GNX 375 TSO Installation Manual

190-02207-04 January 2023 Revision 3

For aviation product support, visit flyGarmin.com.

For information regarding the Aviation Limited Warranty, refer to Garmin's website.

Revision Record

REVISION	REVISION DATE	CHANGE DESCRIPTION
1	02/01/19	Initial release of manual.
2	01/28/20	Updates for software v3.10 and other minor edits.
3	01/19/23	Updates for software v3.20.

Current Revision Description

SECTION	CHANGE DESCRIPTION
1.5.4	Added "Crossfill" section.
5.3.2	Added "Fuel Format 2 Sentence" section.
5.3.2	Added "Fuel Format 1 Sentence" section.
5.3.2	Added "FADC Format 1/Airdata Format Sentence" section.
7.4.1	Added "Crossfill Navigator" to "Interfaced Equipment" description.
7.4.1	Added "Airdata Format 1," "FADC Format 1," "Fuel Format 1," and "Fuel Format 2" to "RS-232/RS-422 Port 1" in table 7-4 "RS-232 Settings."
7.4.1	Added "Airdata Format 1," "FADC Format 1," "Fuel Format 1," and "Fuel Format 2" to "RS-232/RS-422 Port 2" in table 7-4 "RS-232 Settings."
7.4.1	Added notes 2 and 3 to table 7-4 "RS-232 Settings."
7.4.1	Added "Cross-side Navigator" section.
7.7	Added note to "SD Load" section.
10.1	Added "GTN Xi," "GPS 175," and "GNC 355" information to table 10-1 "ADS-B In Displays."
10.1	Added note 1 to table 10-1 "ADS-B In Displays."
10.2	Added "G5(ADI)" to table 10-2 "EFIS Displays."
10.7	Added "G5 (GAD 29B)" and "GI 275" information to table 10-7 "Altitude Sources."
10.10	Added "GAD 29(B)" and "GI 275" information to table 10-10 "Heading Reference Sources."
10.13	Added "Fuel/Air Computers" section.
11	Added note 1 to figure 11-12 "GTR/GNC Interconnect."
11	Added notes 4 and 5 to figure 11-16 "ARINC 429 EFIS - Aspen Interconnect."
11	Added notes 4 and 5 to figure 11-26 "Switches and OAT Probe Interconnect."
11	Added figure 11-30 "GNX 375/GNC 355 Crossfill Interconnect."
11	Added figure 11-31 "GNX 375/GNC 175 Crossfill Interconnect."
11	Added figure 11-32 "RS-232 Interconnect."

Manual Layout

The aim of this installation manual is to provide clear and concise guidance in a layout designed to follow the logical order of a typical installation.

INFORMATION SUBJECT TO EXPORT CONTROL LAWS

This document may contain information which is subject to the Export Administration Regulations (EAR) issued by the United States Department of Commerce (15 CFR, chapter VII, subchapter C) and which may not be exported, released, or disclosed to foreign nationals inside or outside of the United States without first obtaining an export license.

This information in this document is subject to change without notice. For updates and supplemental information regarding the operation of Garmin products visit flyGarmin.com.

SOFTWARE LICENSE NOTIFICATION

AES Encryption

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

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

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

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

Disclaimer

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

SOFTWARE LICENSE AGREEMENT FOR GARMIN AVIATION PRODUCTS

BY USING THE DEVICE, COMPONENT OR SYSTEM MANUFACTURED OR SOLD BY GARMIN ("THE GARMIN PRODUCT"), YOU AGREE TO BE BOUND BY THE TERMS AND CONDITIONS OF THE FOLLOWING SOFTWARE LICENSE AGREEMENT. PLEASE READ THIS AGREEMENT CAREFULLY. Garmin Ltd. and its subsidiaries ("Garmin") grants you a limited license to use the software embedded in the Garmin Product (the "Software") in binary executable form in the normal operation of the Garmin Product. Title, ownership rights, and intellectual property rights in and to the Software remain with Garmin and/or its third-party providers. You acknowledge that the Software is the property of Garmin and/or its third-party providers and is protected under the United States of America copyright laws and international copyright treaties. You further acknowledge that the structure, organization, and code of the Software are valuable trade secrets of Garmin and/or its third-party providers and that the Software in source code form remains a valuable trade secret of Garmin and/or its third-party providers. You agree not to reproduce, decompile, disassemble, modify, reverse assemble, reverse engineer, or reduce to human readable form the Software or any part thereof or create any derivative works based on the Software. You agree not to export or re-export the Software to any country in violation of the export control laws of the United States of America.

Definitions of Warnings, Cautions, and Notes

WARNING
A WARNING MEANS INJURY OR DEATH IS POSSIBLE.

CAUTION
A CAUTION MEANS THAT DAMAGE TO THE EQUIPMENT IS POSSIBLE.

NOTE
A note provides more information.

WARNING
THIS PRODUCT, ITS PACKAGING, AND ITS COMPONENTS CONTAIN CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS, OR REPRODUCTIVE HARM. THIS NOTICE IS BEING PROVIDED IN ACCORDANCE WITH CALIFORNIA'S PROPOSITION 65. FOR QUESTIONS OR ADDITIONAL INFORMATION, REFER TO WWW.GARMIN.COM/PROP65.

WARNING
PERCHLORATE MATERIAL – SPECIAL HANDLING MAY APPLY. REFER TO HTTPS://DTSC.CA.GOV/PERCHLORATE/.

WARNING
THIS PRODUCT CONTAINS A LITHIUM BATTERY THAT MUST BE RECYCLED OR DISPOSED OF PROPERLY. BATTERY REPLACEMENT AND REMOVAL MUST BE PERFORMED BY GARMIN-AUTHORIZED PROFESSIONAL SERVICES.

CAUTION
TAKE PRECAUTIONS TO PREVENT ELECTROSTATIC DISCHARGE (ESD) WHEN HANDLING THE UNIT, CONNECTORS, AND ASSOCIATED WIRING. ESD CAN DAMAGE THE UNIT. ESD DAMAGE CAN BE PREVENTED BY TOUCHING AN OBJECT OF THE SAME ELECTRICAL POTENTIAL AS THE UNIT BEFORE HANDLING THE UNIT ITSELF.

CAUTION
CLEAN THE DISPLAY WITH A CLEAN, LINT-FREE CLOTH AND A CLEANER THAT IS SAFE FOR ANTI-REFLECTIVE COATINGS. THIS UNIT HAS A SPECIAL ANTI-REFLECTIVE COATED DISPLAY THAT IS SENSITIVE TO SKIN OILS, WAXES, AND ABRASIVE CLEANERS. CLEANERS CONTAINING AMMONIA WILL HARM THE ANTI-REFLECTIVE COATING.

Acronyms and Initialisms

A	
ADC	Air Data Computer
ADS-B	Automatic Dependent Surveillance - Broadcast
ADS-R	Automatic Dependent Surveillance Rebroadcast
AFM	Aircraft Flight Manual
AGL	Above Ground Level
AHRS	Attitude Heading Reference System
API	Appliance Project Identifier
ASA	Aircraft Surveillance Applications
C	
CDI	Course Deviation Indicator
CDTI	Cockpit Display of Traffic Information
CDU	Control and Display Unit
CFR	Code of Federal Regulation
D	
DC	Direct Current
DME	Distance Measuring Equipment
E	
EAR	Export Administration Regulations
EFIS	Electronic Flight Instrument System
ETSO	European Technical Standard Order
F	
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FDE	Fault Detection and Exclusion
FIS-B	Flight Information Services-Broadcast
FLTA	Forward looking Terrain Avoidance
FSK	Frequency Shift Keying
G	
GA	Go Around
GAD	Garmin Adapter
GAE	Garmin Altitude Encoder
GDC	Garmin Air Data Computer
GDL	Garmin Data Link

G	
GDU	Garmin Display Unit
GMA	Garmin Marker/Audio
GNS	Garmin Navigation System
GNSS	Global Navigation Satellite System
GNX	Garmin Navigator-Transponder
GP	Glide Path
GPS	Global Positioning System
GRS	Garmin Reference System
GTP	Garmin Temperature Probe
GTX	Garmin Transponder
H	
HSDB	High Speed Data Bus
HSI	Horizontal Situation Indicator
I	
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
L	
LOC	Localizer
LOI	Loss of Integrity
LRU	Line Replaceable Unit
M	
MFD	Multi-Function Display
MSL	Mean Sea Level
MSR	Message Success Rate
N	
NEXRAD	Next-Generation Radar
NOTAM	Notice to Air Missions
O	
OAT	Outside Air Temperature
OBS	Omni-Bearing Selector
OEM	Original Equipment Manufacturer
P	
PED	Portable Electronic Device
P/N	Part Number

P	
PPM	Parts Per Million
PVT	Position, Velocity, and Time
R	
RAIM	Receiver Autonomous Integrity Monitoring
RAM	Random Access Memory
S	
SAR	Search and Rescue
SBAS	Satellite-Based Augmentation System
SBS	Surveillance and Broadcast System
SD	Secure Digital (card)
SURF	Surface Situation Awareness
T	
TC	Type Certificate
TCAS	Traffic Alert and Collision Avoidance System
TFR	Temporary Flight Restriction
TIS-B	Traffic Information Service Broadcast
TNC	Threaded Neill-Concelman
TSO	Technical Standard Order
U	
UTC	Universal Time Coordinated
V	
VOR	Very High Frequency Omni-directional Range
W	
WAAS	Wide Area Augmentation System

1 Declaration of Design and Performance

NOTE

Garmin recommends installation of the GNX 375 by a Garmin-authorized installer. Garmin is not liable for damages resulting from improper or negligent installation of the unit to the extent permitted by law.

This section contains the definition and statement of compliance of the GNX 375. This section is written in accordance with EASA Commission Regulation (EU) No 748/2012 dated 3 August 2012.

This installation manual provides mechanical and electrical information necessary to install the GNX 375. It is not equivalent to an approved airframe-specific maintenance manual, installation design drawing, or installation data package. Attempting to install equipment referencing this manual alone and without first planning or designing an installation specific to an aircraft may compromise safety and is not recommended. The content of this manual assumes use by competent and qualified personnel using standard maintenance procedures in accordance with Title 14 of the Code of Federal Regulation and other related accepted procedures.

1.1 Certification

The GNX 375 has been shown to meet compliance with the claimed TSO(s) when interfaced with the equipment defined in this installation manual, and installed in accordance with the requirements and limitations as defined in this installation manual.

The installer must verify that non-Garmin devices to be interfaced meet the installation requirements identified in this manual to assure the installed system will comply with the Garmin TSO Authorization. Garmin installation requirements will usually specify that the interfaced device has appropriate TSO authorization, and in some cases, such as for TSO-C144 antennas, may also require that the non-Garmin device meet additional Garmin specifications.

The conditions and tests required for approval of this article are minimum performance standards. Those installing this article either on or within a specific type or class of aircraft must determine that the aircraft installation conditions are within the standards and any accepted integrated functions not specified by the standards. TSO articles and any accepted integrated function(s) not specified in the standard must have separate approval for installation in an aircraft. The article may be installed only according to 14 CFR part 43 or the applicable airworthiness requirements. This is an incomplete system intended to provide the functions identified in table 1-1, and when installed according to the installation manual.

It is the installer's responsibility to ensure the ADS-B Out system installation is compliant with 14 CFR 91.227 and to ensure of compatibility between the GNX 375 and other ADS-B Out equipment. For compatible equipment that is applicable for 14 CFR 91.227-compliant installations in accordance with AC 20-165A refer to Garmin ADS-B Out Compatible Equipment. FIS-B information is for pilot-planning and pilot near-term decisions. The information shown are areas of inclement weather that are out of visual range or are not easily seen.

To meet the accuracy requirements of TSO-C165a, it is recommended that compensation be made for the installation-dependent GPS antenna offset, or the GPS antenna should be located within 50.5 feet (15.38 meters) of the nose of the aircraft.

The GNX 375 Appliance Project Identifier (API) is GMN-01823 and is used for project identification with the FAA.

Table 1-1 TSO and Applicability

FUNCTION	TSO	CATEGORY
Automatic Pressure Altitude Reporting	C88b	
Air Traffic Control Radar Beacon System/Mode Select	C112e	1 Level 2 els
Stand-alone Airborne Navigation Equipment Using the Global Positioning System (GPS)	C146e	Class 3
Universal Access Transceiver (UAT) Automatic Dependent Surveillance - Broadcast (ADS-B)	C154c	A1S
Aircraft Flight Information Services Broadcast (FIS-B)	C157b	1
Electronic Map Display Equipment	C165a	
Extended Squitter Automatic Dependent Surveillance -Broadcast (ADS-B) and Traffic Information Service - Broadcast (TIS-B)	C166b	A1S
Avionics Supporting Automatic Dependent Surveillance - Broadcast (ADS-B) Aircraft Surveillance Applications (ASA)	C195b	B1, B3, B5, B7, C1, C2, C3, C5, C7

Table 1-2 TSO Compliance

MAIN SW	TSO	APPLICABLE P/N
v2.xx	C88b, C112e, C146e, C154c, C157b, C165a, C166b, C195b	**Software** 006-B2799-00 thru -0( ) Main Bootblock 006-B2800-00 thru -0( ) Main 006-B2016-BF thru -B( ) Touch Boot 006-B2016-05 thru -0( ) Touch **Transponder** 006-B1607-0F thru -0( ) Main 006-B1607-BD thru -BZ Main Bootblock **CLD** 006-C0157-21 thru -2( ) ADS-B 006-C0153-22 thru -2( ) Transponder **GPS/WAAS** 006-B1827-20 thru -2( ) Main 006-B1827-B0 thru -B( ) Main Bootblock 590-00039-02 thru -0( ) CLD
v3.xx	C88b, C112e, C146e, C154c, C157b, C165a, C166b, C195b	**Software** 006-B2799-10 thru -1( ) Main Bootblock 006-B2800-10 thru -1( ) Main 006-B2016-BF thru -B( ) Touch Boot 006-B2016-05 thru -0( ) Touch **Transponder** 006-B1607-0H thru -0( ) Main 006-B1607-BD thru -BZ Main Bootblock **CLD** 006-C0157-21 thru -2( ) ADS-B 006-C0153-22 thru -2( ) Transponder **GPS/WAAS** 006-B1827-20 thru -2( ) Main 006-B1827-B0 thru -B( ) Main Bootblock 590-00039-02 thru -0( ) CLD

Table 1-3 Non-TSO Functions

FUNCTIONS	APPLICABLE LRU SW P/Ns
Terrain Garmin Terrain is a non-TSO-C151b certified terrain awareness system designed to increase situational awareness and help reduce controlled flight into terrain (CFIT). Using valid 3-D GPS position and a valid terrain/obstacle database, it can provide visual alerts based on Forward Looking Terrain Avoidance and Premature Descent Alerting.	006-B2800-00 thru -1( ) Main 006-B1827-20 thru -2( ) GPS Main

Table 1-4 Standard TSO Deviations

TSO	TSO DEVIATIONS
All TSOs	1. Garmin was granted a deviation to use RTCA DO-160G instead of an earlier version as the standard for environmental conditions and test procedures for airborne equipment.
	2. Garmin was granted a deviation to include only product name, part number, serial number, and a statement "TSO-C146e Class 3 See IM for Add'l Approvals" on the exterior of the unit.

Table 1-5 TSO Deviations

TSO	TSO DEVIATIONS
C146e	1. Garmin was granted a deviation to use GPS antennas that meet Garmin minimum performance specifications instead of DO-301 qualified antennas.
C157b [1]	1. Garmin was granted a deviation to process and display six additional FIS-B products: Icing Forecast, Cloud Tops Forecast, Turbulence Forecast, Lightning, G-AIRMET and Center Weather Advisory.
	2. Garmin was granted a deviation to process and display G-AIRMET (ID 14) and CRL-based G-AIRMET completeness instead of SBS AIRMET product (ID 11).
C166b	1. Garmin was granted a deviation to meet the transponder function requirements of RTCA DO-181E instead of an earlier version.
	2. Garmin was granted a deviation to not process ADS-R.
C195b	1. Garmin was granted a deviation from the TSO, paragraph 3.1(4) that requires databases used to support moving maps integrated with the SURF application must meet at least 5 meter accuracy and 1 meter resolution.

[1] Applicable to units running software v3.10 and later.

1.2 Design Assurance Level

Table 1-6 Software Assurance Level (DO-178B)

FUNCTION	RTCA/DO-178B LEVEL
Display of GPS Navigation Data	C
Output of Data to Automatic Flight Control System	C
Output of GPS PVT Data to External Device	C
Output of Data to External CDI/VDI	C
Display of Situation Awareness Information	C
Display of Vertical Calculation (VCALC)	C
Display of Database Information	C
Display of Miscellaneous Flight Planning Information	C
Display of Scheduler Reminder	C
Display of Datalink Weather Information	C
Output of Datalink Weather Information (to a display)	D
Transponder Communications	C
Transmission of ADS-B Out Reports	C
Receipt of ADS-B In Reports	C
Output of ADS-B In Data	C
Display of ADS-B Traffic	C
Output of Altitude Encoder	C
Display of Altitude	D
Provide Bluetooth Capability	E
Input/Output of Flight Plan data from/to External Device via Bluetooth	E [1]
Wireless Input/Output of Data from/to PED	E
Display of Status of Bluetooth Transfer of Data	C
Utilization of Databases	C

[1] Input/output of flight plan data is validated against the NAV database to Level C.

Table 1-7 CLD Assurance Levels

DESCRIPTION	DO-254 LEVEL
Transponder	C
ADS-B	C
GPS/WAAS	B [1]

[1] Developed to DO-178B level B.

1.2.1 Transmitter Grant of Equipment Authorization

Table 1-8 Equipment Authorization

MODEL	FCC ID
GNX 375	IPH-0328533

1.3 License Requirements

NOTE
The UHF Transmitter in this equipment is guaranteed to meet Federal Communications Commission acceptance over the operating temperature range. Modifications not expressly approved by Garmin could invalidate the license and make it unlawful to operate the equipment.

NOTE
For non-US installations consult the local spectrum management agency for requirements.

The Telecommunications Act of 1996, effective February 8, 1996, provides the FCC discretion to eliminate radio station license requirements for aircraft and ships. The GNX 375 installation must obey current transmitter licensing requirements. In the US, to find out the specific details on whether a particular installation is exempt from licensing, visit the FCC website https://www.fcc.gov/wireless/bureau-divisions/mobility-division/aviation-radio-services.

If an aircraft license is necessary, apply for a license on FCC Form 404, Application for Aircraft Radio Station License. The FCC also has a fax-on-demand service to supply forms by fax. The GNX 375 owner accepts all responsibility for obtaining the proper licensing before using the transponder.

1.4 Reference Documentation

Table 1-9 Garmin Reference Documents

DOCUMENT	P/N
Antenna Minimum Performance Specification for Garmin's GPS/WAAS Receiver System	004-00287-00
G5 Electronic Flight Display Installation Manual for Non-Certified Aircraft	190-02072-01
Garmin Performance-Based Navigation Capabilities	190-02223-00
Garmin Pilot for Android	190-01532-00
Garmin Pilot for iOS	190-01501-00
GMC 605 Installation Manual	190-01488-01
GNX 375 Environmental Qualification Form	005-01206-92
GPS 175/GNC 355/GNX 375 Pilot's Guide	190-02488-01
RTCA/DO-200A List of Applicable Avionics Systems	190-01999-00
Mode A/C Lock Enablement Guide	190-01499-21

Table 1-10 Federal Aviation Administration Documents

DOCUMENT	P/N
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

Table 1-11 Industry Standards

DOCUMENT	P/N
Aerospace Systems Electrical Bonding and Grounding for Electromagnetic Compatibility and Safety	SAE ARP 1870
Application for Aircraft Radio Station License	FCC Form 404

1.4.1 Environmental Qualification Form

It is the responsibility of the installing agency to obtain the EQF necessary for the unit. Forms are available at the Dealer Resource Center.

1.4.2 Database

For information on certification compliance for databases, refer to *RTCA/DO-200A List of Applicable Avionics Systems* on flyGarmin.com.

1.4.3 Periodic Maintenance and Continued Airworthiness

Maintenance of the GNX 375 is "on condition" only. For regulatory periodic functional checks, refer to the approved aircraft maintenance manuals or manual supplements. The aircraft must be returned to service in a means acceptable to the cognizant aviation authority.

1.5 System Limitations

1.5.1 GPS Antenna

The unit's GPS/SBAS receiver must be used with the GPS/SBAS antennas listed in section 3.1.1.

1.5.2 Transponder Antenna

The unit's transponder receiver must be used with the transponder antennas listed in section 3.1.2.

1.5.3 Operation

Navigation is not authorized north of 89 degrees north latitude or south of 89 degrees south latitude.

1.5.4 Crossfill

NOTE
Only two GPS navigator units can crossfill at once.

The unit is not approved for crossfill of SAR data with GTN.

1.6 Considerations

1.6.1 AFM/RFM/AFMS/RFMS/POH Considerations

Refer to *Garmin Performance-Based Navigation Capabilities* for information on the operational capabilities, approvals, and limitations of the Garmin Navigation System when developing an approved AFM, RFM, AFMS, RFMS, and/or POH.

Various certification authority guidance for RNAV and RNP operations require a pre-flight RAIM or FDE prediction be performed before beginning a flight. Garmin provides a free on-line RAIM/FDE prediction service which takes into account the performance of Garmin GPS receivers. This service is available at flyGarmin.com.

1.6.2 Installation

Certain non-aviation radios, including marine transceivers, can interfere with civil aviation navigation and surveillance equipment. When installing the GNX 375, it is the responsibility of the installer to ensure that the installation is compatible with all previous aircraft modifications. Verify there is no interference in aircraft modified with non-aviation radios. Ensure there is no interference if non-aviation radios are installed in an aircraft after the GNX 375. If interference is detected, remove it by:

- Relocating antennas
- Rerouting cables
- Installing filters

If these techniques do not eliminate the interference, it may be necessary to remove or replace the interfering radio.

2 System Specifications & Functionality

2.1 System Functionality

The GNX 375 is a two-inch GPS navigator/transponder and contains an internal GPS receiver, a Mode S transponder, and a 1090/UAT receiver. The unit has a capacitive touch screen, full-color display, and a rotary knob. Functions include:

- Database concierge via Wi-Fi from Flight Stream 510 (ground use only)
- Bluetooth (Flight plan/position/weather/traffic)
- Navigation via internal GPS/SBAS receiver
- Navigation output to autopilot systems
- Moving map display
- Terrain
- Mode S Transponder
- ADS-B Out on 1090 MHz extended squitter
- ADS-B In via 1090 MHz (traffic) and 978 MHz UAT (traffic and weather)
- Processing and display of TIS-B traffic data
- Processing and display of FIS-B weather data

Table 2-1 Compatible Garmin Interfaces

• Flight Stream 510	• G3X
• GDU 700P	• GTX 330
• GDU 700L	• GFC 600 (GMC 605)
• GDU 1060	• GDU 620
• GFC 500 (G5/GAD 29)	• MX20/GMX 200
• GI 275	

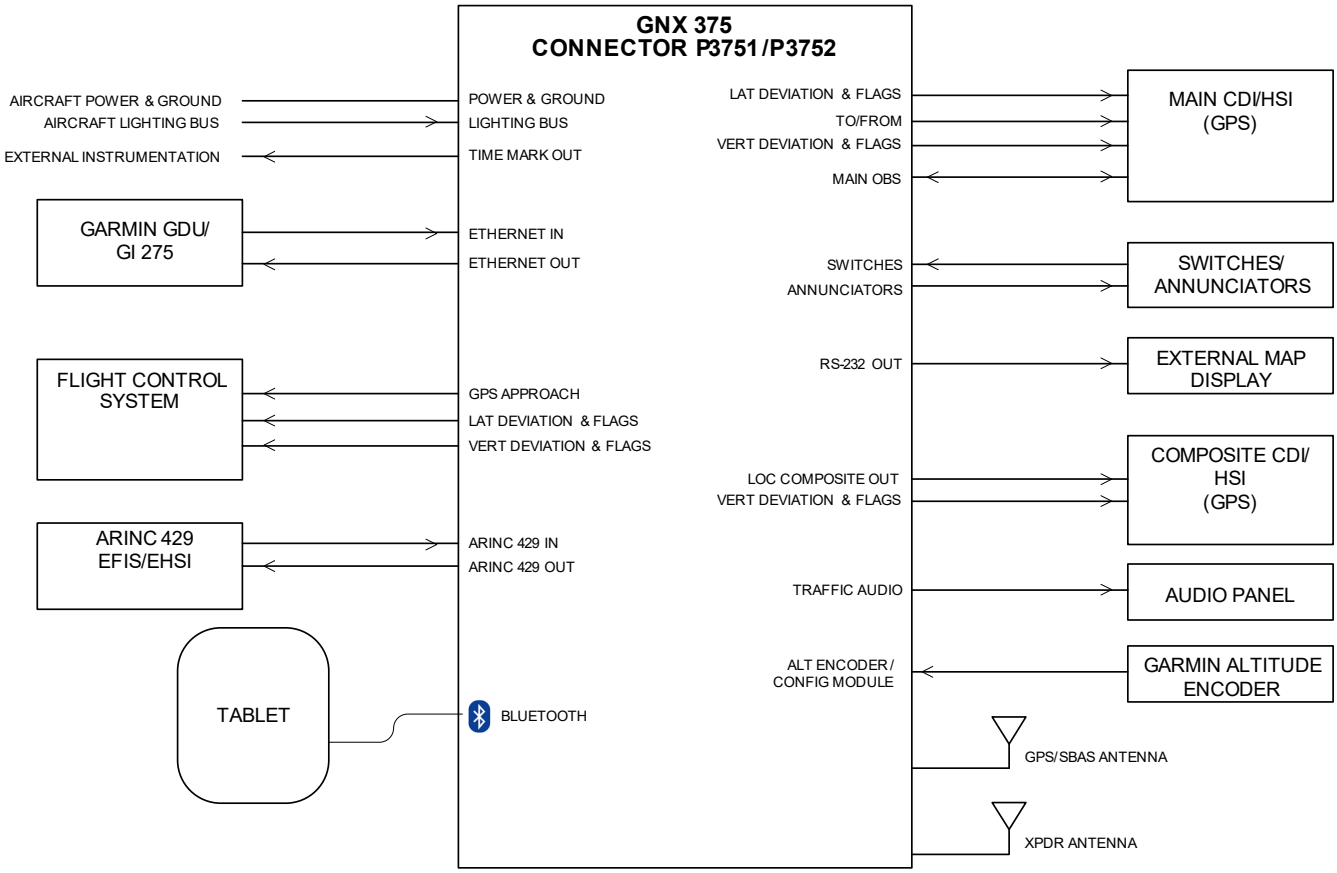


Figure 2-1 System Interfaces

Table 2-2 Interface Summary

INTERFACE DESCRIPTION	QTY	INPUT/OUTPUT
RS-232 [1]	5	I/O
RS-422 [1]	1	I/O
ARINC 429	1	O
	2	I
HSDB	1	I/O
Discrete I/O	3	I/O
Gray code altitude input	1	I

[1] Port 1 is configurable as either RS-232 or RS-422.

Table 2-3 GNX 375 BDS Registers

BDS	DESCRIPTION	EXTENDED SQUITTER	GENERAL TRANSPONDER/ ELEMENTARY SURVEILLANCE
0, 0	Comm-B Broadcasts		✓
0, 5	Airborne Position Message	✓	
0, 6	Surface Position Message	✓	
0, 7	Extended Squitter Status	✓	
0, 8	Airborne Identification Message	✓	
0, 9	Airborne Velocity Message	✓	
1, 0	Data Link Capability Report		✓
1, 7	Common Usage GICB Capability Report		✓
1, 8	MSSS GICB Capability Report (1 of 5)		✓
1, 9	MSSS GICB Capability Report (2 of 5)		✓
1, A	MSSS GICB Capability Report (3 of 5)		✓
1, B	MSSS GICB Capability Report (4 of 5)		✓
1, C	MSSS GICB Capability Report (5 of 5)		✓
1, D	MSSS MSP Capability		✓
2, 0	Aircraft Identification		✓
2, 1	Aircraft Registration		✓
6, 1	Aircraft Status Message, Subtype 1	✓	
6, 2	Target State and Status Message	✓	
6, 5	Operational Status Message	✓	
E, 3	Transponder Type/Part Number		✓
E, 4	Transponder Software Revision Number		✓

2.2 ADS-B Capabilities

The GNX 375 includes 1090 MHz ADS-B Out and 1090 MHz and UAT receivers for ADS-B In data reception. The unit receives ADS-B transmissions from other ADS-B Out equipped aircraft and TIS-B information from ground stations. Traffic information received from these transmissions supply compatible ADS-B In data to CDTIs and the unit.

2.3 FIS-B Capabilities

The unit receives FIS-B information from UAT ground stations in the United States. A direct line-of-sight between the ground station and aircraft is necessary to receive FIS-B data. The data is not available at ground level in some locations. The unit displays FIS-B information and supplies data to compatible displays. Depending on CDTI capability, the following may display:

- NOTAMs (includes TFRs)
- Graphical AIRMETs
- SIGMETs
- METARs
- TAFs
- PIREPs
- Winds/temps aloft
- Regional NEXRAD
- CONUS NEXRAD
- Icing Forecast
- Cloud Tops Forecast
- Turbulence Forecast
- Lightning
- Center Weather Advisory

2.4 Bluetooth Capabilities

With Bluetooth enabled, the unit supports the following features on an available PED with the Garmin Pilot application.

- FIS-B weather
- ADS-B traffic
- GPS/WAAS - PVT
- Pressure altitude
- AHRS
- Magnetic heading
- Flight plan transfer

2.5 Unit Specifications

Figure 2-2 GNX 375 Bezel

Table 2-4 Display Specifications

CHARACTERISTICS	SPECIFICATIONS
Display size	4.8 in (122.5 mm) diagonal
Active area	4.6 in (116 mm) (W) x 1.5 in (38 mm) (H)
Resolution	732 pixels (W) x 240 pixels (H)
Viewing angle (With 10:1 contrast ratio minimum)	**Left**: 45° from perpendicular at left side **Right**: 45° from perpendicular at right side **Up**: 30° up from perpendicular at bottom edge **Down**: 30° down from perpendicular at top edge

Table 2-5 Physical Specifications

CHARACTERISTICS	SPECIFICATIONS
Bezel height	2.02 in (51.0 mm)
Bezel width	6.25 in (159.0 mm)
Rack height (dimple to dimple)	2.025 in (51.0 mm)
Rack width	6.30 in (160.0 mm)
Depth behind panel with connectors (measured from face of aircraft panel to rear of connector backshells)	10.85 in (276.0 mm)
Unit weight	3.2 lb (1.44 kg)
Unit weight with rack, backplate, and connectors	4.4 lb (2.01 kg)
Humidity	95% non-condensing
Maximum altitude	30,000 ft with optional GAE module 35,000 ft without optional GAE module
Input voltage range	9 VDC - 33 VDC
Brightness range	0.015 fL - 260 fL
Operating temperature range	-20° C to 55° C (-4° F to 131° F)

Table 2-6 Power Specifications

14 VOLT CURRENT DRAW		28 VOLT CURRENT DRAW	
Typical	Maximum	Typical	Maximum
1.20 A	1.80 A	0.60 A	0.90 A

Table 2-7 Bluetooth Specifications

CHARACTERISTICS	SPECIFICATIONS
Bluetooth version	4.2
Bluetooth class	2
Maximum transmitter power	+4 dBm
Unimpeded Bluetooth range	100 ft

2.6 UAT Receiver Specifications

Table 2-8 UAT Receiver Specifications

CHARACTERISTICS	SPECIFICATIONS
Frequency	978 MHz ± 20 ppm
Modulation	Continuous phase FSK, h = 0.6, raised cosine shaping, a = 0.5
Data rate	1.04 Mbps
Sensitivity	-96 dBm for 90% MSR

2.7 1090 MHz Receiver Specifications

Table 2-9 1090 MHz Receiver Specifications

CHARACTERISTICS	SPECIFICATIONS
Frequency	1090 MHz ± 1 MHz
Modulation	Binary pulse-position
Data rate	1 Mbps
Sensitivity	-81 dBm for 90% MSR

2.8 Transponder Specifications

Table 2-10 Transponder Specifications

CHARACTERISTICS	SPECIFICATIONS
Transmitter frequency	1090 MHz ± 1 MHz
Transmitter power	125 W min at antenna, with max 2 dB cable loss 250 W nominal at unit
Receiver frequency	1030 MHz ± 0.01 MHz
Receiver sensitivity	-74 dBm nominal for 90% replies
External suppression input	≥10 VDC to suppress
External suppression output	≥18 VDC with 300 ohm load, 28 VDC typical with no load

2.9 GPS Specifications

Table 2-11 GPS Receiver Specifications

CHARACTERISTICS	SPECIFICATIONS
Number of channels	15 (12 GPS and 3 GPS/WAAS/SBAS)
Frequency	1575.42 MHz L1, C/A code
Sensitivity (acquisition, no interference)	-134.5 dBm GPS -135.5 dBm WAAS
Sensitivity (drop lock)	-144 dBm
Dynamic range	>20 dB
LAT/LON position accuracy	<1.25 meter RMS horizontal, < 2 meter vertical, with WAAS
Velocity	1,000 knots maximum (above 60,000 feet)
TTFF (Time To First Fix)	1:45 min. typical with current almanac, position, and time
Reacquisition	10 seconds typical
Position update interval	0.2 sec (5 Hz)
1PPS (Pulse Per Second)	±275 ns of UTC second
Datum	WGS-84
SATCOM compatibility	SATCOM compatibility is dependent upon antenna selection
Antenna power supply	35 mA typical, 40 mA max at 4.7 VDC

2.10 GAE Specifications

Table 2-12 Display Specifications

CHARACTERISTICS	SPECIFICATIONS
Dimensions	1.12 x 0.62 x 0.57 in (28.4 x 15.7 x 14.5 mm)
Weight	0.8 ounces (with mounting hardware and harness)
Operating Temperature	-40° F to +158° F (-40° C to + 70° C)
Altitude	30,000 feet maximum
Voltage	Supplied by GNX 375
Current	Supplied by GNX 375
Resolution	1 foot

2.11 Flight Stream 510

Table 2-13 Flight Stream 510 Specifications

CHARACTERISTICS	SPECIFICATIONS
Wi-Fi class	802.11a/b/g/n
Maximum Wi-Fi transmitter power	10 dBm (10 mW)
Effective unimpeded Wi-Fi range	65 feet (20 m)

3 Installation Materials

This section describes hardware equipment required for unit installations. Installation should follow the aircraft TC or STC requirements. The installing agency fabricates the wire harness to fit each aircraft. For retro-fit installations, AC 43.13-1B and AC 43.13-2B guidance may be useful.

3.1 Materials

The unit is available under the following part numbers. Catalog part numbers are listed with and without the installation kit.

Table 3-1 Part Numbers

DESCRIPTION	UNIT ONLY P/N	STANDARD KIT P/N [1]	UNIT SUBASSEMBLY P/N
GNX 375	010-01823-00	010-01823-01	011-04378-00

[1] Includes unit, connector kit, installation rack, back plate, and configuration module.

Table 3-2 Standard Kit - P/N 010-01823-01

ITEM DESCRIPTION	PART NUMBER	QTY
Install rack	115-02768-00	1
Back plate assembly	011-04781-00	1
Connector kit	011-04779-01	1
Configuration module	011-00979-03	1

Table 3-3 Connector Kit - P/N 011-04779-01

ITEM DESCRIPTION	PART NUMBER	QTY
Subassembly, backshell w/ hardware, 25/44 pin	011-00950-02	1
Subassembly, backshell w/ hardware, 37/62 pin	011-00950-03	1
Subassembly, ground adapter, shell 1-3	011-01169-00	2
Subassembly, ground adapter, shell 4 and 5	011-01169-01	1
Screw, 4-40 x.250, FLHP 100°, SS/P, nylon	211-63234-08	4
Connector, male, HD D-sub, 44 ckt	330-00185-44	1
Connector male, HD D-sub, 62 ckt	330-00185-62	1
Connector, pin, mil crimp, size 22D	336-00021-00	104

Table 3-4 Configuration Module P/N 011-00979-03

ITEM DESCRIPTION	PART NUMBER	QTY
Configuration module, sub-assy, potted	011-02178-00	1
Harness, 4 cond	325-00122-00	1
Contacts, pin, mil crimp, size 22D	336-00021-00	5

3.1.1 GPS Antenna

Use an antenna from the following table to achieve acceptable antenna performance. These antennas meet specifications in the document *Antenna Minimum Performance Specification for Garmin's GPS/WAAS Receiver System.* All Garmin antennas include four mounting screws and one O-ring.

Table 3-5 Acceptable GPS Antennas

MODEL	ANTENNA TYPE	CONNECTOR TYPE	MANUFACTURER	P/N
A33W	GPS/WAAS	TNC	Garmin	013-00261-( )
			Aero Antenna	AT575-332G( )-TNCF-000-RG-27-NM
GA 35	GPS/WAAS [1]	TNC	Garmin	013-00235-( )
			Aero Antenna	AT575-93G( )-TNCF-000-RG-27-NM
GA 36	GPS/WAAS	TNC	Garmin	013-00244-( )
			Aero Antenna	AT575-126G( )-TNCF-000-RG-27-NM
GA 37	GPS/WAAS/XM	TNC	Garmin	013-00245-( )
			Aero Antenna	AT2300-126G( )-TNCF-000-RG-27-NM
N/A	GPS/VHF	TNC/BNC	Comant	CI-2580-200
N/A	GPS/VHF	TNC/BNC	Comant	CI-2728-200
N/A	GPS/XM/VHF	TNC/TNC/BNC	Comant	CI-2580-410
N/A	GPS/XM/VHF	TNC/TNC/BNC	Comant	CI-2728-410
N/A	GPS/WAAS	TNC	Comant	CI-428-200
N/A	GPS/XM	TNC/TNC	Comant	CI-428-410

[1] Same mounting hole pattern as GA 56, except GA 35 has a physically larger footprint.

3.1.2 Transponder Antenna

NOTE

Some types of transponder antennas utilize thin radiator elements and are only intended for use at 1030 and 1090 MHz. These types of antennas should be evaluated on a model-by-model basis to determine their suitability for UAT receivers.

The unit must have a UHF antenna. The antennas in the following table are approved for use. Other antennas are permitted if they meet these specifications:

- Standard 50 ohm vertically polarized antenna with a VSWR $\leq$ 1.7:1 at 978 MHz and $\leq$ 1.5:1 at 1090 MHz
- TSO-C66( ), TSO-C74( ), or TSO-C112( ) antennas that also meet the VSWR specification

Table 3-6 Acceptable UAT/1090 Antennas

MANUFACTURER	P/N	MODEL/DESCRIPTION	CONNECTOR TYPE	NOTES
Aero Antenna	AT130-16	DME Transponder	TNC	DC Grounded
Comant	CI-100	DME Transponder	BNC	Open Circuit
	CI-100-2	DME Transponder	TNC	Open Circuit
	CI-105	DME Transponder	BNC	Open Circuit
	CI-105-3	DME Transponder	BNC	Open Circuit
	CI-105-16	DME Transponder	BNC	Open Circuit
	CI-110-40-30	DME Transponder	C	Open Circuit
	CI-110-41-30	DME Transponder	C	DC Grounded
	CI-110-60-30	DME Transponder	C	Open Circuit
	CI-110-61-30	DME Transponder	C	DC Grounded
Dayton-Granger	L10-611-( )	L-Band Blade	C	DC Grounded
Garmin	590-0052 or 013-00219-00	A-40	TNC	Open Circuit
	590-0051 or 013-00174-00	A-41	TNC	DC Grounded

3.2 Optional Accessories

Table 3-7 Optional Accessories

ITEM DESCRIPTION	P/N
Pressure sensor module	011-03080-00
OAT probe	011-00978-00
Flight Stream 510	011-03595-00

3.2.1 GAE Pressure Sensor Module

The GNX uses an optional GAE module as a transponder pressure altitude input. The GAE module directly attaches to the GNX 375 backplate and connects to the aircraft static pressure system. The GAE module replaces and functions the same as the configuration module.

Table 3-8 GAE Pressure Sensor - P/N 011-03080-00

ITEM	DESCRIPTION	P/N	QTY
Screw	Screw, 4-40 x .250, PHP, SS/P, w/ nylon	211-60234-08	2
Screw	Screw, 4-40 x .312, FLHP100, SS/P, w/ nylon	211-60234-09	2
Harness	Harness, 4 cond	325-00421-00	1
Pressure Sensor	Pressure sensor module	011-03080-01	1

3.2.2 GTP 59 Temperature Probe

The GTP 59 provides outside air temperature information to the unit.

Table 3-9 GTP 59 Standard Kit - P/N 011-00978-00

ITEM	DESCRIPTION	P/N	QTY
Nut	Nut, 5/16", hex, skirt	210-00055-00	1
Screw	Screw, 4-40 x .250, PHP, SS/P, w/ nylon	211-60234-08	2
Washer	Washer, lock, self-sealing, 5/16"	212-00026-00	1
Contact pins	Contact, pin, mil crimp, size 22D	336-00021-00	5
GTP 59	Outside air temperature sensor	494-00022-08	1

3.2.3 Flight Stream 510

The Flight Stream 510 is a wireless data card that provides Wi-Fi connectivity to the unit. The card uses Wi-Fi when loading databases from a PED (ground use only).

Table 3-10 Flight Stream 510

ITEM	UNIT ONLY KIT P/N	STANDARD KIT P/N	UNIT P/N
Flight Stream 510	010-01322-00	010-01322-01	011-03595-00

3.3 Display Database Options

Databases are updated with a data card or the Flight Stream 510. Users update databases by purchasing subscription updates from Garmin or Jeppesen. Contact Garmin at flyGarmin.com. Contact Jeppesen at (800) 621-5377 or www.jeppesen.com. For information on certification compliance of databases, refer to *RTCA/DO-200A List of Applicable Avionics Systems* at flyGarmin.com.

It is necessary to have the Garmin Pilot application on a PED if updating databases using a Flight Stream 510 wireless card. When the Flight Stream 510 is inserted in the unit and powered on in normal mode, a prompt displays instructions on transferring databases. Download *Garmin Pilot for Android* or *Garmin Pilot for iOS* from garmin.com for additional information.

Navigation

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

Basemap

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

Safe Taxi

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

Terrain

The terrain database supports terrain awareness functionality.

Obstacles

The obstacle database provides identification of known obstacles greater than 200 feet AGL, and includes hazardous power lines.

Table 3-11 Database SD Cards

DATA CARDS	P/N
Database, GPS 175/GNX 375/GNC 355, International	010-02090-01
Database, GPS 175/GNX 375/GNC 355, Americas	010-02090-02

3.4 Materials Required but not Supplied

Use standard aviation accessories with the unit. The following items are required for installation, but not supplied.

NOTE
If using MIL-W-22759/18, support and protect the wire.

1. Wire (MIL-W-22759/16 or equivalent)
2. Shielded wire (MIL-C-27500 or equivalent)
3. Push/pull (manually resettable) circuit breakers
4. Tie wraps or lacing cord
5. MS25036 or MS20659 ring terminals
6. M83519/2-X shield terminators
7. A-A-59163 (MIL-I-46852C) silicone fusion tape
8. Aircraft grade category 5 Ethernet cable
9. Coaxial cable (RG-400 or equivalent)
10. BNC connectors for the transponder antenna
11. TNC connectors for the GPS antenna
12. Approved pressure altitude source

Table 3-12 Approved Ethernet Cable Manufacturers

MANUFACTURER	PART NUMBER
Carlisle	392404 (24 AWG)
EMTEQ	D100-0824-100 (24 AWG)
	D10004-664 (24 AWG)
PIC Wire and Cable	E10422 (22 AWG) [1]
	E10424 (24 AWG)
	E12424 (24 AWG)
	E51424 (24 AWG)
Tensolite	NF24Q100 (24 AWG)
Thermax	MX100Q-24 (24 AWG)

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

3.5 Special Tools

The following special tools are required for building the wire harness:

Multi-Meter

A multi-meter 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.

Table 3-13 Recommended Crimp Tool

MANUFACTURER [1]	HAND CRIMPING TOOL	22-28 AWG [2]		22-24 AWG	
		POSITIONER [2]	INSERTION/ EXTRACTION TOOL	POSITIONER	INSERTION/ EXTRACTION TOOL
Military P/N	M22520/2-01	M22520/2-09	M81969/14-01 M81969/1-04	M22520/2-08	M81969/1-02
ITT Cannon [3]	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

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

[2] For configuration module pins, ensure the crimp tool is set to crimp 28 AWG wire (indenter setting of "4").

[3] Insertion/extraction tools from ITT Cannon are all plastic. All others are plastic with metal tips.

The following tools may be required:

- Laser square
- Digital level
- Protractor
- #30 drill bit
- #27 drill bit
- 3/32" hex drive tool
- Milliohm meter with an accuracy of +0.1 milliohms or better

4 Installation Planning & Considerations

4.1 Installation Requirements

4.1.1 Cooling

External cooling is not required. An integrated cooling fan draws air through the bezel and exhausts out the bottom of the unit. When mounting, do not block airflow to these areas.

4.1.2 Electrical Bonding

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

4.1.3 Mounting

The unit mounts in the instrument panel. The mounting hardware accommodates various sheet metal panel thicknesses, from 0.063" to 0.125". For cable routing, allow an additional two inches of clearance behind mating connectors on the rear of unit.

4.1.4 Pressure Altitude Source

Connect the unit to the primary pressure altitude source.

4.1.5 Compass Safe Distance

If the unit mounts less than twelve inches from the compass, recalibrate the compass and make the necessary changes for noting correction data.

4.1.6 ADS-B In

The unit provides ADS-B In data regardless of the state of the transponder. Dual installations are not supported. GNX 375 and GDL 88 installations are not supported.

