GARMIN

GTN Xi
Part 23 AML STC
Installation Manual

190-01007-C0 September 2022 Revision 6

At Garmin, we value your opinion. For comments about this manual, please reference the following contact information.

Garmin International, Inc.
1200 E. 151st Street
Olathe, KS 66062 USA
Telephone: (913) 397-8200
Aviation Dealer Technical Support Line (Toll Free): (888) 606-5482
Website Address: www.garmin.com

Garmin (Europe) Ltd.
Liberty House
Bull Copse Road
Hounsdown Business Park
Southampton, SO40 9LR, UK
Telephone: +44 (0) 23 8052 4000
Fax: +44 (0) 23 8052 4004
Aviation Support: +44 (0) 87 0850 1243

Garmin AT, Inc.
2345 Turner Rd., SE
Salem, OR 97302 USA
Telephone: (503) 581-8101
Fax: (503) 364-2138

INFORMATION SUBJECT TO EXPORT CONTROL LAWS

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

The 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

Disclaimer

SOFTWARE LICENSE AGREEMENT FOR GARMIN AVIATION PRODUCTS

The software embedded in your Garmin product (the “Licensed Software”) is owned by Garmin International, Inc. (“Garmin” or “us”). The Licensed Software is protected under copyright laws and international copyright treaties. The Licensed Software is provided under this Software License Agreement (hereinafter the “Agreement”) and is subject to the following terms and conditions which are agreed to by End User (“Licensee”, “you” or “your”), on the one hand, and Garmin and its licensors and affiliated companies of Garmin and its licensors, on the other hand. The Licensed Software is licensed, not sold, to you. Garmin and Licensee may be referred to individually as a “Party” or jointly as the “Parties.”

IMPORTANT: CAREFULLY READ THIS ENTIRE AGREEMENT BEFORE USING THIS PRODUCT. INSTALLING, COPYING, OR OTHERWISE USING THIS PRODUCT INDICATES YOUR ACKNOWLEDGMENT THAT YOU HAVE READ THIS AGREEMENT AND AGREE TO ITS TERMS AND CONDITIONS. IF YOU DO NOT AGREE TO THESE TERMS AND CONDITIONS, YOU MAY NOT USE THIS PRODUCT.

1. **Definitions**. The following capitalized terms shall have the meanings set forth below:
   a. “Device” means any Garmin device that is delivered by or on behalf of Garmin to Licensee onto which the Licensed Software is installed.
   b. “Documentation” means Gamin's then-current instructional, technical or functional documentation relating to the Devices or Licensed Software which is delivered or made available by Garmin in connection with this Agreement.
   c. “Licensed Software” means the software in binary executable form that is embedded in the Devices and/or made available for use on the Devices via a software loader card.
   d. “Permitted Purpose” means operating and using the Device on which the Licensed Software is installed for the Device's intended use.

2. **License**.
   a. License Grant. Subject to the terms and conditions of this Agreement and Licensee's compliance with the terms and conditions of this Agreement, Garmin hereby grants to Licensee a limited, royalty-free, non-exclusive, non-sublicenseable, non-transferable and revocable right and license to use and perform the Licensed Software as installed on the Devices and the Documentation solely for the Permitted Purpose and only during the term of this Agreement, provided that the Licensed Software may only be used by Licensee on Devices on which the Licensed Software has been installed or otherwise made available by Garmin.
   b. Reservation of Rights. Garmin retains exclusive ownership of all right, title and interest in and to the Licensed Software and Documentation. All of Gamin's rights in and to the Licensed Software and Documentation not expressly licensed to Licensee under Section 2.1 are expressly reserved for Garmin. Nothing contained in this Agreement shall be construed as conferring by implication, acquiescence, or estoppel any license or other right upon Licensee. Without limiting the foregoing, the Parties acknowledge and agree that this Agreement grants Licensee a license of the Licensed Software under the terms of Section 2.1, and shall not in any manner be construed as a sale of the Licensed Software or any rights in the Licensed Software.

3. **Restrictions; Protection and Third Party Devices**.
   a. Prohibited Uses. Licensee shall not, shall not attempt to and shall not permit any third party to:
   (a) sublicense, lease, loan, sell, resell, market, transfer, rent, disclose, demonstrate, or distribute the Licensed Software or Documentation to any third party; (b) uninstall the Licensed Software from the Device on which it was originally installed; (c) make any use of or perform any acts with respect to the Licensed Software or Documentation other than as expressly permitted in accordance with the terms of this Agreement; (d) use the Licensed Software or Documentation in any manner that violates any applicable law; (e) reproduce or copy the Licensed Software; (f) modify, adapt, alter, translate, port, create derivative works of, reverse engineer, decompile or disassemble the Licensed Software or Documentation or otherwise derive the source code or other proprietary information or trade secrets from the Licensed Software; (g) remove, alter, or obscure any proprietary notices from the Licensed Software or Documentation; (h) use the Licensed Software or Documentation to provide services to third parties (such as business process outsourcing, service bureau applications or third party training); (i) use the Licensed Software on any equipment, hardware or device other than a Device; or (j) export, re-export or otherwise distribute, directly or indirectly, the Licensed Software or Documentation to a jurisdiction or country to which the export, re-export or distribution of such Licensed Software or Documentation is prohibited by applicable law.

b. Protection of Software and Documentation. Licensee shall use its best efforts to protect the Licensed Software and Documentation from unauthorized access, distribution, modification, display, reproduction, disclosure or use with at least the same degree of care as Licensee normally uses in protecting its own software and documentation of a similar nature from unauthorized access, distribution, modification, display, reproduction, disclosure or use. Licensee shall limit access to the Licensed Software and Documentation to only those employees of Licensee who require access to the Licensed Software or Documentation for the Permitted Purpose and who have been made aware of the restrictions set forth in this Agreement. Licensee shall take prompt and appropriate action to prevent unauthorized use or disclosure of the Licensed Software and Documentation.

4. **Term and Termination**.

a. Term. The term of this Agreement shall commence on the Effective Date, and shall continue in perpetuity thereafter, unless terminated earlier as provided in this Section 4.

b. Termination by Garmin. Garmin may immediately terminate this Agreement upon written notice to Licensee if Licensee commits a material breach of this Agreement or breaches a material term of this Agreement.

c. Effect of Termination. Upon any termination of this Agreement for any Party: (a) Licensee shall immediately cease all use of the Licensed Software and Documentation; (b) all rights and licenses granted to Licensee to the Licensed Software and Documentation and Gamin's related obligations shall immediately terminate; and (c) Sections 4.3, 5 and 6 shall survive.

5. **Disclaimer; Limitations of Liability; Indemnity**.

a. DISCLAIMER. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, THE LICENSED SOFTWARE AND DOCUMENTATION (INCLUDING ANY RESULTS TO BE OBTAINED FROM ANY USE OF THE LICENSED SOFTWARE AND DOCUMENTATION) ARE PROVIDED “AS IS” AND “AS AVAILABLE” WITH NO WARRANTIES, GUARANTEES OR REPRESENTATIONS AND NEITHER GARMIN NOR ITS AFFILIATES MAKE ANY REPRESENTATION, WARRANTY OR GUARANTEE, STATUTORY OR OTHERWISE, UNDER LAW OR FROM THE COURSE OF DEALING OR USAGE OF TRADE, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NON-INTERFERENCE, NON-INFRINGEMENT, TITLE, OR SIMILAR, UNDER THE LAWS OF ANY JURISDICTION. GARMIN DOES NOT WARRANT THAT THE LICENSED SOFTWARE OR DOCUMENTATION WILL MEET LICENSEE'S REQUIREMENTS OR THAT OPERATION OF THE SOFTWARE WILL BE UNINTERRUPTED OR ERROR FREE. LICENSEE ASSUMES THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LICENSED SOFTWARE AND DOCUMENTATION. THE LICENSED SOFTWARE IS NOT INTENDED FOR USE IN ANY NUCLEAR, MEDICAL, OR OTHER INHERENTLY DANGEROUS APPLICATIONS, AND GARMIN DISCLAIMS ALL LIABILITY FOR ANY DAMAGE OR LOSS CAUSED BY SUCH USE OF THE LICENSED SOFTWARE.

b. EXCLUSION OF DAMAGES; LIMITATION OF LIABILITY. NOTWITHSTANDING ANYTHING TO THE CONTRARY HEREIN, TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, UNDER NO CIRCUMSTANCES AND REGARDLESS OF THE NATURE OF ANY CLAIM SHALL GARMIN BE LIABLE TO LICENSEE FOR AN AMOUNT IN EXCESS OF USD $100, OR BE LIABLE IN ANY AMOUNT FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR INDIRECT DAMAGES, LOSS OF GOODWILL OR PROFITS, LIQUIDATED DAMAGES, DATA LOSS, COMPUTER FAILURE OR MALFUNCTION, ATTORNEYS' FEES, COURT COSTS, INTEREST OR EXEMPLARY OR PUNITIVE DAMAGES, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OR NON-PERFORMANCE OF THE LICENSED SOFTWARE OR DOCUMENTATION, EVEN IF GARMIN HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH LOSS OR DAMAGES.

c. Indemnity. Licensee shall indemnify, defend and hold Garmin and its affiliates harmless against any and all losses, claims, actions, causes of action, liabilities, demands, fines, judgments, damages and expenses suffered or incurred by Garmin or its affiliated companies in connection with: (a) any use or misuse of the Licensed Software or Documentation by Licensee or any third party in Licensee's reasonable control; or (b) Licensee's breach of this Agreement.

6. **General**.

a. No Devices or Services. Licensee acknowledges and agrees that nothing in this Agreement shall be construed as requiring Garmin to: (a) provide or supply the Devices or any other devices or hardware to Licensee; (b) grant any licenses to any software other than the Licensed Software; or (c) provide any services, such as support, maintenance, installation or professional services for the Licensed Software.

b. Non-Exclusive. Each Party's rights and obligations under this Agreement are non-exclusive. Garmin is not precluded from marketing, licensing, providing, selling or distributing the Licensed Software or Documentation, or any other products, software, documentation or services, either directly or through any third party.

c. Assignment. Licensee may not assign this Agreement or any of its rights, interests or obligations hereunder without the prior written consent of Garmin. Any purported assignment in violation of this Section 6.3 shall be null and void. Subject to the foregoing, this Agreement shall be binding upon and shall inure to the benefit of the Parties and their respective successors and permitted assigns and transferees.

d. Feedback and Data. Licensee may from time to time provide feedback, comments, suggestions, questions, ideas, or other information to Garmin concerning the Licensed Software or Documentation or Gamin's products, services, technology, techniques, processes or materials (“Feedback”). Garmin may in connection with any of its products or services freely use, copy, disclose, license, distribute and otherwise exploit such Feedback in any manner without any obligation, payment, royalty or restriction whether based on intellectual property rights or otherwise.

e. Governing Law. The validity, interpretation and enforcement of this Agreement will be governed by the substantive laws, but not the choice of law rules, of the state of Kansas. This Agreement shall not be governed by the 1980 UN Convention on Contracts for the International Sale of Goods.

f. Legal Compliance. You represent and warrant that (i) you are not located in a country that is subject to a U.S. Government embargo, or has been designated by the U.S. Government as a “terrorist supporting” country, and (ii) you are not listed on any U.S. Government list of prohibited or restricted parties.

g. Injunctive Relief. The Parties acknowledge and agree that irreparable damage would occur if any provision of this Agreement was not performed in accordance with its specific terms or was otherwise breached and as such, the Parties will be entitled to an injunction or injunctions to prevent breaches of this Agreement and to enforce specifically the performance of the terms and provisions of this Agreement without proof of actual damages, this being in addition to any other remedy to which any Party is entitled at law or in equity.

h. Amendments and Waivers. This Agreement may be amended and any provision of this Agreement may be waived, provided that any such amendment or waiver will become and remain binding upon a Party only if such amendment or waiver is set forth in a writing by such Party. No course of dealing between or among any persons having any interest in this Agreement will be deemed effective to modify, amend or discharge any part of this Agreement or any rights or obligations of any Party under or by reason of this Agreement. No delay or failure in exercising any right, power or remedy hereunder will affect or operate as a waiver thereof; nor will any single or partial exercise thereof or any abandonment or discontinuance of steps to enforce such a right, power or remedy preclude any further exercise thereof or of any other right, power or remedy. The rights and remedies hereunder are cumulative and not exclusive of any rights or remedies that any Party would otherwise have.

i. Severability. The provisions of this Agreement will be severable in the event that for any reason whatsoever any of the provisions hereof are invalid, void or otherwise unenforceable, any such invalid, void or otherwise unenforceable provisions will be replaced by other provisions which are as similar as possible in terms to such invalid, void or otherwise unenforceable provisions but are valid and enforceable and the remaining provisions will remain valid and enforceable to the fullest extent permitted by applicable law, in each case so as to best preserve the intention of the Parties with respect to the benefits and obligations of this Agreement.

j. No Third-Party Beneficiaries. This Agreement is solely for the benefit of the Parties and does not confer on third parties any remedy, claim, reimbursement, claim of action or other right in addition to those existing without reference to this Agreement.

k. Entire Agreement. This Agreement shall constitute the entire agreement between Garmin and you with respect to the subject matter hereof and will supersede all prior negotiations, agreements and understandings of Garmin and you of any nature, whether oral or written, with respect to such subject matter.

l. Interpretation. In this Agreement: (a) headings are for convenience only and do not affect the interpretation of this Agreement; (b) the singular includes the plural and vice versa; (c) the words 'such as', 'including', 'particularly' and similar expressions are not used as, nor are intended to be, interpreted as words of limitation; (d) a reference to a person includes a natural person, partnership, joint venture, government agency, association, corporation or other body corporate; a thing includes a part of that thing; and a party includes its successors and permitted assigns; and (e) no rule of construction applies to the disadvantage of a Party because that Party was responsible for the preparation of this Agreement. Any translation of this Agreement from English is provided as a convenience only. If this Agreement is translated into a language other than English and there is a conflict of terms between the English version and the other language version, the English version will control.

RECORD OF REVISIONS

Revision	Revision Date	Description
4	07/23/21	Revised to address changes for v20.20 STC update. Added Smart Glide functionality.
5	12/27/21	Clarified Smart Glide functionality. Included GNX 375 as compatible ADS-B In source.
6	09/08/22	Minor change to add new GTN Xi part numbers.

DESCRIPTION OF CHANGES

Section	Description of Change
3.4	Added new GTN Xi part numbers to Table 3-3 GTN Xi Unit Part Numbers.
3.5	Added Table 3-9, Table 3-11, Table 3-13, Table 3-16, and Table 3-18 installation kits for new part numbers.
4.3.8	Updated Figure 4-15 Smart Glide Activation Switch Installation to include dimensions for switch.
5.4.3.7	Added Note regarding Enhanced Lighting Configuration page.
Appendix B	Updated Garmin Smart Glide Switch interconnect in Figure B-20 GTN Xi Switch Interconnect (Optional), Sheet 2.

INFORMATION SUBJECT TO EXPORT CONTROL LAWS

This document may contain information that is subject to the Export Administration Regulations (EAR) issued by the United States Department of Commerce (15 CFR, Chapter VII, Subchapter C) and may not be exported, released, or disclosed to foreign nationals inside or outside of the United States without first obtaining an export license. A violation of the EAR may be subject to a penalty of up to 10 years imprisonment and a fine of up to $1,000,000 under Section 2410 of the Export Administration Act of 1979. Include this notice with any reproduced portion of this document.

DEFINITIONS OF WARNINGS, CAUTIONS, AND NOTES

WARNING
WARNINGS *mean injury or death is possible if the instructions are not obeyed.*

CAUTION
CAUTIONS *mean that damage to the equipment is possible.*

NOTE
NOTES *provide more information.*

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

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

CAUTION
The GTN Xi has a display which is coated with a special anti-reflective coating and is very sensitive to waxes and abrasive cleaners. CLEANERS CONTAINING AMMONIA WILL HARM THE ANTI-REFLECTIVE COATING. It is very important to clean the display using a microfiber cloth or with a clean, lint-free cloth and an eyeglass lens cleaner that is safe for anti-reflective coatings.

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

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1 GENERAL DESCRIPTION

1.1 Introduction

This manual is written for GTN Xi main software v20.12 or later. The software version and information in this document are subject to change without notice. Visit the Dealer Resource Center on Garmin's website for current updates and supplemental information about the GTN Xi.

This manual describes the physical, mechanical, and electrical characteristics, as well as instructions, conditions, and limitations for installation and approval of the GTN Xi navigators and the optional GMA 35/35c and Flight Stream.

1.2 Terminology

Except where specifically noted, references made to:

- "GTN Xi" refer to GTN 625Xi, GTN 635Xi, GTN 650Xi, GTN 725Xi, and GTN 750 Xi
- "GTN 6XX Xi" refer specifically to the GTN 625Xi, GTN 635Xi, and GTN 650Xi
- "GTN 7XX Xi" refer specifically to the GTN 725Xi and GTN 750Xi
- "GMA 35" are synonymous with the GMA 35 and GMA 35c

"GTN AML STC" refers to STC SA02019SE-D.

Throughout this document, references will be made to metallic and nonmetallic aircraft. For the purposes of this installation manual, metal aircraft will be those with an aluminum skin. Nonmetallic aircraft will refer to all other aircraft (e.g., wooden aircraft, aircraft with composite skin, or aircraft with tube-and-fabric construction).

Satellite-Based Augmentation System (SBAS) refers to a system that supports wide-area augmentation through the use of broadcast messages from satellites to improve the GPS navigation system accuracy. SBAS is a general term used to describe systems such as Wide Area Augmentation System (WAAS) and European Geostationary Navigation Overlay Service (EGNOS).

Enhanced Descent-Only (EDO) Vertical Navigation (VNAV) refers to the VNAV function that provides a vertical profile guidance during the en route and terminal phases of flight. References made to the VNAV function will be synonymous with EDO VNAV, unless otherwise noted.

Except where specifically noted, references made to "GTX 335" refer to GTX 335/335R and references made to "GTX 345" refer to GTX 345/345R. "GTX 3X5" refers to both GTX 335 and GTX 345.

1.3 Scope

This installation manual applies to the modification of an aircraft under AML STC SA02019SE-D to install only the equipment specified below. Additionally, only the interfaces between the GTN Xi, GMA 35, Flight Stream, and other equipment listed in this manual are covered by STC SA02019SE-D.

- GTN 625Xi
- GTN 635Xi
- GTN 650Xi
- GTN 725Xi
- GTN 750Xi
- GMA 35c
- Flight Stream 210
- Flight Stream 510
- NAV Antenna cable splitter
- NAV Antenna cable diplexer
- Equipment necessary to support installation of the equipment above, such as the installation kit accessories (Section 3.5.1) and the wiring and circuit breakers shown in Appendix B

This STC approves the interface to the equipment listed in Appendix C. However, this STC assumes these devices are pre-existing. Only the equipment and system interfaces described in this manual have been determined to be mutually compatible and operationally suitable; these are approved for use as characterized herein.

This manual does not provide data for the installation mounting or approval of any external sensors or devices. Equipment and interfaces not covered in this manual require other installation approval.

This STC is applicable for implementation in Part 23 aircraft that are on the Approved Model List (AML).

1.3.1 Approved Aircraft with Systems Not Covered by the STC

Aircraft identified on the Approved Model List have been determined to meet a minimum required configuration for applicability of the STC. However, because some of these aircraft may have been modified over the years or may have been manufactured with systems that are not identified or approved in this manual for integration with the GTN Xi, it may be difficult to use the data herein to completely substantiate the installation in compliance with the STC. It is the installer's responsibility to make the final determination of applicability for each aircraft. Use this manual to assess each installation prior to modifying any Type Certified aircraft to verify the applicability of the GTN AML STC.

1.3.2 Part 23 Aircraft Not Identified on the AML

Aircraft identified in AC 23.1309-1E as Class I, II, III or IV airplanes that are not identified on the GTN AML STC may be valid candidates for installation of the GTN Xi/GMA 35. Installers should contact Garmin Aviation Product Support with detailed drawings of the aircraft's proposed installation. Engineering analysis may allow for the inclusion of these aircraft in a future revision of the FAA-Approved Model List.

1.3.3 Other Aircraft Not Covered by the AML

Transport Category Aircraft (Part 25) and Rotorcraft (Part 27/29) are not part of this GTN AML STC. Certain Part 27 Rotorcraft are covered under the GTN Part 27 AML STC SR02120SE. Aircraft not covered under either GTN AML STC may be valid candidates for installation of this system. Installers may contact Garmin for possible additional information that may support an installation of this type.

1.3.4 Required Documentation for All Installations

The configuration log contained in the *Maintenance Manual and ICA, GTN Xi Part 23 AML STC* must be completed and retained with the aircraft records and the Instructions for Continued Airworthiness, so any aircraft with the modifications detailed in this manual may be properly maintained.

NOTE

For software updates, only the differences from the previously installed configuration need to be recorded and appended to the existing configuration log in the permanent records.

1.4 System Overview

The GTN 6XX Xi and GTN 7XX Xi are touch navigators that provide the various attributes identified in Table 1-1.

The GMA 35 Audio Panel is both a marker beacon receiver and an audio panel that interfaces to the GTN 7XX Xi, communications and navigation radios, headsets, microphones, and speakers. The GMA 35 is a remote-mounted audio panel that interfaces via RS-232 to the GTN 7XX Xi for control and display of audio panel functions. The GMA 35 includes a six-position intercom system (ICS) with electronic cabin noise de-emphasis, two stereo music inputs, and independent pilot/copilot/passenger volume controls. The intercom provides three selectable isolation modes. A pilot-selectable cabin speaker output can be used to listen to the selected aircraft radios or to broadcast PA announcements. The GMA 35 marker beacon receiver includes dual sensitivity and audio muting with automatic re-arming. The GMA 35c provides the equivalent functionality as the GMA 35, with the additional capability to pair Bluetooth audio sources. This enables the distribution of audio to ICS positions when using a compatible Bluetooth device.

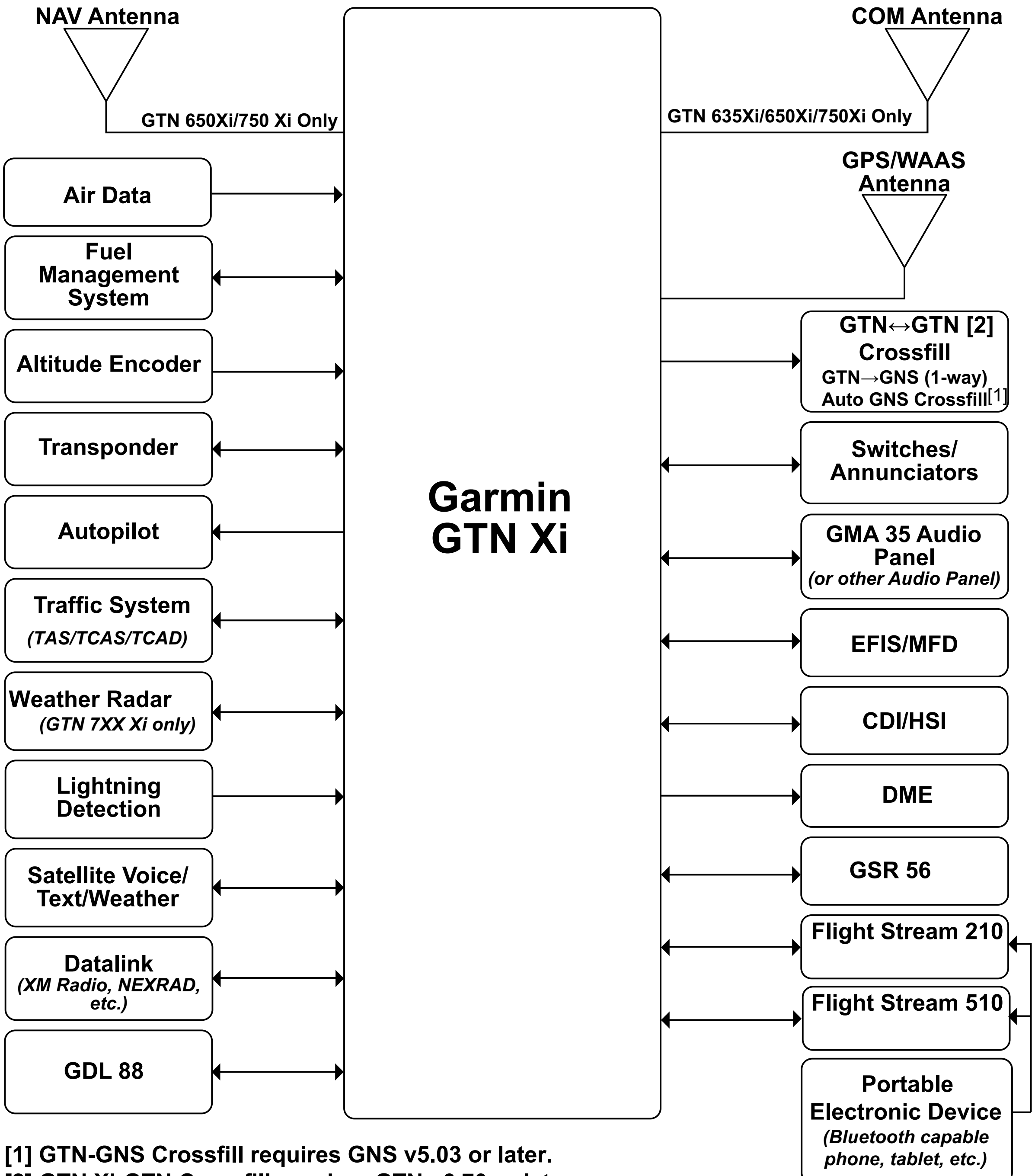
The addition of a Flight Stream brings wireless connectivity to the cockpit, enabling Portable Electronic Devices (PED) to stream data to and from the installed avionics. Flight Stream products are compatible with select iOS and Android devices.

Table 1-1 Attributes of GTN Xi Units

	GTN 625Xi	GTN 635Xi	GTN 650Xi	GTN 725Xi	GTN 750Xi
GPS/SBAS	✓	✓	✓	✓	✓
COM Radio		✓	✓		✓
NAV Radio			✓		✓
GMA 35 Control				✓	✓

1.4.1 GTN Xi Interface Summary

The GTN Xi utilizes ARINC 429, RS-232, discrete inputs/outputs, and Garmin High Speed Data Bus (HSDB) interfaces to communicate with other LRUs and systems on the aircraft. A summary of the GTN Xi interfaces are shown in Figure 1-1. Refer to Appendix B for more details.



[1] GTN-GNS Crossfill requires GNS v5.03 or later.
[2] GTN Xi-GTN Crossfill requires GTN v6.70 or later.

Figure 1-1 GTN Xi System Interface Overview

1.4.2 GMA 35 Interface Summary

A summary of the GMA 35 interfaces is shown in Figure 1-2.

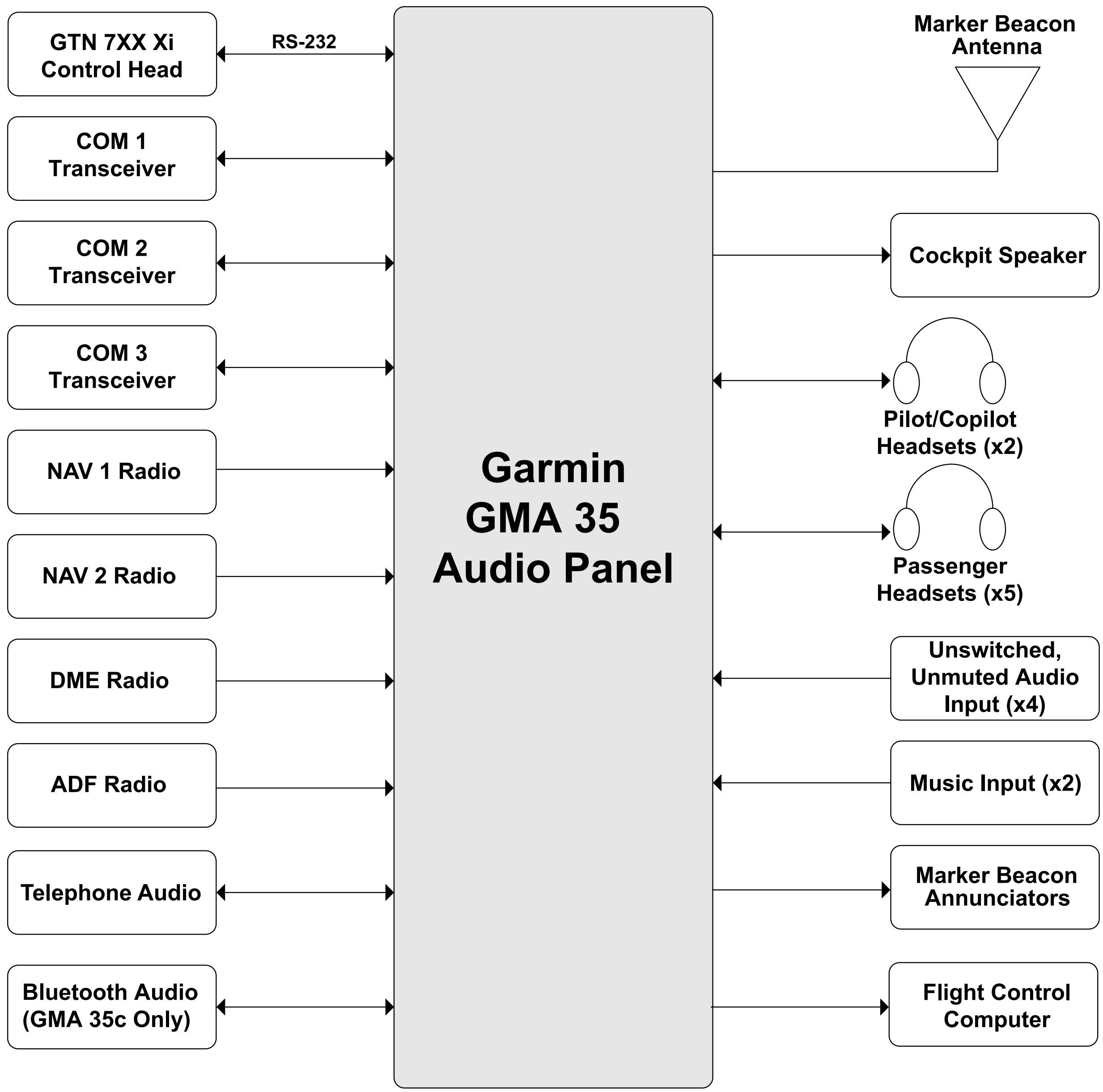


Figure 1-2 GMA 35 System Interface Overview

The GMA 35 utilizes RS-232, discrete inputs/outputs, and analog audio inputs/outputs to communicate with other systems on the aircraft. The GMA 35c adds the capability of pairing telephone or music audio from a Bluetooth device. Refer to Appendix Section B.2 for interconnect drawings.

1.4.3 GTN Xi/GTX Interface Overview

This section contains considerations for connecting GTN Xi units to GTX 32/33/327/328/330/3X5 transponders. The GTN Xi utilizes RS-232 to communicate with GTX transponders. Additionally, the GTN Xi utilizes HSDB to communicate with GTX 345 transponders. Refer to Section 1.4.3.2 if the GTN Xi will control the transponder. Refer to Section 1.4.3.3 if the GTN Xi will not control the transponder.

Pressure altitude transmits from the GTN Xi to the GTX over the RS-232 connections. Pressure altitude does not transmit from the GTX to the GTN Xi over these RS-232 connections except for some GTX 327 interfaces. Refer to Section 1.4.3.2 for more information. It is recommended that the aircraft's pressure altitude source be connected directly to the GTN Xi.

If there is only one GTN Xi and one GTX, they communicate over a direct RS-232 connection, as shown in Figure 1-3.

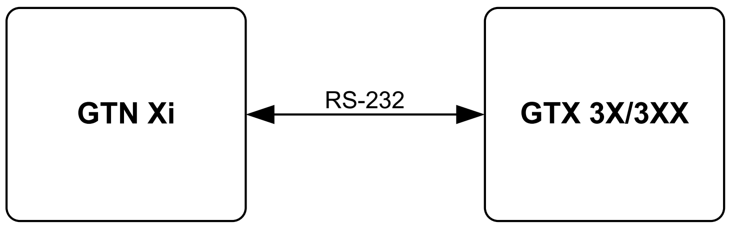


Figure 1-3 Interface Between One GTN Xi and One GTX

If there are two GTX units, they must both be connected to the GTN Xi, as shown in Figure 1-4. In this case, the GTN Xi can control both GTX #1 and GTX #2.

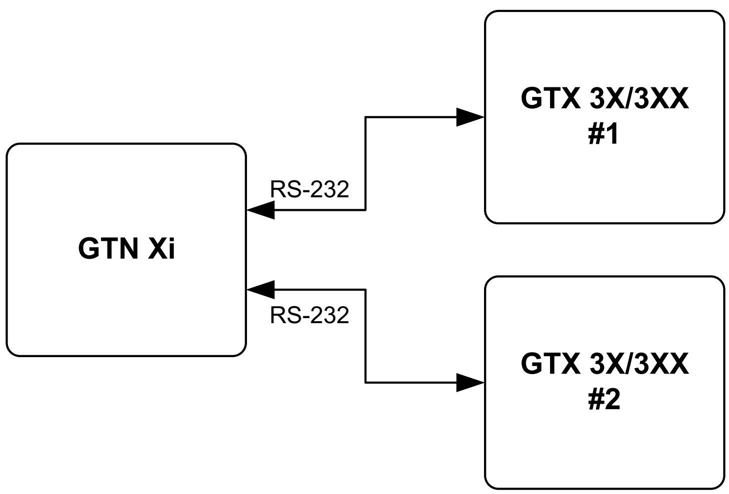


Figure 1-4 Interface Between One GTN Xi and Two GTXs

Similarly, to connect one GTX to dual GTN Xi units, each GTN Xi needs to have an RS-232 connection to the single GTX, as shown in Figure 1-5. In this case, both GTN Xi #1 and GTN Xi #2 can control the transponder.

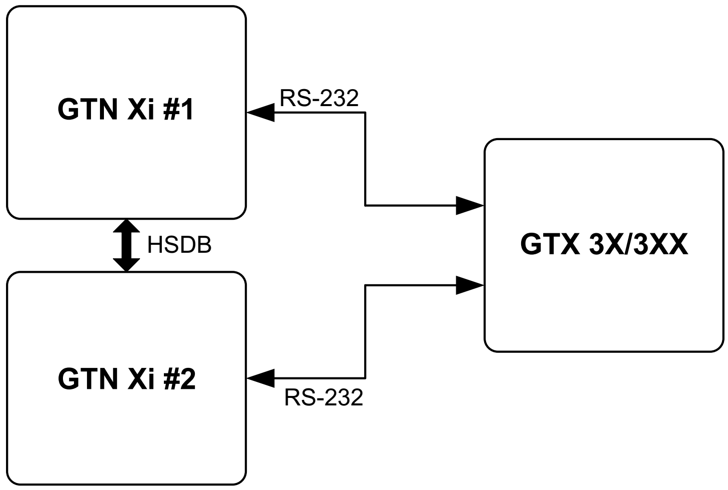


Figure 1-5 Interface Between Two GTN Xi Units and One GTX

If there are two GTXs connected to dual GTN Xi units, GTN Xi #1 should be connected to GTX #1 and GTN Xi #2 should be connected to GTX #2, as shown in Figure 1-6. In this configuration, each GTN Xi is capable of controlling either GTX.

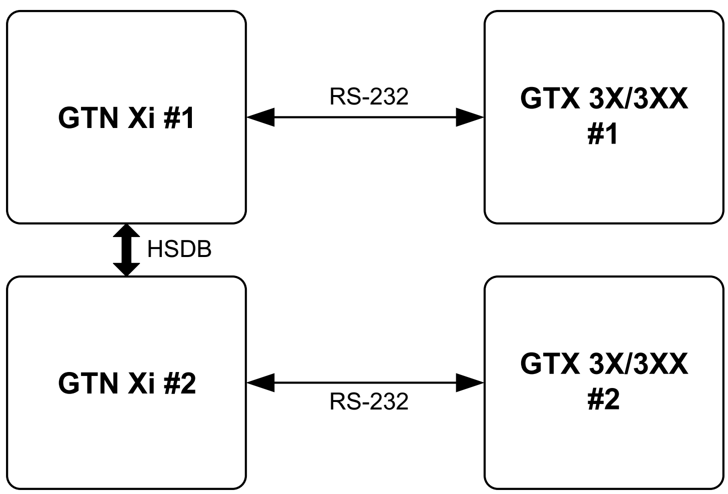


Figure 1-6 Interface Between Two GTN Xi Units and Two GTXs

To enable TIS traffic for the combination of two GTX units connected to dual GTN Xi units, each of the GTX units must be connected to both GTN Xi units because the TIS data is not transmitted over HSDB. Additionally, only the GTX 33, GTX 330, and GTX 335 are capable of receiving TIS traffic data. This arrangement is shown in Figure 1-7. The pressure altitude source must also be connected to both GTN Xi units.

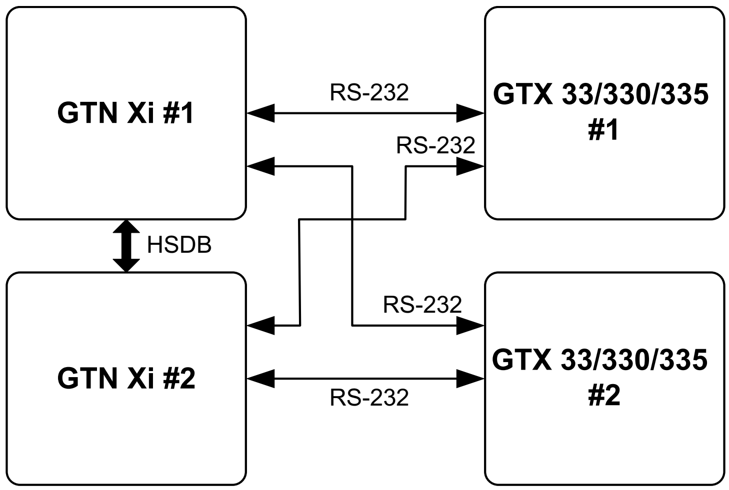


Figure 1-7 Interface Between Two GTN Xi Units and Two GTXs with TIS Traffic

1.4.3.1   GTN Xi/GTX 345 Interface Overview

This section contains considerations for connecting GTN Xi units to GTX 345 transponders. The GTN Xi utilizes HSDB to communicate with GTX 345 transponders. Air data and ADS-B compliant GPS position data, including heading and pressure altitude, are sent from the GTN Xi to the GTX 345 over HSDB. ADS-B IN data, including TIS-B traffic and FIS-B data, is transmitted to the GTN Xi from the GTX 345 over HSDB. If an active traffic system is connected to the GTX 345, correlated traffic is provided to the GTN Xi over HSDB. RS-232 is required only if control of the GTX 345 is desired from the GTN Xi.

GTX 345D/DR transponders require a Time Mark input from the GTN Xi.

For dual transponder installations, if one is a GTX 345 (ADS-B IN), the other must be a GTX 32/33/327/328/330/335. The GTX 345 can be either Transponder #1 or Transponder #2.

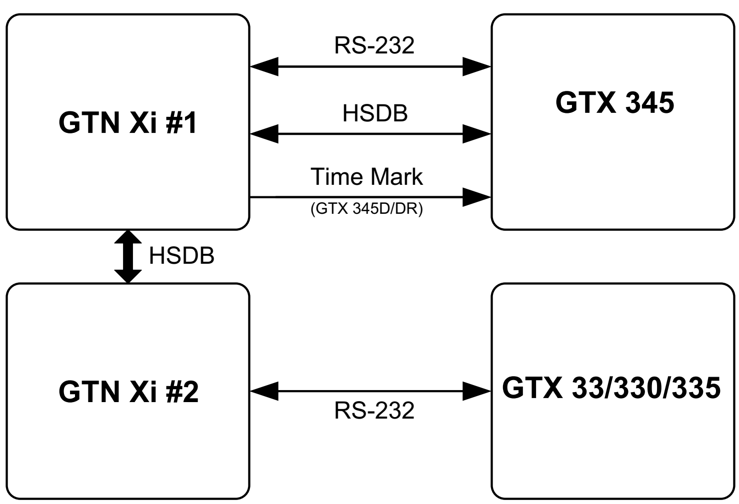


Figure 1-8 Interface Between Two GTN Xi Units and One GTX 345 and GTX 3XX

1.4.3.2 Installation with GTN Xi Control of GTX Transponder

When connected to a GTX 32/33/327/328/330/3X5, the GTN Xi can control the transponder as well as transmit pressure altitude (if a pressure altitude source is connected to the GTN Xi). GTN Xi and GTX configuration settings can be found in Appendix Section C.1.8 and Figure B-12, respectively.

1.4.3.3 Installation without GTN Xi Control of GTX Transponder

The GTX 327, 328, 330, and 3X5 can be connected to the GTN Xi without allowing the GTN Xi to control the transponder functions. GTN Xi and GTX configuration settings can be found in Appendix Section C.1.8 and Figure B-12, respectively.

If the GTN Xi is not set to control the GTX 327, the interface to the GTX 327 is not required. However, the GTN Xi can send GPS groundspeed to the transponder. Also, if the GTN Xi is not controlling the GTX 327, the GTN Xi can optionally receive pressure altitude from the GTX 327.

NOTE

When the GTN Xi is not controlling the GTX 327 Transponder, pressure altitude data is not sent from the GTN Xi to the GTX 327. Instead, the pressure altitude source must be connected to the transponder.

For the GTX 330 and GTX 335, TIS traffic can still be sent to the GTN Xi even if the GTN Xi is not controlling the transponder. If GTN Xi control of the GTX 330/335 and display of TIS traffic from the transponder on the GTN Xi is not desired, then GPS position, track, and velocity can still be sent to the transponder.

1.5 Technical Specifications

The following installation manuals contain technical specifications for the specific unit:

Table 1-2 Garmin Installation Manuals

Document	Garmin P/N
GTN Xi Series TSO Installation Manual	190-02327-02
GMA 35/35c Installation Manual	190-00858-11
Flight Stream 110/210 TSO Installation Manual	190-01700-00

1.5.1 Environmental Qualification Forms

The latest revision of the Environmental Qualification Forms for the GTN Xi, the GMA 35, and the Flight Stream 210 are available directly from Garmin under the part numbers listed in Table 1-3.

Table 1-3 Equipment Environmental Qualification Forms

Document	Garmin P/N
GTN 625/635/650 Bravo Environmental Qualification Form	005-01269-0A
GTN 725/750 Bravo Environmental Qualification Form	005-01269-0B
Garmin GMA 35 Environmental Qualification Form	005-00567-01
Garmin Flight Stream 110/210 Environmental Qualification Form	005-00818-03

Refer to the Dealer Resource Center on Garmin's website to obtain a copy of these forms.

1.5.2 System Documentation

Table 1-4 Garmin STC Documentation

Document	Garmin P/N
Master Drawing List, GTN 6XX/7XX Part 23 AML STC	005-00533-C0
Equipment List, GTN Xi Part 23 AML STC	005-00533-L1
Maintenance Manual and ICA, GTN Xi Part 23 AML STC	190-01007-C1
AFMS or SAFM, Garmin GTN Xi GPS/SBAS Navigation System	190-01007-C2
AFMS or SAFM for the Garmin GTN 6XX Xi/7XX Xi GPS/SBAS Navigation System, GPS Functions Not Approved for IFR Navigation	190-01007-C3
GTN 6XX/7XX Part 23 Installation Checklist	190-01007-E1

Table 1-5 Garmin Reference Documentation

Document	Garmin P/N
Flight Stream 110/210 TSO Installation Manual	190-01700-00
GAD 42 TSO Installation Manual	190-00159-10
GMA 35/35c Installation Manual	190-00858-11
GTN Xi Series TSO Installation Manual	190-02327-02
GTN Xi Series Pilot's Guide	190-02327-03
GTX 3X5 TSO Installation Manual	190-01499-02
400W Series Installation Manual	190-00356-02
500W Series Installation Manual	190-00357-02
G500 AML STC Installation Manual	190-01102-06
G600 AML STC Installation Manual	190-00601-06
GA 35, GA 36, GA 37 Antenna Installation Instructions	190-00848-00
GDL 69 Series TSO Manual	190-00355-07
GDL 69/69A Installation Manual	190-00355-02
GDL 69 Series SiriusXM® Satellite Radio Activation Instructions	190-00355-04
GDL 84/88 Part 23 AML STC Installation Manual	190-01310-00
GDL 84/88 TSO Installation Manual	190-01122-00
GDU 620 Installation Manual	190-00601-04
GMA 350/350H Installation Manual	190-01134-11
GMX 200 Installation Manual	190-00607-04
GSR 56 Installation Manual	190-00836-00
GTX 32 Installation Manual	190-00303-60
GTX 327 Transponder Installation Manual	190-00187-02
GTX 328 Transponder Installation Manual	190-00420-04
GTX 33 Transponder Installation Manual	190-00906-00
GTX 330/330D Transponder Installation Manual	190-00207-02
GWX 68 Installation Manual	190-00286-01
GWX 70 Installation Manual	190-00829-01
GWX Processor Installation Manual	190-02009-00
Garmin G5 Electronic Flight Instrument Part 23 AML STC Installation Manual	190-01112-10
GFC 500 Autopilot with Electronic Stability and Protection Part 23 AML STC Installation Manual	190-02291-00
GFC 600 Automatic Flight Control System Part 23 AML STC Installation Manual	190-01937-00
G500/G600 TXi Part 23 AML STC Installation Manual	190-01717-B3
GI 275 Part 23 AML STC Installation Manual	190-02246-10

Table 1-6 Other Reference Documentation

Document	P/N
FAA Advisory Circular, *Airborne VHF Communications Equipment Installations*	FAA AC 20-67B
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
FAA Advisory Circular, *Airworthiness Approval of Global Navigation Satellite System (GNSS) Equipment*	FAA AC 20-138D
Aerospace Systems Electrical Bonding and Grounding for Electromagnetic Compatibility and Safety	SAE ARP1870
Standard Guide for Aircraft Electrical Load and Power Source Capacity Analysis	ASTM F2490-05e1

1.6 GTN Xi Databases

The GTN Xi utilizes various databases. All databases are loaded to the GTN Xi through the single data card that is inserted into the vertical slot on the left side of the GTN Xi. All databases are stored internally to the GTN Xi. Database updates can be applied in Normal mode at power-up. Alternatively, the databases can be updated in Configuration mode via the ***Updates*** page. The GTN Xi, by default, will only update to effective databases. If loading databases that are not yet effective, or if the GTN Xi GPS time is out-of-date, press and hold the dual-concentric knob during power-up to install all database updates from the data card.

Databases are updated by removing the database card from the GTN Xi, updating the database on the card, and re-inserting the card. Databases can also be updated using a Flight Stream 510 wireless data card and a portable device. When powering on in Normal mode with a Flight Stream 510 inserted into the database card slot, the GTN Xi will provide on-screen instructions on how to transfer databases from a portable device (with a compatible application) over Wi-Fi.

Database cards and the Flight Stream 510 should not be swapped between GTN Xi units, if multiple units are installed.

GTN Xi users update their database card by purchasing database subscription updates from Garmin. Contact Garmin at (866) 739-5687 or go to flyGarmin.com for more information and instructions. Refer to Table 1-7 for a summary of the database location and update rate.

The GTN Xi Database Card (Garmin P/N 010-02044-( )) includes the following databases: Basemap, Obstacle, SafeTaxi, FliteCharts, and Navigation.

GTN Xi users may update their databases by purchasing database subscription updates from Garmin. The database card is programmed using an SD card reader. Contact Garmin at (866) 739-5687 or visit flyGarmin.com for more information and instructions.

CAUTION

The first time the Supplemental Data Card is inserted into a GTN Xi, it associates exclusively with that particular GTN Xi and will not work in other units.

Table 1-7 GTN Xi Database Summary

Database	Update Rate	Stored Location
Basemap Database	Periodic (When available)	Internal
Navigation Database	28 Days	Internal
FliteCharts Database	28 Days	Internal
ChartView Database	14 Days	Internal
SafeTaxi Database	56 Days	Internal
Terrain Database	Periodic (When available)	Internal
Obstacle Database with Hotlines	56 Days	Internal

1.6.1 Basemap Database

The Basemap database provides ground-based references, such as major roads and bodies of water. The database is stored in the GTN Xi internal memory. The Basemap database does not have a scheduled update cycle and as such does not have an expiration date. The Basemap database is updated infrequently.

1.6.2 Navigation Database

The Navigation database provides the GTN Xi with the required information for displaying flight plan information.

1.6.3 FliteCharts® Database (GTN 7XX Xi Only)

FliteCharts resembles the paper version of AeroNav Services terminal procedures charts. FliteCharts database subscription is available from Garmin. The FliteCharts database is stored in the GTN Xi internal memory.

1.6.4 ChartView™ Database (GTN 7XX Xi Only)

ChartView resembles the paper version of Jeppesen terminal procedures charts. The ChartView database is stored in the GTN Xi internal memory.

GTN Xi users update their ChartView data by purchasing database subscription updates from Jeppesen Sanderson. The database card is programmed using an SD card reader and Jeppesen-provided software. Contact Jeppesen at (800) 621-5377 or www.jeppesen.com for more information and instructions.

ChartView is an optional feature that must be activated for use. Instructions for activating the ChartView function are found in Section 5.4.4.2.

1.6.5 SafeTaxi® Database

SafeTaxi diagrams provide detailed taxiway, runway, and ramp information at more than 900 airports in the United States. The SafeTaxi database is stored in the GTN Xi internal memory.

1.6.6 Terrain Database

The Terrain database provides basic terrain awareness functionality and is required for terrain proximity functionality. It is used by the system for TAWS alerting (TAWS enablement is required for functionality). The Terrain database is stored in the GTN Xi internal memory.

1.6.7 Obstacle Database

The Obstacle database provides identification of known obstacles and power lines greater than 200 feet AGL. This database is also used with Terrain Proximity and TAWS functionality. The Obstacle database is stored in the GTN Xi internal memory.

2 LIMITATIONS

Limitations for specific aircraft models can be found in Appendix D.

2.1 Operational Limitations

Refer to the applicable Airplane Flight Manual Supplement (AFMS) for operational limitations.

Refer to Appendix D for additional operational limitations for specific aircraft.

2.2 Installation Limitations

2.2.1 Equipment Interfaced to the GTN Xi, GMA 35, and Flight Stream 210/510

Installation approval under this STC is limited to the GTN Xi, GMA 35/35c, Flight Stream 210/510 interfaces to aircraft systems specified in this installation manual. Equipment interfaced to the GTN Xi must be electrically bonded to the same airframe ground plane as the GTN Xi to ensure that the GTN Xi cable shields terminating at the remote end equipment are electrically bonded to airframe ground. Refer to Section 3.6.6.2 for instructions on electrically bonding the interfaced equipment.

The GTN Xi may be interfaced to a weather radar in metal aircraft only.

2.2.2 Power System

For aircraft certified under 14 CFR Part 23, Post Amendment 41, use of the GTN Xi for IFR operations is limited to aircraft with a functional redundant electrical power system for the primary navigation unit.

2.2.3 Traffic Sensor Interfaced to the GTN Xi

For installations with dual GTN Xi units installed, this STC does not approve interfacing a different traffic sensor to each GTN Xi. Use of the GTX 345 or GDL 88 to correlate traffic from another traffic sensor is acceptable and does not violate this limitation.

2.2.4 GPS/SBAS Antenna Limitations

The GTN Xi is limited to using one of the GPS/SBAS antennas listed in Table 3-34. For multiple GPS installations in nonmetallic IFR aircraft, the GPS antennas must not be mounted in a straight line from the front to the rear of the fuselage to prevent a single lightning strike causing damage to all GPS systems. Antennas interfaced to the GTN Xi must be electrically bonded to the same airframe ground plane as the GTN Xi.

2.2.5 External CDI Interface

An analog course deviation indicator must not be interfaced to the GTN Xi main board connector (P1001) when the GTN Xi is also interfaced to an electronic display that provides GPS selected course via ARINC 429. It is acceptable to interface the analog CDI to the GTN Xi navigation board connector (P1004). Refer to Appendix C for a list of currently approved electronic display interfaces.

2.2.6 Flight Stream 210/510

The Flight Stream 210/510 interface and data provided to a PED is not approved to replace any required or installed aircraft display equipment, including navigation or traffic/weather display equipment.

2.2.7 GMA 35/35c with Marker Beacon in IFR Aircraft

The GMA 35/35c must not be connected to an autopilot and/or more than one PFD if **both** of the following conditions are true:

- The GMA 35/35c (P/N 011-02299-20 and P/N 011-02299-40, respectively) is connected to a marker beacon antenna that is not protected for direct effects of lightning
- The GMA 35/35c is installed in an IFR-certified aircraft

2.2.8 Automatic Speech Recognition

The voice command configuration setting described in Section 5.4.3.8.1 must be set to *DISABLED* in the following aircraft types:

- Open cockpit aircraft
- Aircraft with radial engine(s)
- Unpressurized aircraft with turbine engine(s)
- Multi-engine centerline thrust aircraft with horizontally-opposed engines
- Aircraft with more than two horizontally-opposed engines

2.2.9 Installations in EASA-Controlled Member States

For installations of the GTN Xi in Class IV aircraft operated in EASA-controlled member states, the GTN Xi is required to be interfaced to an HSI that is automatically slaved to the computed path.

3 PREPARATION

3.1 Introduction

This section is an overview of the steps required for the installation of the GTN Xi Navigator, GMA 35 Audio Panel, and the Flight Stream 210/510.

NOTE

Refer to Appendix E and Appendix D for additional information regarding electrical bonding and lightning protection.

3.2 GTN Xi/GMA 35/Flight Stream 210 Installation Overview

NOTE

The Flight Stream 210/510 interface and data provided by the device is not approved to replace any required aircraft navigation or other required equipment. Use of the data provided by the Flight Stream interface in this way is outside of the scope of this STC approval.

Always follow acceptable avionics installation practices per AC 43.13-1B, AC 43.13-2B, or later revisions of these documents. The GPS/SBAS installation instructions have been prepared to meet the guidance material contained in AC 20-138D, *Airworthiness Approval of Global Navigation Satellite System (GNSS) Equipment*. The communications installation instructions have been prepared to meet the guidance material defined by AC 20-67B, *Airborne VHF Communications Equipment Installations.* Follow the installation procedure in this section, as it is presented, to accomplish a successful installation. Read the entire section before beginning the work.

Prior to installation, consider the structural integrity of the GTN Xi, GMA 35, and Flight Stream 210 installation as defined in Section 4.3, Section 4.4, and Section 4.5, respectively. Complete an Electrical Load Analysis (in accordance with the instructions in Section 3.7) on the aircraft prior to starting the modification to ensure the aircraft has the electrical capacity to carry the load for the new equipment being installed. Once the installation is complete, perform the post-installation checkout described in Section 6 before closing the work area.

3.3 Pre-installation Checklist

Before beginning a GTN Xi/GMA 35 installation, it is important to verify that the aircraft meets the prerequisites for the installation of the GTN Xi system under this STC. The following checklist is provided to help the installer determine the necessary requirements that must be met before beginning installation of the GTN Xi in a specific aircraft. Ensure each of the items outlined is completed as necessary before beginning the modification.

If replacing an existing GTN 6XX/7XX with an equivalent GTN Xi unit, instead refer to Section 3.3.1.

Table 3-1 Pre-installation Checklist

Item	Reference	GTN 625Xi	GTN 635Xi	GTN 650Xi	GTN 725Xi	GTN 750Xi	GMA 35	Complete
Aircraft is on Approved Model List (AML)	AML attached to STC Certificate	✓	✓	✓	✓	✓	✓	❒
Acceptable mounting provisions have been identified for GTN Xi	Section 4.3	✓	✓	✓	✓	✓		❒
Acceptable mounting provisions have been identified for GMA 35	Section 4.4						✓	❒
Acceptable GPS/SBAS antenna installed	Section 3.6.1	✓	✓	✓	✓	✓		❒
NAV antenna installed	Section 3.5.2.1 Section 3.6.5.7			✓		✓		❒
COM antenna installed	Section 3.5.2.1 Section 3.6.5.7		✓	✓		✓		❒
Marker beacon antenna installed for GMA 35c installations	Section 3.5.2.1						✓	❒
External annunciations supplied if required for IFR installations	Section 3.6.11	✓	✓	✓	✓	✓		❒
Planned equipment interfaces are approved under the STC or have other FAA approval [1]	Appendix C	✓	✓	✓	✓	✓	✓	❒
Installation/operational limitations reviewed to ensure that the limitations will not adversely impact the installation	Section 2	✓	✓	✓	✓	✓	✓	❒
Aircraft electrical system is sufficient for GTN Xi and GMA 35 installation	Section 3.7	✓	✓	✓	✓	✓	✓	❒
External CDI for IFR installations and/or installation in Type Rated Aircraft [2]	Section 3.6.2.2 Section 3.6.2.3	✓	✓	✓	✓	✓		❒
Second GPS navigator, COM radio, or NAV radio for IFR installations	Section 3.6.2.2 Section 3.6.2.3	✓	✓	✓	✓	✓		❒
Determination of applicable lightning protection needed for each aircraft model	Appendix E Appendix D	✓	✓	✓	✓	✓		❒

Notes:

[1] For installations that intend to enable the VNAV function, ensure that the GTN Xi has an approved baro-corrected altitude source and is connected to an approved audio panel.

[2] Refer to Appendix Section C.1.9 for a list of CDIs approved for use with the GTN Xi.

3.3.1 Replacement of GTN 6XX/7XX with GTN Xi

When replacing an existing GTN 6XX/7XX that was installed per STC SA02019SE-D with an equivalent GTN Xi unit, use this checklist to determine the required procedures to replace the unit.

Table 3-2 Replacement Pre-installation Checklist

Step	Item	Reference	GTN 625Xi	GTN 635Xi	GTN 650Xi	GTN 725Xi	GTN 750Xi	Complete
1	Upgrade GTN 6XX/7XX software to v6.70 or later prior to removal.	GTN 6XX/7XX Part 23 AML STC Installation Manual	✓	✓	✓	✓	✓	❐
2	Verify that the GTN 6XX/7XX Configuration Log is available and correctly filled out.	GTN 6XX/7XX Part 23 AML STC Maintenance Manual Appendix A	✓	✓	✓	✓	✓	❐
3	Remove the GTN 6XX/7XX unit and install the GTN Xi unit per the instructions in the maintenance manual. Update the software if needed.	GTN Xi Part 23 AML STC Maintenance Manual	✓	✓	✓	✓	✓	❐
4	Verify that the removed GTN 6XX/7XX installation meets the installation limitations contained in Section 2 of this manual. Modify the installation as necessary to satisfy these limitations.	Section 2	✓	✓	✓	✓	✓	❐
5	Configure COM and VOR/LOC/GS settings on the ***GTN Setup*** page using the guidance in this manual.	Section 5.4.3.11 Section 5.4.3.12		✓	✓		✓	❐
6	Verify Lighting/Enhanced Lighting settings match the GTN 6XX/7XX Configuration Log.	GTN 6XX/7XX Part 23 AML STC Maintenance Manual Appendix A	✓	✓	✓	✓	✓	❐
7	In dual GTN Xi or a GTN Xi-GTN 6XX/7XX installation, configure the Cross-side Navigator setting appropriately on both units.	Section 5.4.3.4	✓	✓	✓	✓	✓	❐
8	Verify all configuration settings using the GTN 6XX/7XX Configuration Log.	GTN 6XX/7XX Part 23 AML STC Maintenance Manual Appendix A	✓	✓	✓	✓	✓	❐
9	Complete the Configuration Log in the GTN Xi Part 23 AML STC Maintenance Manual.	GTN Xi Part 23 AML STC Maintenance Manual Appendix A	✓	✓	✓	✓	✓	❐
10	Update all databases (existing database cards are usable).	Section 1.6	✓	✓	✓	✓	✓	❐
11	Complete all applicable checkout procedures.	Section 6	✓	✓	✓	✓	✓	❐

3.4 Available Equipment

Table 3-3 GTN Xi Unit Part Numbers

Model	Unit P/N	Catalog P/N
GTN 625Xi	011-04629-00	010-01997-00
GTN 635Xi	011-04630-00	010-01998-00
	011-04630-01 [2]	010-01998-04 [2]
GTN 650Xi	011-04631-00	010-01999-00
	011-04631-01 [2]	010-01999-04 [2]
	011-04631-30 [1]	010-01999-30 [1]
	011-04631-31 [1] [2]	010-01999-34 [1] [2]
GTN 725Xi	011-04632-00	010-02000-00
GTN 750Xi	011-04634-00	010-02002-00
	011-04634-01 [2]	010-02002-04 [2]
	011-04634-30 [1]	010-02002-30 [1]
	011-04634-31 [1] [2]	010-02002-34 [1] [2]

Notes:

[1] Indicates gray bezel units.
[2] Requires COM software v2.10 or later.

Each enablement card listed in Table 3-4 can only be used with the unit that it was initially used to enable the feature and cannot be used to enable the feature on any other GTN Xi.

Table 3-4 GTN Xi Optional Feature Card Part Numbers

Item	P/N
GTN 6XX/7XX 16 Watt COM Enablement Card	010-00878-04
GTN 6XX/7XX Internal TAWS-B Enablement Card	010-00878-01
GTN 6XX/7XX Search and Rescue Enablement Card [1]	010-00878-03
GTN 7XX ChartView Enablement Card	010-00878-40
GTN 7XX Digital Radar Enablement Card	010-00878-42
GTN 7XX Radar AGCS Enablement Card	010-00878-44
GTN 7XX Radar Turbulence Detection	010-00878-45
Radar AGCS Enablement, Dual Install	010-00878-46
Radar Turbulence Detection, Dual Install	010-00878-47

Notes:

[1] In dual installations, only one enablement card is needed to activate search and rescue patterns. The second unit is automatically enabled.

Table 3-5 GMA 35(c) Unit Part Numbers

Item	Unit P/N	Catalog P/N	Voltage (VDC)
GMA 35	011-02299-20	010-00831-20	11-33
GMA 35c	011-02299-40	010-00831-40	11-33

Table 3-6 Flight Stream Unit Part Numbers

Item	Unit P/N	Catalog P/N	Voltage (VDC)
Flight Stream 210	011-03257-40	010-01194-40	11-33
Flight Stream 510	011-03595-00	010-01322-01	N/A

3.5 Installation Materials

3.5.1 Accessories Available from Garmin

Table 3-7 GTN 625Xi Black Installation Kit (P/N 010-01997-01)

Used With	Item	P/N
GTN 625Xi (Black)	Connector kit, GTN 625	011-02325-00
	SMP, mounting rack, GTN 6XX	115-01293-00
	Backplate sub-assembly, GTN 625	011-02245-00
	Configuration module kit	011-00979-03
	Product info kit, GTN Xi Series	K00-01079-00

Table 3-8 GTN 635Xi Black Installation Kit (P/N 010-01998-01)

Used With	Item	P/N
GTN 635Xi (Black)	Connector kit, GTN 635	011-02325-01
	SMP, mounting rack, GTN 6XX	115-01293-00
	Backplate sub-assembly, GTN 635	011-02245-01
	Configuration module kit	011-00979-03
	Product info kit, GTN Xi Series	K00-01079-00

Table 3-9 GTN 635Xi Black Installation Kit (P/N 010-01998-05)

Used With	Item	P/N
GTN 635Xi (Black) -X1	Connector kit, GTN 635	011-02325-01
	SMP, mounting rack, GTN 6XX	115-01293-00
	Backplate sub-assembly, GTN 635	011-02245-01
	Configuration module kit	011-00979-03
	Product info kit, GTN Xi Series	K00-01079-00

Table 3-10 GTN 650Xi Black Installation Kit (P/N 010-01999-01)

Used With	Item	P/N
GTN 650Xi (Black)	Connector kit, GTN 650	011-02325-02
	SMP, mounting rack, GTN 6XX	115-01293-00
	Backplate sub-assembly, GTN 650	011-02245-02
	Configuration module kit	011-00979-03
	Product info kit, GTN Xi Series	K00-01079-00

Table 3-11 GTN 650Xi Black Installation Kit (P/N 010-01999-05)

Used With	Item	P/N
GTN 650Xi (Black) -X1	Connector kit, GTN 650	011-02325-02
	SMP, mounting rack, GTN 6XX	115-01293-00
	Backplate sub-assembly, GTN 650	011-02245-02
	Configuration module kit	011-00979-03
	Product info kit, GTN Xi Series	K00-01079-00

Table 3-12 GTN 650Xi Gray Installation Kit (P/N 010-01999-31)

Used With	Item	P/N
GTN 650Xi (Gray)	Connector kit, GTN 650	011-02325-02
	SMP, mounting rack, GTN 6XX	115-01293-00
	Backplate sub-assembly, GTN 650	011-02245-02
	Configuration module kit	011-00979-03
	Product info kit, GTN Xi Series	K00-01079-00

Table 3-13 GTN 650Xi Gray Installation Kit (P/N 010-01999-35)

Used With	Item	P/N
GTN 650Xi (Gray) -X1	Connector kit, GTN 650	011-02325-02
	SMP, mounting rack, GTN 6XX	115-01293-00
	Backplate sub-assembly, GTN 650	011-02245-02
	Configuration module kit	011-00979-03
	Product info kit, GTN Xi Series	K00-01079-00

Table 3-14 GTN 725Xi Black Installation Kit (P/N 010-02000-01)

Used With	Item	P/N
GTN 725 (Black)	Connector kit, GTN 725	011-02326-00
	SMP, mounting rack, GTN 7XX	115-01294-00
	Backplate sub-assembly, GTN 725	011-02246-00
	Configuration module kit	011-00979-03
	Product info kit, GTN Xi Series	K00-01079-00

Table 3-15 GTN 750Xi Black Installation Kit (P/N 010-02002-01)

Used With	Item	P/N
GTN 750 (Black)	Connector kit, GTN 750	011-02326-02
	SMP, mounting rack, GTN 7XX	115-01294-00
	Backplate sub-assembly, GTN 750	011-02246-02
	Configuration module kit	011-00979-03
	Product info kit, GTN Xi Series	K00-01079-00

Table 3-16 GTN 750Xi Black Installation Kit (P/N 010-02002-05)

Used With	Item	P/N
GTN 750 (Black) -X1	Connector kit, GTN 750	011-02326-02
	SMP, mounting rack, GTN 7XX	115-01294-00
	Backplate sub-assembly, GTN 750	011-02246-02
	Configuration module kit	011-00979-03
	Product info kit, GTN Xi Series	K00-01079-00

Table 3-17 GTN 750Xi Gray Installation Kit (P/N 010-02002-31)

Used With	Item	P/N
GTN 750 (Gray)	Connector kit, GTN 750	011-02326-02
	SMP, mounting rack, GTN 7XX	115-01294-00
	Backplate sub-assembly, GTN 750	011-02246-02
	Configuration module kit	011-00979-03
	Product info kit, GTN Xi Series	K00-01079-00

Table 3-18 GTN 750Xi Gray Installation Kit (P/N 010-02002-35)

Used With	Item	P/N
GTN 750 (Gray) -X1	Connector kit, GTN 750	011-02326-02
	SMP, mounting rack, GTN 7XX	115-01294-00
	Backplate sub-assembly, GTN 750	011-02246-02
	Configuration module kit	011-00979-03
	Product info kit, GTN Xi Series	K00-01079-00

Table 3-19 GMA 35 Installation Kit (P/N 010-00831-21)

Used With	Item	P/N
GMA 35	Backplate assembly, GMA 35	011-02300-00
	Connector kit, GMA 35	011-02302-00
	SMP, install rack, GMA 35	115-01464-00

Table 3-20 GMA 35c Installation Kit P/N 010-00831-41 Accessories

Used With	Item	P/N
GMA 35c	Backplate assembly, GMA 35	011-02300-00
	Connector kit, GMA 35	011-02302-00
	Install rack, SMP	115-01464-00
	Bluetooth antenna kit	011-03909-00

Table 3-21 Flight Stream 210 Connector Kit P/N 011-03258-00

Used With	Item	P/N
Flight Stream 210	Backshell assembly with hardware	011-01855-00
	15-pin high density D-sub	330-00626-15
	Crimp pins #22	336-00021-00

3.5.2 Items Required but Not Supplied

3.5.2.1 GTN Xi and GMA 35 Accessories

The following accessories are required for the installation, but not supplied by Garmin.

Table 3-22 Accessories Required but Not Supplied

Item	Requirements
GPS/SBAS Antenna	Must meet TSO-C144( ). Refer to Section 3.6.1 for acceptable part numbers.
COM Antenna (GTN 635Xi/650Xi/750Xi only)	Must meet TSO-C37( ) and C38( ) or TSO-C169( ). 50 Ω, vertically polarized with coaxial cable.
Marker Beacon Antenna (GMA 35)	Must meet TSO-C35( ).
NAV Antenna (GTN 650Xi/750Xi only)	Must meet TSO-C40( ) and C36( ). 50 Ω, horizontally polarized with coaxial cable. Note that if the NAV antenna is a combined VOR/LOC/GS antenna, it must meet TSO-C40( ), C36( ), and C34( ).
Glideslope Antenna (GTN 650Xi/750Xi only)	Must meet TSO-C34( ).50 Ω, horizontally polarized with coaxial cable or low-loss splitter used with the VOR/LOC antenna.
Headphones	500 Ω nominal impedance.
Microphone	Low impedance, carbon or dynamic, with transistorized pre-amp.

3.5.2.2 GTN Xi Installation Materials

The following items are required for installation, but not supplied:

- Wire (MIL-W-22759/16, MIL-W-22759/18, or equivalent). If MIL-W-22759/18 wire is utilized, extra care must be taken to adequately support and protect the wiring due to its thinner insulation
- Shielded wire (MIL-C-27500 cable utilizing M22759/18 wire (TG) or ETFE jacket)
- Aircraft grade category 5 Ethernet cable is required for installations utilizing HSDB interfaces. The following Ethernet cable part numbers are acceptable for this installation:

MANUFACTURER	P/N
CARLISLE IT	392404 (24 AWG)
PIC WIRE AND CABLE	E10424 (24 AWG)

- Refer to Section 3.5.5 for installation hardware, including screws, nuts/nut plates, washers, and rivets
- Klixon 7274 Series push/pull manually resettable circuit breakers (refer to drawings in Appendix B for circuit breaker ratings)
- Tie wraps or lacing cord
- Ring terminals (MS25036)
- Coaxial cable (RG-400, RG-142B, or equivalent) (refer to Section 3.6.12.2)
- Shield terminators (MIL-S-83519)
- Silicone fusion tape (A-A-59163, MIL-I-46852C)
- Certain installations require aluminum foil tape (3M P/N 436, 438, or other adhesive-backed dead soft aluminum foil 7.2 mils thick or greater) (Refer to Section 3.6.5.6)
- Tubular braid, 7/16" or wider (P/N QQB575R30T437)
  OR
  Flat braid, 3/4" or wider (P/N QQB575F36T781)

- M39012/26-0503 connector, RF Coaxial, TNC Straight Plug, MIL-PRF-39012
- Lightning protection is required for some models on the AML. Refer to Table E-1. Refer to Section 3.5.3 for a list of materials required for lightning protection

3.5.2.3 GMA 35c Installation Materials

- Aircraft hardware for installation, including screws, nuts/nut plates, washers, and rivets, as noted in Section 4.3
- Stereo headphone jacks (up to six), microphone jacks (up to six), 3.5mm stereo jacks (up to two), and insulating washers for all
- Coaxial cable RG-400 and RG-188 (or RG-179)
- Hook and loop fastener tape (optional) A-A 55126

3.5.2.4 Flight Stream 210 Installation Materials

- Aviation hardware for installation, including #6 screws, and nut/nut plates, as noted in Section 4.5.1
- Bonding strap hardware detailed in Section 3.6.6, including 1/4" braid (P/N QQB575R36T0250) or wider

3.5.2.5 NAV Antenna Interface Accessories

Some aircraft may require the use of a splitter or diplexer for connection of the VOR/LOC and GS antennas, or combination VOR/LOC/GS antennas. Refer to Figure B-18 to determine if a splitter or diplexer is required for the installation.

- Garmin P/N 013-00112-00 (Mini-Circuits ZFSC-2-1B+)
- Comant Diplexer VOR/GS, Model CI-507

3.5.3 Lightning Protection Materials

3.5.3.1 Transient Voltage Suppression Materials

Refer to Appendix Section E.1 for detailed information regarding which parts are required for a particular aircraft model.

CAUTION

Either 15KPA48A or 30KPA48A can be used for TVS1. Only 30KPA48A can be used for TVS2.

- Transient Voltage Suppressor 30KPA48A
  OR
  Transient Voltage Suppressor 15KPA48A
  Referred to as TVS1 and TVS2 in the interconnect drawings in Appendix B
- Fuse, 3AG Fast-Acting, 4A Littelfuse (P/N 0312004)
  Referred to as F1 in Figure B-4
- Fuse, 10A Littelfuse, (P/N 0312010)
  Referred to as F2 in Figure B-4
- Fuse Holder, Inline, Cooper Bussmann (P/N HFB)
  Referred to as F1 or F2 in Figure B-4

- Connector, 4-Pin Plug (socket housing) and Cap (pin housing),
  Tyco Electronics (P/Ns 1-480424-0 and 1-480426-0, respectively)
  Referred to as 4 Pin Connector in Appendix B
- Sockets, Qty. 4, Tyco Electronics P/N (60617-1 or 60619-1)
- Pins, Qty. 4, Tyco Electronics, P/N (60618-1 or 60620-1)
- Electrical tie-down strap, MS3367-1-X

3.5.3.2 Instrument Panel Bonding Materials

If the instrument panel is electrically isolated from the aircraft structure, it must be bonded to the aircraft structure for this installation. Refer to Section 4.2 for the installation procedure of the instrument panel bonding strap. The following items are required, but not supplied:

- Tinned copper flat braid, 3/4", QQB575F36T781 (recommended)
  OR
  Tinned copper tubular braid, 7/16", QQB575R30T437
- Terminal lug, 5/16", uninsulated, MS20659-131
- Bolt, AN5-XA
- Locknut, 5/16"
- Lock washer, 5/16", NASM35338-45 (Figure 4-4, washer 1)
- Flat washer, 5/16", NAS1149F0532P (Figure 4-4, washer 2)
- Flat washer, 0.063" thick, NASM970-5 (AN970-5) (Figure 4-4, washer 3)

3.5.3.3 Manufacturer Information

NOTE

Manufacturer information is provided for convenience only. It was current at the time of initial publication and may change at any time.

Aluminum Foil Tape:
3M
3M Corporate Headquarters
3M Center
St. Paul, MN 55144-1000
Phone: 1-888-364-3577
www.3m.com

Tinned Copper Braid:
Alpha Wire Company711
Lidgerwood Avenue
Elizabeth, NJ 07207-0711
Phone: 1-800-522-5742
Fax: (908) 925-6923
www.alphawire.com
OR
Daburn Electronics & Cable
44 Richboynton Road
Dover, NJ 07801
Phone: (973) 328-3200
Fax: (973) 328-3130
www.daburn.com

4-Pin Connector & Contacts:
Tyco Electronics Corporation
1050 Westlakes Drive
Berwyn, PA 19312
Phone: (610) 893-9800
www.tycoelectronics.com

Fuse holder:
COOPER Bussmann
114 Old State Road
Ellisville, MO 63021-5942
Phone: 636-394-2877
Fax: 800-544-2570
www.cooperindustries.com

TVS:
Microsemi Corporation Corporate Headquarters
One Enterprise
Aliso Viejo, CA 92656
Phone: (800) 713-4113
Fax: (949) 215-4996
www.microsemi.com
OR
Littelfuse World Headquarters
8755 West Higgins Road Suite 500
Chicago, IL 60631 USA
Phone: (773) 628-1000
Fax: (847) 391.0894
www.littelfuse.com

Fuse:
Littelfuse World Headquarters
8755 West Higgins Road Suite 500
Chicago, IL 60631
Phone: (773) 628-1000
Fax: (847) 391.0894
www.littelfuse.com

3.5.4 Special Tools Required

NOTE

To perform ground checks of Flight Stream 210 installations, a compatible PED with the Garmin Pilot application installed is required. Visit Garmin's website for a list of compatible devices.

Crimp tools necessary for consistent, reliable crimp contact connections are identified in Table 3-23.

A milliohm meter with an accuracy of ±0.1 mΩ (or better) is required to measure the electrical bonding between the GTN Xi and GMA 35c system components and aircraft ground.

Table 3-23 Recommended Crimp Tools

Manufacturer	Hand Crimping Tool	Standard Density 20-24 AWG (Power/Ground)		High Density 22-28 AWG (P1001-P1005)	
		Positioner	Insertion/ Extraction Tool	Positioner	Insertion/ Extraction Tool
Military Specification P/N	M22520/2-01	M22520/2-08	M81969/14-02 M81969/1-02	M22520/2-09	M81969/14-01 M81969/1-04
Positronic	9507	9502-5	M81969/1-02	9502-3	M81969/1-04
ITT Cannon	995-0001-584	995-0001-604	980-2000-426	995	N/A
AMP	601966-1	601966-5	91067-2	601966-6	91067-1
Daniels	AFM8	K13-1	M81969/1-02	K42	M81969/1-04
Astro	615717	615724	M81969/1-02	615725	M81969/1-04

3.5.4.1 GMA 35c Installations

- 5/16" SMA connector torque wrench

Recommended SMA connector torque wrenches can be found at www.pasternack.com.

3.5.5 Hardware

NOTE

Part numbers in parentheses are inactive or canceled part numbers; these numbers may still be available and/or referred on packaging material.

Table 3-24 Screws, Non-Structural

Type	Size		
	6-32	8-32	10-32
Pan Head, Low Carbon Steel	NASM35206 (MS35206) (AN515)	NASM35206 (MS35206) (AN515)	NASM35207 (MS35207)
Pan Head, Brass	-	NASM35214 (MS35214) (AN515B)	-
Pan Head, Stainless	-	MS51957 (AN515C)	MS51958
Pan Head, Alloy Steel	NAS601	NAS602	NAS603
100 Deg Countersunk	NASM24693 (MS24693) (AN507)	-	-
100 Deg Countersunk, Alloy Steel	NAS514P	-	-

Table 3-25 Screws, Structural

Type	Size	
	8-32	10-32
Pan Head	NASM27039 (MS27039) (NAS220)	NASM27039 (MS27039) (NAS221)

Table 3-26 Lock Washer, Carbon Steel, Cad Plated

Nominal Size	Part Number
#6	NASM35338-41 (MS35338-41)
#8	NASM35338-42 (MS35338-42)
#10 or 3/16	NASM35338-43 (MS35338-43)
5/16	NASM35338-45 (MS35338-45)

Table 3-27 Washers, Carbon Steel, Cad Plated

Nominal Inside Diameter	Size		
	0.016 Thick	0.032 Thick	0.063 Thick
#6	NAS1149FN616P (AN960-6L)	NAS1149FN632P (AN960-6)	-
#8	NAS1149FN816P (AN960-8L)	NAS1149FN832P (AN960-8)	-
#10 or 3/16	-	NAS1149F0332P (AN960-10L)	NAS1149F0363P (AN960-10)
5/16	-	NAS1149F0532P (AN960-516L)	NAS1149F0563P (AN960-516)

Table 3-28 Washers, Carbon Steel, Cad Plated, Large Diameter

Nominal Inside Diameter	Size		
	0.016 Thick	0.032 Thick	0.063 Thick
#10 or 3/16	-	-	AN970-5

Table 3-29 Washers, Stainless Steel

Nominal Inside Diameter	Size		
	0.016 Thick	0.032 Thick	0.063 Thick
#6	NAS1149CN616R (AN960C-6L)	NAS1149CN632R (AN960C-6)	-
#8	NAS1149CN816R (AN960C-8L)	NAS1149CN832R (AN960C-8)	-
#10 or 3/16	-	NAS1149C0332R (AN960C-10L)	NAS1149C0363R (AN960C-10)
5/16	-	-	NAS1149C0563R (AN960C-516)

Table 3-30 Nuts, Steel

Size	Type			
	Nut, Self-locking Metal, Hex, Thin	Nut, Self-locking Elastic, Hex, Thin	Nut, Self-locking Metal, Hex	Nut, Self-locking Elastic, Hex
6-32	NASM21042	NASM21083	NASM21045	NASM21044
8-32	NAS1291	NAS1022N	(MS21045)	NAS1021N
10-32 or 3/16	(MS21042)	(MS21083)		(MS21044N)
5/16	(AN363)	(MS20364) (AN364)		(MS20365) (AN365)

Table 3-31 Nuts, Stainless Steel

Size	Type			
	Nut, Self-locking Metal, Hex, Thin	Nut, Self-locking Elastic, Hex, Thin	Nut, Self-locking Metal, Hex	Nut, Self-locking Elastic, Hex
6-32	NASM21043	NASM21083C	NASM21046C	MS20365C
8-32	NAS1291C	NAS1022C	(MS21046C)	MS21044C
10-32 or 3/16	(MS21043) (AN363C)	(MS21083C) (AN364C)		NAS1021C (AN365C)

Table 3-32 Nut plates, Steel

Size	Type					
	One Lug Fixed	One Lug Floating	Two Lug Fixed	Two Lug Floating	Corner	Side-by-Side
6-32	MS21051	MS21061	MS21047	MS21059	MS21055	MS21086
8-32	MS21053		MS21049	MS21075	MS21057	
10-32 or 3/16	MS21071		MS21069		MS21073	

Table 3-33 Nut plates, Stainless Steel

Size	Type					
	One Lug Fixed	One Lug Floating	Two Lug Fixed	Two Lug Floating	Corner	Side-by-Side
6-32	MS21052	MS21062	MS21048	MS21060	MS21056	MS21087
8-32	MS21054		MS21050	MS21076	MS21058	
10-32 or 3/16	MS21072		MS21070		MS21074	

3.6 Installation Considerations

3.6.1 GPS/SBAS Antenna Requirements

Antenna performance is critical to GPS/SBAS operation. Antennas that meet Garmin's minimum performance specifications are listed in Table 3-34. The GTN Xi must be interfaced with one of these antennas to achieve acceptable performance.

Table 3-34 GPS/SBAS Antennas

Model, Description	Connector Type	Manufacturer	P/N	Notes
GA 35, GPS/WAAS	TNC	Garmin	013-00235-( )	[1] [2]
GA 36, GPS/WAAS	TNC	Garmin	013-00244-( )	[2]
GA 37, GPS/WAAS/XM	TNC	Garmin	013-00245-( )	[2]
A33W, WAAS Antenna	TNC	Garmin	013-00261-( )	[3]
GPS/VHF Antenna	TNC/BNC	Comant	CI-2580-200	
GPS/VHF Antenna	TNC/BNC	Comant	CI-2728-200	
GPS/XM/VHF Antenna	TNC/BNC	Comant	CI-2580-410	
GPS/XM/VHF Antenna	TNC/TNC/BNC	Comant	CI-2728-410	
GPS Antenna	TNC	Comant	CI-428-200	
GPS/XM Antenna	TNC/TNC	Comant	CI-428-410	

Notes:

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

[2] Installation of this antenna may be accomplished using Garmin GPS/XM Antenna STC SA02018SE-D.

[3] Same mounting hole pattern as the A33.

3.6.2 Minimum System Configuration

The following section describes the minimum configuration required for IFR and VFR installations of the GTN Xi.

