft Symbols
(Left: Chevron/Single Cue, Right: Standard/Dual Cue)

Aircraft Symbol Color

Sets the color of the aircraft symbol in Normal mode. Must be configured for the default option of Yellow.

ADI Direction Bug

Sets what is displayed in the ADI Direction Bug in the bottom-left of the ADI page. The options are HDG/TRK, CRS, or Off. Selections vary depending on ADI Style. If the NAV interface is configured as A429 ILS Only, the ADI Direction Bug will be automatically configured as ILS/BC and cannot be changed.

Pitch Down Recovery Chevron

Sets the pitch down angle that recovery chevrons display. Set to 40° to 50°. If the GI 275 is installed with other attitude indication instruments, set the angle to match the other installed instruments, if possible.

Pitch Up Recovery Chevron

Sets the pitch up angle that recovery chevrons display. Set to 20° to 30°. If the GI 275 is installed with other attitude indication instruments, set the angle to match the other installed instruments, if possible.

VS Range

Sets the range of the vertical speed tape. 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.

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. Pilot Control is not approved per this STC.

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.

5.6.1.2 Air Data Setup

Minimum Airspeed Threshold

Sets the minimum airspeed value that the GI 275 will display. At airspeeds under this value, the GI 275 will not display airspeed to avoid nuisance indications at slow speeds on the ground. Options are 0 KT, 20 KT, 30 KT, or 40 KT. This setting must be configured such that minimum airspeed markings are displayed (i.e. if the aircraft has a Vs0 of 38 knots, then the Minimum Airspeed Threshold must be set to 30 KT, 20 KT, or 0 KT).

Airspeed Trend Time

Sets the length of time that the GI 275 airspeed display will use for filtering to provide smooth indication of airspeed. Options are 6s or 10s. It is recommended this setting be configured for 6 seconds in smaller Class I-III aircraft or 10 seconds in larger, higher performance Class IV aircraft. If interfaced with a G500/G600 TXi PFD, configure the GI 275 to match the PFD airspeed trend time.

Airspeed Bug

When enabled, allows an airspeed bug (alert) to be set while in Normal mode. Disabled by default.

Altitude Bug

When enabled, allows an altitude bug (alert) to be set while in Normal mode. Enabled by default.

VS Min

Sets the minimum vertical speed. Not configured per this STC.

VS Max

Sets the maximum vertical speed. Not configured per this STC.

5.6.1.2.1 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 5-7) for a GI 275 will vary depending on whether the Mode field on the Airspeed Configuration page is set to Basic or Advanced (Setup !’ Airframe Configuration !’ Air Data Setup !’ Airspeed Configura).

Figure 5-7 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 5-49 for detailed information on obtaining Basic setting airspeed values. Refer to Appendix E 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/POH lists both indicated airspeed (IAS) and calibrated airspeed (CAS), use IAS.

Table 5-49 Airframe-Specific Configuration Data – Configuration Type Basic Setting

Item	Description	AFM/POH Ref. 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.
C0 - C9	Optional user-configurable airspeed markings.	N/A	Software v2.11 and later. Must be configured at least 5 mph/kts apart from any other airspeed marking.

Mach Settings

NOTE
Mach Number display is not available if a GFC 500 is interfaced to the GI 275. Mach Number display is for supplemental flight information only. It may not replace or duplicate existing Mach Number display gauges and must be configured off in such installations.

Used to configure display of Mach speed. When enabled, Mach Number will be displayed above the airspeed tape. If display of Mach Number is desired, follow the procedure below. Otherwise, configure as None.

1. Touch Display and select Secondary Display.
2. Touch Settings.
3. Touch Activation and select Mach Threshold or Crossover ALT.
4. If Activation is set to Mach Threshold, touch the corresponding buttons to configure On, Off, and Format settings.

   If Activation is set to Crossover ALT, touch the corresponding buttons to configure Altitude and Format settings.

5.6.2 Lighting

This section outlines the preferred method for configuring the GI 275 lighting in the aircraft. The GI 275 STC 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 5-8 shows the Lighting page.

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 5-8 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 should be used for lighting configuration:

- Table 5-51 - Photocell for display/knob (Enhanced Lighting mode de-selected).
- Table 5-52 - Lighting bus for display/knob (Enhanced Lighting mode de-selected).
- Table 5-53 - Photocell for display/knob (Enhanced Lighting mode selected).
- Table 5-54 - Lighting Bus for display (Enhanced Lighting mode selected).
- Table 5-55 - Lighting Bus for knob (Enhanced Lighting mode selected).

Due to the complicated nature of configuring the Enhanced Lighting mode, Table 5-50 provides suggested settings as a starting point for lighting curve configuration. Other user-defined curves can be used, as well as modifying these values to better match the overall cockpit lighting scheme and installation.

Table 5-50 Example of Enhanced Lighting Mode Curve Configuration

Setting	Value	Setting	Value
Vertex 1	20.0, 0.1	Max Level	100.00%
Vertex 2	50.0, 2.0	Min Level	0.10%
Vertex 3	70.0, 5.0	Transition	5.00%
Vertex 4	80.0, 100.0		

Photocell Configuration - Enhanced Lighting De-selected

The Display Lighting and the Knob Lighting curves must be set individually as noted per Table 5-51.

Table 5-51 Photocell Configuration Procedure

Step	Photocell Curve	
	Display	Knob
1	Touch Source Selection and set Photocell as the source for Display Source.	Touch Source Selection and set Photocell as the source for Knob Source.
2	Touch Photocell Configuration and 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	Touch Lighting Curve Configuration 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 5-9).	Touch Lighting Curve Configuration and then Knob 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 5-9 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 keys 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 keys 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 5-10, such that the key 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 key 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 5-9 Lighting Curve Slope Configuration

Figure 5-10 Cutoff Percentage Configuration

Lighting Bus Configuration - Enhanced Lighting De-selected

The Display Lighting and the Knob Lighting curves must be set individually as noted in Table 5-52.

Table 5-52 Lighting Bus Configuration Procedure

Step	Lighting Bus Curve	
	Display	Knob
1	Touch Source Selection and set Lighting Bus as the source for Display Source.	Touch Source Selection and set Lighting Bus as the source for Knob Source.
2	Touch Lightning Bus Configuration and set the Input Type to match the aircraft lighting bus voltage and the Response Time to a low level (e.g., 0 sec) to allow the display to adjust more quickly to dimmer bus input changes.	
3	Follow steps 4 - 13 to achieve consistency between all cockpit lighting. Figure 5-11 shows the primary settings on both the display lighting and the keys lighting curves.	
4	Simulate night conditions in the cockpit.	
5	Touch Lighting Curve Configuration and then Display Lighting.	Touch Lighting Curve Configuration and then Knob Lighting.
6	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.	
7	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.
8	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.
9	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.
10	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 key remains visible.
11	Slowly move the dimmer bus knob towards its maximum setting. Observe the rate of change between the display lighting, bezel key 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 key lighting, and any other cockpit illuminated information over the full range of the dimmer bus. Adjust the Slope and/or Offset to obtain consistency.
12	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.	
13	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.	
14	Verify that adjustments made in the preceding steps are appropriate and functional for all expected lighting conditions.	

Figure 5-11 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 5-53, Table 5-54, and Table 5-55.

Table 5-53 Photocell Configuration Procedure - Enhanced Lighting

Step	Display	Keys
1	Touch Source Selection and set Photocell as the input source for both the Display Source and/or Keys Source.	
2	Touch Photocell Configuration and set the Response Time to a level between 2 - 7 seconds.	
3	Touch Enhanced Lighting Mode to enable it. The button should be highlighted green.	
4		Touch Lighting Curve Configuration !’ Knob Lighting Day Mode and adjust the Cutoff percentage. This allows for the key 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	Touch Lighting Curve Configuration !’ Display/Knob Lighting Day Mode and set the Min Level at 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 5-15). 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 5-12).	

Figure 5-12 Enhanced Lighting Mode Example Photocell
Display (Left) and Knob (Right)

Table 5-54 Lighting Bus Configuration Procedure - Enhanced (Display)

Step	Lighting Bus Day Mode Curve - Display
1	Touch Source Selection and set Display Source to Lighting Bus.
2	Touch Lightning Bus Configuration and set the Input Type to match the aircraft lighting bus voltage, and set the Response Time to a value between 0 - 7 seconds.
3	Touch Enhanced Lighting Mode to enable it. The button should be highlighted green.
4	Touch Lighting Curve Configuration !' Display Lighting Day Mode and set the Transition percentage to 5% (refer to Figure 5-13). 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	Touch Curve to change it to the Photocell Backup option (refer to Figure 5-14). 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 5-15). 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	Touch Curve to change it to the Lighting Bus option (refer to Figure 5-14). This sets the curve for the dimmer bus functionality.
11	Verify functionality of dimmer knob. Re-adjust Transition point if/as required.

Figure 5-13 Enhanced Lighting Mode Example Lighting Bus - Display

Figure 5-14 Selection Between Lighting Bus and Photocell Backup Curves

Table 5-55 Lighting Bus Configuration Procedure - Enhanced (Knob)

Step	Lighting Bus Day Mode Curve - Knob
1	Touch Source Selection and set Knob Source to Lighting Bus.
2	Touch Lighting Bus Configuration and set the Input Type to match the aircraft lighting bus voltage. Set the Response Time to a value between 0 - 7 seconds.
3	Touch Enhanced Lighting Mode to enable it. The button should be highlighted green.
4	Touch Lighting Curve Configuration !' Knob 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 5-15). 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 5-15).
8	Verify functionality of dimmer knob. Re-adjust Transition point if/as required.

Figure 5-15 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.

Brightness Offset Configuration

The Brightness Offset Configuration page can be used to set the limits of pilot-controlled brightness offset from the display/knob lighting curve and whether the offset level persists through system restarts. If Offset Persistence is enabled, the brightness offset selected by the pilot in Normal mode will be retained through power cycles of the GI 275; if disabled, there will be no offset from the display/knob lighting curve. The Min Offset and Max Offset fields determine the bounds of pilot-controlled lighting curve offset.

5.6.3 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 5.3.4). Refer to Section 5.6.3.7 for an example of each page displayed in Normal mode.

In Configuration mode, touch Setup → Page Config. Some instrument types contain optional pages that can be toggled on and off or pages that can be rearranged. Touch Clear All Pages to remove all pages that are not required by the configuration. Touch Default Pages to automatically configure each page based on the configured equipment. Instrument types that do not have configurable pages (i.e., Primary ADI) will have the Page Config button grayed out.

Figure 5-16 Page Config Page - MFD/Standby ADI (Left) and EIS (Right)

5.6.3.1 Primary ADI Page Options

When a unit is configured as a Primary ADI, the ADI page must be displayed at all times while in Normal mode; therefore, the Page Config page will be grayed out. Figure 5-17 depicts possible ADI page styles as configured from the Airframe Configuration page (refer to Section 5.6.1).

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 5-17 Primary ADI Page – Basic, 3-in-1, 4-in-1

5.6.3.2 HSI Page Options

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

- Standard HSI page — Provides magnetically stabilized primary heading.
- Enhanced HSI page — Provides map underlay capable of displaying ownship on a moving map with traffic and weather overlays.

5.6.3.3 MFD Page Options

The MFD configuration contains configurable pages from 1 - 17. To configure a page as a certain function, touch the Page ( ) button and select the desired page 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.

- CDI page — Displays lateral and vertical deviations.
- Standard HSI page — Provides magnetically stabilized primary heading.
- 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.
- Terrain page — Provides depiction of terrain.
- Map page — Displays moving map with ownship icon.
- Gauges Main page [2] [3] — Displays required EIS gauges (Main EIS page in Normal mode).
- Gauges AUX page [2] [3] — Displays additional EIS gauges (AUX EIS page in Normal mode).
- CHT/EGT page [2] [3] — Displays a graph depicting cylinder head temperature and exhaust gas temperature for each cylinder.
- Fuel page [2] [3] — Displays additional fuel data.
- Summary page [2] — Displays supplementary EIS data, such as flight/engine timers and max temperatures.
- MFD Data page — Displays configurable navigation information. Requires interface to external navigator to populate information.
- Radio Altimeter page [1] — Displays altitude above terrain.
- Transponder page [1] [4] — Provides control and display of GTX 345 transponders.

Notes:

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

[2] EIS pages only available when fully configured in accordance with Section 5.7.

[3] GI 275 MFDs must not display any EIS pages other than the Summary page in twin-engine EIS installations or installations with more than one primary EIS display.

[4] The Transponder page must be set as the final page, if configured.

5.6.3.4 EIS Page Options

- Gauges Main page — Displays required EIS gauges (Main EIS page in Normal mode).
- Gauges AUX page — Displays additional EIS gauges (AUX EIS page in Normal mode).
- CHT/EGT page — Displays a graph depicting cylinder head temperature and exhaust gas temperature for each cylinder.
- Fuel page — Displays additional fuel data.
- Summary page — Displays supplementary EIS data, such as flight/engine timers and max temperatures.

5.6.3.5 MFD/Standby ADI Page Options

The MFD/Standby ADI contains configurable pages from 1 - 18. 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 MFD/Standby ADI, the ADI page will be the configured as Page 1.

CAUTION

If the GI 275 is configured as a standby for a system that is not approved for MFD pages per Table 3-14, ensure that all MFD pages are configured off.

- 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.
- 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.
- Terrain page — Provides depiction of terrain.
- Map page — Displays moving map with ownship icon.
- Gauges Main page [2] [4] — Displays required EIS gauges (Main EIS page in Normal mode).
- Gauges AUX page [2] [4] — Displays additional EIS gauges (AUX EIS page in Normal mode).
- CHT/EGT page [2] [4] — Displays a graph depicting cylinder head temperature and exhaust gas temperature for each cylinder.
- Fuel page [2] [4] — Displays additional fuel data.
- Summary page [2] — Displays supplementary EIS data, such as flight/engine timers and max temperatures.
- MFD Data page [2] — Displays configurable navigation information. Requires interface to external navigator to populate information.
- Radio Altimeter page [1] — Displays altitude above terrain.
- Transponder page [1] [5] — Provides control and display of GTX 345 transponders.

Notes:

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

[2] EIS pages are only available when fully configured in accordance with Section 5.7.

[3] The ADI style is configured on the Airframe Configuration page (refer to Section 5.6.1).

[4] GI 275 MFDs must not display any EIS pages other than the Summary page in twin-engine EIS installations or installations with more than one primary EIS display.

[5] The Transponder page must be set as the final page, if configured.

5.6.3.6 HSI/Standby ADI Page Options

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

> NOTE
> When configured as a HSI/Standby ADI, the ADI page is always configured on.

- ADI page [1] — Displays pitch, roll, slip/skip, airspeed tape, altitude tape, and optional heading.
- Standard HSIpage — Provides magnetically stabilized primary heading.
- Enhanced HSIpage — 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 5.6.1).

5.6.3.7 GI 275 Normal Mode Page Options

ADI page

CDI page

Standard HSI page

Enhanced HSI page

Traffic page

SXM Weather page

FIS-B Weather page

Stormscope page

Terrain page

Map page

Gauges Main page

Gauges AUX page

CHT/EGT page

Summary page

Fuel page

MFD Data page

Radar Altimeter page

Transponder page

Figure 5-18 GI 275 Normal Mode Pages

5.6.4 Sensors

This page configures the default ADC and AHRS sensors as the GI 275 allows up to three ADC and three AHRS sensors to be interfaced for the entire system, which includes the GI 275 internal sensors.

Auto Revert is not approved as part of this STC and must be disabled.

Each GI 275 with an internal ADAHRS must have the default sensor match the ADC/AHRS ID assigned to its internal source per Section 5.5.3 and Section 5.5.4. This allows the specific GI 275 to consume its own internal sensors first. For example:

- For a single GI 275, GI 1 sensors are assigned as follows:
  - %æ ADC 1: Internal
  - %æ AHRS 1: Internal
  - %æ Default sensors are set to ADC 1 and AHRS 1
- For a dual GI 275 system, GI 1 sensors are assigned as follows:
  - %æ ADC 1: Internal
  - %æ ADC 2: Other GI 275
  - %æ AHRS 1: Internal
  - %æ AHRS 2: Other GI 275
  - %æ Default sensors are set to ADC 1 and AHRS 1

  GI 2 sensors are assigned as follows:
  - %æ ADC 1: Other GI 275
  - %æ ADC 2: Internal
  - %æ AHRS 1: Other GI 275
  - %æ AHRS 2: Internal
  - %æ Default sensors are set to ADC 2 and AHRS 2

When an external ADC/AHRS is configured as part of the GI 275 system, such as G500/G600 TXi, the external ADC/AHRS must be assigned as ADC 1 and AHRS 1 on all GI 275s in the system that use ADC and AHRS data. For example:

- For a TXi/single GI 275 system, GI 1 sensors are assigned as follows:
  - %æ ADC 1: GX00 TXi
  - %æ ADC 2: Internal
  - %æ AHRS 1: GX00 TXi
  - %æ AHRS 2: Internal
  - %æ Default sensors are set to ADC 2 and AHRS 2
- For a TXi/dual GI 275 system, GI 1 sensors are assigned as follows:
  - %æ ADC 1: GX00 TXi
  - %æ ADC 2: Internal
  - %æ ADC 3: Other GI 275
  - %æ AHRS 1: GX00 TXi
  - %æ AHRS 2: Internal
  - %æ AHRS 3: Other GI 275
  - %æ Default sensors are set to ADC 2 and AHRS 2

  GI 2 sensors are assigned as follows:
  - %æ ADC 1: GX00 TXi
  - %æ ADC 2: Other GI 275
  - %æ ADC 3: Internal
  - %æ AHRS 1: GX00 TXi
  - %æ AHRS 2: Other GI 275

- %æ AHRS 3: Internal
- %æ Default sensors are set to ADC 3 and AHRS 3

• For a dual TXi/GI 275 system, GI 1 sensors are assigned as follows:
  - %æ ADC 1: GX00 TXi
  - %æ ADC 2: GX00 TXi
  - %æ ADC 3: Internal
  - %æ AHRS 1: GX00 TXi
  - %æ AHRS 2: GX00 TXi
  - %æ AHRS 3: Internal
  - %æ Default sensors are set to ADC 3 and AHRS 3

Figure 5-19 shows an example configuration of an external ADC/AHRS and two GI 275s with internal ADAHRS.

GI 1 GI 2

Figure 5-19 External ADC/AHRS Sensor Configuration Example

5.6.5 Audio Alert Config

Audio Out

This determines which GI 275 unit will produce audio. Must be set to the unit with Terrain Alerting enabled, if applicable. The default is GI 1.

Voice Type

This makes the selection between Male and Female voices for alerts. The default is Female.

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. The default is 50%.

Audio Test

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

5.6.6 Unit Alerting Config

Terrain Popup Alert

This setting determines if the Terrain Popup will occur on a GI 275 configured for Terrain Alert. This setting must be enabled unless the GI 275 is interfaced with a compatible G500/G600 TXi PFD or GTN 6XX/7XX/Xi that is providing the Terrain Alerting functionality.

Traffic Popup Alert

This setting determines if the Traffic Popup will occur on a GI 275 configured for Traffic Alerting. This setting must be enabled unless the GI 275 is interfaced with a compatible G500/G600 TXi PFD or GTN 6XX/7XX/Xi that is providing the Traffic Alerting functionality.

5.6.7 Terrain/TAWS

If the interfaced navigator has TAWS B enabled, then configure the Terrain/TAWS per Table 5-56. The GI 275 may not be connected to the audio panel if it is interfaced to a GTN Xi with TAWS A enabled. When SVT is enabled, the GI 275 must have either Terrain-FLTA configured or external TAWS installed. If the aircraft has multiple systems capable of Terrain Alerting, such as a GTN Xi or GNS 5XXW, only one system can be set to generate the Terrain Alert. Set External TAWS Installed (HSDB) for a GTN 6XX/7XX or GTN Xi interface or Installed (MapMX) for a GNS 4XXW/5XXW interface.

Table 5-56 Terrain/TAWS Setting

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

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 runways at the airport meet certain criteria. Select the runway Surface Type and Minimum Length for the aircraft, as described in Table 5-57.

Table 5-57 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).

5.6.8 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 trigger an audio alert 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

> NOTE
>
> For GI 275 software v2.60 or later, Database Sync with GTN 6XX/7XX units is not supported. However, Database Sync with GTN Xi units is supported.

GI 275 and GTN 6XX/7XX or GTN Xi units synchronize databases using Database Sync in order to minimize user effort when loading/updating databases. The user only has to insert an SD card with databases to be loaded into the GTN 6XX/7XX or GTN Xi and the databases will be updated on all connected LRUs for all displays with Database Sync enabled rather than having to update each unit individually. The GI 275 system and GTN 6XX/7XX or GTN Xi will have different System IDs. The databases being synchronized must be enabled for both System IDs in order to allow the Database Sync to take place. Refer to Section 5.2 for more information on acquiring and loading databases.

Make the desired selection between Pilot Control and Disabled for Database Sync functionality. Selecting Pilot Control allows Database Sync to be set to Enabled (default), GI275 Only, or Disabled in Normal mode. When set to GI275 Only, databases will only be synced between GI 275 units.

BARO Side SYNC

With this setting enabled, changing the BARO setting on a pilot-side PFD or GI 275 will also change it on the copilot-side PFD and any copilot-side GI 275s, and vice versa. Choose from Always On or Pilot Control (default). When set to Pilot Control, this feature can be disabled in Normal mode so that the pilot-side and copilot-side displays do not sync BARO settings.

CDI Side SYNC

With this setting enabled, changing the CDI source on a pilot-side PFD or GI 275 will also change it on the copilot-side PFD and any copilot-side GI 275s, and vice versa. Choose from Always On or Pilot Control (default). When set to Pilot Control, this feature can be disabled in Normal mode so that the pilot-side and copilot-side displays do not sync CDI sources.

CDI & BARO Standby SYNC

With this setting enabled, changing the CDI source or BARO setting on a GI 275 or TXi PFD will also change it on the GI 275 Standby ADI. Choose from Always On or Pilot Control (default). When set to Pilot Control, this feature can be disabled in Normal mode so that the PFD and Standby ADI do not sync BARO settings and CDI sources.

When the GI 275 is installed as Standby ADI to a TXi PFD, and a GFC 500 is installed, configure as Always On.

Outside Air Temp

This sets how the outside air temperature is referenced in Normal mode on an ADI. The options are OAT, SAT, or None. Selecting None will disable display of outside air temperature in Normal mode on an ADI.

This setting does not affect OAT in a standalone EIS configuration where the OAT probe is interfaced to a GEA 24(B) or GEA 110. Outside Air Temp, when connected directly to a GEA in a standalone EIS configuration, will always be shown as OAT(EIS), which represents Total Air Temperature.

TAT Title

This sets how the total air temperature is referenced in Normal mode on an ADI and in pilot-defined data fields on MFD and EIS units. The options are TAT or RAT.

Misc Field Enable

Sets which miscellaneous fields are available in Normal mode.

G Filter Time Const

This sets the filtering on the G-Meter time constant. It can be configured for 0.050 through 1.500, with 0.050 being best for responsiveness and 1.000 being best for stability (1.000).

5.6.9 Battery

This configures whether a backup battery is installed in the GI 275. The backup battery is optional in all installations except for a Standby ADI that does not utilize an electrical power source that is independent from the aircraft's primary electrical power source. This should only be enabled if the GI 275 backup battery is installed per Section 4.4.2.

When toggled from disabled to enabled (illuminated green), the GI 275 will trigger a requirement to perform a Battery Rundown Test (refer to Section 5.8.4). Until this test is completed, the GI 275 will produce an annunciation in Normal mode.

5.6.10 Ownship Icon Configuration

- Icon – Select one of the following appropriate icons to match the aircraft type:
    %æ Low Wing Prop
    %æ High Wing Prop
    %æ Turboprop
    %æ Twin Engine Prop
    %æ Arrow
    %æ Basic Aircraft
- Color – Select White as the display option.

5.7 EIS

This section provides data for the configuration of a GI 275 EIS. Prior to beginning EIS configuration, an EIS data source (GEA 24(B)/110) must be configured via the Interfaces page, per the directions found in Section 5.5.11. Refer to Section 2.1.5.1 for limitations and guidance on selection of engine adapter(s). The GI 275 must be configured as either an EIS, MFD/Standby ADI, or MFD in order for the EIS page to be available.

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

1. Engine – Enter number of cylinders, engine power settings, flight hours, HOBBS hours, and Tach 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, Full Time Extra Info, CHT/EGT page extra info, and lean parameters.
4. Gauges – Configure the gauge markings and layout.
5. Fuel – Enter fuel tank specifications and fuel type, and perform a 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 5.8.5.1. Procedures begin assuming the GI 275 is powered on in Configuration mode.

5.7.1 Engine

Configure the EIS for a 4-, 6-, or 7-cylinder engine, depending on the aircraft. Enable Single EGT/CHT to provide CHT/EGT gauges for only a single CHT and a single EGT sensor. Primary EGT and TIT are not available with Single CHT/EGT enabled. Ensure the correct Engine Configuration is set per Section 5.3.3.

Set the Engine Power parameters for supplemental Percent Engine Power indication if desired. The following items under Engine Power must be configured for engine power to be available:

- Maximum Rated Engine Horsepower.
- Maximum Manifold Pressure (if normally-aspirated, defaulted to 29.92 in-Hg).
- RPM at Maximum Rated Engine Horsepower.
- Verify configured RPM value type matches the display RPM type (engine RPM vs propeller RPM)
- Minimum Brake Specific Fuel Consumption. (defaulted to 0.39 lb/hr/BHP).

NOTE

Minimum BSFC should not be changed from the default value unless an alternate value can be identified in a specific installation’s engine operator’s manual. Some engine operator’s manuals graphically depict minimum BSFC on engine performance curves.

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. HOBBS Hours accumulate when the engine is running and the oil pressure exceeds 5 psi. Tach Hours increment at a normal rate when the RPM is equal to cruise RPM, slower when RPM is less than cruise RPM, and faster when RPM is above cruise RPM.

Table 5-58 EIS Configuration - Engine

Engine	Engine Single Engine or Multi Engine		Number of Cylinder 4 cylinders or 6 cylinders or 7 cylinders	
Acft/Eng Time	Flight Hours	HOBBS Hours	Tach Hours	Cruise RPM [1]

Notes:

[1] Set Cruise RPM based on the removed tachometer. Refer to Table 5-59.

Obtain the required information for the Engine subsection using Table 5-58, and populate all fields on the Engine page.

Table 5-59 Cruise RPM Setting

GI 275 Config	Removed Tachometer				Example Aircraft, Reference Only
Cruise Setting	IFR	Mitchell	Stewart Warner	AC Type	
2300	55-35-7	D1-112-5023	P-551-AZ	RT-7	Commander 112, 114; Grumman/American AA-1, AA-1A; Beech C35, D35, E35, F35; Bellanca/Champion 7EC, 7FC, 7GC, 7HC,7GCB, 7ECA, 7GCAA, 7GCBC, 7KCAB, 8KCAB, 14-19; Cessna 120, 140, 170, 180, 182, 185 (with IO-470 eng); Lake Aircraft C-1, C-2, L-4; Mooney M20, M20A, M20D; Piper PA-12, PA-18, PA-20, PA-22, PA-23, PA-24, PA-28, PA-30, PA-32, PA-39
2050	55-35-8	D1-112-5122	P-551-AYZ	RT-8	Beech 35, A35, B35, 35R
2300	55-35-9	D1-112-5030	P-551-AZH	RT-9	Aeronca Champion, Chief (early models); Piper PA18 (w/TCM eng)
2050	55-35-10	D1-112-5124	P-551-AZJ	RT-10	Aeronca Champion, Chief (late models), 7AC, 11AC; Beech Musketeer
2566	55-35-11	D1-112-5025	P-551-TA	RT-11	Bonanza: G35, H35, J35, K35, M35, N35, P35, S35, V35, 36, A36, 95, B95, B95A, D95A; Cessna 150, 152, 172, 177, 185, 188 (with IO-520 eng), 206, 207, 210, 310, 320; Helio H250, H391, H395; Navion E, F, G
2566	55-35-12	D1-112-5032	P-551-AZK	RT-12	Bellanca Champion: 7AC
1800	55-35-14	D1-112-5028	P-551-AZA	RT-14	
3000	55-35-15	D1-112-5034	P-551-AZB	RT-15	Cessna 175
1800	55-35-16	D1-112-5029	P-551-AZL	RT-16	
2400	55-35-17	D1-112-5024	N/A	RT-17	Maule M5/6/MX7-180, M5/6/7/MX7-235

If the Cruise RPM cannot be determined from Table 5-59 or from markings on the original tachometer, use the POH or AFM to find the cruise RPM for 65% 6000 ft PA, Standard Temperature, at 21 in. Hg (if applicable). Verify the Cruise RPM value type matches the display RPM type (i.e. engine RPM or propelle RPM).

5.7.2 Sensors

Configure each connected EIS sensor as shown in Appendix Section C.19. The following steps are required for this section:

1. Determine all installed EIS sensors that interface to the GI 275 system.
2. Touch System Info → Devices and verify that EIS 1/2 has a green check mark.
3. From the Configuration mode home page, touch EIS → Sensors.
4. Select the Sensor Model configuration shown in Appendix Section C.19 for each sensor.

Figure 5-20 Sensor Menu Example

   a. Touch File Location and then 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 installed sensor. A silver checkmark will appear if the configuration is valid. A yellow triangle will appear if the configuration is not valid.
   d. Touch Enter.

An example configuration of a TIT sensor is shown in Figure 5-21. The selection sequence is highlighted.

1 2 3

4 6

7 8 9

Figure 5-21 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:
  - %æ 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.
  - %æ Mag Vent Pickup.
  - %æ Tach Generator - mounts to mechanical tachometer drive port. Only eligible for engines with tachometer drive speed to crankshaft speed ratio of 0.5:1.

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. Touch 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 (EIS !' Sensor !' Manifold PRESS).
2. For the Garmin 011-04202-00, 011-05783-00, and JPI 159934 sensor configurations, if the displayed manifold pressure value is incorrect, perform the calibration.
   a. Reselect the manifold pressure sensor model, then touch Calibration.
   b. Enter the local Barometric Pressure, then touch Current BARO.
   c. Enter the local field elevation, then touch Field Elevation.
   d. Touch Calibrate.

Fuel Quantity

Select the fuel quantity sensor model (refer to Section 3.4.3 and Appendix C for sensor selection details). Refer to Section 5.8.5.1 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; refer to the fuel flow check in Section 6.5.3.2.6. The pilot can make adjustments in Normal mode, which is limited to 15%.

Refer to Table 5-60 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 5-60 Fuel Flow K-Factor

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

Notes:

[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. If there is no K-factor available on the attached tag, use a K-factor value of 29000.

5.7.3 Pages

5.7.3.1 All Pages

Full Time Gauges

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

RPM and Manifold Pressure (if applicable) must be selected as full time gauges per this STC. The order that they are displayed (left or right) must be configured so that the RPM gauge is the same orientation (left or right) as the aircraft’s throttle control.

Full Time Extra Info

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

- Percent Power (requires RPM, MAP, Fuel Flow, and OAT).
- Prop Sync (limited to conventional twin-engine aircraft; prohibited in centerline thrust aircraft, such as Cessna 337).
- Off.

NOTE

Prop Sync will only display on one of the two EIS displays in a conventional twin-engine installation. Percent Power must be configured off if the other EIS has Prop Sync configured.

5.7.3.2 CHT/EGT Page

NOTE

TheCHT/EGT page and the Lean Assist function are not available when the GI 275 EIS is configured for Single CHT/EGT.

Leaning Source

Configures which temperature sensor is used as the source for Lean Assist. The options are EGT and TIT. Using TIT as the Leaning Source is not approved for aircraft with multiple TIT sensors.

Advanced

Configures Lean Assist settings. Configure the settings per Table 5-61.

Table 5-61 CHT/EGT Page Advanced Settings

Setting	Description
Lean – Temp Incr	Select the temperature increase threshold. The default is 14°F.
Lean – Temp Drop	Select the temperature drop threshold. The default is 7.2°F.
Lean – Use FFlow? [1]	Enable or Disable the use of fuel flow sensor data for lean assist aiding.
Lean – FFlow Hyst	Select the fuel flow hysteresis threshold. The default is 0.2 gal/hr.

Notes:

[1] When the use of Fuel Flow sensor data is disabled, only Rich of Peak Lean Assist is available.

5.7.4 Gauges

If configured for twin-engine EIS, a Source button will be selectable at the top of the Gauges page. The GI 275 that is directly interfaced to the GEA connected to Engine 1 (i.e., EIS 1) must have Engine 1 selected as the Source per this STC. The GI 275 that is directly interfaced to the GEA connected to Engine 2 (i.e., EIS 2) must have Engine 2 selected as the Source per this STC.

5.7.4.1 Gauge Layout

Refer to Appendix F for gauge layout information.

5.7.4.2 Gauge Markings and Ranges

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 should 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. Refer to Appendix Section F.6.1.

Gauge markings are not approved for the following gauges:

- EGT

If replacing an existing gauge, all markings will need be replicated on the EIS display. Use Table 5-62 to gather the marking and range information for each gauge specified in the AFM/POH or other approved data.

If configuring 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 5-62 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 Markings	

Include the settings in Table 5-63 for the specific gauge. If the markings in Table 5-63 conflict with AFM/POH or other approved data, use the AFM/POH or other approved data.

Table 5-63 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 5-22.

a. b. c.

d. e. f.

g. h. 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 5-22 Gauge Configuration Example

Use the following procedure for gauge configuration:

1. Complete Table 5-62 for each gauge specified in the AFM/POH or other approved data, and refer to Table 5-63 for additional settings.
2. Using the information gathered in step 1, configure each gauge as shown in the example in Figure 5-22. The EIS gauge settings must accurately convey the limitations in the AFM/POH or other approved data.
3. Use Table 5-64 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 5-23 for an example.
4. When configuring gauge ranges that include red line 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 5-23 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 5-64.

Table 5-64 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 5-23). Unless noted below, the gauge range must include all markings.
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, R, or F to more easily differentiate between EIS 1 and EIS 2 in left/right twin-engine aircraft as well as centerline thrust (forward/rear) twin-engine aircraft. In single-engine aircraft, this feature should remain set to the default None.

Figure 5-24 Side Text Example

5.7.5 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 auxillary tank label.

Fuel Type

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

Quantity Calibration

Refer to Section 5.8.5.1 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.

5.7.6 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.

Fuel Calibration

Shows information on the last completed Fuel Quantity Calibration.

5.8 Calibration/Checks

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

5.8.1 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 5.8.1.2) and Magnetometer Calibration (Section 6.4.1) 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.

5.8.1.1 Calibrate Yaw Offset

If required for the installation, set the yaw offset. The range is -15.0 and 15.0 and the default is 0.

5.8.1.2 Calibrate Pitch/Roll Offset

This procedure must be completed on each GI 275 with an integrated ADAHRS. This procedure can be conducted for each AHRS simultaneously on each display. 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. Touch Calibration/Test !’ Attitude/Heading !’. Calibrate Pitch/Roll
2. Complete the steps listed on the display.
3. Touch Start to begin the calibration procedure.
4. Follow the on-screen command prompts.

The magnetometer calibration and compass swing are completed after the initial Engine Run-up Test has been completed. Refer to Section 6.4.1.

5.8.1.3 Manual Pitch/Roll

The Manual Pitch/Roll Offset will further adjust the Pitch/Roll Calibration; it is not usually required. The Pitch/Roll Calibration in Section 5.8.1.2 and ADI Flight Check in Section 6.8.1 must be completed first. This procedure may only be used if the ADI Flight Check shows an offset of greater than 2.5 degrees difference between a GI 275 Standby ADI and the Primary ADI. The Manual Pitch/Roll Offset may only be used on the GI 275 Standby ADI, and the values entered must result in improved alignment with the Primary ADI.

Enter values for Manual Pitch/Roll while on-ground. Positive pitch values will pitch the ADI nose-down. Positive roll values will roll the ADI to the left. Repeat the ADI Flight Check in Section 6.8.1 to ensure the Manual Pitch/Roll Offset adjustments are correct.

5.8.1.4 Engine Vibration Test

Refer to Section 6.4.3 for test procedure.

5.8.1.5 Interference Test

Refer to Section 6.4.4 for test procedure.

5.8.1.6 Calibrate Magnetometer

Refer to Section 6.4.1 for the magnetometer calibration procedure and Section 6.4.5 for guidance on site evaluation of magnetic disturbances.

5.8.2 Autopilot Calibration

5.8.2.1 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.

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

The following procedure requires a temporary test harness to be installed as shown in Figure 5-25. The parts required for the test harness installation are listed in Table 5-65. A voltmeter accurate to ±1mV at a 5 VDC range is also required.

TOP TEST A4 Test Pin 1
ROLL ATT X FEED Test Pin 2
SIGNAL GROUND Test Pin 3
5

KC 19X

2 TC101
A4 TOP TEST A4

1 19X1
22 ROLL ATT X FEED
Z VG REF
Y PITCH ATTITUDE HI
21 ROLL ATTITUDE HI

1 P19X2
10 SIGNAL GROUND
A CHASIS GROUND
B AP DISCONNECT
2 POWER 14/28VDC
C VG EXCITATION
1 POWER REF

To KC 19X mounting tray
4
22
Z
Y
21
4
10
A
B
2
C
1

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 5-25 KAP 100 & KFC/KAP 150 Test Harness

Table 5-65 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

Notes:

[1] 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 5-25 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. Touch Calibration/Test !’ Autopilot !’ Gyro Output Test
5. Verify that the internal AHRS test values are 0° pitch and 0° roll and are valid (i.e., 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 25° RT using the right ROLL 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 25° LT using the left ROLL arrow.
14. Verify that the voltmeter reading is now +5 ± 0.1 VDC.
15. Set the internal AHRS Output to 0° RT using the right ROLL arrow.
16. Set the internal AHRS Output to 10° DN using the down PITCH arrow.
17. Use a digital voltmeter to measure the voltage (+) at test pin 1 (TC101-A4) with reference to test pin 3 (J19x2-10).
18. 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.
19. Set the internal AHRS Output to 10° UP using the up PITCH arrow.
20. Verify that the voltmeter reading is now -2 ± 0.1 VDC. This step is not applicable to the KC 190/KAP 100.
21. When the testing is complete, remove the test harness.
22. Re-insert and secure the KC 19X computer into the rack.

5.8.2.3 Honeywell (Bendix/King) KFC 200 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 5-26.
- 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. Touch Calibration/Test !’ Autopilot !’ Gyro Output Test
   b. Verify the internal AHRS Pitch/Roll Outputs are zero and valid (i.e., Attitude Valid button is illuminated green).
   c. 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.
   d. Connect the voltmeter to pins 6 and 1 on the maintenance port.
   e. Adjust the Pitch Adjust pot on the KC 290 until the voltmeter reads 0.0 ± 0.3 VDC.
   f. Connect the voltmeter to pins 5 and 4 on the maintenance port.
   g. 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 internal 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° RT using the right ROLL arrow.
   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° LT using the left ROLL arrow.
   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° UP using the up PITCH arrow.
   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. On the GI 275, touch 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 0.00° 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 0.00° as possible.

330-00360-00 CONNECTOR
(Tyco 206485-1)

<4"

PITCH REF 1
VERTICAL GYRO PITCH T.P. 2
GYRO ROLL CROSSFEED 3
LAT REF 4
ROLL ADJ 5
PITCH ADJ 6

IF CONNECTED

KC 295
P2952
L PITCH REF
P VERTICAL GYRO PITCH T.P.
X GYRO ROLL CROSSFEED
f LAT REF
K ROLL ADJ
b PITCH ADJ

KC 296
(YAW COMPUTER)
P2961
GYRO ROLL CROSSFEED H
LAT REF F

KC 290
(MODE CONTROLLER)
P2902
ROLL ADJ F
PITCH ADJ A

Figure 5-26 KFC 200 Test Port

5.8.2.4 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. Touch Calibration/Test → Autopilot → Gyro Output Test
3. Perform the Attitude Gyro Calibration Procedure using 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. Touch 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° UP for pitch, 0° RT for roll, and are valid (i.e., Attitude Valid button 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. Set the internal AHRS Output to 10° UP using the up PITCH arrow.
   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. Set the internal AHRS Output to 0° UP using the down PITCH arrow.
   i. Set the internal AHRS Output to 20° RT using the right ROLL arrow.
   j. 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.
   k. Set the internal AHRS Output to 0° RT using the left ROLL arrow.
   l. Engage the autopilot in the default modes (PIT and ROL).
   m. On the KC 225 RTI, touch 3. Pitch Attitude.
   n. To store the pitch attitude calibration, touch ENTER.
   o. 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°.

p. Disengage the autopilot.
q. Verify the roll attitude calibration:
   i. Set the internal AHRS Output to 0° UP and 20° RT.
   ii. Verify that the Roll value on the KC 225 RTI is 20° (±0.5°).
   iii. Set the internal AHRS Output to 0° UP and 20° LT.
   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.
r. 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°.	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 [10° + 0.67°] ±0.5°)	(This range is equal to [20° + (-0.34°)] ±0.5°)

Heading and Course Pointer Calibration

1. Touch 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. Touch 1. Heading on the Set Installation Offsets page and then touch ENTER.
   b. Touch 2. Course on the Set Installation Offsets page and then touch ENTER.
5. Touch 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, touch Calibration/Test → Autopilot → Gyro Output Test and verify that the output test values are 0° UP, 0° RT, and Attitude Valid.
   b. If using an analog gyro, verify the gyro is operational and level. This may require an extender harness and tilt table.
2. Touch Calibration/Test → Autopilot → Flight Director to view the FD Pitch and FD Roll values.
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, touch Calibration/Test !’ Autopilot !’ Gyro Output Test and verify that the output test values are 0° UP, 0° RT, and Attitude Valid.
   b. Using an analog gyro, verify that the gyro is operational and level (may require an extender harness and tilt table).
2. Touch Calibration/Test !’ Autopilot !’ Flight Director to view the FD Pitch value.
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 IN
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 IN

5.8.2.5 Honeywell (Bendix/King) KFC 250 Autopilot

Gyro Alignment Procedure

1. Power on the GI 275 in Configuration mode.
2. Touch Calibration/Test !’ Autopilot !’ Gyro Output Test
3. Set the Attitude Valid selection to valid (i.e., touch 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.

5.8.2.6 Cessna 300B/400B/800B Autopilots

The following steps outline the alignment procedure:

1. Power on the GI 275 in Configuration mode.
2. Touch Calibration/Test !’ Autopilot !’ Gyro Output Test
3. Verify that the internal AHRS test values are valid (i.e., Attitude Valid button is illuminated green).
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.

5.8.2.7 Cessna 1000A Autopilots

The following steps outline the alignment procedure:

1. Power on the GI 275 in Configuration mode.
2. Touch Calibration/Test !’ Autopilot !’ Gyro Output Test
3. Verify that the internal AHRS test values are valid (i.e., Attitude Valid button is illuminated green).
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.

5.8.2.8 Century II/III Autopilots

The following steps outline the gyro alignment procedure:

1. Power on the GI 275 in Configuration mode.
2. Touch 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, touch Calibration/Test !’ Autopilot !’ Test
   b. To set roll as directed in the procedure, touch Calibration/Test !’ Autopilot !’ Gyro O Test

5.8.2.9 Century 2000 Autopilots

Complete the following procedure to verify the reference voltage:

1. Slowly command the autopilot with a max heading error or course error of about 90°.
2. If the Century 2000 autopilot continues to demand the aircraft in a roll the same direction as the heading/course offset, no further action is needed.
3. If at a 90° offset, the autopilot inverts the direction and oscillates the roll direction between left and right, then change the max reference voltage output from the GI 275 to the Century 2000 autopilot.
    a. In Configuration mode, touch Calibration/Test → Autopilot → Calibration.
    b. Change the Max Voltage to 9.6 VDC (± 0.4 VDC).

5.8.3 Composite 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 on the GI 275 in Configuration mode and then power on NAV1.
2. Touch Calibration/Test → Analog NAV.
3. Touch Localizer.
4. 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.
5. Touch Calibrate and then OK.
6. Wait for the calibration to complete (approximately 6 seconds) and touch OK.
7. Verify that the DDM readout is 0.155 ± 0.010.
8. 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.
9. Touch Back and then VOR.
10. Use a NAV radio tester to generate a 0° FROM radial VOR signal, and tune the NAV radio(s) to the test frequency.
11. Touch Calibrate and then OK.

5.8.4 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. The Backup Battery Test page will only be available if a backup battery is configured on the Battery page (refer to Section 5.6.9).

> NOTE
>
> The Battery Rundown Test may take up to 150 minutes to complete and is reported in UTC.

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

1. Power on each GI 275 with an installed backup battery in Configuration mode.
2. Touch Calibration/Test !’ Backup Battery Test.
3. Touch Before Test Checklist.
4. Verify that “Discharging” is not displayed under Battery State.
5. Touch Test Date and enter the current date.
6. Complete the on-screen checklist. Touch each checklist item once completed. Once all checklist items have a green check mark, touch Back.
7. Touch Start Test and follow the on-screen commands.
8. The GI 275 will power off automatically when the test is complete.
9. Power on the GI 275(s) in Configuration mode and verify a PASS was achieved by touching Calibration/Test !’ Backup Battery Test Results !’ Rundown Test Results.
10. For aircraft that are approved for flight over 25,000 feet, a rundown time of at least 60 minutes is required to be considered a PASS. For aircraft that are only approved for flight at 25,000 feet or less, a rundown time of at least 30 minutes is required to be considered a PASS.

5.8.5 Fuel

5.8.5.1 Fuel Quantity Calibration

The Fuel Quantity Calibration is performed in Configuration mode (EIS !’ Fuel !’ Quantity Cal Calibration/Test !’ Fuel !’ Quantity Cal). Ensure the settings on the Fuel page are configured.

> **CAUTION**
> Ensure the correct Fuel Quantity sensor configuration before calibration. If using a GEA 24 with resistive fuel probes, the fuel quantity sensor must be configured as 0-5 Volt. Refer to Appendix C.

This procedure is used to calibrate the GI 275 fuel quantity gauges. It begins with drained fuel tanks, then 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.

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 this 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.

5.8.5.2 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 5-66 is used as a guide to calibrate the fuel quantity gauge(s). If the installation does not include auxillary tanks, set the Aux Tank field to None. Table 5-67 describes each of the settings during the calibration of the fuel quantity.

Table 5-66 Fuel Page Settings

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 5-67 Fuel Quantity Calibration Settings

Setting	Options	Notes
Gauge Max Main	Main Gauge Maximum (0-2980 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 (0-2980 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 16 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. Refer to Section 5.8.5.1 for details.
Procedure	Single Main Single AUX/Tip Main L & R (Recom.) AUX/Tip L & R (Recom.) Main L Main R AUX/Tip L AUX/Tip R	Main L & R and Aux/Tip L & R procedures alternate left then right calibration points to keep the aircraft balanced. These are recommended if the aircraft has left and right tanks. The available options are dependent on “Main Tank” and “Aux Tank” settings on the Fuel page.

5.8.5.3 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. Touch Calibration/Test !’ Fuel
4. Configure the fuel tank settings using Table 5-66.
5. Touch Quantity Cal.
6. Verify the Gauge Max Main and Gauge Max Aux settings are correct using Table 5-67.
7. Touch Check gauge max A green check mark will appear.
8. Touch Drain fuel if step 1 was completed. A green check mark will appear.
9. Touch Level aircraft if step 2 was completed. A green check mark will appear.
10. Touch Num Points and enter the number of calibration points to be performed. Refer to Table 5-67 and Section 5.8.5.1 for guidance in determining the number of calibration points.
11. Touch Select num points A green check mark will appear.
12. Touch Procedure and select the procedure using Table 5-67.
13. Touch Select procedure A green check mark will appear.
14. When all steps are checked, touch 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 Figure 5-28).
17. Once the sensor readout has stabilized in the tenths place, touch the corresponding button to check it off (refer to Figure 5-28).
    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 Calibrate 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 Add Fuel Amount 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 View ( ) tank status at any point to view a graphical representation of the process (refer to Figure 5-28).
    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., auxillary tank).

Figure 5-27 Fuel Quantity Calibration Page

Enter the ACTUAL amount of fuel added this point

Wait until this value stabilizes at the tenths place before continuing

Figure 5-28 Fuel Quantity Calculation Procedure

NOTE

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

5.9 External Systems

5.9.1 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 5.5.16.

5.10 Diagnostics

The Diagnostics page provides additional information useful for installation and configuration troubleshooting.

5.10.1 VFR GPS

GPS Signal Strength

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

5.10.2 AHRS & ADC

The AHRS/ADC page shows the values for the configured ADC and AHRS sensors. It also allows the Flight Log to be downloaded to a connected USB drive.

5.10.3 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.

5.10.4 HSDB Status

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

5.10.5 CAN Network

The CAN page provides CAN bus error and warning information for any devices connected on the CAN bus network.

5.10.6 Temp/Pwr Stats

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

5.10.7 Discrete Inputs

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

5.10.8 Discrete Outputs

The Discrete Out page shows the status (Active/Inactive) of each Discrete Output. Connected and configured outputs can be toggled Active and Inactive by touching the associated button. Active outputs say “Active” in green lettering, while inactive or not configured outputs say “Inactive” in gray lettering.

5.10.9 Analog Inputs

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

5.10.10 GDL69

The GDL 69 page shows information for a configured GDL 69/69A SXM.

5.10.11 ARINC 429

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

5.10.12 RS-232

The RS-232 page shows the status (Active/Inactive) of each RS-232 connection. Yellow indicates that the port is not actively receiving or transmitting data.

5.10.13 RS-485

The RS-485 page shows the status (Active/Inactive) of the RS-485 connection. Yellow indicates that the port is not actively receiving or transmitting data.

5.10.14 GCO 14

The GCO 14 page shows the serial number of the GCO 14 directly connected to the GI 275, the current carbon monoxide level, and the carbon monoxide sensor expiration date.

5.10.15 GFC 500

The GFC 500 page shows the Autopilot Disconnect Input status for the GFC 500 roll, pitch, and yaw servos, as well as the manual pitch trim switch status.

5.10.16 Clear Config

> CAUTION
>
> Touching Clear Config will erase all configuration settings but will not clear a saved default configuration (refer to Section 5.2.2.5).

5.10.17 Factory Reset

> CAUTION
>
> Touching Factory Reset will restore the unit to its factory defaults, including reseting calibration results. It is not recommended to select this option when troubleshooting.

5.11 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.

5.11.1 Devices Online

The Devices Online page reports the status of installed LRUs. The icon next to each LRU reports one of three colored symbols to indicate the status of each LRU, as described in Table 5-68. Verify that all LRUs connected or configured to each display have a green check mark.

Table 5-68 LRU Status Indicators

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

5.11.2 Device Info

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

5.12 Maintenance

Config Mode Fast Sync

Configure this setting on to expedite maintenance log downloads to a USB drive.

Export Logs

The GI 275 has maintenance and error logs that can be downloaded to a USB drive with the following procedure:

1. Power on all GI 275s in the system in Configuration mode.
2. Insert a USB drive into the USB dongle or optional GSB 15 and wait for the GI 275 to recognize the drive (a USB icon will appear in the bottom-left of the screen).
3. Touch Maintenance → Export Logs.
4. Touch Download Log and select the log type to download: Asset, Flight Data, Aircraft Report, Event Log, HW Diagnostics, Connection Log, or ADAHRS Log.
   - If Flight Data was selected, touch the Download Log Style button and select All or From Date. If From Date was selected as the Log Style, enter the date in the fields below.
   - If Event Log, HW Diagnostics, or ADAHRS Log were selected, touch Download units and select the applicable GI 275 units.
5. Touch Start Download → Begin Download.

Export Config

Export configuration settings via USB. Refer to Section 5.2.2.4 for procedure.

Export External LRU Logs

1. Power on all GI 275s in the system in Configuration mode.
2. Power on all LRUs in the system.
3. Insert a USB drive into the USB dongle or optional GSB 15 and wait for the GI 275 to recognize the drive (a USB icon will appear in the bottom-left of the screen).
4. Touch Maintenance → Export External LRU Logs. The available logs will automatically download. Exported logs can be viewed and printed using a computer's web browser.

Logging Options

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

Clear Assert Logs

This clears the Assert Logs. This cannot be undone.

Clear Flight Logs

This clears the flight logs. This cannot be undone.

Clear ADAHRS Logs

This clears the ADAHRS logs. This cannot be undone.

Clear Databases

This clears all flight databases. This cannot be undone.

View Event Log

This allows all events to be displayed and reviewed based on configurable filters. Select the number of power cycles to be included in the log, a specific Event ID (optionally select All), and a date range to be included. Touch View events to view a list of events. Select each event to view additional information.

5.13 Restart Options

Restart All to Config

Restarts all GI 275s in the system in Configuration mode.

Restart All to Normal

Restarts all GI 275s in the system in Normal mode.

GI ( )

Select restart options for the 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.

5.14 Wireless Connectivity

The GI 275 has built-in Wi-Fi and Bluetooth capabilities. Garmin Connext allows for a wireless connection between the GI 275 and a personal electronic device (PED) running the Garmin Pilot application to update flight databases (refer to Section 5.15) and other functions (refer to Section 1.2.2.6).

Only one Wireless source can be configured in the system at a time.

If a Flight Stream is installed as part of the system, the GI 275 wireless setting must be set to Other LRU. If the cockpit has an ADS-B source with Bluetooth (e.g., GTX 345), a GI 275 should be configured as the wireless source, and the Bluetooth should be deactivated on the ADS-B source.

To configure a wireless connection:

1. Power on the GI 275 in Configuration mode.
2. Touch Interfaces → Wireless.

   NOTE

   The Wireless page may take up to 2 minutes to become available after power on.

3. Touch Wireless GI and select the device for the wireless source:
   - This GI – The specific GI 275 being configured.
   - GI ( ) – A different GI 275 with that Unit ID.
   - Disabled – Disables the wireless functionality and allows an interfaced Garmin LRU to provide the wireless functionality.

SSID

Enter the built-in Wi-Fi SSID. A maximum of eight characters is allowed.

The built-in Wi-Fi is used to transfer databases via Database Concierge. Refer to Section 5.15.

Password

Enter the Wi-Fi password. The password must be eight characters.

The built-in Wi-Fi is used to transfer databases via Database Concierge. Refer to Section 5.15.

Connext Features

Database Update allows flight databases to be updated via the Bluetooth from Garmin Pilot. The default is enabled.

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 Pair a Device → Bluetooth Name and select the device.
3. Touch Pair.

The GI 275 can store up to 13 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. Auto-Reconnect can be enabled from this menu.

5.15 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 typically 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, another Garmin LRU via Database Sync, or through the Database Concierge feature (Wi-Fi).

5.15.1 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. 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 GPS 175, GNX 375, GNC 355, and other GI 275 units.

Load Databases via Database Sync

NOTE

For Database Sync to occur, the GI 275 must have Database Sync set to "Enabled" or "GI275 Only" in Normal mode (System Menu → Databases → DB Sync Option). When Database Sync set to "Enabled", database updates will sync from the master GI 275 to any Database Sync-enabled LRUs. When Database Sync set to "GI275 Only", database updates will only sync from the master GI 275 to any connected GI 275s.

If Database Sync is enabled on the GI 275 (refer to Section 5.6.8), then databases on each GI 275 in the system can be synchronized by the following procedure:

1. Power on all GI 275s in the system in Normal mode.
2. Databases will synchronize automatically in the background. An icon will appear in the upper left of the unit.

3. When the sync is done, a “Database Sync Complete Activate Now?” prompt will appear.
4. Touch **Yes** and then **Update Selected**.
5. When all the database updates are complete, touch **Restart Unit**.

If a GTN 6XX/7XX or GTN Xi with a Flight Stream 510 is installed in the system, then it can also be used to update all GI 275s in the system using the above procedure.

5.15.2 Database Updates via USB

1. Download appropriate databases from flyGarmin.com onto a USB drive.
2. Power on all GI 275s in the system in Normal mode.
3. On the display connected to the USB dongle or GSB 15, open the menu and touch **System → Databases** (or **DB**).
4. Touch **Show Active DBs** and verify the listed databases that show out-of-date (amber) have updated versions contained on the USB drive.
5. Touch **Back**.
6. Insert the USB drive into the USB dongle or optional GSB 15 and wait for the GI 275 to recognize the drive).
7. Once connected, a pop-up will appear to update databases. Touch **Yes**.
   a. Alternatively, the updates can be initiated by opening the menu and touching **System → Databases** (or **DB**) **→ Update → Update Using USB**.
8. Touch **Begin DB Update** to update all active databases on the USB drive, or touch **Manual Update Options** to select the individual databases to update.
   a. After manually selecting updates, touch **Update Selected**.
9. Wait for databases to update. A progress bar is shown for each selected update. If there are other Garmin units in the system that need to receive the new databases, the status of the sync to those units will be displayed as well.
10. When the database updates and syncs are complete, all GI 275s will begin using the new databases without requiring a restart. A list of the completed updates will be displayed.
11. Remove the USB drive.

5.15.3 Transferring Databases via Database Concierge (Wi-Fi)

Database Concierge allows wireless transfer of databases from a PED with the Garmin Pilot application via Wi-Fi while the aircraft is on the ground using the following procedure:

1. Download the appropriate databases onto a PED with the Garmin Pilot application.
2. Power on all GI 275s in the system in Normal mode.
3. If not already configured, configure the WiFi network:
   a. Open the menu and touch **System → Wireless**.
   b. Touch **SSID** and enter a WiFi SSID for the PED to connect to. Touch **Enter**.
   c. Touch **Password** and enter a password to connect to the WiFi. Touch **Enter**.
4. Open the menu and touch **System → Databases** (or **DB**) **→ Update → Update Using Connex (Wi-Fi)**.
5. Connect the PED using the configured SSID and password.

6. Touch **Begin DB Update** to update all active databases from the PED, or touch **Manual Update Options** to select the individual databases to update.
   a. After manually selecting updates, touch **Update Selected**
7. Wait for databases to update. A progress bar is shown for each selected update. If there are other Garmin units in the system that need to receive the new databases, the status of the sync to those units will be displayed as well.
8. When all database updates and syncs are complete, all GI 275s will begin using the new databases without requiring a restart. A list of the completed updates will be displayed.

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.

5.15.4 GI 275 Databases

Table 5-69 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

6 SYSTEM CHECKOUT

6.1 Checkout Log

Refer to GI 275 Part 23 AML STC Maintenance Manual/ICA (P/N 190-02246-11) for configuration, serial number, and LRU location documentation procedures.

Complete all relevant checks as described in the following section using the checkout log as a guide.

GI 275 Checkout Log

Date:_____________Completed by:______________________

Table 6-1 Checkout Log

Check	Task	Section Reference
	Calibration Checkout	
ðq	AHRS / GMU Calibration Pitch / Roll offset	Section 5.8.1
ðq	Autopilot Calibration (if applicable) Honeywell (Bendix/King) Cessna 300B/400B/800B Cessna 1000A	 Section 5.8.2.2 Section 5.8.2.6 Section 5.8.2.7
ðq	Analog NAV Calibration (if applicable)	Section 5.8.3
ðq	EIS Fuel Calibration (if applicable)	Section 5.8.5.1
ðq	Backup Battery Test (if applicable)	Section 5.8.4
	Ground Checkout	
ðq	Configuration Ground Check LRU status check Device Info	Section 6.2
ðq	ADI Ground Check (complete all applicable checks) GPS NAV SVT Traffic Autopilot Databases ADI-Specific Airspeed Tape Altimeter OAT SVT	 Section 6.3.1 Section 6.3.2 Section 6.3.3.4 Section 6.3.9 Section 6.3.10 Section 6.5.1 Section 6.5.1.1 Section 6.5.1.1.3 Section 6.5.1.3 Section 6.5.1.4

	HSI Ground Check (complete all applicable checks)	
	GPS	Section 6.3.1
ðq	NAV	Section 6.3.2
	Traffic	Section 6.3.3
	Weather	Section 6.3.5
	Databases	Section 6.3.10
	MFD Ground Check (complete all applicable checks)	
	GPS	Section 6.3.1
	NAV	Section 6.3.2
	Traffic	Section 6.3.3
	Weather	Section 6.3.5
ðq	Stormscope	Section 6.3.6
	Radar Altimeter	Section 6.3.7
	Transponder Control	Section 6.3.8
	Databases	Section 6.3.10
	MFD-Specific	Section 6.5.2
	OAT	Section 6.5.2.1
	EIS Ground Check (complete all applicable checks)	
	EIS-Specific	Section 6.5.3
	Temperature sensor	Section 6.5.3.1
	EIS gauge layout and markings	Section 6.5.3.2
	Manifold pressure	Section 6.5.3.2.1
	Oil pressure	Section 6.5.3.2.2
ðq	Fuel pressure	Section 6.5.3.2.3
	Tachometer	Section 6.5.3.2.4
	Fuel quantity	Section 6.5.3.2.5
	Fuel flow	Section 6.5.3.2.6
	Shunt/Voltage	Section 6.5.3.2.7
	(OAT) EIS Check	Section 6.5.3.2.8
	EIS engine run-up	Section 6.5.3.3
ðq	Standby Indicator Check	Section 6.5.4
	AHRS Calibration Checks	
	Magnetometer calibration	Section 6.4.1
ðq	Compass swing	Section 6.4.2
	Engine run-up vibration	Section 6.4.3
	Magnetometer interference	Section 6.4.4
	Site evaluation	Section 6.4.5
	Autopilot Ground Check (complete all applicable checks)	
	Autopilot engagement	Section 6.3.9.1
ðq	Flight director	Section 6.3.9.2
	Heading and Course error	Section 6.3.9.3
	VOR /ILS/GS	Section 6.3.9.4
	GPS roll steering	Section 6.3.9.5
ðq	Placards, Switches, and Labels	Section 6.6

ðq	EMI/RFI Checks	Section 6.7
	Flight Checkout	
ðq	Attitude Flight Check	Section 6.8.1
ðq	HSI Flight Check	Section 6.8.2
ðq	MFD Flight Check	Section 6.8.3
ðq	EIS Flight Check	Section 6.8.4
ðq	Standby Indicator Flight Check	Section 6.8.5
ðq	Autopilot Flight Check (if applicable) Autopilot Performance Checkout Log	Section 6.8.6 Figure 6-7
	Documentation	
ðq	AFMS filled in	Section 6.9.1
ðq	ICA filled in	Section 6.9.2

6.2 Configuration Ground Checks

These ground check procedures are intended to verify that each LRU and interface in the GI 275 system has been properly configured. Complete these checks before continuing with further ground checks.