5 Connector Pinouts

5.1 Rear Connector Pinouts

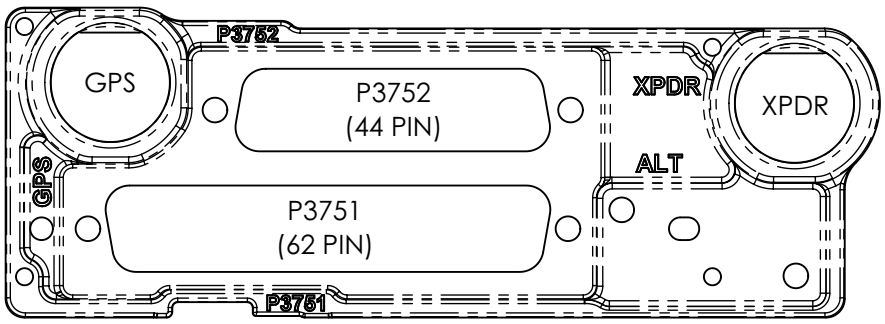


Figure 5-1 GNX 375 Connector Layout

5.1.1 J3751 Main Connector

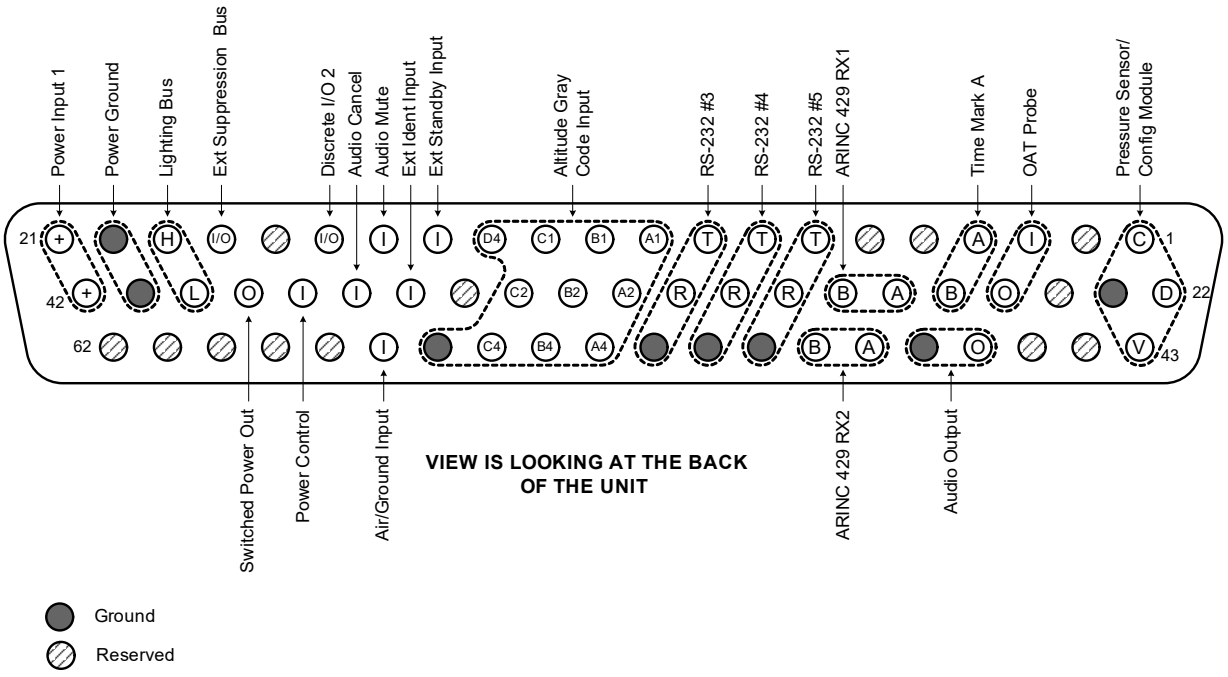


Figure 5-2 62-Pin Connector

Table 5-1 J3751 Main Connector

PIN	PIN NAME	I/O	PIN	PIN NAME	I/O
1	PRESSURE SENSOR/CONFIG MODULE CLOCK	I/O	32	ALTITUDE GRAY CODE A2	In
2	RESERVED	--	33	ALTITUDE GRAY CODE B2	In
3	OAT PROBE IN	In	34	ALTITUDE GRAY CODE C2	In
4	TIME MARK OUT A	Out	35	RESERVED	--
5	RESERVED	--	36	EXT IDENT	In
6	RESERVED	--	37	AUDIO CANCEL	In
7	RS-232 OUT 5	Out	38	POWER CONTROL	In
8	RS-232 OUT 4	Out	39	SWITCHED POWER OUT	Out
9	RS-232 OUT 3	Out	40	LIGHTING BUS LO	In
10	ALTITUDE GRAY CODE A1	In	41	POWER GND	--
11	ALTITUDE GRAY CODE B1	In	42	POWER INPUT 1	In
12	ALTITUDE GRAY CODE C1	In	43	PRESSURE SENSOR/CONFIG MODULE POWER	Out
13	ALTITUDE GRAY CODE D4	In	44	RESERVED	--
14	EXT STANDBY	In	45	RESERVED	--
15	AUDIO MUTE	In	46	AUDIO OUT	Out
16	DISCRETE I/O 2	I/O	47	AUDIO GND	--
17	RESERVED	Out	48	ARINC 429 IN 2A	In
18	EXT SUPPRESSION BUS	I/O	49	ARINC 429 IN 2B	In
19	LIGHTING BUS HI	In	50	RS-232 GND 5	--
20	POWER GND	--	51	RS-232 GND 4	--
21	POWER INPUT 1	In	52	RS-232 GND 3	--
22	PRESSURE SENSOR/CONFIG MODULE DATA	I/O	53	ALTITUDE GRAY CODE A4	In
23	PRESSURE SENSOR/CONFIG MODULE GND	--	54	ALTITUDE GRAY CODE B4	In
24	RESERVED	--	55	ALTITUDE GRAY CODE C4	In
25	OAT PROBE OUT	Out	56	ALTITUDE GRAY CODE GND	--
26	TIME MARK OUT B	Out	57	AIR/GROUND	In
27	ARINC 429 IN 1A	In	58	RESERVED	In
28	ARINC 429 IN 1B	In	59	RESERVED	In
29	RS-232 IN 5	In	60	RESERVED	--
30	RS-232 IN 4	In	61	RESERVED	In
31	RS-232 IN 3	In	62	RESERVED	In

5.1.2 J3752 ADS-B/NAV Connector

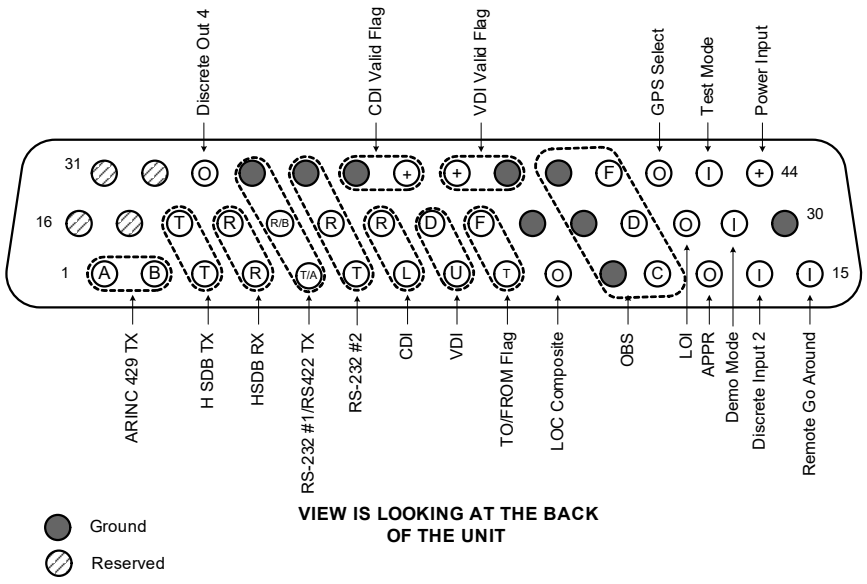


Figure 5-3 44-Pin Connector

Table 5-2 J3752 44-Pin HD-DSUB

PIN	PIN NAME	I/O
1	ARINC 429 OUT 1A	Out
2	ARINC 429 OUT 1B	Out
3	ETHERNET OUT 1A	Out
4	ETHERNET IN 1A	In
5	RS-232 OUT 1/RS-422 A	Out
6	RS-232 OUT 2	Out
7	LATERAL +LEFT OUT	Out
8	VERTICAL +UP OUT	Out
9	+TO OUT	
10	LOC COMPOSITE	Out
11	OBS ROTOR H GND	--
12	OBS ROTOR C	Out
13	GPS APPROACH ANNUNCIATE	Out
14	DISCRETE IN 2	In
15	REMOTE GO AROUND	In
16	RESERVED	--
17	RESERVED	--

PIN	PIN NAME	I/O
23	VERTICAL +DOWN OUT	Out
24	+FROM OUT	
25	GND	--
26	OBS STATOR E GND	--
27	OBS STATOR D	In
28	LOI ANNUNCIATE	Out
29	DEMO MODE	In
30	GND	--
31	RESERVED	--
32	RESERVED	--
33	DISCRETE OUT 4	Out
34	GND	--
35	GND	--
36	LATERAL -FLAG OUT	--
37	LATERAL +FLAG OUT	Out
38	VERTICAL +FLAG OUT	Out
39	VERTICAL -FLAG OUT	--

PIN	PIN NAME	I/O
18	ETHERNET OUT 1B	Out
19	ETHERNET IN 1B	In
20	RS-232 IN 1/RS-422 B	I/O
21	RS-232 IN 2	In
22	LATERAL +RIGHT OUT	Out

PIN	PIN NAME	I/O
40	OBS STATOR G GND	--
41	OBS STATOR F	In
42	GPS SELECT	Out
43	RESERVED	In
44	POWER INPUT	In

5.1.3 GPS Antenna Connector

Uses a TNC coaxial connector on the backplate.

5.1.4 Transponder Antenna Connector

Uses a BNC coaxial connector on the backplate.

5.2 Functional Descriptions

5.2.1 Power

- Compatible with 14 VDC and 28 VDC aircraft electrical systems
- Accepts input power from 9 VDC to 33 VDC
- Use SWITCHED POWER OUT for powering devices such as a remote altitude encoder module
- SWITCHED POWER OUT is active when unit power is on, and has a 1 ampere max rating

Table 5-3 Power Pins

PIN NAME	CONNECTOR	PIN	I/O
POWER GND	J3751	20	--
POWER INPUT 1	J3751	21	In
POWER GND	J3751	41	--
POWER INPUT 1	J3751	42	In
POWER INPUT	J3752	44	In
SWITCHED POWER OUT	J3751	39	Out

5.2.2 Power Control Input

- Optional connection
- Connected - automatically powers the unit on when avionics master is turned on
- Not connected - unit does not automatically power on with avionics master, can be powered on or off with **Power/Home** key

Table 5-4 Power Control Input

PIN NAME	CONNECTOR	PIN	I/O
POWER CONTROL	J3751	38	In

Table 5-5 Power Control Function

POWER CONTROL	DESCRIPTION
OPEN	Auto on disabled
GROUND	Auto on enabled

5.2.3 Lighting

- Display and keys configure to track 28 VDC, 14 VDC, 5 VDC, or 5 VAC lighting buses
- Display and keys automatically adjust for ambient lighting conditions when configured for photocell
- Photocell is on the front of the unit
- Connect both LIGHTING BUS HI and LIGHTING BUS LO for a 5 VAC lighting bus
- Connect LIGHTING BUS HI for a DC input, do not connect LIGHTING BUS LO

Table 5-6 Lighting

PIN NAME	CONNECTOR	PIN	I/O
LIGHTING BUS HI	J3751	19	In
LIGHTING BUS LO	J3751	40	In

5.2.4 Configuration/GAE Module

- Either the configuration or the GAE module may be used.
- Located in the J3751 connector backshell.
- Stores installation-specific configuration information.
- Eliminates the need to reconfigure aircraft specific items when replacing a LRU.
- GAE provides pressure altitude to the GNX 375.

Table 5-7 Configuration Module

PIN NAME	CONNECTOR	PIN	I/O
PRESSURE SENSOR/CONFIG MODULE POWER	J3751	43	Out
PRESSURE SENSOR/CONFIG MODULE GROUND	J3751	23	Out
PRESSURE SENSOR/CONFIG MODULE CLOCK	J3751	1	Out
PRESSURE SENSOR/CONFIG MODULE DATA	J3751	22	In/Out

5.2.5 Discrete Inputs

Discrete input signals are Active-Low pins.

- Active (low) state:
  Input signal is < 3.5 VDC and/or resistance to ground < 375 ohm
- Inactive (open/high) state:
  Input signal is between 6.5 VDC and 33 VDC and/or resistance to ground > 100 kilohm

Table 5-8 Discrete Inputs

PIN NAME	CONNECTOR	PIN	I/O
REMOTE GO AROUND	J3752	15	In
DISCRETE IN 2	J3752	14	In
DEMO MODE	J3752	29	In
EXT STANDBY	J3751	14	In
EXT IDENT	J3751	36	In
AIR/GROUND	J3751	57	In
AUDIO MUTE	J3751	15	In
AUDIO CANCEL	J3751	37	In

Remote Go Around

Active signal from momentary switch activates the missed approach procedure.

Demo Mode

CAUTION
DO NOT CONNECT DEMO MODE SELECT IN AN AIRCRAFT INSTALLATION.

- Selects the Demo mode
- Allows the unit to simulate inputs
- A low at time of unit power-up enables Demo mode

External Standby

Active input signal places the transponder into Standby mode.

External Ident

Active signal from momentary switch activates Ident - Special Position Identification.

Air/Ground

- Input determines status of the aircraft
- A ground on this input can be configured to determine On Ground or In Air status

Audio Mute

When active and an audio alert exists, the unit inhibits all audio alerts. When inactive, and an audio alert exists, the unit annunciates the alert.

Audio Cancel

Active signal from momentary switch cancels all aural alert messages.

5.2.6 Discrete Outputs

Discrete output signals are Active-Low pins. Each is an open drain output and can sink up to 250 mA when active.

Table 5-9 Discrete Outputs

PIN NAME	CONNECTOR	PIN	I/O
GPS APPROACH ANNUNCIATE	J3752	13	Out
LOI ANNUNCIATE	J3752	28	Out
GPS SELECT	J3752	42	Out
DISCRETE OUT 4	J3752	33	Out
DISCRETE OUT 5	J3751	17	Out

GPS Approach Annunciate

Active when:

- Unit is in approach mode

OR

- CDI full scale deflection is set to 0.3 nm

LOI Annunciate

Active when LOI of GPS signal occurs and “LOI” displays on the status bar.

GPS Select

NOTE
Connect this output to GPS SELECT input of King KAP 140 and KFC 225 autopilots.

Active when:

- GPS Select configuration setting is set to auto and the system is in GPS approach mode
- GPS Select configuration setting is set to prompt, the system is in GPS approach mode, and the pilot has acknowledged the prompt

5.2.7 RS-232

- All RS-232 serial ports are configurable.
- The RS-232 outputs are compatible with EIA Standard RS-232C, with an output voltage swing of at least ±5 V when driving a standard RS-232 load.
- Data input and formatting are dependent on the configured function.
- To configure port settings refer to the wiring diagrams in section 11.
- Port 1 may be configured as RS-232 or RS-422.

Table 5-10 RS-232

PIN NAME	CONNECTOR	PIN	I/O
RS-232 OUT 1/RS-422 A	J3752	5	Out
RS-232 IN 1/RS-422 B	J3752	20	I/O
RS-232 GND 1	J3752	34	--
RS-232 OUT 2	J3752	6	Out
RS-232 IN 2	J3752	21	In
RS-232 GND 2	J3752	35	--
RS-232 OUT 3	J3751	9	Out
RS-232 IN 3	J3751	31	In
RS-232 GND 3	J3751	52	--
RS-232 OUT 4	J3751	8	Out
RS-232 IN 4	J3751	30	In
RS-232 GND 4	J3751	51	--
RS-232 OUT 5	J3751	7	Out
RS-232 IN 5	J3751	29	In
RS-232 GND 5	J3751	50	--

5.2.8 RS-422

The RS-422 interface conforms to the electrical specifications of EIA standard RS-422.

Table 5-11 RS-422

PIN NAME	CONNECTOR	PIN	I/O
RS-232 OUT 1/RS-422 A	J3752	5	Out
RS-232 IN 1/RS-422 B	J3752	20	I/O

5.2.9 ARINC 429 In

Table 5-12 ARINC 429 In

PIN NAME	CONNECTOR	PIN	I/O
ARINC 429 IN 1A	J3751	27	In
ARINC 429 IN 1B	J3751	28	In
ARINC 429 IN 2A	J3751	48	In
ARINC 429 IN 2B	J3751	49	In

5.2.10 ARINC 429 Out

Outputs are compatible with the latest ARINC 429 electrical specifications when up to five standard receivers are connected.

Table 5-13 ARINC 429 Out

PIN NAME	CONNECTOR	PIN	I/O
ARINC 429 OUT 1A	J3752	1	Out
ARINC 429 OUT 1B	J3752	2	Out

5.2.11 Main Indicator

The main indicator displays both lateral and vertical deviation from selected course, to/from indications, lateral and vertical flags and superflags.

An OBS resolver connection to the GPS is preferred, but not required.

Deviation Outputs

- Each deviation output provides ±150 mV full scale ± 15 mV
- Drives up to a 333 ohm load (i.e., a maximum of three 1 kilohm loads connected in parallel)
- 0 mVDC ± 4.5 mVDC indicates centered

Table 5-14 Deviation Outputs

PIN NAME	CONNECTOR	PIN	I/O
LATERAL +LEFT OUT	J3752	7	Out
LATERAL +RIGHT OUT	J3752	22	Out
VERTICAL +UP OUT	J3752	8	Out
VERTICAL +DOWN OUT	J3752	23	Out

To/From Outputs

- Drives up to three 200 ohm loads
- The active flag is present when the output provides 225 mV ± 75 mV
- When invalid information is present the flag output provides 0 mV ± 20 mV

Table 5-15 To/From Outputs

PIN NAME	CONNECTOR	PIN	I/O
+TO OUT	J3752	9	Out
+FROM OUT	J3752	24	Out

Flag Outputs

- When valid information is present each low-level flag output provides 375 mV ± 75 mV
- When invalid information is present each low-level flag output provides 0 mV ± 20 mV
- Drives up to a 333 ohm load (i.e., a maximum of three 1 kilohm loads connected in parallel)

Table 5-16 Flag Outputs

PIN NAME	CONNECTOR	PIN	I/O
LATERAL +FLAG OUT	J3752	37	Out
LATERAL -FLAG OUT	J3752	36	--
VERTICAL +FLAG OUT	J3752	38	Out
VERTICAL -FLAG OUT	J3752	39	--

OBS Outputs

OBS Rotor C and OBS Rotor H GND are a buffered output intended to drive the OBS rotors. OBS Stator D and OBS Stator F are amplitude shifted versions of the OBS Rotor C output. Each pair is intended to read one of the two windings of the indicator's OBS stator.

Table 5-17 OBS Outputs

PIN NAME	CONNECTOR	PIN	I/O
OBS ROTOR C	J3752	12	Out
OBS ROTOR H GND	J3752	11	--
OBS STATOR D	J3752	27	In
OBS STATOR E GND	J3752	26	--
OBS STATOR F	J3752	41	In
OBS STATOR G GND	J3752	40	--

Composite Output

LOC Composite is a standard localizer composite output signal which drives left and right deviation for navigation indicators with internal converters. The amplitude of the LOC Composite output is 0.350 $\pm$0.05 Vrms into a 10 kilohm load when the GPS navigation system outputs a valid (non-flagged) cross-track deviation.

Table 5-18 Composite Outputs

PIN NAME	CONNECTOR	PIN	I/O
LOC COMPOSITE	J3752	10	Out

5.2.12 Ethernet

Table 5-19 Ethernet

PIN NAME	CONNECTOR	PIN	I/O
ETHERNET IN 1A	J3752	4	In
ETHERNET IN 1B	J3752	19	In
ETHERNET OUT 1A	J3752	3	Out
ETHERNET OUT 1B	J3752	18	Out

5.2.13 Input Source Priority

The GNX accepts data from multiple sources. If multiple sources supply data to the unit, only valid data from the highest priority source is used. Source priorities are shown from highest to the lowest.

Table 5-20 Barometric Vertical Rate Source Priority

PRIORITY	SOURCE
1	ARINC 429 label 212 from an ADC
2	ARINC 429 label 212 from an EFIS/ADC
3	RS-232 from an ADC
4	RS-232 from a remote control panel
5	HSDB barometric vertical rate from a Garmin GDU
6	HSDB Barometric vertical Rate from GI 275
7	ARINC 429 label 212 from a standby EFIS

Table 5-21 Pressure Altitude Priority

PRIORITY	SOURCE
1	ARINC 429 label 203 from an ADC
2	ARINC 429 label 203 from an EFIS/ADC (Garmin GDU)
3	RS-232 from an ADC
4	RS-232 from a 25ft-resolution altitude source
5	RS-232 from a remote control panel
6	I2C from a GAE 12
7	HSDB pressure altitude from a Garmin GDU
8	HSDB pressure altitude from a GI 275
9	ARINC 429 label 203 from a standby EFIS
10	Gray code altitude
11	RS-232 from a 100ft-resolution altitude source

Table 5-22 Indicated Airspeed Source Priority

PRIORITY	SOURCE
1	ARINC 429 label 206 from an ADC
2	ARINC 429 label 206 from an EFIS/ADC
3	RS-232 from an ADC
4	RS-232 from a remote control panel
5	HSDB indicated airspeed from a Garmin GDU
6	HSDB indicated airspeed from GI 275
7	ARINC 429 label 206 from a standby EFIS

Table 5-23 True Airspeed Source Priority

PRIORITY	SOURCE
1	ARINC 429 label 210 from an ADC
2	ARINC 429 label 210 from an EFIS/ADC
3	RS-232 from an ADC
4	RS-232 from a remote control panel
5	HSDB true airspeed from a Garmin GDU
6	HSDB true airspeed from GI 275
7	ARINC 429 label 210 from a standby EFIS

Table 5-24 Barometric Pressure Setting Source Priority

PRIORITY	SOURCE
1	ARINC 429 label 235 from an ADC
2	ARINC 429 label 234 from an ADC
3	ARINC 429 label 235 from an EFIS/ADC
4	ARINC 429 label 234 from an EFIS/ADC
5	ARINC 429 label 235 from an AFCS
6	ARINC 429 label 234 from an AFCS
7	RS-232 from an ADC
8	RS-232 from a remote control panel
9	HSDB barometric pressure setting from a Garmin GDU
10	HSDB barometric setting from GI 275
11	ARINC 429 label 235 from a standby EFIS
12	ARINC 429 label 234 from a standby EFIS

Table 5-25 Magnetic Heading Source Priority

PRIORITY	SOURCE
1	ARINC 429 label 320 from a heading source
2	ARINC 429 label 320 from an AHRS
3	ARINC 429 label 320 from an EFIS/ADC
4	RS-232 from an ADC
5	RS-232 from a remote control panel
6	HSDB magnetic heading from a Garmin GDU
7	HSDB magnetic heading from GI 275
8	ARINC 429 label 320 from a standby EFIS

Table 5-26 True Heading Source Priority

PRIORITY	SOURCE
1	ARINC 429 label 314 from a heading source
2	ARINC 429 label 314 from an AHRS
3	ARINC 429 label 314 from an EFIS/ADC
4	RS-232 from a remote control panel
5	True heading calculated from magnetic heading received via HSDB from Garmin GDU
6	True heading calculated from magnetic heading received via HSDB from GI 275
7	ARINC 429 label 314 from a standby EFIS

Table 5-27 Static Air Temperature Source Priority

PRIORITY	SOURCE
1	ARINC 429 label 213 from an ADC
2	ARINC 429 label 213 from an EFIS/ADC
3	RS-232 from an ADC
4	RS-232 from a remote control panel
5	HSDB static air temperature from a Garmin GDU
6	HSDB static air temperature from GI 275
7	ARINC 429 label 213 from a standby EFIS

Table 5-28 Total Air Temperature Source Priority

PRIORITY	SOURCE
1	ARINC 429 label 211 from an ADC
2	ARINC 429 label 211 from an EFIS/ADC
3	RS-232 from an ADC
4	RS-232 from a remote control panel
5	HSDB total air temperature from a Garmin GDU
6	HSDB total air temperature from GI 275
7	ARINC 429 label 211 from a standby EFIS
8	Outside air temperature sensor if OAT sensor installed and is active

Table 5-29 Selected Course Source Priority

PRIORITY	SOURCE
1	ARINC 429 label 100 from an EFIS/ADC
2	HSDB selected course from a Garmin GDU
3	HSDB selected course from GI 275
4	ARINC 429 label 100 from a standby EFIS
5	To/From course from the OBS control

5.2.14 Suppression Bus

- Use for connection to other L-band equipment, such as a DME or UAT.
- Active when the unit transmits.
- When driven by another source, the unit transponder receiver and transmitter functions are suppressed.
- Output driven to ≥18 VDC when transmitting.
- Input voltage of ≥10 VDC suppresses the unit.

Table 5-30 Lighting

PIN NAME	CONNECTOR	PIN	I/O
EXTERNAL SUPPRESSION BUS	J3751	18	In/Out

5.2.15 OAT Probe

- The unit includes an OAT input, used for OAT and density altitude displays.
- OAT PROBE IN uses a current sensor type probe, such as the EDMO P/N 655-PROBE or the Davtron P/N C307PS.
- The temperature input specification is 1 microamp per degree Kelvin (1uA/°K).
- Connect the probe positive wire to J3751 pin 25 and negative wire to J3751 pin 3.
- For wire designations refer to the manufacturer's specifications.

Table 5-31 OAT

PIN NAME	CONNECTOR	PIN	I/O
OAT PROBE IN	J3751	3	In
OUT PROBE OUT	J3751	25	Out

5.2.16 Audio Output

- Used to provide aural alerts.
- The output is capable of 100 mW into a 500 ohm load.

Table 5-32 Audio Output

PIN NAME	CONNECTOR	PIN	I/O
AUDIO OUT	J3751	46	Out
AUDIO GND	J3751	47	--

5.2.17 Time Mark

Can be used as an output to provide 1 PPS to other equipment in aircraft.

Table 5-33 Time Mark

PIN NAME	CONNECTOR	PIN	I/O
TIME MARK A	J3751	4	Out
TIME MARK B	J3751	26	Out

5.3 Interface Communication

5.3.1 Gray Code Altitude Input

The unit accepts ten Gray code altitude discrete inputs. The Gray code inputs are pulled down for active, or open for inactive. The unit includes internal isolation diodes on the Gray code inputs to prevent the unit from pulling the encoder lines to ground when turned off.

Table 5-34 Altitude Inputs

PIN NAME	CONNECTOR	PIN	I/O
ALTITUDE GRAY CODE A1	J3751	10	In
ALTITUDE GRAY CODE A2	J3751	32	In
ALTITUDE GRAY CODE A4	J3751	53	In
ALTITUDE GRAY CODE B1	J3751	11	In
ALTITUDE GRAY CODE B2	J3751	33	In
ALTITUDE GRAY CODE B4	J3751	54	In
ALTITUDE GRAY CODE C1	J3751	12	In
ALTITUDE GRAY CODE C2	J3751	34	In
ALTITUDE GRAY CODE C4	J3751	55	In
ALTITUDE GRAY CODE D4	J3751	13	In
ALTITUDE GRAY CODE GND	J3751	56	--

5.3.2 RS-232 Aviation Data Format

Shadin Altitude Sentence

The unit is capable of receiving the following 17-byte message from Shadin Altitude Encoders, Altitude Serializers and Altitude Converters over RS-232 at 9600 baud:

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

Table 5-35 Shadin Altitude Sentence

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

Altitude Format 1 Sentence

The unit is capable of receiving the following 10-byte message from the altitude serializer.

ALT <sp>12345<CR>

Where:

ALT	ASCII characters
<sp>	space (0x20)
12345	altitude in feet
<CR>	carriage return (0x0D)

Altitude Format 3 Sentence

The unit is capable of receiving the following 17-byte message from GAE modules, altitude serializers, and altitude converters.

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

Where:

RMS	ASCII characters
<sp>	space (0x20)
<+/->	sign indicator (0x2B[+] or 0x2D[-])
12345	altitude in feet
T	ASCII character
<+/->	sign indicator
12	sensor temperature
ul	checksum of bytes 1 through 14 in hex ASCII (i.e., FA)
<CR>	carriage return (0x0D)

NOTE

Checksum is calculated by adding each byte in the message (1 through 14).

Air Data Format 1 Sentence

The unit is capable of receiving the following message strings from the air data computer.

SHADIN Z FORMAT

<STX>

ZA012<CR><LF>	ZA (ASCII characters); 012 represents indicated air speed (knots)
ZB345<CR><LF>	ZB (ASCII characters); 345 represents true air speed (knots)
ZC678<CR><LF>	ZC (ASCII characters); 678 represents mach speed (thousandths)
ZD<+/->9012<CR><LF>	ZD (ASCII characters); sign; 9012 represents pressure altitude (tens of feet)
ZE<+/->3456<CR><LF>	ZE (ASCII characters); sign; 3456 represents density altitude (tens of feet)
ZF<+/->78<CR><LF>	ZF (ASCII characters); sign; 78 represents outside air temperature (Celsius)
ZG<+/->90<CR><LF>	ZG (ASCII characters); sign; 90 represents true air temperature (Celsius)
ZL234<CR><LF>	ZL (ASCII characters); 234 represents heading (degrees from north)
ZQ345<CR><LF>	ZQ (ASCII characters); 345 represents error log/reason indicator
ZR678<CR><LF>	ZR (ASCII characters); 678 represents checksum

<ETX>

Where:

<STX>	start-transmit character (0x02)
<CR>	carriage-return character (0x0D)
<LF>	line-feed character (0x0A)
<+/->	sign indicator (0x2B[+] or 0x2D[-])
<ETX>	end-transmit character (0x03)

NOTE

Checksum is calculated by adding each byte in the message (including all characters from <STX> up to and including the error log/reason indicator), such that carries are discarded to give a one byte result. The ASCII-coded decimal representation of that byte is given, ranging from 0 (0x30, 0x30, 0x30) to 255 (0x32, 0x35, 0x35).

SHADIN G FORMAT

<STX>	
GA012<CR><LF>	GA (ASCII characters); 012 represents indicated air speed (knots)
GB345<CR><LF>	GB (ASCII characters); 345 represents true air speed (knots)
GC678<CR><LF>	GC (ASCII characters); 678 represents Mach speed (thousandths)
GD<+/->9012<CR><LF>	GD (ASCII characters); sign; 9012 represents pressure altitude (tens of feet)
GE<+/->3456<CR><LF>	GE (ASCII characters); sign; 3456 represents density altitude (tens of feet)
GF<+/->78<CR><LF>	GF (ASCII characters); sign; 78 represents outside air temperature (Celsius)
GG<+/->90<CR><LF>	GG (ASCII characters); sign; 90 represents true air temperature (Celsius)
GK<+/->901<CR><LF>	GK (ASCII characters); sign; 901 represents vertical speed (tens of ft/minute)
GL234<CR><LF>	GL (ASCII characters); 234 represents heading (degrees from north)
GP89012<CR><LF>	GP (ASCII characters); 89012 represents fuel used, left (or Single) (tenths gallons)
GR6789.0<CR><LF>	GR (ASCII characters); 6789.0 represents fuel remaining (gallons) [1]
Ga<+/->1234<CR><LF>	Ga (ASCII characters); sign; 12.34 represents barometric corrected altitude (tens of feet)
Gb56.78<CR><LF>	Gb (ASCII characters); 56.78 represents current barometric pressure setting (inches Hg)
G*901<CR><LF>	G* (ASCII characters); 901 represents checksum
<ETX>	

Where:

<STX>	start-transmit character (0x02)
<CR>	carriage-return character (0x0D)
<LF>	line-feed character (0x0A)
<+/->	sign indicator (0x2B[+] or 0x2D[-])
<ETX>	end-transmit character (0x03)

[1] Not available from Airdata Computer

NOTE

Checksum is calculated by adding each byte in the message (including all characters from <STX> up to and including the error log/reason indicator), such that carries are discarded to give a one byte result. The ASCII-coded decimal representation of that byte is given, ranging from 0 (0x30, 0x30, 0x30) to 255 (0x32, 0x35, 0x35).

SHADIN S FORMAT

<STX>	
SA012<CR><LF>	SA (ASCII characters); 012 represents indicated air speed (knots)
SB345<CR><LF>	SB (ASCII characters); 345 represents true air speed (knots)
SC678<CR><LF>	SC (ASCII characters); 678 represents Mach speed (thousandths)
SD<+/->9012<CR><LF>	SD (ASCII characters); sign; 9012 represents pressure altitude (tens of feet)
SE<+/->3456<CR><LF>	SE (ASCII characters); sign; 3456 represents density altitude (tens of feet)
SF<+/->78<CR><LF>	SF (ASCII characters); sign; 78 represents outside air temperature (Celsius)
SG<+/->90<CR><LF>	SG (ASCII characters); sign; 90 represents true air temperature (Celsius)
SK<+/->901<CR><LF>	SK (ASCII characters); sign; 901 represents vertical speed (tens of ft/minute)
SL234<CR><LF>	SL (ASCII characters); 234 represents heading (degrees from north)
Sa<+/->1234<CR><LF>	Sa (ASCII character); sign; 1234 represents barometric corrected altitude (tens of feet)
Sb56.78<CR><LF>	Sb (ASCII character); 56.78 represents current barometric pressure setting (inches Hg)
S*901<CR><LF>	S* (ASCII character); 901 represents checksum
<ETX>	

Where:

- <STX> start-transmit character (0x02)
- <CR> carriage-return character (0x0D)
- <LF> line-feed character (0x0A)
- <+/-> sign indicator (0x2B[+] or 0x2D[-])
- <ETX> end-transmit character (0x03)

NOTE

Checksum is calculated by adding each byte in the message (including all characters from <STX> up to and including the error log/reason indicator), such that carries are discarded to give a one byte result. The ASCII-coded decimal representation of that byte is given, ranging from 0 (0x30, 0x30, 0x30) to 255 (0x32, 0x35, 0x35).

Electrical Interface

The output signals are compatible with RS-232C. Data is generated at 9600 baud with a word length of 8 bits, one stop bit, and no parity.

Aviation General Output Format

The unit RS-232 data aviation output has the following general format.

STX	ASCII start-of-text character (02 hex)
t1s	Type 1 output sentences (refer to following paragraphs for description)
t2s	One or more type 2 output sentences (refer to following paragraphs for description)
ETX	ASCII end-of-text character (03 hex)

Aviation Output Sentence Type 1

The Type 1 output sentences have the following general format.

id	item designator (single ASCII alphabetic character)
dddd	item data (1 to 10 printable ASCII characters)
CR	ASCII carriage return character (0D hex)
LF	ASCII line feed character (0A hex) (not output if configured for Aviation Output 2)

Each Type 1 sentence is output by the GNX approximately once every second.

The track, desired track, and bearing to waypoint angles, and the magnetic variation are output according to the current mode of the GNX (automatic magnetic heading, magnetic variation computed at last known position; true heading, magnetic variation of E00.0°; or user-defined magnetic heading, magnetic variation as entered by user).

The following table describes the Type 1 output sentence item designator (id) and item data (dddd) fields. If data for these sentences is invalid or unavailable, dashes ("-") are used to fill in all non-blank character positions.

Table 5-36 Type 1 Output Sentence Format

Ident (1 byte)	Data (10 bytes)										Description
	1	2	3	4	5	6	7	8	9	0	
z	a	a	a	a	a						Current GPS altitude in feet *
A	s		d	d		m	m	h	h		Current latitude, where: s N (north) or S (south) dd degrees mm minutes hh hundredths of minutes
B	s		d	d	d		m	m	h	h	Current longitude, where: s E (east) or W (west) ddd degrees mm minutes hh hundredths of minutes
C	d	d	d								Track in whole degrees
D	s	s	s								Ground speed in knots
E	d	d	d	d	d						Distance to waypoint in tenths of nautical miles
G	s	n	n	n	n						Cross track error, where: s L (left) or R (right) of course nnnn error in hundredths of nautical miles
I	d	d	d	d							Desired track in tenths of degrees
K	c	c	c	c	c						Active waypoint identifier (will be blank filled on right if less than 5 characters in identifier)
L	d	d	d	d							Bearing to active waypoint in tenths of degrees
Q	s	d	d	d							Magnetic variation, where: s E (east) or W (west) ddd tenths of degrees
S	-	-	-	-	f						NAV valid flag status, where: f - N (NAV flagged) or - (NAV valid)
T	-	-	-	-	-	-	-	-	-		Warnings status, only data transmitted are dashes (-). Used to indicate end of Type 1 sentences.
l (lower case Lima)	d	d	d	d	d	d					Distance to destination waypoint in tenths of nautical miles.

Aviation Output Sentence Type 2

The Type 2 output sentence has the following general format.

id	item designator (3 ASCII characters)
seq	sequence number (1 binary byte)
wpt	waypoint identifier (5 ASCII characters)
lat	waypoint latitude (3 binary bytes)
lon	waypoint longitude (4 binary bytes)
mvar	magnetic variation at waypoint (2 binary bytes)
CR	ASCII carriage return character (0D hex)
LF	ASCII line feed character (0A hex)

Each waypoint in the route being navigated has a Type 2 sentence output by the unit approximately once every second.

If no route is being navigated (i.e., the active route is empty), the following Type 2 sentence is output approximately once every second.

id	item designator (3 ASCII characters; route sequence number is “01”)
seq	sequence number (1 binary byte; last waypoint flag is set; route sequence number is 1)
CR	ASCII carriage return character (0D hex)
LF	ASCII line feed character (0A hex)

The following table describes the Type 2 output sentence item designator (id), sequence number (seq), waypoint identifier (wpt), waypoint latitude (lat), waypoint longitude (lon), and magnetic variation at waypoint (mvar) fields.

Table 5-37 Type 2 Output Sentence Format

Field	Byte	Format 7	6	5	4	3	2	1	0	Description
id	1 2-3									ASCII character "w" (77 hex) Two ASCII numeric characters representing route sequence number of waypoint (01 to 31)
seq	1	x	l	a	n	n	n	n	n	x undefined l 1 if last waypoint in route a 1 if active to waypoint nnnnn route sequence number of waypoint (unsigned binary)
wpt	1-5									Destination waypoint identifier (will be blank filled on right if less than 5 characters in identifier)
lat	1	s	d	d	d	d	d	d	d	s 0 (north) or 1 (south) ddddddd latitude degrees (unsigned binary)
	2	x	x	m	m	m	m	m	m	xx undefined mmmmmm latitude minutes (unsigned binary)
	3	x	h	h	h	h	h	h	h	x undefined hhhhhhh hundredths of latitude minutes (unsigned binary)
lon	1	s	x	x	x	x	x	x	x	s 0 (east) or 1 (west) xxxxxxx undefined
	2	d	d	d	d	d	d	d	d	ddddddd longitude degrees (unsigned binary)
	3	x	x	m	m	m	m	m	m	xx undefined mmmmmm latitude minutes (unsigned binary)
	4	x	h	h	h	h	h	h	h	x undefined hhhhhhh hundredths of latitude minutes (unsigned binary)
mvar	1-2									Two's complement binary in 16ths of degrees. Easterly variation is positive. MSB output first.

Fuel Format 2 Sentence

The GNX 375 is capable of receiving the following 55-byte message from the Shadin Fuel Flow Indicator.

<STX>K0543.2<sp>0100.0<sp>0040.0<sp>0060.0<sp>0123.4<sp>0045.4<sp>0078.0<sp>123<ETX>

Where:

<STX>	start-transmit character (0x02)
K	units designation (i.e., Gallons, Liters, Kilograms, B[pounds])
0543.2	total fuel remaining (i.e., ASCII-coded decimal format: 0x30, 0x35, 0x34, 0x33, 0x2e, 0x32)
<sp>	space (0x20)
0100.0	fuel flow rate, total (formatted as for total fuel remaining)
0040.0	fuel flow rate, engine one (or asterisks["******"], in the case of single engine aircraft)
0060.0	fuel flow rate, engine two (asterisks, in the case of single engine aircraft)
0123.4	fuel used, total
0045.4	fuel used, engine one (asterisks, in the case of single engine aircraft)
0078.0	fuel used, engine two (asterisks, in the case of single engine aircraft)
123	checksum (of bytes 2 through 51)
<ETX>	end-transmit character (0x03)

NOTE

Checksum is calculated by adding each byte in the message (2 through 51), such that carries are discarded to give a one byte result. The ASCII-coded decimal representation of that byte is given, ranging from 0 (0x30, 0x30, 0x30) to 255 (0x32, 0x35, 0x35).

Fuel Format 1 Sentence

The GNX 375 is capable of receiving the following 13-byte message from the ARNAV or Electronics International ("EI") Fuel Flow Indicators.

<STX>G0245100550<ETX>

Where:

<STX>	start-transmit character (0x02 hex)
G	units designation (i.e., Gallons, Imperial gallons, Liters, Kilograms, B[pounds])
0245	total fuel remaining in reverse order (i.e., ASCII-coded decimal format: 0x30, 0x32, 0x34, 0x35)
1	fuel remaining checksum (modulo 10 sum of four "total fuel remaining" digits)
0055	total fuel flow rate in reverse order
0	fuel flow checksum
<ETX>	end-transmit character (0x03)

NOTE

Fuel remaining and fuel flow are [* 10] when units designation is gallons or imperial gallons. For example, 0245 gallons indicates 542 gallons; 0245 liters indicates 5420 liters. Checksum is the modulo 10 sum of the four fuel flow decimal digits, converted to an ASCII numerical character (e.g., checksum for "5678" would be ASCII "6").

FADC Format 1/Airdata Format 1 Sentence

The GNX 375 is capable of receiving the following message strings from the Shadin Fuel/Air Data or ADC.

SHADIN "z" FORMAT

<STX>

ZA012<CR><LF>	"ZA" (ASCII characters) "012" represents indicated Air Speed (knots)
ZB345<CR><LF>	"ZB" (ASCII characters) "345" represents true Air Speed (knots)
ZC678<CR><LF>	"ZC" (ASCII characters) "678" represents Mach Speed (thousandths)
ZD<+/->9012<CR><LF>	"ZD" (ASCII characters) Sign "9012" represents pressure altitude (tens of feet)
ZE<+/->3456<CR><LF>	"ZE" (ASCII characters) Sign "3456" represents density altitude (tens of feet)
ZF<+/->78<CR><LF>	"ZF" (ASCII characters) Sign "78" represents outside air temperature (Celsius)
ZG<+/->90<CR><LF>	"ZG" (ASCII characters) Sign "90" represents true air temperature (Celsius)
ZH123<CR><LF>	"ZH" (ASCII characters) "123" represents wind direction (degrees from north)
ZI456<CR><LF>	"ZI" (ASCII characters) "456" represents wind speed (knots)
ZJ<+/->78<CR><LF>	"ZJ" (ASCII characters) Sign "78" represents rate of turn (degrees per second)
ZK<+/->901<CR><LF>	"ZK" (ASCII characters) Sign "901" represents vertical speed (tens of feet/minute)
ZL234<CR><LF>	"ZL" (ASCII characters) "234" represents heading (degrees from north)
ZM5678<CR><LF>	"ZM" (ASCII characters) "5678" represents fuel flow, right (tenths gallons/hour) [1]
ZN90123<CR><LF>	"ZN" (ASCII characters) "90123" represents fuel used, right (tenths gallons) [1]
ZO4567<CR><LF>	"ZO" (ASCII characters) "4567" represents fuel flow, left (tenths gallons/hour) [1]
ZP89012<CR><LF>	"ZP" (ASCII characters) "89012" represents fuel used, left (tenths gallons) [1]
ZQ345<CR><LF>	"ZQ" (ASCII characters) "345" represents error log/reason indicator
ZR678<CR><LF>	"ZR" (ASCII characters) "678" represents checksum

<ETX>

[1] Not available from ADC.

Where:

<STX>	start-transmit character (0x02)
<CR>	carriage-return character (0x0d)
<LF>	line-feed character (0x0a)

<+/-> sign indicator (0x2b["+"] or 0x2d["-"])
<ETX> end-transmit character (0x03)

NOTE

Checksum is calculated by adding each byte in the message (including all characters from <STX> up to and including the error log/reason indicator), such that carries are discarded to give a one byte result. The ASCII-coded decimal representation of that byte is given, ranging from 0 (0x30, 0x30, 0x30) to 255 (0x32, 0x35, 0x35).

SHADIN "G" FORMAT

<STX>

GA012<CR><LF>	"GA" (ASCII characters) "012" represents indicated Air Speed (knots)
GB345<CR><LF>	"GB" (ASCII characters) "345" represents true Air Speed (knots)
GC678<CR><LF>	"GC" (ASCII characters) "678" represents Mach Speed (thousandths)
GD<+/->9012<CR><LF>	"GD" (ASCII characters) Sign "9012" represents pressure altitude (tens of feet)
GE<+/->3456<CR><LF>	"GE" (ASCII characters) Sign "3456" represents density altitude (tens of feet)
GF<+/->78<CR><LF>	"GF" (ASCII characters) Sign "78" represents outside air temperature (Celsius)
GG<+/->90<CR><LF>	"GG" (ASCII characters) Sign "90" represents true air temperature (Celsius)
GH123<CR><LF>	"GH" (ASCII characters) "123" represents wind direction (degrees from north)
GI456<CR><LF>	"GI" (ASCII characters) "456" represents wind speed (knots)
GJ<+/->78<CR><LF>	"GJ" (ASCII characters) Sign "78" represents rate of turn (degrees per second)
GK<+/->901<CR><LF>	"GK" (ASCII characters) Sign "901" represents vertical speed (tens of feet/minute)
GL234<CR><LF>	"GL" (ASCII characters) "234" represents heading (degrees from north)
GM5678<CR><LF>	"GM" (ASCII characters) "5678" represents fuel flow, right (Twin only) (tenths gallons/hour) [1]
GN90123<CR><LF>	"GN" (ASCII characters) "90123" represents fuel used, right (Twin only) (tenths gallons) [1]
GO4567<CR><LF>	"GO" (ASCII characters) "4567" represents fuel flow, left (or Single) (tenths gallons/hour)
GP89012<CR><LF>	"GP" (ASCII characters) "89012" represents fuel used, left (or Single) (tenths gallons)
GQ001<CR><LF>	"GQ" (ASCII characters) "001" represents error log/reason indicator (001 = temp. sensor error, 000 = no errors)
GR6789.0<CR><LF>	"GR" (ASCII characters) "6789.0" represents fuel remaining (gallons) [1]

Ga<+/->1234<CR><LF>	"Ga" (ASCII characters) Sign "12.34" represents barometric corrected altitude (tens of feet)
Gb56.78<CR><LF>	"Gb" (ASCII characters) "56.78" represents current barometric pressure setting (inches Hg)
G*901<CR><LF>	"G*" (ASCII characters) "901" represents checksum

<ETX>

[1] Not available from ADC.

Where:

<STX>	start-transmit character (0x02)
<CR>	carriage-return character (0x0d)
<LF>	line-feed character (0x0a)
<+/->	sign indicator (0x2b["+"] or 0x2d["-"])
<ETX>	end-transmit character (0x03)

NOTE

Checksum is calculated by adding each byte in the message (including all characters from <STX> up to and including the error log/reason indicator), such that carries are discarded to give a one byte result. The ASCII-coded decimal representation of that byte is given, ranging from 0 (0x30, 0x30, 0x30) to 255 (0x32, 0x35, 0x35).