3.6.2.1 VFR GPS Installation

For a VFR installation of a GTN Xi, the following equipment is required:

- GTN Xi unit installed in the aircraft manufacturer approved location for 6.25-inch wide avionics equipment
- GPS/SBAS antenna required for GPS navigation functions
- An external CDI and proper source selection annunciation are required for installations using the VOR navigation and glideslope information. Refer to Appendix Section C.1.9 for a list of approved CDIs
- If the GTN Xi does not meet the field-of-view requirements as outlined in Section 3.6.11.1.1, then a display that can display source selection must be installed. Refer to Appendix Section C.1.12 for a list of applicable CDI source selection annunciators and Appendix Section C.1.5 for approved EFIS displays. The GTN Xi provides these annunciations if mounted within the required field-of-view
- A NAV antenna is required for VHF NAV functions (GTN 650Xi/750Xi only)
- A COM antenna is required for COM functions (GTN 635Xi/650Xi/750Xi only)

VFR installations must be placarded “GPS LIMITED TO VFR USE ONLY” in clear view of the pilot. The placard must be located immediately adjacent to the GTN Xi. Refer to Section 3.6.7 for additional placard requirements. VFR GPS installations must use *AFMS or SAFM for the Garmin GTN Xi GPS/SBAS Navigation System, GPS Functions Not Approved for IFR Navigation* (P/N 190-01007-C3).

3.6.2.2 IFR Installation of a GTN 625Xi/635Xi/725Xi

For an IFR installation of a GTN 625Xi, GTN 635Xi, or GTN 725Xi, the criteria in Section 3.6.2.1 must be met in addition to the following:

- If the GTN Xi is installed for GPS primary navigation, then the GTN Xi must be interfaced to a navigation indicator installed in the pilot’s primary field-of-view (or in the aircraft manufacturer approved mounting location)
- The navigation indicator must have a vertical deviation indicator (GS) in order to perform approaches with vertical guidance. EFIS, EHSI, and NAV indicators that are approved to interface to the GTN Xi under this STC are listed in Appendix C
- Additional lightning protection may be required for some models on the AML. Refer to Table E-1 for lightning protection requirements
- Either a second GPS navigator or a separate VHF navigation radio must be installed. Refer to Section 3.6.2.3 if installing a GTN 650Xi or GTN 750Xi

Refer to *AFMS or SAFM Garmin GTN Xi GPS/SBAS Navigation System* to meet these requirements.

3.6.2.3 IFR Installation of a GTN 650Xi/750Xi

For an IFR installation of a GTN 650Xi or GTN 750Xi, the criteria in Section 3.6.2.1 must be met in addition to the following:

- If the GTN Xi is installed for GPS primary navigation, then the GTN Xi must be interfaced to a navigation indicator installed in the pilot’s primary field-of-view (or in the aircraft manufacturer approved mounting location)
- The navigation indicator must have a vertical deviation indicator (GS) in order to perform approaches with vertical guidance. Approved EFIS, EHSI, and NAV indicators are listed in Appendix C
- Additional lightning protection may be required for some models on the AML. For lightning protection requirements, refer to Table E-1
- If the GTN Xi does not meet the field-of-view requirements outlined in Section 3.6.11, then an EFIS display capable of displaying source selection annunciatons must be installed (refer to Appendix Section C.1.5). The GTN Xi provides these annunciations if mounted within the required field-of-view
- Either a second GPS navigator or a separate VHF navigation radio is required in the following installations:
    - Aircraft with a maximum certified gross takeoff weight of greater than 6000 lbs
    - Turbine-powered aircraft
    - Multi-engine aircraft
    - A CDI is connected to connector P1004 pin 29 and there is no other way of displaying VHF navigation deviation information from the GTN 650Xi/750Xi. Refer to Figure B-9, Figure B-10, and Figure B-11. This is not required for installations that have a CDI or HSI

connected to the main connector P1001 that can be switched to output either GPS or VHF navigation information

Refer to *AFMS or SAFM Garmin GTN Xi GPS/SBAS Navigation System* to meet these requirements.

3.6.3 GTN Xi External Sensors and Devices

When the GTN Xi is interfaced to external sensors, these sensors must be installed in accordance with the sensor manufacturer's data. Refer to Appendix C for a list of sensors approved to interface with the GTN Xi.

The GTN Xi can accept data from multiple sources. If multiple sources are used, the GTN Xi will accept data as described below. The input priority of each external data source cannot be configured. If available, verify the higher priority sources are connected to the GTN Xi.

If multiple sources for a specific data type are supplied to the GTN Xi, only valid data from the highest priority source is used. If the highest priority source becomes unavailable, data is taken from the next highest priority source. The data sources listed in Section 3.6.3.1 through Section 3.6.3.9 are prioritized from highest to lowest.

3.6.3.1 Multiple Uncorrected Pressure Altitude Sources

Priority	Uncorrected Pressure Altitude Source
1	HSDB from G500/G600 TXi
2	ARINC 429 label 203 from Airdata
3	ARINC 429 label 203 from Airdata/AHRS
4	ARINC 429 label 203 from GDU Format 1
5	ARINC 429 label 203 from EFIS Format 2
6	ARINC 429 label 203 from Data Concentrator
7	ARINC 429 label 203 Traffic Format 1, 2, 3, 4, 5, or 6
8	RS-232 FADC Format 1 or Airdata Format 1
9	RS-232 Altitude Format 1 or 3

NOTE

Only certain altitude sources are acceptable for providing altitude to the GDL 88. Refer to Section 3.6.4 for more information.

3.6.3.2 Multiple Baro-Corrected Altitude Sources

NOTE

Baro-corrected altitude is not required by the GTN Xi to meet the requirements of TSO-C146c; however, to take full advantage of the GTN Xi capabilities, a baro-corrected altitude source is recommended for automatic sequencing of altitude leg types and EDO VNAV function. If no baro-corrected altitude data is provided to the GTN Xi, altitude leg types must be manually sequenced and EDO VNAV will be unavailable.

Priority	Multiple Baro-Corrected Altitude Source
1	HSDB from G500/G600 TXi
2	ARINC 429 label 204 from Airdata
3	ARINC 429 label 204 from GDU Format 1
4	ARINC 429 label 204 from EFIS Format 2
5	ARINC 429 label 204 from Data Concentrator
6	RS-232 FADC Format 1 or Airdata Format

3.6.3.3 Multiple Heading Sources

NOTE

A heading source is not required by the GTN Xi; however, with a heading source the following will be provided:

- *Autopilot roll steering on ARINC 424 heading legs (for priority 1 through 12 sources only)*
- *Map orientation to heading up*
- *Display of TAS traffic, ADS-B traffic when correlated with a TAS/TCAS source (e.g., GDL 88 connected to GTS 8XX)*
- *WX-500 Stormscope and weather radar data on the moving map*
- *Wind calculation if airspeed is also available*

Priority	Heading Source
1	HSDB from G500/G600 TXi
2	ARINC 429 label 314 from EFIS Format 1 or Format 3
3	ARINC 429 label 320 from EFIS Format 1 or Format 3
4	ARINC 429 label 320 from EFIS Format 2
5	ARINC 429 label 320 from GDU Format 1
6	ARINC 429 label 314 from INS/IRU
7	ARINC 429 label 314 from Data Concentrator
8	ARINC 429 label 320 from INS/IRU
9	ARINC 429 label 320 from Airdata/AHRS
10	ARINC 429 label 320 from GAD Format 1
11	ARINC 429 label 320 from EFIS Format 4
12	ARINC 429 label 314 from GAD Format 1

Priority	Heading Source
13	XYZ Synchro
14	ARINC 429 label 320 from Data Concentrator
15	ARINC 429 label 320 from Traffic Format 1, 2, 3, 4, 5, or 6
16	RS-232 FADC Format 1 or Airdata Format 1
17	RS-232 bus from Lightning Detector 1
18	HSDB Traffic System

3.6.3.4 Multiple Indicated Airspeed Sources

Priority	Indicated Airspeed Source
1	HSDB from G500/G600 TXi
2	ARINC 429 label 206 from GDU Format 1
3	ARINC 429 label 206 from Airdata/AHRS
4	ARINC 429 label 206 from Data Concentrator
5	RS-232 bus from FADC Format 1 or Airdata Format 1

3.6.3.5 Multiple True Airspeed Sources

NOTE

True Airspeed is not required for the GTN Xi; however, the GTN Xi uses true airspeed to calculate winds aloft if heading is also available.

Priority	True Airspeed Source
1	HSDB from G500/G600 TXi
2	ARINC 429 label 210 from Airdata
3	ARINC 429 label 210 from Airdata/AHRS
4	ARINC 429 label 210 from GDU Format 1
5	ARINC 429 label 210 from EFIS Format 2
6	ARINC 429 label 210 from GAD Format 1
7	ARINC 429 label 210 from Data Concentrator
8	RS-232 bus from FADC Format 1 or Airdata Format 1

3.6.3.6 Multiple VLOC Selected Course Sources

Priority	VLOC Selected Course Source
1	HSDB from G500/G600 TXi
2	ARINC 429 label 100 from EFIS Format 4
3	ARINC 429 label 110 from GAD Format 1
4	TO/FROM course from an Omni-Bearing Selector (OBS) control

3.6.3.7 Multiple GPS Selected Course Sources

Priority	GPS Selected Course Source
1	HSDB from G500/G600 TXi
2	ARINC 429 label 100 from EFIS Format 1 or 3
3	ARINC 429 label 100 from GDU Format 1
4	ARINC 429 label 100 from EFIS Format 2
5	ARINC 429 label 100 from EFIS Format 4
6	ARINC 429 label 100 from GAD Format 1
7	ARINC 429 label 100 from Data Concentrator
8	TO/FROM course from an Omni-Bearing Selector (OBS) control

3.6.3.8 Multiple Total Air Temperature Sources

Priority	Total Air Temperature Source
1	HSDB from G500/G600 TXi
2	ARINC 429 label 211 from Airdata
3	ARINC 429 label 211 from GDU Format 1
4	ARINC 429 label 211 from EFIS Format 2
5	ARINC 429 label 211 from Data Concentrator
6	RS-232 bus from FADC Format 1 or Airdata Format 1

3.6.3.9 Multiple Static Air Temperature Sources

Priority	Static Air Temperature Source
1	HSDB from G500/G600 TXi
2	ARINC 429 label 213 from Airdata
3	ARINC 429 label 213 from GDU Format 1
4	ARINC 429 label 213 from EFIS Format 2
5	ARINC 429 label 213 from Data Concentrator

3.6.4 GDL 88 Interface Considerations

When a GDL 88 is interfaced with a GTN Xi, altitude data can be forwarded from sources connected to the GTN Xi to the GDL 88. The GTN Xi is also capable of forwarding Gray code received from an altimeter connected to a GTX transponder. All of these sources must meet the minimum performance requirements of TSO-C10 or TSO-C106, or altitude digitizers/encoders must meet TSO-C88 (reference AC 20-165, Section 3-4(a)(1) and (2)).

Heading data from the following sources will not be forwarded from the GTN Xi to the GDL 88:

- ARINC 429 label 320 from Data Concentrator
- ARINC 429 label 320 from Traffic Format 1, 2, 3, 4, 5, or 6
- RS-232 FADC Format 1 or Airdata Format 1
- RS-232 bus from Lightning Detector 1

If a compatible TAS system and the GDL 88 are installed in an aircraft, the compatible TAS system should be directly connected to the GDL 88. The traffic data is then sent from the GDL 88 to the GTN Xi over HSDB.

NOTE

When a GDL 88 is connected to a TAS/TCAS traffic sensor, a heading source is required to display traffic on the moving map. Refer to Figure B-40 for more information on the connection.

Refer to *GDL 88 TSO Installation Manual* and *GDL 88 Part 23 AML STC Installation Manual* for more information on configuration of the GDL 88 and systems connected to the GDL 88.

3.6.5 Antenna Considerations

Location considerations for antennas used by LRUs installed under this STC are contained in this section. General installation guidance is provided to ensure the installed antennas meet the GTN Xi/GMA performance requirements.

NOTE

Refer to Garmin Antenna STC SA02018SE-D for GPS/SBAS antennas installation.

Figure 3-1 shows the recommended placement of GPS/SBAS and COM antennas.

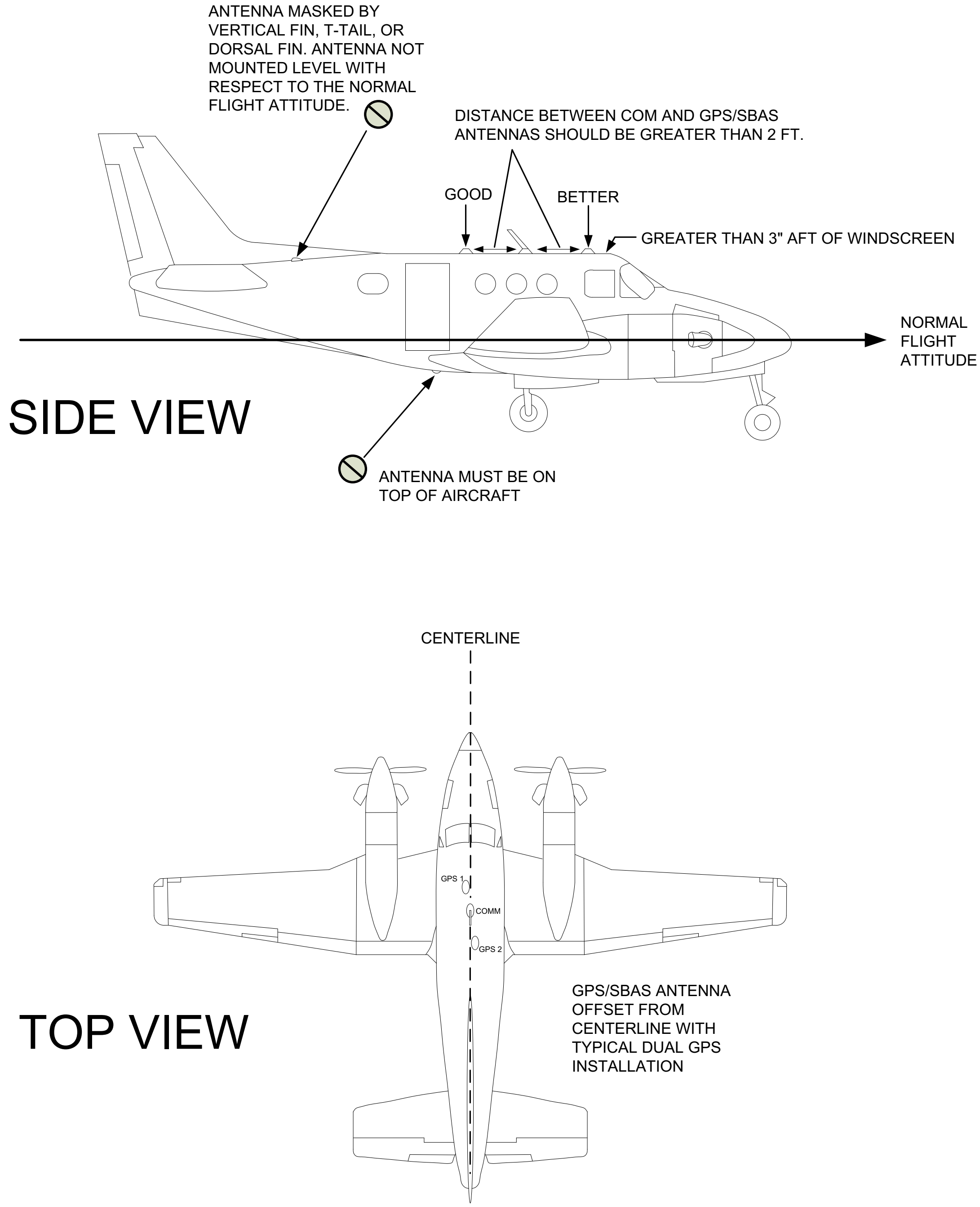


Figure 3-1 GPS/SBAS Antenna Mounting Considerations

3.6.5.1 GPS Antenna Location

The GPS antenna is a key element in the overall system performance and integrity for a GPS/SBAS system. The antenna location, geometry, and surroundings of the antenna can affect the system performance and/or availability. The following guidance provides information to aid the installer in ensuring the optimum location is selected for the installation of the GPS antenna. The installation guidelines presented here meet the intent of AC 20-138D Chapter 13, Section 13-1. The greater the variance from these guidelines, the greater the chance of decreased signal availability. Because meeting all of these installation guidelines may not be possible on all aircraft, these guidelines are listed in order of importance to achieve optimum performance. The sub-items of step 3 below are of equal importance and their significance may depend on the aircraft installation. The installer should use their best judgment to balance the installation guidelines.

Figure 3-1 shows the recommended placement of the GPS antenna.

1. The antenna should be mounted as close to level as possible with respect to the normal cruise flight attitude of the aircraft. If the normal flight attitude is not known, substitute with the waterline, which is typically referenced as level while performing a weight and balance check.
2. The GPS antenna should be mounted in a location to minimize the effects of airframe shadowing during typical maneuvers. Typically mounting farther away from the tail section reduces signal blockage seen by the GPS antenna.
3. The GPS antenna should be mounted:
    a. No closer than 2 feet from any VHF COM antenna or any other antenna that may emit interference. Complete an aircraft EMC check to ensure there is no GPS degradation. Refer to Section 5. If an EMC check reveals unacceptable interference, a GPS notch filter (Garmin P/N 330-00067-00) can be inserted in line with the offending VHF COM or the (re-radiating) ELT transmitter, or a different GPS antenna location can be selected. The GPS/WAAS antenna is less susceptible to harmonic interference if a 1.57542 GHz notch filter is installed on the COM transceiver antenna output.

NOTE

When mounting a combination antenna, the recommended distance of 2 feet or more is not applicable to the distance between the antenna elements in a combination antenna (e.g., GPS and COM, GPS and SiriusXM) provided the combination antenna is TSO-approved and has been tested to meet Garmin's minimum performance standards.

NOTE

The internal GTN Xi COM does not interfere with its own GPS receiver. However, placement of the GTN Xi GPS/SBAS antenna relative to transmitting antennas (including the GTN Xi COM antenna) is critical.

    b. No closer than 2 feet from any antennas emitting more than 25 watts of power. If an EMC check reveals unacceptable interference, a different GPS antenna location can be selected.
    c. No closer than 9 inches (center-to-center) from other antennas, including passive antennas such as another GPS antenna or XM antenna.

4. To maintain a constant gain pattern and limit degradation by the windscreen, avoid mounting the antenna closer than 3 inches from the windscreen.

5. For multiple GPS installations, the antennas should not be mounted in a straight line from the front to the rear of the fuselage (i.e., so that a single lightning strike does not damage all GPS systems). Additionally, varying the mounting location will help minimize any airframe shadowing by the wings or tail section (i.e., in a particular azimuth, when one antenna is blocked, the other antenna may have a clear view). Refer to Section 2.2.4 for GPS/SBAS antenna limitations.
6. A 12-inch center-to-center spacing between GPS antennas is required to achieve the best possible low-elevation antenna gain by minimizing pattern degradation due to shadowing and near-field interaction. When practical, installers must use a 12-inch center-to-center spacing between GPS antennas. If a 12-inch spacing is not practical, installers must use the maximum center-to-center spacing possible, but never less than a 9-inch center-to-center spacing. Tests have shown that spacing less than 9 inches center-to-center results in unacceptable antenna pattern degradation.

3.6.5.2 COM Antenna Location

The COM antenna should be electrically bonded to a flat ground plane over as large an area as possible (at least 18 inches square). The antenna should be mounted at least 6 feet from other COM antennas, 4 feet from any ADF sense antennas, 2 feet from the GTN Xi and its GPS/SBAS antenna, and as far apart as practical from the ELT antenna for best performance. A configuration of one top-side antenna and one bottom-side antenna is recommended.

3.6.5.3 NAV Antenna Location

The GTN 650Xi/750Xi NAV antenna should have a clear line of sight in all directions, if possible. The antenna should be mounted as close to the centerline of the aircraft as possible, minimizing the lateral offset.

3.6.5.4 Marker Beacon Antenna Location

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

Mount the antenna to minimize the amount of structure between it and the ground radio stations. Locate it as far away as possible from transmitter antennas.

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

3.6.5.5 GMA 35c Bluetooth Antenna Location

The GMA 35c kit supplies a Bluetooth antenna and a pre-fabricated coaxial cable harness that must be installed to provide Bluetooth audio. Consider each seating location that may utilize the Bluetooth audio routing when selecting the installation location. For best reception, the antenna should have clear line of sight to the audio source; however, inconspicuous mounting may make this impractical. For crew and passengers in small aircraft, selecting a location on the underside of the glare shield or behind the instrument panel will yield acceptable reception.

3.6.5.6 Ground Plane

Verify the GPS/NAV/COM antennas are electrically bonded to the same aircraft ground plane as the GTN Xi. Follow the aircraft manufacturer's instructions for the NAV and COM antenna installations.

As a prerequisite of this STC, the GPS/SBAS antenna requires a minimum ground plane radius of 7.5 inches around the perimeter of the antenna. Refer to Figure 3-2. For metal aircraft, the surrounding metal skin on which the antenna is mounted supplies the ground plane. For nonmetallic aircraft, the ground plane can be composed of heavy duty aluminum foil tape, such as 3M P/N 438, 3M P/N 436, or other adhesive-backed dead soft foil with aluminum 7.2 mils or greater.

WARNING

If the antenna is struck by lightning, the foil by itself may not be sufficient to dissipate lightning currents. Additional protection may be needed depending on the construction of the structure to which the antenna is mounted. Refer to the aircraft structural repair manual (SRM) for details.

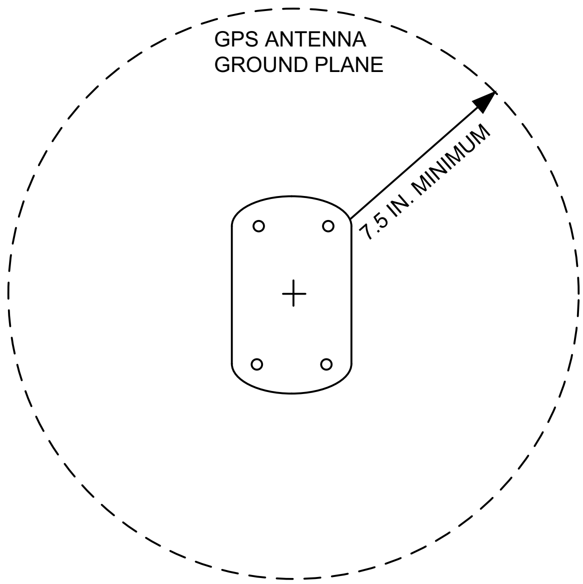


Figure 3-2 GPS/SBAS Antenna Minimum Ground Plane Radius

3.6.5.7 COM and NAV Antenna Installation Considerations

Avoid running wires and coaxial cables near the COM and NAV antenna cables. If there are two separate COM antennas, attempt to run the COM coaxial cables independently of each other and provide zonal separation as much as possible in the aircraft to avoid loss of both COMs in a single event.

3.6.5.7.1 NAV Antenna Cable Splitter/Diplexer Considerations

The GTN 650Xi/750Xi includes one NAV antenna input. It is recommended that a single VOR/localizer/glideslope antenna be used for the installation. Some installations will require the use of a splitter or diplexer. Refer to Section 3.5.2.5 for acceptable part numbers. Refer to Figure B-18 for splitter and diplexer installation wiring details. Install the splitter and diplexer in accordance with Section 4.3 and Section 4.1.3.2.

3.6.6 Electrical Bonding

Electrical equipment chassis, shield/ground terminations, interfaced antennas, supporting brackets, and racks must be electrically bonded to the aircraft's main structure (metallic or tube/fabric aircraft) or instrument panel (composite aircraft). Refer to SAE ARP 1870 Section 5 when surface preparation is required to achieve electrical bond. The electrical bond must achieve direct current (DC) resistance less than or equal to:

- 2.5 mΩ to local structure in equipment mounting locations for metallic or tube-and-fabric aircraft
- 5.0 mΩ to the instrument panel for composite aircraft

For some aircraft, the instrument panel is attached with vibration mounts. For these aircraft, the vibration-isolated instrument panel must be grounded to the airframe metallic structure. A bonding strap meeting the following criteria can be installed to accomplish this:

- 7/16" or wider tubular braid (QQB575R30T437) or 3/4" or wider flat braid (QQB575F36T781)
- The strap length must not exceed 6 inches. Detailed instructions for constructing a bonding strap meeting these requirements are in Appendix Section

Antenna baseplates must be electrically bonded to the aircraft ground plane.

Brackets installed to main structure or instrument panel with four or more rivets can provide sufficient electrical bond to allow equipment chassis or install rack to be bonded to the bracket. More rivets or surface preparation may be needed for brackets that will carry large DC/AC or lightning currents.

For the best results when bonding the GTN Xi rack to the supporting structure, contact locations between the mounting structure and installation rack should be cleaned and prepared for bond. The following steps are an acceptable method for bonding aluminum surfaces:

1. Clean grounding location with solvent.
2. Remove non-conductive films or coatings from the grounding location.
3. Apply a chemical conversion coat, such as Alodine 1200, to the bare metal.
4. Once the chemical conversion coat is dry, clean the area.
5. Install bonding aluminum tape or equipment at grounding location.
6. After the satisfactory electrical bond is accomplished, any coatings or protective films removed from the surface must be reapplied. Refer to the model-specific aircraft maintenance manual or Standard Practices Manual for surface protection requirements applicable to affected areas.

The correct material finish is important when mating untreated or bare dissimilar metals. They should be galvanically compatible. When corrosion protection is removed to make an electrical bond, any exposed area after the bond is completed should be protected again. Additional guidance can be found in AC 43.13-1B and SAE ARP1870.

Typical electrical bonding preparation examples are shown in Figure 3-3, Figure 3-4, and Figure 3-5. The hardware specified in Section 3.5.5 must be used unless otherwise specified in this manual. Bonding details for composite and tube-and-fabric aircraft are included in Appendix E.

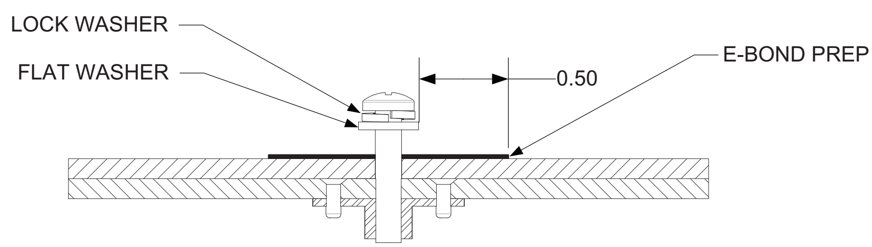


Figure 3-3 Electrical Bonding Preparation - Nut Plate

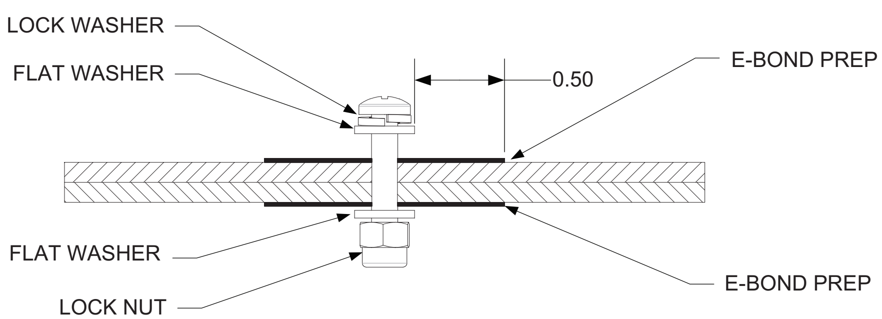


Figure 3-4 Electrical Bonding Preparation - Bolt/Nut Joint

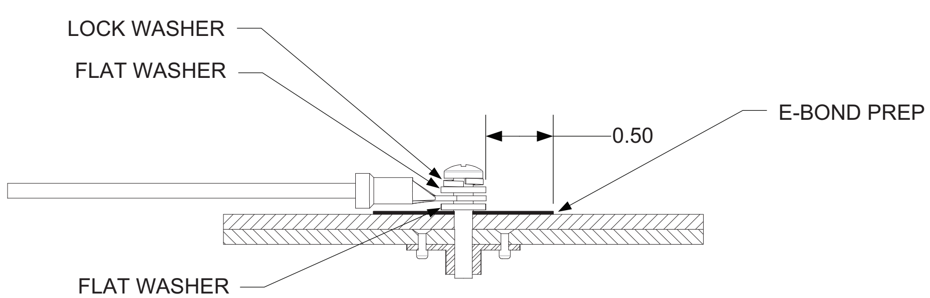


Figure 3-5 Electrical Bonding Preparation - Terminal Lug

3.6.6.1 Electrical Bonding for Flight Stream 210

In order to provide a ground path for the Flight Stream 210, a bonding strap must be constructed. This is accomplished by attaching 10 AWG #8 ring terminal (MS25036) to both ends of 1/4" braid (item 6 in Figure 3-6). The length should be as short as practical but no longer than 20 inches. A wider braid is also acceptable. Cut the flat braid to the desired length.

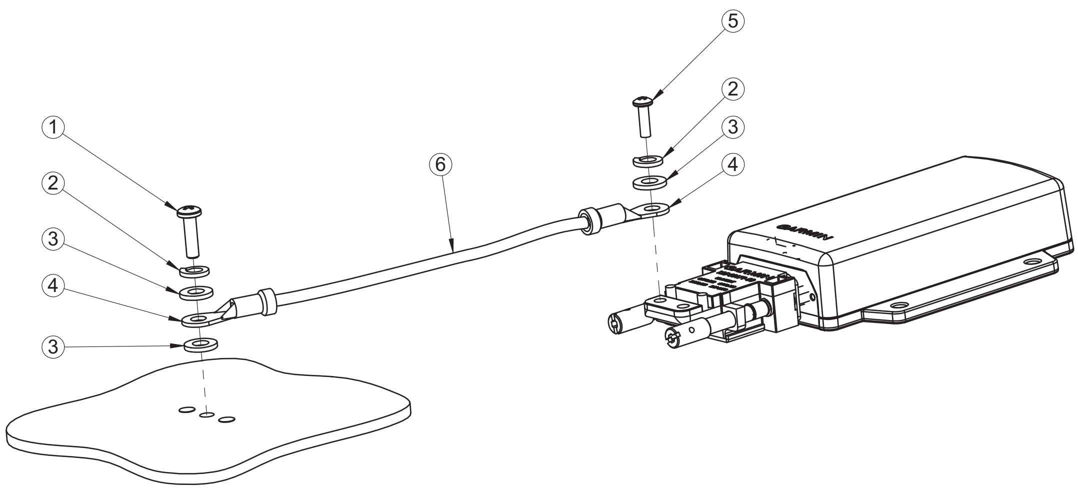
TERMINATING THE BONDING STRAP

Numbers in steps correspond to Figure 3-6.

1. Place a split washer (**2**) on the pan head screw (**5**).
2. Place a flat washer (**3**) on the screw next to the split washer (**2**).
3. Place the terminal lug (**4**) on the pan head screw (**5**) and insert the screw into the tapped hole on the shield block.
4. Terminate the remaining end of the ground wire to nearby grounded metallic structure by selecting a suitable location for the terminal lug. Drill a 0.1695 ±0.005-inch through-hole in the structure.

Depending on the installation location, the terminal stud may be secured using a 8-32 nut plate or a flat washer and lock nut. For suitable hardware, refer to Section 3.5.5.

5. If using a nut plate, install the nut plate to the back side of the structure.
6. Clean and prepare the surface as described in Section 3.6.6.
7. Using a MS35206 pan head screw (**1**), build up the terminal hardware as shown in Figure 3-5.
8. Screw the fastener into the nut plate; the recommended torque value is between 12-15 in-lbf. This torque value also applies if using a lock nut and washer in lieu of a nut plate.
9. Measure between the shield block on the Flight Stream 210 connector and nearby aircraft metallic structure.
10. Ensure the bonding resistance is less than or equal to 10 mΩ.



Item	Detail
1	MS35206 (AN515) #8 Pan head screw
2	MS35338-42 #8 lock washer
3	NAS1149FN832P (AN960-8) #8 washer
4	MS25036 #8 ring terminal
5	MS51957-42 screw
6	QQB575F36T0250 flat braid or wider braid

Figure 3-6 Flight Stream 210 with Connector

3.6.6.2 GTN Xi Interfaced Equipment Electrical Bonding

Equipment interfacing to the GTN Xi must be electrically bonded to the same airframe ground plane as the GTN Xi. Follow the interfacing equipment electrical bonding requirements.

If the interfaced equipment and connectors are metal and designed to maintain shield continuity to airframe ground via the connectors and chassis, then electrical bonding is achieved by electrically bonding the interfaced equipment chassis to airframe ground per the interfacing equipment electrical bonding requirements.

If the interfaced equipment and/or connectors are not metal or not designed to maintain shield continuity to airframe ground via the connectors and chassis, then a bonding strap of less than 6 inches must be connected from the backshell (metal connector) or from a shield drain (non-metal connector) to a #10 ground stud. The bonding strap must be connected to the backshell or shield drain with the GTN wiring. Ensure the bonding strap meets the following specifications:

- The braid is a 7/16” or wider tubular braid (P/N QQB575R30T437, 24120 circular mils)
- The braid contains a terminal lug (mil-spec MS20659-130) at each end
- The strap length is as short as possible, not exceeding 6 inches

Create the bonding strap using the following instructions:

1. Cut an appropriate length of a metal braid (maximum of 6 inches).
2. Terminate both ends with the stated MS20659 terminal.
3. Find a location on the structure to create or re-use an existing ground stud that is size #10 for connection to this bonding strap from the LRU backshell.
4. If creating a new ground stud, create a #10 ground stud in accordance with the instructions in Section 3.6.6.2.1. The hole should be 0.201 inches in diameter.
5. Use the method in Figure 3-7 to connect the #10 terminal to the LRU backshell if the connector is metal. Use the method in Figure 3-8 if the connector is not metal.
6. Torque hardware buildup to 11 to 17 in-lbf.

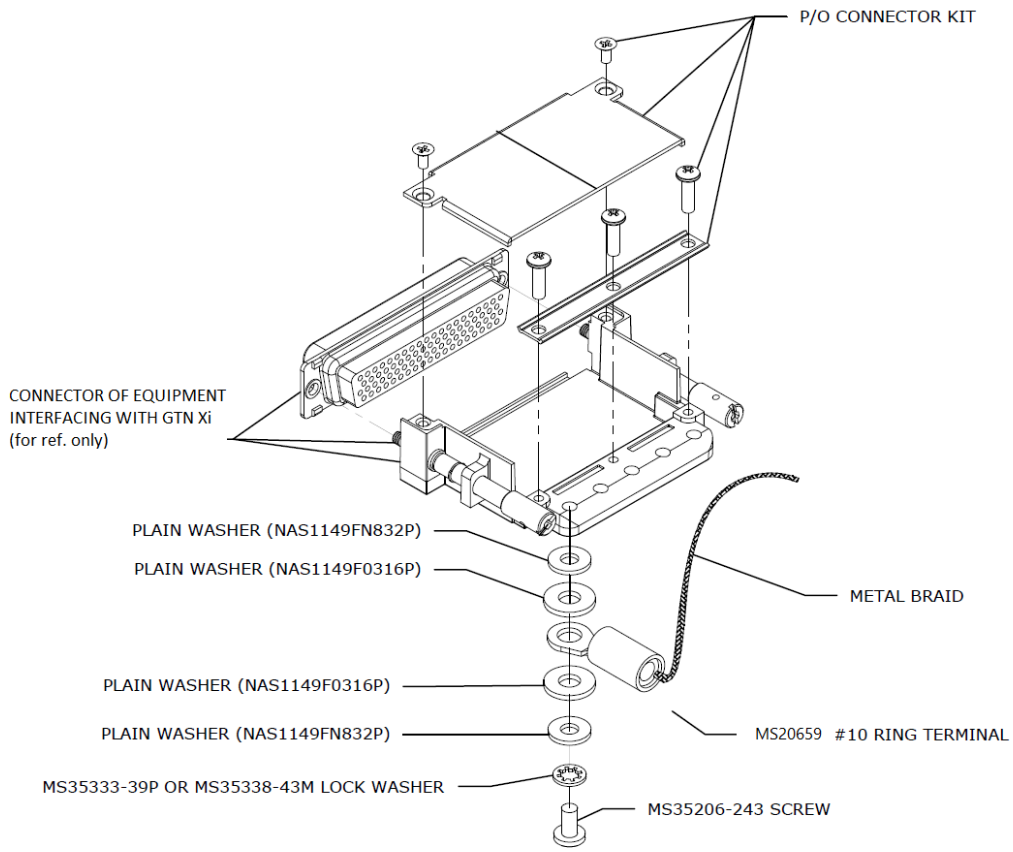


Figure 3-7 Bonding Strap (Metal Connectors)

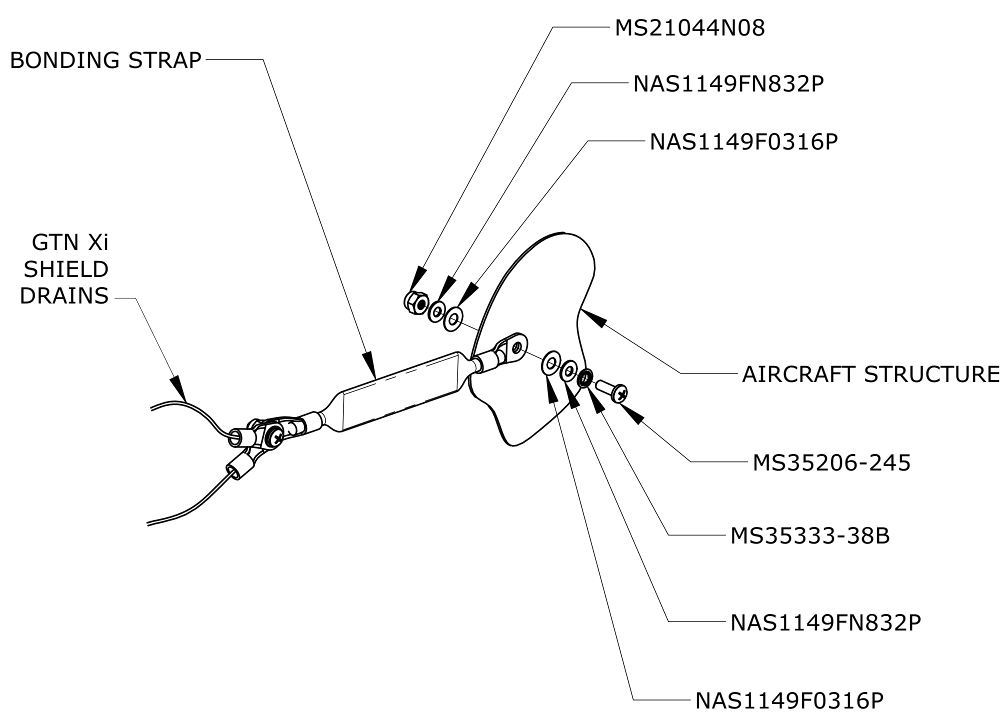


Figure 3-8 Bonding Strap (Non-Metal Connectors)

3.6.6.2.1 Ground Stud Buildup

New ground studs for equipment grounding may be required for some LRU installations. Refer to Figure 3-9 (pan head) or Figure 3-10 (countersunk) for the parts required and the buildup sequence for each ground stud installation. Use the surface preparation steps provided in Section 3.6.6. The pan head screw is the preferred ground stud buildup. If a ground stud is required in a restricted area, or if installed on an instrument panel, the countersunk screw buildup can be used to maintain the aesthetic of the panel. Clean and prepare one side of the sheet metal surface in accordance with Section 3.6.6.

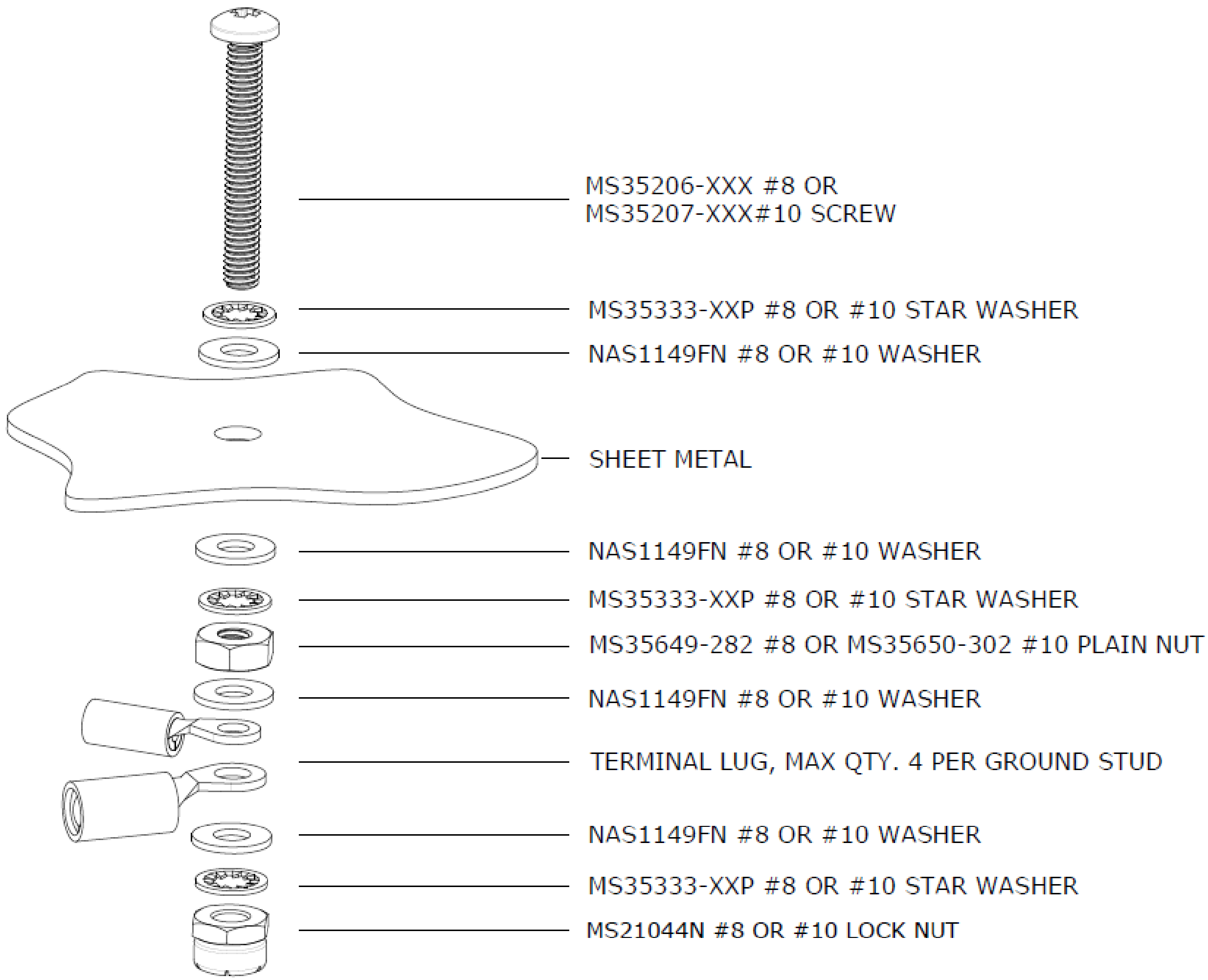


Figure 3-9 Pan Head Screw Ground Stud Buildup (Preferred)

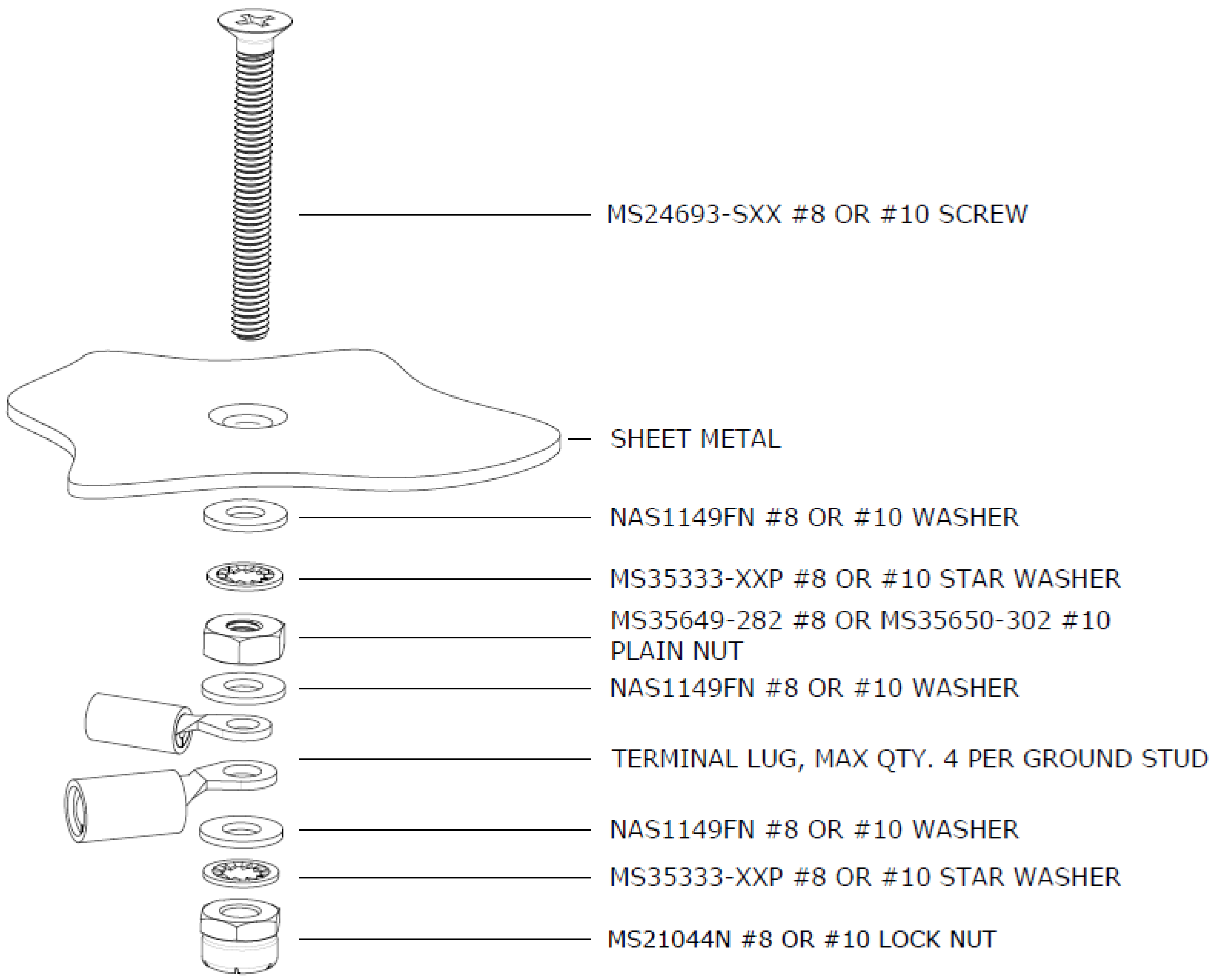


Figure 3-10 Countersunk Screw Stud Buildup

3.6.7 Placards and Labels

Placards and labels added as part of the GTN Xi, GMA 35, and Flight Stream 210 installation must be displayed in a conspicuous place and must not be easily erased, disfigured, or obscured. They must be readable in all cockpit lighting conditions. Ambient flood lighting is acceptable. Text height must be a minimum of 0.10 inches, and the text must contrast with the placard surroundings such that it is easily readable. The text must be a solid-color font of at least 300 DPI (dots per inch).

New circuit breakers and switches installed for the GTN Xi, GMA 35, and Flight Stream 210 unit must be labeled as shown in the applicable interconnect drawing in Appendix B. Applicable interconnect diagrams are listed in Table 3-36.

3.6.7.1 Smart Glide Placard or Label

If Smart Glide is configured per Section 5.4.3.15, a Smart Glide discrete switch must be installed and configured or a placard must be added per the guidance below. Refer to Figure B-20, Sheet 2, for acceptable discrete switches and labeling requirements.

If a discrete switch is not configured or installed, and Smart Glide is configured in the aircraft, a placard with the text "**Press and hold the Direct-to button to activate Smart Glide.**" must be installed adjacent to the #1 GTN Xi in a single or dual GTN Xi installation. In a GTN Xi-GTN 6XX/7XX installation, the placard must be installed adjacent to the GTN Xi.

3.6.8 Power Distribution

For the purpose of this section, an avionics bus is considered to be any group of circuit breakers fed from a common source or multiple sources with a remote switch for the intent of controlling the power to avionics equipment.

The power distribution requirements to install the GTN Xi are based on the aircraft and operational capabilities. Refer to the applicable section listed in Table 3-35 for GTN Xi power distribution/electrical bus structure based on aircraft gross take-off weight (GTOW).

Table 3-35 Power Distribution Section Reference

Aircraft GTOW Weight	IFR/VFR/Both	Section
Less than 6000 lbs	Both	3.6.8.2 or 3.6.8.3
Greater than 6000 lbs	VFR	3.6.8.2 or 3.6.8.3
Greater than 6000 lbs	IFR	3.6.8.4 or 3.6.8.5

3.6.8.1 Circuit Protection

Circuit protection devices for the GTN Xi, GMA 35, and Flight Stream 210 must be push-pull manually resettable circuit breakers (MS26574, MS22073, or other trip-free, push-pull circuit breaker type as specified by the aircraft manufacturer). Figures that contain the circuit breaker ratings for each unit are listed in Table 3-36.

Table 3-36 Circuit Breaker Ratings Reference Figures

Unit	Figure
GTN Xi	Figure B-4
GMA 35	Figure B-50
Flight Stream 210	Figure B-42

The circuit breakers must be readily accessible to the pilot.

A single circuit breaker must be dedicated to the GTN Xi Main and NAV power inputs, as shown in Figure B-4. A single circuit breaker must also be dedicated to the COM input for the GTN 635Xi/650Xi/750Xi. Do not combine more than one unit on the same circuit breaker.

3.6.8.2 Power Distribution - Single GTN Xi, Aircraft Weight Less Than 6000 lbs

When installing a single GTN Xi in a VFR only aircraft **or** an IFR aircraft with a maximum gross takeoff weight of less than 6000 lbs, the GTN Xi should be connected to the avionics bus. The NAV/GPS and COM circuit breakers (refer to Figure B-4) must be connected to the same avionics bus.

When the GTN Xi is the second NAV/COM unit being installed in the aircraft, the GTN Xi should be connected to the avionics bus. The NAV/GPS and COM circuit breakers (refer to Figure B-4 and Figure B-42) must be connected to the same avionics bus. The GTN Xi and other NAV/COM must be grounded at separate ground terminal/stud locations on the aircraft. The power and ground wiring for the GTN Xi should be routed separately from the power and ground wiring for the other NAV/COM. This method, shown in Figure 3-11, will maximize system redundancy if the ground connection for one radio fails.

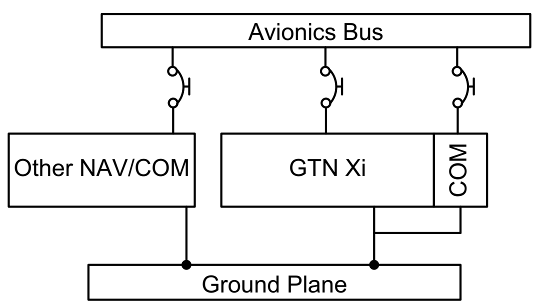


Figure 3-11 Power and Ground Distribution - Single GTN Xi, Aircraft Weight Less Than 6000 lbs

3.6.8.3 Power Distribution - Dual GTN Xi, Aircraft Less Than 6000 lbs or VFR Only Installation

For dual GTN Xi installations in a VFR only **or** IFR aircraft with a maximum certified gross takeoff weight less than 6000 lbs, connect GTN Xi #1 to the avionics bus. The NAV/GPS and COM circuit breakers (refer to Figure B-4) for GTN Xi #1 must be connected to the same avionics bus. If a second avionics bus is available, connect GTN Xi #2 to the second avionics bus; otherwise, connect GTN Xi #2 to the same avionics bus as GTN Xi #1. The NAV/GPS and COM circuit breakers for GTN Xi #2 must be connected to the same avionics bus.

The GTN Xi must be grounded at separate ground terminal/stud locations on the aircraft. Power and ground wiring for GTN Xi #1 should be routed separately from the power and ground wiring for GTN Xi #2 (Figure 3-12). This will maximize system redundancy if the ground connection for one GTN Xi fails.

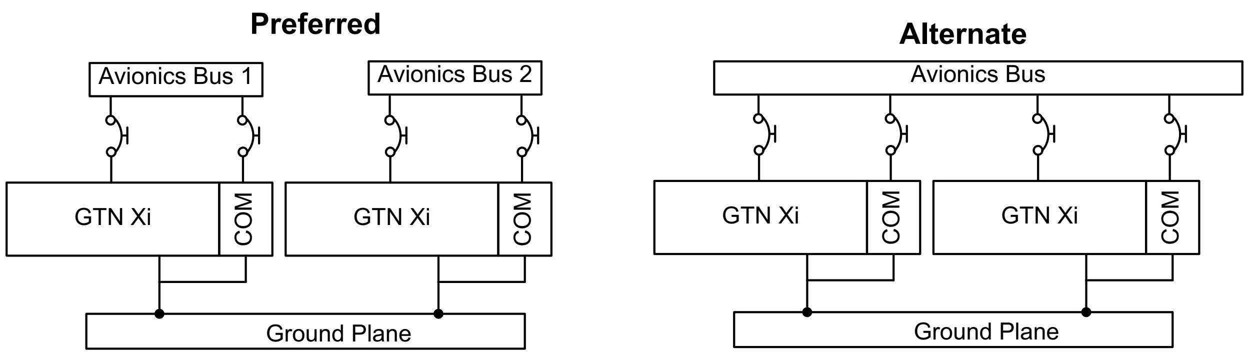


Figure 3-12 Power and Ground Distribution - Dual GTN Xi, Aircraft Weight Less Than 6000 lbs

3.6.8.4 Power Distribution - Single GTN Xi, IFR Installation in Aircraft Greater Than 6000 lbs

When a single GTN Xi is installed in an aircraft with a maximum certified gross takeoff weight of 6000 lbs or greater, the GTN Xi must be installed on a bus (main or avionics) separate from that of other pre-existing NAV/COM systems in the aircraft, as shown in Figure 3-13. The GTN Xi NAV/GPS and COM circuit breakers (refer to Figure B-4) must be connected to the same avionics bus.

The GTN Xi and other NAV/COM must be grounded at separate ground terminal/stud locations on the aircraft. The power and ground wiring for the GTN Xi must be routed separately from the power and ground wiring for the other NAV/COM, including no shared connectors. This will maximize system redundancy if the ground connection for one radio fails.

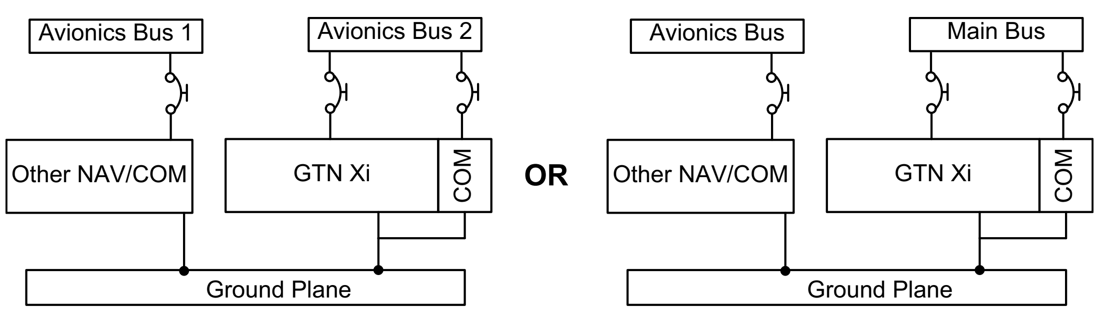


Figure 3-13 Power and Ground Distribution - Single GTN Xi, Aircraft Weight Greater Than 6000 lbs

3.6.8.5 Power Distribution - Dual GTN Xi Units, IFR Installation in Aircraft Greater Than 6000 lbs

When dual GTN Xi units are installed in an aircraft with a maximum certified gross takeoff weight of 6000 lbs or greater, each GTN Xi must be installed on a separate avionics bus. If two avionics buses are not available in the aircraft, install GTN Xi #1 on the main bus and GTN Xi #2 on the avionics bus. Both options are shown in Figure 3-14. Preferably, GTN Xi #1 should not be connected to the bus that supplies power to the GTN Xi #2 avionics bus. The GTN Xi #1 NAV/GPS and COM circuit breakers (refer to Figure B-4) must be connected to the same bus, and the GTN Xi #2 NAV/GPS and COM circuit breakers must also be connected to the same bus.

The GTN Xi must be grounded at separate ground terminal/stud locations on the aircraft. The power and ground wiring for GTN Xi #1 must be routed separately from the power and ground wiring for GTN Xi #2, including no shared connectors. This will maximize system redundancy if the ground connection for one GTN Xi fails.

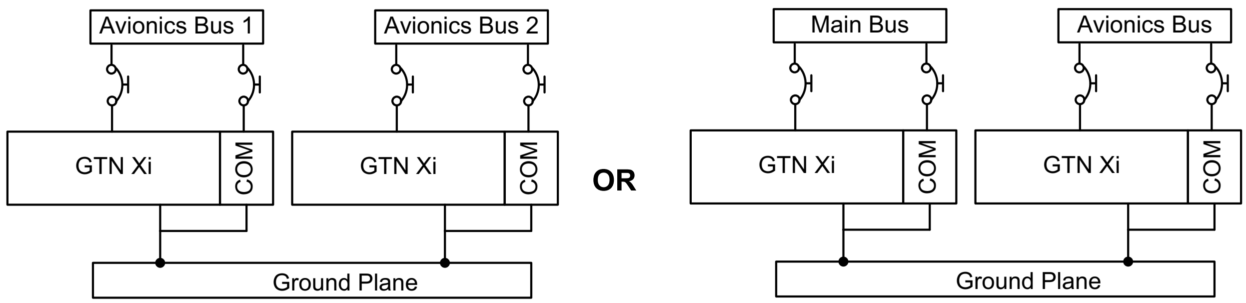


Figure 3-14 Power and Ground Distribution - Dual GTN Xi, Aircraft Weight Greater Than 6000 lbs

3.6.8.6 Power Distribution - GMA 35 Audio Panel

The GMA 35 Audio Panel must be connected to the same electrical bus as the interfaced GTN Xi if GTN Xi #1 and GTN Xi #2 are on separate buses. If the GTN Xi units are on the same bus, any avionics bus can be used.

3.6.8.7 Power Distribution - Flight Stream 210

When a Flight Stream 210 is installed, it should be connected to an avionics bus. It is recommended that the Flight Stream 210 is installed on the same avionics bus as the interfaced GTN Xi. In dual GTN Xi installations, it is preferred to connect the Flight Stream 210 to a GTN Xi that is on an avionics bus.

3.6.9 Optional Switch Installation

If optional switches are installed as part of the GTN Xi and GMA 35 installations, each switch installed must meet the following requirements:

- The switch must be labeled as specified in the interconnect drawings in Appendix B
- The label must be adjacent to the switch
- The switch must be readily accessible to the pilot
- The label must be visible under all cockpit lighting conditions (refer to Section 3.6.7)

3.6.10 External Annunciations

Refer to Section 3.6.11.1.1 to determine if external annunciators are required.

3.6.11 Unit Mounting Considerations

3.6.11.1 GTN Xi Mounting Considerations

The GTN Xi should be mounted in the avionics stack in the aircraft instrument panel within view and reach of the pilot. The primary unit location should minimize pilot head movement when transitioning between looking outside of the cockpit and viewing or operating the GTN Xi. The location should be such that the GTN Xi is not blocked by the glare shield on top or by the engine controls, control yoke, etc., on the bottom. If the aircraft has a throw-over yoke, ensure it does not interfere with the GTN Xi.

For VFR-only installations, the GTN Xi must be mounted in the aircraft manufacturer's approved location or other FAA-approved location. A CDI/HSI is necessary for installations using VOR/ILS information. If a CDI/HSI is installed, a proper source selection annunciation must be used.

For IFR GPS installations, the GTN Xi must be mounted in the aircraft manufacturer's approved location or other FAA-approved location, and the required CDI/HSI must be mounted in the primary field-of-view. CDI/HSI navigation source selection annunciation must be on or near the affected display and any additional annunciations must be mounted within the normal field-of-view.

The source selection annunciation displayed on the GTN Xi must be within 13.9 inches of the pilot's view centerline (refer to Figure 3-15). If the CDI is to the left or right of the centerline, it must favor the same side as the GTN Xi placement (i.e., typically the radio stack is on the right of the pilot's view centerline, so the CDI should be on the right side of the basic primary flight instruments). A CDI/HSI with a built-in annunciation may be used in lieu of a separate external annunciator to satisfy the source selection annunciation requirement. Additionally, required GPS navigation annunciations (refer to Section 3.6.11.1.3) must be within 16.8 inches of the pilot's view centerline. If the GTN Xi display is within this area, then no external GPS navigation annunciations are required.

The GTN Xi may be installed outside the acceptable view parameters if it is used as a redundant or secondary navigation device. (e.g., the GTN Xi may be installed to the right of a center radio stack when two columns of avionics are available. This places the unit too far from the pilot's normal scan. As such, IFR flights may not originate or be predicated on this unit unless the primary system has failed).

If a GNS 400W/500W is installed concurrently with a GTN Xi, it is recommended the GTN Xi be mounted in the #1 position relative to the GNS in a GTN Xi/GNS installation. In a typical radio stack, this would be above the GNS. This recommendation is only applicable if the GTN Xi-GNS crossfill function is utilized in the installation.

3.6.11.1.1 Determination of Acceptable Field-of-View

The FAA has determined the acceptable field-of-view for TSO-C146c annunciations related to navigation source selection is approximately ±30° horizontally from the center of the attitude indicator (or centerline of the pilot's seat/yoke), and the acceptable field-of-view for TSO-C146c annunciations related to GPS navigation data is approximately ±35° horizontally from the center of the attitude indicator. These angles are based on the closest panel distance of 24 inches resulting in a measured offset from the attitude indicator of 13.9 inches and 16.8 inches, respectively.

The acceptable vertical field-of-view includes the area from the top of the instrument panel to the portion of the instrument panel that is immediately below the basic "T" instruments. For an IFR-approved GPS installation, either:

- The GTN Xi must be located within the ±35° horizontal acceptable field-of-view; or
- Source selection and GPS annunciations are required to be installed

If the GTN Xi is installed between ±30° and 35° horizontally, at a minimum, source selection annunciation must be installed. Note that Figure 3-15, Figure 3-16, and Figure 3-17 show a GTN 7XX Xi. The dimensions shown in these drawings are also applicable to the GTN 6XX Xi. If the GTN Xi is installed within ±30° horizontally, no external annunciations are required.

NOTE

If a GTN Xi is installed with an EFIS in the primary field-of-view that provides the annunciations discussed in the following sections, then external annunciators are not required. The G5, GDU 620, and GDU 700/1060 provide all of the annunciations required by these sections.

3.6.11.1.2 Source Selection Annunciation

Installations of the GTN Xi in the existing center radio stack in aircraft with an analog T configuration are considered to be in the primary (acceptable) field-of-view per AC 20-138D.

Use the steps below to determine whether or not the integrated source selection annunciation displayed on the GTN Xi to be installed is within the acceptable field-of-view. Refer to Figure 3-15.

1. Determine the pilot's primary view centerline, utilizing the following criteria:
   - For aircraft with a basic "T" instrument configuration, with the attitude indicator in the upper-center location, the center of this instrument should be used as the primary view centerline
   - If the basic "T" is offset away from the radio stack with respect to the control yoke, or a non-standard instrument cluster is present in the aircraft, the center of the control yoke or stick in the neutral position may be used as the primary view centerline
   - If the control yoke/stick is offset from the center of the pilot's seat, an imaginary line extended through the center of the pilot's seat may be used as the primary view centerline
2. Measure the horizontal distance from the primary view centerline to the left or right edge of the GTN Xi.
3. If the GTN Xi is mounted to the right of the primary instruments, the internal annunciations are considered to be within the acceptable field-of-view if the following criteria are met:
   - The left edge of the GTN Xi bezel is within 10.6 ± 0.25inches of the primary view centerline
   - The top edge of the GTN Xi is no lower than the bottom edge of the primary flight instruments or the unit is line abreast with the affected CDI
4. If the GTN Xi is mounted to the left of the primary instruments, the internal annunciations are considered to be within the acceptable field-of-view if the following criteria are met:
   - The right edge of the GTN Xi is within 10.0 ± 0.25 inches of the primary view center line
   - The top edge of the GTN Xi is no lower than the bottom edge of the primary flight instruments or the unit is line abreast with the affected CDI

The GTN Xi may only be installed outside of the acceptable field-of-view if it is interfaced to a Garmin EFIS display or a non-Garmin EFIS display that is capable of displaying Source Selection annunciation (refer to Appendix Section C.1.5).

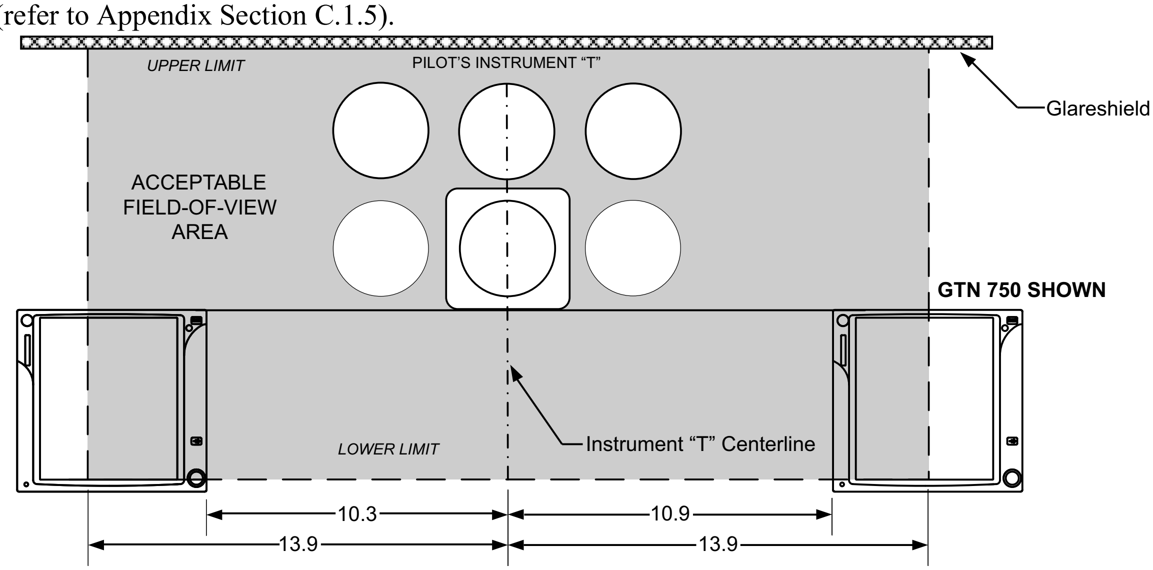


Figure 3-15 GTN Xi CDI Source Selection Annunciation Field-of-View (±30°)

3.6.11.1.3 GPS Navigation Annunciation

Installations of the GTN Xi in the existing center radio stack in aircraft with an analog T configuration are considered to be in the primary (acceptable) field-of-view per AC 20-138D.

Use the steps below to determine whether or not the integrated GPS navigation annunciation displayed on the GTN Xi to be installed is within the acceptable field-of-view, as depicted in Figure 3-16.

1. Determine the pilot's primary view centerline, as defined in step 1 of Section 3.6.11.1.1.
2. Measure the horizontal distance from the primary view centerline to the left or right edge of the GTN Xi.
3. If the GTN Xi is mounted to the right of the primary instruments, the internal annunciations are considered to be within the acceptable field-of-view if the following criteria are met:
   - The left edge of the GTN Xi bezel is within 14.4 inches of the primary view centerline
   - The top edge of the GTN Xi is no lower than the bottom edge of the primary flight instruments or the unit is line abreast with the affected CDI
4. If the GTN Xi is mounted to the left of the primary instruments, the internal annunciations are considered to be within the acceptable field-of-view if the following criteria are met:
   - The right edge of the GTN Xi bezel is within 12.2 inches of the primary view centerline
   - The top edge of the GTN Xi is no lower than the bottom edge of the primary flight instruments or the unit is line abreast with the affected CDI

The GTN Xi may only be installed outside of the acceptable field-of-view if it is interfaced to a Garmin EFIS display (refer to Appendix Section C.1.5 for approved displays) that is providing GPS navigation annunciations.

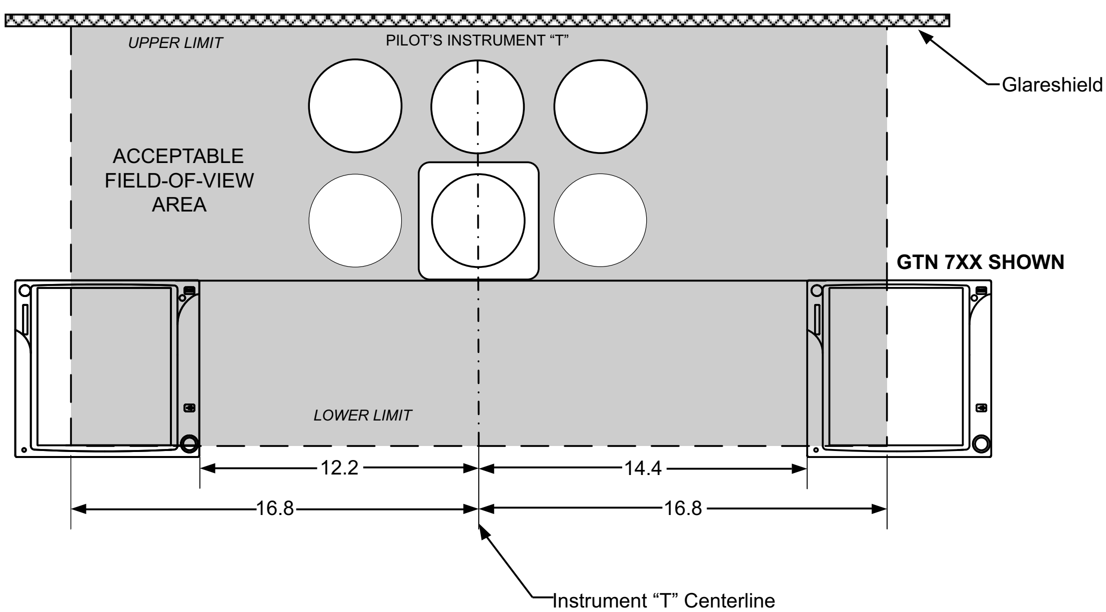


Figure 3-16 GTN Xi GPS Navigation Annunciation Field-of-View (±35°)

3.6.11.1.4 TAWS Annunciation (Units with TAWS Only)

Installations of the GTN Xi in the existing center radio stack in aircraft with an analog T configuration are considered to be in the primary (acceptable) field-of-view per AC 20-138D.

Use the steps below to determine whether or not the integrated TAWS annunciations displayed on the GTN Xi to be installed are within the acceptable field-of-view, as depicted in Figure 3-17.

1. Determine the pilot's primary view centerline, as defined in step 1 of Section 3.6.11.1.2.
2. Measure the horizontal distance from the primary view centerline to the left or right edge of the GTN Xi.
3. If the GTN Xi is mounted to the right of the primary instruments, the internal annunciations are considered to be within the acceptable field-of-view if the following criteria are met:
   - The left edge of the GTN Xi bezel is within 15.4 inches of the primary view centerline
   - The top edge of the GTN Xi is no lower than the bottom edge of the primary flight instruments or the unit is line abreast with the affected CDI
4. If the GTN Xi is mounted to the left of the primary instruments, the internal annunciations are considered to be within the acceptable field-of-view if the following criteria are met:
   - The right edge of the GTN Xi bezel is within 11.5 inches of the primary view centerline
   - The top edge of the GTN Xi is no lower than the bottom edge of the primary flight instruments or the unit is line abreast with the affected CDI

If the GTN Xi internal TAWS annunciations do not meet the criteria for acceptable field-of-view as defined above, an external annunciator unit must be installed within 16.8 inches of the view centerline.

The external TAWS annunciator unit must contain, at a minimum, the following annunciations:

- PULL UP (terrain warning) – red
- TERR (terrain caution) – amber/yellow
- TER N/A (terrain not available) – amber/yellow
- TER INHB (terrain inhibited) – white

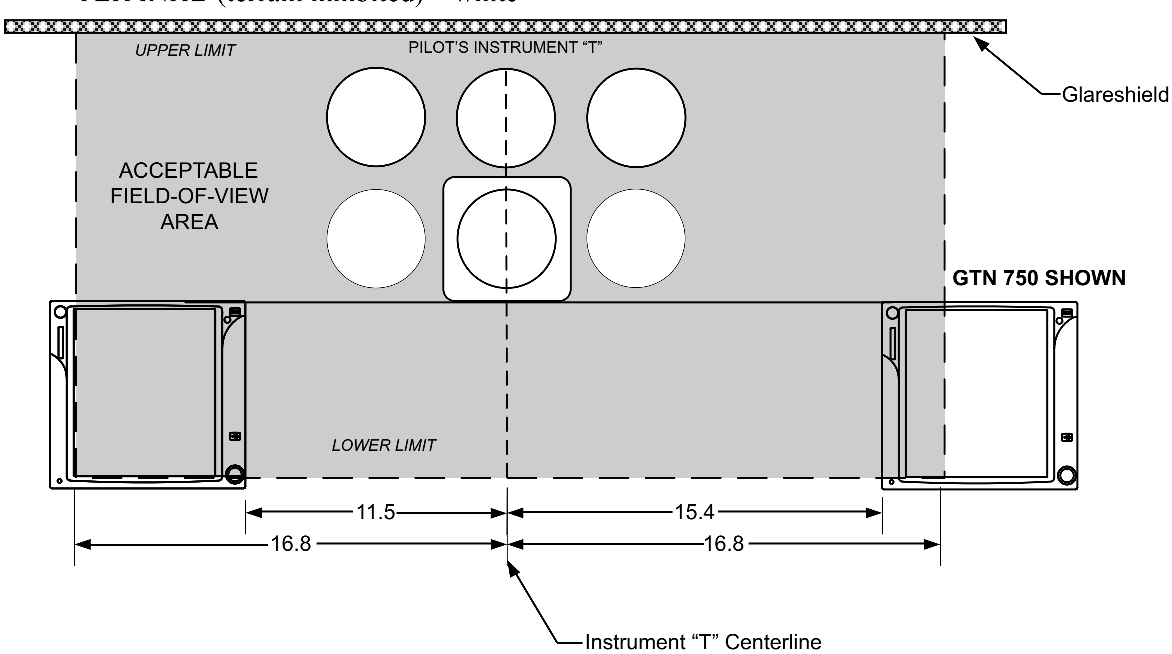


Figure 3-17 TAWS Annunciation Field-of-View (±35°)

3.6.11.2 Flight Stream 210 Mounting Considerations

The following must be considered when selecting a Flight Stream 210 mounting location:

- The Flight Stream 210 contains an attitude sensor so it must be mounted rigidly to aircraft structure where vibration is minimized
- Do not use shock mounting. Mounting in a vibration-prone area may result in degraded accuracy
- The Flight Stream 210 can be mounted in any direction on the roll axis and up to and including 45° from centerline for the pitch axis. For details, refer to Figure 3-18 and Figure 3-19
- The Flight Stream 210 may be mounted offset from the aircraft centerline, but must be mounted with the connector pointed in the direction of flight on the yaw axis. Up to 3° of deviation is acceptable for mounting along the yaw axis (the arrow symbol on the side of the unit points in the direction of flight). Failure to mount the Flight Stream 210 with the connector pointed in the direction of flight will result in attitude error
- The Flight Stream 210 must be installed within the cabin/cockpit of the aircraft
- Mounting location must allow for a minimum of 3 inches between the edge of the connector and nearby objects
- The Flight Stream 210 housing is made up of a non-metallic material. A ground terminal strap must be installed to ground the shield block to aircraft ground. Identify a terminal lug location when selecting a mounting location for the Flight Stream. Refer to Section 3.6.6.1 for detailed instructions on how to properly terminate the Flight Stream 210

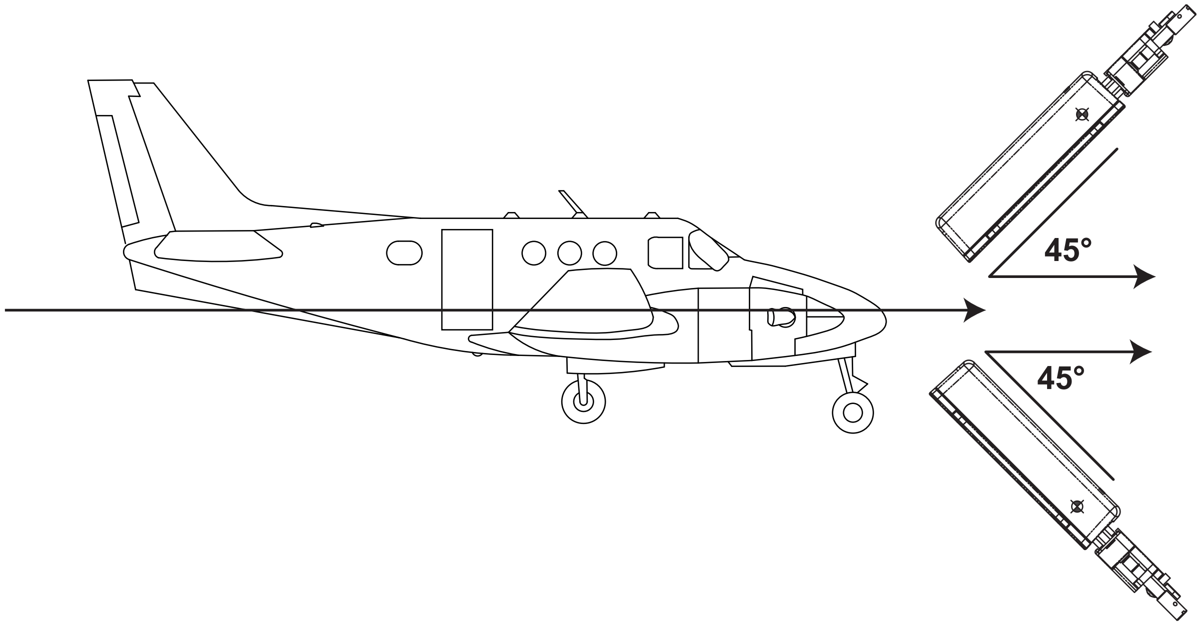


Figure 3-18 Flight Stream 210 Mounting Considerations

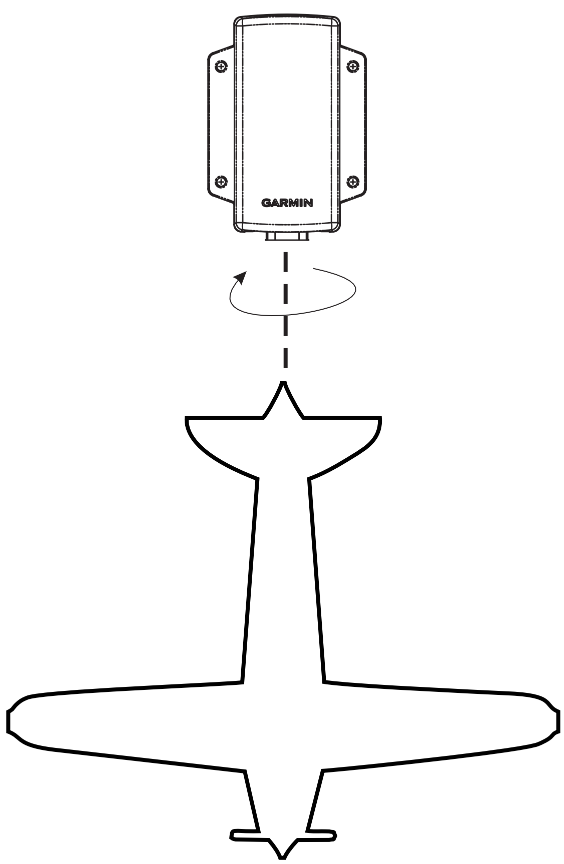


Figure 3-19 Mounting Orientation - Roll Axis

3.6.12 Cable and Wiring Considerations

Wiring should be installed in accordance with AC 43.13-1B Chapter 11, Sections 8 through 13. Observe the following precautions when installing cables and wiring:

- Care must be taken to adequately support and protect cable harnesses from chafing
- Cable harnesses should not be located near flight control cables, high-capacity electrical lines (e.g., DC electric motor cables), or fuel lines
- Cable harnesses should be located in a protected area of the aircraft (i.e., isolated from engine rotor burst)
- Cable harnesses should not be routed near high-energy sources (e.g., DC motors, high-heat sources)
- Shield drains must be less than 3 inches
- For dual GTN Xi (or GTN 6XX/7XX) installations, the cable harnesses must be routed separately

Refer to Appendix B for the applicable wiring connections to assemble the wiring connectors.

3.6.12.1 Pressurized Aircraft Considerations

In pressurized aircraft, wiring that penetrates the pressure vessel must be installed in accordance with the Type Design of the aircraft. Any wires that penetrate the pressure bulkhead must use existing provisions, such as spare pins in the existing bulkhead connectors or through existing sealed bulkhead feedthroughs, in accordance with the aircraft maintenance manual.

Substantiation for additional holes in the pressure vessel is beyond the scope of this manual and requires additional data from the aircraft manufacturer or other FAA-approved data.

If mounting the Flight Stream 210 in a pressurized location, the internal pressure sensor will read the ambient pressure in the cockpit. This function may be disabled on the connected PED.

3.6.12.2 Coaxial Cable Considerations

When routing coaxial cables, observe the following precautions:

- All cable routing should be kept as short and as direct as possible
- Avoid sharp bends
- Avoid routing cables near power sources (e.g., 400 Hz generators, trim motors, etc.) or near power for fluorescent lighting
- Avoid routing the marker beacon antenna cable near other antenna cables (e.g., ADF, COM, NAV, G/S)

Refer to Section 3.5.2.1 and Section 3.5.2.2 for recommended coaxial cable types.

3.6.12.3 Shield Termination Consideration

Shield terminations must be kept as short as possible and should be less than 3 inches unless the non-Garmin equipment manufacturer's installation requirements specify otherwise. When there are no requirements given by the non-Garmin equipment manufacturer's installation manual, then the shields may be connected to the metal connector backshell when the backshell is grounded to airframe ground. Alternatively, the shield termination may be directly connected to airframe ground. Maintain shield continuity through all intermediate connectors unless otherwise specified (including audio lines).

Audio line shields should be continuous from end-to-end and be grounded only at one end to prevent ground loops. Refer to Section 3.6.16.

If wiring from the GTN Xi goes to a unit that uses overbraided wires, then the GTN Xi wiring to that unit must also be overbraided. If the wiring passes through bulkhead connectors, then each segment must be overbraided and the overbraid must be grounded at both ends, unless otherwise shown in the equipment's installation manual. The overbraid must be terminated as close to the connector as possible and in accordance with manufacturer's installation requirements.

3.6.13 GTN Xi Cooling Requirements

The GTN Xi has a cooling fan integrated into the backplate to draw forced-air cooling through the unit. There are inlets along the left, right, and bottom sides of the GTN Xi bezel that allow air to flow through the unit. Ensure there are no obstructions to the air inlets or fan exhaust. Airflow should be unrestricted from the bezel inlets to the fan outlet in the backplate on the rear of the unit.

3.6.14 GMA 35 Cooling Requirements

The GMA 35 does not have provisions for attaching cooling air. Installing an external fan or providing space for natural convection is always a good practice and is recommended to increase the product life.

3.6.15 Flight Stream 210 Cooling Requirements

The Flight Stream 210 does not require external cooling.

3.6.16 Audio Electrical Noise

Take care to minimize effects from coupled interference and ground loops. Avoid routing audio system interconnecting cables near large AC electric fields, AC voltage sources and pulse equipment (e.g., strobes, spark plugs, magnetos, EL displays, CRTs, etc.), and large AC current-carrying conductors or switched DC equipment (e.g., heaters, solenoids, fans, autopilot servos, etc.).