> NOTE
>
> Throughout the configuration ground check section, references are made to particular functions and screens. If a function or screen is not available, ensure that the system has been configured correctly.

These ground checks must be performed on every GI 275. Before starting the checkout, ensure:

1. All GI 275 displays in the system are powered on in Configuration mode.
2. All system LRUs are be powered on.
3. All installed LRUs have been configured per Section 5.5.

6.2.1 LRU Status Check

The Devices Online page (System Info !’ Devices Online) reports the status of installed LRUs. The icon next to each LRU reports one of three colored symbols to indicate the status of each LRU, as described in Table 5-68. Verify that all LRUs connected or configured have a green check mark indicator.

6.2.2 Device Info

The Device Info page (System Info !’ Device Info) provides information for each configured LRU as part of the system.

1. Touch Device and select an interfaced LRU.
2. Verify that all software versions are up-to-date for the interfaced LRU.
3. Repeat for each LRU.

6.2.3 GSB 15 Connection Check

This check is required to test the connection if a GSB 15 is installed.

1. Power on all GI 275s in the system in Configuration mode.
2. Follow the Export Configuration procedure in Section 5.2.2.4 using the GSB 15.
3. When completed, remove the USB drive.
4. Insert a charging cable into the GSB 15 and connect it to a device. Ensure the device shows charging.

6.2.4 GCO 14 Connection Check

This check is required to test the connection if a GCO 14 is installed.

1. Power on the GI 275 directly connected to the GCO 14 in Configuration mode.
2. Touch Diagnostics !’ GCO 14.
3. Ensure the Serial Number, Current CO Level, and Sensor Expiration Date fields are populated.

6.3 Interfaced Equipment Ground Checks

Table 6-2 shows all compatible LRUs that can be installed in the GI 275 system and have required ground checks. Cross-reference each configured LRU with the installed GI 275 indicator type for a list of required ground checks. Additionally, each indicator type may have specific checks associated with it that must also be completed (these checks are listed on the bottom row of the table). Not all checks in a section may be applicable to a particular installation. It is the installer's responsibility to complete all applicable checks for the installation.

> CAUTION
>
> Units configured as a standby indicator (ADI or HSI) must perform all applicable ADI ground checks listed in Table 6-2, including indicator-specific checks. Additionally, the standby checks in Section 6.5.4 must be completed.

Table 6-2 Interfaced Equipment Ground Check Section Reference

Interfaced LRU	Indicator Type				
	ADI	HSI	MFD	EIS	Standby ADI
GPS source	6.3.1	6.3.1	6.3.1		6.3.1
NAV source	6.3.2.1	6.3.2	6.3.2 [1]		6.3.2
Traffic source	6.3.3.4 [2]	6.3.3	6.3.3 [3]		6.3.3
Terrain	6.3.4		6.3.4		6.3.4
Weather source		6.3.5	6.3.5 [3]		6.3.5 [3]
Stormscope			6.3.6 [3]		6.3.6 [3]
Radar altimeter			6.3.7 [3]		6.3.7 [3]
Transponder			6.3.8		6.3.8
Autopilot/flight director	6.3.9				6.3.9
AHRS	6.4	6.4			6.4
Other Checks					
Database checks	6.3.10	6.3.10	6.3.10		6.3.10
Indicator-specific checks	6.5.1		6.5.2	6.5.3	6.5.1 6.5.4

Notes:

[1] Only required if the CDI, Standard HSI , or Enhanced HSI pages are configured on the MFD.

[2] Only required if SVT is enabled.

[3] Only required if the applicable page is configured on the MFD, MFD/Standby ADI, or HSI/Standby ADI. Refer to Section 5.6.3 for page options.

Checks that are specific to the Primary ADI must also be completed by GI 275 standby indicators on their ADI page.

6.3.1 GPS Ground Checks

6.3.1.1 GPS Receiver Interface Check

This check is required for units configured as a Primary ADI, Standby ADI, HSI, and MFD with the CDI page configured on.

> NOTE
> GPS satellite reception is required for the following steps.

1. Power on the GI 275 system in Normal mode.
2. Select GPS (or GPS1) as the CDI source.
   a. ADI: Open the menu and touch (ADI) Options !’ NAV Options !’ CDI (Source) !’ GPS.
   b. HSI: Touch the CDI button until “GPS” is displayed in the top-left of the display.
   c. MFD CDI: Touch the CDI button until “GPS” is displayed on the left side of the display.
3. ADI: Enable deviations by opening the menu and touching (ADI) Options !’ NAV Options !’ CRS Devs).
4. Verify the external GPS1 navigator is powered on and, if dual GPS navigators are installed, ensure the second GPS navigator (GPS2) is powered off.
   a. For a GNS 4XXW/5XXW series, GTN 6XX/7XX series, or GTN Xi series navigator, while on the Power-up Self-test page, verify that the ADI displays the correct lateral and vertical deviation information.
   b. For a GNS 480 unit, while it is going through its power-up sequence, verify that the ADI displays the correct lateral and vertical deviation information.
5. Continue in Normal mode after the self-test and wait until the navigator acquires a position before proceeding.
6. Review the active alerts on the display (if any) and verify that there are no alerts, service soon, or service required alerts associated with the GPS unit.
7. Create/activate a flight plan on the GPS navigation source.
8. ADI: Verify that the magenta diamond displays on the lateral deviation.
   HSI: Verify that the magenta deviation bar displays in the center of the display.
   MFD CDI: Verify that the magenta deviation bar displays in the center of the display.
   a. If the MFD Data page is configured, navigate to it and verify that the waypoint in the Active WPT field is the same as the one on the GPS navigator.
9. On the GPS navigator, enter OBS mode.
10. ADI: On the GI 275, access the course selection bug (Menu !’ (ADI) Options !’ NAV Optio !’ CRS Option) and adjust the course using the inner knob.
    HSI: On the GI 275, touch CRS on the bottom-right of the display of the GI 275 (will illuminate cyan when selected) and adjust the course using the inner knob.
11. ADI: Verify that the course to the active waypoint changes as the display course pointer is rotated.
    HSI: Verify that the course to the active waypoint changes as the display course pointer is rotated.
12. Exit OBS mode on the navigator.
13. If dual GPS receivers are installed, power off GPS1 and power on GPS2.
14. Select GPS2 as the CDI source and repeat steps 4 through 12.

6.3.1.2 Backup GPS Signal Check

This check is required for units configured as a Primary ADI, Standby ADI, HSI, and MFD (with the CDI page) only if the VFR GPS is enabled and the antenna installed.

1. Power on the GI 275 system in Normal mode and verify that the aircraft has an unobstructed view of the sky (or GPS repeater coverage).
2. Verify GPS1 and GPS2 (if equipped) are powered on.
3. Wait at least 5 minutes to allow GPS1, GPS2, and the VFR GPS to acquire a position.
4. Power off GPS1 and GPS2 (if equipped).
5. Verify message icon is annunciated on the top-left of the display.
6. Open the menu and touch Messages (Msgs). Verify that the message “VFR GPS is being used” is present.
7. Verify ownship symbol is displayed on the map.

6.3.2 NAV Ground Checks

6.3.2.1 NAV Receiver Check – ARINC 429

This check is required for units configured as a Primary ADI, Standby ADI, HSI, and MFD with the CDI page configured on.

1. Power on the GI 275 system in Normal mode.
2. Verify the NAV1 receiver is powered on and, if dual NAV receivers are installed, verify the second NAV receiver (NAV2) is powered off.
3. Select the NAV receiver as the CDI source.
   a. ADI: Open the menu and touch (ADI) Options → NAV Options → CDI (Source) → VOR.
   b. HSI: Touch the CDI button until “VOR” is displayed in the top-left of the display.
   c. MFD CDI: Touch the CDI button until “VOR” is displayed on the left side of the display.
4. Tune the NAV receiver to a localizer frequency (it is not necessary that a valid localizer signal is being received).
5. Verify that the CDI on the GI 275 displays “LOC” (or “LOC1”/“LOC2” for installations with dual navigators).
6. If dual navigation receivers are installed, power off NAV 1 and power on NAV 2.
7. Select NAV2 as the CDI source and repeat steps 3 and 5.

6.3.2.2 NAV Receiver Check – Analog

This check is required for units configured as an HSI, HSI/Standby ADI, MFD (with the CDI page), and MFD/Standby ADI (with the CDI page). Prior to conducting this check, ensure that the GI 275 has been calibrated to the NAV receiver in accordance with Section 5.8.3.

1. Verify the NAV1 receiver is turned on and, if dual NAV receivers are installed, ensure the second NAV receiver (NAV2) is powered off.
2. Select the NAV receiver as the CDI source by touching the CDI button until “VOR” is displayed in green on the left side of the screen.
3. Tune the NAV receiver to a VOR frequency (it is not necessary that a valid VOR signal is being received).
4. Using a VOR/ILS test set, generate a 0° FROM radial VOR signal and tune the NAV receiver to the test frequency.
5. Adjust the course pointer until the deviation is centered and FROM is indicated.
6. Verify that the course pointer setting is 0 ± 4°.
7. Repeat the above steps using VOR FROM signals at 90°, 180°, and 270°. Verify that the course pointer is within 4° of the simulated VOR bearing.
8. Tune the navigation receiver to a localizer frequency (it is not necessary that a valid localizer signal is being received).
9. Verify that “LOC” (or “LOC1”/“LOC2” for installations with dual navigators) is displayed.
10. Set the course pointer to the current heading (i.e., straight up on the GI 275 CDI or HSI).
11. Using a VOR/ILS test set, generate a localizer and glideslope signal as specified in Table 6-3.
12. Verify that the course pointer deviation bar and glideslope indications are as specified in Table 6-3.
13. If dual NAV receivers are installed, power off NAV1 and power on NAV2.
14. Select NAV 2 on the CDI. Repeat the NAV receiver check.

Table 6-3 Localizer/Glideslope Checks

Test Set Setting (DDM)		PFD Indication	
Localizer	Glideslope	Localizer	Glideslope
0.000	0.000	Centered (within fuselage on aircraft symbol)	Centered (covering horizontal white line)
0.078 Right	0.088 Down	Half-scale right (dev bar inside of first dot)	Half-scale down (first dot covered by diamond)
0.155 Right	0.175 Down	Full-scale right (dev bar inside of second dot)	Full-scale down (second dot covered by diamond)
0.078 Left	0.088 Up	Half-scale left (dev bar inside of first dot)	Half-scale up (first dot covered by diamond)
0.155 Left	0.175 Up	Full-scale left (dev bar inside of second dot)	Full-scale up (second dot covered by diamond)

6.3.3 Traffic Ground Checks

6.3.3.1 ADS-B In Interface Check

This check is required for units configured as an HSI (with Enhanced HSI page), HSI/Standby ADI (with Enhanced HSI page), and MFD (with Traffic page).

If the installed system is configured to receive ADS-B In data through an interface with an ADS-B In capable unit (e.g., GTX 345, GTS ADS-B, or GNX 375), the interface is verified as follows:

> NOTE
> The following steps may be performed as a ground check as long as the aircraft is within range of an FAA ground station with available targets of opportunity. If this is not the case, it is recommended that these checks be performed in-flight within range of an FAA ground station.

1. Power on the GI 275 in Normal mode.
2. HSI: Navigate to the HSI Map page (Menu → Select Page → HSI Map or turn the outer knob).
   MFD: Navigate to the Traffic page (Menu → Select Page → Traffic or turn the outer knob).
3. Turn on the interfaced ADS-B-In capable equipment.
   a. If the installation includes TAS/TCAS correlated traffic, turn on the TAS/TCAS source.
4. Verify an amber “NO DATA” message is not displayed over the ownship icon.
5. HSI: Verify there are no “FAIL” annunciations in traffic status window.
   a. If the installation includes TAS/TCAS correlated traffic, verify that the TAS/TCAS status is either “OPER” or “STBY”.
6. Observe targets of opportunity from ADS-B equipped aircraft or an FAA ground station.

6.3.3.2 TAS/TCAS Traffic Interface Check

This check is required for units configured as an HSI (with Enhanced HSI page), HSI/Standby ADI (with Enhanced HSI page), and MFD (with Traffic page).

> NOTE
> If the GI 275 system is configured for an external control (i.e., a display other than the MFD is controlling the traffic system), then the Standby/Operate testing does not have to be completed.

If the interfaced traffic system is any of the following, then verify the interface per the instructions included in this section:

- L3 Communications SKY497/SKY899 SkyWatch®
- Honeywell (Bendix/King) KTA 870/KMH 820, KTA 970/KMH 920
- Avidyne TAS 6XX (Ryan 9900BX TCAD)
- GTS 8XX

1. Power on the GI 275 in Normal mode.
2. HSI: Navigate to the HSI Map page (Menu → Select Page → HSI Map or turn the outer knob).
   MFD: Navigate to the Traffic page (Menu → Select Page → Traffic or turn the outer knob).
3. Verify that no TAS/TCAS failure annunciations (e.g., “NO DATA”, “TRFC FAIL”, “NO TRFC DATA”, “DATA FAILED”, “FAILED”) are shown on the traffic map.
   a. HSI: This completes the check.

4. In the upper-left corner of the Traffic page, verify that the Traffic Status is either “TAS/TCAS: OPER” or “TAS/TCAS: STBY” (i.e., “TIS: FAIL” or “TAS/TCAS: FAIL” must not be displayed).
5. Change the Traffic Status mode between Operate and Standby (Menu → Traffic Options → Traffic Status).
6. Verify that the mode of the traffic system is updated accordingly (“STBY” will be annunciated above ownship icon when in Standby mode; “TRAFFIC” will be annunciated at the top of the screen in Operate mode).
7. Put the traffic system in Standby mode and initiate a traffic system self-test by selecting the Test button (“TEST MODE” will annunciate at the top of the screen for approximately 5 seconds).
8. Verify that the traffic system runs a self-test and the self-test traffic pattern is displayed.

6.3.3.3 TIS-A Traffic Interface Check

This check is required for units configured as an HSI (with Enhanced HSI page), HSI/Standby ADI (with Enhanced HSI page), and MFD (with Traffic page) only if a Garmin GTX 33X Transponder is connected to the GI 275 system, and no other traffic systems covered in Section 6.3.3.1 or Section 6.3.3.2 are installed.

1. Power on the GI 275 in Normal mode.
2. HSI: Navigate to the HSI Map page (Menu → Select Page → HSI Map or turn the outer knob).
   MFD: Navigate to the Traffic page (Menu → Select Page → Traffic or turn the outer knob).
3. Power on the GTX 33X by pressing ALT on the GTX 33X.
4. On the GI 275, verify that the Traffic Status is not “TIS Fail” (i.e., no fail annunciations).
5. Verify that the amber “NO DATA” is not displayed over the ownship symbol.
   a. HSI: This completes the check.
6. Verify that the Traffic Status is in Standby mode (Menu → Traffic Options).
7. Attempt to place the system in Operate mode. If the aircraft is within TIS-A coverage, the system will display “TRAFFIC”. If the aircraft is not within TIS-A coverage, the unit will display “Unavailable”.

6.3.3.4 SVT Traffic Check

This check is required if Synthetic Vision is enabled and a traffic source is interfaced to a Primary ADI.

> NOTE
> It may take up to a minute for the synthetic terrain data to be displayed on the ADI. Until SVT is active, the horizon display will be the standard blue over brown.

1. Power on all GI 275s in Normal mode.
2. Wait for the GPS signal to be acquired and the TAWS system check to report “OK”.
3. From the menu, touch TAWS Test and verify that the GI 275 displays “TAWS Test”.
4. Once the test is complete, touch TAWS Inhibit and verify that the GI 275 displays “TAWS Inhibit”.
5. Touch TAWS Inhibit to de-select it.

6.3.4 Terrain Checks

6.3.4.1 External TAWS Check

This check is required if the GI 275 MFD or Primary ADI is configured for External TAWS.

1. Power on the GI 275 in Normal mode.
2. Power on the External TAWS source (GNS 400W/500W, GTN 6XX/7XX, or GTN Xi).
3. Wait for the GPS signal to be acquired and the TAWS system check to report “OK”.
4. Once the test is complete, touch TAWS Inhibit and verify that the GI 275 displays “TAWS Inhibit”.
5. Touch TAWS Inhibit to de-select it.

6.3.4.2 Terrain Display

This check is required for an MFD displaying the Terrain page.

1. Power on the GI 275 in Normal mode.
2. Navigate to the Terrain page (Menu → Select Page → Terrain or turn the outer knob).
3. Verify the display shows a red background (indicating surrounding terrain is 100 feet below the aircraft and above).
4. Touch the radius button on the left side of the screen and adjust the radius wider with the inner knob until an obstacle (tower figure) is displayed on the screen.
5. Change the view from 360° to Arc (Menu → Terrain Options → View) and verify that the view on the display changes.
6. Perform a Terrain Test (Menu → Terrain Options → Terrain Test). “TER TEST” will display in white at the bottom of the screen.

6.3.5 Weather Ground Checks

6.3.5.1 FIS-B Weather (ADS-B In)

This check is required for units intending to display weather on an HSI or HSI/Standby ADI with Enhanced HSI page or on an MFD or MFD/Standby ADI with FIS-B Weather page only if a compatible ADS-B traffic source (GTX 345, GTS ADS-B, GNX 375) is configured.

NOTE

The following steps may be performed as a ground check as long as the aircraft is within range of an FAA ground station. If this is not the case, it is recommended that these checks be performed in-flight within range of an FAA ground station.

1. Power on the GI 275 system in Normal mode.
2. Verify the GPS navigator and GDL 69/69A are in Normal mode.
3. Allow up to 5 minutes for the GPS navigator to obtain a position.
4. HSI: Navigate to the HSI Map page (Menu → Select Page → HSI Map or turn the outer knob).

   MFD: Navigate to the FIS-B Weather page (Menu → Select Page → Weather or turn the outer knob).
5. Verify there are no warnings displayed.
6. MFD: Open the menu and touch FIS-B WX Options → Layers and then select several FIS-B weather products to display.

NOTE

It may take up to 10 minutes after power-on for the system to begin receiving FIS-B weather products.

7. MFD: Verify at least one of the selected products displays a valid time stamp by touching Time Stamps on the bottom of the display.
8. Verify there are no status fail messages regarding FIS-B weather.

6.3.5.2 GDL 69 Series Weather

This check is required for units intending to display weather on an HSI or HSI/Standby ADI with Enhanced HSI page or on an MFD or MFD/Standby ADI with the SXM Weather page only if a GDL 69/69A is configured and a valid Sirius XM subscription is obtained.

This procedure does not activate the GDL 69 series XM data link radio. The instructions for activating the GDL 69 series XM data link radio can be found in GDL 69 Series SiriusXM Satellite Radio Activation Instructions (P/N 190-00355-04).

1. Position the aircraft where there is a clear view of the southeastern or southwestern sky (XM Satellite Radio satellites are located above the equator over the eastern and western coasts of the continental United States).
2. Power on the GI 275 system in Normal mode.
3. Verify the GPS navigator and GDL 69/69A are in Normal mode.
4. Allow up to 5 minutes for the GPS navigator to obtain a position and the GDL 69/69A to obtain data.

5. HSI: Navigate to the HSI Map page (Menu → Select Page → HSI Map or turn the outer knob).
   MFD: Navigate to the SXM Weather page (Menu → Select Page → Weather or turn the outer knob).
6. Verify there are no warnings displayed.
7. MFD: Open the menu and touch SXM WX Options → Datalink Status.
   a. Verify the Data ID field has a valid value and is not blank.
   b. Verify the Data and Audio signal bars are in the green and that the displayed subscription level is accurate.

6.3.6 WX-500 Stormscope Interface Check

This check is required for units intending to display Stormscope (lightning) on an MFD or MFD/Standby ADI.

1. Power on the GI 275 in Normal mode.
2. Power on the LRU controlling the Stormscope.
3. Allow up to 5 minutes for the GPS navigator to obtain a position.
4. Navigate to the Lightning page (Menu → Select Page → Lightning or turn the outer knob).
5. Verify there are no warnings displayed.
6. Open the menu and touch Lightning Opts.
7. Toggle between Cell and Strike modes and verify that the corresponding mode is displayed on the bottom of the MFD.
8. Toggle between 360° and Arc views and verify the image switches between a 360° view surrounding the aircraft icon to an arc placed in front of the aircraft icon.

6.3.7 Radar Altimeter Check (ARINC 429)

This check is required for units intending to display radar altitude on an MFD or MFD/Standby ADI.

> NOTE
>
> The GRA 55/5500 and FreeFlight RA4500 radar altimeters provide an automated self-test during power cycles; therefore, no pilot-initiated self- test is required. After the power-up sequence, verify that no faults are detected, “RA FAIL” is not displayed, and the RA value displays “0” after the self-test is complete.

1. Power on the GI 275 in Normal mode.
2. Navigate to the Rad Alt page (Menu → Select Page → Rad Alt or turn the outer knob).
3. Initiate a radar test (Menu → Rad Alt Options → Test).
   a. Verify that the radar altimeter increases to an altitude of 50 feet before decreasing to 0 feet.

6.3.8 Transponder Control Check

This check is required for units configured as an MFD or an MFD/Standby ADI (with the **Transponder** page configured on) that is interfaced to a GTX 345R remote transponder or a GTX 345 configured as a remote transponder.

1. Power on the GI 275 in Normal mode.
2. Navigate to the **Transponder** page (it must be configured as the last page per Section 5.6.3).
3. With the GTX 345 transponder powered on, verify that there is not a yellow “X” over the XPDR field.
4. Enter a code into the XPDR field using the keypad and touch **Enter**.

   CAUTION

   When entering a code to check the transponder, do not enter a code that begins with a “7” to avoid accidentally triggering an alarm at an ATC facility.

5. Verify that the code that was entered is now displayed in the XPDR field.
6. If dual transponders are installed, select XPDR 2 as the active transponder and repeat steps 3 through 5.
7. If dual transponders are installed, with XPDR 1 set as the active transponder, pull the #1 transponder circuit breaker and verify that XPDR 1 shows a yellow “X”. Select XPDR 2 as the active transponder and verify that it does not show a yellow “X”. If the behavior above does not occur, verify that the wiring is correct.

6.3.9 Autopilot Ground Checks

Before proceeding with the autopilot interface tests, verify the display has been properly configured for the autopilot (and flight director, if applicable) that is installed. For configuration instructions, refer to Appendix C. Only those interfaces that are directly affected by the GI 275 STC are covered by this manual; if any other autopilot modifications have been made, those changes are outside the scope of this STC and must be checked in accordance with the autopilot installation manual.

> WARNING
> It is important the display be properly configured to prevent damage to the autopilot computer.

6.3.9.1 Autopilot Engagement Check

This section verifies that the autopilot can be engaged.

1. Power on the GI 275 system in Normal mode. Allow the PFD to obtain a valid heading, attitude, altitude, and GPS location (from the navigator).
2. Verify the GPS navigator is in Normal mode.
3. Engage the autopilot. If the autopilot cannot be engaged, troubleshoot using the instructions in the autopilot installation manual.
4. For installations utilizing the GI 275 to provide attitude information to the autopilot, verify that the autopilot disconnects and the servo's disengage (Menu !’ Test !’ AP DISC).
5. For all other installations, disengage the autopilot using regular means.

6.3.9.2 Flight Director Check

This section verifies that the flight director interface between the autopilot computer and the display is functional. This test only needs to be performed if:

- Analog flight director outputs are being sent to the display.
- The GI 275 is configured to display the flight director.

1. Power on the GI 275 PFD in Normal mode.
2. Activate the flight director with the autopilot in Pitch/Roll or Heading/Altitude mode (it is not necessary for the servos to be engaged for this test).
3. Verify that the flight director is displayed on each applicable display. If the flight director is not displayed, troubleshoot using the guidelines in the GI 275 maintenance manual.
4. Command the flight director to pitch up.
5. Verify that the command bars move up.
   - If the flight director response is opposite (i.e., the command bars move down rather than up), the Pitch Polarity can be changed in Configuration mode (Calibration/Test !’ Autopilot !’ Flight Director !’ Pitch Polarity).
6. Command the flight director to pitch down.
7. Verify that the command bars move down.
8. Command the flight director to roll right.
9. Verify that the command bars move to the right.
   - If the flight director response is opposite, the Roll Polarity can be changed in Configuration mode (Calibration/Test !’ Autopilot !’ Flight Director !’ Roll Polarit).
10. Command the flight director to roll left.

11. Verify that the command bars move to the left.
12. Touch Go Around, if equipped.
13. Verify that the command bars center laterally and move to command a climb.

6.3.9.3 Heading and Course Error Check

This section verifies that the heading and course error interface between the GI 275 and autopilot computer is functional.

1. Power on the GI 275 system in Configuration mode.
2. Touch Calibration/Test → Autopilot → Test
3. Engage HDG/CRS Valid (if HDG/CRS valid discrete is not configured, then continue to step 4).
4. On the autopilot, engage in HDG mode.
5. Change HDG Datum to 10°RT.
6. Verify that the control yoke or stick moves to the right.
7. Change HDG Datum to -10°LT.
8. Verify that the control yoke or stick moves to the left.
9. Change HDG Datum to 0°RT.

NOTE
If the control yoke or stick moves in the opposite direction of what is expected, reverse the Left/Right HDG Polarity on the Autopilot Calibration page and continue the checkout process.

10. Put the autopilot in NAV mode.
11. Change CRS Datum to 20°RT.
12. Verify that the control yoke or stick moves to the right.
13. Change CRS Datum to -20°LT.
14. Verify that the control yoke or stick moves to the left.
15. Change CRS Datum to 0°RT.
16. Disengage the autopilot.

NOTE
If the control yoke or stick moves in the opposite direction of what is expected, reverse the Left/Right Course Polarity on the Autopilot Calibration page and continue the checkout process.

Figure 6-1 Autopilot Test Page

6.3.9.4 VOR/Localizer and Glideslope Deviation Checks

This test verifies that the lateral deviation, vertical deviation, lateral flag/superflag, and vertical flag/superflag interfaces between the GI 275 and autopilot are correct.

> NOTE
> Setting lateral and vertical flags will set both the low-level and superflag outputs simultaneously.

1. Power on the GI 275 system in Configuration mode.
2. Touch Calibration/Test !’ Autopilot !’ Test !’ Deviations.
3. Engage HDG/CRS Valid.
4. On the autopilot, engage in HDG mode.
5. On the GI 275, touch Lateral Flag.
6. On the autopilot, engage in APR mode.
7. On the GI 275, set the Lateral Deviation (Lat) to 30% RT.
8. Verify that the autopilot moves the control yoke or stick to the right.
9. Set the Lateral Deviation (Lat) to -30% LT.
10. Verify that the autopilot moves the control yoke or stick to the left.
11. Set the Lateral Deviation (Lat) to 0%.
12. Touch Lateral Flag to disable it.
13. On the autopilot, verify that it exits APR mode.
14. On the GI 275, touch Lateral Flag.
15. On the autopilot, re-engage APR mode, if necessary.
16. On the GI 275, touch Back !’ ILS/GPS Approach.
17. Touch Deviations.
18. Touch Vertical Flag and set Vertical Deviation (Vert) to -30% DN.
19. Verify that the autopilot indicates that it is capturing or tracking the glideslope.
20. Verify that the autopilot moves the control yoke or stick forward.
21. Set the Vertical Deviation to 30% UP.
22. Verify that the autopilot moves the control yoke or stick aft.
23. Touch Vertical Flag to disable it.
24. Verify that the autopilot indicates that it is no longer capturing or tracking the glideslope.
25. Set the Vertical Deviation to 0% and verify the Vertical Flag and the Lateral Flag are de-selected.
26. Disengage the autopilot.

Figure 6-2 Autopilot Test Page - Deviation

6.3.9.5 GPS Roll Steering Check

GPS roll steering is handled in one of three ways:

1. If the autopilot has an ARINC 429 roll steering input, the GI 275 can provide ARINC 429 roll steering directly to the autopilot.
2. If an external roll steering converter has been installed, the GI 275 can provide ARINC 429 roll steering to the converter, which then outputs an analog heading error signal to the autopilot.
3. The GI 275 can provide the roll steering via the heading error output, taking the place of a separate roll steering converter. The autopilot is left in Heading mode, and the GI 275 varies the heading error output to steer the autopilot.

6.3.9.5.1 ARINC 429 GPS Roll Steering Check

This test verifies that the GPS roll steering interface between the GI 275 and the autopilot is functional.

1. Power on the GI 275 system in Configuration mode.
2. Touch Calibration/Test !’ Autopilot !’ Test !’ A429 Output
3. Engage GPS Annunciate discrete output (if configured) and GPS Select discrete output (if configured).
4. Engage the autopilot in GPSS mode. If an external roll steering converter is used, engage the autopilot in Heading mode and set the roll steering converter to roll steering.
5. On the GI 275, set the roll angle to 10°RT.
6. Set GND Speed to 50 KT.
7. Touch GPSS Valid (i.e., illuminated green).
   a. Verify that the autopilot rolls the control yoke or stick to the right.
8. Set the roll angle to 0°RT.
   a. Verify that the autopilot rolls the control yoke or stick level.
9. Set the Roll angle to 10°LT.
   a. Verify that the autopilot rolls the control yoke or stick to the left.
10. Set the Roll angle to 0°RT.
11. Set GND Speed to 0 KT.
12. Touch GPSS Valid to de-select it.
13. Disconnect the autopilot.

Figure 6-3 GPSS Page

6.3.9.5.2 Analog GPS Roll Steering Check

This check verifies that the GPSS/HDG Control selection is configured correctly and also verifies the operation of the analog GPS roll steering interface between the GI 275 and the autopilot.

> NOTE
>
> The Heading and Course Error Check in Section 6.3.9.3 must be successfully completed prior to checking the operation of the GI 275 Analog GPS roll steering.

1. Power on the GI 275 system in Normal mode.
2. Touch the CDI button until “GPS” is displayed as the navigation source on the HSI.
3. Open the menu and touch HSI Options !’ HDG Options menu and change the AP HDG REF to GPSS.
4. Verify that “GPSS” is displayed.
5. Verify the cyan heading bug is hollowed out.
6. Open the menu and touch HSI Options !’ HDG Options menu and change the AP HDG REF to HDG Bug
7. Verify that “GPSS” is no longer displayed.

Figure 6-4 GPSS Selection

GNS 4XXW/5XXW Series, GTN 6XX/7XX Series, and GTN Xi Series Units

The following steps are not required if the Heading Error Test has been successfully completed. Due to the nature of the GNS 4XXW/5XXW, GTN 6XX/7XX, and GTN Xi self-test operation, it may be difficult to observe the self-test response. It is recommended that the Heading Error Test be used in place of self-test operation. Perform the following check for the GPS source that is providing navigation data to the HSI:

1. Power on the GPS unit is in Normal mode.
2. Proceed to the Instrument Panel Self-Test page.
3. Ensure that “GPSS” is displayed on the GI 275 (refer to Figure 6-4).
4. Engage the autopilot in HDG mode. If possible, engage only the flight director and not the autopilot servos.
5. If available, verify that the flight director slowly moves back and forth between a right bank and wings level. If the flight director is not available, verify that the autopilot rolls the control yoke or stick to the right if AP is engaged.

GNS 480 Navigator

For the GPS source that is providing navigation data to the HSI, do the following:

1. Power on the GNS 480 is in Ground Maintenance mode and navigate to the Autopilot Test page.
2. Ensure that “GPSS” is displayed on the GI 275.
3. Set the ROLL/STEER to 10°R.
   a. Verify that the autopilot rolls the control yoke or stick to the right.
4. Set the ROLL/STEER to 0°.
   a. Verify that the autopilot rolls the control yoke or stick level.

5. Set the ROLL/STEER to 10°L.
    a. Verify that the autopilot rolls the control yoke or stick to the left.
6. Disconnect the autopilot.

6.3.10 Flight Databases Check

This section verifies that all databases are up-to-date.

1. Power on the GI 275 in Normal mode.
2. Open the menu and touch System !’ Databases (DB)
3. Verify that all databases are up-to-date. Outdated databases will be in amber.
4. If any databases are out-of-date, follow the instructions in Section 5.15.

    NOTE
    The Basemap and Terrain databases do not have expiration dates.

6.4 AHRS Ground Checks

These checks must be performed on each GI 275 unit with an internal ADAHRS that is configured on (i.e., AHRS configured to Internal). The following section completes the required AHRS calibration and compass swing checks/adjustments.

6.4.1 Magnetometer Calibration

Use the compass rose or a calibrated magnetic sight compass to calibrate the magnetometer. Ensure the aircraft and compass is located away from magnetic buildings, materials, and other structures. The accuracy of the AHRS cannot be guaranteed if the calibration is not performed in an area that is free of metallic structure or objects. Refer to Section 6.4.5 for guidance in evaluating a site for magnetic disturbances.

> NOTE
>
> The Pitch/Roll Offset Compensation Procedure in Section 5.8.1.2 must be completed prior to performing this procedure.

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 GI 275(s) in Configuration mode.
4. Touch Calibration/Test !’ Attitude/Heading !’ Calibrate Magnetomete
5. Complete the Before Calibration steps listed on the display; touch Next after completing each step to move to the next step.
6. Touch Start when it becomes available to start the calibration procedure.
7. Follow the on-screen commands to complete the calibration.
8. Repeat the steps 4 - 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 36° turn. If this condition is encountered, use outside references to complete the approximate 36° turn, instead of using the display instructions of when to complete the turn (use the compass rose radial to make the 36° (±5°) turn increments). Accurately completing each 36° 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 36°). 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”.

6.4.2 Compass Swing

After the Magnetometer Calibration Procedure is completed, a compass swing must be performed to verify the AHRS heading accuracy.

1. With all of the aircraft and avionics systems powered on and operating normally, position the aircraft on a compass rose at a heading 360° (Magnetic North) or select a level and magnetically clean location and use a calibrated sight compass.
2. Power on the GI 275 in Normal mode.
3. Open the menu and touch System → Units.
4. Touch Nav Angle to select Magnetic. Close the menu.
5. Record the HDG value displayed on the display as indicated in Table 6-4.
6. Record the heading displayed on the standby compass and non-stabilized compass. Verify or correct the standby compass deviation card.
7. Calculate the heading errors by subtracting the displayed (B) value from the actual (A) value for each of the headings. If each heading displayed on the display (or display #1 and display #2) is at or within ±3° of the actual heading, no further adjustments are necessary. If one or more of the displayed heading values are outside this range, further calibration is needed.
8. If all calculated heading errors are between -5° and +5° inclusive, the heading offset procedure can be used for the Heading Offset Compensation Procedure. Proceed to Section 6.4.2.1.

   NOTE

   If at least one Heading Error (A-B) is greater than 5°/less than –5°, DO NOT perform the Heading Offset Procedure in Section 6.4.2.1 until the GMU 11/44B installation has been physically corrected.

9. If at least one Heading Error (A-B) is greater than 5°/less than -5°, calculate the average error by adding all errors and dividing by 12. This is the angle by which the GMU 11/44B must be physically rotated to correct the installation.
10. Modify the installation to rotate the GMU 11/44B by the amount calculated in the previous step. When looking down at the GMU 11/44B, rotate clockwise for positive values and counterclockwise for negative values.
11. After physically correcting the GMU 11/44B installation, repeat the procedures in Section 6.4.1 and Section 6.4.2.

Table 6-4 Heading Verification AHRS

AHRS #1 (For Dual Installations)

Heading (A)	Displayed AHRS or AHRS #1 Heading (B)	Heading Error (A-B)	Standby Compass Heading
360° (North)			
30°			
60°			
90°(East)			
120°			
150°			
180°(South)			
210°			
240°			
270°(West)			
300°			
330°			

AHRS #2 (For Dual Installations Only)

Heading (A)	Displayed AHRS or AHRS #2 Heading (B)	Heading Error (A-B)	Standby Compass Heading
360° (North)			
30°			
60°			
90°(East)			
120°			
150°			
180°(South)			
210°			
240°			
270°(West)			
300°			
330°			

6.4.2.1 Heading Offset Compensation

NOTE
This procedure is only needed when the GI 275 is interfaced to an external AHRS source.

The Heading Offset Compensation Procedure is not required if it was determined in Section 6.4.2 that all calculated heading errors are between -3° and +3° inclusive. If at least one heading error was greater than 3° or less than -3°, but all heading errors were between - 5° and +5° inclusive, use the Heading Offset Compensation Procedure to correct the errors. Otherwise, physically correct the appropriate GMU 11/44B installation before performing the Heading Offset Compensation Procedure.

NOTE
If the Heading Offset Compensation Procedure must be performed on both AHRS #1 and AHRS #2, it is permitted to run the procedure below simultaneously on two displays.

The Magnetometer Calibration Procedure must be performed before the Heading Offset Compensation Procedure. Performing the magnetometer calibration removes any stored heading offset values.

1. Start the aircraft engine in accordance with the aircraft AFM/POH.
2. Power the displays on in Configuration mode.
3. Touch Calibration/Test → Attitude/Heading → Heading Offset.
4. Select the desired AHRS unit to calibrate from the AHRS Unit selection.
5. Complete the Before Calibration steps listed on the display; touch each step when complete so that a green check mark appears next to the selection.
6. Touch Calibrate when it becomes active to start the calibration procedure.
7. Follow the on-screen commands to complete the calibration.

6.4.3 Engine Vibration Test

The calibration procedures in Section 5.8.1.1 through Section 6.4.2.1 do not have to be completed prior to performing this procedure.

For dual AHRS installations, the following procedure must be performed for each AHRS on the display it is wired to. The procedure can be done simultaneously on each display. Follow the prompts on each display. Initiate the Engine Vibration Test by performing the following steps:

1. Start the aircraft engine in accordance with the aircraft AFM/POH.
2. Power on the display(s) in Configuration mode.
3. Touch Calibration/Test → Attitude/Heading → Engine Vibration Test.
4. Complete the Before Calibration steps listed on the display; touch Next after completing each step to move to the next step.
5. Touch Start to begin the procedure.
6. Gradually increase the engine throttle in small increments from idle to full and back to idle over a period of approximately 1 minute.
7. Observe the readout on the display while performing the engine run-up. The values shown during the test must not exceed 100 in order for the test to be considered a pass. Values in excess of 100 will cause the display to indicate a failure.
8. Select DONE when finished.

If failures are indicated, the engine run-up check may be repeated up to two more times. If the check does not pass after three attempts, the installation cannot be considered reliable until the source of the vibration problem is identified and fixed. In the event of repeated failures during the engine run-up check, record the values that are reported to be out of range for future reference.

The following are potential causes for a failure of the engine run-up check:

- Vibration motion of AHRS and/or GMU 11/44B caused by neighboring equipment and/or supports.
- Mounting screws and other hardware for AHRS and/or GMU 11/44B are not firmly attached.
- AHRS connector is not firmly attached to unit.
- Wiring connected to the remotely mounted AHRS or GMU 11/44B is not firmly secured to supporting structure.
- An engine/propeller is significantly out of balance.
- GI 275 does not have up-to-date software.
- A connector is inadequately torqued (loose connectors can affect the Acceleration and Gyro data very easily).
- Harnesses are inadequately secured (if there is a ‘pre-load’ from the harness or P/S lines, this can cause a specific axis to fail).
- Batteries are not properly installed with dampers.
- Mounting hole and screws are not properly torqued (verify the seating of the GI 275).
- The panel mounting provisions are inadequate:
    %æThe panel thickness is inadequate.
    %æAdjacent instrumentation insecurely mounted (any external mounted items, such as an iPad attached to the panel, can result in issues).
    %æPull the power to any other instrument on the panel that might have a gyro, such as the Turn Coordinator.

After the AHRS calibration is complete, the AHRS attitude and heading information displayed will become valid within 1 minute of power-up in Normal mode.

6.4.4 Magnetometer Interference Test

For dual AHRS installations, the following procedure must be performed on each AHRS through the display it is directly wired to. The test can be done simultaneously on each display. Follow the display prompts.

1. Power on the display(s) in Configuration mode.
2. Touch Calibration/Test !’ Attitude/Heading !’ Interference Test
3. Complete the Before Calibration steps listed on the display; touch Next after completing each step to move to the next step.

   NOTE

   The second item on the checklist instructs the operator to “prepare a detailed test sequence”. An example sequence is listed in Section 4.6.1.1 and Garmin document AHRS/Magnetometer Installation Considerations (P/N 190-01051-00).

4. Touch Start to start the procedure.
5. Perform each action on the Test Sequence List at its specified elapsed time and duration. This will help ensure correct identification of magnetic field deviation sources after the survey is complete. The Magnetometer Interference Test must be run for a duration of at least 25 seconds to properly complete.
6. Monitor the magnetic field deviation percentage throughout the survey. If deviation levels exceed thresholds, mark the survey sequence exercises during which these deviations occurred.
7. Touch Done when the test sequence is completed. The GI 275 will display a test Pass or Fail, the worst-case percentage of magnetic interference, and the time stamp at which it occurred.
8. Repeat the procedure for each installed AHRS unit if they were not completed simultaneously.
9. If the check passes, no further action is required.

If the check fails, the installation is considered unreliable until the source of magnetic interference is identified and fixed. The Magnetometer Interference Test must be repeated until passed. When the Magnetometer Interference Test fails, record the three magnetometer maximum deviation values and their corresponding timestamps. A maximum deviation value greater than 5.0 mGauss in either the X or Y axes, or greater than 8.0 mGauss in the Z axis, indicates a problem that must be resolved. Compare the corresponding timestamps with the prepared test sequence to identify which action produced the failure. Contact Garmin Support for assistance.

Three common reasons for a failed Magnetometer Interference Test are:

- Equipment, wiring, or ferro-magnetic items are installed too close to the magnetometer.
- An electronic device has become grounded through the aircraft structure instead of the proper ground wire in a twisted shielded pair, especially if the ground return path through the aircraft structure passes near the GMU 11/44B.
- The Interference Test was not run for a long enough duration. At least 25 seconds are required for the test to properly complete.

6.4.5 Site Evaluation of Magnetic Disturbances

Typically, a compass rose is an acceptable location to perform the Magnetometer Calibration Procedure. However, even an existing compass rose can be evaluated to determine if it is free of magnetic disturbances. If the evaluation of an existing compass rose indicates that magnetic disturbances are present, an alternative location must be found to perform the Magnetometer Calibration Procedure.

A GI 275-equipped aircraft can be used to evaluate a candidate site for magnetic disturbances and determine whether it is a suitable location to perform the Magnetometer Calibration Procedure. The Magnetometer Calibration Procedure itself contains the logic to simultaneously survey the location for magnetic cleanliness while it is computing the magnetometer calibration parameters.

The GI 275-equipped aircraft used to evaluate the site must have already completed the Pitch/Roll Offset Compensation Procedure (Section 5.8.1.2). The completion of the Magnetometer Calibration Procedure (Section 6.4.1) is not required. In order to evaluate a site, the Magnetometer Calibration Procedure must be performed twice: once turning clockwise around the site and once turning counterclockwise. Both times, the procedure should be conducted as described in Section 6.4.1, with the exception of the direction of turns around the site.

If, upon completion of the Magnetometer Calibration Procedure in each clockwise and counterclockwise direction, the GI 275 displays the “CALIBRATION SUCCESSFUL/SITE IS CLEAN” message, then the candidate site is sufficiently free of magnetic disturbances and is acceptable for performing the Magnetometer Calibration Procedure. It is important to obtain successful results in both the clockwise and counterclockwise directions.

If, upon completion of the Magnetometer Calibration Procedure in either of the two directions, the GI 275 displays either the “MAG FIELD AT SITE NOT UNIFORM” or “MAG FIELD AT SITE DIFFERS FROM IGRF MODEL” message, then the site contains magnetic disturbances that are too large, and an alternate site should be used for the AHRS magnetic calibration.

6.5 Indicator-Specific Checks

6.5.1 Attitude and Direction Indicator (ADI) Checks

The ADI Checkout Procedure, contained in the following subsections, must be conducted on each Primary ADI and Standby ADI in the GI 275 system.

6.5.1.1 Pitot-Static and Airspeed Tape Settings Checks

The following section verifies the correct operation of the GI 275 altitude and airspeed tapes, standby altimeter, and standby airspeed indicator using a pitot-static ramp tester. When using a pitot-static ramp tester, only simulate normal aircraft operating conditions as defined in the aircraft Type Data (POH/AFM) or other approved STC in order to avoid component damage.

> NOTE
> The ADC may require a warm-up period of 15 minutes to reach full accuracy; however, 30 minutes may be required if the environmental temperature is below 0°C.

The airspeed tape display and settings must be verified using Section 6.5.1.1.1 or Section 6.5.1.1.2 depending on the airspeed tape configuration (Basic or Advanced, respectively). The airspeeds referenced in the following sections were configured per the instructions in Section 5.6.1.2.1.

6.5.1.1.1 Basic Airspeed Tape Setting

If the Airspeed Configuration Type is set to Basic, verify correct operation of the ADC as follows. The Airspeed Configuration Type is set on the Airspeed Configuration page (Setup → Airframe Configuration → Airspeed Configuration).

> NOTE
> If the ADC and standby airspeed indicator are on separate pitot-static systems, it is recommended to set up the test set so that both systems can be tested at the same time, or separate tests must be completed for each system.

1. Power on all GI 275s in the system in Normal mode.
2. Using a pitot-static test set, increase the airspeed until the airspeed tape pointer is at the bottom of the white band (Vs0).
3. Verify that the bottom of the white arc/band on the standby ASI and ADI airspeed tape are at the same airspeed value.
4. For twin-engine aircraft with a minimum control speed: Increase the airspeed to the lower red radial (Vmca). Verify that the red radial on the standby ASI and ADI airspeed tape are at the same airspeed value.
5. Change the airspeed until the ADI airspeed tape pointer is at the bottom of the green band (Vs1).
6. Verify that the bottom of the green arc/band on the standby ASI and ADI airspeed tape are at the same airspeed value.
7. For twin-engine aircraft only: Increase the airspeed to the blue radial (Vyse). Verify that the blue radial on the standby ASI and ADI airspeed tape are at the same airspeed value.
8. Change the airspeed until the ADI airspeed tape pointer is at the top of the white band (Vfe).
9. Verify that the top of the white arc/band on the standby ASI and ADI airspeed tape are at the same airspeed value.

10. Change the airspeed until the ADI airspeed tape pointer is at the top of the green band/bottom of the yellow band (Vno).
11. Verify that the top of the green arc/band on the standby ASI and ADI airspeed tape are at the same airspeed value.
12. Increase the airspeed to the upper red radial/top of yellow arc (Vne).
13. Verify that the red radial on the standby ASI and ADI airspeed tape are at the same airspeed value.
14. Starting at the current airspeed, decrease the airspeed to zero, stopping at each of the airspeeds listed in Table 6-5 (airspeeds above Vne should not be checked), verifying that the ADI and standby ASI airspeed values are within the tolerances indicated in Table 6-5.

Table 6-5 Airspeed Test Points

Test Set Airspeed (kt)	ADI Allowed Tolerance (kt)
50	±5.0
80	±3.5
100	±2.0
120	±2.0
150	±2.0
180	±2.0
210	±2.0
250	±2.0
290	±3.0

Cessna 190/195 with Harpoon-Style Pitot Probe

Installations of the GI 275 in a Cessna 190/195 in which the GI 275 replaces the Kollsman airspeed indicator (identifiable by a Harpoon-style pitot probe mounted on the wing) must use the specific Cessna 190/195 Airspeed Calibration listed in Table 3-3 and must use Table 6-6.

Table 6-6 Cessna 190/195 Airspeed Test Points

Test Set Airspeed (MPH)	Cessna 190/195 Indicator Airspeed (MPH)	ADI Allowed Tolerance (MPH)
0	0	±3.0
50	45	±3.5
70	70	±3.0
100	106.5	±3.0
150	166	±3.0
190	213	±4.0

6.5.1.1.2 Advanced Airspeed Tape Setting

If the Airspeed Configuration Type is set to Advanced, refer to Appendix E. Set the Airspeed Configuration Type on the Airspeed Configuration page (Setup !’ Airframe Configuration !’ Airs Configuration). Verify correct operation of the ADC as follows.

> NOTE
> If the ADC and standby airspeed indicator are on separate pitot-static systems, it is recommended to set up the test set so that both systems can be tested at the same time, or separate tests must be completed for each system.

1. Power on all GI 275s in the system in Normal mode.
2. Using a pitot-static test set, increase the airspeed until the ADI airspeed tape pointer is at the bottom of the white band (Vs0).
3. Verify that the bottom of the white arc/band on the standby ASI and ADI airspeed tape are at the same airspeed value.
4. Increase the IAS throughout the range of the ASI. Stop at the limits of all Arc Ranges and at all Marking values configured per the instructions in Table E-1 and Table E-4.
5. Verify that the ranges and markings on the standby ASI and ADI are located at the same airspeed values. The last value verified should be the beginning of the red overspeed range (Vne/Vmo/Mmo).
6. The following applies to Variable Vne/Vmo/Mmo aircraft only:
   a. Decrease the IAS to 25 knots below the barber pole on the ADI. Increase the indicated altitude to the maximum operating altitude or service ceiling. Verify that the red overspeed range on the ADI and barber pole on the standby ASI are at the same airspeed (±5 knots). Decrease the airspeed as needed to ensure the IAS does not exceed the overspeed range during the simulated climb.
   b. Decrease the indicated altitude (do not exceed vertical speed limitations) back to ambient static pressure.
7. Starting at the current airspeed, decrease the airspeed to zero, stopping at all of the relevant airspeeds listed in Table 6-5 (airspeeds above Vne should not be checked). Verify that the ADI and standby ASI values are within the tolerances indicated.

6.5.1.1.3 Altimeter Check

The GI 275 and standby altitude displays must be verified per Title 14 of the CFR 91.411 and Part 43 Appendix E, with the following exception to 14 CFR Part 43 Appendix E, paragraph (b)(1):

- The tests of sub-paragraphs iv (Friction) and vi (Barometric Scale Error) are not applicable to the GI 275 due to the ADC interface and instrument display being digital.

6.5.1.2 ADI OAT Check

1. Power on all GI 275s in the system in Normal Mode.
2. On the ADI page, open the menu and touch ADI Options !’ Misc. Field.
3. Touch the button that displays temperature and select OAT. Touch OAT to enable it.
4. Exit the menu and verify that OAT is displayed in the bottom-left of the ADI page.

6.5.1.3 Standard Turn Rate Indicator Check

Standard turn rate indicators require an interfaced OAT probe.

1. Power on all GI 275s in the system in Normal mode.
2. Use a pitot/static test set to increase the airspeed to 70 kts.
3. Verify that the standard turn rate indicators are displayed at the top of the page (refer to Figure 6-5). If they are not displayed, then the ADI is not receiving outside air temperature data from the GTP 59.

Figure 6-5 ADI Standard Turn Rate Indicators

6.5.1.4 Synthetic Vision Check

Complete this section if SVT is enabled.

> NOTE
>
> It may take up to a minute for the synthetic terrain data to be displayed on the display. Until SVT is active, the horizon display will be the standard blue over brown.

1. Power on the GI 275 in Normal mode.
2. Wait for the GI 275 to initialize (i.e., attitude, heading, airspeed, altitude, and GPS position become valid).
3. Open the menu and touch Options !’ Terrain SVT.
4. Toggle on Synthetic Terrain (i.e., illuminated green).
5. Verify that there are no SVT alerts.
6. Verify that synthetic terrain data is displayed on the display.

6.5.2 Multifunction Display (MFD) Ground Checks

The MFD checkout procedures must be conducted on every MFD installed in the GI 275 system. The following sections must be completed as part of the MFD checkout process.

6.5.2.1 MFD OAT Check

1. Power on all GI 275s in the system in Normal mode.
2. Navigate to the MFD Data page (Menu !’ Select Page !’ MFD Data or turn the outer knob).
3. Open the menu and touch MFD Data Options.
4. Select the desired air temperature reference units page to match the type specified in the AFM or POH of the aircraft:
    a. OAT (Static) (static air temperature)
    b. OAT (Total) (total air temperature)
5. Verify the correct units (Celsius or Fahrenheit) and temperature reference (static or total) are displayed in the field.

6.5.3 Engine Indication System (EIS) Checks

This section contains procedures to verify proper installation, operation, and gauge markings of the EIS. Begin with the engine off and at ambient temperature.

6.5.3.1 Temperature Sensor Checks

This check applies to all temperature sensors interfaced to the EIS.

1. Power on each EIS display in Normal mode.
2. Navigate to the CHT/EGT page (Menu !’ Select Page !’ CHT/EGT or turn the outer knob).
3. Verify the temperatures being displayed are within ± 2°C of the ambient temperature.

   NOTE
   If the engine has not had sufficient time to reach ambient temperature, it is necessary to verify each temperature source independently.

4. Verify each CHT, EGT, TIT, and TIT2 (if installed) probe is wired to the corresponding cylinder number by applying heat to each sensor and monitoring the temperature rise on the EIS display.

   NOTE
   If the temperature decreases when heat is applied, the wire polarity may be reversed.

6.5.3.2 EIS Gauge Layout and Marking Checks

1. Power on the GI 275 system in Normal mode.
2. Verify that no or marks are present on any EIS gauge.
3. Verify the gauges on each EIS display match the required layout per the POH/AFM. Refer to Appendix F for details on EIS gauge layouts.
4. Verify that the instrument gauge markings and ranges match the aircraft data gathered in Section 5.7.4.2, Table 5-62, and Table 5-63.

   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.

6.5.3.2.1 Manifold Pressure Sensor Check

In Normal mode, verify that the gauge reads ambient pressure ±1 inHg (inches of mercury).

NOTE
Estimate the ambient pressure by subtracting 1 inHg for every 1,000 ft of field elevation from the current barometric pressure.

6.5.3.2.2 Oil Pressure Sensor Check

In Normal mode, verify that the gauge reads 0 ±1 psi.

6.5.3.2.3 Fuel Pressure Sensor Check

1. In Normal mode, verify that the gauge reads 0 ±1 psi. It may be necessary to manipulate the throttle/mixture to reduce residual fuel pressure.
2. If installed, turn on the fuel boost pump and verify the fuel pressure increases. Turn off the boost pump.

6.5.3.2.4 Tachometer Check

In Normal mode, verify that the gauge indicates 0 RPM.

6.5.3.2.5 Fuel Quantity Check

1. In Normal mode, verify the indicated fuel quantities are accurate for each tank (Main and AUX).
2. Verify that the unusable fuel quantity established by the aircraft manufacturer is the zero reading and a red line is present at zero.

6.5.3.2.6 Fuel Flow Sensor Check

In Normal mode, verify that the gauge reads 0 GPH.

6.5.3.2.7 Shunt and Voltage Sensor Checks

1. In Normal mode, verify all intended gauges are available.
2. Verify that the gauge(s) show the correct aircraft voltage and amperage with the engine off.

NOTE
An alternator load meter may indicate a small current if the alternator field is on.

6.5.3.2.8 OAT (EIS) Check

This check only applies to standalone GI 275 EIS units with an interfaced OAT sensor.

NOTE
If the GI 275 EIS is interfaced to a PFD, the OAT sensor must be interfaced to that PFD and not to a GEA.

1. In Normal mode, navigate to the AUX EIS page and touch a configurable field button.
2. Select OAT(EIS) and verify that the field displays the correct outside air temperature.

6.5.3.3 EIS Engine Run-up Checks

An Engine Run-up Check must be performed to ensure proper installation and configuration of the EIS sensors and gauges. Always follow engine start-up procedures as provided in the aircraft POH.

> CAUTION
> If the engine indications are not within operating specifications shortly after starting, IMMEDIATELY shut down the engine and troubleshoot the problem. Failure to do so may cause engine damage.

1. Obtain an optical tachometer to monitor propeller RPM.
2. Place the aircraft in an open and clear area appropriate for an extended engine run-up.
3. Follow the engine start-up procedure as outlined in the aircraft POH. Adhere to the required observations immediately following the start, such as oil pressure within 30 seconds.
4. For twin-engine aircraft, verify the appropriate engine gauges respond corresponding to the correct side (left/right or front/rear).
5. Verify the EIS RPM gauge(s) match the optical tachometer reading ±50 RPM.
6. Allow the engine to warm-up and oil temperature to increase to at least 100°F.
7. Verify the engine oil pressure gauge is reading within the green arc.
8. Verify the EIS RPM gauge matches the optical tachometer reading ±50 RPM during all phases of the engine run-up.
9. Verify the alternator load meter (if installed) and battery charge/discharge ammeter (if installed) indicate a positive load.
10. Perform individual magneto checks as specified by the aircraft POH. If the RPM does not drop as expected when switching from both magnetos to one, the P-lead, ignition switch wiring, or magneto timing is incorrect. Discontinue the test immediately and repair the ignition system.
11. Perform the engine pre-takeoff run-up checklist in accordance with the aircraft POH.
12. Verify all EIS readings are consistent with normal operation performance.
13. Verify all installed sensors and fittings are free of leaks.

> NOTE
> If the manifold pressure gauge is jittery, installing a Garmin restrictor will reduce jitter. Refer to Section 4.7.5.3.

6.5.3.4 EIS Annunciator Light Check

If an EIS annunciator(s) is installed, perform the following procedure:

1. Power on all GI 275s in Configuration mode.
2. Touch **Diagnostics → Discrete Outputs**.
3. Toggle the discrete labeled as “Engine Warning” (as configured in Section 5.5.11.1) to **Active** and verify that the red engine annunciator lamp illuminates. Toggle back to **Inactive**.
4. Toggle the discrete labeled as “Engine Caution” (as configured in Section 5.5.11.1) to **Active** and verify that the yellow engine annunciator lamp illuminates. Toggle back to **Inactive**.

    NOTE

    For separate annunciators, if the annunciator lights do not illuminate, verify the lamp operation by pressing on the lens holder. If the lamp does not illuminate, inspect and/or replace the lamps and repeat the check.

5. If the annunciator(s) do not illuminate, remove power from the aircraft and inspect the wiring.

6.5.4 Standby Indicator Check

This check verifies the configuration of the MFD/Standby ADI and HSI/Standby ADI automatic reversion and backup battery. Aircraft not configured for auto-reversionary standby instruments do not need to perform the following check.

1. Power on all GI 275s in the system in Normal mode.
2. Verify that no amber or red battery icon is displayed on the GI 275 standby display and that no messages annunciate.
3. Verify that attitude, heading, altitude, and airspeed are displayed normally on the standby display’s ADI page and on the primary display (i.e., no warnings, cautions, or advisories related to these functions).
4. Verify that the additional configured pages display information on the standby display (i.e., the standby should not be in reversionary mode).
5. Power off the primary display.
6. The standby display should revert to the ADI page within 1 second. Ensure that the attitude, heading, altitude, and airspeed are displayed normally on the GI 275 standby display (i.e., no warnings, cautions, or advisories related to these functions).
7. Power back on the primary display.
8. Verify that the primary display returns to Normal mode (may take up to 2 minutes for AHRS to align after restoring power).
9. Turn off the aircraft master switch and verify that all displays not equipped with a backup battery have powered off.
10. Touch **Stay On** on the dialog box that appears on the standby display. If any other display has the backup battery installed, touch **Turn Off**.
11. Verify that attitude, heading, altitude, and airspeed are displayed on the standby display.
12. Turn back on the aircraft master switch.
13. Verify that all displays in the system return to Normal mode (may take up to 2 minutes for AHRS to align).

6.6 Placards and Switch Labeling Check

If any placards were replaced or relocated as a result of a display installation, verify the following:

- The font size of the new placard is the same as the old placard it is replacing.
- The color of the new placard is identical to the color of the placard it is replacing.
- The text on the new placard is identical to the text on the placard it is replacing (it can be arranged differently as required by space constraints, but the wording must be the same).
- The placard must be legible and not obscured to the pilot by the glareshield, in all flight control positions, or by any other component in the flight deck.

If the new switch labels were added as a result of the GI 275 installation, verify the following:

- The font size and label is legible from the pilot's seat.
- The labels are legible in all ambient light conditions. In particular, the labels are legible with ambient flood lighting in darkness.
- The switch label must be legible and not obscured to the pilot by the glareshield, in all flight control positions, or by any other component to include the switch position.

If the GI 275 installation is limited to VFR operation only, and the criteria in Section 2.2 determined a placard is required, verify the following:

- The text on the placard reads: "AIRCRAFT LIMITED TO VFR".
- The font is at least 0.25 inches high.
- The placard is legible from the pilot's seat.

If separate EIS annunciators were installed, a placard or label is required. Verify the following:

- The text on the placard reads: "ENGINE".
- The font is at least 0.125 inches high and easily readable with sufficient contrast from the surroundings.
- The text must be displayed in a conspicuous place so that it cannot be obscured to the pilot by the glareshield or any other component and remains visible in all flight control positions.
- The text is legible in all ambient light conditions, particularly with ambient floodlighting in darkness.

Aircraft with an existing Operating Airspeed Placard, which includes information such as maneuvering speed, landing gear operating speed, and multi-engine aircraft operating speeds, that was relocated as the result of installation of the GI 275 system must have the new placard installed as close to the airspeed display as practical.

6.7 Electromagnetic Interference (EMI) Check

An EMC check must be conducted once the GI 275 system is installed and all interfaces to external equipment are verified to be working correctly. The EMC check verifies that the GI 275 is not producing unacceptable interference in other avionics systems and other avionics systems are not producing unacceptable interference in the unit.

1. Enter equipment installed in the aircraft into the Source row and Victim column of the form.
2. Apply power to all avionics systems except for the components that are considered to be part of the GI 275 system.
3. Verify all existing avionics systems are functioning properly.
4. Apply power to the GI 275 system components.
5. Remove power from all other avionics systems.

Before applying power to the next system, wait for the current system start-up sequence to finish.