SHADIN "S" FORMAT

<STX>

SA012<CR><LF>	"SA" (ASCII characters) "012" represents indicated Air Speed (knots)
SB345<CR><LF>	"SB" (ASCII characters) "345" represents true Air Speed (knots)
SC678<CR><LF>	"SC" (ASCII characters) "678" represents Mach Speed (thousandths)
SD<+/->9012<CR><LF>	"SD" (ASCII characters) Sign "9012" represents pressure altitude (tens of feet)
SE<+/->3456<CR><LF>	"SE" (ASCII characters) Sign "3456" represents density altitude (tens of feet)
SF<+/->78<CR><LF>	"SF" (ASCII characters) Sign "78" represents outside air temperature (Celsius)
SG<+/->90<CR><LF>	"SG" (ASCII characters) Sign "90" represents true air temperature (Celsius)
SH123<CR><LF>	"SH" (ASCII characters) "123" represents wind direction (degrees from north)
SI456<CR><LF>	"SI" (ASCII characters) "456" represents wind speed (knots)
SJ<+/->78<CR><LF>	"SJ" (ASCII characters) Sign "78" represents rate of turn (degrees per second)

SK<+/->901<CR><LF>	"SK" (ASCII characters) Sign "901" represents vertical speed (tens of feet/minute)
SL234<CR><LF>	"SL" (ASCII characters) "234" represents heading (degrees from north)
SM5678<CR><LF>	"SM" (ASCII characters) "5678" represents fuel flow, right (tenths gallons/hour)
SN90123<CR><LF>	"SN" (ASCII characters) "90123" represents fuel used, right (tenths gallons)
SO4567<CR><LF>	"SO" (ASCII characters) "4567" represents fuel flow, left (tenths gallons/hour)
SP89012<CR><LF>	"SP" (ASCII characters) "89012" represents fuel used, left (tenths gallons)
SQ345<CR><LF>	"SQ" (ASCII characters) "345" represents error log/reason indicator
SR67890<CR><LF>	"SR" (ASCII characters) "67890" represents fuel remaining (tenths gallons)
SS123<CR><LF>	"SS" (ASCII character) "123" represents ground speed (knots)
ST456<CR>LF>	"ST" (ASCII character) "456" represents track (degrees)
SU789012<CR><LF>	"SU" (ASCII character) "789012" represents distance to waypoint (hundredths nautical miles)
SV<E/W>345<CR><LF>	"SV" (ASCII character) "E" represents East "W" represents West "345" represents magnetic variation (tenths degrees)
SW<N/S>67 8901<CR><LF>	"SW" (ASCII character) "N" represents North "S" represents South "67 8910" represents current latitude (degrees, minutes, hundredths of minutes)
SX<E/W>234 5678<CR><LF>	"SX" (ASCII character) "E" represents East "W" represents West "234 5678" represents current longitude (degrees, minutes, hundredths of minutes)
SY<L/R>90<CR><LF>	"SY" (ASCII character) "L" represents Left "R" represents Right "90" represents drift angle (degrees)
Sa<+/->1234<CR><LF>	"Sa" (ASCII character) Sign "1234" represents barometric corrected altitude (tens of feet)
Sb56.78<CR><LF>	"Sb" (ASCII character) "56.78" represents current barometric pressure setting (inches Hg)
S*901<CR><LF>	"S*" (ASCII character) "901" represents checksum

<ETX>

Where:

<STX>	start-transmit character (0x02)
<CR>	carriage-return character (0x0d)
<LF>	line-feed character (0x0a)
<+/->	sign indicator (0x2b["+"] or 0x2d["-"])
<ETX>	end-transmit character (0x03)

NOTE

Checksum is calculated by adding each byte in the message (including all characters from <STX> up to and including the error log/reason indicator), such that carries are discarded to give a one byte result. The ASCII-coded decimal representation of that byte is given, ranging from 0 (0x30, 0x30, 0x30) to 255 (0x32, 0x35, 0x35).

5.3.3 ARINC 429 Communication

Table 5-38 GAMA Format 1

LABEL	DATA
001	Distance to GO (BCD)
002	Time to Go (BCD)
012	Ground Speed (BCD)
074G	Data Record Header
075G	Active Wpt From/To Data
100P	Selected Course 1
113G	Message Checksum
114	Desired Track (True)
115	Waypoint Bearing (True)
116G [1]	Cross Track Distance
117G	Vertical Deviation
121	Horizontal Command (to Autopilot)
125	Greenwich Mean Time (BCD)
147G	Magnetic Variation
150	Greenwich Mean Time (BNR)
251G	Distance to Go
252	Time to Go
260G	Date (BCD)
261G	GPS Discrete Word 1
275G	LRN Status Word
300G	Station Declination, Type, and Class
303G	Message Length/Type/Number
304G	Message Characters 1-3
305G	Message Characters 4-6
306G	NAV/Waypoint/Airport Latitude
307G	NAV/Waypoint/Airport Longitude
310	Present Position Latitude
311	Present Position Longitude
312	Ground Speed
313	Track Angle (True)
314	True Heading
315	Wind Speed
316	Wind Angle (True)

LABEL	DATA
320	Magnetic Heading
321	Drift Angle
326G [1]	Lateral Scale Factor
327G	Vertical Scale Factor
330	Conic Arc Inbound Course
351G	Distance to Destination (Via Flight Plan)
352G	Estimated Time to Destination (Via Flight Plan)
371G	Specific Equipment ID
377	Equipment Hex ID Code

[1] Optional resolution extension bits 11-13 used.

Table 5-39 GAMA Format 3

LABEL	DATA
001	Distance to GO (BCD)
002	Time to Go (BCD)
012	Ground Speed (BCD)
074G	Data Record Header
075G	Active Wpt From/To Data
100P	Selected Course 1
113G	Message Checksum
114	Desired Track (True)
115	Waypoint Bearing (True)
116G [1]	Cross Track Distance
117G	Vertical Deviation
121	Horizontal Command (to Autopilot)
125	Greenwich Mean Time (BCD)
147G	Magnetic Variation
150	Greenwich Mean Time (BNR)
251G	Distance to Go
252	Time to Go
260G	Date (BCD)
261G	GPS Discrete Word 1
275G	LRN Status Word
300G	Station Declination, Type, and Class
303	Message Length/Type/Number

LABEL	DATA
304G	Message Characters 1-3
305G	Message Characters 4-6
306G	NAV/Waypoint/Airport Latitude
307G	NAV/Waypoint/Airport Longitude
310	Present Position Latitude
311	Present Position Longitude
312	Ground Speed
313	Track Angle (True)
314	True Heading
315	Wind Speed
316	Wind Angle (True)
320	Magnetic Heading
321	Drift Angle
326G [1]	Lateral Scale Factor
327G	Vertical Scale Factor
330	Conic Arc Inbound Course
331	Conic Arc Radius
332	Conic Arc Course Change Angle
333	Airport Runway Azimuth
334	Airport Runway Length in Feet
335	Left/Right Hand Holding Pattern Azimuth
340	Left/Right Procedure Turn Azimuth
351G	Distance to Destination (Via Flight Plan)
352G	Estimated Time to Destination (Via Flight Plan)
371G	Specific Equipment ID
377	Equipment Hex ID Code

[1] Optional resolution extension bits 11-13 used.

AHRS

Table 5-40 AHRS

LABEL	DATA	PERIODIC TIMEOUT
270	AHRS Discrete Word	2000 ms
314	True Heading	200 ms
320	Magnetic Heading	200 ms
324	Pitch Angle	200 ms
325	Roll Angle	200 ms
332	Body Lateral Acceleration	240 ms
333	Body Normal Acceleration	240 ms
340	Inertial Yaw Rate	80 ms
365	Inertial Vertical Velocity	160 ms

ADC

Table 5-41 ADC

LABEL	DATA	PERIODIC TIMEOUT
203	Altitude	250 ms
204	Baro-Corrected Altitude #1	250 ms
205	Mach	500 ms
206	Indicated Airspeed	500 ms
210	True Airspeed	500 ms
211	Total Air Temperature	2000 ms
212	Altitude Rate	250 ms
213	Static Air Temperature	2000 ms

EFIS/Air Data

Table 5-42 EFIS/Air Data

LABEL	DATA	PERIODIC TIMEOUT
100	Selected Course #1	1000 ms
203	Altitude	200 ms
204	Baro-Corrected Altitude #1	200 ms
206	Indicated Airspeed	400 ms
210	True Airspeed	400 ms
211	Total Air Temperature	2000 ms
213	Static Air Temperature	2000 ms
314	True Heading	200 ms
320	Magnetic Heading	200 ms

Heading

Table 5-43 Heading

LABEL	DATA	PERIODIC TIMEOUT
314	True Heading	200 ms
320	Magnetic Heading	200 ms

6 Installation Procedures

This section describes the procedures necessary to install the GNX 375. Steps should be performed in the order they are presented. All materials needed are identified in section 3.

For all components covered under this TSO, this section explains:

- Locating a mounting position
- Preparing mounting locations
- Installing the electrical portions of the system
- Installing all components

6.1 Cabling and Wiring General Instructions

CAUTION

ENSURE THERE ARE NO WIRING ERRORS BEFORE CONNECTING THE CABLES. INCORRECT WIRING COULD DAMAGE COMPONENTS.

NOTE

Shield terminations to the unit connector backshell must be less than 3.0". Shield terminations for interfaced equipment should be as short as practical. Wiring must be shielded as required in section 11.

Install wire in accordance with AC 43.13-1B, chapter 11. Allow adequate space for installation of cables and connectors. For connector and tooling information, refer to section 3. The installer supplies and fabricates all of the cables according to information in this manual. Cable lengths vary depending on installation. Ground and shield terminations of interfaced equipment can vary. For more information refer to the equipment manufacturer's installation manual. The following considerations should also be addressed.

- Cable harness should not be located near controls/control cables, high voltage lines, or fuel lines
- Cable harness should be in a protected area of the aircraft (e.g., isolated from engine rotor burst)
- Cable harness should not be routed near high voltage or electrical noise sources
- Use wire gauge specified in section 11
- Route and secure the wire bundle as appropriate
- Avoid sharp bends and chafing

6.1.1 Shielded Cable Preparation

1. At the end of the shielded cable, strip back 2.5 inch maximum length of the jacket to expose the braid.
2. Remove the exposed braid.
3. Carefully score the jacket 1/4 inches to 5/16 inches from the end and remove the jacket to leave the braid exposed.
4. Connect a 20 or 22 AWG wire to the exposed braid of the prepared cable. For termination techniques, refer to AC 43.13.

Preferred Method

a. Slide a solder sleeve (1) onto the prepared cable and shrink using a heat gun. The chosen size of solder sleeve must accommodate the number of conductors present in the cable assembly. Refer to M83519/1-2 for 2-conductor and M83519/1-3 for 3-conductor solder sleeves. Solder sleeves with preinstalled leads are acceptable.

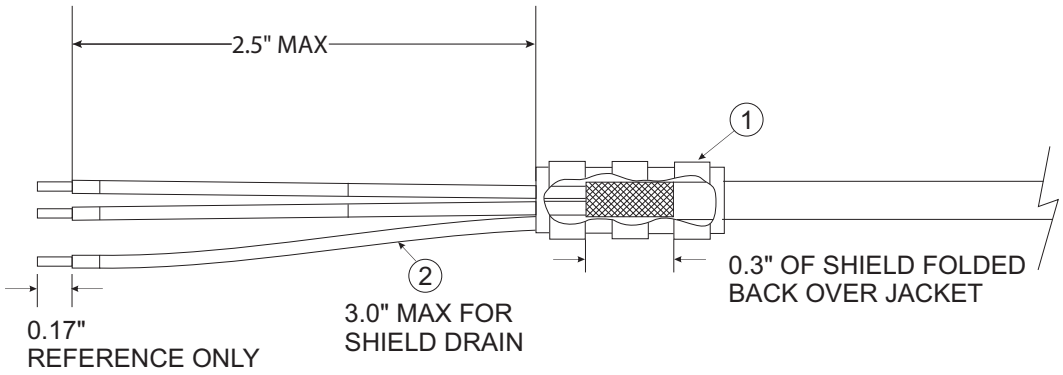


Figure 6-1 Preferred Shield Termination Method

Alternate Method

a. Solder the wire (2) to the exposed braid of the prepared cable.
b. Ensure a solid electrical connection through the use of acceptable soldering practices.
c. Slide a piece of shrink tube (1) onto the prepared cable and shrink using a heat gun. The chosen size of shrink tube must accommodate the number of conductors present in the cable.

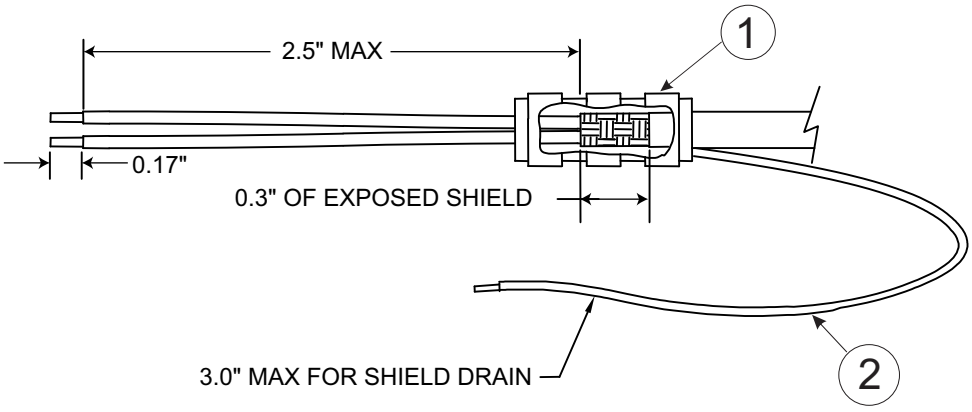


Figure 6-2 Alternate Shield Termination Method

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

6.1.2 Instructions to Crimp Pins to Wires

1. Strip back approximately 0.17 inches of insulation from each wire.
2. Insert the wire (1) into the pin/socket (2) and crimp with one of the recommended crimping tools.
3. Insert the pin into the connector housing location as specified by the interconnect drawings in section 11.
4. Verify the pin is properly engaged in the connector by tugging on the wire.

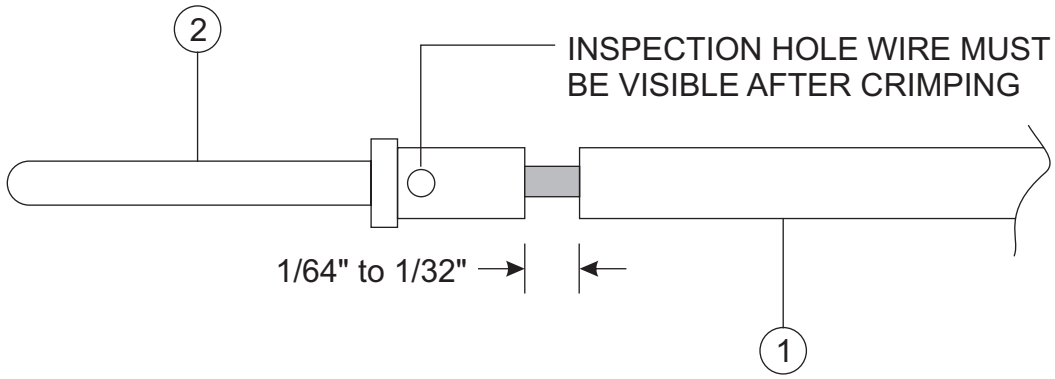


Figure 6-3 Insulation to Pin/Socket Clearance

6.1.3 Configuration Module

The backshell assembly houses the configuration module. The configuration module and the GAE use the same connector pin locations and cannot be used at the same time. To assemble:

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

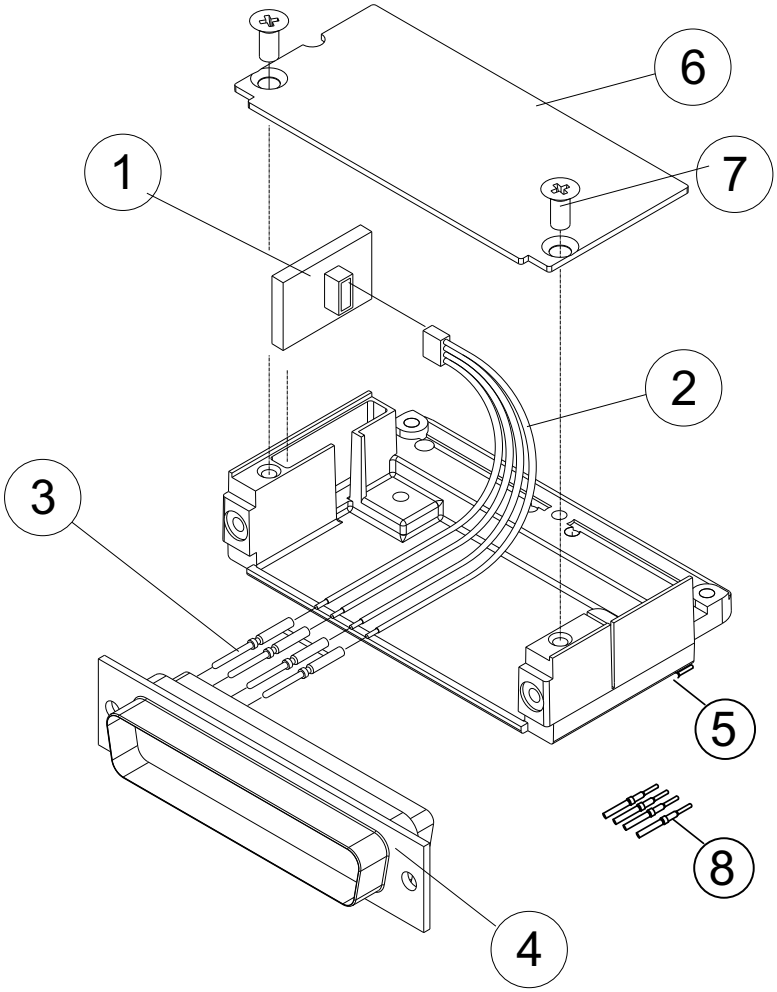


Figure 6-4 Configuration Module Assembly

6.1.4 Backshell Assembly

CAUTION

PLACE THE SMOOTH SIDE OF THE STRAIN RELIEF CLAMP ACROSS THE CABLE BUNDLE. PLACING THE CONCAVE SIDE AGAINST THE CABLE BUNDLE WILL DAMAGE WIRES.

Each tapped hole on the backshell may accommodate up to two ring terminals. It is preferred that only two wires be terminated per ring terminal. This necessitates 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 be used. If more wires exist for the connector than two per ring terminal, it is permissible to terminate three wires per ring terminal. For this procedure refer to figure 6-5 and figure 6-6.

1. Insert flat head screws (3) through holes on the shield block (2).
2. Attach to the backshell (1).
3. Insert the crimped wire harness contacts (14) in the D-sub connector (10).
4. Install the configuration module or GAE wires into the connector.
5. Wrap the cable bundle with silicone fusion tape (19) where the strain relief clamps the bundle.
6. Place the smooth side of the backshell strain relief clamp (7) across the cable bundle.
7. Secure strain relief with three 4-40 x 0.375 pan head screws (6).
8. Attach configuration module.
9. Attach the cover (8) to the backshell using the supplied screws (9).
10. Install a ring terminal onto the cable shield drains, grouping wires as appropriate for the connector.
11. Place the following items on the 8-32 x 0.312 pan head shield terminal screw in the order they are presented.
    a. Split washer (17)
    b. Flat washer (18)
    c. First ring terminal (15)
    d. Second ring terminal (if necessary)
12. Insert the pan head shield terminal screw (16) into the tapped holes on the shield block (2).

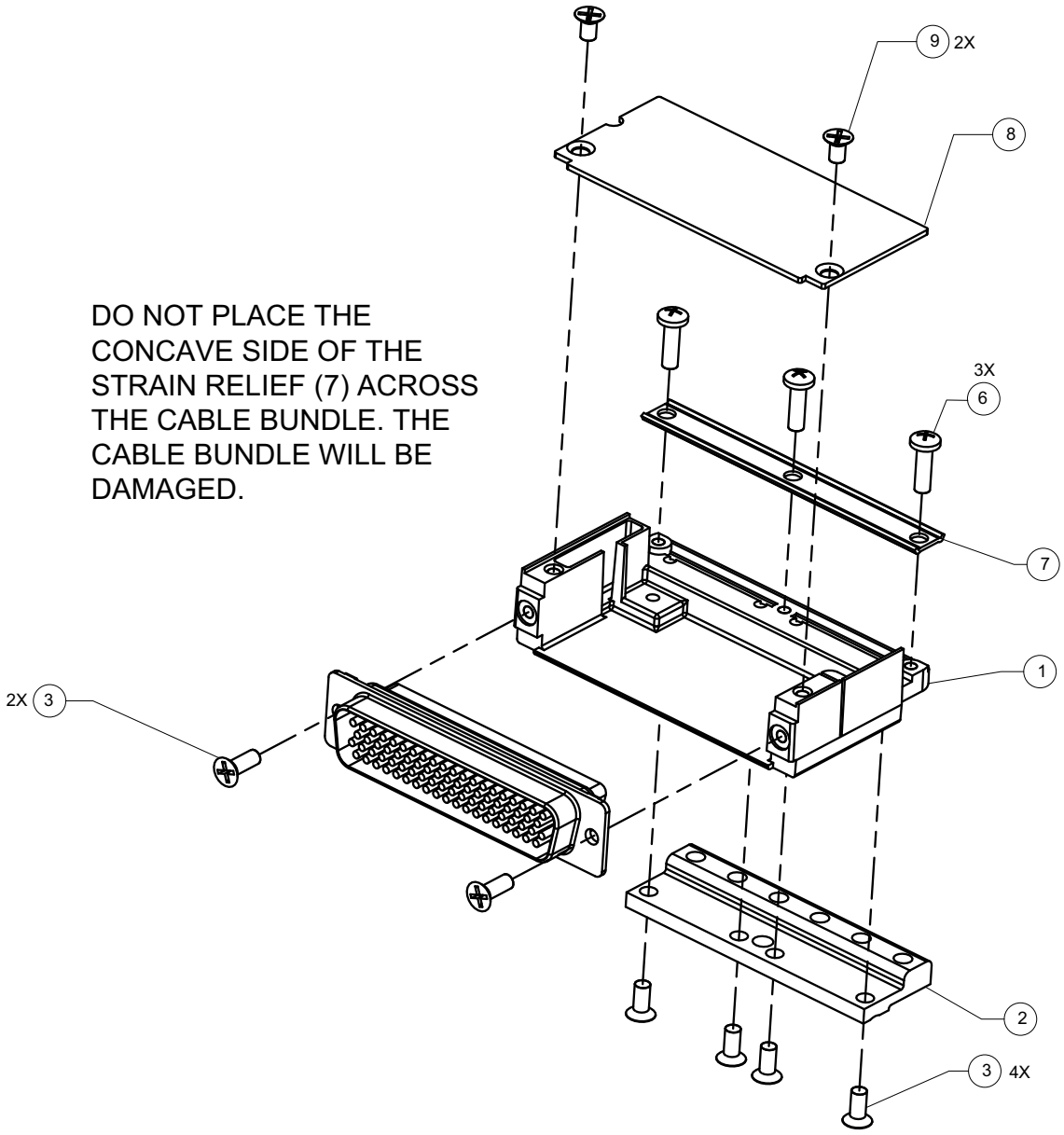


Figure 6-5 Backshell Assembly Example

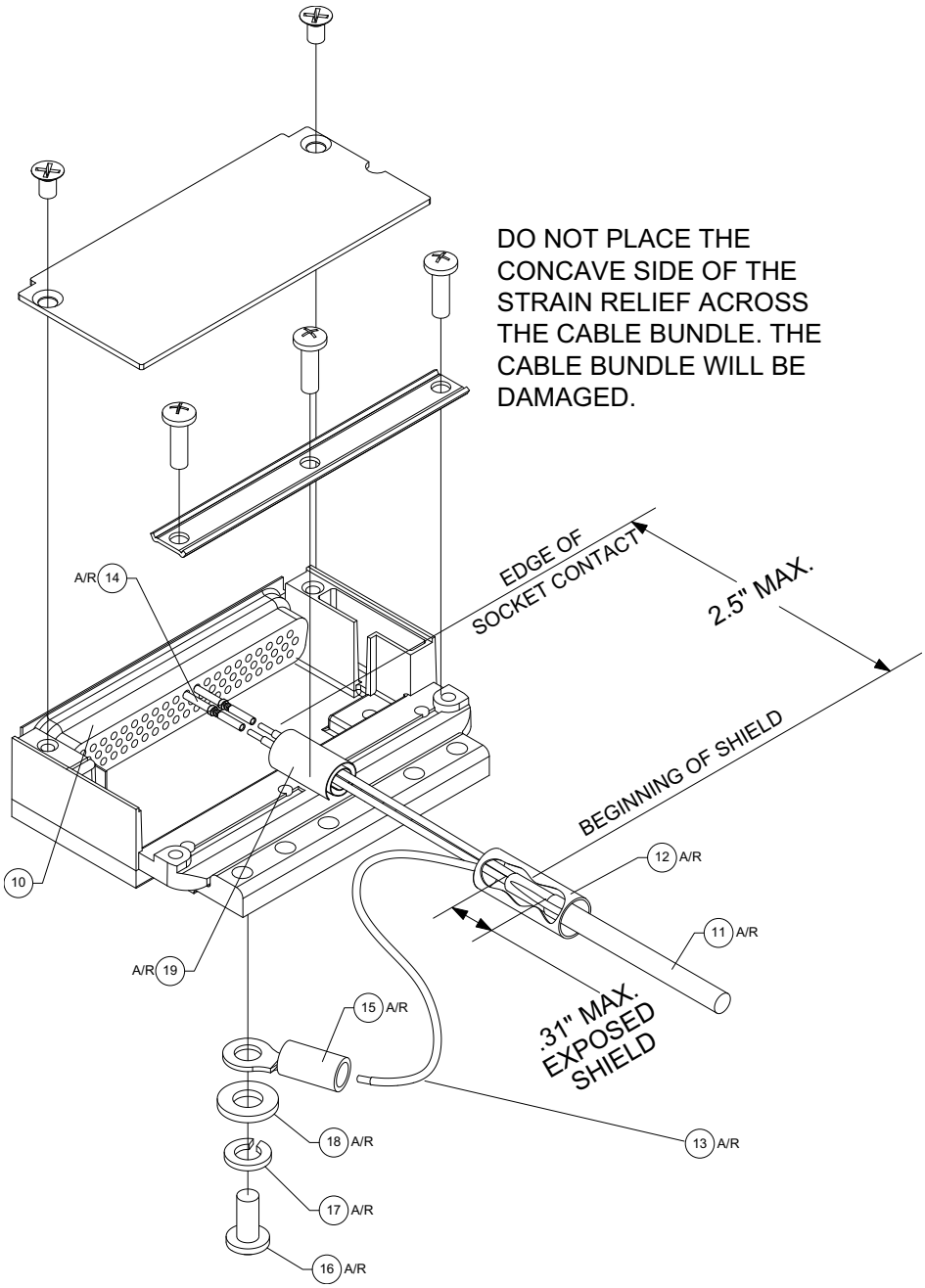


Figure 6-6 Backshell Shield Termination

6.1.5 Coaxial Cable Installation

Ensure the length is set for the necessary cable loss. Some antennas have minimum cable loss specifications that may need a cable longer than the physical run in the aircraft. To install coax cables:

1. Route the coaxial cable to the radio rack location keeping in mind the recommendations of section 6.4 and section 6.5.
2. Attach the cable in accordance with AC 43.13-1B, chapter 11, section 11.
3. Trim the cable to the applicable length.
4. Install the connectors per the manufacturer's instructions.

6.1.6 Wiring and Power Checks

CAUTION

VERIFY ALL LIGHTING BUSES ARE SET TO THE LOWEST ADJUSTMENT BEFORE APPLYING POWER TO THE UNIT. THE LOWEST ADJUSTMENT SETTING PREVENTS DAMAGE TO THE UNIT IF THERE ARE ANY WIRING ERRORS.

Examine the wire harness to ensure the connection to aircraft systems and avionics equipment is correct before the unit is energized. Point-to-point continuity checks must be performed to expose any faults such as shorting to ground or wiring discrepancies. All faults or discrepancies must be corrected before continuing.

Before and during the installation ensure:

- Cables are properly attached
- Shields are connected to connector shield blocks
- Cables do not touch controls and control systems over entire range of movement
- Wires are installed as described

Ensure these items are completed after the installation.

- Power and ground checks
- Continuity checks
- Faults and discrepancies are corrected
- Unit is correctly attached

6.2 Unit Installation

The GNX 375 is designed to mount in the aircraft instrument panel. The primary unit location should minimize pilot head movement when transitioning between looking outside of the cockpit and viewing/operating the unit. The location should be such that the unit is not blocked by the glare shield on top, or throttles, control yoke, etc., on the bottom. If the aircraft has a throw-over yoke, ensure the yoke does not interfere with the unit.

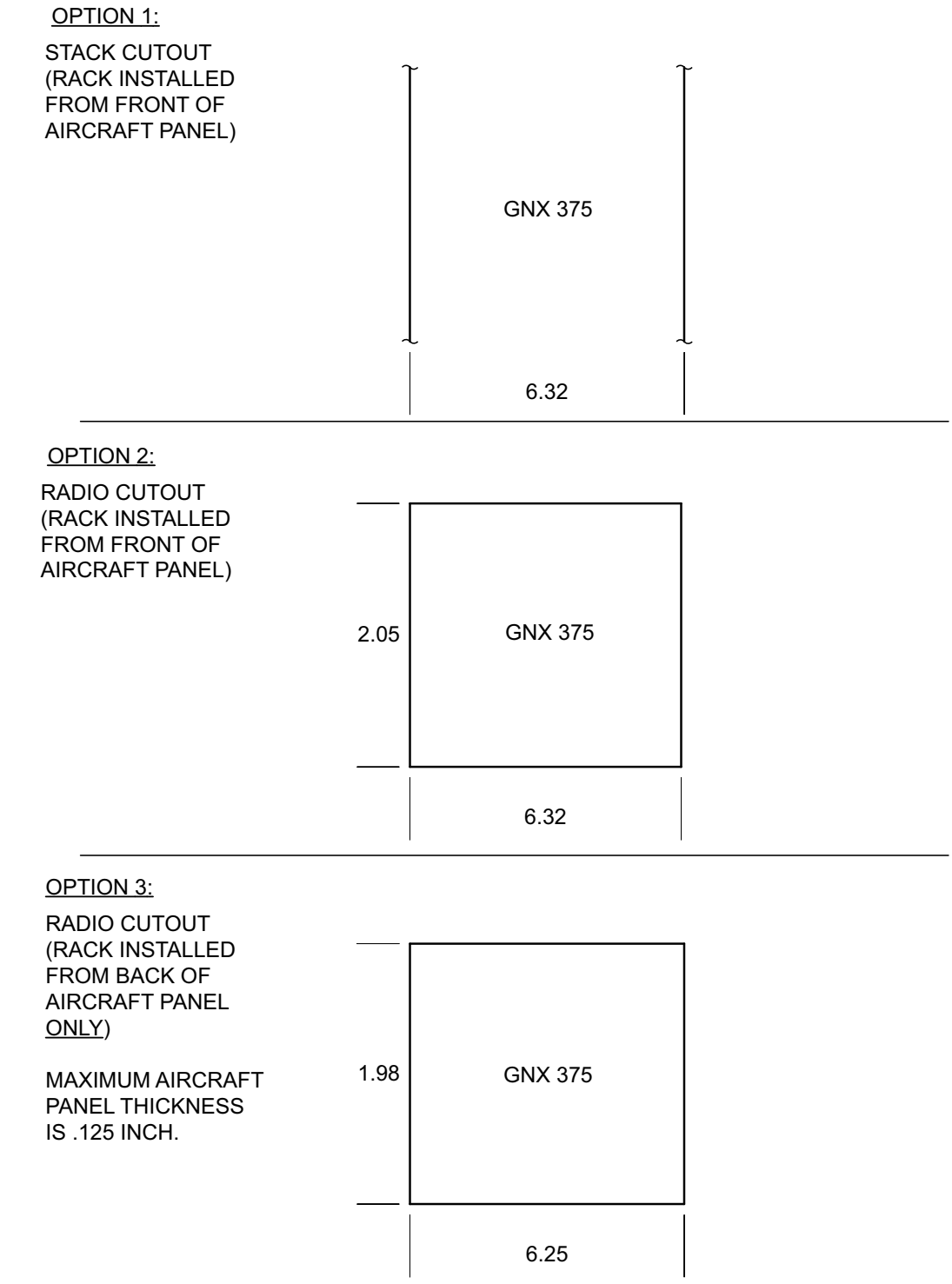
Ensure there is sufficient clearance behind the GNX 375 location for connectors, wire harness, and Pitot-static plumbing before cutting the panel.

6.2.1 Rack Installation

CAUTION

BE CAREFUL WHEN INSTALLING THE RACK IN THE INSTRUMENT PANEL. DEFORMATION OF THE RACK WILL MAKE IT DIFFICULT TO INSTALL AND REMOVE THE GNX 375.

1. Use the dimensions in figure 6-7 to mark the panel. Alternatively, the mounting rack may be used as a template for drilling the mounting holes.
2. Drill four 0.1285" holes for the GNX mounting points using a #30 drill bit.
3. Enlarge the mounting holes to 0.144" using a #27 drill bit.
4. Cut out the GNX outline on the instrument panel.
5. Install the rack in the instrument panel with six #6-32 flat head screws and six self-locking nuts.
6. Insert the screws from the inside through the holes in the sides of the rack. The top front lip of the rack should be flush with, or extend slightly beyond the finished aircraft panel. If the front lip of the mounting rack is behind the surface of the instrument panel, the unit connectors may not fully engage.



NOTES, ALL OPTIONS:
1. DIMENSIONS ARE IN INCHES
2. IF THE FRONT LIP OF THE MOUNTING RACK IS BEHIND THE SURFACE OF THE AIRCRAFT INSTRUMENT PANEL, THE UNIT CONNECTORS MAY NOT FULLY ENGAGE.
3. TOLERANCE: ±0.03 INCHES.

Figure 6-7 Panel Cutout

6.2.2 Backplate Installation

CAUTION

ENSURE THE GROUND LUGS ON THE CONNECTOR BACKSHELL FACE AWAY FROM EACH OTHER WHEN INSTALLING THE CONNECTORS IN THE BACKPLATE. FAILURE TO DO SO MAY CAUSE DAMAGE TO PINS OR INTERMITTENT FAILURES WHEN UNIT IS INSERTED.

1. Visually inspect the connectors to ensure that there are no bent or damaged pins.
2. Repair any damage.
3. Connect the rear connectors to the backplate.
4. Align the backplate so that the backplate screw heads pass through the keyed holes in the back of the rack.
5. Slide the backplate to the right (viewing from cockpit) until it clicks into place.
6. Secure the backplate by tightening the four #4-40 screws.

6.2.3 GNX Unit Removal and Installation

CAUTION

ALWAYS CONNECT AN ANTENNA OR A DUMMY LOAD TO THE UNIT WHEN OPERATING. FAILURE TO DO SO WILL CAUSE THE UNIT TO FAIL AND POSSIBLY DAMAGE IT.

Removal

1. Insert a 3/32" hex drive tool into the access hole on the unit face.
2. Rotate counterclockwise until the unit is forced out about 3/8" and the hex drive tool completely stops.
3. Pull the unit from the rack.

Installation

CAUTION

DO NOT OVER TIGHTEN THE UNIT INTO THE RACK. TORQUE EXCEEDING 15 IN-LBS CAN DAMAGE THE LOCKING MECHANISM.

NOTE

It may be necessary to insert the hex drive tool into the access hole and turn the tool counterclockwise until it completely stops in order to ensure correct position of the retention mechanism prior to placing the unit in the rack.

1. Slide the unit straight into the rack until it stops, approximately 3/8" short of the final position.
2. Insert a 3/32" hex drive tool into the access hole near the top right of the unit face.
3. Turn the tool clockwise while pressing on the left side of the bezel until the unit is firmly seated in the rack.

6.3 GAE Installation

CAUTION

VERIFY THERE ARE NO PNEUMATIC LEAKS, AND SEALANTS, FLUIDS, OR PARTICLES IN THE LINES OR FITTINGS.

1. Strip 0.17 inches of insulation from each wire of the four-conductor wire harness.
2. Crimp pins onto each wire.
3. Insert newly crimped pin contacts into the correct locations in the connector housing.
4. Mount the GAE to the backplate using two countersunk screws as shown in figure 6-8.
5. Torque screws to 8 in-lbs.
6. Attach the aircraft static pressure source to the GAE.
7. Plug the four-conductor wire harness into the connector on the GAE.
8. Verify there are no pneumatic leaks or sealant in the lines and fittings.

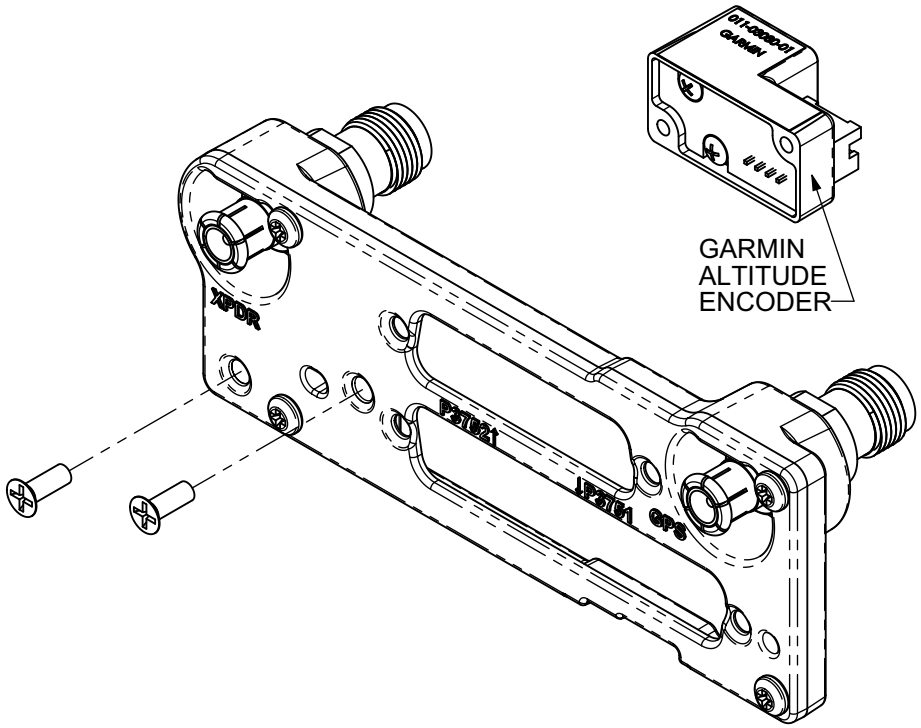


Figure 6-8 GAE Assembly

6.4 GPS Antenna Installation

NOTE

When attaching a combination antenna, the recommended distance of two feet or more is not applicable to the distance between the antenna elements of the combination antenna (i.e., GPS and COM, GPS and XM) provided the combination antenna is TSO authorized and has been tested to meet Garmin's minimum performance standards. For approved antennas refer to section 3.1.1.

NOTE

If twelve inch spacing is not practical, the maximum center-to-center spacing must be used, but never less than nine inches. Spacing less than nine inches results in unacceptable antenna pattern degradation.

NOTE

It may be beneficial to temporarily locate the GPS/SBAS antenna with coax connected to the GNX unit and check the GPS/SBAS performance as described in section 8.2.3. Once a suitable location has been verified, then permanently mount the antenna.

The installation guidelines meet the intent of AC 20-138D chapter 13. The greater the deviation from these guidelines, the greater the chance of decreased signal quality and availability. It is possible that all of the installation guidelines cannot be met. These guidelines are listed in order of importance to get the best performance. The installer should use best judgment to balance the installation guidelines.

6.4.1 Antenna Location

The GPS antenna should:

1. Be installed as near to level as possible with respect to the normal cruise flight attitude of the aircraft.
2. Be installed in a location to minimize the effects of airframe shadowing during typical maneuvers.
3. Be installed a minimum of two feet from any VHF COM antenna or any other antenna which may emit harmonic interference at the L1 frequency of 1575.42 MHz.
4. Be installed a minimum of two feet from any antennas emitting more than 25 watts.
5. Be installed a minimum of nine inches (center to center) from other antennas, including passive antennas such as another GPS or XM antenna.
6. Be installed a minimum of three inches from the windscreen.
7. Have a twelve inch center to center spacing between GPS antennas.

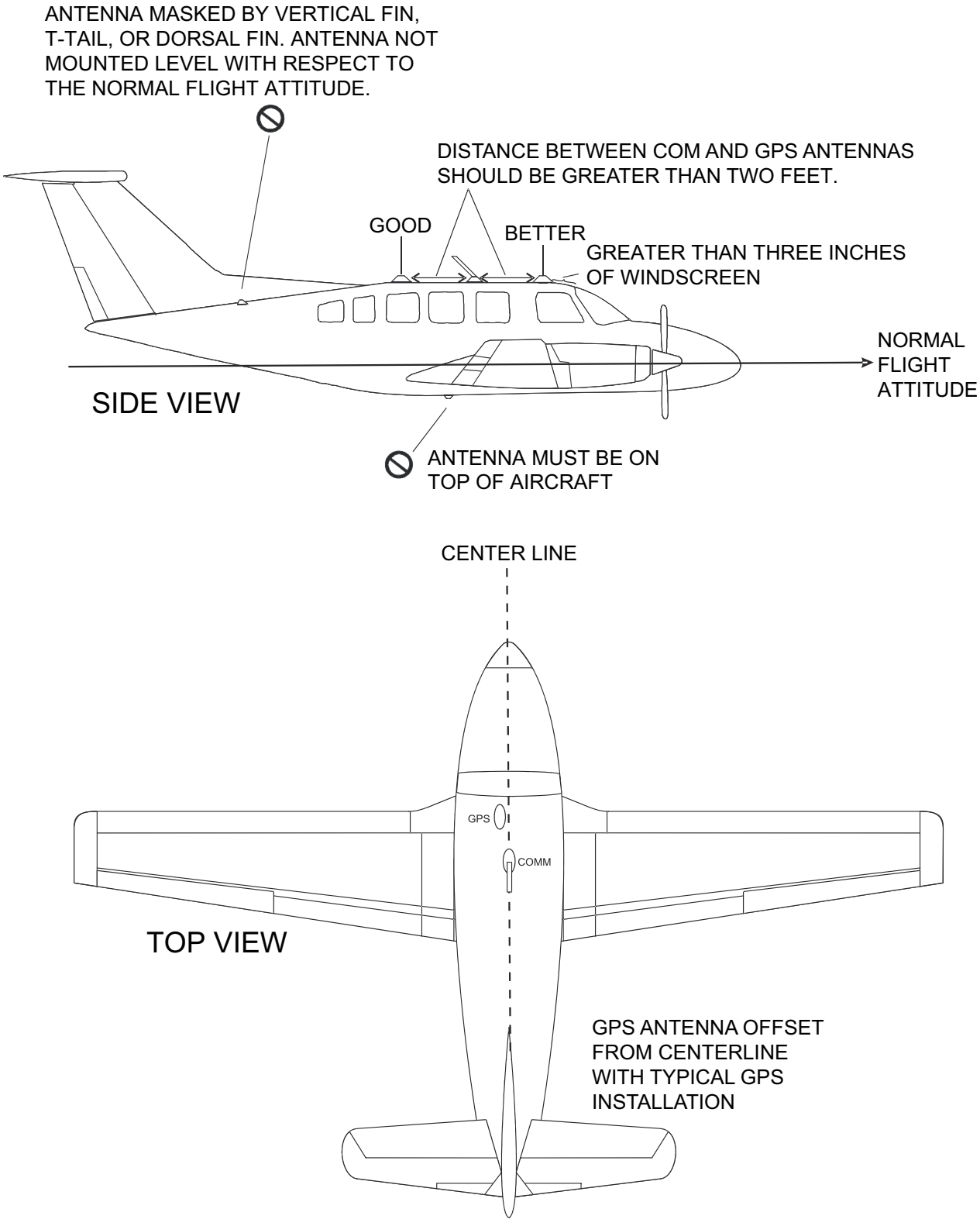


Figure 6-9 GPS Antenna Locations

6.4.2 GPS Antenna Cable

Once the antenna mounting position has been prepared, route the coax cable from the antenna to the GNX 375. Proper selection of coax cable and assembly of connectors is critical to GPS signal performance. Cable loss from the GPS/SBAS antenna must be between 1.5 dB and 6.5 dB in order to maintain proper rejection to interference signals.

Coaxial connectors and adapters, such as TNC to BNC, add additional loss to the cable and should be considered when computing the cable loss. A typical loss of 0.2 dB can be used for each connection. To maintain integrity of the SBAS signal, the GPS antenna coaxial cable must have a minimum of two shields (e.g., RG-400 or RG-142B).

NOTE

If RG-142B or RG-400 is used, 1.5 dB equates to a length of approximately 6.5 feet of cable with a connector on each end. RG-142B or RG-400 cable can be used as long as the length is less than 35 feet. For longer lengths, use low-loss double or triple shielded 50 ohm coax.

For very short runs, where the loss is less than 1.5 dB, additional cable should be used to increase the loss to within 1.5 dB to 6.5 dB. This additional cable may be coiled, taking into account the minimum bend radius of the cable.

During the post-installation checkout, susceptibility to harmonics of VHF COM transmitters will be evaluated. If problems arise, then better isolation, or distance, may be required between the GPS and COM antennas, or a 1575.42 MHz notch filter, Garmin P/N 330-00067-00, may be installed in series with the antenna coax of the VHF COM transceiver to reduce or eliminate the harmonic interference.

If a VHF COM transmitter causes problems with the GPS on the selected frequencies as listed in the post-installation checkout, the problem may be due to the ELT. This can be verified by disconnecting the ELT antenna coax at the ELT unit. If the ELT is found to cause the problem, then contact the ELT manufacturer or replace the ELT.

6.4.3 GPS Antenna

GA 35 Antenna

The antenna includes four 8-32 UNC-2A x 1.00" SS 303 mounting screws and one O-ring. If it is necessary to use an antenna doubler refer to the applicable antenna installation data.

1. Attach the antenna with four #8 washers and four #8 self-locking nuts. Alternatively, nut plates can be attached to the doubler.
2. Torque the four supplied 8-32 stainless steel screws 12-15 in-lbs. Apply torque equally across all mounting screws to avoid deformation of the mounting area.
3. Use a TNC plug to connect the GPS antenna coax cable.