All audio jacks should be isolated from ground. Audio shields should only be grounded at one end to prevent ground loops. The wiring diagrams and accompanying notes in this manual should be followed closely to minimize audio electrical noise effects.

3.6.17 GMA 35 Wiring Considerations for Failsafe Operation

The GMA 35 includes a failsafe circuit that connects the pilot's headset and microphone directly to COM 1 in the event that power is interrupted or RS-232 communication with the GTN Xi is lost.

When the GMA 35 is installed with a GTN 750Xi and a second COM radio, the GTN 750Xi COM must be connected to the COM 2 pins on the GMA 35. The other radio should be connected to the COM 1 pins. This will prevent the loss of both COM radios if power to the GMA 35 or RS-232 communication to the GMA 35 is lost. The GTN Xi includes a configuration setting to allow the GTN 750Xi COM radio to appear as COM 1 in the GTN Xi user interface. COM 1 Is Connected As COM 2 should be set to *True* in this case. Refer to Section 5.4.6.6.2 for information about this setting.

If the GMA 35 is installed with a GTN 725Xi (no COM) and two other COM radios, wire COM 1 to the COM 1 pins on the GMA 35 and COM 2 to the COM 2 pins. COM 1 Is Connected As COM 2 should be set to *False* in this case. Refer to Section 5.4.6.6.2 for information about this setting.

If the GMA 35 is installed with dual GTN 750Xi units, wire the GTN 750Xi that is controlling the GMA 35 to the COM 2 pins on the GMA 35 and wire the GTN 750Xi that is not controlling the GMA 35 to the COM 1 pins on the GMA 35. If GTN 750Xi #1 is the one that is controlling the GMA 35, COM 1 Is Connected As COM 2 should be set to *True*; otherwise, it should be set to *False*.

3.6.18 Magnetic Compass Recalibration

If the GTN Xi is mounted less than 12 inches from the compass, the compass should be recalibrated and the necessary changes for noting correction data should be made.

3.6.19 Weather Radar Wiring Considerations

This STC only approves GTN Xi interface with weather radar in metal aircraft. Weather radar data can be displayed only on GTN 7XX Xi units. Weather radars that use ARINC 453/708 for data transfer must be connected directly to the GTN 7XX Xi. For an installation that includes a GWX 68/70/75 and two GTN Xi units, the GWX 68/70/75 can be connected to either GTN Xi and the data will be forwarded over HSDB to the GTN 7XX Xi.

3.6.20 Smart Glide Considerations

Smart Glide requires TAS, HDG, roll angle, OAT, and baro altitude information from an approved ADAHRS source or connected G500/G600 TXi, GI 275 PFD, G3X, or G5. The GTN Xi uses the information to calculate real-time winds for glide performance calculation. Smart Glide provides aural alerts and therefore requires a connection to an unswitched input on an audio panel from the #1 GTN Xi in a single or dual GTN Xi installation or from the GTN Xi in a GTN Xi-GTN 6XX/7XX installation.

3.7 Electrical Load Analysis

An Electrical Load Analysis (ELA) must be completed on each aircraft prior to installation to verify the aircraft electrical system is capable of supporting the GTN Xi, GMA 35, and Flight Stream 210. If it is determined the modification results in an increase in electrical load, then it must be further verified the aircraft electrical system remains in compliance, which includes both electrical generation capacity and, if loads have been increased, that reserve battery capacity remains adequate to support loads essential to continued safe flight and landing. If the existing battery does not meet the battery capacity requirements, a battery that has sufficient capacity must be installed. The installation of another battery is beyond the scope of this STC. The Blank Emergency Power Calculation Form (Figure 3-25) may be used for this reserve battery capacity calculation.

ASTM F2490-05, *Standard Guide for Aircraft Electrical Load for Power Source Analysis* provides acceptable guidance for conducting a complete analysis of increased electrical load.

As part of the installation it must be shown the maximum electrical system demand does not normally exceed 80% of the alternator data plate rating. Satisfactory completion of the ELA should be recorded on FAA Form 337. There are several approaches that could be taken, as described in the following sections. For each approach, use the values outlined in Table 3-37.

The GTN Xi, GMA 35, and Flight Stream 210 are capable of operating at either 14 or 28 VDC. Refer to the individual equipment Environmental Qualification Forms for details on surge ratings and minimum/ maximum operating voltages.

Table 3-37 LRU Current Draw

LRU	14V System		28V System	
	Typical	Maximum	Typical	Maximum
GTN 625Xi/635Xi/650Xi (Main Connector)	1.6 A [1]	2.8 A [2] [3]	0.8 A [1]	1.5 A [2] [3]
GTN 635Xi/650Xi (COM Connector)	0.45 A	5.66 A (16W COM) 4.02 A (10W COM)	0.21 A	2.33 A (16W COM) 1.76 A (10W COM)
GTN 650Xi (NAV Connector)	0.60 A	0.90 A [2]	0.30 A	0.45 A
GTN 725Xi/750Xi (Main Connector)	2.4 A [1]	3.4 A [2] [3]	1.2 A [1]	1.8 A [2] [3]
GTN 750Xi (COM Connector)	0.45 A	5.66 A (16W COM) 4.02 A (10W COM)	0.21 A	2.33 A (16W COM) 1.76 A (10W COM)
GTN 750Xi (NAV Connector)	0.60 A	0.90 A [2]	0.30 A	0.45 A [2]
GMA 35	0.80 A	1.50 A	0.40 A	1.0 A
GMA 35c	0.80 A	1.50 A	0.40 A	1.0 A
Flight Stream 210	0.10 A	0.10 A	0.05 A	0.05 A

Notes:

[1] The specified current draw is with the display backlight set to 100% and the fan operating at low speed. If the superflags are connected, their current draw must be added in addition to the specified current. The superflags will supply up to 320 mA each regardless of the GTN Xi's input voltage.

[2] The specified current draw does not include the superflags. If connected, their current draw must be added to the specified current. The superflags will supply up to 320 mA each regardless of the GTN Xi's input voltage.

[3] The Flight Stream 510 adds 0.1 A to the maximum current draw at both 14 and 28 volts.

3.7.1 Aircraft with Existing Electrical Load Analysis

If there is an existing ELA for the aircraft, this must be updated to reflect the modification. It must show the alternators/generators have adequate capacity to supply power to the modified systems in all anticipated conditions. Add the applicable typical current draw values from Table 3-37 to the existing ELA under continuous operating conditions. Verify the new aircraft electrical load does not exceed the rated capacity of the installed generator/alternator. After performing the calculations, if the additional load exceeds the rated capacity of the generator/alternator, proceed to the steps in Section 3.7.2. If the additional load still exceeds the generator rated capacity, alternate FAA approval is required for installation of the GTN Xi, GMA 35, or Flight Stream 210 in the aircraft.

3.7.2 Aircraft without Existing Electrical Load Analysis

Prior to undertaking a complete Electrical Load Analysis, the net change to the electrical load resulting from the GTN Xi installation should be determined. Refer to Figure 3-20 for a sample calculation. The results of this analysis will determine how to proceed further.

Items removed from aircraft:	Electrical Load (A) [1]	Comment
GNS 530W (Main Connector)	1.4 A	
GNS 530W (COM Connector)	0.015 A	Used non-transmitting current draw.
GNS 530W (NAV Connector)	0.5 A	
PMA 7000M	2.5 A	
Subtotal:	4.415 A	

Items added to aircraft:	Electrical Load (A) [1] [2]	Comment
GTN 750Xi (Main Connector)	1.2 A	
GTN 750Xi (COM Connector)	0.21 A	Used non-transmitting current draw.
GTN 750Xi (NAV Connector)	0.3 A	
GMA 35	0.40 A	
Flight Stream 210	0.05 A	
Subtotal:	2.16 A	

Net Change in Bus Load:	-2.255 A [3]

Notes:

[1] Use typical current draw when performing this calculation.

[2] Use 28V current draw values for this calculation.

[3] To obtain a Net Change in bus load, subtract the “Items Removed” subtotal from the “Items Added” subtotal.

Figure 3-20 Sample Net Electrical Load Change Calculation

3.7.3 Performing an Electrical Load Analysis by Measurement

CAUTION

To avoid damage to equipment, ensure the ammeter is capable of handling the anticipated load.

CAUTION

The pitot heat should only be switched on long enough to take the current measurement and then switched off. The pitot probe may get hot, so care should be exercised to avoid burns or damaging the unit.

NOTE

Performing an ELA using electrical measurements is not an acceptable method for commuter category airplanes.

NOTE

Intermittent electrical loads are not measured. It is assumed that if additional current is required beyond what the alternator can supply, this short-duration demand will be provided by the battery.

NOTE

It is permissible to exceed 80% of the alternator data plate rating during the takeoff/landing phase of flight when the pitot heat and landing light are switched on simultaneously. However, for this condition (i) you must not exceed 95% of the alternator data plate rating, and (ii) you must not exceed 80% of the alternator data plate rating with the pitot heat on and the landing light off.

The following section describes how to perform an ELA for a single alternator/single battery electrical system. This should be modified accordingly for aircraft with multiple batteries or alternators, and it must be shown the maximum electrical demand for each alternator does not normally exceed 80% of the alternator data plate rating.

In this section, the following definitions are used:

- *normal operation*: the primary electrical power generating system is operating normally
- *emergency operation*: the primary electrical power generating system is inoperative

An in-circuit or clamp-on, calibrated ammeter with 0.5 A or better accuracy can be used for current measurement. Record the continuous (data plate/nameplate) rating for the alternator and battery.

1. Compile a list of electrical loads on the aircraft using the blank electrical load tabulation form provided in Figure 3-22. Generally, this is a list of circuit breakers and circuit breaker switches. An example is shown in Figure 3-23.
2. Identify whether each load is continuous (e.g., GPS) or intermittent (e.g., stall warning horn, landing gear).
3. Identify whether each load is used in a particular phase of flight for normal operation using the worst-case flight condition. If some loads are mutually exclusive and will not be turned on simultaneously (e.g., pitot heat and air conditioning), use only those loads for the worst-case condition.
4. Identify whether each load is used in a particular phase of flight for emergency operation. As a minimum, these systems include:
    - COM radio #1
    - NAV radio #1

- ◦ Transponder and associated altitude source
- ◦ Audio panel
- ◦ Stall warning system (if applicable)
- ◦ Pitot heat
- ◦ Landing light (switched on during landing only)
- ◦ Instrument panel dimming

5. Insert or attach the calibrated ammeter in the line from the external power source to the master relay circuit as shown in Figure 3-21. This eliminates errors due to the charging current drawn by the battery.

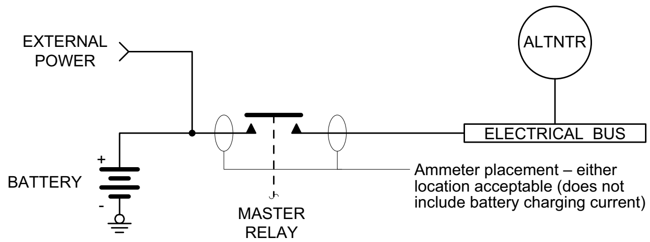


Figure 3-21 Ammeter Placement for Current Measurements

6. Verify that all circuit breakers are closed.
7. Apply external power to the aircraft. Power source voltage should be set to nominal alternator voltage (usually 13.8 VDC or 27.5 VDC).
8. Turn on the battery master switch.
9. Set the lighting as described below. These settings will be used for every current measurement that follows.
   - ◦ All instrument panel and flood lights should be set to maximum brightness
   - ◦ The GTN Xi backlight should be set to 50% brightness
   - ◦ Any other displays with a backlight should be set to 50% brightness
10. Using the tabulation completed above, switch on all continuous electrical loads used in the taxiing phase and record ammeter current reading (measurement (a) in Figure 3-22). The following items should be taken into consideration for this measurement:
    - ◦ The autopilot circuit breaker should be closed, but the autopilot should not be engaged
11. Using the tabulation completed above, switch on all continuous electrical loads used in the normal takeoff/landing phase and record ammeter current reading. Measurements must be taken with the landing lights ON and OFF (measurements (b1) and (b2) in Figure 3-22).
    - ◦ The autopilot circuit breaker should be closed, and the autopilot should be engaged
12. Using the tabulation completed above, switch on all continuous electrical loads used in the normal cruise phase and record the ammeter current reading (measurement (c) in Figure 3-22).
    - ◦ The autopilot circuit breaker should be closed, and the autopilot should be engaged
13. Using the tabulation completed above, switch on all continuous electrical loads used in the *emergency* cruise phase and record the ammeter current reading. Record the current drawn with the landing light switched OFF and again with the landing light switched ON.
14. Using the tabulation completed above, switch on all continuous electrical loads that are used for the *emergency* landing phase and record the ammeter current reading.
15. Using the values measured and recorded, complete the ELA using the blank form in Figure 3-22. Verify the maximum demand does not exceed 80% of the alternator data plate rating.

Date: _______________ **Electrical Load Measurement** Tail No.:_______________

Circuit/ System	Circuit Breaker No.	Operating Time	Normal Operation: Taxiing 10 min — Used in this phase of flight?	Normal Operation: TO/Land 10 min — Used in this phase of flight?	Normal Operation: Cruise 60 min — Used in this phase of flight?	Emergency Operation: Cruise — Used in this phase of flight?	Emergency Operation: Land 10 min — Used in this phase of flight?
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑

Figure 3-22 Blank Electrical Tabulation Form
Sheet 1 of 2

Date: ______________ Electrical Load Measurement (cont'd) Tail No.:____________

			Normal Operation			Emergency Operation	
			Taxiing 10 min	TO/Land 10 min	Cruise 60 min	Cruise	Land 10 min
Circuit/ System	Breaker No.	Operating Time	Used in this phase of flight?	Used in this phase of flight?	Used in this phase of flight?	Used in this phase of flight?	Used in this phase of flight?
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑
			❑	❑	❑	❑	❑

MEASURED VALUE	(Amps):	________	________(a)	________(b1) *Ldg light ON* ________(b2)	________(c)	________(d)	________(e)
Alternator Rating	(Amps):	________					
Percent of Alternator Capacity Used:			________ (< 80 %)	________ *Ldg light ON* (< 95%) ________ *Ldg light OFF* (< 80%)	________ (< 80 %)	**N/A**	**N/A**

Figure 3-22 Blank Electrical Tabulation Form
Sheet 2 of 2

Date: 1/6/2020 Electrical Load Measurement Tail No.: N5272K

			Normal Operation			Emergency Operation	
			Taxiing 10 min	**TO/Land 10 min**	**Cruise 60 min**	**Cruise *(calculated)***	**Land 10 min**
Circuit/ System	**Circuit Breaker No.**	**Operating Time**	**Used in this phase of flight?**	**Used in this phase of flight?**	**Used in this phase of flight?**	**Used in this phase of flight?**	**Used in this phase of flight?**
Alternator Field	A1	*Continuous*	X	X	X		
Annunciator Panel	C1	*Continuous*	X	X	X	X	X
Vacuum Warning	C2	*Intermittent*					
Stall Warning	C3	*Intermittent*					
Gear Warning	C4	*Intermittent*					
Gear Actuator	C5	*Intermittent*					
Cluster Gage	D1	*Continuous*	X	X	X	X	X
Ignition	D2	*Intermittent*					
PFD	D3	*Continuous*	X	X	X	X	X
Turn Coordinator	D4	*Continuous*	X	X	X		
Gear Relay	D5	*Intermittent*					
ADC	E1	*Continuous*	X	X	X	X	X
Panel Lights	E2	*Continuous*	X	X	X	X	X
Glareshield Lights	E3	*Continuous*	X	X	X	X	X
AHRS	E4	*Continuous*	X	X	X	X	X
Flap Actuator	E5	*Intermittent*					
Com 1	F1	*Continuous*	X	X	X	X	X
GPS/NAV 1	F2	*Continuous*	X	X	X	X	X
Com 2	F3	*Continuous*	X	X	X		
GPS/NAV 2	F4	*Continuous*	X	X	X		
Autopilot	F5	*Continuous*	X *	X	X		
Audio Panel	G1	*Continuous*	X	X	X	X	X
Radio Blower	G2	*Continuous*	X	X	X		
ADF	G3	*Continuous*	X	X	X		
Transponder	G4	*Continuous*	X	X	X	X	X
GDL 69	H1	*Continuous*	X	X	X		
TCAD	H2	*Continuous*	X	X	X		
JPI Engine Monitor	H3	*Continuous*	X	X	X	X	X
Bose Headsets	H5	*Continuous*	X	X	X	X	X
Altitude Encoder	J1	*Continuous*	X	X	X	X	X
Strobe Light	SW1	*Continuous*	X	X	X	X	X
Nav Lights	SW2	*Continuous*	X	X	X	X	X
Recognition Lights	SW3	*Continuous*	X	X	X	X	X
Landing Light	SW4	*Continuous*	X	X			X
Pitot Heat	SW5	*Continuous*		X	X	X	X
Elevator Trim	SW6	*Intermittent*					
Boost Pump	SW7	*Intermittent*					
MEASURED VALUE	(Amps):		47.5 (a)	60.0 (b1) *Ldg light ON* 44.7 (b1) *Ldg light OFF*	43.5 (c)	34.0 (d)	48.1 (e)
Alternator Rating	(Amps):	70					
Percent of Alternator Capacity Used:			68 % (< 80 %)	86 % *Ldg light ON* (< 95%) 64 % *Ldg light OFF* (< 80%)	62 % (< 80 %)	N/A	N/A
			PASS	PASS	PASS		

*Autopilot circuit breaker is closed, but autopilot is not engaged.

Figure 3-23 Example Electrical Load Tabulation

Date: _____________ Tail No.:_____________

Power Sources

Item	Number Installed	Voltage (DC Volts)	Manufacturer	Model Number
Alternator				
Battery				

Battery Capacity: __________ x 0.75 (derating factor) = ________ Ah x 60 min = ________ A-min [i]

Current drawn during Normal Cruise (amps): ________ (c) *enter current calculated in step 13. above*

Cruise consumption during recognition: (c)____________A x 5 min = ________ A-min [ii]

Emergency Landing Current (amps): _________ (e) *enter current measured in step 15. above*

Emergency Landing Consumption: (e)_________ A x 10 min = ________ A-min [iii]

Capacity remaining for cruise: ([i] – [ii] – [iii]) ________ - ________ - ________ = ________ A-min [iv]

Emergency Cruise Current (amps): _________ (d) *enter current measured in step 14. above*

Emerg Cruise Duration ([iv] / (d)): ____________ [iv] / ___________ (d) = __________ min [v]

The total duration of flight on emergency power is determined by adding the time for recognition of the failure (5 minutes) to the time for emergency cruise (calculated above) to the time for landing (10 mins).

Total Duration for Flight on Emergency Power (5 + [v]_________ + 10) = ________ **min [vi]**

Verify that the total flight duration on emergency power [vi] is ≥ 30 minutes (for a typical Part 23 aircraft).

Assumptions:

1. Most severe operating condition is considered to be ____
2. Motor load demands are shown for steady state operation and do not include inrush current draw.
3. Load shedding is accomplished *(how)*____within five minutes of warning annunciation.

Measured loads using ____

Figure 3-24 Blank Emergency Power Operation Calculation Form

Date: 1/6/2020 Tail No.: N5272K

Power Sources

Item	Number Installed	Voltage (DC Volts)	Manufacturer	Model Number
Alternator	1	13.75	Prestolite	AL 12-P70
Battery	1	12	Gill	G-35

Battery Capacity: **35** x 0.75 (derating factor) = **26.25** Ah x 60 min = **1575** A-min [i]

Current drawn during Cruise (amps): **43.5** (c) *enter current calculated in step 13. above*

Cruise consumption during recognition: (c) **43.5** A x 5 min = **217.5** A-min [ii]

Emergency Landing Current (amps): **48.1** (e) *enter current measured in step 15. above*

Emergency Landing Consumption: (e) **48.1** A x 10 min = **481** A-min [iii]

Capacity remaining for cruise: ([i] – [ii] – [iii]) 1575 - 217.5 - 481 = 876.5 A-min [iv]

Emergency Cruise Current (amps): **34.0** (d) *enter current measured in step 14 above*

Cruise Duration ([iv] / (d)): **876.5** [iv] / **34.0** (d) = **25.8** min [v]

Total Duration for Flight on Emergency Power (5 + [h] **25.8** + 10) = **40.8** **min [vi]**

The total flight duration on emergency power [vi] is ≥ 30 minutes. **[PASS]**

Assumptions:

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

Figure 3-25 Example of Completed Emergency Power Operation Calculation

4 INSTALLATION

4.1 Antenna Cable Installation and Connections

4.1.1 GPS/SBAS Antenna Cable Installation

This section provides information on the antenna cable installation. Refer to Section 3.6.5.1 for antenna installation location considerations.

NOTE

GPS/SBAS antenna cable loss must be between 1.5 dB and 6.5 dB in order to maintain proper rejection of interference signals. If RG-142B or RG-400 is used, it must be between 6.5 and 35 feet long to meet the cable loss requirement. For longer lengths, use low-loss double or triple-shielded, 50 Ω coaxial cable.

It is permissible to temporarily locate the GPS antenna with a coaxial cable connected to the GTN Xi and check the GPS performance as described in Section 6.2.2. Once the antenna mounting position has been established, route the coaxial cable from the antenna to the GTN Xi. Proper selection of coaxial cable and assembly of connectors is critical to GPS signal performance.

An acceptable connector used to connect the coaxial cable to the GPS/SBAS antenna is listed in Table 4-1.

Table 4-1 GPS Antenna TNC Connector

Item	Amphenol P/N
Connector, TNC, Male, Crimp	31-4452

Additional loss from coaxial connectors and adapters, such as TNC to BNC, should be considered when computing 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).

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 and 6.5 dB. This additional cable may be coiled, taking into account the minimum bend radius of the cable.

4.1.2 COM Antenna Cable Installation

The antenna coaxial cable must be made of RG-142B, RG-400 or a comparable quality 50 Ω coaxial.

Check for insertion loss and VSWR. A directional power meter such as a Bird or similar directional power meter with a minimum power rating of 50 watts and covering 118-137 MHz should be used to measure VSWR. The power meter should be inserted as close to the transceiver as possible. When rack and harness buildup is performed in the shop, the coax termination may be provisioned by using a 6" inline BNC connection. This would be an acceptable place to insert the power meter. Any problem with the antenna installation is most likely seen as high reflected power. The VSWR should typically be less than 2.5:1 at the band edges of 118 MHz and 137 MHz. In some installations, especially on rotorcraft, the VSWR measured may be as high as 3:1 depending on mounting proximity to skids, floats, cargo pods and/or wire strike devices. However, a VSWR of 3:1 will reduce the operational range but the transmitter is designed to work into a VSWR up to 5:1 without damage.

4.1.3 NAV Antenna Cable Installation

For the NAV antenna(s), it is recommended the installer use RG-142B, RG-400, or equivalent 50 Ω coaxial.

4.1.3.1 NAV Antenna Cable Splitter Installation

The need for a NAV antenna cable splitter (P/N 013-00112-00) is installation-dependent. Wire the splitter as shown in the applicable diagram in Figure B-18. Use the following guidance when determining a proper location to mount the splitter:

- Locate the splitter such that minimal coaxial cable is used in the installation. In general, this will be as close to the GTN Xi as practical
- Install the splitter on a flat surface in the fuselage in a location free from excessive vibration
- Splitter installation requires four #4-40 fasteners (torque within 5 to 6 in-lbf)
- Fasteners must be standard aircraft hardware meeting industry-accepted specifications (e.g., AN, MS, or NAS)

4.1.3.2 NAV Antenna Cable Diplexer Installation

The need for a NAV antenna cable Comant CI-507 diplexer is installation-dependent. Wire the diplexer as shown in the applicable diagram in Figure B-18. When determining a proper location to mount the diplexer, use the following guidance:

- Locate the diplexer such that minimal coaxial cable is used in the installation. In general, this will be as close to the antennas as practical
- Install the diplexer on a flat surface in the fuselage in a location free from excessive vibration
- Diplexer installation requires two #10-32 fasteners (torque within 22 to 25 in-lbf)
- Fasteners must be standard aircraft hardware meeting industry-accepted specifications (e.g., AN, MS, or NAS)

4.1.4 Coaxial Cable Termination

Follow the steps below for installation of coaxial cables:

1. When routing the coaxial cable to the radio rack location, keep in mind the recommendations in Section 4.1.3.
2. Secure the cable in accordance with AC 43.13-1B Chapter 11, Section 11.
3. Trim the coaxial cable to the desired length.
4. Install the TNC or BNC connectors per the manufacturer's instructions.

4.1.5 Marker Beacon Antenna Cable Termination

This section provides guidance for terminating the marker beacon coaxial cable into the GMA 35 D-sub connector. MS17/128-RG-400 coaxial cable is recommended for the marker beacon antenna. Due to the thickness of this cable, an RG-179 or RG-188 cable assembly must be constructed to terminate the coaxial in the GMA 35 D-sub. The termination cable assembly should be terminated to the RG-400 cable using a BNC connector. Cable routing for the marker beacon coaxial cable must be routed in accordance with Section 3.6.12.

When terminating the coaxial cable into the D-Sub, observe the following guidance. Refer to Figure 4-1:

- Ensure the distance from the beginning of the exposed shield to D-Sub is no more than 1.5 inches long
- Terminate the center conductor by directly connecting it to the D-Sub with a crimp pin

A suggested method for terminating the marker beacon coaxial cable using RG-188 terminated into a high density D-Sub connector is shown in Figure 4-1 below. Refer to Table 3-23 for crimp tool, pin, and crimp tool insert part numbers. Use a BNC connector to connect the RG-400 coaxial cable from the antenna to the RG-188 or RG-179 marker beacon cable termination assembly. Terminate the antenna end of the RG-400 coaxial cable with a BNC-F connector and attach to the marker beacon antenna.

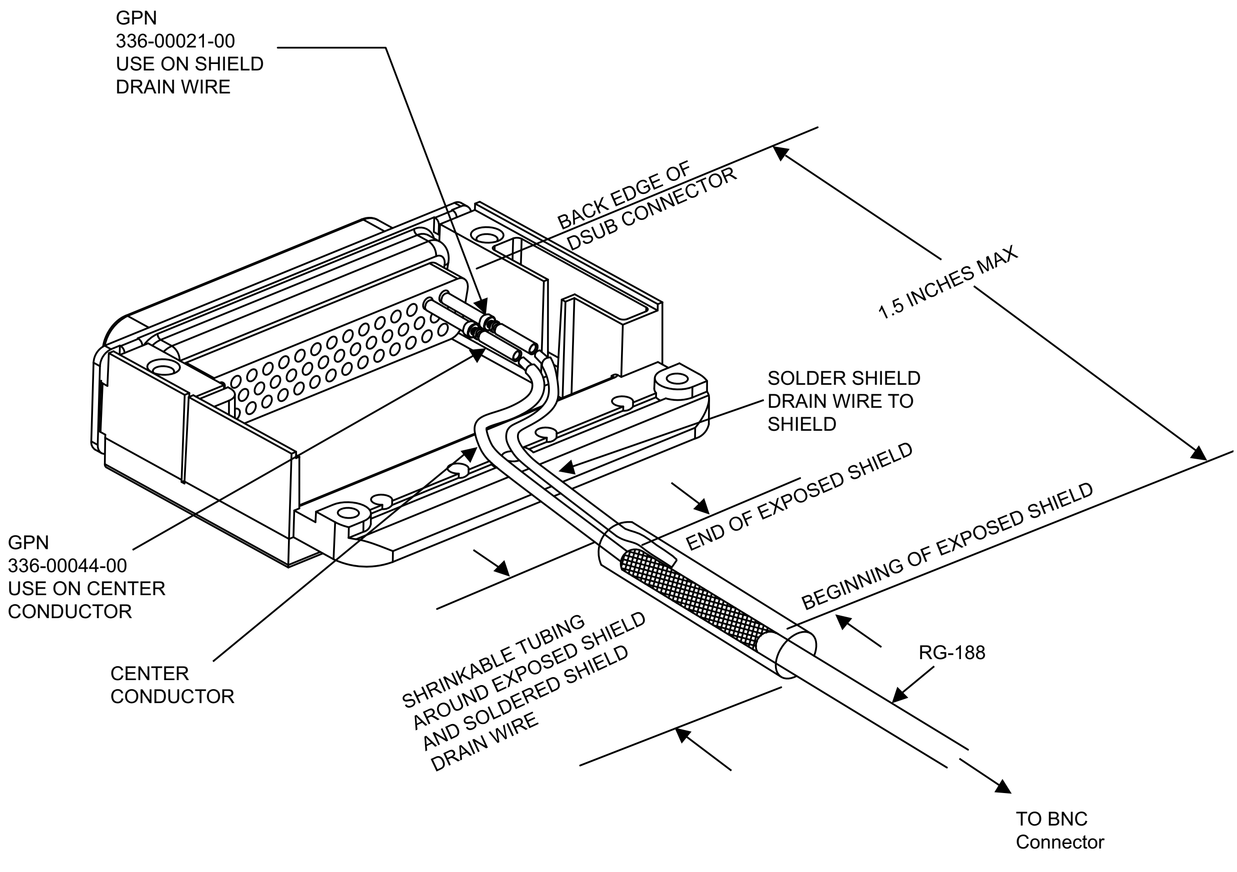


Figure 4-1 GMA 35 Marker Beacon Coaxial Cable D-Sub Termination

4.1.6 Remote Bluetooth Antenna Installation

NOTE

Complete a Bluetooth audio checkout to determine if the location of the antenna is suitable before permanently attaching the antenna. Refer to Section 6.2.6.10.

The GMA 35c installation kit is equipped with a 2.4GHz 90° antenna (Garmin P/N 700-00076-00) along with a cable assembly (Garmin P/N 325-00458-00 or P/N 325-00458-01). Install the antenna with the supplied cable assembly to optimize antenna performance.

The antenna is through-mounted or installed with a bracket similar to the one shown in Figure 4-2.

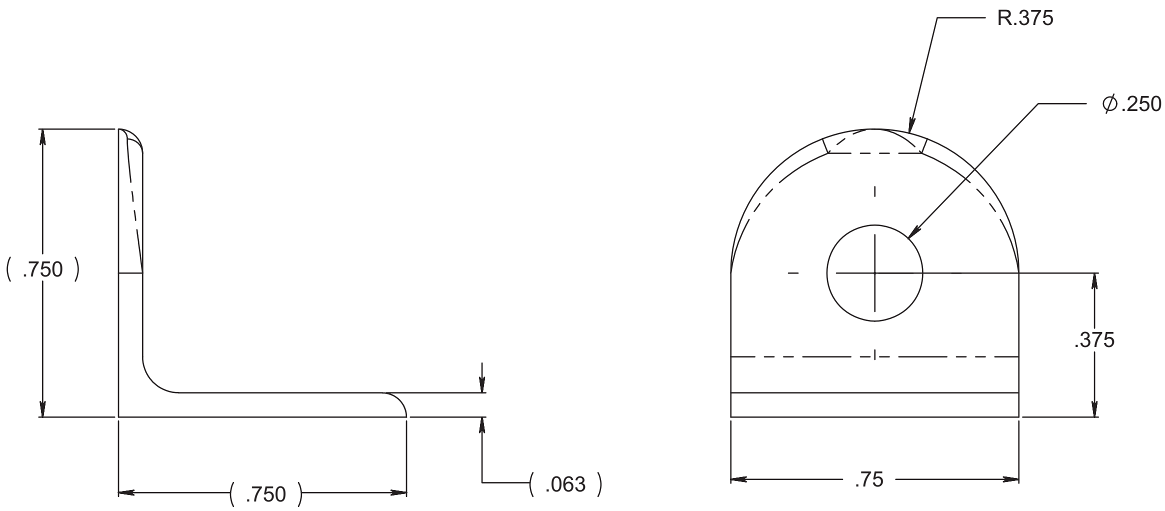


Figure 4-2 Bluetooth Antenna Mounting Bracket Example

Brackets or modifications to the aircraft instrument panel structure to mount the antenna should be performed in accordance with the methods outlined in AC 43.13-2B Chapter 2, AC 43.13-1B Chapter 4, and these requirements:

- The material must be a minimum 0.040 inches thick if directly mounting to an instrument panel
- Maintain an edge distance of at least 2d (center of hole to edge of part) for all new holes
- Maintain a minimum of 3d (center-to-center) for all new holes
- Material for a fabricated bracket must be 2024-T3 sheet aluminum, minimum thickness of 0.032 inches
- Use sheet metal techniques (e.g, bend radius, fillets, etc.) applicable to material type and thickness
- Fabricated parts must be corrosion protected. Apply zinc chromate primer that meets FED STD TT-P-1757, or epoxy primer that meets MIL-P-23377, or other corrosion protection methods listed in the aircraft's maintenance manual
- If fabricating a bracket, the bracket or plate must have a minimum of two fastener holes (#6-32 screws).
- Nut plates may be installed on the bracket or plate to secure the #6-32 screws
- The bracket may be secured using A-A 55126, hook and loop fastener tape if using the provided bracket design
- Trim fastener tape to cover the entire base of the bracket mounting surface and mount on a flat surface

- The antenna cable must be secured so the cable assembly will not interfere with any controls under the instrument panel
- Use tie wraps to relieve strain at the installed antenna location

To install the cable assembly to mounting bracket, perform the following steps:

CAUTION
Failure to fully engage the right angle connector will prevent the GTN Xi from properly seating.

1. Secure the right angle connector of the cable assembly to the GMA 35c Bluetooth connector.
2. Torque the right angle connector to 8-10 in-lbf with a 5/16" SMA torque wrench.
3. Attach the other end of the cable assembly to the bracket or mounting location with supplied locking washer and nut.
4. Torque the brass nut to 28-32 in-lbf.
5. Torque the antenna onto cable assembly to 8-10 in-lbf with a 5/16" SMA torque wrench.

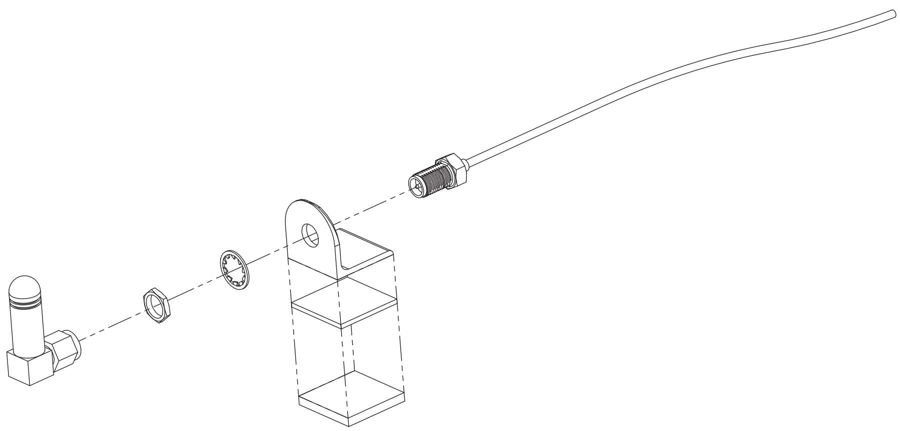


Figure 4-3 Mounting Antenna to Bracket

4.2 Instrument Panel Bonding Procedure

The instrument panel bonding strap length should be as short as possible and must not exceed 6 inches in length. The installation must be so that it avoids the bonding strap looping back on itself. Refer to Section 3.5.3.2 for hardware specifications. Complete the installation using the following procedure along with the guidance in AC 43.13-2B, *Acceptable Methods, Techniques, and Practices - Aircraft Alterations*, AC 43.13-1B, *Acceptable Methods, Techniques, and Practices – Aircraft Inspection and Repair*, and aircraft make/model-specific structural repair documentation, as indicated.

Construct a bonding strap by attaching 5/16" inside diameter terminal lugs to both ends of the braid.

Install the bonding strap with the following procedure:

1. Secure one end of the bonding strap to the instrument panel with a 5/16" bolt, washers, and nut, in accordance with bonding requirements in Section 3.6.6. The washers must seat fully against the panel without overhang or interference from other hardware.
2. Secure the other end of the bonding strap to the aircraft metallic structure with a 5/16" bolt, washers, and nut, in accordance with bonding requirements in Section 3.6.6. The washers must seat fully against the aircraft metallic structure, without overhang or interference from other hardware.

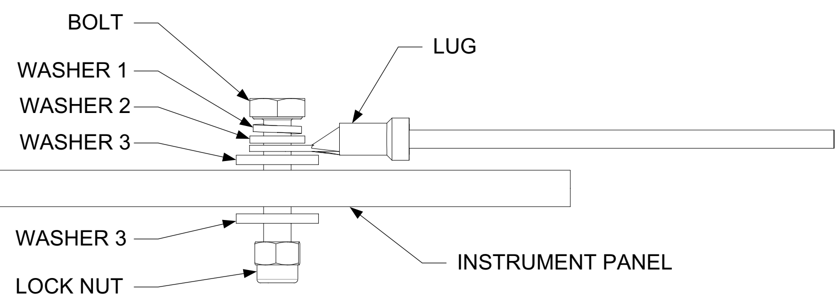


Figure 4-4 Instrument Panel Bonding

If using an electrical bonding clamp, the installation must be in accordance with AC 43.13-1B Chapter 11 and the following criteria:

- Use cadmium plated steel clamp, nut, and washers. Only AN735-6 and larger diameter clamps are permitted.
- Select location to minimize the presence of moisture and allow for easy inspection
- The AN735 conductive clamp must not be installed in Lightning Zones 1A, 1B, or 2B. Refer to AC 20-155A, or later revision
- Ensure all surface preparation material (e.g., primer, paint, etc.) is removed between the clamp and the metallic tube in an area that is equal to the width of the clamp and 1 inch in circumference to ensure a good contact surface is made
- After assembly and bonding check, prime airframe tube and clamp in accordance with the approved maintenance manual, or use MIL-PRF-85285 Type I, Color to suit (36081 Flat Gray Preferable) Coating: Polyurethane, Aircraft And Support Equipment, or MIL-PRF-23377 Type I, Class N, Primer Coatings: Epoxy, High-Solids

4.3 GTN Xi

4.3.1 Requirements for GTN Xi Installations

The GTN Xi navigators are designed to be installed in the mounting rack attached to the back of the instrument panel. In many cases, the existing brackets or rails fastened to the face of an instrument panel can provide adequate means to attach the GTN Xi mounting racks and may be reused, requiring no modifications to the instrument panel.

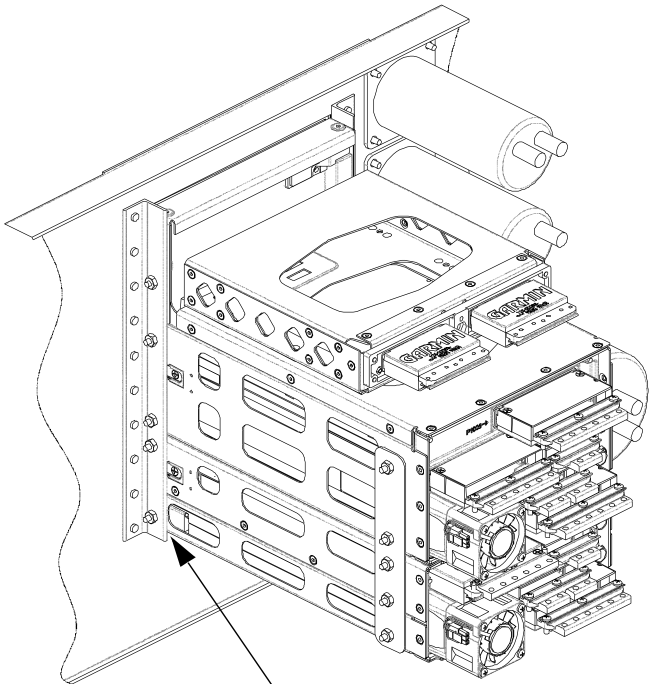
4.3.2 General Requirements for GTN Xi Installations

Figure 4-5 and Figure 4-6 illustrate the avionics rack mounting rails and forward rack support required in all GTN Xi installations.

In order to satisfy the structural requirements for the GTN Xi, the following conditions must be met:

1. If existing structure is to be used for mounting the GTN Xi, it must meet the following requirements:
    a. Sheet aluminum instrument panel structure must be at least 0.062 inches thick.
    b. Avionics stack brackets or rails must be at least 0.032 inches thick.
2. It is acceptable to reuse existing support brackets or plates. Minor modifications can be made to adjust for the GTN Xi mounting rack hole patterns.
    a. Maintain an edge distance of at least 2d (center of hole to edge of part) for all new holes.
    b. Maintain a minimum of 3d (center to center) for all new holes.
3. If support brackets or plates do not exist, cannot be modified to fit, or otherwise need to be fabricated for this installation, they should be fabricated and attached to the aircraft instrument panel structure in accordance with the methods outlined in AC 43.13-2B Chapter 2, AC 43.13-1B Chapter 4, and the following requirements:
    a. Material must be 2024-T3 sheet aluminum (bare or Clad) and a minimum of 0.032 inches thick.
    b. Apply aviation standard sheet metal techniques (e.g., bend radius, fillets, etc.) for the material type and thickness selected for the fabricated parts.
    c. Bracket or plate must have a minimum of two fastener holes (6-32 screws) for each GTN Xi mounting rack. Nut plates may be installed on the bracket or plate to secure the 6-32 screws.
    d. Fabricated parts must be corrosion protected. Apply zinc chromate primer that meets FED STD TT-P-1757, or epoxy primer that meets MIL-P-23377, or other corrosion protection methods listed in the aircraft's maintenance manual.
    e. If possible, fabricate and install a support between the mounting tray and a nearby structural member of the aircraft, as recommended in AC 43.13-2B Chapter 2.

Refer to Section 4.3.9 for example layouts.



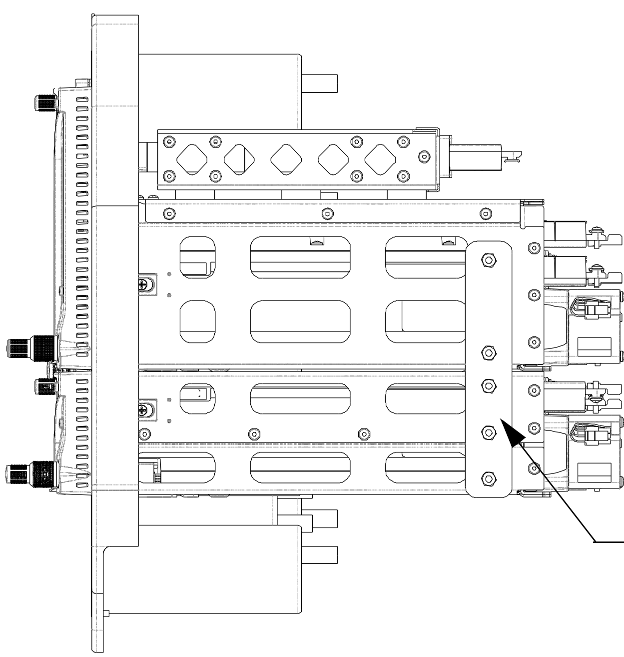


Figure 4-5 GTN Xi Mounting Rack Plate Support

4.3.3 Avionic Stack Cutout

Some instrument panels may require minor modification to increase width or height of the avionics stack cutout to accommodate installation of the GTN Xi.

In order to satisfy the structural requirements for the installation of the GTN Xi, the following conditions must be met:

1. A cutout cannot be made into aircraft primary structure.
2. Cutout area must not affect any subpanel structure.
3. Some stationary instrument panels are considered primary structure. Modification of such panels is not covered by this STC and requires additional approval.
4. Refer to Figure 4-9 for dimensions of GTN Xi cutouts.
5. Radius corners and remove burrs from cut edges. Finish paint the cut edge or apply corrosion protection as specified in Section 4.3.2.

4.3.3.1 Modification of Avionics Stack Mounting Rails

Existing mounting rails may contain holes from previously installed equipment. If existing rail holes do not match holes in GTN Xi mounting racks, it may be acceptable to modify the rails by adding fastener holes to accept installation of GTN Xi mounting racks.

In order to satisfy the structural requirements for the installation of the GTN Xi, the following conditions must be met:

1. Additional fastener holes must maintain an edge distance at least 2d.
2. Added and existing holes in the mounting rail must maintain at least 3d distance between hole centers.
3. If existing brackets or mounting rails are determined to be unsuitable for installation of the GTN Xi, new parts need to be fabricated. In some cases, there may be too many holes from previous avionics mounting tray installations.
4. Carefully remove existing mounting rails from instrument panel. Avoid enlarging existing rivet holes.
5. Fabricate new parts as close to the original design as possible (e.g., rails that had too many holes drilled to be functional for another installation should be replaced with new rails of the same material thickness and type with only the holes necessary for the planned avionics stack).
6. If the material type of the original rails or brackets is unknown, replace with 2024-T3 (bare or Clad) of the same thickness as the original part. Apply aviation standard sheet metal techniques (e.g., bend radius, fillets, etc.) for the material type and thickness selected for the fabricated rails or brackets.
7. Fabricated parts must be corrosion protected. Apply zinc chromate primer that meets FED STD TT-P-1757, or epoxy primer that meets MIL-P-23377, or other corrosion protection methods listed in the aircraft’s maintenance manual. Area around the fastener holes on the side of the fabricated rail that attaches to the GTN Xi mounting rack must be cleaned and prepared for electrical bond, as detailed in Section 3.6.6 of this manual.
8. Install fabricated mounting rails to instrument panel using the same number and size of rivets as those removed.

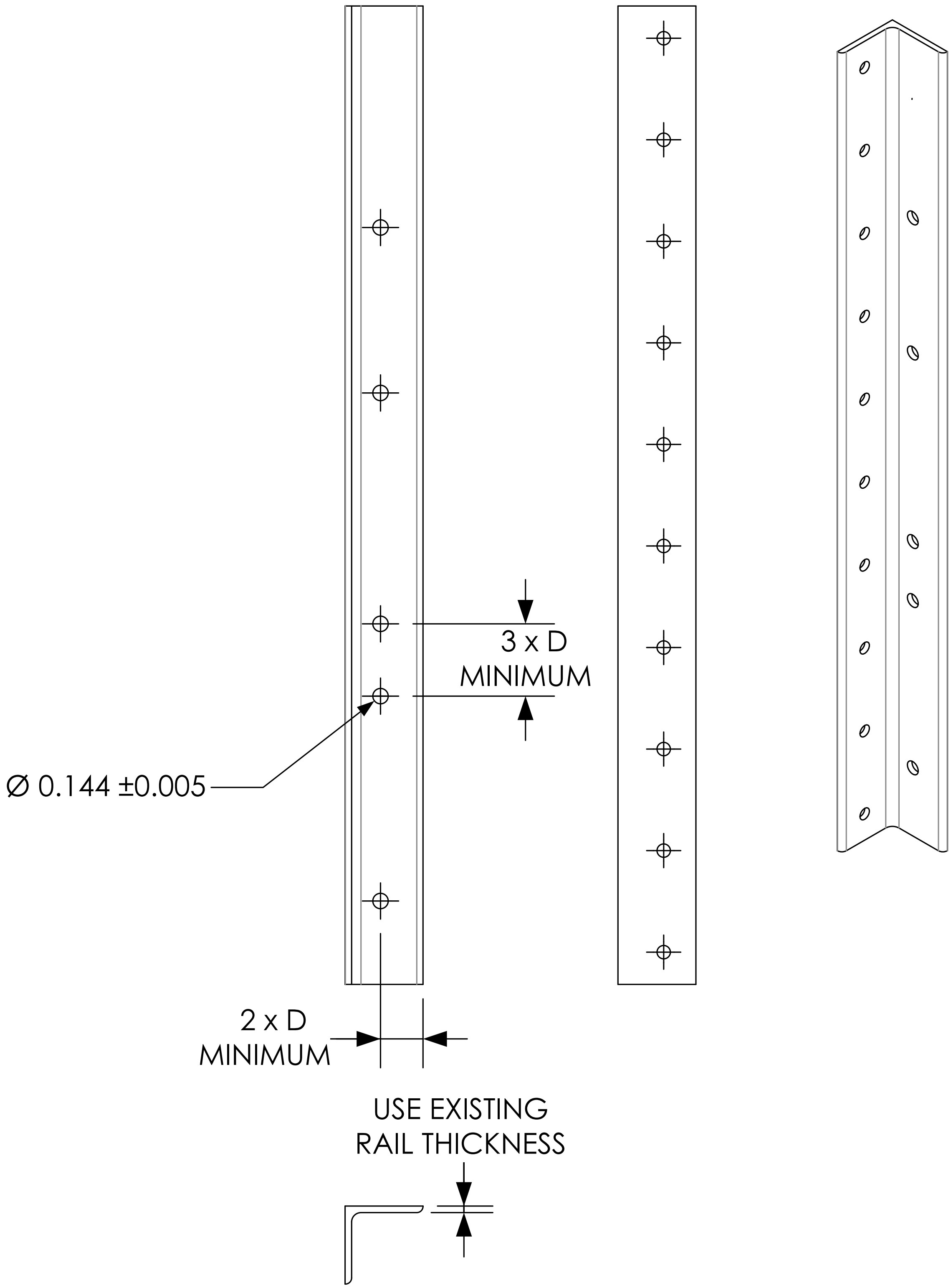


Figure 4-6 Avionics Rack Mounting Rail Considerations

4.3.4 Instrument Panel

Given the age of the aircraft and the number and type of past avionics rack modifications, it may not be possible to reuse the existing instrument panel. For example, removal and replacement of the mounting rails may create a scenario where the rivet holes in the instrument panel have been enlarged too much to repair. In such cases, GTN Xi installations may require a new instrument panel purchased from an aircraft manufacturer. Under certain conditions, it may be possible to fabricate an identical instrument panel to allow installation of the GTN Xi.

Such modifications require that the existing instrument panel must not be part of the aircraft primary structure. Modifications that affect instrument panel structure are not approved through this STC and require separate review and approval.

If the existing instrument panel is replaced with a new instrument panel, the new panel must comply with the following requirements:

1. Material must be the same thickness and type as the original instrument panel (with a minimum thickness of 0.062 inches).
2. Aircraft manufacturer Standard Practices or Repair Manuals are followed in selection of corrosion protection and sheet metal techniques applicable to the installation. Alternatively AC 43.13-1B, Chapter 4, Section 4 (Metal Repair Procedures) can be used as a reference. If not specified by aircraft manufacturer, the panel shall be chemical conversion coat per MIL-DTL-5541 TYPE II, or MIL-DTL-81706 TYPE II and primed with high-solids chemical and solvent resistant epoxy primer per MIL-PRF-23377, CLASS N.
3. The original mounting locations, shape, form, and/or bends must not be modified from the original design.
4. Bends in the material must not exceed the minimum bend radius specification of the material used.
5. OEM processes may allow for tighter bends (e.g., a “soft” material is formed then heat treated to increase hardness”).
6. Panels must not be combined (i.e., an original two-piece panel cannot be combined to create a single-piece panel). Likewise, panels must not be split (i.e., creating a two-piece panel from a single-piece panel).
7. Movement or consolidation of instruments, gauges, annunciators, placards, lighting, etc., is beyond the scope of this STC and will require separate approval.
8. Instrument panels are often more than a single piece; they are assembled with other brackets and components permanently or semi-permanently attached to form supporting structure. The new instrument panel must not alter the design of the instrument panel assembly features from the original design. These features must be duplicated in the new panel structure.
9. The only intended difference between the new and the old instrument panel assembly is the installation of the GTN Xi, which should occur in the location of the existing radio stack. Every other feature of the panel, including aspects of the structure invisible to the pilot, must be duplicated. Modification of the instrument panel that will not comply with these requirements is not approved under this STC.

4.3.5 GTN Xi Preparation

Use the dimensions shown in Figure 4-10 (GTN 6XX Xi) or Figure 4-12 (GTN 7XX Xi) to prepare the mounting holes for the GTN Xi. The GTN Xi mounting rack itself may also be used as a template for drilling the mounting holes.

1. The backplate of the rack may optionally be removed for ease of mounting in the aircraft panel. To do so, remove the two #4-40 screws, tilt the backplate away from the tray, and then slide the backplate to the side.
2. Figure 4-9 shows outline dimensions for the various GTN Xi units. Install the rack in a rectangular 6.32 × 4.60 inch hole (or gap between units) in the instrument panel (refer to Figure 4-21). The lower-front lip of the rack should be flush with, or extend slightly beyond, the face of aircraft instrument panel.

NOTE

If the front lip of the mounting rack is behind the surface of the aircraft panel, the GTN Xi connectors may not fully engage.

3. Ensure that no screw heads or other obstructions prevent the unit from fully engaging in the rack (refer to Section 5.3). Exercise caution when installing the rack into the instrument panel. Deformation of the rack may make it difficult to install and remove the GTN Xi.
4. Install the rack in the aircraft panel using six #6-32 flat head screws and six self-locking nuts. The screws are inserted from the inside through the holes in the sides of the rack. Torque screws 12-15 in-lbf.
5. Verify the GTN Xi/GMA rack is electrically bonded to aircraft structure or instrument panel as required in Section 3.6.6.
6. If the backplate was previously removed (refer to step 1), replace the backplate by positioning the tabs on the backplate in the slots of the left side of the rack (viewing it from the cockpit) and attaching it by replacing the two #4-40 screws. Torque 5 to 6 in-lbf.

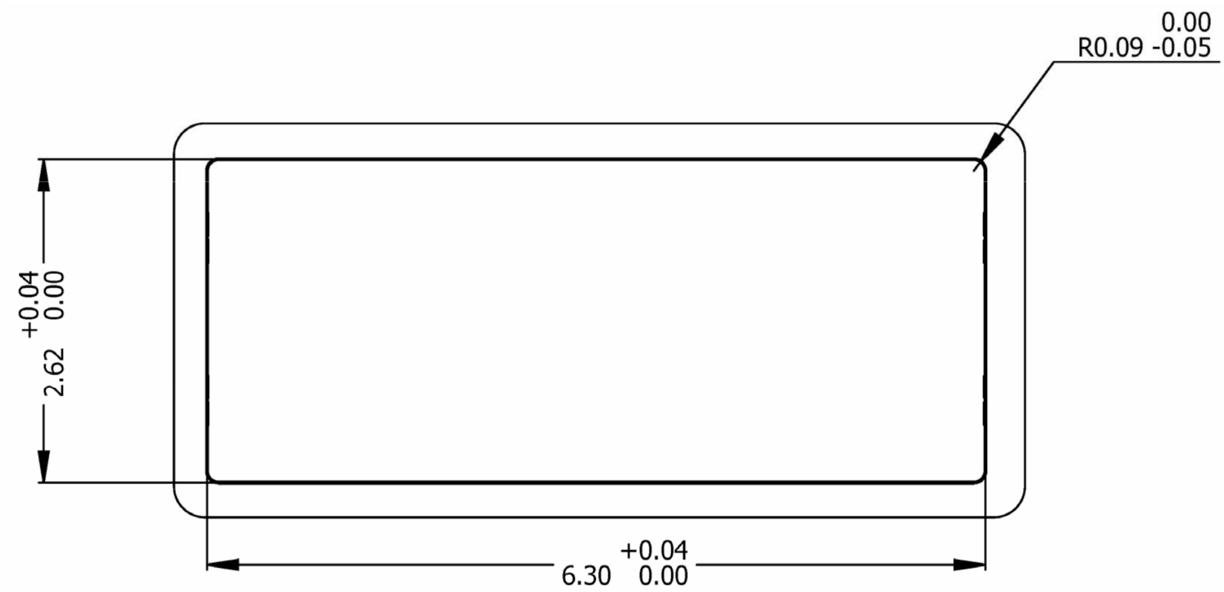


Figure 4-7 GTN 6XX Xi Panel Cutout Detail

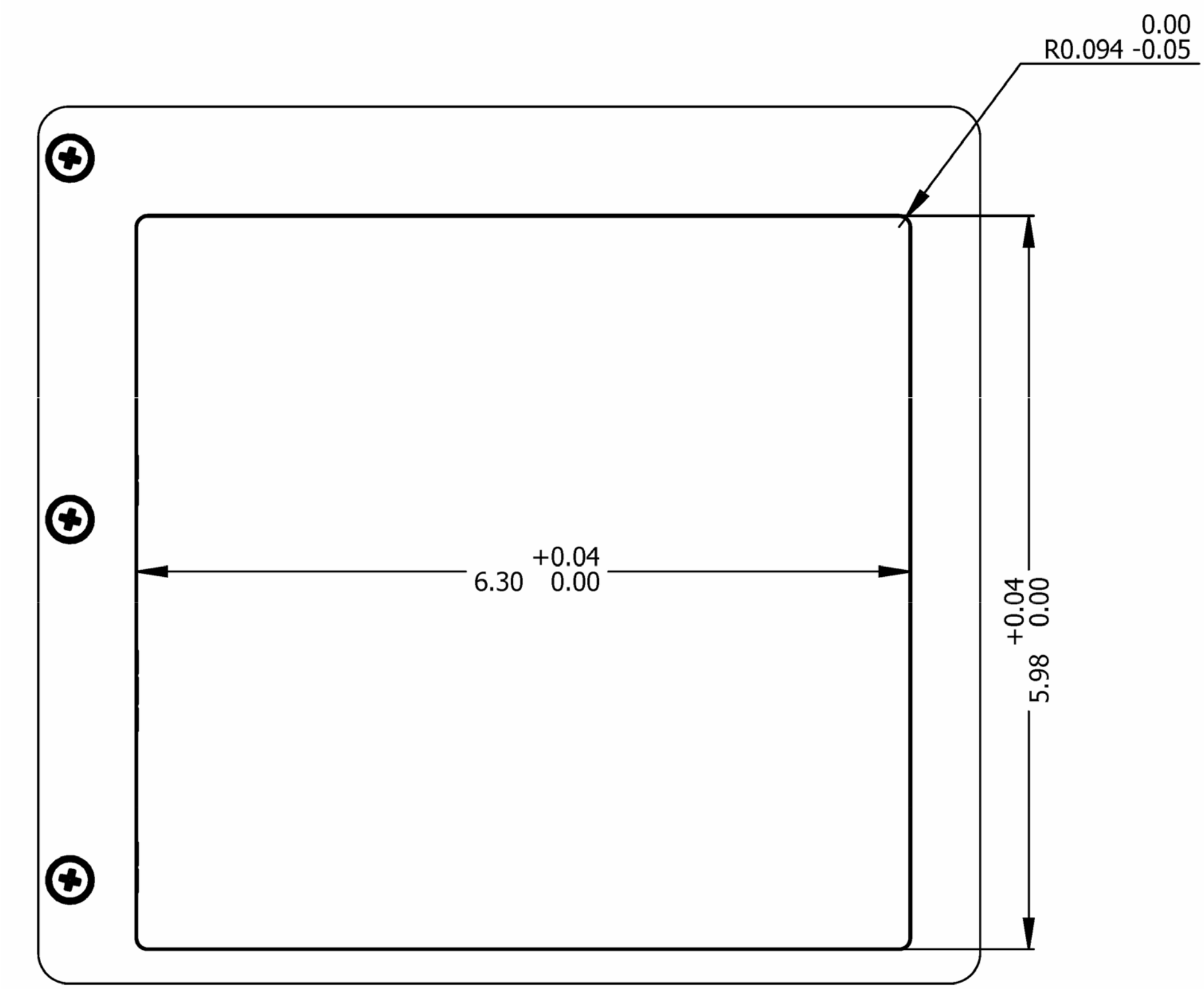


Figure 4-8 GTN 7XX Xi Panel Cutout Detail

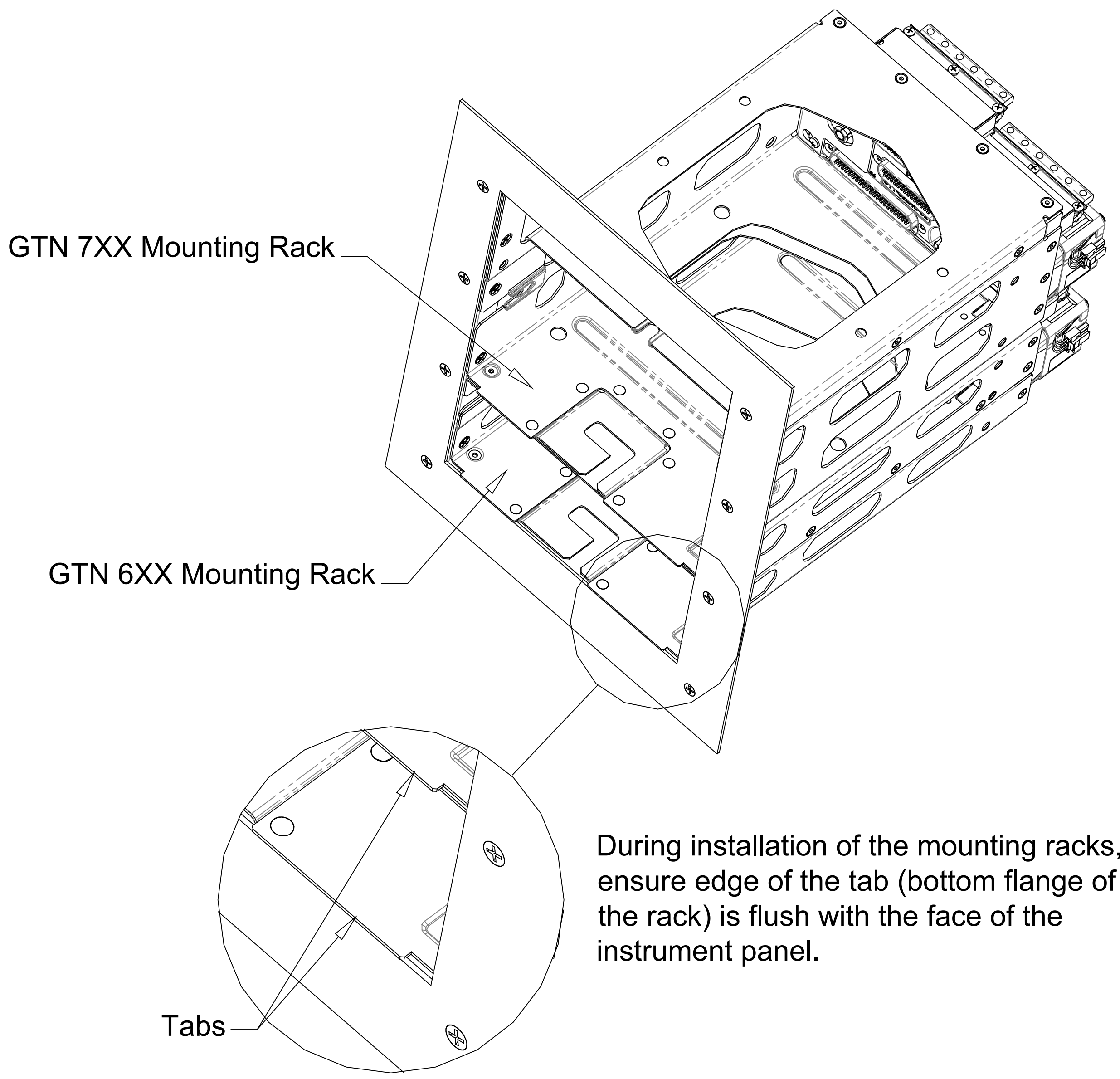
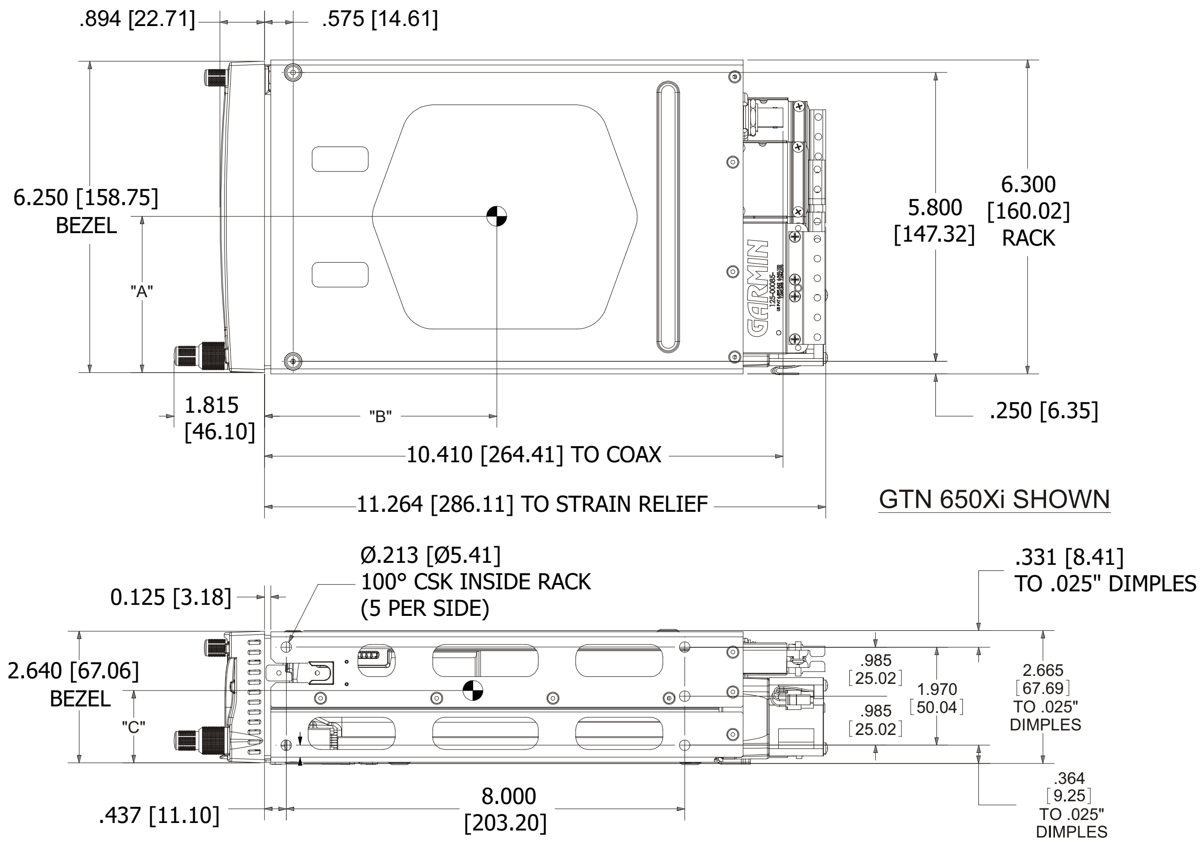


Figure 4-9 GTN Xi Mounting Rack Tab Alignment

4.3.6 GTN Xi Installation



1 DIMENSIONS: INCHES [MILLIMETERS]
WEIGHT: POUNDS [KILOGRAMS]

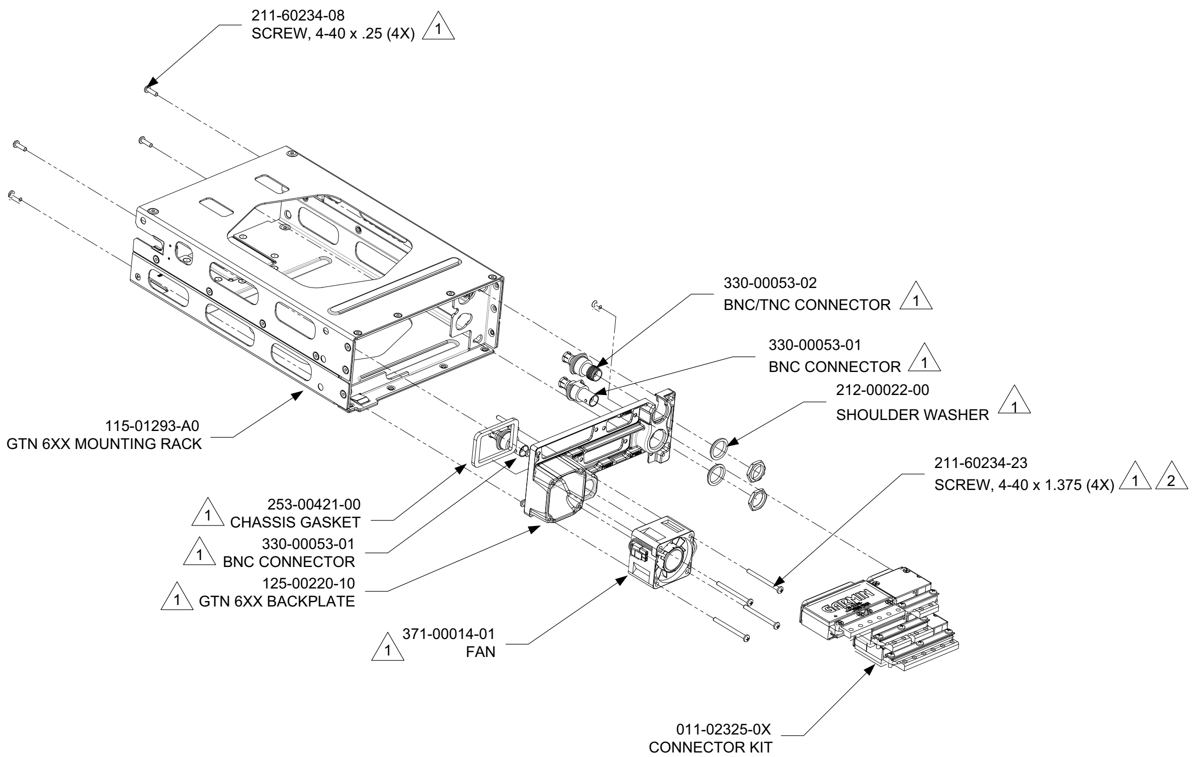
2 CG LOCATION INCLUDES UNIT WITH CONNECTOR KIT, MOUNTING RACK, AND BACKPLATE ASSEMBLY.

MODEL	DIMENSIONS inches [mm] [1]			WEIGHT lbs [kg]	
	A	B	C	UNIT	UNIT + CONNECTOR KIT
GTN 625Xi	3.06 [77.8]	4.59 [116.6]	1.34 [34.1]	4.1 [1.88]	5.3 [2.40]
GTN 635Xi	3.19 [81.0]	4.72 [119.9]	1.22 [31.0]	4.8 [2.18]	6.2 [2.80]
GTN 650Xi	3.19 [81.0]	4.92 [125.0]	1.09 [27.7]	5.5 [2.48]	7.0 [3.19]

Notes:

[1] Dimensions to CG include GTN 6XX Mounting Rack.

Figure 4-10 GTN 6XX Xi Dimensions and Center of Gravity



NOTES

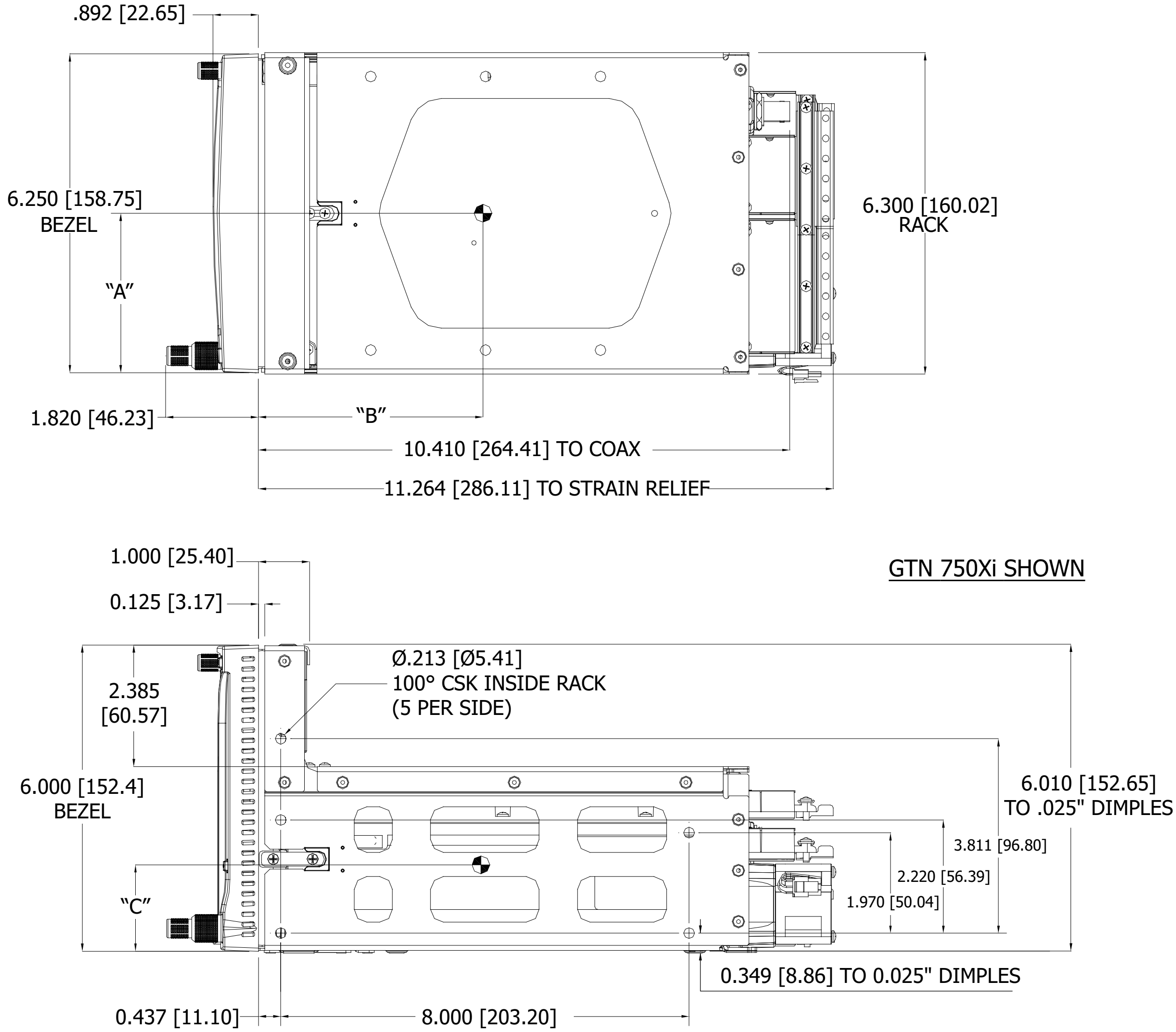
1. PART OF P/N 011-02245-00 (GTN 625), P/N 011-02245-01 (GTN 635), AND P/N 011-02245-02 (GTN 650) BACKPLATE ASSEMBLY KITS. REFER TO TABLE BELOW KIT CONTENT DIFFERENCES.

2. TORQUE TO 4.5 - 5.2 IN-LBF.

3. INSTALLATION KITS CONTAIN THE UNIT, CONNECTOR KIT, BACKPLATE ASSEMBLY KIT, MOUNTING RACK, AND CONFIGURATION MODULE.

					BACKPLATE KIT CONTENT DIFFERENCES			
UNIT DESCRIPTION	INSTALL KIT P/N	CONNECTOR KIT P/N	MOUNTING RACK P/N	BACKPLATE KIT P/N	WASHER	QTY	BNC CONN	QTY
GTN 625Xi, Black	010-01997-01	011-02325-00	115-01293-00	011-02245-00	212-00022-00	1	330-00053-01	0
GTN 635Xi, Black	010-01998-01	011-02325-01	115-01293-00	011-02245-01		2		1
GTN 650Xi, Black	010-01999-01	011-02325-02	115-01293-00	011-02245-02		3		2
GTN 650Xi, Gray	010-01999-31	011-02325-02	115-01293-00	011-02245-02		3		2

Figure 4-11 GTN 6XX Xi Mounting Rack Assembly (GTN 650Xi Installation Shown)



1 DIMENSIONS: INCHES [MILLIMETERS]
WEIGHT: POUNDS [KILOGRAMS]

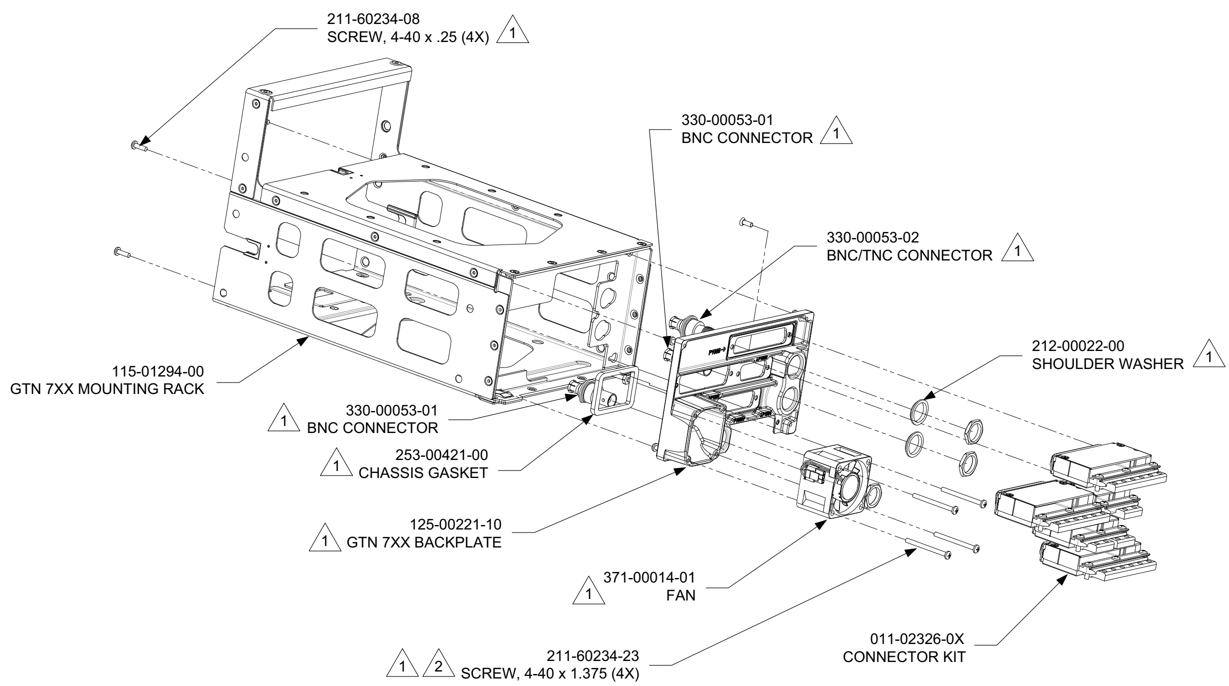
2 CG LOCATION INCLUDES UNIT WITH CONNECTOR KIT, MOUNTING RACK, AND BACKPLATE ASSEMBLY.

MODEL	DIMENSIONS inches [mm] [1]			WEIGHT lbs [kg]	
	A	B	C	UNIT	UNIT + CONNECTOR KIT
GTN 725Xi	3.22 [81.8]	4.16 [105.6]	1.99 [50.5]	5.7 [2.60]	7.3 [3.29]
GTN 750Xi	3.22 [81.8]	4.47 [113.5]	1.78 [45.2]	7.1 [3.22]	9.0 [4.07]

Notes:

[1] Dimensions to CG include GTN 6XX Mounting Rack.

Figure 4-12 GTN 7XX Xi Dimensions and Center of Gravity



NOTES

1. PART OF P/N 011-02246-00 (GTN 725) AND P/N 011-02246-02 (GTN 750) BACKPLATE ASSEMBLY KITS. REFER TO TABLE BELOW KIT CONTENT DIFFERENCES.

2. TORQUE TO 4.5 - 5.2 IN-LBF.

3. INSTALLATION KITS CONTAIN THE UNIT, CONNECTOR KIT, BACKPLATE ASSEMBLY KIT, MOUNTING RACK, AND CONFIGURATION MODULE.

					BACKPLATE KIT CONTENT DIFFERENCES			
UNIT DESCRIPTION	INSTALL KIT P/N	CONNECTOR KIT P/N	MOUNTING RACK P/N	BACKPLATE KIT P/N	WASHER	QTY	BNC CONN	QTY
GTN 725Xi, Black	010-02000-01	011-02326-00	115-01294-00	011-02246-00	212-00022-00	1	330-00053-01	1
GTN 750Xi, Black	010-02002-01	011-02326-02	115-01294-00	011-02246-02		3		2
GTN 750Xi, Gray	010-02002-31	011-02326-02	115-01294-00	011-02246-02		3		2

Figure 4-13 GTN 750Xi Mounting Rack Assembly

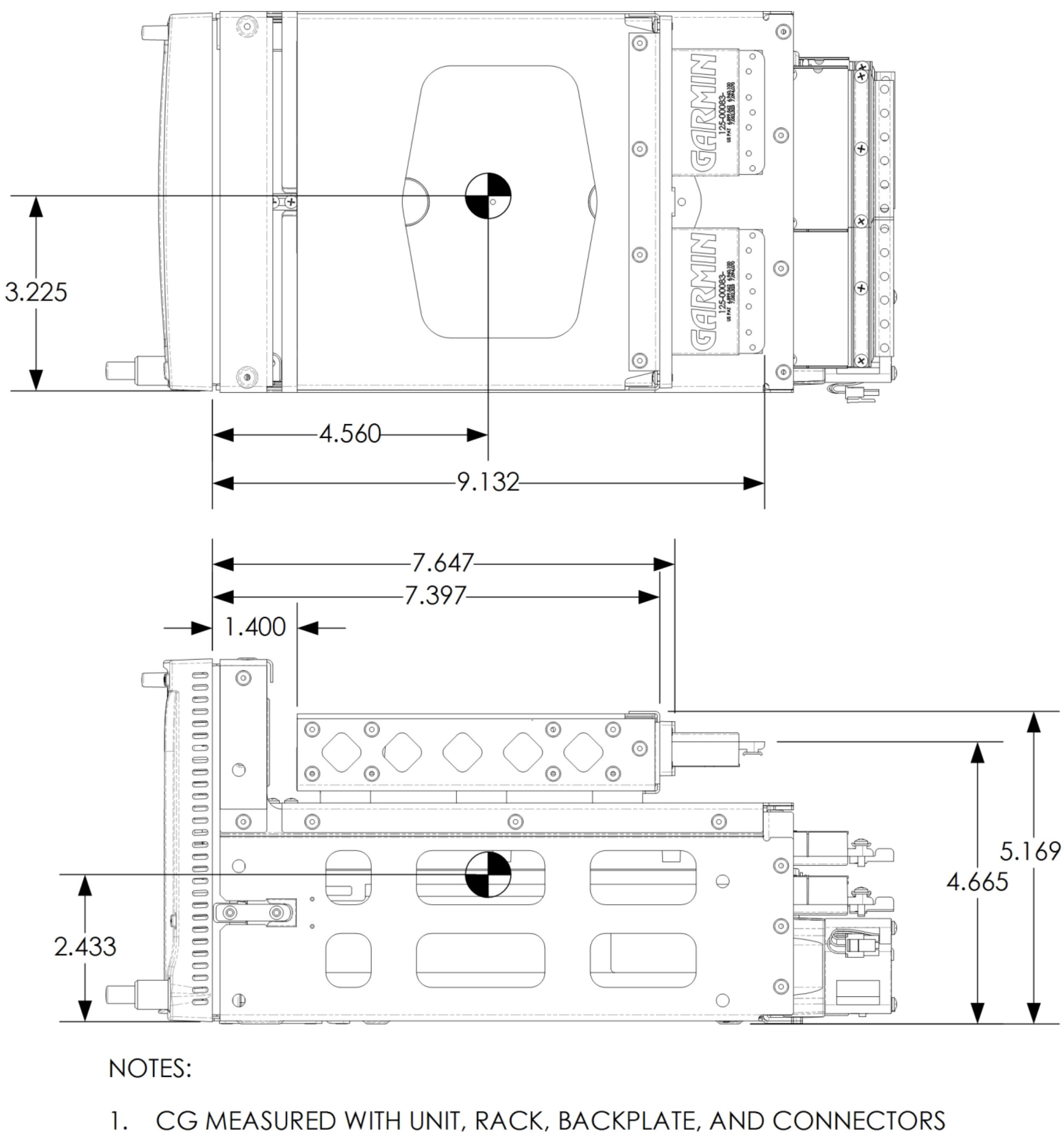


Figure 4-14 GTN 750Xi with GMA 35 Installation Dimensions and Center of Gravity

4.3.7 GTN Xi Insertion

CAUTION

To avoid damage to the GTN Xi, take precautions to prevent electro-static discharge (ESD) when handling the GTN Xi unit, connectors, fan, and associated wiring. ESD damage can be prevented by touching an object that is of the same electrical potential as the GTN Xi before handling the GTN Xi itself.