6. Apply power and/or operate the systems listed on the fillable form, one system at a time.
7. Verify the GI 275 system functions properly. Verify there are no related messages displayed.
8. Verify each radio is functioning properly by completing the following:
   a. For each VHF COM radio, monitor one local frequency, one remote (far field) frequency, and one unused frequency.
   a. Verify no unintended squelch breaks or audio tones interfere with communications.
   b. For each VHF NAV radio, monitor one local frequency, one remote (far field) frequency, and one unused frequency.
   c. Verify there are no guidance errors.
   d. Verify no audio tones interfere with the station ID.
9. If an EI FT-60 or an EI FT-90 fuel flow sensor is installed, verify the fuel flow indication is accurate and the indication does not fluctuate or invalidate the display.
   a. Transmit various modulating tones on each COM radio (e.g., whistling).
   b. Refer to Section 4.7.6.1 for details if the fuel flow indication fluctuates.
10. Verify all other avionic systems are functioning properly.

VICTIM

Attitude Indicator
Airspeed Indicator
Altimeter
Vertical Speed Indicator
Turn and Bank Indicator
Heading Indicator
Magnetic Compass
Clock
OAT Indicator
Power Plant Instruments
Autopilot / SAS
Navigation Radio(s)
Communication Radio(s)
Engine Relight
Fuel Valve
Pitot Heat
Pulse Light
Generator
Pos Lt
Anti Coll Lt
Ldg Lts
Gov RPM Incr / Decr
Eng Deicing
Hyd System
Radar Altimeter
TAS/TCAS
Transponder
Audio Panel
G,

Figure 6-6 EMI Victim/Source Matrix

6.8 Flight Checks

All checks contained in the previous sections must be completed prior to performing the following flight checks.

6.8.1 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.
    - %æIf a pitch and/or roll discrepancy greater than 2.5° is observed between a GI 275 Standby ADI and the PFD, record the pitch and/or roll offset (e.g., GI 275 Standby ADI is 3° nose up from PFD). Refer to Section 5.8.1.3 to manually adjust the axis or axes with a discrepancy greater than 2.5°. After completing the Manual Pitch/Roll Offset, repeat this flight check to verify correct pitch and/or roll adjustments.
- 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.

6.8.2 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 69/69A SXM or FIS-B source.

6.8.3 MFD Flight Checks

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

- 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 69/69A SXM or FIS-B source.
- All applicable EIS flight checks in Section 6.8.4.

6.8.4 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.
- Values on the Fuel page populate when a GPS destination is active.
- Post-flight check of installed sensors and fittings for leaks.

If the AFM/POH has an operating limitation based only on fuel flow, the fuel flow must be accurate within 10% to ensure the limitation is maintained. If the recorded fuel flow and measured fuel flow are out of tolerance, the K-factor must be adjusted in Configuration mode. Perform 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.

6.8.5 Standby Flight Checks

Complete all checks in Section 6.8.1 and Section 6.8.3 for an MFD/Standby ADI. Complete all checks in Section 6.8.1 and Section 6.8.2 for an HSI/Standby ADI.

6.8.6 Autopilot Flight Checks

NOTE

This section applies only to installations in which the GI 275 ADAHRS+AP interfaces to an autopilot.

Once the configuration and ground checks are performed, the autopilot system must be flight tested and adjusted for the particular airframe, if necessary. This section provides general guidelines for verifying the autopilot, flight director performance, and any necessary adjustments.

Use the Autopilot Performance Checkout Log in Figure 6-7 to document the autopilot performance before and after the installation of the GI 275.

If the autopilot performance does not adhere to the criteria listed in the Autopilot Performance Checkout Log, the autopilot must be serviced in order to meet these criteria or customer acknowledgment of the performance must be obtained prior to proceeding with the installation.

6.8.6.1 Autopilot Performance

The autopilot performance can be adjusted by changing the settings on the Autopilot Calibration page (Calibration/Test → Autopilot) while in Configuration mode.

1. To evaluate the autopilot heading performance, center the heading bug and engage the autopilot in HDG mode. Change the heading bug by at least 45°. The autopilot must follow the heading bug and roll out smoothly, without undershooting or overshooting the selected heading.
2. To evaluate the autopilot course performance, engage the autopilot in NAV mode. Tune to a NAV frequency that is out of range and select the corresponding NAV on the CDI. The GI 275 will invalidate the lateral deviation signal. Change the course by at least 45°. The autopilot must turn to the new course and roll out smoothly without undershooting or overshooting the selected course.

6.8.6.2 Roll Steering Performance

GPS roll steering is handled in one of three ways:

1. If the autopilot has an ARINC 429 roll steering input, the GI 275 provides ARINC 429 roll steering directly to the autopilot.
2. If an external roll steering converter has been installed, the GI 275 provides ARINC 429 roll steering to the converter, which then outputs an analog heading error signal to the autopilot.
3. The GI 275 can provide the roll steering via its heading error output, taking the place of a separate roll steering converter. In this case, the autopilot is left in Heading mode, and the GI 275 varies the heading error output to steer the autopilot.

In order to evaluate roll steering performance, perform the following:

1. Set up a GPS flight plan that includes at least two legs with an angle between them.
2. Set the CDI to display the active GPS.
3. Engage the autopilot in GPS Roll Steering mode.
4. If the autopilot uses the heading error input for roll steering, engage the autopilot in HDG mode.
5. Activate GPSS (HDG → AP HDG REF → GPSS or by using the discrete switch).
6. A “GPSS” annunciation will appear on the display.
7. Verify that the autopilot flies the airplane smoothly through the turn between the two legs.

NOTE

If the Analog Roll Steering function is utilized, the scaling of the output can be adjusted using the Analog Roll Steering Scaling setting on the Autopilot Test page. If the autopilot does not turn sharp enough while in Roll Steering mode, increase the GPSS Scaler to HDG value. If the autopilot turns too sharp while in Roll Steering mode, decrease the GPSS Scaler to HDG value.

6.8.6.3 Yaw Damper Operation

This check is only required if the GI 275 is used to replace an existing yaw rate sensor to provide yaw rate information to the autopilot. During flight, verify that the yaw damp function operates correctly.

6.8.6.4 GI 275 Autopilot Performance Checkout Log

Completion of this form is required only for installations interfacing to an autopilot.

Aircraft Make and Model: Aircraft Registration Number:

Autopilot Make and Model:

Autopilot Serformance Srior to G , LQVWDOODWLRQ

Date: By:

Function/Mode	Criteria	Notes
Pitch Attitude Hold	Selected pitch attitude held within ±2°. Pitch attitude should not oscillate continuously.	
Roll Attitude Hold	Selected roll attitude held within ±3°. Roll attitude should not oscillate continuously.	
Heading Bug Coupling	Selected heading held within ±3°. Heading should not oscillate continuously.	
Altitude Hold	Altitude held within ±100 feet. Altitude should not oscillate continuously.	
Selected Altitude Capture (Altitude Preselect)	Overshoot during altitude capture should not exceed 100 feet.	
Vertical Speed Hold	Selected vertical speed held within ±200 FPM. Vertical speed should not oscillate continuously.	
Airspeed Hold	Selected airspeed held within ±5 KIAS. Indicated airspeed should not oscillate continuously.	
VOR Tracking	Lateral deviation from course remain withLQ 25% of full scale deflection once established on course.	
ILS/LPV Approach	Lateral and vertical deviations from course/ glidepath remain withLQ25% of full scale deflection once established.	
VOR/LOC/GS Capture	925 /2& *6 F apture performance PXVW IXQFWLRQ DV LQWHQGHG EHIRUH DQG DIWHU WKH *, installation	
Go-around	Pitch and roll attitude held as specified by WKH autopilot PDQXIDFWXUHV GDWD	
Flight Director	F' commands satisfy selected modes and do not display excessive jitter or oscillation.	
Yaw Damp	YaZ dampening performance PXVW IXQFWLRQ DV LQWHQGHG EHIRUH DQG DIWHU WKH *, installation	

General Notes

Figure 6-7 Autopilot Performance Checkout Log
Sheet 1 of 2

G, AUTOPILOT PERFORMANCE CHECKOUT LOG (CONTINUED)

Completion of this form is required only for installations interfacing to an autopilot.

Autopilot Serformance Iollowing G , Lnstallation

By: Date:

Function/Mode	Criteria	Notes
Pitch Attitude Hold	Selected pitch attitude held within ±2°. Pitch attitude should not oscillate continuously.	
Roll Attitude Hold	Selected roll attitude held within ±3°. Roll attitude should not oscillate continuously.	
Heading Bug Coupling	Selected heading held within ±3°. Heading should not oscillate continuously.	
Altitude Hold	Altitude held within ±100 feet. Altitude should not oscillate continuously.	
Selected Altitude Capture (Altitude Preselect)	Overshoot during altitude capture should not exceed 100 feet.	
Vertical Speed Hold	Selected vertical speed held within ±200 FPM. Vertical speed should not oscillate continuously.	
Airspeed Hold	Selected airspeed held within ±5 KIAS. Indicated airspeed should not oscillate continuously.	
VOR Tracking	Lateral deviation from course remain withLQ 25% of full scale deflection once established on course.	
ILS/LPV Approach	Lateral and vertical deviations from course/ glidepath remain withLQ 25% of full scale deflection once established.	
VOR/LOC/GS Capture	925 /2& *6 F apture performance PXVW SHUIRUP DV LQWHQGHG EHIRUH DQG DIWHU WKH *, LQVWDOODWLRQ	
Go-around	Pitch and roll attitude held as specified by autopilot PDQXIDFWXUHV.GDWD	
Flight Director	F' commands satisfy selected modes and do not display excessive jitter or oscillation.	
Yaw Damp	Yaw dampening performance PXVW IXQFWLRQ DV LQWHQGHG EHIRUH DQG DIWHU WKH *, installation	

General Notes

Figure 6-7 Autopilot Performance Checkout Log
Sheet 2 of 2

6.9 Documentation Checks

All checks contained in the previous sections must be completed prior to performing the following checks.

6.9.1 Airplane Flight Manual Supplement

Ensure that the AFMS is completed and inserted in the AFM or POH.

1. Fill in the specific airplane information on the AFMS cover sheet.
2. In AFMS Section 1.7, fill in all applicable check boxes. More than one box may be checked, depending upon the installation.
    a. If gasket-style CHT probes were previously approved and the AFM/POH has CHT temperature limits, do not mark the box in AFMS Section 1.7.9. because the limits were established using gasket-style CHT probes.

6.9.2 Instructions for Continued Airworthiness

Ensure that the appropriate aircraft information in Appendix A of GI 275 Part 23 AML STC Maintenance Manual/ICA(P/N 190-02246-11) is filled in completely and inserted into the aircraft permanent records.

6.9.3 Return to Service

Complete the return-to-service in a means acceptable to the cognizant aviation authority. An example would be compliance with 14 CFR 43.9, 14 CFR 91.417 and submission of an FAA Form 337 “Major Repair and Alteration Airframe, Powerplant, Propeller, or Appliance” completed in accordance with advisory circular AC43.9-1F, Instructions for Completion of FAA Form 337

If a GEA 24 P/N 011-02848-01 is connected to resistive fuel quantity probe(s), verify the interface is installed in accordance with revision 8 or later of this installation manual (refer to Section 3.4.3, Figure B-8, and Appendix Section C.19). If the interface does not comply, refer to Garmin Service Bulletin SB2135 for additional information. Once complete, make the following entry in the aircraft maintenance record (i.e. airframe logbook):

> The GI 275 installation in this aircraft complies with Garmin Service Bulletin SB2135, Modification of GEA 24 Resistive Fuel Probe Interface.

7 TROUBLESHOOTING

This section provides troubleshooting flow charts for most system failures and alert messages. It is recommended that system troubleshooting and repair only be completed by a Garmin authorized repair facility. If a specific alert or fault condition is not listed, or the fault still exists after completing the given corrective action, contact Garmin Aviation Technical Support at the number listed for your specific region on the “Support” tab of the flyGarmin.com website.

7.1 Troubleshooting Flowcharts

GI 275 Alert Messages

Demo mode, do not use in flight	Backlight calibration lost	Service required	Main touch screen error	Key stuck: Key knob is stuck	Main board system fault
Maintenance Log Message		Maintenance Log Message	Maintenance Log Message	Maintenance Log Message	Maintenance Log Message
Unit in demo mode		GDU software mismatch	Main Board Touch Screen Error	System detects stuck unit knob	Main Board SFD Corrupt Main Board Boot Block Corrupt Main Board Key Region Corrupt Main Board Key Region Missing
Cause		Cause	Cause	Cause	Cause
Unit is in demo mode		One or more GI 275 LRU in the system have different software versions	Touch screen is not responding	The display knob has been pushed for more than 30 seconds Display knob is stuck in the pushed position	Corrupt software image
Corrective Action	Corrective Action	Corrective Action	Corrective Action	Corrective Action	Corrective Action
Set unit to normal mode by deselecting “Simulate Inputs” from the main menu in configuration mode	Return GI 275 to Garmin for service	Ensure all GI 275 units are loaded with the same software version	Return GI 275 to Garmin for service	Release display knob Free display knob from the pushed position	Reload GI 275 software If fault persists, contact Garmin.

Figure 7-1 GI 275 Alert Message Troubleshooting
Sheet 1 of 2

GI 275 Alert
Messages Cont'd

LRU replacement error	Expansion board: Invalid config.	Internal comm. fault	Expansion board system fault	Max temperature exceeded	LCD board system fault
Maintenance Log Message	Maintenance Log Message		Maintenance Log Message	Maintenance Log Message	Maintenance Log Message
LRU replacement error	Expansion board configuration error		Expansion Board System Error	Expansion Board Temp	LCD Board System Error
Cause	Cause	Cause	Cause	Cause	Cause
Error between GI 275 config module and installed GI 275	Incorrect expansion board configuration	Internal hardware failure	Bad expansion system data Failed expansion calibration CRC	Expansion Board has exceeded temperature threshold	Missing LCD software region LCD Board software failure
Corrective Action	Corrective Action	Corrective Action	Corrective Action	Corrective Action	Corrective Action
Verify accuracy of configuration settings on GI 275	Verify expansion board configuration	Verify system configuration	Reload expansion board software	Remove GI 275 from extreme temperature environment	Reload LCD software
Clear configuration and reconfigure		Return GI 275 to Garmin for service	Return GI 275 to Garmin for service	Shut down GI 275 for at least 30 min	
Replace configuration module					

If fault persists, contact Garmin.

Figure 7-1 GI 275 Alert Message Troubleshooting
Sheet 2 of 2

Battery Alert Messages

Invalid battery detected	Battery operation warning	Battery unavailable: Capacity test	Battery unavailable: Capacity test	Battery unavailable: Communication lost	Non-Garmin battery detected
Maintenance Log Message	Maintenance Log Message	Maintenance Log Message	Maintenance Log Message	Maintenance Log Message	Maintenance Log Message
Battery is not sealed	Battery charge FET permanent fail fault Battery discharge FET permanent fail Battery safety cell overvoltage permanent fail	Battery capacity test failed	Battery capacity test failed	Communication was lost with the battery	Battery authentication failed
Cause	Cause	Cause	Cause	Cause	Cause
GI 275's battery internal configuration is corrupted	Battery has permanently failed	Battery capacity test failed	Battery capacity test has not been run for 392 days	Battery not properly seated Battery is configured but not installed	Non-Garmin battery is installed
Corrective Action	Corrective Action	Corrective Action	Corrective Action	Corrective Action	Corrective Action
Replace battery	Replace battery	Replace battery	Run battery capacity test	Ensure battery is properly installed	Replace battery with authentic Garmin battery

If fault persists, contact Garmin.

Figure 7-2 Battery Alert Message Troubleshooting
Sheet 1 of 4

Battery Alert
Messages Cont'd

Battery operation warning

Maintenance Log Message

Battery overcurrent during charge protection fault

Cause

Battery circuitry failure

GI 275 charging circuitry failure

Corrective Action

If error self clears, perform battery rundown test, then fully charge battery, ensure alert does not reoccur

Replace battery

Return GI 275 to Garmin for service

Battery operation warning

Maintenance Log Message

Battery overcurrent during discharge protection fault

Cause

Battery short circuit failure

GI 275 charging circuitry failure

Corrective Action

If error self clears, perform battery rundown test, then fully charge battery, ensure alert does not reoccur

Replace battery

Return GI 275 to Garmin for service

Battery warning: Charge inhibited

Maintenance Log Message

Battery cell overvoltage protection fault

Cause

Battery circuitry failure

GI 275 charging circuitry failure

Corrective Action

If error self clears, perform battery rundown test, then fully charge battery, ensure alert does not reoccur

Replace battery

Return GI 275 to Garmin for service

Battery warning: Charge inhibited

Maintenance Log Message

Battery cell undervoltage protection fault

Cause

Battery charge was low and left to discharge further

Corrective Action

Ensure battery warmed to room temperature environment, attempt charging

Replace battery

If fault still exists, contact Garmin.

Figure 7-2 Battery Alert Message Troubleshooting
Sheet 2 of 4

Battery Alert
Messages Cont'd

Battery operation warning	Battery operation warning	Battery warning: Charge inhibited	Battery warning: Charge inhibited	Battery operation warning
Maintenance Log Message	Maintenance Log Message	Maintenance Log Message	Maintenance Log Message	Maintenance Log Message
Battery overtemperature during discharge protection fault	Battery undertemperature during discharge protection fault	Battery overtemperature during charge protection fault	Battery undertemperature during discharge protection fault	Battery overload during discharge protection fault
Cause	Cause	Cause	Cause	Cause
Battery internal temperature exceeds 80°C during discharge Battery temperature sensor has failed	Battery internal temperature below -20°C during discharge Battery temperature sensor has failed	Battery internal temperature exceeds 80°C during discharge Battery temperature sensor has failed	Battery internal temperature below -20°C during discharge Battery temperature sensor has failed	Battery current overdraw Partial short in battery circuitry Partial short in GI 275 circuitry External LRU excessive current draw with GI 275 overcurrent circuitry failure
Corrective Action	Corrective Action	Corrective Action	Corrective Action	Corrective Action
Allow battery to cool, remove exposure to extreme temperature environment	Allow battery to warm up, remove exposure to extreme temperature environment	Allow battery to cool, remove exposure to extreme temperature environment	Allow battery to warm up, remove exposure to extreme temperature environment	Replace battery
Replace battery	Replace battery	Replace battery	Replace battery	Return GI 275 to Garmin for service
				If fault still exists, contact Garmin.

Figure 7-2 Battery Alert Message Troubleshooting
Sheet 3 of 4

Battery Alert
Messages Cont'd

Battery operation warning

Maintenance Log Message

Battery short circuit during discharge protection fault

Cause

Battery circuitry failure

GI 275 charger circuitry failure

Corrective Action

Replace battery

Return GI 275 to Garmin for service

Battery operation warning

Maintenance Log Message

Battery short circuit during charge protection fault

Cause

Battery circuitry failure

GI 275 charger circuitry failure

Corrective Action

Replace battery

Return GI 275 to Garmin for service

Battery operation warning

Maintenance Log Message

Battery pre-charge timeout fault

Cause

Battery charge extremely low; led to additional time in pre-charge mode

Battery / GI 275 circuitry failure

Corrective Action

Ensure GI 275 is at room temperature, re-attempt charging (may take several attempts)

Perform battery rundown test; recharge fully

Replace battery

Return GI 275 to Garmin for service

Battery operation warning

Maintenance Log Message

Battery fast-charge timeout fault

Cause

Too much time spent in fast charge mode before reaching full charge

Battery / GI 275 circuitry failure

Corrective Action

Perform battery rundown test; recharge fully

Replace battery

Return GI 275 to Garmin for service

Battery operation warning

Maintenance Log Message

Battery pack voltage out of range

Cause

Battery voltage is below 1.0V or above 3.9V

Corrective Action

Perform battery rundown test; recharge fully

Replace battery

If fault persists, contact Garmin.

Figure 7-2 Battery Alert Message Troubleshooting
Sheet 4 of 4

AHRS Fault Messages

AHRS <1/2/3> MISSING -or- AHRS MISSING

Maintenance Log Message

AHRS <1/2/3> data is missing and cannot be compared

Not enough AHRS sensors to perform a comparison

Cause

Multiple AHRS are configured in the system and the reported AHRS is not detected

Corrective Action

Ensure the missing AHRS is powered

Ensure the missing AHRS configuration is correct

Verify wiring is correct

AHRS <1/2/3> MISCOMPARE -or- AHRS MISCOMPARE

Maintenance Log Message

AHRS <1/2/3> does not match other senosrs

All AHRS sensors do not match

Cause

Multiple AHRS are configured, a reported AHRS heading difference of 6 degrees or more is detected

Multiple AHRS are configured, a reported AHRS pitch or roll of 5 degrees or more is detected

Corrective Action

Determine if pitch, roll or heading is out of tolerance

Heading out of tolerance: perform magnetic calibration on all configured heading sources

Pitch or roll out of tolerance: perform pitch-roll offset calibration on all configured sources

AHRS <1/2/3>: Magnetic model outdated

Maintenance Log Message

AHRS <1/2/3> Magnetic Model out of date

Cause

Magnetic model is out of date

Corrective Action

Update the IGRF Magnetic Field Model

AHRS <1/2/3> not receiving GPS aiding

Maintenance Log Message

AHRS <1/2/3> not receiving GPS aiding

Cause

Not receiving GPS data from a configured GPS source

Corrective Action

Verify GPS configurations

Verify GPS antenna has a clear view of the sky and GPS source has a valid fix

Verify connections and wiring

AHRS <1/2/3> reports service required

Cause

Bad AHRS calibration

No data from ADC

Corrective Action

Ensure ADC is powered on

Perform AHRS calibration

Verify connections and wiring

Service required

Maintenance Log Message

<AHRS> configuration does not match what the unit expected

Cause

AHRS LRU is not configured correctly

Corrective Action

Verify AHRS configuration settings

Magnetic variance inaccurate

Maintenance Log Message

ADB and IOP packet magnetic variances differ

Cause

Aviation database out-of-date on GI 275 / Navigator

Corrective Action

Ensure aviation database is up-to-date on GI 275 and configured navigator

Magnetic variance unavailable

Maintenance Log Message

ADB is unavailable for magnetic variance

Cause

Aviation database is missing

Navigator / GPS source unavailable

Corrective Action

Ensure aviation database is loaded and up-to-date

Verify GPS source online

If fault persists, contact Garmin.

Figure 7-3 AHRS Alert Message Troubleshooting

ADC Fault Messages

ADC <1/2/3> MISSING -or- ADC MISSING	ADC <1/2/3> MISCOMPARE -or- ADC MISCOMPARE	ADC <1/2/3> reports service required	ADC <1/2/3> reports service required	Service required
Maintenance Log Message	Maintenance Log Message		Maintenance Log Message	Maintenance Log Message
ADC <1/2/3> data is missing and cannot be compared Not enough ADC sensors to perform a comparison	ADC <1/2/3> does not match other senosrs All ADC sensors do not match		ADC <1/2/3> reports configuration error	<AHRS> configuration does not match what the unit expected
Cause	Cause	Cause	Cause	Cause
Multiple ADCs are configured in the system and the reported ADC is not detected	Multiple ADCs are configured, a reported ADC pressure altitude difference of 200ft or more is detected Multiple ADCs are configured, a reported ADC airspeed difference of 7kts or more is detected	ADC internal calibration mismatch	ADC is reporting a configuration error	AHRS LRU is not configured correctly
Corrective Action	Corrective Action	Corrective Action	Corrective Action	Corrective Action
Ensure the missing ADC is powered Ensure the missing ADC configuration is correct Verify wiring is correct	Ensure the altitude and airspeed units of measure are the same for all configured ADCs Ensure there are no leaks in the pitot static system	Perform ADC calibration procedure	Verify ADC configuration settings	Verify AHRS configuration settings

If fault persists, contact Garmin.

Figure 7-4 ADC Alert Message Troubleshooting

Terrain/TAWS Alert Messages

SVT could not be enabled	Obstacle database not yet effective	Obstacle database expired	SVT not available due to databases	Terrain not available due to databases	TER FAIL	TER N/A	Service TAWS. Invalid Config
Maintenance Log Message	Maintenance Log Message	Maintenance Log Message	Maintenance Log Message	Maintenance Log Message			Maintenance Log Message
SVT could not be enabled	Obstacle database not yet effective	Obstacle database expired	SafeTaxi database unavailable	Terrain database unavailable			Terrain/TAWS alerting configuration not selected
Cause	Cause	Cause	Cause	Cause	Cause	Cause	Cause
Terrain database missing or out-of-date Bad feature enablement	Preloaded database is not yet activated on the system	Obstacle database has expired	Database out-of-date or corrupted	Database out-of-date or corrupted	Database corrupted or missing Internal failure	No valid GPS position Terrain data not available (out of coverage area) GPS vertical position error estimate over max allowed	TAWS not properly configured
Corrective Action	Corrective Action	Corrective Action	Corrective Action	Corrective Action	Corrective Action	Corrective Action	Corrective Action
Verify Terrain database is installed and up-to-date Re-download and install SVT feature enablement	Activate databases: follow system prompts	Update to the current database version	Reload or update database	Reload or update database	Verify Terrain database is loaded and current Reload Terrain database	Verify GPS is powered and has a clear view of sky Verify Terrain database coverage Inspect GPS antenna and wiring	Check TAWS/Terrain config settings Verify External TAWS and GI 275 have the same aircraft type configured

If fault persists, contact Garmin

Figure 7-5 Terrain/TAWS Alert Message Troubleshooting

ADS-B Traffic Alert Messages

UAT traffic/data receiver fault	UAT fault	1090ES traffic receiver fault	ADS traffic alerting inoperative	ADS-B In traffic source mismatch	TAS/TCAS function inoperative	ADS traffic function inoperative
Maintenance Log Message	Maintenance Log Message	Maintenance Log Message	Maintenance Log Message	Maintenance Log Message	Maintenance Log Message	Maintenance Log Message
ADS-B LRU reports UAT traffic/data receiver fault	UAT LRU reports low WAAS battery fault	ADS-B LRU reports 1090ES traffic receiver fault	ADS-B LRU reports CSA/TSAA failure	ADS-B In traffic source does not match configuration	ADS-B LRU reports TAS/TCAS inoperative or connection lost	ADS-B LRU reports ADS-B Traffic In has failed
			Cause	Cause		
			ADS-B In external LRU traffic receiver has failed	ADS-B traffic format does not match the external LRU configuration		
Corrective Action	Corrective Action	Corrective Action	Corrective Action	Corrective Action	Corrective Action	Corrective Action
Troubleshoot device in accordance with ADS-B LRU maintenance manual	Troubleshoot device in accordance with UAT LRU maintenance manual	Refer to ADS-B LRU manual for troubleshooting	Refer to ADS-B LRU manual for troubleshooting	Verify configuration	Troubleshoot device in accordance with ADS-B LRU maintenance manual	Troubleshoot device in accordance with ADS-B LRU maintenance manual

If fault persists, contact Garmin

Figure 7-6 Traffic Alert Message Troubleshooting
Sheet 1 of 2

Traffic
Alert Messages

Traffic/FIS-B inoperative

Corrective Action

Troubleshoot device in accordance with LRU maintenance manual

TAS/TCAS function inoperative

Maintenance Log Message

Traffic device reported failure

Corrective Action

Troubleshoot device in accordance with TAS/TCAS LRU maintenance manual

Traffic function inoperative

Maintenance Log Message

Transponder device reported failure

Corrective Action

Troubleshoot device in accordance with TIS-A LRU maintenance manual

If fault persists, contact Garmin

Figure 7-6 Traffic Alert Message Troubleshooting
Sheet 2 of 2

Audio & Weather
Alert Messages

Audio inoperative

Maintenance Log Message	Maintenance Log Message
Audio clip failed to play	Audio device failed
Cause	Cause
Audio clip failed to play	Audio device failed
Corrective Action	Corrective Action
Verify audio device is online	Verify audio device is online
Inspect audio device connection and wiring	Inspect audio device connection and wiring
Troubleshoot in accordance with audio device maintenance manual	Troubleshoot in accordance with audio device maintenance manual

SiriusXM receiver inoperative	Service Soon	Stormscope inoperative	
Maintenance Log Message	Maintenance Log Message	Maintenance Log Message	Maintenance Log Message
SiriusXM receiver has failed	Stormscope is reporting invalid heading	Communication lost with Stormscope	Stormscope is not configured or operating properly
Cause	Cause	Cause	Cause
GDL 69/69A has lost communication with GI 275 or is reporting a failed condition	Stormscope's heading source is missing	The GI 275 has lost communication with the Stormscope	Stormscope is reporting failed
Corrective Action	Corrective Action	Corrective Action	Corrective Action
Ensure all LRUs in the system are online	Verify control source heading is valid	Verify power to Stormscope	Verify Stormscope configuration settings
Verify configuration settings		Inspect Stormscope wiring and connections	Inspect Stormscope wiring and connections
Inspect GDL 69/69A wiring and connectors			

If fault persists, contact Garmin

Figure 7-7 Audio and Weather Alert Message Troubleshooting

NAV/GPS Alert Messages

NAV <1/2> inoperative

Maintenance Log Message

NAV <1/2> interface/unit failed. Check NAV unit or wiring.

Cause

- NAV source has lost communication
  - Corrective Action
  - Verify NAV source is on and not reporting failed
  - Verify configuration settings
  - Inspect NAV wiring and connections
- NAV source is reporting failed
  - Corrective Action
  - Troubleshoot in accordance with NAV unit maintenance manual
  - Verify configuration settings
  - Inspect NAV wiring and connections

Navigation database mismatch

Maintenance Log Message

Navigation database mismatch

Cause

Multiple GI 275 units have different NAV database expirations

Corrective Action

Update databases across all units to the same date

Navigation database not yet effective

Maintenance Log Message

Navigation database not yet effective

Cause

Preloaded database is not activated on the system

Corrective Action

Activate databases: Follow system prompts

Navigation database expired

Maintenance Log Message

Navigation database expired

Cause

Navigation database has expired

Corrective Action

Update to the current database version

GPS <1/2> inoperative

Maintenance Log Message

GPS <1/2> interface failed

Cause

GPS source has lost communication

GPS source is reporting failed

Corrective Action

Verify GPS source is ON and has a clear view of the sky

Verify configuration settings

Inspect GPS antenna, wiring and connections

If fault persists, contact Garmin.

Figure 7-8 NAV Alert Message Troubleshooting

Autopilot Fault Messages

Autopilot fault	Servo Clutch Fault	Monitor fault	AFCS Comm Fault	Power fault	GMC ESP inoperative
Maintenance Log Message			Maintenance Log Message		Maintenance Log Message
Autopilot reference monitor			Unit lost communication to AFCS		GMC electronic stability protection failed
Cause	Cause	Cause	Cause	Cause	Cause
Configured autopilot reference voltage does not match actual voltage	GFC 500 servo clutch monitor has tripped	GI 275 Commanded Pitch/Roll voltage does not match the expected Autopilot voltage	GI 275 communication with the Autopilot has failed	GI 275 internal autopilot voltage output is below threshold voltage	Refer to Section 5.2 of the GFC 600 AFCS Part 23 AML STC Maintenance Manual
Corrective Action	Corrective Action	Corrective Action	Corrective Action	Corrective Action	Corrective Action
Verify GI 275 reference voltage matches the required autopilot reference voltage	Use GFC 500 Diagnostics page to clear fault	Verify Autopilot configuration settings are correct	Verify Autopilot interface wiring is correct	Ensure GI 275 is not on backup battery power	Refer to Section 5.2 of the GFC 600 AFCS Part 23 AML STC Maintenance Manual
		Verify GI 275 and Autopilot interface wiring is correct		Clear autopilot configuration settings and reconfigure	

If fault persists, contact Garmin.

Figure 7-9 Autopilot Alert Message Troubleshooting

Miscellaneous Alert Messages

SafeTaxi database expired	SafeTaxi database not yet effective
Maintenance Log Message	Maintenance Log Message
SafeTaxi database expired	SafeTaxi database is not yet effective
Cause	Cause
SafeTaxi database has expired	Preloaded database is not activated on the system
Corrective Action	Corrective Action
Update database to the current version	Activate databases: follow system prompts

If fault persists, contact Garmin.

Figure 7-10 Miscellaneous GI 275 Alert Message Troubleshooting

External LRU
Alert Messages

Crosstalk error

Maintenance
Log Message

Crosstalk Error

Cause

Interfacing LRU is not powered

Interfacing LRU not configured properly

Interfacing LRU does not have compatible software version

Incorrect wiring

Corrective
Action

Verify power to unit

Verify configuration settings

Verify proper software version

Verify wiring

<External LRU>
service required

Cause

System ID set on GI 275 is different from that on the external LRU

Corrective
Action

Ensure configured System ID on GI 275 and external LRU are the same

Service required

Maintenance
Log Message

GEA <1/2/3/4> did not accept configuration

Cause

GEA configuration settings were not accepted

Corrective
Action

Verify GEA configuration settings

Service soon

Maintenance
Log Message

GTX 345 reports config module needs service

Corrective
Action

Troubleshoot in accordance with the GTX 3X5 maintenance manual

Service soon

Maintenance
Log Message

System configuration module has failed or is missing

Cause

Configuration module not installed correctly

Configuration module has failed

Corrective
Action

Verify configuration module wiring

Replace configuration module

If fault persists,
contact Garmin.

Figure 7-11 External LRU Alert Message Troubleshooting

GCO 14
Alert Messages

CO Sensor Expired

Maintenance
Log Message

CO sensor is
expired

Corrective
Action

Verify per aircraft logbooks
10 years has elasped since
GCO 14 install.

Replace GCO 14

CO Sensor
Inoperative

Maintenance
Log Message

CO sensor is inoperative

Cause

Incorrect wiring

Aircraft configured as Non-
Pressured, no air data present

Corrective
Action

Verify GCO, Air Data
Configuration

Verify GCO 14
unit wiring

Verify config
module wiring

No Data From
Remote CO Sensor

Maintenance
Log Message

No Data From
Remote CO Sensor

Corrective
Action

Troubleshoot in
accordance with the
directly connected
LRU maintenance
manual

High CO Level
Advisory

Maintenance
Log Message

High CO Level
Advisory

Corrective
Action

Check aircraft heat
exchanger, exhaust.

If believe CO indication
erroneous:

If fault persists,
contact Garmin.

Figure 7-12 GCO 14 Alert Message Troubleshooting

7.2 Additional Troubleshooting

If necessary, perform the following troubleshooting steps:

1. The GI 275 air/ground logic must be on-ground when making any configuration changes or attempting to load software. If the system is in-air while attempting system configuration changes or software loads, system failures will occur. For example, an air data test set can trigger an unexpected in-air state. Ensure:
    a. Airspeed is less than 30kts – Pitot input can cause inadvertent airspeed inputs causing unintended inputs.
    b. GPS ground speed must be less than 30kts. – Using a GPS repeater can create issues with the GPS system switching between satellite acquisition from an outside signal and the repeater signal causing false GPS ground speed readings.
    c. For units with EIS, the RPM readings must be 0 RPM while entering Configuration mode.
2. Ensure every GI 275 is in Configuration mode prior to making any configuration change.
3. Ensure every unit in the system has matching software.
4. For AHRS and autopilot configuration issues, ensure the above steps are completed and attempt to reset the expansion board configuration using the following procedure in Configuration mode:
    a. From the Interfaces page, configure the AHRS and ADC sensors as None on all units.
    b. From the Interfaces page, configure the Autopilot configuration as None on all units.
    c. If an ADI is configured, from the Unit Configuration page, change the Instrument Type to MFD and then back to ADI.
    d. If an HSI is configured, from the Unit Configuration page, change the Instrument Type to MFD and then back to HSI (re-select the Standby selection if it appropriate).
    e. From the Interfaces page, reconfigure AHRS and ADC sensors on all units as appropriate.
    f. From the Interfaces page, reconfigure the Autopilot on all units as appropriate.
    g. Reconfigure the Discrete In “Display Backup” discrete on the unit configured as the standby, if appropriate.
    h. Cycle system power by removing power from the GI 275 units.
5. GFC 500 servo faults can be cleared by completing the following procedure:
    a. On the GI 275 in Configuration mode, navigate to the GFC 500 page (Config !’ Diagnostics !’ GFC 500).
    b. From this page, the servo fault can be cleared. Once the faults are cleared, the GFC 500 configuration must be synchronized.
    c. Navigate to the GFC 500 Settings page (Config !’ Interfaces !’ Autopilot !’ Settings).
    d. From this page, scroll to the bottom and touch Copy Config From GI 275 to GFC 500.
    e. Cycle power to the GI 275(s) and the GFC 500.
6. For GFC 500 configuration issues, ensure the following steps have been completed:
    a. The GI 275 Internal AHRS/ADC is configured (Config !’ Interfaces !’ AHRS or ADC).
    b. GFC 500 interface is properly configured (Config !’ Interfaces !’ Autopilot).
    c. The Copy Config From GI 275 to GFC 500 has been performed (Config !’ Interfaces !’ Autopilot !’ Settings).
    d. Ensure the Manifest has been synced.
    e. Minimum approved SW on the GMC 507 and the GSAs has be installed.
    f. Autopilot Calibration has been performed (without the above steps completed, this calibration will not be available).

7.3 Interpreting Flight Data Logs

Flight data and engine logs can be uploaded and graphed on FlyGarmin.com.

Table 7-1 Flight Data Log Descriptions

Parameter	Logged Name	Units	Definition
Local Date	Lcl Date	#yyy-mm-dd	
Local Time	Lcl Time	hh:mm:ss	
UTC Offset	UTCOfst	hh:mm	UTC Offset (Lcl Time = UTC Time + UTC Offset)
Active Waypoint	AtvWpt	ident	Text identifier for FMS waypoint
Latitude Position	Latitude	DEG	From selected GPS source or backup GPS (backup is used if 1 and 2 are invalid)
Longitude Position	Longitude	DEG	From selected GPS source or backup GPS (backup is used if 1 and 2 are invalid)
Indicated Barometric Altitude	AltB	ft	Displayed value
Selected Barometric Pressure Setting	BaroA	inHg	Displayed value
GPS Altitude Relative To Mean Sea Level	AltMSL	ft	Selected GPS
Outside Air Temperature	OAT	C	Selected ADC
Indicated Airspeed	IAS	kts	Selected ADC
Ground Speed	GndSpd	kts	From selected GPS source or backup GPS (backup is used if 1 and 2 are invalid)
Vertical Speed	VSpd	ft/min	Selected ADC
Attitude Pitch Angle	Pitch	DEG	Selected AHRS
Attitude Roll Angle	Roll	DEG	Selected AHRS
Lateral (Y) Acceleration	LatAc	g's	Selected AHRS, relative to aircraft body, right is positive
Vertical (Z) Acceleration	NormAc	g's	Selected AHRS, relative to aircraft body, up is positive
Heading	HDG	DEG	Magnetic or True Heading depending on pilot selection
Track	TRK	DEG	Magnetic or True Track depending on pilot selection
Battery #1 Volts	volt1	V	Measurement taken from GEA
Battery #2 Volts	volt2	V	Measurement taken from GEA
Battery #1 Amps	amp1	A	Measurement taken from GEA
Battery #2 Amps	amp2	A	Measurement taken from GEA
DC Bus #1 Volts	bus1volts	V	Measurement taken from GEA
DC Bus #2 Volts	bus2volts	V	Measurement taken from GEA
Alternator #1 Amps	alt1amps	A	Measurement taken from GEA
Alternator #2 Amps	alt2amps	A	Measurement taken from GEA

Parameter	Logged Name	Units	Definition
Left Fuel Quantity	FQtyL	gl	Fuel quantity in gallons. Measurement taken from GEA
Center Fuel Quantity	FQtyC	gl	Fuel quantity in gallons. Measurement taken from GEA
Right Fuel Quantity	FQtyR	gl	Fuel quantity in gallons. Measurement taken from GEA
Left Fuel Quantity	FQtyLlbs	lb	Measurement taken from GEA
Center Fuel Quantity	FQtyClbs	lb	Measurement taken from GEA
Right Fuel Quantity	FQtyRlbs	lb	Measurement taken from GEA
Aux #1 Fuel Quantity	FQtyAux1	gl	Fuel quantity in gallons. Measurement taken from GEA
Aux #2 Fuel Quantity	FQtyAux2	gl	Fuel quantity in gallons. Measurement taken from GEA
Aux #1 Fuel Quantity	FQtyA1lbs	lbs	Measurement taken from GEA
Aux #2 Fuel Quantity	FQtyA2lbs	lbs	Measurement taken from GEA
Engine #1 Fuel Flow	E1 FFlow	gl/h	Measurement taken from GEA
Engine #1 Fuel Pressure	E1 FPres	PSI	Measurement taken from GEA
Engine #1 Oil Temperature	E1 OilT	DEG F	Measurement taken from GEA
Engine #1 Oil Pressure	E1 OilP	PSI	Measurement taken from GEA
Engine #1 Manifold Pressure	E1 MAP	inHg	Measurement taken from GEA
Engine #1 Revolutions Per Minute	E1 RPM	RPM	Measurement taken from GEA
Engine #1 Power Percent	E1 %Pwr	%	May be calculated depending on aircraft configuration
Engine #1, Cylinder Head Temperature #1	E1 CHT1	DEG F	Measurement taken from GEA
Engine #1, Cylinder Head Temperature #2	E1 CHT2	DEG F	Measurement taken from GEA
Engine #1, Cylinder Head Temperature #3	E1 CHT3	DEG F	Measurement taken from GEA
Engine #1, Cylinder Head Temperature #4	E1 CHT4	DEG F	Measurement taken from GEA
Engine #1, Cylinder Head Temperature #5	E1 CHT5	DEG F	Measurement taken from GEA
Engine #1, Cylinder Head Temperature #6	E1 CHT6	DEG F	Measurement taken from GEA
Engine #1, Cylinder Head Temperature #7	E1 CHT7	DEG F	Measurement taken from GEA
Engine #1, Cylinder Head Temperature Cooling Rate	E1 CHT CLD	DEG F/min	Measurement taken from GEA
Engine #1, Exhaust Gas Temperature #1	E1 EGT1	DEG F	Measurement taken from GEA
Engine #1, Exhaust Gas Temperature #2	E1 EGT2	DEG F	Measurement taken from GEA

Parameter	Logged Name	Units	Definition
Engine #1, Exhaust Gas Temperature #3	E1 EGT3	DEG F	Measurement taken from GEA
Engine #1, Exhaust Gas Temperature #4	E1 EGT4	DEG F	Measurement taken from GEA
Engine #1, Exhaust Gas Temperature #5	E1 EGT5	DEG F	Measurement taken from GEA
Engine #1, Exhaust Gas Temperature #6	E1 EGT6	DEG F	Measurement taken from GEA
Engine #1, Exhaust Gas Temperature #7	E1 EGT7	DEG F	Measurement taken from GEA
Engine #1 Carburetor Temperature	E1 CarbT	DEG F	Measurement taken from GEA
Engine #2 Carburetor Temperature	E2 CarbT	DEG F	Measurement taken from GEA
Engine #1 Turbine #1 Inlet Temperature	E1 TIT1	DEG F	Measurement taken from GEA
Engine #2 Turbine #1 Inlet Temperature	E2 TIT1	DEG F	Measurement taken from GEA
Engine #1 Compressor Inlet Air Temperature	E1 IAT	DEG F	Measurement taken from GEA
Engine #1 Compressor Discharge Temperature	E1 CDT	DEG F	Measurement taken from GEA
Engine #1 Primary Exhaust Gas Temperature	E1 PEGT	DEG F	Measurement taken from GEA
Engine #1 Torque	E1 Torq	PSI	Measurement taken from GEA
Engine #1 RPM Power Turbine	E1 NP	RPM	Measurement taken from GEA
Engine #1 RPM % Generator Turbine (Compressor Turbine)	E1 NG RPM	RPM	Measurement taken from GEA
Engine #1 Inter Turbine Temperature	E1 ITT	DEG C	Measurement taken from GEA
Engine #1 Outside Air Temperature	E1 OAT	DEG C	Engine #1 Outside Air Temperature. Measurement from GEA
Engine #2 Outside Air Temperature	E2 OAT	DEG C	Engine #2 Outside Air Temperature. Measurement from GEA
Engine #2 Fuel Flow	E2 FFlow	gl/h	Measurement taken from GEA
Engine #2 Fuel Pressure	E2 FPres	PSI	Measurement taken from GEA
Engine #2 Oil Temperature	E2 OilT	DEG F	Measurement taken from GEA
Engine #2 Oil Pressure	E2 OilP	PSI	Measurement taken from GEA
Engine #2 Manifold Pressure	E2 MAP	inHg	Measurement taken from GEA
Engine #2 Revolutions Per Minute	E2 RPM	RPM	Measurement taken from GEA
Engine #2 Power Percent	E2 %Pwr	%	May be calculated depending on aircraft configuration

Parameter	Logged Name	Units	Definition
Engine #2, Cylinder Head Temperature #1	E2 CHT1	DEG F	Measurement taken from GEA
Engine #2, Cylinder Head Temperature #2	E2 CHT2	DEG F	Measurement taken from GEA
Engine #2, Cylinder Head Temperature #3	E2 CHT3	DEG F	Measurement taken from GEA
Engine #2, Cylinder Head Temperature #4	E2 CHT4	DEG F	Measurement taken from GEA
Engine #2, Cylinder Head Temperature #5	E2 CHT5	DEG F	Measurement taken from GEA
Engine #2, Cylinder Head Temperature #6	E2 CHT6	DEG F	Measurement taken from GEA
Engine #2, Cylinder Head Temperature #7	E2 CHT7	DEG F	Measurement taken from GEA
Engine #2, Cylinder Head Temperature Cooling Rate	E2 CHT CLD	DEG F/min	Measurement taken from GEA
Engine #2, Exhaust Gas Temperature #1	E2 EGT1	DEG F	Measurement taken from GEA
Engine #2, Exhaust Gas Temperature #2	E2 EGT2	DEG F	Measurement taken from GEA
Engine #2, Exhaust Gas Temperature #3	E2 EGT3	DEG F	Measurement taken from GEA
Engine #2, Exhaust Gas Temperature #4	E2 EGT4	DEG F	Measurement taken from GEA
Engine #2, Exhaust Gas Temperature #5	E2 EGT5	DEG F	Measurement taken from GEA
Engine #2, Exhaust Gas Temperature #6	E2 EGT6	DEG F	Measurement taken from GEA
Engine #2, Exhaust Gas Temperature #7	E2 EGT7	DEG F	Measurement taken from GEA
Engine #2 Compressor Inlet Air Temperature	E2 IAT	DEG F	Measurement taken from GEA
Engine #2 Compressor Discharge Temperature	E2 CDT	DEG F	Measurement taken from GEA
Engine #2 Primary Exhaust Gas Temperature	E2 PEGT	DEG F	Measurement taken from GEA
Engine #2 Torque	E2 Torq	PSI	Measurement taken from GEA
Engine #2 RPM Power Turbine	E2 NP	RPM	Measurement taken from GEA
Engine #2 RPM % Generator Turbine (Compressor Turbine)	E2 NG RPM	RPM	Measurement taken from GEA
Engine #2 Inter Turbine Temperature	E2 ITT	DEG C	Measurement taken from GEA
WGS84 GPS Altitude	AltGPS	ft	Selected GPS source
True Airspeed	TAS	kts	Selected ADC

Parameter	Logged Name	Units	Definition
HSI Source	HSIS	enum	Active navigation source on the HSI page: NAV1, NAV2, GPS1, GPS2
Selected Course	CRS	DEG	Magnetic or True Selected Course depending on pilot selection
#1 Navigation Radio Frequency	NAV1	MHz	
#2 Navigation Radio Frequency	NAV2	MHz	
Horizontal CDI	HCDI	fsd	Active VOR/LOC full scale deflection
Vertical CDI	VCDI	fsd	GS vertical full scale deflection
Wind Speed	WndSpd	kts	
Wind Direction	WndDr	DEG	Relative to true north
Distance to Next Waypoint	WptDst	nm	
Bearing to Next Waypoint	WptBrg	DEG	Magnetic or True Bearing to Next Waypoint depending on pilot selection
Magnetic Variation	MagVar	DEG	
Autopilot is engaged?	AfcsOn	boolean	0: Autopilot not engaged 1: Autopilot engaged
Autopilot Roll Mode	RollM	enum	Abbreviated text of autopilot roll mode
Autopilot Pitch Mode	PitchM	enum	Abbreviated text of autopilot pitch mode
Autopilot Flight Director Roll Command	FDRollC	DEG	Relative or absolute based on autopilot mode
Autopilot Flight Director Pitch Command	FDPitchC	DEG	Relative or absolute based on autopilot mode
GPS Vertical Speed	VSpdG	ft/min	Selected GPS
GPS Fix	GPSfix	enum	Selected GPS ForcNO : Selected GPS must be re-initialized NoSoln : No GPS solution 2D: 2D solution 3D: 3D solution 2DDiff : 2D differential solution 3DDiff : 3D differential solution DRGPS: Dead Reckoning based on last known GPS position DRWAAS : Dead Reckoning based on last known WAAS position
GPS Horizontal Alert Limit	HAL	mt	Selected GPS
GPS Vertical Alert Limit	VAL	mt	Selected GPS
WAAS GPS Horizontal Protection Level	HPLwas	mt	Selected GPS

Parameter	Logged Name	Units	Definition
GPS Horizontal Protection Level	HPLfd	mt	Selected GPS
WAAS GPS Vertical Protection Level	VPLwas	mt	Selected GPS
Pressure Altitude	AltPress	ft	Selected ADC
GPS Sattelites Used	GPSSat	#	Configured GPS 1
GPS Vertical Dilution of Precision	GPSVdop	#	Configured GPS 1
GPS Velocity (East)	GPSVelE	ft/min	Configured GPS 1
GPS Velocity (North)	GPSVelN	ft/min	Configured GPS 1
GPS Velocity (Up)	GPSVelU	ft/min	Configured GPS 1
GPS Horizontal Dilution of Precision	GPSHdop	#	Configured GPS 1
Turn Rate	TurnRate	DEG/second	
Slip Skid	SlipSkid	DEG	Positive is right of center
Selected Heading	SelHDG	DEG	Magnetic or True Selected Heading depending on pilot selection
Selected Track	SelTrk	DEG	Magnetic or True Selected Track depending on pilot selection
Selected Altitude	SelAlt	ft	
Selected Vertical Speed	SelVspd	ft/min	
Selected Airspeed	SelAspd	kt	
Navigation Source	NavSource	enum	Activenavigation source on the CDI: GPS1, GPS2, VLOC1, VLOC2, INVLD
Vertical Navigation Deviation	VnavDev	ft	Deviation from VNAV path
Vertical Navigation Path Angle	VnavPAng	DEG	
Vertical Navigation Altitude	VnavAlt	ft	
Autopilot State	ApState	enum	AP_off : Autopilot is off AP_eng : Autopilot is engaged AP_fail : Autopilot is failed AP_inv : Autopilot is unknown state
Yaw Damper State	YdState	enum	YD_off : Yaw Damper is off YD_eng : Yaw Damper is engaged YD_fail : Yaw Damper is failed YD_inv : Yaw Damper is unknown state
Flight Director Target Altitude	FdTrgtAlt	ft	
Autopilot Roll Command	ApRollCmd	DEG	Relative or absolute based on autopilot mode
Autopilot Pitch Command	ApPitCmd	DEG	Relative or absolute based on autopilot mode

Parameter	Logged Name	Units	Definition
Autopilot Vertical Speed Command	ApVsCmd	ft/min	
Autopilot Roll Torque	ApRollTrq	%	Autopilot Roll Torque where 100% is 60 in-lb for a GFC 500 system
Autopilot Pitch Torque	ApPitTrq	%	Autopilot Pitch Torque where 100% is 60 in-lb for a GFC 500 system
Autopilot Roll Trim Torque	ApRollTrimTrq	%	Autopilot Roll Trim Torque where 100% is 60 in-lb for a GFC 500 system
Autopilot Pitch Trim Torque	ApPitTrimTrq	%	Autopilot Pitch Trim Torque where 100% is 60 in-lb for a GFC 500 system
Autopilot Yaw Torque	ApYawTrq	%	Autopilot Yaw Torque where 100% is 60 in-lb for a GFC 500 system
LCD Temperature	LCDTemp	DEG C	LCD Temperature
Aircraft Power	AcftPower	V	Aircraft Power measured at GI 275
Battery Status	BattStatus	enum	Internal Garmin use
Battery Charge	BattCharge	%	GI 275 Battery Charge
Autopilot Monitor and Fault Flags	ApFlags	#	Internal Garmin use
Autopilot Disengage Cause	ApDisCause	enum	Various
Yaw Damper Monitor and Fault Flags	YdFlags	#	Internal Garmin use
Yaw Damper Disengage Cause	YdDisCause	enum	Various
Flight Director Lat Mode	FdLatMode	enum	See Pilot’s Guide Section 6.5 AFCS System Architecture
Flight Director Vert Mode	FdVertMode	enum	See Pilot’s Guide Section 6.5 AFCS System Architecture
Autopilot Altitude Command	ApAltCmd	ft	Internal Garmin use
Envelope Protection Status	EpStatus	enum	Roll , Pitch , IAS, Mach
CAN Status	CanStatus	#	Internal Garmin use
G-Meter	LonAC	G	Vertical Acceleration
Carbon Monoxide Level	COLvl	PPM	Measured Volumetric Parts-per-million of Carbon Monoxide
Carbon Monoxide Alert Status	COAl	“NONE” “TSO” “USER” “BOTH”	Type of Active CO Level Alarm

APPENDIX A CONNECTORS AND PIN FUNCTION

This appendix contains connector information and a description of pin functions for all LRUs installed as part of the GI 275 STC, with exception of the EIS sensors.

Refer to the LRU TSO installation manuals listed in Table 1-1 for more detailed signal information on each LRU and manufacturer documentation for EIS sensor information.

All D-sub connectors follow a similar pin numbering scheme. Numbered layouts (as seen while looking at the LRU) are provided for each connector in the orientation that it appears on the unit. Because installations can vary, ensure the correct orientation of the connector and pins.

A.1 GI 275

The GI 275 has up to two D-sub connectors and one BNC connector. The J2752/P2752 connector and pitot and static fittings are only present on GI 275 ADAHRS and ADAHRS+AP models. Pins relating to autopilot functionality are not present in the J2752/P2752 connector on the GI 275 ADAHRS (P/N 011-04489-10 and -30); however, all other pin functions are identical between GI 275 ADAHRS and ADAHRS+AP models. Refer to Table A-3 for pin function differences between the two models.

The mating designators, part numbers, and associated connector kits are listed in Table A-1.

Table A-1 GI 275 Unit Connectors

Ref. Des.	Description	Connector P/N	Kit P/N
J2751	Conn, Female, HD D-Sub, 78 Ckt	330-00366-78	011-04809-00
J2752	Conn, Female, HD D-Sub, 78 Ckt	330-00366-78	011-04809-01 [1]
GPS	BNC, Male	Supplied with antenna	

Notes:

[1] P/N 011-04809-01 kit includes connectors for both J2751 and J2752.

Figure A-1 GI 275 Connectors
(GI 275 ADAHRS shown)

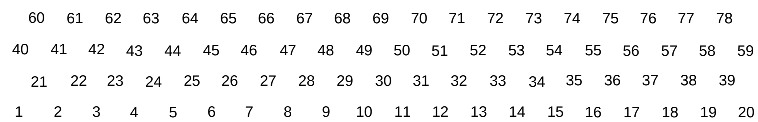


Figure A-2 GI 275 J2751/P2751 Connector (Looking at Unit)

Table A-2 GI 275 J2751/P2751 Connector

Pin	Function	I/O	Pin	Function	I/O
1	CONFIG MODULE GROUND	--	40	CONFIG MODULE DATA	I/O
2	AIRCRAFT POWER 1	IN	41	AIRCRAFT GROUND	--
3	AIRCRAFT POWER 2	IN	42	LIGHTING BUS LO	IN
4	DISCRETE OUT 1 LO	OUT	43	DISCRETE OUT 2*	OUT
5	VOR/LOC COMPOSITE LO	IN	44	VOR/LOC COMPOSITE HI	IN
6	GLIDESLOPE DEVIATION +UP	IN	45	GLIDESLOPE DEV +DOWN	IN
7	LATERAL -FLAG	IN	46	ETHERNET OUT 1A	OUT
8	ETHERNET OUT 2A	OUT	47	ETHERNET OUT 1B	OUT
9	ETHERNET OUT 2B	OUT	48	ALERT AUDIO OUT LO	OUT
10	OBS STATOR F	OUT	49	RS-485 A [1]	I/O
11	GLIDESLOPE +FLAG	IN	50	TO/FROM +FLAG IN	IN
12	DISCRETE IN 4 LO	IN	51	SPARE GROUND	--
13	OBS ROTOR H	IN	52	ARINC 429 IN 1A	IN
14	ARINC 429 IN 2B	IN	53	ARINC 429 IN 3A	IN
15	ARINC 429 IN 4B	IN	54	SPARE GROUND	--
16	ARINC 429 OUT 1A	OUT	55	ARINC 429 OUT 1B	OUT
17	SPARE GROUND	--	56	SPARE GROUND	--
18	RS-232 OUT 2	OUT	57	RS-232 IN 1	IN
19	LRU GROUND	--	58	USB DATA HI	I/O
20	LRU POWER	OUT	59	USB GROUND	--
21	CONFIG MODULE POWER	OUT	60	CONFIG MODULE CLOCK	OUT
22	LIGHTING BUS HI	IN	61	AIRCRAFT GROUND	--
23	DISCRETE IN 1 LO	IN	62	DISCRETE IN 2 LO	IN
24	DISCRETE OUT 3 LO	OUT	63	DISCRETE IN 3 LO	IN
25	LATERAL DEVIATION +LEFT	IN	64	LATERAL DEVIATION +RIGHT	IN
26	LATERAL +FLAG	IN	65	ETHERNET IN 1A	IN
27	ETHERNET IN 2A	IN	66	ETHERNET IN 1B	IN
28	ETHERNET IN 2B	IN	67	OBS STATOR G	IN
29	OBS STATOR D	OUT	68	OBS STATOR E	OUT
30	ALERT AUDIO OUT HI	OUT	69	RS-485 B [1]	I/O
31	GLIDESLOPE -FLAG	IN	70	SPARE GROUND	--
32	TO/FROM -FLAG	IN	71	OBS ROTOR C	IN
33	ARINC 429 IN 1B	IN	72	ARINC 429 IN 2A	IN
34	ARINC 429 IN 3B	IN	73	ARINC 429 IN 4A	IN
35	ARINC 429 OUT 2A	OUT	74	ARINC 429 OUT 2B	OUT
36	SPARE GROUND	--	75	SPARE GROUND	--
37	RS-232 IN 2	IN	76	RS-232 2 GROUND	--
38	RS-232 OUT 1	OUT	77	RS-232 1 GROUND	--
39	USB DATA LO	I/O	78	USB VBUS POWER	OUT

Notes:

[1] RS-485 IN ports can receive RS-422 signals.

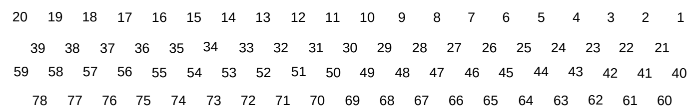


Figure A-3 GI 275 J2752/P2752 Connector (Looking at Unit)

CAUTION

Pins highlighted in gray are not present in GI 275 ADAHRS units (P/Ns 011-04489-10 and 011-04489-30) and should be treated as Not Connected. All pins listed in Table A-3 are present in GI 275 ADAHRS+AP units (P/Ns 011-04489-20 and 011-04489-40).

Table A-3 GI 275 J2752/P2752 Connector

Pin	Function	I/O	Pin	Function	I/O
1	DISCRETE OUT 7 LO	OUT	40	DISCRETE OUT 8 LO	OUT
2	SPARE	--	41	AP INTERLOCK RELAY COM	IN
3	GYRO VALID COMMON	--	42	GYRO VALID RELAY NC	OUT
4	DISCRETE IN 5 LO	IN	43	DISCRETE IN 6 LO	IN
5	VERTICAL -FLAG OUT	OUT	44	VERTICAL SUPERFLAG	OUT
6	PITCH AC OUT HI	OUT	45	ROLL AC OUT LO	--
7	26 VAC REF LO	IN	46	10 VAC REF LO	IN
8	HEADING SYNCRO X	OUT	47	HEADING SYNCHRO Z	--
9	VERTICAL +UP OUT	OUT	48	LATERAL +LEFT OUT	OUT
10	LATERAL +RIGHT OUT	OUT	49	TO/FROM -FLAG OUT	OUT
11	RADAR ROLL HI	OUT	50	RADAR ROLL LO	--
12	CAN LO	I/O	51	CAN TERMINATION A	I/O
13	A/P HEADING ERROR HI	OUT	52	A/P HEADING ERROR LO	OUT
14	DISCRETE OUT 5 LO	OUT	53	SPARE	--
15	YAW RATE HI	OUT	54	BARO CORRECTION LO	IN
16	HEADING SYNCRO Y	OUT	55	PITCH DC OUT	OUT
17	DISCRETE OUT 9 LO	OUT	56	RS-232 IN 3	IN
18	FD ENABLE HI	IN	57	SPARE	--
19	FD PITCH UP	IN	58	FD PITCH DOWN	IN
20	DISCRETE OUT 6 LO	OUT	59	SPARE GROUND	--
21	OAT PROBE IN LO	IN	60	OAT PROBE IN HI	IN
22	AP INTERLOCK RELAY NC	--	61	AP INTERLOCK RELAY NO	OUT
23	GYRO VALID RELAY NO	OUT	62	OAT PROBE POWER	OUT
24	VERTICAL +FLAG OUT	OUT	63	LATERAL +FLAG OUT	OUT
25	LATERAL SUPER FLAG	OUT	64	PITCH AC OUT LO	OUT
26	ROLL AC OUT HI	OUT	65	26 VAC REF HI	IN
27	10 VAC REF HI	IN	66	LATERAL -FLAG OUT	OUT
28	SPARE	--	67	SPARE GROUND	--
29	TO/FROM +FLAG	OUT	68	VERTICAL +DOWN OUT	OUT
30	RADAR PITCH LO	--	69	RADAR PITCH HI	OUT
31	CAN HI	I/O	70	CAN TERMINATION B	I/O
32	A/P COURSE ERROR HI	OUT	71	A/P COURSE ERROR LO	OUT
33	SPARE	--	72	DISCRETE OUT 4 LO	OUT
34	ROLL DC OUT	OUT	73	YAW RATE LO	--
35	BARO CORRECTION HI	OUT	74	SPARE GROUND	--

36	RS-232 3 GROUND	--	75	RS-232 OUT 3	OUT
37	DC REF IN	IN	76	SPARE GROUND	--
38	FD ROLL RIGHT	IN	77	FD ROLL LEFT	IN
39	TIME MARK A	IN	78	TIME MARK B	IN

The Active-Low discrete outputs shall provide a connection to ground with a resistance of no more than 25© when in the active state.