GA 36 Antenna

The antenna includes four 10-32 UNF-2A x 1.00" SS 303 mounting screws and one O-ring. If it is necessary to use an antenna doubler refer to the applicable antenna installation data.

1. Attach the antenna with four #10 washers and four #10 self-locking nuts. Alternatively, nut plates can be attached to the doubler.
2. Torque the four supplied 10-32 stainless steel screws 20-25 in-lbs. Apply torque equally across all mounting screws to avoid deformation of the mounting area.
3. Use a TNC plug to connect the GPS antenna coax cable.

GA 37 Antenna

The antenna includes four 10-32 UNF-2A x 1.00" SS 303 mounting screws and one O-ring. If it is necessary to use an antenna doubler refer to the applicable antenna installation data.

1. Attach the antenna with four #10 washers and four #10 self-locking nuts. Alternatively, nut plates can be attached to the doubler.
2. Torque the four supplied 10-32 stainless steel screws 20-25 in-lbs. Apply torque equally across all mounting screws to avoid deformation of the mounting area.
3. Use a TNC plug to connect the GPS antenna coax cable.

A33W Antenna

The antenna includes four 6-32 UNC-2A x 1.00" SS 303 mounting screws and one O-ring. If it is necessary to use an antenna doubler refer to the applicable antenna installation data.

1. Attach the antenna with four #6 washers and four self-locking nuts. Alternatively, nut plates can be attached to the doubler.
2. Torque the four supplied 6-32 stainless steel screws 3-5 in-lbs. Apply torque equally across all mounting screws to avoid deformation of the mounting area.
3. Use a TNC plug to connect the GPS antenna coax cable.

6.5 Transponder Antenna Installation

Ground planes must be considered for installations on composite aircraft. Conductive wire mesh, radials, or thin aluminum sheets embedded in the composite material supply the ground plane to maximize the antenna pattern (gain). This can improve transponder performance.

The antenna mounting must use the aircraft manufacturer's type certificated antenna location and style. The antenna must be installed in accordance with manufacturer instructions and/or AC 43.12-2A chapter 3.

Transponder antenna considerations help the installer to select the best location for the antenna. The antenna should:

1. Attach away from major protrusions, such as engines, nacelles, propellers, and antenna masts.
2. Mount as far as practical from landing gear doors, access doors, or other openings that could affect its radiation pattern.
3. Vertically attach on the bottom of the aircraft.
4. Not attach within three feet of the ADF sense antenna or any other communication antenna.
5. Not attach within six feet of a DME antenna.
6. Attach a minimum of three feet from the unit to prevent RF interference.

7 System Configuration

This section provides complete instructions for configuring a GNX 375. Specific configuration steps vary depending on the installed system and software version. No references are needed outside the scope of this section to successfully configure the unit. Perform all section topics in the order presented. Screen shots are for reference only.

System Configuration Map

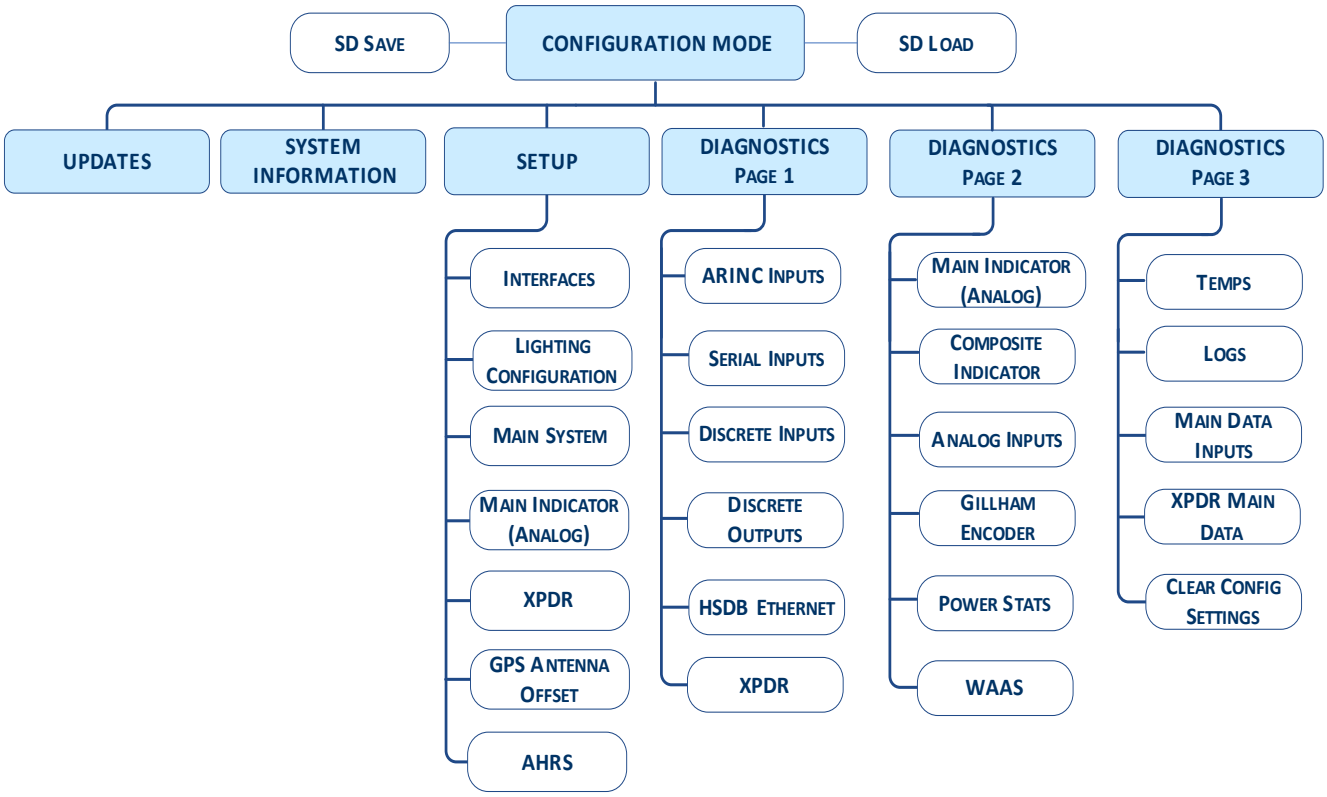


Figure 7-1 Configuration Map

7.1 Configuration Mode

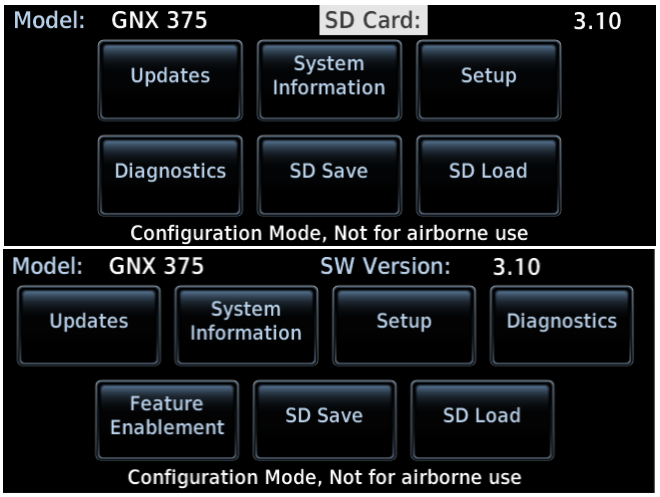
Perform all configurations, calibrations, and test procedures in configuration mode.

Dots display above the page name when more than one page is in a group. A cyan dot indicates the active page. Swipe left or right to change pages.

When entering configuration mode with a software update card installed, the unit displays the main software version on the card.

Configuration Mode

1. Push and hold the inner knob.
2. Push the power key.
3. When the configuration mode home page displays, release the knob.



Main Software Version on SD Card

Main Software Version Installed on Unit

Figure 7-2 Configuration Mode Home Page

Screen Shots

The GNX 375 captures images on the display to view later. This is a useful tool for troubleshooting.

1. Insert the SD card into the card slot.
2. Push and hold the knob.
3. Push and release the power/home key. The camera icon briefly displays at the bottom right of the screen indicating the image saved to the SD card.

Feature Enablement

Some features require an enablement card. For information about Mode A/C Lock, refer to *Mode A/C Lock Enablement Guide*.

7.2 Updates

The system configuration determines software update options. It is necessary to create a loader card before updating software. An SD card reader and a PC running Windows 2000, XP, Vista, Windows 7, Windows 8, or Windows 10 are necessary. There is no Mac support at this time.

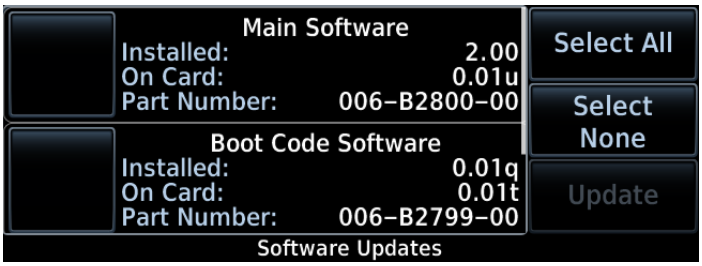


Figure 7-3 Software Package List

- Software Upload page displays the SD card list of files.
- Perform software updates as part of a single package or load individually.
- Unavailable selections display as gray text.

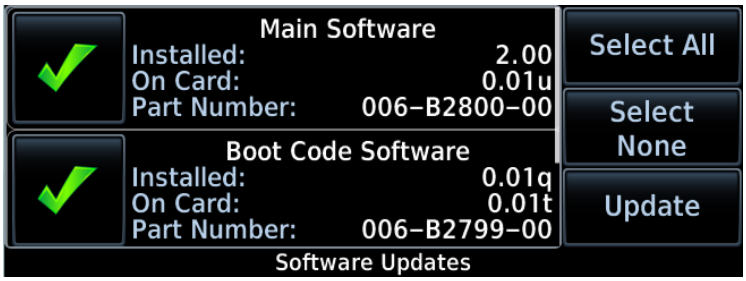
7.2.1 Software Loader Card Instructions

1. Log into the Dealer Resource Center.
2. Download the appropriate system software to a folder on a PC.
3. Connect an SD card reader to the PC.
4. Insert an SD card into the card reader.
5. Run the *.exe file downloaded from the Dealer Resource Center.
6. Follow the screen prompts to create the loader card.
7. Tap **Finish**.
8. Eject the loader card.

7.2.2 Software Update Instructions

When selecting software, a green check mark indicates software to be loaded as part of that update.

1. Power the unit off.
2. Insert the software loader card into the slot.
3. Power the unit on. The unit automatically starts in configuration mode.
4. Tap the box of the software or software packages to update.
5. Tap Update.



SELECTION	DESCRIPTION
Select All	Updates all available software packages
Select None	Clears selection
Update	Begins software update

Figure 7-4 Software Upload Page

Selecting Cancel during the update process stops remaining updates. This does not cancel the file currently updating.

Figure 7-5 Software Upload in Progress

7.2.3 Flight Stream 510 Software Loading

CAUTION

DO NOT DISCONNECT OR REMOVE POWER FROM THE UNIT WHILE UPDATING SOFTWARE.

NOTE

To perform software updates, a compatible PED with an active Garmin Pilot account and Dealer Mode subscription is required.

NOTE

To perform the software update, Garmin Pilot version iOS 9.1.5 or later is required.

To activate Dealer Mode, contact Aviation Product Support at (888) 606-5482. Request access to update Flight Stream software as a Garmin Dealer.

The Flight Stream 510 software can be updated via Wi-Fi during normal power up of the unit. To update Flight Stream software, perform the following steps.

1. Connect to the Flight Stream device. Refer to section 7.9 for additional details.
2. Open the Garmin Pilot application.
3. Tap **Settings** from the home screen.
4. Verify that "Dealer Mode" displays as an active subscription.
5. Tap **Home**.
6. Tap **Connext**.
7. Tap **Firmware**.
8. Select the desired Flight Stream 510 software version.
9. Tap **Update over Wi-Fi**. A Wi-Fi connection is necessary to update Flight Stream 510 software.
10. Connect the PED to the Flight Stream 510 Wi-Fi network. Garmin Pilot provides instructions to connect to the Wi-Fi network.
11. Open the Garmin Pilot Firmware page.
12. Select the desired software version.
13. Tap **Begin Firmware Update**. The Flight Stream device reboots after the update. Allow the Flight Stream device to reconnect to Garmin Pilot.
14. Tap **Continue**.
15. Verify that Garmin Pilot displays the updated Flight Stream software version.

7.3 System Information

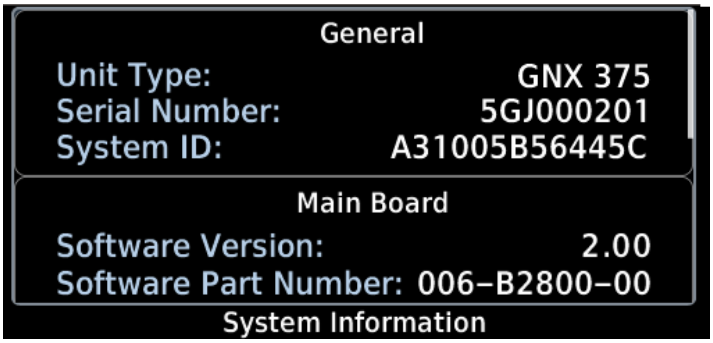


Figure 7-6 System Information Page

The System Information page displays general and board specific information for the GNX 375.

7.4 Setup

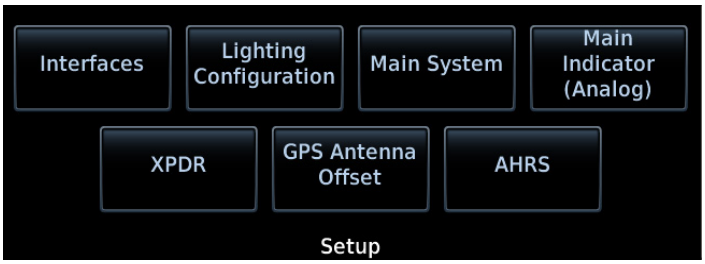


Figure 7-7 Setup Page

The Setup page provides access to the different pages required to configure the GNX 375 for a specific installation. Tap a key associated with a specific page to configure that setting.

7.4.1 Interfaced Equipment

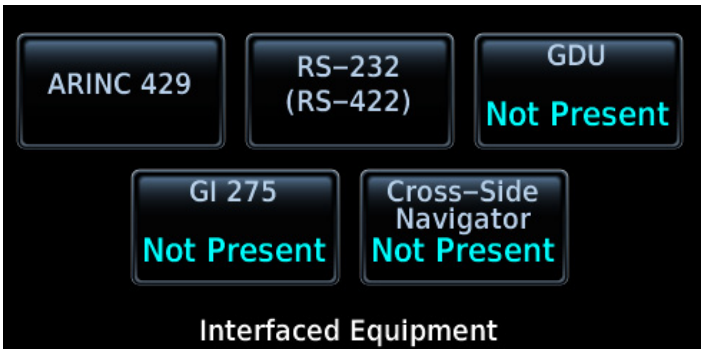


Figure 7-8 Interfaced Equipment Page

The Interfaced Equipment page allows configuration of ARINC 429/RS-232 ports, selection of the source of ADS-B, and setting the status of GI 275, GDU, and Crossfill Navigator.

ARINC 429

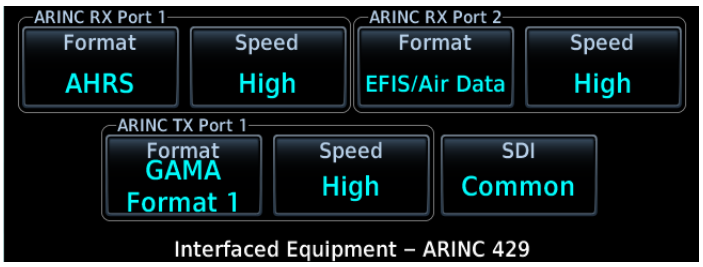


Figure 7-9 Interfaced Equipment - ARINC 429

Table 7-1 ARINC 429 RX Ports 1 and 2

SELECTIONS	OPTIONS	DESCRIPTION
Format	Off	No units connected to this port.
	AHRS	Receives heading, roll, pitch, and yaw information from systems with AHRS.
	Air Data	Receives altitude, airspeed, and altitude rate information from air data systems.
	EFIS/Air Data	Receives altitude, airspeed, altitude rate, selected course, and heading information from EFIS and ADC systems.
	Heading	Receives heading information.
Speed	Low	Low-speed, nominally 12.5 Kb per second
	High	High-speed, nominally 100 Kb per second

Table 7-2 ARINC 429 TX Port 1

SELECTIONS	OPTIONS	DESCRIPTION
Format	Off	No units connected to this port.
	GAMA Format 1	• GDU 620 • GAD 29 • GDU 37X/45X/46X
	GAMA Format 3	• Aspen • Sandel 3308, 3500, and 4500
Speed	Low	Low-speed, nominally 12.5 Kb per second
	High	High-speed, nominally 100 Kb per second

Table 7-3 SDI

OPTIONS	DESCRIPTION
Common	• Accepts all 429 inputs • Generates all 429 outputs with SDI = 0
LNAV1	• Select for number 1 (pilot) navigator • Accepts all 429 inputs with SDI = 0 or 1 • Generates all 429 outputs with SDI = 1
LNAV2	• Select for number 2 (copilot) navigator • Accepts all 429 inputs with SDI = 0 or 2 • Generates all 429 outputs with SDI = 2

RS-232

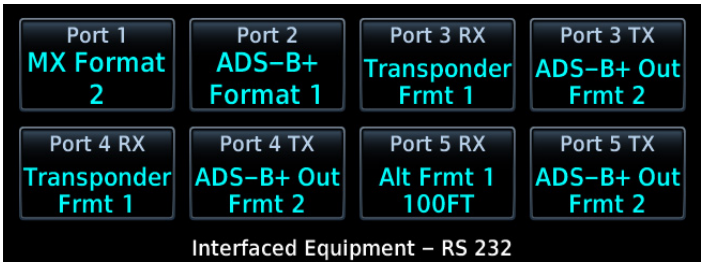


Figure 7-10 Interfaced Equipment - RS-232 Page

Table 7-4 RS-232 Settings

SELECTION	OPTION	NOTES
RS-232/RS-422 Port 1 [1]	Off	No units connected to this port.
	MapMX Format 1	Provides navigation data (PVT). • MX20 software v5.6 or later • GMX 200 • GDU 620 • G5 • GMC 605
	Aviation Output 1	• Argus 3000, 5000, or 7000 Moving Map • Electronics International FP-5L Fuel Flow Computer (non-TSO'd) • Garmin MX20 (V5.6 or later), GMX 200, GPSMAP 195, GPSMAP 295 or GPS III Pilot, GPSMAP 196, GPSMAP 296, GPSMAP 396, GPSMAP 496, GPSMAP 695, GPS MAP 696, GTX 327 Transponder, GTR 225/GNC 255 • JP Instruments EDM-700 or EDM-760 Engine Monitor, Shadin 9628XX-X Fuel/Air Data Computer, 91204XM and 91053XM Digital Fuel Management Systems. • Stormscope Series II (with NAVAID) Moving Map
	Aviation Output 2	• Garmin MX20 (V5.5 or earlier) • Horizon DDMP
	ADS-B+ Format 1	Transmits necessary ADS-B GPS data at 9600 baud.
	ADS-B+ Format 2	Transmits necessary ADS-B GPS data at 38400 baud.
	Connext 57600	G3X touch system
	MX Format 1 [1]	Provides weather and traffic data. • GMX 200
	MX Format 2 [1]	Provides weather and traffic data. • MX20
	OPT LGCY ADSB [1]	Aspen Evolution MFD (optimized legacy ADS-B)

SELECTION	OPTION	NOTES
RS-232/RS-422 Port 1 [1]	Airdata Format 1 [2][3]	Serial air data information from the following units: • Shadin ADC 200, 200+, 2000
	FADC Format 1 [2][3]	Serial air data and fuel flow information from the following units: • Shadin 9628XX-X Fuel/ADC • INSIGHT TAS 1000 ADC
	Fuel Format 1 [2][3]	Serial fuel flow information from the following units: • ARNAV FC-10, FT-10 • Electronics International FP-5L
	Fuel Format 2 [2][3]	Serial fuel flow information from the following units: • Shadin 91053XM Digital Fuel Management System • Shadin 91204XM Digital Fuel Management System • JP Instruments EDM-700 or EDM-760 Engine Monitor
RS-232 Port 2	Off	No units connected to this port.
	MapMX Format 1	Provides navigation data (PVT). • MX20 software v5.6 or later • GMX 200 • GDU 620 • G5 • GMC 605
	Aviation Output 1	• Argus 3000, 5000, or 7000 Moving Map • Electronics International FP-5L Fuel Flow Computer (non-TSO'd) • Garmin MX20 (V5.6 or later), GMX 200, GPSMAP 195, GPSMAP 295 or GPS III Pilot, GPSMAP 196, GPSMAP 296, GPSMAP 396, GPSMAP 496, GPSMAP 695, GPS MAP 696, GTX 327 Transponder, GTR 225/GNC 255 • JP Instruments EDM-700 or EDM-760 Engine Monitor, Shadin 9628XX-X Fuel/Air Data Computer, 91204XM and 91053XM Digital Fuel Management Systems. • Stormscope Series II (with NAVAID) Moving Map
	Aviation Output 2	• Garmin MX20 (V5.5 or earlier) • Horizon DDMP
	ADS-B+ Format 1	Transmits necessary ADS-B GPS data at 9600 baud.
	ADS-B+ Format 2	Transmits necessary ADS-B GPS data at 38400 baud.
	Connext 57600	G3X touch system

SELECTION	OPTION	NOTES
RS-232 Port 2	Airdata Format 1 [2][3]	Serial air data information from the following units: • Shadin ADC 200, 200+, 2000
	FADC Format 1 [2][3]	Serial air data and fuel flow information from the following units: • Shadin 9628XX-X Fuel/ADC • INSIGHT TAS 1000 ADC
	Fuel Format 1 [2][3]	Serial fuel flow information from the following units: • ARNAV FC-10, FT-10 • Electronics International FP-5L
	Fuel Format 2 [2][3]	Serial fuel flow information from the following units: • Shadin 91053XM Digital Fuel Management System • Shadin 91204XM Digital Fuel Management System • JP Instruments EDM-700 or EDM-760 Engine Monitor
RS-232 Port 3, 4, 5 RX	Off	No units connected to this port.
	Transponder Frmt 1	G3X touch system
	Alt Frmt 1 100FT	Sandia/Icarus/ACK altitude format with parallel Gray source or 100 ft encoding.
	Alt Frmt 1 25FT	Supports Sandia/Icarus/ACK altitude format with 25 ft or lower encoding.
	Alt Frmt 3 100FT	Supports Shading altitude format with a parallel Gray code source or 100 ft encoding.
	Alt Frmt 3 25FT	Supports Shadin altitude format with 25 ft or lower encoding.
	ADC Frmt 1	Supports Shadin G/S/Z ADC Formats.
	Connext 57600	G3X Touch system
RS-232 Port 3, 4, 5 TX	Off	No units connected to this port.
	ADS-B+ Out Frmt 1	Transmits necessary ADS-B GPS data at 9600 baud.
	ADS-B+ Out Frmt 2	Transmits necessary ADS-B GPS data at 38400 baud.
	Transponder Frmt 1	G3X touch system
	Alt Frmt 1	Transmits pressure altitude in 1 to 100 ft resolution depending on the source of the data.
	Connext 57600	G3X touch system

[1] This format configures output for RS-422.
[2] Software v3.20 and later.
[3] Using this input format automatically configure port output to Aviation Output 1.

GDU

Tap **GDU** to toggle between "Present" and "Not Present." Select "Present" if the unit is interfacing to a GDU.

GI 275

Tap **GI 275** to toggle between "Present" and "Not Present". Select "Present" if the unit is interfacing to a GI 275.

Cross-side Navigator (Software v3.20 and later)

Tap **Cross-side Navigator** to select Not Present or cross-side Navigator: GPS 175 (software v3.20), GNC 355 (software v3.20), GNX 375 (software v3.20), GTN Xi (software v20.20 or later), or GTN (software v6.72).

7.4.2 Lighting Configuration

The display and bezel keys lighting control source can be configured to track either the Photocell or Lighting Bus. The unit adjusts its intensity based on the lighting bus or photocell level.

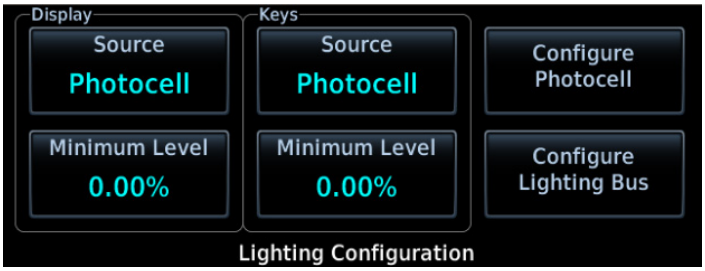


Figure 7-11 Lighting Configuration Page

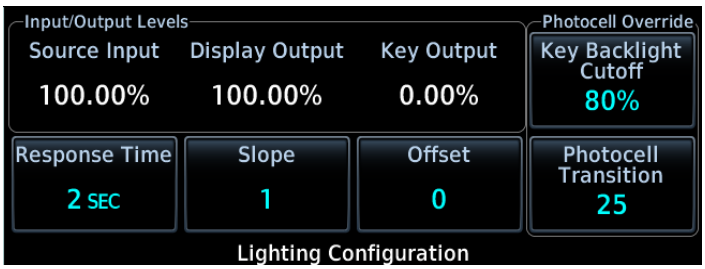
Display **Source** sets source input for the display backlight. Keys **Source** sets source input for the bezel keys backlight.

To specify a lighting input source, select Display **Source**. There are four possible lighting source configurations. Configure parameters affecting the display backlight and key lighting brightness on the Lighting Configuration page.

Table 7-5 Lighting Configuration Selections

SELECTION	DESCRIPTION
Photocell	Sets the lighting input level for day and night curves according to the ambient light level, as measured by the unit photocell.
Lighting Bus	Sets the lighting input level according to the lighting bus dimmer levels.
Minimum Level	Sets the applicable minimum auto brightness of the keys or display.

Photocell Configuration



The Photocell Configuration page displays the set input/output levels for the source, display, and key, and provides keys to change and override parameters.

Figure 7-12 Photocell Configuration Page

To configure photocell:

1. Ensure "Lighting Bus" displays as the source of the display and/or keys.
2. Tap Configure Photocell.
3. Tap Key Backlight Cutoff to set the key backlight cutoff percentage. Set to the desired value so the key backlighting switches off in bright light. Type the preferred cutoff value (0.0 - 100.0) > Enter.
4. Tap Response Time to select the preferred response time (2 - 7). The lower the level, the faster the display adjusts.
5. Tap Slope and type the preferred slope value (0 - 100) > Enter.
6. Tap Offset and type the preferred offset value (0 - 100) > Enter to adjust the key brightness.
   - Too bright - lower minimum level and/or adjust lighting slope
   - Too dim - raise minimum level
7. Tap Photocell Transition and type the preferred transition value (5 - 50) > Enter.
8. Verify the display/keys produce maximum brightness on the backlight output level. Adjust the levels if needed.
   - If the display/keys are too bright or too dim, vary the Slope and/or Offset 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 to achieve desired brightness at mid-range lighting input levels.
   - Adjust the response time to smooth changes to brightness as required.
9. Verify adjustments made in the preceding steps are appropriate and functional for all expected lighting conditions.

Table 7-6 Photocell Configuration

SETTING	DESCRIPTION
Key Backlight Cutoff	Configures the point at which key backlights are switched off in bright light (e.g., a value of 70% means the backlights will be off at photocell source input levels above 70%). The default value for this setting is 80%.
Response Time	Sets the speed where the brightness responds to changes in the input level (ambient light). The lower the value, the faster the response. Selections range from 2 to 7 seconds. The default value for this setting is two seconds.
Slope	Sets the display brightness sensitivity according to input level changes. The default value for this setting is 50.
Offset	Adjusts the lighting level up or down for a given input level. The default value for this setting is 50.
Photocell Transition	Sets the lighting bus input level where the lighting bus input is ignored and the photocell is used to control the display backlight. The photocell transition is a percentage of the maximum lighting bus input level. Selections are between 5 and 50. The default value for this setting is 25%.

Lighting Bus Configuration

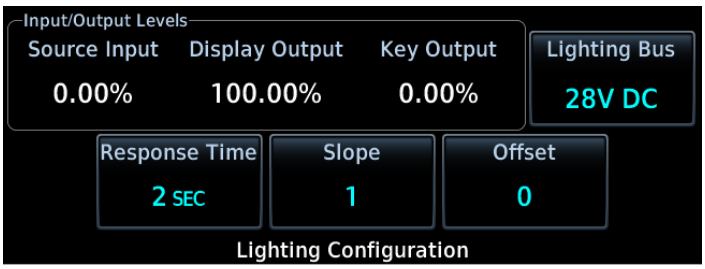


Figure 7-13 Lighting Bus Configuration Page

The Lighting Bus Configuration page displays the set input/output levels for the source, display, and key, and provides keys to change and override parameters.

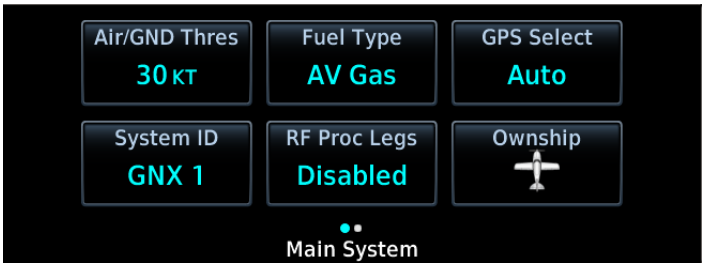
To configure for lighting bus:

1. Ensure "Lighting Bus" displays as source for display and/or keys.
2. Tap **Configure Lighting Bus**.
3. Tap **Lighting Bus** to set lighting bus voltage. Tap the aircraft lighting bus voltage > **Enter**.
4. Tap **Response time** to select the preferred response time. The lower the level, the faster the display adjusts.
5. Tap **Slope** and type the preferred slope value (0 - 100) > **Enter**.
6. Tap **Offset** and type the preferred offset value (0 - 100) > **Enter** to adjust key brightness.
   - Too bright - lower minimum level and/or adjust the lighting slope
   - Too dim - raise minimum level
7. Verify the display/keys produce maximum brightness on the backlight output level. Adjust the levels if needed.
   - If the display/keys are too bright or too dim, vary the Slope and/or Offset to achieve the desired brightness at mid-range lighting input levels.
   - Adjust the Response Time to smooth changes to brightness as required.
8. Verify that adjustments made in the preceding steps are appropriate and functional for all expected lighting conditions.

Table 7-7 Source Configuration

	DESCRIPTION
Lighting Bus	Sets lighting bus source voltage. Selection is determined by the lighting bus voltage source: 14V DC, 28V DC, 5V DC, 5V AC.
Response Time	Sets speed where the brightness responds to changes in the input level (bus voltage). Selections range from 2 to 7 seconds. The default value for this setting is two seconds.
Slope	Sets display brightness sensitivity according to changes in the input level. The default value for this setting is 50.
Offset	Adjusts lighting level up or down for a given input level. The default value for this setting is 50.

7.4.3 Main System



The Main System page configures system items unrelated to LRUs.

Figure 7-14 Main System Page

Table 7-8 Main System Selections

SETTING	SELECTION	DESCRIPTION
Air/GND Thres	Enter 1 kt to 99 kt	The ground speed in which the unit transitions from a ground state to an airborne state, and vice versa.
Fuel Type	Av Gas	Select aircraft fuel type.
	Jet A	
	Jet B	
GPS Select	Auto	GPS Select discrete is open whenever a GPS approach mode is active.
	Prompt	GPS Select discrete is open whenever a GPS approach mode is active and A/P APR Outputs are enabled. For Honeywell (Bendix/King) KFC 225 and KAP 140 autopilots.
System ID	GNX 1	Identifies the position of the GPS in multi-unit installations. If unit is the primary GPS in the aircraft, select GNX 1. If unit is secondary, select GNX 2.
	GNX 2	
RF Proc Legs	Disabled	Procedures with RF legs are not available to load.
	Enabled	Procedures with RF legs are available to load.
Ownship	Varies	Select icon to display on moving map.
Terrain Alerts	Disabled	Enables or disables terrain avoidance alerts.
	Enabled	
Graphical Edit	Disabled	Enables or disables the ability to graphically edit the active flight plan directly on the map display.
	Enabled	
Composite CDI	Disabled	Composite CDI not interfaced to GNX.
	Enabled	Composite CDI interfaced to GNX.
Bluetooth	Enabled	Bluetooth is enabled on the GNX.
	Disabled	Bluetooth is not enabled on the GNX.
ADS-B Logging	Enabled	The unit will log ADS-B activity in normal mode.
	Disabled	The unit will not log ADS-B activity in normal mode.
External FPL	Enabled	The unit will accept active flight plan edits from the G3X touch system.
	Disabled	The unit will not accept active flight plan edits from the G3X touch system.

7.4.4 Main Indicator (Analog)

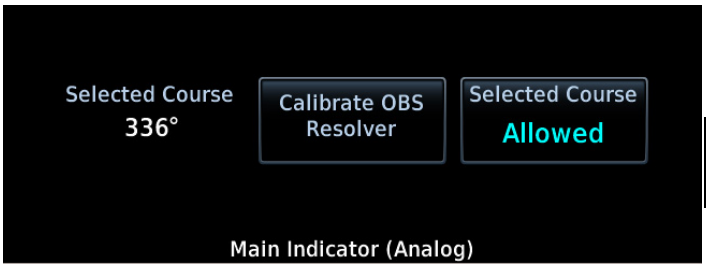


Figure 7-15 Main Indicator (Analog)

The Main Indicator (Analog) configuration page calibrates the OBS resolver, enables selected course, and displays the selected course for the GNX 375.

Before setting the selected course using OBS, Selected Course must be set to "Allowed" instead of "Ignored."

Table 7-9 Main Indicator (Analog) Configuration

SETTING	SELECTION	DESCRIPTION
Display of selected course		Displays the selected course received by the GNX.
Calibrate OBS Resolver	N/A	Tap Calibrate OBS Resolver and follow the prompts to calibrate the resolver. Verify OBS operation by checking that the displayed course is within 2° of the selected course.
Selected Course	Allowed	Allows selected course inputs for GPS operation in OBS mode.
	Ignored	Ignores selected course inputs for GPS operation.

7.4.5 XPDR

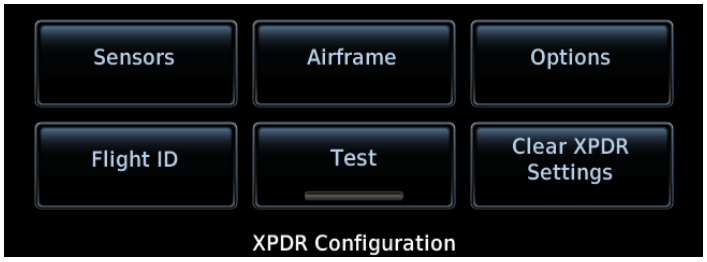


Figure 7-16 XPDR Configuration Page

The XPDR Configuration page configures the transponder portion of the GNX 375 and provides access to the following pages/functions.

- Sensors
- Airframe
- Options
- Flight ID
- Test
- Clear XPDR Settings

Sensors

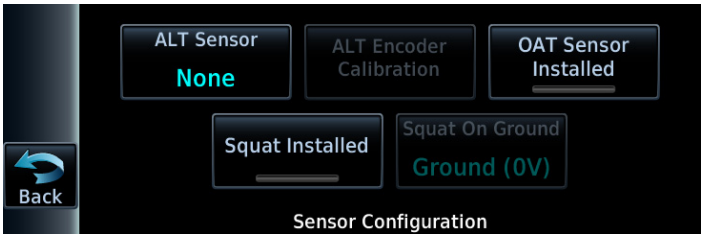


Figure 7-17 XPDR Sensor Configuration Page

Table 7-10 XPDR Sensors Configuration

SETTING	SELECTION	DESCRIPTION
Alt Sensor	None	Select if no altitude sensor is connected.
	Gillham	Select to enable Gillham/Gray code inputs.
	GAE	Select if the altitude source is the GAE. Enables Alt Encoder Calibration.
Alt Encoder Calibration	N/A	Opens Alt Encoder Calibration page.
OAT Sensor	Enabled/Disabled	Enable if an OAT sensor is connected to the GNX.
Squat Installed	Enabled/Disabled	Enable if a squat sensor is connected to the GNX. Enables Squat On Ground.
Squat On Ground	Open	Select if an open signal indicates aircraft is on ground.
	Ground (0V)	Select if a ground (0V) indicates the aircraft is on ground.

Table 7-11 Alt Encoder Calibration

SETTING	DESCRIPTION
Ceiling	Configures aircraft maximum altitude between 8,000 and 30,000 feet.
Test Points	Configures the number of test points used to calibrate the GAE. Range is 3 to 20. Maximum number of test points are limited by the aircraft ceiling setting.
Internal Alt Encoder Adjustment	Configures GAE altitude to match primary display altitude.

GAE 12 Calibration

1. Tap ALT Sensor and select GAE.

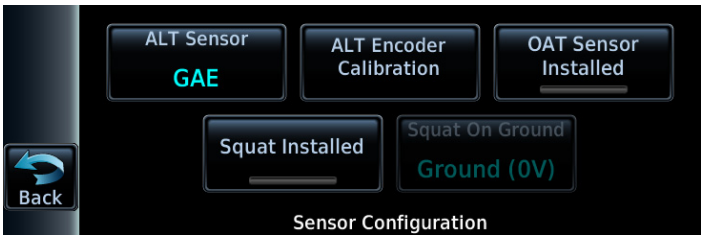


Figure 7-18 GAE Sensor Configuration

2. Tap ALT Encoder Calibration.
3. Enter the aircraft ceiling and the amount of calibration points.

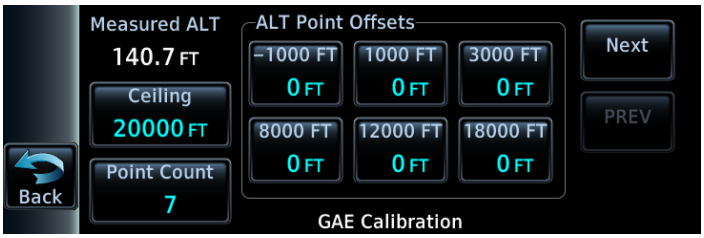


Figure 7-19 GAE Calibration

4. Connect a Pitot-static test set to the aircraft. Use the test set and the aircraft altimeter (if applicable) for altitude verification.
5. Set the test set to the altitude of the initial test point and record the Measured ALT value.
6. Tap the corresponding test point and enter the offset of the test set value and the Measure ALT value. For example, if you set the test set to 1000 feet and the Measure ALT value is 1013 feet, enter "-13" into the 1000 FT calibration point.
7. Repeat steps 5 and 6 with all remaining test points.
8. If there are more than six calibration points, tap Next, if not, return to configuration mode home page.
9. Diagnostics > XPDR > Faults.
10. Verify a green checkmark is next to ALT ENC CAL.
11. If the ALT ENC CAL has a red "X" next to it, cycle power to the unit, and check again. If the red "X" persists, repeat the calibration procedure.

Airframe

Figure 7-20 XPDR Airframe Configuration Page

Table 7-12 XPDR Airframe Configuration

SETTING	SELECTION	DESCRIPTION
Aircraft Category	• Unknown • Light • Small • High Performance • Rotorcraft • Glider • Lighter than Air • Ultralight • UAV	This setting configures the aircraft type. Select Light for aircraft with a maximum gross weight less than 15,500 lbs.
Max Airspeed	• Unknown • <=75 kt • <=150 kt • <=300 kt • <=600 kt • <=1200 kt • >1200 kt	Configures the maximum airspeed of the aircraft.
Stall Speed	30 to 200 kt	Configures the stall speed of the aircraft in 1 kt increments.
Aircraft Length	• Unknown • <=15 Meters • <=25 Meters • <=35 Meters • <=45 Meters • <=55 Meters • <=65 Meters • <=75 Meters • <=85 Meters • >85 Meters	Configures the aircraft length in meters.
Aircraft Width	• Unknown • <=23.0 Meters • <=28.5 Meters • <=33.0 Meters • <=34.0 Meters • <=39.5 Meters • <=45.0 Meters • <=52.0 Meters • <=59.5 Meters • <=67.0 Meters • <=72.5 Meters • <=80.0 Meters • >80 Meters	Configures the aircraft width in meters.

Options

Figure 7-21 XPDR Options Configuration Page

Table 7-13 XPDR Options Configuration

SETTING	SELECTION	DESCRIPTION
1090 ES Out Control	• Always Disable	Disables transmission of extended squitters.
	• Always Enable	Enables transmission of extended squitters.
	• Pilot controlled	Enables transmission of extended squitters on power up. Allows for the pilot to disable or re-enable transmission.
Automatic Moding	Enabled/disabled	Enable this feature to automatically enter altitude reporting mode when transitioning from on-ground to airborne.

Flight ID

Figure 7-22 XPDR Flight ID Configuration Page

Table 7-14 XPDR Flight ID Configuration

SETTING	DESCRIPTION
Aircraft Registration	Enter the registered aircraft tail number.
ICAO Address	Enter the ICAO address in hexadecimal.
Allow Pilot Flight ID Entry	Enable to allow pilot to change the flight ID.
Default Flight ID	Enter the default Flight ID used in normal mode.
Generate ICAO from Tail	Generates ICAO address from tail number.
VFR Squawk Code	Configures the VFR squawk code (1200 in US). Range in octal is 0000-7777.

Test

Tap **Test** to enable Ground Test mode. Ground Test mode overrides the air/ground logic to transmit as if the GNX is airborne. This mode has a duration of one power cycle.

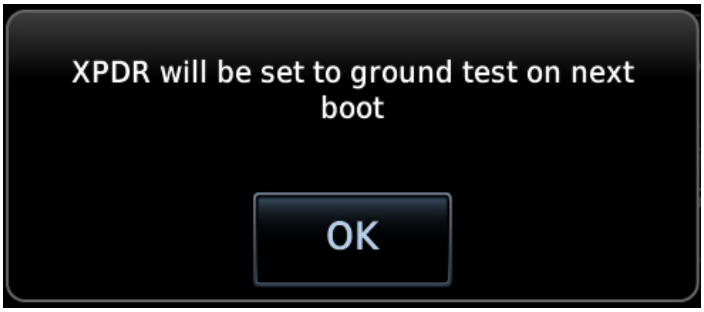


Figure 7-23 XPDR Ground Test Mode Acknowledgment

Clear XPDR Settings

Sets all configuration settings to default values.

7.4.6 GPS Antenna Offset

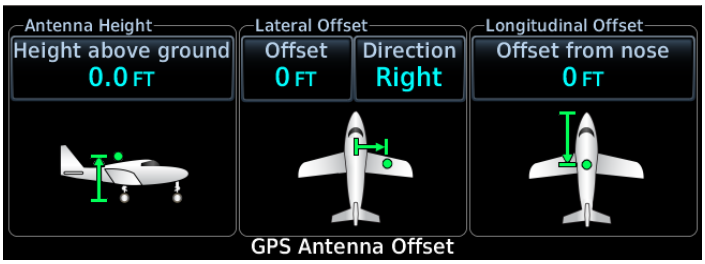


Figure 7-24 GPS Antenna Offset Page

Configures GPS antenna height, lateral offset, and longitudinal offset. Before proceeding, measure:

- Antenna height above ground
- Lateral offset
- Longitudinal offset

Set the GPS Antenna Offset

1. Tap **Height above ground**.
2. Enter value to the nearest tenth of a foot.
3. Tap **Enter**.
4. Tap **Offset**.
5. Enter value to the nearest foot.
6. Tap **Enter**.
7. Tap **Direction** to toggle between left and right lateral offset.
8. Tap **Offset from nose**.
9. Enter value to the nearest foot.
10. Tap **Enter**.

7.4.7 AHRS

NOTE

The display orientation must be set and aircraft must be level before calibrating the internal AHRS.

Figure 7-25 AHRS Calibration Page

Use this page to:

- Set the display orientation
- Set the Yaw Offset
- Calibrate the internal AHRS

Table 7-15 AHRS Calibration

SETTING	SELECTION	DESCRIPTION
Display Orientation	• Unknown	N/A
	• AFT	Select this orientation if the display faces aft.
	• Up	Select this orientation if the display faces up.
Calibrate	N/A	Tap **Calibrate** to calibrate the internal AHRS to level (0° aircraft pitch and 0° aircraft roll).
Yaw Offset	-60° to 60°	Set the yaw angle of the unit relative to the centerline of the aircraft. When setting the yaw angle, a positive angle indicates the GNX is rotated clockwise from the longitudinal axis of the airplane (line from nose to tail). A negative angle indicates the GNX is rotated counterclockwise.

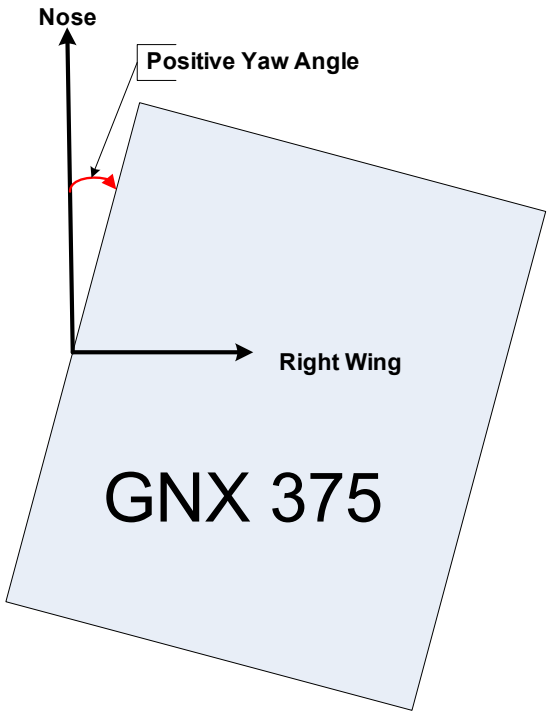


Figure 7-26 Setting the Yaw Angle

7.5 Diagnostics

Diagnostics provide access to pages helpful for maintenance and troubleshooting the system. Not all keys are enabled for every unit configuration.

Table 7-16 Available Diagnostics Pages

PAGE 1	PAGE 2	PAGE 3
ARINC Inputs	Main Indicator (Analog)	Temps
Serial Inputs	Composite Indicator	Logs
Discrete Inputs	Analog Inputs	Main Data Inputs
Discrete Outputs	Gillham Encoder	XPDR Main Data
HSDB Ethernet	Power Stats	Clear Config Settings
XPDR	WAAS	

7.5.1 ARINC Inputs

The unit auto detects ARINC 429 inputs operating at high or low speed. It processes incoming data at the appropriate rate and displays Label, SSM, Data, and SDI.