CAUTION

The Bluetooth antenna port on the GMA 35c has a tight clearance between the GMA and GTN Xi. Verify the unit and antenna cable are fully seated before inserting the GTN Xi. The GMA 35c is seated when the face of the unit is flush with the mounting rack.

It may be necessary to insert the hex drive tool into the access hole and rotate the cam mechanism 90° counterclockwise to ensure the correct position prior to placing the unit in the rack. The GTN Xi is installed in the rack by sliding it straight in until it stops, about 1 inch short of the final position. A 3/32" hex drive tool is then inserted into the access hole at the bottom of the unit face. Rotate the hex tool clockwise while pressing on the left side of the bezel until the unit is firmly seated in the rack.

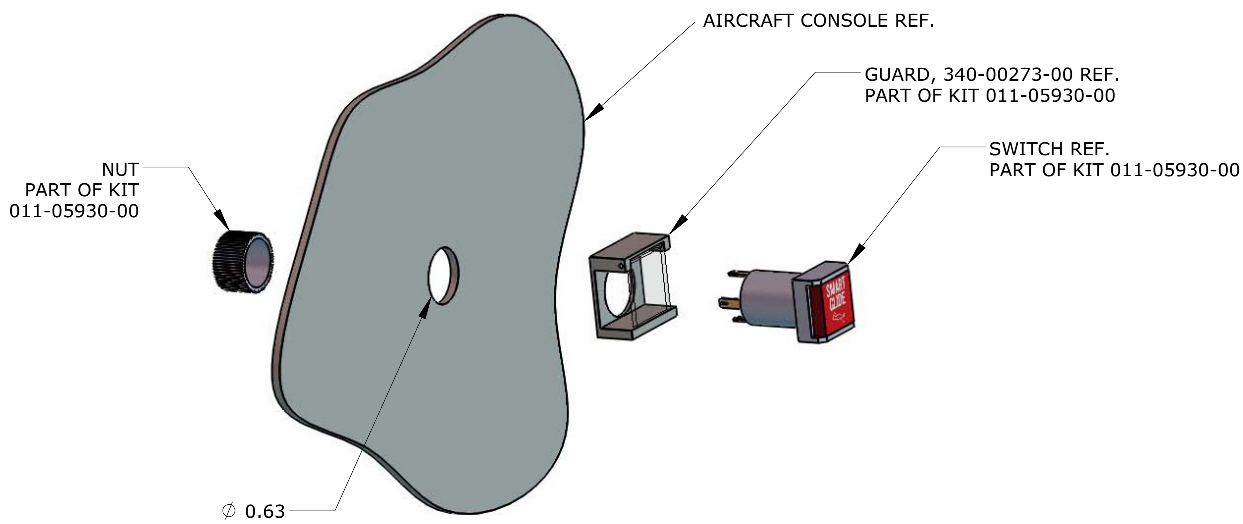
Be sure not to overtighten the unit into the rack. The application of hex drive tool torque exceeding 15 in-lbf can damage the locking mechanism.

4.3.8 Smart Glide Activation Switch Installation

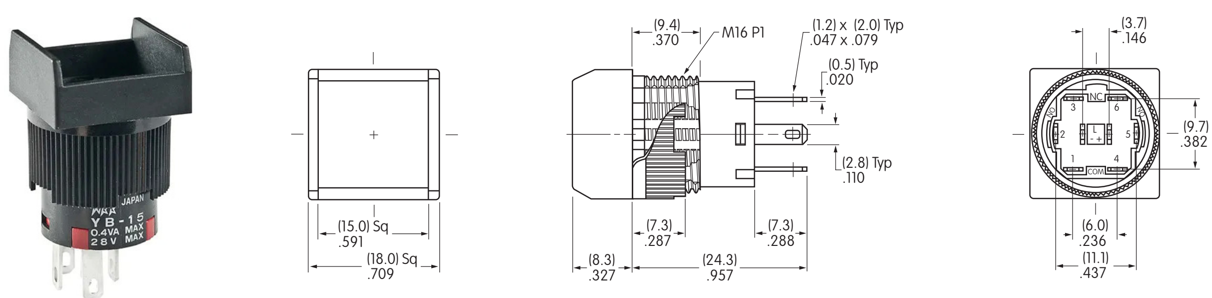
NOTE

A Smart Glide activation switch is recommended to be installed when Smart Glide is configured. If a Smart Glide activation switch is not installed while Smart Glide is configured, a placard must be installed in accordance with Section 3.6.7.1. If installed, the activation switch must be connected to all GTN Xi units.

Use the dimensions shown in Figure 4-15 to prepare the mounting hole for the Smart Glide activation switch. The switch must be mounted in a location within easy reach of the pilot and readily distinguishable from other switches. Refer to Figure B-20 for more information.



Switch (No Keycap)



Dimensions: (mm) inch

Single pole models do not have terminals 4, 5, & 6.

Figure 4-15 Smart Glide Activation Switch Installation

4.3.9 Example Instrument Panel Layouts with GTN Xi Installations

Figure 4-16, Figure 4-17, and Figure 4-18 show various configurations utilizing the GTN 6XX Xi and/or the GTN 7XX Xi with other avionics.

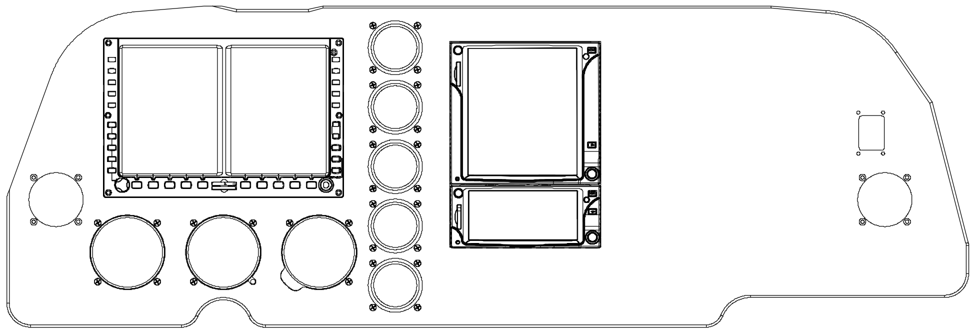


Figure 4-16 GTN 6XX Xi and GTN 7XX Xi Example Installation

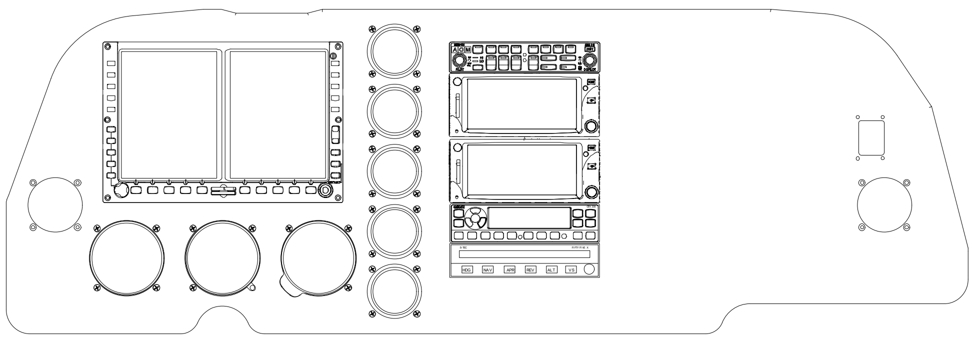


Figure 4-17 GTN 6XX Xi Example Installation

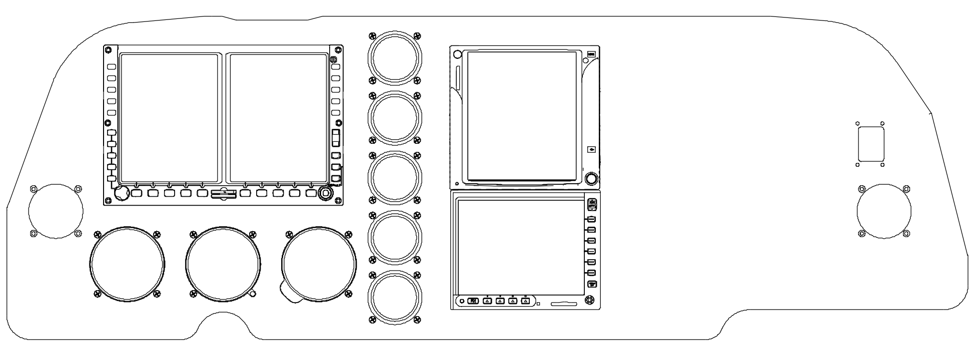
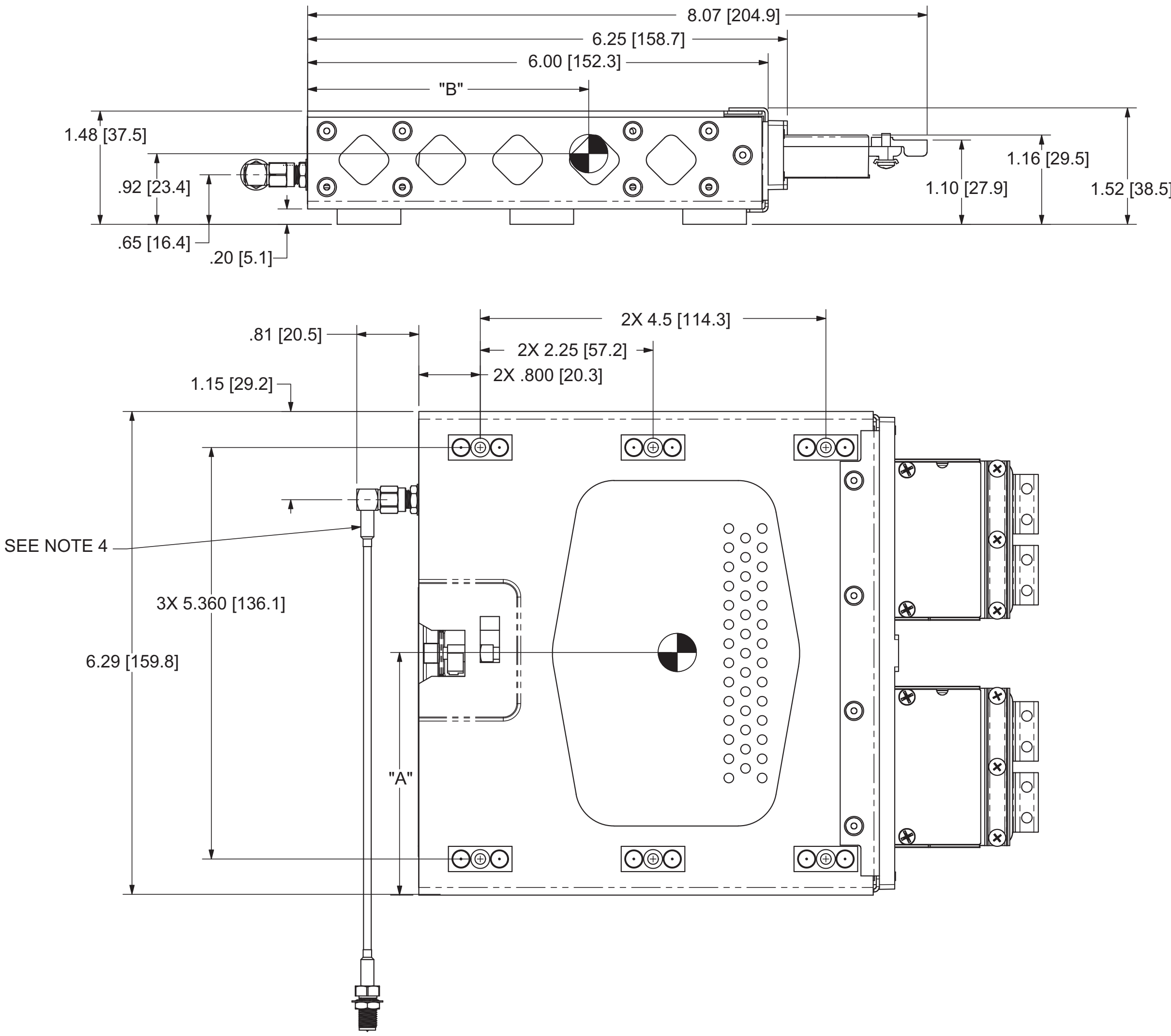


Figure 4-18 GTN 7XX Xi Example Installation

4.4 GMA 35

4.4.1 GMA 35 Installation

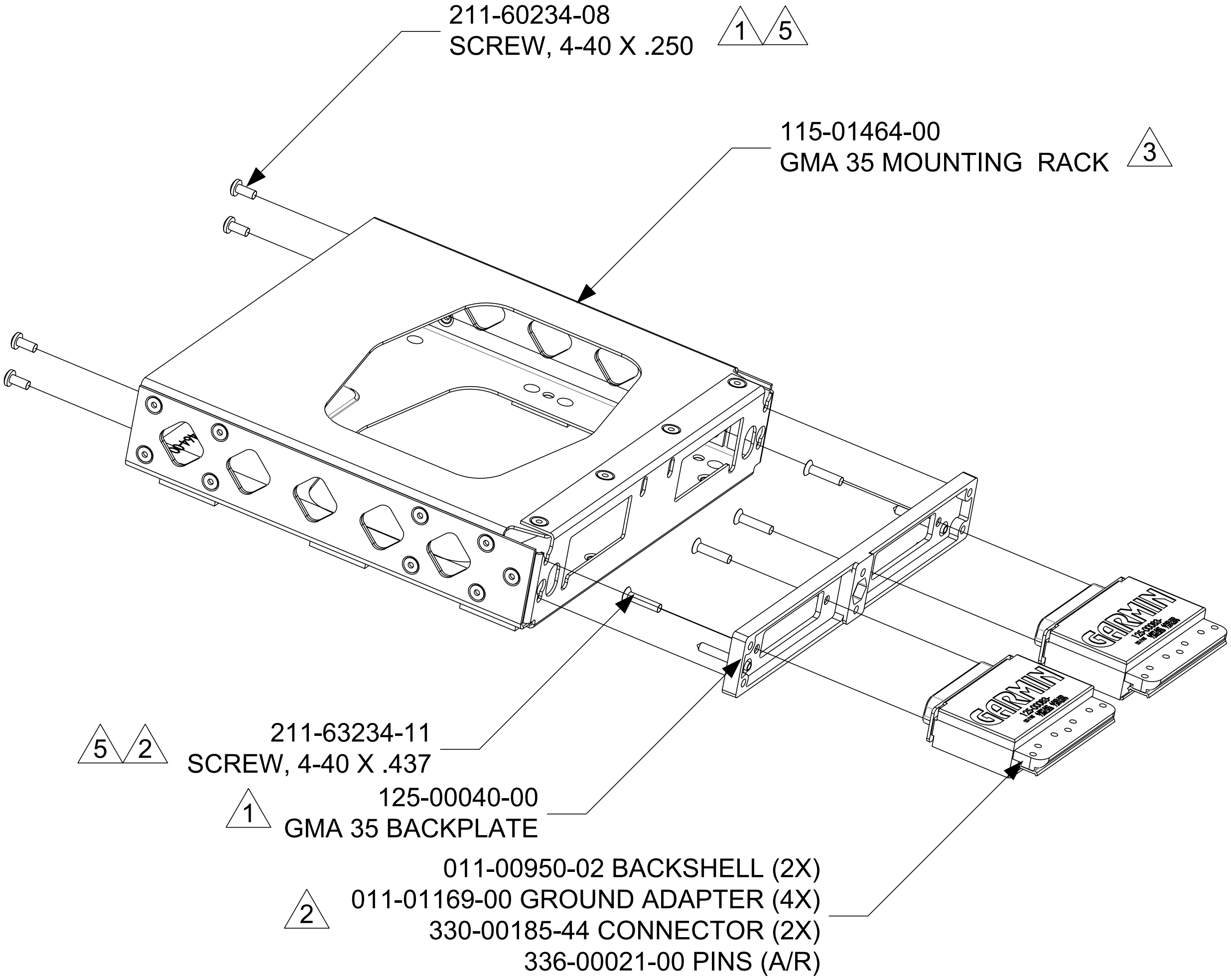
Use the six #6-32 screws that accompany the GMA 35 Installation Kit to install the GMA 35 mounting rack to a GTN 7XX mounting rack. The screws are installed from the bottom side of the GTN 7XX mounting rack using through-holes to access the mounting locations on the GMA 35 mounting rack. Refer to Figure 4-19 and Figure 4-22.



		DIMENSIONS		WEIGHT	
MODEL	P/N	A	B	UNIT	UNIT, RACK, BACKPLATE, AND CONNECTOR KIT
GMA 35	011-02299-00	3.1 [79.2]	3.6 [92.2]	1.4 lb [.64 kg]	2.2 lb [1.00 kg]
GMA 35	011-02299-20	3.1 [78.5]	3.8 [95.3]	1.3 lb [.59 kg]	2.1 lb [.95 kg]
GMA 35c	011-02299-40	3.2 [80.3]	3.7 [93.0]	1.3 lb [.61 kg]	2.1 lb [.95 kg]

NOTES:
1. DIMENSIONS: INCHES[mm]. METRIC VALUES ARE FOR REFERENCE ONLY.
2. DIMENSIONS ARE NOMINAL AND TOLERANCES ARE NOT IMPLIED UNLESS SPECIFICALLY STATED.
3. CG MEASURED WITH UNIT, RACK, BACKPLATE, AND CONNECTORS.
4. BLUETOOTH ANTENNA CABLE IS ONLY REQUIRED FOR GMA 35c INSTALLATIONS.

Figure 4-19 GMA 35 Dimensions and Center of Gravity



1 PART OF 011-02300-00 BACKPLATE KIT

2 PART OF 011-02302-00 CONNECTOR KIT

3 PART OF 010-00831-01 INSTALLATION KIT

4 SEE TABLE FOR KIT REFERENCE INFORMATION

5 TORQUE 4.5 – 5.2 IN-LBS

UNIT DESCRIPTION	INSTALLATION KIT	CONNECTOR KIT 3	BACKPLATE KIT 3
GMA 35	010-00831-01	011-02302-00	011-02300-00
GMA 35	010-00831-21	011-02302-00	011-02300-00
GMA 35c	010-00831-41	011-02302-00	011-02300-00

Figure 4-20 GMA 35 Mounting Rack Assembly Overview

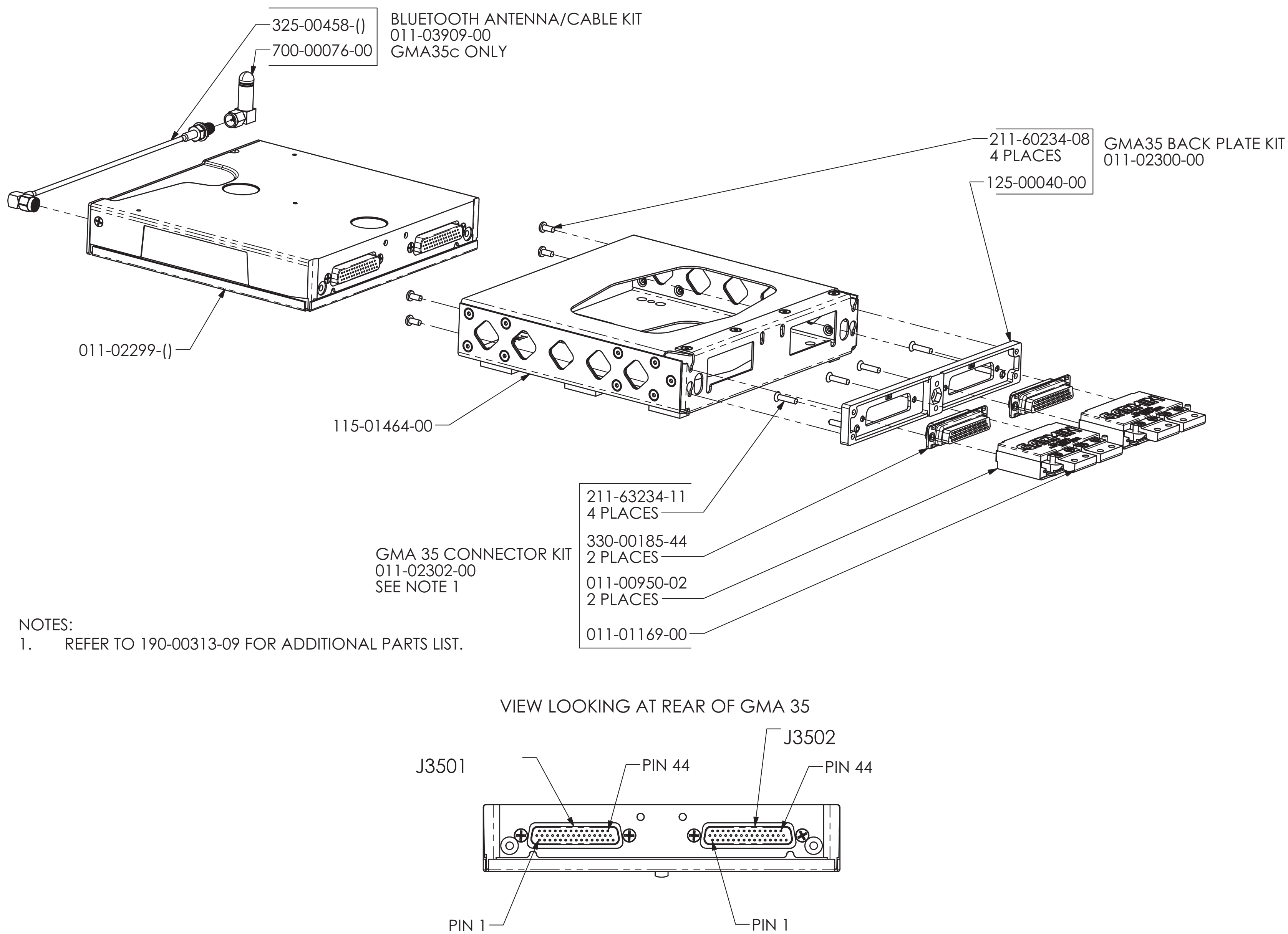
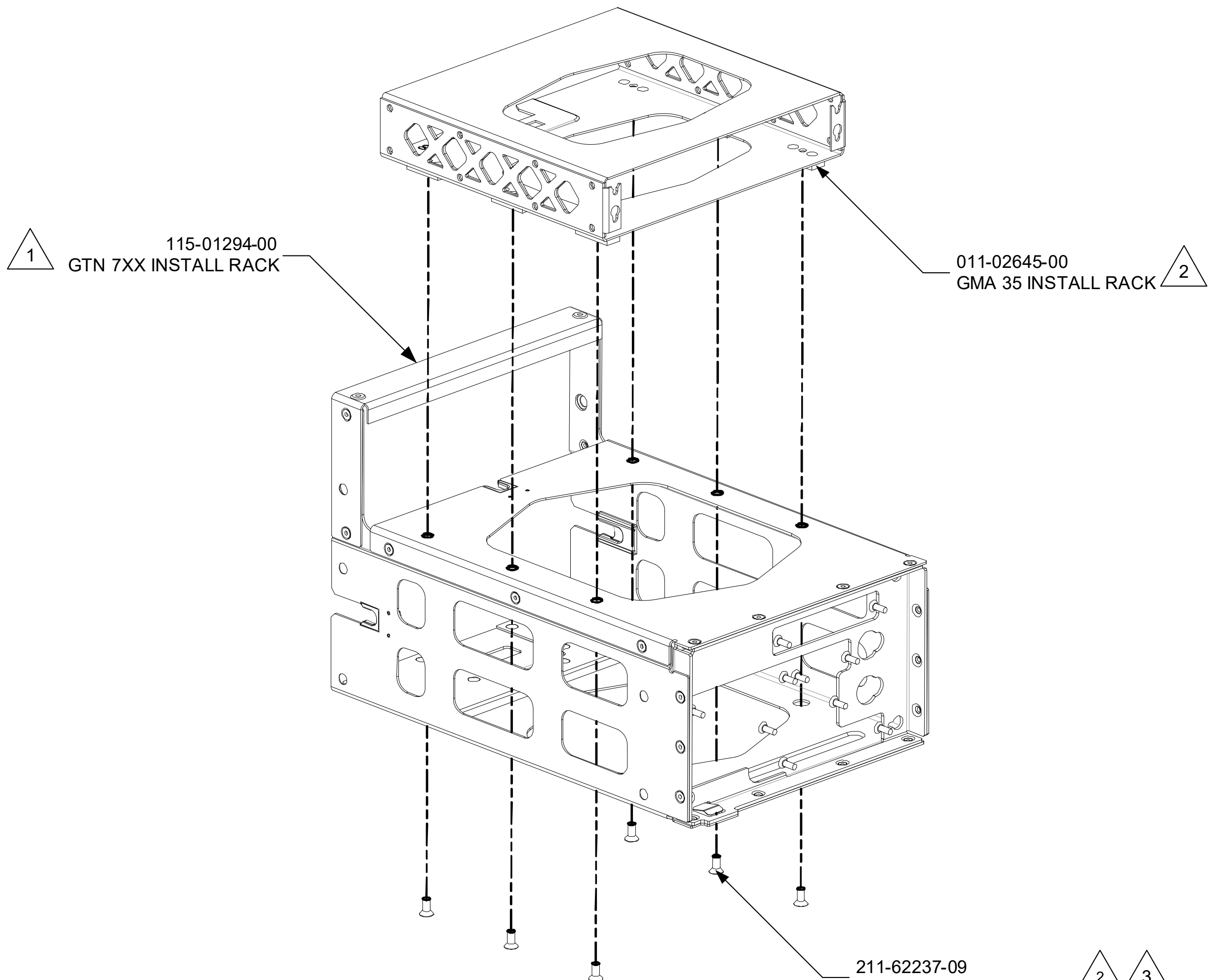


Figure 4-21 GMA 35 Installation



1 PART OF 011-00819-50 (GTN 725, BLACK), 011-00820-50 (GTN 750, BLACK), AND 011-00890-50 (GTN 750, GRAY) KITS

2 PART OF 011-02645-00 (GMA 35) KIT

3 TORQUE 8.5 – 9.5 IN-LBS

Figure 4-22 GTN 750Xi with GMA 35 Mounting Rack Assembly

4.4.2 GMA 35c Unit Insertion

The GMA 35c is installed in the rack by sliding it straight in until it stops. A 3/32" hex drive tool is then inserted into the hex hole at the bottom-center of the unit. Rotate the hex tool clockwise while pressing the unit on the front until the GMA 35c is firmly seated in the rack.

Be sure not to overtighten the unit into the rack. The application of hex drive tool torque exceeding 15 in-lbf can damage the locking mechanism.

4.5 Flight Stream

4.5.1 Flight Stream 210 Installation

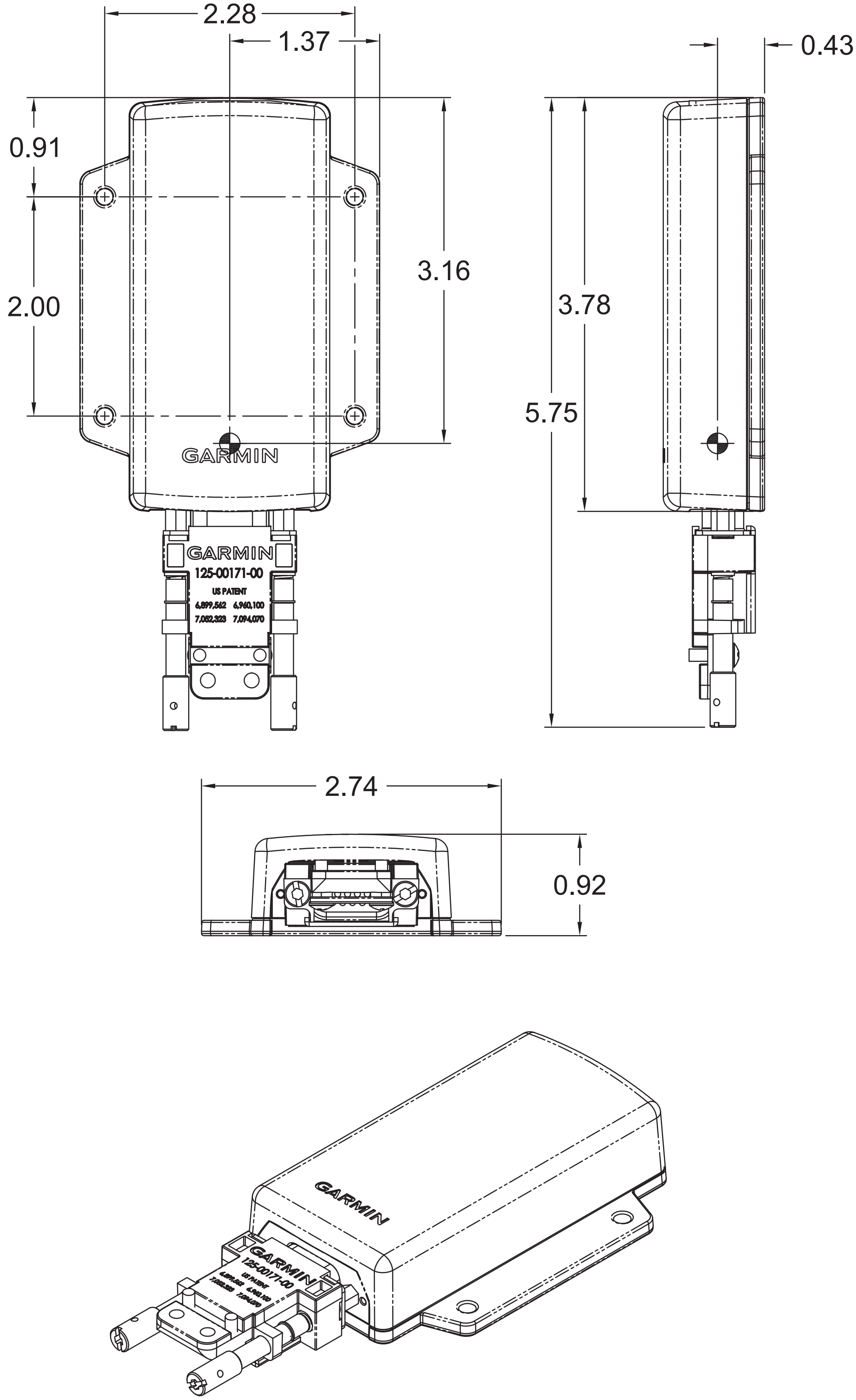


Figure 4-23 Flight Stream 210 Dimensions and Center of Gravity

CAUTION

Care should be taken when tightening the mounting screws of the Flight Stream 210. Excessive tightening may damage the mounting flange or break the screws.

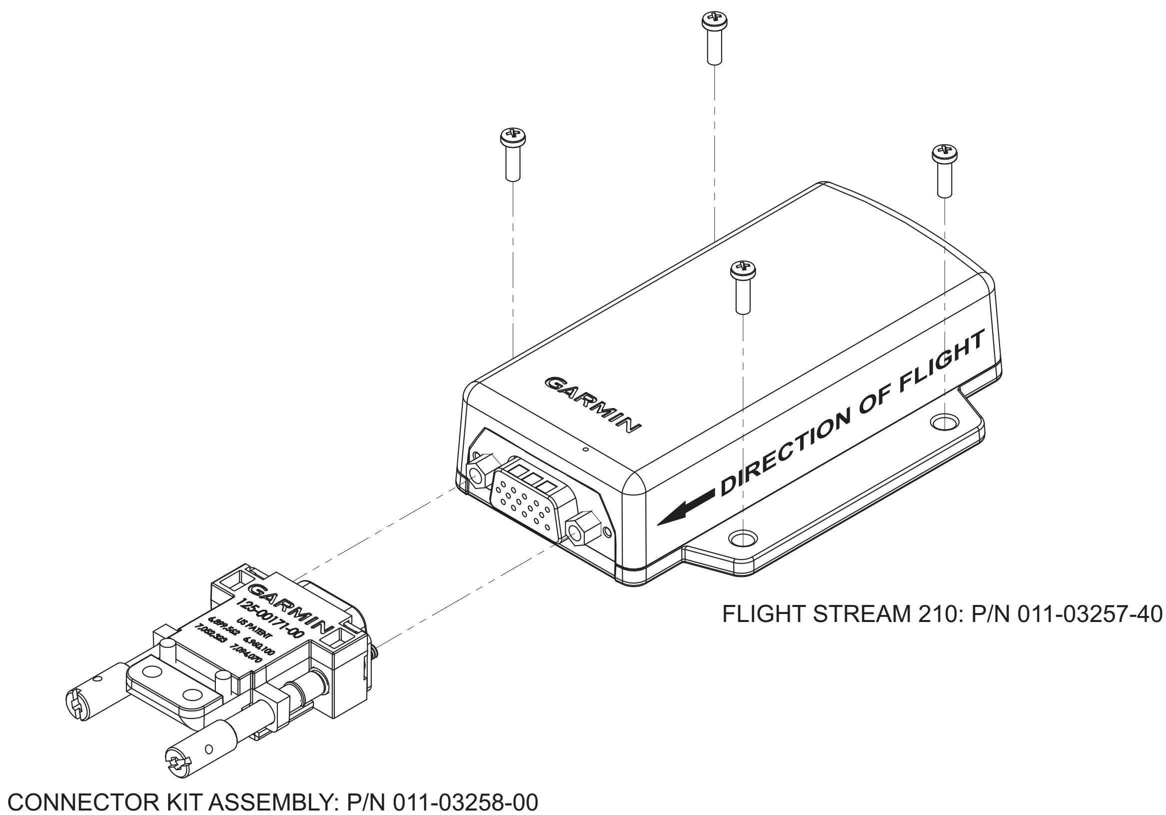


Figure 4-24 Flight Stream 210 Mounting

1. Verify the chosen mounting location meets the criteria specified in Section 3.6.11.2.
2. Using four #6 pan head screws, install to supporting structure. Fasteners should be tightened until snug, plus one-quarter turn.

NOTE

Nut plates or self-locking nuts may be used to secure the screws.

3. Verify the Flight Stream 210 electrical bond to aircraft structure or instrument panel as required in Section 3.6.6.1.

4.5.1.1 Bracket Fabrication and Considerations

If fabricating a bracket for Flight Stream 210 mounting:

- Use 2024-T3 sheet (bare or Clad) or angle aluminum with minimum 0.025-inch thickness. Keep bracket as small as possible with thin material
- Use sheet metal techniques (e.g., bend radius, fillets, etc.) applicable to the material thickness and type
- Apply zinc chromate primer that meets FED STD TT-P-1757, epoxy primer that meets MIL-P-23377, or other corrosion protection methods listed in the aircraft's maintenance manual

Metallic Aircraft

- Attach fabricated parts to metal structure in accordance with the methods outlined in AC 43.13-2B Chapter 2 and AC 43.13-1B Chapter 4 using mil-spec hardware
- Use of blind fasteners may be necessary in some installations due to lack of access for other fastening methods. Only use structural blind fasteners, such as NAS9301B (CherryMAX CR3213) rivets

Tube-and-Fabric Aircraft

When fabricating a new bracket to attach to tube-and-fabric aircraft, a small plate may be fabricated and secured between tubular structure using MS21919 clamps attached to the tubular frame. Guidance should be followed for fabricating a sheet metal bracket for metallic aircraft and in accordance with the methods outlined in AC 43.13-2B Chapter 2.

Composite Aircraft

When fabricating a new bracket to attach to composite structure, follow guidance provided by the aircraft manufacturer, such as the aircraft's maintenance manual (MM) and/or structural repair manual (SRM). AC 43-214, *Repairs and Alterations to Composite and Bonded Aircraft Structure*, may be used as a supplement to manufacturer guidance material. Repair procedures contained in the MM or SRM may be used to support the installation of new brackets or shelves fabricated for installation of the Flight Stream 210.

4.5.2 Flight Stream 510 Unit Insertion

To install the Flight Stream 510, insert the Flight Stream 510 data card into the GTN Xi data card slot until it stops. The label should be facing to the right.

4.6 Electrical Installation Procedure

4.6.1 Wire Harness Buildup

The installation kits for the GTN Xi, Flight Stream 210, and GMA 35 include connectors and crimp contacts. Use wire specified in Section 3.5.2 for all connections. Make the crimp connections with a crimp tool as specified in Table 3-23.

Refer to the interconnect diagrams in Appendix B for the applicable connections. Use 22 or 24 AWG wire for all connections. For power and ground, use the wire gauge specified in the interconnect drawing in Appendix B, then 22 AWG for the short length from the splice to the connector. Install the configuration module as described in Section 4.6.4.2. Once the wire harness assemblies have been made, use anti-chafe tape and attach the backshell/connector to the rear of the mounting unit. Route the wire harness as applicable. Avoid sharp bends that may damage the wire harness.

Allow adequate space for installation of wire harnesses and connectors. Refer to interconnect diagrams in Appendix B. Refer to Appendix A for connector pinout information. All electrical connections to the GTN Xi are made through the following connectors provided by Garmin:

- J1001 Main – 78-pin high-density D-Sub connector (male)
- J1002 Main – 26-pin high-density D-Sub connector (male)
- J1003 COM – 44-pin high-density D-Sub connector (male) (GTN 635Xi/650Xi/750Xi only)
- J1004 NAV – 62-pin high-density D-Sub connector (male) (GTN 650Xi/750Xi only)
- J1005 I/O – 62-pin high-density D-Sub connector (male) (GTN 7XX Xi only)

All electrical connections to the GMA 35c are made through the following connectors provided by Garmin:

- J3501 – 44-pin high-density D-Sub connector (male)
- J3502 – 44-pin high-density D-Sub connector (male)

All electrical connections to the Flight Stream 210 are made through the following connector provided by Garmin:

- J301 - 15-pin high-density D-Sub connector (male)

Construct the wire harness according to the information contained in this and the following sections. Strip all wires going to the connectors 0.17 inches. Insert the wire into the pin and crimp with one of the recommended (or equivalent) crimping tools. Insert the pin into the connector housing location as specified by the interconnect drawing in Appendix B. Verify the pin is properly engaged into the connector by gently tugging on the wire.

Appendix A provides the pinout information for the GTN Xi, GMA 35, and Flight Stream 210. Required connectors and associated hardware are supplied with the connector kits.

CAUTION

Check wiring connections for errors before inserting the unit into the rack. Incorrect wiring could cause component damage.

Table 4-2 Socket Contact Part Numbers

Wire Gauge	22-28 AWG [1]
Garmin	336-00021-00
Military	M39029/58-360 [2]
AMP	204370-2 [2]
Positronic	MC8522D [2]
ITT Cannon	030-2042-000 [2]

Notes:

[1] For configuration module pins, ensure the crimp tool is set to crimp 28 AWG wire (use the indenter settings provided on the positioner tool).

[2] Non-Garmin part numbers shown are subject to change without notice.

4.6.2 Backshell Assembly and D-Sub Connectors

The GTN Xi connector kits include Garmin backshell assemblies and ground adapter assemblies. Backshell connectors give the installer the ability to terminate shield grounds at the backshell housing using the shield block ground kit. Garmin part numbers for the D-Sub connectors and the backshell assemblies are listed in Table 4-3.

Table 4-3 GTN Xi Backshell Assembly

Refer to Figure 4-25 through Figure 4-27	Description	Garmin P/N	Notes
1	Backshell (P1001) Backshell (P1002) Backshell (P1003) Backshell (P1004, P1005)	125-00085-00 125-00082-00 125-00083-00 125-00084-00	[1]
2	Shield block (P1002, P1003) Shield block (P1001, P1004, P1005)	117-00147-00 117-00147-01	[2]
3	Screw, 4-40 x 0.250, FLHP100°, SS/P, Nylon	211-63234-08	[2] [3]
6	Screw, 4-40 x 0.375, PHP,SS/P, w/Nylon	211-60234-10	[1]
7	Strain relief (P1001, P1004, P1005) Strain relief (P1002) Strain relief (P1003)	115-00499-03 115-00499-01 115-00499-02	[1]
8	Cover (P1001) Cover (P1002) Cover (P1003) Cover (P1004, P1005)	115-00500-04 115-00500-01 115-00500-02 115-00500-03	[1]
9	Screw, 4-40 x 0.187, FLHP100,SS/P, w/Nylon	211-63234-06	[1]
10	Connector, D-sub, HD, 78-pin (P1001) Connector, D-sub, HD, 26-pin (P1002) Connector, D-sub, HD, 44-pin (P1003) Connector, D-sub, HD, 62-pin (P1004) Connector, D-sub, HD, 62-pin (P1005)	330-00185-78 330-00185-26 330-00185-44 330-00185-62 330-00185-62	[3]
11	Multiple conductor shielded cable (refer to interconnect diagrams, Appendix B)	As Required	[4]
12	Shield terminator	As Required	[4] [5]

Refer to Figure 4-25 through Figure 4-27	Description	Garmin P/N	Notes
13	Wire, insulated (20-22 AWG), 3" max length	As Required	[4] [5]
14	Pin contacts, #22D	336-00021-00	[3]
15	Ring terminal, #8, insulated, 18-22 AWG, 14-16 AWG, 12–10 AWG	MS25036-149, MS25036-153, MS25036-156	[4] [6]
16	Screw, PHP, 8-32 x 0.312", stainless or cad plated Steel	MS51957-42, MS35206-242	[4] [6]
17	Split washer, #8, (0.045" compressed thickness) stainless or cadmium plated steel	MS35338-137, MS35338-42	[4] [6]
18	Flat washer, #8, 0.032" thick, 0.174"ID, 0.375" OD, stainless or cad-plated steel	NAS1149CN832R, NAS1149FN832P	[4] [6]
19	Silicone fusion tape	249-00114-00	[4]

Notes:

[1] Supplied as part of Backshell Kits P/N 011-00950-04 (P1001), P/N 011-00950-01 (P1002), P/N 011-00950-02 (P1003), and P/N 011-00950-03 (P1004 and P1005).

[2] Supplied as part of Ground Adapter Kits P/N 011-01169-01 (P1001, P1004, P1005) and P/N 011-01169-00 (P1002, P1003).

[3] Supplied as part of GTN Xi Connector Kit P/N 011-02325-00 (GTN 625Xi), P/N 011-02325-01 (GTN 635Xi), P/N 011-02325-02 (GTN 650Xi), P/N 011-02326-00 (GTN 725Xi), and P/N 011-02326-01 (GTN 750Xi).

[4] Not supplied – must be purchased separately.

[5] Solder sleeve with pre-installed shield drain wire may be used instead of items 12 and 13.

[6] Not a Garmin part number.

Table 4-4 GMA 35 Backshell Assembly

Refer to Figure 4-25 through Figure 4-27	Description	Garmin P/N	Notes
1	Backshell	125-00083-00	[1]
2	Shield block	117-00147-00	[2]
3	Screw, 4-40 x 0.250, FLHP 100, SS/P	211-63234-08	[2]
6	Screw, 4-40x 0.437, FLHP100, SS/P, nylon	211-60234-11	[1]
7	Strain relief	115-00499-02	[1]
8	Cover	115-00500-02	[1]
9	Screw, 4-40 x 0.187, FLHP100, SS/P, w/nylon	211-63234-06	[1]
10	Connector, D-sub, HD, 44-pin	330-00185-44	[3]
11	Multiple conductor shielded cable	As Required	[4]
12	Shield terminator	As Required	[4] [5]
13	Wire, insulated (20-22 AWG), 3" max length	As Required	[4] [5]
14	Pin contacts, #22D	336-00021-00	[3]
15	Ring terminal, #8, insulated, 18-22 AWG	MS25036-149	[4] [6]
16	Screw, PHP, 8-32 x 0.312", stainless or cad plated	MS51957-42,	[4] [6]
17	Split washer, #8, (0.045" compressed thickness)	MS35338-137	[4] [6]
18	Flat washer, #8, 0.032" thick, 0.174"ID, 0.375" OD, stainless or cad plated steel	NAS1149CN832R, NAS1149FN832P	[4] [6]
19	Silicone fusion tape	249-00114-00	[4]

Notes:

[1] Supplied as part of backshell kit P/N 011-00950-02 (P3501 and P3502).

[2] Supplied as part of ground adapter kit P/N 011-01169-00 (P3501 and P3502).

[3] Supplied as part of GMA 35 connector kit P/N 011-02302-00.

[4] Not supplied – must be purchased separately.

[5] Solder sleeve with pre-installed shield drain wire may be used instead of items 12 and 13.

[6] Not a Garmin part number.

Table 4-5 Flight Stream 210 Backshell Assembly

Refer to Figure 4-31	Description	Garmin P/N	Notes
1	Backshell	125-00083-00	
6	Screw, 4-40 x 0.375", PHP, SS/P with nylon	211-60234-10	
7	Clamp, backshell, jackscrew	115-01078-00	
8	Cover, backshell, jackscrew	115-01079-00	
9	Screw, 4-40 x 0.187", FLHP100, SS/P with nylon	211-63234-06	
10	15-pin D-sub connector	211-00170-00	
Refer to Figure 4-27			
11	Multiple conductor shielded cable	As Required	[2]
12	Shield terminator	As Required	[2] [3]
13	Wire, insulated (20-22 AWG), 3" max length	As Required	[2] [3]
14	Pin contacts, #22D	336-00021-00	[1]
15	Ring terminal, #8, insulated, 18-22 AWG,	MS25036-149	[2] [4]
16	Screw, PHP, 8-32, cad plated	MS51957-42	[2] [4]
17	Split washer, #8, (0.045" compressed thickness)	MS35338-137	[2] [4]
18	Flat washer, #8, 0.032" thick, 0.174"ID, 0.375" OD, stainless or cad plated steel	NAS1149CN832R, NAS1149FN832P	[2] [4]
19	Silicone fusion tape	249-00114-00	[2]

Notes:

[1] Supplied as part of Connector Kit P/N 011-03258-00.

[2] Not supplied – must be purchased separately.

[3] Solder sleeve with pre-installed shield drain wire may be used instead of items 12 and 13.

[4] Not a Garmin part number.

4.6.2.1 Shield Block Ground Procedure

This section describes the acceptable methods for terminating shielded wires for the GTN Xi, Flight Stream 210, and GMA 35 wires.

NOTE

The three tapped holes on the shield block above the GTN Xi fan must not be used for grounding shield terminal lugs on P1001. There is insufficient clearance between the fan case and the P1001 shield block to allow these holes to be used for grounding shield terminal lugs. Refer to Section 4.6.5 for more information.

NOTE

Alternatively, use a Raychem S-2 series solder sleeve with the thermochromic temperature indicator. These solder sleeves come with a pre-installed lead and effectively take the place of items 12 and 13. Refer to Raychem installation procedure for detailed instructions on product use.

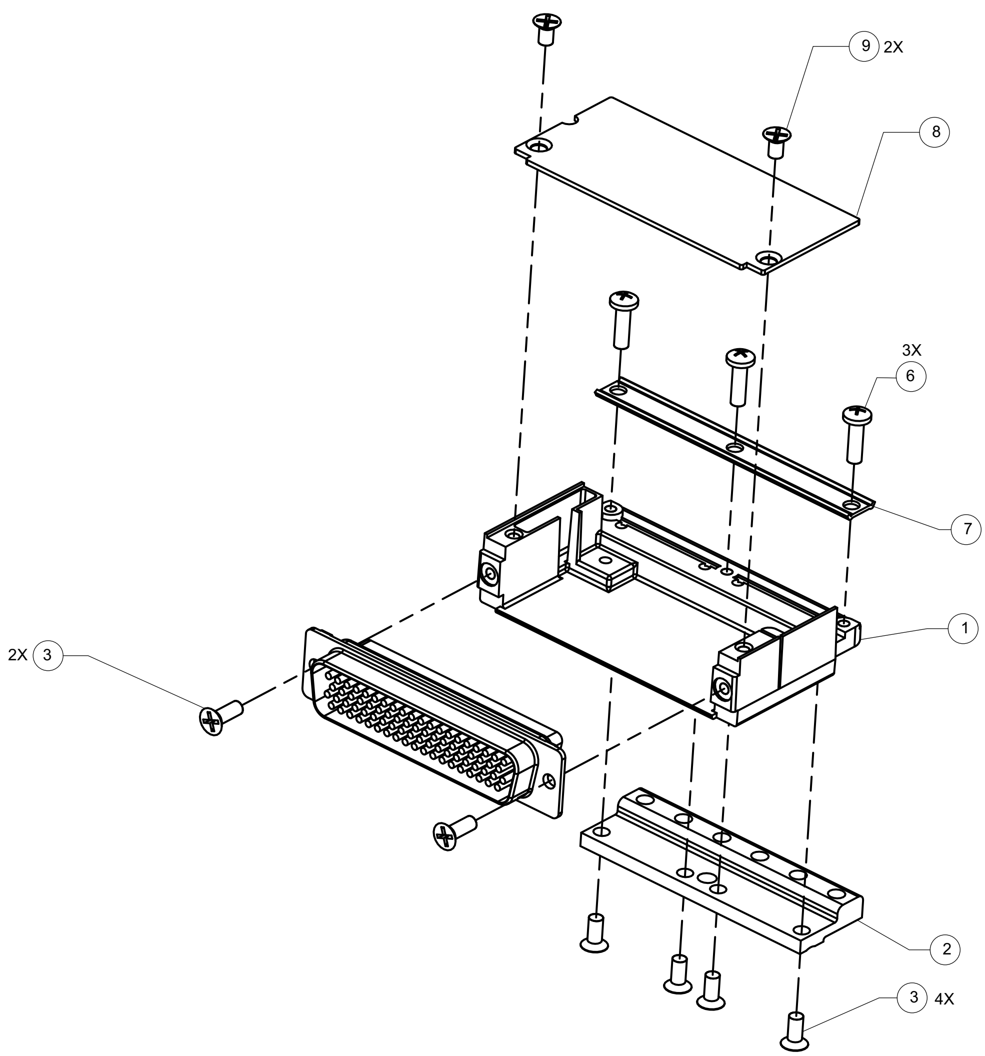
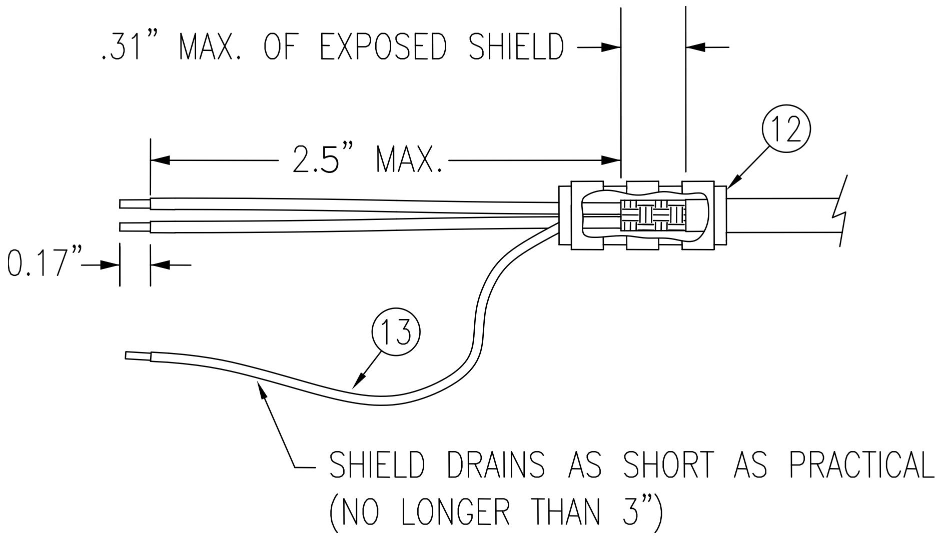
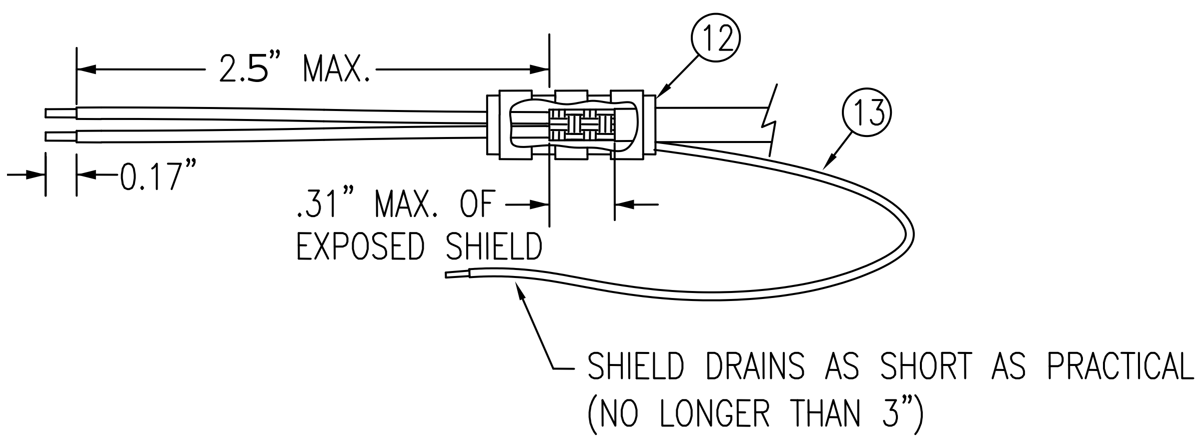


Figure 4-25 Connector and Backshell Assembly



PREFERRED METHOD



ALTERNATE METHOD

Figure 4-26 Shielded Cable Preparation

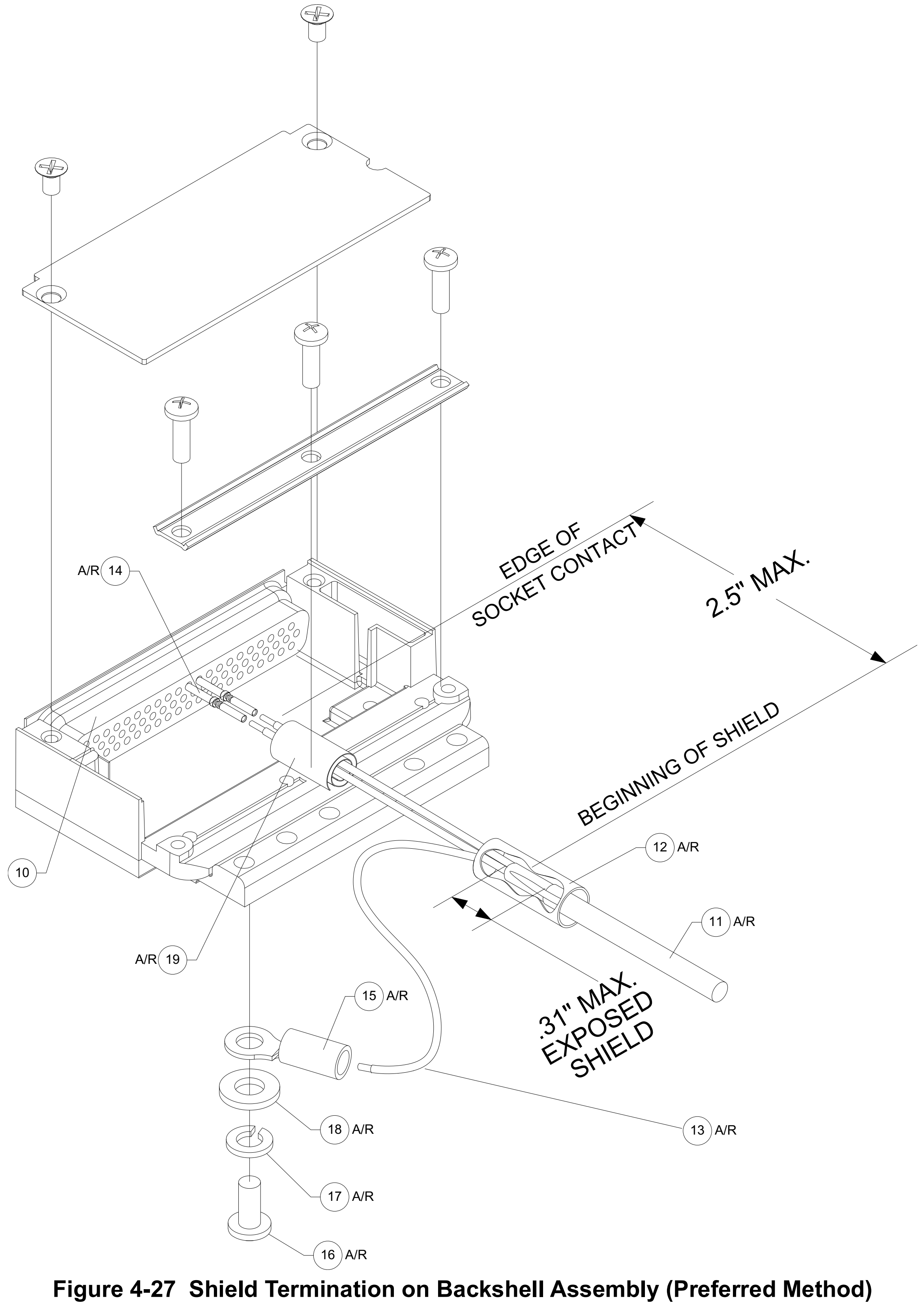


Figure 4-27 Shield Termination on Backshell Assembly (Preferred Method)

The screws (**16**) used to ground the shields to the shield block should penetrate two to four threads past the shield block when installed. If the screws are too long, they could potentially damage the wires going into the backshell.

Each tapped hole on the backshell can accommodate only two ring terminals (**15**). It is preferred that only two wires (**13**) be terminated per ring terminal. Two wires per ring terminal will necessitate the use of a ring terminal, #8, insulated, 14-16 AWG (MS25036-153). If only a single wire is left or if only a single wire is needed for this connector a ring terminal, #8, insulated, 18-22 AWG (MS25036-149) can accommodate this single wire. If more wires exist for the connector than two per ring terminal, it is permissible to terminate three wires per ring terminal.

Prepare all of the shielded cables as shown in Figure 4-26. Refer to Figure 4-27 for details of the shield termination to the connector backshell. Skip to step 5 below for wires with no shielding.

1. At the end of the shielded cable (**11**), strip back a 2.5-inch maximum length of the jacket to expose the braid.
2. Remove the exposed braid.
3. Carefully score the jacket 1/4 to 5/16 inches from the end and remove the jacket to leave the braid exposed.
4. Connect a 20 or 22 AWG wire (**13**) to the exposed shield of the prepared cable assembly. Refer to Figure 4-26.
5. Slide a shield terminator (**12**) onto the prepared cable assembly (**11**).
6. Connect the wire (**13**) to the shield using a heat gun approved for use with solder sleeves. The chosen size of solder sleeve must accommodate both the number of conductors present in the cable and the wire (**13**) to be attached.
7. Repeat steps 1 through 3 as needed for the remaining shielded cables.
8. Crimp pins/sockets (**14**) onto the wires.
9. Terminate wires in the connector (**10**) in accordance with the aircraft wiring drawings.
10. For P1001, install the configuration module wires into the connector. Refer to Section 4.6.4.2 for instructions on installing the configuration module.

Refer to Figure 4-25 to complete the following steps to assemble the backshell onto the connector:

1. Attach the shield block (**2**) to the backshell (**1**) by inserting the flathead screws (**3**) through the holes on the shield block and threading into the tapped holes on the backshell (**1**) (refer to Figure 4-25).
2. Wrap the wire harness with silicone fusion tape (**19**, or a similar version) at the point where the backshell strain relief and cast housing will contact the wire harness.
3. Place the smooth side of the backshell strain relief (**7**) across the wire harness and secure using the two screws (**6**). Ensure each half of the strain relief bar is supporting half of the wire harness.

CAUTION

Placing the grooved side of the strain relief across the wire harness may damage wires.

4. For P1001, install the configuration module into the connector backshell. Refer to Section 4.6.4.2 for instructions on installing the configuration module into the backshell.
5. Attach the cover (**8**) to the backshell using two screws (**9**).
6. Install ring terminals (**15**) onto the shield drain wires (**13**), grouping wires as applicable for the connector.

7. Terminate the ring terminals to the shield block (**2**) by placing items on the pan head screw (**16**) in the following order: split washer (**17**), flat washer (**18**), first ring terminal, second ring terminal if needed, before finally inserting the screw into the tapped holes on the shield block.
8. Insert the assembled connector into the backplate. Using screws (**3**), secure the connector into the backplate. For the Flight Stream 210 connector, mate the connector directly to the Flight Stream 210 LRU and thread the jackscrew until snug.

4.6.2.1.1 Special Considerations

Up to three shields or wires may be terminated within the 14-16 AWG MS25036-153 #8 ring terminal, and a maximum of three ring terminals may be installed on each shield block terminal location.

4.6.3 TVS and Fuse Installation (Nonmetallic IFR Aircraft Only)

This section applies to IFR, nonmetallic aircraft only. VFR, non-metal aircraft do not require the use of TVSs or fuses.

Certain IFR, nonmetallic aircraft will require TVSs at the main and NAV power inputs of the GTN Xi. To determine which aircraft require TVSs, refer to Table E-1. TVS component part numbers are found in Section 3.5.3.

4.6.3.1 TVS/Fuse Installation

For all TVS1/F1 assemblies that are required for lightning protection, install them in accordance with Figure 4-28 and the notes on the applicable interconnect diagram in Appendix B.

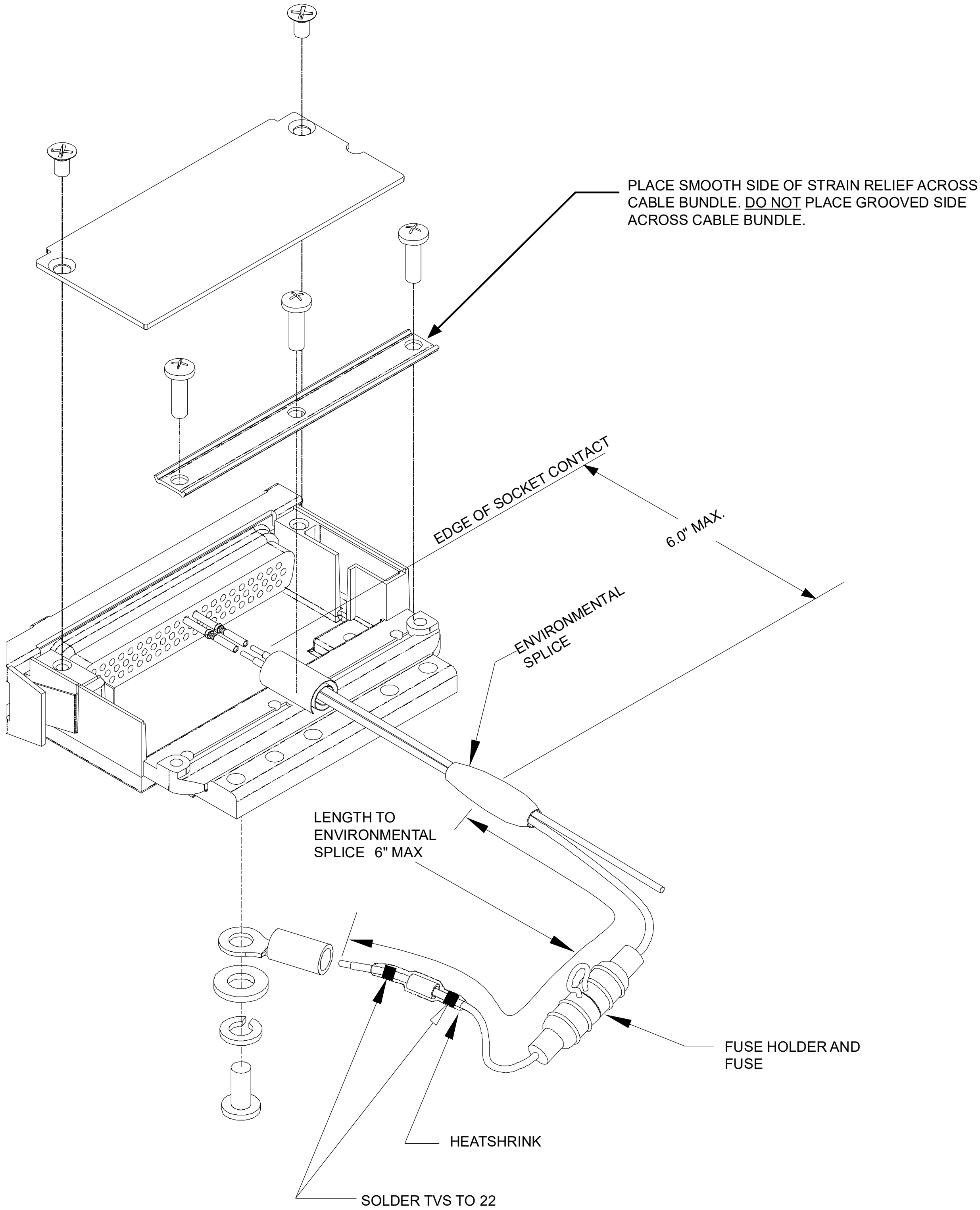


Figure 4-28 TVS/Fuse Installation (TVS1/F1)

4.6.3.2 TVS2 Assembly (Nonmetallic IFR Aircraft Only)

Refer to Figure 4-30 while completing the following steps.

Certain IFR, nonmetallic aircraft will require a TVS assembly at the power bus that supplies power to the GTN Xi (refer to Appendix Section E.1 to determine which aircraft require them). Refer to Section 3.5.3 for TVS component part numbers. Refer to Figure B-4 for interconnect drawings that show the TVS installed.

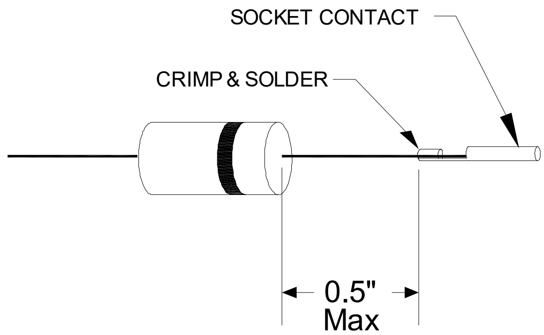


Figure 4-29 Detail of TVS Pin Assembly

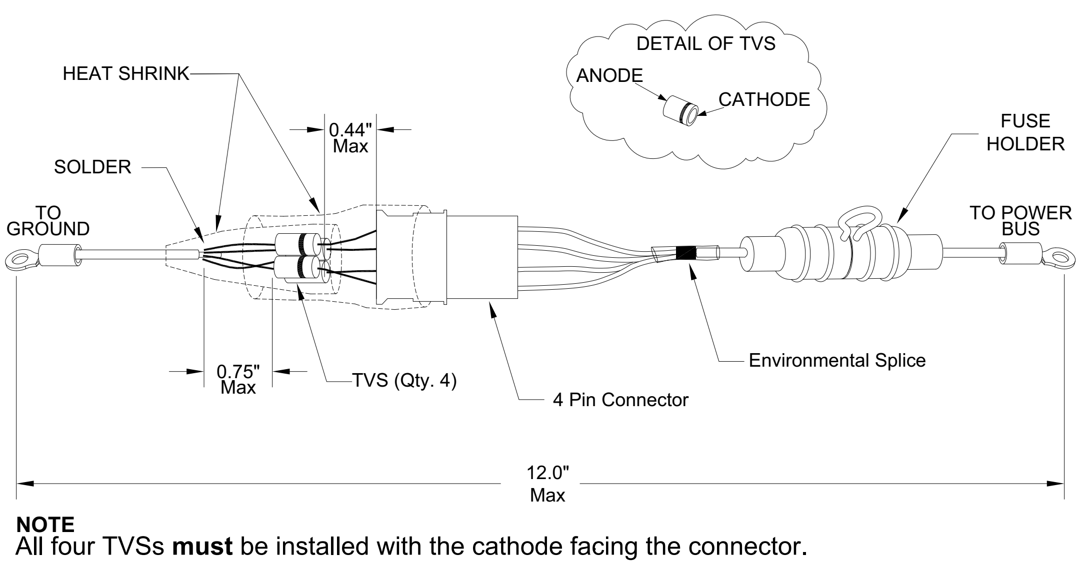


Figure 4-30 TVS2 Assembly

1. Cut the TVS leads to 0.75 +0.00/-0.10 inches on both sides.
2. Crimp and solder each of the four TVS banded side (cathode) leads to their connector sockets (refer to Figure 4-29), and insert into the 4-pin connector.
3. Install heat shrink around the four TVSs – this will help to hold them in place during the following steps.
4. Solder the four leads at the anode (ground) end of the assembly onto a length of 18 AWG wire. Attach a terminal lug onto the wire end.
5. Attach a piece of heat shrink to cover the soldered TVS leads and four TVSs.

6. Attach a larger piece of heat shrink over the 4-pin connector with sockets and back over the four TVSs. These two pieces of heat shrink should overlap along the entire length of the TVSs.
7. Crimp and solder four 18 AWG wires to their connector pins and insert them into the 4-pin connector.
8. Attach lengths of 18 AWG to both ends of the fuse and fuse holder assembly.
9. Splice the four wires from the connector with pins to one of the wires attached to the fuse assembly.
10. Attach a terminal lug to the 18 AWG coming from the other end of the fuse assembly.
11. Connect the two halves of the four-pin connector together.
12. Verify the 10A fuse is installed in the fuse holder.

4.6.3.2.1 TVS2 Assembly Polarity Check

Using a multimeter that is set to the diode mode, check conductivity across the entire TVS2 assembly. The meter should indicate open when the red lead is attached to the power bus terminal lug and the black lead is attached to the ground terminal lug. The meter should indicate 2.0 to 2.5 volts when the red lead is attached to the ground terminal lug and the black lead is attached to the power bus terminal lug.

4.6.3.2.2 TVS2 Installation

Refer to Figure B-4 while completing the following steps:

1. Attach the fuse (power) end of the TVS assembly to the power bus at the specific point detailed in the drawing.
2. Attach the ground end of the TVS2 assembly to aircraft ground.

4.6.4 Flight Stream 210 Backshell Assembly

The Flight Stream 210 device supports one RS-422 input/output and two RS-232 inputs/outputs. Shields for each of these wires must be terminated on the connector shield block. The Flight Stream connector contains two tapped holes on the shield block for termination of grounding shield terminal lugs.

Up to three shields or wires may be terminated within the 14-16 AWG MS25036-153 #8 ring terminal. Up to three ring terminals may be located on each of the two tapped holes on the shield block. It is recommended to terminate each of the shield drains on one of the terminal holes to ensure there is adequate room on the shield block to terminate the unit ground terminal braid on the other terminal. Refer to Section 3.6.6.1 for details on how to build and terminate the ground terminal braid.

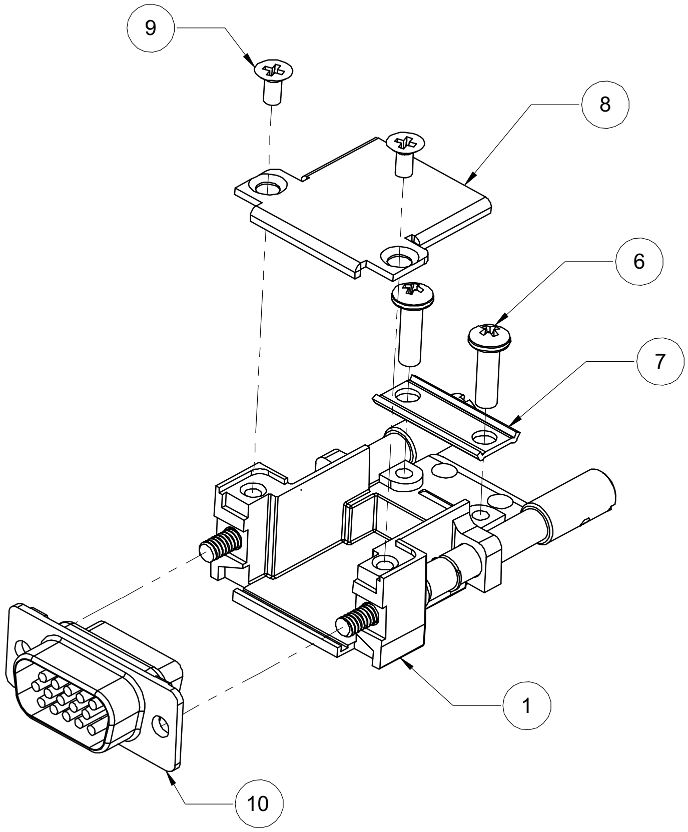


Figure 4-31 Flight Stream 210 Backshell Assembly

4.6.4.1 Flight Stream 210 Installation Special Considerations

To avoid incorrectly attaching the 15-pin D-sub connector and damaging the unit, it is recommended to populate pin 6 of the connector.

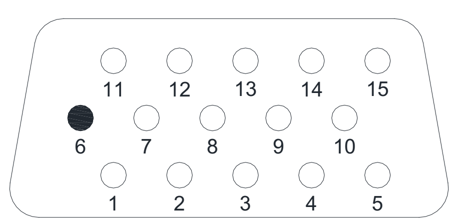


Figure 4-32 Flight Stream 210 Connector

4.6.4.2 Configuration Module Installation (P1001 Only)

GTN Xi P1001 connector assemblies serve as the housing for a configuration module. This section lists the two configuration module assemblies that are supplied with GTN Xi installation kits.

Table 4-6 Configuration Module Wire Color Reference Chart

Color	Function	P1001 Contact
Red	Vcc	65
Black	Ground	64
Yellow	Data	62
White	Clock	63

NOTE

The pin contacts supplied with the GTN Xi configuration module are specifically made to accommodate 28 AWG wire.

4.6.4.2.1 Configuration Module Assembly with Potted PCB

Refer to Figure 4-33 and Table 4-5 for details and item numbers referenced in the following procedure.

1. Strip 0.17 inches of insulation from each wire prior to crimping.
2. Crimp pins (**4**) onto each wire of the 4-conductor wire harness (**3**).
3. Insert the newly crimped pins and wires (**3**, **4**) into the applicable connector housing (**5**) locations shown in Figure 4-33 and Figure B-4.
4. Plug the 4-conductor wire harness (**3**) into the connector on the PCB (**1**).
5. Insert the PCB (**1**) into the backshell (**6**) recess.
6. Attach cover (**7**) to backshell (**6**) using screws (**8**).

Table 4-7 Configuration Module Kit P/N 011-00979-03 (P1001)

Refer to Figure 4-33	Description	Garmin P/N
1	Configuration module, PCB board assembly w/EEPROM	011-02178-00
3	4-conductor harness	325-00122-00
4	Pin contact, crimp, #22D	336-00021-00

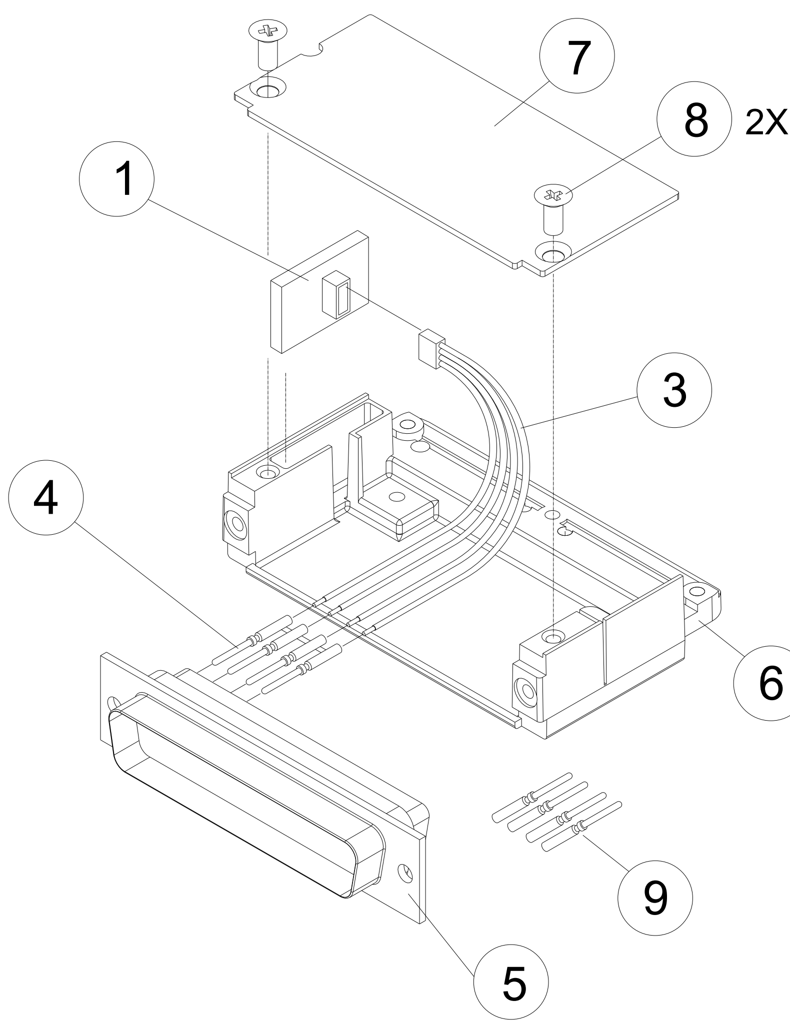


Figure 4-33 Backshell Assembly (Potted Configuration Module)

4.6.4.2.2 Configuration Module Assembly with Spacer

NOTE

Configuration module assembly kit P/N 011-00979-00 may not be available for new GTN Xi installations. Refer to Section 4.6.4.2.1 for new GTN Xi installations.

Table 4-8 Configuration Module Kit P/N 011-00979-00 (P1001)

Refer to Figure 4-34	Description	Garmin P/N
1	Configuration Module, PCB Board Assembly w/EEPROM	012-00605-00
2	Spacer, Configuration Module	213-00043-00
3	4-Conductor Harness	325-00122-00
4	Pin Contact, Crimp, #22D	336-00021-00

Refer to Figure 4-34 for details and item numbers referenced in the following procedure.

1. Strip 0.17 inches of insulation from each wire prior to crimping.
2. Crimp socket contacts (**4**) onto each wire of the 4-conductor wire harness (**3**).
3. Insert newly crimped socket contacts and wires (**3**, **4**) into the applicable connector housing location shown in Figure 4-34 and Figure B-4.
4. Apply the spacer (**2**) by wrapping it around the PCB board (**1**) making sure to insert the plastic connector mounted on the board into the hole provided in the spacer.
5. Plug the 4-conductor wire harness (**3**) into the connector on the PCB board (**1**).
6. With spacer (**2**) in position, insert PCB board (**1**) into the backshell recess.
7. Orient the connector housing so the inserted 4-conductor wire harness (**3**) is on the same side of the backshell as the inserted PCB board (**1**).

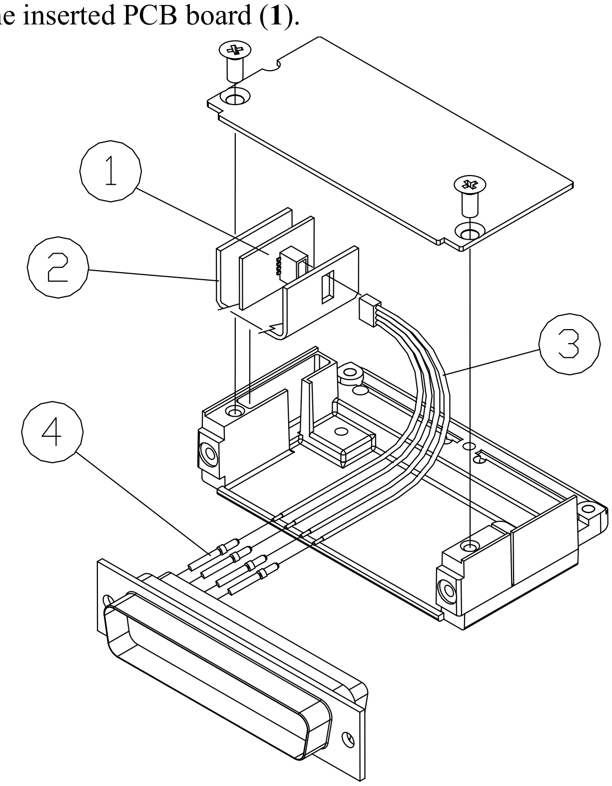


Figure 4-34 Backshell Assembly (Configuration Module with Spacer)

4.6.5 GTN Xi Fan Installation

Part numbers for the fan kit that is used with P1001 only are listed in Table 4-9.

Table 4-9 Fan Kit

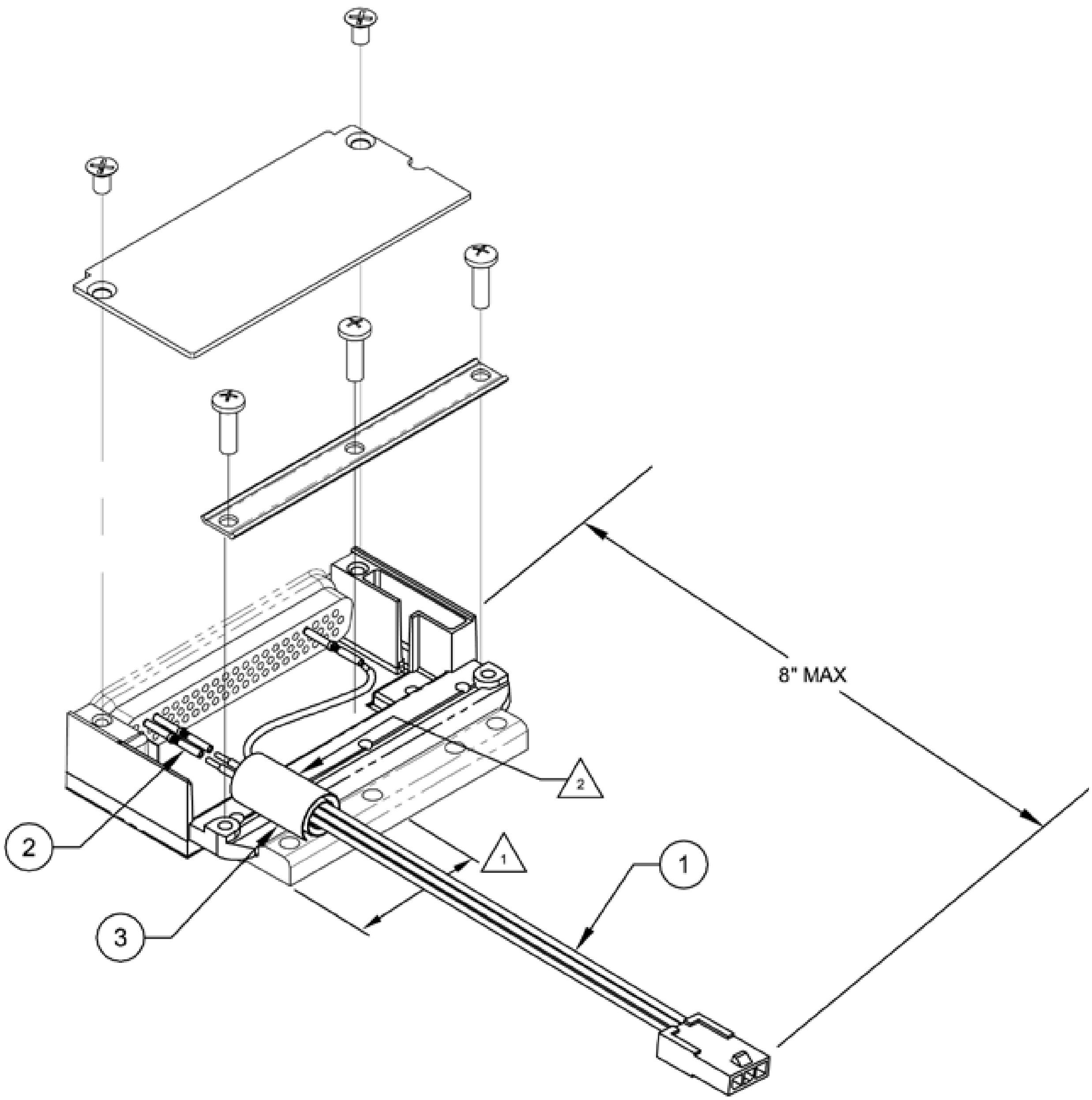
Refer to Figure 4-35	Description	Garmin P/N
1	Fan cable assembly, 3-conductor harness	320-00600-00
2	Pin contact, crimp, #22D	336-00021-00
3	Silicone fusion tape	249-00114-00

Table 4-10 Fan Cable Wire Color Reference Chart

Color	Function	P1001 Contact
Red	Power	59
Black	Ground	43
Yellow	Fan tach	58

The GTN Xi backplate assembly has a cooling fan mounted to it. The cooling fan is mounted to the backplate assembly at the factory. The fan is necessary for proper cooling and air circulation within the unit. The fan is powered from the GTN Xi and must be wired to the GTN Xi connector P1001.