A.2 GEA 24(B)

The GEA 24(B) has four connectors. The mating designators, part numbers, and associated connector kits are listed in Table A-4.

Table A-4 GI 275 - GEA 24(B)

Ref. Des.	Description	Connector P/N	Kit P/N
J241	Conn, Male, D-Sub, 9 Ckt	330-00625-09	011-01855-00
J242	Conn, Female, D-Sub, 25 Ckt	330-00624-25	011-01855-02
J243	Conn, Male, D-Sub, 37 Ckt	330-00625-37	011-01855-03
J244	Conn, Male, D-Sub, 50 Ckt	330-00625-50	011-01855-04

GEA 24 UNIT
011-02848-00

J243

J242

J244

J241

Figure A-4 GEA 24(B) Connectors
GEA 24 shown, GEA 24B similar

Figure A-5 GEA 24(B) J241/P241 Connector (Looking at Unit)

Table A-5 GEA 24(B) J241/P241 Connector

Pin	Function	I/O
1	CAN HI	I/O
2	CAN LO	I/O
3	RESERVED	--
4	RS-232 RX	IN
5	RS-232 TX	OUT
6	GROUND	--
7	AIRCRAFT POWER 1	IN
8	AIRCRAFT POWER 2	IN
9	GROUND	--

Figure A-6 GEA 24(B) J242/P242 Connector (Looking at Unit)

Table A-6 GEA 24(B) J242/P242 Connector

Pin	Function	I/O	Pin	Function	I/O
1	RESERVED	--	14	CHT 6 HI / CHT 2 RESIST HI	IN
2	CHT 6 LO / CHT 2 RESIST LO	IN	15	EGT 6 HI	IN
3	EGT 6 LO	IN	16	CHT 5 / CHT 1 RESISTIVE HI	IN
4	CHT 5 LO / CHT 1 RESIST LO	IN	17	EGT 5 HI	IN
5	EGT 5 LO	IN	18	CHT 4 HI	IN
6	CHT 4 LO	IN	19	EGT 4 HI	IN
7	EGT 4 LO	IN	20	CHT 3 HI	IN
8	CHT 3 LO	IN	21	EGT 3 HI	IN
9	EGT 3 LO	IN	22	CHT 2 HI	IN
10	CHT 2 LO	IN	23	EGT 2 HI	IN
11	EGT 2 LO	IN	24	CHT 1 HI	IN
12	CHT 1 LO	IN	25	EGT 1 HI	IN
13	EGT 1 LO	IN			

Figure A-7 GEA 24(B) J243/P243 Connector (Looking at Unit)

Table A-7 GEA 24(B) J243/P243 Connector

Pin	Function	I/O	Pin	Function	I/O
1	FUEL PRESS GROUND	--	20	FUEL XDCR GROUND_1	--
2	FUEL PRESS	IN	21	FUEL RETURN (shared w/Pin 37, J244 connector)	IN
3	FUEL PRESS XDCR +12V	OUT	22	FUEL XDCR GROUND_2	
4	FUEL PRESS XDCR +5V	OUT	23	FUEL FLOW (shared w/Pin 36, J244 connector)	IN
5	RPM XDCR GROUND_2	--	24	FUEL XDCR +12V_1	OUT
6	RPM 2	IN	25	FUEL XDCR +12V_2	OUT
7	RPM XDCR GROUND_1	--	26	GP +5V_1	OUT
8	RPM 1	IN	27	GP GROUND_1	--
9	RPM XDCR +12V_1	OUT	28	POS 7 / MISC TEMP 2 LO	IN
10	RPM XDCR +12V_2	OUT	29	POS 7 / MISC TEMP 2 HI	IN
11	RESERVED / SPARE	IN	30	POS 6 / MISC TEMP 1 LO	IN
12	MANIFOLD PRESS GROUND	--	31	POS 6 / MISC TEMP 1 HI	IN
13	MANIFOLD PRESS	IN	32	OIL TEMP LO	IN
14	MANIFOLD PRESS XDCR +12V	OUT	33	OIL TEMP HI	IN
15	MANIFOLD PRESS XDCR +5V	OUT	34	SHUNT 2 LO (shared w/Pin 47, J244 connector)	IN
16	OIL PRESS GROUND	--	35	SHUNT 2 HI (shared w/Pin 46, J244 connector)	IN
17	OIL PRESS HI	IN	36	SHUNT 1 LO	IN
18	OIL PRESS XDCR +12V	OUT	37	SHUNT 1 HI	IN
19	OIL PRESS XDCR +5V	OUT			

Figure A-8 GEA 24(B) J244/P244 Connector (Looking at Unit)

Table A-8 GEA 24(B) J244/P244 Connector

Pin	Function	I/O	Pin	Function	I/O
1	SYSTEM ID 1A*	IN	26	GP GROUND_2	--
2	SYSTEM ID 1B / GROUND	--	27	GP +5V_3	OUT
3	RESERVED	--	28	VOLTS 2	IN
4	RESERVED	--	29	GP GROUND 3	--
5	FUEL QTY +5V_1	OUT	30	POS 5 HI / +5V	OUT
6	FUEL QTY 1	IN	31	POS 5 / MISC PRESS	IN
7	FUEL QTY 1 GROUND	--	32	POS 5 LO / GROUND	--
8	FUEL QTY +5V_2	OUT	33	CAN2_L	I/O
9	FUEL QTY 2	IN	34	FUEL QTY +12V 1	OUT
10	FUEL QTY 2 GROUND	--	35	FUEL QTY +12V 2	OUT
11	POS 3 HI / +5V_3	OUT	36	RESERVED	IN
12	POS 3 / GP 3 / FUEL QTY 3	IN	37	RESERVED	IN
13	POS 3 LO / GROUND	--	38	RESERVED	--
14	POS 4 HI / +5V_4	OUT	39	RESERVED	--
15	POS 4 / GP 4 / FUEL QTY 4	IN	40	DISCRETE IN 1**	IN
16	POS 4 LO / GROUND	--	41	DISCRETE IN 2**	IN
17	CAN2_H	I/O	42	DISCRETE IN 3**	IN
18	GP1 HI / +5V	OUT	43	DISCRETE IN 4**	IN
19	GP1 / POS 1	IN	44	RESERVED	IN
20	GP1 LO / GROUND	--	45	RESERVED	IN
21	GP2 HI / +5V	OUT	46	SHUNT 2 HI (shared w/Pin 35, J243 connector)	IN
22	GP2 / POS 2	IN	47	SHUNT 2 LO (shared w/Pin 34, J243 connector)	IN
23	GP2 LO / GROUND	--	48	RESERVED / SPARE 1	IN
24	GP +5V_2	OUT	49	RESERVED / SPARE 2	IN
25	VOLTS 1	IN	50	GP +12V	OUT

*Indicates Active-Low

**Can be configured as Active-High or Active-Low

A.3 GEA 110

The GEA 110 has two connectors. The mating designators, part numbers, and associated connector kits are listed in Table A-9.

Table A-9 GI 275 - GEA 110 Connectors

Ref. Des.	Description	Connector P/N	Kit P/N
P1101	Conn, Hi Dens, D-Sub, Mil Crmp, 15 Ckt	330-00185-15	011-03527-50
	Conn, HD D-Sub, Male, Str, Mil Crp contacts included, sealed, 15 Pin	330-01384-00	011-03527-51
P1102	Conn, Hi Dens, D-Sub, Mil Crp, 78 Ckt	330-00185-78	011-03527-50
	Conn, HD D-Sub, Male, Str, Mil Crp, Sealed, w/ GND Indents, 78 Pin	330-00776-78	011-03527-51

CAUTION

Ensure the 15 pin HD D-Sub connector is orientated properly; if the connector is installed upside down, it can cause damage to the GEA 110.

Figure A-9 GEA 110 Connectors

Figure A-10 GEA 110 J1101/P1101 Connector (Looking at Unit)

Table A-10 GEA 110 J1101/P1101 Connector

Pin	Function	I/O
1	AIRCRAFT PWR 1	IN
2	RESERVED	IN
3	DISCRETE OUT 1	OUT
4	RS-485 2A	I/O
5	RS-485 1A	I/O
6	AIRCRAFT PWR 2	IN
7	RESERVED	OUT
8	DISCRETE OUT 2	OUT
9	RS-485 2B	I/O
10	RS-485 1B	I/O
11	DISCRETE IN 5	IN
12	SYS ID #1	IN
13	SYS ID #2	IN
14	POWER GND	--
15	POWER GND	--

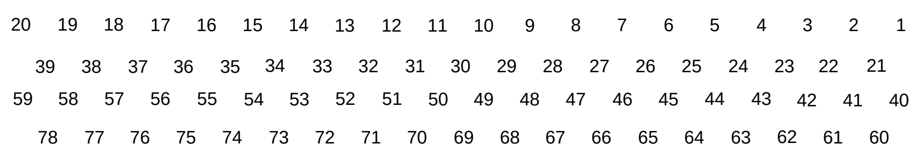


Figure A-11 GEA 110 J1102/P1102 Connector (Looking at Unit)

Table A-11 GEA 110 J1102/P1102 Connector

Pin	Function	I/O	Pin	Function	I/O
1	CHT 1 (+)	IN	40	EGT 1 (+)	IN
2	CHT 2 (+)	IN	41	EGT 2 (+)	IN
3	CHT 3 (+)	IN	42	EGT 3 (+)	IN
4	CHT 4 (+)	IN	43	EGT 4 (+)	IN
5	CHT 5 (+)	IN	44	EGT 5 (+)	IN
6	CHT 6 (+)	IN	45	EGT 6 (+)	IN
7	GENERAL PURPOSE 1 (+)	IN	46	CARB TEMP (+)	IN
8	GENERAL PURPOSE 2 (+)	IN	47	OIL TEMP (+)	IN
9	+10 VDC	OUT	48	OIL PRESSURE (+)	IN

10	FUEL PRESSURE (+)	IN	49	SIGNAL GND	--
11	DISCRETE IN 1	IN	50	MANIFOLD PRESSURE (+)	IN
12	FUEL QUANTITY 1 / GENERAL PURPOSE 3 (+)	IN	51	DISCRETE IN 3	IN
13	FUEL QUANTITY 3 / GENERAL PURPOSE 5 (+)	IN	52	FUEL QUANTITY 2 / GENERAL PURPOSE 4 (+)	IN
14	SIGNAL GND	IN	53	FUEL QUANTITY 4 / GENERAL PURPOSE 6 (+)	IN
15	FUEL FLOW 1	IN	54	SIGNAL GND	--
16	FUEL FLOW 2	IN	55	SHUNT 1 (-)	IN
17	+12 VDC	OUT	56	SHUNT 2 (-)	IN
18	RPM IN 1 (+)	IN	57	BUS 1	IN
19	RPM IN 2 (+)	IN	58	BUS 2	IN
20	CONFIG. MODULE PWR	OUT	59	CONFIG MODULE CLOCK	OUT
21	CHT 1 (-)	IN	60	EGT 1 (-)	IN
22	CHT 2 (-)	IN	61	EGT 2 (-)	IN
23	CHT 3 (-)	IN	62	EGT 3 (-)	IN
24	CHT 4 (-)	IN	63	EGT 4 (-)	IN
25	CHT 5 (-)	IN	64	EGT 5 (-)	IN
26	CHT 6 (-)	IN	65	EGT 6 (-)	IN
27	GENERAL PURPOSE 1 (-)	IN	66	CARB TEMP (-)	IN
28	GENERAL PURPOSE 2 (-)	IN	67	OIL TEMP (-)	IN
29	+5 VDC	OUT	68	OIL PRESSURE (-)	IN
30	FUEL PRESSURE (-)	IN	69	+12 VDC	OUT
31	DISCRETE IN 2	IN	70	MANIFOLD PRESSURE (-)	IN
32	FUEL QUANTITY 1 / GENERAL PURPOSE 3 (-)	IN	71	DISCRETE IN 4	IN
33	FUEL QUANTITY 3 / GENERAL PURPOSE 5 (-)	IN	72	FUEL QUANTITY 2 / GENERAL PURPOSE 4 (-)	IN
34	SIGNAL GND	--	73	FUEL QUANTITY 4 / GENERAL PURPOSE 6 (-)	IN
35	SHUNT 1 (+)	IN	74	SIGNAL GND	--
36	SHUNT 2 (+)	IN	75	RESERVED	--
37	RPM IN 1 (-)	IN	76	+5 VDC	OUT
38	RPM IN 2 (-)	IN	77	BUS 3	IN
39	CONFIG MODULE DATA	I/O	78	CONFIG MODULE GND	--

A.4 GMU 44B

The GMU 44B has one connector. The mating designator, part number, and associated connector kit are listed in Table A-12.

Table A-12 GI 275 - GMU 44B Connectors

Ref. Des.	Description	Connector P/N	Kit P/N
P442	6 Pin Rectangular Connector	330-01430-01	011-04205-00

Figure A-12 GMU 44B J442/P442 Connector

Table A-13 GMU 44B J442/P442 Connector

Pin	Function	I/O
1	SHIELD GROUND	--
2	RS-422 OUT B	OUT
3	RS-422 OUT A	OUT
4	POWER GROUND	--
5	RS-232 IN	IN
6	MAG POWER INPUT	IN

A.5 GMU 11

The GMU 11 has one connector. The mating designator, part number, and associated connector kit are listed in Table A-14.

Table A-14 GI 275 - GMU 11 Connectors

Ref. Des.	Description	Connector P/N	Kit P/N
J111	Conn, Circular, Male, 9 Ckt	011-03002-00	011-04349-90

Figure A-13 GMU 11 J111/P111 Connector (Looking at Unit)

Table A-15 GMU 11 J111/P111 Connector

Pin	Function	I/O
1	CAN BUS HI	I/O
2	CAN BUS LO	I/O
3	UNIT ID 1	IN
4	RS-232 IN	IN
5	RS-232 OUT	OUT
6	SIGNAL GROUND	--
7	AIRCRAFT PWR 1	IN
8	AIRCRAFT PWR 2	IN
9	POWER GROUND	--

A.6 GTP 59

The GTP 59 Temperature Probe does not have a connector. Rather, a 3-conductor shielded cable extends from the sensor for interface with the GI 275.

Table A-16 GTP 59 3-Conductor Shielded Cable

Conductor Color	Name	I/O
WHITE	PROBE POWER LEAD	IN
BLUE	RESISTIVE ELEMENT HI	OUT
ORANGE	RESISTIVE ELEMENT LO	OUT

A.7 GSB 15

The GSB 15 has a six-pin connector in either a vertical or horizontal position. The connector designation (P201 or P202) is dependent on the part number but the pin numbers and functions are identical (refer to Table A-17.

P201, GSB 15 Rear Unit
P/N 011-04937-00/-20/-40

P202, GSB 15 Side Unit
P/N 011-04937-01/-30/-50

Figure A-14 GSB 15 Connectors

Table A-17 GSB 15 J201/P201 & J202/P202

Pin	Function	I/O
1	AIRCRAFT POWER	IN
2	USB DN	I/O
3	USB DP	I/O
4	USB GND	--
5	BACKLIGHT ENABLE	IN
6	POWER GROUND	--

A.8 GCO 14

The GCO 14 has a four-pin connector. The wire harness is pre-fabricated and included with the unit.

1 2 3 4

Figure A-15 GCO 14 J1000/P1000 Connector

Table A-18 GCO 14 J1000/P1000 Connector

Pin	Pin Name	Color	I/O
1	GROUND	BLACK	--
2	CLOCK	WHITE	I/O
3	DATA	YELLOW	I/O
4	+3.3v	RED	IN

APPENDIX B INTERCONNECT DIAGRAMS

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 LESS THAN 3.0 INCHES UNLESS OTHERWISE SPECIFIED.

[3] USE APPROVED ETHERNET CABLES LISTED IN SECTION 3.1.2 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 7* !’ INDICATES ANY AVAILABLE ‘DISCRETE IN’ CAN BE USED.

~ RS-232 6 !’ INDICATES ANY AVAILABLE RS-232 PORT CAN BE USED.

~ GEN PURP !’ INDICATES ANY AVAILABLE GENERAL PURPOSE PORT CAN BE USED.

* REPRESENTS ACTIVE-LOW PIN.

S SHIELD GROUND BLOCK DESIGNATOR.

AIRFRAME GROUND DESIGNATOR.

GI 275

P2751 1 9

CONFIG MODULE PWR	21	28 AWG	RED	4	CONFIG MODULE
CONFIG MODULE GND	1	28 AWG	BLK	1	
CONFIG MODULE DATA	40	28 AWG	YEL	3	
CONFIG MODULE CLOCK	60	28 AWG	WHT	2	

LIGHTING BUS HI	22	2
LIGHTING BUS LO	42	

~ETHERNET 1	OUT A	46	5
	OUT B	47	
	IN A	65	
	IN B	66	

s

AIRCRAFT POWER 2	3	22 AWG
AIRCRAFT POWER 1	2	22 AWG

4

3

AIRCRAFT POWER 2	3	22 AWG
AIRCRAFT POWER 1	2	22 AWG

4

8

STRIPE ON TVS
INDICATES
CATHODE SIDE

s s

AIRCRAFT GND	41	22 AWG
AIRCRAFT GND	61	22 AWG

3

USB	DATA HI	58	GRN	USB
	DATA LO	39	WHT	
	VBUS POWER	78	RED	
	GROUND	59	BLK	

6 7

s

Figure B-1 GI 275 - Power, Lighting, Configuration Module, HSDB, USB Interconnect
Sheet 1 of 2

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 AIRCRAFT POWER 2 IS USED FOR WIRING WITH INDEPENDENT POWER BUSSES AND IS NOT REQUIRED. REFER TO SECTION 3.2.1 FOR BREAKER SIZING, BUSSING, AND LABELING.

5 REFER TO SECTION 3.2.6 FOR HSDB ARCHITECTURE.

6 P/N 325-00238-02 CABLE ASSY, USB-A RECPT TO PIGTAIL, 48” INCLUDED WITH GI 275 CONNECTOR KIT. THE USB CONNECTOR IS FOR MAINTENANCE PURPOSES ONLY AND MUST BE CAPPED AND STOWED PRIOR TO RETURNING THE AIRCRAFT TO SERVICE. PROTECT THE USB CONNECTOR SUCH THAT THE USB CONNECTOR OPENING IS COMPLETELY COVERED. THEN SECURE THE USB CONNECTOR FOR FUTURE MAINTENANCE ACCESS.

7 A GSB 15 USB DATABASE AND CHARGING HUB CAN BE INSTALLED IN PLACE OF THE USB PIGTAIL. REFER TO FIGURE B-26.

8 TVS/FUSE ONLY REQUIRED FOR CLASS II & III COMPOSITE AIRCRAFT. REFER TO NOTES COLUMN OF TABLE D-2 FOR AIRCRAFT MODELS REQUIRING THE TVS/FUSE. REFER TO SECTION 3.1.2 FOR TVS AND FUSE PART NUMBERS. VERIFY THAT THERE IS NO TENSION ON THE INLINE FUSE OR TVS COMPONENTS WHEN INSTALLED.

THE WIRE LENGTH BETWEEN THE GI 275 CONNECTOR AND ENVIRONMENTAL SPLICE MUST BE 6 INCHES OR LESS, AND THE WIRE LENGTH BETWEEN THE ENVIRONMENTAL SPLICE AND THE SHIELD GROUND MUST BE 10 INCHES OR LESS.

9 REFER TO FIGURE B-27 FOR CONFIG MODULE HARNESS WHEN A GCO 14 IS INSTALLED.

Figure B-1 GI 275 - Power, Lighting, Configuration Module, HSDB, USB Interconnect
Sheet 2 of 2

ADAHRS

GI 275
w/ ADAHRS

P2751
RS-485 A 49
(RS-422) B 69
s
LRU PWR OUT 20
LRU GROUND 19
2 RS-232 OUT 1 38
s

P442
3
2
1
6
4
5

GMU 44B
MAGNETOMETER

OR

P111
GMU 11
MAGNETOMETER

2 RS-232 1 OUT 38 4
IN 57 5
GND 77 s s 6

3

LRU PWR OUT 20 7
LRU GROUND 19 s s 9

4 Supplemental Heading Source

GI 275 GAD 29 Heading Source 4

~ARINC 429 IN 2 A 72 B 14 s s 16 55 24 12 A B ARINC 429 OUT~

OR

~HSDB 2
IN A 27
IN B 28
OUT A 8
OUT B 9

5

P2752

OAT POWER 62 WHT
OAT PROBE IN HI 60 BLU
OAT PROBE IN LO 21 ORN
s

1

GTP 59
OAT PROBE

Figure B-2 Attitude and Air Data Interconnect
Sheet 1 of 2

NOTES

1 THE WIRING SUPPLIED WITH THE GTP 59 MAY BE EXTENDED IF THE SUPPLIED WIRE LENGTH IS NOT SUFFICIENT FOR A PARTICULAR INSTALLATION.

2 THE GMU MUST BE CONNECTED TO RS-232 PORT 1 OR PORT 2 ONLY (CONNECTOR 1 ON THE MAIN BOARD).

3 THE GMU 11 IS RESTRICTED TO CLASS I & II AIRCRAFT.

4 WHEN THE GI 275 IS NOT THE PRIMARY HEADING INDICATOR, AN ARINC 429 INPUT FOR HEADING MAY BE UTILIZED IN CLASS I - III AIRCRAFT FOR SUPPLEMENTAL DISPLAY/USE OF HEADING. THIS MUST BE SOURCED FROM THE AIRCRAFT HEADING SOURCE WHICH MUST BE AN FAA -APPROVED OR TSO-C201 APPROVED SYSTEM CAPABLE OF PROVIDING ARINC 429 LABEL 320 FOR MAGNETIC HEADING.

5 THE GI 275 HAS THE CAPABILITY TO CONSUME THE MAGNETIC HEADING DATA FROM THE SOURCE CONFIGURED AS AHRS #1 IF THAT SOURCE HAS MAGNETIC HEADING DATA AVAILABLE. CONFIGURE AHRS #2 OR #3 MAGNETIC HEADING INTERFACE FOR “PRIMARY” TO PROVIDE MAGNETIC HEADING DATA FROM AHRS #1.

Figure B-2 Attitude and Air Data Interconnect
Sheet 2 of 2

GI 275		P2751	TXi [1] P2	GSU 75 P751	GDC 72 P721	GDC 74 P741		GARMIN ADC
~ARINC 429 IN 1	A	52	-	27	27	26	A	ARINC 429 OUT
	B	33	-	7	7	27	B	
~ETHERNET 1	OUT A	46	16	-	-	-	IN A	ETHERNET 1 ~
	OUT B	47	31	-	-	-	IN B	
	IN A	65	17	-	-	-	OUT A	
	IN B	66	32	-	-	-	OUT B	

GI 275		P2751	TXi [1] P4	GSU 75 [2] P751	GRS 79 P791	GRS 77 P771		GARMIN AHRS
~ARINC 429 IN 2	A	72	-	-	27	14	A	ARINC 429 OUT
	B	14	-	-	7	29	B	

NOTES

1 ETHERNET CONNECTION MUST BE DIRECTLY CONNECTED WITH TXi. ANY PORT MAY BE USED. ETHERNET INTERFACE PROVIDES ADC/AHRS/PFD SYNC.

2 CONNECTIONS TO THE GSU 75 USE ADAHRS ARINC 429 SO ONLY ONE CONNECTION IS REQUIRED.

Figure B-3 External Attitude and Air Data

GPS SOURCE

GARMIN

GI 275		P2751	GNX 375 P3751	GNX 375 P3752	GPS 175 / GNC 355 PXX51	GTX 3X5 P3251	GTN 6XX/7XX / GTN Xi P1001	GTN 6XX/7XX / GTN Xi P1002	GNS 480 P1	GNS 480 P5	GPS 400W / GNC 420W / GNS 430W P4001	GPS 500W / GNS 530W P5001	GPS SOURCE
~ETHERNET 1	OUT A	46	-	4	11	-	-	15	-	-	-	-	ETHERNET IN A
	OUT B	47	-	19	33	-	-	16	-	-	-	-	ETHERNET IN B
	IN A	65	-	3	10	-	-	17	-	-	-	-	ETHERNET OUT A
	IN B	66	-	18	32	-	-	18	-	-	-	-	ETHERNET OUT B
~RS-232 1	IN	57	-	-	-	7	-	-	5	-	56	56	RS232 OUT (MAPMX)
	GND	77	-	-	-	50	-	-	23	-	GND	GND	GROUND 1
~ARINC 429 IN 1	A	52	-	-	-	-	-	-	-	4	46	46	GPS 429 OUT A (GAMA 429)
	B	33	-	-	-	-	-	-	-	24	47	47	GPS 429 OUT B (GAMA 429)
~ARINC 429 OUT 1	A	16	-	-	-	-	-	-	-	8	48	48	GPS 429 IN A (GARMIN GDU)
	B	55	-	-	-	-	-	-	-	28	49	49	GPS 429 IN B (GARMIN GDU)

BNC CONNECTOR

BACKUP
GPS ANTENNA

NOTES

1 FOR PINS IDENTIFIED WITH “GND”, CONNECT WIRE TO GROUND AT THE REAR OF THE UNIT.

2 REFER TO SECTION 3.2.6 FOR HSDB ARCHITECTURE.

3 SPLICES AT THE NAVIGATOR MAY BE REQUIRED FOR RS-232 AND ARINC 429 LINES.

4 IF NOT ENOUGH ARINC 429 CONNECTIONS ARE AVAILABLE IN THE SYSTEM, THE GENERIC MAPMX FORMAT MAY BE USED WITH ONLY THE RS-232 CONNECTION FROM THE GNS 4XXW/5XXW OR GNS 480. REFER TO SECTION 5.5.5.

Figure B-4 GPS Interconnect

GI 275 — NAVIGATOR

GI 275	P2751 [1]	GARMIN GTN 6XX/7XX GTN Xi P1002	GARMIN GNS 480 P5	GARMIN GNS 430W P4006	GARMIN GNS 530W P5006	GARMIN GNC 255() P2001	GARMIN GNC 215 [7] P1	GARMIN SL30 37-Pin	HONEYWELL (BENDIX/KING) KN 53 P532	HONEYWELL KX 170B KX 175B P171	HONEYWELL KX 155A/165A P155A1 P165A1	HONEYWELL KX 155A/165A P155A2 P165A2	HONEYWELL KX 155/165 P401	HONEYWELL KX 155/165 P901	COLLINS VIR-32/33 P1	COLLINS VIR-32/33 P2	NAVIGATOR
~ARINC 429 IN 2 A	72	-	5	24	24	-	48	-	-	-	-	-	-	-	-	-	VOR/ILS 429 OUT A
~ARINC 429 IN 2 B	14	-	25	23	23	-	47	-	-	-	-	-	-	-	-	-	VOR/ILS 429 OUT B
~RS-232 2 OUT	18	-	-	-	-	16	46	4	-	-	-	-	-	-	-	-	RXD1
~RS-232 2 IN	37	-	-	-	-	1	5	5	-	-	-	-	-	-	-	-	TXD1
~RS-232 2 GND	76	-	-	-	-	31	26	3	-	-	-	-	-	-	-	-	SERIAL GROUND
VOR/LOC COMPOSITE HI	44	-	-	-	-	-	-	-	B	3	H	-	H	-	-	24	VOR/LOC COMPOSITE OUT
VOR/LOC COMPOSITE LO	5	-	-	-	-	-	-	-	15	GND	GND	-	GND	-	-	26	VOR/LOC COMPOSITE OUT LO
GLIDESLOPE DEV +UP	6	-	-	-	-	-	-	-	P	- [2]	- [2]	15 / S	- [2]	15 / S	5	-	GS DEVIATION +UP
[5] GLIDESLOPE DEV +DOWN	45	-	-	-	-	-	-	-	14	-	-	16 / T	-	16 / T	1	-	GS DEVIATION + DOWN
GLIDESLOPE +FLAG	11	-	-	-	-	-	-	-	13	- [3]	-	17 / U	-	17 / U	17	-	GS +FLAG
[5] GLIDESLOPE -FLAG	31	-	-	-	-	-	-	-	R	-	-	14 / R	-	14 / R	-	-	GS -FLAG
DISCRETE IN 4 LO	12	-	-	-	-	-	-	-	12	4	8	- [4]	8	- [4]	-	40	ILS ENERGIZE
		-	-	-	-	-	-	-	-	19	-	-	-	-	-	-	ILS COMMON
~ETHERNET 1 OUT A	46 [6]	15	-	-	-	-	25	-	-	-	-	-	-	-	-	-	ETHERNET IN A
~ETHERNET 1 OUT B	47	16	-	-	-	-	24	-	-	-	-	-	-	-	-	-	ETHERNET IN B
~ETHERNET 1 IN A	65	17	-	-	-	-	4	-	-	-	-	-	-	-	-	-	ETHERNET OUT A
~ETHERNET 1 IN B	66	18	-	-	-	-	3	-	-	-	-	-	-	-	-	-	ETHERNET OUT B

Figure B-5 NAV Interconnect
Sheet 1 of 2

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. REFER TO SECTION 3.2.6 FOR HSDB ARCHITECTURE.

7. FOR GNC 215, WIRE AS EITHER HSDB, ARINC 429, OR RS-232. REFER TO SECTION 5.5.7 FOR CONFIGURATION INFORMATION. USE THE ARINC 429 CONNECTION IN AIRCRAFT THAT HAVE THE GNC RS-232 CONNECTED TO A GPS SOURCE.

Figure B-5 NAV Interconnect
Sheet 2 of 2

GI 275

1

NAVIGATOR

Garmin

GI 275 P2751		GTN 6XX/7XX GTN Xi P1004	GNS 5XX P5006	GNS 4XX P4006	
LATERAL DEVIATION +LEFT	25	5	5	5	LATERAL +LEFT
LATERAL DEVIATION +RIGHT	64	6	6	6	LATERAL +RIGHT
LATERAL +FLAG	26	3	3	3	LATERAL +FLAG
LATERAL -FLAG	7	4	4	4	LATERAL -FLAG
TO/FROM +FLAG	50	1	1	1	+TO
TO/FROM -FLAG	32	2	2	2	+FROM
GLIDESLOPE DEVIATION +UP	6	34	32	32	GS DEVIATION +UP
GLIDESLOPE DEV +DOWN	45	55	31	31	GS DEVIATION + DOWN
GLIDESLOPE +FLAG	11	32	30	30	GS +FLAG
GLIDESLOPE -FLAG	31	53	31	31	GS -FLAG
OBS STATOR D	29	13	13	13	OBS RESOLVER D
OBS STATOR E	68	11	11	11	OBS RESOLVER E
OBS STATOR F	10	12	12	12	OBS RESOLVER F
OBS STATOR G	67	14	11	11	OBS RESOLVER G
OBS ROTOR C	71	9	9	9	OBS RESOLVER C
OBS ROTOR H	13	10	10	10	OBS RESOLVER H

Figure B-6 Analog CDI Interconnect
Sheet 1 of 2

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 FIGURE B-5.

2 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 FIGURE B-5 MUST BE USED.

Figure B-6 Analog CDI Interconnect
Sheet 2 of 2

GI 275

P2751

OUT 38
RS-232 1 IN 57
GND 77

s

1

GEA 24/GEA 24B

P241

4 IN
5 OUT RS-232 1
9 GND

s

7 POWER IN 1

6 GROUND

NOTES

1 REFER TO SECTION 3.2.1 FOR BREAKER SIZING, BUSSING, AND LABELING.

Figure B-7 GEA 24(B) Power Interconnect

GEA 24/GEA 24B

P242

3 3 4

2	CHT 1 HI	24	YEL	YEL	WHT
	CHT 1 LO	12	RED	RED	RED

3 3

	EGT 1 HI	25	YEL	YEL
2	EGT 1 LO	13	RED	RED

P243

7 12

FUEL PRESS XCDR +5V	4	-	-	RED	RED	-
FUEL PRESS XCDR +12V	3	RED	RED	-	-	RED
FUEL PRESS RX	2	WHT	WHT	GRN	GRN	WHT
FUEL PRESS GND	1	BLK	BLK	BLK	BLK	BLK

s

MAN PRESS XCDR +5V	15	-	-	RED	RED
MAN PRESS XCDR +12V	14	RED	ORG-WHT	-	-
MANIFOLD PRESS RX	13	WHT	WHT	GRN	GRN
MAN PRESS GND	12	BLK	BLU-WHT	BLK	BLK

s

OIL PRESS XCDR +5V	19	-	RED	-
OIL PRESS XCDR +12V	18	RED	-	-
OIL PRESS RX	17	WHT	GRN	HI
OIL PRESS GND	16	BLK	BLK	LO

s

11

Figure B-8 GEA 24(B) Sensor Interconnect
Sheet 1 of 11

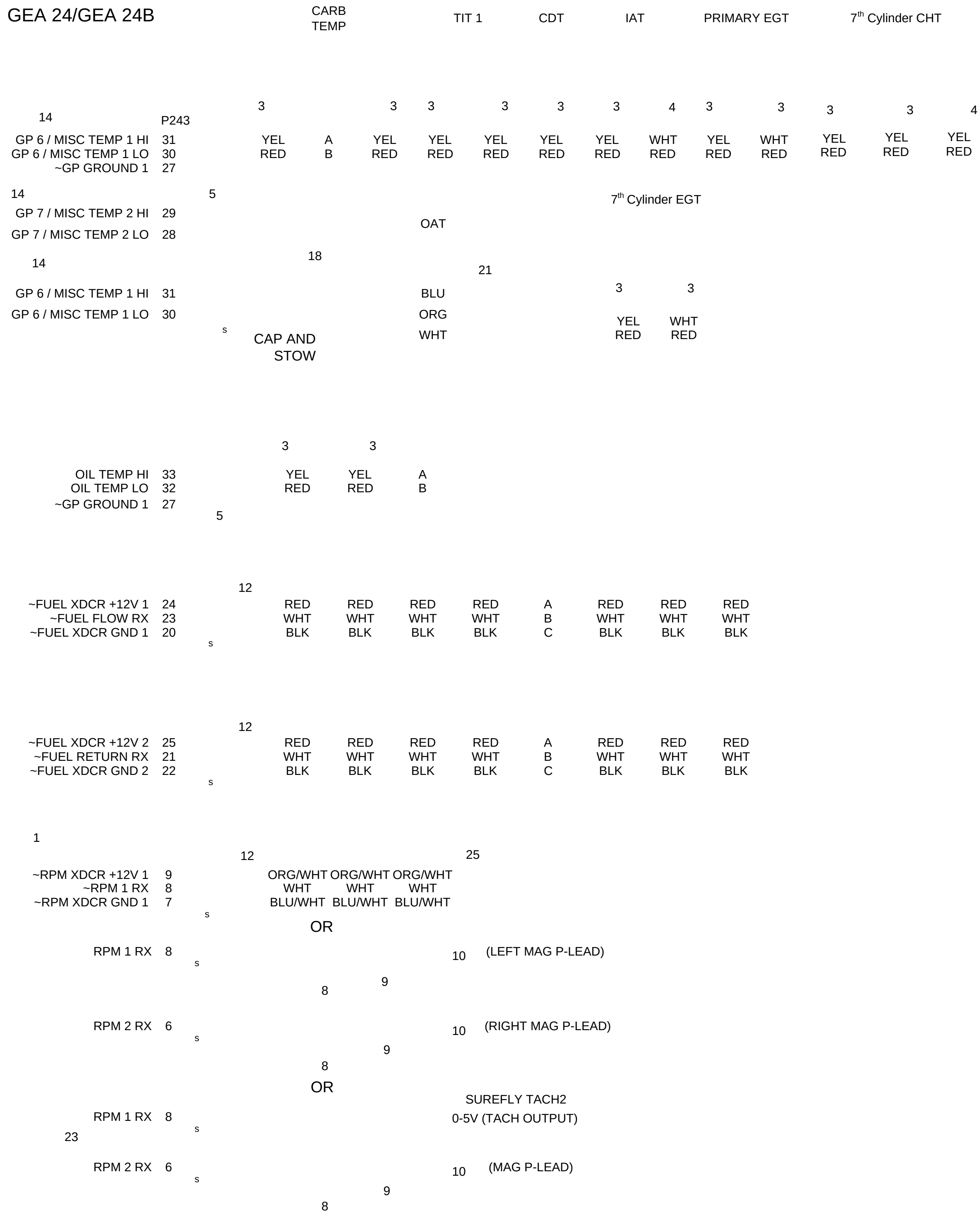


Figure B-8 GEA 24(B) Sensor Interconnect
Sheet 2 of 11

GEA 24/GEA 24B

P243

ALT LOAD - SHUNT 1 HI 37 1A

B ALT G

13

ALT LOAD - SHUNT 1 LO 36 1A

AIRCRAFT BUS

OR

MASTER
SOLENOID

BATT - SHUNT 2 LO 34 1A

\+ -

13

BATT - SHUNT 2 HI 35 1A

BATTERY BUS

OR

CESSNA
CS3200
PB018

ELECTRICAL
CURRENT SHUNT

26

BATT - SHUNT 2 LO 34 G AMMETER
BATT - SHUNT 2 HI 35 F AMMETER

S

P244

VOLTS 1 25 1A BUS VOLTS

VOLTS 2 28 1A BATT VOLTS

AT TANK MASTER
SENDER

20

6

24 FUEL QTY 1 6 BLUE GREEN
FUEL QTY 1 GND 7 BLK BLK

S

Figure B-8 GEA 24(B) Sensor Interconnect
Sheet 3 of 11

GEA 24 AND GEA 24B USING EXISTING WIRING (REPLACING A GEA 24)
SINGLE-ENGINE INSTALLATIONS

GEA 24/GEA 24B
22
P244

LEFT MAIN /
SINGLE MAIN

19

15
FUEL +12V 1 34

RESISTIVE
FLOAT

16
6

FUEL QTY 1 HI (0-5 VOLT) 6
HI
s
FUEL QTY 1 LO 7
LO
s

RIGHT MAIN

FUEL +12V 2 35

RESISTIVE
FLOAT

16
6

FUEL QTY 2 HI (0-5 VOLT) 9
HI
s
FUEL QTY 2 LO 10
LO
s

LEFT AUX /
SINGLE AUX

RESISTIVE
FLOAT

16
6

FUEL QTY 3 HI (0-5 VOLT) 12
HI
s
FUEL QTY 3 LO 13
LO
s

GP +12V 50
17
RIGHT AUX

RESISTIVE
FLOAT

16
6

FUEL QTY 4 HI (0-5 VOLT) 15
HI
s
FUEL QTY 4 LO 16
LO
s

Figure B-8 GEA 24(B) Sensor Interconnect
Sheet 4 of 11

GEA 24 AND GEA 24B USING EXISTING WIRING (REPLACING A GEA 24) TWIN-ENGINE INSTALLATIONS

GEA 24/GEA 24B #1
(Left Engine)

22 P244

LEFT MAIN

19

15 FUEL +12V 1 34

RESISTIVE
FLOAT

16 6

FUEL QTY 1 HI (0-5 VOLT) 6 HI

s

FUEL QTY 1 LO 7 LO

s

LEFT AUX

GP +12V 50

RESISTIVE
FLOAT

16 6

FUEL QTY 3 HI (0-5 VOLT) 12 HI

s

FUEL QTY 3 LO 13 LO

s

GEA 24/GEA 24B #2
(Right Engine)

P244

RIGHT
MAIN

22

15 FUEL +12V 2 35

RESISTIVE
FLOAT

16 6

FUEL QTY 2 HI (0-5 VOLT) 9 HI

s

FUEL QTY 2 LO 10 LO

s

RIGHT AUX

GP +12V 50

RESISTIVE
FLOAT

16 6

FUEL QTY 4 HI (0-5 VOLT) 15 HI

s

FUEL QTY 4 LO 16 LO

s

Figure B-8 GEA 24(B) Sensor Interconnect
Sheet 5 of 11

GEA 24B NEW INSTALLATIONS
SINGLE-ENGINE INSTALLATIONS

GEA 24B

P244

LEFT MAIN /
SINGLE MAIN

RESISTIVE
FLOAT

6

FUEL QTY 1 HI (0-620 OHM) 6 HI

s

FUEL QTY 1 LO 7 LO

s

RIGHT MAIN

RESISTIVE
FLOAT

6

FUEL QTY 2 HI (0-620 OHM) 9 HI

s

FUEL QTY 2 LO 10 LO

s

LEFT AUX /
SINGLE AUX

RESISTIVE
FLOAT

6

FUEL QTY 3 HI (0-620 OHM) 12 HI

s

FUEL QTY 3 LO 13 LO

s

RIGHT AUX

RESISTIVE
FLOAT

6

FUEL QTY 4 HI (0-620 OHM) 15 HI

s

FUEL QTY 4 LO 16 LO

s

Figure B-8 GEA 24(B) Sensor Interconnect
Sheet 6 of 11

GEA 24B NEW INSTALLATIONS
TWIN-ENGINE INSTALLATIONS

GEA 24B #1
(Left Engine)

LEFT MAIN

RESISTIVE
FLOAT

P244

6

FUEL QTY 1 HI (0-620 OHM) 6 HI

s

FUEL QTY 1 LO 7 LO

s

LEFT AUX

RESISTIVE
FLOAT

6

FUEL QTY 3 HI (0-620 OHM) 12 HI

s

FUEL QTY 3 LO 13 LO

s

GEA 24B #2
(Right Engine)

RIGHT MAIN

RESISTIVE
FLOAT

P244

6

FUEL QTY 2 HI (0-620 OHM) 9 HI

s

FUEL QTY 2 LO 10 LO

s

RIGHT AUX

RESISTIVE
FLOAT

6

FUEL QTY 4 HI (0-620 OHM) 15 HI

s

FUEL QTY 4 LO 16 LO

s

Figure B-8 GEA 24(B) Sensor Interconnect
Sheet 7 of 11

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 OTHER CHANNELS. USE CHANNELS 1-4 FOR 4-CYLINDER CONFIGURATION, USE CHANNELS 1-6 FOR 6-CYLINDER CONFIGURATION, USE POS 6 / MISC TEMP 1 LO/HI FOR CHT CHANNEL 7, AND POS 7 / MISC TEMP 2 LO/HI FOR EGT CHANNEL 7 FOR 7-CYLINDER CONFIGURATION.AND ONLY CHANNEL 1 FOR SINGLE CHT/EGT CONFIGURATION.
3	USE K-TYPE THERMOCOUPLE WIRE FOR EXTENSIONS.
4	USE J-TYPE THERMOCOUPLE WIRE FOR EXTENSIONS.
5	GEA GROUND PIN ONLY REQUIRED FOR MS28034 TEMP SENSOR.
6	EXISTING FUEL QTY WIRING MAY BE RE-USED. USE A STANDARD ENVIRONMENTAL CRIMP SPLICE TO EXTEND THE SIGNAL TO THE GEA, IF REQUIRED. ALL ADDITIONAL WIRING MUST BE SHEILDED AND BOTH SHEILD ENDS TERMINATED. THE SHEILD 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 K©, 1/4 WATT, -55 C TO +125 C RESISTORS. TWIST PARALLEL RESIST SPLICE TO WIRES WITH ENVIRONMENTAL SPLICES, AND ENCAPSULATE SPLICES AND RESISTORS WITH ADHESIVE LINED POLYOLEFIN HEAT-SHRINKABLE TUBING.
9	DO NOT EXCEED 6-INCH 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 --- PIN ONLY REQUIRED FOR BEECH 102-389017-3.
12	DO NOT EXCEED 6-INCH 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. IF A CONNECTOR IS PROVIDED BY THE FUEL FLOW TRANSDUCER MANUFACTURER, IT CAN BE REMOVED IN FAVOR OF AN ENVIRONMENTAL SPLICE, IF NECESSARY.
13	BOTH FUSES MUST BE THE SAME TYPE AND RATING.
14	USE EITHER GP 6/MISC TEMP 1 OR GP 7/MISC TEMP 2 PORTS FOR TIT, CDT, IAT, OAT, AND PRIMARY EGT SENSORS. CARB TEMP AND 7TH CYLINDER CHT SENSORS MUST BE CONNECTED TO GP 6/MISC TEMP 1. 7TH CYLINDER EGT MUCH BE CONNECTED TO GP 7/MISC TEMP 2.
15	WHEN USING THE DUAL 2.2K RESISTOR WIRING CONFIGURATION SHOWN IN THIS FIGURE, THE RESISTIVE FUEL PROBE MUST BE CONFIGURED AS A 0-5 VOLT SENSOR. THE RESISTIVE SENSOR CONFIGURATION MUST NOT BE USED FOR A GEA 24. REFER TO APPENDIX C.

Figure B-8 GEA 24(B) Sensor Interconnect
Sheet 8 of 11

NOTES CONTINUED

END OF WIRE

CONTACT
(P/O GEA24 CONNECTOR KIT)

2.00(+0.25/-0) INCH

3.5(±0.5) INCH

RESISTOR

JUMPER (22 AWG)
1.75(+0.25/-0) INCH

16

SOLDER SLEEVE (REF SECTION 4)

RING TERMINAL

BRAID MAX 4 INCH

HARNESS BUILDUP PROCEDURE

BUILD RESISTOR ASSEMBLIES AS SHOWN IN NOTE 1 .
COMPLETE RESISTOR ASSEMBLY AS SHOWN IN ABOVE FIGURE (I.E. CRIMP CONTACTS TO WIRES, TERMINATE SHIELD, ETC.).
2.1. REFERENCE FIGURE B-8 SHEET 4 FOR COMPLETE FUEL QUANTITY WIRING CONNECTIONS.
SEE NOTE 18 FOR CABLE TIE PLACEMENT TO AVOID COMPONENT STRAIN.

SPLICE OF THE +12V OUTPUT IS ONLY REQUIRED FOR INSTALLATIONS INTERFACING TO TWO AUX TANKS WITH RESISTIVE PROBES.

END OF WIRE

2.00(+0.25/-0) INCH

3.5(±0.5) INCH

CONTACT
(P/O GEA24 CONNECTOR KIT)

JUMPER (22 AWG)
1.75(+0.25/-0) INCH

RESISTOR

JUMPER (22 AWG)
1.75(+0.25/-0) INCH

SOLDER SLEEVE (REF SECTION 4)

17

RESISTOR

JUMPER (22 AWG)
1.75(+0.25/-0) INCH

BRAID MAX 4 INCH

RING TERMINAL

SOLDER SLEEVE (REF SECTION 4)

RING TERMINAL

BRAID MAX 4 INCH

HARNESS BUILDUP PROCEDURE

BUILD RESISTOR ASSEMBLIES AS SHOWN IN NOTE 1 .
COMPLETE RESISTOR ASSEMBLY AS SHOWN IN ABOVE FIGURE (I.E. CRIMP CONTACTS TO WIRES, TERMINATE SHIELD, ETC.).
2.1. REFERENCE FIGURE B-8 SHEET 4 FOR COMPLETE FUEL QUANTITY WIRING CONNECTIONS.
SEE NOTE 18 FOR CABLE TIE PLACEMENT TO AVOID COMPONENT STRAIN.

18 THE WIRING SUPPLIED WITH THE GTP 59 MAY BE EXTENDED IF THE SUPPLIED WIRE LENGTH IS NOT SUFFICIENT FOR A PARTICULAR INSTALLATION.

Figure B-8 GEA 24(B) Sensor Interconnect
Sheet 9 of 11

NOTES CONTINUED

19

FUEL QUANTITY RESISTOR BUILDUP PROCEDURE

STEP 1-2

WIRE(S) WIRE(S)

PREPARE IAW STEP 3

NOTE 1: FOR POTENTIAL FUEL QUANTITY RESISTORS P/N REFERENCE SECTION 3.1.2. ALL RESISTORS ARE REQUIRED TO BE THE SAME PART NUMBER.
NOTE 2: SAE AS4461 REVISION C OR A LATER APPROVED VERSION IS TO BE USED IN THIS PROCEDURE.

1. TRIM RESISTOR LEADS TO 0.25±(0.063) INCH.
2. CREATE A HOOK IN THE REMAINING LEAD ON THE RESISTOR. REFERENCE FIGURE 9 IN AS4461 FOR HOOK CREATION.
3. PREPARE RESISTOR LEAD AND STRANDED WIRE IAW AS4461 SECTION 4.8.

STEP 4-6

WIRE(S) WIRE(S)

4. USE PROCEDURE IN AS4461 SECTION 5.1.6.1 ALONG WITH FIGURE 8 AND 9 GUIDANCE TO SOLDER RESISTOR LEAD TO STRANDED WIRE(S) AS SHOWN ABOVE. ACCEPTABLE SOLDER TYPES ARE Sn60 OR Sn63.
5. CLEAN FLUX RESIDUES IAW AS4461 SECTION 4.11.2.
6. INSPECT SOLDER JOINT IAW AS4461 SECTION 5.1, JOINT CAN BE REWORKED IAW AS4461 SECTION 4.11.1. IF REWORK IS REQUIRED, INSPECT JOINT AGAIN IAW AS4461 SECTION 5.1.

STEP 7

WIRE(S) 0.5(±0.1) INCH 0.5(±0.1) INCH WIRE(S)

NOTE: DURING THE HEAT SHRINKING PROCESS ENSURE THE RESISTOR IS MINIMALLY EXPOSED TO DIRECT HEAT.

7. COVER SOLDER JOINTS IN 0.5(±0.1) INCH STANDARD HEAT SHRINK, REFERENCE SECTION 3.1.2 FOR P/N OF HEAT SHRINK. ENSURE THE HEAT SHRINK CONSTRICTS AROUND THE SOLDER JOINT AND CONNECTING WIRE.

STEP 8

WIRE(S) 1.25(+0.25/-0.00) INCH WIRE(S)

NOTE: DURING THE HEAT SHRINKING PROCESS ENSURE THE RESISTOR IS MINIMALLY EXPOSED TO DIRECT HEAT.

8. COVER ASSEMBLY IN 1.25(+0.25/-0.00) INCH STANDARD HEAT SHRINK, CENTER HEAT SHRINK ON RESISTOR PRIOR TO SHRINKING. REFERENCE SECTION 3.1.2 FOR P/N OF STANDARD HEAT SHRINK. ENSURE THE HEAT SHRINK CONSTRICTS AROUND THE HEAT SHRINK INSTALLED ON THE SOLDER JOINTS.

GEA24 P244 CABLE TIE PLACEMENT

4.5(±0.50) INCH

2.00(±0.50) INCH

ROUTE WITH EXISTING WIRING IN ACCORDANCE WITH SECTION 4.1

INSTALL CABLE TIES AS SHOWN TO AVOID COMPONENT STRAIN

BACK OF P244 CONNECTOR (REF)

CABLE CLAMP (REF)

RESISTOR BUILDUPS (TOTAL NUMBER OF RESISTORS MAY VARY PER INSTALLATION, SEE FIGURE B-8 SHEET 4)

BACK OF P244 BACKSHELL (REF)

20 IN TANKS WHERE TWO OR MORE SENSORS ARE REQUIRED, THE MOST INBOARD SENSOR IS THE MASTER, AND THE OTHER SENDERS ARE SLAVES. SEE APPLICABLE CiES STC FOR MULTI-PROBE AND PWR/GND WIRING.

Figure B-8 GEA 24(B) Sensor Interconnect
Sheet 10 of 11

NOTES CONTINUED

21 IF THE GI 275 EIS IS INTERFACED WITH A GI 275 ADI UNIT, THE OAT PROBE MUST BE INTERFACED TO THE ADI UNIT. ONLY CONNECT THE OAT PROBE TO THE GEA IN STANDALONE EIS INSTALLATIONS.

22 FUEL QUANTITY WIRING USING THE DUAL 2.2K RESISTORS SHOWN ON SHEET 4 AND SHEET 5 IS OPTIONAL FOR GEA 24B AND REQUIRED FOR GEA 24. FUEL QUANTITY WIRING SHOWN ON SHEET 6 AND SHEET 7 IS ONLY APPROVED FOR GEA 24B. REFER TO SECTION 3.4.3 FOR MORE INFORMATION ON FUEL QUANTITY SENSOR INTERFACE WITH THE GEA 24 AND GEA 24B.

23 CONNECT SUREFLY TACH2 AND MAGNETO P-LEAD TO RPM RX 1 AND RPM RX 2 AS APPLICABLE DEPENDING ON WHICH SIDE THEY ARE INSTALLED ON.

24 SINGLE CHANNEL SHOWN. IDENTICAL WIRING FOR OTHER CHANNELS. USE THE DESIGNATED GEA INPUT DEPENDING ON THE FUEL TANK. USE FUEL QTY 1 FOR LEFT MAIN, FUEL QTY 2 FOR RIGHT MAIN, FUEL QTY 3 FOR LEFT AUX, AND FUEL QTY 4 FOR RIGHT AUX.

25 UMA T[ ]A3-4C-[ ] CAN BE USED FOR FOUR-, SIX-, AND SEVEN-CYLINDER APPLICATIONS. HOWEVER, SEVEN-CYLINDER APPLICATIONS ARE LIMITED TO THE UMA T[ ]A3-4C-[ ] FOR RPM.

26 SHUNT 1 HI/LO (PINS 37/36) MAY ALSO BE USED.

Figure B-8 GEA 24(B) Sensor Interconnect
Sheet 11 of 11

GEA 110

P1102

CONFIG
MODULE

4 RED 20 CONFIG MODULE PWR
1 BLK 78 CONFIG MODULE GND
3 YEL 39 CONFIG MODULE DATA
2 WHT 59 CONFIG MODULE CLK

MULTI
SINGLE # 1 # 2

3
P1101

GI 275
- GND - 12 SYS ID #1
- - GND 13 SYS ID #2

P2751

RS-485 A 49 5 A RS-485 1
B 69 10 B
s s

1 2
1 POWER IN 1
6 POWER IN 2
14 GND

NOTES

1 REFER SECTION 3.2.1 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 ORIENTATED PROPERLY, DAMAGE WILL OCCUR IF THE CONNECTOR IS INSTALLED UPSIDE DOWN.

Figure B-9 GEA 110 Power, Config Module Interconnect

P1102
GEA 110

7 12
1 ~ +5V 1 EXCT 29 - - RED RED -
+10V EXCT 9 RED RED - - RED
FUEL PRESS (+) (80V) 10 WHT WHT GRN GRN WHT
GROUND 34 BLK BLK BLK BLK BLK
s

7 12
1 ~ +5V 2 EXCT 76 - - RED RED
+10V EXCT 9 RED ORG-WHT - -
MAN PRESS (+) (80V) 50 WHT WHT GRN GRN
GROUND 54 BLK BLU-WHT BLK BLK
s

7 12
1 ~ +5V 2 EXCT 76 - RED A
+10V EXCT 9 RED - -
OIL PRESS (+) (5/80V) 48 WHT GRN C
OIL PRESS (-) (5/80V) 68 - - D
GROUND 34 BLK BLK B
s

OIL PRESS. MAP FUEL PRESSURE

7 12
1 ~ +5V EXCT 29 - A A A
~ GEN PURP (+) 8 HI C C C
(-) 28 LO D D D
~ GROUND 34 - B B B
s
11

OAT 18

15
16
~ GEN PURP (+) 8 BLU
(-) 28 ORG
s WHT
CAP AND STOW

Figure B-10 GEA 110 Sensor Interconnect
Sheet 1 of 8

GEA 110 P1102

3 3

CARB TEMP (+) (5/80V) 46 YEL YEL A
CARB TEMP (-) (5/80V) 66 RED RED B

5

3 3

OIL TEMP (+) (5V) 47 YEL YEL A
OIL TEMP (-) (5V) 67 RED RED B

5

12

1 ~ +12V 1 EXCT 69 RED RED RED RED A RED RED RED
FUEL FLOW 1 15 WHT WHT WHT WHT B WHT WHT WHT
GROUND 74 BLK BLK BLK BLK C BLK BLK BLK
s

12

1 ~ +12V 2 EXCT 17 RED RED RED RED A RED RED RED
FUEL FLOW 2 16 WHT WHT WHT WHT B WHT WHT WHT
GROUND 14 BLK BLK BLK BLK C BLK BLK BLK
s

Figure B-10 GEA 110 Sensor Interconnect
Sheet 2 of 8

GEA 110

P1102

12

22

1 ~ +12V 2 EXCT 17 ORG/WHT ORG/WHT ORG/WHT
RPM 1(+) 18 WHT WHT WHT
GROUND 74 BLU/WHT BLU/WHT BLU/WHT

s

OR

9

RPM 1(+) 18 s 10 (LEFT MAG P-LEAD)

8

9

RPM 2(+) 19 s 10 (RIGHT MAG P-LEAD)

8

OR

C1 C1

RPM 1(+) 18 Pin 22 Pin 22 19

9

RPM 2(+) 19 s 10 (MAG P-LEAD)

8

OR

SUREFLY TACH2

RPM 1(+) 18 s 0-5V (TACH OUTPUT)

20

RPM 2(+) 19 s 10 (MAG P-LEAD)

9

8

Figure B-10 GEA 110 Sensor Interconnect
Sheet 3 of 8

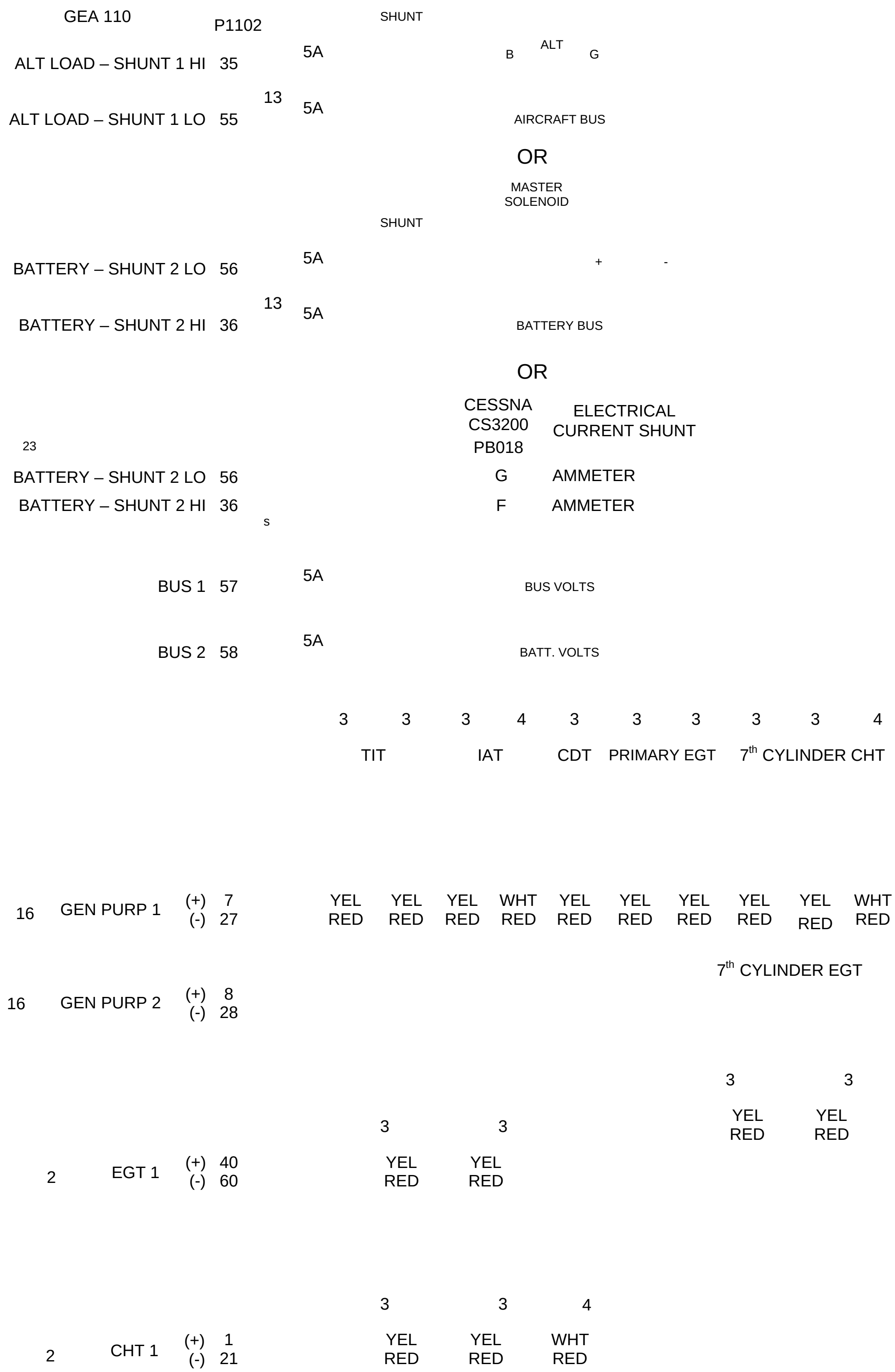


Figure B-10 GEA 110 Sensor Interconnect
Sheet 4 of 8

SINGLE-ENGINE INSTALLATIONS

GEA 110

P1102

AT TANK MASTER SENDER

17

21

6

FUEL QUANTITY 1 / DIGITAL FUEL 1 (+) 12 (-) 32

s

BLUE BLACK

GREEN BLACK

OR

LEFT MAIN /
SINGLE MAIN
RESISTIVE FLOAT

6

FUEL QUANTITY 1 (+) 12 (-) 32

s

s

HI

LO

14

RIGHT MAIN
RESISTIVE FLOAT

6

FUEL QUANTITY 2 (+) 52 (-) 72

s

s

HI

LO

14

LEFT AUX /
SINGLE AUX
RESISTIVE FLOAT

6

FUEL QUANTITY 3 (+) 13 (-) 33

s

s

HI

LO

14

RIGHT AUX
RESISTIVE FLOAT

6

FUEL QUANTITY 4 (+) 53 (-) 73

s

s

HI

LO

14

Figure B-10 GEA 110 Sensor Interconnect
Sheet 5 of 8

TWIN-ENGINE INSTALLATIONS

GEA 110 #1
(LEFT ENGINE)

P1102

FUEL QUANTITY 1
(+) 12
(-) 32
s
s

6
14

LEFT MAIN
RESISTIVE FLOAT
HI
LO

FUEL QUANTITY 3
(+) 13
(-) 33
s
s

6
14

LEFT AUX
RESISTIVE FLOAT
HI
LO

GEA 110 #2
(RIGHT ENGINE)

P1102

FUEL QUANTITY 2
(+) 52
(-) 72
s
s

6
14

RIGHT MAIN
RESISTIVE FLOAT
HI
LO

FUEL QUANTITY 4
(+) 53
(-) 73
s
s

6
14

RIGHT AUX
RESISTIVE FLOAT
HI
LO

Figure B-10 GEA 110 Sensor Interconnect
Sheet 6 of 8

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. USE CHANNELS 1-4 FOR 4-CYLINDER CONFIGURATION, USE CHANNELS 1-6 FOR 6-CYLINDER CONFIGURATION, USE GEN PURP 1 FOR CHT CHANNEL 7 AND USE GEN PURP 2 FOR EGT CHANNEL 7 FOR 7-CYLINDER CONFIGURATION, AND ONLY CHANNEL 1 FOR SINGLE CHT/EGT CONFIGURATION.