Figure 7-27 ARINC 429 Inputs

ARINC 429 Port	Toggles between available ports.
Pause	Interrupts all incoming data.
Clear Log	Clears all logged data.

7.5.2 Serial Inputs

The Serial Inputs page displays serial data received on each serial port.

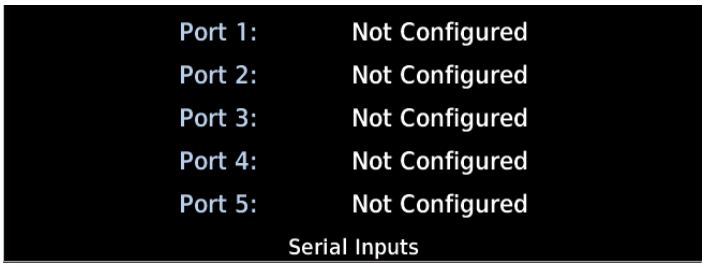


Figure 7-28 Serial Inputs Page

Not Configured	Port is not configured for an LRU.
Receiving	Port is receiving data.
Not Receiving	Port is configured for an LRU, but not receiving data.

7.5.3 Discrete Inputs

Figure 7-29 Discrete Inputs Page

This page shows the status as active or inactive for the discrete input.

7.5.4 Discrete Outputs

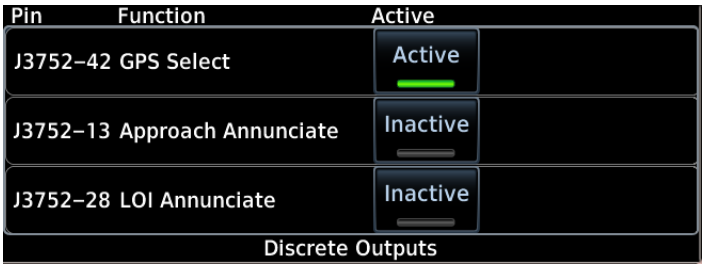


Figure 7-30 Discrete Outputs Page

This page allows discrete outputs to be turned on or off to verify functionality of a specific discrete. Select the key to the right of a function to toggle the state active (indicated by green bar) or inactive.

7.5.5 HSDB Ethernet

Figure 7-31 HSDB (Ethernet) Page

Table 7-17 HSDB (Ethernet) Page Description

ETHERNET PORT	
Not Configured	Port is not interfaced to an LRU.
Receiving	Port is receiving data.
Not Receiving	Port is interfaced to an LRU, but not receiving data.

GDU	
Online	Port is receiving data from LRU.
Offline	Port is interfaced to an LRU, but not receiving data.

7.5.6 XPDR

Figure 7-32 XPDR Page

The GNX 375 monitors internal systems to verify functionality. Errors are displayed as Failures, Faults, Warnings, or Pilot Alerts. Failures are the most severe followed by Faults, Warnings, and then Pilot Alerts.

Failures

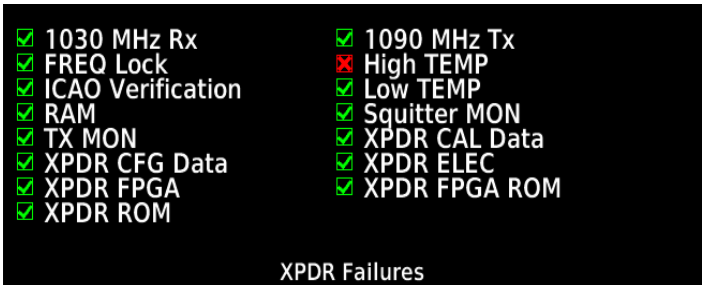


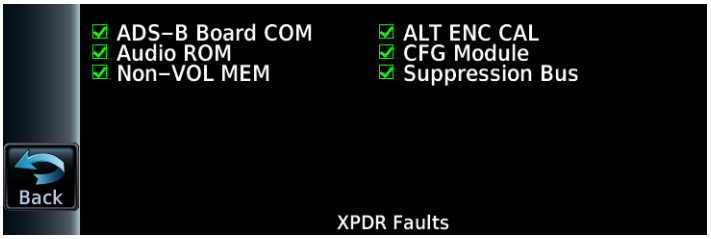
Figure 7-33 Transponder Failures

When a failure is active, the transponder stays in standby mode. All transmissions are disabled. Failures must be resolved.

Table 7-18 Transponder Failures

FAILURE	CAUSE
1030 MHz RX	The 1030 MHz receiver self-test has failed.
Freq Lock	FPGA PLL lock failure.
ICAO Verification	The configured ICAO address is invalid (all 0s or 1s).
RAM	An internal RAM failure has been detected.
TX Mon	1090 MHz transmission failures have been detected.
XPDR Cfg Data	Transponder system configuration is invalid.
XPDR FPGA	The transponder FPGA is reporting a failure.
XPDR ROM	The transponder system image is invalid.
1090 MHz TX	The 1090 MHz transmitter self-test has failed.
High Temp	Unit temperature is above 95° C
Low Temp	Unit temperature is below -50° C
Squitter Mon	A squitter generation failure has occurred.
XPDR Cal Data	Transponder system calibration is invalid.
XPDR Elec	Internal voltages are outside limits.
XPDR FPGA ROM	The transponder FPGA image is invalid.

Faults



Active faults remove some transponder functionality. The transponder does remain operational.

Figure 7-34 Transponder Faults

Table 7-19 Transponder Faults

FAULT	CAUSE
1090 MHz RX	The 1090 MHz receiver self-test has failed.
ADS-B/ADS-R/TIS-B In	Either the 1090 RX or 978 RX fault has occurred.
Remote ADS-B Board	Internal ADS-B In communication failure.
ADS-B In Elec	Internal voltages are outside limits.
ADS-B In ROM	The ADS-B In system image is invalid.
Audio ROM	The transponder audio image is invalid.
TRFC Alerting	
Non-Vol Mem	Internal memory was determined to be invalid, or failed to load.
978 MHz RX	The 978 MHz receiver self-test has failed.
ADS-B In Cal Data	ADS-B In calibration is invalid.
ADS-B In Cfg Data	ADS-B In configuration is invalid.
ADS-B In FPGA ROM	The ADS-B In FPGA image is invalid.
Alt Enc Cal	The Garmin Altitude Encoder calibration is invalid.
Cfg Module	A configuration module is present, but its data is invalid or a communication error occurred.
GPS	Communication with internal GPS has failed or is reporting a fault.
Suppression Bus	The external suppression bus is stuck. The unit is unable to output to the bus.

Warnings

Warnings activate due to:

- Loss of a required input
- Anomalous conditions

Figure 7-35 Transponder Warnings

Table 7-20 Transponder Warnings

WARNING	CAUSE
No ADS-B Position	GPS position input data is unavailable or invalid
No Press Alt	Pressure altitude input data is unavailable or invalid.
Cfg Module Absent	A configuration module is not connected.

Pilot Alerts

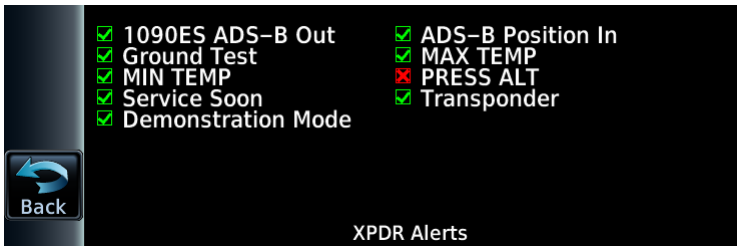


Figure 7-36 Transponder Alerts

Pilot alerts summarize failure, fault, and warning indications. These appear in normal mode. The severity depends on the cause of the alert.

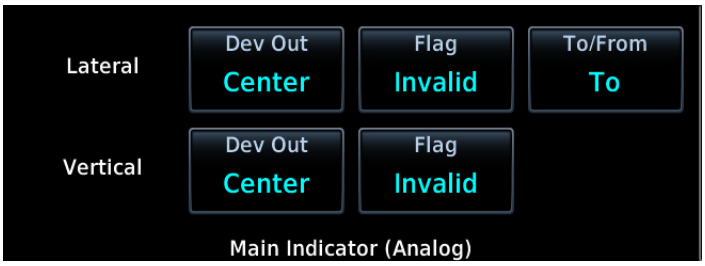
All failures, faults, and warnings cause an alert.

Some alerts such as Test Mode, Demonstration Mode, and Ground Test mode are not associated with a failure, fault, or warning.

Table 7-21 Pilot Alerts

PILOT ALERT	FAILURE	FAULT	WARNING
1090ES ADS-B In	N/A	1090 MHz RX	N/A
ADS-B In	N/A	ADS-B/ADS-R/TIS-B In	N/A
ADS-B Position In	N/A	N/A	No ADS-B Position
Max Temp	High Temp	N/A	N/A
Press Alt	N/A	N/A	No Press Alt
Test Mode	N/A	N/A	N/A
Demonstration Mode	N/A	N/A	N/A
1090 ES ADS-B Out	Any Failure	N/A	N/A
ADS-B In Trfc Alrt	N/A	TRFC Alerting	N/A
Ground Test	N/A	N/A	N/A
Min Temp	Low Temp	N/A	N/A
Service Soon	N/A	• ADS-B In Cal Data • ADS-B In Cfg Data • ADS-B In Elec • ADS-B In FPGA ROM • ADS-B In ROM • ALT ENC CAL • Audio ROM • Cfg Module • GPS • Non-Vol Mem • Suppression Bus	N/A
Transponder	Any Failure	N/A	N/A

7.5.7 Main Indicator (Analog)



The Main Indicator (Analog) page allows the installer to verify the connected CDI interface and perform a ground check.

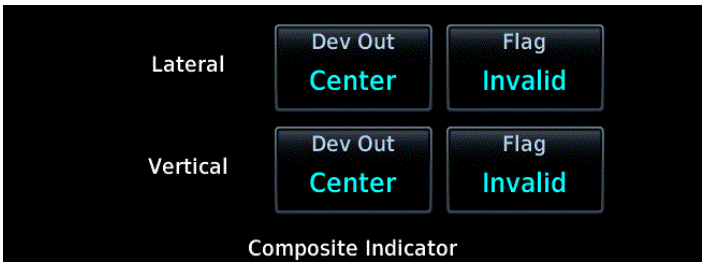
Figure 7-37 Main Indicator (Analog) Page

Table 7-22 Indicator Selections

SETTING GROUP	SELECTION	CDI STATE
Lateral	Dev Out	Max Left
		Full Left
		Center
		Full Right
		Max Right
	Flag	Valid
		Invalid
	To/From	From
		Hidden
		To
Vertical	Dev Out	Max Up
		Full Up
		Center
		Full Down
		Max Down
	Flag	Valid
		Invalid

7.5.8 Composite Indicator

NOTE
This page only displays if Composite CDI is enabled.



The Composite Indicator page allows the installer to verify the connected CDI interface and perform a ground check.

Figure 7-38 Main Indicator (Analog) Page

Table 7-23 Indicator Selections

SETTING GROUP	SELECTION	CDI STATE
Lateral	Dev Out	Max Left
		Full Left
		Center
		Full Right
		Max Right
	Flag	Valid
		Invalid
Vertical	Dev Out	Max Up
		Full Up
		Center
		Full Down
		Max Down
	Flag	Valid
		Invalid

7.5.9 Analog Inputs

The Analog Input page displays the input voltage and bus setting for the lighting bus.

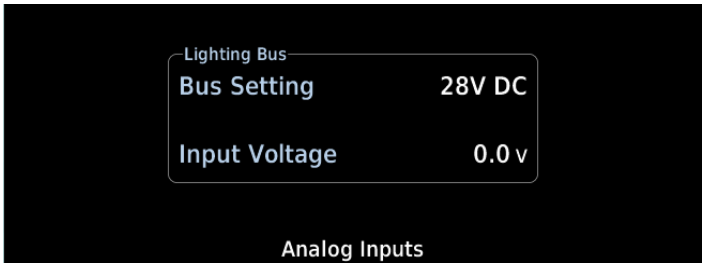


Figure 7-39 Analog Inputs Page

ANALOG INPUTS
• Lighting bus setting • Lighting bus input voltage

7.5.10 Gillham Encoder

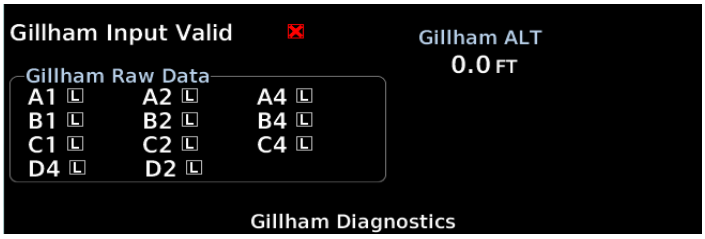


Figure 7-40 Gillham Encoder Page

Displays the decoded Gillham altitude and the discrete pin settings.

7.5.11 Power Statistics

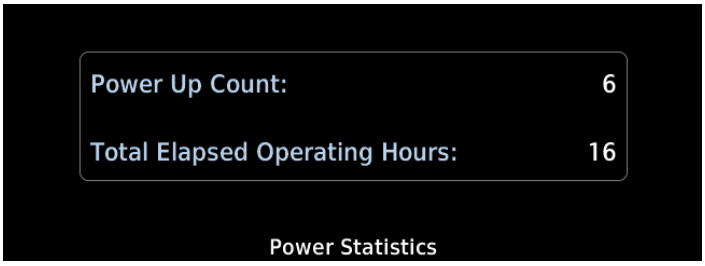


Figure 7-41 Power Statistics Page

Displays power up count and total elapsed operating hours of the unit.

7.5.12 WAAS

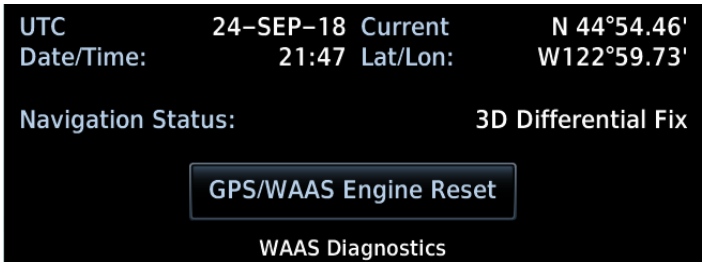


Figure 7-42 WAAS Diagnostics Page

The WAAS diagnostics page displays the WAAS engine status, including UTC date/time, current Lat/Lon, and overall navigation status.

To reset the WAAS engine and clear all almanac data, tap GPS/WAAS Engine Reset. New satellite acquisitions take up to 20 minutes.

7.5.13 Temperatures

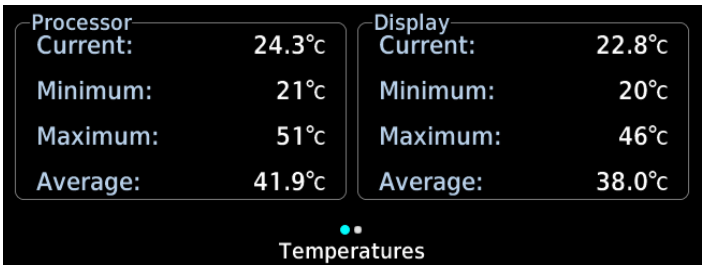


Figure 7-43 Temperatures Page

The Temperatures page displays current, minimum, maximum, and average temperatures for the main processor, display, transponder, and LED boards.

7.5.14 Logs

The Logs page provides the option of copying error, maintenance, and Flight/ADS-B Data logs to an SD card, or clearing all log files.

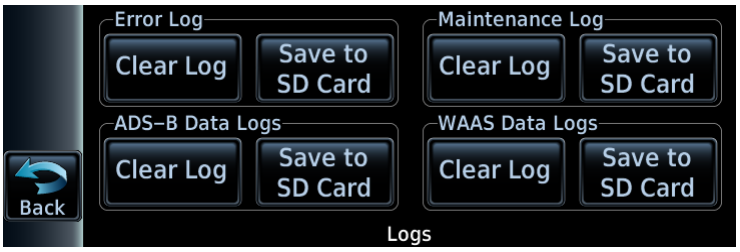


Figure 7-44 Error Log Page

LOGS KEY DESCRIPTIONS	
Save to SD Card	Saves the selected information to SD card.
Clear Log	Removes all messages from the selected log.

7.5.15 Main Data Inputs

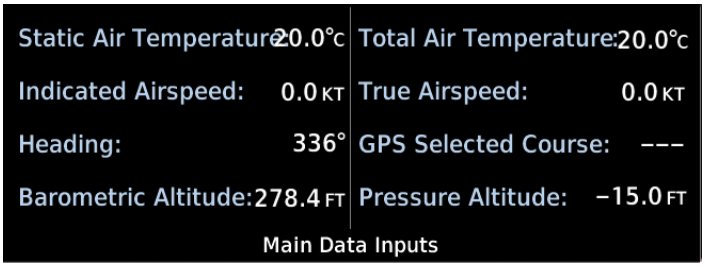


Figure 7-45 Main Data Inputs Page

The Main Data Inputs page displays ARINC 429, RS-232, and other electrical inputs information. Data not received is dashed out. The page aids in verifying electrical interfaces during installation and troubleshooting.

7.5.16 XPDR Main Data

The XPDR Main Data Diagnostics page provides access to the GPS and Air Data Diagnostics pages. These pages display the following information.

Figure 7-46 XPDR Main Data Diagnostics Page

Table 7-24 XPDR Main Data Diagnostics Pages

Page	Displayed Information	
GPS Data Page 1	• GPS Lat • GPS Lon • HAE	• Ground Speed • Ground Track • Time
GPS Data Page 2	• Date • North/South Velocity • East/West Velocity	• Up/Down Velocity • Geoid Height • RAIM Alarm
GPS Data Page 3	• SBAS Correction • HPL • HFOM	• HFOMV • VPL • VFOM
GPS Data Page 4	• VFOMV	
Air Data Page 1	• Pressure Alt Source • Baro Alt • Baro Corrected Alt	• Baro Press Setting • Density Alt • Radio Alt
Air Data Page 2	• Air State • Baro Vert Rate • Inert Vert Rate	• Vert Rate • Vert Rate Source • Roll Angle
Air Data Page 3	• Indicated Airspeed • True Airspeed • Mach	• TAT Source • Static Air Temp • Total Air Temp
Air Data Page 4	• Autopilot Vert Mode • Autopilot Alt Source • FCS Selected Alt	• FMS Selected Alt • Magnetic Heading • True Heading
Air Data Page 5	• Selected Heading • NRST APT LAT • NRST APT LON	• NRS APT ELEV • NRST APT Category • NRST APT Source+

7.5.17 Clear Config

Before clearing configuration settings, save settings to an SD card.

To reset unit to original factory values, tap Clear Config Settings > OK. After clearing the configuration restart unit.

7.6 SD Save

NOTE
The unit supports up to a 32 GB FAT 32 SD card.

Exporting a configuration to an SD card allows airframe specific configuration information to be loaded to a different GNX unit. Tap **SD Save** on the GNX to save configuration information.

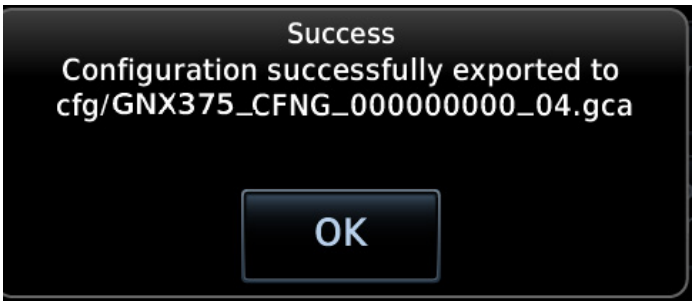


Figure 7-47 Successful Configuration Export

1. Insert an SD card into the card slot.
2. Power on the GNX in configuration mode.
3. Tap **SD Save**.
4. Tap **OK** to acknowledge a successful export.

Figure 7-48 Failed Configuration Export

An error message displays when the configuration fails to export.

7.7 SD Load

NOTE

If a GAE 12 is installed, the GAE 12 Calibration must be performed after SD Load has been completed. Refer to section 7.4.5 for GAE 12 Calibration.

This feature allows a previously saved configuration to load from an SD card.

Loading from an SD Card

The software version must match the unit saved to the card. Before configuring determine if a previously saved configuration is available.

1. Power unit on in configuration mode.
2. Insert SD card into card slot.
3. Tap SD Load.
4. Tap a file to load.
5. Restart unit.
6. Verify settings on Interface Settings page are correct.

Figure 7-49 Import Configuration File Page

7.8 Bluetooth

NOTE
A compatible PED with the Garmin Pilot application is required. Visit Garmin's website for a list of compatible devices.

NOTE
Bluetooth setup is performed in normal mode.

NOTE
If having issues making a Bluetooth connection, cycle power on the unit. Retry making a Bluetooth connection.

Bluetooth Setup

1. Ensure the unit is in normal mode.
2. Tap **System**.
3. Tap **Connext Setup**.
4. Ensure Bluetooth is enabled on the GNX 375.
5. Enable Bluetooth connectivity on the PED. Once enabled, the GNX 375 will be viewable in the list of available devices. The default Bluetooth name is GNX 375 followed by the last four digits of the MAC address (e.g., GNX 375 4000). To change the Bluetooth name:
   - Tap **Device Name.**
   - Type the desired Bluetooth name and tap **Enter**.
6. Select the GNX 375 from the list of available Bluetooth devices on the PED. A pop-up window will appear on the units screen to confirm the new Bluetooth pairing.
7. Tap **Yes** to finish pairing the device.

Bluetooth setup only needs to be performed when pairing with a device for the first time. Once a connection is established with a Bluetooth device, the GNX 375 automatically connects to the Bluetooth device upon power-up if Auto-Reconnect is enabled on the unit.

8. On the GNX 375, verify the PED displays as a paired device.
9. On Garmin Pilot, tap **Connext**.
10. Tap **GNX 375** under the devices tab.
11. Verify the GNX 375 is connected.

Figure 7-50 Bluetooth Setup Page

Managing Paired Devices

The GNX 375 can connect to up to three Bluetooth devices simultaneously. The GNX 375 saves up to thirteen Bluetooth device pairings. Remove pairing on both devices before attempting to pair again.

Figure 7-51 Bluetooth Paired Devices

SELECTION	DESCRIPTION
Auto Reconnect	Enables automatic connection between the GNX 375 and paired device when the units are within range of each other.
Remove	• Removes device from the list • Removes GNX pairing • Requires confirmation

7.9 Flight Stream 510

NOTE
A compatible PED with the Garmin Pilot application is required. Visit Garmin's website for a list of compatible devices.

NOTE
Flight Stream 510 Wi-Fi setup is performed during initial startup in normal mode.

NOTE
If having issues making a Wi-Fi connection, cycle power on the unit. Retry making a Wi-Fi connection.

NOTE
Wi-Fi setup only needs to be performed when connecting to a device for the first time. Once a connection is established with a PED, the GNX 375 automatically connects to the device upon power-up if Auto-Reconnect is enabled on the unit.

Wi-Fi Setup

1. Power up the unit in normal mode.
2. Tap the display to continue.
3. Wait for "Ready" to display under **WiFi Info**.

4. Tap **WiFi Info**.
5. Enable Wi-Fi connectivity on the PED. Once enabled, the Flight Stream 510 will be viewable in the list of available devices. The default Wi-Fi name is 510 followed by the last four digits of the MAC address (e.g., 510-8672). To change the Wi-Fi name:
   - Tap **SSID**.
   - Type the desired Wi-Fi name and tap **Enter**.
6. Change the Flight Stream 510 password:
   - Tap **Password**.
   - Type the desired password and tap **Enter**.

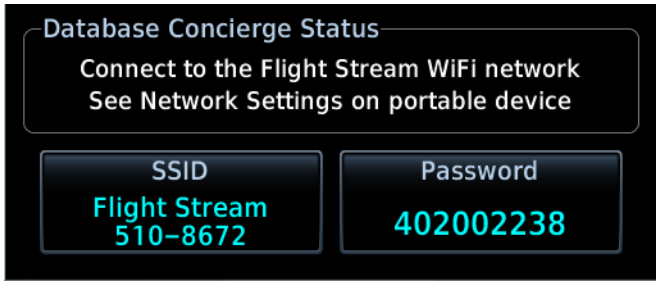


Figure 7-52 Flight Stream 510 Setup Page

7. Select the Flight Stream 510 from the list of available Wi-Fi devices on the PED and enter the password.
8. On Garmin Pilot, tap **Connext**.
9. Tap **GNX 375** under the devices tab.
10. Verify the GNX 375 is connected.

8 System Checkout

8.1 Ground Check (Configuration Mode)

NOTE
Throughout this section, references are made to particular functions and screens. If a function or screen is not available, ensure that the system has been correctly configured.

The configuration mode ground check verifies each LRU and interface is properly configured. Steps that are not applicable to a particular installation may be skipped.

The configuration mode checkout should be performed on every installed GNX 375. Before starting the configuration mode checkout, the following conditions must be met:

1. The GNX 375 must be powered on and placed in configuration mode.
2. All system LRUs must be powered on.
3. System must be configured.

8.1.1 Main Indicator

NOTE
This check is not required if the unit is interfaced to an electronic HSI or a Composite CDI and the main indicator analog output is not used.

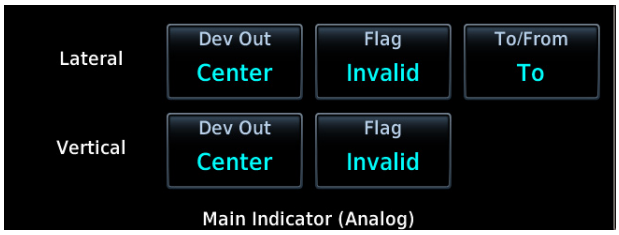


Figure 8-1 Main Indicator (Analog) Page

If the GNX is interfaced to an analog indicator on the main CDI/OBS, perform the following steps:

1. Tap Diagnostics > Main Indicator (Analog).
2. Verify correct operation of the lateral deviation, flag and TO/FROM flag using the corresponding selections.
3. Verify correct operation of the vertical deviation and flag using the corresponding selections.

8.1.2 Composite Indicator

NOTE

This check is not required if the unit is interfaced to an electronic HSI or a main analog indicator and the composite indicator analog output is not used.

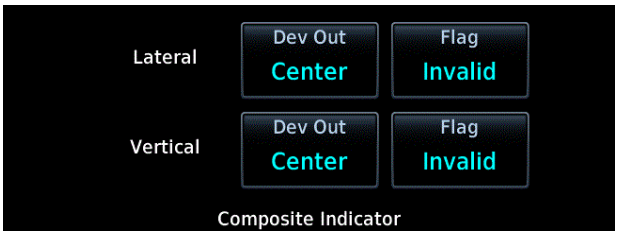


Figure 8-2 Composite Indicator Page

If the GNX is interfaced to an composite indicator on the main CDI/OBS, perform the following steps:

1. Tap Diagnostics > Composite Indicator.
2. Verify correct operation of the lateral deviation and flag using the corresponding selections.
3. Verify correct operation of the vertical deviation and flag using the corresponding selections.

8.1.3 Discretes

Tap Diagnostics > Discrete Inputs.

Perform the following steps for each external switches:

1. Set the switch to active.
2. Verify the GNX indication displays active.
3. Set the switch to inactive.
4. Verify the GNX indication displays inactive.

Figure 8-3 Discrete Inputs Page

Tap Diagnostics > Discrete Outputs

Perform the following steps for each discrete output:

1. Tap the Active key corresponding to the discrete output. A green bar on the key indicates the signal as active.
2. Verify the appropriate external annunciator illuminates when the output is set to ACTIVE and extinguishes when the output is set to INACTIVE.

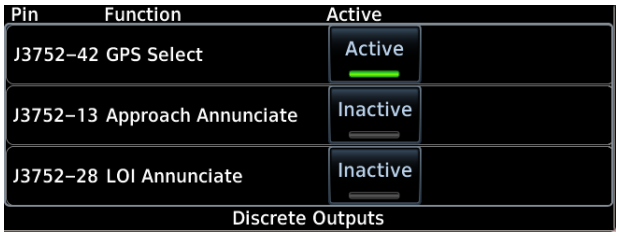


Figure 8-4 Discrete Output Page

8.1.4 HSDB

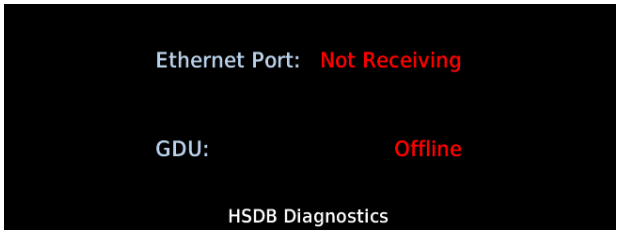


Figure 8-5 HSDB Page

Tap Diagnostics > HSDB Ethernet.

1. Ensure any LRUs connected via HSDB are powered on and properly configured.
2. Ensure any GDUs/GI 275s connected via HSDB are powered on and properly configured.
3. Ensure that the status of the connected port displays "Receiving."
4. Ensure that status of any connected GDU/GI 275 displays "Online."
5. If the previous step did not perform correctly, check the electrical connections and configuration setup.

8.1.5 Transponder

FAR 91.413 transponder checks require the GNX to reply to different types of interrogations. The unit only replies to Mode S/A/C All Calls when airborne. FAR 91.413 provides guidance for the transponder check.

To simulate a temporary airborne state, place the GNX in Ground Test mode. Ground Test mode overrides the air/ground logic to transmit as if the GNX is airborne. This mode has a duration of one power cycle.

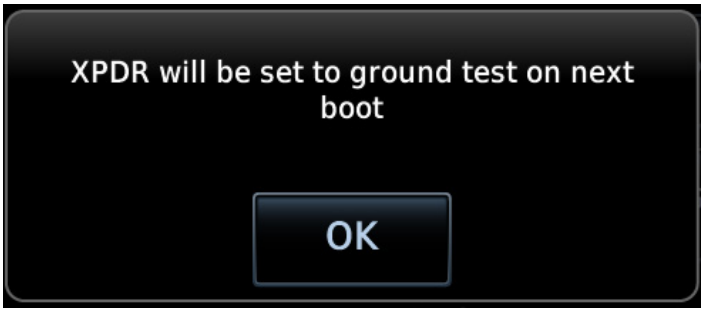


Figure 8-6 XPDR Ground Test

To enable Ground Test mode, perform the following steps from the configuration home page.

1. Tap Setup B > XPDR > Test.
2. Tap OK to acknowledge the ground test prompt.

8.1.6 Lighting Bus Interface Check

CAUTION

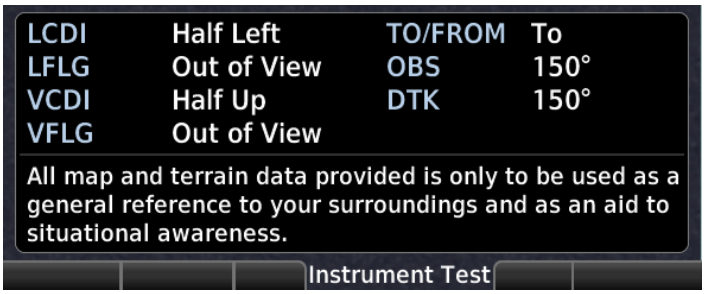
WHEN 14 VDC OR 28 VDC LIGHTING BUSES ARE CONNECTED TO THE UNIT, CONNECTION OF THE AIRCRAFT LIGHTING BUS TO THE INCORRECT INPUT PINS CAN CAUSE DAMAGE TO THE UNIT. ALWAYS START THIS TEST WITH THE DIMMING BUS AT THE LOWEST SETTING, AND SLOWLY INCREASE THE BRIGHTNESS. IF THE BRIGHTNESS LEVEL ON THE DISPLAY DOES NOT INCREASE AS THE LIGHTING IS INCREASED IN BRIGHTNESS, VERIFY THAT THE WIRING IS CORRECT BEFORE PROCEEDING.

The display and bezel key backlighting on the unit tracks an external lighting/dimmer bus input and uses it to vary the display and bezel key backlight levels accordingly. This check verifies the interface.

1. Ensure the lighting bus is set to its minimum setting.
2. Slowly vary the lighting bus level that is connected to the unit.
3. Verify the display brightness tracks the lighting bus setting.
4. Continue to maximum brightness and verify operation.

8.2 Ground Check (Normal Mode)

8.2.1 Instrument Test



This is not a required check. However, this page may be useful for troubleshooting installation issues. During normal power-up, the splash screen displays, followed by the Active Database screen. Tap Continue. When the Instrument Test page displays, the electrical outputs are activated and set to values listed below.

Figure 8-7 Instrument Test

Table 8-1 Instrument Test Data

PARAMETER	INSTRUMENT-TEST VALUE
LCDI	Half Left
LFLG	Out of View
VCDI	Half Up
VFLG	Out of View
TO/FROM	TO when Composite CDI is disabled. N/A when Composite CDI is enabled.
OBS	Displays received OBS angle or dashes if no valid OBS selected course is being received. N/A if Composite CDI is enabled.
DTK	149.5° (Displayed as 150°)
Items below do not display on the INSTRUMENT TEST page.	
Distance to Go	10.0 nautical miles
Time to Go	4 minutes
Active Waypoint	GARMN
Groundspeed	150 knots
Present Position	N 39°04.05', W 94°53.86'
Waypoint Alert	Active
Phase of Flight	En Route
Message Alert	Active
Leg/OBS Mode	Leg Mode
GPS Integrity	Invalid

PARAMETER	INSTRUMENT-TEST VALUE
Roll Steering (if applicable)	Flight Director commands 0° bank (level flight) for 5 seconds, increasing right bank at approximately 1°/second for 5 seconds, 5° right bank for 5 seconds, decreasing right bank at approximately 1°/second for 5 seconds until 0° bank is reached. This cycle repeats continuously.

8.2.2 Signal Acquisition

NOTE
Turn off all other avionics before beginning this test.

NOTE
Initial position acquisition can take up to 20 minutes. Subsequent acquisitions will not take that long.

1. Power up unit in normal mode.
2. Tap System.
3. Tap GPS Status.
4. Verify 3-D Fix displays.
5. If unable to acquire satellites:
   - Move aircraft away from structures
   - Check GPS antenna installation
   - Verify coaxial cable length meets cable loss guidelines (refer to section 6.4.2)

Once GPS position information is available, perform the following steps:

1. On the GPS Status page, verify that the aircraft position matches a known reference position.
2. While monitoring the GPS Status page, turn on other avionics one at a time and check the GPS signal reception to ensure it is not affected (no significant signal degradation).
3. Before proceeding with the VHF COM interference check, ensure that any connected equipment is transmitting and/or receiving data from the GNX 375, and functioning properly.

8.2.3 VHF COM Interference

If testing a transmitter from a non-aviation device, verify each frequency by transmitting at least 30 seconds on each channel. This check must be completed on all IFR installations. If the GPS "LOI" flag comes into view during this procedure, refer to section 1.6.2.

1. On the GPS Status page, verify at least 7 satellites have been acquired.
2. Verify that the GPS "LOI" flag is out of view.
3. Select 121.150 MHz on the COM transceiver to be tested.
4. Transmit for a period of 35 seconds.
5. Verify that the GPS "LOI" flag does not come into view.
6. Repeat steps 4 and 5 for the following frequencies.

• 121.15 MHz	• 121.22 MHz	• 131.22 MHz	• 131.30 MHz
• 121.17 MHz	• 121.25 MHz	• 131.25 MHz	• 131.32 MHz
• 121.20 MHz	• 131.20 MHz	• 131.27 MHz	• 131.35 MHz

7. For VHF radios that include 8.33 kHz channel spacing, include the following frequencies.

• 121.185 MHz	• 130.285 MHz	• 121.190 MHz	• 131.290 MHz

8. Repeat steps 3 through 7 for all remaining COM transceivers in the aircraft.
9. Turn on the TCAS system and ensure the GPS position remains valid if the aircraft is TCAS equipped.
10. Use the SATCOM system to ensure the GPS position remains valid if the aircraft is SATCOM equipped.

9 Mechanical Drawings

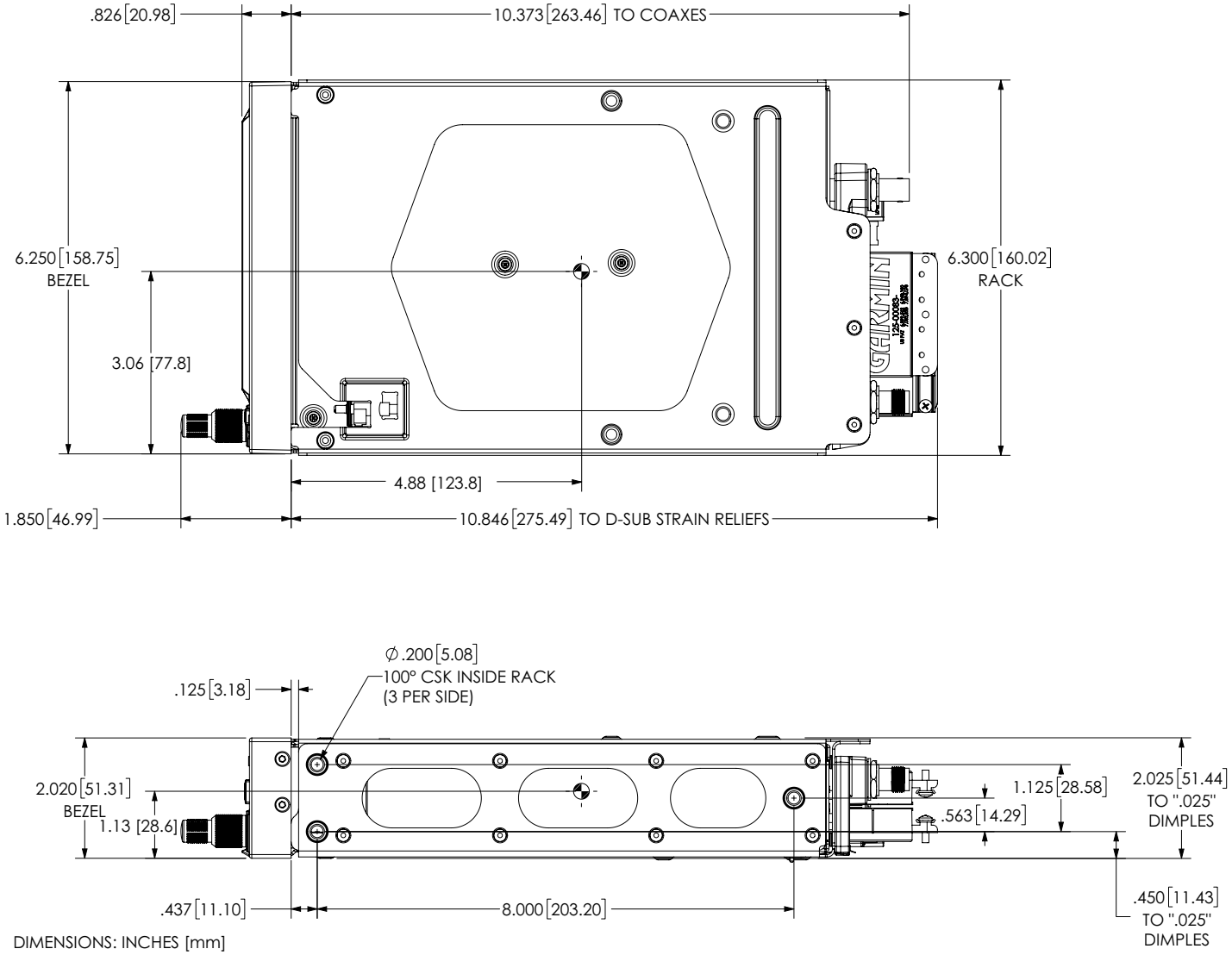


Figure 9-1 Dimensions and Center of Gravity

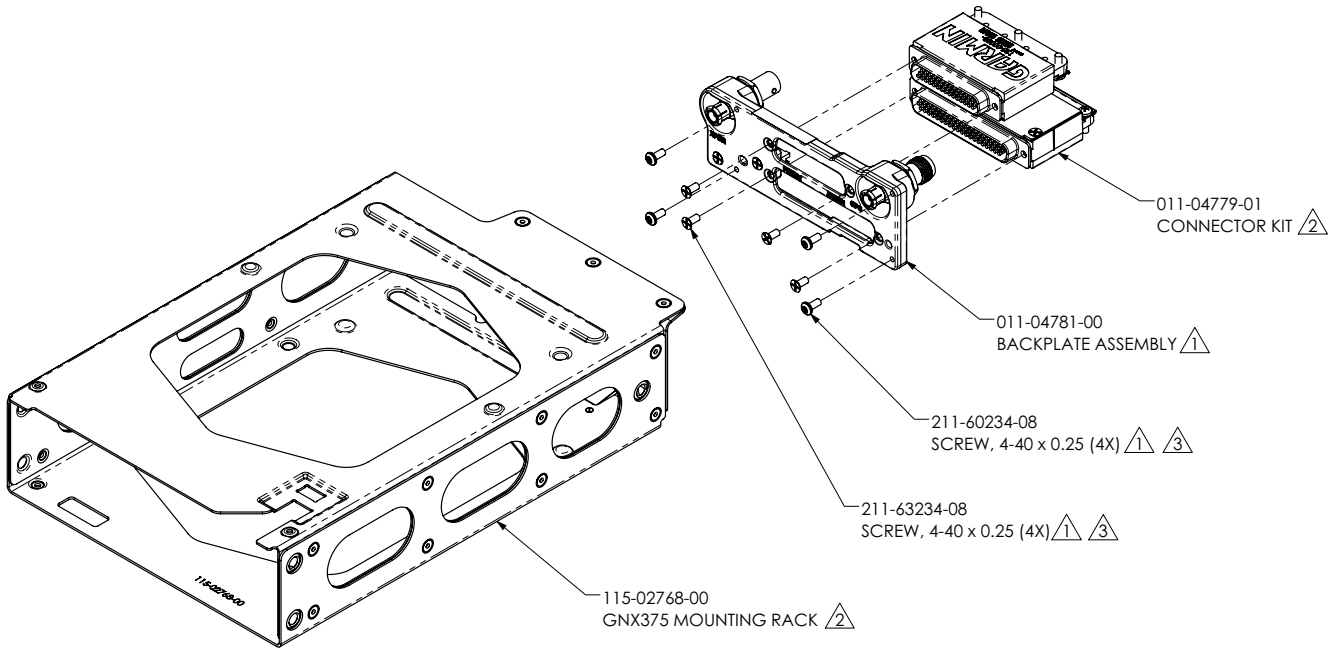


Figure 9-2 Mounting Rack Installation

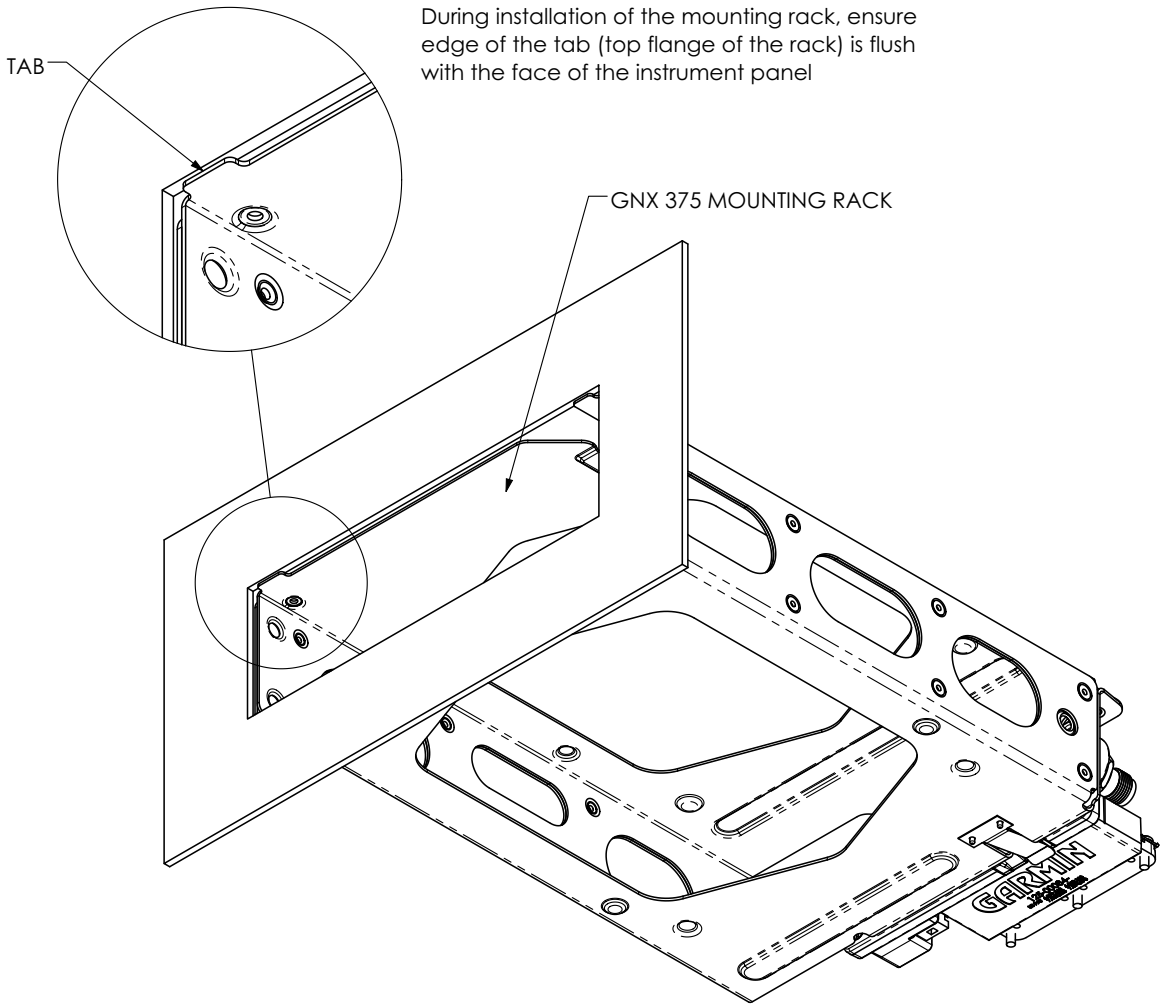


Figure 9-3 Mounting Rack Tab Alignment Detail

10 Equipment Compatibility and Configuration

10.1 ADS-B In Displays

Table 10-1 ADS-B In Displays

MANUFACTURER	MODEL	DATA FORMAT	INTERFACE CONFIGURATION	GNX 375 CONFIGURATION SETTING
Aspen	EFD1000/500	RS-422	ADSB Type 4	OPT LGCY ADSB
Garmin	GDU 620	HSDB	Traffic/ADS-B: GNX 375 #1 or GNX 375 #2	GDU: Present
	GDU 700( ) GDU 1060	HSDB	ADS-B: GNX 375	
	GTN	HSDB	ADS-B: GNX 375	Cross-Side Navigator: GTN If GTN is set to GTN1, set GNX 375 to GNX2.
	GTN Xi	HSDB	Cross-Side Navigator: Present, GNX 375 ADS-B In Source: GNX ( )	Cross-Side Navigator: GTN Xi
	GPS 175	HSDB	Cross-Side Navigator: GNX 375 ADS-B SRC: GNX ( )	Cross-Side Navigator: GPS 175
	GNC 355	HSDB	Cross-Side Navigator: GNX 375 ADS-B SRC: GNX ( )	Cross-Side Navigator: GNC 355
	G3X GDU 4XX/37X	RS-232	Connext 57600 baud	Connext 57600
	GMX 200	RS-422	FIS Data Link: Enabled GDL 90 UAT Radio: Disp Only GDL 90 Code Edit: Disabled	MX Format 1
	GI 275	HSDB	GPS 1: GNX 375 [1]	GI 275: Present
UPSAT	MX20	RS-422	FIS Data Link: Enabled GDL 90 UAT Radio: Disp Only GDL 90 Code Edit: Disabled	MX Format 2

[1] If the GNX 375 is the primary GPS source, configure as GNX 1. If the GNX 375 is the secondary GPS source, configure as GNX 2. Refer to section 7.4.3.