1. Strip 0.17 inches of insulation from each wire prior to crimping.
2. Crimp socket contacts onto each wire of the 3-conductor wire harness.
3. Insert newly crimped socket contacts and wires into the applicable connector housing location as shown in Figure 4-35 and the interconnect drawings in Appendix B.
4. Plug the 3-conductor wire harness connector into the connector on the fan.



NOTES:

1 Do not use the three tapped holes on the shield block above the fan.There is insufficient clearance between the fan casing and terminal lugs.

2 Wrap fan wire with fusion tape separately from the main harness to prevent the fan wires from being dislodged or damaged if there is excess movement between the main harness and the fan harness.

3 Ensure the fan wires do not exceed eight inches in length.

Figure 4-35 Fan Wiring Installation

4.7 Weight and Balance

Weight and balance computation is required after the installation is complete. Follow the applicable guidelines as established in AC 43.13-1B, Chapter 10, Section 2. Make applicable entries in the equipment list indicating items added, removed, or relocated along with the date the installation was accomplished. GTN Xi and GMA 35c unit weights are listed in Table 4-11. Refer to Figure 4-10 (GTN 6XX Xi) and Figure 4-12 (GTN 7XX Xi) for unit centers of gravity.

Refer to Figure 4-36 for a sample calculation. Include a copy of the updated aircraft weight and balance in the aircraft POH/AFM.

Table 4-11 LRU Weights

LRU	Std. Wt. [Metric Wt.]
GTN 750Xi (unit only)	7.1 lbs [3.22 kg]
GTN 750Xi (with rack and backplate)	9.0 lbs [4.07 kg]
GTN 725Xi (unit only)	5.7 lbs [2.60 kg]
GTN 725Xi (with rack and backplate)	7.3 lbs [3.29 kg]
GTN 650Xi (unit only)	5.5 lbs [2.48 kg]
GTN 650Xi (with rack and backplate)	7.0 lbs [3.19 kg]
GTN 635Xi (unit only)	4.8 lbs [2.18 kg]
GTN 635Xi (with rack and backplate)	6.2 lbs [2.80 kg]
GTN 625Xi (unit only)	4.1 lbs [1.88 kg]
GTN 625Xi (with rack and backplate)	5.3 lbs [2.40 kg]
GMA 35 (-00 unit only)	1.4 lbs [0.64 kg]
GMA 35 (-00 with rack and backplate)	2.2 lbs [1.00 kg]
GMA 35 (-20 unit only)	1.3 lbs [0.58 kg]
GMA 35 (-20 with rack and backplate)	2.1 lbs [1.00 kg]
GMA 35c (unit only)	1.3 lbs [0.58 kg]
GMA 35c (with rack and backplate)	2.2 lbs [1.00 kg]
Flight Stream 210 (unit only)	0.16 lbs [0.07 kg]
Flight Stream 210 (with connector)	0.27 lbs [0.12 kg]
Flight Stream 510 [1]	Negligible

Notes:

[1] Flight Stream 510 should be added to the equipment list as an optional LRU and may be installed/removed by the owner or operator.

Previous Aircraft Weight and Balance	Useful Load (lb)	Empty Weight (lb)	C.G. (in)	Moment (lb-in)
Calculated: 01/06/20	1093.3	2306.70	138.83	320233.96
Description of Items removed from aircraft		**Weight (lb)**	**Arm (in)**	**Moment (lb-in)**
SL15 Audio Panel		1.00	55.00	55.00
GMX200		4.60	55.00	253.00
CNX80/GNS480 Color GPS/NAV/COM		6.10	55.00	335.50
SL30 NAV/COM		2.30	55.00	126.50
Total Removed:		14.00		770.00
Description of items added to aircraft		**Weight (lb)**	**Arm (in)**	**Moment (lb-in)**
GTN 750Xi		9.00	54.90	494.10
GTN 650Xi		7.00	54.90	384.30
GMA 35		2.20	52.90	116.38
Total Added:		18.20		994.78
Change		+4.20		+224.78
New Aircraft Weight and Balance	**Useful Load (lb)**	**Empty Weight (lb)**	**C.G. (in)**	**Moment (lb-in)**
Calculated: 01/06/20	1089.1	2310.9	138.66	321228.74

Figure 4-36 Sample Aircraft Weight and Balance Calculation

5 SYSTEM CONFIGURATION

5.1 System Configuration Overview

Instructions for configuring the GTN Xi and GMA 35c for each installation are contained in this section. Checks to verify the system is properly installed and functioning correctly are also included. The steps that are not applicable to a particular installation may be skipped. The checkout log included in Section 6.4.3 should be filled out during the checkout procedures and maintained with the aircraft permanent records. A configuration log is included in *Maintenance Manual and ICA, GTN Xi Part 23 AML STC* and must be filled out during configuration. The completed configuration log must be maintained with the aircraft permanent records to document the configuration of this installation. A summary of the steps required for configuration and checkout of the GTN Xi is as follows:

1. Perform installation checks (Sections 5.2 and 5.3).
2. If required, load software into the GTN Xi (Section 5.4.1.1).
3. If required, load software into GMA 35 (Section 5.4.1.2 through Section 5.4.1.3).
4. Configure the GTN Xi for the specific installation (Section 5.4.3).
5. Configure GMA 35 (Section 6.2.6).
6. Perform ground checks to confirm proper operation of the external sensors with the GTN Xi (Section 5.4.1, Section , Section 6.1, and Section 6.2).
7. Perform the specified database checks (Section 6.2.14).
8. Perform the specified flight checks (Section 6.3).
9. Complete the checkout log (Section 6.4.3).
10. Update the aircraft documentation (Section 6.4).

NOTE

Throughout the next section, many screen shots and examples are used to illustrate the software loading and configuration and checkout process. Changes may occur that result in the examples being out-of-date. Always refer to Equipment List, GTN Xi Part 23 AML STC for the correct software versions and part numbers.

NOTE

Throughout the next section, many screen shots are shown of the GTN 7XX Xi. The procedures and methods for accessing pages on the GTN 6XX Xi are similar to what is described for the GTN 7XX Xi, unless specifically noted.

5.2 Mounting, Wiring, and Power Checks

Verify all wire harnesses and cables are properly secured and shields are connected to the shield block of the connectors. Check the movement of the flight and engine controls to verify there is no interference.

Prior to powering up the GTN Xi and GMA 35c, the wire harnesses must be checked for proper connections to the aircraft systems and other avionics equipment. Point-to-point continuity must be checked on all wiring to expose any faults such as shorting to ground. Any faults or discrepancies must be corrected before proceeding. If any TVSs are installed as part of the installation, proper TVS installation should be verified prior to application of power. Refer to Section 4.6.3 for guidance on checking each TVS assembly. Check the lighting bus wiring to verify it is wired correctly before applying power to the GTN Xi.

CAUTION

Incorrect lighting bus wiring could cause damage to the GTN Xi.

After accomplishing a continuity check, perform power and ground checks to verify there is proper power distribution to the GTN Xi and GMA 35c, including the lighting bus and any high level inputs to the GTN Xi. Any faults or discrepancies should be corrected at this time. Remove power from the aircraft upon completion of the wire harness checkout.

The GTN Xi/GMA 35c can be installed after completion of the continuity and power checks. The GMA 35c should be installed into the rack and secured as described in Section 4.3.7. The GTN Xi should be installed into the rack and secured as described in Section 4.3.7. The GTN Xi backplate must be connected to the wire harness and antenna coaxial cables.

5.3 Connector Engagement Check

Prior to configuration and checkout of the GTN Xi, the connector engagement should be checked as described below:

1. Ensure the GTN Xi GPS/NAV and COM circuit breakers are pulled.
2. Slide the GTN Xi straight into the rack until it stops about 1 inch short of the fully seated position.
3. Insert a 3/32" hex drive into the unit retention mechanism access hole at the bottom of the unit face and rotate the tool clockwise while pressing the bezel until the unit is firmly seated in the rack.
4. With the GTN Xi seated, reapply power by closing the circuit breakers and turning on the avionics master switch (if installed).
5. Again, insert the hex drive into the unit retention mechanism access hole.
6. Rotate the tool counterclockwise to back out the retention mechanism.
7. Verify that three complete revolutions of the Allen screw can be performed without red “X” indication or loss of power to the GTN Xi.

NOTE

If power is lost or the red “X” condition occurs with fewer than three turns, verify there are no obstructions to the unit fully seating in the rack. Also, the mounting rack may need to be moved aft (toward the pilot) so the instrument panel does not obstruct the unit from properly engaging in the rack.

8. Re-seat the GTN Xi per step 3.

5.4 Configuration Mode Operations

NOTE

A Garmin transponder (GTX 32/32X/33/3XX) controlled by the GTN Xi will reboot into the same mode as the controlling GTN Xi (i.e. if the GTN Xi boots into Configuration mode, the transponder will also boot into Configuration mode).

CAUTION

Before configuring the GTN Xi, verify there are no configuration module service messages displayed in the message queue. This would indicate the configuration module is improperly wired or damaged.

Configuration mode is used to configure the GTN Xi settings for each specific installation. To access Configuration mode, remove power from the GTN Xi. With the GTN Xi turned off (i.e., circuit breaker pulled), press and hold the **HOME** key and re-apply power to the GTN Xi (i.e., push in the circuit breaker). Release the **HOME** key when "Garmin" appears fully lit on the display. The first page displayed is the Configuration mode home page. While in Configuration mode, pages can be selected by touching the desired key on the display. Some pages may require page scrolling to view all of the information and keys on the page; this can be done by touching the screen and dragging the page in the desired direction or by touching the **Up** or **Down** keys.

5.4.1 Updates

The GTN Xi comes pre-loaded with software. However, to ensure it is loaded with the software that is applicable to this STC, a GTN Software Loader Card must be created. Refer to Section 5.4.1.1 for additional information. For dual GTN Xi installations, the software loading procedures in Section 5.4.1.2 must be carried out on each GTN Xi; however, the same Software Loader Card created in Section 5.4.1.1 may be used.

NOTE

Prior to installing a version of the GTN Xi main board software that is older than the currently installed version, all RS-232 and ARINC 429 ports should be set to Off.

NOTE

Screen shots in this section are provided for reference only. Refer to Equipment List, GTN Xi Part 23 AML STC for actual GTN Xi software versions.

5.4.1.1 GTN Xi Software Loader Card

A GTN Xi Software Loader Card may be created using a GTN Xi Downloadable Software SD Card (P/N 010-01000-00) in conjunction with a GTN Xi software application downloaded from the Dealer Resource Center on Garmin's website. As an alternative, a pre-programmed software loader card may be purchased from Garmin. Refer to *Equipment List, GTN Xi Part 23 AML STC* (P/N 005-00533-L1) for the correct part number of the pre-programmed GTN Software Loader Card.

NOTE

The downloadable application to create the GTN Software Loader Card only runs on Windows PCs (Windows 2000, XP, Vista, Windows 7, and Windows 10 are supported). There is no Mac support at this time.

NOTE

An SD card reader is needed to create the GTN Software Loader Card using the application that is downloaded from Garmin. The approved readers are SanDisk SDDR-99 and SDDR-93, although other SD card readers may work.

Create a GTN Software Loader Card as follows:

1. Go to the Dealer Resource Center on Garmin's website.
2. Download the GTN Software Loader Image. Refer to *Equipment List*, *GTN Xi Part 23 AML STC* for the correct Software Loader Image part number.
3. Run the executable file. The window shown in Figure 5-1 will appear. Click **Setup**.

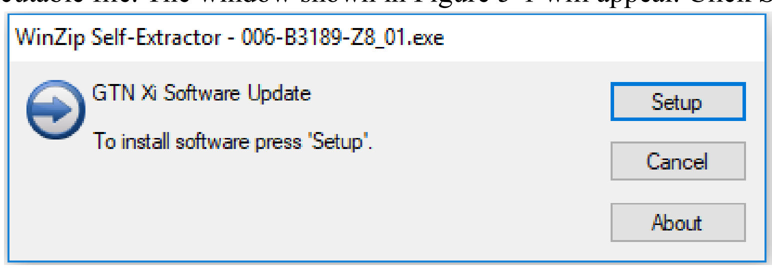


Figure 5-1 Software Update Installer

4. The window shown in Figure 5-2 will appear to guide you through the software loader card creation process.

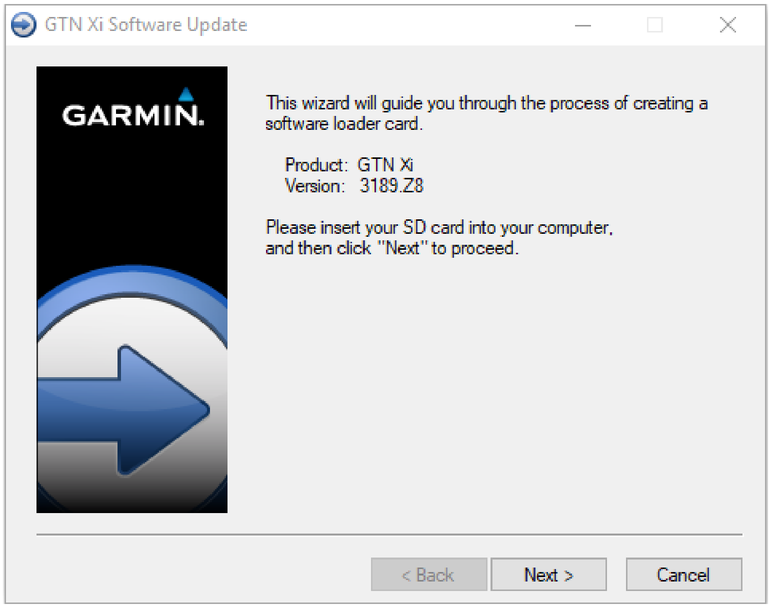


Figure 5-2 System and Software Version

5. Ensure you have an SD card reader connected to the PC. Insert the GTN Downloadable Software SD Card (P/N 010-01000-00) into the card reader. Click **Next**.
6. Read and accept the license agreement, as shown in Figure 5-3. Click **Next** when finished.

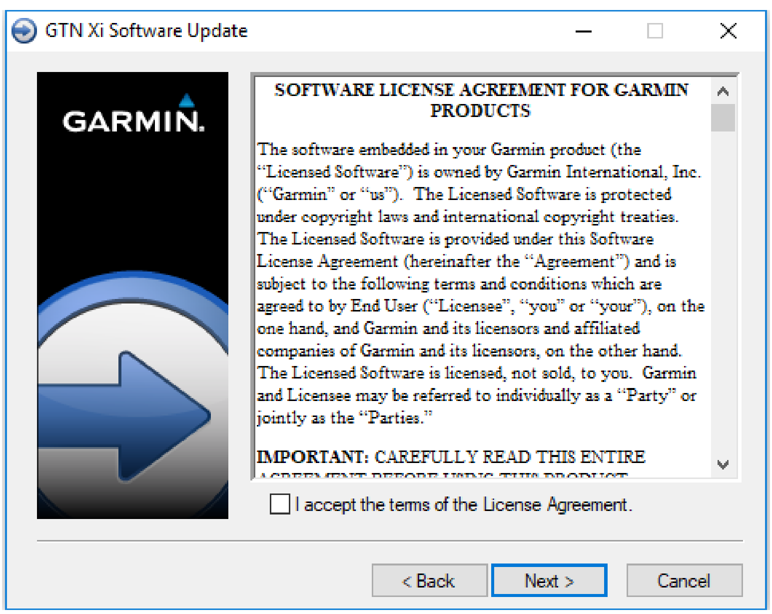


Figure 5-3 Software Loader Card License Agreement

7. Click **Find Drive** or select the correct drive from the drop-down menu. Click **Next**.

CAUTION

In order to create a GTN Software Loader Card, the drive that you select will be completely erased.

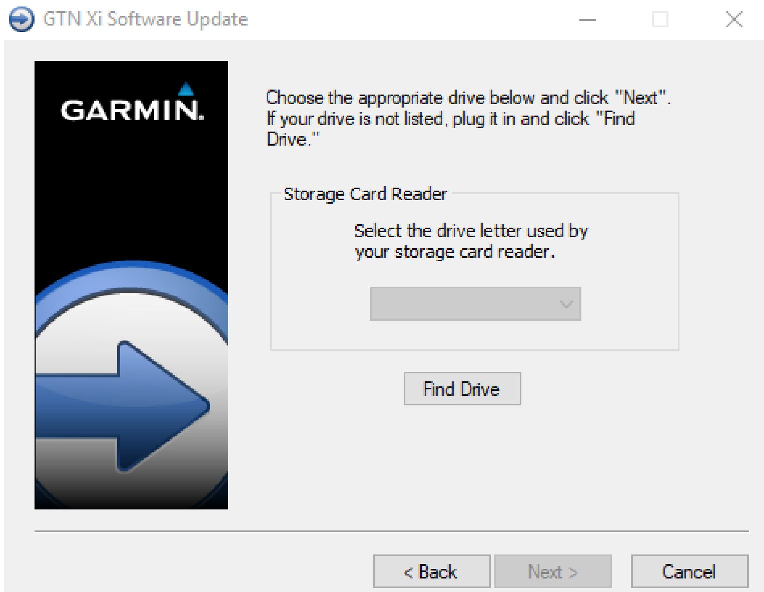


Figure 5-4 Software Loader Card Drive

8. The progress window shown in Figure 5-5 will appear while the card is being created.

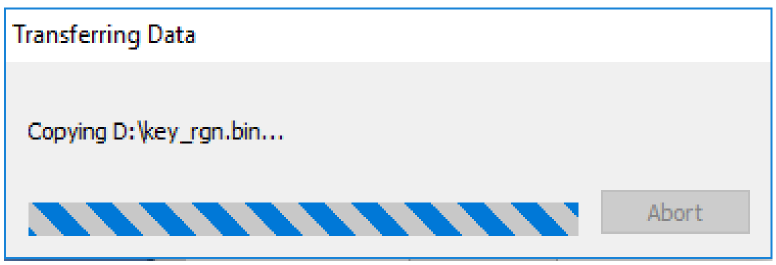


Figure 5-5 Software Loader Card Progress Window

9. After the card has been created, the window shown in Figure 5-6 will appear. Select **Finish** to complete the update process.

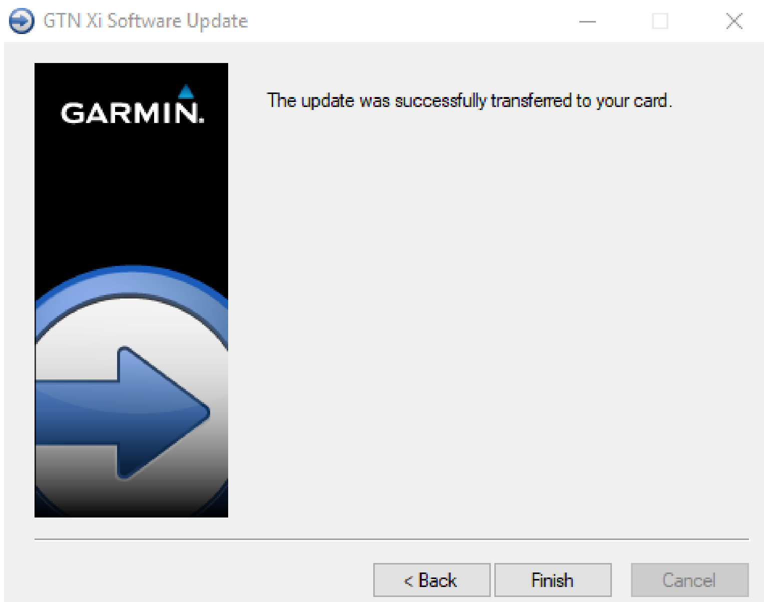


Figure 5-6 Software Loader Card Completion

10. Eject the card from the card reader (or stop the card reader in Windows). The GTN Software Loader Card is now ready to use.

5.4.1.2 GTN Xi Software Loading

1. Remove power from the GTN Xi by opening the circuit breaker.
2. Remove the database card from the data card slot and insert the correct GTN Software Loader Card into the data card slot. Refer to Section 5.4.1.1 for instructions on how to create a loader card.
3. Restore power to the GTN Xi by closing the circuit breaker.
4. The Configuration mode home page should now be displayed. Touch **Updates** to display the software updates that are available.
5. Verify the software version being loaded to the GTN Xi matches the software version listed on *Equipment List, GTN Xi Part 23 AML STC*. The ***Updates*** page displays the version that is installed on the unit and the version installed on the loader card.
6. Verify the available GTN Xi software updates are being displayed by ensuring "GTN Software Updates" is displayed on the key in the upper-left corner of the display.
7. To update the GTN Xi with all software available, touch **Select All**.
8. To begin the software update, touch **Update** on the bottom of the display.
9. The GTN Xi will display the prompt, "Start GTN Software Updates?".
10. Touch **OK** to allow the GTN Xi to go through the update process.
11. When the updates are finished, the GTN Xi will display "Update Complete!".
12. When finished, remove power from the GTN Xi and remove the Software Loader Card. Re-insert the database card into the data card slot.
13. Cycle power on the GTN Xi and verify the software was correctly updated by going to the ***System Information*** page and selecting the GTN Xi.

5.4.1.3 GMA 35 Software Loading

NOTE

The GMA 35 software will be present on the SD card when creating a GTN Software Loader Card. A separate card is not required to perform GMA 35 software updates. Refer to Section 5.4.1.1 for instructions to create the GTN Software Loader Card.

1. Remove power from the GTN 7XX Xi.
2. Insert the GTN Software Loader Card into the GTN Xi data card slot.
3. Push the **HOME** key.
4. Apply power to the GTN Xi.
5. Release the **HOME** key when "Garmin" is fully lit on the display.
6. Ensure the GMA 35 circuit breaker is closed.
7. Touch the **Updates** key.
8. Touch the **GTN Software Updates** key.
9. Touch the **GMA 35 Software Updates** key.
10. Touch the **Select All** key.
11. Touch the **Update** key.
12. Touch the **OK** key.
13. Remove power from the GTN Xi and GMA 35 when finished.
14. Remove the Software Loader Card.
15. Re-insert the database card in the data card slot.
16. Apply power to the GTN Xi.
17. Apply power to the GMA 35.
18. Navigate to the ***System Information*** page.
19. Select **GMA 35**.
20. Verify the software version matches what was on the Software Loader Card.

5.4.1.4 GMA 35 Boot Block Loading

CAUTION

The GMA 35 Boot Block Loader Card is separate from the GMA 35 Software Loader Card and is required to update Boot Block software to v4.10. Refer to Section 5.4.1.3 for instructions to create the GMA 35 Software Loader Card.

1. Remove power from the GTN 7XX Xi.
2. Insert the GTN Boot Block Loader Card into the GTN Xi data card slot.
3. Ensure the GMA 35 circuit breaker is closed.
4. Apply power to the GTN Xi.
5. Select all GMA 35 Boot Block updates.
6. Touch the **Update** key.
7. Touch **OK**.
8. Remove power from the GTN Xi.

9. Remove power from the GMA 35.
10. Remove the Boot Block Loader Card.
11. Re-insert the database card in the data card slot.
12. Apply power to the GTN Xi.
13. Apply power to the GMA 35.
14. Navigate to the ***System Information*** page.
15. Select **GMA 35**.
16. Verify the software version matches what was on the GTN Boot Block Loader Card.

5.4.2 System Information Page

The ***System Information*** page, shown in Figure 5-7, allows information related to the system, such as unit type, serial number, system ID, and software versions, to be viewed. To access the ***System Information*** page, touch the **System Information** key from the Configuration mode home page. System information for remote LRUs can also be viewed from this page. To select a remote LRU, touch the key at the top of the ***System Information*** page and select an LRU from the menu. Select the GTN Xi or other LRU to view applicable LRU-specific system information.

Figure 5-7 System Information Page

5.4.3 GTN Setup Page

GTN 6XX Xi

GTN 7XX Xi

Figure 5-8 GTN Setup Page

5.4.3.1 ARINC 429 Configuration Page

To access the ***ARINC 429 Configuration*** page, shown in Figure 5-9, first access the ***GTN Setup*** page from the Configuration mode home page by touching **GTN Setup**, then touching **ARINC 429**.

This page allows configuration of the ARINC 429 input ports and the ARINC 429 output ports. Select the correct speed for each port depending upon the installed interfaced equipment by touching the **Speed** key and toggling the high or low selection.

NOTE

Refer to Appendix C for approved third-party equipment interfaces to the GTN Xi.

Select the correct Data In and Data Out settings for each port. The correct setting is dependent upon the interfaced equipment. The data selections are described in Table 5-2, Table 5-3, and Table 5-4. Refer to Appendix C for the correct data format selections for each piece of interfaced equipment.

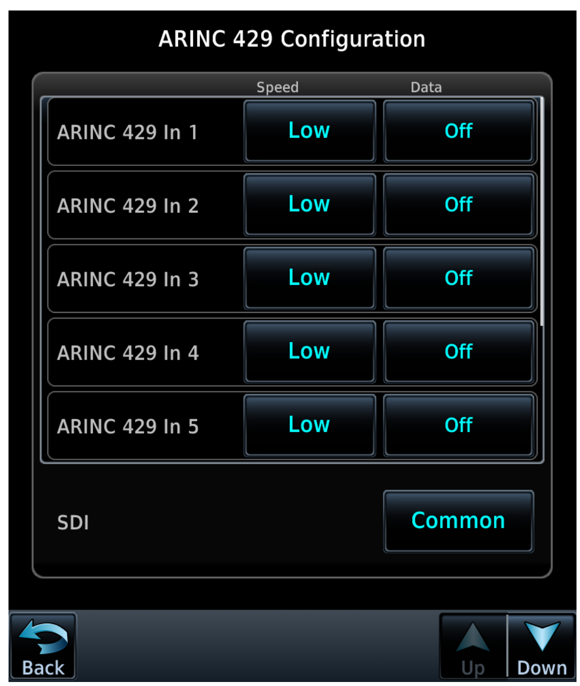


Figure 5-9 ARINC 429 Configuration Page

Table 5-1 ARINC 429 Speed Selections

Selection	Description
Low	Standard low-speed ARINC 429 (nominally 12.5 Kb per second)
High	High-speed ARINC 429 (nominally 100 Kb per second)

Table 5-2 ARINC 429 DATA IN Selections

Selection	GNS Equivalent	Description	Notes
Off	Off	No unit(s) connected to this ARINC 429 input.	
Airdata	Airdata	Altitude, temperature, and speed information from the following Air Data systems: • *B&D 90004-003* • *Bendix/King KDC281/481*	[1]
Airdata/AHRS	Airdata/AHRS	Heading, altitude, temperature, and speed information from Air Data/AHRS systems. This interface is not used in this STC.	
Data Concentrator	Garmin GTX 330	This is a Garmin data concentration format. Only high speed ARINC 429 should be used. This interface is not used in this STC.	
EFIS Format 1	EFIS	Selected course, true heading, magnetic heading, and joystick waypoint information from the following EFIS systems: • *Bendix/King EFS 40/50*	[2]
EFIS Format 2	EFIS/Airdata	Selected course, true heading, magnetic heading, altitude, temperature, true airspeed information, and joystick waypoint information from the following systems: • *Bendix/King EFS 40/50*	[2]
EFIS Format 3	Honeywell EFIS	Selected course, true heading, magnetic heading, and joystick waypoint information from EFIS systems. This interface is not used in this STC.	
EFIS Format 4	Sandel EHSI	Selected course, magnetic heading, baro-corrected altitude from the following EFIS systems: • *Avidyne EXP5000* • *Sandel SN 3308* • *Sandel SN 3500/4500*	[2]
GAD Format 1	Garmin GAD 42	Selected course, true heading, magnetic heading, joystick waypoint information, and true airspeed information from the following system: • *Garmin GAD 42*	[3]
GDU Format 1	Garmin GDU	Selected course, magnetic heading, pressure altitude, baro-corrected altitude, temperature, calibrated airspeed, and true airspeed information from the following systems: • *Garmin GDU 620*	[2]

Selection	GNS Equivalent	Description	Notes
INS/IRU	INS/IRU	True heading and magnetic heading information from the following Inertial systems: • *Collins AHS-85E*	[4]
RADAR Graphics	RADAR Graphics	Joystick waypoint information from a RADAR graphics unit.	
Radio Altimeter Format	N/A	Radio Altimeter height above ground from radar altimeters. This interface is not used in this STC.	
Traffic Format 1	Traffic Advisory	Traffic information from the following traffic systems: • *Garmin GTS 800*	[5]
Traffic Format 2	Traffic Advisory	Traffic information from the following traffic systems: • *Garmin GTS 820/850*	[5]
Traffic Format 3	Traffic Advisory	Traffic information from the following traffic systems: • *Skywatch HP SKY899*	[5]
Traffic Format 4	Traffic Advisory	Traffic information from the following traffic systems: • *Bendix/King KTA 870/970* • *Bendix/King KMH 880/980*	[5]
Traffic Format 5	Traffic Advisory	Traffic information from the following traffic systems: • *Avidyne TAS (Ryan 9900BX)*	[5]
Traffic Format 6	Traffic Advisory	Traffic information from the following traffic systems: • *Sky 497 Skywatch*	[5]

Notes:

[1] Refer to Appendix Section C.1.2 for more information.

[2] Refer to Appendix Section C.1.5 for more information.

[3] Refer to Appendix Section C.1.15 for more information.

[4] Refer to Appendix Section C.1.7 for more information.

[5] Refer to Appendix Section C.1.10 for more information.

NOTE

Refer to GTN Xi Series TSO Installation Manual for information about ARINC 429 labels.

NOTE

Only one ARINC 429 output port can be configured to a GAMA Format output at one time. If more than one interfaced system requires a GAMA Format output, splice the GAMA 429 output wires from the GTN Xi into each system requiring GAMA Format information.

Table 5-3 ARINC 429 DATA OUT Selections

Selection	GNS Equivalent	Description	Notes
Off	Off	No unit(s) connected to ARINC 429 output.	
ARINC 429	ARINC 429	Standard ARINC 429 output data (non-GAMA).	
GAMA Format 1	GAMA 429	ARINC 429 data as defined by the *General Aviation Manufacturers' Association (GAMA) General Aviation Subset, 2nd Edition*. The output data includes navigation and flight plan information to the following systems: • *Bendix/King EFS 40/50* • *Garmin GDU 620*	[1]
GAMA Format 2	GAMA 429 Graphics	ARINC 429 data as defined by the *GAMA General Aviation Subset, 2nd Edition* including GAMA Graphics Protocol 'A'. This format outputs intersection symbols as generic waypoint symbols. The output data includes navigation and flight plan information (including graphical representation of flight plan procedures) to the following EFIS systems: • *Avidyne EX500/EX5000/EXP5000*	[1] [2]
GAMA Format 3	GAMA 429 Graphics w/Int	ARINC 429 data as defined by the *GAMA General Aviation Subset, 2nd Edition* including GAMA Graphics Protocol 'A'. The output data includes navigation and flight plan information (including graphical representation of flight plan procedures) to the following systems: • *Sandel SN3308* • *Sandel SN3500/4500*	[3]
GAMA Format 4	GAMA 429 Pro Line 21	ARINC 429 data as defined by the *GAMA General Aviation Subset, 2nd Edition*. The output data includes navigation and flight plan information.	
GAMA Format 5	GAMA 429 Sextant	ARINC 429 data as defined by the *GAMA General Aviation Subset, 2nd Edition*. The output data includes navigation and flight plan information.	
GAMA Format 6	GAMA 429 Bendix King	ARINC 429 data as defined by the GAMA *General Aviation Subset, 2nd Edition.* The output data includes navigation, flight plan, and GPS vertical guidance information to the following systems: • *Bendix/King EFS 40/50*	[1]
GAMA Format 7	N/A	This output format is not approved under this STC.	
GAMA Format 8	N/A	This output format is not approved under this STC.	
Radar Format 1	N/A	ARINC 429 output for control of ARINC 708 weather radars.	[4]
Garmin 429	N/A	The output includes navigation, VNAV guidance, and GPS vertical guidance for the following systems: • *Garmin G5* • *Garmin GFC 500*	[5]

Notes:

[1] Refer to Appendix Section C.1.5 for more information.
[2] Refer to Appendix Section C.1.14 for more information.
[3] Refer to Appendix Section C.1.6 for more information.
[4] Refer to Appendix Section C.1.17 for more information.
[5] G5 software v5.50 or later.

Table 5-4 SDI Selections

Selection	Description
Common	RX: Accepts all ARINC 429 inputs TX: Generates all ARINC 429 outputs with SDI = 0
LNAV 1	Number 1 (Pilot) long-range navigator RX: Accepts 429 inputs with SDI = 0 or 1 TX: Generates 429 outputs with SDI = 1
LNAV 2	Number 2 (Copilot) long-range navigator RX: Accepts 429 inputs with SDI = 0 or 2 TX: Generates 429 outputs with SDI = 2

5.4.3.2 RS-232 Configuration Page

Select the ***RS-232 Configuration*** page, shown in Figure 5-10, from the ***GTN Setup*** page by touching the **RS-232** key.

This page allows configuration of the RS-232 input ports and the RS-232 output ports. Change the inputs or outputs to match the equipment that is interfaced to each channel. Touch the key corresponding to the RS-232 channel and select the applicable input or output setting. The input/output settings are described in Table 5-5 and Table 5-6. Refer to Appendix C for the correct data format selections for each piece of interfaced equipment.

More RS-232 Setup (Forward ALT to GTX)

This provides a means to enable or disable the output of pressure altitude to a Garmin transponder. For this page to appear, a Garmin transponder must be configured in the RS-232 inputs and outputs.

Figure 5-10 RS-232 Configuration Page

NOTE

Refer to Appendix C for third-party equipment interfaces to the GTN Xi that are approved under STC SA02019SE-D.

Table 5-5 RS-232 Channel Input Selections

Selection	GNS Equivalent	Description	Notes
Off	Off	No unit(s) connected to input of this channel.	
Airdata Format 1	Shadin-ADC	Serial air data information from the following units: • *Shadin ADC 200/2000*	[1]
Altitude Format 1	Icarus-alt	Serial altitude data from the following units: • *Icarus Instruments 3000* • *Sandia SAE5-35* • *Garmin GTX 327 Transponder* • *Trans-Cal Industries IA-RS232-X, SSD120* • *ACK Technologies A-30 (Mod 8 and above)*	[1]
Altitude Format 3	Shadin-alt	Serial altitude data from the following units: • *Shadin 8800T, 9000T, 9200T*	[1]
Connext Format 1	N/A	Format used to accept data from a PED via the following unit: • *Flight Stream 210*	
Connext Format 2	N/A	Flight plan information from G3X Touch.	[8]
FADC Format 1	Shadin-FADC	Serial air data and fuel flow information from the following units: • *INSIGHT TAS 1000 Air Data Computer* • *Shadin F/ADC 200* • *Shadin F/ADC 2000* • *Shadin AIS-380*	[2]
Fuel Format 1	Arnav/ei-fuel	Serial fuel flow information from the following units: • *ARNAV FC-10, FT-10* • *Electronics International FP-5L* • *Shadin AIS-380*	[1]
Fuel Format 2	Shadin-fuel	Serial fuel flow information from the following units: • *Shadin 91053XP, 91204XT(38)D, 91053, 912802-( ) Digital Fuel Management System* • *JP Instruments EDM-700 Engine Monitor*	[1]
GMA Format 1	N/A	This input format supports the GMA 35 audio panel interface.	[3]
GMA Format 2	N/A	This format enables marker beacon display on a GTN Xi from the GMA 350 panel-mounted audio panel.	
GNS Crossfill	N/A	Select this format to transmit flight plan information automatically to a connected GNS 400W/500W navigator.	[7]
GSR Format 1	N/A	Select this format for the Garmin GSR 56.	[6]

Selection	GNS Equivalent	Description	Notes
GTX Mode C #1	N/A	Select this format for the GTX 32/327 transponder #1. Provides status data and flight ID. Choosing this input setting will automatically configure the corresponding channel output to the same setting.	[4]
GTX Mode C #2	N/A	Select this format for the GTX 32/327 transponder #2. Provides status data, and flight ID. Choosing this input setting will automatically configure the corresponding channel output to the same setting.	[4]
GTX Mode S #1	N/A	Select this format for the GTX 33/328/330 transponder #1. Provides status data, ICAO address, and flight ID. Choosing this input setting will automatically configure the corresponding channel output to the same setting.	[4]
GTX Mode S+ #1	N/A	Select this format for the GTX 33ES/330ES transponder #1 with GTX software v7.01 or later and for the GTX 335/335R/345/345R for AC 20-165( ) compliance. Provides status data, ICAO address, and flight ID. Choosing this input setting will automatically configure the corresponding channel output to the same setting.	[4]
GTX Mode S #2	N/A	Select this format for the GTX 33/328/330 transponder #2. Provides status data, ICAO address, and flight ID. Choosing this input setting will automatically configure the corresponding channel output to the same setting.	[4]
GTX Mode S+ #2	N/A	Select this format for the GTX 33ES/330ES transponder #2 with GTX software v7.01 or later and for the GTX 335/335R/345/345R for AC 20-165( ) compliance. Provides status data, TIS data, ICAO address, and flight ID. Choosing this input setting will automatically configure the corresponding channel output to the same setting.	[4]
GTX w/TIS #1	N/A	Select this format for the GTX 33/33ES/330/330ES transponder #1. Provides status data, TIS data, ICAO address, and flight ID. Choosing this input setting will automatically configure the corresponding channel output to the same setting.	[4]
GTX w/TIS+ #1	N/A	Select this format for the GTX 33ES/330ES transponder #1 with GTX software v7.01 or later or GTX 335/335R transponder #1 for AC 20-165( ) compliance. Provides status data, TIS data, ICAO address, and flight ID. Choosing this input setting will automatically configure the corresponding channel output to the same setting.	[4]
GTX w/TIS #2	N/A	Select this format for the GTX 33/33ES/330/330ES transponder #2. Provides status data, TIS data, ICAO address, and flight ID. Choosing this input setting will automatically configure the corresponding channel output to the same setting.	[4]

Selection	GNS Equivalent	Description	Notes
GTX w/TIS+ #2	N/A	Select this format for the GTX 33ES/330ES transponder #2 with GTX software v7.01 or later or GTX 335/335R transponder #2 for AC 20-165( ) compliance. Provides status data, TIS data, ICAO address, and flight ID. Choosing this input setting will automatically configure the corresponding channel output to the same setting.	[4]
MapMX Format 2	N/A	This format is not used under this STC.	
Panel GTX w/TIS #1	N/A	Select this format for the GTX 330 transponder #1. This provides TIS data from the panel mount GTX 330/ transponder without controlling the transponder via the GTN Xi.	[4]
Panel GTX w/TIS+ #1	N/A	Select this format for the GTX 330ES transponder #1 with GTX software v7.01 or later or GTX 335 transponder #1 for AC 20-165( ) compliance. This provides TIS data from the panel mount GTX 330/330ES transponder without controlling the transponder via the GTN Xi.	[4]
Panel GTX w/TIS #2	N/A	Select this format for the GTX 330 transponder #2. This provides TIS data from the panel mount GTX 330 transponder without controlling the transponder via the GTN Xi.	[4]
Panel GTX w/TIS+ #2	N/A	Select this format for the GTX 330ES transponder #2 with GTX software v7.01 or later or GTX 335 transponder #2 for AC 20-165( ) compliance. This provides TIS data from the panel mount GTX 330/330ES transponder without controlling the transponder via the GTN Xi.	[4]
Lightning Detector 1	WX-500	Lightning strike information from an L-3 Communications WX-500 Stormscope.	[5]
Radio CTRL Format 1	N/A	This format is not used under this STC.	
Traffic Format 7	Ryan TCAD	Select this format for the Ryan TCAD 9900B Series traffic system.	[5]
Traffic Format 8	Ryan TCAD	Select this format for the Ryan TCAD 9900BX Series traffic system.	[5]

Notes:

[1] Refer to Appendix Section C.1.3 for more information.

[2] Refer to Appendix Section C.1.2 for more information.

[3] Refer to Appendix Section C.1.1 for more information.

[4] Refer to Appendix Section C.1.8 for more information.

[5] Refer to Appendix Section C.1.10 for more information.

[6] Refer to Appendix Section C.1.18 for more information.

[7] If Auto GNS Crossfill is used, the GTN Xi should be installed as the #1 navigator.

[8] Refer to Appendix Section C.1.5 for more information.

Table 5-6 RS-232 Channel Output Selections

Selection	GNS Equivalent	Description	Notes
Off	Off	No unit(s) connected to output of this channel.	
ADS-B	ADS-B	Serial communication of GPS data to Garmin panel mount mode S transponders. Note: This format is not required when using any other GTX output format.	[1]
ADS-B+ Format 1	N/A	Serial communication of GPS data at 9,600 baud to Garmin GTX 330ES transponder with GTX software v7.01 or later, or GTX 335/345 transponder for AC 20-165( ) compliance. Note: This format is not required when using any other GTX output format that is described as being for AC 20-165( ) compliance.	[1]
ADS-B+ Format 2	N/A	This format is not approved under this STC.	
Aviation Output 1	Aviation	Serial position, GPS altitude, velocity, and navigation data to the following units: • *Garmin MX20 (V5.6 or later), GMX 200* • *Garmin GTX 327 Transponder*	[2]
Aviation Output 2	Aviation no alt	Serial position, velocity, and navigation data to the following units: • *Garmin MX20 (V5.5 or earlier)*	[2]
Connext Format 1	Connext Format 1	Aviation data to support interface to a PED via the following unit: • *Flight Stream 210*	
Connext Format 2	N/A	Flight plan information to G3X Touch.	[8]
External EGPWS	HW EGPWS	Serial communication to a Bendix/King (Honeywell) KGP 560 EGPWS.	[3]
GMA Format 1	N/A	Control of GMA 35c Audio Panel functions.	[4]
GMA Format 2	N/A	This format is not used in this STC.	
GNS Crossfill	N/A	Select this format to transmit flight plan information automatically to a connected GNS 400W/500W navigator.	[5]
GSR Format 1	N/A	Select this format for the Garmin GSR 56.	[6]
GTX Mode C #1	N/A	Control of GTX 32/327 #1 transponder functions, pressure altitude data, and groundspeed data.	[1]
GTX Mode C #2	N/A	Control of GTX 32/327 #2 transponder functions, pressure altitude data, and groundspeed data.	[1]
GTX Mode S #1	N/A	Control of GTX 33/328/330 #1 transponder functions, pressure altitude data, and groundspeed data.	[1]
GTX Mode S #2	N/A	Control of GTX 33/330 #2 transponder functions, pressure altitude data, and groundspeed data.	[1]
GTX w/TIS #1	N/A	Control of GTX 33/330 #1 transponder functions, pressure altitude data, groundspeed data, and TIS traffic.	[1]

Selection	GNS Equivalent	Description	Notes
GTX w/TIS #2	N/A	Control of GTX 33/330 #2 transponder functions, pressure altitude data, groundspeed data, and TIS traffic.	[1]
Panel GTX w/TIS #1	N/A	Select this format for the GTX 330 transponder #1.This provides groundspeed, GPS PVT, and pressure altitude information to the transponder without controlling the transponder via the GTN Xi.	[1]
Panel GTX w/TIS #2	N/A	Select this format for the GTX 330 transponder #2. This provides groundspeed, GPS PVT, and pressure altitude information to the transponder without controlling the transponder via the GTN Xi.	[1]
GTX Mode S+ #1	N/A	Select this format for the GTX 33ES/330ES transponder #1 with GTX software v7.00 or later or GTX 335/335R/345/345R transponder #1 for AC 20-165( ) compliance. This format provides control of transponder functions, pressure altitude data, and groundspeed data.	[1]
GTX Mode S+ #2	N/A	Select this format for the GTX 33ES/330ES transponder #2 with GTX software v7.00 or later or GTX 335/335R/345/345R transponder #2 for AC 20-165( ) compliance. This format provides control of transponder functions, pressure altitude data, and groundspeed data.	[1]
GTX w/TIS+ #1	N/A	Select this format for the GTX 33ES/330ES transponder #1 with GTX software v7.00 or later or GTX 335/335R transponder #1 for AC 20-165( ) compliance. This format provides control of transponder functions, control of TIS traffic, pressure altitude data, and groundspeed data.	[1]
GTX w/TIS+ #2	N/A	Select this format for the GTX 33ES/330ES transponder #2 with GTX software v7.00 or later or GTX 335/335R transponder #2 for AC 20-165( ) compliance. This format provides control of transponder functions, control of TIS traffic, pressure altitude data, and groundspeed data.	[1]
Panel GTX w/TIS+ #1	N/A	Select this format for the GTX 330ES transponder #1 with GTX software v7.00 or later or GTX 335 transponder #1 for AC 20-165( ) compliance without controlling the transponder. This format provides control of TIS traffic, pressure altitude data, and groundspeed data.	[1]
Panel GTX w/TIS+ #2	N/A	Select this format for the GTX 330ES transponder #2 with GTX software v7.00 or later or GTX 335 transponder #2 for AC 20-165( ) compliance without controlling the transponder. This format provides control of TIS traffic, pressure altitude data, and groundspeed data.	[1]

Selection	GNS Equivalent	Description	Notes
Lightning Detector 1	WX-500	Serial communication to an L-3 Communications WX-500 Stormscope.	[3]
MapMX Format 1	MapMX	Serial position, GPS altitude, velocity, and navigation data to the following units: • *Garmin MX20 (V5.6 or later), GMX 200* • *Garmin GDU 620* • *Garmin G5*	[2] [7]
MapMX Format 2	N/A	This format is not used under this STC.	
Radio CTRL Format 1	N/A	This format is not used under this STC.	
Traffic Format 7	Ryan TCAD	Select this format for the Ryan TCAD 9900B Series traffic system.	[3]
Traffic Format 8	Ryan TCAD	Select this format for the Ryan TCAD 9900BX Series traffic system.	[3]

Notes:

[1] Refer to Appendix Section C.1.8 for more information.

[2] Refer to Appendix Section C.1.14 for more information.

[3] Refer to Appendix Section C.1.10 for more information.

[4] Refer to Appendix Section C.1.1 for more information.

[5] If Auto GNS Crossfill is used, the GTN Xi should be installed as the #1 navigator.

[6] Refer to Appendix Section C.1.18 for more information.

[7] Refer to Appendix Section C.1.5 for more information on GDU 620 or G5 interface.

[8] Refer to Appendix Section C.1.5 for more information.

5.4.3.3 HSDB Port Configuration Page

The ***HSDB Port Utilization*** page, as shown in Figure 5-11, can be accessed from the ***GTN Setup*** page. To configure each HSDB port, touch the key next to the port to configure it as *Connected* or *Not Connected*.

If a Garmin LRU is connected to a specific HSDB port, then configure the port as **Connected**. If no LRU is connected to the port, configure it as *Not Connected*.

NOTE

The GTN Xi does not provide heading over HSDB to the GWX weather radar.

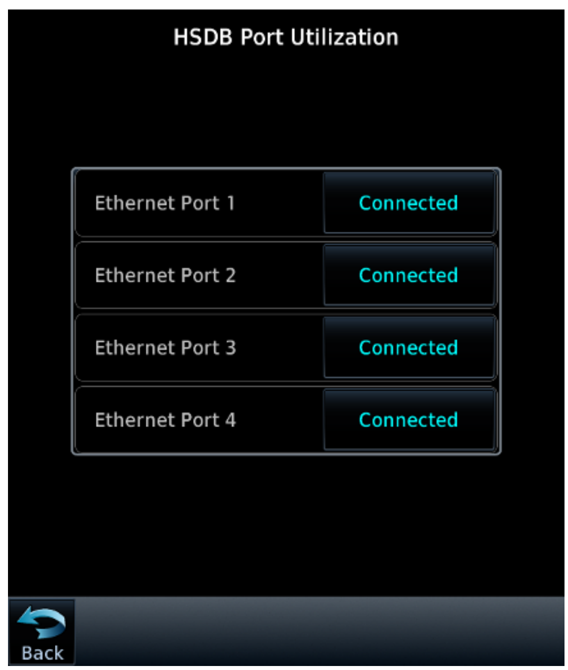


Figure 5-11 HSDB Port Utilization Page

5.4.3.4 Interfaced Equipment Page

To access the ***Interfaced Equipment*** page, as shown in Figure 5-12, touch the **Interfaced Equipment** key from the ***GTN Setup*** page.

This page configures which LRUs are installed and interfaced to the GTN Xi. From the available list of LRUs, select either *Present* or *Not Present*. The transponder interfaced equipment configuration should be pre-populated when the RS-232 data format is selected for each RS-232 channel.

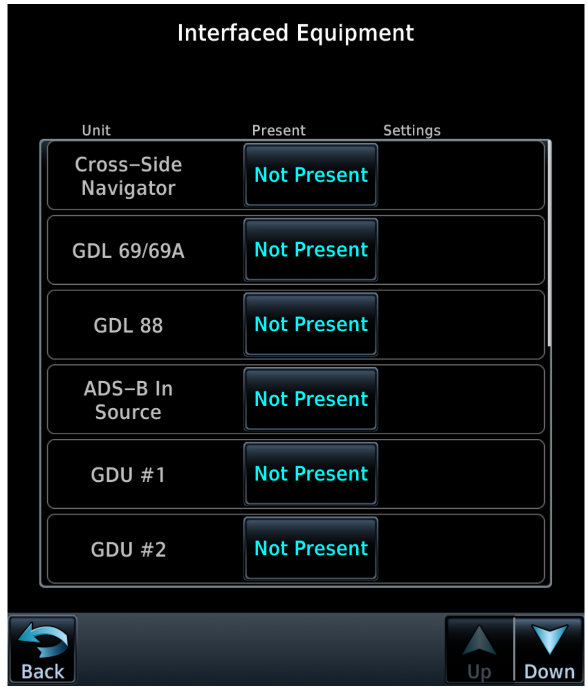


Figure 5-12 Interfaced Equipment Page

Cross-Side Navigator

In a single GTN Xi installation, select *Not Present*. In a dual GTN Xi installation or GTN Xi-GTN 6XX/7XX installation, select *Present*. Under Settings, select *GTN* if a GTN 6XX/7XX is installed or *GTN Xi* if a GTN Xi is installed as the second navigator.

NOTE

In a dual GTN Xi installation, verify that both units have "GTN Xi" configured. In a GTN Xi-GTN 6XX/7XX installation, verify that the GTN Xi has "GTN" configured and that the GTN 6XX/7XX has "GTN Xi" configured.

GDL 69/69A

Select either *Present* or *Not Present*. If Present, select either **GDL 69** or **GDL 69A** based upon the installed LRU.

GDL 88

Select either *Present* or *Not Present*. If present, touch **GDL 88** to select the external traffic source (*None*, *TCAD*, or *TAS/TCAS*) connected to the GDL 88 and the GDL 88 ADS-B transmit state (*Enabled* or *Disabled*). Configuration of these parameters enables portions of the GDL 88 user interface in Normal mode and does not configure the GDL 88. Refer to *GDL 88 Part 23 AML STC Installation Manual* for more information on configuring the GDL 88.

ADS-B In Source

NOTE

For installations with multiple GTN Xi units, the same source must be selected on each GTN Xi.

The ADS-B In Source setting is used to specify which interfaced LRU is used to provide ADS-B In traffic/ FIS-B weather (if applicable) to the GTN Xi. The GTN Xi is only able to select one source for display. Select either *Not Present, GDL 88, GTX #1, GTX #2, GTS, GNX #1, or GNX #2*.

If an active traffic source is connected to the interfaced ADS-B In sensor, select the type. Available selections are *None, TCAD or TAS/TCAS*.

GDU #1, GDU #2, GDU #3, and GDU #4

Set GDU #1 as *Present* if there is one G500/G600 system installed. Set GDU #2 as *Present* if there are two G500/G600 systems installed. Set GDU #3/#4 to *Not Present*. If Present, the option for GDU 620 and GDU TXi appear. Select *GDU 620* for interface to the G500/G600. Select *GDU TXi* for interface to the G500/G600 TXi.

GI 275

Select either *Present* or *Not Present*. If Present, select ID of the GI 275. ID selections are GI #1, GI #2, GI #3, GI #4, GI #5, or GI #6.

Transponder #1 and Transponder #2

Select *GTX Mode C, GTX Mode S,* or *GTX Mode S+* based upon the interfaced transponder type. If the type of transponder connected to the cross-side navigator is GTX w/TIS or GTX w/TIS+, select **GTX Mode S** or **GTX Mode S+**, respectively. Note that if the correct data format is selected on the ***RS-232 Configuration*** page, this is filled in and grayed out. Verify the correct transponder type is displayed. Also, the transponder should be configured as present even if it is connected to the other installed GTN Xi. This setting enables the user interface in Normal mode.

GWX (GTN 7XX Xi Only)

Select either *Present* or *Not Present*. If Present, select *GWX 68*, *GWX 70*, or *GWX 75/80*, based upon the installed radar. The GWX must be configured for 1024 bins or less.

NOTE

If an ARINC 708 weather radar is configured, the **Present** *key will not be available for selection for the GWX weather radar.*

GSR 56

Select either *Present* or *Not Present*. In installations with multiple GTN Xi units, this selection must be the same on all GTN Xi units.

5.4.3.5 Main Indicator (Analog) Configuration Page

Select the ***Main Indicator (Analog) Configuration*** page from the ***GTN Setup*** page. This page allows you to calibrate the OBS resolver, configure the CDI key, selected course for GPS and VLOC, as well as the V-Flag state. Configurable fields are described below.

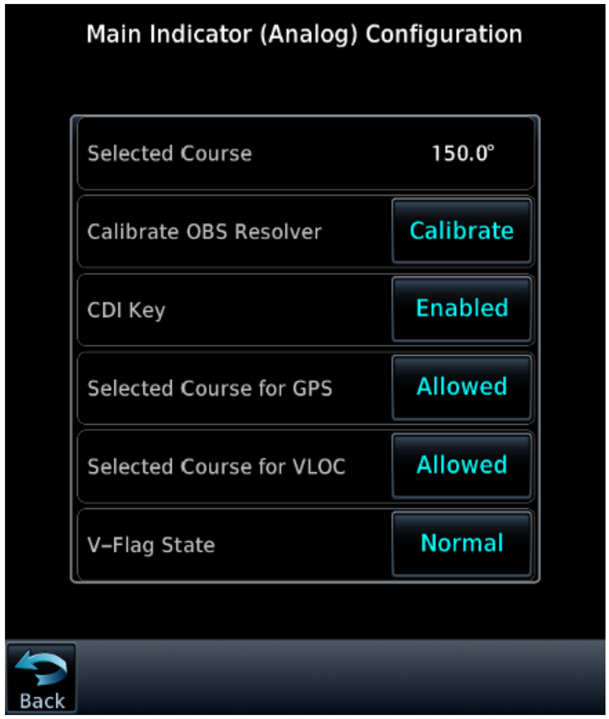


Figure 5-13 Main Indicator (Analog) Configuration Page

OBS Resolver Calibration

To calibrate the OBS resolver, touch the **Calibrate** key from the ***Main Indicator Configuration*** page. Next, select **150˚** on the External CDI/HSI, then touch the **OK** key as prompted on the display. After the OBS resolver is finished calibrating, the GTN Xi will display "OBS Resolver Calibration Complete!". Touch **OK** after the calibration is complete. Verify OBS operation by checking the selected course displayed at the top of the page is within 2° of the selected course.

CDI Key

To enable or disable the CDI key, touch the key to the right of CDI key to toggle between enabling and disabling the CDI key. Disabling the CDI key causes the CDI source to always display as GPS and removes the CDI key. This may be necessary for certain EFIS systems where navigation sensor selection must be accomplished on the EFIS or its control panel.

Table 5-7 GPS Selected Course

Selection	Description
Allowed (Default)	Select if it is desired to allow a selected course input from the analog resolver or ARINC 429 for GPS operation in OBS mode.
Ignored	Select to cause the GTN Xi to ignore a selected course input (either analog resolver or ARINC 429) for GPS operation in OBS mode.

Table 5-8 VLOC Selected Course

Selection	Description
Allowed (Default)	Select if it is desired to allow a selected course input from the analog resolver or ARINC 429 for VLOC operation in OBS mode.
Ignored	Select if it is desired to ignore a selected course input so the VOR valid flag is dependent only on a valid VOR signal, with lateral deviation calculated by another display device.

Table 5-9 V-Flag State

Selection	Description
Declutter	Whenever vertical deviation is invalid, the vertical deviation bar is parked in the maximum UP position and the vertical flag is removed from view, except in the following cases: (i) the CDI is in VLOC mode and an ILS frequency is tuned, or (ii) the CDI is in GPS mode and a GPS approach with vertical guidance is active. In these cases, whenever the vertical deviation is invalid, the vertical deviation bar parks in the centered position and the vertical flag is shown.
Normal (Default)	Whenever vertical deviation is invalid, the vertical deviation bar parks in the centered position and the vertical flag is shown.

NOTE

The V-Flag declutter setting should only be set for indicators in which 300 mVDC is sufficient to drive the vertical deviation bar out of view.

5.4.3.6 Lighting Configuration Page

CAUTION

Verify the Backlight Manual Offset value is set to 0% before lighting is configured. This Normal mode setting is on the ***Backlight*** *page of the System group.*

This section outlines the preferred method for configuring the GTN Xi lighting in an aircraft.

For those installations that have a day/night switch that meets the requirements specified in the switch interconnect (Figure B-21), it is recommended to utilize the enhanced lighting configuration to better integrate GTN Xi with the cockpit lighting scheme.

While only one lighting source (e.g., lighting bus or photocell) may be configured to control the display, through proper configuration it is possible to have the GTN Xi controlled by the dimmer bus for night operations and the photocell for day operations. This configuration provides the pilot with easily accessible control of the display brightness with fine resolution.

Configure the Day Lighting Curve

For the day lighting curve (refer to Section 5.4.3.6.1), set the photocell transition point to any value between 5% and 50%. The objective is to have the display brightness controlled by the photocell when the dimmer switch is in the OFF or lowest position so the input voltage has fallen below the photocell transition level. To configure the day lighting curve set the dimmer to the OFF position or lowest level and ensure the input level is below the transition level. Set the first vertex while exposing the panel to bright lights or sunlight and set the remainder of the vertices while progressively shading the interior of the aircraft. This can be achieved by shadowing the cockpit with blankets or moving the aircraft into the hangar in stages. It is recommended to configure the photocell curve to ensure the display reaches 100% output prior to 100% input. A linear curve for the photocell typically works well.

The following criteria must be met:

- The display must be viewable under all anticipated lighting conditions, including:
    - The display must be viewable when in direct sunlight
    - The display must be sufficiently bright during conditions where the photocell is in heavy shadow but cockpit is bright (e.g., flight into a setting sun)

Configure the Night Lighting Curve

To configure Night mode, cover the windows of the aircraft with blankets or other window covering and turn off as many lights in the hangar as needed to ensure the cockpit is not exposed to any external lighting. For best results, the installer should remain in the dark environment for up to 30 minutes to allow their eyes to adjust before configuring the avionics lighting.

For Night mode, it is recommended to set the photocell transition point to the minimum value of 5% and to set the maximum brightness value to a value of 75% or below.

Vary the dimmer switch through its range and adjust the lighting curve match the brightness of the GTN Xi display as closely to the lighting levels of other avionics/lights in the cockpit as possible. It is recommended most of the vertices be used to provide precision adjustment of the display at the lowest lighting levels.

Next, turn the dimmer switch to the off position to configure the photocell.

- For any anticipated lighting condition, the GTN Xi display is viewable when the dimmer is set to a level that results in other equipment on the same lighting bus being viewable
- In full dark conditions, the transition from the dimmer control to the photocell does not result in sudden increase in brightness
- The maximum brightness setting on the dimmer switch will result in a display brightness sufficient to be seen in sunlight

Photocell Only Control

If an installation has no dimmer control and the photocell is to be used for control of display brightness under all conditions (i.e., no dimmer input), the following procedure is recommended to set the lighting curve:

To configure Night mode, cover the windows of the aircraft with blankets or other window covering and turn off as many lights in the hangar as needed to ensure the cockpit is not exposed to any external lighting. For best results, the installer should remain in the dark environment for up to 30 minutes to allow their eyes to adjust before configuring the avionics lighting. Begin configuring the unit starting with the left-most vertex, configure the required brightness for the current input value (indicated by a vertical white line) under full dark conditions. Repeat this step for the remaining vertices by removing the window coverings in increments; exposing the cockpit to additional external lighting and finally full sunlight on the display. Typical acceptable lighting curves have a fairly flat slope at the lowest levels then become linear as input levels increase.

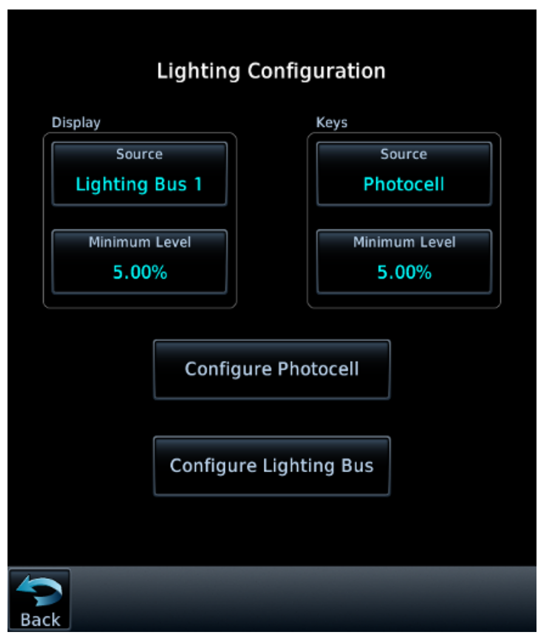


Figure 5-14 Lighting Configuration Page

Refer to Section 5.4.3.6 for normal lighting configuration and Section 5.4.3.7 for enhanced lighting configuration for detailed information on lighting controls. From the ***GTN Setup*** page shown in Figure 5-8, select the ***Lighting Configuration*** page, shown in Figure 5-14. This page sets display parameters that affect the display backlight and key lighting brightness. Fields listed in Table 5-10 are adjusted separately for both the Display and Key lighting features. The display source can only be configured to track the Photocell or Lighting Bus 1. The display source cannot be configured to track Lighting Bus 2.

Table 5-10 Display and Key Lighting Adjustable Fields

Field	Description
Photocell	Backlight or key lighting level is determined by the ambient light level as measured by the photocell on the GTN Xi.
Lighting Bus 1	Backlight or key levels track the Lighting Bus 1 levels.
Lighting Bus 2	Key lighting levels track the Lighting Bus 2 levels.

Minimum Level

This sets the minimum brightness of the keys or display. Touch the **Minimum Level** key corresponding to either the Keys or the Display to adjust the minimum brightness. The minimum brightness level can be adjusted in a range from 0.05% to 100.00% when tracking the lighting bus, and from 0.14% to 100.00% when tracking the photocell, with 100.00% being the maximum brightness level. The default minimum display brightness level when tracking the lighting bus is 0.05%. The default minimum display brightness level when tracking the photocell is 0.14%. The default minimum bezel key brightness level is 0.00%.

5.4.3.6.1 Photocell Configuration Page

The ***Photocell Configuration*** page, shown in Figure 5-15, is reached by touching **Configure Photocell** on the ***Lighting Configuration*** page, shown in Figure 5-14. This page allows configuration of the photocell parameters listed below.

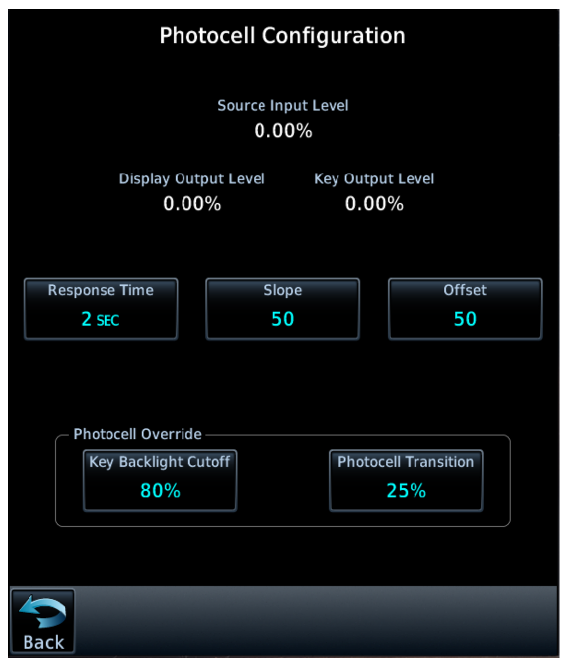


Figure 5-15 Photocell Configuration Page

Response Time

This sets the speed that the key or display brightness responds to the input level (bus voltage or ambient light) changes. The higher the number, the slower the display responds. This field has a range of 0 to 7 seconds, and is set to 2 seconds as a default value.

Slope

This sets the sensitivity the brightness of the display or keys has to changes in the input level. Adjusting the slope higher will result in a brighter display for a given increase in the input level. This field has a range of 0 to 100, and is set to 50 as the default setting.

Offset

This adjusts the lighting level up or down for any given input level. This field has a range of 0 to 99, and is set to 50 as a default value. This may also be used to match lighting curves with other equipment in the panel.

5.4.3.6.1.1 Photocell Override Options

Key Backlight Cutoff

This configures the point at which key backlighting is switched off in bright light. For example, a value of 70% results in the key backlights being turned off at photocell source input levels above 70%. This field has a range of 0 to 100%, and is set to 80% as the default setting.

Photocell Transition

This sets the lighting bus input level below which the lighting bus input is ignored and the photocell is used to control the GTN Xi display backlight. The photocell transition is a percentage of the maximum lighting bus input level. This field has a range of 5 to 50, and is set to 25 as the default setting.

5.4.3.6.2 Lighting Bus Configuration Page

The ***Lighting Bus Configuration*** page offers the same Response Time, Slope, and Offset adjustments as described in Section 5.4.3.6.1.

Lighting Bus Source

To configure the lighting bus source voltage, touch the **Lighting Bus 1** or **Lighting Bus 2** key. Select *14 VDC*, *28 VDC*, *5 VDC*, or *5 VAC*, depending on the lighting bus voltage source.

5.4.3.7 Enhanced Lighting Configuration Page

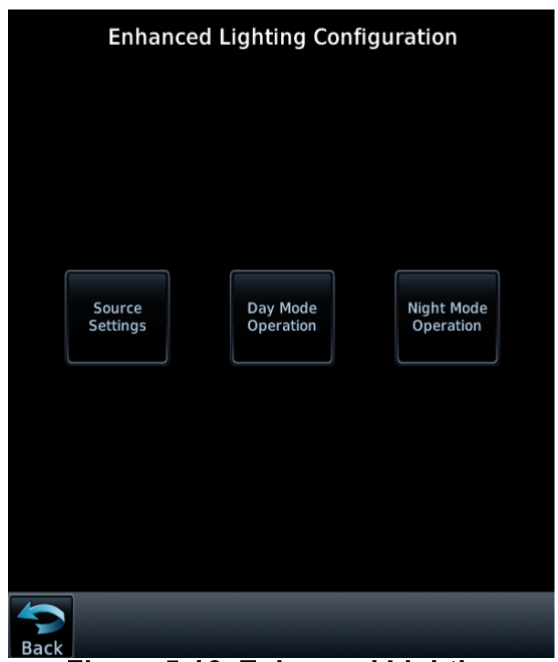


Figure 5-16 Enhanced Lighting Configuration Page

CAUTION

*Verify the Backlight Manual Offset Value is set to 0% before lighting is configured. This Normal mode setting is on the **Backlight** page of the System group.*

NOTE

*The **Enhanced Lighting Configuration** page is displayed in place of the **Lighting Configuration** page only if Enhanced Lighting is enabled on the **Main System Configuration** page (refer to Section 5.4.3.10).*

NOTE

*Minimum Lighting Level must be configured on the normal **Lighting Configuration** page before enabling Enhanced Lighting and continuing the configuration on the **Enhanced Lighting Configuration** page. Failure to configure Minimum Lighting Level on the **Lighting Configuration** page before enabling Enhanced Lighting will result in the Enhanced Lighting Minimum Lighting Level being ignored for the level set on the normal **Lighting Configuration** page.*

From the ***GTN Setup*** page, select the ***Enhanced Lighting Configuration*** page, shown in Figure 5-16. This page allows you to set display parameters that affect the display backlight and key lighting brightness. Enhanced lighting allows customized lighting curve slopes to be configured for both display and key lighting to improve the ability to match the GTN Xi lighting levels with other light sources in the cockpit. Fields listed under the menus described in Table 5-11 are adjusted separately for both the display and key lighting features.

The ***Enhanced Lighting Configuration*** page provides an alternative method to configure lighting for the GTN Xi. Enhanced lighting provides the installer the ability to configure customized day and night lighting curves. These custom curves provide improved resolution for the installer to match the GTN Xi lighting to other avionics in the cockpit.

From the ***GTN Setup*** page, select the ***Enhanced Lighting Configuration*** page, shown in Figure 5-16. This page allows you to set display parameters that affect the display backlight and key lighting brightness. Fields listed under the menus described in Table 5-11 are adjusted separately for both the display and key lighting features. The display source can only be configured to track the photocell or Lighting Bus 1. The display source cannot be configured to track Lighting Bus 2.

Table 5-11 Enhanced Lighting Configuration Subpages

Field	Description
Source Settings	This selection contains display and key lighting source configuration items.
Day Mode Operation	Contains day mode display and backlight curve configuration items.
Night Mode Operation	Contains night mode display and backlight curve configuration items.

5.4.3.7.1 Source Setting Pages

The ***Source Settings Configuration*** page is reached by touching Source Settings on the ***Enhanced Lighting Configuration*** page, shown in Figure 5-16. This page allows configuration of the lighting bus and photocell parameters listed below.

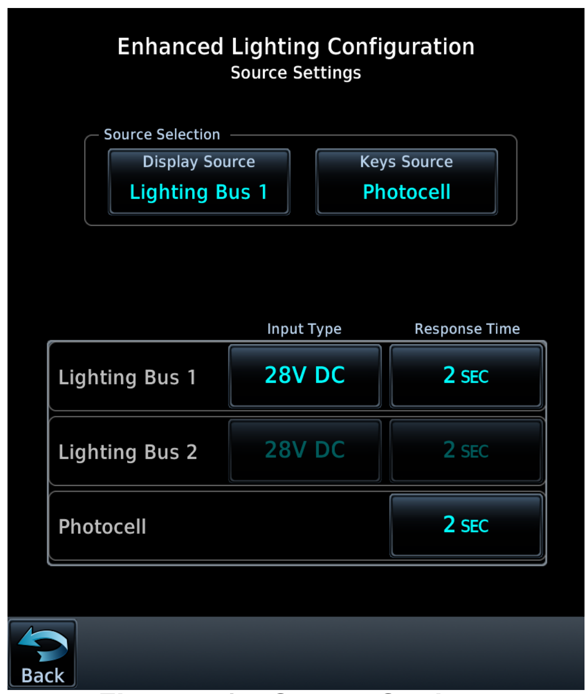


Figure 5-17 Source Settings Configuration Page

Display Source

This sets the source input for the display backlight. This may be set to *Photocell* or *Lighting Bus 1*. If configured for Photocell, the photocell sensor is used to provide the lighting input level for day and night curves. The display source may alternatively be configured for a dimmer lighting bus.

Keys Source

This sets the source input for the keys backlight. This may be set to *Photocell*, *Lighting Bus 1*, or *Lighting Bus 2* (if display source is configured for Lighting Bus 1). If configured for photocell, the photocell sensor is used to provide the lighting input level for day and night curves. The keys source may alternatively be configured for a dimmer lighting bus.

Response Time

This sets the speed that the key or display brightness responds to the input level (bus voltage or ambient light) changes. The higher the number, the slower the display responds. This field has a range of 0-7 seconds, and is set to 2 seconds as a default value.

Lighting Bus 1/2

These fields are configurable when either the display or the keys source is set to Lighting Bus 1 or 2. This field sets the input type for each lighting bus source (5 VDC, 5 VAC, 14 VDC, or 28 VDC).

5.4.3.7.2 Day/Night Mode Operation Page

The ***Day*** or ***Night Mode Operation Configuration*** page is reached by touching **Day Mode Operation** on the ***Enhanced Lighting Configuration*** page, shown in Figure 5-16. This page allows configuration of the Photocell Transition, Key Backlight Cutoff, and Curve parameters listed below.

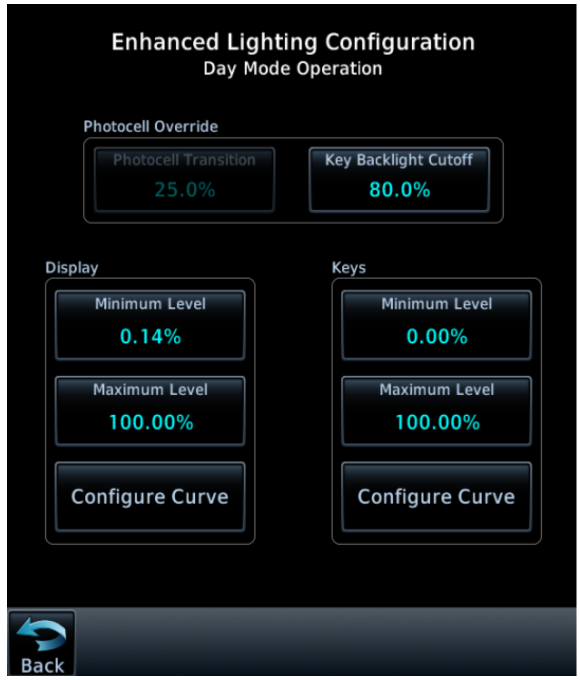


Figure 5-18 Day Mode Operation Configuration Page

Photocell Transition

This sets the lighting bus input level below which the lighting bus input is ignored and the photocell is used to control the GTN Xi display backlight. The photocell transition is a percentage of the maximum lighting bus input level. The field has a range of 5 to 50, and is set to 25 as the default setting. The transition point is depicted as a purple vertical line on the ***Display Curve Configuration*** page.

Key Backlight Cutoff

This parameter configures the point at which key backlighting is switched off in bright light. For example, a value of 70% results in the key backlights being turned off at photocell source input levels above 70%. This field has a range of 0 to 100% and is set to 80% as the default setting. The key backlight cutoff is depicted as a purple vertical line on the ***Keys Curve Configuration*** page.

Minimum Level

This sets the minimum brightness of the keys or display. Touch the **Minimum Level** key corresponding to either the Keys or the Display to adjust the minimum brightness. The minimum brightness level can be adjusted in a range from 0.05% to 100.00% when tracking the lighting bus, and from 0.14% to 100.00% when tracking the photocell, with 100.00% being the maximum brightness level. The default minimum display brightness level when tracking the lighting bus is 0.05%. The default minimum display brightness level when tracking the photocell is 0.14%. The default minimum bezel key brightness level is 0.00%.

Maximum Level

This sets the maximum brightness level for the lighting curve. Values may be between 20 and 100.

Configure Curve Page

Display or key lighting curves may be customized on the ***Configure Curve*** pages, an example of which is shown in Figure 5-19.

Vertices: Each of the four curve vertices may be adjusted by touching and dragging the vertex's corresponding key and adjusting axis values incrementally, as shown in Figure 5-20. A vertex may not be adjusted beyond the positions of its adjacent vertices on either axis or beyond the limits of either axis.

Swap Curves: This selection item is only available when the lighting source is configured for Lighting Bus 1 or 2. This selection transitions between the source curve and the photocell curve.

Source Curve

This curve may be either a curve for photocell or lighting bus, depending on the main source configuration. If display or key source is configured for lighting bus, then the source curve is for the lighting bus curve.

Photocell Curve

This curve is only available if a lighting bus is configured as the main source input. The curve must be configured across the entire input range. The photocell curve will take over when the lighting bus input drops below the photocell transition percentage.

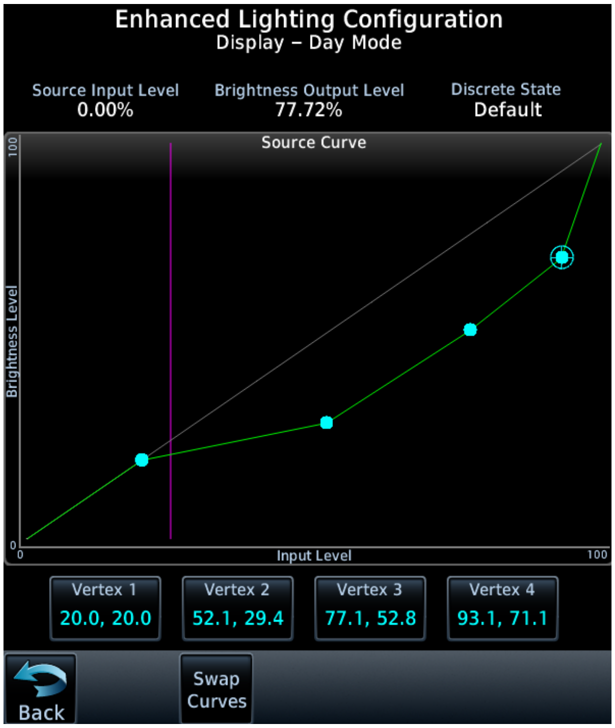


Figure 5-19 Configuration Curve Page (Day Mode Source Curve Shown)

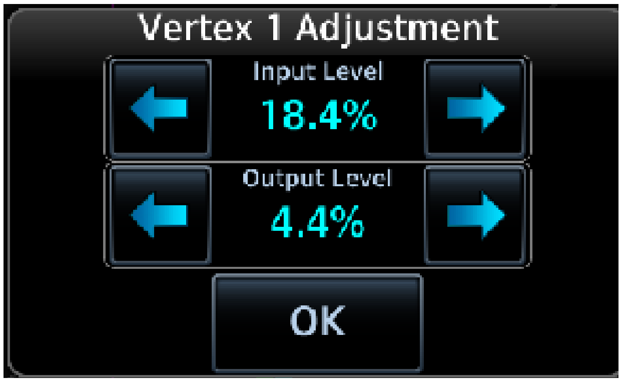


Figure 5-20 Vertex Incremental Adjustment

5.4.3.8 Audio Configuration Page

The ***Audio Configuration*** page allows the adjustment of alert audio volume.

Adjust alert volume by touching the arrows to increase or decrease the volume. Volume is displayed as a percentage of maximum volume, with 0% being muted and 100% being maximum volume. The selected volume can be checked by selecting **Altitude**, **Terrain**, or **Test Tone** beneath the volume adjustment and then touching the triangle to the right of the key. Refer to Section 6.1.7 for the TAWS audio check procedure.

Voice command configuration options are accessed from this page.

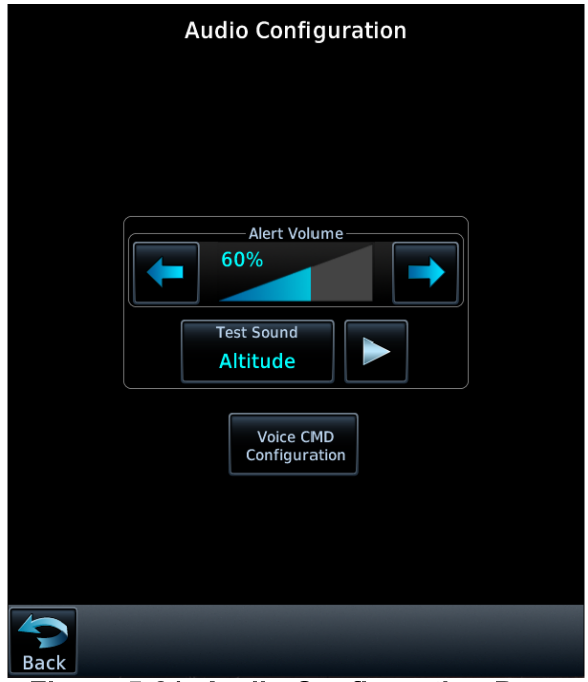


Figure 5-21 Audio Configuration Page

5.4.3.8.1 Voice Command Configuration

NOTE

Mute Tone is not enabled per this STC.

NOTE

A limitation exists for voice commands in certain aircraft types. For more details, refer to Section 2.2.8.

To enable Telligence Voice Commands, touch the **Voice Commands** key. To enable “Say...” commands, touch the **“Say...” Commands** key.

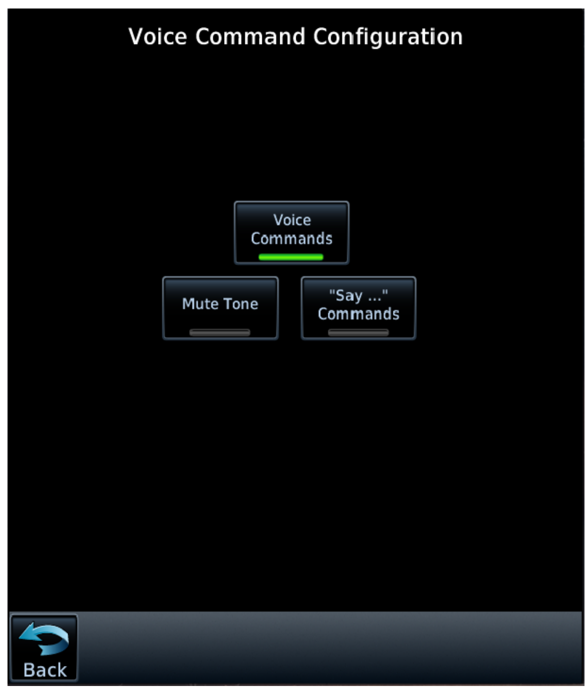


Figure 5-22 Voice Command Configuration Page

5.4.3.9 Traffic Configuration Page

Access the ***Traffic Configuration*** page from the ***GTN Setup*** page. The ***Traffic Configuration*** page allows the external control to be configured for each specific installation.

Configure the traffic intruder symbol color. If the GTN Xi is installed with other traffic displays, choose the applicable symbol color (white or cyan) to maintain cockpit consistency.

Configure the GTN Xi control of the traffic system. If the GTN Xi is used to control the traffic system, select **Yes**. If a separate display device is used to control the traffic system, select **No**. The default selection is *No*.

If the GTN Xi is interfaced to the Avidyne TAS (Ryan 9900BX) and configured to ARINC 429 Traffic Format 5, this setting must be configured to *No*. The Avidyne TAS does not include provisions for the necessary discrete signals to be controlled by the GTN Xi.