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 EXISTING FUEL QTY WIRING MAY BE RE-USED. USE A STANDARD ENVIRONMENTAL CRIMP SPLICE TO EXTEND THE SIGNAL TO THE GEA, IF REQUIRED. ALL ADDITIONAL WIRING MUST BE SHEILDED AND BOTH SHEILD ENDS TERMINATED. THE SHEILD 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 K©, 1/4 WATT, -55 C TO +125 C RESISTORS. TWIST PARALLEL RESIST
SPLICE TO WIRES WITH ENVIRONMENTAL SPLICES, AND ENCAPSULATE SPLICES AND RESISTORS WITH ADHESIVE LINED POLYOLEFIN HEAT-SHRINKABLE TUBING.

9 DO NOT EXCEED 6 INCHES OF 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 OIL PRESSURE SENSOR AND GARMIN GTP 59 OAT SENSOR. BEECH OIL PRESSURE AND GARMIN OAT SENSORS MUST USE GENERAL PURPOSE PORT 1 AND/OR 2.

12 DO NOT EXCEED 6 INCHES OF 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 GEA 110 Sensor Interconnect
Sheet 7 of 8

NOTES CONTINUED

IF THE EXISTING FUEL PROBE INCLUDES A LO (-) OUTPUT WIRE, CONNECT TO THE RESPECTIVE GEA LO (-) INPUT.

14

GEA 110
FUEL QUANTITY X
P1102
(+) HI
(-) LO
S

LEFT MAIN /
SINGLE MAIN
RESISTIVE FLOAT
HI
LO

15 THE WIRING SUPPLIED WITH THE GTP 59 MAY BE EXTENDED IF THE SUPPLIED WIRE LENGTH IS NOT SUFFICIENT FOR A PARTICULAR INSTALLATION.

16 USE EITHER GENERAL PURPOSE 1 OR GENERAL PURPOSE 2 PORTS FOR TIT, CDT, IAT, OAT, AND PRIMARY EGT SENSORS. 7TH CYLINDER CHT SENSORS MUST BE CONNECTED TO GENERAL PURPOSE 1. 7TH CYLINDER EGT MUCH BE CONNECTED TO GENERAL PURPOSE 2.

17 IN TANKS WHERE TWO OR MORE SENSORS ARE REQUIRED, THE MOST INBOARD SENSOR IS THE MASTER, AND THE OTHER SENDERS ARE SLAVES. SEE APPLICABLE CIES STC FOR MULTI-PROBE AND PWR/GND WIRING.

18 IF THE GI 275 EIS IS INTERFACED WITH A GI 275 ADI UNIT, THE OAT PROBE MUST BE INTERFACED TO THE ADI UNIT. ONLY CONNECT THE OAT PROBE TO THE GEA IN STANDALONE EIS INSTALLATIONS.

19 MAG P-LEAD MUST BE CONNECTED TO RPM 2 REGARDLESS OF INSTALLATION ON LEFT OR RIGHT OF ENGINE. ELECTRONIC IGNITION SYSTEM MUST BE CONNECTED TO RPM 1.

20 CONNECT SUREFLY TACH2 AND MAGNETO P-LEAD TO RPM 1 AND RPM 2 AS APPLICABLE DEPENDING ON WHICH SIDE THEY ARE INSTALLED ON.

21 SINGLE CHANNEL SHOWN. IDENTICAL WIRING FOR OTHER CHANNELS. USE THE DESIGNATED GEA INPUT DEPENDING ON THE FUEL TANK. USE FUEL QTY 1 FOR LEFT MAIN, FUEL QTY 2 FOR RIGHT MAIN, FUEL QTY 3 FOR LEFT AUX, AND FUEL QTY 4 FOR RIGHT AUX.

22 UMA T[ ]A3-4C-[ ] CAN BE USED FOR FOUR-, SIX-, AND SEVEN-CYLINDER APPLICATIONS. HOWEVER, SEVEN-CYLINDER APPLICATIONS ARE LIMITED TO THE UMA T[ ]A3-4C-[ ] ONLY FOR RPM.

23 SHUNT 1 HI/LO (PINS 35/55) MAY ALSO BE USED

Figure B-10 GEA 110 Sensor Interconnect
Sheet 8 of 8

1 GI 275

6

AUDIO PANEL

P2751

GI 275	P2751	Note
AUDIO INHIBIT IN (~DISCRETE IN X*)	X	2
AUDIO ACTIVE OUT (~DISCRETE OUT X*)	X	3
AUDIO OUT HI	30	
AUDIO OUT LO	48	

s 4 5

	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	
HI	31	31	T	31	54	31	T	31	T	14	31	UNSWITCHED AUDIO IN
LO	32	32	Gnd Lug	32	55	32	Gnd Lug	32	Gnd Lug	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 390© 1/4 W. THE AUDIO LEVELS OF EXISTING AUDIO SOURCES WILL HAVE TO BE RE-EVALUATED AFTER MIXING RESIST

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 THE GI 275 WITH A G500/G600 TXi, LEAVE THE GI 275 AUDIO AND AUDIO DISCRETES UNCONNECTED.

Figure B-11 Audio Interconnect

GI 275
(Pilot s Primary ADI
or Pilot s HSI)

BENDIX AUTOPILOT

GI 275 signal	P2752	M-4C 3 5536E-2 Comp. Amp. P1	M-4C P2	M-4D 4 5536F Comp. Amp. P1	M-4D P2	5485A 5487G P4	Bendix signal
LATERAL +LEFT OUT	48	1	-	1	-	-	VOR/LOC +LT IN
LATERAL +RIGHT OUT	10	5	-	5	-	-	VOR/LOC +RT IN
VERTICAL +UP OUT	9	34	-	34	-	-	GS + UP
VERTICAL +DN OUT	68	35	-	35	-	-	GS + DN
A/P HEADING ERROR HI	13	6	-	-	-	6	HDG DAT H
A/P HEADING ERROR LO	52	-	34	-	34	-	HDG DAT C
A/P COURSE ERROR HI	32	-	48	-	-	8	CRS DAT H
A/P COURSE ERROR LO	71	-	29	-	27	-	CRS DAT C
		-	51	-	51	-	LOC + 28
ILS/GPS APPROACH (~DISCRETE OUT 7 LO)	1						
7 26 VAC REF HI	65						
26 VAC REF LO	7						
FD ROLL RIGHT	38	-	-	-	35	-	FD ROLL CMD + RT
FD ROLL LEFT	77	-	-	-	36	-	FD ROLL CMD + LT
9 FD PITCH UP	19	-	-	-	38	-	FD PITCH CMD + UP
FD PITCH DOWN	58	-	-	-	37	-	FD PITCH CMD + DN
FD ENABLE HI	18						

s s s s s s s s

T1
10k:10k 5

T1
10k:10k 5

+28 VDC 6

N/C

LOC RELAY

AIRCRAFT 26 VAC 400 HZ
REFERENCE VOLTAGE

FLIGHT
DIRECTOR
ON
28VDC

OFF

8

1 ADI 2
(on copilot s side)

Collins
FD-112V

Signal	P1	P2	M-4C P1	M-4C P2	M-4D P1	M-4D P2	P4	Bendix signal
FD PITCH DOWN	-	k						
FD PITCH UP	-	F						
FD ROLL LEFT	-	T						
FD ROLL RIGHT	-	U						
OFF MODE +	-	Z	-	-	39	-	-	FD ENG

Figure B-12 Autopilot/Flight Director Interconnect - Bendix
Sheet 1 of 2

NOTES

1 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 IN ACCORDANCE WITH SECTION 3.2. IF THIS INDICATOR IS BEING RELOCATED TO THE CO-PILOT'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 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.

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 GI 275 (P2752-65), 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.

9 CONNECTIONS MUST BE MADE TO THE PILOT'S PRIMARY ADI ONLY.

10 AUTOPILOT MUST BE INTERFACED TO A GI 275 ADAHRS + AP UNIT.

Figure B-12 Autopilot/Flight Director Interconnect - Bendix
Sheet 2 of 2

Century II/IIB/III (with 1C388, 1C388M, 1C388C or 1C388MC Radio Coupler)

GI 275
(Pilot's Primary ADI)
P2752

PITCH AC OUT LO 64
PITCH AC OUT HI 6
s
1 SP-13 4
12 25
3 20k:800 6
2.2k
½ W

ROLL AC OUT LO 45
ROLL AC OUT HI 26
s
1 SP-13 4
12 25
3 20k:800 6
2.2k
½ W

GYRO VALID RELAY
NC 42
COM 3
NO 23
(see autopilot disconnect options on following pages)

CENTURY AP
27

II/IIB CD-18 (to horizon)	III CD-18 (to horizon)	
-	H	PITCH HORIZON SIGNAL
-	F	PITCH MOTOR/COMMON
C	C	ROLL HORIZON SIGNAL
D	D	ROLL MOTOR/COMMON

TO CONSOLE/AMPLIFIER/
ARTIFICIAL HORIZON
(EXISTING WIRING RETAINED)

10 VAC REF HI 27
10 VAC REF LO 46
s
1 SP-66 4
10k
24 1
3 T1 10k:10k 6

A/P HEADING ERROR HI 13
A/P HEADING ERROR LO 52
s
1 SP-13 4
12 24
10k
3 T1 20k:800 6

A/P COURSE ERROR HI 32 N/C
A/P COURSE ERROR LO 71 N/C

18 mH
. 0 4 7 ¼ F
26

RADIO COUPLER

1C388 1C388M CD 33 TO AMP	1C388 1C388M CD 33 TO DG (pigtail)	1C388C 1C388MC CD33 TO DG (pigtail)	
C	-	D	ROLL EXCITATION
F	-	E	ROLL EXCITATION
-	A	A	HEADING SIGNAL
-	B	B	ROLL COMMON
-	D	-	DG EXCITATION
-	E	-	DG EXCITATION

Figure B-13 Autopilot/Flight Director Interconnect - Century
Sheet 1 of 7

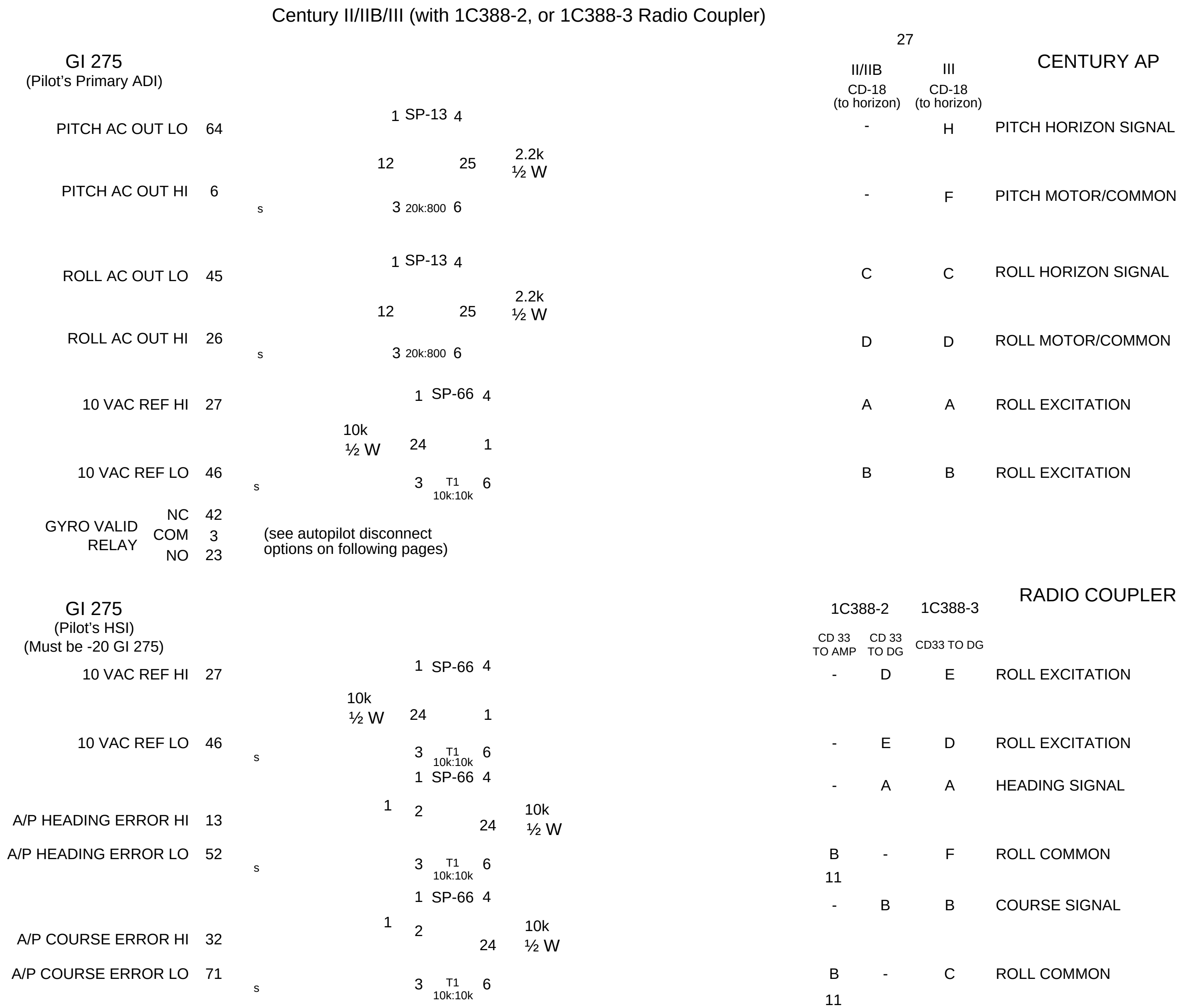


Figure B-13 Autopilot/Flight Director Interconnect - Century
Sheet 2 of 7

Century II/III (Autopilot Disconnect)

GI 275
(Pilot's Primary ADI)

P2752

GYRO VALID RELAY
NC 42
COM 3
NO 23

TO
AUTOPILOT C/B

23 TO GI 275 C/B

19

21
DISENG

ENG

22

AP DISC
RELAY
(EXTERNAL)

CENTURY II/III
(Console/Amplifier
or Console)

II/IIB R-104	III CD-20	
N	1	AP A+ IN

Century II/III (No Automatic Trim System)

OR

GI 275
(Pilot's Primary ADI)

P2752

GYRO VALID RELAY
NC 42
COM 3
NO 23

To CD-27 of 30D207
CABLE ASSY

23 TO GI 275 C/B

20

21
DISENG

ENG

22

TO AUTOPILOT C/B
(existing wire – no change)

AP DISC
RELAY
(EXTERNAL)

TO TRIM ENABLE/AP DISC SW (S3)
(existing wire – no change)

1A526 Relay Box
(Type 17 Trim System)

CD-76	
A	AP A+ IN
B	CONSOLE POWER
C	TRIM ENABLE / AP DISC

Century II/III (Type 17 Automatic Trim System)

Century II/III (Deviations)

GI 275
(Pilot's Primary ADI
or Pilot's HSI (-20 unit only))

	P2752
LATERAL +LEFT OUT	48
LATERAL +RIGHT OUT	10
VERTICAL +UP OUT	9
VERTICAL +DOWN OUT	68

s

s

18

CENTURY AP

II CD-34	III CD-34	III CD-58	
B	B	-	LAT DEV +LT
A	A	-	LAT DEV +RT
-	-	B	GS DEV +UP
-	-	A	GS DEV +DOWN
-	K	C	LOC NORMAL

Figure B-13 Autopilot/Flight Director Interconnect - Century
Sheet 3 of 7

GI 275
(Pilot's Primary ADI or Pilot's HSI)

GI 275	P2752	
PITCH DC OUT	55	
ROLL DC OUT	34	
DC REF IN	37	
AP INTERLOCK RELAY NO	61	
AP INTERLOCK RELAY NC	22	N/C
AP INTERLOCK RELAY COM	41	
A/P HEADING ERROR HI	13	
A/P HEADING ERROR LO	52	
A/P COURSE ERROR HI	32	
A/P COURSE ERROR LO	71	
LATERAL +FLAG OUT	63	
LATERAL -FLAG OUT	66	
VERTICAL +FLAG OUT	24	
VERTICAL -FLAG OUT	5	
LATERAL +LEFT OUT	48	
LATERAL +RIGHT OUT	10	
VERTICAL +UP OUT	9	
VERTICAL +DOWN OUT	68	
ILS/GPS APPROACH (~DISCRETE OUT 7 LO)	1	
10 VAC REF HI	27	
10 VAC REF LO	46	
FD ENABLE HI	18	NC
FD ROLL RIGHT	38	
FD ROLL LEFT	77	
FD PITCH UP	19	20 AWG
FD PITCH DOWN	58	20 AWG

17 17 10 s s s s s s s s s s

TRIM CMD A/P DISC (EXIST.) 16

A/P DISC SW (OPT. EXIST.) 13 14

3 6 7 8 9 28 28 20 AWG 20 AWG

CENTURY AP

	21		31		41		
	CD194	CD186	CD189	CD200	CD189	CD184	
	-	-	-	22	-	36	PITCH SIG
	-	11	-	24	-	42	ROLL SIG
	-	5	-	23	-	27	ROLL REF
			15		15		
	11	-	3	-	3	-	A/P DISC SW
	12	-	5	-	5	-	A/P DISC GND

IV	21		31	5		41	5	
CD66	CD194	CD175	CD191	CD175	CD191	CD175	CD184	
49	-	17	-	17	-	17	-	DC HDG DATUM HI
-	-	-	-	-	-	-	-	DC HDG/CRS DATUM LO
48	-	2	-	2	-	2	-	DC COURSE DATUM HI
-	-	-	-	-	-	-	-	COURSE DATUM LO
-	2	-	7	-	7	-	-	LAT DEV FLAG +
-	3	-	8	-	8	-	-	LAT DEV FLAG -
-	-	-	2	-	2	-	-	GS DEV FLAG +
-	-	-	1	-	1	-	-	GS DEV FLAG -
32	4	-	6	-	6	-	-	LAT DEV +LT
31	5	-	5	-	5	-	-	LAT DEV +RT
45	-	-	4	-	4	-	-	GS DEV +UP
46	-	-	3	-	3	-	-	GS DEV +DOWN
44	1	-	9	-	9	-	-	LOC SWITCH
-	-	-	-	-	-	-	-	5 kHz EXCITATION
-	-	-	-	-	-	-	-	5 kHz EXCITATION
21	-	-	-	-	-	-	40	ROLL STEERING
24	-	-	-	-	-	-	28	ROLL COMMON
20	-	-	-	-	-	-	29	PITCH STEERING
17	-	-	-	-	-	-	17	STEERING COMMON

ADI
52C77/-2/-3/-4
(optional install on copilot's side)

	( )/-2	-3/-4	
	CD64	CD144	
STEERING COMMON	F	12	
PITCH STEERING	J	11	
ROLL COMMON	E	28	20 AWG
ROLL STEERING	H	10	20 AWG

2 3 4

Figure B-13 Autopilot/Flight Director Interconnect - Century
Sheet 4 of 7

GI 275
(Pilot's Primary ADI
or Pilot's HSI)

CENTURY AP

2000

GI 275 Signal	P2752		CD189 (To flight computer)	CD220	Century AP Signal
PITCH DC OUT	55		-	32	PITCH SIG
ROLL DC OUT	34		-	44	ROLL SIG
DC REF IN	37		-	17	ROLL REF
AP INTERLOCK RELAY NO	61		3	-	A/P DISC SW
AP INTERLOCK RELAY NC	22	N/C			
AP INTERLOCK RELAY COM	41	TO CD221-9	11	-	A/P DISC GND

17 15 15

2000

GI 275 Signal	P2752		CD191	CD175	CD220	Century AP Signal
A/P HEADING ERROR HI	13		-	17	-	DC HDG DATUM HI
A/P HEADING ERROR LO	52		-	20	-	DC HDG/CRS DATUM LO
A/P COURSE ERROR HI	32		-	2	-	DC COURSE DATUM HI
A/P COURSE ERROR LO	71		-	-	-	COURSE DATUM LO
LATERAL +FLAG OUT	63		7	-	-	LAT DEV FLAG +
LATERAL -FLAG OUT	66		8	-	-	LAT DEV FLAG -
VERTICAL +FLAG OUT	24		2	-	-	GS DEV FLAG +
VERTICAL -FLAG OUT	5		1	-	-	GS DEV FLAG -
LATERAL +LEFT OUT	48		6	-	-	LAT DEV +LT
LATERAL +RIGHT OUT	10		5	-	-	LAT DEV +RT
VERTICAL +UP OUT	9		4	-	-	GS DEV +UP
VERTICAL +DOWN OUT	68		3	-	-	GS DEV +DOWN
ILS/GPS APPROACH (~DISCRETE OUT 7 LO)	1		9	-	-	LOC SWITCH
10 VAC REF HI	27		-	-	-	5 kHz EXCITATION
10 VAC REF LO	46		-	-	-	5 kHz EXCITATION
FD ENABLE HI	18	NC				
FD ROLL RIGHT	38		-	-	6	ROLL STEERING
FD ROLL LEFT	77		-	-	7	ROLL COMMON
FD PITCH UP	19	20 AWG	-	-	5	PITCH STEERING
FD PITCH DOWN	58	20 AWG	-	-	30	STEERING COMMON

28 28 10 17 3 6

ADI
52C77/-2/-3/-4
(optional install on copilot's side)

	( )/-2 CD64	-3/-4 CD144	
STEERING COMMON	F	12	
PITCH STEERING	J	11	
ROLL COMMON	E	28	20 AWG
ROLL STEERING	H	10	20 AWG

2 3 4

Figure B-13 Autopilot/Flight Director Interconnect - Century
Sheet 5 of 7

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. IF THIS INDICATOR IS BEING RELOCATED TO THE CO-PILOT'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.

3 IF THE 52C77/-2/-3/-4 ADI IS CONNECTED WITH THE GI 275, THE 18.0 OR 30.0 © RE INSTALLED.

4 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.

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 © FOR CENTURY IV AND 14 VDC SYSTEMS WITH CENTURY 41 AND 2000, OR 30.0 © FOR 28 VDC SYSTEMS USING THE 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 FOR CENTURY 41 SYSTEMS ONLY.

9 FOR CENTURY IV SYSTEMS ONLY.

10 THE 5 kHz 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 AP DISC SWITCH IS INSTALLED, REMOVE THE EXISTING CONDUCTOR FROM CD194 – 11. CONNECT CD194 – 11 TO THE GI 275 RELAY WIRING AS SHOWN.

Figure B-13 Autopilot/Flight Director Interconnect - Century
Sheet 6 of 7

NOTES CONTINUED

14	FOR CENTURY 21 AUTOPILOT: IF OPTIONAL AP 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. THIS STC DOES NOT AUTHORIZE INSTALLATION OF AP DISC SWITCH.
15	REMOVE THE EXISTING CONDUCTOR FROM CD189-3 ON FLIGHT COMPUTER SIDE, AND CONNECT CD189-3 TO THE GI 275 RELAY AS SHOWN
16	USED 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 RN65E1002FB14.
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 M39014/05-2273.
27	USE CD-18 THAT WAS DIRECTLY CONNECTED TO THE HORIZON INDICATOR BEING REPLACED.
28	USE 1K OHM 5% AXIAL, 1 WATT RESISTOR FOR CENTURY IV, 21, 41, AND 2000 SYSTEMS.
29	AUTOPILOT MUST BE INTERFACED TO A GI 275 ADAHRS + AP UNIT.

Figure B-13 Autopilot/Flight Director Interconnect - Century
Sheet 7 of 7

GI 275
(Pilot s Primary ADI
or Pilot s HSI)

P2752

LATERAL +LEFT OUT	48	
LATERAL +RIGHT OUT	10	s
LATERAL +FLAG OUT	63	N/C
LATERAL -FLAG OUT	66	N/C
VERTICAL +UP OUT	9	
VERTICAL +DN OUT	68	s
VERTICAL +FLAG OUT	24	N/C
VERTICAL -FLAG OUT	5	N/C
ILS/GPS APPROACH (~DISCRETE OUT 7 LO)	1	
10 VAC REF HI	27	
10 VAC REF LO	46	s
A/P HEADING ERROR HI	13	
A/P HEADING ERROR LO	52	s
A/P COURSE ERROR HI	32	
A/P COURSE ERROR LO	71	s

AUTOPILOT 28VDC

3

T1
10k:10k

CESSNA
AUTOPILOT

2

300/400/800
IFCS

S530A J3/P18	CA530FD J1/P5	
T	-	NAV 1 +L
U	-	NAV 1 +R
Z	-	NAV 2 +L
a	-	NAV 2 +R
N	-	NAV 1 GS +UP
P	-	NAV 1 GS +DN
d	-	NAV 2 GS +UP
f	-	NAV 2 GS +DN
R	-	NAV 1 VOR/LOC RY
X	-	NAV 2 VOR/LOC RY
S	-	NAV 1 VOR/LOC RY RTN*
Y	-	NAV 2 VOR/LOC RY RTN*
-	E	10 VAC 400 HZ
-	F	10 VAC 400 HZ RETURN
E	-	HDG ERROR 1 HI 1
C	-	HDG ERROR 1 LO
V	-	NAV 1 CRS DATUM HI
k	-	NAV 1 CRS DATUM LO
b	-	NAV 2 CRS DATUM HI
m	-	NAV 2 CRS DATUM LO

Figure B-14 Autopilot/Flight Director Interconnect - Cessna
Sheet 1 of 5

GI 275 (Pilot s Primary ADI or Pilot s HSI)	P2752		Note	300B/400B/800B IFCS S-550A J1	S-550A J2	S-550A J3	CA550A/FD J1	CA550A/FD J2	400B CA550A/FD J1/P4	CA550A/FD J2/P5	MODE CONTROLER 2
LATERAL +LEFT OUT	48			-	-	5	-	-	-	5	VOR/LOC SIGNAL (+LT)
LATERAL +RIGHT OUT	10			-	-	22	-	-	-	2	VOR/LOC SIGNAL (+RT)
LATERAL +FLAG OUT	63	N/C		-	-	16	-	-	-	-	NAV #2 VOR/LOC (+LT)
LATERAL -FLAG OUT	66	N/C		-	-	4	-	-	-	-	NAV #2 VOR/LOC (+RT)
VERTICAL +UP OUT	9			-	-	1	-	-	18	-	G/S SIGNAL (+UP)
VERTICAL +DN OUT	68			-	-	6	-	-	17	-	G/S SIGNAL (+DN)
VERTICAL +FLAG OUT	24	N/C		-	-	15	-	-	-	-	NAV #2 G/S SIG (+UP)
VERTICAL -FLAG OUT	5	N/C		-	-	14	-	-	-	-	NAV #2 G/S SIG (+DN)
A/P HEADING ERROR HI	13			12	-	-	-	-	24	-	DC HDG GYRO IN
A/P HEADING ERROR LO	52			13	-	-	-	-	-	-	#2 DC HDG GYRO IN
A/P COURSE ERROR HI	32			-	-	21	-	-	-	17	DC COURSE DATUM IN
A/P COURSE ERROR LO	71			-	-	24	-	-	-	-	#2 DC COURSE SIG IN
				-	-	-	15	-	15	-	AC COURSE DATUM
			6	-	-	-	-	20	-	20	AC HDG GYRO IN
ILS/GPS APPROACH (~DISCRETE OUT 7 LO)	1			-	-	-	-	-	-	9	VOR/LOC RELAY RTN*
				-	10	-	-	-	-	-	NAV #1 LOC GND
				-	19	-	-	-	-	-	NAV #2 LOC GND 7
FD ENABLE HI	18		5	19	-	-	-	-	-	-	FD COMPUTER ON
FD ROLL RIGHT	38		13	-	11	-	-	-	-	-	ADI ROLL BAR
FD ROLL LEFT	77			-	1	-	-	-	-	-	SIGNAL COM/ROLL +LT
FD PITCH UP	19			-	22	-	-	-	-	-	ADI PITCH BAR
FD PITCH DOWN	58			-	1	-	-	-	-	-	ADI PITCH + DN

4 ADI (on copilot s side)

	CESSNA G-1050A P1	CESSNA G-550A J1
CMD BAR N VIEW	24	8
CMD BAR +RT	26	9
CMD BAR +LT/REFERENCE	27	26
CMD BAR +UP	28	10
CMD BAR +DN	29	-

GI 275	P2752	Note	300B/400B/800B IFCS S-550A J1	S-550A J2	S-550A J3	CA550A/FD J1	CA550A/FD J2	400B AF CA550A/FD J1/P4	CA550A/FD J2/P5	C-530A J1	C-530A J2	CESSNA AUTOPILOT
PITCH AC OUT HI	6											
PITCH AC OUT LO	64	8 ATTITUDE TEST SWITCH NC C	-	-	-	-	15	-	-	L	-	PITCH IN
		NO	-	-	-	7	-	7	-	-	-	PITCH/ROLL TEST
ROLL AC OUT HI	26		-	-	-	-	4	-	4	-	-	ROLL IN
ROLL AC OUT LO	45											
10 VAC REF HI	27		-	-	-	33	-	33	-	-	-	400 HZ REF
10 VAC REF LO	46		-	-	-	19	-	19	-	-	-	400 HZ RETURN
GYRO VALID RELAY NO	23	13	-	3	-	-	-	-	-	-	A	A/P DISABLE IN
GYRO VALID RELAY COM	3	9										
		10 N/C	-	-	-	-	32	-	32	-	-	400 Hz EXT OSC

Figure B-14 Autopilot/Flight Director Interconnect - Cessna
Sheet 2 of 5

GI 275
(Pilot s Primary ADI
or Pilot s HSI)

1000 IFCS 2

CA-1050A

GI 275	P2752		PK41	PK42	PK43	PK44	1000 IFCS
LATERAL +LEFT OUT	48		-	-	-	5	NAV 1 +L
LATERAL +RIGHT OUT	10		-	-	-	3	NAV 1 +R
			-	-	-	4	NAV 2 +L
			-	-	-	2	NAV 2 +R
VERTICAL +UP OUT	9		-	-	-	24	NAV 1 G/S +UP
VERTICAL +DN OUT	68		-	-	-	23	NAV 1 G/S +DN
			-	-	-	22	NAV 2 G/S +UP
			-	-	-	21	NAV 2 G/S +DN
VERTICAL SUPERFLAG	44		16	-	-	-	G/S 1 SUPERFLAG
			18	-	-	-	G/S 2 SUPERFLAG
LATERAL SUPERFLAG	25		12	-	-	-	NAV 1 SUPERFLAG
			14	-	-	-	NAV 2 SUPERFLAG
ILS/GPS APPROACH (~DISCRETE OUT 7 LO)	1		4	-	-	-	NAV 1 VOR/LOC RY RTN*
			3	-	-	-	NAV 2 VOR/LOC RY RTN*
A/P HEADING ERROR HI	13		-	-	28	-	HDG ERROR 1 HI DC
A/P HEADING ERROR LO	52						
			-	-	30	-	HDG ERROR 2 HI DC
A/P COURSE ERROR HI	32		-	-	27	-	NAV 1 CRS DATUM HI DC
A/P COURSE ERROR LO	71						
			-	-	29	-	NAV 2 CRS DATUM HI DC
LATERAL +FLAG OUT	63	N/C					
LATERAL -FLAG OUT	66	N/C	-	-	2	-	HDG ERROR 1 HI AC
			-	-	23	-	HDG ERROR 2 HI AC
VERTICAL +FLAG OUT	24	N/C	-	-	1	-	NAV 1 CRS DATUM HI AC
VERTICAL -FLAG OUT	5	N/C	-	-	24	-	NAV 2 CRS DATUM HI AC
FD ENABLE HI	18		-	37	-	-	FD COMPUTER ON
FD ROLL RIGHT	38						
FD ROLL LEFT	77		-	-	22	-	SIGNAL COM/ROLL +LT
FD PITCH UP	19		-	-	33	-	ADI PITCH BAR
FD PITCH DOWN	58						

5

13

ADI 4
(on copilot s side)

CESSNA

	G-1050A P1	G-550A J1
CMD BAR N VIEW	24	8
CMD BAR +RT	26	9
CMD BAR+LT/REFERENCE	27	26
CMD BAR +UP	28	10
CMD BAR +DN	29	-

Figure B-14 Autopilot/Flight Director Interconnect - Cessna
Sheet 3 of 5

GI 275
(Pilot s Primary ADI only)

1000 IFCS

13

P2752

GI 275	P2752	-0001					-0002, -0102					-0004					-0005, -0105					1000 IFCS
			CA-1050A Com puter		C-1050A Control Unit	AC-1050A Air Data		CA-1050A Com puter		C-1050A Control Unit	AC-1050A Air Data		CA-1050A Com puter		C-1050A Control Unit	AC-1050A Air Data		CA-1050A Com puter		C -1050A Control Unit	AC-1050A Air Data	
		PK42	PK43	PK44	PK40	PK39	PK42	PK43	PK44	PK40	PK39	PK42	PK43	PK44	PK40	PK39	PK42	PK43	PK44	PK40	PK39	
PITCH AC OUT HI	6	-	16	-	-	-	-	-	-	11	-	-	16	-	-	-	-	-	-	11	-	PITCH IN
PITCH AC OUT LO	64	-	GND	-	-	-	-	-	-	GND	-	-	GND	-	-	-	-	-	-	GND	-	
		-	3	-	13	-	-	16	-	12	-	-	3	-	13	-	-	16	-	12	-	PITCH/ROLL TEST**
ROLL AC OUT HI	26	-	-	-	11	-	-	3	-	-	-	-	-	-	11	-	-	3	-	-	-	ROLL IN
ROLL AC OUT LO	45	-	-	-	GND	-	-	GND	-	-	-	-	-	-	GND	-	-	GND	-	-	-	
26 VAC REF HI	65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	-	-	-	-	23	26 V, 400 Hz
26 VAC REF LO	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	-	-	-	-	25	26 V, 400 Hz RTN
10 VAC REF HI	27	-	-	-	-	24	-	-	-	-	24	-	-	-	-	-	-	-	-	-	-	10 V, 400 Hz
10 VAC REF LO	46	-	-	-	-	25	-	-	-	-	25	-	-	-	-	-	-	-	-	-	-	10 V, 400 Hz RTN
GYRO VALID NO	23	18	-	-	-	-	18	-	-	-	-	18	-	-	-	-	18	-	-	-	-	ENGAGE INTLK
RELAY COM	3	-	-	37	-	-	-	-	37	-	-	-	-	37	-	-	-	-	37	-	-	GYRO VALID

s

s

s

12

s

11

22 AW G

22 AW G

ACTUATOR
INTERLOCK
CIRCUIT

Figure B-14 Autopilot/Flight Director Interconnect - Cessna
Sheet 4 of 5

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 INDICATOR MUST BE LOCATED IN ACCORDANCE WITH SECTION 3.2. IF THIS INDICATOR IS BEING RELOCATED TO THE CO-PILOT'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 THAT USE AN ACCELERATION SENSOR TEST SWITCH CIRCUIT, THE GI 275 "PITCH AC OUT HI" PIN (P2752-6) MUST BE DIRECTLY CONNECTED TO THE DEPICTED "PITCH INPUT" PIN ON THE AUTOPILOT.
9. REMOVE EXISTING WIRING FROM THE "A/P DISABLE IN" PIN AND CONNECT THIS REMOVED WIRING TO THE GI 275 "GYRO VALID COMMON" PIN (P2752-3).
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). REFER TO 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.
14. AUTOPILOT MUST BE INTERFACED TO A GI 275 ADAHRS + AP UNIT.

Figure B-14 Autopilot/Flight Director Interconnect - Cessna
Sheet 5 of 5

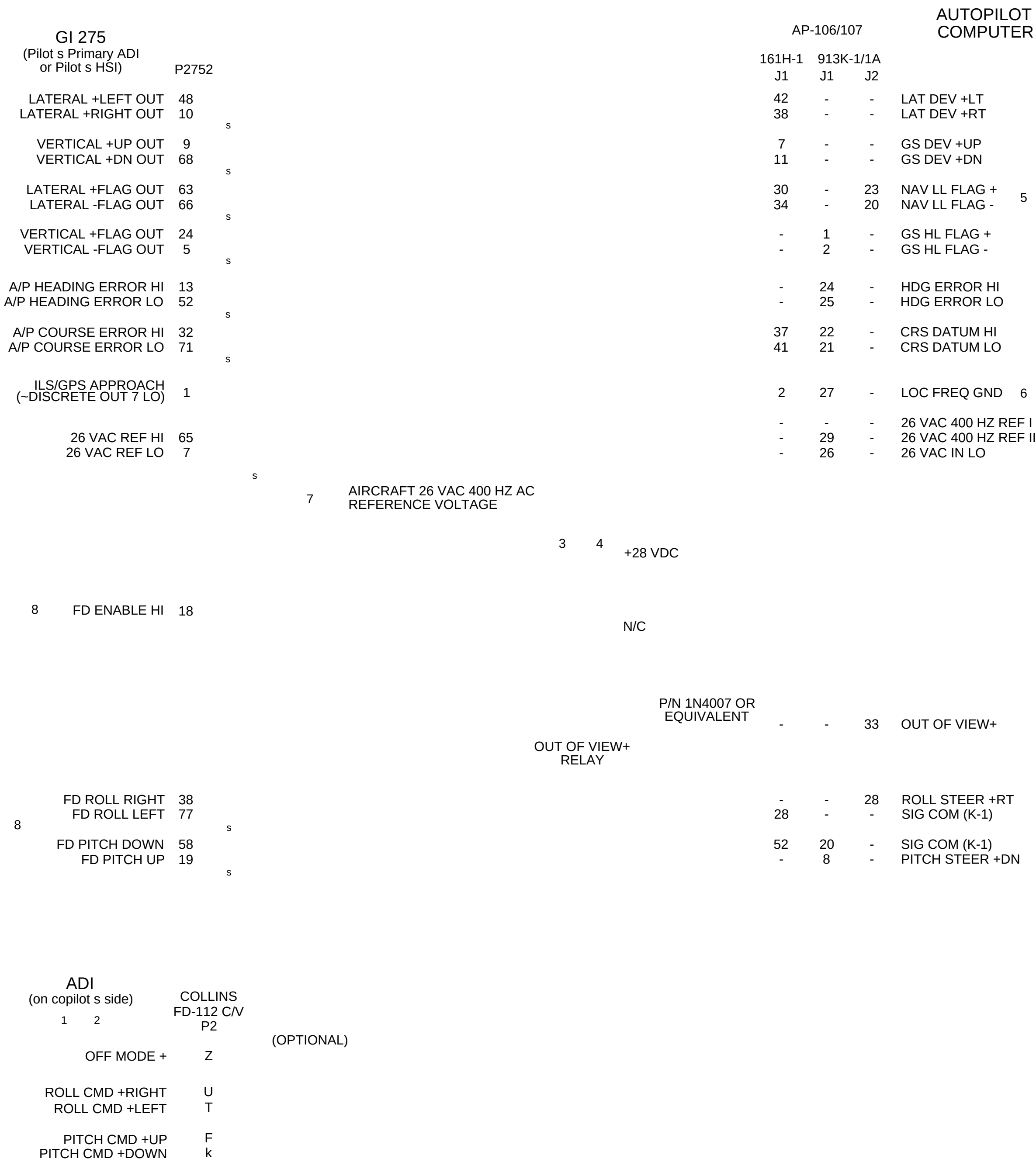


Figure B-15 Autopilot/Flight Director Interconnect - Collins
Sheet 1 of 2

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 IN ACCORDANCE WITH SECTION 3.2. IF THIS INDICATOR IS BEING RELOCATED TO THE CO-PILOT'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 CO-PILOT'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. REFER TO 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.

9. AUTOPILOT MUST BE INTERFACED TO A GI 275 ADAHRS + AP UNIT.

Figure B-15 Autopilot/Flight Director Interconnect - Collins

GI 275 P2751 P6051 GMC 605

1 ~HSDB 1
IN A 65
IN B 66
OUT A 46
OUT B 47
s

46 OUT 2A
47 OUT 2B
44 IN 2A
45 IN 2B
s
HSDB 2

NOTES

1 ANY AVAILABLE ETHERNET PORT MAY BE USED.

2 THE GMC 605 CAN BE INTERFACED TO A GI 275 ADAHRS UNIT; IT DOES NOT REQUIRE A GI 275 ADAHRS+AP UNIT.

3 IF THE GMC 605 IS NOT INSTALLED WITHIN THE FIELD-OF-VIEW REQUIREMENTS, THE GI 285 MUST BE USED FOR AUTOPILOT MODE ANNUNCIATIONS. REFER TOGI 285 INSTALL MANUAL (P/N 190-00303-98).

4 IF THE GI 275 IS INSTALLED WITH AND INTERFACED TO A GFC 600, THEN A THIRD PARTY HSI CANNOT PROVIDE THE HEADING AND COURSE ERROR DATA TO THE GFC 600.

Figure B-16 Autopilot/Flight Director Interconnect - Garmin GFC 600

GI 275
(Pilot s Primary ADI or Pilot s HSI)

AUTOPILOT

GI 275	P2752		KAP 100 KC 190 P1901	KAP 100 KC 190 P1902	KAP 150 / KFC 150 KC 191/192 P19X1	KAP 150 / KFC 150 KC 191/192 P19X2	KC 296 P2961	KC 296 P2962	KAS 297B P297B1	AUTOPILOT
LATERAL +FLAG OUT	63	N/C								
LATERAL -FLAG OUT	66	N/C								
LATERAL +LEFT OUT	48		U	-	U	-	-	-	-	LAT DEV +LT
LATERAL +RIGHT OUT	10	s	17	-	17	-	-	-	-	LAT DEV +RT
VERTICAL +UP OUT	9		-	-	-	V	-	-	-	GS DEV +UP
VERTICAL +DN OUT	68	s	-	-	-	19	-	-	-	GS DEV +DOWN
A/P HEADING ERROR HI	13		X	-	X	-	-	-	-	HDG DATUM HI
A/P HEADING ERROR LO	52	s	20	-	20	-	-	-	-	HDG DATUM LO
A/P COURSE ERROR HI	32		W	-	W	-	-	-	-	CRS DATUM HI
A/P COURSE ERROR LO	71	s	19	-	19	-	-	-	-	CRS DATUM LO
VERTICAL +FLAG OUT	24		-	-	-	21	-	-	-	GS DEV FLAG +
VERTICAL -FLAG OUT	5	s	-	-	-	Y	-	-	-	GS DEV FLAG -
GPS SELECT (~DISCRETE OUT 8 LO)	40		-	-	-	-	-	-	-	GPS SELECT (GND=GPS)
ILS/GPS APPROACH (~DISCRETE OUT 7 LO)	1		B	-	B	-	-	-	-	ILS ENERGIZE (A/P IN)
HDG/CRS DATUM VALID (~DISCRETE OUT 4 LO)	72		1	-	1	-	-	-	-	COMPASS VALID
PITCH AC OUT HI	6		Y	-	Y	-	-	-	-	PITCH ATTITUDE HI
PITCH AC OUT LO	64	s								
ROLL AC OUT HI	26		21	-	21	-	-	-	-	ROLL ATTITUDE HI
20 ROLL AC OUT LO	45	s								
10VAC REF IN HI	27		-	C	-	C	-	-	-	VG EXCITATION
10VAC REF IN LO	46	s	Z	-	Z	-	-	-	-	VG REF
			-	1	-	1	-	-	-	PWR REF

3

6

20

TO AUTOPILOT C/B

A/P DISC RELAY (EXISTING) 5

TO A/P (TRIM) WARNING SONALERT

NO NC NO NC

C C

AP DISC RELAY (EXTERNAL)

DISENG

A/P DISC SW (EXISTING)

9

GYRO VALID RELAY										
NO	23									
NC	42	N/C	-	B	-	B	-	-	-	AP DISC
COM	3									

12 ENG

18 TO GI 275 C/B

8

OR

20

TO AUTOPILOT C/B

A/P DISC / TRIM INTR (EXISTING)

TO A/P (TRIM) WARNING SONALERT 5

DISENG

9

GYRO VALID RELAY										
NO	23									
NC	42	N/C	-	B	-	B	-	-	-	AP DISC
COM	3									

12 ENG

18 TO GI 275 C/B

8

AP DISC RELAY (EXTERNAL)

GI 275	P2752		P1901	P1902	P19X1	P19X2	P2961	P2962	P297B1	AUTOPILOT
20 YAW RATE HI	15		-	-	-	-	2	-	-	YAW RATE (HIGH)
YAW RATE LO	73	s	-	-	-	-	C	-	-	YAW RATE (LOW)
			-	-	-	-	-	7	-	YAW ANNUNCIATE
		10	-	-	15	-	-	-	-	YD ANNUNCIATE
20 11		N/C	-	-	-	-	-	-	4	BARO EXCITATION
BARO CORRECTION HI	35		-	-	-	-	-	-	7	BARO SET (IN)
BARO CORRECTION LO	54	s	-	-	-	-	-	-	3	BARO/XPDR REF
FD ENABLE HI	18		-	-	16	-	-	-	-	CMD BAR RETRACT
FD ROLL RIGHT	38		-	-	C	-	-	-	-	ROLL CMD BAR OUT
20 FD ROLL LEFT	77	s								
FD PITCH UP	19		-	-	E	-	-	-	-	PITCH CMD BAR OUT
FD PITCH DOWN	58	s	-	-	-	A	-	-	-	CMD BAR REF

REPLACES KRG 331

REPLACES KEA 130A 13

FLIGHT DIRECTOR FOR KFC 150 ONLY

KI 256 ADI
(copilot s side)

1 2

KI 256	KI 256 P2561
CMD BAR RETRACT	P
ROLL CMD BAR IN	M
PITCH CMD BAR IN	L
CMD BAR REF	N

Figure B-17 Autopilot/Flight Director Interconnect - Honeywell (Bendix/King)
Sheet 1 of 10

GI 275
(Pilot's Primary ADI
or Pilot's HSI)

AUTOPILOT

KAP 140

KC 140

GI 275 Signal	P2752	P1401	P1402	Autopilot Signal
LATERAL +LEFT OUT	48	24	-	LAT DEV +LT
LATERAL +RIGHT OUT	10	25	-	LAT DEV +RT
VERTICAL +UP OUT	9	-	9	GS DEV +UP
VERTICAL +DN OUT	68	-	10	GS DEV +DOWN
A/P HEADING ERROR HI	13	2	-	HDG DATUM HI
A/P HEADING ERROR LO	52	27	-	CRS/HDG DATUM LO
A/P COURSE ERROR HI	32	-	17	CRS DATUM HI
A/P COURSE ERROR LO	71			
LATERAL +FLAG OUT	63	22	-	LAT DEV FLAG +
LATERAL -FLAG OUT	66	23	-	LAT DEV FLAG -
VERTICAL +FLAG OUT	24	-	31	GS DEV FLAG +
VERTICAL -FLAG OUT	5	-	12	GS DEV FLAG -
GPS SELECT (~DISCRETE OUT 8 LO)	40	-	26	GPS SELECT (GND=GPS)
ILS/GPS APPROACH (~DISCRETE OUT 7 LO)	1	7	-	ILS ENERGIZE (A/P IN)
HDG/CRS DATUM VALID (~DISCRETE OUT 4 LO)	72	11	-	COMPASS VALID

23 20

REPLACES KEA 130A 13

GI 275 Signal	P2752		P1401	P1402	Autopilot Signal
		N/C	-	37	BARO EXCITATION
BARO CORRECTION HI	35		-	16	BARO SET (IN)
BARO CORRECTION LO	54		-	35	BARO/XPDR REF

Figure B-17 Autopilot/Flight Director Interconnect - Honeywell (Bendix/King)
Sheet 2 of 10

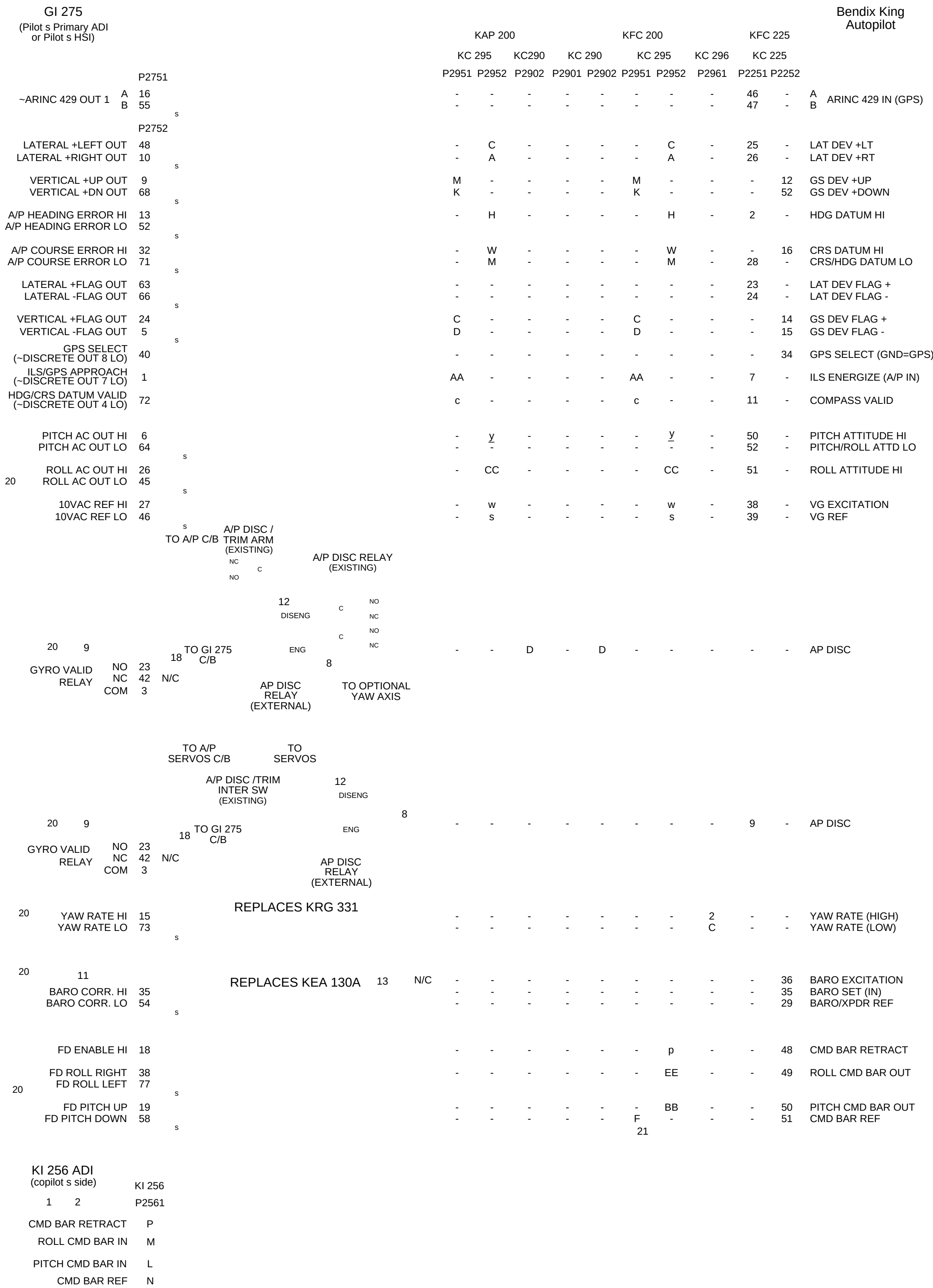


Figure B-17 Autopilot/Flight Director Interconnect - Honeywell (Bendix/King)
Sheet 3 of 10

GI 275
(Pilot's Primary ADI
or Pilot's HSI)

BENDIX KING
AUTOPILOT

KFC 250 (3" INSTRUMENTS)

GI 275	P2752		KCP 299 w/ 065-5016-XX Adapter Card P2991	KCP 299 w/ 065-5016-XX Adapter Card P2992	KA141 P141	KC290 J2901	
LATERAL +LEFT OUT	48		-	C	-	-	LAT DEV +LT
LATERAL +RIGHT OUT	10	s	-	A	-	-	LAT DEV +RT
VERTICAL +UP OUT	9		M	-	-	-	GS DEV +UP
VERTICAL +DN OUT	68	s	K	-	-	-	GS DEV +DOWN
A/P HEADING ERROR HI	13		-	H	-	-	HDG DATUM HI
A/P HEADING ERROR LO	52	s	-	M	-	-	HDG DATUM LO
A/P COURSE ERROR HI	32		-	W	-	-	CRS DATUM HI
A/P COURSE ERROR LO	71	s	-	S	-	-	CRS DATUM LO
LATERAL +FLAG OUT	63	NC					
LATERAL -FLAG OUT	66	NC					
VERTICAL +FLAG OUT	24		C	-	-	-	GS DEV FLAG +
VERTICAL -FLAG OUT	5	s	D	-	-	-	GS DEV FLAG -
ILS/GPS APPROACH (~DISCRETE OUT 7 LO)	1		AA	-	-	-	ILS ENERGIZE (A/P IN)
HDG/CRS DATUM VALID (~DISCRETE OUT 4 LO)	72		c	-	-	-	COMPASS VALID
FD ENABLE IN HI	18		-	p		-	CMD BAR RETRACT
FD ROLL RIGHT	38		-	EE	-	-	ROLL CMD BAR OUT
20 FD ROLL LEFT	77	s					
FD PITCH UP	19		-	BB	-	-	PITCH CMD BAR OUT
FD PITCH DOWN	58	s	F	-	17 3	A	CMD BAR REF

ADI
(copilot's side)

1 2

KI 256	P2561
CMD BAR RETRACT	P
ROLL CMD BAR IN	M
PITCH CMD BAR IN	L
CMD BAR REF	N

Figure B-17 Autopilot/Flight Director Interconnect - Honeywell (Bendix/King)
Sheet 4 of 10

GI 275
(Pilot s Primary ADI only)

20

KFC 250
(3" INSTRUMENTS)

GI 275	P2752		W/ KA 141 KCP 299 W/ 065-5016-XX ADAPTER CARD P2991	W/ KA 141 KCP 299 W/ 065-5016-XX ADAPTER CARD P2992	KA 141 P141	W/O KA 141 KCP 299 W/ 065-5016-XX ADAPTER CARD P2991	W/O KA 141 KCP 299 W/ 065-5016-XX ADAPTER CARD P2992	KFC 250
PITCH AC OUT HI	6		-	-	-	-	y	PITCH ATTITUDE HI
PITCH AC OUT LO	64		-	-	-	-	s	GYRO COMMON
ROLL AC OUT HI	26		-	-	-	-	CC	ROLL ATTITUDE HI
ROLL AC OUT LO	45		-	-	-	-	HH	GRYO COMMON
10VAC REF HI	27		-	-	-	-	w	VG EXCITATION
10VAC REF LO	46		-	-	-	F	-	VG (PWR) REF
PITCH AC OUT HI	6		-	-	12	-	-	PITCH ATTITUDE HI
PITCH AC OUT LO	64		-	-	N	-	-	PITCH/ROLL ATTD LO
		NC	-	y	13	-	-	PITCH GRYO (H) RTN
		NC	-	HH	P	-	-	PITCH/ROLL REF
ROLL AC OUT HI	26		-	-	10	-	-	ROLL ATTITUDE HI
ROLL AC OUT LO	45	NC	-	CC	11	-	-	ROLL GYRO(H) RTN
10VAC REF HI	27		-	w	F	-	-	VG EXCITATION
10VAC REF LO	46		F	-	-	-	-	VG (PWR) REF
YAW RATE HI	15		-	X	-	-	X	YAW RATE (HIGH)
YAW RATE LO	73		-	Z	-	-	Z	YAW RATE (LOW)

REPLACES KRG 331

KA 136
TRIM ADAPTER

P1362
6 EMERG AP/YD DISC

A/P DISC
SWITCH(ES)
(EXISTING)

COPILOT

PILOT

18
TO GI 275 C/B

12 8
DISENG

ENG

9
GYRO VALID RELAY NO 23
COM 3

AP DISC
RELAY
(EXTERNAL)

Figure B-17 Autopilot/Flight Director Interconnect - Honeywell (Bendix/King)
Sheet 5 of 10

GI 275
(Pilot s Primary ADI
or Pilot s HSI)

4" ADI Replacement – Basic
(cont d on Attitude page)

BENDIX KING
AUTOPILOT

GI 275	P2752	KFC 250 (4" INSTRUMENTS) KCP 299 w/ 065-5015-XX Adapter Card P2991	KFC 250 P2992	KA141 P141	KC290 J2901	KFC 300 KCP 320 J1	J2TP	J2BP	BENDIX KING AUTOPILOT
LATERAL +LEFT OUT	48	-	C	-	-	2	-	-	LAT DEV +LT
LATERAL +RIGHT OUT	10	-	A	-	-	1	-	-	LAT DEV +RT
VERTICAL +UP OUT	9	M	-	-	-	3	-	-	GS DEV +UP
VERTICAL +DN OUT	68	K	-	-	-	4	-	-	GS DEV +DOWN
A/P HEADING ERROR HI	13	-	H	-	-	12	-	-	HDG DATUM HI
A/P HEADING ERROR LO	52	-	M	-	-	13	-	-	HDG DATUM LO
A/P COURSE ERROR HI	32	-	W	-	-	14	-	-	CRS DATUM HI
A/P COURSE ERROR LO	71	-	S	-	-	15	-	-	CRS DATUM LO
LATERAL +FLAG OUT	63	-	-	-	-	-	30	-	LAT DEV FLAG +
LATERAL -FLAG OUT	66	-	-	-	-	-	31	-	LAT DEV FLAG -
VERTICAL +FLAG OUT	24	C	-	-	-	-	24	-	GS DEV FLAG +
VERTICAL -FLAG OUT	5	D	-	-	-	-	25	-	GS DEV FLAG -
ILS/GPS APPROACH (~DISCRETE OUT 7 LO)	1	AA	-	-	-	-	29	-	ILS ENERGIZE (A/P IN)
HDG/CRS DATUM VALID (~DISCRETE OUT 4 LO)	72	c	-	-	-	-	-	-	COMPASS VALID
		-	-	-	-	17	-	-	COURSE DATUM COS-
		-	-	-	-	16	-	-	COURSE DATUM COS+
		H	-	-	-	19	-	-	26 VAC 400 HZ REF HI
		-	-	-	-	-	-	5	26 VAC 400 HZ REF LO
A/P BACKCOURSE (~DISCRETE OUT 5 LO)	14								
		-	-	-	-	-	40	-	PRE-FLT TEST SWITCH
FD ENABLE IN HI	18	-	p		-	9	-	-	CMD BAR RETRACT
FD ROLL RIGHT	38	-	EE	-	-	30	-	-	ROLL CMD BAR OUT
FD ROLL LEFT	77								
FD PITCH UP	19	-	BB	-	-	29	-	-	PITCH CMD BAR OUT
FD PITCH DOWN	58	F	-	3	A	-	-	10	CMD BAR REF

TO GI 275 CIRCUIT BREAKER 18

2 MΩW
¼ WATT

26 VAC 400 REF
(SEE ATTITUDE PAGE)

BACKCOURSE
RELAY

4 NC NC NO NO

TO
KAC 325 TP-43
AND
KDC 380 J1-R

TO GI 275
C/B
18

AP TEST

ONLY REQUIRED
WHEN KCI 310 IS NOT
CONNECTED

TO AUTOPILOT
CIRCUIT BREAKER

14 15 16
FUSE, 5A
OR LESS

100 K , ¼ WATT

20

17

ADI
(copilot s side)

1 2

	KCI 310 P1
CMD BAR RETRACT	R
ROLL CMD BAR IN	T
PITCH CMD BAR IN	P
CMD BAR REF	W

Figure B-17 Autopilot/Flight Director Interconnect - Honeywell (Bendix/King)
Sheet 6 of 10

GI 275
(Pilot s Primary ADI only)

20

P2752

PITCH AC OUT HI 6
PITCH AC OUT LO 64
s

ROLL AC OUT HI 26
ROLL AC OUT LO 45
s

26 VAC REF HI 65
26 VAC REF LO 7
s

9
GYRO VALID RELAY COM 3
NC 42 NC
NO 23

YAW RATE HI 15
YAW RATE LO 73
s

26 VAC 400 Hz
Source

19 26 VAC HI
26 VAC LO

GI 275 C/B 18

REPLACES KRG 331

KFC 250
(4" INSTRUMENTS)

	W/ KA 141 KCP 299 W/ 065-5015-XX ADAPTER CARD		KA 141	W/O KA 141 KCP 299 W/ 065-5015-XX ADAPTER CARD		
	P2991	P2992	P141	P2991	P2992	
	-	-	12	-	y	PITCH AC HI
	-	-	R	-	s	PITCH AC LO
NC	-	y	13	-	-	PITCH GYRO (H) RTN
NC	-	s	S	-	-	PITCH GYRO (C) RTN
	-	-	10	-	CC	ROLL AC HI
	-	-	N	-	HH	ROLL AC LO
NC	-	CC	11	-	-	ROLL GYRO (H) RTN
NC	-	HH	P	-	-	ROLL GYRO(C) RTN
	H	w	F	H	w	26VAC REF HI
	BB	-	-	BB	-	VG VALID
	-	X	-	-	X	YAW RATE (HIGH)
	-	Z	-	-	Z	YAW RATE (LOW)

Figure B-17 Autopilot/Flight Director Interconnect - Honeywell (Bendix/King)
Sheet 7 of 10

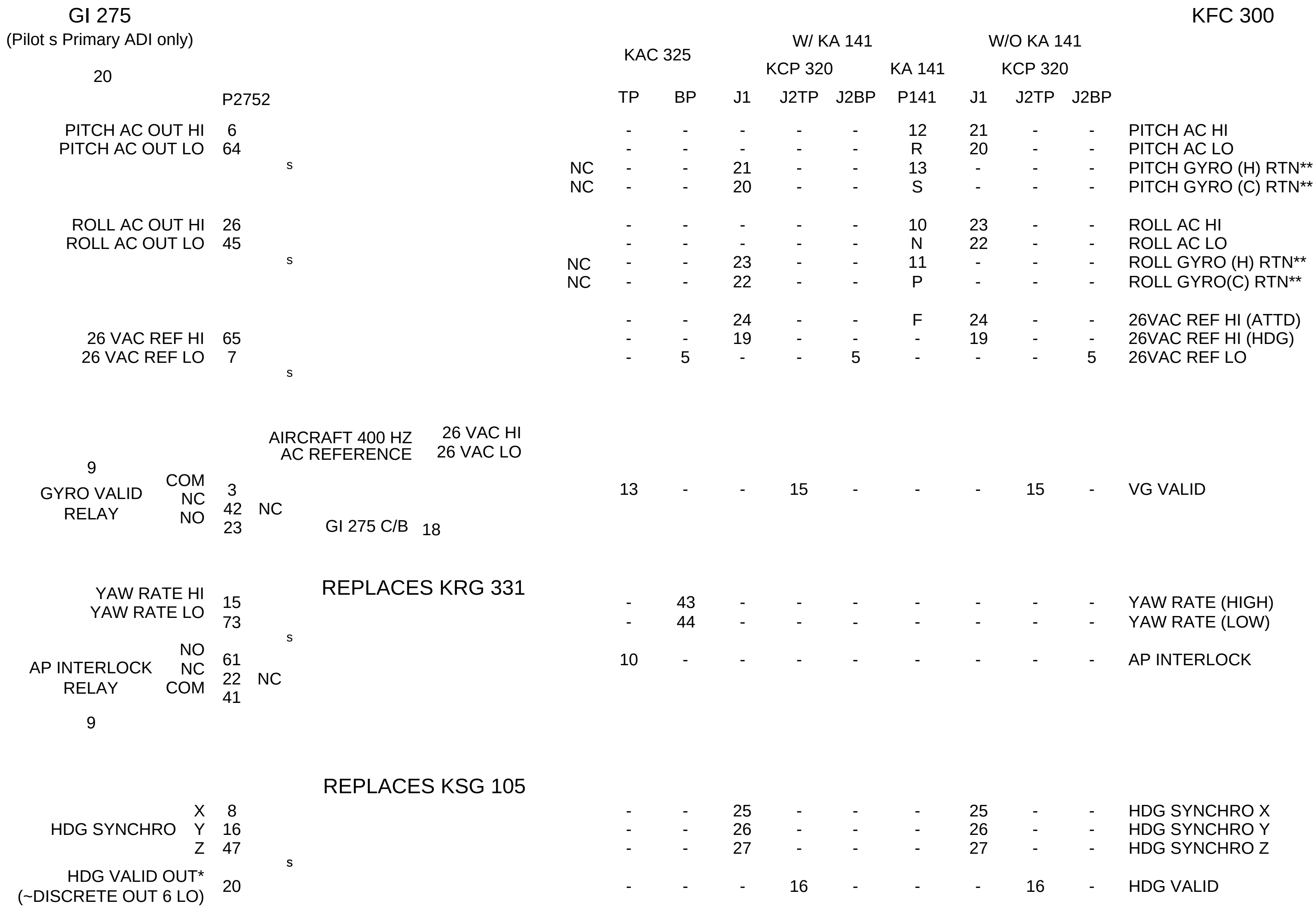


Figure B-17 Autopilot/Flight Director Interconnect - Honeywell (Bendix/King)
Sheet 8 of 10

NOTES

1 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 IN ACCORDANCE WITH SECTION 3.2. IF THIS INDICATOR IS BEING RELOCATED TO THE CO-PILOT'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 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.