10.2 EFIS Displays

Table 10-2 EFIS Displays

MANUFACTURER	MODEL	DATA FORMAT	INTERFACE CONFIGURATION	GNX 375 CONFIGURATION SETTING
Aspen	EFD1000/500	ARINC 429	ID #1: C ID #2: NONE Description GNS 400, no GPS 2 Tracker Autopilot GAMA Format 3 Low Speed	GAMA Format 3 Low Speed
Garmin	GDU 620	ARINC 429, RS-232	GDU 620 Configuration Settings: ARINC 429 Setup: ARINC In 3 for High speed GPS1 ARINC Out 1 for Low speed GPS Navigator	ARINC 429 Setup In: Low, EFIS/AIRDATA Out: High, GAMA Format 1 SDI: LNAV 1 (for GPS 1) LNAV 2 (for GPS 2)
	GDU 700( ) GDU 1060	HSDB	GPS 1: GNX 375	GDU: Present
	G3X GDU 4XX/37X	RS-232, ARINC 429	GDU 4XX/37X: RS-232: MAPMX ARINC 429 in: Garmin GPS and “NAV 1” ARINC 429 Out: EFIS/AIRDATA FORMAT 1	RS-232: MAPMX Format 1 ARINC 429 Setup In: Low, EFIS/AIRDATA Out: Low, GAMA Format 1
	GI 275	HSDB	GPS 1: GNX 375	GI 275: Present
	G5(ADI)	RS-232	RS-232:MapMX	RS-232: MapMX Format 1

10.3 EHSI Displays

Table 10-3 EHSI Displays

MANUFACTURER	MODEL	DATA FORMAT	INTERFACE CONFIGURATION	GNX 375 CONFIGURATION SETTING
Garmin	G5 (Attitude Indicator)	RS-232	MAPMX	RS:-232 MAPMX Format 1
	G5 (HSI)	RS-232, ARINC 429	RS-232:MAPMX ARINC 429 Input: Garmin GPS (SDI 1) ARINC 429 Output: EFIS/AIRDATA 1 (SDI 1) (Only used when no autopilot is interfaced)	RS-232: MAPMX Format 1 ARINC 429 Setup In: EFIS/AIRDATA Out: GAMA Format 1
	GI 275 (HSI)	HSDB	GPS 1: GNX 375	GI 275: Present
Sandel	SN 3308 [1]	Analog/ARINC 429	SN 3308 Configuration Settings: LNAV 1/2 SELECT: GNS 430 (ARINC) ANNUN: SERIAL RELAY SENSE: NAV-2 OFF COURSE: OBS/LEG GPS-1: OFF DEVIATION: ANALOG GPS-2: OFF OBS ROT: NORMAL CDI SRC SEL: OFF OBS CAL: 000.0 RCVR 1/2: OFF	GAMA Format 3, low speed
	SN 3500/4500 [2]	ARINC 429	SN 3500/4500 Configuration Settings: LNAV 1/2 SELECT: GNS 530 (ARINC) ANNUN: SERIAL LAT DV: SERIAL VERT DV: SERIAL SN 3500 VERT ENA: SERIAL SN 4500 VERT ENA: VERT DV FLAG	GAMA Format 3

[1] GPS lateral and vertical guidance is provided using the analog interface.

[2] Vertical Guidance is provided for GPS approaches. Software v3.06 or later is required for SN3500.

10.4 Multifunction Displays

Table 10-4 Multifunction Displays

MANUFACTURER	MODEL	DATA FORMAT	GNX 375 CONFIGURATION SETTING
Garmin	MX20	RS-232	Aviation Output 2 format for MX20 v5.5 and earlier. Aviation Output 1 format for MX20 v5.6 and later. (MX20 will not accept GPS altitude even though it is part of Aviation Output 1 Format). MapMX format 1 for MX20 v5.6 or later. Refer to section 7.4.3 if installation enables RF Leg navigation on the GNX.
	GMX 200		Aviation Output 1 format MapMX format 1 (preferred) Refer to section 7.4.3 if installation enables RF Leg navigation on the GNX.
	GI 275 (MFD)	HSDB	GI 275 Configuration Setting GPS 1: GNX 375 Traffic: Type: ADS-B Interface: GNX 375 GNX 375 Configuration Setting GI 275: Present

10.5 VHF COM

Table 10-5 VHF COM

MANUFACTURER	MODEL	DATA FORMAT	INTERFACE CONFIGURATION	GNX 375 CONFIGURATION SETTING
Garmin	GTR 225	RS-232	Serial Port: AVN IN/MAPCOM	Aviation Format 1

10.6 NAV/COM

Table 10-6 NAV/COM

MANUFACTURER	MODEL	DATA FORMAT	INTERFACE CONFIGURATION	GNX 375 CONFIGURATION SETTING
Garmin	GNC 255	RS-232	Serial Port: AVN IN/MAPCOM	Aviation Format 1

10.7 Altitude Sources

Table 10-7 Altitude Sources

MANUFACTURER	MODEL	DATA FORMAT	INTERFACING EQUIPMENT CONFIGURATION	GNX 375 CONFIGURATION SETTING	NOTES
ACK Tech	A-30	RS-232	N/A	ALT FMT 1 25 ft	
B&D	90004-003	ARINC 429	N/A	ADC	
Garmin	GDC 72 GDC 74( ) GDC 75	ARINC 429	N/A	ADC	
	GDU 620	ARINC 429	GENERAL (Speed: HIGH)	EFIS AIR DATA (Speed: HIGH)	
	GAE 12	N/A	N/A	Garmin Altitude Encoder: Present	
	GDU 700( ) GDU1060	HSDB	GPS 1/2: GNX 375	GDU: Present	
	GAD 29(B)	ARINC 429	EFIS/AIRDATA	EFIS AIR DATA (Speed: LOW)	
	G5 (GAD 29B)	ARINC 429	EFIS/AIRDATA (SDI 1) or EFIS/AIRDATA 2 (SDI 2)	EFIS/AIR DATA (Speed: LOW)	Refer to Garmin G5 Electronic Flight Instrument Part 23 AML STC Installation Manual (P/N 190-01112-10) for configuration details.
	GI 275	HSDB	GPS 1: GNX 375	GI 275: Present	

MANUFACTURER	MODEL	DATA FORMAT	INTERFACING EQUIPMENT CONFIGURATION	GNX 375 CONFIGURATION SETTING	NOTES
Honeywell	KDC 281	ARINC 429	N/A	ADC	
	KDC 481	ARINC 429	N/A	ADC	
Icarus Instruments	3000	RS-232	N/A	ALT FMT 1 100 ft	
Sandia	SAE 5-35	RS-232	N/A	ALT FMT 1 25 ft	Either RS-232 or Gillham Gray code format can be used to provide altitude data from the Sandia SAE 5-35 to the GNX 375.
		Discrete	N/A	Gillham Discretes ON	
Shadin	8800T	RS-232	25 ft or lower encoding	ALT FMT 3 25 ft	Applicable to installations with the 8800T unit configured for 25ft or lower encoding.
		RS-232	100 ft encoding	ALT FMT 3 100 ft	Applicable to installations with the 8800T unit configured for parallel Gray source or 100 ft encoding.
	F/ADC-200	RS-232	N/A	ADC FMT 1	
	F/ADC-2000	RS-232	N/A	ADC FMT 1	Either the RS-232 or ARINC 429 data format can be used for the Shadin F/ADC-2000 interface to the GNX 375 (not both).
		ARINC 429	N/A	ADC (Speed: LOW)	
Trans-Cal Industries	IA-RS232-X	RS-232	N/A	ALT FMT 1 100 ft	
	SSD120	RS-232	25 ft or lower encoding	ALT FMT 1 25 ft	Applicable to installations with the SSD120 unit configured for 25ft or lower encoding.
		RS-232	100 ft encoding	ALT FMT 1 100 ft	Applicable to installations with the SSD120 unit configured for parallel Gray source or 100 ft encoding.

10.8 Audio Panels

Table 10-8 Audio Panels

MANUFACTURER	MODEL	DATA FORMAT	GNX 375 CONFIGURATION SETTING
Garmin	SL10, SL10MS, SL10M, SL10S, SL15, SL15M, GMA 340, GMA 342, GMA 345, GMA 347, GMA 35, GMA 350	Analog Audio	
Honeywell (Bendix/King)	KMA 24, KMA 24H-70/71, KMA 26, DMA 28		
PS Engineering	PMA 6000, PMA 7000 Series, PMA 8000 Series		

10.9 Autopilots

Table 10-9 Autopilots

MANUFACTURER	MODEL	DATA FORMAT	GNX 375 CONFIGURATION SETTING
Honeywell (Bendix/King)	KAP 100/140/150, KFC 150/200/250/300	Analog Deviation, Discrete	GPS Select: Auto [1]
	KFC 225/275/325	Analog Deviation, Discrete, ARINC 429 GPSS	GPS Select: Auto [1] Configure output to any GAMA format.
Century	I/II/III/IV, 21/31/41, 2000, Triden	Analog Deviation, Discrete	
	AK 1081 [2]	ARINC 429 GPSS	Configure output to any GAMA format.
S-TEC	System 20/30/40/50/55/60-1/60-2/60, PSS/65	Analog Deviation, Discrete	
	System 55X	Analog Deviation, Discrete, ARINC 429 GPSS	Configure output to any GAMA format.
	ST-901 [2]	ARINC 429 GPSS	Configure output to any GAMA format.
Cessna	300B/400B/800B	Analog Deviation, Discrete	
	300 IFCS/400 IFCS/800 IFCS/1000 IFCS [3]		
Collins	APS 65( )		
Garmin	GFC 500/GFC 600	Analog Deviation, ARINC 429, HSDB	

[1] Set, GPS Select: Prompt, when interfaced with, KAP 140 or KFC 225
[2] GPSS Roll Steering Converter
[3] 400A Nav-o-matic (CA530FD computer)

10.10 Heading Reference Sources

Table 10-10 Heading Reference Sources

MANUFACTURER	MODEL	CONFIGURATION PARAMETER	INTERFACING EQUIPMENT CONFIGURATION	GNX 375 CONFIGURATION SETTING	NOTES
Aspen	EFD1000	ARINC 429	N/A	HEADING [1] (Speed: LOW)	
Garmin	GSU 75 GRS 77 GRS 79	ARINC 429	N/A	AHRS [2] (Speed: HIGH)	
	GAD 42	ARINC 429	N/A	HEADING [1] (Speed: LOW)	
	GDU 620	ARINC 429	GENERAL	EFIS AIR DATA [3] (Speed: HIGH)	Note that this interface also provides altitude data. Refer to table 10-7.
	GDU 700( ) GDU 1060	HSDB			
	GAD 29(B)	ARINC 429	EFIS/AIRDATA	EFIS/AIRDATA (Speed: LOW)	
	GI 275	HSDB	GPS 1: GNX 375	GI 275: Present	
Sandel	SN3500	ARINC 429	N/A	AHRS [2] (Speed: LOW)	
	SN3308			AHRS [2] (Speed: LOW)	

[1] Heading information only.

[2] Attitude and heading information.

[3] Altitude, airspeed, altitude rate, and heading information.

10.11 Bluetooth

Table 10-11 Bluetooth

MANUFACTURER	MODEL	DATA FORMAT	INPUT/OUTPUT	GNX 375 CONFIGURATION SETTING
Garmin	Internal	Bluetooth	N/A	Bluetooth: Enabled

10.12 Remote Control

Table 10-12 Remote Control

MANUFACTURER	MODEL	DATA FORMAT	INTERFACE CONFIGURATION	GNX 375 CONFIGURATION SETTING
Garmin	G3X (GSU 25)	RS-232	No configuration required for GSU serial port	Transponder FRMT

10.13 Fuel/Air Computers

Table 10-13 Fuel/Air Computers

MANUFACTURER	MODEL	DATA FORMAT	CONFIGURATION
ARNAV	FC-10	RS-232	Fuel Format 1
	FT-10	RS-232	Fuel Format 1
Electronics International	FP-5L	RS-232	Fuel Format 1
JP Instruments	EDM-700	RS-232	Fuel Format 2
Shadin	833811-00 (AIS-380)	RS-232	FADC Format 1
	F/ADC-200 [1]	RS-232	Airdata Format 1 or FADC Format 1
	F/ADC-2000 [1]	RS-232	Airdata Format 1 or FADC Format 1
	91204XT(38)D (Miniflo-L)	RS-232	Fuel Format 2
	91053XP (Digiflo-L)	RS-232	Fuel Format 2
	91053XT-D (Digiflo-L)	RS-232	Fuel Format 2
	912802-( ) (Digidata)	RS-232	Fuel Format 2

[1] Configure the Shadin F/ADC to Garmin G Format to provide fuel and air data to the GNX 375.

[2] Garmin G Format should only be configured if the GNX 375 is set to FADC Format 1.

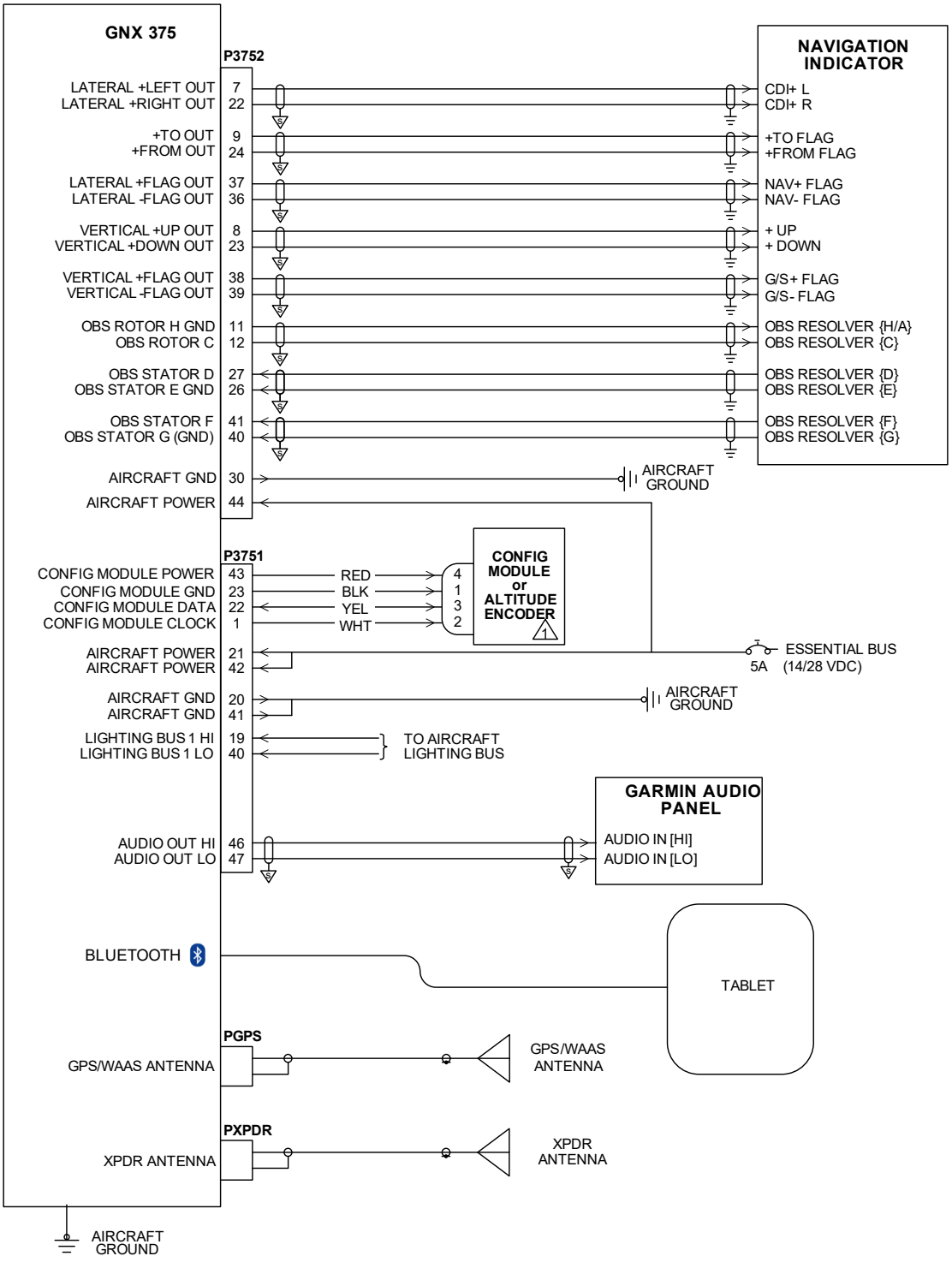
11 Interconnects

This section contains wiring interconnects and connection examples necessary for unit installation. Each figure contains notes that must be followed. General notes apply to all figures in this section. Refer to manufacturer's documentation for complete pinout and interconnect information.

General Notes

- Unless specified differently, all wires are 24 AWG or larger.
- Connect shield grounds to backshell at GNX 375. Shield leads must be less than 3.0". Connect all other shield grounds to aircraft ground with as short a conductor as practical.
- Connect all power and ground leads.
- Connections marked with x OR X indicate that there is no recommended connection. Any available port or pin is acceptable.
- Designations for ground connections:

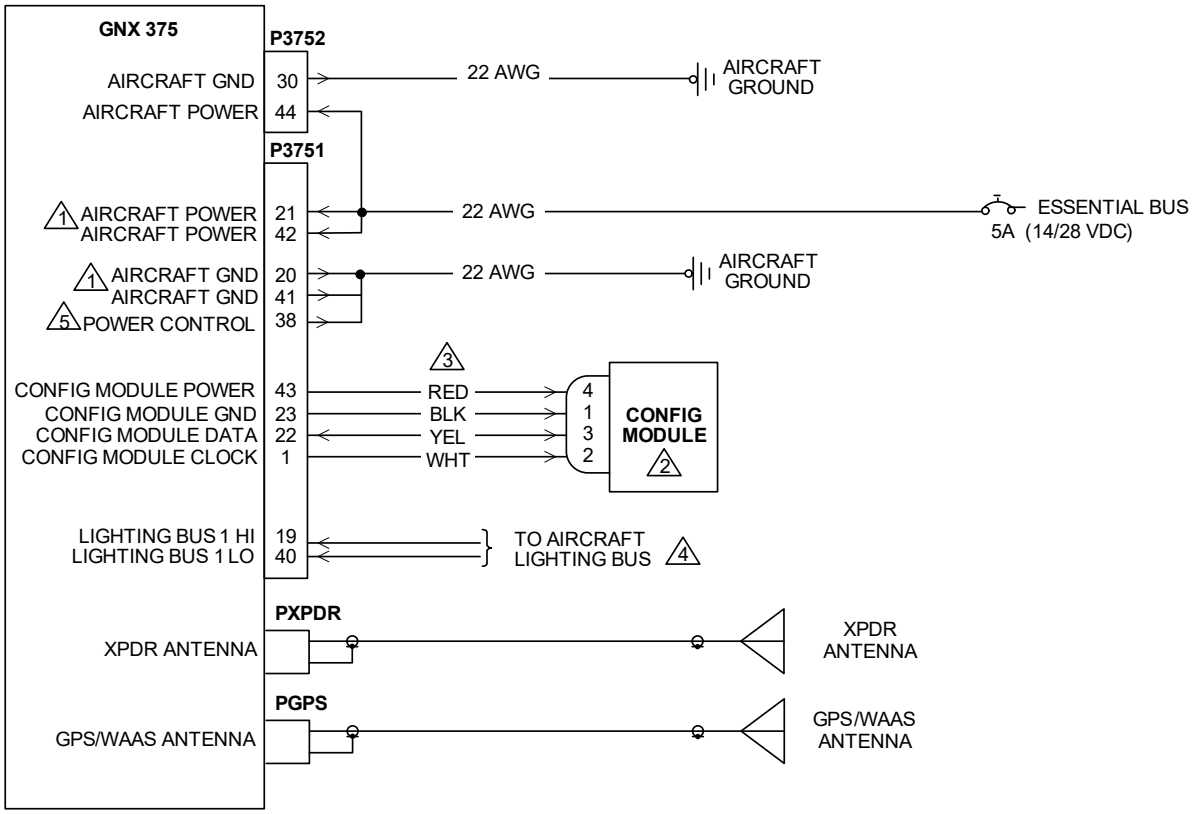
  Shield Block Ground Airframe Ground
- ~ indicates any available similar functioning port or pin may be used. Ports or pins without ~ must be connected as shown.
- * indicates an Active-Low pin.
- † indicates an Active-High pin.
- Antennas and associated cabling are shown for reference only.



NOTES

1. CONFIG MODULE REQUIRES WIRE HARNESS P/N:325-00122-00. PRESSURE SENSOR/CONFIG MODULE REQUIRES WIRE HARNESS P/N: 325-00421-00. MODULE WIRE HARNESSES ARE NOT INTERCHANGEABLE. WIRE COLOR IN MODULE WIRE HARNESS DESIGNATES FUNCTION. CONNECT MODULE WIRE HARNESS TO GNX 375 ACCORDING TO WIRE COLOR.

Figure 11-1 Typical Installation Interconnect



NOTES

1. ALL POWER LEADS AND GROUND LEADS ARE REQUIRED.

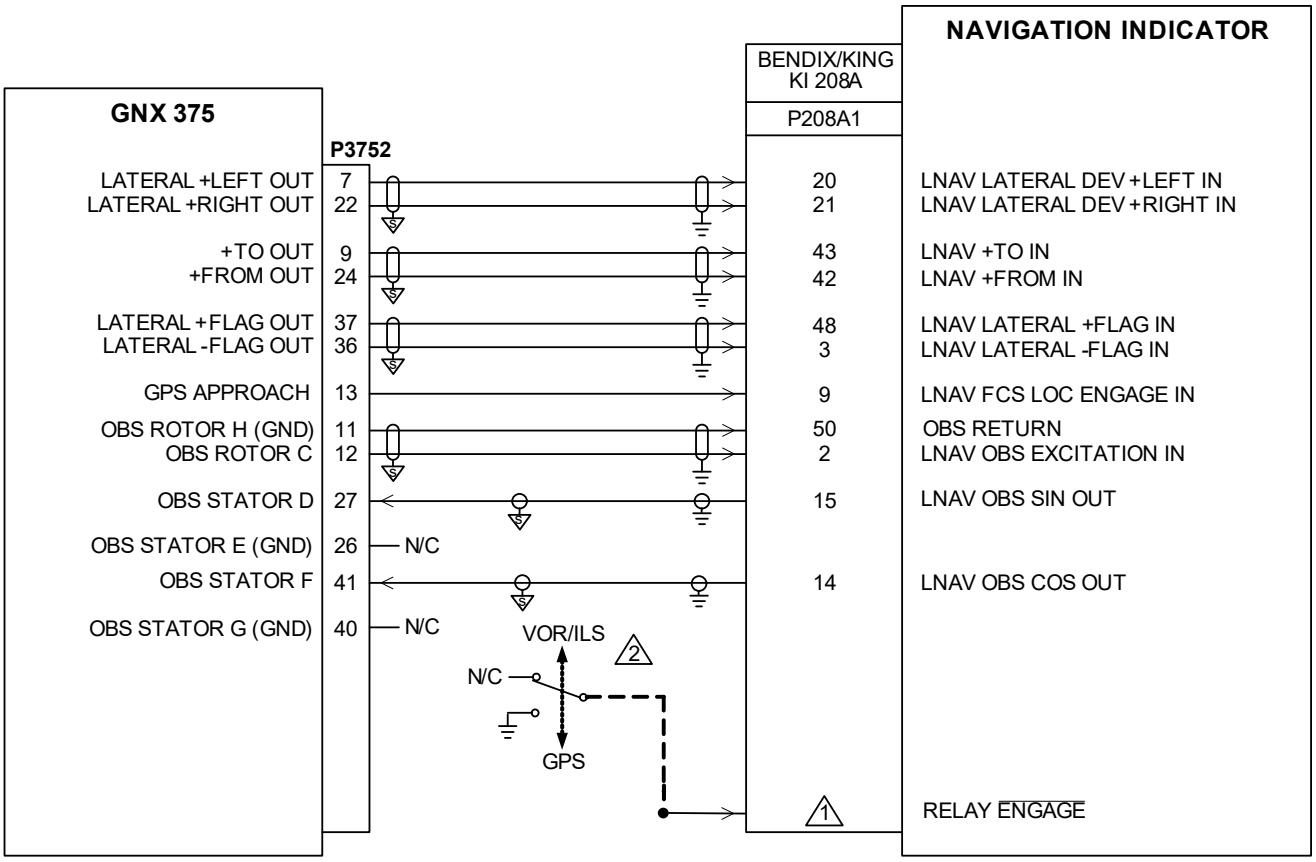
2. CONFIGURATION MODULE IS MOUNTED IN THE BACKSHELL OF THE P3751 CONNECTOR.

3. THE SUPPLIED CONFIGURATION MODULE HARNESS USES 28 AWG WIRES. USE THE CONTACTS SUPPLIED WITH CONFIGURATION MODULE.

4. OPTIONAL LIGHTING BUS CONNECTION (28 VDC, 14 VDC, 5VDC, OR 5 VAC).

5. REFER TO THE POWER CONTROL INPUT SECTION 5.2.2.

Figure 11-2 Power, Configuration Module, and Lighting Interconnect

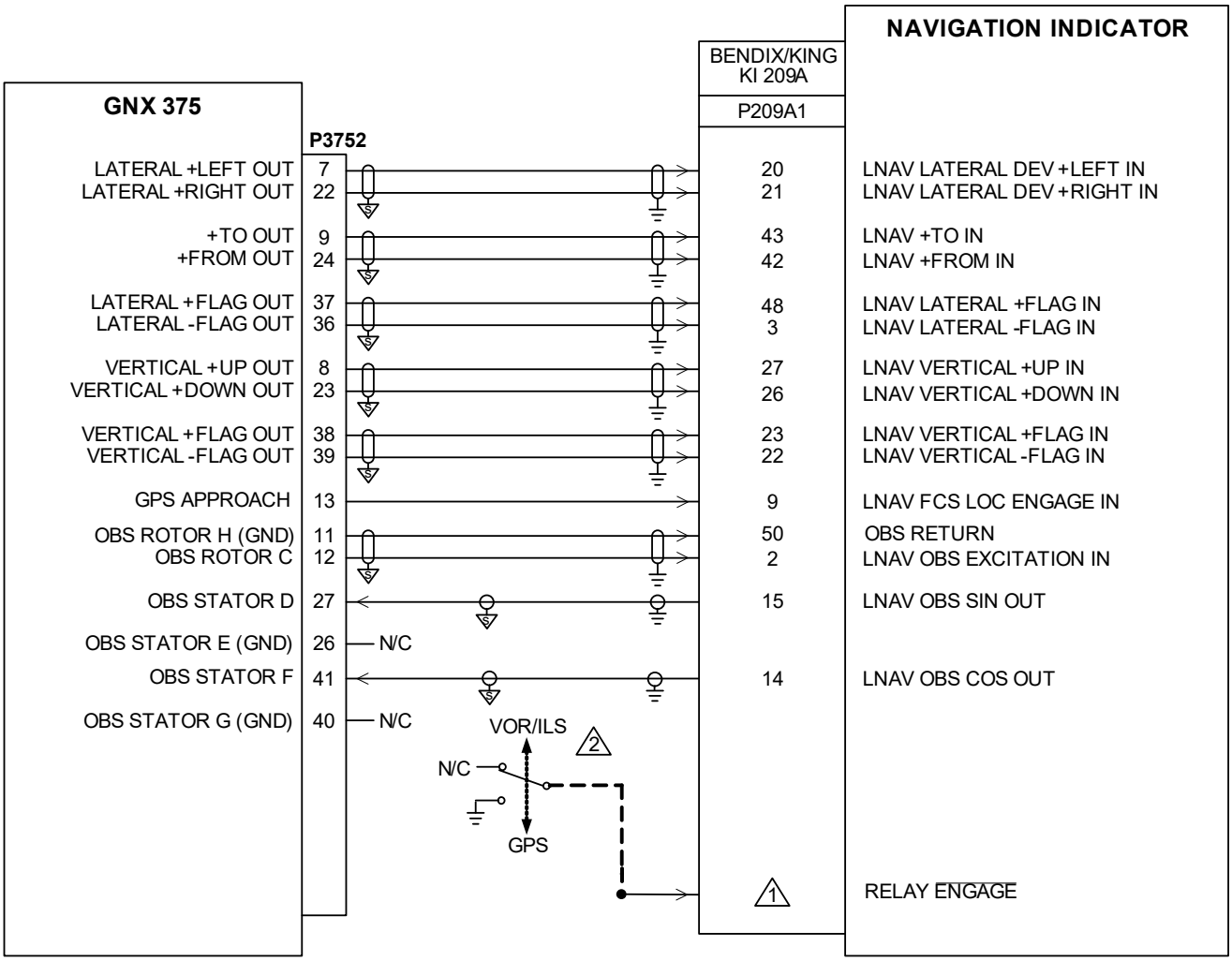


NOTES

1. PROPER CONNECTION OF THE RELAY ENGAGE INPUT OF THE KI 208A IS DEPENDENT ON THE POWER SUPPLY VOLTAGE. REFER TO KI 208A MANUFACTURERS DOCUMENTATION FOR PROPER CONNECTION.

2. IF THE GNX 375 IS INSTALLED AND A VOR/ILS RECEIVER IS AVAILABLE TO DRIVE THE NAVIGATION INDICATOR, AN EXTERNAL SOURCE SELECTION SWITCH MUST BE USED. REFER TO KI 208A MANUFACTURER'S DOCUMENTATION FOR ACCEPTABLE SWITCHES.

Figure 11-3 KI 208A Nav Indicator Interconnect

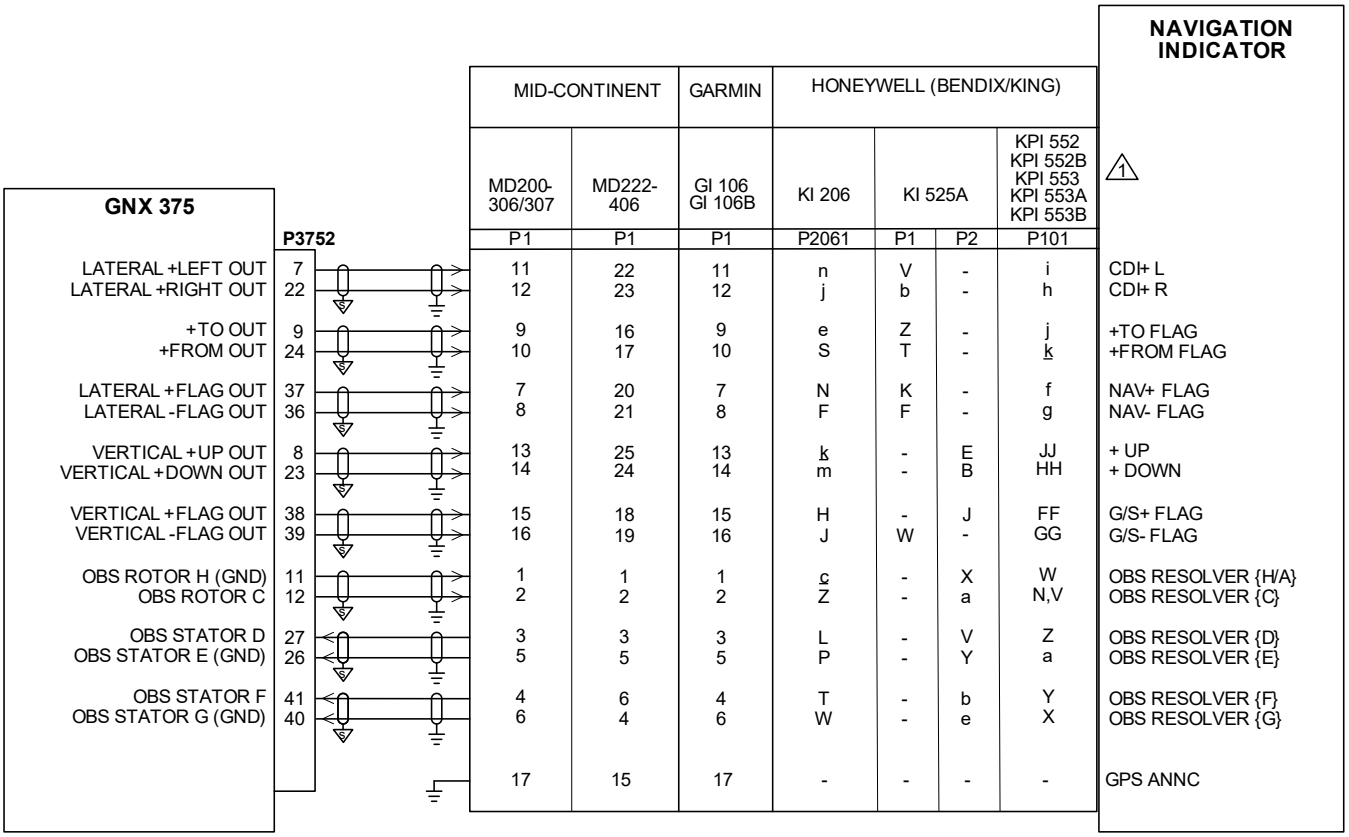


NOTES

1. PROPER CONNECTION OF THE RELAY ENGAGE INPUT OF THE KI 209A IS DEPENDENT ON THE POWER SUPPLY VOLTAGE. REFER TO KI 209A DOCUMENTATION FOR PROPER CONNECTION.

2. IF THE GNX 375 IS INSTALLED, AND A VOR/ILS RECEIVER IS AVAILABLE TO DRIVE THE NAVIGATION INDICATOR, AN EXTERNAL SOURCE SELECTION SWITCH MUST BE USED. REFER TO KI 209A MANUFACTURER'S DOCUMENTATION FOR ACCEPTABLE SWITCHES.

Figure 11-4 KI 209A Nav Indicator Interconnect



NOTES

1. THE OBS INTERFACE TO THE GNX 375 ONLY WORKS FOR KPI 552/553/553A UNITS THAT HAVE A COURSE KNOB.

Figure 11-5 Main CDI Indicator (Analog) Interconnect
Sheet 1 of 2

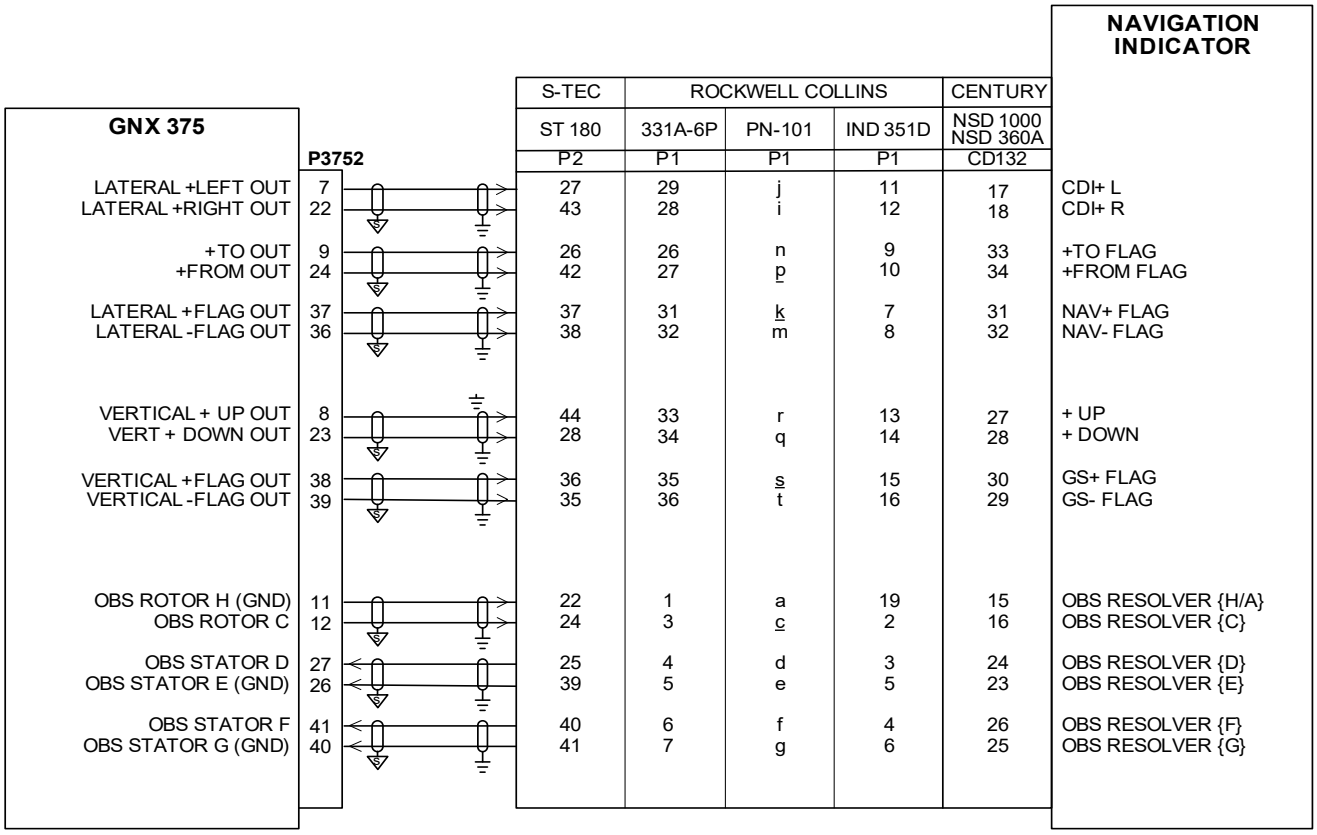


Figure 11-5 Main CDI Indicator (Analog) Interconnect
Sheet 2 of 2

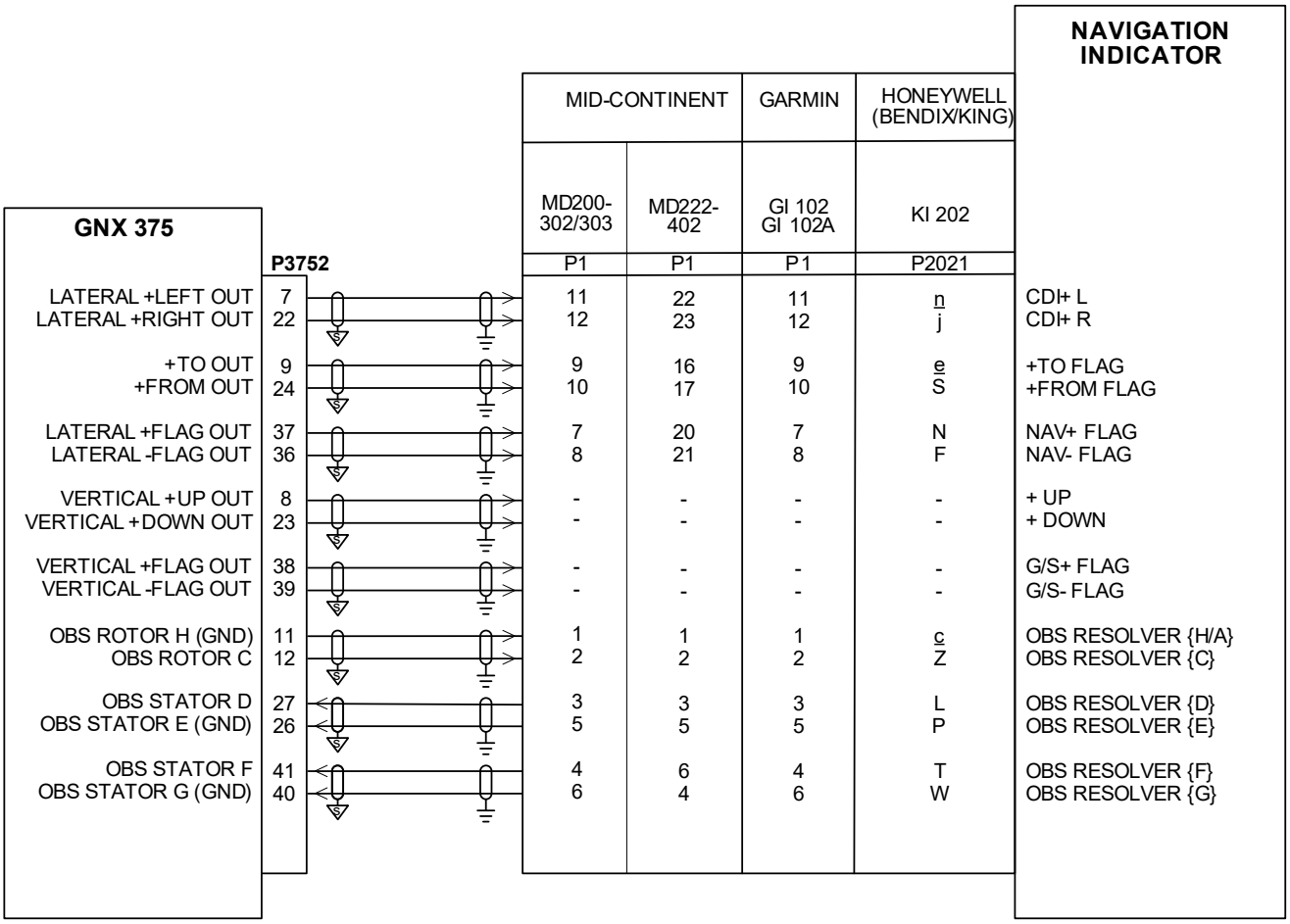


Figure 11-6 Main CDI Indicator VFR (Analog) Interconnect

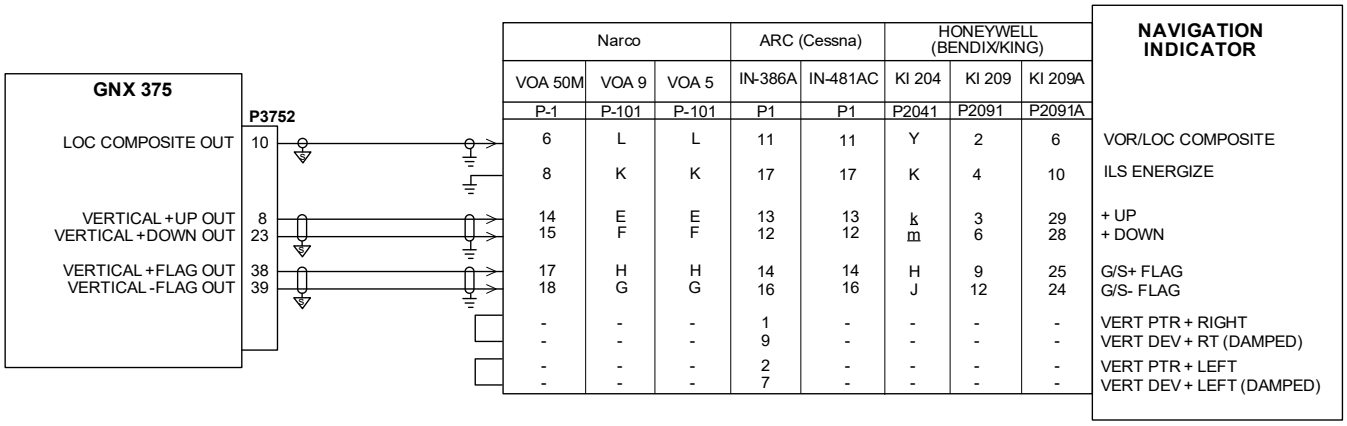
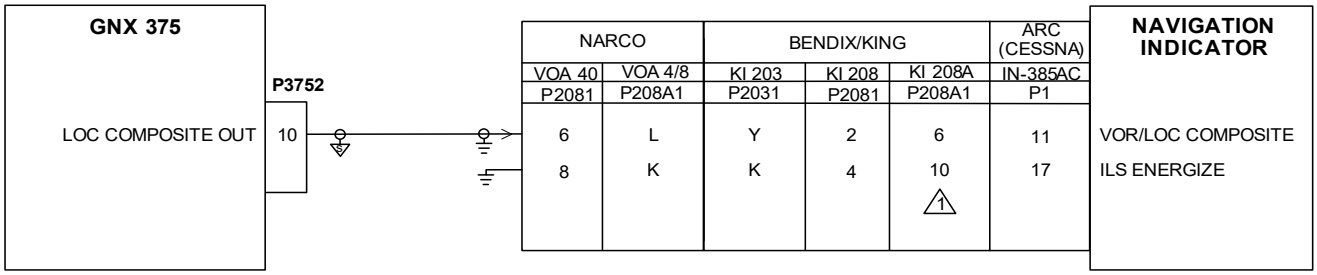