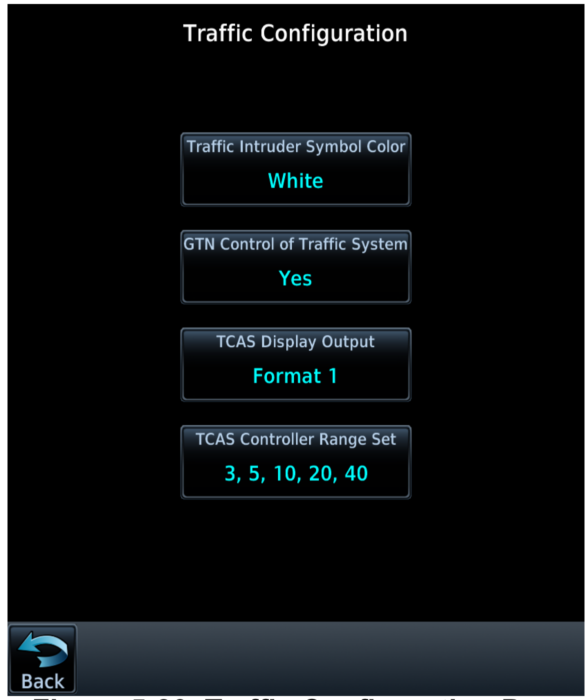


Figure 5-23 Traffic Configuration Page

If the GTN Xi is connected to a GDL 88 that is interfaced with a TCAD system, the option to configure the GTN Xi control of the TCAD system is available. If the GTN Xi is used to control the traffic system, select *Yes*. If a separate display device is used to control the traffic system, select *No*.

5.4.3.10 Main System Configuration Page

Select **Main System** from the ***GTN Setup*** page. This page displays miscellaneous configuration options as described below.

Airframe Type

This setting configures the airframe type of the aircraft. The default for this setting is Fixed Wing. This setting must be set to *Fixed Wing* for this STC.

Air/Ground Threshold

This setting sets the groundspeed at which the GTN Xi transitions from a ground state to an airborne state, and vice versa. To adjust the Air/Ground Threshold, touch the key to the right and enter a value. This field has a range of 0 to 99 knots and is set to 30 knots as a default value.

Figure 5-24 Main System Configuration Page

Air/Ground Discrete

This discrete is Active-Low and can be configured to interpret if the aircraft is airborne or on the ground based upon whether the input is grounded or open. If it is desired for the air/ground state to be airborne when the squat switch input is grounded, then toggle the AIR/GROUND discrete key to *Active for Airborne*. If it is desired for the air/ground state to be airborne when the squat switch input is open, then toggle the air/ground discrete key to *Active for Ground*. For installations in which no input is provided for the air/ground discrete, this setting must be set to *Active for Airborne*.

The default configuration is Active for Airborne.

Table 5-12 Air/Ground Discrete Selections

AIR/GROUND Discrete Configuration	AIR/GROUND input state	GTN Xi Air/Ground Status
Configured Active for Ground	Open	Airborne
	Grounded	On-Ground
Configured Active for Airborne	Open	On-Ground
	Grounded	Airborne

GPS Antenna Height Above Ground

This setting configures the height of the GPS antenna above ground level while the aircraft is sitting on the ground. Before proceeding, measure the GPS antenna vertical offset (to the nearest tenth of a foot). Enter the measured value by touching the key and typing the measured value into the keypad on the display. This field has a range of 0.0 to 99.9 feet.

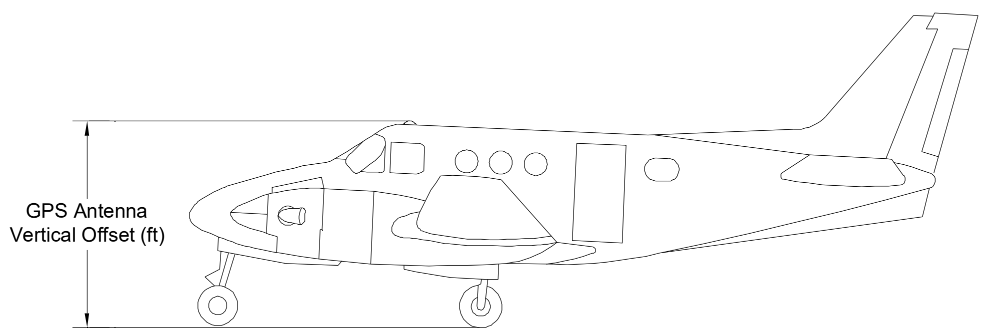


Figure 5-25 Measurement of GPS Antenna Vertical Offset

Fuel Type

This setting configures the fuel type of the aircraft. Select *AV Gas*, *Jet A*, or *Jet B* as applicable. The default is *AV Gas*.

Synchro Heading Input (GTN 7XX Xi Only)

This setting configures whether a synchro heading source is connected to the GTN Xi. Select *Connected* if a synchro heading source is connected to the GTN 7XX Xi. *Not Connected* is the default setting.

Table 5-13 Synchro Heading Input Selections

Selection	Description
Connected	A synchro heading source is connected to the GTN 7XX Xi.
Not Connected (Default)	A synchro heading source is not connected to the GTN 7XX Xi.

GPS Select

NOTE

In a dual GTN Xi or GTN Xi/GTN 6XX/7XX installation, both units must be configured for the same GPS Select setting for the unit to function properly. If Auto is selected on one unit, Auto must be selected on the other.

Table 5-14 GPS Select Selections

Selection	Description
Auto (Default)	When in GPS mode, the GPS Select discrete is unasserted (open) whenever a GPS approach mode is active – no associated messages appear and no pilot action is required. The pilot is also allowed to select automatic or manual GPS to ILS CDI transitions on the ***AUX CDI/ALARMS*** page.
Prompt	When in GPS mode, the GPS Select discrete is unasserted (open) whenever a GPS approach mode is active and the pilot has enabled the A/P APR Outputs (an associated message is displayed telling the pilot to enable the A/P APR Outputs). This setting will not allow the pilot to select automatic GPS to ILS CDI transitions on the ***AUX CDI/ALARMS*** page (only manual transitions are permitted). *For Honeywell (Bendix/King) KFC 225 and KAP 140 autopilots.*

Heading Source Input

NOTE

This setting in not applicable to synchro heading input.

This setting configures whether a heading source is connected to the GTN Xi. If no heading source is present, set to *Not Connected*. The default is Connected.

Table 5-15 Heading Source Input Selections

Selection	Description
Connected (Default)	A heading source is connected to the GTN Xi.
Not Connected	A heading source is not connected to the GTN Xi.

Radio Altimeter Input

This STC does not approve interface to radar altimeters. Select *Not Connected.*

Altitude Source Input

This setting configures whether a pressure altitude source is connected to the GTN Xi. If no pressure altitude source is present, set to *Not Connected*. The default is Connected.

Table 5-16 Altitude Source Input Selections

Selection	Description
Connected (Default)	A pressure altitude source is connected to the GTN Xi.
Not Connected	A pressure altitude source is not connected to the GTN Xi.

Enhanced Lighting Mode

This setting enables the ***Enhanced Lighting*** page from the ***GTN Setup*** page in place of the ***Lighting*** page. Enhanced Lighting allows the configuration of separate Day/Night curves for the backlight and keys. The default is Disabled.

Table 5-17 Enhanced Lighting Mode Selections

Selection	Description
Disabled (Default)	Basic lighting configuration options are enabled.
Enabled	Customizable lighting curves and day/night curve configuration is allowed. Lighting Configuration is replaced with Enhanced Lighting Configuration under ***GTN Setup*** page.

Pilot Position (GTN 7XX Xi Only)

This setting allows the pilot seating position in the cockpit to be configured for the purposes of 3D audio.

Table 5-18 Pilot Position Selections

Selection	Description
Right	This configuration is not approved under this STC.
Left (Default)	For aircraft in which the pilot sits in the left seat, this selection is applicable.

Crossfill Status Alert

This setting, when enabled, configures the GTN Xi to provide a message when crossfill is not selected in Normal mode. This setting defaults to *Disabled.*

Table 5-19 Crossfill Status Alert Selections

Selection	Description
Disabled (Default)	A message will not be provided when crossfill is disabled. Crossfill Status Alert must be set to *Disabled*.
Enabled	A message is provided when crossfill is disabled. A setting of *Enabled* is not approved by this STC.

System ID

This setting is used to identify GTN Xi #2 in an installation with more than one GTN Xi. This input must be set to *GTN 2* on a second GTN Xi. This setting defaults to *GTN 1*.

NOTE

When replacing a GTN 6XX/7XX with software earlier than v5.00 with a GTN Xi, this setting must be configured. This setting replaces the SYSTEM ID PROGRAM discrete.

Database SYNC

This setting controls the ability of the GTN Xi to synchronize databases with other LRUs when a suitable data card is inserted.

Table 5-20 Database SYNC Selections

Selection	Description
Disabled	Database SYNC is disabled and databases will not be sent or received from this GTN Xi.
Enabled	Database SYNC is enabled and databases are sent and received from this GTN Xi when a data card is inserted that supports Database SYNC.
Pilot Control	Database SYNC is controlled by a pilot configurable setting.

Airspace Labels

This setting, when enabled, will display airspace labels on the ***Map*** page. The default is Enabled.

Checklist Page Title

This sets the title of the ***Checklist*** page to the default *Checklist* or the alternate *Task List*.

Blackout Mode

This setting enables the ***Blackout Mode*** page shortcut option for pilot selection in Normal mode. Blackout mode allows the pilot to blackout the map. The Blackout Mode is not approved under this STC. Select *Disabled*. The default is Disabled.

Table 5-21 Blackout Mode Selections

Selection	Description
Enabled	Blackout mode user field shortcut is available for pilot selection.
Disabled (Default)	Blackout mode is not available.

External Flight Plan

This setting, when enabled, allows the active flight plan to be edited by an external touchscreen display. The External Flight Plan setting is not approved under this STC. Select *Disabled*.

Table 5-22 External Flight Plan Selections

Selection	Description
Enabled	An external touchscreen display can make changes to the active flight plan.
Disabled (Default)	External flight plan modification is disabled.

Remote Database Confirmation

This setting enables the confirmation of the remote side GTN Xi databases. Select *Disabled* when a Flight Stream 510 is installed in a GTN Xi.

Table 5-23 Remote Database Confirmation Selections

Selection	Description
Enabled	Allows the confirmation of remote side GTN Xi databases on startup.
Disabled (Default)	The confirmation of remote side GTN Xi databases cannot be performed from the primary GTN Xi.

Remote Radio Control (Software v20.10 and Later)

When installed in tandem cockpits, the Remote Radio Control setting will allow the pilot to send COM/NAV frequencies from one GTN Xi to the other GTN Xi.

Table 5-24 Remote Radio Control Selections

Selection	Description
None (Default)	No cross-side control of COM 1/2 and NAV 1/2.
COM	Allows tuning of COM 1/2 from another GTN Xi.
COM/NAV	Allows tuning of COM 1/2 and NAV 1/2 from another GTN Xi.

5.4.3.11 COM Configuration Page (GTN 635Xi/650Xi/750Xi Only)

Touch the **COM Configuration** key from the ***GTN Setup*** page. These values are set at the factory and rarely require calibration.

To enable or disable the COM radio, touch the key to toggle between *Enabled* and *Disabled*. The COM radio defaults to the enabled state.

The GTN Xi COM receiver squelch is intended to silence the received audio when no signal above a specific power threshold is detected. Two methods of measuring the signal power are used: RX Squelch and Carrier Squelch

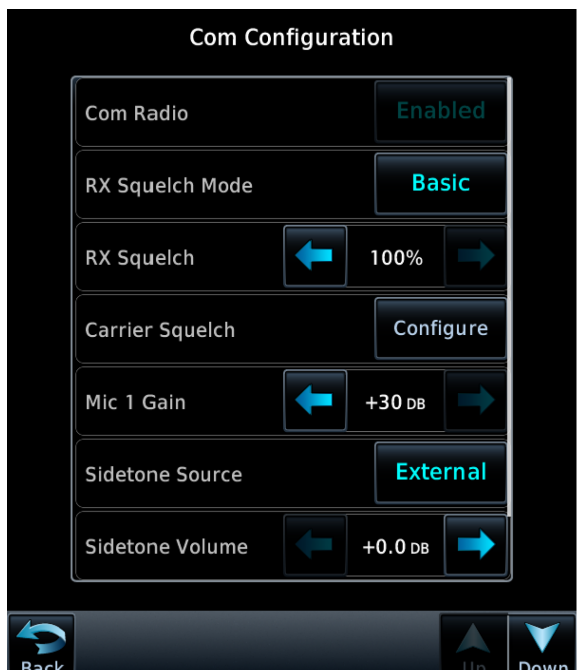


Figure 5-26 COM Configuration Page

COM RX Squelch

RX Squelch is the primary squelch and is the most sensitive. It functions by calculating the ratio of the signal power to the background noise power, and comparing this to the set threshold.

If other aircraft equipment is generating noise that consists of pure tones, those may be interpreted as signals for this calculation, and result in squelch breaks when the corresponding channel is selected. In this case the RX Squelch adjust percentage should be increased or the noise source should be isolated until the squelch breaks no longer occur.

Table 5-25 RX Squelch Mode Selections

Selection	Description
Basic	Applies a COM RX squelch value to all frequencies.
Advanced	The COM RX Squelch values can be set for low, mid, and high frequencies independently for 25 kHz and 8.33 kHz spacing.

Basic COM RX Squelch Mode configures the RX squelch threshold for all frequencies. The default setting is 57%. 0% is the most sensitive (i.e., the weakest signal level necessary to break squelch). Decreasing the value will allow the squelch to be broken with low signal levels. Increasing the value will require higher signal levels to break squelch.

For Advanced COM Squelch Mode, touch the **Configure** key to open the ***Advanced Com RX Squelch*** page. The squelch threshold values can be set for Low, Mid, and High frequencies. The squelch thresholds are adjustable in the range of 0 to 100. Decreasing the value will allow the squelch to be broken with low signal levels. Increasing the value will require higher signal levels to break squelch. The squelch threshold value is linearly interpolated for frequencies between the Low (118.000 MHz), Mid (127.000 MHz), and High (136.975 MHz for 25 kHZ spacing or 136.990 MHz for 8.33 kHz spacing) frequency values. The COM RX squelch values are adjusted separately for 25 kHz and 8.33 kHz spacing.

Table 5-26 lists approximate levels when the auto squelch opens and closes for various RX Squelch settings. GTN Xi installations will generally use a setting of 57 or higher.

Table 5-26 COM RX Squelch Levels

COM RF Squelch Setting [1]	Carrier Squelch Open Approximation
0	-107.0 dBm
25	-103.5 dBm
50	-99.0 dBm [2]
75	-96.5 dBm
100	-93.0 dBm

Notes:

[1] The COM RX Squelch range (0-100) is a linear response.

[2] Auto squelch opens at approximately -99 dBm is a typical value for many installations.

COM Carrier Squelch

Carrier Squelch is the secondary squelch and is much less sensitive. It functions by calculating the signal power only, and comparing this to the set threshold.

If other aircraft equipment is generating noise of a more random nature (wideband), the combined power may cause squelch breaks on many channels. In this case the Carrier Squelch adjust percentage should be increased or the noise source should be isolated until the squelch breaks no longer occur.

Table 5-27 Carrier Squelch Selections

Selection	Description
Basic	Applies a COM carrier squelch value of 0 to 25 kHz and 8.33 kHz spacing.
Advanced	Allows the adjustment of COM carrier squelch values.
Spacing	Allows the adjustment of COM carrier squelch values for 25 kHz and 8.33 kHz spacing separately.
Squelch	The COM carrier squelch is adjustable in the range of 0 to 100. The default value is 0. Decreasing the value allows the carrier squelch to be broken with low signal levels. Increasing the value requires higher signal levels to break carrier squelch.

Table 5-28 lists approximate levels when the carrier squelch opens for various carrier squelch settings.

Table 5-28 COM Carrier Squelch Levels

COM RF Squelch Setting [1]	Carrier Squelch Open Approximation
0	-87.0 dBm
25	-84.5 dBm
50	-82.0 dBm
75	-79.5 dBm
100	-77.0 dBm

Notes:

[1] The COM carrier squelch range (0-100) is a linear response.

Mic 1 Gain

The MIC 1 Gain can be adjusted from -12 dB to +30 dB in 6 dB increments. The default is +12 dB. For microphones with low signal levels, this can be adjusted up to increase the signal strength. For microphones with high signal levels, this can be adjusted down to decrease the signal strength.

Sidetone Source

NOTE

The COM sidetone settings are only applicable when the audio panel is not generating the sidetone audio.

The Sidetone Source setting is used to select the source of the sidetone audio that the crew hears while transmitting on the COM.

Table 5-29 COM Sidetone Source Selections

Selection	Description
External (Default)	The COM sidetone audio that the pilot hears is the demodulated audio signal that is actually going to the antenna to be transmitted.
Internal	The COM sidetone audio that the pilot hears is the audio signal from the headset microphone before it is filtered for transmission.

Sidetone Volume

This parameter sets the audio sidetone output level. Sidetone refers to the audio spoken into the COM microphone. This setting only affects the volume of the sidetone for the GTN XI COM during PTT. This value may be set to values between 0.0 dB and 26.0 dB in 0.5 dB increments. The default is 22.0 dB. The higher the setting, the louder the sidetone will be. The sidetone is only generated in the COM headset (low level) audio output.

Sidetone Pilot Control

The Sidetone Pilot Control setting is used to enable pilot adjustment of the sidetone audio volume. If enabled, the pilot can also link the COM and sidetone volumes.

Table 5-30 Sidetone Pilot Control Settings

Settings	Description
Enabled (Default)	The pilot can adjust the sidetone audio volume or link it to the COM volume.
Disabled	The sidetone audio volume is fixed based on the Sidetone Volume setting.

5.4.3.12 VOR/LOC/GS Configuration Page (GTN 650Xi/750Xi Only)

Select the **VOR/LOC/GS** key from the ***GTN Setup*** page by touching the key on the display shown in Figure 5-8. This page provides calibration and configuration options necessary to interface with external indicators and DME equipment through the P1004 connector.

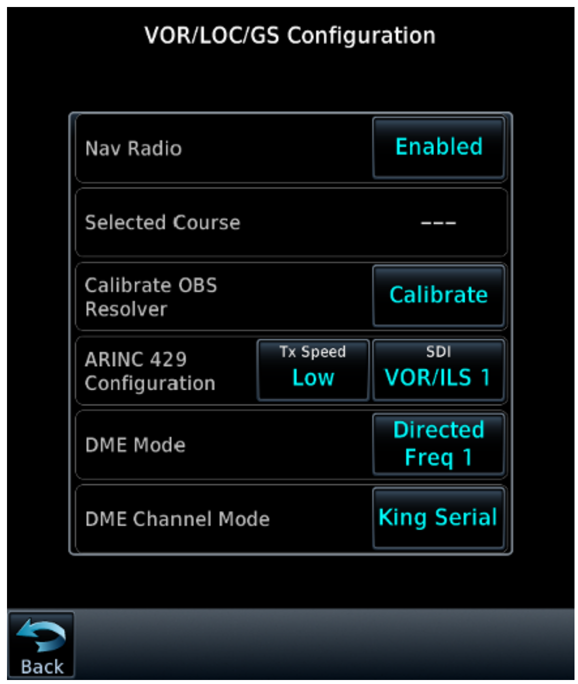


Figure 5-27 VOR/LOC/GS Configuration Page

NAV Radio

To enable or disable the NAV radio, touch the key to toggle between *Enabled* and *Disabled*. The NAV radio defaults to the enabled state.

Calibrate OBS Resolver

To calibrate the OBS resolver, touch the **Calibrate** key from the ***VOR/LOC/GS Configuration*** page. Next, select **150**° on the external CDI/HSI, then touch the **OK** key when prompted by the display. Touch **OK** after calibration is complete. Verify OBS operation is correct by checking the selected course displayed at the top of the page is within 2° of the selected course.

Table 5-31 ARINC 429 Configuration Speed (TX)

Selection	Description
Low	Standard low-speed ARINC 429 (nominally 12.5 kilobits per second)
High	High-speed ARINC 429 (nominally 100 kilobits per second)

Table 5-32 SDI

Selection	Description
Common	Generates all 429 outputs with SDI = 0.
VOR/ILS 1	Number 1 (Pilot) VOR/ILS Receiver TX: Generates 429 outputs with SDI = 1
VOR/ILS 2	Number 2 (Copilot) VOR/ILS Receiver TX: Generates 429 outputs with SDI = 2

Table 5-33 DME Mode

Selection	Description
Directed freq 1	If the GTN Xi is connected to a multi-channel ARINC 429 DME, channel 1 of the DME is tuned. "Directed freq 1" should be selected if a single-channel ARINC 429 DME is to be tuned.
Directed freq 2	If the GTN Xi is connected to a multi-channel ARINC 429 DME, channel 2 of the DME is tuned.

DME Channel Mode

This configuration setting allows you to set the format for DME tuning data output.

Table 5-34 DME Channel Mode

Selection	Description
King serial	King Serial DME tuning data
Parallel 2x5	2 of 5 parallel DME tuning
Parallel BCD	Shifted BCD (Binary Coded Decimal) parallel DME tuning
Parallel slip	Slip-code parallel DME tuning
Narco 890/891	2 of 5 parallel DME tuning, compatible with the following DME units: • *Narco DME 890* • *Narco DME 891*

Filtered LOC/GS

This setting is not approved under this STC.

NAV Radio Display Timeout

This setting must be set to the default *Enabled* per this STC. When enabled, selection of the NAV radio on a GTN 650Xi/750Xi will revert to the COM radio after 10 seconds.

5.4.3.13 ARINC 708 Configuration Page (GTN 7XX Xi Only)

This page allows the ARINC 453/708 port to be configured for a compatible weather radar. Refer to Section 5.4.4.4.1 for information on ARINC 708 weather radar enablement and Section 5.4.6.10.2 for information on ARINC 708 weather radar configuration.

5.4.3.14 Discrete Configuration Page

The **Discrete Configuration** page, shown in Figure 5-28, allows for customized pin assignment of discrete inputs/ outputs on the P1001 and P1002 connectors. Access the ***Discretes Configuration*** page from the ***GTN Setup*** page. To reassign a new discrete function to a particular pin, select the label and choose the desired function from the drop-down menu. A discrete function is only available in the drop-down if it is not currently assigned to a pin. To reassign a pin function to another pin, first select the desired function and select **Off**. Next, select the **Function** key next to desired configurable discrete pin and select the function to be assigned to the pin. To return to the default discrete pin configuration, select **Set to Default**, which is found on the menu bar. The user is prompted with a message stating the configuration will be overwritten with the default settings. Select **OK** and the settings will be returned to the default configuration values; otherwise, select **Cancel**. Configurable discrete functions that are not assigned to a pin under the default configuration are listed in Table 5-35.

Figure 5-28 Discrete Configuration Page

Table 5-35 Configurable Discrete Functions

Selection	Description
RP Mode (input)	HTAWS (This function not approved under this STC)
Alert Acknowledge (input)	HTAWS (This function not approved under this STC)
Day/Night (input)	This discrete input is used to switch between the Day and Night lighting curves when using the Enhanced Lighting configuration.
Mark on Target (input)	This momentary discrete input may be used to create a target waypoint at the user's current latitude/longitude (this function not approved under this STC).
Remote Go Around (input)	Missed Approach: This momentary discrete input may be used to activate the missed approach prior to the Missed Approach Waypoint (MAWP); similarly this discrete may be used to activate the missed approach following the MAWP popup.
GPWS Inhibit (input)	Class A TAWS (This function not approved under this STC).
Flap Override (input)	Class A TAWS (This function not approved under this STC).
Glideslope Inhibit (input)	Class A TAWS (This function not approved under this STC).
Flap Position (input)	Class A TAWS (This function not approved under this STC).
Landing Gear Position (input)	Class A TAWS (This function not approved under this STC).
RP Mode Annunciate (output)	HTAWS (This function not approved under this STC).
GSR 56 Audio Attenuate (output)	This discrete interfaces to the GSR 56 to attenuate the telephone ringer volume until a call is answered using the GTN Xi. It is recommended to use this discrete when the GTN Xi interfaces to the GSR 56.
Engage/Disengage Smart Glide (input)	This discrete allows an external switch to engage/disengage Smart Glide. If this discrete is not configured but Smart Glide is configured, a placard must be installed in accordance with Section 3.6.7.1.

5.4.3.15 Navigation Features

Mark On Target

Mark On Target is not approved under this STC.

RF Procedure Legs

NOTE

This setting should not be enabled when interfaced to a GMX 200 or MX20 MFD.

NOTE

This STC does not grant operational approval for RF leg navigation. Additional FAA approval is required for those operators intending to use the GTN Xi as a means to provide RNP 1.0 navigation in accordance with FAA AC 90-105.

This setting enables or disables Radius to Fix leg types on the GTN Xi. With this setting enabled, the GTN Xi will provide display and guidance for these leg types. The GTN Xi supports RF legs up to Required Navigation Performance 1.0 (RNP 1.0). Refer to Section 6.4.1.1.1 to determine if the aircraft is properly equipped to use this setting.

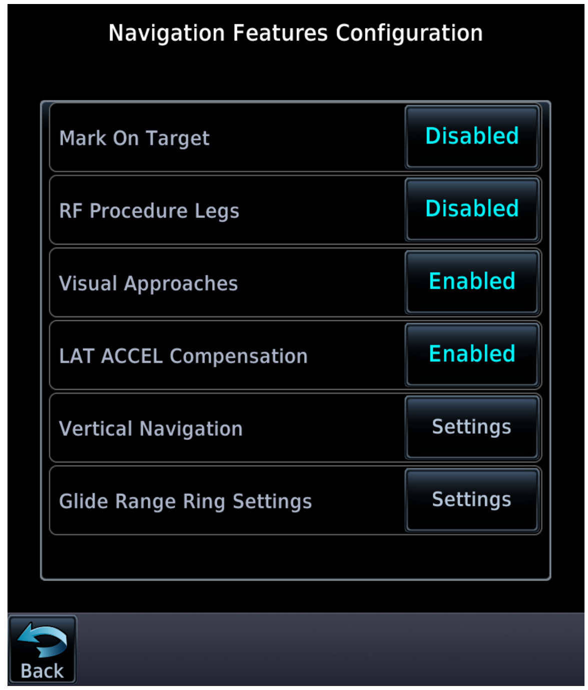


Figure 5-29 Navigation Features Page

Visual Approaches

The Visual Approaches feature is enabled by default and is available to load when available. Visual approaches are for reference only.

LAT ACCEL Compensation

Lateral acceleration is used in roll steering calculations. This setting is applicable to installation issues when the autopilot is unable to maintain lateral course resulting in overshoot or sustained cross-track error. It is recommended to enable this if the GTN Xi is interfaced with a GFC 500. Do not enable if the GTN Xi is interfaced with a GFC 600. Do not enable if the GTN Xi is interfaced with a rate-based autopilot.

Vertical Navigation

Access the ***Vertical Navigation Configuration*** page (Figure 5-30) by touching the **Options** key in the Vertical Navigation row.

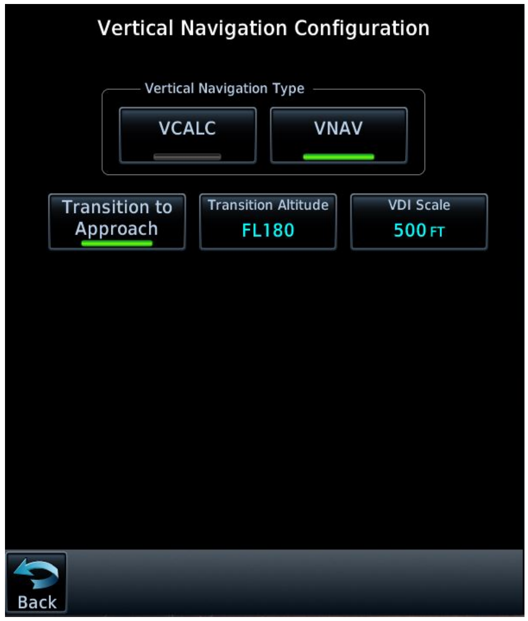


Figure 5-30 Vertical Navigation Configuration Page

Table 5-36 Vertical Navigation Type

Selection	Description
VCALC (default)	The Vertical Calculator (VCALC) function will be enabled. VCALC provides advisory messages and vertical speed required to achieve a simple descent profile.
VNAV	The vertical navigation (VNAV) function will be enabled. The VNAV function provides vertical profile guidance during the en route and terminal phases of flight. Guidance based on specified altitudes at waypoints in the active flight plan or to a direct-to waypoint is provided. It includes vertical path guidance to a descending path, which is provided as a linear deviation from the desired path. VNAV requires a baro-corrected altitude input and connection to an unswitched and unmuted input on an audio panel (refer to Figure B-14). If VNAV is enabled, then the Transition to Approach feature can be enabled.

Table 5-37 Transition To Approach

Selection	Description
Enabled (default)	Vertical navigation will automatically adjust the descent path to compensate for temperature changes and provide a continuous descent onto the approach. The Transition to Approach function requires a static air temperature input.
Disabled	Vertical navigation will end at the waypoint preceding the final approach fix (FAF) in the flight plan. Select this option when using a GFC 500 or non-Garmin autopilot.

NOTE

The Transition To Approach feature must be disabled when the GTN Xi is interfaced to a GFC 500 or third-party (non-Garmin) autopilot system.

The Transition Altitude will set the altitude at which the GTN Xi will transition to displaying altitudes in flight levels instead of feet. The default is FL180 (18,000ft). The VDI Scale sets the scale for the VNAV vertical deviation output. The default VDI Scale is 500 feet.

Glide Range Ring (Software v20.10 through v20.12)

NOTE

The Range Ring key is available after entry of configuration items.

Touch **Settings** to configure the Glide Range Ring. Refer to the POH for the values of the following:

- Glide Ratio
- Wing Area
- Best Glide Speed
- Aircraft Max Weight

Touch **Range Ring** to enable or disable the display of range rings.

Figure 5-31 Glide Range Ring Settings Page

Touch **Advanced Settings** to configure additional parameters.

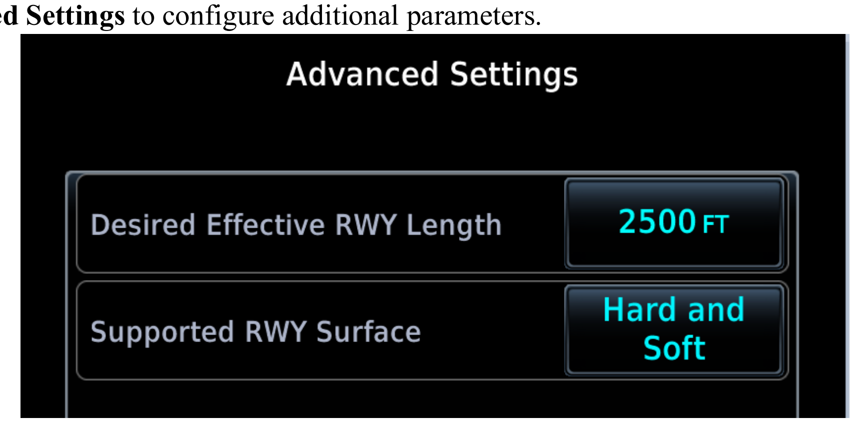


Figure 5-32 Glide Range Ring Advanced Settings Page

Table 5-38 Glide Range Ring Advanced Settings

Selection	Description
Desired Effective RWY Length	Enter value of minimum desired runway length. The range is 0 to 25000 ft and default is 2500 ft. Runways shorter than the default setting are considered, but are given a lower priority when calculating the best glide runway.
Supported RWY Surface	Enter allowable surface type of Hard, Soft, Water, or Amphibious. Default is Soft. Runways that do not meet the default setting are not considered in determining the best glide runway destination.

Smart Glide (Software v20.20 or Later)

NOTE

Range Ring is available after entry of configuration items. Smart Glide is available after enabling Range Ring.

NOTE

The GTN will command the autopilot to target the best glide speed when Smart Glide is active.

Figure 5-33 Smart Glide Configuration Page

Table 5-39 Smart Glide Configuration Settings

Selection	Description
Glide Ratio	Configure Glide Ratio per published value in AFM/POH. This number will be the amount of distance covered divided by the amount of altitude lost. Refer to Figure 5-34, Table 5-40, and Table 5-41 for guidance in converting a Glide table to a Glide Ratio value. Refer to Figure 5-35, Table 5-42, and Table 5-43 for guidance in converting written glide values to a Glide Ratio value.
Best Glide Speed	Configure Best Glide Speed per published value in AFM/POH. If there are different speeds published for various aircraft gross weight values, you must use the best glide speed value for the maximum aircraft gross weight.
Range Ring [1]	Enables or disables Glide Range Ring and Best Glide Airports list and map indication.
Smart Glide	Enables or disables Smart Glide.

Notes:

[1] Required for Smart Glide.

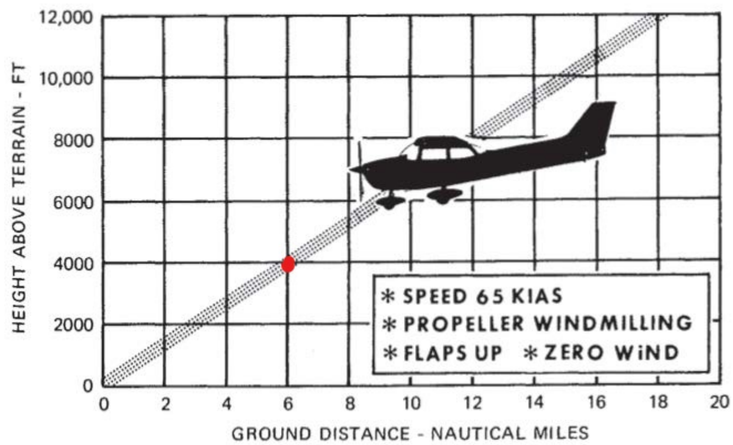


Figure 5-34 Example Glide Table from AFM/POH

Figure 5-34 is an example glide ratio graph from a Cessna 172N POH. The Glide Ratio is linear and can therefore be calculated by looking at any single point on the line. To make it easier to determine a Glide Ratio, choose a point on the line where it crosses an intersection of the grid. Once a point has been selected, refer to Table 5-40 or Table 5-41 depending on the units of measurement to determine the Glide Ratio.

For example, below are the steps used to calculate the Glide Ratio based on the red dot in Figure 5-34:

1. From the selected point (depicted as a red dot), move down the corresponding vertical grid line until you can read the value at the bottom of the table for Ground Distance. In this example, the value will be 6 Nautical Miles.
2. From the selected point (depicted as a red dot), move horizontally to the left along the grid line until you can determine the corresponding value on the side of the table for Height Above Terrain. In this example, the value is 4,000 Feet.
3. Refer to the appropriate table for the units of measure depicted in the POH table. In this example, the table is in nautical miles and feet; therefore, Table 5-40 is used.
4. The value corresponding to 6 Nautical Miles and 4,000 Feet produces a Glide Ratio of 9.10.

Table 5-40 Glide Table Conversion (Nautical Miles and Feet)

	Nautical Miles													
Feet	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1,000	6.07	12.13	18.20	24.27	30.34	36.40	42.47	48.54	54.60	60.67	66.74	72.80	78.87	84.94
2,000	3.03	6.07	9.10	12.13	15.17	18.20	21.23	24.27	27.30	30.34	33.37	36.40	39.44	42.47
3,000	2.02	4.04	6.07	8.09	10.11	12.13	14.16	16.18	18.20	20.22	22.25	24.27	26.29	28.31
4,000	1.52	3.03	4.55	6.07	7.58	9.10	10.62	12.13	13.65	15.17	16.68	18.20	19.72	21.23
5,000	1.21	2.43	3.64	4.85	6.07	7.28	8.49	9.71	10.92	12.13	13.35	14.56	15.77	16.99
6,000	1.01	2.02	3.03	4.04	5.06	6.07	7.08	8.09	9.10	10.11	11.12	12.13	13.15	14.16
7,000	0.87	1.73	2.60	3.47	4.33	5.20	6.07	6.93	7.80	8.67	9.53	10.40	11.27	12.13
8,000	0.76	1.52	2.28	3.03	3.79	4.55	5.31	6.07	6.83	7.58	8.34	9.10	9.86	10.62
9,000	0.67	1.35	2.02	2.70	3.37	4.04	4.72	5.39	6.07	6.74	7.42	8.09	8.76	9.44
10,000	0.61	1.21	1.82	2.43	3.03	3.64	4.25	4.85	5.46	6.07	6.67	7.28	7.89	8.49
11,000	0.55	1.10	1.65	2.21	2.76	3.31	3.86	4.41	4.96	5.52	6.07	6.62	7.17	7.72
12,000	0.51	1.01	1.52	2.02	2.53	3.03	3.54	4.04	4.55	5.06	5.56	6.07	6.57	7.08

Table 5-41 Glide Table Conversion (Statute Miles and Feet)

	Statute Miles													
Feet	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1,000	5.28	10.56	15.84	21.12	26.40	31.68	36.96	42.24	47.52	52.80	58.08	63.36	68.64	73.92
2,000	2.64	5.28	7.92	10.56	13.20	15.84	18.48	21.12	23.76	26.40	29.04	31.68	34.32	36.96
3,000	1.76	3.52	5.28	7.04	8.80	10.56	12.32	14.08	15.84	17.60	19.36	21.12	22.88	24.64
4,000	1.32	2.64	3.96	5.28	6.60	7.92	9.24	10.56	11.88	13.20	14.52	15.84	17.16	18.48
5,000	1.06	2.11	3.17	4.22	5.28	6.34	7.39	8.45	9.50	10.56	11.62	12.67	13.73	14.78
6,000	0.88	1.76	2.64	3.52	4.40	5.28	6.16	7.04	7.92	8.80	9.68	10.56	11.44	12.32
7,000	0.75	1.51	2.26	3.02	3.77	4.53	5.28	6.03	6.79	7.54	8.30	9.05	9.81	10.56
8,000	0.66	1.32	1.98	2.64	3.30	3.96	4.62	5.28	5.94	6.60	7.26	7.92	8.58	9.24
9,000	0.59	1.17	1.76	2.35	2.93	3.52	4.11	4.69	5.28	5.87	6.45	7.04	7.63	8.21
10,000	0.53	1.06	1.58	2.11	2.64	3.17	3.70	4.22	4.75	5.28	5.81	6.34	6.86	7.39
11,000	0.48	0.96	1.44	1.92	2.40	2.88	3.36	3.84	4.32	4.80	5.28	5.76	6.24	6.72
12,000	0.44	0.88	1.32	1.76	2.20	2.64	3.08	3.52	3.96	4.40	4.84	5.28	5.72	6.16

MAXIMUM GLIDE CONFIGURATION

1. Landing Gear - UP
2. Flaps - UP
3. Cowl Flaps - CLOSED
4. Propeller - PULL for LOW RPM
5. Airspeed - 110 kts/127 mph

Glide distance is approximately 1.7 nautical miles (2 statute miles) per 1000 feet of altitude above the terrain.

3-6 August 1982

Figure 5-35 Example Glide Distance from AFM/POH

Figure 5-35 is an example Glide Distance from the Bonanza A36 AFM/POH. Using the value for the correct unit of measure in Table 5-42 or Table 5-43, this value can be converted to a Glide Ratio. In this example, the stated value for an A36 is 1.7NM per 1000ft. Using the corresponding NM per 1000ft value in Table 5-42, it can be determined that the Glide Ratio value for 1.7NM per 1000ft is 10.33.

Table 5-42 Glide Distance Conversion (Nautical Miles per 1000ft Altitude)

NM per 1000ft	Glide Ratio	NM per 1000ft	Glide Ratio	NM per 1000ft	Glide Ratio	NM per 1000ft	Glide Ratio
0.8	4.86	1.4	8.51	2.0	12.15	2.6	15.80
0.9	5.47	1.5	9.11	2.1	12.76	2.7	16.41
1.0	6.08	1.6	9.72	2.2	13.37	2.8	17.01
1.1	6.68	1.7	10.33	2.3	13.97	2.9	17.62
1.2	7.29	1.8	10.94	2.4	14.58	3.0	18.23
1.3	7.90	1.9	11.54	2.5	15.19		

The stated glide value in the example POH in Figure 5-35 in statute miles is given as 2SM per 1000ft. Using the corresponding SM per 1000ft value in Table 5-43, it can be determined that the Glide Ratio value for 2SM per 1000ft is 10.56. The difference in Glide Ratios between the units given in Figure 5-34 can be attributed to rounding that occurs while converting between different units of measurement. If a calculated Glide Ratio falls between two values, the lower number should be used.

Table 5-43 Glide Distance Conversion (Statute Miles per 1000ft Altitude)

SM per 1000ft	Glide Ratio	SM per 1000ft	Glide Ratio	SM per 1000ft	Glide Ratio	SM per 1000ft	Glide Ratio
0.8	4.22	1.4	7.39	2.0	10.56	2.6	13.73
0.9	4.75	1.5	7.92	2.1	11.09	2.7	14.26
1.0	5.28	1.6	8.45	2.2	11.62	2.8	14.78
1.1	5.81	1.7	8.98	2.3	12.14	2.9	15.31
1.2	6.34	1.8	9.50	2.4	12.67	3.0	15.84
1.3	6.86	1.9	10.03	2.5	13.20		

Touch **Advanced Settings** to configure additional parameters.

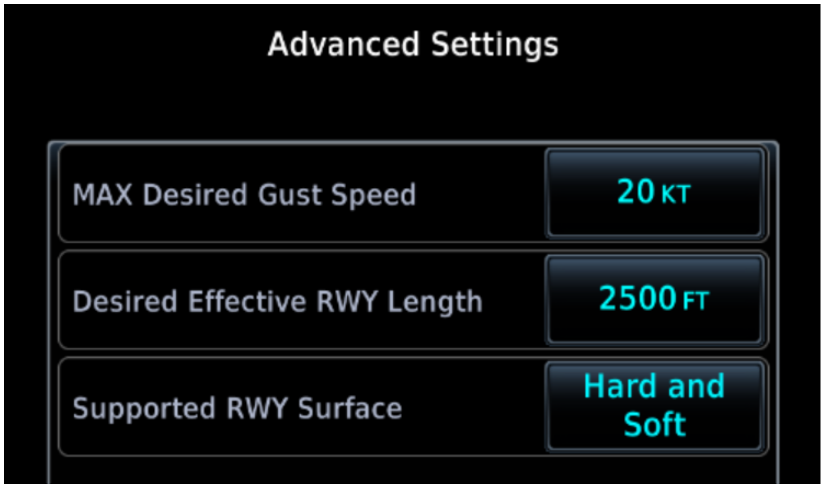


Figure 5-36 Smart Glide Advanced Settings Page

Table 5-44 Smart Glide Advanced Settings

Selection	Description
MAX Desired Gust Speed	Enter value of the maximum desired wind gust speed at destination airport. The range is 0 to 99 kts and default is 20 kts. This setting does not exclude airports from the Smart Glide function; it simply de-prioritizes airports that exceed the desired gust speed.
Desired Effective RWY Length	Enter value of minimum desired runway length. The range is 0 to 25000 ft and default is 2500 ft. This setting does not exclude airports from the Smart Glide function; it simply prioritizes airports that are longer than this value. This value cannot be shorter than the published short field landing distance at ISA values.
Supported RWY Surface	Enter allowable surface type of Hard Only, Water Only, Hard and Soft, or Amphibious (Any). Default is Hard and Soft. Hard and Soft should be set for all land-planes. Amphibious should only be set for seaplanes/floatplanes with landing gear. Water Only should only be set for aircraft with straight floats.

NOTE

Smart Glide configuration settings will be automatically cross-filled to a second GTN Xi if a GTN Xi is configured as the cross-side navigator per Section 5.4.3.4. Smart Glide configuration settings should be verified to have properly cross-filled to both navigators, if present.

5.4.3.16 Ownship

This configuration page allows the installer to choose the ownship to be displayed on the moving map display. The default ownship for fixed-wing installations is a Low-Wing Prop ownship.

Configuration of the ownship color to magenta is not approved under this STC.

Figure 5-37 Ownship Configuration Page

5.4.3.17 Flight Stream

These settings are not approved under this STC.

5.4.3.18 Update Config Module

Once all setup items have been configured, touch the Update Config Module button and touch Yes to save all configuration settings to the configuration module.

5.4.4 GTN Options Page

Access the ***GTN Options*** page, shown in Figure 5-38, by touching the **GTN Options** key on the Configuration Mode home page. This page allows optional purchased features to be enabled. All optional features are activated using the ***GTN Options*** page.

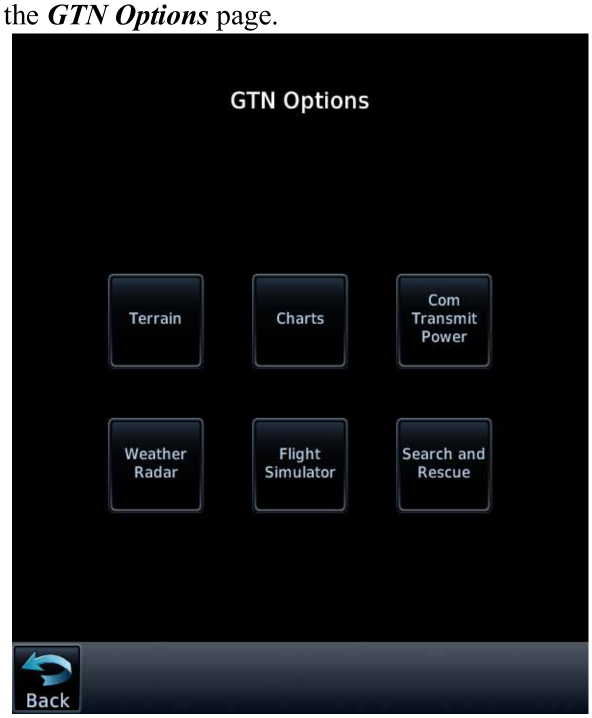


Figure 5-38 GTN Options Page

NOTE

All feature enablement cards should be provided to the customer after the GTN Xi installation.

5.4.4.1 Terrain

Access the ***Terrain Configuration*** page, shown in Figure 5-39, by touching the **Terrain** key on the ***GTN Options*** page.

5.4.4.1.1 Terrain Proximity

Garmin Terrain Proximity is a terrain awareness system that allows relative terrain layers to be displayed on the ***Map*** and ***Terrain*** pages. It does not provide aural alerting of terrain. Refer to *GTN Xi Series Pilot's Guide* for additional information regarding this feature.

5.4.4.1.2 Terrain Alerting

Terrain Alerting will provide a subset of the TAWS B alerting functionality in addition to the Terrain Proximity features already provided as a standard feature of the GTN Xi. It does not replace full TAWS capabilities or meet the requirements of TSO-151c. Refer to *GTN Xi Series Pilot's Guide* for additional information regarding this feature.

NOTE

If enabling Terrain Alerting on the GTN Xi, the audio output from the GTN Xi must be connected to an unswitched and unmuted input on the audio panel. Refer to Figure B-14.

NOTE

Terrain Alerting should only be enabled on one GTN Xi in dual GTN Xi installations to prevent conflicting audio messages.

NOTE

In a GTN Xi-GTN 6XX/7XX installation with Smart Glide configured, TAWS B or Terrain Alerting should be enabled on the GTN Xi and Terrain Proximity should be enabled on GTN 6XX/7XX.

5.4.4.1.3 TAWS Enablement

When the optional TAWS feature is enabled, the GTN Xi will provide Class B TAWS functionality. This section describes how to activate the TAWS feature in the GTN Xi. **This STC does not approve TAWS A enablement.**

1. Power off the GTN Xi.
2. Remove the database SD card from the data card slot and insert a TAWS Enablement Card (P/N 010-00878-01).
3. Enter Configuration mode by applying power (i.e., closing the circuit breaker) to the GTN Xi while holding the **HOME** key.
4. Enter the ***Terrain Configuration*** page, shown in Figure 5-39, by touching the **Terrain** key on the ***GTN Options*** page. Touch the **TAWS B** key under Terrain Mode.
5. A window will appear with "Enable TAWS-B? This will consume a feature unlock key when selected."
6. Touch **Yes** to enable TAWS B.

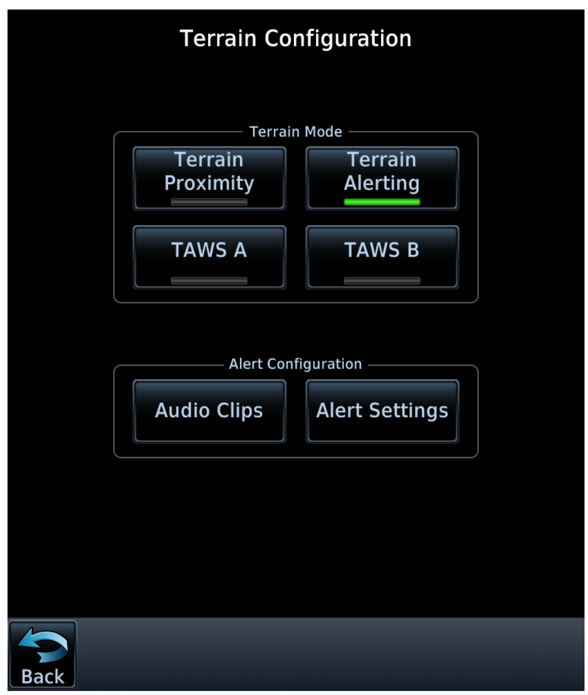


Figure 5-39 Terrain Configuration Page

When the TAWS feature is activated, the TAWS B key is lit green.

NOTE

If enabling TAWS on the GTN Xi, the audio output from the GTN Xi must be connected to an unswitched and unmuted input on the audio panel. Refer to Figure B-14.

NOTE

TAWS B should only be enabled on one GTN Xi in dual GTN Xi installations to prevent conflicting audio messages.

5.4.4.1.4 Audio Clips (Only if Terrain Alerting or TAWS Enabled)

From the ***Terrain Configuration*** page in the ***GTN Options*** page group, touch the **Audio Clips** key. This page, shown in Figure 5-40, allows configuration of the Terrain Alerting and TAWS audio messages for cautions and warnings. For each audio alert, select the desired audio text, as described in Table 5-45 through Table 5-59.

Figure 5-40 Audio Clips Page

5.4.4.1.4.1 Caution Fields

NOTE

NCR and EDR Caution/Warning are only available when TAWS is enabled; these caution fields are not available for Terrain Alerting.

Table 5-45 NCR CAUTION Field

Selection	Description
"Don't Sink"	Sets the Negative Climb Rate (NCR) cautionary alert to the specified text. (Default)
"Too Low Terrain"	Sets the Negative Climb Rate (NCR) cautionary alert to the specified text.

Table 5-46 EDR CAUTION Field

Selection	Description
"Sink Rate"	Sets the Excessive Descent Rate (EDR) cautionary alert to the specified text.

Table 5-47 PDA CAUTION Field

Selection	Description
"Too Low - Terrain"	Sets the Premature Descent Alert (PDA) cautionary alert to the specified text.

Table 5-48 IOI CAUTION Field

Selection	Description
"Obstacle Ahead" x2	Sets the Forward Looking Terrain Clearance (FLTA) Imminent Obstacle Impact (IOI) cautionary alert to the specified text. (Default)
"Caution Obstacle" x2	Sets the Forward Looking Terrain Clearance (FLTA) Imminent Obstacle Impact (IOI) cautionary alert to the specified text.

Table 5-49 ROC CAUTION Field

Selection	Description
"Obstacle Ahead" x2	Sets the Forward Looking Terrain Clearance (FLTA) Reduced Required Obstacle Clearance (ROC) cautionary alert to the specified text. (Default)
"Caution Obstacle" x2	Sets the Forward Looking Terrain Clearance (FLTA) Reduced Required Obstacle Clearance (ROC) cautionary alert to the specified text.

Table 5-50 ILI CAUTION Field

Selection	Description
"Wire Ahead" x2	Sets the Forward Looking Terrain Clearance (FLTA) Imminent Line Impact (ILI) cautionary alert to the specified text. (Default)
"Caution Wire" x2	Sets the Forward Looking Terrain Clearance (FLTA) Imminent Line Impact (ILI) cautionary alert to the specified text.

Table 5-51 RLC CAUTION Field

Selection	Description
"Wire Ahead" x2	Sets the Forward Looking Terrain Clearance (FLTA) Reduced Required Line Clearance (RLC) warning alert to the specified text. (Default)
"Caution Wire" x2	Sets the Forward Looking Terrain Clearance (FLTA) Reduced Required Line Clearance (RLC) warning alert to the specified text.

Table 5-52 ITI CAUTION Field

Selection	Description
“Terrain Ahead” x2	Sets the Forward Looking Terrain Clearance (FLTA) Imminent Terrain Impact (ITI) cautionary alert to the specified text. (Default)
“Caution Terrain” x2	Sets the Forward Looking Terrain Clearance (FLTA) Imminent Terrain Impact (ITI) cautionary alert to the specified text.

Table 5-53 RTC CAUTION Field

Selection	Description
“Terrain Ahead” x2	Sets the Forward Looking Terrain Clearance (FTLA) Reduced Required Terrain Clearance (RTC) cautionary alert to the specified text. (Default)
“Caution Terrain” x2	Sets the Forward Looking Terrain Clearance (FLTA) Reduced Required Terrain Clearance (RTC) cautionary alert to the specified text.

Table 5-54 IOI WARNING Field

Selection	Description
“Obstacle Ahead Pull-Up” x2	Sets the Forward Looking Terrain Clearance (FLTA) Imminent Obstacle Impact (IOI) warning alert to the specified text. (Default)
“Obstacle” x2 “Pull Up” x2	Sets the Forward Looking Terrain Clearance (FLTA) Imminent Obstacle Impact (IOI) warning alert to the specified text.

Table 5-55 ROC WARNING Field

Selection	Description
“Obstacle Ahead Pull Up” x2	Sets the Forward Looking Terrain Clearance (FLTA) Reduced Required Obstacle Clearance (ROC) warning alert to the specified text. (Default)
“Obstacle” x2 “Pull Up” x2	Sets the Forward Looking Terrain Clearance (FLTA) Reduced Required Obstacle Clearance (ROC) warning alert to the specified text.

Table 5-56 ILI WARNING Field

Selection	Description
“Wire Ahead Pull Up” x2	Sets the Forward Looking Terrain Clearance (FLTA) Imminent Line Impact (ILI) warning alert to the specified text. (Default)
“Wire x2, Pull Up” x2	Sets the Forward Looking Terrain Clearance (FLTA) Imminent Line Impact (ILI) warning alert to the specified text.

Table 5-57 RLC WARNING Field

Selection	Description
“Wire Ahead Pull Up” x2	Sets the Forward Looking Terrain Clearance (FLTA) Reduced Required Line Clearance (RLC) warning alert to the specified text. (Default)
“Wire” x2 “Pull Up” x2	Sets the Forward Looking Terrain Clearance (FLTA) Reduced Required Line Clearance (RLC) warning alert to the specified text.

Table 5-58 ITI WARNING Field

Selection	Description
“Terrain Ahead Pull Up” x2	Sets the Forward Looking Terrain Clearance (FLTA) Imminent Terrain Impact (ITI) warning alert to the specified text. (Default)
“Terrain” x2 “Pull Up” x2	Sets the Forward Looking Terrain Clearance (FLTA) Imminent Terrain Impact (ITI) warning alert to the specified text.

Table 5-59 RTC WARNING Field

Selection	Description
"Terrain Ahead Pull Up" x2	Sets the Forward Looking Terrain Clearance (FLTA) Reduced Required Terrain Clearance (RTC) warning alert to the specified text. (Default)
"Terrain" x2 "Pull Up" x2	Sets the Forward Looking Terrain Clearance (FLTA) Reduced Required Terrain Clearance (RTC) warning alert to the specified text.

Table 5-60 EDR WARNING Field

Selection	Description
"Pull Up"	Sets the Excessive Descent Rate (EDR) warning alert to the specified text.

Table 5-61 500 FT Field

Selection	Description
"Five Hundred"	Sets the Voice Callout (VCO) advisory alert to the specified text.

5.4.4.1.5 Alert Settings (Only if Terrain Alerting or TAWS Enabled)

For installations with Terrain Alerting or TAWS B enabled, the GTN Xi provides aural and visual terrain alerts. The alerting algorithm adapts the terrain alerting criteria based on nearby airports. The GTN Xi must be configured to specify the minimum criteria which an airport must meet to be considered as a nearby airport for the purpose of TAWS/Terrain Alerting. For installations with Terrain Alerting or TAWS enabled, obtain the information listed in Table 5-62.

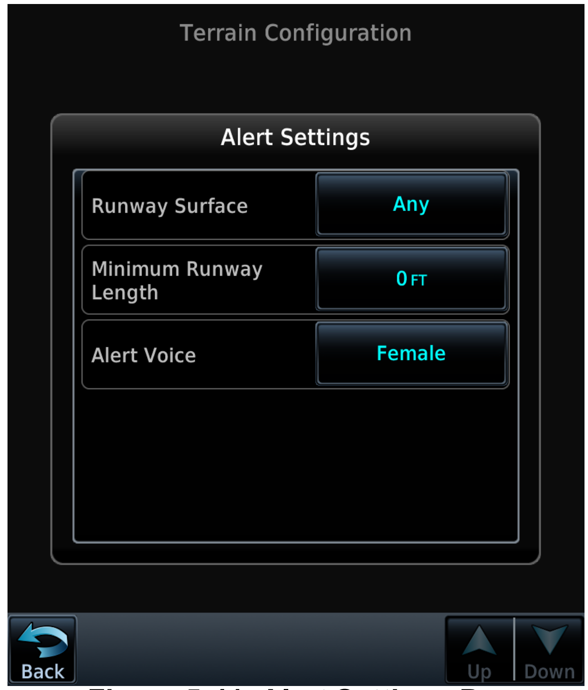


Figure 5-41 Alert Settings Page

Table 5-62 Airframe-Specific Runway Configuration Data

Item	Description	POH/AFM Section	Notes
Runway Surface	Type of surfaces the runway must have for the aircraft to land.	N/A	Set to type of runway surface the aircraft will typically use.
Minimum Length	Minimum length the runway must have before being considered a runway by TAWS alerting.	5 - Performance	Set to the shortest ground roll distance required for takeoff/ landing operations (typically the distance given for sea level using the coldest temperature given in the POH/AFM).
Alert Voice	Determines voice for annunciations.	N/A	

Configure the Alert Settings as follows:

1. Access the ***Alert Settings*** page from the ***Terrain Configuration*** page, as shown in Figure 5-41.
2. Touch the **Runway Surface** field and select the applicable runway surface type as determined from the information in Table 5-62.
3. Touch the **Minimum Runway Length** field and enter the minimum length value from the information in Table 5-62. This field has a range of 0 to 25,000 ft and defaults to 0.
4. Touch the Alert Voice field to toggle between *Female* or *Male*. Female is the default.

5.4.4.2 Charts (GTN 7XX Xi Only)

NOTE

For dual GTN 7XX Xi installations with charts installed, both GTN Xi units must have the same chart source enabled. For example, if FliteCharts is used, both GTN Xi units must have FliteCharts. If ChartView is used, both GTN Xi units must have ChartView.

NOTE

The ChartView Enablement Card can only be used on one GTN Xi (for dual GTN Xi installations, a separate ChartView Enablement Card must be used on each GTN Xi).

NOTE

Navigation or chart data must not be programmed on the ChartView Enablement Card.

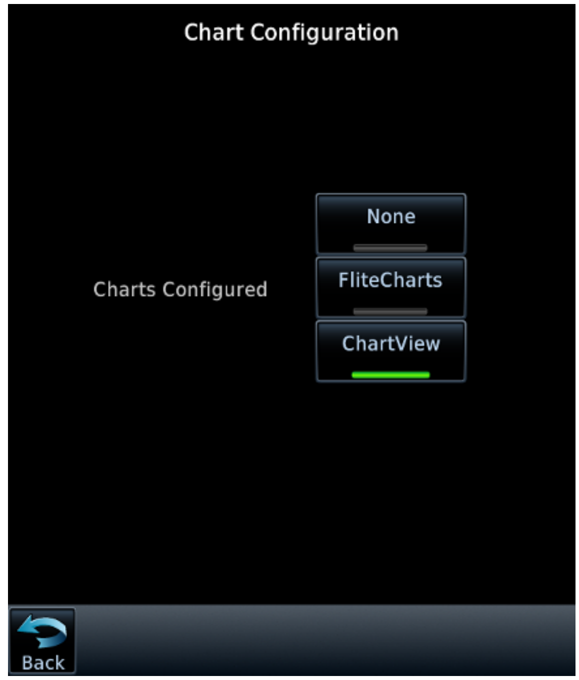


Figure 5-42 Chart Configuration Page

The GTN 7XX Xi can display Jeppesen charts using the optional ChartView feature, which must be activated. To configure which charts to display, touch either **None**, **FliteCharts**, or **ChartView**. If ChartView is selected, it must be enabled as described below:

1. Power off the GTN Xi by pulling the circuit breaker.
2. Remove the database SD card from the data card slot and insert a ChartView Enablement Card (P/N 010-00878-40).
3. Enter Configuration mode on the GTN Xi by applying power to the GTN Xi (closing the circuit breaker) while holding the **HOME** key.
4. Navigate to the ***Charts*** page from the ***GTN Options*** page. Touch the **ChartView** key.
5. When prompted, touch **Yes** to enable ChartView.
6. When the ChartView feature is activated, the **ChartView** key is lit green.

5.4.4.3 COM Transmit Power (GTN 635Xi/650Xi/750Xi Only)

When the optional 16W COM power is configured, the GTN Xi COM will transmit with 16 watts rather than the standard 10 watts. 16W COM transmit power should be enabled for aircraft certified to fly above FL180. This section describes how to enable the 16W COM transmit power.

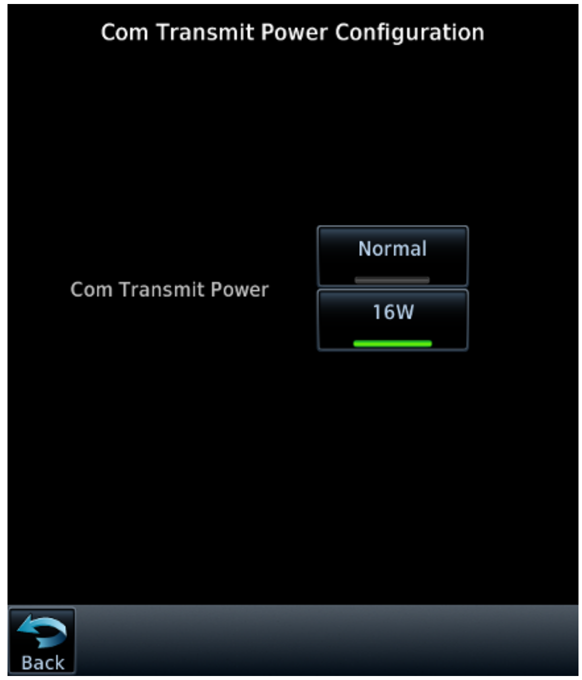


Figure 5-43 COM Transmit Power Configuration Page

NOTE

The 16W COM Enablement Card can only be used on one GTN Xi (for dual GTN Xi installations, a separate Enablement Card must be used on each GTN Xi). A new 16W COM Enablement Card must be used for each GTN Xi that has the 16W COM feature activated.

1. Turn the GTN Xi off by pulling the circuit breaker.
2. Remove the database SD card from the data card slot and insert a 16W Enablement Card (P/N 010-00878-04).
3. Enter Configuration mode by applying power to the GTN Xi (closing the circuit breaker) while holding the **HOME** key.
4. Navigate to the ***COM Transmit Power*** page from the ***GTN Options*** page. Touch the **16W** key.
5. A window will appear with "Enable 16W COM? This will consume a feature unlock key when selected."
6. Touch **Yes** to enable 16W COM.
7. When the 16W COM feature is activated, the **16W** key is lit green.

5.4.4.4 Weather Radar

5.4.4.4.1 Digital Radar (GTN 7XX Xi Only)

This section describes how to enable the Digital Radar feature, which allows approved ARINC 708 Weather Radars to be interfaced with the GTN 7XX Xi.

NOTE

The Digital Radar Enablement Card can only be used on one GTN Xi (for dual GTN Xi installations, a separate Digital Radar Enablement Card must be used on each GTN Xi).

1. Power off GTN Xi by pulling the circuit breaker.
2. Remove the database SD card from the data card slot and insert a Digital Radar Enablement Card (P/N 010-00878-42).
3. Enter Configuration mode on the GTN Xi by applying power to the GTN Xi (closing the circuit breaker) while holding the **HOME** key.
4. Navigate to the ***Weather Radar*** page from the ***GTN Options*** page.
5. Touch the **Digital Radar** key.
6. When prompted, touch **Yes** to enable ARINC 708 Weather Radars. When the feature is activated, the **Digital Radar** key is lit green.

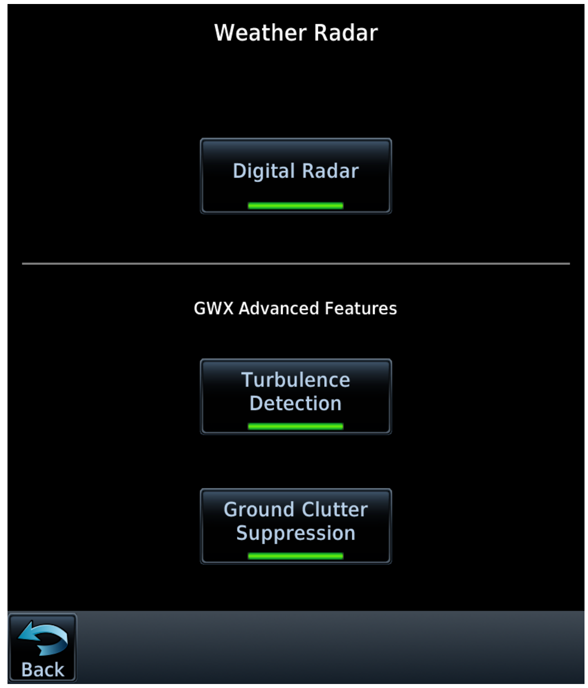


Figure 5-44 Weather Radar Page

5.4.4.4.2 GWX Advanced Features (GTN 7XX Xi Only)

The GTN 7XX Xi can enable two Doppler radar features for the GWX 70/75. A Radar Turbulence Detection Card (P/N 010-00878-45 or 010-00878-47 (dual install)) is needed for Turbulence Detection, and a Radar Automatic Ground Clutter Suppression Enablement Card (P/N 010-00878-44 or P/N 010-00878-46 (dual install)) is needed for Ground Clutter Suppression.

To enable Radar Turbulence Detection or Ground Clutter Suppression:

1. Power off the GTN Xi by pulling the circuit breaker.
2. Remove the database SD card from the data card slot and insert a Radar AGCS Enablement Card (P/N 010-00878-44 / 010-00878-46) or Radar Turbulence Detection Enablement Card (P/N 010-00878-45 / 010-00878-47).
3. Enter Configuration mode on the GTN Xi by applying power to the GTN Xi (closing the circuit breaker) while holding the **HOME** key.
4. Navigate to the ***Weather Radar*** page from the ***GTN Options*** page.
5. Touch the **Turbulence Detection** or **Ground Clutter Suppression** key.
6. When prompted, touch **Yes** to enable the selected GWX 70/75 advanced feature. When the feature is activated, the selected **GWX 70/75 Advanced Feature** key is lit green.

5.4.4.5 Search and Rescue

This option enables up to four unique search and rescue flight plan patterns. Enabling this functionality provides a means for the crew to easily create Orbit, Expanding Square, Parallel Track, and/or Sector Search flight plan patterns via the ***Flight Plan*** page or Direct-to pop-up menu.

Access the ***Search and Rescue*** page by touching the **Search and Rescue** key on the ***GTN Options*** page.

NOTE

A GTN 6XX/7XX Search and Rescue Enablement Card is needed for Search and Rescue.

The GTN 6XX/7XX Search and Rescue Enablement Card is only used on one GTN Xi. In a dual GTN Xi installation or GTN Xi/GTN 6XX/7XX installation, when Search and Rescue is enabled on one GTN 6XX/7XX or GTN Xi, the enablement is automatically transferred to the other unit. The SAR status will display "Unlocked Remotely." If the originally enabled unit is disconnected from the second unit, then Search and Rescue is disabled on the unit that was remotely unlocked. The SAR status displays, "Unavailable – Remote Unlock Missing."

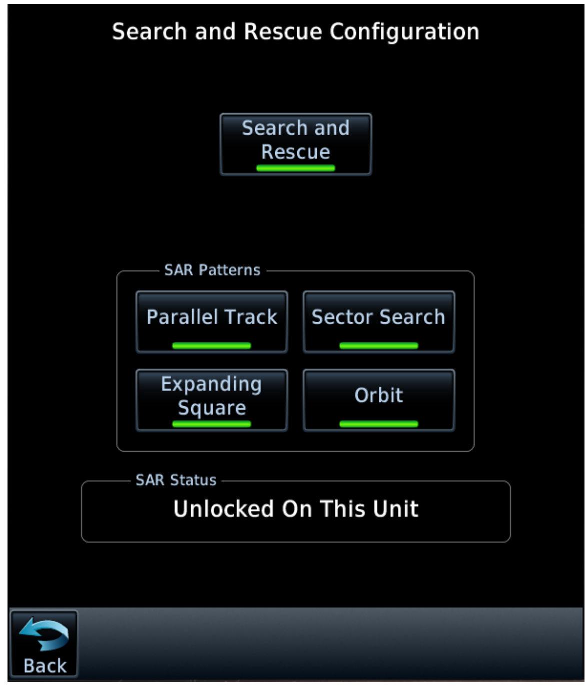


Figure 5-45 Search and Rescue Page

To enable the Search and Rescue feature on the GTN Xi:

1. Power off the GTN Xi.
2. Remove the database SD card from the SD card slot.
3. Insert a GTN 6XX/7XX Search and Rescue Enablement Card.
4. Power on the GTN Xi in Configuration mode.
5. Touch the **Search and Rescue** key on ***GTN Options*** page.
6. Touch the **Search and Rescue** key on ***Search and Rescue Configuration*** page.
7. When prompted, touch **Yes** to enable Search and Rescue. When this feature is activated, the **Search and Rescue** key appears green and the SAR status displays "Unlocked On This Unit."
8. Select the SAR Patterns to be used in Normal mode. Selections are Parallel Track, Sector Search, Expanding Square, and Orbit.

5.4.5 GTN Diagnostics Page

The ***GTN Diagnostics*** page, shown in Figure 5-46, is accessed from the Configuration mode home page and is a useful diagnostic and troubleshooting tool. Ground checks are also performed using the tools in this page. The following sections describe pages that are accessed from the ***GTN Diagnostics*** page.

Figure 5-46 GTN Diagnostics Page

5.4.5.1 ARINC Inputs

The ***ARINC Inputs*** diagnostics page allows the display of ARINC 429 data being received over each ARINC 429 port. Each port can be chosen for display by touching the **Port** key and toggling between the input ports. Select a port to display. The GTN Xi will then display the label, SSM, Data, and SDI for each ARINC 429 input port. This is useful for determining if the expected labels are being received and also for troubleshooting incorrect or swapped wiring to the input ports. The data log can be paused by toggling the **Pause** key. Clear the data log by touching **Clear Log**.

5.4.5.2 Serial Inputs

The ***Serial Inputs*** page allows the display of serial data being received and is useful for determining if the GTN Xi is receiving data on each connected port. Select the desired port by touching the **Port** key and selecting the RS-232 channel from the list. The data log can be paused by toggling the **Pause** key. Clear the data log by touching **Clear Log**.

5.4.5.3 Discrete Inputs

The ***Discrete Inputs*** page displays the state of each of the discrete input pins on the GTN Xi. This page is useful for troubleshooting discrete wiring. Refer to Section 6.1.3 for the discrete input checkout procedure.

5.4.5.4 Discrete Outputs

The ***Discrete Outputs*** page allows the state of each of the discrete outputs to be toggled between active and inactive. This is useful for ensuring annunciator and signal outputs are properly connected to annunciator lights or third-party LRUs and they are receiving the signal. Refer to Section 6.1.4 for the discrete output checkout procedure.

5.4.5.5 HSDB (Ethernet)

The ***HSDB Diagnostics*** page allows the status of each HSDB port to be displayed. This page displays whether each port is connected or not connected and whether or not it is receiving data. The configuration status of each installed HSDB LRU is also displayed. Refer to Section 5.4.3.3 for HSDB port configuration instructions.

5.4.5.6 Main Indicator (Analog)

The ***Main Indicator Diagnostics*** page allows the CDI connected to the main board (P1001) to be ground checked and allows the interface to be verified. Refer to Section 6.1.1 for the main indicator checkout procedure.

5.4.5.7 Analog Inputs

The ***Analog Inputs*** page displays the bus voltage setting for Lighting Bus 1 and Lighting Bus 2, as well as the input voltage setting for each bus. It also displays synchro heading input diagnostics information, such as heading angle, heading valid status, AC voltage, and AC frequency.

5.4.5.8 Power Stats

The ***Power Statistics*** page displays the number of times the GTN Xi has powered up, as well as the total elapsed operating hours for the GTN Xi.

5.4.5.9 WAAS

The ***WAAS Diagnostics*** page displays the WAAS engine status, including UTC date and time, current latitude and longitude, overall navigation status, oscillator temperature, and AGC voltage. This page also allows the GPS/SBAS engine to be reset.

5.4.5.10 Temps

The ***Temperatures*** page displays the current, minimum, maximum, and average board temperatures for the LED Board, Main Board, Display Interface Board, GPS/SBAS Board, COM Board, and COM Oscillator.

5.4.5.11 Logs

The ***Logs*** page allows the error, connection, WAAS diagnostic, and flight data logs to be written to the SD card in the front slot. It also allows the error and WAAS diagnostics logs to be cleared.

5.4.5.12 Main Data Inputs

The ***Main Data Inputs*** page allows the data on ARINC 429, RS-232, and other electrical inputs to be monitored during installation and troubleshooting. Information that is not being received by the GTN Xi is dashed out. The data displayed is prioritized according to the scheme outlined in Section 3.6.3, if the data is being received on multiple inputs. Refer to Section 6.1.10 for checkout procedure utilizing this page.

5.4.5.13 VOR/ILS Indicator (Analog) (GTN 650Xi/750Xi Only)

The ***VOR/ILS Indicator Diagnostics*** page allows the CDI connected to the NAV board (P1004) to be ground checked and allows the NAV indicator interface to be verified. Refer to Section 6.1.2 for the ground check.

5.4.5.14 Com Board (GTN 635Xi/650Xi/750Xi Only)

The ***Com Board Diagnostics*** page allows the com board interfaces to be verified. Information that is not being received by the GTN Xi is dashed out.

5.4.5.15 Clear Config Settings

CAUTION

*This key should only be touched if the intent is to clear all configuration settings. Touching the **Clear Config Settings** key opens a confirmation window to reset all of the settings stored in the configuration module to their defaults.*

5.4.6 External Systems

The following section contains procedures for configuring remote mount units that are connected to the GTN Xi. To configure external systems using the GTN Xi, touch the **External Systems** key from the Configuration mode home page.

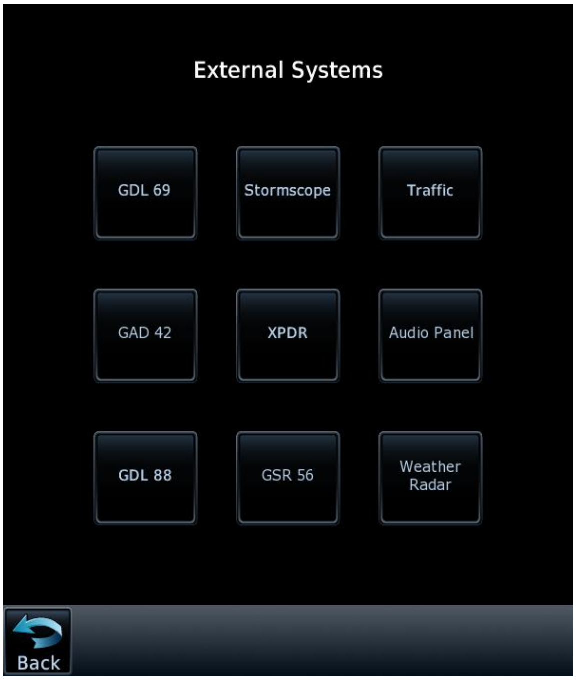


Figure 5-47 External Systems Page

5.4.6.1 GDL 69

If installed, the GDL 69/69A must be configured to match the installation. Follow the steps below:

1. Navigate to the ***GDL 69/69A Configuration*** page. This can be accessed from the ***External Systems*** page, shown in Figure 5-47.
2. Adjust the Antenna Gain and Cable Loss to match the installation. Refer to *GDL 69/69A Installation Manual* to determine the correct values.
3. Enable any GDL 69/69A HSDB ports as required by the installation.

NOTE

The GDL 69/69A XM must be activated before use. If XM activation has not been done, refer to GDL 69/69A Installation Manual or GDL 69 Series TSO Manual and GDL 69/69A XM Activation Instructions.

5.4.6.2 Stormscope

NOTE

*The **Stormscope** pages are only available if the WX-500 is connected to the RS-232 channel, which is configured for the WX-500.*

Select the ***Stormscope*** page, shown in Figure 5-48, from the ***External Systems*** page. The WX-500 Stormscope configuration is reported by the WX-500 through RS-232 data.

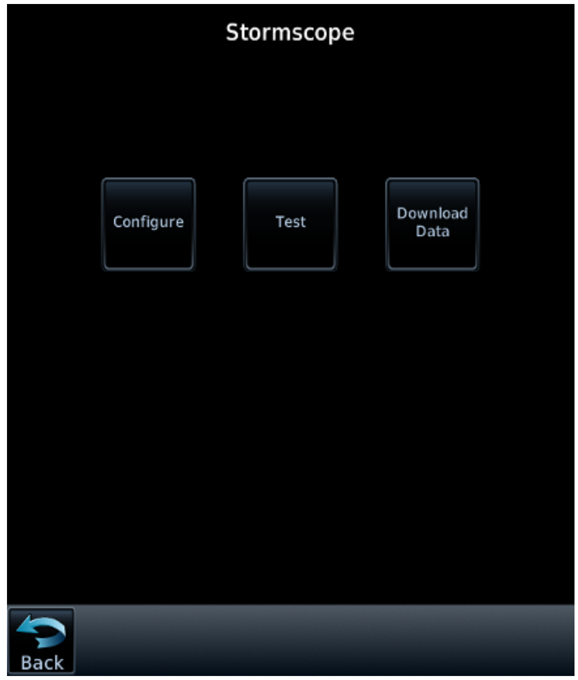


Figure 5-48 Stormscope Page

5.4.6.2.1 Stormscope Configuration

To display the Stormscope Configuration information, touch the **Configure** key on the ***Stormscope*** page, shown in Figure 5-48. Verify the Status field indicates "OK" and the other displayed parameters are correct based upon the installation. Refer to the configuration information in the WX-500 Installation Manual to determine the correct configuration.

When a GTN Xi is interfaced with a WX-500 Stormscope, the "Synchro" or "Serial" heading formats may be used. If another heading format is used, lightning strike information is visible on the ***Weather*** page, but not the ***Map*** page.

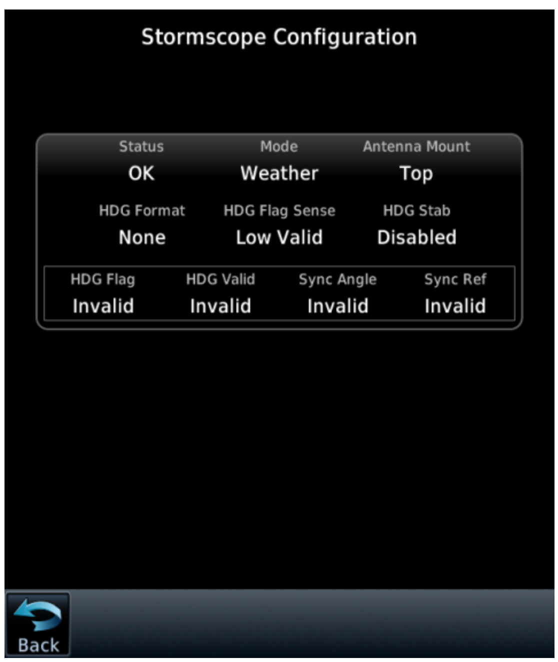


Figure 5-49 Stormscope Configuration Page

5.4.6.2.2 Stormscope Test Page

To access the ***Stormscope Test*** page, shown in Figure 5-50, select the **Stormscope Test** key from the ***Stormscope*** page. This page shows current strike activity, WX-500 status, and the heading supplied by the WX-500. The WX-500 mode may be changed to *Cell, Strike, Noise, Strike Test, Self Test,* and *Demo*.

The strikes can be cleared from the display by touching the **Clear Strikes** key. The view can be changed by touching either the **360˚** key or the **Arc** key.

Verify the WX-500 mode can be changed. Refer to the WX-500 manual for specific installation test procedures for the WX-500, using this page to view strike data, change the WX-500 mode, view WX-500 status, trigger count, and heading.

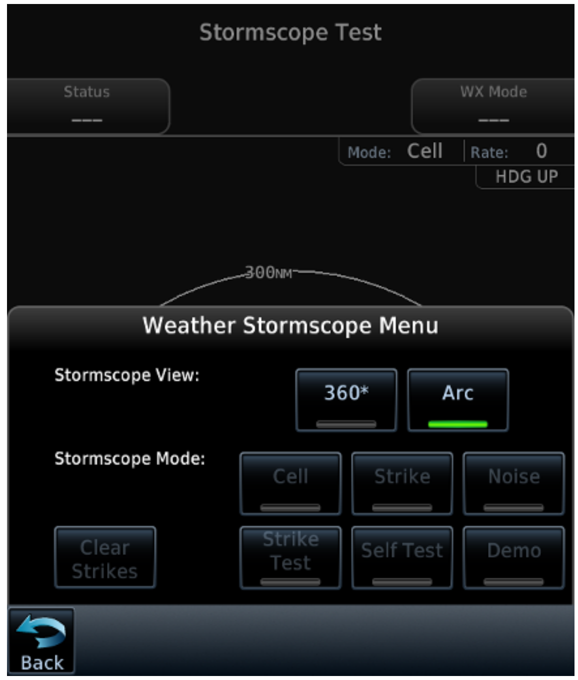


Figure 5-50 Stormscope Test Page

5.4.6.2.3 Stormscope Download Data Page

Select the **Download Data** key from the ***Stormscope*** page. This page shows raw data downloadable from the WX-500. Optional sets of data include WX-500 software version, configuration data, environment data, and fault log data.

Verify the configuration data is correct as intended. To request which packet of data to display, touch the key underneath "Data to Display" and select a data type from the menu.

5.4.6.3 Traffic Test Page

NOTE

The following pages are only available if one of the ARINC 429 or RS-232 inputs is configured for a traffic format.

The ***Traffic Test*** page displays the traffic system modes of operation and current traffic situation.

Depending on the type of traffic system installed, the information displayed on the ***Traffic Test*** page can vary.

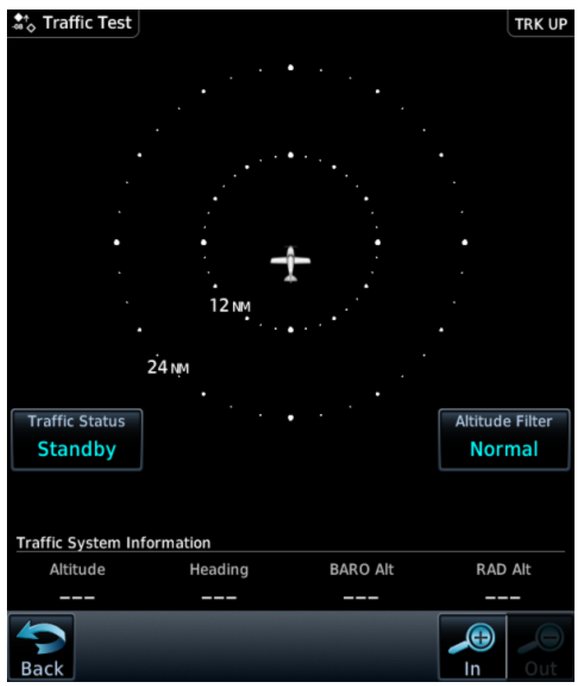


Figure 5-51 Traffic Test Page

5.4.6.3.1 Ryan TCAD

For Ryan TCAD, the ***Traffic Test*** page displays the following data:

- Current shield mode
- Altitude filter-Normal
- Above, Below, and Unrestricted
- Barometric pressure

By touching **Menu**, the traffic menu can be displayed. Under Traffic Audio, the mute duration (9900B only) and traffic audio volume can be set, and the TCAD can be toggled between voice and tone alerts. Under Shield Setup, the shield settings can be configured for the various shield types. Also, Ground Mode (9900BX only) and APPR mode can be toggled.