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 GI 275 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. REFER TO THE APPROPRIATE INSTALLATION MANUAL OR MAINTENANCE MANUAL FOR THE AUTOPILOT SYSTEM AND PERFORM ANY RELEVANT ALTITUDE CALIBRATION PROCEDURES.

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. REFER TO THE APPROPRIATE INSTALLATION MANUAL OR MAINTENANCE MANUAL FOR THE AUTOPILOT SYSTEM AND PERFORM ANY RELEVANT ALTITUDE CALIBRATION PROCEDURES.

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 TH AUTOPILOT COMPUTER IS NOT POWERED UP.

Figure B-17 Autopilot/Flight Director Interconnect - Honeywell (Bendix/King)
Sheet 9 of 10

NOTES CONTINUED

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-INCH INSTRUMENTS.

17 IF KA 141 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 DOESN'T EXIST IN THE AIRCRAFT, IT MUST BE INSTALLED.

20 CONNECTIONS MUST BE MADE TO THE PILOT'S PRIMARY ADI ONLY.

21 PIN F IS WIRED TO OTHER KFC 200 COMPONENTS (CONNECTOR J2901 PIN A) THAT USE THE LO REFERENCE FOR OTHER AP FUNCTIONS. DO NOT INTERRUPT THE AP CIRCUIT OR CONNECTIONS WHEN SPLICING TO THIS WIRE.

22 AUTOPILOT MUST BE INTERFACED TO A GI 275 ADAHRS + AP UNIT.

23 IF THE GI 275 IS PROVIDING BARO CORRECTION TO THE KAP 140, THE AUTOPILOT MUST BE CONFIGURED FOR "REMOTE BARO" PER THE BENDIX/KING KAP 140 FCS INSTALLATION MANUAL. AS PART OF AUTOPILOT GROUND CHECKS IN SECTION 6.3.9, ENSURE THAT THE INDICATED BARO AFTER PRESSING THE BARO BUTTON ON THE KAP 140 MATCHES THAT OF THE GI 275.

Figure B-17 Autopilot/Flight Director Interconnect - Honeywell (Bendix/King)
Sheet 10 of 10

GI 275

(Pilot s Primary ADI
or Pilot s HSI)

AUTOPILOT

GI 275 signal	P2752				S-TEC 20/30 P1	S-TEC 40/50 P1	S-TEC 60-1 RFGC	Autopilot signal
LATERAL +LEFT OUT	48				9	14	23	LAT DEV +LT
LATERAL +RIGHT OUT	10	s			10	13	21	LAT DEV +RT
LATERAL +FLAG OUT	63				-	-	24	LAT DEV FLAG +
LATERAL -FLAG OUT	66	s			-	-	6	LAT DEV FLAG -
A/P HEADING ERROR HI	13				8	31	19	HDG DATUM HI
A/P HEADING ERROR LO	52	s			7	29	13	HDG DATUM LO
A/P COURSE ERROR HI	32				-	-	20	CRS DATUM HI
A/P COURSE ERROR LO	71	s			-	-	13	CRS DATUM LO
GPS SELECT (~DISCRETE OUT 8 LO)	40				42	26	-	GPS TRACK GAIN
ILS/GPS APPROACH (~DISCRETE OUT 7 LO)	1				-	-	16	LOC SWITCH
			4	N/C	-	-	18	DG GROUND STRAP
			4	N/C	-	-	34	GROUND
			5	N/C	20	23	-	NO HEADING SYSTEM A
			5	N/C	21	39	-	NO HEADING SYSTEM B

Figure B-18 Autopilot/Flight Director Interconnect - S-TEC
Sheet 1 of 4

GI 275 (Pilot s Primary ADI or Pilot s HSI)	P2752			S-TEC 55 P1	S-TEC 55 P2	S-TEC 55X P1	S-TEC 55X P2	AUTOPILOT	
FD ENABLE HI	18			-	4	-	4	FD LOGIC OUT	1
7 FD ROLL RIGHT	38			-	12	-	12	ROLL STEERING SIG	
FD ROLL LEFT	77	s		-	29	-	29	SIG REF	
FD PITCH UP	19			-	13	-	13	PITCH STEERING SIG	
FD PITCH DOWN	58	s		-	30	-	30	SIG REF	
			2 N/C	-	10	-	10	10 VDC PARALLAX POT**	
			N/C	-	11	-	11	PITCH STR CENTERING**	
			N/C	-	44	-	44	FD POT GROUND**	
A/P HEADING ERROR HI	13			28	-	28	-	HDG DATUM HI	
A/P HEADING ERROR LO	52	s		29	-	29	-	HDG DATUM LO	
A/P COURSE ERROR HI	32			11	-	11	-	CRS DATUM HI	
A/P COURSE ERROR LO	71	s		12	-	12	-	CRS DATUM LO	
LATERAL +FLAG OUT	63			13	-	13	-	LAT DEV FLAG +	
LATERAL -FLAG OUT	66	s		14	-	14	-	LAT DEV FLAG -	
VERTICAL +FLAG OUT	24			-	1	-	1	GS DEV FLAG +	
VERTICAL -FLAG OUT	5	s		-	2	-	2	GS DEV FLAG -	
GPS ANNUNCIATE (~DISCRETE OUT 9 LO)	17			-	-	-	38	GPSS STEERING	
GPS SELECT (~DISCRETE OUT 8 LO)	40			-	-	49	-	GPS TRACK GAIN	
ILS/GPS APPROACH (~DISCRETE OUT 7 LO)	1			32	-	32	-	LOC SWITCH	
VERTICAL +UP OUT	9			-	18	-	18	GS DEV +UP	
VERTICAL +DOWN OUT	68	s		-	19	-	19	GS DEV +DOWN	
LATERAL +LEFT OUT	48			31	-	31	-	LAT DEV +LT	
LATERAL +RIGHT OUT	10	s		30	-	30	-	LAT DEV +RT	
	P1								
~ARINC 429 OUT 1 A	16			-	-	-	36	A 429 GPSS DATA IN	
B	55	s		-	-	-	37	B	
ADI (on copilot s side)			4 N/C	9	-	9	-	DG GROUND STRAP	
3			N/C	10	-	10	-	GROUND	

Figure B-18 Autopilot/Flight Director Interconnect - S-TEC
Sheet 2 of 4

GI 275 (Pilot s Primary ADI or Pilot s HSI)	P2752			S-TEC 60 PSS PFGC	ST-670	S-TEC 60-2/65 PFGC	RFGC	AUTOPILOT
FD ENABLE IN HI	18			-	13	-	-	FD LOGIC OUT 6
FD ROLL RIGHT	38			-	1	-	-	ROLL STEERING SIG
7 FD ROLL LEFT	77	s		-	-	-	-	SIG REF
FD PITCH UP	19			-	9	-	-	PITCH STEERING SIG
FD PITCH DOWN	58	s		-	-	-	-	SIG REF
			N/C	-	-	62	-	10 VDC PARALLAX POT
		2	N/C	-	-	61	-	PITCH STR CENTERING
			N/C	-	-	63	-	FD POT GROUND
A/P HEADING ERROR HI	13			-	-	-	19	HDG DATUM HI
A/P HEADING ERROR LO	52	s		-	-	-	13	HDG DATUM LO
A/P COURSE ERROR HI	32			-	-	-	20	CRS DATUM HI
A/P COURSE ERROR LO	71	s		-	-	-	-	CRS DATUM LO
LATERAL +FLAG OUT	63			-	-	-	24	LAT DEV FLAG +
LATERAL -FLAG OUT	66	s		-	-	-	6	LAT DEV FLAG -
VERTICAL +FLAG OUT	24			77	-	77	-	GS DEV FLAG +
VERTICAL -FLAG OUT	5	s		58	-	58	-	GS DEV FLAG -
ILS/GPS APPROACH (~DISCRETE OUT 7 LO)	1			9	-	-	16	LOC SWITCH
			N/C	-	-	-	18	DG GROUND STRAP
		4	N/C	-	-	-	34	GROUND
LATERAL +LEFT OUT	48			-	-	-	23	LAT DEV +LT
LATERAL +RIGHT OUT	10	s		-	-	-	21	LAT DEV +RT
VERTICAL +UP OUT	9			46	-	46	-	GS DEV +UP
VERTICAL +DN OUT	68	s		45	-	45	-	GS DEV +DOWN

Figure B-18 Autopilot/Flight Director Interconnect - S-TEC
Sheet 3 of 4

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. 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.

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. CONNECTIONS MUST BE MADE TO THE PILOT'S PRIMARY ADI ONLY.

8. AUTOPILOT MUST BE INTERFACED TO A GI 275 ADAHRS + AP UNIT.

Figure B-18 Autopilot/Flight Director Interconnect - S-TEC
Sheet 4 of 4

GI 275 (Pilot s Primary ADI or Pilot s HSI)	P2752		SPZ-200A/-500 FZ-500 J1A	FZ-500 J1B	SP-200 J1B	AUTOPILOT [1]
LATERAL +LEFT OUT	48		20	-	-	LAT DEV +LT
LATERAL +RIGHT OUT	10	s	21	-	-	LAT DEV +RT
VERTICAL +UP OUT	9		-	16	-	GS DEV +UP
VERTICAL +DN OUT	68	s	-	17	-	GS DEV +DN
A/P HEADING ERROR HI	13		36	-	-	HDG ERROR HI
A/P HEADING ERROR LO	52	s				
A/P COURSE ERROR HI	32		41	-	-	CRS DATUM HI
A/P COURSE ERROR LO	71	s	37	-	-	HDG/CRS DATUM LO
LATERAL SUPERFLAG	25		16	-	-	LAT SUPERFLAG
VERTICAL SUPERFLAG	44		-	7	-	G/S SUPERFLAG
ILS/GPS APPROACH (~DISCRETE OUT 7LO)	1		22	-	-	LOC FREQ GROUND

TO OTHER AVIONICS

GI 275	P2752		J1A	J1B	J1B	AUTOPILOT
26 VAC REF HI	65		-	-	7	26 VAC OUTPUT
26 VAC REF LO	7		-	-	5	AC POWER GROUND
FD ENABLE HI	18		-	47	-	+28 FDC VALID
3 FD ROLL LEFT	77		29	-	-	ROLL FD COMMAND +
FD ROLL RIGHT	38	s	30	-	-	ROLL FD COMMAND -
FD PITCH DOWN	58		-	30	-	PITCH FD COMMAND +
FD PITCH UP	19	s	-	31	-	PITCH FD COMMAND -
			-	48	-	LOW LEVEL FDC VALID
			1	-	-	SIGNAL GROUND

ADI (copilot s side) 2

SPERRY HZ-444 P1

ADI	P1		J1A	J1B	J1B	AUTOPILOT
			2	-	-	+V OUTPUT
			31	-	-	ROLL BIAS OUT OF VIEW
ROLL CMD PTR (+)	s		5	-	-	-V OUTPUT
ROLL CMD PTR (-)	t		-	29	-	PITCH BIAS OUT OF VIEW
PITCH CMD PTR (+)	p	N/C	60	-	-	HI — ROLL PTR GAIN SEL
PITCH CMD PTR (-)	q		61	-	-	LOW — ROLL PTR GAIN SEL
			62	-	-	COMM — ROLL PTR GAIN SEL
FD WARN FLAG (+)	GG					
FD WARN FLAG (-)	HH	N/C	-	11	-	HI — PITCH PTR GAIN SEL
			-	12	-	LOW — PITCH PTR GAIN SEL
			-	13	-	COMM — PITCH PTR GAIN SEL

Figure B-19 Autopilot/Flight Director Interconnect - Sperry
Sheet 1 of 2

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. THIS ADI MUST BE LOCATED IN ACCORDANCE WITH SECTION 3.2. IF THIS INDICATOR IS BEING RELOCATED TO THE CO-PILOT'S SIDE, WIRING MAY BE CONNECTED IN PARALLEL TO THIS ADI AND MUST BE CONNECTED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

3 CONNECTIONS MUST BE MADE TO THE PILOT'S PRIMARY ADI ONLY.

4 AUTOPILOT MUST BE INTERFACED TO A GI 275 ADAHRS + AP UNIT.

Figure B-19 Autopilot/Flight Director Interconnect - Sperry
Sheet 2 of 2

DISPLAY BACKUP SWITCH

GI 275
P2752
DISCRETE IN 6 LO 43
(DISPLAY BACKUP)

ON

AUTO

AP HDG DATUM SWITCH

GI 275
P2751
~DISCRETE IN 1 LO 23

2

GPSS

HDG

ENGINE ANNUNCIATOR (14 VDC)

GI 275
EIS #1

P2751
~DISCRETE OUT 1 LO 4
(ENGINE WARNING)
~DISCRETE OUT 2 LO 43
(ENGINE CAUTION)

TO EIS DISPLAY
BREAKER

95-40-17-B4-E1WPN

B ENGINE WARN 1
C ENGINE WARN 1
A ENGINE CAUTION 1
D ENGINE CAUTION 1
G POWER

GI 275 EIS #1
P2751
~DISCRETE OUT 1 LO 4
(ENGINE WARNING)

TO EIS DISPLAY
BREAKER

22 AWG 1
22 AWG 2
22 AWG 3

MS25041-2 (RED)
WITH LAMP
MS25237-330 or -8918

~DISCRETE OUT 2 LO 43
(ENGINE CAUTION)

TO EIS DISPLAY
BREAKER

22 AWG 1
22 AWG 2
22 AWG 3

MS25041-4 (YEL)
WITH LAMP
MS25237-330 or -8918

ENGINE ANNUNCIATOR (28 VDC)

GI 275
EIS #1

P2751
~DISCRETE OUT 1 LO 4
(ENGINE WARNING)
~DISCRETE OUT 2 LO 43
(ENGINE CAUTION)

1

TO EIS DISPLAY
BREAKER

LED-40-17-BA2-E1WP6

B ENGINE WARN 1
A ENGINE CAUTION 1
G POWER

GI 275 EIS #1
P2751
~DISCRETE OUT 1 LO 4
(ENGINE WARNING)

TO EIS DISPLAY
BREAKER

22 AWG 1
22 AWG 2
22 AWG 3

MS25041-2 (RED)
WITH LAMP
MS25237-327

~DISCRETE OUT 2 LO 43
(ENGINE CAUTION)

TO EIS DISPLAY
BREAKER

22 AWG 1
22 AWG 2
22 AWG 3

MS25041-4 (YEL)
WITH LAMP
MS25237-327

Figure B-20 External Switches and Annunciators
Sheet 1 of 2

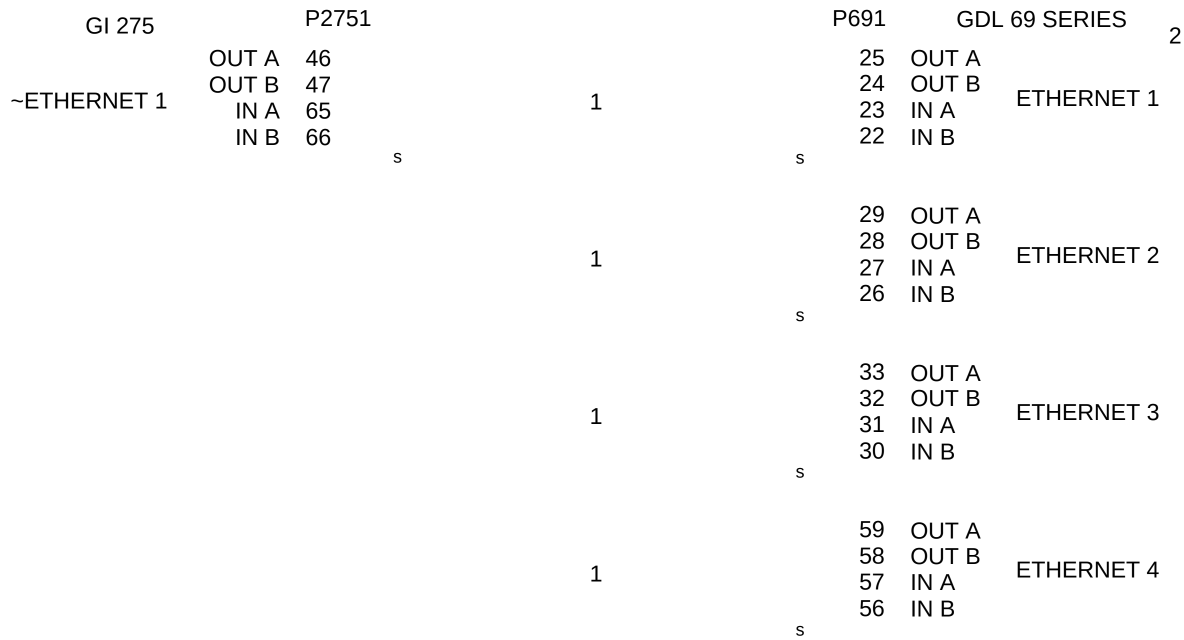
NOTES

1 USE 47©, 1/4 WATT RESISTOR.

2 IF AN AP HDG DATUM SWITCH IS INSTALLED, THE SWITCH MUST BE LOCATED AS NEAR AS PRACTICAL TO THE AUTOPILOT MODE CONTROL PANEL.

3 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 External Switches and Annunciators
Sheet 2 of 2



NOTES

1 REFERENCE SECTION 3.2.6 FOR HSDB ARCHITECTURE.

2 ONLY THE SECOND GENERATION GDL 69/69A SXM MODELS ARE COMPATIBLE WITH THE GI 275.

Figure B-21 GDL 69 Series Interconnect

GI 275

RADAR ALTIMETER

GI 275		P2751	GARMIN GRA 55/ 5500 P1	FREE FLIGHT RA-4500 P1	COLLINS RAC 870 P1	HONEYWELL KRA 405B P4051	RADAR ALTIMETER
~DISCRETE OUT 2* (RAD ALT SELF TEST OUT)		43	-	-	40	U	PUSH-TO-TEST IN
~ARINC 429 IN 4	A	73	52	12	2	B	ARINC 429 OUT A
	B	15	55	11	3	C	ARINC 429 OUT B

s

Figure B-22 Radar Altimeter Interconnect

GI 275

TRANSPONDER

GARMIN
GTX 32
GTX 327

P2751

J1

~RS-232 1 OUT 38 — 2 ~RS-232 IN

GND 77 — -

s

Figure B-23 Serial Altitude Output Interconnect

DISPLAY ONLY

GI 275

P2751

	GND	76
~RS-232 2	IN	37
	OUT	18

s

WX-500
STORMSCOPE

P2

5	RS-232 GND

P3

20	RS-232 TX
8	RS-232 RX

TO STORMSCOPE
CONTROL AND DISPLAY

Figure B-24 Stormscope Interconnect

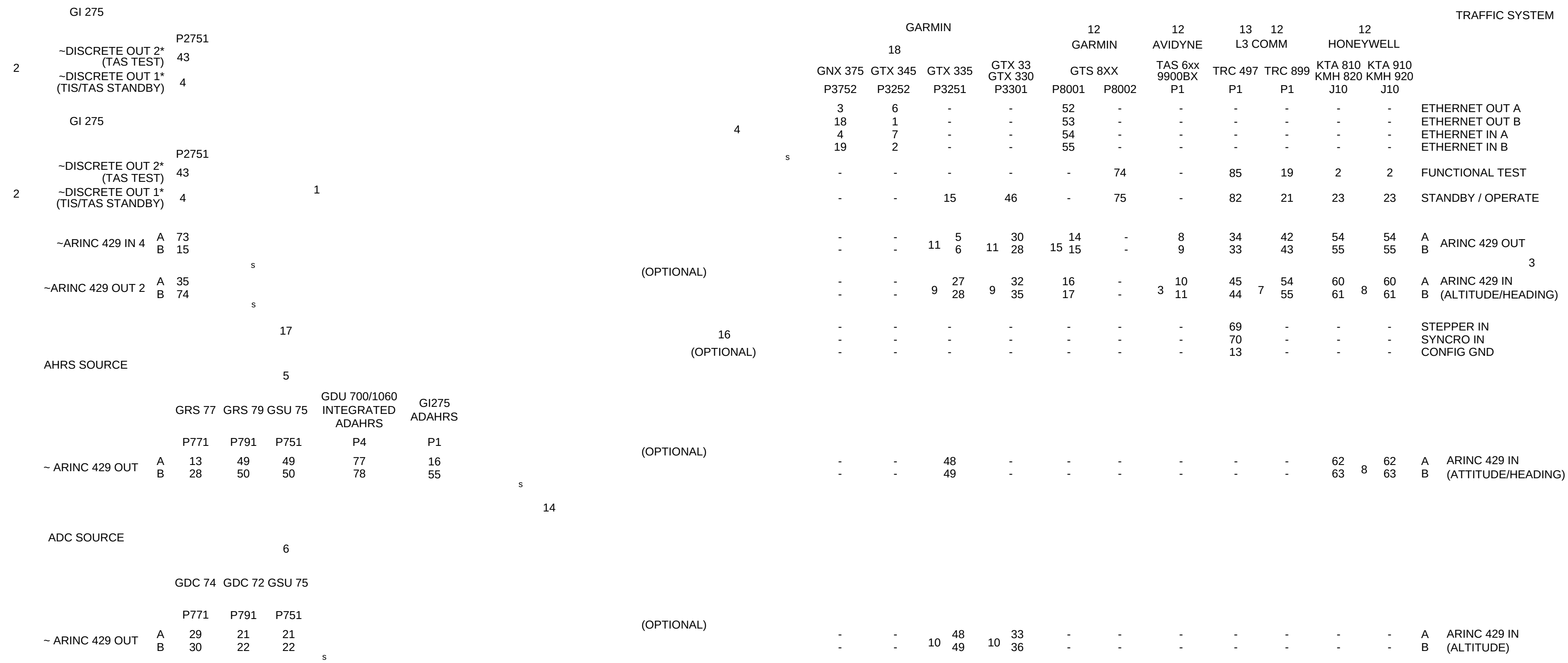


Figure B-25 Traffic Advisory System Interconnect
Sheet 1 of 3

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 REFER TO SECTION 3.2.6 FOR HSDB ARCHITECTURE.

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.

Figure B-25 Traffic Advisory System Interconnect
Sheet 2 of 3

NOTES CONTINUED

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.

18 THE HSDB CONNECTION TO THE GTX 345 SHOWN HERE ALSO PROVIDES THE TRANSPONDER CONTROL INTERFACE, IF APPLICABLE.

Figure B-25 Traffic Advisory System Interconnect
Sheet 3 of 3

GI 275 P2751

USB DATA HI 58
USB DATA LO 39
USB GROUND 59

P201/
P202 GSB 15

3 USB DP
2 USB DN
4 USB GND

1 AIRCRAFT POWER
5 BACKLIGHT ENABLE 3
6 POWER GROUND

5

4 S 6

2 1

NOTES

1
- GSB 15 DUAL TYPE-A UNITS (P/Ns 011-04937-00, -01) USE 20 OR 22 AWG FOR POWER AND POWER GROUND WIRES, 25 FT MAX.
- GSB 15 TYPE-A & TYPE-C (P/Ns 011-04937-20, -30) AND GSB 15 DUAL TYPE-C (P/Ns 011-04937-40, -50) UNITS INSTALLED IN 28V AIRCRAFT, USE 20 OR 22 AWG FOR AIRCRAFT POWER AND POWER GROUND WIRES, 25FT MAX.
- GSB 15 TYPE-A & TYPE-C (P/Ns 011-04937-20, -30) AND GSB 15 DUAL TYPE-C (P/Ns 011-04937-40, -50) UNITS INSTALLED IN 14V AIRCRAFT, USE 20 AWG FOR AIRCRAFT POWER AND POWER GROUND WIRES, 8FT MAX. IF LONGER WIRE LENGTH IS NEEDED, USE 16 AWG FOR AIRCRAFT POWER AND GROUND WIRES, 13FT MAX, SPLICED TO 2FT MAX 20 AWG POWER AND GROUND WIRES AT GSB 15 CONNECTOR.

2 THE GSB 15 IS APPROVED TO UTILIZE A 5 AMP FUSE OR CIRCUIT BREAKER OR A 7.5 AMP FUSE OR CIRCUIT BREAKER. REFER TO SECTION SECTION 3.2.1 FOR BREAKER AND FUSE SIZING, BUSSING, AND LABELING.

3 TO DISABLE BACKLIGHT, GROUND THE BACKLIGHT ENABLE PIN. USE 22 AWG WIRE.

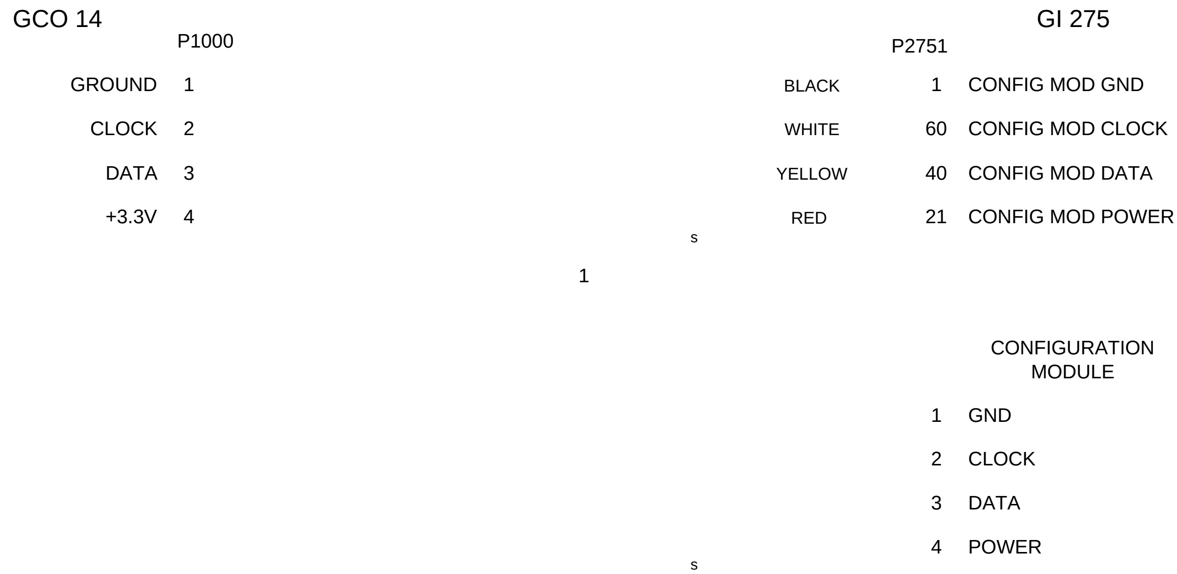
4 PIN 78 ON CONNECTOR P2751 SHOULD NOT BE CONNECTED. WHEN REPLACING A USB PIGTAIL WITH THE GSB 15, LEAVE THE PIN NOT CONNECTED.

5 MUST USE ETHERNET CABLE. REFER TO TABLE 3-7 FOR APPROVED CABLES.

6 TERMINATE SHIELDING 2.5 INCHES FROM THE GSB 15 CONNECTOR. GROUND GSB 15 SIDE TO RING TERMINAL PER SECTION 4.5.2.

7 USB DATA CABLES MUST BE 10 FEET LONG OR LESS.

Figure B-26 GSB 15 Interconnect



NOTES

1 USE HARNESS INCLUDED IN P/N 011-06537-10 SUB-ASSY, GCO 14 CABLE KIT.

Figure B-27 GCO 14 Interconnect

EFIS

GI 275

P2751

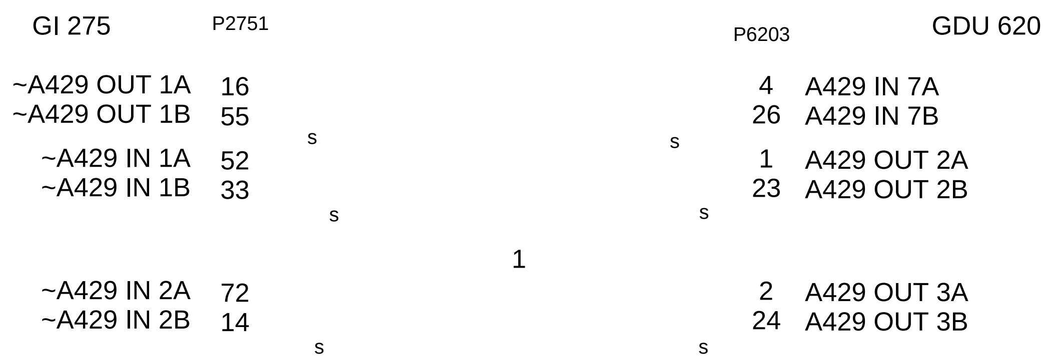
~ARINC 429 IN 2 A 72
B 14
s

	Garmin GDU 620	Sandel SN3308	Sandel SN3500/4500	Avidyne EXP5000	Bendix/King EFS 40/50		
	P6202	P3	P2	J732	P4652B		
	3	11	30	22	47	A	~ARINC 429 OUT
	20	29	15	21	20	B	

NOTES

1 ARINC 429 COURSE SELECT INTERFACE ALLOWS THE GI 275 TO SLAVE THE SELECTED COURSE FROM AN EXTERNAL SOURCE WHEN COURSE SELECTION IS DISABLED. REFER TO SECTION 5.5.7 FOR CONFIGURING COURSE SELECTION.

Figure B-28 ARINC 429 Course Select Interconnect



NOTES

1 SPLICING THE ARINC 429 CONNECTIONS WHEN NO OTHER ARINC 429 CHANNELS ARE AVAILABLE FOR THE SYSTEM WIRING/CONFIGURATION IS ACCEPTABLE PROVIDED THE WIRE SHIELD CONTINUITY IS MAINTAINED AS SHOWN.

2 DO NOT CONNECT THE ARINC 429 COURSE SELECT WIRING SHOWN IN FIGURE B-28 IF CONNECTING ARINC 429 USING THE WIRING SHOWN HERE.

3 A GFC 500 INTERFACED TO THE GI 275 IS REQUIRED FOR THIS CONNECTION. REFER TO APPENDIX SECTION C.16 FOR CONFIGURATION SETTINGS.

4 ENSURE THERE ARE AN ADEQUATE NUMBER OF ARINC 429 PORTS FOR INTERFACING SYSTEMS (i.e. A DUAL GNS 4XX/5XX INTERFACE REQUIRES AN ADDITIONAL GI 275 TO PROVIDE THE REQUIRED AMOUNT OF ARINC 429 PORTS).

Figure B-29 GDU 620 ARINC 429 Interface for GFC 500

Sensor Power Relay Examples – Remote Aircraft Status (RAS)

Multiple Breaker Multiple Load

RAS X
Sensor A
A2
A3
A1
Sensor B
B2
B3
B1
X1
X2
CB A
CB B

Single Breaker Multiple Load

RAS X
Sensor A
A2
A3
A1
Sensor B
B2
B3
B1
X1
X2
RAS 1 A2
RAS 1 B2
CB A/B

Single Breaker Single Load

RAS X
Sensor A
A2
A3
A1
B2
B3
B1
X1
X2
RAS 1 A2
RAS 1 B2
CB A

Inline Fuse Example

RAS X
Sensor A
A2
A3
A1
Sensor B
B2
B3
B1
X1
X2
CB A
CB B

Figure B-30 GDL 60 Remote Aircraft Status Interconnect
Sheet 1 of 3

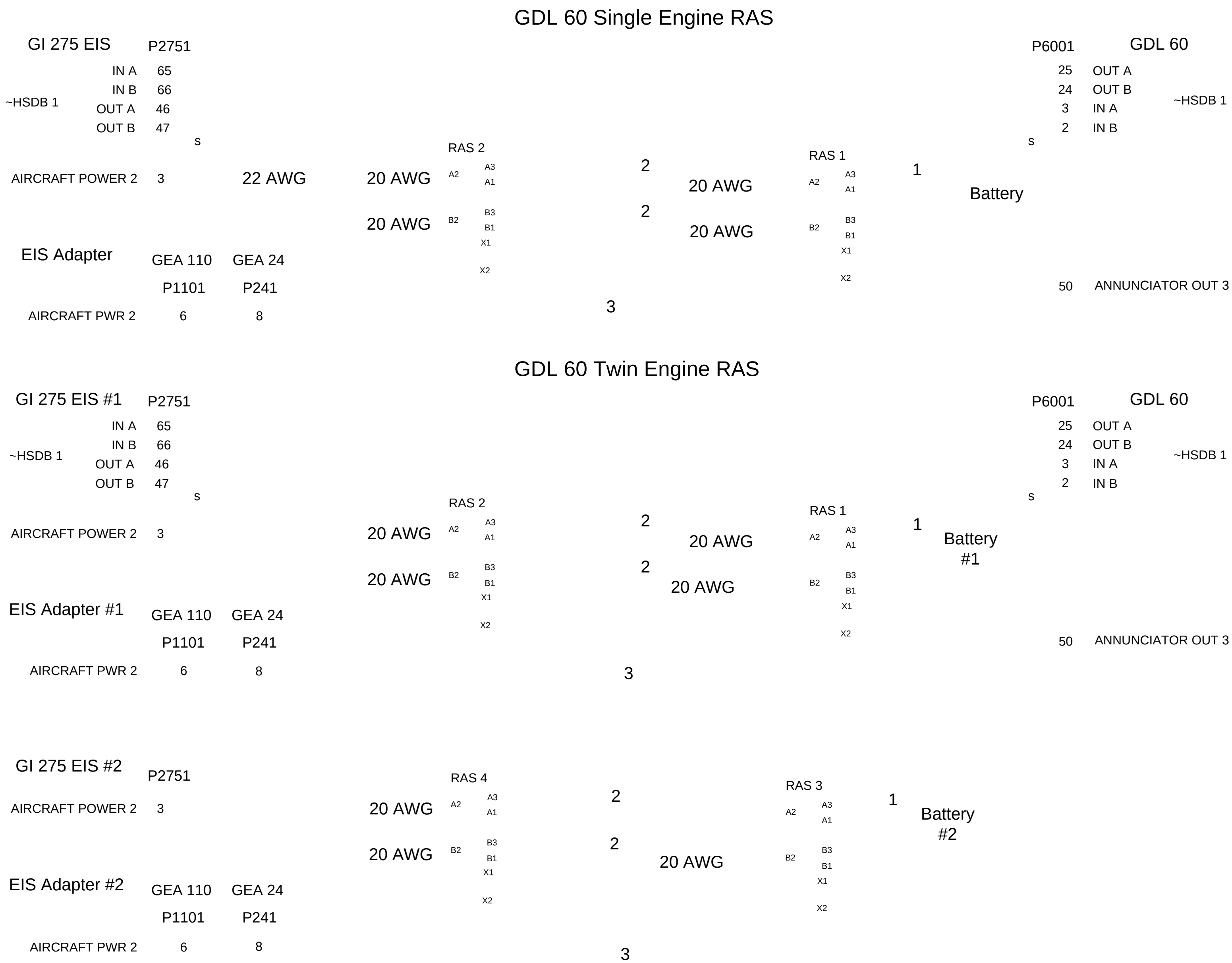


Figure B-30 GDL 60 Remote Aircraft Status Interconnect
Sheet 2 of 3

NOTES

1 INSTALL 5 AMP FUSE AS CLOSE AS PRACTICAL TO THE BATTERY.

2 EXISTING POWER IN 2 WIRING MAY BE RE-USED. IF NO POWER IN 2 WIRING EXISTS FOR THE GI 275 OR THE GEA, CONNECT TO THE UNITS EXISTING POWER IN 1 CIRCUIT BREAKER.

3 ADDITIONAL RAS LOADS MAY BE ADDED USING THE SECOND TIER RELAY WIRING EXAMPLES SHOWN ON SHEET 1.

4 SPLICES WITHIN 6 INCHES OF RELAY/LRU PIN.

5 THE GDL 60 MUST BE DIRECTLY CONNECTED TO A GI 275 EIS UNIT VIA HSDB FOR REMOTE AIRCRAFT STATUS FUNCTIONALITY.

6 EXISTING SENSOR WIRING SHOWN IN GRAY DASHED LINES.

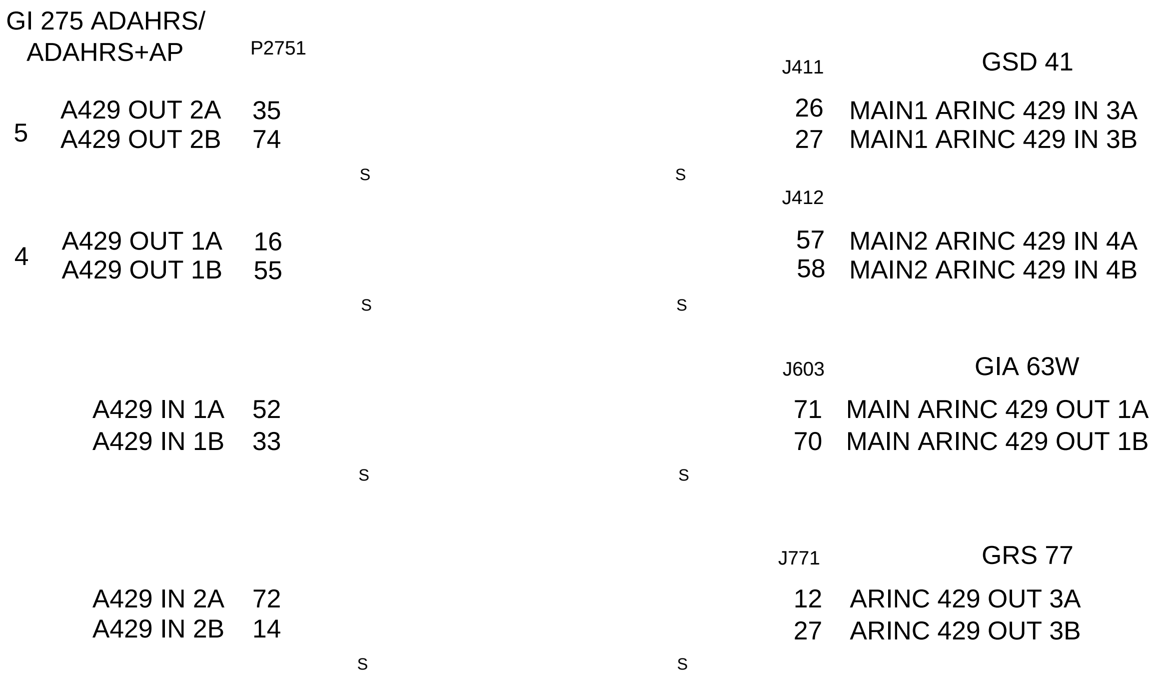
7 SENSOR A/B AND CB A/B REPRESENT ANY GIVEN CIRCUIT FROM BREAKER TO THE FUEL QUANTITY SENSOR. THE LOAD CAN BE ANY FUEL QUANTITY PROBE THAT IS NOT POWERED DIRECTLY FROM THE GEA.

8 UNLESS OTHERWISE SPECIFIED, USE A MINIMUM OF 22 AWG WIRE GAUGE FOR NEW WIRING. FOR WIRE LENGTHS LONGER THAN 20 FEET, REFER TO AC 43.13-1B CHAPTER 11 TO DETERMINE APPROPRIATE WIRE GAUGE.

9 WHEN UTILIZING EXISTING SENSOR/LRU WIRING OF LESS THAN 22 AWG, PLACE AN INLINE FUSE UPSTREAM OF THE RELAY THAT IS THE SAME RATING AS THE ORIGINAL CIRCUIT. SEE INLINE FUSE EXAMPLE.

10 OUTSIDE AIR TEMPERATURE CANNOT BE PROVIDED TO THE GDL 60 UNLESS THE GI 275 ADI IS POWERED DURING AN RAS QUERY.

Figure B-30 GDL 60 Remote Aircraft Status Interconnect
Sheet 3 of 3



NOTES

1 INTERFACE PERMITTED SOLELY FOR EMBRAER S.A. EMB-500 AND EMB-505 AIRCRAFT USING P/N 011-01457-00 GSD 41 IN G1000 GIFD FLIGHT DECKS. G1000 NXI SW IMAGE MUST BE AT P/N 006-B3643-07 OR PRIOR. G1000 LEGACY SW IMAGE MUST BE AT P/N 006-B0734-9A OR PRIOR.

2 REMOVE EXISTING IESI STANDBY INDICATOR, REPLACE WITH THE GI 275 UNIT IN ACCORDANCE WITH PROCEDURES IN SECTION 4. CONNECTIONS SHOWN ARE EXISTING. CAP AND STOW BOTH ENDS OF PRIOR CONNECTIONS TO THE IESI STANDBY INDICATOR THAT ARE NOT DEPICTED IN THIS FIGURE

3 REFER TO THE CONFIGURATION IN APPENDIX SECTION D.1.

4 GI 275 PFD SYNC MUST BE CONFIGURED PER SECTION 5.5.17. NO OTHER A429 DATA OUTPUT MAY BE CONFIGURED ON THIS PORT.

5 DO NOT CONFIGURE A429 DATA OUTPUT ON THIS PORT.

Figure B-31 GSD 41 Interconnect

APPENDIX C EQUIPMENT COMPATIBILITY AND CONFIGURATION

The equipment listed in this appendix is compatible with the GI 275 system when configured as described in the following sections. For GI 275 configuration information, refer to Section 5.5.

Table C-1 LRU Interface Summary

Interfaced LRU	Min. Software Needed	Primary Functions
G500/G600 (GDU 620)	v7.40	• Provides PFD bug sync • Crossfill of GFC 500 display data
G500/G600 TXi	v3.02 [1] [4]	• Provides air data and heading via crossfill
GDL 69/69A SXM	v5.51	• Weather data
GPS 175	v2.02	• ADS-B GPS position • GPS NAV source
GNX 375	v2.02	• ADS-B GPS position • Traffic and weather data • GPS NAV source
GNC 355	v3.01	• ADS-B GPS position • GPS NAV source
GTN 6XX/7XX	v6.70	• ADS-B GPS position • GPS/VHF NAV source
GTN Xi	v20.10 [4]	• ADS-B GPS position • GPS/VHF NAV source
GTS 8X5	v3.13	• ADS-B GPS position • TAS traffic source
GTS 8X0	v4.13	• ADS-B GPS position • TAS traffic source
GTX 33X	v2.52	• TIS-A traffic source
GTX 3X5	Main: v2.52 ADS-B: v3.12	• ADS-B GPS position • Serial altitude • ADS-B traffic source • Weather data (GTX 345 only) • Mode 3 transponder control (GTX 345 only) [2]
L-3 Communications SKY 497	v1.6	• TAS traffic source
GEA 24	v3.60	• EIS
GEA 24B	v2.10	• EIS
GEA 110	v2.10 [3]	• EIS
GMC 605	v2.31	• GFC 600 Autopilot
GMC 507	v2.90	• GFC 500 Autopilot
GSA 28	v4.70	

Notes:

[1] G500/G600 TXi software v3.11 or later requires GI 275 software v2.11 or later.

[2] GTX 345 Main v2.60 and ADS-B v3.21 software versions are required for Transponder Control functionality.

[3] GI 275 software v2.42 or later requires GEA 110 software v2.21 or later.

[4] GI 275 software v2.60 or later requires G500/G600 TXi software v3.50 or later and GTN Xi software v20.30 or later.

C.1 Electronic Standby Indicators

The electronic standby indicators listed in Table C-2 are compatible with the GI 275. For instrument requirements, refer to the following sections:

- Standby instruments Section 3.2.2
- Power distribution Section 3.2.1
- Pitot-static plumbing Section 4.2
- Location and mounting Section 4

Table C-2 Electronic Standby Indicator

Manufacturer	Model	Interfacing Equipment Configuration Information	Notes
Garmin	G5		[1] [2] [3]
	GI 275	Refer to Section 2.1.4 for limitations. Refer to Section 3.2.2 for installation and display requirements.	

Notes:

[1] Installation approval for this indicator is not provided by this STC and must be obtained separately. This STC only approves compatibility of the indicator as a standby instrument for the GI 275 system.

[2] Must be installed per the requirements in this manual and G5 AML STC SA0181WI.

[3] The G5 must have an internal battery installed if used as a standby to the GI 275.

C.2 ADC

The air data computers listed in Table C-3 are compatible with the GI 275.

Table C-3 Compatible Air Data Computers

Mfr	Model	Data Format	Interfacing Equipment Configuration Information		Notes
Garmin	Internal		If another ADC is configured, the internal ADC must be configured as ADC 2 and must be set as the default. Refer to Section 5.6.4.		Only available on GI 275 ADAHRS and ADAHRS+AP units.
	Other GI 275	HSDB			Crossfills data from a different GI 275 interfaced to an ADC.
	GSU 75	ARINC 429			
	GDC 72	ARINC 429			
	GDC 74	ARINC 429			
	G500/G600 TXi	HSDB	Interfaces page	Standby Instrument: GI 275	TXi software v3.02 or later is required for GI 275 software v2.05 or earlier. TXi software v3.10 or later is required for GI 275 software v2.10 or later.

C.3 AHRS

The attitude and heading reference systems listed in Table C-4 are compatible with the GI 275.

Table C-4 Compatible Attitude and Heading Reference Systems

Mfr	Model	Data Format	Interfacing Equipment Configuration Information		Notes
Garmin	Internal		If another AHRS is configured, the internal AHRS must be configured as AHRS 2 and must be set as the default. Refer to Section 5.6.4.		Only available on GI 275 ADAHRS and ADAHRS+AP units.
	Other GI 275	HSDB			Crossfills data from a different GI 275 interfaced to an AHRS.
	GSU 75	ARINC 429			
	GRS 77	ARINC 429			
	GRS 79	ARINC 429			
	G500/G600 TXi	HSDB	Interfaces page	Standby Instrument: GI 275	TXi software v3.02 or later is required for GI 275 software v2.05 or earlier. TXi software v3.10 or later is required for GI 275 software v2.10 or later.
	GAD 29	ARINC 429	ARINC 429 Configuration page	OUTPUT ( ): EFIS/AIRDATA 1 (SDI 1)	The GI 275 can receive magnetometer data from a G5. Refer to Section 5.5.4 for configuration information.

C.4 GPS Source

The GPS position sources listed in Table C-5 are compatible with the GI 275.

Table C-5 Compatible GPS Position Source

Mfr	Model	Data Format	Interfacing Equipment Configuration Information		Notes
Garmin	Other GI 275	HSDB			Crossfills data from a different GI 275 interfaced to a GPS source.
	Internal VFR GPS		Interfaces page	VFR GPS: Internal	Internal VFR GPS must install antenna per Section 4.6.3. [1]
	GNS 4XXW GNS 5XXW	ARINC 429 RS-232	Main ARINC 429 Config page	IN 1: Low, Garmin GDU OUT: High, GAMA 429 SDI: LNAV 1 (for GPS 1) LNAV 2 (for GPS 2) VNAV: Enable Labels	If a GNS 500W TAWS unit is installed, it must be connected as GPS 1. Main CDI/OBS Config page is only available on GNS 430W/430AW and GNS 530W/530AW. Main software v3.30 or later is required.
			Main RS-232 Config page	CHNL 1: INPUT: Off OUTPUT: MapMX	
			Main CDI/OBS Config page	Menu key > Ignore CDI Key? > Yes	
	GNS 480	ARINC 429 RS-232	Serial Setup page	CH 1: RX: MapMX TX: MapMX	GNS 480 can only be connected to RS-232 ports 1 or 2 on the GI 275.
			ARINC 429 Setup page	CH 2 IN: SEL: Garmin GDU SPEED: Low SDI: Sys 1 (for GPS 1) Sys 2 (for GPS 2) CH 1 OUT: SEL: GAMA 429	
			Miscellaneous Setup page	CDI SELECT: IGNORE	
	GTN 6XX GTN 7XX	HSDB	Interfaced Equipment page	Set GDU to Present. Set the format to GI 275 for each installed GI 275.	Software v6.70 or later required. For GI 275 software v2.60 or later, Database Sync is only supported with GTN 6XX/7XX software v6.73 or later.
			Main Indicator (Analog) Configuration page	CDI Key: Disabled or Enabled [2]	
	GTN Xi	HSDB	Interfaced Equipment page	Set GDU to Present. Set the format to GI 275 for each installed GI 275.	Software v20.10 or later required.
			Main Indicator (Analog) Configuration page	CDI Key: Disabled or Enabled [2]	

Mfr	Model	Data Format	Interfacing Equipment Configuration Information			Notes
Garmin	GTX 3X5	RS-232	RS-232 Interface	page	ADS-B + FORMAT2	Main SW v2.52 or later required. ADS-B SW v3.12 or later required. [1]
	GPS 175	HSDB	Interfaced Equipment	page	Set GI 275 to Present.	Software v2.02 or later required.
	GNX 375	HSDB	Interfaced Equipment	page	Set GI 275 to Present.	Software v2.02 or later required.
	GNC 355	HSDB	Interfaced Equipment	page	Set GI 275 to Present.	Software v3.01 or later required.

Notes:

[1] Does not provide precision GPS approach guidance.

[2] Enabling the CDI Key on a GTN Xi requires GI 275 software v3.00 or later.

C.5 VHF Navigation Receiver

The VHF navigation receivers listed in Table C-6 are compatible with the GI 275. For a list of analog navigation receivers compatible with the GI 275, refer to Appendix Section C.6.

Table C-6 Compatible VHF Navigation Receiver

Mfr	Model	Data Format	Interfacing Equipment Configuration Information		Notes
Garmin	Other GI 275	HSDB			Crossfills data from a different GI 275 interfaced to a NAV source.
	GNC 255	RS-232	Serial Port page	IO MODE: NMEA	Can be NAV 1, NAV 2, or both. [1]
			CDI Indicator page	When GI 275 NAV CDI is desired to be driven by a “standard CDI” connected to the GNC 255, set TYPE: RESOLVER. When GI 275 NAV CDI is desired to be set via the GI 275 interface, set TYPE: SERIAL. When GI 275 NAV CDI is desired to be set via the GI 275 interface and/or the GNC 255 display, set TYPE: NONE.	
	GNC 215	HSDB	HSDB page	GI 275: Present	Can be NAV 1, NAV 2, or both. Software v2.11 or later required. [2]
		ARINC 429	ARINC 429 page	SPEED: Low SDI Selection: Use Unit ID	
		RS-232	RS-232 page	Format: NMEA 1	
	GNS 430W/430AW GNS 530W/530AW	ARINC 429	VOR/LOC/GS ARINC 429 Config page	SPEED: TX: Low SDI: VOR/ILS 1 (for NAV 1) VOR/ILS 2 (for NAV 2)	Can be NAV 1, NAV 2, or both.
	GNS 480 (CNX80)	ARINC 429	ARINC 429 Setup page	CH OUT 2: SEL: VOR/ILS SPEED: Low SDI: Sys 1 (for NAV 1) Sys 2 (for NAV 2)	Can be NAV 1, NAV 2, or both.
	GTN 650 GTN 750	HSDB	HSDB Port Utilization page	Ethernet Port ( ): Connected	Software v6.70 or later required. Can be NAV 1, NAV 2, or both.

Mfr	Model	Data Format	Interfacing Equipment Configuration Information		Notes
Garmin	GTN 650Xi GTN 750Xi	HSDB	HSDB Port Utilization page	Ethernet Port ( ): Connected	Software v20.10 or later required. Can be NAV 1, NAV 2, or both.
	SL30	RS-232	With no external CDI connected to SL30, set INDICATOR HEAD TYPE: SERIAL. With external “standard CDI” connected to SL30, set INDICATOR HEAD TYPE: RESOLVER. With external “composite CDI” connected to SL30, set INDICATOR HEAD TYPE: SERIAL.		Software v1.3 or later is required. Can be NAV 1, NAV 2, or both.

Notes:

[1] For GI 275 software v3.10 and later, if the GI 275 is interfaced with a GDU 620 and GFC 500 per Appendix Section C.16, set the GNC 255 type to NONE.

[2] Configure GNC 215 for HSDB, ARINC 429, or RS-232 to match wiring.

C.6 Analog Navigation Receiver

Interface to analog navigation receivers not listed in Table C-7 can still be approved under the GI 275 if all of the following conditions are met:

- The navigation receiver is approved to TSO C36( ) (Localizer), TSO C40( ) (VOR), and optionally TSO C34( ) (Glideslope) if the glideslope is used.
- If the glideslope is being used, the navigation receiver has a glideslope low-level flag output.
- The installation of the navigation receiver was previously FAA-approved.
- The calibration procedure for the analog navigation receiver described in Section 5.8.3 and the ground check in Section 6.3.2.2 have successfully co

NOTE

The GI 275 is an EZ zeroed resolver at 0 degrees.

Table C-7 Compatible Analog Navigation Receiver

Mfr	Model	Data Format	Interfacing Equipment Configuration Information	Notes
Collins	VIR-32/33	Composite Analog		Can be NAV 1, NAV 2, or both.
	GNS 4XX/5XX GNS 4XXW/5XXW	Composite Analog		Can be NAV 1, NAV 2, or both. This interface only supports NAV, not GPS. It is recommended to connect and configure per Table C-6.
Garmin	GTN 6XX/7XX	Composite Analog		
	GTN Xi	Composite Analog		
	KX 155/155A/165/165A	Composite Analog		
Honeywell (Bendix/King)	KN 53	Composite Analog		Can be NAV 1, NAV 2, or both.
	KX 170B/175B	Composite Analog		

C.7 Radar Altimeter

The radar altimeter transceivers listed in Table C-8 are compatible with the GI 275.

Table C-8 Compatible Radar Altimeter

Mfr	Model	Data Format	Interfacing Equipment Configuration Information	Notes
Collins	RAC-870	ARINC 429		This is an analog to digital converter specifically for use with the ALT-55B rad-alt.
FreeFlight	RA-4500	ARINC 429		
Garmin	Other GI 275	HSDB		Crossfills data from a different GI 275 interfaced to a radar altimeter.
	GRA 55/5500	ARINC 429		
Honeywell (Bendix/King)	KRA 405B	ARINC 429		

C.8 Autopilot

The autopilots listed in Table C-9 are compatible with the GI 275. Refer to Table 3-21 for a list of functions available for each model of autopilot.

NOTE
Refer to the GFC 500 installation manual for GI 275 to GFC 500 interface and configuration data.

NOTE
This section includes compatibility with the basic autopilot computer, but does not include compatibility with the flight director interface to the autopilot computer. For compatibility with the autopilot computer flight director outputs, refer to Appendix Section C.9.

Table C-9 Compatible Autopilot

Mfr	Model	Data Format	Interfacing Equipment Configuration Information	Notes
Bendix	M-4C/M-4D	Analog	Any variant of the 5536E/F Computer-Amplifier.	Attitude-based autopilot. [2] [6]
Century	2000	Analog		Attitude-based autopilot. [2]
	21 / 31 / 41	Analog		Attitude-based autopilot. [2] [8]
	II / IIB / III	Analog		Attitude-based autopilot. [2] [15] [16] [17]
	IV	Analog		Attitude-based autopilot. [2]
Cessna	400 B	Analog		Attitude-based autopilot. [2]
	300 IFCS / 400 IFCS / 800 IFCS	Analog	For 400 IFCS, the mode control panel must be adjusted NOT to attenuate the heading or course error signal.	Attitude-based autopilot. [2] [11]
	300B IFCS / 400B IFCS / 800B IFCS	Analog	G519( ) attitude gyro may replace G550A or G1050A ADI to provide attitude information to the autopilot system.	Attitude-based autopilot. [2] [11]
	1000 IFCS	Analog		Attitude-based autopilot. [2] [11] [12]
Collins	AP-106 / 107	Analog		Attitude-based autopilot. [2]
Garmin	GFC 500	CAN Bus		Attitude-based autopilot. [13] [18]
	GFC 600	HSDB		Attitude-based autopilot. [13] [14] [19]

Mfr	Model	Data Format	Interfacing Equipment Configuration Information	Notes
Honeywell (Bendix/King)	KAP 100 / 150 / 200 KFC 150 / 200 / 250	Analog		Attitude-based autopilot. [1] [2] [3]
	KAP 140	Analog		Rate-based autopilot. [2] [9]
	KFC 225	Analog ARINC 429 GPSS		Attitude-based autopilot. [2] [3] [9] [10]
	KFC 300	Analog		Attitude-based autopilot. Only KFC 300 autopilots without VNAV functionality are supported. [2] [3] [4] [7]
S-TEC	20/30/40/50/60-1/60-2/65	Analog Discrete	Must be configured to operate with either the NSD-360 or KI-525 (KCS-55) heading system.	Rate-based autopilot. [2]
	60 PSS	Analog		Pitch axis only autopilot. [2]
	55 / 55X	Analog Discrete ARINC 429 GPSS	Must be configured to operate with either the NSD-360 or KI-525 (KCS-55) heading system.	Rate-based autopilot. [2]
Sperry	SPZ-200A/500	Analog		Attitude-based autopilot. [2] [5]

Notes:

[1] For KAP 150/KFC 150, EFIS-enabled KC-19X computer (P/N 065-0042-16) is not supported.

[2] The heading error and course error signal characteristics are determined by the autopilot that is selected in the Interfaces settings.

[3] An attitude source must be provided to the autopilot in order for it to function properly. The KVG 350 gyro or the KI 255/256 ADI may be retained, or the KG 258 ADI may replace the KI 256 ADI to provide attitude information to the autopilot system. Optionally, the GI 275 may be used instead of the KI 255/256/KG 258 ADI or the KVG 350 gyro to provide attitude information to the autopilot system.

[4] For the KFC 300 autopilot, a synchro heading input is required. The existing KCS 305 compass system (KSG 105 slaved directional gyro) may be retained to provide heading information to the autopilot system.

[5] The original attitude and heading system must remain in the aircraft to provide attitude and heading inputs to the autopilot. The original Altitude Alert Controller must be retained.

[6] The autopilot computer must be configured for a Collins PN-101 (FD-112C/V) HSI. If the autopilot had another HSI prior to the installation of the GI 275 system, changes to the GDU emulation setting may be required (the installation that was evaluated was an M-4D that had a Collins FD-112 HSI/ADI in the original configuration).

[7] 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.

[8] For the Century 31/41, ensure any jumpers at CD185 pins 8, 9, and 17 are removed to configure computer for an NSD 360A.

[9] For the KAP 140 and KFC 225, the GPS SELECT discrete configuration setting on the GNS 400W/500W must be set to Prompt in accordance with GNS 400W/500W Series Installation Manual, GTN 6XX/7XX Part 23 AML STC Installation Manual, or GTN Xi Part 23 AML STC Installation Manual.