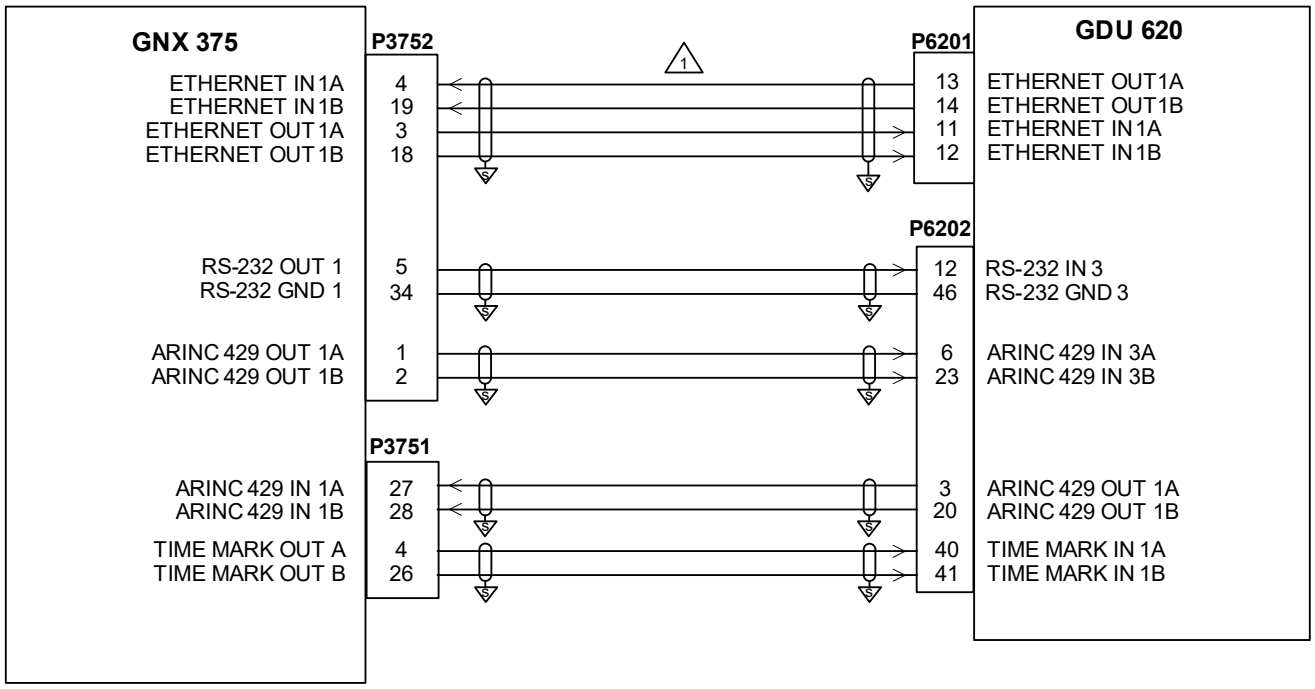
Figure 11-7 Composite CDI Interconnect



NOTES

1. FIGURE 11-3 IS THE PREFERRED CONNECTION FOR KI 208A.

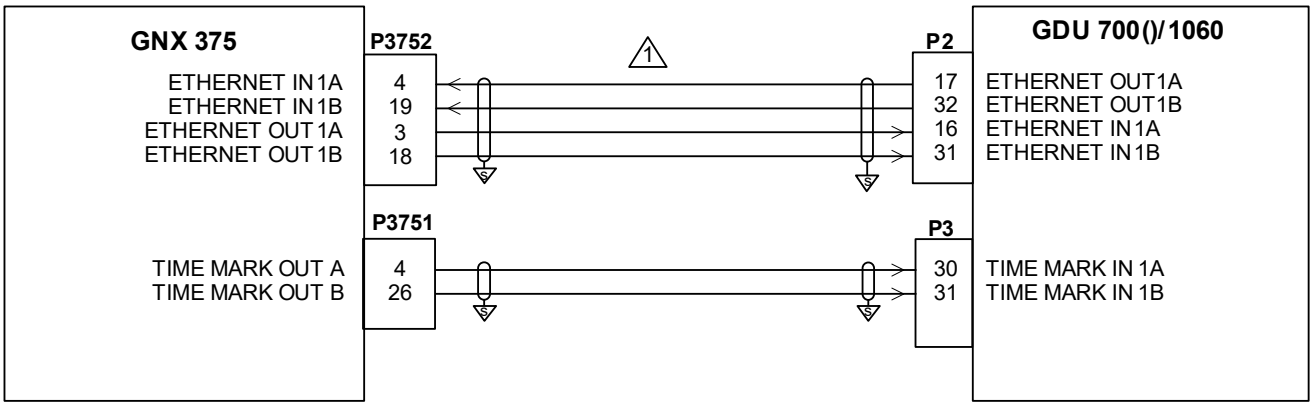
Figure 11-8 Composite CDI VFR Interconnect



NOTES

1. USE AIRCRAFT GRADE CATEGORY 5 ETHERNET CABLE. REFER TO SECTION 3.4 FOR PART NUMBERS.

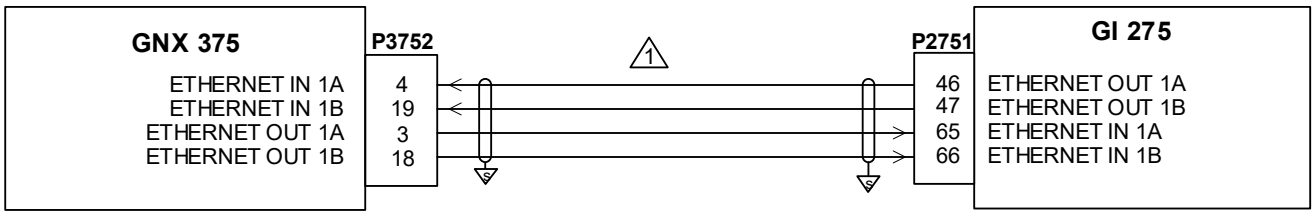
Figure 11-9 G500/G600 Interconnect



NOTES

1. USE AIRCRAFT GRADE CATEGORY 5 ETHERNET CABLE. REFER TO SECTION 3.4 FOR PART NUMBERS.

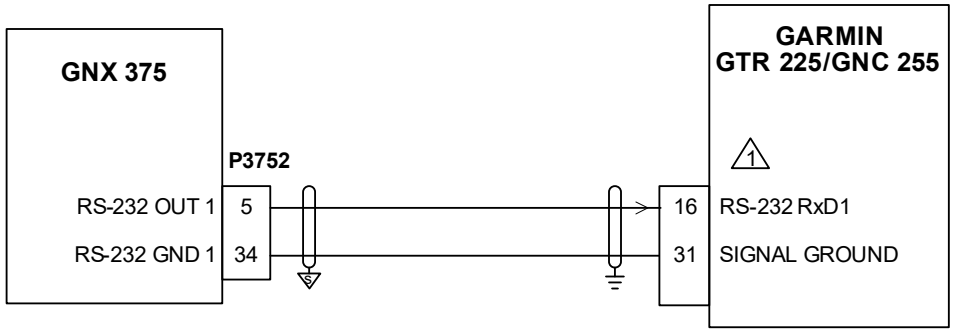
Figure 11-10 G500/600 TXi Interconnect



NOTES

1. USE AIRCRAFT GRADE CATEGORY 5 ETHERNET CABLE.

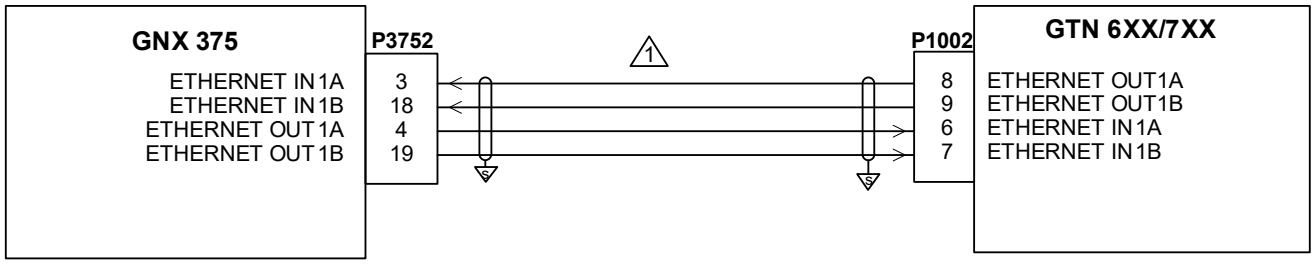
Figure 11-11 GI 275 Interconnect



NOTES

1. AUTOPILOT SHOWN FOR REFERENCE ONLY. REFER TO THE APPROPRIATE AUTOPILOT INTERCONNECT DIAGRAM.

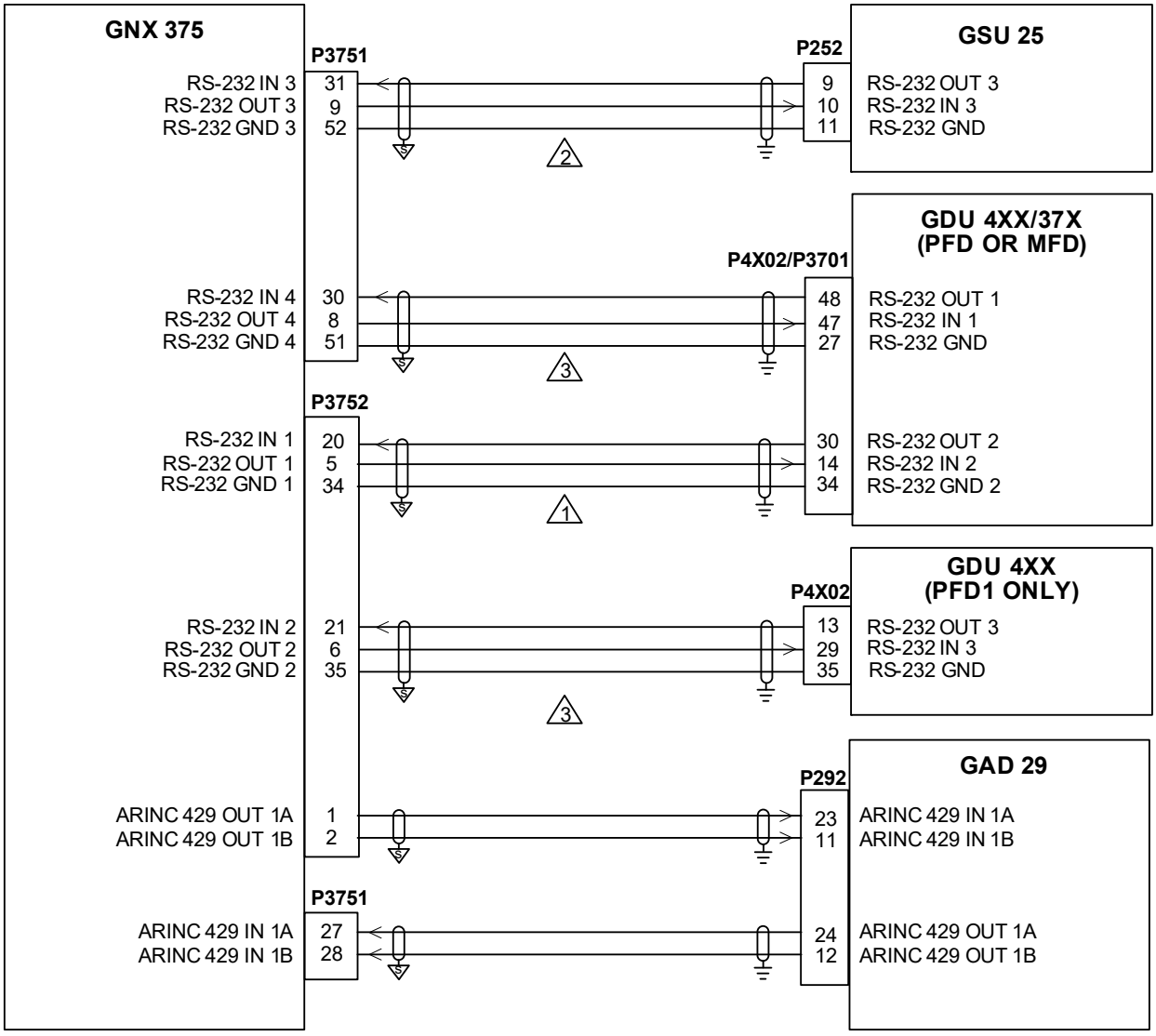
Figure 11-12 GTR/GNC Interconnect



NOTES

1. USE AIRCRAFT GRADE CATEGORY 5 ETHERNET CABLE. REFER TO SECTION 3.4 FOR PART NUMBERS.

Figure 11-13 GTN 6XX/7XX Interconnect



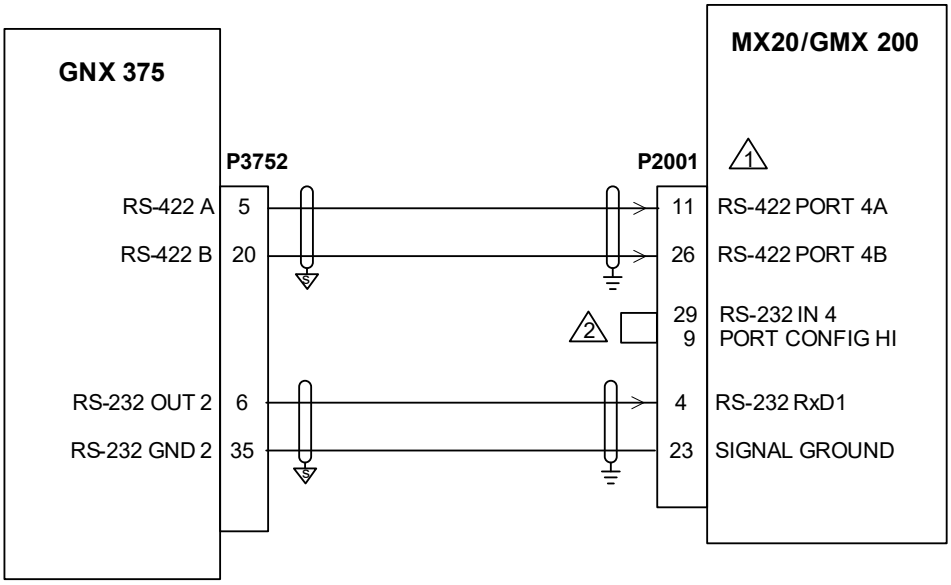
NOTES

1. RS-232 CONFIGURATION SET TO “MAPMX FORMAT 1.”

2. RS-232 CONFIGURATION SET TO “TRANSPONDER FRMT 1.”

3. GNX 375 RS-232 CONFIGURATION SET TO “CONNEXT 57600.”
   GDU 4XX RS-232 CONFIG SET TO “CONNEXT 57600 BAUD.”

Figure 11-14 G3X Interconnect



NOTES

1. OTHER INPUTS PORTS ON THE MX20/GMX200 MAY BE USED IN LIEU OF THE PORT SHOWN. REFER TO THE APPLICABLE INSTALLATION MAUAL FOR ADDITIONAL DETAILS.

2. GMX 200 ONLY: JUMPER MUST BE INSTALLED AS SHOWN TO CONFIGURE PORT 4 FOR RS-422 OPERATION. IF PORT 4 IS USED AS AN RS-422 PORT, RS-232 PORT 4 CANNOT BE USED.

Figure 11-15 MX20/GMX 200 Interconnect

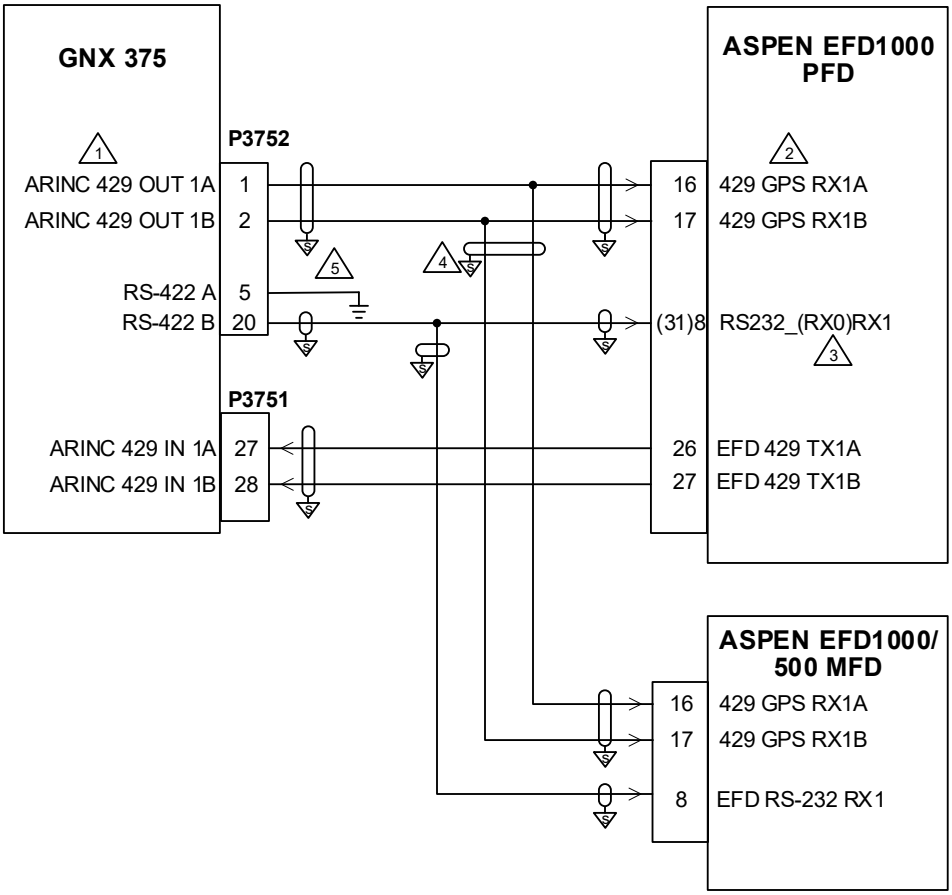


Figure 11-16 ARINC 429 EFIS - Aspen Interconnect
Sheet 1 of 2

NOTES

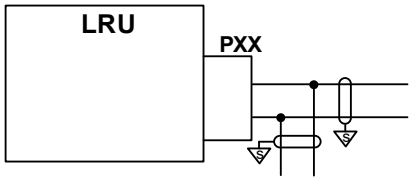
1. CONFIGURE GARMIN ARINC 429 PORT FOR GAMA FORMAT 3 LOW SPEED.

2. CONFIGURE ASPEN EFD 1000/EFD 500 INSTALLATION MENU - NAV SET UP:

ID #1	ID #2	DESCRIPTION
C	NONE	GPS1, NO GPS2

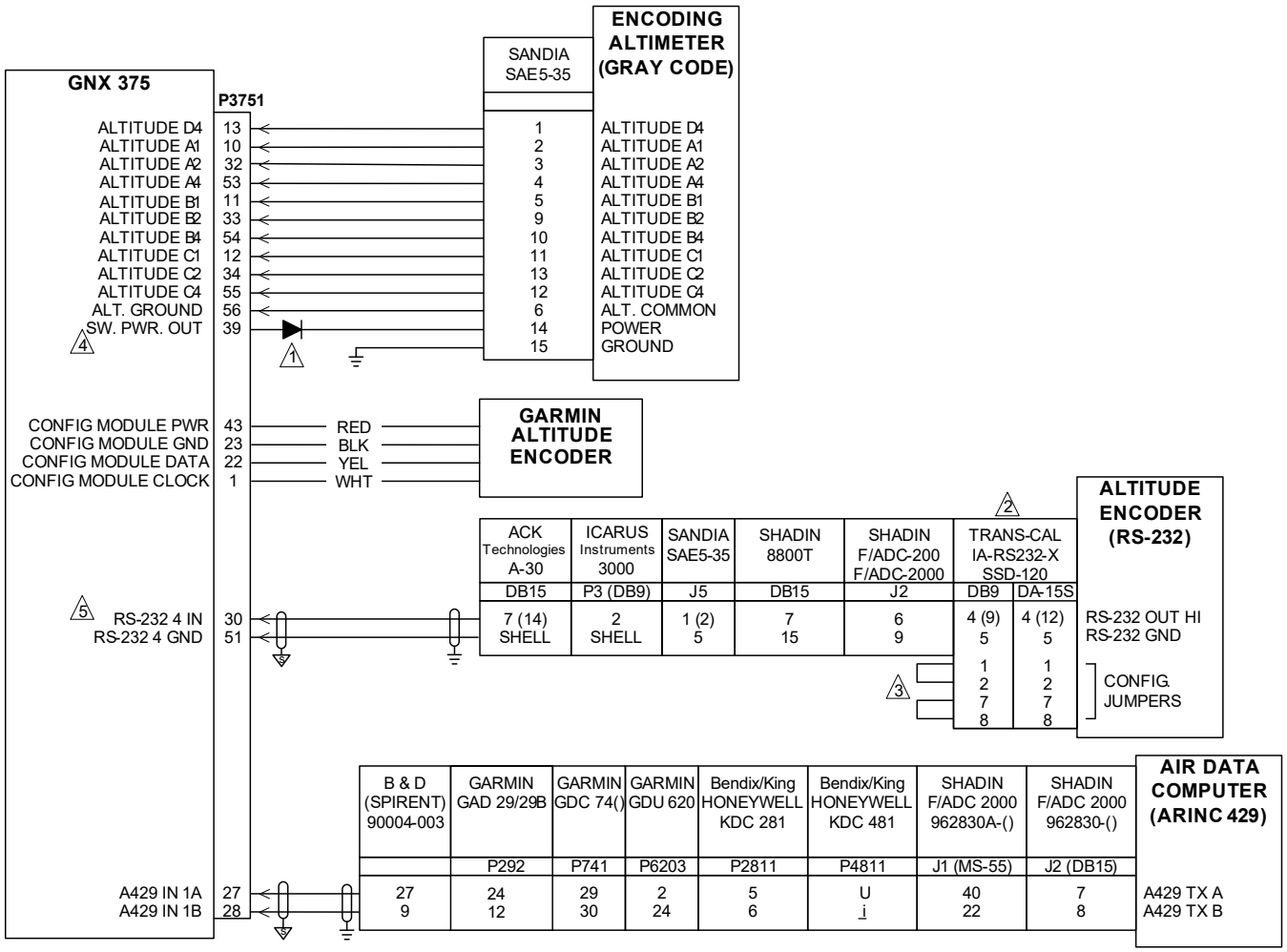
3. CONFIGURE ASPEN EFD 1000/EFD 500 RS-232 IN PORT ( ) “ADSB TYPE 4.”

4. THE SPLICE MUST BE PERFORMED AT THE CONNECTOR END OF THE WIRE. SPLICE AS SHOWN:



5. LENGTH OF WIRE SHALL BE NO MORE THAN 6 INCHES.

Figure 11-16 ARINC 429 EFIS - Aspen Interconnect
Sheet 2 of 2



NOTES

1. USE 1N4007 DIODE FOR ENCODER POWER.

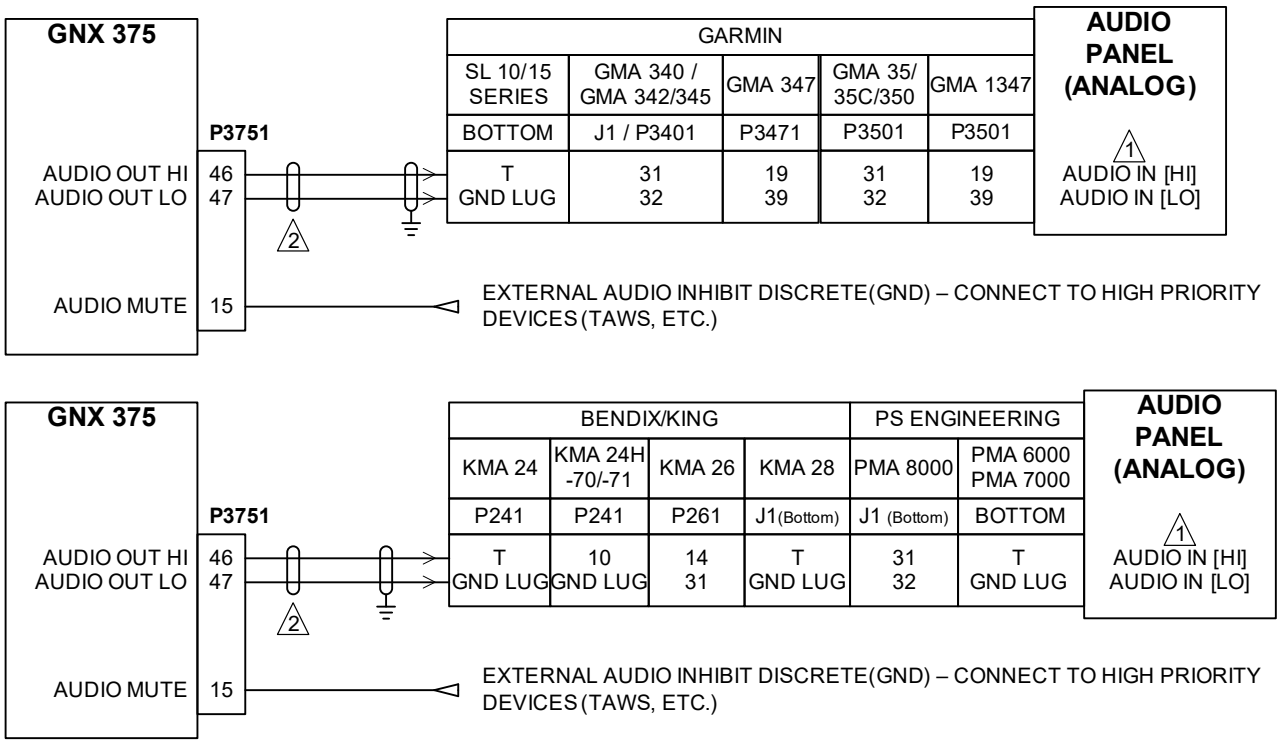
2. CONFIGURE ENCODER OUTPUT TO “TRIMBLE/GARMIN 9600 BPS” FORMAT IF USING RS-232 SOFTWARE METHOD.

3. LIMIT STRAP LENGTH TO SPECIFIED LENGTH IN THE MANUFACTURER’S INSTALLATION MANUAL.

4. POWERING SAE 5-35 THROUGH THE SWITCHED OUTPUT IS OPTIONAL.

5. ALTITUDE MAY BE INPUT ON RS-232 IN 3, RS-232 IN 4, OR RS-232 IN 5.

Figure 11-17 Altitude and Gillham Gray Code Interconnect

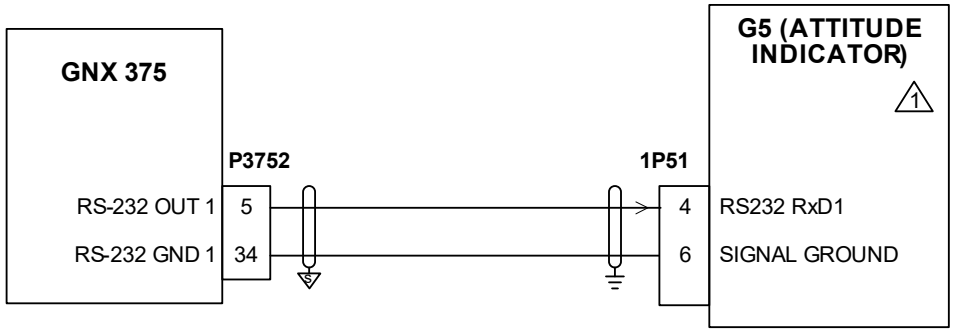


NOTES

1. IT IS ACCEPTABLE TO USE OTHER AVAILABLE UNSWITCHED, UNMUTED INPUTS. IF AUDIO PANEL DOES NOT HAVE AN AVAILABLE UNSWITCHED UNMUTED INPUT, AUDIO FROM THE GNX 375 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 OHMS ¼ W. THE AUDIO LEVELS OF EXISTING AUDIO SOURCES WILL HAVE TO BE RE-EVALUATED AFTER MIXING RESISTORS ARE INSTALLED.

2. SHIELDS FOR AUDIO CABLES SHOULD BE GROUNDED AT ONE END (WITH LEADS LESS THAN 3.0 INCHES) AND LEFT FLOATING AT THE OTHER END.

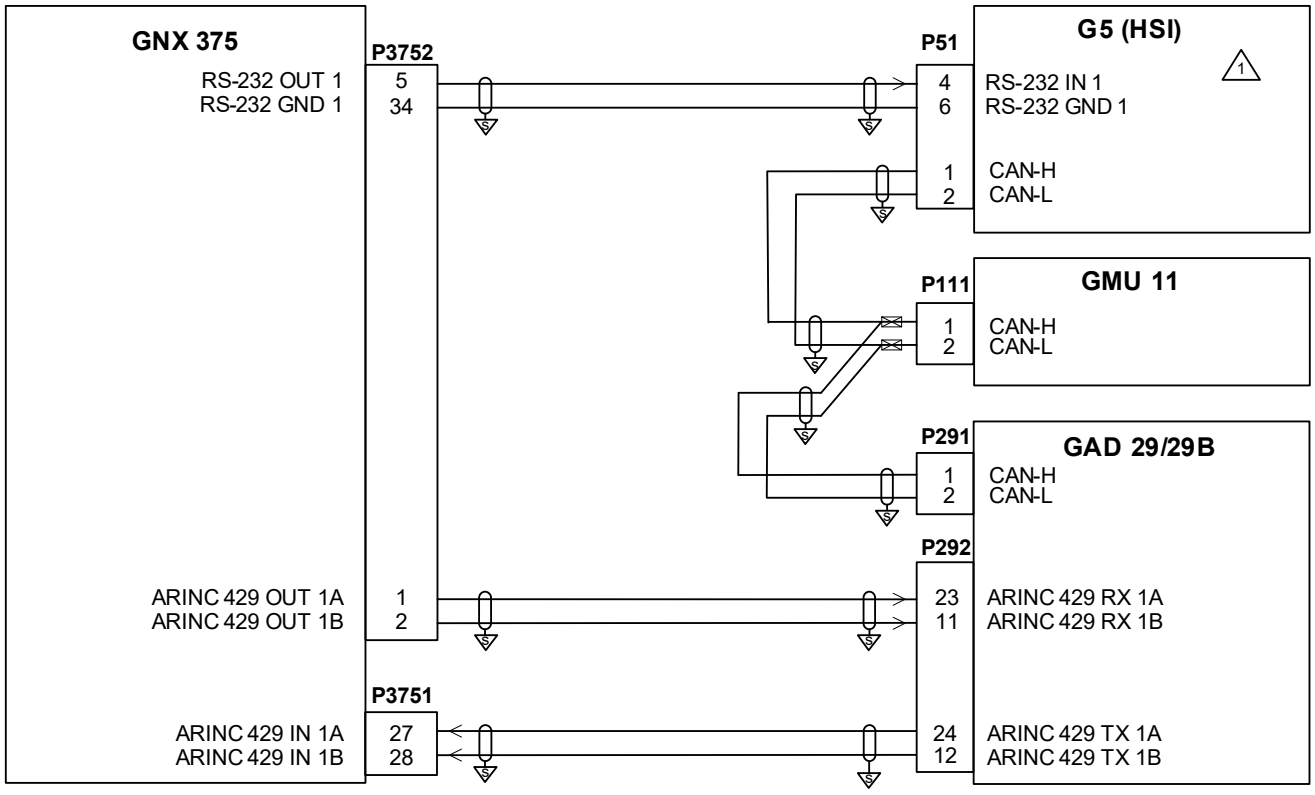
Figure 11-18 Audio Panel Interconnect



NOTES

1. REFER TO THE *G5 ELECTRONIC FLIGHT DISPLAY INSTALLATION MANUAL FOR NON-CERTIFIED AIRCRAFT* FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION.

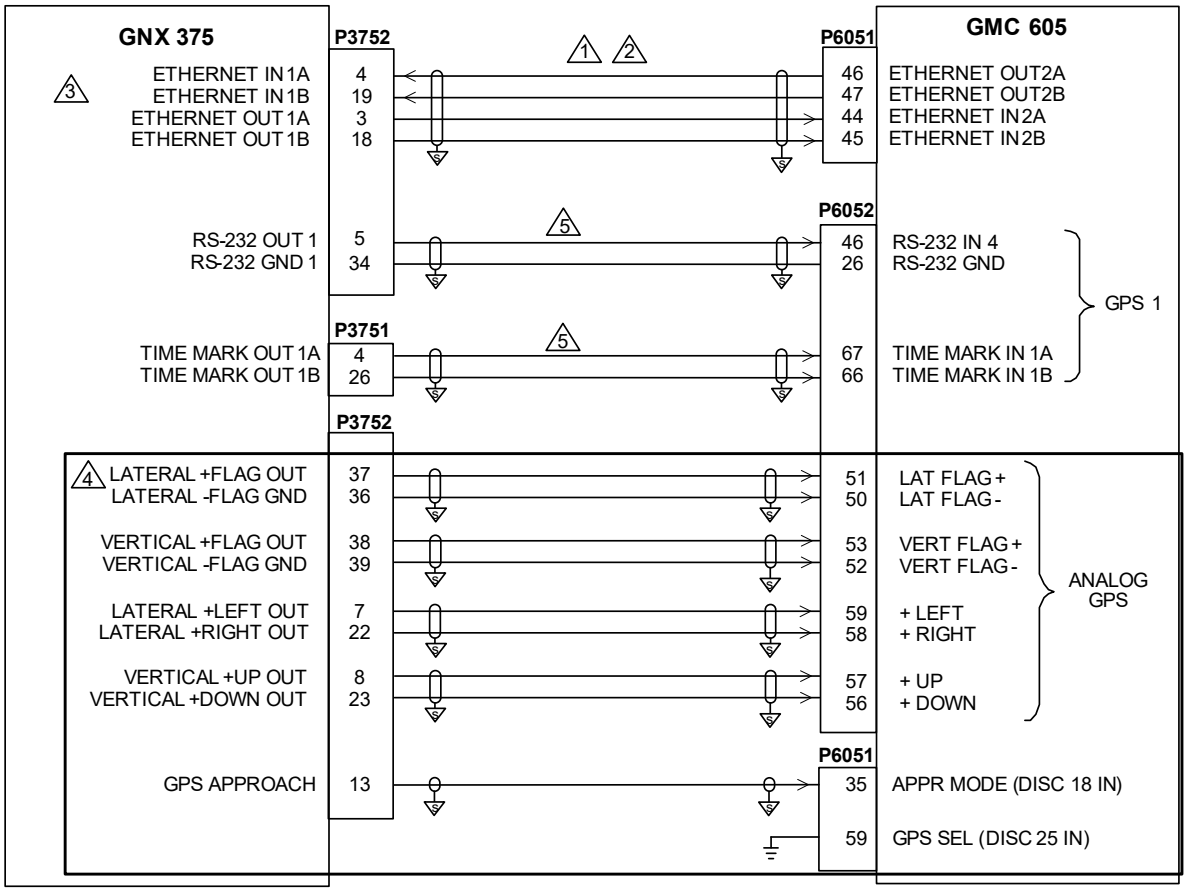
Figure 11-19 G5 ADI Interconnect



NOTES

1. REFER TO *G5 ELECTRONIC FLIGHT DISPLAY INSTALLATION MANUAL FOR NON-CERTIFIED AIRCRAFT* FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PIN-OUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY. CAN BUS MUST BE TERMINATED IN ACCORDANCE WITH *G5 ELECTRONIC FLIGHT DISPLAY INSTALLATION MANUAL FOR NON-CERTIFIED AIRCRAFT*.
2. THE GFC 500 SYSTEM REQUIRES THE G5 TO BE INSTALLED AS A PREREQUISITE. REFER TO *G5 ELECTRONIC FLIGHT DISPLAY INSTALLATION MANUAL FOR NON-CERTIFIED AIRCRAFT* FOR ADDITIONAL INFORMATION.

Figure 11-20 G5 HSI Interconnect



NOTES

1. USE AIRCRAFT GRADE CATEGORY 5 ETHERNET CABLE. REFER TO SECTION 3.4 FOR PART NUMBERS.

2. IF INSTALLATION HAS AN EXISTING NAV1/NAV2 SWITCH, WITHOUT A GARMIN GDU OR EFIS, DO NOT CONNECT THE ETHERNET (HSDB) WIRING TO THE GNX 375.

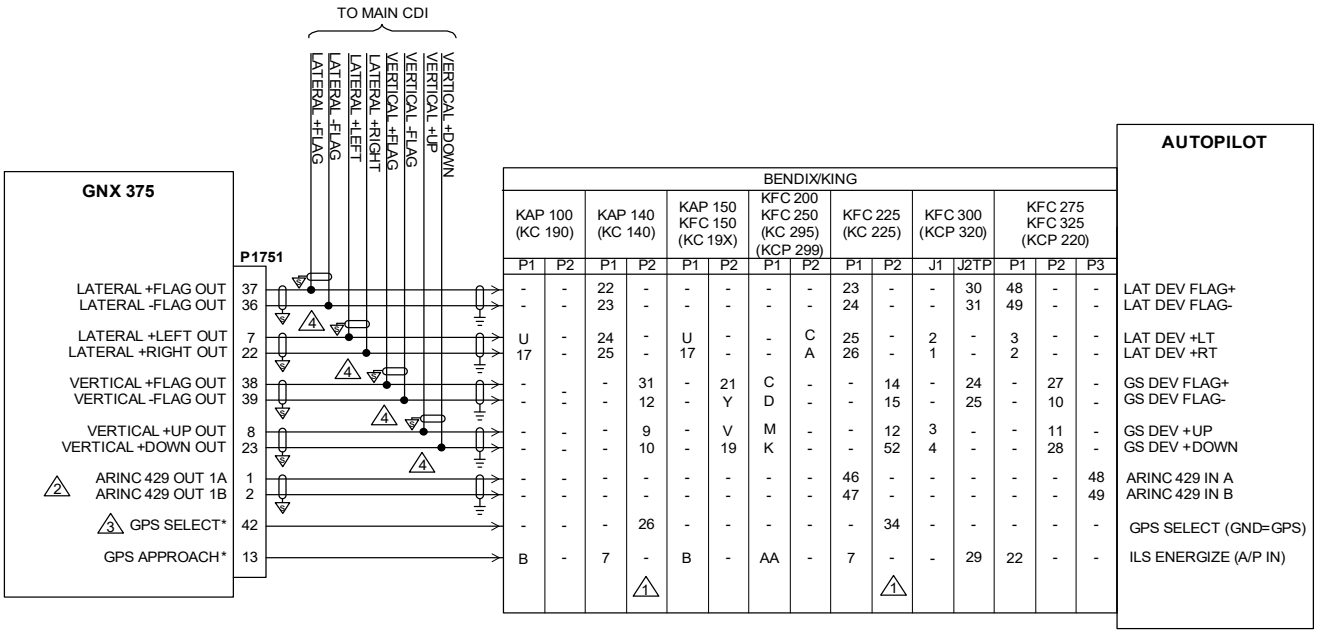
3. IF A SINGLE OR DUAL GPS 175 INSTALLATION WITHOUT A GARMIN GDU, ONLY CONNECT THE ETHERNET (HSDB) WIRING TO GNX 375 #1.

4. ONLY REQUIRED IF INSTALLATION IS A SINGLE OR DUAL GNX 375 INSTALLATION WITHOUT A GARMIN GDU. THE ANALOG GPS CONNECTIONS MUST BE USED BETWEEN THE GMC 605 AND GNX 375 #1. THE GFC 600 WILL ONLY COUPLE TO NAVIGATION GUIDANCE FROM GNX 375 #1.

5. IT IS ACCEPTABLE TO SPLICE WIRES TO EXISTING WIRING.

6. REFER TO *GMC 605 INSTALLATION MANUAL* FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

Figure 11-21 GFC 600/GMC 605 Interconnect



NOTES

1. THE GPS SELECT OUTPUT MUST BE CONNECTED TO THE GPS SELECT INPUT OF THE AUTOPILOT. THIS OUTPUT IS GROUNDED IN GPS MODE, UNLESS A GPS APPROACH IS ACTIVE AND THE PILOT HAS ENABLED THE A/P APPROACH OUTPUTS. THIS WILL ALLOW THE AUTOPILOT TO CAPTURE THE GPS GLIDEPATH WHILE THE CDI IS DISPLAYING GPS INFORMATION.

2. BOTH GAMA 429 CONFIGURATIONS OF THE GPS ARINC 429 OUTPUT PROVIDE DATA REQUIRED BY THE AUTOPILOT FOR GPSS.

3. REFER TO SECTION 10.9 FOR THE CORRECT GPS SELECT CONFIGURATION SETTINGS. FOR THE BENDIX/KING
KFC 225 AND KAP 140 AUTOPILOTS, THE GPS SELECT CONFIGURATION SETTING MUST BE SET TO “PROMPT.”

4. SPLICE MUST BE PERFORMED WITHIN 6.0 INCHES OF CONNECTOR BACKSHELL (WITHIN CONNECTOR BACKSHELL IS PREFERRED).

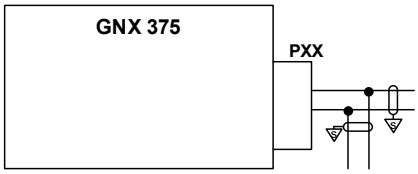
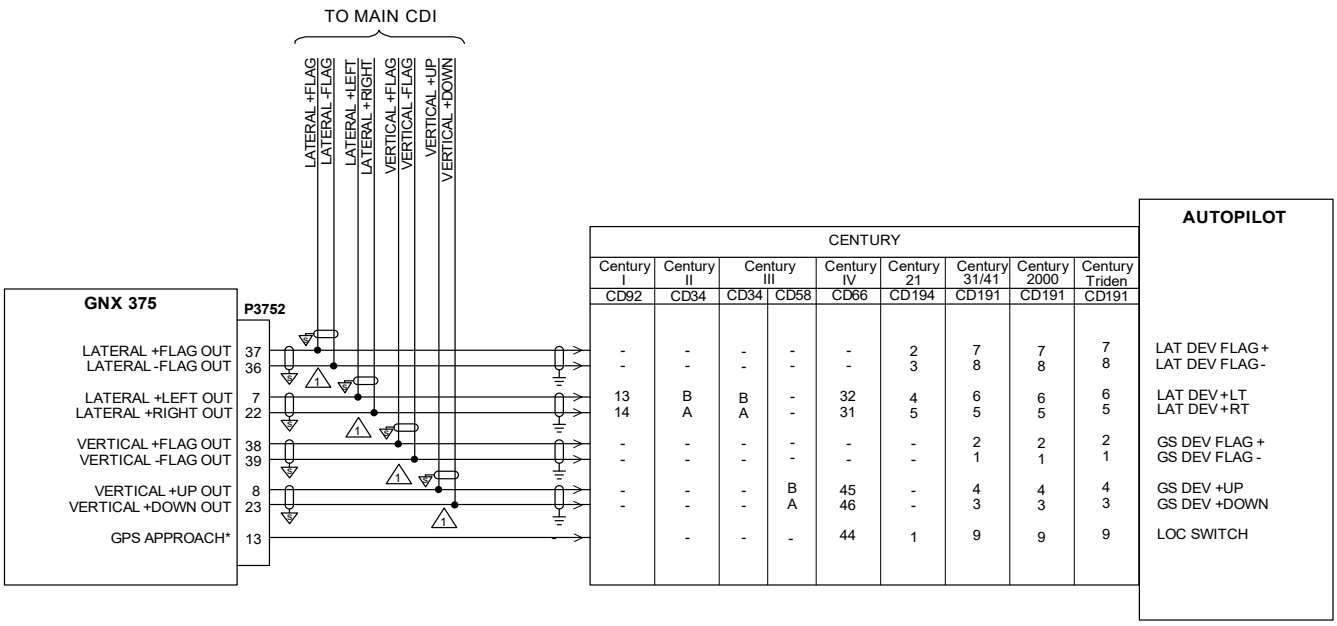


Figure 11-22 Bendix King Autopilots Interconnect



NOTES

1. SPLICE MUST BE PERFORMED WITHIN 6.0 INCHES OF CONNECTOR BACKSHELL (WITHIN CONNECTOR BACKSHELL IS PREFERRED).

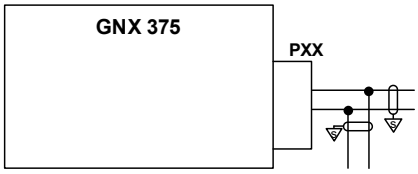
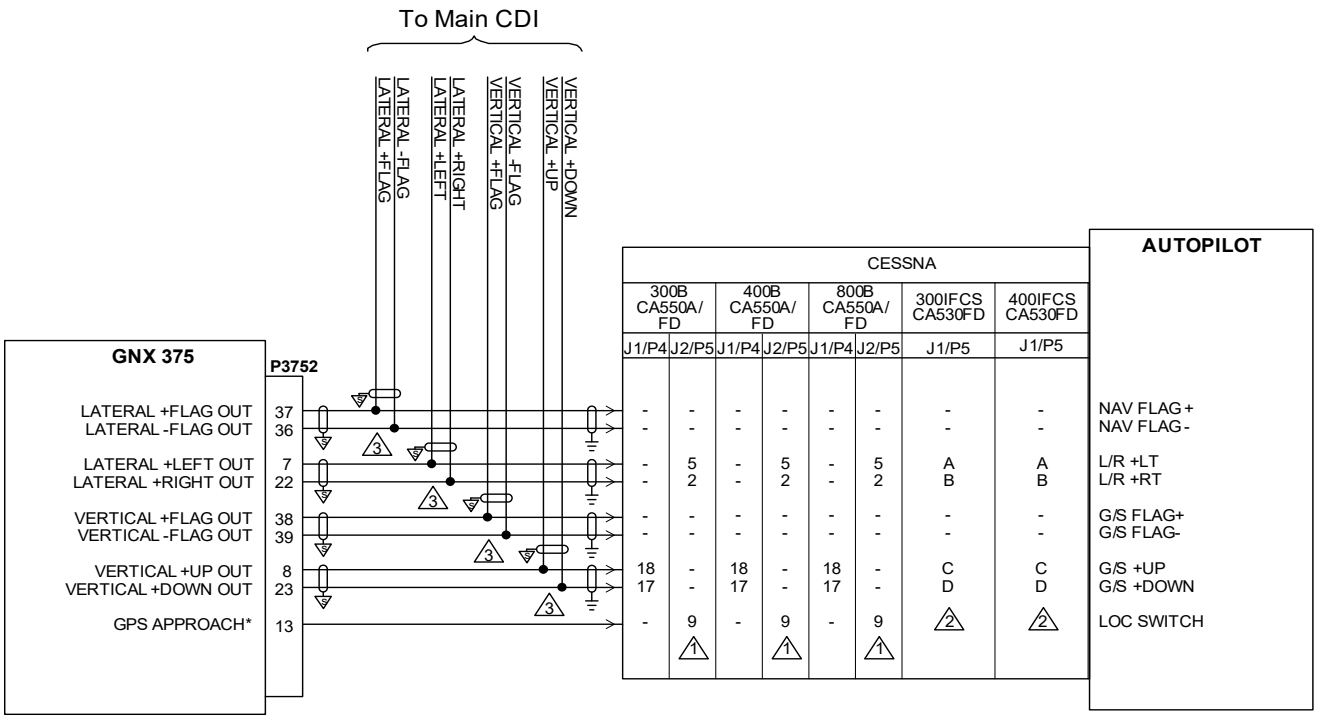


Figure 11-23 Century Autopilots Interconnect



NOTES

1. THE GPS APPROACH DISCRETE OUTPUT MUST ALSO BE CONNECTED TO THE BACK COURSE RELAY - REFER TO MANUFACTURER'S DOCUMENTATION FOR ADDITIONAL DETAILS.