5.4.6.3.2 Other Traffic Systems

For traffic systems other than Ryan TCAD, the ***Traffic Test*** page displays the following data:

- Altitude filter—Normal, Above, Below, and Unrestricted
- Operating mode—Standby, Operate, or TAS Fail
- Altitude
- Heading
- BARO Alt and RAD Alt status

5.4.6.4 GAD 42 Configuration

The GAD 42 can be configured by the GTN Xi if an ARINC 429 input is connected to the GAD 42. To configure the GAD 42, select the ***External Systems*** page group and then touch the **GAD 42** key.

The ***GAD 42 Configuration*** page allows remote configuration of the GAD 42 Interface Adapter. For details on how to configure the unit, refer to Section 5 of *GAD 42 Installation Manual* (P/N 190-00159-00).

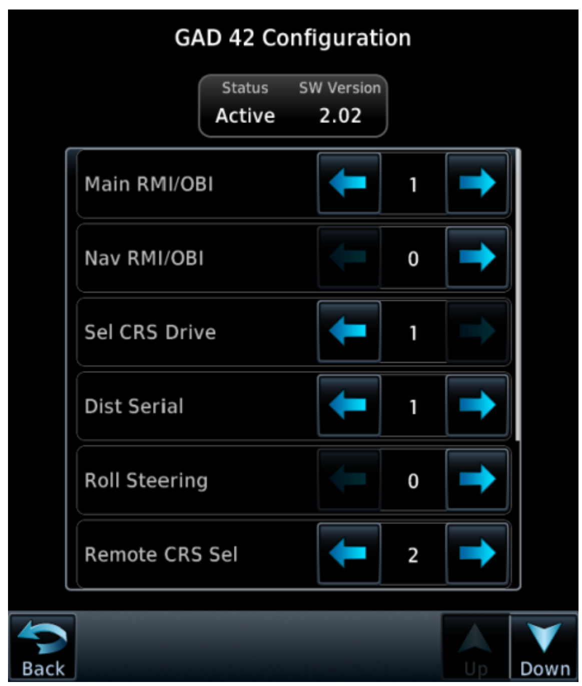


Figure 5-52 GAD 42 Configuration Page

5.4.6.5 XPDR

A remote transponder (GTX 32/33) can be configured by the GTN Xi via RS-232 if it is configured for one of the RS-232 ports. To configure the transponder, it must first be selected as present and the type of transponder installed must be specified. To do this, refer to the Transponder #1 and Transponder #2 subsection of Section 5.4.3.4. Next, navigate to the ***External Systems*** page and touch the **XPDR** key. This displays the page shown in Figure 5-53, which allows the remote transponder to be configured.

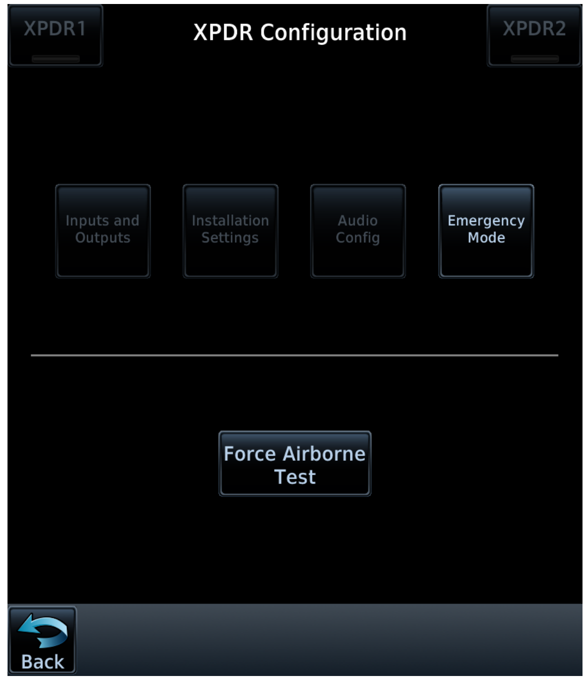


Figure 5-53 XPDR Configuration Page

NOTE

The GTX 335R/345R must be configured via the GTX 3X5 Install Tool. Refer to GTX 3X5 TSO Installation Manual for more information.

NOTE

If the GTN Xi controls any transponder (GTX 32/33/327/328/330/335/335R/345/345R), the transponder will boot into the same mode (Normal or Configuration) as the GTN Xi.

NOTE

If the GTN Xi is not communicating with the GTX transponder, all of the editable fields for the setup items shown in the following sections will be dashed out. If the fields are dashed out, check the wiring and pin connections from the GTN Xi to the transponder.

NOTE

The GTN Xi can interface to the GTX 327/328/330/330 ES; however, configuration of the panel-mounted GTX 327/328/330/330 ES/335/345 is not supported. These transponders should be configured per their installation manuals rather than through the GTN Xi.

5.4.6.5.1 XPDR Inputs and Outputs

Access the ***XPDR( ) Inputs/Outputs*** page, shown in Figure 5-54, by touching the **Inputs and Outputs** key from the ***XPDR Configuration*** page. The transponder RS-232 channel inputs can be configured by the GTN Xi. RS-232 channel 1 input for the transponder can only be set to *Remote* and is the default for channel 1 input. RS-232 channel 1 is used for control and remote configuring of the transponder.

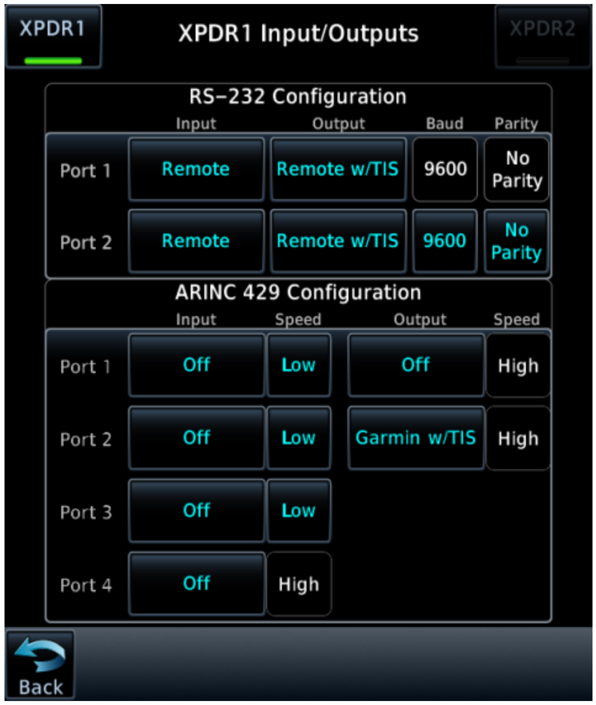


Figure 5-54 XPDR Inputs/Outputs Page

5.4.6.5.1.1 XPDR RS-232 Configuration

The following outlines RS-232 channel settings and describes what each setting is used for. Select the correct input/output setting based upon the installed interfaced equipment. It is not necessary to select the baud rate for the transponder port to which the GTN Xi is connected.

Table 5-63 RS-232 Channel 1 Inputs

Selection	Description
Remote	The RS-232 port is configured for remote control by the GTN Xi.

Table 5-64 RS-232 Channel 1 Outputs

Selection	Description
Remote	RS-232 serial output remote data.
Remote + TIS	RS-232 serial output remote data with TIS.

Table 5-65 RS-232 Channel 2 Inputs

Selection	Description
OFF	DEFAULT. The altitude code input is not from an RS-232 source.
Airdata Format 1	RS-232 serial air data information from Shadin ADC 200, 200+, 2000 plus altitude data. This input is the same as ADC W/ALT in the GTX 330.
Airdata Format 2	RS-232 serial air data information from Shadin ADC 200, 200+, 2000. This input is the same as ADC no ALT in the GTX 330.
Altitude Format 1	RS-232 serial altitude from an Icarus Instruments 3000. This input is the same as ICARUS ALT in the GTX 330.
Altitude Format 2	Reports Icarus Instruments 3000 altitude in 25-foot increments. This input is the same as ICARUS ALT 25 FT in the GTX 330.
Altitude Format 3	RS-232 serial altitude from Shadin 8800T, 9000T, 9200T. This input is the same as SHADIN ALT in the GTX 330.
Altitude Format 4	Reports Shadin 8800T, 9000T, 9200T altitude in 25-foot increments. This is the same as SHADIN ALT 25 Ft in the GTX 330.
FADC Format 1	RS-232 serial air data from Shadin 9628XX-X family of Air Data Computers and Fuel/Air Data Computers plus altitude data. This input is the same as FADC w/ ALT in the GTX 330.
FADC Format 2	RS-232 serial air data from Shadin 9628XX-X family of Air Data Computers and Fuel/Air Data Computers. This input is the same as FADC NO ALT in the GTX 330.
GPS	RS-232 groundspeed from a GPS device.
REMOTE	RS-232 serial input remote data.
GNS	RS-232 serial output to a Garmin GNS.

Table 5-66 RS-232 Channel 2 Outputs

Selection	Description
OFF	Default for channel 2. No unit is connected to the output of this channel.
Altitude Format 1	RS-232 serial altitude from an Icarus Instruments 3000.
REMOTE	RS-232 serial output remote data.
REMOTE w/TIS	RS-232 serial output remote data with TIS.
GNS	RS-232 serial input from a Garmin GNS.

Baud Rate Selection

Select the baud rate for each RS-232 channel.

NOTE

The GTX will force the RS-232 configuration to 38400 baud, no parity for the GNS format. All other formats use 9600 baud, no parity. The other baud rate and parity options are not valid.

Table 5-67 RS-232 Baud Rate Selections

Selection	Description
9600	Sets the baud rate to 9600 Bd.
19200	Sets the baud rate to 19200 Bd.
28800	Sets the baud rate to 28800 Bd.
38400	Sets the baud rate to 38400 Bd.
57600	Sets the baud rate to 57600 Bd.

Parity Selections

Select the parity for RS-232 channel 2.

Table 5-68 RS-232 Parity Selections

Selection	Description
Even Parity	Sets the Parity to Even.
No Parity	Sets the Parity to None.
Odd Parity	Sets the Parity to Odd.

5.4.6.5.1.2 XPDR ARINC 429 Configuration (GTX 33 Only)

Refer to the *GTX 330/330D Installation Manual* (Garmin P/N 190-00207-02) for a list of labels supported by each format. Configure the four ARINC 429 input ports and the two ARINC 429 output ports. Select the correct speed for each port depending upon the installed interfaced equipment by touching the **Speed** key and toggling *High* or *Low*. Each port can be configured independently for the desired functions by selecting the desired data format from the menu.

Table 5-69 ARINC 429 Speed Selections

Selection	Description
Low	Standard low-speed ARINC 429 (nominally 12.5 Kb per second)
High	High-speed ARINC 429 (nominally 100 Kb per second)

ARINC 429 Input Selections

Select the correct Data In and Data Out settings for each port. The data selections are described below.

Table 5-70 ARINC 429 Input Selections

Channel	Selection	Description
All	OFF	No unit connected to this ARINC 429 input.
1 Through 3	GPS	Selected waypoint information and GPS groundspeed recognition.
	ADC NO ALT	Temperature and speed information.
	ADC W/ALT	Altitude, temperature, and speed information.
	AHRS	Attitude and heading information.
	EFIS/ADC NO ALT	Selected course, heading, temperature, joystick waypoint, and speed information.
	EFIS/ADC W/ALT	Selected course, heading, temperature, joystick waypoint, and speed information plus altitude data.
	GARMIN DISPLAY	Same as GPS with added ability of receiving phase of flight data.
	GARMIN TAS	Traffic Advisory System discretes.
	GARMIN 743A	Standard GNSS output. Includes position, velocity, and integrity data.
	AFCS	Selected altitude, baro setting, and pitch discretes.
4 [1]	ADLP	Airborne Data Link Processor. ADLP is available only on channel 4.

Notes:

[1] This format not available for GTX v8.00 or later.

ARINC 429 Output Selections

ARINC 429 Channel 1 defaults to *Off*. ARINC 429 Channel 2 defaults to *Garmin w/ TIS*. The GTX 33 can be configured to include GPS, Airdata, AHRS, EFIS/Airdata, and ADLP ARINC 429 input, functioning as an ARINC 429 data concentrator. Each output port can be configured independently for the desired function. Both ARINC 429 outputs send high speed ARINC 429 data.

Selection	Description
CHANNEL 1 (DATA)	• DATA SOURCE: OFF, ADLP, GARMIN, GARMIN TAS, or GARMIN W/TIS. • DEFAULTS to OFF. • ARINC 429 input channel 4 sets the ARINC 429 output channel 1 to the same selection.
CHANNEL 2 (DATA)	• DATA SOURCE: OFF, GARMIN, GARMIN TAS, or GARMIN W/TIS. • DEFAULTS to GARMIN W/TIS. • Do not select GARMIN W/TIS if the aircraft contains another traffic detection system.

5.4.6.5.2 XPDR Installation Settings Page

VFR Button Code

Input a VFR transponder code by touching the key and typing the selected code into the keypad. This field has a range of 0000-7777.

NOTE

Exercise care when making routine code changes. Enter only valid VFR codes. Avoid using code 7500 and codes in the 7600-7777 range, as these codes trigger special indicators in automated facilities.

Figure 5-55 XPDR Installation Settings Page

Aircraft Weight

Select the weight of the aircraft in which the transponder is installed.

Table 5-71 Aircraft Weight

Selection	ADS-B Emitter Category	Description
<15,500 LBS	Set A, Light Airplane	Configures the aircraft weight to less than 15,500 lbs.
>=15,500 LBS	Set A, Small Airplane	Configures the aircraft weight to equal to or greater than 15,500 lbs.
ROTORCRAFT	Set A, Rotorcraft	Configures to rotorcraft use.
UNKNOWN	Set A, No Emitter Category	Aircraft weight is unknown.

Auto Standby Delay (GTX software v7.04 and earlier)

This is the number of seconds the aircraft must be on the ground before the transponder automatically switches to GND mode when it has a means of determining the aircraft is on the ground. It has a range of 0 seconds to 99 seconds. The default value of 24 seconds is a nominal value for most aircraft. This value can be changed depending on the types of operations the aircraft is expected to perform.

Vertical Speed (VS) Rate

This is the vertical speed climb rate required in order to transition from ground to airborne state. This field is adjustable from 100 fpm to 9999 fpm. This field should be set to the typical vertical speed climb rate of the aircraft. The VS climb rate is necessary for the GTX to assume liftoff for detecting an airborne state. Refer to the Pilot's Operation Handbook (POH) to determine this value. If the POH does not include aircraft climb rate information, use the default value of 300 fpm.

Air/Ground Logic

Select the source for the air/ground logic.

Table 5-72 Air/Ground Logic

Selection	Description
Auto Airborne Off	This is not a valid setting.
Squat Switch	The transponder is connected to a squat switch to determine airborne state.
GPS Data	Select this setting if a squat switch is not installed and any GTX input port is configured for **GPS**.
Altitude Data	Select this setting if a squat switch is not installed and no GTX input ports are configured for **GPS**.

Squat Switch Sense

The squat switch sense field may be set to either *High* or *Low*. If the air/ground logic field is set to squat switch, the squat switch sense field is used to define the state of the squat switch input. If the squat sense field is set to High, then when the squat switch input is high, the aircraft is considered to be on the ground. If the squat sense field is set to Low, then when the squat switch input is low, the aircraft is considered to be on the ground.

Maximum Airspeed (GTX 33 only)

Select the maximum true airspeed for the aircraft. The default is <= 150 KTS.

Table 5-73 Maximum Airspeed (GTX 33 Only)

Selection	Description
<= 75 KTS	Max aircraft operating speeds less than or equal to 75 knots TAS.
<= 150 KTS	Max aircraft operating speeds less than or equal to 150 knots TAS.
<=300 KTS	Max aircraft operating speeds less than or equal to 300 knots TAS.
<=600 KTS	Max aircraft operating speeds less than or equal to 600 knots TAS.
<=1200 KTS	Max aircraft operating speeds less than or equal to 1200 knots TAS.
>1200 KTS	Max aircraft operating speeds greater than 1200 knots TAS.
UNKNOWN	Max aircraft speed is unknown.

Address Type (GTX 33 only)

Select the method of entry of the aircraft address.

Table 5-74 Address Type (GTX 33 Only)

Selection	Description
US Tail	N-Registration Number.
HEX ID	Allows technician to enter the aircraft registration number in hexadecimal code format.

Flight ID Type (GTX 33 only)

Select the flight ID type. For operation requiring the flight crew to enter an aircraft identification designator, select the page identified as PILOT ENTRY. When this choice is selected and the crew enters the flight ID type correctly, the flight number call sign for radio contact with ATC is the same flight identification the GTX 33 Mode S transponder replies to ATC radar interrogations.

Table 5-75 Flight ID Type

Selection	Description
CONFIG ENTRY	Allows technician to enter flight ID while in Configuration mode only.
PILOT ENTRY	Allows pilot/technician to enter flight ID in the GTN Xi in Normal mode.
SAME AS TAIL	If Address Type is US Tail, allows flight ID to use the same number.

Selecting PILOT ENTRY allows the flight ID to remain the same as entered during the previous flight until it is updated, the crew is not prompted to update the flight ID. The selections SAME AS TAIL and CONFIG ENTRY are fixed Mode S addresses.

Flight ID (GTX 33 only)

Enter the flight ID number of the aircraft. This field allows eight alphanumeric characters.

Aircraft Length (GTX 33 only)

This field sets the length of the aircraft to less than or equal to 15 meters (49 feet), less than or equal to 25 meters (82 feet), less than or equal to 35 meters (115 feet), less than or equal to 45 meters (148 feet), less than or equal to 55 meters (180 feet), less than or equal to 65 meters (213 feet), less than or equal to 75 meters (246 feet), less than or equal to 85 meters (279 feet), or more than 85 meters (279 feet). Enter the aircraft's minimum length category.

Aircraft Width (GTX 33 only)

This field sets the wingspan of the aircraft to less than or equal to 11.5 meters (38 feet), less than or equal to 23.0 meters (75 feet), less than or equal to 28.5 meters (94 feet), less than or equal to 33.0 meters (108 feet), less than or equal to 34.0 meters (112 feet), less than or equal to 38.0 meters (125 feet), less than or equal to 39.5 meters (130 feet), less than or equal to 45.0 meters (148 feet), less than or equal to 52.0 meters (171 feet), less than or equal to 59.5 meters (195 feet), less than or equal to 67.0 meters (220 feet), less than or equal to 72.5 meters (238 feet), less than or equal to 80.0 meters (262 feet), or more then 80.0 meters (262 feet). Enter the aircraft's minimum width category.

Enhanced Surveillance (GTX 33 only)

This field sets Enhanced Surveillance (EHS) to *DISABLE* or *ENABLE*. When EHS is set to DISABLE, the enhanced surveillance function is not available.

Source Integrity Level (GTX 33 only)

This field sets the correct GPS Integrity for the GTX interface when it is used for AC 20-165( ) compliant ADS-B Out. When a GTX 33 is interfaced to the GTN Xi, the GPS Integrity **must** be set to 10^-5 for GTX software v7.01 and earlier, and 10^-7 for GTX software v7.02 or later when the GTN Xi "+" RS-232 formats (e.g., GTX Mode S+, ADS-B+, etc.) are configured (refer to Section 5.4.3.4). If the GTX 33 is not being used for ADS-B Out, the GPS Integrity setting is not important.

Temperature Switch Installed (GTX 33 only)

This field determines if a temperature switch is connected to the GTX 33. Select *Yes* if a temperature switch is connected to the transponder. Select *No* otherwise.

1090 Input (GTX 33 only)

The 1090 input setting may be set to either *Enabled* or *Disabled*. This setting controls bits in the ADS-B Out message that indicates whether the aircraft is equipped with the capability to receive ADS-B 1090 MHz messages. If the aircraft has this capability, this should be set to *Enabled*; otherwise, this setting should be set to *Disabled*.

ADS-B Out (GTX 33ES only)

This field controls the ADS-B Out function of the transponder. The options are: *Enable*, *Disable*, and *Pilot Set*. This setting enables or disables the ADS-B Out function from transponders that are capable of ADS-B Out.

UAT Input (GTX 33 only)

The UAT Input setting may be set to either *Enabled* or *Disabled*. This setting controls bits in the ADS-B Out message that indicate if the aircraft is capable of receiving ADS-B and Ground Uplink UAT messages. If the aircraft has this capability, this should be set to *Enabled*; otherwise, this setting should be set to *Disabled*.

GPS Antenna Longitudinal Offset (GTX 33 only)

This field sets the longitudinal offset of the GPS antenna measured from the nose of the aircraft. The valid input range for this setting is from 2 to 60 meters.

GPS Antenna Lateral Offset (GTX 33 only)

This field sets the lateral offset of the GPS antenna measured from the centerline of the aircraft. The valid input range for this setting is from 0 to 6 meters (left or right, looking forward).

Auto ALT

This setting determines whether the GTX will automatically transition to ALT mode when it detects a takeoff.

Aircraft Stall Speed

Sets the stall speed of the aircraft to either *DEFAULT* or a fixed speed between 30 and 200 knots. Enter the aircraft's minimum stall speed based on the speed documented in the Pilot's Operating Handbook (POH) or Aircraft Flight Manual (AFM).

5.4.6.5.3 XPDR Audio Configuration

Select the **Audio Config** key from the Transponder Configuration menu. The ***XPDR Audio Configuration*** page, shown in Figure 5-56, will display the following information:

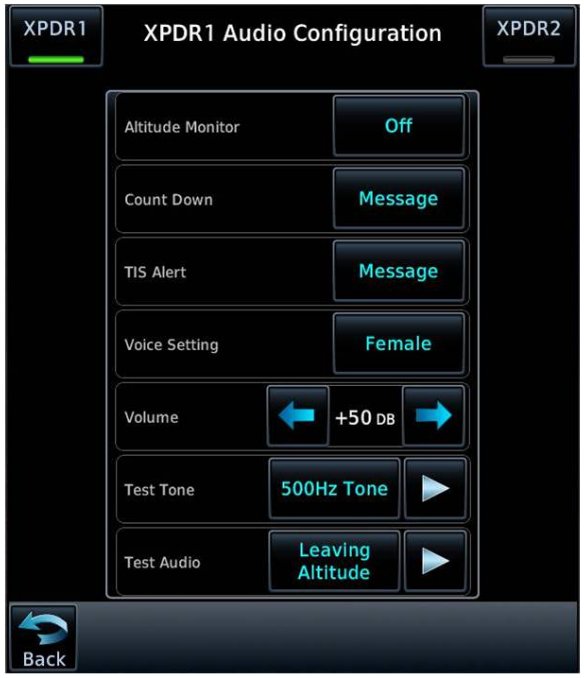


Figure 5-56 XPDR Audio Configuration Page

Altitude Monitor

This configuration is not used for remote-mounted transponders.

Countdown Timer

This configuration is not used for remote-mounted transponders.

TIS Alert

Select the desired audio type for TIS alerts. The choices are *Off*, *Tone*, or *Message*.

Voice Setting

Set the voice type to *Male* or *Female*.

Volume

Adjust the desired volume level for transponder audio.
Volume is adjusted from 0 to +63 dB. Verify the volume level is sufficient for all anticipated cockpit noise environments.

Test Tone

Select the desired test tone. Options are *500Hz Tone* or *Tone*. Touching the play key (triangle) will play the selected test tone.

Test Audio

Select the desired audio test message. Touching the play key (triangle) will play the selected test audio.

5.4.6.5.4 XPDR Emergency Mode

The default *Disabled* must be selected per this STC.

When the volume knob is held down in Normal mode, the GTN Xi will automatically change the COM frequency to the emergency frequency. When XPDR Emergency Mode is enabled, holding the knob will simultaneously change the transponder code to the designated code if the GTN Xi is configured for control of a transponder. The default transponder code is *7700*.

5.4.6.5.5 Force Airborne Test *(GTX Software v8.XX or Later)*

The **Force Airborne Test** key allows the installer to place the transponder in Airborne mode while on the ground. This functionality allows the installer to perform the GTX checkout procedures, which require the unit to be in Airborne mode. Once **Force Airborne Test** is touched, the installer will be notified the GTX unit will be forced into Airborne mode following the next GTN Xi power cycle. At this time, power may be removed and reapplied to the GTN Xi to force the In-Air state.

NOTE

When the GTN Xi is rebooted, the unit will force all connected transponders into the airborne state.

For additional details, refer to Table 1-5 for the part number of the applicable GTX installation manual.

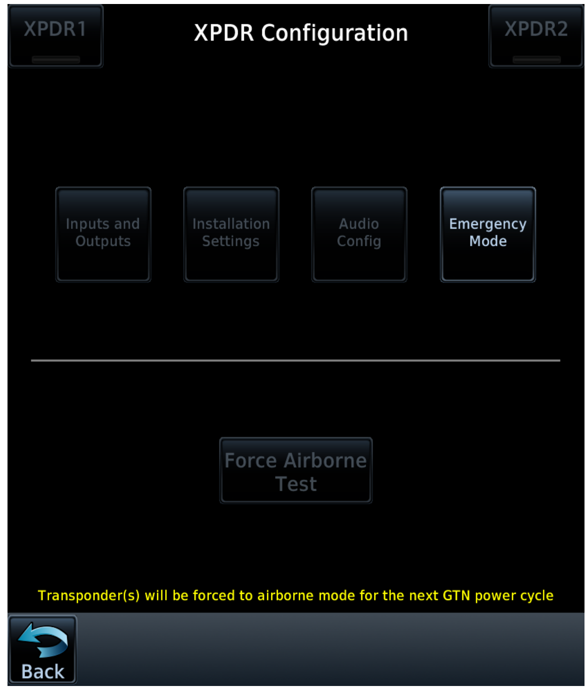


Figure 5-57 XPDR1 Configuration Page - Force Airborne Test

5.4.6.6 Audio Panel (GMA 35/35c)

If a GMA 35/35c Audio Panel is configured to a GTN 7XX Xi via RS-232, then the page shown in Figure 5-58 will be available. To configure the port, it must first be set to *Present* and then *GMA Format 1* selected. Next, navigate to the ***External Systems*** page and touch the **Audio Panel** key.

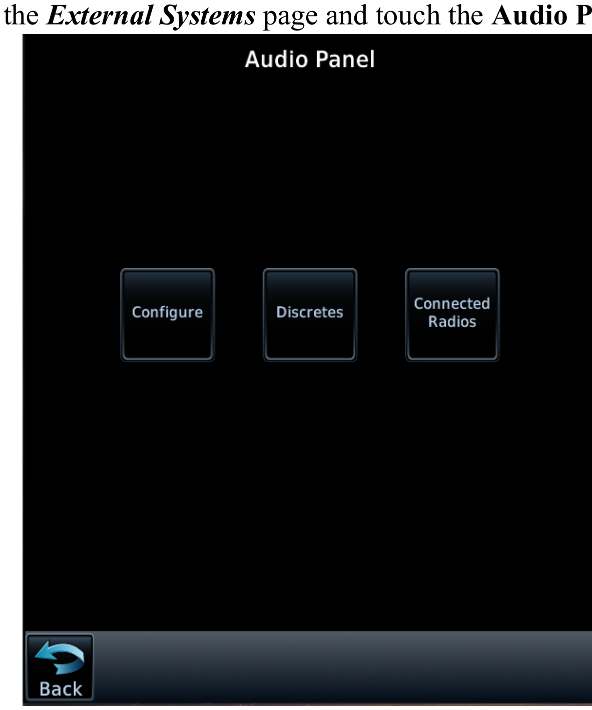


Figure 5-58 Audio Panel Page

5.4.6.6.1 Audio Terminology

The following terms will be used throughout the audio panel configuration sections and are defined here:

- **ALERT** - Unswitched inputs. These inputs are typically warnings, and there is no way for the user to de-select the audio
- **COPILOT** - The second crewmember is considered the COPILOT. The copilot is typically the front-right seat for airplanes
- **CREW** - Refers to aircraft occupants who can transmit on radios (i.e., PILOT and COPILOT). In certain installations, each crewmember may be able to individually select radios
- **ICS** - Intercom Communication System - This refers to the distribution of microphone audio for each occupant in the aircraft
- **PA** - Passenger Address - This refers to a crewmember broadcasting audio to the passengers, either through headsets or speakers, outside of the ICS distribution
- **PASSENGERS** - Occupants considered passengers are not able to transmit or select individual radios and are treated as a group in which each PASSENGER hears the same audio
- **PILOT** - The first crewmember is considered the PILOT. The pilot is typically the front-left seat for airplanes. This crew position will always hear Selected Audio (SA)
- **PTT** - Push-To-Talk - This refers to keyed microphone transmissions. An input must be activated before the microphone audio is transmitted
- **PRIMARY RADIO** - For a crewmember, the Primary Radio is the radio selected for transmission. A Push-to-talk (PTT) by a crewmember will transmit over the PRIMARY RADIO
- **SA** - Selected Audio - This refers to the combination of audio sources selected by the crewmember. Note Alerts are separate from Selected Audio
- **SECONDARY RADIOS** - For a crewmember, any radio selected for monitoring, which is not selected for transmission, is considered a SECONDARY RADIO
- **SOFT MUTE** - When music audio is muted due to an audio interruption, such as ICS or alerts, SOFT MUTE allows music audio to fade in gradually to the original volume setting after muting
- **SIDETONE** - Refers to the audio spoken into the microphone by occupants. Many half-duplex radios provide sidetone audio to the radio's received audio output. When transmitting on these radios, it is not desired for the audio panel to provide the sidetone to the headset (this is provided by the transceiver). For PA and telephone audio, sidetone distribution may be adjusted

5.4.6.6.2 Audio Panel Configuration

NOTE

When configuring volumes and squelches, keys can be touched and held to quickly scroll through the values.

To configure the audio panel, navigate to the ***External Systems*** page and touch the **Audio Panel** key. On the main ***Audio Panel Configuration*** page, touch the **Configure** key to access configuration settings for audio routing, volume, and miscellaneous options.

5.4.6.6.2.1 General Configuration Settings

Mute PASS to CREW intercom during alerts

This option mutes the passenger ICS audio to the crew during system alerts. Select *True* to mute passenger audio during alerts or select *False* to allow passenger audio to be audible to the crew during alerts. False is the default selection.

Mute PASS to CREW intercom during selected audio

This option mutes the passenger ICS audio to the crew during selected audio. Select *True* to mute passenger audio during selected audio or select *False* to allow passenger audio to be audible to the crew during selected audio. False is the default selection.

Passengers hear selected audio

Select *True* to allow passengers to hear selected audio. Select *False* to disable selected audio routing to the passengers. False is the default selection.

Figure 5-59 Audio Panel Configuration Page (Intercom)

Receiver 5 is Passenger

Select *True* to allow a fifth passenger MIC input to be configured on the Receiver 5 input. This setting is only available when there is no source configured on Receiver 5. Refer to Section 5.4.6.6.4.

Disable PA functionality

Select *True* to disable the passenger address function. Select *False* to enable the PA functionality. False is the default selection.

Mute PASS music during intercom

Select *True* if it is desired for passenger music to be muted while the passengers are hearing microphone audio from an occupant. Select *False* if it is desired for passenger music to continue playing during ICS audio. False is the default selection.

Passengers hear alerts

Select *True* to allow passengers to hear alert audio. Select *False* to disable alert audio routing to the passengers. False is the default selection.

Mute secondary radios on primary radio reception (monitor mute)

If *True* is selected, all secondary COM audio is muted upon receiving primary COM audio. If *False* is selected, secondary COM audio will be allowed to play simultaneously with primary COM audio reception. False is the default selection.

NOTE

It is recommended to set the internal sidetone settings to True for better audio quality. For GMA 35 software prior to v2.20, if Internal Sidetone is set to True, the COM radio Sidetone Volume must be set to 0. Refer to Section 5.4.3.11.

Audio Processor generates COM1 internal sidetone

Selecting **True** causes the audio panel to provide COM 1 sidetone. Selecting *False* allows the COM 1 radio to generate its own sidetone. False is the default selection.

Audio Processor generates COM2 internal sidetone

Selecting *True* causes the audio panel to provide COM 2 sidetone. Selecting *False* allows the COM 2 radio to generate its own sidetone. False is the default selection.

Audio Processor generates COM3 internal sidetone

Selecting *True* causes the audio panel to provide COM 3 sidetone. Selecting *False* allows the COM 3 radio to generate its own sidetone. False is the default selection.

COM 1 is connected as COM 2

Select *True* if COM 1 is connected as COM 2. Select *False* if COM 1 is connected as COM 1. False is the default selection. A setting of *True* allows the GTN 7XX Xi to be connected to the COM 2 port, but appear to the pilot as COM 1. Refer to Section 3.6.17 for more information and wiring instructions for this setting.

Figure 5-60 Audio Panel Configuration Page (Sidetone/COM Connections)

Ambient Noise Mic On

This setting enables or disables the ambient noise sensor that is built in to the GMA 35c. The ambient noise sensor adjusts the volume of the speaker based upon the ambient noise environment. The ambient noise sensor is mounted internal to the GMA 35c with no external wiring. False is the default selection. The headset ambient noise MIC setting must be set to *False*.

5.4.6.6.2.2 Volume Configuration Settings

Use the following procedure when adjusting volumes in the GMA 35c to provide the best audio results. This procedure allows the signal levels in the audio wires to be large so they are more resistant to noise interference. When audio levels can be controlled at the audio source, and the GMA 35c has an input gain control for the audio source, perform the following procedure:

1. Adjust the source audio level to the minimum and audio panel input gain control to the minimum.
2. Adjust the volume settings on the audio panel for normal operation.
3. Increase the audio source level until the desired audio level is reached or the audio source is close to the maximum specified input level for the audio panel input.
4. If the audio from the source is not loud enough, increase the input gain until the desired audio level is reached. Repeat this setup for each audio source and audio panel input with adjustable gains.
5. If the audio source does not have adjustable gain, then adjust the gain for the audio panel input until the desired audio level is reached. For volume adjustments on the GMA 35c, increasing the gain to +96 will increase the volume, and decreasing the gain to -96 will decrease the volume.
6. If the audio panel input does not have adjustable gain, then adjust the audio source gain until the desired audio level is reached. Refer to the audio source manufacturer's installation documentation for volume adjustment instructions.

NOTE

For the volume settings described below, higher gain values increase volume, and lower gain values decrease volume.

NOTE

All non-pilot controllable volumes are to be adjusted to ensure that each volume is at an appropriate level in relation to other aircraft audio volumes. Priority should be given to aircraft system and alert aurals over entertainment, TTS, or audio panel aural response volumes.

Alert 1 thru 4 input audio volume

These settings allow the unswitched alert input audio to the GMA 35c to be adjusted. This setting is configurable from -96 to +96. The default is 0.

Failsafe Warn input audio volume

This setting allows the failsafe warn audio input to the GMA 35c to be adjusted. This setting is configurable from -96 to +96. The default is 0.

Marker volume

This adjusts the marker beacon volume output to the crew headsets. This setting is configurable from -96 to +96. The default is 0. This setting adjusts the maximum allowable volume range in GTN Xi Normal mode.

Music 1 and Music 2

This adjusts the volume of the two music inputs to the GMA 35c. This setting is configurable from -96 to +96. The default is 0. This setting adjusts the maximum allowable volume range in GTN Xi Normal mode.

Figure 5-61 Audio Panel Configuration Page (Input Volume)

Telephone

This adjusts the telephone input volume. This setting is configurable from -96 to +96. The default is 0.

Text to Speech (TTS)

This adjusts the text-to-speech volumes used by ASR in the GMA 35. This setting is configurable from -96 to +96. The default is 0.

Bluetooth Audio

This adjusts the Bluetooth volume. This setting is configurable from -96 to +96. The default is 0.

Bluetooth Telephone

This adjusts the Bluetooth telephone volume. This setting is configurable from -96 to +96. The default is 0.

Audio Clips

This adjusts the GMA audio clip volume. This setting is configurable from -96 to +96. The default is 0.

Pilot PA

This setting adjusts the pilot passenger address to cabin speaker volume. This setting is configurable from -96 to +96. The default is 0.

Copilot PA

This setting adjusts the copilot passenger address to cabin speaker volume. This setting is configurable from -96 to +96. The default is 0.

Crew Audio

This setting adjusts the crew audio to cabin speaker volume. This setting is configurable from -96 to +96. The default is 0.

Alert Audio Sum

This setting adjusts the alert audio to cabin speaker volume. This setting is configurable from -96 to +96. The default is 0.

Figure 5-62 Audio Panel Configuration Page (Speaker Volume)

COM 1-3

These settings adjust the signal strength required to break squelch for each input. These are configurable from -96 dB to 0 dB. The default value is -48 dB. A value of 0 dB will require high signal levels to break squelch. Decreasing the value to -96 dB will allow squelch to be broken with low signal levels.

NAV 1 and NAV 2

These settings adjust the signal strength required to break squelch on the NAV 1 and NAV 2 inputs. These are configurable from -96 dB to 0 dB. The default value is -48 dB. A value of 0 dB will require high signal levels to break squelch. Decreasing the value to -96 dB will allow squelch to be broken with low signal levels.

RCVR 3

This setting adjusts the signal strength required to break squelch on the RCVR 3 input. This is configurable from -96 dB to 0 dB. The default is -48 dB. A value of 0 dB will require high signal levels to break squelch. Decreasing the value to -96 dB will allow squelch to be broken with low signal levels.

RCVR 4

This setting adjusts the signal strength required to break squelch on the RCVR 4 input. This is configurable from -96 dB to 0 dB. The default is -48 dB. A value of 0 dB will require high signal levels to break squelch. Decreasing the value to -96 dB will allow squelch to be broken with low signal levels.

RCVR 5

This setting adjusts the signal strength required to break squelch on the RCVR 5 input. This is configurable from -96 dB to 0dB. The default is -48 dB. A value of 0 dB will require high signal levels to break squelch. Decreasing the value to -96 dB will allow squelch to be broken with low signal levels.

WARN 1 (or Failsafe Warn)

This setting adjusts the signal strength required to break squelch on the Failsafe Warn input. This is configurable from -96 dB to 0 dB. The default is -48 dB. A value of 0 dB will require high signal levels to break squelch. Decreasing the value to -96 dB will allow squelch to be broken with low signal levels.

ALERT 1-4

These settings adjust the signal strength required to break squelch on the ALERT 1-4 inputs. These are configurable from -96 dB to 0 dB. The default value is -48 dB. A value of 0 dB will require high signal levels to break squelch. Decreasing the value to -96 dB will allow squelch to be broken with low signal levels.

Marker Beacon high sense threshold

The marker high sensitivity threshold configures the marker beacon signal strength required to activate the marker beacon signal in marker high sense mode. This is adjustable from -31 to +31. The default value is 0. A value of -31 will cause the marker beacon signal to activate at lower signal strength; therefore, the beacon signal will remain active for a longer period of time while on approach. A value of +31 will require the marker beacon signal strength to be much stronger to activate, which results in the marker beacon activating for a very short duration while flying directly over the marker beacon. When configuring the high sense threshold, a value lower than the low sense threshold should be used.

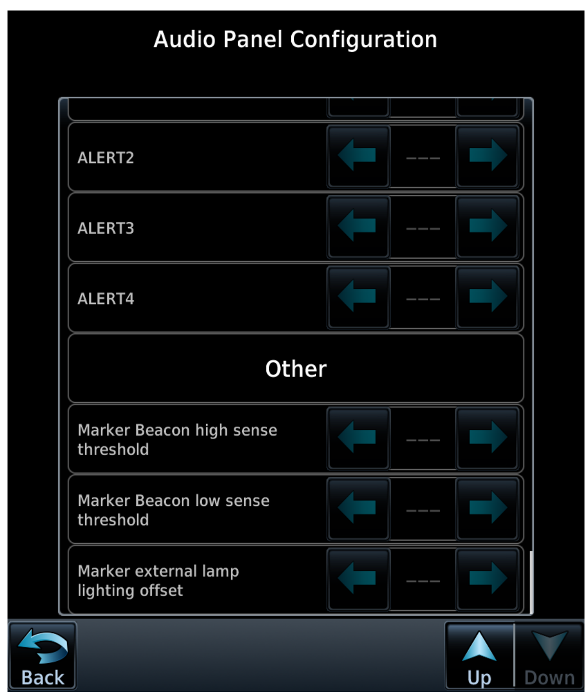


Figure 5-63 Audio Panel Configuration Page (Other)

Marker Beacon low sense threshold

The marker beacon low sensitivity threshold configures the signal strength required to activate the low sense mode. This is adjustable from -31 to +31. The default value is 0. A value of -31 will cause the marker beacon signal to activate at lower strength, remaining active for a longer period of time during approach. A value of +31 requires the marker beacon signal to activate at a much higher strength, which results in the signal activating for a very short duration while flying directly over the marker beacon.

Marker external lamp lighting offset

When external marker lamps are connected to the GMA 35c, this setting allows the lighting level to be adjusted up or down. It applies an offset to the lighting input that the marker lamps are tracking. If the lamps are too bright, adjust this number down; if the lamps are too dim, adjust this number up. This setting is configurable from -31 to +31. The default is 0.

5.4.6.6.3 Audio Panel Discrete Configuration

Configuration to alternate discrete functions is not covered by this STC.

5.4.6.6.4 Connected Radios

From the ***Audio Panel*** page, touch the **Connected Radios** key to configure which radios or systems are connected to the GMA 35c. Compare the interfaced radios in the aircraft to the GMA 35c pin function list in Appendix Section A.2 to determine which radios are connected to the applicable pins in the GMA 35c. The following radios can be configured as *Present* or *Not Present*:

- COM 2
- COM 3
- NAV 1
- NAV 2
- RCVR 3
- RCVR 4
- RCVR 5
- TEL
- Music 1
- Music 2
- Marker Beacon

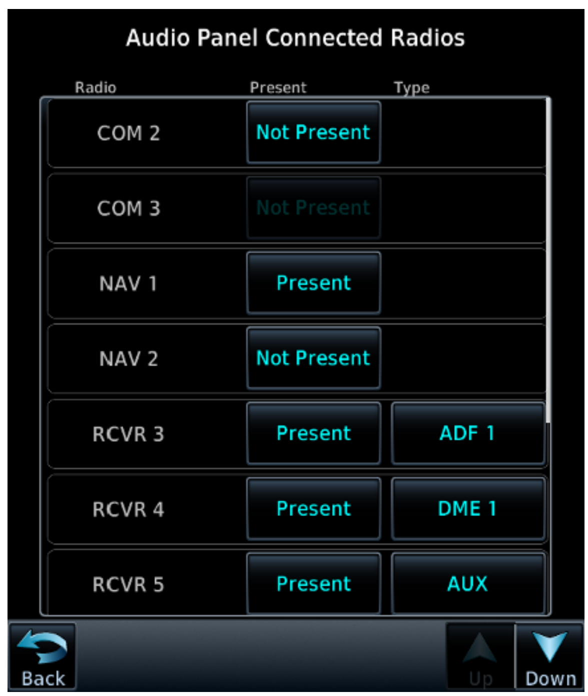


Figure 5-64 Audio Panel Connected Radios Page

For RCVR 3, RCVR 4, and RCVR 5, the type of radio must also be configured. For each connected RCVR source, select the type of radio listed in Table 5-76.

Table 5-76 RCVR Radio Types

Selection	Description
ADF 1	An Automatic Direction Finder (ADF) is connected to the RCVR input.
ADF 2	A second Automatic Direction Finder (ADF) is connected to the RCVR input.
DME 1	Distance Measuring Equipment (DME) is connected to the RCVR input.
DME 2	A second Distance Measuring Equipment (DME) is connected to the RCVR input.
AUX	An Auxiliary radio is connected to the RCVR input.
PASSENGER	When RCVR 5 is configured as a passenger input under the ***Audio Panel Configuration*** page, the RCVR 5 input will be configured for passenger MIC audio.

5.4.6.7 Audio Panel (GMA 350)

If a GMA 350 Audio Panel is configured to the GTN Xi via RS-232, then the page shown in Figure 5-65 will be available. To configure the port, it must first be set to *Present* and then *GMA Format 2* selected. Next, navigate to the ***External Systems*** page and touch the **Audio Panel** key. Select the **Marker Beacon Display** key to enable this functionality.

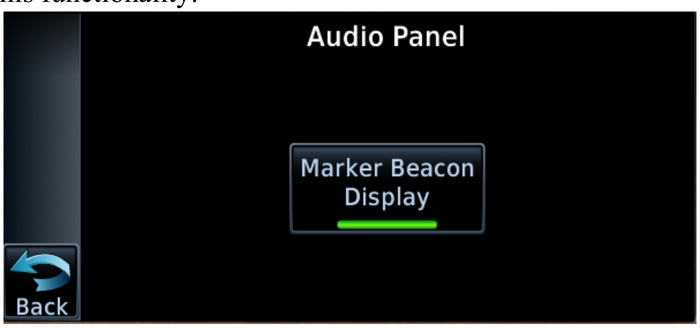


Figure 5-65 Audio Panel - Marker Beacon Display

5.4.6.8 GDL 88

NOTE

This STC does not cover the installation of the GDL 88; refer to GDL 88 Part 23 AML STC Installation Manual. The following instructions are provided for reference only.

5.4.6.8.1 GDL 88 Diagnostics

The ***GDL 88 Diagnostics*** page is a useful tool for diagnosing issues and troubleshooting problems that arise during installation. These pages are also used for the GDL 88 checkout procedures in *GDL 88 Part 23 AML STC Installation Manual*, which must be followed.

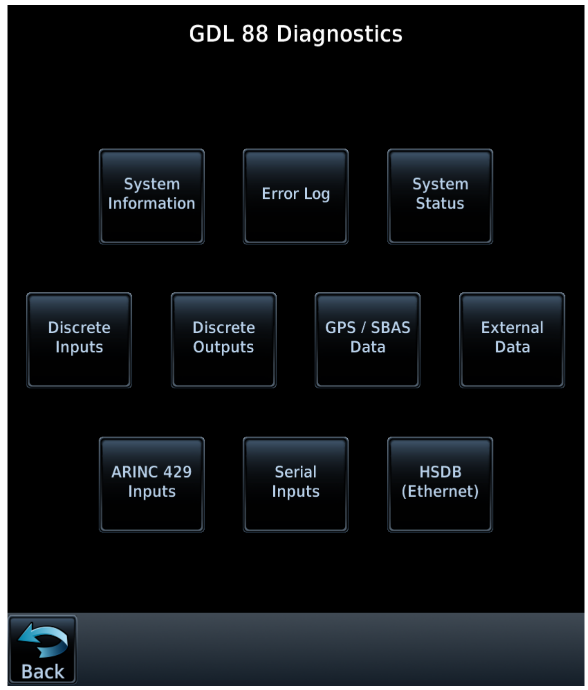


Figure 5-66 GDL 88 Diagnostics Page

5.4.6.8.1.1 System Information

This page is the same as the ***Unit Information*** page in the GDL 88 Install Tool. The ***System Information*** page displays device information, including the serial number and software versions along with system statistics.

5.4.6.8.1.2 Error Log

This page is the same as the ***Unit Assert Log*** page in the GDL 88 Install Tool. The ***Error Log*** page allows the GDL 88 assert log to be saved to an SD card or cleared.

5.4.6.8.1.3 System Status

This page contains a list of GDL 88 system faults and ADS-B faults. A description of each fault and troubleshooting procedures can be found in *GDL 88 AML STC Installation Manual* (P/N 190-01310-00).

5.4.6.8.1.4 Discrete Inputs

The ***Discrete Inputs*** diagnostics page displays the state of each of the discrete input pins on the GDL 88.

5.4.6.8.1.5 Discrete Outputs

The ***Discrete Outputs*** diagnostics page allows the state of each of the discrete outputs to be toggled between active and inactive.

5.4.6.8.1.6 GPS/SBAS Data

The ***GPS/SBAS Data*** page displays the WAAS engine information and PPS status information. For GDL 88 units with an internal WAAS engine, this page allows the GDL 88 internal WAAS engine to be reset.

5.4.6.8.1.7 External Data

This page is the same as the ***Data Inputs*** page in the GDL 88 Install Tool. The ***External Data*** page displays the data received on the GDL 88 from the other connected avionics.

5.4.6.8.1.8 ARINC 429 Inputs

The ***ARINC Inputs*** diagnostics page allows the display of ARINC 429 data that is being received over each GDL 88 ARINC 429 port. Each port can be chosen for display by touching the **Port** key and toggling between the input ports. Select a port to display. The GTN Xi will then display the label, SSM, Data, and SDI for each GDL 88 ARINC 429 input port. This is useful for determining if the expected labels are being received and also for troubleshooting incorrect or swapped wiring to the input ports. The data log can be paused by toggling the **Pause** key. Clear the data log by touching **Clear Log**.

5.4.6.8.1.9 Serial Inputs

The ***RS-232 Inputs*** diagnostics page allows the display of serial data that is being received and is useful for determining if the GDL 88 is receiving data on each connected port. Select the desired port by touching the **Port** key and selecting the RS-232 channel from the list. The data log can be paused by toggling the **Pause** key. Clear the data log by touching **Clear Log**.

5.4.6.8.1.10 HSDB (Ethernet)

The ***HSDB Diagnosis*** page allows the status of each HSDB port to be displayed. This page displays whether or not each port is receiving data and displays whether the port is connected or not connected. The configuration status of each installed HSDB LRU is also displayed.

5.4.6.8.2 GDL 88 Configuration

The ***GDL 88 Configuration*** page can be accessed by touching the **GDL 88** button on the ***External Systems*** page and then touching the **Configuration** button. Pressing the **Set to Default Config** key will reset the GDL 88 to factory default settings.

The GDL 88 Install Tool is used to configure GDL 88 settings for a specific installation. Changes made in the configuration pages are immediately committed to the GDL 88.

Before configuring the GDL 88, ensure the Configuration mode status is "PASS" under the ***External Systems → GDL 88 → Diagnostics → System Status*** page.

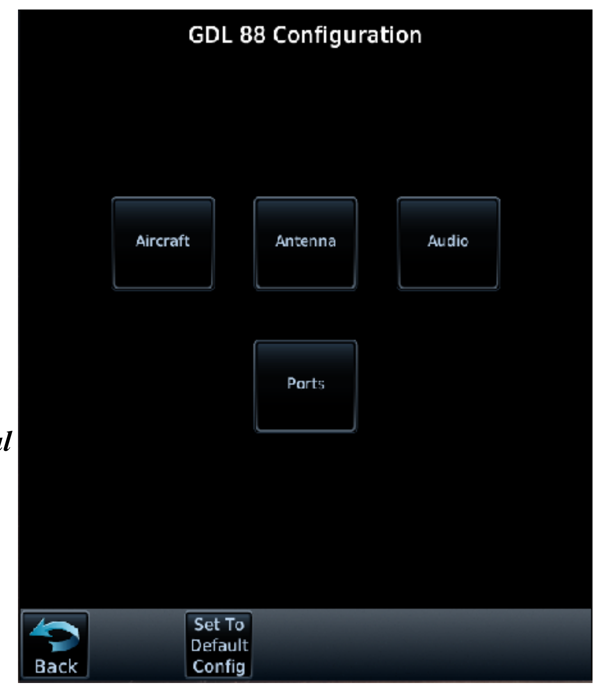


Figure 5-67 GDL 88 Configuration Page

5.4.6.8.2.1 Aircraft

The ***Aircraft Configuration*** page allows configuration of aircraft information and settings. To access this page, touch **External Systems → GDL 88 → Configuration → Aircraft**.

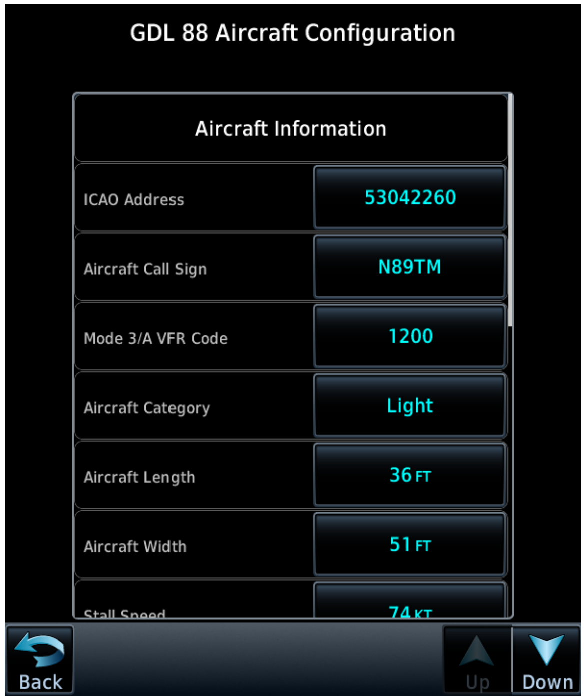


Figure 5-68 GDL 88 Aircraft Configuration Page

ICAO Address

Enter the aircraft assigned ICAO address code, eight octal digits. This code can be found in either of the following locations:

- The aircraft registration certificate
- The N-number inquiry page of registry.faa.gov/aircraftinquiry.

NOTE

Correct entry of the assigned aircraft ICAO address in the GDL 88 is critical.

Aircraft Call Sign

This allows the entry of the aircraft call sign (Tail Number). Typically, this is the US registration number (N-number). Selections: A-Z, 0-9, #, and trailing space. # should be entered if the call sign is not available.

Mode 3/A VFR Code

Enter the VFR transponder code. This field has a range of 0000-7777.

This setting is used for the UAT anonymous mode feature (if enabled), where the transponder must be tuned to this code before the GDL 88 is capable of transmitting a temporary address and a call sign of "VFR."

NOTE

The code must match the VFR code configured on the transponder. This is typically 1200 for US-registered aircraft.

Aircraft Category

This setting selects the aircraft emitter category for which the GDL 88 is installed. Select *Light* for aircraft with maximum gross weight less than 15,500 lbs.

Aircraft Length

Enter the length of the aircraft. This field has a range of 1 to 300 feet.

Aircraft Width

Enter the width (wingspan) of the aircraft. This field has a range of 1 to 300 feet.

Stall Speed

The stall speed setting is used in the GDL 88 air/ground determination for “Light” category aircraft (aircraft weight is less than 15,500 lbs).

Enter the aircraft stall speed. This field has a range of 30 to 100 knots. Use the aircraft landing configuration stall speed (Vso) as specified in the aircraft Pilot’s Operating Handbook (POH) or aircraft Approved Flight Manual Supplement (AFMS).

ADS-B Transmit

This setting enables or disables the GDL 88 UAT transmitter. If it is desired for the GDL 88 to transmit, select *Enabled*; otherwise, select *Disabled* (default).

NOTE

The GDL 88 is capable of transmitting ADS-B messages while in Configuration mode. Verify the aircraft-assigned ICAO 24-bit address is entered prior to enabling the GDL 88 UAT transmitter.

FIS-B Processing

This setting enables or disables the processing of Flight Information Service Broadcast (FIS-B). If it is desired for the GDL 88 to process FIS-B, select *Enabled* (default); otherwise, select *Disabled*.

Internal GPS/SBAS

If the GDL 88 unit has an internal GPS/SBAS present, this setting enables or disables the internal GPS/SBAS receiver (GDL 88/D with internal GPS/SBAS only). If it is desired to utilize the internal GPS/SBAS receiver as a GPS source, select *Enabled* (default); otherwise, select *Disabled*.

Transponder Interrogation

This setting enables or disables the transponder interrogation control panel interface. If it is desired for the GDL 88 to communicate with the transponder wirelessly, select *Enabled*; otherwise, select *Disabled*. Refer to *GDL 88 Part 23 AML STC Installation Manual* for more information.

UAT Call Sign ID Logic

This setting configures whether the Mode 3/A Code (Squawk Code) is transmitted in the UAT ADS-B Out message. This setting must be set to *Enabled* (default), allowing the GDL 88 to transmit the pilot-entered Mode 3/A Code (Squawk Code) to FAA ground stations.

Equipment Status Annunciators

The equipment status annunciator setting allows the user to select whether single or dual annunciators have been installed as part of the GDL 88 system.

Air/Ground Discrete

The GDL 88 Air/Ground discrete input is Active-Low and can be configured to interpret whether the aircraft is airborne or on the ground based upon whether the input is grounded or open.

If the GDL 88 Air/Ground discrete is not connected, then select *Not Installed* (default). If the GDL 88 Air/Ground discrete is connected, and the aircraft air/ground state is On-Ground when the input is grounded, then select *Active for Ground*. If the Air/Ground discrete is connected, and the aircraft air/ground state is airborne when the input is grounded, then select *Active for Airborne*.

Table 5-77 GDL 88 Air/Ground Discrete Configurations

Air/Ground Discrete	Air/Ground Discrete Input State	GDL 88 Air/Ground State
Not Installed	N/A	N/A
Active for Ground	Open	Airborne
	Grounded	On-Ground
Active for Airborne	Open	On-Ground
	Grounded	Airborne

Pressure Altitude Broadcast Inhibit Switch

This setting configures whether the GDL 88 is interfaced with an external switch for controlling pressure altitude reporting. If an altitude reporting selection switch is installed and interfaced to the Pressure ALT Broadcast Inhibit discrete, select *Installed*; otherwise, select *Not Installed*.

Anonymous Mode

NOTE

If a Mode S Transponder is installed with the GDL 88, the UAT anonymity feature must be disabled as to prevent two different aircraft addresses from being transmitted (Transponder Mode S address and the GDL 88 temporary address).

This setting controls whether the UAT anonymity feature is available. Consult the aircraft operator for guidance on whether this feature should be enabled. When enabled, and the flight crew selects the anonymous mode with the transponder tuned to the VFR Code, the GDL 88 transmits a temporary address instead of the aircraft assigned ICAO 24-bit address, and a call sign of “VFR.”

If it is desired to disable the UAT anonymity feature, select *Unavailable* (default). If it is desired to enable the UAT anonymity feature controlled by an interfaced display, select *Display Available*. If it is desired to enable the UAT anonymity feature controlled by an anonymous selection switch interfaced to the Anonymous Mode discrete input, select *Switch Available*.

5.4.6.8.3 Antenna

The antenna page allows configuration of antenna settings. To access this page, touch **External Systems → GDL 88 → Configuration → Antenna**.

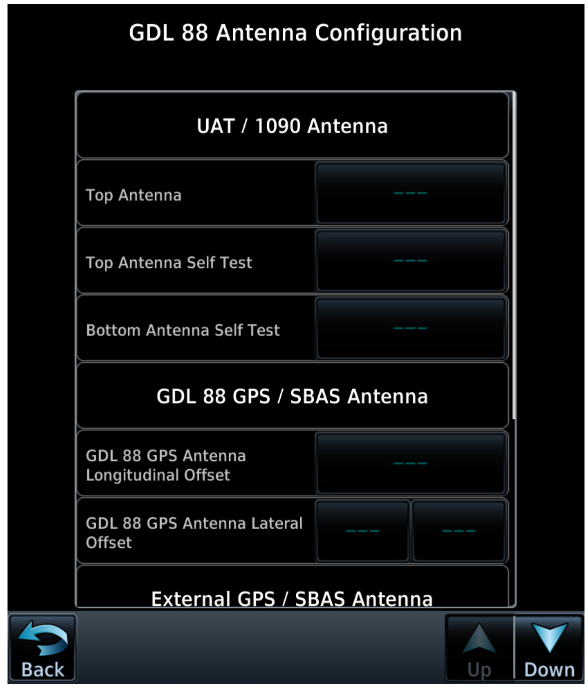


Figure 5-69 GDL 88 Antenna Configuration Page

5.4.6.8.3.1 UAT/1090 Antenna

These settings control antenna utilization and self-tests.

The top antenna setting determines utilization of the top antenna for GDL 88D units. A GDL 88D with the top antenna disabled will perform like a single antenna unit. The top antenna will not be used for transmission or reception and will not be self-tested. It is recommended that GDL 88D owners enable the top antenna unless there is reason to do a single antenna installation. These settings control whether the GDL 88 antenna self-tests are performed.

If the top UAT/1090 antenna (GDL 88D models only) is of the DC grounded type, select *Enabled*; otherwise, select *Disabled*. If the bottom UAT/1090 antenna is of the DC grounded type, select *Enabled*; otherwise, select *Disabled*. Refer to *GDL 88 Part 23 AML STC Installation Manual* for UAT/1090 antenna information.

5.4.6.8.3.2 GDL 88 GPS/SBAS Antenna (GDL 88/88D with GPS/SBAS Only)

These settings indicate the horizontal placement of the GDL 88 GPS/WAAS antenna on the aircraft.

Enter the GDL 88 GPS/SBAS antenna longitudinal offset distance, rounded to the nearest foot, from the nose of the aircraft. Then enter the lateral offset, as measured in feet (left or right, looking forward), from the centerline of the aircraft.

5.4.6.8.3.3 External GPS/SBAS Source Antenna

These settings indicate the horizontal placement of the external GPS source(s) GPS/SBAS antenna(s).

If external GPS #1 is connected to the GDL 88 Time Mark 1, enter the external source’s GPS/SBAS antenna longitudinal offset distance, rounded to the nearest foot, from the nose of the aircraft . Then enter the lateral offset, as measured in feet (left or right, looking forward), from the centerline of the aircraft.

If external GPS #2 is connected to the GDL 88 Time Mark 2, enter the external source’s GPS/SBAS antenna longitudinal offset, as measured in feet, from the nose of the aircraft. Then enter the lateral offset, as measured in feet (left or right, looking forward), from the centerline of the aircraft.

5.4.6.8.4 Audio

This page configures the GDL 88 analog audio output volume level and voice type.

1. Set the audio volume to an acceptable level as described in *GDL 88 Part 23 AML STC Installation Manual*.
2. Select the desired voice gender as *Male* or *Female*.
3. Touch **Run Audio Test** to check the audio volume level.

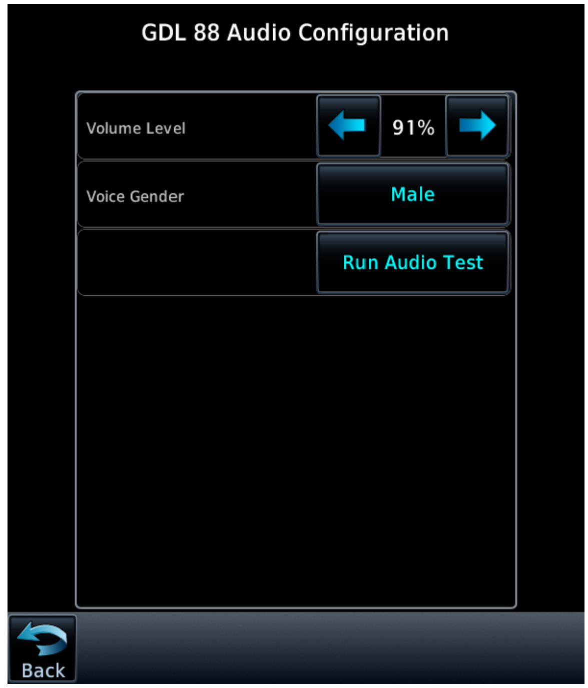


Figure 5-70 GDL 88 Audio Configuration Page

5.4.6.8.5 Ports

This page allows configuration of RS-232 and ARINC 429 input and output ports and HSDB connections. Select the applicable interface with the key at the top of the screen to display the list of available and configured ports.

Figure 5-71 GDL 88 Port Configuration Page

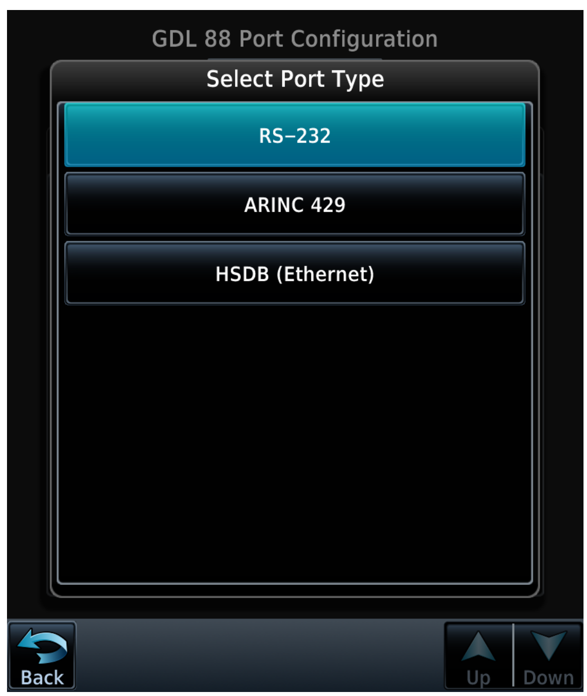


Figure 5-72 GDL 88 Port Selection

5.4.6.8.5.1 RS-232 Configuration

This page allows configuration of the RS-232 input ports and the RS-232 output ports. Refer to *GDL 88 Part 23 AML STC Installation Manual* for approved third-party equipment interfaces to the GDL 88.

Select the inputs and outputs to match the equipment that is interfaced to each channel. Refer to Table 5-78 (inputs) and Table 5-79 (outputs). Refer to *GDL 88 Part 23 AML STC Installation Manual* for the correct selections for each piece of interfaced equipment.

Table 5-78 RS-232 Input Selections

Selection	Description
Disabled	No unit connected to this RS-232 input.
ADS-B+ Format 2 #1	Select this format for GNS 480. Provides GPS data. [1] [2]
ADS-B+ Format 2 #2	Select this format for GNS 480. Provides GPS data. [1] [2]
Airdata Format 1	Provides altitude, airspeed, and altitude rate information. [3]
Altitude Format 1	Provides altitude information.
Altitude Format 2	Provides altitude information.
Altitude Format 3	Provides altitude information.
GNS Series #1	Provides GPS data and FIS-B requests. Same as **GNS Series #1** in the GDL 88 Install Tool.
GNS Series #2	Provides GPS data and FIS-B requests. Same as **GNS Series #2** in the GDL 88 Install Tool.
GTX Mode C #1	Provides Mode 3/A Code (Squawk Code), Ident Status, Transponder Mode, and Parallel Gray Code Altitude.
GTX Mode C #2	Provides Mode 3/A Code (Squawk Code), Ident Status, Transponder Mode, and Parallel Gray Code Altitude.
GTX Mode S #1	Provides Mode 3/A Code (Squawk Code), Ident Status, Transponder Mode, Flight ID, and Parallel Gray Code Altitude.
GTX Mode S #2	Provides Mode 3/A Code (Squawk Code), Ident Status, Transponder Mode, Flight ID, and Parallel Gray Code Altitude.
GTX 3000 Format 1 #1	Select this format for the GTX 3000 transponder #1 in a dual transponder installation. Provides Mode 3/A Code (Squawk Code), Ident Status, Transponder Mode, Flight ID, Pressure Altitude, Barometric Vertical Rate, Magnetic Heading, UAT Transmit Control, and Air/Ground Status. [1]
GTX 3000 Format 1 #2	Select this format for the GTX 3000 transponder #2 in a dual transponder installation. Provides Mode 3/A Code (Squawk Code), Ident Status, Transponder Mode, Flight ID, Pressure Altitude, Barometric Vertical Rate, Magnetic Heading, UAT Transmit Control, and Air/Ground Status. [1]
SL Mode C Format 1 #1	Provides Mode 3/A Code (Squawk Code), Ident Status, Transponder Mode, and Altitude.
SL Mode C Format 2 #1	Provides Mode 3/A Code (Squawk Code), Ident Status, Transponder Mode, and Altitude.
SL Mode C Format 2 #2	Provides Mode 3/A Code (Squawk Code), Ident Status, Transponder Mode, and Altitude.
Traffic Format 4	Provides traffic system status information. [1]
Legacy Traffic w/Alt	Select this format for Legacy G1000 systems. Provides pressure altitude from GIAs. [1]

Notes:

[1] GDL 88 only.

[2] If ADS-B+ is selected for the RS-232 output, it can not be selected for the RS-232 input.

[3] Devices that convert Gillham (Gray) coded altitude data to serial data are not authorized when using this port setting.

Table 5-79 RS-232 Output Selections

Selection	Description
Disabled	No unit connected to this RS-232 output.
ADS-B+ Format 1 #1	Select this format for the GTX 33/330 or any other LRU that accepts ADS-B+. [1] [2] [3]
ADS-B+ Format 1 #2	Select this format for the GTX 33/330 or any other LRU that accepts ADS-B+. [1] [2] [3]
ADS-B+ Format 2 #1	Reserved. [1] [2] [3]
ADS-B+ Format 2 #2	Reserved. [1] [2] [3]
GNS Series #1	Provides FIS-B and GDL 88 product information. Same as **GNS Series #1** in the GDL 88 Install Tool. [1]
GNS Series #2	Provides FIS-B and GDL 88 product information. Same as **GNS Series #2** in the GDL 88 Install Tool. [1]
GTX Mode C #1	Provides transponder #1 control commands.
GTX Mode C #2	Provides transponder #2 control commands.
GTX Mode S #1	Provides transponder #1 control commands.
GTX Mode S #2	Provides transponder #2 control commands.
Traffic Format 4	Traffic system control commands. [1]
Legacy Traffic w/Alt	Select this format for Legacy G1000 systems. Provides traffic to GDU. [1]

Notes:

[1] GDL 88 only.

[2] If ARINC 743A transmit is selected, ADS-B+ Formats can not be used for the RS-232 out.

[3] If ADS-B+ is selected for the RS-232 input, it can not be selected for the RS-232 output.

5.4.6.8.5.2 ARINC 429 Configuration

This page allows configuration of the ARINC 429 input ports and the ARINC 429 output ports. Select the correct Format and Speed settings for each port. The correct setting is dependent upon the interfaced equipment. Refer to Table 5-80 (inputs), Table 5-81 (outputs), and Table 5-82 (speed). Refer to *GDL 88 Part 23 AML STC Installation Manual* for the correct selections for each piece of interfaced equipment.

Table 5-80 ARINC 429 Input Selections

Format	Description
Off	No unit connected to the ARINC 429 input. Same as *Disabled* in the GDL 88 Install Tool.
Airdata #1	Select this format for the Air Data system, or the Air Data system #1 in a dual Air Data system installation. Provides altitude, airspeed, and altitude rate information.
Airdata #2	Select this format for the Air Data system #2 in a dual Air Data system installation. Provides altitude, airspeed, and altitude rate information.
Airdata/ Heading No Alt	Airspeed, altitude rate, and heading information.
Airdata/Heading w/Alt	Pressure altitude, airspeed, altitude rate, and heading information.
Heading	Select this format for heading information.
Radio Altimeter	Select this format for radio altimeter information.
TCAS II TA/RA	Provides ARINC 429 labels 270 (Vertical RA) and 274 (Transponder Control) from ACAS or TCAS II systems complying with ARINC 735A. Used for determining “TCAS/ACAS Operational” and “TCAS/ACAS Resolution Advisory” flags in the UAT ADS-B Out message.
Traffic Format 1	Select this format for traffic information. [1]
Traffic Format 2	Select this format for traffic information. [2]
Traffic Format 3	Select this format for traffic information.
Traffic Format 5	Reserved for future use.
Traffic Format 6	A Rockwell Collins TTR-4000 traffic system will use this data to receive information from the TCAS/ACAS and set the correct data in the ADS-B Out message.

Notes:

[1] Traffic Format 1 configures DISCRETE OUT 1* and DISCRETE OUT 2* to function as traffic system standby/operate and test control discretes.

[2] Traffic Format 2 configures DISCRETE OUT 1* and DISCRETE OUT 2* to function as traffic system standby/operate and test control discretes.

Table 5-81 ARINC 429 Output Selections

Format	Description
Disabled	No unit connected to this ARINC 429 output.
Traffic Out	Traffic and equipment status output.
ARINC 743A #1	GPS out for ARINC 743A devices. [1]
ARINC 743A #2	GPS out for ARINC 743A devices. [1]

Notes:

[1] ARINC 743A transmit is unavailable for selection if ADS-B+ formats are selected for the RS-232 output.

Table 5-82 ARINC 429 Speed Selections

Speed	Description
Low	Standard low-speed ARINC 429 (nominally 12.5 kb per second)
High	High-speed ARINC 429 (nominally 100 kb per second)

5.4.6.8.5.3 HSDB Configuration

This page configures which LRUs are installed on the GDL 88 HSDB network. From the available list of LRUs, select either *Enabled* or *Disabled*.

GTN 6XX/7XX

Select *Enabled* if a single GTN Xi unit or dual GTN Xi and/or GTN 6XX/7XX units are installed.

GTS 8XX

Select *Disabled* if no GTS 8XX is installed or if a GTS 8XX is installed but the installation is not using the HSDB interface for traffic correlation. Select *Enabled* if a GTS 8XX is installed and the HSDB interface is being used for traffic correlation.

NOTE

GTS 8XX selection of Enabled configures DISCRETE OUT 1 and DISCRETE OUT 2* to function as traffic system standby/operate and test control discretes.*

NOTE

This setting should only be set to Enabled if the GTS 8XX is interfaced to the GDL 88 via HSDB instead of ARINC 429 for traffic correlation. If the GTX 8XX is interfaced to the GDL 88 using ARINC 429, select Disabled.

5.4.6.8.5.4 RS-422 Configuration

This page allows configuration of the RS-422 input ports and the RS-422 output ports. Refer to *GDL 88 Part 23 AML STC Installation Manual* for approved third-party equipment interfaces to the GDL 88.

Select the inputs and outputs to match the equipment that is interfaced to each channel. Refer to Table 5-83 (inputs) and Table 5-84 (outputs). Refer to *GDL 88 Part 23 AML STC Installation Manual* for the correct selections for each piece of interfaced equipment.

Table 5-83 RS-422 Input Selections

Format	Description
Disabled	No unit connected to this RS-422 input.
Connext Format 1	Select this format for the Flight Stream series units.
Legacy ADS-B	Select this format for Legacy G1000, MX20, and GMX 200.
Legacy ADS-B w/ Control	Select this format for MX20 or GMX 200 when a transponder is not present in the aircraft. [1]

Notes:

[1] This provides controls for Anonymous Mode, Flight ID, Pressure Altitude Broadcast Inhibit, Mode 3/A Squawk Code, and IDENT.

Table 5-84 RS-422 Output Selections

Format	Description
Disabled	No unit connected to this RS-422 output.
Connext Format 1	Select this format for the Flight Stream series units.
Legacy ADS-B	Select this format for Legacy G1000, MX20, and GMX 200.
Legacy ADS-B w/ Control	Select this format for MX20 or GMX 200 when a transponder is not present in the aircraft. [1]

Notes:

[1] This provides controls for Anonymous Mode, Flight ID, Pressure Altitude Broadcast Inhibit, Mode 3/A Squawk Code, and IDENT.

5.4.6.9 GSR 56 Configuration

If the GSR 56 Iridium transceiver is installed and connected to the GTN Xi, the GSR 56 features that will be used must be enabled.

1. Navigate to the ***GSR 56 Configuration*** page in the External Systems page group.
2. Touch each feature to activate it. When active, the key for the feature will be lit green.
3. Verify the RUDICS Number setting is 0088160000576. If the RUDICS Number setting is incorrect, touch **Restore Defaults**.
4. Verify the SMS SCA setting is 881662900005. If the SMS SCA setting is incorrect, touch **Restore Defaults**.

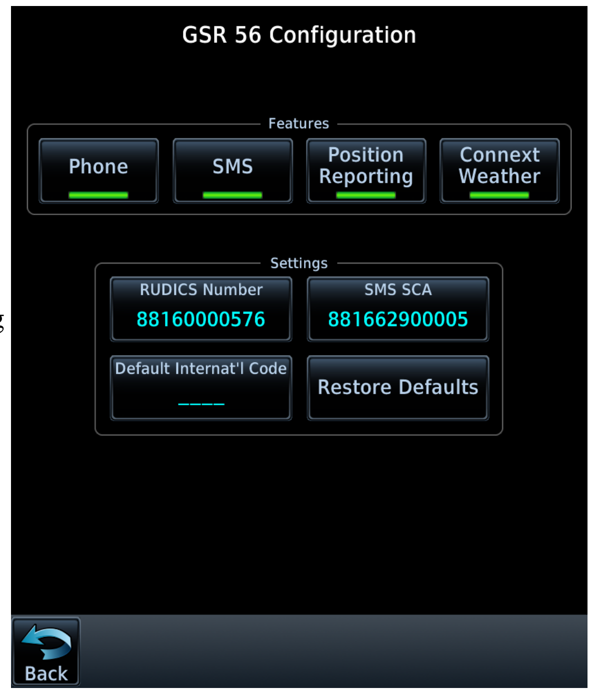


Figure 5-73 GSR 56 Configuration Page

5.4.6.10 Weather Radar (GTN 7XX Xi Only)

5.4.6.10.1 GWX 68/70/75 Configuration

To configure the GWX 68/70/75, it must first be selected as ***Present*** and the model of GWX installed must be specified. To do this, refer to Section 5.4.3.4. Next, navigate to the ***External Systems*** page and touch the **Weather Radar** key.

Pitch Trim

This setting specifies the offset angle being used by the GWX for the pitch axis. Selections: -4.00° to +4.00° in 0.01° increments.

Roll Trim

This setting specifies the offset angle being used by the GWX for the roll axis. Selections: -4.00° to +4.00° in 0.01° increments.

Use the following procedure to configure weather radar roll trim while flying:

1. Power on the GTN Xi in Normal mode.
2. Touch **Radar** on the ***Weather*** page to bring up the radar display.
3. Touch the distance labels on the radar display, one at a time in ascending order (i.e., 1-2-3-4), to bring up the roll trim setting.
4. Once the proper roll trim is set, touch the **Enter** key to save the setting.

Figure 5-74 Roll Trim Configuration in Normal Mode

Return Bins

This setting specifies the number of range bins used to encode the data for one radar spoke. The default for this value is 600.

5.4.6.10.2 ARINC 708 Weather Radar Configuration

NOTE

If a GWX weather radar is already configured, the key to configure an ARINC 708 weather radar will be disabled and vice-versa because the radar types are mutually exclusive.

NOTE

The Digital Radar option must be enabled before an ARINC 708 weather radar can be configured. Refer to Section 5.4.4.4.1.

As part of the wiring installation, the GTN 7XX Xi will be connected to the weather radar as display #1 or #2, and the GTN 7XX Xi must be configured accordingly. Follow the steps below to perform ARINC 708 weather radar configuration:

1. Power on the GTN Xi in Configuration mode.
2. Navigate to the ***ARINC 708*** page from the ***GTN Setup*** page.
3. For External Weather Radar, choose the applicable ARINC 708 weather radar type by selecting the correct device from the drop-down list.

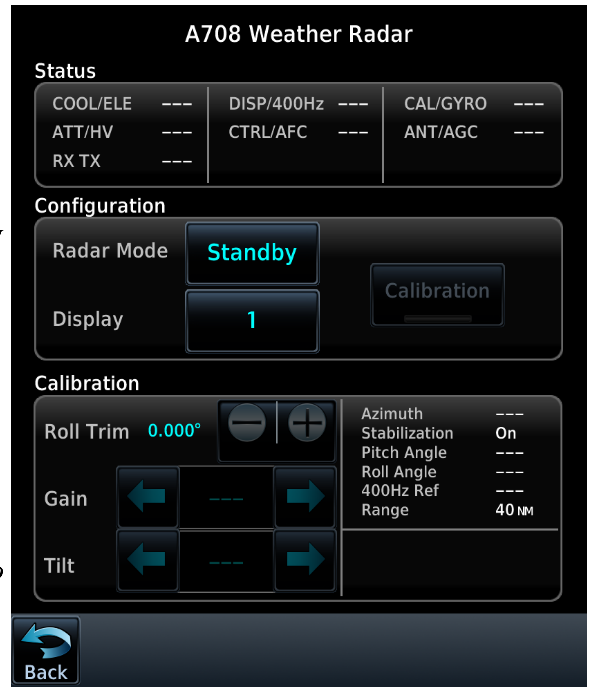


Figure 5-75 A708 Weather Radar Page

NOTE

When configuring an RDR-2100 (ART 2100), select "ART 2000" from the drop-down. Refer to Table C-23 for more information.

NOTE

When an ARINC 708 weather radar is configured, the ARINC 429 Out 3 format will automatically be set to Radar Format 1, which is the format used to control the weather radar.

4. Navigate to the ***Weather Radar*** page in the External Systems page group.
5. Choose the applicable display number to match the connections to the weather radar.
6. The ARINC 708 weather radar system may also require additional calibration. Refer to Section 5.4.6.10.2.1 and Section 5.4.6.10.2.2.

5.4.6.10.2.1 Honeywell (Bendix/King) 2XXX Series Radars

This section describes post-installation system configuration and calibration of the Bendix/King RDR-2000 (ART 2000) and RDR-2100 (ART 2100) Radar Systems using the GTN 7XX Xi. The CM 2000 Configuration Module for the WXR must be configured using the Honeywell (Bendix/King) KPA 900 Configuration Module Programmer Kit (P/N 050-03311-0000) in conjunction with a personal computer. Refer to the configuration module programmer operator's guide for detailed setup instructions. Follow the instructions for the programmer and any required weather radar settings contained in Appendix Section C.1.17.

Weather Radar Calibration Mode

Place the weather radar in Calibration mode as follows:

1. Navigate to the ***Weather Radar*** page in the External Systems page group.
2. Set the Radar Mode to *Test*.
3. Touch the **Calibration** key and wait for the weather radar to enter Calibration mode – all status indicators will flash briefly to indicate the radar is in Calibration mode.

Antenna Clearance Check

Perform the antenna clearance check as follows:

1. Ensure the weather radar is in Calibration mode.
2. Set the Gain field to a value of -26.5 to -28.0, and set the Tilt Settings field to 14.75°U. This will initiate the antenna clearance scan. The antenna will move to each of the extreme positions to determine there is no interference with antenna movement and all scan motors are working.

Stabilization Calibration

Perform the weather radar stabilization calibration as follows:

1. Ensure the weather radar is in Calibration mode.
2. Note the Roll Trim value for re-entry following the stabilization calibration procedure. Adjust the Roll Trim field to 0.000.
3. Beginning with the 400 Hz REF GAIN procedure, follow the instructions in Section 2.4.4.1 of *RDR 2000 Installation Manual* (Honeywell P/N 006-00643-0007) or *RDR 2100 Installation Manual* (Honeywell P/N 006-00648-0002).
4. If the roll trim value was recorded from the previous WXR indicator, or noted in step 2, set the Roll Trim field on the GTN 7XX Xi to this value.

5.4.6.10.2.2 Honeywell (Bendix/King) RDS 8X Series Radars

This section describes post-installation system configuration and calibration of the Bendix/King RDS-81 (RS 811A) and RDS-82 (RS 181A) systems using the GTN 7XX Xi.

Weather Radar Calibration Mode

Place the weather radar in Calibration mode as follows:

1. Navigate to the ***Weather Radar*** page in the External Systems page group.
2. Set the Radar Mode to *Test*.
3. Touch the **Calibration** key and wait for the weather radar to enter Calibration mode. The RX TX box will turn red when the radar enters Calibration mode.

Stabilization Calibration

Perform the weather radar stabilization calibration as follows:

1. Ensure the weather radar is in Calibration mode.
2. Note the Roll Trim value for re-entry following the stabilization calibration procedure. Adjust the Roll Trim field to 0.000.
3. Beginning with the step C in Section 2.3.6.3 of *RDS 81 Installation Manual* (Honeywell P/N 006-00954-0001) or *RDS 82 Installation Manual* (Honeywell P/N 006-00955-0006), perform the stabilization alignment in the aircraft.
4. If the roll trim value was recorded from the previous WXR indicator, or noted in step 2, set the Roll Trim field on the GTN 7XX Xi to this value.