[10] The KFC 225 must be configured for DC analog heading and A429 GPS steering.

[11] For Cessna autopilots with NAV 1/NAV 2 source switching on the autopilot mode controller, the NAV 1/NAV 2 source identification (lighted switch caption) on the mode controller must be obliterated (i.e., hidden from view). All NAV source switching is accomplished on the GI 275.

[12] The CA-1050A autopilot computer must be configured for a Century NSD-360 HSI or equivalent (DC Heading and Course Error signals). The GI 275 can emulate AC Heading and Course Error (Datum) signals; however, this has currently not been evaluated as part of this STC. Installers are encouraged to utilize the NSD-360 DC setting to avoid the burden of additional installation approval efforts.

[13] Garmin autopilots can interface to a GI 275 ADAHRS unit (i.e., a GI 275 ADAHRS+AP unit is not required).

[14] If a GI 275 is installed with and interfaced to a GFC 600, then a third party HSI cannot provide the heading and course error data to the GFC 600.

[15] If the GI 275 is used to provide attitude to the Century II/IIB/III autopilot, the GI 275 hardware must be MOD 1 or later.

[16] Two GI 275 ADAHRS+AP units are required for aircraft equipped with a 1C388-2 or 1C388-3 Radio Coupler when the GI 275 installation is replacing both the ADI and HSI functions.

[17] The Century II/IIB autopilot is equivalent to the Piper AutoControl III and IIIB autopilots, with the exception of a combined console amplifier used for the AutoControl IIIB. The Century III autopilot is equivalent to the Piper Altimatic III, IIIB, and IIIC autopilots.

[18] For interface approval with the GFC 500, refer to GFC 500 STC SA01866WI.

[19] If the GI 275 is interfaced to a G500/G600 TXi and a GFC 600, the GI 275 must have the GFC 600 configured to Off in some airframes that support Stall Warning modes. Refer to GFC 600 STC SA01844WI for airframe-specific information.

C.9 External Flight Director

The flight directors listed in Table C-10 are compatible with the GI 275.

Table C-10 Compatible External Flight Director

Mfr	Model	Data Format	Interfacing Equipment Configuration Information	Notes
Bendix	M-4D	Analog	5536F computer must have 4007463-0501 Flight Director Board (for Collins 329B7-R, FD-108, and FD112C/V indicators).	
Century	IV	Analog	Autopilot computer must be previously compatible with the single cue 52C77( ) series indicator.	
	41	Analog		
	2000	Analog		
Cessna	300B IFCS/ 400B IFCS/ 800B IFCS	Analog		
	1000 IFCS	Analog		
Collins	AP-106/107	Analog	OUT OF VIEW+ signal from autopilot must be inverted to be Active-High for correct operation with the GI 275.	
Garmin	GFC 600	HSDB		
Honeywell (Bendix/King)	KFC 150/KFC 200/ KFC 225	Analog	For KFC 150, EFIS-enabled KC-19X computer (P/N 065-0042-16) is not supported.	
	KFC 250	Analog		
	KFC 300	Analog		
S-TEC	55/55X	Analog	ST-645 Remote Annunciator panel must be installed (or retained) if the flight director is displayed on GI 275. This will provide the required mode annunciations. Only flight director pitch/roll outputs directly from 55X computer can be used for display on GI 275 (FD pitch/roll outputs from the remote annunciator panel cannot be used). If FD Logic output from 55X P2-4 is connected to P1-20 input on ST-645, it must be disconnected.	
	60-2/65 (with ST-670)	Analog	ST-670 Single Cue FD Interface Unit for King KI 256 (P/N 01180) must be installed or retained to display flight director information on the GI 275.	
Sperry	SPZ-200A/500	Analog		[1]

Notes:

[1] FZ-500 flight director computer must be strapped for low gain pitch/roll steering and pitch/roll bias out of view inputs must be connected.

C.10 EIS

The engine adapters listed in Table C-11 are compatible with the GI 275.

Table C-11 Compatible Engine Adapters

Mfr	Model	Data Format	Interfacing Equipment Configuration Information	Notes
Garmin	GEA 110	RS-485		GI 275 software v2.42 or later requires GEA 110 software v2.21 or later. [1]
	GEA 24(B)	RS-232		[1]
	Other GI 275	HSDB	For twin-engine aircraft, configure EIS 2 as Other GI 275.	Crossfills data from a different GI 275 interfaced to a GEA 24(B)/110. [1]

Notes:

[1] An external annunciator(s) is required to be configured if the GI 275 EIS is installed outside of 35° of the centerline and is installed as a Primary EIS display. Refer to Section 4.4.4.

C.11 Transponder Control

The transponders listed in Table C-12 are compatible with the GI 275 for remote transponder control.

Table C-12 Compatible Transponders

Mfr	Model	Data Format	Interfacing Equipment Configuration Information		Notes
Garmin	GTX 345 GTX 345R GTX 345D GTX 345DR	HSDB	HSDB Interface page	HSDB INTERFACE: SFD PRESENT: YES	Main software v2.60 or later required. ADS-B software v3.21 or later required.

C.12 Serial Altitude (RS-232)

The GI 275 can provide RS-232 serial altitude, Shadin altitude format, 9600 baud, to the systems listed in Table C-13.

Table C-13 RS-232 Serial Altitude

Mfr	Model	Data Format	Interfacing Equipment Configuration Information		Notes
Garmin	GTX 3XX	RS-232	RS-232 Input and Output page	Set the RS-232 input that is used to provide altitude to the transponder to “SHADIN ALT”.	

C.13 Traffic Source

The traffic sources listed in Table C-14 are compatible with the GI 275.

Table C-14 Compatible Traffic Source

Mfr	Model	Data Format	Interfacing Equipment Configuration Information		Notes
Avidyne (Ryan)	TAS 6XX / TCAD	ARINC 429			TAS
	Other GI 275	HSDB			Crossfills data from a different GI 275 interfaced to a traffic source.
	GTS 800/820/825/ 850/855 (GTS 8XX)	HSDB			TCAS I, ADS-B [5]
		ARINC 429	The GTS 8XX can receive heading and altitude from the display or directly from the AHRS and ADC.		TAS/TCAS I This interface only displays TAS/TCAS targets. [5]
Garmin	GTX 33X	ARINC 429	GTX 33/330 ARINC 429 Output page	CHANNEL 2: GARMIN W/TIS	TIS-A GTX 3X5 Main software v2.52 or later required. The display can control the TIS state; however, it does not provide control of the GTX 33. [1]
			GTX 33/330 ARINC 429 Input page	If GTX 33/330 will receive ARINC 429 data from the GI 275: SEL: EFIS w/ALT SPEED: LOW	
			GTX 335 A429 Output page	A429 OUTPUT: FORMAT 8	
	GTX 345	HSDB	HSDB Interface page	HSDB INTERFACE: SFD PRESENT: YES	ADS-B/TIS-B Main software v2.52 or later required. ADS-B software v3.12 or later required. The GTX 345 can provide TAS/TCAS. [3] [4]
	GNX 375	HSDB			ADS-B Software v2.02 or later required. [3] [4]

Mfr	Model	Data Format	Interfacing Equipment Configuration Information	Notes
Honeywell (Bendix/King)	KTA870 / KMH820	ARINC 429	Intruder File Protocol: ARINC 735 Controller Type: Discrete	TAS [2]
	KTA970 / KMH920	ARINC 429	Intruder File Protocol: ARINC 735 Controller Type: Discrete	TCAS I [2]
L-3 Communications (Goodrich)	SKY497	ARINC 429	For SKY 497, ARINC 735 Alternate Display type must be set to "ARINC735 Type 1" (P1-80 must be grounded).	TAS SKY 497 software v1.6 or later required.
	SKY899	ARINC 429		TAS/TCAS I

Notes:

[1] The GI 275 provides altitude as part of the data transmitted to the GTX 33( )/330( ); however, it is recommended that a direct connection from the ADC also be provided so that the GTX 33( )/330( ) will still receive altitude in the event of a GI 275 failure.

[2] Controller type is only required if GI 275 is used to control the traffic system.

[3] Only one ADS-B In source can be configured at a time.

[4] This interface will provide FIS-B weather as well as SXM weather if a GDL 69/69A SXM is also installed.

[5] If the GTS is connected via HSDB, the ARINC 429 interface is not required.

C.14 Weather Source

The weather transceivers listed in Table C-15 are compatible with the GI 275.

Table C-15 Compatible Weather Radar Sources

Mfr	Model	Data Format	Interfacing Equipment Configuration Information	Notes
Garmin	GDL 69A SXM	HSDB	Ethernet port that is connected to GI 275 must be enabled.	The GI 275 cannot control the GDL 69. A controlling unit (e.g., GDU 700/1060 or GTN 6XX/7XX) must be present in the system for the GI 275 to display GDL 69 data. GDL 69/69A SXM requires minimum software v5.51. [2]
	GTX 345	HSDB	Refer to the GTX 345 configuration information in Table C-14.	[1]
	GNX 375	HSDB	Refer to the GNX 375 configuration information in Table C-14.	[1]

Notes:

[1] Configuring the Traffic Type to ADS-B on the GI 275 automatically enables weather information.

[2] Only the second generation GDL 69/69A SXM models are compatible with the GI 275.

C.15 Lightning/Electrical Discharge Source

The lightning/electrical discharge system listed in Table C-16 is compatible with the GI 275.

Table C-16 Compatible Lightning/Electrical Discharge Source

Mfr	Model	Data Format	Interfacing Equipment Configuration Information	Notes
L-3 Communications	WX-500	RS-232		The GI 275 cannot control the WX-500 Stormscope. A controlling unit (e.g., GDU 620, GDU 700/1060, GTN 6XX/7XX) must be present in the system for the GI 275 to display Stormscope data.
Garmin	Other GI 275	HSDB		Crossfills data from a different GI 275 interfaced to a Stormscope.

C.16 GFC 500 PFD Sync

Table C-17 Compatible GFC 500 PFD Sync Interfaces

Mfr	Model	Data Format	Interfacing Equipment Configuration Information		Notes
Garmin	GDU 620	ARINC 429	Autopilot Configuration page	Present: GFC 500	GDU 620 software v7.40 or later is required.
			Flight Director page	Present: ARINC 429	If SVT is configured, set SVT FD Display to ENABLED and set SVT FD SCALING to 0.76. [1]
			ARINC Port Configuration page	ARINC 429 In 4-8: GFC 500 (low speed) ARINC 429 Out 2: GFC 500 (low speed) ARINC 429 Out 3-4: GFC 500 NAV (low speed)	

Notes:

[1] SVT must be either Enabled or Disabled similarly on each display to prevent Flight Director pitch scaling differences.

C.17 External TAWS

The External TAWS sources listed in Table C-18 are compatible with the GI 275. Refer to Section 3.3.10 for additional details regarding the external TAWS and configuration.

Table C-18 Compatible External TAWS Sources

Mfr	Model	Data Format	Interfacing Equipment Configuration Information		Notes
Garmin	GTN 6XX/7XX	HSDB	HSDB Port Configuration page	Ethernet Port ( ): Connected	Software v6.70 or later required.
			Terrain Configuration page	Enable Terrain Alerting	
	GTN Xi	HSDB	HSDB Port Configuration page	Ethernet Port ( ): Connected	Software v20.10 or later required.
			Terrain Configuration page	Enable Terrain Alerting	
	GNS 400W/500W	RS-232	Main RS-232 Config page	Out: MapMX	
			Main System Config page	Configure: Terrain Terrain Type: TAWS	

C.18 Audio Panel

Interfacing the GI 275 to an audio panel is recommended but not required unless TAWS B and/or SVT is enabled, or in some installations with a GCO 14 (re
Section 3.3.7 for details).

The audio panels listed in Table C-19 are compatible with the GI 275. However, audio panels not listed below can still be approved under the GI 275 AML S
all of the following conditions are met:

- The installation of the audio panel was previously FAA-approved.
- The GI 275 audio must be verified as described in Section 5.6.5.

For installations using SVT, the audio panel must have an unswitched audio input that is used for the GI 275 audio.

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

Table C-19 Compatible Audio Panels

Mfr	Model	Data Format	Interfacing Equipment Configuration Information	Notes
Garmin	GMA 340 GMA 342 GMA 345 GMA 347 GMA 35(c) GMA 350(c) SL 15 SL 15M	Analog	GMA 35(c) requires a control panel, such as a GTN 7XX.	
Honeywell (Bendix/King)	KMA 24 KMA 26 KMA 28 KMA 30	Analog		
PS Engineering	PMA 6000 PMA 7000 Series PMA 8000 Series PAR 200	Analog		

C.19 EIS Sensors

GI 275 EIS gauges display data from the GEA 24(B)/110 when approved sensors are configured in accordance with Table C-20. EIS sensors that are autho
"Interface only" require a separate installation approval.

Table C-20 EIS Sensor Compatibility

Function	Mfr	Garmin P/N	Description	Sensor Configuration	Authorization
RPM	N/A	N/A	P-lead (w/resistors) [6]	Mag P-Lead (v1/v2) or Dual Mag P-Lead (v1/v2) or Geared 0.642:1 P-Lead (v1/v2) or Geared 0.667:1 P-Lead (v1/v2/v3) or Geared 0.750:1 P-Lead (v1/v2) or Geared 16:25 P-Lead (v1/v2) or Geared 77:120 P-Lead (v1/v2) [3]	Interface and installation
	UMA	N/A	T1A9-1	UMA T1A9-1 Slick (v1)	Interface only
	UMA	N/A	T1A9-2	UMA T1A9-2 Bendix (v1)	
	UMA	N/A	T[ ]A3-4C-[ ]	UMA Ratio 0.5:1 TXA3-4 (v1)	
	Electroair	N/A	Electronic Ignition System	Electroair EIS-41000 (v2) [4]	
	Electroair	N/A	Electronic Ignition System	Electroair EIS-61000 (v2) [4]	
	Surefly	N/A	Surefly Tach2	Mag P-Lead (v1/v2)	
Manifold Press [10]	Garmin	011-04202-00	Garmin 30 PSIA (Brass)	Garmin 011-04202-00 (v1) or Garmin 011-04202-00 Hi (v2) [7]	Interface and installation
	Garmin	011-05783-00	GPT 30PSIA (SS)	Garmin 011-05783-00 (v2)	
	Kulite	494-30030-00	APT-20GX-1000-25A (Mil-Spec Style)	Kulite 20GX-1000-25A (v1) [1] [4] or Garmin 494-30030-00 (v1) [1] [4]	
	UMA	N/A	T1EU50A (Absolute)	UMA T1EU50A (v1)	Interface only
	UMA	N/A	T1EU50A-CS (Absolute)	UMA T1EU50A (v1)	
	UMA	N/A	UMA T1EUMA050A-( )( )	UMA T1EU50A (v1)	
	JPI	N/A	159934 30PSIA (Brass)	JPI 159934 (v1)	
	Kavlico	N/A	P155-50A-E4B 50PSIA (Brass)	Kavlico P155-50A-E4B (v1) or Kavlico P155-50A-E4B Hi (v1) [7]	

Function	Mfr	Garmin P/N	Description	Sensor Configuration	Authorization
Oil Press	Garmin	011-04202-30	150 PSIG (Brass)	Garmin 011-04202-30 (v1)	Interface and installation
	Garmin	011-05783-30	GPT 150PSIG (SS)	Garmin 011-05783-30 (v1)	
	Kulite	494-30032-00	APT-20GX-1000-150G (Mil-Spec Style)	APT-20GX-1000-150G (v1) [4] or Garmin 494-30032-00 (v1) [4]	
	Beech	N/A	102-389017-1	Beech 102-389017 (v1) [1]	Interface only
	Beech	N/A	102-389017-3	Beech 102-389017 (v1) [1]	
	UMA	N/A	T1EU150G (Gauge)	UMA T1EU150G (v1)	
	UMA	N/A	T1EU150G-CS (Gauge)	UMA T1EU150G (v1)	
	JPI	N/A	159936 150PSIG (Brass)	JPI 159936 (v1)	
Oil Temp	UMA	494-70009-00	T3B3-2.5G (K Type)	UMA T3B3 (v1)	Interface and installation
	UMA	N/A	T3B3	UMA T3B3 (v1)	Interface only
	UMA	N/A	T3B3A	UMA T3B3 (v1)	
	UMA	N/A	T3B3-2.5	UMA T3B3 (v1)	
	Mil-Spec	N/A	MS28034	MilSpec MS28034 (v1)	
	Varies	N/A	K Type	NIST ITS-90 K Type (v1)	
CHT	Alcor	494-70008-00	Alcor 86252 (K Type)	Alcor 86252 (v1) or Garmin 494-70008-00 (v1)	Interface only
	Varies	N/A	K Type	NIST ITS-90 K Type (v1) [11]	
	Varies	N/A	J Type	NIST ITS-90 J Type (v1) [11]	
EGT	Alcor	494-70001-00	Alcor 86255 (K Type)	Alcor 86255 (v1) or Garmin 494-70001-00 (v1)	Interface only
	Varies	N/A	K Type	NIST ITS-90 K Type (v1)	
Primary EGT	Alcor	494-70001-00	86255 (K Type)	Alcor 86255 [1] (v1) or Garmin 494-70001-00 (v1) [1]	Interface only
	Varies	N/A	K Type	NIST ITS-90 K Type (v1) [1]	
TIT & TIT 2	Alcor	494-70002-00	Alcor 86245 (K Type)	Alcor 86245 (v1) [1] or Garmin 494-70002-00 (v1) [1]	Interface only
	Varies	N/A	K Type	NIST ITS-90 K Type (v1) [1]	
Carb Temp	UMA	494-70010-00	T3B10-SG (K Type)	UMA T3B10-SG (v1) [1] or Garmin 494-70010-00 (v1) [1]	Interface and installation
	Mil-Spec	N/A	MS28034	Mil-Spec MS28034 (v1)	Interface only
	Varies	N/A	K Type	NIST ITS-90 K Type (v1)	

Function	Mfr	Garmin P/N	Description	Sensor Configuration	Authorization
Fuel Press	Garmin	011-04202-20	75 PSIG (Brass)	Garmin 011-04202-20 (v1) or Garmin 011-04202-20 Hi (v2) [7]	Interface and installation
	Garmin	011-04202-10	15 PSIG (Brass)	Garmin 011-04202-10 (v1) or Garmin 011-04202-10 Hi (v2) [7]	
	Garmin	011-05783-10	GPT 15PSIG (SS)	Garmin 011-05783-10 (v1)	
	Garmin	011-05783-20	GPT 75PSIG (SS)	Garmin 011-05783-20 (v1)	
	Kulite	494-30031-00	APT-20GX-1000-50G (Mil-Spec Style)	Kulite 20GX-1000-50G (v1) [1] [4] or Garmin 494-30031-00 (v1) [1] [4]	
	Kulite	494-30029-00	APT-20GX-1000-15G (Mil-Spec Style)	Kulite 20GX-1000-15G (v1) [1] [4] or Garmin 494-30029-00 (v1) [1] [4]	
	UMA	N/A	T1EU70G (Gauge)	UMA T1EU70G (v1)	Interface only
	UMA	N/A	T1EU70G-CS (Gauge)	UMA T1EU70G (v1)	
	UMA	N/A	T1EU35G (Gauge)	UMA T1EU35G (v1)	
	UMA	N/A	T1EU35G-CS (Gauge)	UMA T1EU35G (v1)	
	UMA	N/A	T1EU70D (Differential)	UMA T1EU70D (v1)	
	UMA	N/A	T1EU70D-CS (Differential)	UMA T1EU70D (v1)	
	UMA	N/A	T1EU100D (Differential)	UMA T1EU100D (v1)	
	UMA	N/A	T1EU100D-CS (Differential)	UMA T1EU100D (v1)	
	UMA	N/A	T1EU35D (Differential)	UMA T1EU35D (v1)	
	UMA	N/A	T1EU35D-CS (Differential)	UMA T1EU35D (v1)	
	JPI	N/A	159935 50PSIG (Brass)	JPI 159935 (v1)	

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 (v1) or Garmin 494-10001-00 Hi (v1) [2] EI FT-60 Low (v1) or Garmin 494-10001-00 Low (v1) [2]	Interface and installation
	Electronics Intl	494-10001-01	EI FT-90	EI FT-90 Hi (v1) or Garmin 494-10001-01 Hi (v1) [2] EI FT-90 Low (v1) or Garmin 494-10001-01 Low (v1) [2]	
	Beech	N/A	102-389012-11	Beech 102-389012-11 Low (v1) or Beech 102-389012-11 Hi (v1) [2] [8]	Interface only
	Floscan	N/A	201 B-6	Floscan 201 B-6 Low (v1) or Floscan 201B-6 Hi (v1) [2] [9]	
	Floscan	N/A	231	Floscan 231 Low (v1) or Floscan 231 Hi (v1) [2]	
	JPI	N/A	700900-1 (201)	Floscan 201 B-6 Low (v1) or Floscan 201B-6 Hi (v1) [2]	
	JPI	N/A	700900-2 (231)	Floscan 231 Low (v1) or Floscan 231 Hi (v1) [2]	
Shunt - Alternator Load & Battery Charge/ Discharge	Varies	N/A	30Amps 50mV	30Amps 50mV (v1)	Interface only
	Varies	N/A	50Amps 50mV	50Amps 50mV (v1)	
	Varies	N/A	50Amps 100mV	50Amps 100mV (v1)	
	Varies	N/A	60Amps 50mV	60Amps 50mV (v1)	
	Varies	N/A	60Amps 100mV	60Amps 100mV (v1)	
	Varies	N/A	75Amps 50mV	75Amps 50mV (v1)	
	Varies	N/A	75Amps 100mV	75Amps 100mV (v1)	
	Varies	N/A	80Amps 50mV	80Amps 50mV (v1)	
	Varies	N/A	85Amps 50mV	85Amps 50mV (v1)	
	Varies	N/A	100Amps 50mV	100Amps 50mV (v1)	
	Varies	N/A	100Amps 100mV	100Amps 100mV (v1)	
	Varies	N/A	120Amps 50mV	120Amps 50mV (v1)	
	Varies	N/A	125Amps 50mV	125Amps 50mV (v1)	
	Varies	N/A	150Amps 50mV	150Amps 50mV (v1)	
Bus Volts	Varies	N/A	Aircraft Bus (80V Max)	Bus Max 80 Volts DC (v1)	Interface only
Batt Volts	Varies	N/A	Aircraft Battery (80V Max)	Batt Max 80 Volts DC (v1)	Interface only

Function	Mfr	Garmin P/N	Description	Sensor Configuration	Authorization
Fuel Quantity (Main & Aux) [5]	Resistive Floats (GEA 110/ GEA 24B Only)	N/A	Left/Single Tank	0-620Ohm Left Main (v1) or 0-620Ohm Single Main (v1)	Interface only
	Resistive Floats (GEA 24(B))	N/A		0-5 Volt Left Main (v1) or 0-5 Volt Single Main (v1)	
	CiES CC284022-XXXX-XXX	N/A		Digital (v1) or 0-5Volt (v1)	
	Resistive Floats (GEA 110/ GEA 24B Only)	N/A	Right Tank	0-620Ohm Right Main (v1)	
	Resistive Floats (GEA 24(B))	N/A		0-5 Volt Right Main (v1)	
	CiES CC284022-XXXX-XXX	N/A		Digital (v1) or 0-5Volt (v1)	
	Resistive Floats (GEA 110/ GEA 24B Only)	N/A	AUX Left/Single Tank	0-620Ohm Left Aux (v1) or 0-620Ohm Single Aux (v1)	
	Resistive Floats (GEA 24(B))	N/A		0-5 Volt Left Aux (v1) or 0-5 Volt Single Aux (v1)	
	CiES CC284022-XXXX-XXX	N/A		Digital (v1) or 0-5Volt (v1)	
	Resistive Floats (GEA 110/ GEA 24B Only)	N/A	AUX Right Tank	0-620Ohm Right Aux (v1)	
	Resistive Floats (GEA 24(B))	N/A		0-5 Volt Right AUX (v1)	
	CiES CC284022-XXXX-XXX	N/A		Digital (v1) or 0-5Volt (v1)	
CDT	Varies	N/A	K Type	NIST ITS-90 K Type (v1) [1]	Interface only
IAT	Varies	N/A	K Type	NIST ITS-90 K Type (v1) [1]	Interface only
	Varies	N/A	J Type	NIST ITS-90 J Type (v1) [1]	
OAT	Garmin	011-00978-00	GTP 59	Garmin GTP 59 (v1) [1]	Interface and installation

Notes:

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

[2] Refer to Section 5.7.2 for fuel flow gauge smoothing filter and K-factor selection.

[3] Refer to Section 5.7.2 for P-lead magneto type and propeller-to-engine gear ratio selection.

[4] Available for GEA 110 only.

[5] Resistive fuel probes interfaced to a GEA 24 or a GEA 24B that is wired with parallel resistors must have the sensor configuration set to 0-5 Volt. Resistive fuel probes interfaced to a GEA 110 or a GEA 24B that is wired without parallel resistors must have the sensor configuration set to 0-620 Ohm.

[6] GI 275 software v2.42 or later must interface with GEA 110 software v2.21 and use P-Lead version 2 or 3 sensor configurations.

[7] For pressure sensors, the “Hi” configuration provides additional signal filtering to provide a smoother gauge indication. Select “Hi” filter configurations if the EIS gauges exhibit excessive jitter/noisiness. If manifold pressure jitter persists, refer to note 10 below.

[8] The Beech 102-389012-11 configurations are compatible with Shadin 680501 fuel flow sensor interfaces.

[9] The Floscan 201 B-6 configurations are compatible with Shadin 680501-1 and 680501X fuel flow sensor interfaces.

[10] Engine manifold pressure sensor ports located near an intake valve may produce a jittery manifold pressure indication. Installation of the optional Garmin restrictor will help to stabilize the indication. Refer to Section 4.7.5.

[11] Refer to Section 3.4.3 for additional information regarding gasket-style probes.

APPENDIX D MODEL-SPECIFIC DATA

D.1 G1000 (NXi) EMB-500/EMB-505 with GI 275 Standby System Configuration

D.1.1 Applicability

If the GI 275 is installed as a Standby ADI to the G1000 or G1000 NXi Garmin Integrated Flight Deck (GIFD) systems and interfaced according to the interconnects specified in Figure B-31, this procedure may be used to remove a nuisance "FAILED PATH" system message due to no ARINC AHRS information available on the GSD 41 A429 IN 3 channel.

D.1.2 Limitations

This configuration procedure may be used solely on Embraer S.A. EMB-500 and EMB-505 aircraft using P/N 011-01457-00 GSD 41 in G1000 GIFD flight decks. G1000 NXi SW image must be at P/N 006-B3643-06 07 or prior. G1000 Legacy SW image must be at P/N 006-B0734-9A or prior.

D.1.3 Reference Documents

Table D-1 G1000 (NXi) Reference Documents

Phenom Model / GIFD type	Maintenance Manual P/N
EMB-500 & EMB-505 / G1000 Legacy	190-02620-00
EMB-500 / G1000 NXi	190-02545-02
EMB-505 / G1000 NXi	190-02545-12

D.1.4 Configuration Procedure

1. Power on PFD 1/2 and MFD in Configuration mode.
2. On PFD 1, in the System page group, use the small FMS knob to scroll to the System Data Paths page (refer to Figure D-1).
   a. A429 labeled softkey should be already selected; if not, press it.

Figure D-1 G1000 A429 System Data Path Config

3. Enable the cursor by pressing the FMS knob and use the large FMS knob to scroll down the MONITOR list to select the GSD1 A429 IN 3 field.
4. Use the small FMS knob to change this setting from ON to OFF (refer to Figure D-2).

Figure D-2 G1000 A429 IN 3 Data Monitoring Setting

5. Disable the cursor by pressing the FMS knob.
6. The following steps are only necessary for a G1000 NXi system; otherwise, skip to step 7.
   a. Rotate the small FMS knob to select Configuration Manager page under the System page group.
   b. Press the softkey labeled CNFM CFG.
   c. Highlight OK in the popup window and press the ENT key to select.
7. Restart the avionics in Normal mode.

D.2 Aircraft Model-Specific Matrix

This section provides the following information for every model listed on the AML:

- GI 275 Installation Limited to MFD/Standby ADI: An “X” in this column indicates that only installations of the GI 275 as an MFD/Standby ADI are approved for this model; refer to Section 2.1.15 for more information.
- Fuel Pressure Check Required: An “X” in this column necessitates a Fuel Pressure Check be performed per Section 3.4.3, item 7. The Fuel Pressure Check only applies to piston aircraft with fuel flow transducers installed per this STC.
- Lightning Zone Wing, Fuselage, and Empennage: Each column references the lightning zoning figures from Appendix G that are applicable to a particular aircraft model.
- GTP 59 and GMU 11/GMU 44B Location: Each column references the suitable lightning zones for installation of the GTP 59 Temperature Probe and GMU 11/44B Magnetometer in a particular aircraft model. For additional information, refer to Section 4.6.2 for GTP 59 and Section 4.6.1 for GMU 11 and GMU 44B.
- Notes: This column includes any notes related to a particular aircraft model.

NOTE

Any aircraft model listed in Table D-2 and not explicitly called out as nonmetallic by an end note should be considered an all-metal aircraft.

Table D-2 Aircraft Model-Specific Data

A10EU	AERMACCHI S.p.A (AERMACCHI S.p.A)	F.260, F.260B, F.260C, F.260D, F.260E, F.260F	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A9EU	AERMACCHI S.p.A (AERMACCHI S.p.A)	S.205-18/F, S.205-18/R, S.205-20/F, S.205-20/R, S.205-22/R, S.208, S.208A	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
1A21	AERO COMMANDER (Dynac Aerospace Corp) [Volaire]	10, 10A, 100, 100A, 100-180	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A17WE	Aerostar (Aerostar Aircraft Corporation)	PA-60-600 (Aerostar 600), PA-60-601 (Aerostar 601), PA-60-601P (Aerostar 601P), PA-60-602P (Aerostar 602P), PA-60-700P (Aerostar 700P)	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7] Ensure compliance with AD 74-25-02 if applicable. The Class I/II GI 275 variants can be installed in this airframe.

A17SW	Air Tractor (Air Tractor, Inc.)	AT-401		Figure G-3, Figure G-4, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7] Aircraft may be IFR or limited to VFR per prior certification. For IFR aircraft, use Wing Figure G-3. For VFR only aircraft, use Wing Figure G-4. The Class I/II GI 275 variants can be installed in this airframe.
A17SW	Air Tractor (Air Tractor, Inc.)	AT-502A, AT-502B	N/A	Figure G-4, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7] The Class I/II GI 275 variants can be installed in this airframe.
A19SW	Air Tractor (Air Tractor, Inc.)	AT-602, AT-802, AT-802A	N/A	Figure G-4, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7] The Class I/II GI 275 variants can be installed in this airframe.
A18CE	ALEXANDRIA AIRCRAFT (Alexandria Aircraft LLC) [Bellanca, Inc.]	17-30A, 17-31A, 17-31ATC		Not Allowed	Figure G-6	Figure G-18	Zone 2A	Zone 2A	[1] [3] [5] [8]

1A3	ALEXANDRIA AIRCRAFT (Alexandria Aircraft LLC) [Bellanca, Inc.]	14-19, 14-19-2, 14-19-3, 14-19-3A, 17-30, 17-31, 17-31TC		Not Allowed	Figure G-6	Figure G-18	Zone 2A	Zone 2A	[1] [3] [5] [8]
A48EU	ALPHA AVIATION CONCEPT LTD (Alpha Aviation Concept Limited) [Alpha Aviation Design Limited]	R2160	X	Figure G-4, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A3CE	American Champion (American Champion Aircraft Corp.) [Champion]	402	X	Figure G-3	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5] [8] [12]
A21CE	American Champion (American Champion Aircraft Corp.) [FRA Enterprises, Inc.]	8KCAB, 8GCBC		Figure G-3	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5] [8] [12]
A-759	American Champion (American Champion Aircraft Corp.) [FRA Enterprises, Inc.]	7EC, 7ECA, 7FC, 7GC, 7GCA, 7GCAA, 7GCB, 7GCBA, 7GCBC, 7KCAB		Figure G-3	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5] [8] [12]
A66EU	APEX Aircraft (APEX Aircraft) [AVIONS PIERRE ROBIN]	R 3000/160	X	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

4A24	Atlantic Coast Seaplanes LLC (Atlantic Coast Seaplanes LLC) [Aero Planes, LLC]	G-21C, G-21E, G-21G		N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
4A24	Atlantic Coast Seaplanes LLC (Atlantic Coast Seaplanes LLC) [Aero Planes, LLC]	G-21D	X	N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A22NM	Aviat Aircraft, Inc. (Aviat Aircraft Inc.) [Sky International, Inc.]	A-1, A-1A, A-1B, A-1C-180, A-1C-200			Figure G-3	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5] [8]
A8SO	Aviat Aircraft, Inc. (Aviat Aircraft, Inc.) [Sky International, Inc.]	S-1S, S-1T, S-2A, S-2S, S-2B, S-2C			Not Allowed	Figure G-6	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5] [8]
A-773	Bellanca (Bellanca Aircraft Corporation)	14-13, 14-13-2, 14-13-3			Not Allowed	Figure G-6	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5] [8]

A29EU	B-N Group LTD. (B-N Group Ltd.) [Pilatus Britten-Norman Limited]	BN2A MK. III, BN2A MK. III-2, BN2A MK. III-3	X	X	Figure G-3, Figure G-5	Figure G-10	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7] Fuselage lightning zone for bottom of fuselage only. Requires GEA 110 for interface to resistive fuel quantity sensors. Cannot mount the GTP on the empennage.
A17EU	B-N GROUP LTD. (B-N Group Ltd.) [Pilatus Britten-Norman Limited]	BN-2, BN-2A, BN-2A-2, BN-2A-3, BN-2A-6, BN-2A-8, BN-2A-9, BN-2A-20, BN-2A-21, BN-2A-26, BN-2A-27, BN-2B-20, BN-2B-21, BN-2B-26, BN-2B-27			Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A17EU	B-N GROUP LTD. (B-N Group Ltd.) [Pilatus Britten-Norman Limited]	BN-2T, BN2T-4R, BN2T-4S		N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A-2-575	BOEING (The Boeing Company) [Rockwell International]	BC-1A, AT-6 (SNJ-2), AT-6A (SNJ-3), AT-6B, AT-6C (SNJ-4), AT-6D (SNJ-5), AT-6F (SNJ-6), SNJ-7, T-6G			Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
1A18	BOEING (The Boeing Company) [Rockwell International]	NOMAD NA-260 (T-28A)		N/A	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

A-722	CESSNA (Cessna Aircraft Company)	T-50 (Army AT-17, and UC-78 series, and Navy JRC-1)	N/A	Not Allowed	Figure G-10	Not Allowed	Zone 2A	Zone 2A	[1] [3] [5] [8] Installation using Figure G-10 only allowed for tube and fabric; otherwise, Not Allowed
5A5	CESSNA (Regal Air, Inc.)	305A (USAF 0-1A), 305C (USAF 0-1E), 305D (USAF 0-1G), 305F		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
3A14	CESSNA (Regal Air, Inc.)	305B, 305E (Military TO-1D, 0-1D or 0-1F)		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A00009CH	Cirrus Design Corporation (Cirrus Design Corporation)	SR20, SR22, SR22T		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 3	Zone 3	[4] [6] [8] [11] [13]
A12SO	COMMANDER (Commander Aircraft Corporation) [CPAC, Inc.]	112, 112TC, 112B, 112TCA, 114, 114A, 114B, 114TC		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A62CE	Costruzioni Aeronautiche Tecnam S.P.A. (Costruzioni Aeronautiche Tecnam S.P.A.) [Costruzioni Aeronautiche Tecnam srl]	P2006T	N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

A17SO	Cougar (Cougar Aircraft Corporation) [SOCATA, S.A.]	GA-7		Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7] Requires GEA 110 for interface to resistive fuel quantity sensors.
A00053SE	CUB CRAFTERS (Cub Crafters, Inc.)	CC19-180		Figure G-4, Figure G-5	Figure G-6	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5] [8]
A60EU	DAHER AEROSPACE (DAHER AEROSPACE) [SOCATA]	TBM 700 (TBM850)	N/A	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A22EU	De Havilland Support Limited (De Havilland Support Limited) [British Aerospace, Aircraft Group Scottish Division]	Beagle B.121 Series 1, Beagle B.121 Series 2, Beagle B.121 Series 3		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
TA4CH	DIAMOND (Diamond Aircraft Industries Inc.)	DA20-A1, DA20-C1		Figure G-4, Figure G-5	Figure G-6	Figure G-18	Zone 3	Zone 2A, Zone 3	[4] [6] [8] [11] Installation approved for VFR operation only. Interface to resistive fuel quantity sensors is not approved in this aircraft. GMU Zone 2A is for fuselage only.

A47CE	DIAMOND (Diamond Aircraft Industries Inc.) [Diamond Aircraft Industries GmbH]	DA 40, DA 40 F		Figure G-3, Figure G-4, Figure G-5	Figure G-6	Figure G-18	Zone 3	Zone 3	[4] [6] [8] [11] [13] Diamond SB OSB 40-004/3 incorporated: use Figure G-3 Absent Diamond SB OSB 40-004/3: use Figure G-4; install limited to VFR ONLY; CANNOT interface to resistive fuel quantity sensors
A47CE	DIAMOND (Diamond Aircraft Industries Inc.) [Diamond Aircraft Industries GmbH]	DA 40 NG	N/A	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 3	Zone 3	[4] [6] [8] [11] [13] Must have Diamond SB OSB 40-004/3 incorporated.
A00008DE	DISCOVERY (Discovery Aviation, Inc.) [Liberty Holdings, LLC]	XL-2	X	Figure G-3, Figure G-5	Not Allowed	Figure G-18	Zone 3	Zone 3	[4] [6] [8] [11]
A55EU	EADS-PZL “Warszawa-Okecie” (EADS-PZL “Warszawa-Okecie” S.A.) [Panstwowe Zaklady Lotnicze]	PZL-104 WILGA 80, PZL-104M WILGA 2000, PZL-104MA WILGA 2000	X	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

A69EU	EADS-PZL “Warszawa-Okecie” (EADS-PZL “Warszawa-Okecie” S.A.) [Panstwowe Zaklady Lotnicze]	PZL-KOLIBER 150A, PZL-KOLIBER 160A		X	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A21SO	Embraer S.A. (Embraer S.A) [Empresa Brasileira de Aeronáutica S.A.]	EMB-110P1	X	N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A59CE	Embraer S.A. (Embraer S.A) [Empresa Brasileira de Aeronáutica S.A.]	EMB-500	X	N/A	Figure G-3, Figure G-5	Figure G-17	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7] GTP 59 installation on engines is NOT allowed
A60CE	Embraer S.A. (Embraer S.A) [Empresa Brasileira de Aeronáutica S.A.]	EMB-505	X	N/A	Figure G-3, Figure G-5	Figure G-17	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7] GTP 59 installation on engines is NOT allowed

A00059SE	EPIC (Epic Aircraft, LLC)	E1000	X		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 3	Zone 3 OR Empenage Zone 1A/2A	[4] [6] [8] GI 275 installation limited to the Standby ADI configuration described in Section 2.1.14. Installation of TVS diodes on GI 275 power input wires is required. Refer to Figure B-1 for Class II & III composite aircraft. An interfaced GPS source is not required when installed as a Standby ADI.
A67EU	EXTRA (Extra Flugzeugproduktions- und Vertriebs - GmbH) [Extra Flugzeugbau GmbH]	EA 300, EA 300/L, EA 300/S, EA 300/200			Not Allowed	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5] [8] Interface to resistive fuel quantity sensors is not approved in this aircraft.
A67EU	Extra (Extra Flugzeugproduktions- und Vertriebs - GmbH) [Extra Flugzeugbau GmbH]	EA 300/LC		X	Not Allowed	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5] [8] Interface to resistive fuel quantity sensors is not approved in this aircraft.

A58EU	FFT-GmbH (FFT Gesellschaft fur Flugzeug - & Faserverbund-Technologie mbH)	SC01 B-160 Gyroflug Speed Canard	X	Figure G-4, Figure G-5	Figure G-7	Not Allowed	Zone 3	Zone 2A, Zone 3	[4] [6] Installation approved for VFR operation only. Interface to resistive fuel quantity sensors is not approved in this aircraft. GMU 44B and GMU 11 may only be installed in the fuselage.
A13EA	FOUND BROTHERS (Found Brothers Aviation Limited)	FBA Centennial “100”	X	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A-734	Frakes Aviation (Frakes Aviation) [Gulfstream American Corporation]	G-44 (Army OA-14 Navy J4F-2), G-44A, SCAN Type 30		Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A-780	FS2003 Corp. (FS 2003 Corporation) [The New Piper Aircraft, Inc]	PA-12, PA-12S		Not Allowed	Figure G-6	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5] [8]
A4PC	FUJI (Fuji Heavy Industries, Ltd.)	FA-200-160, FA-200-180, FA-200-180AO		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A00011LA	GA8 Airvan (Pty) Ltd (GA 8 Airvan (Pty) Ltd) [Gippsland Aeronautics Pty. Ltd.]	GA8, GA8-TC320		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

A34EU	Gomolzig Flugzeug- und Maschinenbau GmbH (Gomolzig Flugzeug- und Maschinenbau GmbH) [FFA Aircraft Bravo AG]	AS 202/15 “BRAVO”, AS 202/18A “BRAVO”, AS 202/18A4 “BRAVO”	X	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A57EU	GROB Aircraft AG (GROB Aircraft AG) [GROB Aerospace GmbH i.l.]	G115, G115A, G115B, G115C, G115C2, G115D, G115D2		Figure G-4, Figure G-5	Figure G-6	Figure G-18	Zone 3	Zone 3	[4] [6] [8] [11] Installation approved for VFR operation only. Interface to resistive fuel quantity sensors is not approved in this aircraft.
TC 654	Grumman (Grumman American Aviation Corporation)	Grumman G-21, Grumman G-21A	N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
3A3	Helio (Helio Aircraft Corporation) [Taylorcraft]	15A, 20		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5]
1A8	HELIO (Helio Aircraft, LLC) [Alliance Aircraft Group, LLC]	H-250, H-295 (USAF U-10D), HT-295, H-391 (USAF YL-24), H-391B, H-395 (USAF L-28A or U-10B), H-395A, H-700		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

1A8	HELIO (Helio Aircraft, LLC) [Alliance Aircraft Group, LLC]	H-800		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7] Neither GMU 11/44B nor GTP 59 can be mounted on aircraft wing.
A4EA	HELIO (Helio Aircraft, LLC) [Alliance Aircraft Group, LLC]	HST-550, HST-550A (USAF AU-24A)	N/A	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A-717	HOWARD (Howard Aircraft Foundation) [Jobmaster Co.]	DGA-15P (Army UC-70, Navy GH-1, GH-2, GH-3, NH-1), DGA-15J (Army UC-70B), DGA-15W		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5] [8]
3A18	Interceptor (Interceptor Aviation Inc.) [Interceptor Aircraft Corporation]	200, 200A, 200B, 200C, 200D		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
3A18	Interceptor (Interceptor Aviation Inc.) [Interceptor Aircraft Corporation]	400	N/A	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
7A3	JET SET AVIATION HOLDINGS (Jet Set Aviation Holdings SAS) [SOCATA]	M.S. 760, M.S. 760 A, M.S. 760 B	N/A	Figure G-3, Figure G-5	Figure G-14	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

A17CE	King's Engineering Fellowship (The King’s Engineering Fellowship) [Evangel-Air]	4500-300, 4500-300 Series II		X	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A5CE	LEARJET (Learjet Inc.)	23		N/A	Figure G-3, Figure G-5	Figure G-17	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] GTP 59 installation on engines is NOT allowed
A6EA	Legend Aviation & Marine (Legend Aviation & Marine, LLC) [STOL Aircraft Corporation]	UC-1 (Twin-Bee)			Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A-723	LOCKHEED (Lockheed Martin Aeronautics Company) [Lockheed Aircraft Corporation]	18	X	N/A	Figure G-3, Figure G-5	Figure G-10	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
TC 616	Lockheed (Lockheed Aircraft Corporation)	12-A (Army UC-40, UC-40A; Navy JO-1, JO-2)		N/A	Figure G-3, Figure G-5	Figure G-10	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A64EU	Lovaux Ltd (FLS Aerospace (Lovaux) Ltd.)	OA7 Optica Series 300		X	Figure G-3, Figure G-5	Not Allowed	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5]

A-694	LUSCOMBE (Good Earthkeeping Organization, Inc.) [Team Luscombe, LLC]	8, 8A, 8B, 8C, 8D, 8E, 8F, T-8F			Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A5SW	M7 Aerospace LLC (M7 Aerospace LLC) [M7 Aerospace LP]	SA26-AT		N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A5SW	M7 Aerospace LLC (M7 Aerospace LLC) [M7 Aerospace LP]	SA226-T, SA226-AT, SA226-T(B), SA227-AT, SA227-TT	X	N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A8SW	M7 Aerospace LLC (M7 Aerospace LLC) [M7 Aerospace LP]	SA226-TC, SA227-AC (C-26A), SA227-BC (C-26A)	X	N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A18SW	M7 Aerospace LLC (M7 Aerospace LLC) [M7 Aerospace LP]	SA227-DC (C-26B)	X	N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

3A23	Maule (Maule Aerospace Technology, Inc.) [Maule Aircraft Corporation]	Bee Dee M-4, M-4, M-4C, M-4S, M-4T, M-4-210, M-4-210C, M-4-210S, M-4-210T, M-4-220, M-4-220C, M-4-220S, M-4-220T, M-4-180C, M-4-180S, M-4-180T, M-5-210C, M-5-220C, M-5-235C, M-5-180C, M-5-210TC, M-6-235, M-6-180, M-5-200, M-7-235, MX-7-235, MX-7-180, MXT-7-180, MT-7-235, M-8-235, MX-7-160, MXT-7-160, MX-7-180A, MXT-7-180A, MX-7-180B, M-7-235B, M-7-235A, M-7-235C, MX-7-180C, M-7-260, MT-7-260, M-7-260C, MX-7-160C, MX-7-180AC, M-4-180V, M-9-235		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5] [8]
3A23	Maule (Maule Aerospace Technology, Inc.) [Maule Aircraft Corporation]	MX-7-420, M-7-420AC, M-7-420A, MT-7-420	X	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5] [8]

3A1	MICCO Aircraft Co., Inc. (MICCO Aircraft Company, Inc.) [Aero Acquisitions, LLC]	MAC-125C, MAC-145, MAC-145A, MAC-145B		X	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A2PC	Mitsubishi (Mitsubishi Heavy Industries, Ltd.)	MU-2B, MU-2B-20, MU-2B-35, MU-2B-25, MU-2B-36, MU-2B-26	X	N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A10SW	Mitsubishi (Mitsubishi Heavy Industries, Ltd.) [Mitsubishi Aircraft International Inc.]	MU-2B-25, MU-2B-35, MU-2B-26, MU-2B-36, MU-2B-26A, MU-2B-36A, MU-2B-40, MU-2B-60	X	N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A6SW	Mooney (Mooney Aircraft Corporation)	M22			Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
2A3	Mooney (Mooney International Corporation) [Mooney Aviation Company, Inc.]	M20, M20A, M20B, M20C, M20D, M20E, M20F, M20G, M20J, M20K, M20L, M20M, M20R, M20S, M20TN			Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
7A5	Nardi (Nardi S.A.)	FN-333		X	Figure G-3, Figure G-5	Figure G-8	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A-782	Navion (Sierra Hotel Aero, Inc.) [Navion Aircraft LLC]	Navion (L-17A), Navion A (L-17B, L-17C), Navion B, Navion D, Navion E, Navion F, Navion G, Navion H			Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

A50CE	Pacific Aerospace Limited (Pacific Aerospace Limited) [Pacific Aerospace Corporation, Ltd.]	750XL		N/A	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A7EA	Pacific Aerospace Limited. (Pacific Aerospace Ltd.) [Found Aircraft Canada, Inc.]	FBA-2C, FBA-2C1, FBA-2C2, FBA-2C3		X	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
7A4	Piaggio (Industrie Aeronautiche e Meccaniche Rinaldo Piaggio, S.p.A) [Piaggio & Co.]	P.166, P.166B			Figure G-3, Figure G-5	Figure G-11	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
7A4	Piaggio (Industrie Aeronautiche e Meccaniche Rinaldo Piaggio, S.p.A) [Piaggio & Co.]	P.166C	X		Figure G-3, Figure G-5	Figure G-11	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
7A4	Piaggio (Industrie Aeronautiche e Meccaniche Rinaldo Piaggio, S.p.A) [Piaggio & Co.]	P.166 DL3		N/A	Figure G-3, Figure G-5	Figure G-11	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A-813	Piaggio (Piaggio & C.)	P.136-L, P.136-L1, P.136-L2			Figure G-3, Figure G-5	Figure G-11	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

A59EU	Piaggio (Piaggio Aero Industries S.p.A)	PIAGGIO P-180 (PIAGGIO P-180)	N/A	Figure G-3, Figure G-5	Figure G-15	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
7A15	Pilatus (Pilatus Aircraft Ltd.)	PC-6, PC-6-H1, PC-6-H2, PC-6/350, PC-6/350-H1, PC-6/350-H2		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
7A15	PILATUS (Pilatus Aircraft Ltd.)	PC-6/A, PC-6/A-H1, PC-6/A-H2, PC-6/B-H2, PC-6/B1-H2, PC-6/B2-H2, PC-6/B2-H4, PC-6/C-H2, PC-6/C1-H2	N/A	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A78EU	PILATUS (PILATUS AIRCRAFT LTD.)	PC-12, PC-12/45, PC-12/47, PC-12/47E	N/A	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A50EU	PILATUS (PILATUS Aircraft Ltd.)	PC-7	N/A	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
1A2	Piper Aircraft, Inc. (Piper Aircraft, Inc.) [The New Piper Aircraft, Inc]	PA-18, PA-18S, PA-18 “105” (Special), PA-18S “105” (Special), PA-18A, PA-18 “125” (Army L-21A), PA-18S “125”, PA-18AS “125”, PA-18 “135” (Army L-21B), PA-18A “135”, PA-18S “135”, PA-18 “150”, PA-18A “150”, PA-18S “150”, PA-19 (Army L-18C)		Figure G-3, Figure G-5	Figure G-6	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5] [8]

1A4	Piper Aircraft, Inc. (Piper Aircraft, Inc.) [The New Piper Aircraft, Inc]	PA-20, PA-20 “135”		Figure G-3, Figure G-5	Figure G-6	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5] [8]
1A6	Piper Aircraft, Inc. (Piper Aircraft, Inc.) [The New Piper Aircraft, Inc]	PA-22, PA-22-108, PA-22-135, PA-22S-135, PA-22-150, PA-22S-150, PA-22-160		Figure G-3, Figure G-5	Figure G-6	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5] [8]
1A10	Piper Aircraft, Inc. (Piper Aircraft, Inc.) [The New Piper Aircraft, Inc]	PA-23, PA-23-160, PA-23-235, PA-23-250, PA-23-250 (Navy UO-1), PA-E23-250		Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
1A15	Piper Aircraft, Inc. (Piper Aircraft, Inc.) [The New Piper Aircraft, Inc]	PA-24, PA-24-250, PA-24-260, PA-24-400		Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

2A13	Piper Aircraft, Inc. (Piper Aircraft, Inc.) [The New Piper Aircraft, Inc]	PA-28-160 (Cherokee), PA-28-150 (Cherokee), PA-28-180 (Cherokee), PA-28S-160 (Cherokee), PA-28S-180 (Cherokee), PA-28-235 (Cherokee Pathfinder), PA-28-140 (Cherokee Cruiser), PA-28R-180 (Arrow), PA-28R-200 (Arrow), PA-28R-200 (Arrow II), PA-28S-180 (Archer), PA-28-235 (Cherokee Pathfinder), PA-28-151 (Cherokee Warrior), PA-28-181 (Archer II), PA-28-181 (Archer III), PA-28-161 (Cadet), PA-28-161 (Warrior II), PA-28-161 (Warrior III), PA-28R-201 (Arrow III), PA-28R-201T (Turbo Arrow III), PA-28-236 (Dakota), PA-28RT-201 (Arrow IV), PA-28RT-201T (Turbo Arrow IV), PA-28-201T (Turbo Dakota)		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A18SO	Piper Aircraft, Inc. (Piper Aircraft, Inc.) [The New Piper Aircraft, Inc]	PA-38-112 (Tomahawk)		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

A32SO	Piper Aircraft, Inc. (Piper Aircraft, Inc.) [The New Piper Aircraft, Inc]	PA-42-720R	X	N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A19SO	Piper Aircraft, Inc. (Piper Aircraft, Inc.) [The New Piper Aircraft, Inc]	PA-44-180 (Seminole), PA-44-180T			Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7] Requires GEA 110 for interface to resistive fuel quantity sensors.
A1EA	Piper Aircraft, Inc. (Piper Aircraft, Inc.) [The New Piper Aircraft, Inc]	PA-30, PA-39, PA-40			Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A20SO	Piper Aircraft, Inc. (Piper Aircraft, Inc.) [The New Piper Aircraft, Inc]	PA-31 (Navajo), PA-31-300 (Navajo), PA-31-325 (Navajo C/R), PA-31-350 (Chieftain)			Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A8EA	Piper Aircraft, Inc. (Piper Aircraft, Inc.) [The New Piper Aircraft, Inc]	PA-31P (Pressurized Navajo), PA-31P-350 (Mojave)			Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7] Requires GEA 110 for interface to resistive fuel quantity sensors.
A8EA	Piper Aircraft, Inc. (Piper Aircraft, Inc.) [The New Piper Aircraft, Inc]	PA-31T (Cheyenne/Cheyenne II), PA-31T1 (Cheyenne I/IA), PA-31T2 (Cheyenne IIXL), PA-31T3		N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

A3SO	Piper Aircraft, Inc. (Piper Aircraft, Inc.) [The New Piper Aircraft, Inc]	PA-32-260 (Cherokee Six 260), PA-32-300 (Cherokee Six 300), PA-32S-300 (Cherokee Six Seaplane), PA-32R-300 (Lance), PA-32RT-300 (Lance II), PA-32RT-300T (Turbo Lance II), PA-32R-301 (Saratoga SP), PA-32R-301 (Saratoga II HP), PA-32R-301T (Turbo Saratoga SP), PA-32-301 (Saratoga), PA-32-301T (Turbo Saratoga), PA-32R-301T (Saratoga II TC), PA-32-301FT (Piper 6X), PA-32-301XTC (Piper 6XT)		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A7SO	Piper Aircraft, Inc. (Piper Aircraft, Inc.) [The New Piper Aircraft, Inc]	PA-34-200 (Seneca), PA-34-200T (Seneca II), PA-34-220T (Seneca III, IV, V)		Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A23SO	Piper Aircraft, Inc. (Piper Aircraft, Inc.) [The New Piper Aircraft, Inc]	PA-42 (Cheyenne III), PA-42-720 (Cheyenne IIIA), PA-42-1000	N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A25SO	Piper (Piper Aircraft, Inc.) [The New Piper Aircraft, Inc]	PA-46-310P (Malibu), PA-46-350P (Malibu Mirage), PA-46R-350T (Malibu Matrix)		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

A25SO	Piper (Piper Aircraft, Inc.) [The New Piper Aircraft, Inc]	PA-46-500TP (Malibu Meridian), PA-46-600TP (M600)		N/A	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A44CE	Polskie Zaklady Lotnicze Spolka zo.o (Polskie Zaklady Lotnicze Spolka zo.o) [PZL MIELEC]	PZL M26 01		X	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A00007SE	QUEST (Quest Aircraft Design, LLC)	KODIAK 100		N/A	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A54EU	Reims Aviation SA (Reims Aviation S.A.)	F406	X	N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
1A13	Revo, Inc. (Revo, Incorporated) [Global Amphibians LLC]	Lake LA-4, Lake LA-4-200, Lake Model 250			Figure G-3	Figure G-9	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
7A13	RUAG Aerospace Services GmbH (RUAG Aerospace Services GmbH) [Fairchild Dornier GmbH]	Do 28 A-1, Do 28 B-1			Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A16EU	RUAG Aerospace Services GmbH (RUAG Aerospace Services GmbH) [Fairchild Dornier GmbH]	Do 28 D, Do 28 D-1	X		Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

A16EU	RUAG Aerospace Services GmbH (RUAG Aerospace Services GmbH) [Fairchild Dornier GmbH]	Dornier 228-100, Dornier 228-101, Dornier 228-200, Dornier 228-201, Dornier 228-202, Dornier 228-212	X	N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A8IN	RUAG Aerospace Services GmbH (RUAG Aerospace Services GmbH) [Fairchild Dornier GmbH] DORNIER LUFTFAHRT GmbH]	Do 27 Q-6			Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A44EU	Rust (de Havilland) (Robert E. Rust, Jr.) [Robert E. Rust]	DHC-1 Chipmunk Mk 21, DHC-1 Chipmunk Mk 22, DHC-1 Chipmunk Mk 22A			Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A73EU	Slingsby Aviation Ltd. (Slingsby Aviation Ltd.)	T67M260		X	Figure G-4	Figure G-6	Figure G-18	Zone 3	Zone 3	[4] [6] [8] [11] Installation approved for VFR operation only. Interface to resistive fuel quantity sensors is not approved in this aircraft.

7A14	SOCATA (SOCATA) [S O C A T A - Groupe AEROSPATIALE]	MS 880B (Rallye, Ralley Club), MS 885 (Super Rallye), MS 894A, MS 894E (Rallye Minerva 220), MS 892A-150 (Commodore), MS 892E-150 (Rallye 150GT), MS 893A (Rallye Commodore), MS 893E (Rallye 180 GT), Rallye 100S, Rallye 150 ST, Rallye 150 T, Rallye 235 E, Rallye 235C	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A51EU	SOCATA (SOCATA) [S O C A T A - Groupe AEROSPATIALE]	TB 9, TB 10, TB 20, TB 21, TB 200	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A-774	STINSON (Consolidated Vultee Aircraft Corporation Stinson Division)	V-77 (Army AT-19)	Figure G-3, Figure G-5	Figure G-6	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5] [8]
A-769	STOL (Sky Enterprises, Inc.)	RC-3 (Sea-Bee)	Figure G-3, Figure G-5	Figure G-8	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A-766	SWIFT (Swift Museum Foundation, Inc) [Univair Aircraft Corporation]	GC-1A, GC-1B	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

A46CE	SYMPHONY AIRCRAFT INDUSTRIES INC. (Symphony Aircraft Industries Inc.) [Ostmecklenburgische Flugzeugbau GmbH]	OMF-100-160, SA 160		X	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [8] [11]
A24CE	Textron Aviation Inc (Textron Aviation Inc.) [Beechcraft Corporation]	200, A200C (UC-12B), 200C, B200, B200C, B200C (C-12F), B200C (UC-12F), B200C (UC-12M), B200C (C-12R), A200 (C-12A), A200 (C-12C), 200T, 200CT, A200CT (C-12D), A200CT (FWC-12D), A200CT (C-12F), A200CT (RC-12G), A200CT (RC-12H), B200T, B200GT, A100-1 (U-21J), A200CT (RC-12K), A200CT (RC-12P), A200CT (RC-12Q), 1900, 1900C, 1900C (C-12J), 300, 300LW, B300, B300C, B300C (MC-12W), B300C (UC-12W), 1900D	X	N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A4EU	Textron Aviation Inc (Textron Aviation Inc.) [Cessna Aircraft Company]	F172D, F172E, F172F, F172G, F172H, F172K, F172L, F172M, F172N, F172P, FP172D		X	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

3A21	Textron Aviation Inc (Textron Aviation Inc.) [Cessna Aircraft Company]	210, 210A, 210B, 210C, 210D, 210E, 210F, T210F, 210G, T210G, 210H, T210H, 210J, T210J, 210K, T210K, 210L, T210L, 210M, T210M, 210N, P210N, T210N, 210R, P210R, T210R, 210-5 (205), 210-5A (205A)		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A-768	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	120, 140		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
5A2	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	140A	X	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
3A19	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	150, 150A, 150B, 150C, 150D, 150E, 150F, 150G, 150H, 150J, 150K, 150L, 150M, A150K, A150L, A150M, 152, A152		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A-799	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	170, 170A, 170B		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

3A12	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	172, 172A, 172B, 172C, 172D, 172E, 172F (USAF T-41A), 172G, 172H (USAF T-41A), 172I, 172K, 172L, 172M, 172N, 172P, 172Q, 172R, 172S	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
3A17	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	175, 175A, 175B, 175C, P172D, R172E (USAF T-41B,C,D), R172G (USAF T-41C,D), R172J, R172K, 172RG	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A13CE	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	177, 177A, 177B	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A20CE	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	177RG	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
5A6	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	180, 180A, 180B, 180C, 180D, 180E, 180F, 180G, 180H, 180J, 180K	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
3A13	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	182, 182A, 182B, 182C, 182D, 182E, 182F, 182G, 182H, 182J, 182K, 182L, 182M, 182N, 182P, 182Q, 182R, 182S, 182T, R182, T182, TR182, T182T	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

3A24	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	185, 185A, 185B, 185C, 185D, 185E, A185E, A185F	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A-790	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	190, 195 (LC-126A,B,C), 195A, 195B	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	Aircraft with Cessna Airspeed Indicators P/N 0311015-1 or -3 (Kollsman Type 586CK-0187) must install the GI 275 with the Cessna 190/195 Airspeed Calibration curve software (P/N 006-B4540-01). Refer to Section 5.2.1. Otherwise, the GI 275 must be limited to HSI, MFD, EIS, or Attitude Only ADI. Installations can be identified by airspeed indicator marking or long straight harpoon-style pitot probe. [1] [2] [5] [7]

A4CE	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	206, P206, P206A, P206B, P206C, P206D, P206E, U206, U206A, U206B, U206C, U206D, U206E, U206F, U206G, TP206A, TP206B, TP206C, TP206D, TP206E, TU206A, TU206B, TU206C, TU206D, TU206E, TU206F, TU206G, 206H, T206H		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A16CE	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	207, 207A, T207, T207A		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A37CE	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	208, 208B	N/A	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A34CE	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	T303 (Crusader)		Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7] Requires GEA 110 for interface to resistive fuel quantity sensors.