2. REFER TO MANUFACTURERS DOCUMENTATION FOR CORRECT CONNECTION OF THE VOR/LOC RELAY USING AN ACTIVE-LOW INPUT.

3. SPLICE MUST BE PERFORMED WITHIN 6.0 INCHES OF CONNECTOR BACKSHELL (WITHIN CONNECTOR BACKSHELL IS PREFERRED).

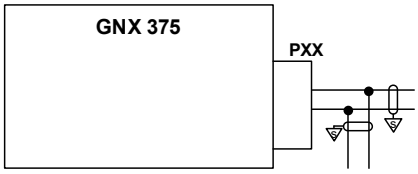
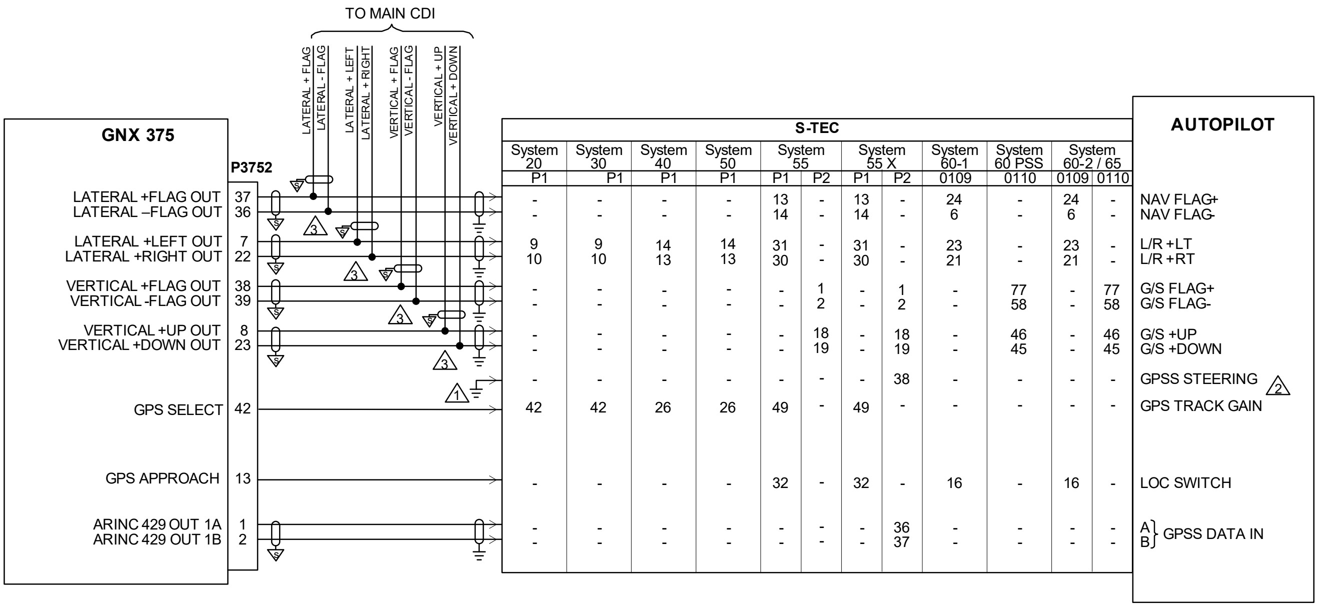


Figure 11-24 Cessna Autopilots Interconnect



NOTES

1. WHEN USED IN CONJUNCTION WITH A NAV RADIO, THESE PINS MUST BE OPEN WHEN THE NAV RADIO IS THE NAVIGATION SOURCE BEING USED BY THE AUTOPILOT.

2. GPS TRACK GAIN IS USED TO IMPROVE TRACKING WHEN GPS IS SELECTED ON THE CDI AND THE AUTOPILOT IS IN ANALOG NAVIGATION MODE (AND ROLL STEERING IS NOT ENGAGED).

3. SPLICE MUST BE PERFORMED WITHIN 6.0 INCHES OF CONNECTOR BACKSHELL (WITHIN CONNECTOR BACKSHELL IS PREFERRED).

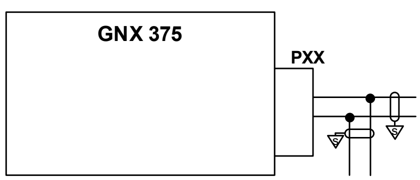
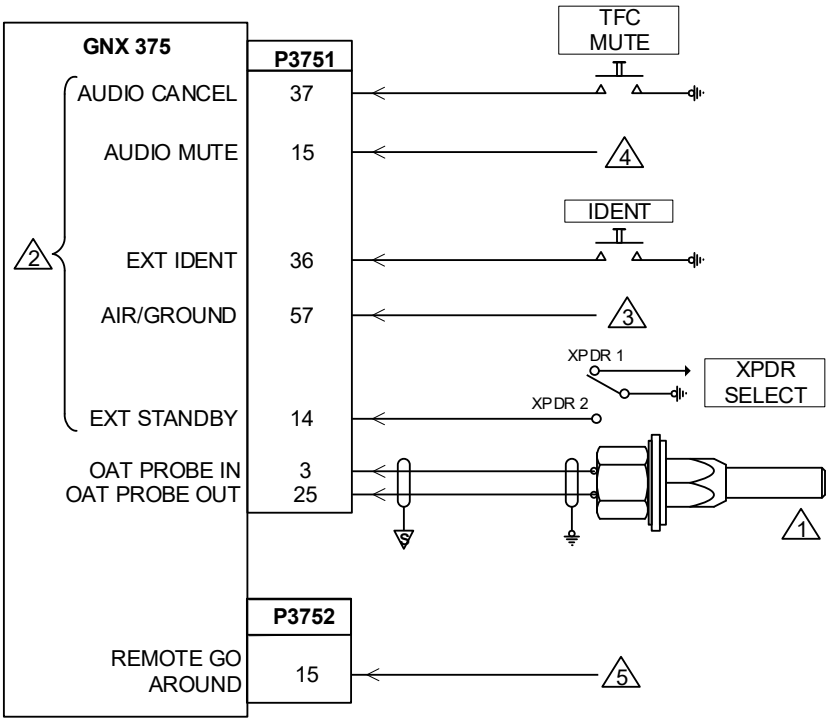


Figure 11-25 S-TEC Autopilots Interconnect



NOTES

1. OUTSIDE AIR TEMPERATURE PROBE WITH 1 MICRO-AMP PER DEGREE KELVIN RESPONSE. SUITABLE MODELS ARE: EDMO 655 AND DAVTRON C307PS.
2. REFER TO SECTION 5.2 FOR DISCRETE I/O PINS.
3. THE AIR/GROUND INPUT CAN BE USED TO CONTROL AIR/GROUND STATUS. THE INPUT SENSE CONFIGURATION IS DESCRIBED IN SECTION 5.2.5.
4. AUDIO MUTE MUST BE WIRED TO HIGHER PRIORITY ALERT DEVICES, SUCH AS A TAWS ENABLED DEVICE.
5. CONNECT TO EXISTING SWITCH.

Figure 11-26 Switches and OAT Probe Interconnect

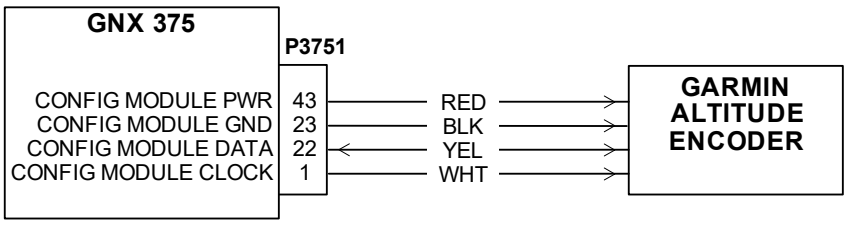
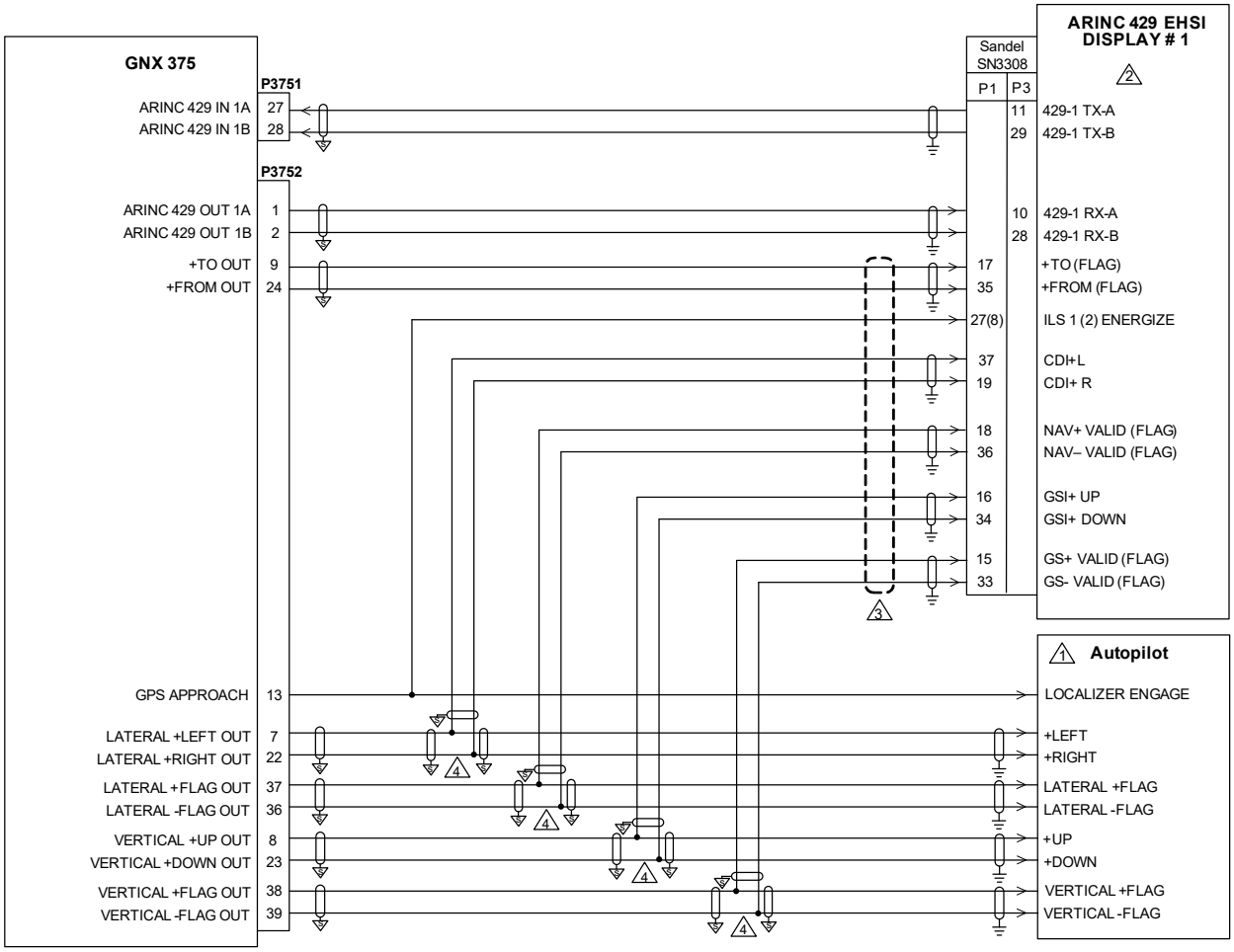


Figure 11-27 Pressure Sensor Interconnect



NOTES

1. AUTOPILOT SHOWN FOR REFERENCE ONLY. REFER TO THE APPROPRIATE AUTOPILOT INTERCONNECT DIAGRAM.

2. REFER TO SECTION 10.3 FOR CONFIGURATION SETTINGS.

3. FOR SN3308 SOFTWARE VERSIONS PRIOR TO 2.30, ANALOG CONNECTIONS TO SN3308 ARE REQUIRED TO ALLOW VERTICAL GUIDANCE TO BE DISPLAYED FOR GPS APPROACHES. FOR SOFTWARE VERSION 2.30 AND LATER, THESE ANALOG CONNECTIONS ARE NOT REQUIRED.

4. SPLICE MUST BE PERFORMED WITHIN 6.0 INCHES OF CONNECTOR BACKSHELL (WITHIN CONNECTOR BACKSHELL IS PREFERRED).

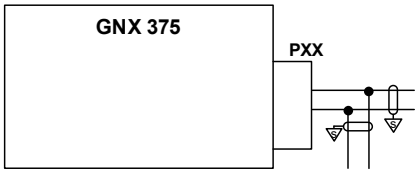
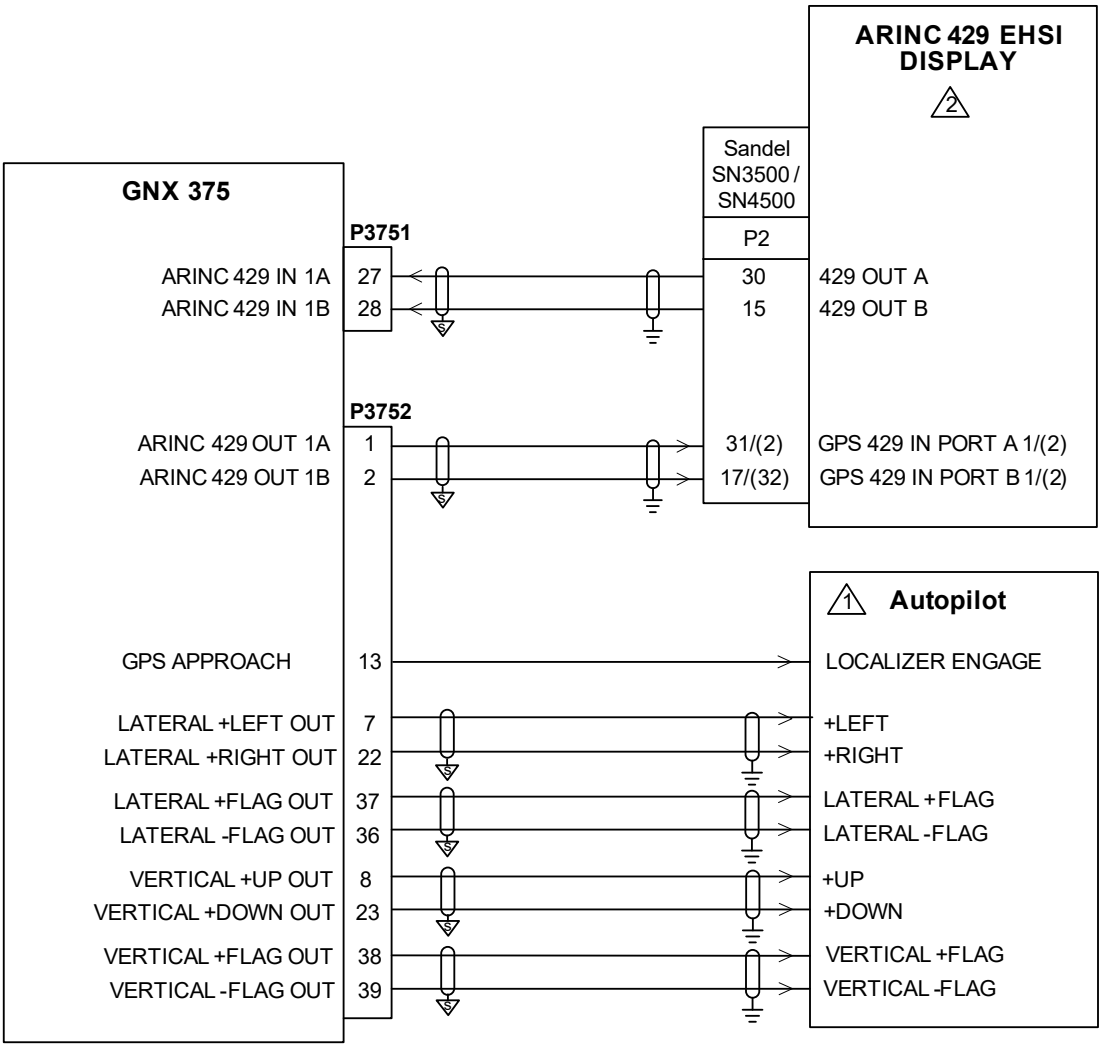


Figure 11-28 Sandel SN3308 Interconnect



NOTES

1. AUTOPILOT SHOWN FOR REFERENCE ONLY. REFER TO THE APPROPRIATE AUTOPILOT INTERCONNECT DIAGRAM.

2. SANDEL SN3500/SN4500 SETUP ITEMS:

LNAV 1/2 SELECT: GNS 530 (ARINC)	ANNUN:	SERIAL
	LAT DV:	SERIAL
	VERT DV:	SERIAL
SN 3500	VERT ENA:	SERIAL
SN 4500		VERT DV FLAG

Figure 11-29 Sandel SN3500/4500 Interconnect

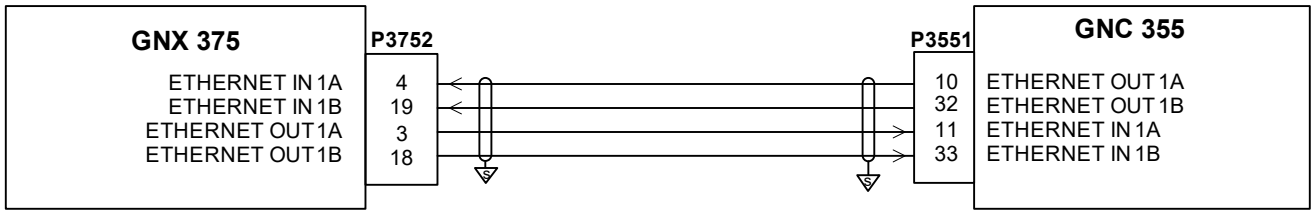


Figure 11-30 GNX 375/GNC 355 Crossfill Interconnect

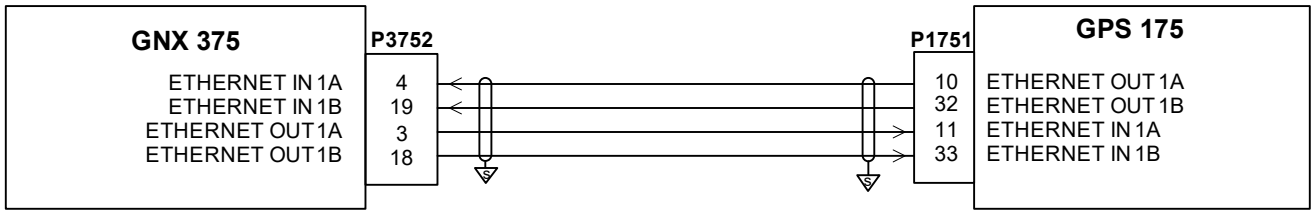
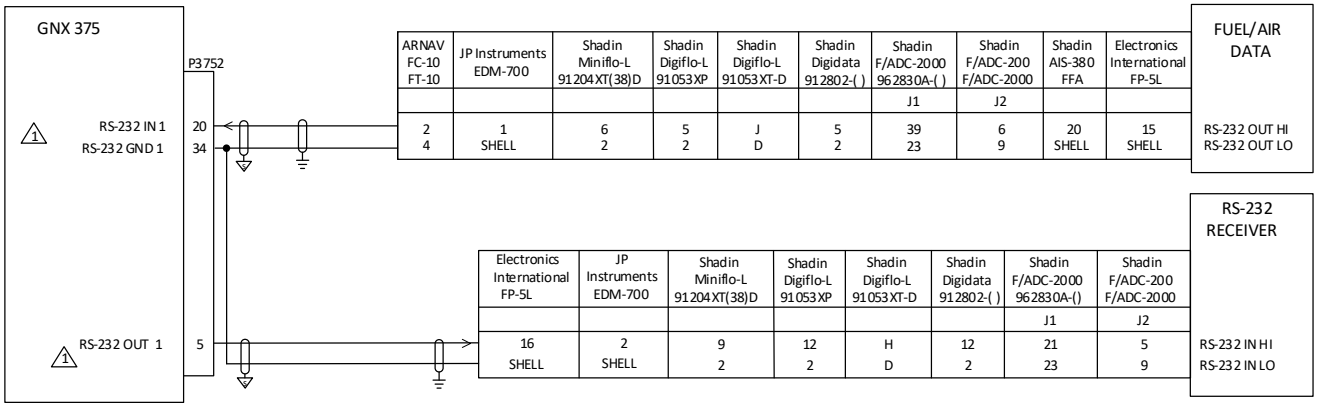


Figure 11-31 GNX 375/GNC 175 Crossfill Interconnect



NOTES

1. IF THE SPECIFIED RS-232 PORT ON THE GNX 375 IS ALREADY USED, PORT 2 MAY BE CONNECTED.

2. WHEN FUEL FORMAT IS SELECTED, AVIATION OUTPUT 1 IS AUTOMATICALLY SELECTED FOR THAT PORT.

Figure 11-32 RS-232 Interconnect

12 CS-ACNS Compliance Matrix

12.1 Elementary Surveillance (ELS)

Table 12-1 ELS

CS-ACNS SECTION	CS-ACNS ITEM DESCRIPTION	COMPLIANCE SUMMARY
CS ACNS.D.ELS.001 Applicability	Provided that the differences listed in Appendix D have also been addressed, then previous compliance declarations with JAA TGL 13 Revision1 (Certification of Mode S Transponder Systems for Elementary Surveillance) supplemented with the additional assessments is another Acceptable Means of Compliance.	Not applicable, GNX 375 is a new product that does not have previous compliance declarations with JAA TGL 13 Revision 1.
CS ACNS.D.ELS.010 Transponder Characteristics	a) The transponder(s) is (are) an approved level 2 or greater Mode S transponder(s) with Elementary Surveillance and Surveillance Identifier (SI) capability.	The GNX 375 is a TSO Class 1 Level 2 transponder with Level C (Major) Failure classification with SI mode capability.
	b) The transponder(s) of aircraft that have ACAS II installed is (are) ACAS compatible.	The GNX 375 does not support an interface with an ACAS II system therefore the Resolution Advisory (BDS 3,0) is transmitted as all zeros.
	c) The peak pulse power available at the antenna end of the transmission line of the transponder is more than 125 W (21 dBW) and not more than 500 W (27 dBW) for aircraft that operate at altitudes exceeding 4,570 m (15 000 ft) or with a maximum cruising speed exceeding 90 m/s (175 knots).	The GNX 375 meets the minimum and maximum transmit power level, 125 W (21 dBW) and 500 W (27 dBW), respectively, when installed according to this installation manual.
CS ACNS.D.ELS.010 Transponder Characteristics (continued)	d) The peak pulse power available at the antenna end of the transmission line of the transponder is more than 70 W (18.5 dBW) and not more than 500 W (27 dBW) for aircraft operating at or below 4,570 m (15000 ft) with a maximum cruising airspeed of 90 m/s (175 knots) or less.	The GNX 375 is a Class 1 transponder meeting the higher requirements identified in ACNS.D.ELS.010.c, when installed according to this installation manual.

CS-ACNS SECTION	CS-ACNS ITEM DESCRIPTION	COMPLIANCE SUMMARY
CS ACNS.D.ELS.015 Data Transmission	a) The surveillance system provides the following data in the Mode S replies:	The GNX 375 provides the following:
	1. The Mode A Code in the range 0000 to 7777 (Octal).	1. Mode A code provided in DF=5 and 21 replies. Mode A Code in the range 0000 to 7777 as entered through the touch panel user interface.
	2. The pressure altitude corresponding to within plus or minus 38 m (125 ft), on a 95 per cent probability basis, with the pressure-altitude information (referenced to the standard pressure setting of 1013.25 hectopascals), used on board the aircraft to adhere to the assigned flight profile. The pressure altitude ranges from minus 300 m (1 000 ft) to the maximum certificated altitude of aircraft plus 1,500 m (5,000 ft).	2. Altitude is reported in DF=4 and 20 replies. The transponder transmits altitude in 100ft increments from -1000 to 62,700ft or 25ft increments from -1000 to 50,175ft depending on the source data.
	3. On-the-ground status information.	3. CA field in DF=11 or FS field in DF=4, 5, 20, and 21 replies includes airborne state. The GNX 375 automatically transitions the aircraft state from airborne to ground-borne and report surface mode broadcasting ground-only information such as aircraft length and width. If the aircraft airborne state is unknown, it will report AIRBORNE with additional details in DF 11 with CA code of 6 or 7.

CS-ACNS SECTION	CS-ACNS ITEM DESCRIPTION	COMPLIANCE SUMMARY
CS ACNS.D.ELS.015 Data Transmission (continued)	4. The Aircraft Identification as specified in Item 7 of the ICAO flight plan or the aircraft registration.	4. The GNX 375 provides BDS register 20 (Aircraft Identification) as configured by the installer, or changed by the flight crew via touch panel user interface. BDS register 21 (Aircraft Registration) is provided as a constant message.
	5. Special Position Indication (SPI).	5. FS (Flight Status) field in DF=4, 5, 20, and 21 replies includes SPI/IDENT indication. SPI/IDENT is commanded by flight crew via discrete input or touch panel user interface.
	6. Emergency status (Emergency, Radio communication failure, Unlawful interference).	6. Emergency status is reported in DF=5 and 21 replies.
	7. The data link capability report.	7. BDS register 10 (Data Link Capability Report) is provided.
	8. The common usage GICB capability report.	8. BDS register 17 (Common Usage Ground Initiated Comm-B Capability Report) is provided.
	9. The ICAO 24-bit aircraft address.	9. ICAO 24-bit aircraft address is provided in DF=11 squitters.
	10. Aircraft that have ACAS II installed provide the ACAS active resolution advisory report.	10. Resolution Advisory (BDS 3,0) is transmitted as all zeros, as the GNX 375 does not support an interface with ACAS II.
	b) All other data transmitted is verified.	The installation data requires a transponder / ADS-B test to be run IAW Part 43 applicable regulatory tests.
	1. If the system transmits one or more additional downlink airborne parameters in addition to those listed in paragraph (a), then the relevant sub specifications of CS ACNS.D.EHS.015 are also complied with.	Not applicable, GNX 375 does not transmit additional downlink airborne parameters that are relevant in ACNS.D.EHS.015.

CS-ACNS SECTION	CS-ACNS ITEM DESCRIPTION	COMPLIANCE SUMMARY
CS ACNS.D.ELS.015 Data Transmission (continued)	2. If the system transmits additional parameters on the extended squitter and if their full compliance with CS ACNS.D.ADSB has not been verified, as a minimum the aircraft identification, pressure altitude, ICAO 24-bit aircraft address is identical to those transmitted in the Mode S replies. Additionally the position and velocity quality indicators reports the lowest quality.	The installation data requires a transponder / ADS-B test to be run IAW Part 43 applicable regulatory tests.
CS ACNS.D.ELS.020 On-the-Ground Status Determination	a) The on-the-ground status is not set by a manual action.	The GNX 375 software's air/ground state will be automatically determined based on emitter category, remote air/ground state, ground speed, GPS track, airspeed, squat switch, and height above terrain when possible. The on-the-ground status cannot be set by manual action.
	b) If automatic determination of the on-the-ground status is not available, the on-the ground status is set to airborne.	The GNX 375 will report the airborne state in FS fields 4, 5, 20, 21 and the CA field of DF 11. Furthermore, DF 11 provides the additional capability of identifying if the aircraft didn't know the air/ground state by transmitting a CA code of 6 or 7 which still translates to an AIRBORNE state.
CS ACNS.D.ELS.025 Altitude Source	a) The reported pressure altitude is obtained from an approved source.	This installation manual provides approved altitude interfaces.
	b) The altitude resolution is equal to or less than 30.48 m (100 ft.).	When the unit retrieves valid pressure altitude data, the unit sets the altitude precision of the system based on the data source and the precision field, with a worst-case resolution of 100ft.
	c) The altitude source connected to the active transponder is the source being used to fly the aircraft.	The GNX 375 provides the option to utilize the Garmin Altitude Encoder which interfaces to the existing aircraft static system and provides the altitude data via I2C to the GNX 375. It is required to conduct a transponder test upon completion of the installation, which also requires an altitude inspection to compare the input altitude to the aircraft altitude and broadcasted altitude.

CS-ACNS SECTION	CS-ACNS ITEM DESCRIPTION	COMPLIANCE SUMMARY
CS ACNS.D.ELS.030 Flight Deck Interface	a) A means is provided:	The GNX 375 provides the following:
	1. To select Mode A Code, including emergency indicators.	1. Mode A code entry on the GNX 375.
	2. To initiate the IDENT (SPI) feature.	2. Ident can be activated via front panel key, discrete input, or compatible control device.
	3. For an aircraft identification to be inserted by the flight crew if the aircraft uses variable aircraft identification.	3. Flight ID is entered from the transponder main page.
	4. To notify the flight crew when the transmission of pressure altitude information has been inhibited, if a means to inhibit the transmission of pressure altitude is provided.	4. The GNX 375 provides a means to inhibit the transmission of pressure altitude. The means is through selection of ON mode or Standby mode. The flight crew is notified when transmission of pressure altitude is inhibited, via the annunciation of ON or Standby mode on the unit.
	5. To select the transponder to the "standby" or "OFF" condition.	5. The GNX 375 is equipped with an OFF and STBY key.
	6. To indicate the non-operational status or failure of the transponder system without undue delay and without the need for flight crew action.	6. Failure messages are provided on the display. Failure messages are documented in the maintenance manual.
	7. To display the selected Mode A code to the flight crew.	7. Mode A codes are displayed and entered from the transponder main page.
	8. To display the aircraft identification to the flight crew.	8. Flight ID is displayed on the transponder main page.
CS ACNS.D.ELS.030 Flight Deck Interface (continued)	b) Input which is not intended to be operated in flight, is not readily accessible to the flight crew.	The GNX 375 has a Ground Test mode, which requires a unit power cycle while depressing a soft key.
CS ACNS.D.ELS.040 Integrity	The Mode S ELS airborne surveillance system integrity is designed commensurate with a "minor" failure condition.	Mode S operations are classified as a Minor failure classification for the GNX 375. The transponder is designed to meet design assurance level C which exceeds the "minor" failure classification for Mode S ELS.

CS-ACNS SECTION	CS-ACNS ITEM DESCRIPTION	COMPLIANCE SUMMARY
CS ACNS.D.ELS.045 Continuity	The Mode S ELS airborne surveillance system continuity is designed to an allowable qualitative probability of "remote."	The GNX 375 has a design assurance level of C "remote" for listed functions. The GNX 375 has a maximum ELS system failure rate of no less than 5000 hours using the MTBF rates, or 2.0E-04 failure rate.
CS ACNS.D.ELS.050 Dual/multiple Transponder Installation	If more than one transponder is installed, simultaneous operation of transponders is prevented.	Dual GNX 375 installations are not supported.
CS ACNS.D.ELS.055 ICAO 24-bit Aircraft Address	The ICAO 24-bit aircraft address assigned by the competent authority is correctly implemented on each transponder.	The ICAO address is programmed as part of the transponder configuration by the installer and verified as part of the transponder configuration and return to service procedures.
CS ACNS.D.ELS.060 Antenna Installation	a) The installed antenna(s) has (have) a resulting radiation pattern which is (are) vertically polarized, omni-directional in the horizontal plane, and has (have) sufficient vertical beam width to ensure proper system operation during normal aircraft maneuvers.	Transponder antenna must be compliant to TSO 112( ), TSO C66( ) or C74( ).This installation manual provides a list of compatible antennas.
	b) Antenna(s) is/are located such that the effect on the far field radiation pattern(s) by the aircraft structure are minimized.	The installation of the antennas is not covered by this installation manual, however, guidance for the antenna locations is provided in this installation manual.
CS ACNS.D.ELS.065 Antenna Diversity	Aircraft with a maximum certified take-off mass in excess of 5700 kg or a maximum cruising true airspeed capability, under International Standard Atmosphere (ISA) conditions, in excess of 130 m/s (250 knots) operates with an antenna diversity installation.	The GNX 375 transponders are not diversity units and do not meet this requirement.

12.2 ADS-B

Table 12-2 ADS-B

CS-ASNS SECTION	CS-ACNS DESCRIPTION	COMPLIANCE SUMMARY
CS ACNS.D.ADSB.001 Applicability	This section provides standards for 1090 MHz Extended Squitter (ES) ADS-B Out installations.	Information only, no compliance statement necessary.
CS ACNS.D.ADSB.010 ADS-B Out System Approval	The equipment contributing to the ADS-B Out function is approved.	The GNX 375 is a TSO Class 1 Level 2 transponder with Level C (Major) Failure classification with SI mode capability. They are 1090ES capable transponders that require a valid pressure altitude source, a valid GPS source, and meet ELS requirements.
CS ACNS.D.ADSB.020 ADS-B Out Data Parameters	a) The ADS-B Out system provides the following minimum set of data parameters:	
	1. Aircraft Identification.	1. Supported in BDS (0,8) Aircraft Identification and Category, and sourced from the operator via the GNX 375, a compatible control device, or transponder configuration settings. Priority: (1) Flight ID, (2) Aircraft Registration.

CS-ASNS SECTION	CS-ACNS DESCRIPTION	COMPLIANCE SUMMARY
CS ACNS.D.ADSB.020 ADS-B Out Data Parameters (continued)	2. Mode A Code.	2. Mode A code is supported in BDS (6,1) and entered from the transponder main page.
	3. ICAO 24-bit aircraft address.	3. All DF=17 squitter transmissions provide the ICAO address. Aircraft address data is sourced from transponder internal configuration settings.
	4.	4.
	a. Airborne Horizontal Position - Latitude and Longitude.	a. Supported in BDS (0,5) Airborne Position.
	b. Airborne Navigation Integrity Category: NIC.	b. Supported in BDS (0,5) Airborne Position.
	c. Airborne/Surface Navigation Accuracy Category for Position: NACp.	c. Supported in BDS (6,2) Target State and Status and (6,5) Aircraft Operational Status.
	d. Airborne/Surface Source Integrity Level: SIL.	d. Supported in BDS (6,2) Target State and Status and (6,5) Aircraft Operational Status.
	e. Airborne/Surface System Design Assurance: SDA.	e. Supported in BDS (6,5) Aircraft Operational Status.

CS-ASNS SECTION	CS-ACNS DESCRIPTION	COMPLIANCE SUMMARY
CS ACNS.D.ADSB.020 ADS-B Out Data Parameters (continued)	5. Pressure Altitude (incl. NICbaro).	5. Supported in BDS (0,5) Airborne Position. An encoding altimeter or other altitude source provides this data to the transponder. NICbaro is provided in BDS register (6,2) and (6,5).
	6. Special Position Identification (SPI).	6. Supported in BDS (6,5) Aircraft Operational Status. SPI data is sourced from transponder internal IDENT status. The IDENT function is controlled via the GNX 375 or an approved control source.
	7.	7.
	a. Emergency Status.	a. Supported in BDS (6,1) Emergency/Priority Status.
	b. Emergency Indication.	b. Data is sourced from current Mode A code status. The Mode A code is entered and displayed via the GNX 375 or a compatible control device.
	8. 1090 ES Version Number.	8. Supported in BDS (6,5) Aircraft Operational Status, Bits 41-43 are populated with "2."
	9.	9.
	a. Airborne velocity over Ground - (East/West and North/South.	a. Supported in BDS (0,9) Airborne Velocity Subtype 1&2.
	b. Airborne/Surface Navigation Accuracy Category for Velocity: NACv.	b. Supported in BDS (0,9) Airborne Velocity Subtype 1&2.
	10. Emitter Category.	10. Supported in BDS (0,8) Extended Squitter Identification and data source from transponder configuration.
	11. Vertical Rate.	11. Supported in BDS (0,9) Airborne Velocity.
	12.	12.

CS-ASNS SECTION	CS-ACNS DESCRIPTION	COMPLIANCE SUMMARY
CS ACNS.D.ADSB.020 ADS-B Out Data Parameters (continued)	a. Surface Horizontal Position - Latitude and Longitude.	a. Supported in BDS (0,6) Surface Position.
	b. Surface Navigation Integrity Category: NIC.	b. Supported in BDS (0,6) Surface Position and (6,5) Aircraft Operational Status. When the GPS mode is SBAS Nav, the GNX 375 limits the radius of containment to greater than or equal to 25 meters, otherwise it limits this value to greater than or equal to 75 meters.
	13. Surface Ground Track.	13. Supported in BDS (0,6) Surface Position.
	14. Movement (surface ground speed).	14. Supported in BDS (0,6) Surface.
	15. Length/width of Aircraft.	15. Supported in BDS (6,5) Aircraft Operational Status Subtype 1. Data sourced from transponder configuration.
	16. GPS Antenna Longitudinal Offset.	16. Supported in BDS (6,5) Aircraft Operational Status Subtype 1. Data sourced from transponder configuration.
	17.	17.
	a. Geometric Altitude.	a. Supported in BDS (0,9) Airborne Velocity.
	b. Geometric Altitude Quality: GVA.	b. Supported in BDS (6,5) Aircraft Operational Status Subtype 0.
	Where available in a suitable format, the ADS-B Out system provides the following data parameters:	
	1. Selected Altitude.	1. Supported in BDS (6,2) Target State and Status Information.
	2. Barometric Pressure Setting.	2. Supported in BDS (6,2) Target State and Status Information.
	3. ACAS Resolution Advisory.	3. The GNX 375 does not interface with ACCAS II units and thus does not support ACAS II resolution advisory data.

CS-ASNS SECTION	CS-ACNS DESCRIPTION	COMPLIANCE SUMMARY
CS ACNS.D.ADSB.025 Provision of Data	a) All data provided by the ADS-B Out system comes from approved sources.	GNX 375 contains an approved GPS source.
	b) The data transmitted by the ADS-B Out system originates from the same data source as used in the transponder replies to Mode S interrogations.	The ADS-B Out system is integrated in the GNX 375. ADS-B related BDS registers are populated with the same DAP parameters used to populate transponder registers.
	c) When a data quality indication is required, it is provided to the ADS-B transmit unit together with the associated data parameter and it expresses the actual quality of the respective data as valid at the time of applicability of the measurement.	Data quality parameters are only used for data parameters from the same source interface (e.g., the same A429 channel). An ADS-B Fail indication is provided when the quality of the GPS position source is below the allowable tolerance. In addition, other data parameters will only be processed when their associated validity flags (if applicable) indicate the parameter is valid.
CS ACNS.D.ADSB.030 ADS-B Transmit Unit Approval	The ADS-B transmit unit is approved and it is integrated in the Mode S transponder.	The GNX 375 has TSOA and meets TSO-C112e and TSO-C166b with granted deviations.
CS ACNS.D.ADSB.035 ICAO 24-bit Aircraft address	The ICAO 24 bit aircraft address is implemented as specified in CS ACNS.D.ELS.055.	The ICAO address is programmed as part of the transponder configuration by the installer and verified as part of the transponder configuration and return to service procedures.
CS ACNS.D.ADSB.040 Antenna Diversity	The ADS-B transmit unit employs antenna diversity under the same conditions as specified in CS ACNS.D.ELS.065.	The GNX 375 transponder is not a diversity unit and does not meet this requirement.
CS ACNS.D.ADSB.045 Antenna Installation	The antenna is installed as specified in CS ACNS.D.ELS.060.	Transponder antenna must be compliant to TSO-C66( ), TSO-C74( ), or TSO-C112( ). Antenna installations are not covered in the design/installation data however, minimum installation requirements are provided under the antenna installation guidance in section 3.1.2 and section 6.5 of this installation manual.
CS ACNS.D.ADSB.050 Transmit power	The ADS-B transmit unit has a peak transmit power as specified in CS ACNS.D.ELS.010(c);(d).	The GNX 375 meets the minimum and maximum transmit power level, 125 W (21 dBW) and 500 W (27 dBW), respectively, when installed according to this installation manual.

CS-ASNS SECTION	CS-ACNS DESCRIPTION	COMPLIANCE SUMMARY
CS ACNS.D.ADSB.055 Simultaneous Operation of ADS-B Transmit Units	If more than one ADS-B transmit unit is installed, simultaneous operation of the transmit systems is prevented.	Dual GNX 375 installations are not supported.
CS ACNS.D.ADSB.060 On-the-ground status determination	a) The on-the-ground status is determined and validated by the ADS-B Out system.	The GNX 375 automatically transitions the aircraft mode from airborne to ground-borne and report surface mode, broadcasting ground-only information such as aircraft length and width based on an algorithm within the GNX 375 ADS-B system.
	b) The on-the-ground status is not set by a manual action.	The GNX 375 software's air/ground state will be automatically determined based on emitter category, remote air/ground state, ground speed, GPS track, airspeed, squat switch, and height above terrain when possible. The on-the-ground status cannot be set by manual action.
CS ACNS.D.ADSB.070 Horizontal Position and Velocity Data Sources	a) The horizontal position is derived from GNXS data.	Horizontal position data will be derived from approved internal GPS sources.
	b) The GNSS receiver based horizontal position and velocity data source is approved and performs, as a minimum, horizontal position receiver autonomous integrity monitoring (RAIM) and fault detection and exclusion (FDE).	TSO-C146e Class Gamma 3 is met by internal GPS.
	c) Horizontal velocity data stems from the same source as horizontal position data.	Horizontal velocity data is ground speed and N/S E/W velocity provided in BDS register (0,6) when on ground and BDS register (0,9) when airborne. Both position and velocity are used from the same selected position source.
CS ACNS.D.ADSB.080 Data Sources as defined by Mode S Elementary and Enhanced Surveillance	a) The data source requirements as defined for in section 2 and 3 of this subpart, are applicable.	Refer to table 12-1 of this installation manual for the GNX 375 ELS compliance matrices for Mode S and ELS data. GNX 375 is not an EHS capable unit.

CS-ASNS SECTION	CS-ACNS DESCRIPTION	COMPLIANCE SUMMARY
CS ACNS.D.ADSB.085 Geometric Altitude	a) Geometric Altitude is provided by the horizontal position and velocity source (see CS ACNS.D.ADSB.070).	The GNX 375 sources Geometric Altitude from the internal GPS source, which is also the horizontal position and velocity source.
	b) Geometric Altitude is transmitted as height above WGS-84 ellipsoid.	The geometric altitude from the approved position sources is provided as the height above the WGS-84 ellipsoid in the APM (BDS register 0,5) when type codes 20-22 are transmitted, and in AVM (BDS register 0,9) as a difference between GPS and BARO altitude.
CS ACNS.D.ADSB.090 Flight deck interface	1. The control and display of surveillance data items is as per CS ACNS.D.ELS.030.	Refer to the GNX 375 ELS CS-ACNS compliance matrix.
	2. A means is provided to indicate the non-operational status or failure of the ADS-B Out system without undue delay.	ADS-B Out failure indications are provided on the GNX 375 any time the ADS-B Out system constitutes a failure.
CS ACNS.D.ADSB.100 Integrity	a) The ADS-B Out system integrity is designed commensurate with a 'major' failure condition for the transmission of the following parameters:	The GNX 375 which includes an approved position source is designed to meet design assurance level C which meets the 'major' failure classification for ADS-B Out.
	1. ICAO 24-bit aircraft address.	
	2. Airborne Horizontal Position - Latitude and Longitude.	
	3. Airborne Navigation Integrity Category: NIC.	
	4. Airborne/Surface Navigation Accuracy Category for Position: NACp.	
	5. Airborne/Surface Source Integrity Level: SIL.	
	6. Airborne/Surface System Design Assurance: SDA.	
	7. 1090 ES Version Number.	
	8. Airborne velocity over Ground - East/West and North/South.	

CS-ASNS SECTION	CS-ACNS DESCRIPTION	COMPLIANCE SUMMARY
CS ACNS.D.ADSB.100 Integrity (continued)	9. Airborne/Surface Navigation Accuracy Category for Velocity: NACv.	The GNX 375 which includes an approved position source is designed to meet design assurance level C which meets the 'major' failure classification for ADS-B Out.
	10. Emitter Category.	
	11. Surface Horizontal Position - Latitude and Longitude.	
	12. Surface Navigation Integrity Category: NIC.	
	13. Surface Ground Track.	
	14. Movement (surface ground speed).	
	15. Length/width of Aircraft.	
	16. GPS Antenna Offset.	
	17. Geometric Altitude.	
	18. Geometric Altitude Quality: GVA.	
	b) The ADS-B Out system integrity is designed commensurate with a 'minor' failure condition for the transmission of other data parameters.	The GNX 375 is designed to meet design assurance level C which exceeds the 'minor' failure classification for TSO-C166b 3.b loss of ADS-B Out transmission as a 'minor' failure condition.
CS ACNS.D.ADSB.105 Continuity	The ADS-B Out system continuity is designed to an allowable qualitative probability of “remote.”	The GNX 375 has a design assurance level of C 'remote' for listed functions. The GNX 375 has a maximum ADS-B system failure rate of no less than 5000 hours using the MTBF rates, or 2.0E-04 failure rate.
CS ACNS.D.ADSB.110 Horizontal Position and Velocity Data Refresh Rate	A horizontal position and velocity source calculates position and velocity data with a rate of at least 1 Hertz.	The internal GPS sources at an update rate of 5 Hz.

CS-ASNS SECTION	CS-ACNS DESCRIPTION	COMPLIANCE SUMMARY
CS ACNS.D.ADSB.115 Horizontal Position and Velocity Total Latency	Measured from the time of applicability within the source, the total latency of the horizontal position and horizontal velocity data introduced by the ADS-B Out system does not exceed 1.5 second.	For the internal GPS source with a 5 Hz update rate: Position solution update delay until the next solution overwrite is relayed to the transponder <= 200 ms (5 Hz update rate). The GNX 375 introduces an additional total latency of <= 400 ms to the ADS-B Out system. Therefore, the worst case total latency of the ADS-B Out system with a 5 Hz rate source and the listed assumptions is <= 850 ms.
CS ACNS.D.ADSB.120 Horizontal Position Uncompensated Latency	The uncompensated latency of the horizontal position data introduced by the ADS-B Out System does not exceed 0.6 second.	Uncompensated latency introduced by the internal GPS source is assumed to be <= 250 ms. The GNX 375 introduces an additional uncompensated latency of <= 150 ms to the ADS-B Out system. Therefore, the worst case uncompensated latency of the ADS-B Out system given the listed assumptions is <= 400 ms.


GARMIN