3A10	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	310, 310A (USAF U-3A), 310B, 310C, 310D, 310E (USAF U-3B), 310F, 310G, 310H, E310H, 310I, 310J, 310J-1, E310J, 310K, 310L, 310N, 310P, T310P, 310Q, T310Q, 310R, T310R	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
3A25	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	320, 320-1, 320A, 320B, 320C, 320D, 320E, 320F, 335, 340, 340A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A2CE	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	336	Figure G-3, Figure G-5	Figure G-12	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A6CE	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	337, 337A (USAF 02B), 337B, T337B, M337B (USAF 02A), 337C, T337C, 337D, T337D, 337E, T337E, 337F, T337F, 337G, T337G, 337H, P337H, T337H, T337H-SP	Figure G-3, Figure G-5	Figure G-12	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A7CE	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	401, 401A, 401B, 402A, 402B, 411, 411A, 421A, 421B	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

A7CE	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	402, 402C, 414, 414A, 421, 421C			Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7] Requires GEA 110 for interface to resistive fuel quantity sensors.
A7CE	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	425		N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A25CE	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	404			Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7] Requires GEA 110 for interface to resistive fuel quantity sensors.
A25CE	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	406	X	N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A27CE	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	501, 551	X	N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A28CE	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	441		N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

A00014WI	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	510	X	N/A	Figure G-3, Figure G-5	Figure G-17	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7] GTP 59 installation on engines is NOT allowed
A1WI	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	525, 525A, 525B, 525C		N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	For Textron Aviation (Cessna) Model 525(A) with G600 TXi, refer to Appendix H. [1] [2] [5] [7]
A00003SE	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	LC40-550FG, LC41-550FG, LC42-550FG			Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 3	Zone 3	[4] [6] [8]
A00003SE	Textron Aviation Inc. (Textron Aviation Inc.) [Cessna Aircraft Company]	T240		X	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 3	Zone 3	[4] [6] [8]
5A3	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	45 (YT-34), A45 (T-34A, B-45), D45 (T-34B)			Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
5A4	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	50 (L-23A), B50 (L-23B), C50, D50 (L-23E), D50A, D50B, D50C, D50E, D50E-5990, E50 (L-23D, RL-23D), F50, G50, H50, J50			Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

A23CE	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	58P, 58PA, 58TC, 58TCA		Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7] Requires GEA 110 for interface to resistive fuel quantity sensors. The Class I/II GI 275 variants can be installed in this airframe.
A12CE	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	60, A60, B60		Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7] Requires GEA 110 for interface to resistive fuel quantity sensors.
TC 779	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	G17S		Figure G-3, Figure G-5	Figure G-16	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5] [8]
TC 630	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	18A, S18A		Figure G-3, Figure G-5	Figure G-10	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A-684	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	18D, A18A, A18D, S18D, SA18A, SA18D		Figure G-3, Figure G-5	Figure G-10	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

A-765	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	3N, 3NM, 3TM, JRB-6, D18C, D18S, E18S, RC-45J (SNB-5P), E18S-9700, G18S, H18, C-45G, TC-45G, C-45H, TC-45H, TC-45J/UC-45J (SNB-5)		N/A	Figure G-3, Figure G-5	Figure G-10	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A1CE	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	19A, B19, M19A, 23, A23, A23A, A23-19, A23-24, B23, C23, A24, A24R, B24R, C24R			Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A29CE	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	76			Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7] Requires GEA 110 for interface to resistive fuel quantity sensors.
A30CE	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	77			Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A31CE	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	F90		N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A14CE	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	99, 99A, 99A (FACH), A99, A99A, B99, C99, 100 (U-21F), A100, B100	X	N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

A-649	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	D17S (Army UC-43, UC*43B, Navy GB-1, GB-2), SD17S		Figure G-3, Figure G-5	Figure G-16	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5] [8]
A-777	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	35, A35, B35, C35, D35, E35, F35, G35, 35R		Figure G-3, Figure G-5	Figure G-6	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A26CE	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	T-34C (T-34C-1) (34C)	N/A	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
3A15	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	35-33, 35-A33, 35-B33, 35-C33, 35-C33A, E33, E33A, E33C, F33, F33A, F33C, G33, G36, 36, A36, A36TC, B36TC		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7] GMU 11/44B installation in empennage not allowed for V-Tail models.
3A15	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	H35, J35, K35, M35, N35, P35, S35, V35, V35A, V35B		Figure G-3, Figure G-5	Figure G-6	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7] GMU 11/44B installation in empennage not allowed for V-Tail models.

3A16	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	D55, D55A, E55, E55A, 56TC, A56TC, 58, 58A, G58, 95, B95, B95A, D95A, E95, 95-55, 95-A55, 95-B55, 95-B55A, 95-B55B (T-42), 95-C55, 95-C55A			Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
3A20	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	65 (L-23F), A65, A-65-8200, 65-80, 65-A80, 65-A80-8800, 65-88, 70			Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
3A20	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	65-B80	X		Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
3A20	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	65-90, 65-A90, 65-A90-2 (RU-21B), 65-A90-3 (RU-21C), C90, B90		X	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
3A20	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	65-A90-1 (JU-21A, U-21A, RU-21A, RU-21D, U-21G, RU-21H), 65-A90-4 (RU-21E, RU-21H), C90A, C90GT, C90GTi	X	N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
3A20	Textron Aviation (Textron Aviation Inc.) [Beechcraft Corporation]	E90, H90 (T-44A)		N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

A13EU	Textron Aviation (Textron Aviation Inc.) [Cessna Aircraft Company]	F150F, F150G, F150H, F150J, F150K, F150L, F150M, F152, FA150K, FA150L, FA150M, FA152, FRA150L, FRA150M		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A18EU	Textron Aviation (Textron Aviation Inc.) [Cessna Aircraft Company]	FR172E, FR172G, FR172H, FR172J, FR172K		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A26EU	Textron Aviation (Textron Aviation Inc.) [Cessna Aircraft Company]	F177RG		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A42EU	Textron Aviation (Textron Aviation Inc.) [Cessna Aircraft Company]	F182P, F182Q, FR182		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A23EU	Textron Aviation (Textron Aviation Inc.) [Cessna Aircraft Company]	F337E, FT337E, F337F, FT337F, F337G, FT337GP, F337H, FT337HP		Figure G-3, Figure G-5	Figure G-12	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A3SW	THRUSH AIRCRAFT, INC. (Thrush Aircraft, Inc.) [Quality Aerospace]	600 S-2D, S2R, S2R-R3S, S2R-R1340		Figure G-4	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A3SW	THRUSH AIRCRAFT, INC. (Thrush Aircraft, Inc.) [Quality Aerospace]	S2R-T34, S2R-T15, S2R-T11	N/A	Figure G-4	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

A4SW	THRUSH AIRCRAFT, INC. (Thrush Aircraft, Inc.) [Quality Aerospace]	600 S-2D, S2R-R1340, S2R, S2R-R1820, S2R-R3S		Figure G-4	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A4SW	THRUSH AIRCRAFT, INC. (Thrush Aircraft, Inc.) [Quality Aerospace]	S2R-G10, S2R-G5, S2R-T34, S2R-T65, S2R-G1, S2R-T15, S2RHG-T65, S2RHG-T34, S2R-T45, S2R-T660, S2R-T11, S2R-G6, S2R-H80	N/A	Figure G-4	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A2WI	TKEF (The King's Engineering Fellowship (TKEF))	44		Figure G-3, Figure G-5	Figure G-11	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7] Requires GEA 110 for interface to resistive fuel quantity sensors.
A00006SE	TOPCUB AIRCRAFT, INC. (Topcub Aircraft, Inc.)	CC18-180, CC18-180A		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5] [8]
A19EA	TRIDENT (Viking Air, Ltd)	TR-1	X	Figure G-3, Figure G-5	Figure G-8	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A11EA	True Flight Holdings LLC (True Flight Holdings LLC) [Tiger Aircraft LLC]	AA-1, AA-1A, AA-1B, AA-1C		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

A16EA	True Flight Holdings LLC (True Flight Holdings LLC) [Tiger Aircraft LLC]	AA-5, AA-5A, AA-5B, AG-5B		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
6A1	Twin Commander (Twin Commander Aircraft LLC) [Twin Commander Aircraft Corporation]	500, 500A, 500B, 500U, 500S, 520, 560, 560A, 560E		Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
2A4	Twin Commander (Twin Commander Aircraft LLC) [Twin Commander Aircraft Corporation]	680, 680E, 720, 680F, 560-F, 680FL, 680FL(P), 685		Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
2A4	Twin Commander (Twin Commander Aircraft LLC) [Twin Commander Aircraft Corporation]	680F(P), 680T, 680V, 680W, 681, 690, 690A, 690B, 690C, 695, 695A, 690D, 695B	X	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A12SW	Twin Commander (Twin Commander Aircraft LLC) [Twin Commander Aircraft Corporation]	700		Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7] Requires GEA 110 for interface to resistive fuel quantity sensors.
A-787	Univair (Univair Aircraft Corporation)	415-D, 415-E, 415-G, F-1, F-1A, A-2, A2-A, M10		Figure G-3, Figure G-5	Figure G-6	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

A-718	Univair (Univair Aircraft Corporation) [Mooney]	415-C, 415-CD			Figure G-3, Figure G-5	Figure G-6	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A-767	Univair (Univair Aircraft Corporation) [Stinson]	108, 108-1, 108-2, 108-3			Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5] [8]
A9EA	Viking Air Limited (Viking Air Limited) [Bombardier Inc.]	DHC-6-1, DHC-6-100, DHC-6-200, DHC-6-300	X	N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A9EA	Viking Air Limited (Viking Air Limited) [Bombardier Inc.]	DHC-6-400	X	N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A-815	Viking Air Limited (Viking Air Limited) [Bombardier Inc.]	DHC-3	X		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A-806	Viking Air Limited (Viking Air Limited) [Bombardier Inc.]	DHC-2 Mark I, DHC-2 Mark II			Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A-806	Viking Air Limited (Viking Air Limited) [Bombardier Inc.]	DHC-2 Mark III		N/A	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A15EU	Viking Air Limited (Viking Air Limited) [Short Brothers & Harland Ltd.]	SC-7 Series 2, SC-7 Series 3	X	N/A	Figure G-3, Figure G-5	Figure G-10	Not Allowed	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]

A61EU	Vulcan Air S.p.A. (Vulcanair S.p.A.)	SF600, SF600A	N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A00075CE	Vulcanair S.p.A. (Vulcanair S.p.A.)	Vulcanair V1.0	X	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [3] [5] [7] [8] For main cabin tube structure, [3] applies; for other areas, [2] applies.
A31EU	Vulcanair S.p.A. (Vulcanair S.p.A.) [Partenavia Costruzioni Aeronautiche S.p.A]	P.68, P.68B, P.68C, P.68C-TC, P.68 “OBSERVER”, P.68TC “OBSERVER”, P.68 “OBSERVER 2”, P.68R		Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7] Requires GEA 110 for interface to resistive fuel quantity sensors.
A31EU	Vulcanair S.p.A. (Vulcanair S.p.A.) [Partenavia Costruzioni Aeronautiche S.p.A]	AP68TP-300 “SPARTACUS”, AP68TP-600 “VIATOR”	N/A	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A-804	W.Z.D Enterprises Inc. (W.Z.D Enterprises Inc.) [JGS Properties, LLC]	11A, 11E	X	Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A18EA	WACO Classic Aircraft Corporation (WACO Classic Aircraft Corporation) [Great Lakes Aircraft Company]	2T-1A, 2T-1A-1, 2T-1A-2		Figure G-4, Figure G-5	Figure G-6, Figure G-16	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5]
ATC 542	WACO (The WACO Aircraft Company)	YMF	N/A	Figure G-3, Figure G-5	Figure G-16	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5] [8]

A68EU	WSK “PZL-MIELEC” OBR (WSK PZL MIELEC and OBR SK MIELEC) [PZL]	PZL M20 03	X	Figure G-3, Figure G-5	Figure G-10	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
TA5CH	Zenair (Zenair Ltd.)	CH2000		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A76EU	ZLIN Aircraft a.s. (ZLIN Aircraft a.s.) [MORAVAN a.s.]	Z-242L, Z-143L		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [2] [5] [7]
A30EU	ZLIN Aircraft a.s. (ZLIN Aircraft a.s.) [Moravan National Corporation]	ZLIN 526L		Figure G-3, Figure G-5	Figure G-6	Figure G-18	Zone 2A, Zone 3	Zone 2A, Zone 3	[1] [3] [5] [8]

Notes:

[1] The GTP 59 cannot be installed on Zone 2A composite areas.

[2] The GTP 59 must be bonded to the aluminum skin. For details, refer to Section 4.6.2.

[3] The GTP 59 must be bonded to the metallic tube structure. For details, refer to Section 4.6.2.

[4] The GTP 59 must be isolated from the aircraft ground plane. For details, refer to Section 4.6.2.

[5] The GMU 44B must be bonded to the aircraft ground plane. For details, refer to Section 4.6.1.

[6] The GMU 44B must be isolated from the aircraft ground plane. For details, refer to Section 4.6.1.

[7] The GMU 44B/GMU 11 may be mounted in the wingtip provided that certain criteria are met. For details, refer to Section 4.6.1.

[8] Nonmetallic aircraft.

[9] Reserved.

[10] Reserved.

[11] Remote LRUs must be installed on existing structure designated by aircraft manufacturer for avionics installation.

[12] For wing lightning zones, equipment installation only allowed in aluminum wings. Equipment installation is NOT allowed in wooden wings.

[13] Wires must be routed behind metallic substructure (i.e., routed behind instrument panel/pedestal/circuit breaker panel, along lightning ground bar/strip, inside lightning ground tube, or along other airframe ground plane).

APPENDIX E ADVANCED AIRSPEED SETTINGS

E.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.

E.2 Configuration Page Layout

In Configuration mode, touch Setup !’ Airframe Config !’ Air Data Setup !’ Airspeed Configuration. Set the Mode to Advanced and touch Configuration. 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.
- Mach Settings - Optionally configure.

Figure E-1 shows a summation of the configuration. Refer to the following sections for more detail.

a. b. c.

d. e. f.

g. h. i.

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 touch Enter Overspeeds and select Mmo or Vne/Vmo per the POH.

f. Configure Mmo or Vne/Vmo (Variable Mmo is not approved per this STC). Refer to Appendix Section E.4

g. From the Advanced Airspeed page, touch Bugs and configure the bugs per the POH. Refer to Appendix Section E.5

h. From the Advanced Airspeed page, touch Markings and configure the markings per the POH. Refer to Appendix Section E.6

i. From the Advanced Airspeed page, touch Mach Settings and configure per Section 5.6.1.

Figure E-1 Advanced Airspeed Configuration Pages

E.3 Tape Ranges

E.3.1 Configuration

The information listed in Table E-1 must be obtained for every installation. Figure E-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 at the end of the IAS tape.

Figure E-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 tape ranges to overlap each other. Gaps are acceptable between ranges, but overlaps are not.

Table E-1 Advanced Airframe-Specific Configuration Data – Tape Ranges

Tape/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.
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 E.3.3.

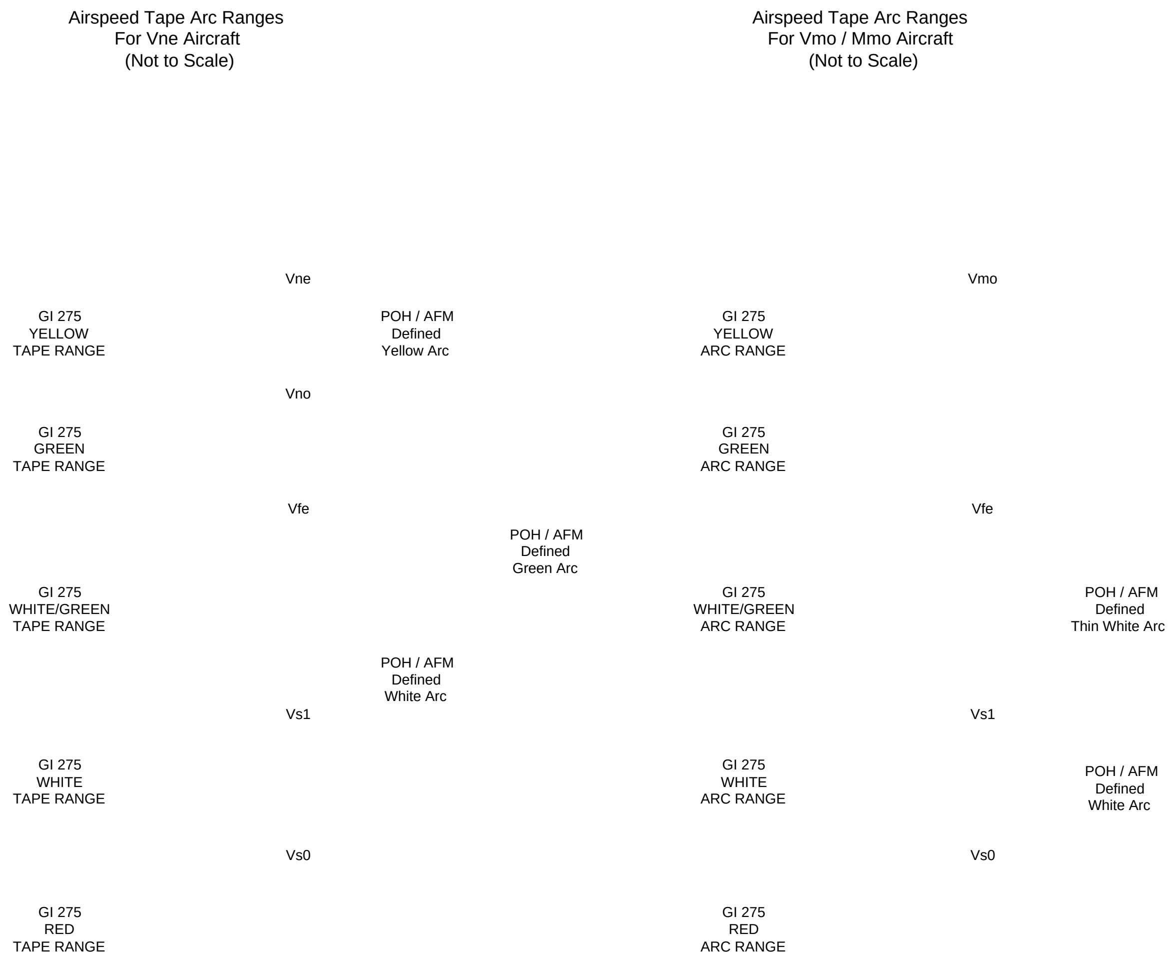


Figure E-2 Airspeed Tape Arc Range Diagrams

E.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).

E.3.3 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".

NOTE

When Overspeeds are configured, the GI 275 ADI will display a variable red overspeed range similar to a barber pole.

Variable Mmo mode is not approved per this STC.

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 overspeed range. 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.

E.3.3.1 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

E.4 Bugs

The information obtained in Table E-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 0 KT.

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 E-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.

Touching GLIDE, VX, and VY, will change the bugs to VREF, V1, and V2, respectively. Refer to Table E-3.

Table E-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.

E.5 Markings

The information obtained in Table E-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. Touch the corresponding button to enable each marking. Touch Value for enabled markings to configure the value of that marking.

> 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 E-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.
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.
C0 - C9	Optional user-configurable airspeed markings.	N/A	Software v2.11 and later. Must be configured at least 5 mph/kts apart from any other airspeed marking.

E.6 Mach Settings

NOTE

Mach Number display is not available if a GFC 500 is interfaced to the GI 275. Mach Number display is for supplemental flight information only. It may not replace or duplicate existing Mach Number display gauges and must be configured off in such installations.

Used to configure display of Mach speed. When enabled, Mach Number will be displayed above the airspeed tape. If display of Mach Number is desired, follow the procedure below. Otherwise, configure as None.

1. Touch Display and select Secondary Display.
2. Touch Settings.
3. Touch Activation and select Mach Threshold or Crossover ALT.
4. If Activation is set to Mach Threshold, touch the corresponding buttons to configure On, Off, and Format settings.

   If Activation is set to Crossover ALT, touch the corresponding buttons to configure Altitude and Format settings.

E.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.

E.7.1 Beechcraft Bonanza A36 (Example)

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

CURRENT ASI

Figure E-3 Beechcraft Bonanza A36 Current ASI and Tape Markings

Figure E-4 Beechcraft Bonanza A36 Equivalent IAS Tape and Airspeed Configuration

E.7.2 Columbia 400 (Example)

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.)

CURRENT ASI

Figure E-5 Columbia 400 Current ASI and Tape Markings

Vne = 230 KT
@ FL 075

Vne = 213 KT
@ FL 160

Figure E-6 Columbia 400 Equivalent IAS Tape and Airspeed Configuration

APPENDIX F EIS GAUGE LAYOUT

This appendix provides guidance for configuring EIS gauge layouts for the GI 275 EIS display. Any deviation from the requirements contained within will require the installer to obtain additional approval. The gauge layout of the GI 275 may differ between installations due to various factors. Gauge layouts are generated automatically by the GI 275 depending on the selected engine sensors, specific gauge configuration and markings, and the number of EIS displays installed. Guidelines for how the EIS gauge layout is generated are given in the following sections.

Not all aircraft and the engine indications are compatible with the GI 275 EIS due to the installed engine gauges and the associated markings. For incompatibility cases, the original gauge must be retained. Refer to Section 2 for limitations.

The GI 275 EIS provides up to five different pages depending on the system configuration: Main EIS page, AUX EIS page, CHT/EGT page, Fuel page, and Summary page. Each page has three distinct display sections: top, middle, and bottom.

NOTE
The gauge minimum and maximum limits may be adjusted to optimize pilot interpretation of the gauge; however, all limitations in the POH/AFM or other approved aircraft data must be displayed on the gauge.

F.1 Main EIS Page

The Main EIS page is divided into four sections: top, bottom, middle-left, which contains a CHT/EGT Graph, and middle-right, which contains strip gauges.

The following is an example of the GI 275 Main EIS page.

Figure F-1 Example Main EIS Page

Top Full-Time Gauges

The GI 275 EIS provides a section at the top to display specific gauge information on all pages. This includes RPM and Manifold Pressure (if applicable). Additionally, a Prop Sync Wheel (conventional twin-engine only) or Percent Power can be configured to be displayed.

Percent Power requires the following gauge inputs: RPM, Manifold Pressure, Fuel Flow, and OAT, as well as inputting the Max Rated Horsepower, Max MAP, RPM at Max HP, and the Minimum Brake Specific Fuel Consumption (BSFC). Refer to Section 5.7.1 for engine configuration settings.

The Manifold Pressure gauge can be configured to show on the left side or on the right side of the RPM gauge. Refer to Figure F-2 for examples.

Figure F-2 Top Full-Time Gauge Examples

Bottom Full-Time Fuel Gauges

The GI 275 EIS provides a section at the bottom to display specific gauge information on all pages. If Main Fuel is configured, the Main Fuel Quantity beakers will be shown on every page in the bottom center (single or Left/Right). If Fuel Quantity is not configured, Outside Air Temperature will be displayed in this location. If Fuel Quantity and OAT are not configured, Time (UTC) will be displayed full-time in the bottom center position.

For twin-engine aircraft, the Fuel Quantity gauge must only be shown on one EIS unit. Toggle the Show button in the EIS Gauges menu on one of the two EIS displays so that the Fuel Quantity gauge is only shown on one unit.

Bottom Full-time AUX/Tip Fuel Quantity and Electrical Gauges

If AUX/Tip tanks are configured, AUX/Tip Fuel beaker gauges will be displayed to the left and right of the Main Fuel Quantity beaker gauges. If AUX/Tip tanks are not configured but digital gauges (e.g., Alternator, Battery, Bus - Volts/AMPS) are configured, up to two digital gauges will be displayed in the bottom left and right corners. If a single AUX gauge is configured, its fuel beaker gauge will be displayed in the lower left corner. Additionally, if a single AUX gauge and only one digital gauge are configured, the digital gauge will also populate next to the AUX gauge in the lower right position. Refer to Figure F-3 for examples.

The priority for populating bottom left and bottom right full-time gauges is as follows:

(With Red or Yellow Markings)

1. AUX/Tip Fuel (left/right center) – always highest priority over any digital gauge
2. Alternator Amps
3. Battery Volts
4. Bus Volts
5. Battery Amps

(Without Red or Yellow Markings)

6. Alternator Amps
7. Battery Volts
8. Bus Volts
9. Battery Amps IAT

Figure F-3 Bottom Full-Time Gauge Examples

For twin-engine aircraft, the Fuel Quantity gauge must only be shown on one EIS unit. Toggle the Show button in the EIS Gauges menu on one of the two EIS displays so that the Fuel Quantity gauge is only shown on one unit.

Middle Left CHT/EGT Graph

The GI 275 EIS provides a 4-, 6-, or 7-cylinder CHT/EGT graph in the middle left of the Main EIS page, unless configured for Single CHT/EGT, in which the GI 275 displays a strip gauge for each similar to the middle right strip gauges. This section displays CHT, EGT, and if configured, Primary EGT or TIT (single or dual) in a bar graph layout with digital readouts above the graph for the hottest cylinder or the user-selected cylinder. Refer to Figure F-4 for examples.

Figure F-4 CHT/EGT Graph Examples

Middle Right Strip Gauges

The GI 275 EIS provides a section in the middle right of the display that arranges up to four strip gauges or up to three strip gauges with two digital gauges. This section layout will differ depending on the displayed gauges and the alerting lines configured with the corresponding gauge. Refer to Figure F-5 for layout examples.

Figure F-5 Strip Gauge Examples

The gauges in the middle right of the Main EIS page follow a gauge priority scheme as shown below. Number 1 is the highest priority gauge and number 17 is the lowest priority gauge. The section populates the gauge layout from top to bottom following the prioritization scheme listed below.

The following are exceptions to the priority list:

- If AUX/Tip tanks are configured and at least one digital gauge is configured with a red/yellow alert, this gauge will take the top slot.
- The Fuel Flow gauge will always be placed in the fourth slot (near the fuel quantity) unless it is unmarked with an alert and four other gauges are marked with a red/yellow alert.

(With Red or Yellow Markings)

1. Oil Pressure
2. Oil Temperature
3. Fuel Flow
4. Fuel Pressure
5. Carb Temp
6. CDT
7. IAT

8. CDT/IAT Diff
9. Digital
    a. ALT AMPS
    b. BATT Volts
    c. BUS Volts
    d. BATT AMPS

(Without Red or Yellow Markings)

10. Oil Pressure
11. Oil Temperature
12. Fuel Flow
13. Fuel Pressure
14. Carb Temp
15. CDT
16. IAT
17. CDT/IAT Diff

Figure F-6 Strip Gauge Priority Examples

The nomenclature with examples shown below can be used to determine EIS gauge placement:

[S1] Oil Press, unless Aux Fuel and alerting digital gauges are configured; if so, shift this and the subsequent gauges down.

[S2] Oil Temp.

[S3] 1. Highest priority marked gauge.
2. Fuel Pressure.
3. Highest priority unmarked gauge.

[S4] 1. Next highest priority marked gauge.
2. Fuel Flow.
3. Next highest priority unmarked gauge.

Refer to Figure F-7 for more information.

Figure F-7 Strip Gauge Diagram

All alerting (i.e., red or yellow markings) gauges must be shown on the Main EIS page of the EIS display. Some aircraft may have more alerting gauges than the GI 275 can display on a single EIS unit. If not all alerting gauges can be configured for display on the Main EIS page, the original gauges must be retained.

F.2 AUX EIS Page

The AUX EIS page is divided into four sections: top, bottom, middle left, and middle right. This page provides supplemental EIS gauges and information. The top arc segment as well as the bottom segment with Fuel Quantity are unchanged from the Main EIS page. No red/yellow alerting gauges can be configured on the AUX EIS page without being displayed on the Main EIS page as well.

The middle left section of the AUX EIS page provides two miscellaneous fields that may be populated differently depending on the EIS sensors displayed and gauge markings configured. The top field is a user-selectable field for miscellaneous information.

The bottom field is reserved for digital gauges or another user-selectable field for miscellaneous information. If AUX/Tip tanks are configured, as well as digital gauges, this space will display the digital gauges (up to four). If more than two digital gauges are configured with or without AUX/Tip tanks, the digital gauges will all be displayed in this field (up to four), even if the information is repeated from the Main EIS page. Refer to Figure F-8 for examples.

Figure F-8 Left Side Aux Gauges Examples

The middle right section of the AUX EIS page provides two user-selectable fields for miscellaneous information if no unmarked strip gauges are displayed on the AUX EIS page. If there are unmarked strip gauges that do not fit onto the Main EIS page due to other priorities, these gauges will populate the middle right of the AUX EIS page. Up to four strip gauges can be displayed on the AUX EIS page. One strip gauge will replace the lower user-selectable field. Two or more strip gauges will replace both user-selectable fields and will populate the gauges from the top down based on the strip gauge priorities. Refer to Figure F-9 for examples.

Figure F-9 Right Side Aux Gauges Examples

The bottom of the AUX EIS page has the full-time center position for Fuel Qty, OAT, or Time, with spaces for digital gauges on the left and right. If unmarked digital gauges cannot be displayed on the Main EIS page due to other gauge priorities (such as AUX Fuel), they will be displayed on the bottom-left and bottom-right, beginning with the higher priority digital gauge on the left. Refer to Figure F-10 for examples.

Figure F-10 Bottom AUX Gauges Examples

F.3 CHT/EGT Page

NOTE
This page is not available when GI 275 EIS is configured for Single CHT/EGT per Section 5.7.1.

The CHT/EGT page is dedicated to CHT and EGT information, as well as Primary EGT or TIT, if applicable. Similarly to the Main EIS and AUX EIS pages, the top section displays full-time gauges and the bottom center area displays fuel quantity.

The bar graph on the CHT/EGT page will populate with four, six, or seven pairs (depending on engine configuration) of CHT and EGT bars for each cylinder. If TIT sensors are installed and configured on the GI 275, then one or two (depending on configuration) bars for TIT will be displayed on the right-hand side of the CHT/EGT page. Alternatively, if a Primary EGT sensor is installed and configured, a bar for Primary EGT will be displayed on the right-hand side of the CHT/EGT page. There is also a space below the CHT/EGT bar graph where Fuel Flow is displayed, if installed and configured.

Figure F-11 CHT/EGT Page Examples

The CHT/EGT page can be cycled through three different modes that change display aspects of the CHT/EGT bar graph for different pilot operations, such as Lean Assist or viewing cylinders in Normalized layout during cruise.

F.4 Fuel Page

If a Fuel Flow sensor is installed and configured, a Fuel page is available on the GI 275 EIS. Similar to the AUX EIS and CHT/EGT pages, the top and bottom of the Fuel page retains the same full-time gauges and fuel quantity gauges. The Fuel page will show Estimated Fuel and Endurance based on the Fuel Flow sensor data. It will also show the Fuel Flow gauge with the fuel computer "fuel used" value.

Figure F-12 Fuel Page without GPS Source

Additionally, if a GPS source is interfaced with the GI 275 EIS, the Fuel page will display estimated range and efficiency based on fuel flow sensor data and will give fuel and endurance estimates for a flight plan waypoint if one is loaded on the interfaced GPS.

Figure F-13 Fuel Page with GPS Source

F.5 Summary Page

The Summary page provides supplemental flight summary information. Similarly to the Main EIS and AUX EIS pages, the top and bottom of the Summary page retain the full-time gauges and Fuel Quantity gauges. The Summary page will additionally show Aircraft Timer information, RPM, and Temperature data, as well as Fuel and Lean data.

Figure F-14 Summary Page – Aircraft Timers

Figure F-15 Summary Page – RPM and Temp Data

Figure F-16 Summary Page – Fuel and Lean Data

F.6 Gauge Markings

F.6.1 Caution and Warning Alerts

The GI 275 EIS will generate alerts for gauges with configured red or yellow markings by highlighting the numerical value in a red or yellow background, respectively. For strip and digital readout gauges, a flashing alert triangle is generated in the top left of the display in addition to highlighting the numerical gauge value. This alert triangle will persist on all EIS pages. Touching the triangle will stop the flashing and return the display to the Main EIS page. The full-time arc gauges do not generate alert banners.

Figure F-17 Caution Alert (Flashing and Acknowledged)

Figure F-18 Warning Alert (Flashing and Acknowledged)

If both a Caution and a Warning alert have triggered, the flashing Warning alert triangle will be displayed, and each numerical gauge value will flash the appropriate color (yellow for Caution and red for Warning). Touching the flashing Warning alert triangle will acknowledge both the Caution and Warning alerts. The non-flashing Warning alert triangle will persist until the alert condition is no longer true, in which case the non-flashing Caution alert triangle will be displayed as long as that alert condition is true.

Figure F-19 Caution and Warning Alerts (Flashing and Acknowledged)

If an acknowledged Warning alert triangle is currently displayed and a new Caution alert triggers, a flashing Caution alert triangle will display in place of the Warning alert triangle. Once the Caution alert is acknowledged, the alert triangle will default to the higher priority non-flashing Warning alert triangle.

Figure F-20 New Caution Alert with Ongoing Warning Alert

Certain gauges (Oil Pressure, Manifold Pressure, and Fuel Pressure) do not trigger alerts until the engine is started. Gauges with red or yellow markings must be displayed on the Main EIS page. Green, blue, and white markings do not produce alerts or affect gauge prioritization, and may be shown on the AUX EIS page.

F.6.2 Gauge with Varying Arc Width

The GI 275 EIS display does not provide varying gauge arc width configuration options, as seen in Figure F-21. If a gauge that contains a varying arc width is being replaced, it must be configured so that the arc length is continuous for the intended length of the colored arc. Refer to Figure F-21 as an example.

Varying Gauge Arc Width Example

Continuous Gauge Arc Width Example

Figure F-21 Varying Gauge Arc

APPENDIX G HIRF AND LIGHTNING PROTECTION

G.1 Shielded Wire

When extending existing sensor wiring, it is required to maintain continuity of the wire shield.

For the shielded wire(s), the shield on both sides of the open segment must be reconnected after the splice is complete with a spacing of approximately 3 inches or less in total length.

1. Use solder sleeves with an insulated shield drain to jumper the shield ends together.
2. Protect the open segment of wire with fusion tape.
3. Start the wrap by making a complete turn of the tape around the cable approximately 0.5 inches from the repair area.
4. Overlap the preceding wrap by 50%.
5. Extend the tape over the repair area by approximately 0.5 inches.
6. Use lacing tape to spot tie the end of the fusion tape.

1/2" 3" Segment opening 1/2"

Insulated shield drain

Shielded wire Fusion tape Lacing cord Shielded wire

Figure G-1 Shielded Wire Splice

G.2 Lightning Zones for GTP 59 and GMU 11/44B

This section provides lightning zoning diagrams for various types of aircraft to facilitate correct placement of the GMU11/44B and GTP59. Additional restrictions related to the placement of the GMU 11/44B and GTP59 can be found in Section 4.6.1 and Section 4.6.2, respectively.

The zoning levels correspond to the severity of lightning strikes and probability of occurrence on the aircraft. The order of severity starting with the safest zone is Zone 3, 2A, 2B, 1C, and 1A/1B. The GMU 44B and GTP59 cannot be installed in Zones 1A, 1B, 1C, or 2B.

All diagrams in this appendix use the legend shown in Table . The zoning described is split into the following: wings, fuselage, and empennage. For the particular airframe, the applicable wings, fuselage, and empennage zoning should be merged to get a complete zonal definition. The zoning figures applicable to any particular model are found in Table D-2. If there is a region of overlapping zones, the more severe zone should always be applied (e.g., if Zone 2A and 1A overlap in a region, then the overlapping region should be considered Zone 1A). Examples of complete lightning zoning diagrams can be found in Appendix Section G.3.

Shading	Zone	Shading	Zone
	Zone 1A		Zone 2A
	Zone 1B		Zone 2B
	Zone 1C		Zone 3

Figure G-2 Lightning Zoning Legend

G.2.1 Wings

The different zoning for wingtips and wings are contained in the following subsections.

G.2.1.1 Wingtips

G.2.1.1.1 Aircraft Not Limited to VFR Operation

> NOTE
> This zoning section is applicable to those aircraft models that are not limited to VFR operation only in Table D-2. For zoning of models limited to VFR operation only, refer to Appendix Section G.2.1.1.2.

Zoning of various types of wingtips is shown in Figure G-3. Figure G-3A shows zoning for straight wingtips. Figure G-3B shows zoning for curved wingtips. The zones are similar to those of straight wingtips. The main difference is that Zone 1 extends from the outboard edge of the wing past the tangent point of the chord and 0.5 meters inboard.

Figure G-3C shows zoning for winglets. Note that the winglet figure shows a flattened winglet. Winglet classifications are very similar to those of curved wingtips. The main difference is that Zone 1 extends from the outboard edge of the wing past the tangent point of the winglet and 0.5 meters inboard.

Figure G-3D shows zoning for tip tanks. The rule that applies to tip tanks is very similar to that of the curved wing. The main difference is that Zone 1 extends 0.5 meters past the inboard edge of the tip tank.

0.6 m

0.5 m

0.15 m

A (STRAIGHT WINGTIP)

0.6 m

0.5 m

Tangent Point

0.15 m

B (CURVED WINGTIP)

0.6 m

0.5 m

Tangent Point

0.15 m

C (WINGLET)

0.6 m

0.5 m

Tangent Point

0.15 m

D (TIP TANKS)

Figure G-3 Zoning for Wingtips on Aircraft Not Limited to VFR Operation

G.2.1.1.2 Aircraft Limited to VFR Operation

This zoning section is applicable to those aircraft models that are limited to VFR operation only in Appendix D. For zoning of models that are not limited to VFR operation only, refer to Appendix Section G.2.1.1.1.

NOTE

The aircraft must have a position light in the wing tip area as a prerequisite for this STC.

If there is no position light on the wing, then no Zone 3 exists and the GTP 59 cannot be installed on this particular aircraft. For those aircraft identified as VFR in Appendix D, the following criteria is used to determine the Zone 3 area:

- Zone 1A/1B finishes as shown in Figure G-3 or 0.5 meters inboard from the inboard edge of the position light, whichever is the greater distance from the outboard edge of the wing tip, as shown in Figure G-4.
- Zone 2A/2B extends a total of 2.1 meters inboard of Zone 1A/1B.
- Zone 3 extends inboard of Zone 2A/2B from the wing tip and stops at another Zone 1A/1B or 2A/2B determined from other areas of Appendix Section G.2.2.

2.1 m
0.5 m
Position Light
0.15 m
A (STRAIGHT WINGTIP)

2.1 m
0.5 m
Position Light
Tangent Point
0.15 m
B (CURVED WINGTIP)

2.1 m
0.5 m
Position Light
Tangent Point
0.15 m
C (WINGLET)

2.1 m
0.5 m
Position Light
Tangent Point
0.15 m
D (TIP TANKS)

Figure G-4 Zoning for Wingtips on Aircraft Limited to VFR Operation

G.2.1.2 Landing Gear

The landing gear is considered Zone 1A. The struts that connect the landing gear to the wings are Zone 2A. Each side of landing gear is zoned individually. If there is a single strut connecting the landing gear to the wing, then the inboard and outboard edges of the landing gear should be used for zoning instead of using the connection point of the wing and the strut. In addition to the zoning shown in Figure G-5, the zoning described for the fuselage and wings also applies. The floats for a float-mounted fuselage have not been zoned because they do not influence the zoning of the bottom of the fuselage. Neither the GTP 59 nor the GMU 11/44B can be mounted on landing gear, including floats, or its struts.

Figure G-5 Zoning for Wings Affected by Landing Gear

G.2.2 Fuselage

This section describes the zoning for several different types of fuselages. The empennage is zoned in Appendix Section G.2.3. Aft of every Zone 2A is a 0.15 meter Zone 2B (i.e., Zone 2A is followed by a 0.15 meter Zone 2B). Although Zone 2B areas are marked on the diagrams, sometimes their widths are not defined (0.15 meters should be used in these cases). The horizontal stabilizer of the tail is not zoned because neither the GTP 59 nor the GMU 11/44B can be mounted there. In addition, neither the GTP 59 nor the GMU 11/44B can be mounted within 0.5 meters of the rear-most point of the fuselage. Appendix Section G.2.3 explains the conditions under which the GTP 59 or GMU11/44B can be mounted on the vertical stabilizer. Although all diagrams show low-wing aircraft, the same zoning can be applied to high-wing aircraft. The values d_1 and d_2 are defined as follows:

d_1 = 1.3 m (51.2 in)

d_2 = 2.6 m (102.4 in)

G.2.2.1 Single-Propeller Aircraft

Zoning of low- or high-wing aircraft with single propellers is shown in Figure G-6. The area of the nose immediately aft of the propeller is Zone 3. The 0.6-meter distance should be measured from the outboard-most edge of the fuselage or the tip of the propeller, whichever is longer. Figure G-8 shows the case of an aircraft with a curved fuselage. The portion of the fuselage that extends 1.3 meters aft of the propeller blades is Zone 1C. However, the bottom centerline is Zone 2A, and it is acceptable to mount the GTP 59 there.

Figure G-6 Zoning for a Single Propeller (Low- or High-Wing)

A

B

Figure G-7 Zoning for a Low- or High-Wing Canard with a Rear-Mounted Propeller

A

B

NOTE

The bottom centerline is Zone 2A, and it is acceptable to mount the GTP 59 there.

Figure G-8 Zoning for a Low- or High-Wing Aircraft with a Curved Lower Fuselage

A

B

Figure G-9 Zoning for a Single, Rear-Mounted Prop above Fuselage

G.2.2.2 Aircraft with Multiple Propellers

Zoning of low- or high-wing aircraft with twin front-mounted propellers is shown in Figure G-10. The text below assumes the aircraft fuselage and wing are constructed of metal. Note that Zone 2A can overlap onto the nacelles if they are within 0.6 meters outboard of the fuselage.

Zoning of low- or high-wing aircraft with rear-mounted twin propellers is shown in Figure G-11. The text below assumes the aircraft fuselage and wing are constructed of metal.

For an empennage with a third engine, the GTP 59 cannot be located in the empennage. Therefore, the zoning for this third engine area has been omitted from the diagrams below. The GTP 59 and GMU 11/44B for this aircraft should be located in Zone 3 or Zone 2A on the bottom of the fuselage and wings.

A

B

Figure G-10 Zoning for Front-Mounted Twin Propellers (Low- or High-Wing)

A

B

NOTE

Although the engine nacelles are shown as Zone 3, they may be Zone 2A if the engine falls within the Zone 2 area of the wing (within 0.6 meters outboard from fuselage edge).

Figure G-11 Zoning for Rear-Mounted Twin Propellers (Low- or High-Wing)

A

B

NOTE
Nothing can be mounted in the tail boom of the aircraft.

Figure G-12 Zoning for Front- and Rear-Mounted Propellers (Low- or High-Wing)

A

B

Figure G-13 Zoning for High-Wing with Front and Rear Propellers Mounted Above Fuselage

A

B

Figure G-14 Zoning for Low- or High-Wing Canard with Twin Jet Engines

0.15m

d_2

d_1

0.5m

0.15m

TOP (VIEW LOOKING DOWN)

BOTTOM (VIEW LOOKING UP)

0.5m

0.15m

0.15m

Figure G-15 Zoning for Low or High Wing Canard with Twin Rear-Facing Props

G.2.2.3 Biplanes

Figure G-16 shows how biplanes can be classified using previous figures. The top and bottom of both wings will be zoned using Figure G-4, while the fuselage and the mid-sections of the wing can be zoned using Figure G-6.

Figure G-16 Zoning for Single-Propeller Biplane

G.2.2.4 Aircraft with Jet Engines

Zoning of low- or high-wing twin jet engine aircraft is shown in Figure G-17.

d_2
0.5m
d_1
TOP (VIEW LOOKING DOWN)
BOTTOM (VIEW LOOKING UP)
0.5m
A
d_2
d_1
B

Figure G-17 Single Jet Engines with Two Inlets Zoning, Low or High Wing

G.2.3 Empennage

If the GTP 59 and GMU 11/44B cannot be mounted in other areas of the aircraft that are Zone 3 locations, it is acceptable for metal aircraft with one of the three traditional empennages shown in Figure G-18 to mount the GTP 59 or GMU11/44B in the Zone 2A area of the tail. However, the GTP 59 or GMU11/44B cannot be mounted on/under any non-conducting surfaces. If the complete empennage of the aircraft being considered does not match those shown in Figure G-18, then it should be mounted in allowed areas defined for the fuselage and wings. If only portions of the empennage shown below match, then the same rule applies and the GTP 59 or GMU11/44B cannot be installed in the empennage. Note that it is allowable for only the horizontal stabilizer tips to differ from those shown in Figure G-18. The GTP 59 cannot be located in the horizontal stabilizer of the empennage. Unless otherwise noted in the model-specific notes in Appendix D, neither the GTP 59 nor the GMU 11/44B can be mounted in the tail of a composite empennage.

A B C

D (APPLIES TO A) E (APPLIES TO B AND C)

Figure G-18 Zoning for Empennage

G.3 Example Lightning Zoning Diagrams

This section contains sample lightning zoning diagrams for typical aircraft.

Figure G-19 Example Lightning Zoning for Single-Engine Aircraft

Figure G-20 Example Lightning Zoning for Twin-Engine Aircraft

APPENDIX H TEXTRON AVIATION (CESSNA) MODEL 525(A) - GI 275 STANDBY ADI WITH G600 TXi

H.1 Limitations

The system architectures and configurations contained in this appendix are limited to GI 275 unit(s) installed in a Textron Aviation (Cessna) Model 525(A) as an integrated Standby ADI to the G600 TXi system in accordance with STC SA02571SE. This appendix includes installation data for the GI 275 unit(s) only; refer to STC SA02571SE for other system requirements, limitations, and equipment approval in the Textron Aviation (Cessna) Model 525(A) with the G600 TXi system.

When installed as a Standby ADI to the G600 TXi system in the Textron Aviation (Cessna) Model 525(A), the GI 275 must be installed and configured in accordance with the data in this appendix. GI 275 software v3.42 or later is required to be installed on each GI 275 unit. A high level diagram of the GI 275 Standby ADI installation in the Textron Aviation (Cessna) Model 525(A) with G600 TXi is shown in Figure H-1.

Optional Co-pilot Standby

ADAHRS DATA HSDB

GI 275 w/ ADAHRS
011-04489-30
Standby ADI

GI 275 Base
011-04489-00
Standby ADI

G600 TXi
Pilot PFD

HSDB

GTN 750Xi
GPS Navigator

HSDB

G600 TXi
Co-pilot PFD

Figure H-1 Textron Aviation (Cessna) Model 525(A) System Architecture

The most notable feature of the GI 275 Standby ADI installation in the Textron Aviation (Cessna) Model 525(A) with G600 TXi is the installation of an optional GI 275 Base unit (P/N 011-04489-00) as a Standby ADI receiving ADAHRS data from an interfaced GI 275 ADAHRS unit (P/N 011-04489-30) for display. This allows the GI 275 Standby ADI on the co-pilot side of the panel to provide a redundant display of the standby ADAHRS data. This architecture is limited to the Textron Aviation (Cessna) Model 525(A) with an interfaced G600 TXi per STC SA02571SE and is not approved in any other installation.

H.2 Equipment

The required equipment for the installation of the GI 275 Standby ADI in the Textron Aviation (Cessna) Model 525(A) with G600 TXi is shown in Table H-1.

Table H-1 Textron Aviation (Cessna) Model 525(A) Required Equipment

Unit	Part Number	
	Unit	Catalog
GI 275 ADAHRS, Class III & IV	011-04489-30	010-01912-30
GI 275 Base [1]	011-04489-00	010-01912-00

Notes:

[1] Optional co-pilot side Standby ADI.

H.3 Installation

The GI 275 mechanical installation in the Textron Aviation (Cessna) Model 525(A) follows the general guidance provided in Section 4. Additional requirements for the Textron Aviation (Cessna) Model 525(A) panel with the GI 275 Standby to the G600 TXi, including the installation locations for the GI 275, are contained in the applicable installation manual addendum (refer to Table H-2).

Table H-2 Textron Aviation (Cessna) Model 525(A) Installation Manual Addendum s

Installation Manual Addendum	Part Number
G500/G600 TXi Part 23 AML STC Installation Manual Addendum, Textron Aviation Inc. (Cessna), Model 525, S/N 525-0360 Thru -0599	190-01717-BG
G500/G600 TXi Part 23 AML STC Installation Manual Addendum, Textron Aviation Inc. (Cessna), Model 525A, S/N 525A-0001 Thru -0299	190-01717-B7

H.4 Electrical Installation

Refer to the applicable installation manual addendum listed in Table H-2 for electrical installation data, including GI 275 connections.

H.5 System Configuration

The GI 275 unit(s) must be configured in accordance with the settings below. Refer to Section 5 for general instructions, such as accessing and navigating Configuration mode, loading system software, and saving configuration files.

References to "GI 275 ADAHRS" and "GI 275 Base" indicate configuration settings specific to either the pilot side Standby ADI unit (P/N 011-04489-30 ADAHRS unit) or the co-pilot side unit (P/N 011-04489-00 Base unit), respectively. Some settings are not specific to the unit and apply to both units. If only a GI 275 ADAHRS unit is installed, settings applicable to both units should simply be set only on the GI 275 ADAHRS unit.

Settings described as "Enabled" are typically indicated on the GI 275 by illumination of green status bar.

H.5.1 Unit Type

Touch Unit Type from the Configuration mode home page and configure the GI 275 ADAHRS and GI 275 Base (if applicable) per Table H-3.

Table H-3 GI 275 Unit Type Settings

Menu Selections		Settings		GI 275 Unit
Unit ID		GI 1		GI 275 ADAHRS
		GI 2		GI 275 Base
System ID Source		Master	Enabled	GI 275 ADAHRS
		Master	GI 1	GI 275 Base
Airframe Info	Category	Fixed Wing		Both
	Engine Config	Multi Engine		
Unit Configuration	Instrument Type	ADI		Both
	Standby	Enabled		
	Unit Location	Pilot		GI 275 ADAHRS
		Copilot		GI 275 Base

H.5.2 Feature Enable

Touch Feature Enable from the Configuration mode home page and configure the GI 275 ADAHRS and GI 275 Base (if applicable) per the settings in Table H-4.

Table H-4 GI 275 Feature Enable Settings

Menu Selections	Settings		GI 275 Unit
Feature Enable	Standby Flight Instrument	Enabled	Both
	SVT	Enabled or Disabled [1]	Both

Notes:

[1] SVT is an optional feature and requires the GI 275 feature unlock. Refer to Section 5.4.1.

H.5.3 Interfaces

Touch Interfaces from the Configuration mode home page and configure the GI 275 ADAHRS and GI 275 Base (if applicable) per the settings in Table H-5. Settings not defined in the tables below should be set as None

Table H-5 GI 275 Interfaces Settings

Menu Selections		Settings		GI 275 Unit
GI 275s Installed		GI 1	Enabled	Both
		GI 2	Enabled	
Wireless		Wireless GI	Disabled	Both
ADC 1	Interface	GX00 TXi		Both
	GDUs Installed	GDU 1	Enabled	
		GDU 2	Enabled	
		GDU 3	Enabled	
	Filtering Time Constants	Airspeed Low	0.250 SEC	
		Airspeed High	0.897 SEC	
		Airspeed Transition to Low	85 KT	
		Airspeed Transition to High	135 KT	
		Vertical Speed	0.40 SEC	
ADC 2	Interface	GX00 TXi		Both
	GDUs Installed	GDU 1	Enabled	
		GDU 2	Enabled	
		GDU 3	Enabled	
	Filtering Time Constants	Airspeed Low	0.250 SEC	
		Airspeed High	0.897 SEC	
		Airspeed Transition to Low	85 KT	
		Airspeed Transition to High	135 KT	
		Vertical Speed	0.40 SEC	

Menu Selections		Settings		GI 275 Unit
ADC STBY	Interface	Internal		GI 275 ADAHRS
		Other GI 275		GI 275 Base
	Error Correction	Pressure Altitude	Corrected	Both
		IAS	Uncorrected	
	Filtering Time Constants	Airspeed Low	0.250 SEC	
		Airspeed High	0.897 SEC	
		Airspeed Transition to Low	85 KT	
		Airspeed Transition to High	135 KT	
		Vertical Speed	0.40 SEC	
AHRS 1	Interface	GX00 TXi		Both
	GDUs Installed	GDU 1	Enabled	
		GDU 2	Enabled	
		GDU 3	Enabled	
	Inertial-aided Vertical Speed	Disabled		
AHRS 2	Interface	GX00 TXi		Both
	GDUs Installed	GDU 1	Enabled	
		GDU 2	Enabled	
		GDU 3	Enabled	
	Inertial-aided Vertical Speed	Disabled		
AHRS STBY	Interface	Internal		GI 275 ADAHRS
		Other GI 275		GI 275 Base
	Magnetic HDG	Interface	Primary	GI 275 ADAHRS
	Inertial-aided Vertical Speed	Disabled		
	External GPS Aiding	Enabled		
GPS 1	Interface	GTN 7xx	Both	GPS 1
	Transmit Selected Course to the GTN	Enabled		
GPS 2	Interface	GTN 7xx	Both	GPS 2
	Transmit Selected Course to the GTN	Enabled		

Menu Selections		Settings		GI 275 Unit
VFR GPS	Interface	Internal or None [1]	GI 275 ADAHRS	VFR GPS
		Other GI 275 or None [1]	GI 275 Base	
	Allow for SVT	Enabled or Disabled [2]	Both	
NAV 1	Interface	GTN 750	Both	NAV 1
	Course Selection	Enabled		
	Transmit Selected Course to the GTN	Enabled		
NAV 2	Interface	GTN 750	Both	NAV 2
	Course Selection	Enabled		
	Transmit Selected Course to the GTN	Enabled		
Traffic [3]	Type	ADS-B		Both
	Interface	GTX 345		
	Active Traffic	TAS/TCAS		
GDL 60 [3]	Interface	GDL 60		Both
	Connected To	Other LRU		
GDL 69 [3]	Interface	GDL 69A		Both
PFD Sync	Interface	HSDB		Both
	GDUs Installed	GDU 1	Enabled	
		GDU 2	Enabled	
		GDU 3	Enabled	

Notes:

[1] VFR GPS is an optional interface for the GI 275 ADAHRS unit. If not installed, set VFR GPS to None.

[2] Optional to set to Enabled or Disabled if SVT is also enabled on the GI 275.

[3] Optional interfaces. Configure per Section 5.5 if compatible interfaces are installed.

H.5.4 Setup

H.5.4.1 Airframe

Touch Setup ➔ Airframe Config from the Configuration mode home page and configure the GI 275 ADAHRS and GI 275 Base (if applicable) per the settings in Table H-6. Settings not defined in Table H-6 should be set as None.

Table H-6 Airframe Configuration Settings

Menu Selections		Settings	GI 275 Unit
Indicator Setup	Roll Pointer	Fixed	Both
	ADI Style	4-in-1	
	ADI ACFT Symbol	Chevron	
	ADI Direction Bug	HDG/TRK	
	Pitch Down Recovery Chevron	40 degrees	
	Pitch Up Recovery Chevron	20 degrees	
	VS Range	+/- 4000FPM	
	ALT/VS Units	Feet	
	IAS Units	KT	
Air Data Setup	Minimum Airspeed Offset	Default (0KT)	
	Airspeed Trend Time	10s	
	Airspeed Bug	Disabled	
	Alt Bug	Disabled	
	Max Alt	99900FT	
	VS Min	Disabled	
	VS Max	Disabled	

H.5.4.2 Airspeed

Touch Setup !’ Airframe Config !’ Airspeed Configuration from the Configuration mode home page and set the mode to Advanced. Touch Configuration !’ Tape Ranges !’ Vne / Vmo / Mmo and configure the GI 275 ADAHRS and GI 275 Base (if applicable) per the settings in Table H-7 or Table H-8. All other tape ranges, markings, bugs, and mach display settings must be configured to Disabled or None.

Table H-7 Airspeed Configuration Settings - Model 525A

Menu Selections					Settings	GI 275 Unit
Vne / Vmo / Mmo	Mode				Variable	Both
	Enter Overspeeds	Mmo	Mmo Mode		Fixed	
			Mmo Level		29300 FT	
			Mmo Value		M 0.720	
		Vne / Vmo	Row 1		Enabled	
				ALT	7999 FT	
				IAS	260 KT	
			Row 2		Enabled	
				ALT	8000 FT	
				IAS	275 KT	
			Row 3		Enabled	
				ALT	29300 FT	
				IAS	275 KT	

Table H-8 Airspeed Configuration Settings - Model 525

Menu Selections					Settings	GI 275 Unit
Vne / Vmo / Mmo	Mode				Variable	Both
	Enter Overspeeds	Mmo	Mmo Mode		Fixed	
			Mmo Level		30500 FT	
			Mmo Value		M 0.710	
		Vne / Vmo	Row 1		Enabled	
				ALT	41000 FT	
				IAS	263 KT	

Set all Airspeed Config Bugs and Markings to 0KTS and/or Disabled.

H.5.4.3 Lighting

Use the general guidance outlined in Section 5.6.2 to configure the GI 275 lighting.

H.5.4.4 Other Setup

Touch Setup from the Configuration mode home page and configure the GI 275 ADAHRS and GI 275 Base (if applicable) per the settings in Table H-9. Settings not defined in Table H-9 should be set as None.

Table H-9 Additional Setup Configuration Settings

Menu Selections		Settings	GI 275 Unit
Page Config	Pages 2 through 18	None [1]	Both
	Auto Revert	Disabled	
Sensors	Default ADC	ADC STBY	Both
	Default AHRS	AHRS STBY	
	Audio Out	GI 1	
Audio Alert Config	Voice Type	Male or Female [2]	Both
	Alert Volume	1% - 100% [2]	
Unit Alerting Config	Terrain Popup Alert	Disabled	Both
	Traffic Popup Alert	Disabled	
Terrain/TAWS	External TAWS	Installed (HSDB)	Both
Miscellaneous	Traffic Color	White	Both
	Altitude Alerter	1000 FT Chime	
	Database Sync	Pilot Control	
	BARO Side SYNC	Pilot Control	
	CDI Side SYNC	Pilot Control	
	CDI & BARO Standby SYNC	Always On	
	Outside Air Temp	OAT	
	TAT Title	RAT	
	Misc Field Enable	TAS Disabled	
Battery	Backup Battery	Enabled	Both
Ownship Icon Config	Icon	Business Jet / Arrow / Basic Aircraft [2]	Both
	Color	White	

Notes:

[1] Clear pages 2 through18 by scrolling to the bottom of the menu and touching Clear All Pages.

[2] Optional settings. Set based on individual installation. Refer to Section 5.6 for guidance.

H.6 Checkout

In addition to the checkout procedures outlined in this manual, perform the following as part of the checkout procedures.

H.6.1 Static Source Error Correction (SSEC) Calibration

Installations of the GI 275 as a Standby ADI in a G600 TXi system installed in Textron Aviation (Cessna) Model 525(A) aircraft must use the applicable Cessna CJ Static Source Error Correction (SSEC) calibration file as specified in Table H-10. Refer to the SSEC checkout table listed in Table H-10 for Altitude display test checkout points and tolerances.

Table H-10 Cessna CJ SSEC Calibration Files

Model	Loader Card Part Number	Calibration File Part Number	Calibration File Description	SSEC Checkout Table
525	006-B4540-02	006-DA300-07	Cessna 525	Table H-11
525A		006-DA300-09	Cessna 525A	Table H-12

Loading the SSEC Calibration File to the GI 275 Standby ADI Unit(s)

1. Create a Software Loader Card using the applicable software per Table H-10 and instructions available on the Garmin Dealer Resource Center.
2. Power on all GI 275s and all applicable LRUs in the system in Configuration mode.
3. Insert the USB drive into the USB dongle or GSB 15 (if installed).
4. Touch SW/Config !’ Loader Card.
5. Select “Cessna 525” or “Cessna 525A” software update.
6. Touch Update Packages ( ) and then Begin Update. A restart is required when completed.
7. Confirm successful SSEC load by touching System Info !’ Devices, selecting GI 275 Expansion, and confirming the description under the SSEC field matches Table H-10.
8. Confirm the software part number under the SSEC field matches GI 275 Part 23 AML STC Equipment List (P/N 005-01208-42).

Altitude Check

Table H-11 Textron Aviation (Cessna) Model 525 Altitude Test Points

Date:

Aircraft S/N: Operator:

Aircraft Registration: Witness:

Air Data Tester Input		Standby ADI Altimeter Display	Altitude & Tolerance
Altitude (ft)	Airspeed (kts)	Pilot [1]	Pilot (ft)
-900	185		-944 ± 20
0	185		-45 ± 20
2000	100		1992 ± 30
2000	150		1967 ± 30
2000	185		1952 ± 30
5000	185		4948 ± 35
10000	180		9943 ± 80
10000	220		9924 ± 80
20000	220		19895 ±130
25000	185		24907 ± 155
30000	220		29840 ± 180
30000	263		29752 ± 180
35000	185		34859 ± 205
40000	200		39779 ± 230
41000	200		40765 ± 230
43000	185		42783 ± 255

Notes:

[1] The ADAHRS-equipped GI 275 Standby ADI unit is connected to the copilot pitot-static system.

Table H-12 Textron Aviation (Cessna) Model 525A Altitude Test Points

Date:

Aircraft S/N: Operator:

Aircraft Registration: Witness:

Air Data Tester Input		Standby ADI Altimeter Display	Altitude & Tolerance
Altitude (ft)	Airspeed (kts)	Pilot [1]	Pilot (ft)
-960	185		-990 ± 20
0	185		-31 ± 20
2000	100		1994 ± 30
2000	150		1976 ± 30
2000	185		1967 ± 30
5000	185		4964 ± 35
10000	180		9961 ± 80
10000	220		9944 ± 80
20000	220		19912 ± 130
25000	185		24926 ± 155
30000	220		29834 ± 180
30000	270		29669 ± 180
35000	185		34863 ± 205
40000	200		39739 ± 230
41000	200		40718 ± 230
45000	180		44729 ± 255
47000	150		46826 ± 255

Notes:

[1] The ADAHRS-equipped GI 275 Standby ADI unit is connected to the copilot pitot-static system.