6 SYSTEM CHECKOUT

6.1 Ground Checks (Configuration Mode)

The following checks are done in Configuration mode. For instructions on entering Configuration mode, refer to Section .

6.1.1 Main Indicator Check (Analog Only)

NOTE

If the GTN Xi is interfaced to an electronic HSI/EFIS and the main indicator analog output is not used, this check is not required.

If the GTN Xi is interfaced to an analog indicator on the main CDI/OBS (P1001), perform the following steps:

1. Navigate to the ***GTN Diagnostics*** page. Refer to Section 5.4.5.
2. Navigate to the ***Main Indicator (Analog)*** page.
3. Verify the correct operation of the lateral deviation, flag, and TO/FROM flag using the corresponding selections.
4. Verify the correct operation of the vertical deviation and flag using the corresponding selections.
5. Verify the correct operation of the OBS knob using the OBS Resolver Setting display. At 30° increments around the OBS card, verify the indicated value is within 2° of the value set on the indicator. If the resolver is not within 2°, calibrate the resolver as described in Section 5.4.3.5.

6.1.2 VOR/LOC/GS Indicator (GTN 650Xi/750Xi Only)

If the GTN Xi is interfaced to an analog indicator on the VOR/ILS Indicator output (P1004), perform the following steps:

1. Navigate to the ***GTN Diagnostics*** page.
2. Navigate to the ***VOR/ILS Indicator (Analog) Diagnostics*** page.
3. Verify the correct operation of the lateral deviation, flag, and TO/FROM flag using the corresponding selections.
4. Verify the correct operation of the vertical deviation and flag using the corresponding selections.
5. Verify the correct operation of the OBS knob using the Selected Course display. At 30° increments around the OBS card, verify the indicated value is within 2° of the value set on the indicator. If the resolver is not within 2°, calibrate the resolver as described in Section 5.4.3.11.

6.1.3 Discrete Inputs Checkout

If the GTN Xi is connected to any external switches, perform the following steps:

1. Navigate to the ***GTN Diagnostics*** page.
2. Navigate to the ***Discrete Inputs*** page, shown in Figure 6-1.
3. For each external switch that is connected, exercise the switch source and check the ACTIVE or INACTIVE indication on the screen correlating to the applicable input to ensure it is displayed correctly.
4. If the state of the switch/LRU is not displayed correctly, check the wiring to the discrete input and ensure it is not shorted to ground. Also ensure the correct type of switch/discrete is connected to the GTN Xi.

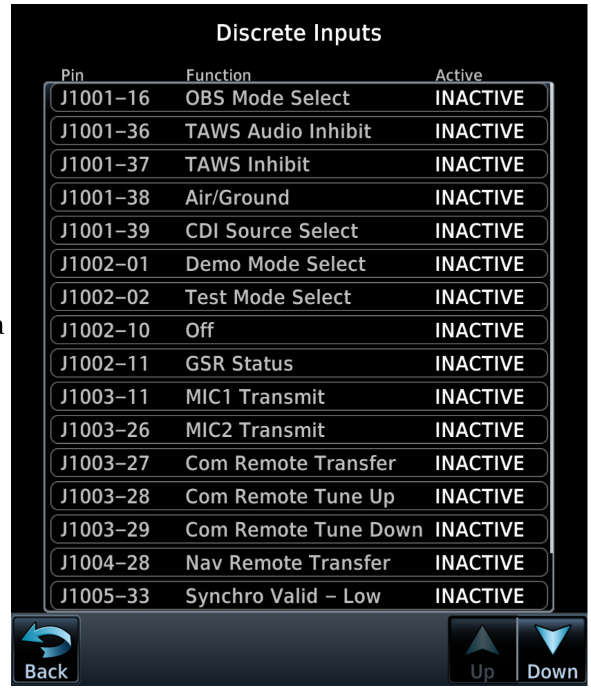


Figure 6-1 Discrete Input Page

6.1.4 Discrete Outputs Checkout

If the GTN Xi is connected to any external annunciators/systems, perform the following steps:

1. Navigate to the ***GTN Diagnostics*** page.
2. Navigate to the ***Discrete Outputs*** page, shown in
   Figure 6-2.
3. For each annunciator output that is connected to an external system or annunciator, toggle the output *ACTIVE* (corresponding box is filled green and displays "ACTIVE") and *INACTIVE* (corresponding box is not filled green and displays "INACTIVE") by touching the key corresponding to the output. Verify the applicable external annunciator comes on when the output is set to *ACTIVE* and extinguishes when the output is set to *INACTIVE*. If the output is not connected to an annunciator but provides an input to another system, ensure the other system receives the signal.
4. If the annunciator and/or other system does not receive the signal, ensure the wiring is connected properly and not shorted to ground.

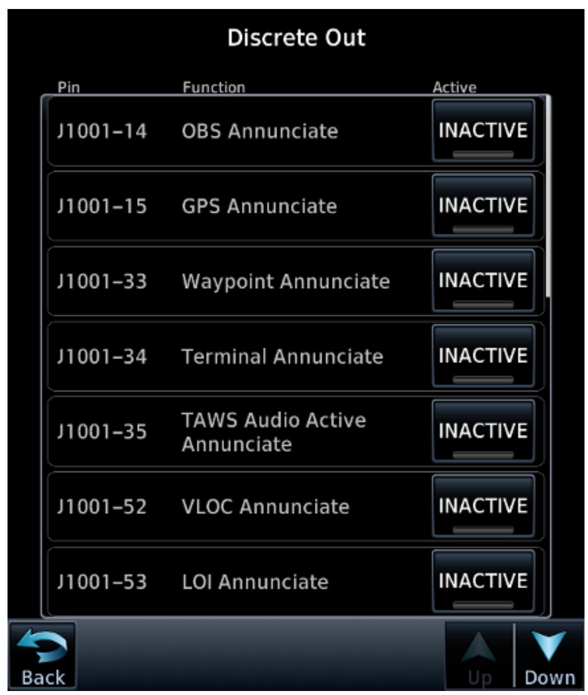


Figure 6-2 Discrete Output Page

6.1.5 HSDB Wiring Checkout

If HSDB wiring has been installed for interface to other Garmin LRUs, follow the procedure below to verify it has been installed and configured correctly:

1. Access the ***GTN Diagnostics*** page from the Configuration mode home page.
2. Touch the **HSDB (Ethernet)** key. The ***HSDB Diagnostics*** page, shown in Figure 6-3, will be displayed.
3. Ensure that any LRUs connected via HSDB are powered on and properly configured.
4. For each HSDB port that has HSDB wiring connected to it, verify the port status displays “Connected” and “Receiving”.
5. If the previous step did not perform correctly, check the electrical connections and configuration setup.

Figure 6-3 HSDB Diagnostics Page

6.1.6 Crossfill Check (Dual GTN Xi or GTN 6XX/7XX Installation Only)

1. Power on all GTN Xi and GTN 6XX/7XX units in Configuration mode.
2. On each GTN Xi and GTN 6XX/7XX, navigate to the ***HSDB Diagnostics*** page, shown in Figure 6-3.
3. For the port connecting the cross-side GTN Xi or GTN 6XX/7XX, check the HSDB Port Status and verify “Connected” is displayed under Connection and “Receiving” is displayed under Data.
4. If the previous steps do not perform correctly, check the electrical connections and configuration setup. The connected ports must be configured as “Connected” for each GTN Xi and/or GTN 6XX/7XX. Also, under the ***Interfaced Equipment*** page, the cross-side navigator must be set to *Present*.

6.1.7 Terrain Audio Check (For Units with Terrain Alerting or TAWS Only)

NOTE

The audio panel must also be powered on for the audio check.

The audio volume has an initial default of 80% of the maximum value. The Terrain/TAWS volume needs to be set to verify aural alerts are audible under all anticipated noise environmental conditions.

1. Navigate to the ***Audio Configuration*** page from the main ***GTN Setup*** page.
2. Under Alert Volume, increase or decrease the volume by touching the **Volume Up** or **Volume Down** keys.
3. Evaluate the Terrain/TAWS audio messages for acceptable volume and intelligibility during both low and high cockpit noise levels (e.g., idle descent at low speed and high power at Vmo). Refer to Section 6.3.6 for the flight check procedure.
4. Re-adjust the volume as needed to ensure the Terrain/TAWS audio messages will be heard in all anticipated cockpit noise conditions.

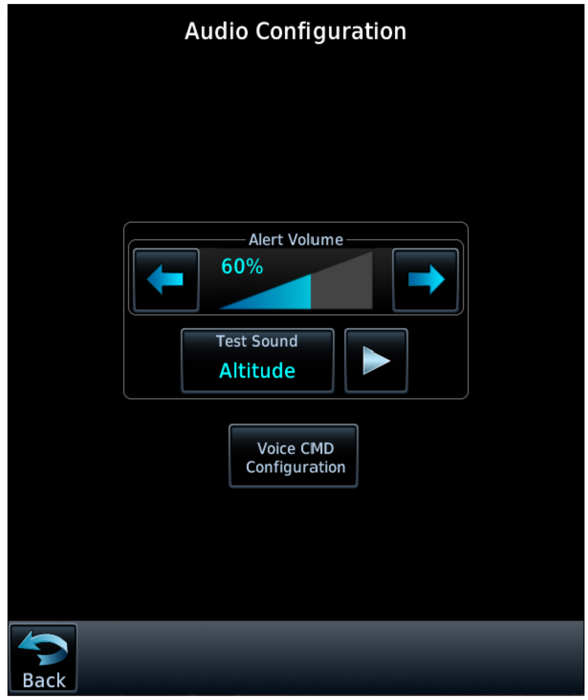


Figure 6-4 Audio Configuration Page

6.1.8 GAD 42 Interface Check

This check verifies the interface between the GTN Xi and the GAD 42.

1. Navigate to the ***GAD 42 Configuration*** page from the ***External Systems*** page. Touch **External Systems**, then touch **GAD 42**.
2. Verify Status is *ACTIVE*.
3. Change any of the options to a different number.
4. Verify that after changing one of the options, the Status field changes to *SENDING*, then changes back to *ACTIVE*. If the entry reverts to the previous number when "ACTIVE" is displayed, then check the wiring connections to the GAD 42. Refer to *GAD 42 Installation Manual* for details on how to configure the GAD 42.

Figure 6-5 GAD 42 Configuration Page

6.1.9 Lighting Bus Interface Check

The display and key backlighting on the GTN Xi can track an external lighting/dimmer bus input and use it to vary the display and key backlight levels accordingly. This check verifies the interface is connected correctly.

CAUTION

When 14 VDC or 28 VDC lighting buses are connected to the GTN Xi, connection of the aircraft lighting bus to the incorrect input pins can cause damage to the GTN Xi. Always start this test with the dimming bus at the lowest setting, and slowly increase the brightness. If the LIGHTING level displayed on the GTN Xi does not increase as the lighting is increased in brightness, ensure the wiring is correct before proceeding.

1. Ensure the lighting bus is set to its minimum setting.
2. Navigate to the ***Lighting Bus Configuration*** page.
3. Slowly vary the lighting bus level that is connected to the GTN Xi.
4. Verify the Source Input Level value displayed on the configuration screen tracks the lighting bus setting.
5. Continue to maximum brightness and ensure it properly tracks.

Figure 6-6 Lighting Bus Configuration Page

6.1.10 Air/Fuel Data Interface Check

The GTN Xi can receive fuel and altitude data from an external source. This check verifies the GTN Xi is receiving data from these sources. Ensure the GTN Xi is powered on and in Configuration mode. If the following steps do not perform correctly, check the electrical connections (refer to Appendix B) and configuration setup (refer to Section 5.4.3.2) for the interfaced data source.

1. Navigate to the ***GTN Diagnostics*** page from the Configuration mode home page.
2. Touch the **Main Data Inputs** key.
3. If there are multiple sources providing data to the GTN Xi, remove power from all but one source.
4. Ensure the applicable data is displayed and agrees with the active source.

NOTE

After applying power to an altitude source, it may take several minutes to warm up. During the warm-up period, the Pressure Altitude display on the GTN Xi will be dashed out.

5. If there are multiple sources, remove power from the currently active source and apply power to another source that has not been checked.
6. Repeat steps 4 and 5 until all available sources have been checked.

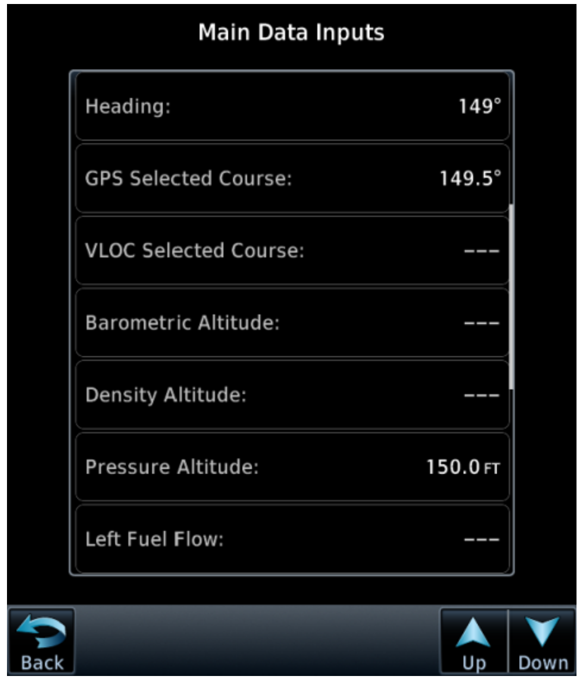


Figure 6-7 Main Data Inputs Page

6.1.11 AHRS/IRU Interface Check

The GTN Xi can receive heading data from an external source. This check verifies the GTN Xi is receiving data from these sources. Ensure the GTN Xi is powered on and in Configuration mode. If the following steps do not perform correctly, check the electrical connections and configuration setup for the interfaced AHRS/IRU.

1. Navigate to the ***GTN Diagnostics*** page from the Configuration mode home page.
2. Touch the **Main Data Inputs** key.
3. Scroll to the Heading data display.

NOTE

If a Sandel EHSI or an ARINC 429 EFIS is also installed, ensure it is turned off so it does not supply heading to the GTN Xi. Ensure the HDG field displays valid heading data.

4. Remove power from the heading source and verify the magnetic heading field is dashed out.

6.2 Ground Checks (Normal Mode)

For the following checks, cycle power on the GTN Xi and power it up in Normal mode.

6.2.1 Display of Self-Test Data

Following normal power-up, the ***Database*** pages are displayed, followed by the ***Instrument Panel Self-Test*** page. Touching **Continue** displays the ***Instrument Panel Self-Test*** page. During this time, the electrical outputs are activated and set to the values listed below. Touch **Continue** to acknowledge the ***Instrument Panel Self-Test*** page. This is not a required check, although this page can be useful for troubleshooting installation problems.

Table 6-1 Self-Test Values

Parameter	Self-Test Value
Course Deviation	Half-scale left deviation, TO indication, flag pulled
Glideslope/Vert. Deviation	Half-scale up deviation, flag pulled
Annunciators	All On
Selected Course (OBS)	The GTN Xi displays the OBS value (149.5° if interfaced to an HSI with driven course pointer)
Desired Track	149.5° (displayed as 150°)
ITEMS BELOW ARE NOT DISPLAYED ON THE INSTRUMENT PANEL SELF-TEST PAGE	
Distance to Go	10.0 nautical miles
Time to Go	4 minutes
Bearing to Waypoint (RMI)	135°
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
Roll Steering (if applicable)	Flight Director commands 0° bank (level flight) for 5 seconds; commands increasing right bank at 1°/second for 5 seconds; commands 5° right bank for 5 seconds; commands decreasing right bank at 1°/second for 5 seconds, until command is 0° bank again. This cycle repeats continuously.

6.2.2 Signal Acquisition Check

NOTE

All other avionics should be turned off at the start of this test, with the GTN Xi powered on.

Verify the GTN Xi is able to acquire sufficient satellites to compute a GPS position. From the home page, touch the **System** key and then touch the **GPS Status** key. Under GPS Solution, verify a "3D Fix" or "3D Diff Fix" is obtained. If the unit is unable to acquire satellites, move the aircraft away from obstructions that might be shading GPS reception. If the GPS solution does not improve, check the GPS antenna installation.

NOTE

After installation, the initial acquisition of position can take up to 20 minutes. Subsequent acquisitions will not take as long.

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

1. On the ***GPS Status*** page, verify the LAT/LON agree with 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 verify it is not affected (no significant signal degradation).
3. Before proceeding with the VHF COM interference check, verify that any connected equipment is transmitting and/or receiving data from the GTN Xi and is functioning properly.

6.2.3 VHF COM Interference Check

NOTE

Interference checks must be completed on all IFR installations.

When installing GTN Xi equipment, it is the responsibility of the installer to verify the GTN Xi modification is compatible with all previous aircraft modifications. Garmin recommends whenever a GTN Xi is installed in an aircraft that has been modified with non-aviation radios, particular care should be exercised to ensure these do not interfere with proper function of the GTN Xi. Certain non-aviation radios can interfere with civil aviation navigation and surveillance equipment, including the Garmin GTN Xi.

When testing a transmitter from a non-aviation device, each frequency must be verified by transmitting for at least 30 seconds on each channel.

Once the Signal Acquisition Test has been completed successfully, perform the following steps:

1. View the ***Satellite Status*** page and verify at least seven satellites have been acquired by the GTN Xi.
2. Verify 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 the GPS "LOI" flag does not come into view.

6. Repeat steps 4 and 5 for the following frequencies:
   a. 25 kHz COM Channel Spacing:

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

   b. For VHF radios with 8.33 kHz channel spacing, include the following frequencies in addition to those listed above:

121.185 MHz	130.285 MHz
121.190 MHz	131.290 MHz

7. Repeat steps 3 through 6 for all remaining COM transceivers installed in the aircraft.
8. If the aircraft is TCAS-equipped, turn on the TCAS system and verify the GPS position remains valid. If position is lost, the status on the ***GPS Status*** page will change to "ACQUIRING".
9. If aircraft is SATCOM-equipped, use the SATCOM system and verify the GPS position remains valid. If position is lost, the status on the ***GPS Status*** page will change to "ACQUIRING".
10. If the GPS "LOI" flag comes into view, refer to Section 3.6.5.7 for options to improve performance.

6.2.3.1 Interference of GPS

On some installations, VHF COM transceivers, Emergency Locator Transmitter (ELT) antennas, and Direction Finder (DF) receiver antennas can re-radiate harmonics that can potentially interfere with the GPS antenna. The GTN Xi COM does not interfere with its own GPS section.

If a COM antenna is found to be the problem, a 1.57542 GHz notch filter (Garmin P/N 330-00067-00) may be installed in the VHF COM coax as close to the COM as possible. This filter is not required for the GTN 635Xi/650Xi/750Xi transmitter.

If a VHF COM is found to be radiating, the following can be done:

1. Replace or clean the VHF COM rack connector to ensure a good coaxial ground is made.
2. Place a grounding brace between the GTN Xi unit, VHF COM, and ground.
3. Shield the VHF COM wiring harness.

6.2.4 VHF NAV Checkout (GTN 650Xi/750Xi)

1. Touch the **CDI** key to select VLOC mode, which is indicated by a green "VLOC" annunciation on the bottom-center of the display.
2. Check the VOR reception with ground equipment, operating VOT or VOR.
3. Verify the audio and Morse code ID functions (if possible).
4. Tune a localizer frequency and verify the CDI needle and NAV flag, and VDI needle and GS flag properly operate.

6.2.4.1 NAV Audio Check (For non-GMA 35c Installations)

1. Ensure the audio panel is powered on.
2. Plug in a headset at pilot and co-pilot position.
3. Tune the GTN Xi NAV receiver to a local VOR station.
4. Verify the Morse code identifier is being received over the crew headsets.
5. If the audio is not heard, verify the wiring connections to the audio panel are correct.
6. Verify the audio volume is sufficient for all anticipated cockpit noise conditions.
7. Repeat steps 2 through 5 for each installed GTN Xi NAV receiver.

6.2.5 VHF COM Checkout (GTN 635Xi/650Xi/750Xi Only)

6.2.5.1 Antenna Check

If desired, the antenna VSWR can be checked using an inline wattmeter in the antenna coaxial cable using frequencies near both ends of the band. The VSWR should be < 2:1. A VSWR of 2:1 will cause a drop in output power of approximately 12%.

6.2.5.2 Receiver/Transmitter Operation

Tune the unit to a local VHF frequency and verify the receiver output produces a clear and understandable audio output. Verify the transmitter properly functions by contacting another station and getting a report of reliable communications.

6.2.6 GMA 35c Audio Panel Checkout (GTN 7XX Xi Only)

6.2.6.1 GMA 35c Interface Check (GTN 7XX Xi Only)

1. With the GTN Xi and the GMA 35c Audio Panel powered on, touch the **Audio Panel** key.
2. Verify a red “X” is not displayed over the **Audio Panel** key.

After configuring the audio panel, an in-aircraft checkout may be performed with a good microphone, headset, speaker, and avionics receivers. For testing the marker beacon, use a ramp tester that transmits a 75 MHz marker beacon test signal or perform the flight check outlined in Section 6.3.7.

For instructions on how to operate the GMA 35c in Normal mode during the installation checkout procedures, refer to *GTN Xi Series Pilot’s Guide*. Ensure every function of the GMA 35c correctly operates.

NOTE

In the procedural steps outlined below, allow for variation in the configuration settings for the particular installation under test.

6.2.6.2 Failsafe Operation Check

1. Power off the GMA 35c by pulling the GMA 35c circuit breaker.
2. Check the failsafe operation by exercising the COM 1 microphone, microphone key, and audio over the pilot's headphones.

NOTE

If utilizing the Failsafe Warn input, this audio channel should also be verified by causing the audio source to provide audio and making sure the alert is heard over the pilot's headset.

NOTE

Use of a true mono headset is required for this test (not a stereo headset with a mono/stereo switch) to verify of proper wiring even if a stereo jack is provided in the installation. Wiring the left channel (tip contact) and right channel (ring contact) backwards will cause failsafe mode not to function with mono headsets. This will guarantee the right channel (ring terminal) being shorted to the return (sleeve terminal) by the mono headset's plug. During power-on operation, this short will not damage the audio panel.

3. Verify COM 1 can key and transmit the pilot's mic audio by checking reception of the transmission with another radio tuned to receive this transmission (i.e., verify Pilot PTT and mic operation is delivered to this transceiver).
4. Turn the unit back on to continue testing.

NOTE

If the configuration setting COM 1 is connected as COM 2 is set to True (described in Section 5.4.6.6.2), then the COM 2 radio should be exercised rather than COM 1.

6.2.6.3 COM Transceiver Operational Check

1. Connect a headset to the pilot's headset output and mic input jack.
2. Verify each installed transceiver (COM) can be heard when selected.

NOTE

Depending on configuration settings, the mic selected COM may mute audio from other COMs.

3. Verify each installed transceiver transmits clear audio from the pilot's mic when the **Pilot PTT** key is pressed.

NOTE

Depending on configuration settings, other transceivers may be muted during transmit. Also, the audio panel may mute the speaker during PTT.

4. Move the headset to the copilot's headset jacks and verify any one of the installed transceivers (testing each is not necessary) receives and transmits copilot mic properly as above.

6.2.6.4 NAV Audio Check

1. Power on the GMA 35c and each installed NAV receiver.
2. Tune the NAV receiver to a local VOR station.
3. Verify the Morse code identifier is being received over the crew headsets.
4. If the audio is not heard, verify the wiring to the audio panel is correct.
5. Verify the audio volume is sufficient for all anticipated cockpit noise conditions.
6. Repeat steps 1 through 4 for each installed NAV receiver.

6.2.6.5 Alert Audio Check

If there is an alert audio source connected to the GMA 35c, the interface should be verified as described below:

1. Cause the alert audio source to produce audio (e.g., if a traffic system is installed, command the traffic system into self-test mode; if a TAWS system is installed, command the TAWS system into self-test mode).
2. Verify the alert audio source is heard in the pilot and co-pilot headsets and the audio volume is sufficient for all anticipated cockpit noise conditions. Adjust the audio volume level as needed, following the instructions in Section 5.4.6.6.2.2.
3. If the alert audio source is not heard in the crew headsets, check the wiring from the source to the GMA 35c alert audio inputs.
4. Repeat this procedure for each alert audio source connected to the GMA 35c.

6.2.6.6 Receiver Audio Check

If there are receiver audio sources connected to the GMA 35c, the interface should be verified as described below. Ensure the GMA 35c and the interfaced receiver (e.g., DME, ADF, etc.) are powered on.

1. Plug in a headset at pilot and co-pilot position.
2. Tune the installed receiver to a valid station.
3. Verify the audio is being received over the crew headsets.
4. Verify the audio volume is sufficient for all anticipated cockpit noise conditions.
5. Adjust the audio output level as needed at the receiver.
6. Repeat steps 2 through 5 for each installed receiver.

6.2.6.7 Intercom System (ICS) Check

NOTE

If a monaural headset is plugged into any stereo phone jack position, no damage will occur to the GMA 35c. In the case of plugging a monaural headset into any passenger position, any stereo listener will lose one channel when another passenger plugs in a monaural headset.

1. Place the audio panel into ALL ICS mode (refer to *GTN Xi Series Pilot's Guide*) so all ICS positions hear all others.
2. De-select or turn off other audio sources (e.g., MKR, transceivers, receivers, alerts). Some configurations may mute passenger intercom audio to crew when aircraft audio is present.

3. From the pilot headset position, verify the pilot, co-pilot, and all passenger mic inputs can be heard in the pilot's headset when speaking into the mic input under test.
4. Adjust the pilot ICS volume, if necessary.
5. Speak into the pilot's mic and verify co-pilot mic audio is heard in the co-pilot headset.
6. Adjust the co-pilot ICS volume, if necessary.
7. Repeat steps 3 through 6 for each passenger headset.

6.2.6.8 Aircraft Receivers Check

1. Select the audio source for each avionics unit installed in the aircraft and check for audio over the headsets.
2. Touch the **Cabin Speaker** key and verify any selected audio is heard over the speaker.

6.2.6.9 Music System Check (If Installed)

NOTE

Music should mute as a result of GTN Xi audio output. If music fails to mute as a result of GTN Xi key click audio or TAWS audio, adjust the alert audio squelch level to verify the GMA input for GTN Xi and other alerting inputs is sensitive enough to cause the music to mute.

1. Distribute the music to each position (e.g., pilot, co-pilot, passenger).
2. Verify the music source is turned up and is not muted.
3. Connect a stereo audio source to MUSIC 1 or MUSIC 2.
4. Verify the stereo audio is heard over each headset position.
5. Tune a station on COM 1 and monitor the COM. Verify the music audio is muted by active COM 1 audio (break squelch on COM 1, if necessary). Repeat this check for both the pilot and co-pilot headset positions. If music fails to mute, it is possible the squelch level for one of the unswitched alert audio inputs is set too low.

6.2.6.10 Bluetooth Audio Check

While on the ground, turn on the GTN Xi and GMA 35c. A compatible Android or iOS PED is required.

NOTE

To verify telephone audio is available, a Bluetooth-compatible phone is needed.

1. Navigate to the ***GMA 35c*** page by touching ***System*** → ***Connext Setup*** → ***GMA 35c***.
2. Verify Bluetooth is enabled.
3. On the PED, view the list of available Bluetooth devices.
4. Select the device that matches the Bluetooth name shown on the GTN Xi screen.
5. Verify the PED is paired with the GTN Xi. A green check mark is displayed by the paired device.
6. Touch **Intercom** on the GTN 725Xi/750Xi.
7. Touch **Bluetooth Audio** and set distribution to Pilot, Co-pilot, and Passenger.
8. Touch **Radio** to mute Bluetooth during radio transmissions.

9. Touch **Intercom** to mute Bluetooth during intercom transmissions.
10. Verify the audio from PED is distributed to the selected positions.
11. Tune and monitor a COM frequency to verify the communications over the radio are easily heard over the audio.

NOTE

If different values are used for the telephone and audio volume settings, repeat this procedure while making a call from a Bluetooth compatible phone.

12. Adjust the Bluetooth volume as necessary.

6.2.7 Terrain System Check (For Units with Terrain Alerting/TAWS Only)

While on the ground, turn on the GTN Xi following normal power-up procedures. Also turn on the audio panel.

NOTE

A 3D GPS position fix is required to conduct this check.

1. Select the ***Terrain*** page from the Normal mode home page.
2. Touch the **MENU** key.
3. Touch the **Test Terrain** or **Test TAWS** key.
4. Wait until the Terrain Alerting/TAWS self-test completes (10-15 seconds) to hear the Terrain/TAWS system status aural message:
   - The aural message "Terrain System Test OK" or "TAWS System Test OK" will be annunciated if the Terrain/TAWS system is properly functioning
   - The aural message "Terrain System Failure" or "TAWS System Failure" will be annunciated if the Terrain/TAWS system is **not** properly functioning. Also, "Terrain Fail" or "TAWS FAIL" will appear in amber on the screen

If no audio message is heard, then a fault exists within the audio system or associated wiring and the Terrain/TAWS capability must be considered non-functional. Verify the wiring to the audio panel is installed in accordance with Appendix Section B.2.

6.2.8 Interface Checks

6.2.8.1 Weather Radar Interface Check

6.2.8.1.1 GWX 68/70/75 Weather Radar Interface Check

This section makes sure the heading interface between the GTN 7XX Xi and the GWX 68/70/75 weather radar is functional.

1. Power on the GTN Xi in Normal mode.
2. On the home page, touch **Weather** and then **Radar**.
3. Touch the **Mode** key and select Standby mode and wait for the warm-up to complete.
4. Touch the **Mode** key again and select Test mode.
5. Verify the GWX 68/70/75 begins sweeping and the test pattern is shown.
6. If supported by the installation, verify stabilization is on (“STAB On” is displayed in the upper-right corner of the radar display).
7. Using the **Mode** key, set the mode to *Off*.
8. If a second GTN Xi is installed, repeat steps 2 through 7.

6.2.8.1.2 ARINC 708 Weather Radar Interface Check

This section makes sure the interface between the GTN 7XX Xi and ARINC 708 weather radar is functional.

WARNING

Aircraft should be outdoors and personnel should not be in front of the weather radar when it is radiating (i.e., when Weather or Ground mode is selected on the GTN Xi).

1. Power on the GTN Xi in Normal mode. In a dual GTN 7XX Xi installation, power on both in Normal mode.
2. On each GTN Xi, navigate to the home page, touch **Weather** and then **Radar**.
3. On one GTN Xi, touch the **Mode** key and select Standby mode and wait for the warm-up to complete.
4. Touch the **Mode** key again and select *Test Mode*.
5. Verify the radar begins sweeping and the test pattern is shown.
6. If stabilization is supplied to the radar, turn the radar to Weather mode and turn stabilization on in the weather menu.
7. Verify “STAB On” is displayed in the upper-right corner or the radar display. If “STAB INOP” is displayed, verify stabilization is being supplied to the weather radar R/T.
8. Using the **Mode** key, set the mode to *Off*.

NOTE

If only one GTN 7XX Xi is installed, the following steps do not have to be carried out.

9. Repeat steps 3 through 7 for the second GTN 7XX Xi.
10. On each GTN Xi, touch the **Mode** key and select *Standby* and wait for the warm-up to complete.
11. On each GTN Xi, touch the **Mode** key again and select *Test Mode*.
12. On GTN Xi #1, touch the **Zoom Out** key to increase the range of the radar display.
13. Verify the range on GTN Xi #1 changes and the range on GTN Xi #2 does not change.

14. On GTN Xi #2, touch the **Zoom Out** key to increase the range of the radar display. Select a different zoom level than GTN Xi #1.
15. Verify the range on GTN Xi #2 changes and the range on GTN Xi #1 does not change.
16. On each GTN Xi, using the **Mode** key, set the mode to *Off*.

6.2.8.2 GSR 56 Iridium® Check

NOTE

When testing the GSR 56, the aircraft must be located outside and have an unobstructed view of the sky.

NOTE

For additional information on using the GSR 56 features, refer to GTN Xi Series Pilot's Guide.

NOTE

To use the position reporting feature of the GSR 56, a short burst data (SBD) Iridium account is required. To use the phone feature of the GSR 56, an Iridium voice account is required. To use the SMS feature of the GSR 56, an Iridium SMS account is required. To use the weather feature of the GSR 56, an Iridium RUDICS account is required. For more information on how to subscribe to the services offered by the GSR 56, refer to the GSR 56 installation manual.

If the GSR 56 Iridium transceiver is installed and connected to the GTN Xi, check the operation as follows:

1. Power on the GTN Xi in Normal mode.
2. If position reporting is enabled, navigate to the ***Iridium*** page in the Utilities page group and touch **Position Reporting**.
3. Verify the reporting status is not "Unavailable".
4. If the Iridium phone is enabled, navigate to the ***Iridium Phone*** page in the Iridium page group.
5. Verify the phone status is not "Unavailable".
6. Verify a phone call can be placed.

NOTE

The following steps should only be completed if CONNEXT Weather is enabled. In order to receive weather updates, the GSR 56 being tested must be registered and the registration access code must be entered into the GSR 56 using the GTN Xi.

7. Navigate to the ***Connext*** page in the Weather page group.
8. Verify the Connext settings can be found by touching **Menu**.
9. If the GSR 56 is registered, touch the **Menu** key and select the "CONNEXT Data Request" option under CONNEXT settings. Verify weather is displayed on the map. Refer to *GTN Xi Series Pilot's Guide* for information on requesting Connext data.

6.2.8.3 Honeywell (Bendix/King) EFS 40/50 Interface Check

If a Honeywell EFS40/50 has been connected to the GTN Xi, the interface should be verified as described in this section.

1. Cycle power to the first GTN Xi and acknowledge the prompts until it gets to the ***Instrument Panel Self-Test*** page (refer to Section 6.2.1).
2. Verify GPS1 data is displayed by pressing the **1-2** key on the EFS40/50 control panel.
3. While the GTN Xi is displaying the ***Instrument Panel Self-Test*** page, verify the EFS40/50 is displaying data from the GPS source. Refer to Section 5.4.3.1 for configuration information.
   - Course Deviation: Half-scale left deviation, TO indication, flag pulled
   - Active Waypoint: GARMN
   - Vertical Deviation: Half-scale up deviation (only if installation is setup to display GPS vertical deviation)
4. On the GTN Xi, verify an OBS value is displayed (and not dashed out).
5. Using a VOR test set, verify the CDI deviation on the EFS40/50 is correctly displayed.
6. Cycle power to the second GTN Xi and acknowledge the prompts until it gets to the ***Instrument Panel Self-Test*** page.
7. Switch to GPS2 data by pressing the **1-2** key on the EFS40/50 control panel and repeat steps 3-5 with GTN Xi #2.

6.2.8.4 Sandel SN 3308 Interface Check

If a Sandel EHSI has been connected to the GTN Xi, the interface should be verified as described in one of the following sections, as applicable for the installation.

6.2.8.4.1 Single GTN Xi/Single SN 3308

1. Cycle power to the GTN Xi and acknowledge the prompts until it gets to the ***Instrument Panel Self-Test*** page (refer to Section 6.2.1).
2. Verify the SN3308 is receiving valid heading.

NOTE

The Vertical Deviation Indication will not be displayed unless the SN3308 is receiving valid heading.

3. While the GTN Xi is displaying the ***Instrument Panel Self-Test*** page, verify the SN3308 is displaying the following data from the GPS source:
   - Course Deviation: Half-scale left deviation, TO indication, flag pulled
   - Vertical Deviation: Half-scale up deviation, flag pulled
   - Active Waypoint: GARMN
4. On the GTN Xi, verify an OBS value is displayed (and not dashed out).
5. Acknowledge the self-test on the GTN Xi by touching the **Continue** key.
6. Select VLOC on the GTN Xi and verify the SN3308 displays “NAV 1” or “NAV 2” (depending on the GTN Xi navigation source configuration).
7. Using a VOR test set, verify the CDI deviation on the SN3308 is correctly displayed.

6.2.8.4.2 Dual GTN Xi Units/Single SN3308

1. Remove power from GTN Xi #2.
2. Cycle power to GTN Xi #1 and acknowledge the prompts until it gets to the ***Instrument Panel Self-Test*** page (refer to Section 6.2.1).
3. Select GPS1 as the navigation source by pressing the **NAV** key on the SN3308.
4. Verify GPS1 is displayed on the SN3308.
5. Verify the SN3308 is receiving valid heading.

NOTE

The Vertical Deviation Indication will not be displayed unless the SN3308 is receiving valid heading.

6. While GTN Xi #1 is displaying the ***Instrument Panel Self-Test*** page, verify the SN3308 is displaying the following data from GPS1:
   - Course Deviation: Half-scale left deviation, TO indication, flag pulled
   - Vertical Deviation: Half-scale up deviation, flag pulled
   - Active Waypoint: GARMN
7. On GTN Xi #1, verify an OBS value is displayed (and not dashed out).
8. Acknowledge the self-test on GTN Xi #1 by touching the **Continue** key.
9. Select VLOC on GTN Xi #1 and verify the SN3308 displays “NAV 1” or “NAV 2” (depending on which navigation source the GTN Xi is).
10. Using a VOR test set, verify the CDI deviation on the SN3308 is correctly displayed.
11. Remove power from GTN Xi #1 and apply power to GTN Xi #2.
12. Acknowledge the prompts until the ***Instrument Panel Self-Test*** page is displayed. Refer to Section 6.2.1.
13. Select GPS2 by pressing the **NAV** key on the SN3308.
14. Repeat steps 5-10 with GTN Xi #2.

6.2.8.4.3 Dual GTN Xi Units/Dual SN3308s

1. Remove power from GTN Xi #2.
2. Cycle power to GTN Xi #1 and acknowledge the prompts until it gets to the ***Instrument Panel Self-Test*** page (refer to Section 6.2.1). Select GPS1 as the navigation source by pressing the **NAV** key on the SN3308.
3. Verify GPS1 is displayed on the SN3308.
4. Verify the SN3308 is receiving valid heading.

NOTE

The Vertical Deviation Indication will not be displayed unless the SN3308 is receiving valid heading.

5. While GTN Xi #1 is displaying the ***Instrument Panel Self-Test*** page, verify the SN3308 is displaying the following data from GPS1:
   - Course Deviation: Half-scale left deviation, TO indication, flag pulled
   - Vertical Deviation: Half-scale up deviation, flag pulled
   - Active Waypoint: GARMN
6. Verify an OBS value displays on GTN Xi #1.
7. Touch the **Continue** key to acknowledge the self-test on GTN Xi #1.
8. Select *VLOC* on GTN Xi #1.
9. Verify the SN3308 displays “NAV 1” or “NAV 2” (depending on which navigation source the GTN Xi is).
10. Using a VOR test set, verify the CDI deviation on the SN3308 is correctly displayed.
11. Remove power from GTN Xi #1.
12. Apply power to GTN Xi #2.
13. Acknowledge the prompts until the ***Instrument Panel Self-Test*** page displays (refer to Section 6.2.1).
14. Press the **NAV** key on the SN3308 to select GPS2.
15. Repeat steps 4-10 with GTN Xi #2.
16. Perform the same procedure for the second SN3308.

6.2.8.5 Sandel SN3500/4500 Interface Check

If a Sandel SN3500/4500 EHSI has been connected to the GTN Xi, the interface should be verified as described in this section.

1. Cycle power to the GTN Xi and acknowledge the prompts until it gets to the ***Instrument Panel Self-Test*** page (refer to Section 6.2.1).
2. Verify the SN3500/4500 is receiving valid heading.

NOTE

The Vertical Deviation Indication will not be displayed unless the SN 3500/4500 is receiving valid heading.

3. While the GTN Xi is displaying the ***Instrument Panel Self-Test*** page, verify the SN3500/4500 is displaying data from the GPS source.
   - Course Deviation: Half-scale left deviation, TO indication, flag pulled
   - Vertical Deviation: Half-scale up deviation, flag pulled
   - Active Waypoint: GARMN
4. On the GTN Xi, verify an OBS value is displayed (and not dashed out).
5. Acknowledge the self-test on the GTN Xi by touching the **Continue** key.
6. Select VLOC on the GTN Xi and verify the SN3500/4500 displays “NAV 1” or “NAV 2” (depending on what navigation source the GTN Xi is).
7. Verify the NAV 1 (or NAV2) indication does not have a red line through it.
8. Repeat steps 3-7 for GTN Xi #2, if installed.

6.2.8.6 Ryan TCAD Traffic System Interface Check

If a Ryan TCAD has been connected to the GTN Xi, the traffic interface should be verified as described in this section.

1. Navigate to the ***Traffic*** page on the GTN Xi.
2. Verify "NO DATA" is not displayed in yellow on the center of the ***Traffic*** page.
3. Using the SHIELD SETUP under the Traffic menu, verify the shield mode can be changed.

6.2.8.7 EHSI Deviation Scaling for HSI/CDI Driven by GTN Xi via ARINC 429 Data

If the GTN Xi has a ARINC 429 connection to an EFIS display, proper scaling of the EFIS CDI and VDI must be verified.

1. Cycle power to the GTN Xi and acknowledge the prompts until it gets to the ***Instrument Panel Self-Test*** page (refer to Section 6.2.1).
2. With the ***Instrument Panel Self-Test*** page displayed on the GTN Xi, look on the EHSI/EFIS and verify the lateral deviation is half-scale left and not flagged.
3. With the ***Instrument Panel Self-Test*** page displayed on the GTN Xi, look on the EHSI/EFIS and verify the vertical deviation is half-scale up and not flagged.

NOTE

If the deviations are not as described, the EHSI/EFIS does not scale the GTN Xi deviations properly and this installation cannot be certified for GPS-based guidance. Contact Garmin for further assistance.

6.2.8.8 ARINC 429 Traffic System Interface Check

If a Garmin GTS 8XX Traffic system, L-3 Communications SKY497/SKY899 SkyWatch sensor, or a Honeywell (Bendix/King) KTA 810 TAS/KMH 820 IHAS has been connected to the GTN Xi via ARINC 429, the traffic interface should be verified as described in this section.

1. Navigate to the ***Traffic*** page on the GTN Xi from the home page.
2. Verify "NO DATA" is not displayed in yellow on the center of the ***Traffic*** page.
3. If the GTN Xi is configured to control the traffic system (Section 5.4.3.9), verify the traffic system mode can be changed from *STBY* to *OPER*.
4. Switch the traffic system mode to *STBY*, and then run the traffic self-test from the menu.
5. Verify the traffic system executes a self-test and a self-test pattern is displayed on the GTN Xi traffic display.
6. Restart the GTN Xi in Configuration mode.
7. On the ***Traffic*** page in the External Systems page group, verify there is data displayed in the Altitude field.

6.2.8.9 Stormscope® Interface Check

If an L-3 Communications WX-500 Stormscope has been connected to the GTN Xi, the Stormscope interface should be verified as described in this section.

1. Navigate to the ***Lightning*** page on the GTN Xi.
2. Verify "STORMSCOPE FAILED" is not displayed in yellow on the center of the ***Lightning*** page.
3. Verify the Stormscope mode can be changed from *Strike* to *Cell*, and vice versa.

6.2.8.10 GMX 200/MX20 Interface Check

If a Garmin GMX 200 or MX20 has been connected to the GTN Xi, the interface should be verified as described in this section.

1. Verify the GTN Xi has a 3-D position fix.
2. Create and activate a flight plan on the GTN Xi by touching the **Direct-To** key and entering a waypoint.
3. Verify the RTE and POS data flags are not displayed on the GMX 200/MX20.
4. Verify the flight plan is displayed on the GMX 200/MX20 using the flight plan (FPL) function.

6.2.8.11 GDL 69/69A Interface Check

If a Garmin GDL 69 has been connected to the GTN Xi, the interface should be verified as described in Section 6.2.8.11.1. If a Garmin GDL 69A has been connected to the GTN Xi, the interface should be verified as described Sections 6.2.8.11.1 and 6.2.8.11.2. Each of these procedures involves making sure the satellite signal is acquired and tracked. Locate the aircraft where there is a clear view of the southeastern or southwestern sky. XM Satellite Radio satellites are located above the equator over the eastern and western coasts of the continental United States.

NOTE

The following sections only check that the interface between the GTN Xi and GDL 69/69A correctly operates. It does not activate the GDL 69 Sirius XM data link radio. Complete instructions for activating the Sirius XM data link radio can be found in GDL 69/69A XM Satellite Radio Activation Instructions (P/N 190-00355-04).

6.2.8.11.1 SiriusXM Satellite Radio Weather Checkout Procedure

1. With the GTN Xi in Normal mode, navigate to the ***External LRUs*** page (in the System page group) then touch the **More Info** key next to "GDL69."
2. Verify the Data Radio ID field has a valid ID. For a GDL 69A, the Audio Radio ID field should also display a valid ID.
3. Verify at least one subscribed weather product turns green on the ***GDL 69 Status*** page. This may take several minutes. This will indicate the weather products are being received.
4. During SiriusXM activation, "Detecting Activation" will be displayed in the Subscription Level field on the ***SiriusXM Information*** page. The subscription level will be displayed once the SiriusXM signal is detected.

6.2.8.11.2 SiriusXM Satellite Radio Audio Checkout Procedure

The following steps only need to be completed for GDL 69A installations:

1. Navigate to the ***Music*** page from the home page.

NOTE

If the SiriusXM Satellite Radio audio subscription has not been activated, audio is available only on Channel 1. If the audio subscription has been activated, audio should be available on multiple channels.

2. Verify the GDL 69A audio is not muted.
3. Verify audio can be heard over the headsets.
4. Adjust the volume to verify the data path is working and the volume is at an satisfactory level.

6.2.8.12 External RMI/OBI Interface Check (GTN 650Xi/750Xi Only)

The GTN Xi VOR RMI/OBI output can be used to drive an RMI (or OBI) navigation indicator. This check verifies the RMI/OBI is receiving data from the GTN Xi. If the following steps do not perform correctly, check the electrical connections and configuration setup.

NOTE

The aircraft heading system must be operating properly in order for the RMI needle to point correctly.

6.2.8.12.1 VOR OBI Output

If the VOR OBI output from the GTN 650Xi/750Xi is connected to an RMI navigation indicator, verify the interface is correctly operating.

1. Power on the equipment.
2. If installed, set the RMI select switch to the VLOC position.
3. Tune a local VOR station, or use a simulated signal from an approved VOR Test System.
4. Verify the RMI needle swings and points toward the VOR station.

6.2.8.13 DME Tuning Check (GTN 650Xi/750Xi Only)

If the GTN Xi is set up to remotely channel a DME, verify the interface is correctly operating.

1. Select a VOR/ILS channel that corresponds to (1) a DME station within a 40 nautical mile range, or (2) the frequency of a DME ground tester.
2. Verify the DME locks on to the signal and a valid distance is displayed.
3. Tune an invalid VOR station.
4. Verify the DME data is flagged.
5. If two GTN Xi units are set up to remotely channel a DME, repeat steps 1-4 using the other GTN Xi.

6.2.8.14 TIS (Garmin GTX 33/330/335/335R) Interface Test

If a Garmin GTX 33/330/335/335R transponder has been connected to the GTN Xi, the traffic interface should be verified as described in this section.

1. Select the Traffic Map on the GTN Xi.
2. Verify “TIS FAIL” is not displayed in the upper-left corner under Traffic Status, and “NO DATA” (yellow) is not displayed over the ownship symbol.
3. On the upper-left corner of the ***Traffic Map*** page, verify the status of the traffic system is either “TIS Standby” or “TIS Operating/Unavailable” (i.e., “TAS” should not be displayed).

The following additional steps should only be completed if the GTN Xi is controlling the traffic system:

1. Pull the transponder circuit breaker and verify the air data fields do not contain a red “X”.
2. If a squat switch (or airspeed switch) is connected to the GTX, verify it is in AIR mode.
3. Alternately, touch the **Standby** key and **Operate** key to change the mode of the traffic system. It may take several seconds for the traffic system to change modes.
4. Verify the mode of the traffic system can be changed.

6.2.8.15 Transponder Interface Check

If the GTN Xi is interfaced to a GTX 32/33/335R/345R remote transponder or a GTX 327/328/330/335/345 configured as a remote transponder, the following checks must be completed:

1. With the GTN Xi in Normal mode and the transponder powered on, verify there is no red “X” over the transponder data field on the top right of the screen of the home page.
2. Enter a code into the Code field using the keypad.
3. Touch the **Enter** key
4. Verify the code that was entered is displayed in the Transponder Data field.
5. If dual transponders are installed, select *Transponder 2* and perform steps 1 through 4 for the second transponder.
6. Pull the Transponder #1 circuit breaker and verify the transponder 1 data field contains a red “X” rather than the transponder 2 data field to verify the wiring is not crossed (i.e., transponder 1 is incorrectly connected to transponder 2 circuit breaker).
7. Repeat the preceding steps for the second GTN Xi.

6.2.8.16 Fan Interface Check

NOTE

The fan may take a few minutes to power on if the unit is below normal operating temperature.

With the GTN Xi in Normal mode and the fan on:

1. Touch the **Message Queue** key on the home page.
2. Verify the “COOLING FAN- the cooling fan has failed” message is not displayed.

6.2.8.17 GTX 345/345R Interface Check

When testing the GTX 345/345R, the aircraft must be located outside and have an unobstructed view of the sky. If the GTX is installed and connected to the GTN Xi as the ADS-B In Source, check the operation as follows:

1. Power on the GTN Xi in Normal mode.
2. Power on the transponder.
3. Touch the **System** key.
4. Touch the **External LRUs** key.
5. Verify that the status for the GTX is a green checkmark.
6. Touch the **More Info** key for the GTX.
7. Verify that the GPS status and software versions are reported.
8. Repeat the preceding steps for the second GTN Xi, if applicable.

If TAWS is configured on the GTN Xi in addition to the interface to the GTX 345/345R, check the operation as follows:

9. Monitor the Audio Inhibit discrete input on the ***Discrete Diagnostics*** page for the GTX using the bezel controls in Configuration mode on the GTX or the GTX 3X5 Install Tool.
10. Verify the Audio Inhibit discrete input indicates active when the TAWS system is playing audio and inactive otherwise. Refer to Section 6.1.7.

6.2.9 GDL 88 Interface Check

When testing the GDL 88, the aircraft must be located outside and have an unobstructed view of the sky. If the GDL 88 is installed and connected to the GTN Xi, check the operation as follows:

1. Power on all GTN Xi units into Configuration mode. Refer to Section .
2. Navigate to the ***GDL 88*** page in the External Systems page group.
3. Touch the **Diagnostics** key.
4. Touch the **GPS/SBAS Data** key.
5. Verify the GDL 88 is receiving valid position source data.
6. Verify the status of the External GPS connection(s) is valid.

If a TAWS system is installed in addition to the GDL 88, check the operation as follows:

7. Navigate to the ***GDL 88 Discrete Input*** page under GDL 88 Diagnostics page group.
8. Verify the Audio Inhibit #1* discrete input indicates active when the TAWS system is playing audio, and inactive otherwise. Refer to Section 6.1.7.

6.2.10 Flight Stream 210/510 Interface Check

For this checkout, the Flight Stream 210/510, GTN Xi, GDL 69 (if installed), and GDL 88 (if installed) need to be powered on.

NOTE

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

6.2.10.1 Bluetooth Setup

When the Flight Stream 210/510 device is powered on, Pairing mode will not be enabled until the ***Connext Setup*** page is opened on the GTN Xi.

1. Enable Bluetooth connectivity on the PED. Once enabled, Flight Stream 210/510 will be viewable in the list of available devices.
2. Select the Flight Stream 210/510 from the list of available Bluetooth devices on the PED.

The default Flight Stream 210/510 Bluetooth name is "Flight Stream" followed by the three-digit model number (210 or 510) and then the last four digits of the MAC address (e.g., Flight Stream 210 4000).

A pop-up will appear on the GTN Xi screen to confirm the new Bluetooth pairing. Select **Yes** to finish pairing the device.

Bluetooth setup only needs to be run when pairing with a device for the first time. Once a connection is established with a Bluetooth device, the Flight Stream 210/510 will automatically connect to the Bluetooth device upon power-up. The Flight Stream may be connected to up to four Bluetooth devices simultaneously. The Flight Stream 210/510 will also save up to thirteen Bluetooth device pairings.

NOTE

If issues occur when making a Bluetooth connection, cycle power on the Flight Stream device and retry making a Bluetooth connection.

6.2.10.2 Interface Checks

After pairing the Flight Stream 210/510 with the PED, verify the device is communicating with the GTN Xi, GDL 88 (if installed), and GDL 69A (if installed). This test should be performed outside, away from buildings and large obstructions. If any of the tests below are unsuccessful, refer to *GTN Xi Part 23 AML STC Maintenance Manual and ICA* (P/N 190-01007-C1) for trouble-shooting information.

6.2.10.2.1 GTN Xi Interface Check

1. On the Garmin Pilot application, navigate to the ***Flight Plan*** page and create a flight plan.
2. Select the **Connext** icon at the top of the page.
3. Select the option to send the flight plan to the GTN Xi. If successful, a message will be available on the GTN Xi.

6.2.10.2.2 GDL 88 Interface Check (If Installed)

1. Navigate to the ***Traffic*** page on the GTN Xi.
2. Navigate to the ***Traffic*** page on the Garmin Pilot application.
3. On the GTN ***Traffic*** page, touch the **Menu** key.
4. Touch the **Test** key. If the **Test** key is unavailable, ADS-B Status must be turned off.
5. Verify the traffic targets are displayed on the PED.

6.2.10.2.3 GDL 69/69A Interface Check (If Installed)

1. On the Garmin Pilot application, navigate to the ***Connext*** page.
2. Select **SiriusXM** under Status and verify that weather data is available.

6.2.11 Magnetic Compass Check

A compass swing should be carried out at completion of installation in accordance with AC 43.13-1B, Chapter 12, Section 3, paragraph 12-37.

6.2.12 Electromagnetic Compatibility (EMC) Check

NOTE

The Flight Stream 110/210 EMC check does not show compliance for 14 CFR 91.21, 121.306, or 125.204. It is the responsibility of the aircraft operator to comply with regulations governing the use of PEDs on an aircraft.

Wait for the current system start-up sequence to finish before applying power to the next system. An EMC check must be conducted once the GTN Xi/GMA 35/Flight Stream is installed and all interfaces to external equipment are verified to be correctly working. The EMC check verifies that the equipment is not producing unacceptable interference in other avionics systems and that other avionics systems are not producing unacceptable interference in the GTN Xi. An example EMC Source/Victim matrix is shown in Figure 6-8.

Perform the following procedure:

1. Enter equipment installed in the aircraft into the Source row and Victim column of the form.
2. Apply power to all avionics systems, except the equipment installed under this STC.
3. Verify that all existing avionics systems are properly functioning.
4. Apply power to the GTN Xi, GMA 35, and Flight Stream.
5. Remove power from all other avionics systems.
6. Apply power and/or operate the systems listed on the form, one system at a time.
7. Verify that the GTN Xi properly functions.
8. Verify that each radio properly functions.
   a. For VHF COM radio, monitor one local frequency, one remote (far field) frequency, and one unused frequency.
   b. Verify that there are no unintended squelch breaks or audio tones that interfere with communications.
   c. For each VHF NAV radio, monitor one local frequency, one remote (far field) frequency, and one unused frequency.
   d. Verify that there are no guidance errors.
   e. Verify that there are no audio tones that interfere with the station ID.
9. Verify that all other avionics properly function.

	VICTIM																																		
SOURCE	Attitude Indicator	Airspeed Indicator	Altimeter	Vertical Speed Indicator	Turn and Bank Indicator	Heading Indicator	Magnetic Compass	Clock	OAT Indicator	Power Plant Instruments	Autopilot / SAS	Navigation Radio(s)	Communication Radio(s)	Engine Relight	Fuel Valve	Pitot Heat	Pulse Light	Generator	Pos Lt	Anti Coll Lt	Ldg Lts	Gov RPM Incr / Decr	Eng Deicing	Hyd System	Radar Altimeter	TAS/TCAS	Transponder	Audio Panel	GTN Xi	GMA 35 or GMA 35c	Traffic Sensor 1	Traffic Sensor 2				
Attitude Indicator	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Airspeed Indicator	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Altimeter	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Vertical Speed Indicator	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Turn and Bank Indicator	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Heading Indicator	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Magnetic Compass	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Clock	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
OAT Indicator	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Power Plant Instruments	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Autopilot / SAS	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Navigation Radio(s)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Communication Radio(s)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Engine Relight	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Fuel Valve	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Pitot Heat	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Pulse Light	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Generator	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Pos Lt	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Anti Coll Lt	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Ldg Lts	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Gov RPM Incr / Decr	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Eng Deicing	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Hyd System	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Radar Altimeter	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
TAS/TCAS	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Transponder	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Audio Panel	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
GTN Xi	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Flight Stream	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
GMA 35 or 35c	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Traffic Sensor 1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Traffic Sensor 2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Figure 6-8 Example EMC Source/Victim Matrix

6.2.13 Engine Run-Up Vibration Test

NOTE

The Flight Stream 210 includes an attitude sensor. Performing this test will validate the vibration characteristics of the installation.

Initiate the Flight Stream 210 Attitude Sensor engine run-up vibration test procedure by performing the following steps:

1. If a G500/G600 is present in the aircraft, pull the circuit breaker to the AHRS before performing this test. If a G500/G600 TXi is present in the aircraft, pull the circuit breaker to the AHRS or PFD (for integrated ADAHRS systems) before performing this test.
2. For this test, a Flight Stream 210 compatible iOS or Android device with the Garmin Pilot application will be required. Open the application to the ***Attitude Indicator*** screen and observe the reading throughout the test.
3. Prior to running the test, place the aircraft on a level surface and zero the Flight Stream 210 attitude sensor by pressing **Reset Pitch/Roll** on the application. This setting is located under the Flight Stream 210 device settings.
4. Start the engine and gradually increase power from idle to full throttle and back to idle over the course of about 90 seconds.
5. If the reading deviates more than 5° during the test, a new mounting location should be chosen for the Flight Stream 210.

The following are potential causes for failure of the Engine Run-up Test:

- Excessive flexibility of Flight Stream 210 mechanical mounting with respect to airframe
- Vibrational motion of Flight Stream 210 caused by neighboring equipment and/or supports
- Mounting of Flight Stream 210 at a location that is subject to severe vibrations
- Mounting screws or other hardware for Flight Stream 210 not firmly attached
- Absence of mounting supports recommended by the aircraft manufacturer
- Cabling leading to Flight Stream 210 not firmly secured to supporting structure
- An engine/propeller combination that is significantly out of balance

6.2.14 Database Check

Check the navigation database to verify it is current. The database information is displayed during the unit display start-up sequence. To check the database:

1. Cycle power on the GTN Xi. The GTN Xi will go through its normal start-up sequence.
2. Wait for the ***Database Verification*** page to be displayed.
3. Verify the expiration dates displayed have not passed for each database.
4. The database expiration date can also be viewed in the ***System Status*** page, which is accessed from the ***System*** page in Normal mode. If the database has expired, then update the database per Section 1.6.

6.3 Flight Checks

A flight check is required as final installation verification. Verify the system operates as described in the following sections.

The analog deviation (LEFT/RIGHT and UP/DOWN), TO/FROM, and FLAG (lateral and vertical) outputs to a CDI or HSI should be verified in flight with potential sources of electrical noise, such as autopilot, flaps, gear, heater blowers, etc., operating. Lateral deviation and flags may be checked with either GPS or VOR/ILS, and vertical deviation and flags must be checked with glideslope. Verify the flags are hidden at the correct times, and the flag is in view at the correct times. Verify, during flight, any placards and labels added as part of the GTN Xi installation are readable in all anticipated cockpit lighting conditions.

6.3.1 GPS Flight Check

1. Verify GPS position is not lost during normal aircraft maneuvering (e.g., bank angles up to 30° and pitch angles associated with take-off, departures, approaches, landings, and missed approaches, as applicable). If GPS position is lost, a “Loss of GPS Navigation” message will be displayed.
2. Enter and activate a flight plan on the GTN Xi by touching the **Direct-To** key and entering a waypoint. Fly the flight plan and verify the display of flight plan data is consistent with the CDI indication (e.g., deviation, TO/FROM, etc.) in the pilot’s primary field-of-view.

6.3.2 VHF COM Flight Check (GTN 635Xi/650Xi/750Xi)

After the installation is complete, a flight check is required to ensure performance is satisfactory. To check the communications transceiver:

1. Maintain an appropriate altitude and contact a ground station facility at a range of at least 50 nautical miles.
2. Contact a ground station in close proximity.
3. Press the COM volume knob to select manual squelch and listen for any unusual electrical noise, which would increase the squelch threshold. If possible, verify the communications capability on the high, low, and mid bands of the VHF COM band. It may be required by the governing regulatory agency to verify operation of the COM transmitter and receiver at the extent of a ground facility’s service volume (e.g., FAA AC 23-8C).
4. Verify that the COM sidetone volume is sufficiently loud to be heard without causing feedback or distortion.
5. Verify that airframe warnings are audible when the headset is in use. If the warnings are not audible, then the GTN Xi volume must be adjusted.

6.3.3 VOR Flight Check (GTN 650Xi/750Xi)

1. Tune a local VOR station within 50 miles.
2. Verify the audio IDENT and voice quality are satisfactory.
3. Verify there is no objectionable electrical interference, such as magneto noise.
4. Verify the Morse code decoder IDs the station (95% probability).
5. Fly to and from the station.
6. Verify NAV flag, TO/FROM flag, and CDI are operational.

6.3.4 ILS Flight Check (GTN 650Xi/750Xi)

1. Tune an ILS at a local airport.
2. Verify the audio IDENT and audio quality are satisfactory.
3. Verify there is no objectionable electrical interference, such as magneto noise.
4. Verify the Morse code decoder IDs the station (95% probability).
5. Fly the approach.
6. Verify NAV flag, GS flag, and CDI and VDI are operational.

6.3.5 Autopilot Flight Check

1. Enter and activate a flight plan on the GTN Xi. For the GTN 650Xi/750Xi, verify that GPS is selected on the CDI. Engage the autopilot in the GPSS mode, if available.
2. Verify the autopilot flies the course.
3. Disengage the autopilot and fly off course.
4. Re-engage the autopilot (in GPSS mode) and verify it correctly intercepts the course and continues to fly it.
5. Turn off the autopilot GPSS but leave the autopilot engaged in NAV mode.
6. Verify it maintains the current course.

GTN 650Xi/750Xi only

7. Re-select the GPSS mode on the autopilot.
8. Touch the **CDI** key to select VLOC on the GTN 650Xi/750Xi.
9. Verify the GPSS mode disengages.
10. For autopilots that provide vertical guidance, fly a vertically coupled LPV approach.
11. Verify the autopilot correctly flies the approach.
12. Deviate from the glideslope by using control wheel steering, or by disengaging the autopilot.
13. Verify the autopilot correctly follows the approach guidance once re-engaged.

RNP 1.0 installations only

NOTE

This check is not necessary for aircraft with a Vne/Vmo of 180 KIAS or less.

NOTE

Calibrate the autopilot if it is unable to command a bank of 20°.

Calibrated autopilots approved for RF leg coupling using G500/G600 or G500/G600 TXi GPSS roll steering function must be capable of providing a bank command of a minimum 20°.

It is required that the autopilot can command a minimum 20° bank for installations that claim RNP 1.0 capability for RF leg navigation with an autopilot.

14. Program a flight plan on the GTN Xi with a minimum of 90° transition between the two legs.
15. Engage autopilot in GPSS/NAV/HDG mode (Roll Steering mode).
16. Establish a minimum ground speed of 180 knots.
17. During the turn, verify the attitude indicator on the GDU reaches a minimum of 20° of bank.

6.3.6 Terrain Audio Flight Check (For Units with Terrain Alerting or TAWS Only)

NOTE

The Terrain Alerting/TAWS volume should be loud enough to verify aural alerts are audible under all anticipated noise environmental conditions. This check makes sure Terrain Alerting/TAWS aurals can be heard during flight.

1. Take-off and ascend to altitude. During the ascent, in a high ambient noise condition with full power, eject the SD card from the slot. A Terrain Alerting or TAWS fail audio message should be generated.
2. Evaluate the volume of the audio message. Verify the Terrain Alerting/TAWS audio can be clearly heard during high power, high noise flight. If the volume is too low, adjust as described in Section 6.1.7.
3. After re-inserting the SD card into the slot, reboot the GTN Xi by pulling the GTN Xi circuit breaker and pushing it back in.
4. After this test, during the approach, at approximately 500 ft AGL, the "five hundred" callout will occur. Verify "five hundred" can be easily heard and understood.

6.3.7 Marker Beacon Receiver Flight Check (GMA 35)

1. Set up for an approach to the airport, with the marker beacon set to low sensitivity.
2. During the approach, verify the marker beacon annunciator light (OM, MM, or IM) illuminates for a ground distance of 2,000 to 3,000 feet when flying at an altitude of 1,000 ft AGL on the localizer centerline in all flap and gear configurations.

An acceptable means to determine ground distances of 2,000 to 3,000 feet is to fly at a specified groundspeed and time the duration the marker beacon light is illuminated. The values listed in Table 6-2 can be used.

Table 6-2 Marker Beacon Annunciator Light Duration

Groundspeed (Knots)	Light Time (seconds)	
	2000 ft	3000 ft
90	13	20
110	11	16
130	9	14
150	8	12

If the marker beacon annunciator lights do not remain illuminated for the required time, adjust the marker beacon low sensitivity threshold as described in Section 5.4.6.6.2.2, and then repeat steps 1 and 2.

6.4 Documentation Checks

6.4.1 Airplane Flight Manual Supplement

Verify the Airplane Flight Manual Supplement (AFMS) is completed and inserted in the Airplane Flight Manual (AFM) or Pilot's Operating Handbook (POH).

1. Fill in the required airplane information in the AFMS.
2. Fill in the applicable checkbox in the Limitations section of the AFMS corresponding to the autopilot coupling limitations.

NOTE

The GPS SELECT setting will determine if the transition into approach mode is automatic or requires pilot acknowledgment of a message prompt. Refer to Section 5.4.3.10 for more information about this configuration setting.

3. Fill in the applicable check box in the Normal Procedures section of the AFMS corresponding to the autopilot mode transitions.
4. Fill in the applicable check boxes in the System Descriptions section of the AFMS corresponding to leg sequencing and Terrain Proximity/Terrain Alerting/TAWS.
5. Fill in the applicable check boxes in the System Capability section of the AFMS corresponding to the capabilities of the installed GTN Xi system.
6. Insert the completed AFMS into the AFM or POH.

6.4.1.1 AFMS Completion

AFMS Section - System Capabilities

This section contains seven options that are listed in Section 1.2 of *AFMS or SAFM for Garmin GTN Xi GPS/SBAS Navigation System* (P/N 190-01007-C2) and five options ([1], [2], [5], [6], and [7]) that are listed in Section 1.2 of *AFMS or SAFM for the Garmin GTN Xi GPS/SBAS Navigation System, GPS Functions Not Approved for IFR Navigation* (P/N 190-01007-C3). Use the following guidance to check the applicable boxes in the AFMS for the installed GTN Xi configuration:

[1] VHF Communication Radio

[2] Primary VHF Navigation

[3] Primary GPS Navigation (En route) and Approach Capability (LP, LNAV)*

[4] Primary GPS Approach Capability with Vertical Guidance (LNAV/VNAV, LPV)*

[5] TSO-C151c Terrain Awareness and Warning System

[6] Enroute Baro-VNAV

[7] Smart Glide

*Not included in *AFMS or SAFM for the Garmin GTN Xi GPS/SBAS Navigation System, GPS Functions Not Approved for IFR Navigation* (P/N 190-01007-C3).

Box [1] is checked if the installed GTN Xi contains a COM radio (GTN 635Xi, GTN650 Xi, GTN 750Xi).

Box [2] is checked if the installed GTN Xi contains a NAV radio (GTN 650Xi, GTN 750Xi).

Box [3] is checked if the installation of the GTN Xi meets the requirements of Section 3.6.2.2 or Section 3.6.2.3.

Box [4] is checked if the installation of the GTN Xi meets the requirements of Section 3.6.2.2 or Section 3.6.2.3 and the interfaced navigation indicator includes a vertical deviation indication.

Box [5] is checked if the installed GTN Xi has the TAWS-B feature enabled.

Box [6] is checked if the installed GTN Xi has approved baro-altitude source and VNAV function enabled.

Box [7] is checked if the installed GTN Xi has configured Smart Glide per Section 5.4.3.15.

AFMS Section - Smart Glide (Optional)

This section of the AFMS contains two selections that are listed in Section 7.36 of *AFMS or SAFM for Garmin GTN Xi GPS/SBAS Navigation System* (P/N 190-01007-C2) and Section 7.36 of *AFMS or SAFM for the Garmin GTN Xi GPS/SBAS Navigation System, GPS Functions Not Approved for IFR Navigation* (P/N 190-01007-C3):

[1] Smart Glide is configured in this installation with the following parameters.

[2] Smart Glide is not configured in this installation.

Select option [1] for installations where the GTN Xi has been configured for Smart Glide functionality per Section 5.4.3.15. The following values must be recorded in the AFMS:

- MAX Desired Gust Speed (in KTs) per Table 5-44
- Desired Effective Runway Length (in ft) per Table 5-44
- Supported Runway Surface Type (select option) per Table 5-44

Select option [2] if the GTN Xi has not been configured for Smart Glide functionality.

6.4.1.1.1 Autopilot Listed in GTN AML STC

For all autopilots listed in Appendix Section C.1.4, the applicable limitations for that autopilot are identified in Table 6-3 and described in the paragraphs following the table.

Table 6-3 Autopilot Coupling Limitations

Manufacturer	Model	Capabilities			Limitations		Notes
		Lateral	Vertical	GPSS	AFMS Section 2	AFMS Section 4.5	
Honeywell (Bendix/King)	KAP 100	X		(iii)	None	[3]	
	KAP 150	X	X	(iii)		[2]	
	KAP 140	X	X	(iii)		[1]	
	KFC 150/200/250/300	X	X	(iii)		[2]	
	KFC 225	X	X	X		[1]	ARINC 429 roll steering
	KFC 275/325	X	X	X		[2]	ARINC 429 roll steering
Century	I/II	X		(iii)	None	[2]	
	III/IV	X	X	(iii)		[2]	
	21	X		(ii) (iii)		[3]	
	31/41	X	X	(ii) (iii)		[2]	
	2000	X	X	(ii) (iii)		[2]	
	Trident	X	X	(ii) (iii)		[2]	
Sperry	SPZ-200A/500	X	X	(iii)	None	[2]	
S-TEC	System 20/30/40/50	X		(i) (iii)	None	[3]	
	System 55	X	X	(i) (iii)		[2]	
	System 55X	X	X	X		[2]	
	System 60-1	X		(i) (iii)		[3]	
	System 60-2/65	X	X	(i) (iii)		[2]	
	System 60 PSS		X	(iii)		[2]	
Cessna	300B/400B/800B	X	X	(iii)	None	[2]	
	300 IFCS/400 IFCS/800 IFCS/1000 IFCS	X	X	(iii)		[2]	
Bendix	M4C/M4D	X	X	(iii)	None	[2]	
Collins	APS 65 ( )	X	X	(iii)	None	[2]	
Garmin	GFC 500	X	X	X	None	[2]	See AFMS Section 4.6 for Descent VNAV coupling
	GFC 600	X	X	X	None	[2]	See AFMS Section 4.6 for Descent VNAV coupling

(i) Roll steering may be provided through the ST-901 GPSS converter.

(ii) Roll steering may be provided through the AK 1081 GPSS converter.

(iii) Roll steering may be provided using the Garmin G500/G600 roll steering converter function. Reference instructions below for AFMS Section 4.5 selections [4] and [5].

AFMS Section - Autopilot Coupling Limitations

This section of the AFMS contains one possible limitation that is listed in Section 2.12 of *AFMS or SAFM for Garmin GTN Xi GPS/SBAS Navigation System* (P/N 190-01007-C2) and Section 2.6 of *AFMS or SAFM for the Garmin GTN Xi GPS/SBAS Navigation System, GPS Functions Not Approved for IFR Navigation* (P/N 190-01007-C3):

[1] Lateral coupling only for GPS approaches. Coupling to the vertical path for GPS approaches is not authorized.

Select this limitation if the autopilot does not have vertical coupling capability as listed in Table 6-3. No limitations apply in this section for installations that have the autopilot wired to an EFIS/EHSI instead of directly to the GTN Xi.

AFMS Section - Autopilot Operation

This section of the AFMS contains two selections that are listed in Section 4.4 of *AFMS or SAFM for Garmin GTN Xi GPS/SBAS Navigation System* (P/N 190-01007-C2) and Section 4.4 of *AFMS or SAFM for the Garmin GTN Xi GPS/SBAS Navigation System, GPS Functions Not Approved for IFR Navigation* (P/N 190-01007-C3):

[1] This installation has a heading source. The GTN Xi will provide heading leg steering for the autopilot.

[2] This installation does not have a heading source. The crew cannot use the GTN Xi steering to fly heading legs with the autopilot.

Select option [1] for installations where the following conditions have been met:

- GTN Xi receives heading from one of the roll steering approved heading sources listed in Section 3.6.3.3
- Autopilot is provided GPSS roll steering by one of the accepted methods listed in Table 6-3

Select option [2] for all other installations.

AFMS Section - Coupling the Autopilot During Approaches

NOTE

This STC does not grant operational approval for RF leg navigation. Additional FAA approval is required for those aircraft intending to use the GTN Xi as a means to provide RNP 1 navigation in accordance with FAA AC 90-105.

NOTE

Currently uncoupled RF leg navigation is not permitted per FAA AC 90-105. Installations used to aid in AC 90-105 approval may need to be installed with a compatible autopilot with native roll steering. Refer to Table 6-3 for a list of autopilots that are approved for coupled RF leg navigation when interfaced with the GTN Xi.

This section of the AFMS contains six selections that are listed in Section 4.5 of *AFMS or SAFM for Garmin GTN Xi GPS/SBAS Navigation System* (P/N 190-01007-C2) and Section 4.5 of *AFMS or SAFM for the Garmin GTN Xi GPS/SBAS Navigation System, GPS Functions Not Approved for IFR Navigation* (P/N 190-01007-C3). Select only those that apply to the installation.

[1] This installation prompts the flight crew and requires the pilot to enable the approach outputs just prior to engaging the autopilot in APR mode.

[2] This installation supports coupling to the autopilot in approach mode once vertical guidance is available.

[3] The installation *does not* support any vertical capture or tracking.

[4] This installation is equipped to support coupled RF leg navigation up to RNP 1.0.

[5] This installation is equipped to support *un-coupled* RF leg navigation up to RNP 1.0.

[6] This installation *does not* support RF leg navigation.

For all autopilots listed in the GTN AML STC, the applicable check box for [1], [2], or [3] is identified in Table 6-3. The corresponding limitation, if any, should be checked in the AFMS. Limitations [1], [2], or [3] are not applicable for installations when the autopilot is wired to an EFIS/EHSI rather than directly to the GTN Xi.

Select option [4] if the following conditions are met:

- The GPSS roll steering is provided to the autopilot or flight director by the G3X, G500/G600, or G500/G600 TXi (GDU 4X0, GDU 620, or GDU 700/1060) system. Ensure the GDU 620 or GDU 700/1060 is configured to provide GPSS roll steering to the autopilot before selecting this option. Refer to STC SA1899WI for installation requirements related to the G3X system. Refer to STC SA02153LA-D for installation requirements related to the G500/G600 system. Refer to STC SA02571SE for installation requirements related to the G500/G600 TXi system
- The criteria for option [5] have been met

Select option [5] if the following conditions are met:

- The GTN Xi is interfaced to one of the following EFIS/EHSI:
    - Avidyne EXP 5000
    - GDU 4X0
    - Garmin GDU 620
    - Garmin GDU 700/1060
    - Sandel SN3308
    - Sandel SN3500/4500
- Navigation Feature “RF Procedure Leg” setting is set to Enabled

Other EFIS/EHSI may be able to be approved for non-coupled RF leg navigation, but they must support auto-slewing desired track.

Select option [6] for installations where option [4] and [5] are not met.

AFMS Section - Coupling the Autopilot for Descent VNAV

This section of the AFMS contains four selections that are listed in Section 4.6 of *AFMS or SAFM for Garmin GTN Xi GPS/SBAS Navigation System* (P/N 190-01007-C2) and Section 4.6 of *AFMS or SAFM for the Garmin GTN Xi GPS/SBAS Navigation System, GPS Functions Not Approved for IFR Navigation* (P/N 190-01007-C3):

[1] This installation is equipped and configured to provide VNAV display and autopilot coupling.

[2] This installation is equipped and configured to provide VNAV *display only*.

[3] This installation *does not* support VNAV display or coupling.

[4] This installation is configured with VNAV Transition to Approach.

Box [1] is checked if the installation is equipped with a Garmin GFC 500 or GFC 600 and configured to provide EDO VNAV display and autopilot coupling.

Box [2] is checked if the installation is not equipped with a Garmin GFC 500 or GFC 600 and configured to provide EDO VNAV display without autopilot coupling.

AFMS Section - Cold Weather Compensation

This section of the AFMS contains three selections that are listed in Section 4.9 of *AFMS or SAFM for Garmin GTN Xi GPS/SBAS Navigation System* (P/N 190-01007-C2) and Section 4.9 of *AFMS or SAFM for the Garmin GTN Xi GPS/SBAS Navigation System, GPS Functions Not Approved for IFR Navigation* (P/N 190-01007-C3). Check the applicable box in the AFMS depending on if a G500/G600 TXi system is installed with the GTN Xi.

[1] This installation supports cold weather compensated intermediate approach and minimum altitudes.

[2] This installation supports cold weather compensated *intermediate approach altitudes and missed approach altitudes only*.

[3] This installation does not support cold weather compensation.

Box [1] is checked if a G500/G600 TXi is installed.

Box [2] is checked in all other installations with VNAV enabled.

Box [3] is checked if VNAV is disabled.

AFMS Section - Leg Sequencing

This section of the AFMS contains two possible choices that are listed in Section 7.2 of *AFMS or SAFM for Garmin GTN Xi GPS/SBAS Navigation System* (P/N 190-01007-C2) and Section 7.2 of *AFMS or SAFM for the Garmin GTN Xi GPS/SBAS Navigation System, GPS Functions Not Approved for IFR Navigation* (P/N 190-01007-C3):

[1] This installation *has* a barometric corrected altitude source. The GTN Xi will automatically sequence altitude legs.

[2] This installation *does not have* a barometric corrected altitude source. The flight crew will be prompted to manually sequence altitude legs.

Check the applicable box in the AFMS depending on whether or not a barometric corrected altitude source is interfaced to the GTN Xi.

AFMS Section - Activate GPS Missed Approach

This section of the AFMS contains two possible choices that are listed in Section 7.4 of *AFMS or SAFM for Garmin GTN Xi GPS/SBAS Navigation System* (P/N 190-01007-C2) and Section 7.4 of *AFMS or SAFM for the Garmin GTN Xi GPS/SBAS Navigation System, GPS Functions Not Approved for IFR Navigation* (P/N 190-01007-C3):

[1] This installation *will* autoswitch from VLOC to GPS when the **Activate GPS Missed Approach** button is touched.

[2] This installation *will not* autoswitch from VLOC to GPS when the **Activate GPS Missed Approach** button is touched. The pilot must manually switch from VLOC to GPS if GPS guidance is desired after the missed approach point.

This limitation depends on the configuration of the CDI Key. If the CDI Key is set to “Disabled” then the GTN Xi *will not* autoswitch from VLOC to GPS when the **Activate GPS Missed Approach** key is touched. The pilot must manually switch from VLOC to GPS if GPS guidance is desired after the missed approach point.

AFMS Section - Terrain Proximity, Terrain Alerting, and TAWS

This section of the AFMS contains three possible choices that are listed in Section 7.5 of *AFMS or SAFM for Garmin GTN Xi GPS/SBAS Navigation System* (P/N 190-01007-C2) and Section 7.5 of *AFMS or SAFM for the Garmin GTN Xi GPS/SBAS Navigation System, GPS Functions Not Approved for IFR Navigation* (P/N 190-01007-C3):

[1] This installation supports *Terrain Proximity*. *No aural or visual alerts* for terrain or obstacles are provided. Terrain Proximity does not satisfy the TAWS requirement of 91.223.

[2] This installation supports *Terrain Alerting*. Aural and visual alerts are provided. This installation *does not* satisfy the TAWS requirement of 91.223.

[3] This installation supports *TAWS B*. Aural and visual alerts *will be* provided. This installation *does* support the TAWS requirement of 91.223.

Check the applicable box in the AFMS depending on whether or not the TAWS feature is enabled.

AFMS Section - Traffic System (Optional)

This section of the AFMS contains six possible choices that are listed in Section 7.7 of *AFMS or SAFM for Garmin GTN Xi GPS/SBAS Navigation System* (P/N 190-01007-C2) and Section 7.7 of *AFMS or SAFM for the Garmin GTN Xi GPS/SBAS Navigation System, GPS Functions Not Approved for IFR Navigation* (P/N 190-01007-C3):

[1] No traffic system is interfaced to the GTN Xi.

[2] A TAS/TCAS I traffic system is interfaced to the GTN Xi.

[3] A TIS traffic system is interfaced to the GTN Xi.

[4] A TCAD traffic system is interfaced to the GTN Xi.

[5] A Garmin ADS-B traffic system is interfaced to the GTN Xi.

[6] A Garmin ADS-B traffic system is interfaced to the GTN Xi. The ADS-B traffic system is also interfaced to an on board traffic system.

Check the applicable box in the AFMS depending on the traffic system that is connected to the GTN Xi.

6.4.1.1.2 Autopilot Not Listed in GTN AML STC

If an installation has an autopilot interface that is not listed in the GTN AML STC, additional FAA approval is required for installations not adhering to the criteria discussed in Appendix Section C.1.4. However, the AFMS provided with the AML STC should still be used, with the applicable limitations specified as described below.

AFMS Section - Autopilot Coupling Limitations

This section of the AFMS contains one possible limitation that is listed in Section 2.12 of *AFMS or SAFM for Garmin GTN Xi GPS/SBAS Navigation System* (P/N 190-01007-C2) and Section 2.6 of *AFMS or SAFM for the Garmin GTN Xi GPS/SBAS Navigation System, GPS Functions Not Approved for IFR Navigation* (P/N 190-01007-C3):

[1] Lateral coupling only for GPS approaches. Coupling to the vertical path for GPS approaches is not authorized.

For all autopilots that are not listed in the GTN AML STC, limitation [1] applies, unless the autopilot is approved to interface to the Garmin G500/G600 under the G500 or G600 AML STC or to the G500/G600 TXi under the G500/G600 TXi Part 23 AML STC. No limitations apply in this section for installations that have the autopilot wired to an EFIS/EHSI rather than directly to the GTN Xi. Additional FAA approval from the Aircraft Certification Office (ACO) is required for a particular installation to remove the vertical GPS coupling limitations. This section is not included in *AFMS or SAFM for the Garmin GTN Xi GPS/SBAS Navigation System, GPS Functions Not Approved for IFR Navigation* (P/N 190-01007-C3).

AFMS Section 4.5 Autopilot Coupling

This section of the AFMS contains six selections that are listed in Section 4.5 of *AFMS or SAFM for Garmin GTN Xi GPS/SBAS Navigation System* (P/N 190-01007-C2) and Section 4.5 of *AFMS or SAFM for the Garmin GTN Xi GPS/SBAS Navigation System, GPS Functions Not Approved for IFR Navigation* (P/N 190-01007-C3). Select only those that apply to the installation.

[1] This installation prompts the flight crew and requires the pilot to enable the approach outputs just prior to engaging the autopilot in APR mode.

[2] This installation supports coupling to the autopilot in approach mode once vertical guidance is available.

[3] The installation does not support any vertical capture or tracking.

For all autopilots that are not listed in the GTN AML STC, select the applicable check box as follows:

Box [1] is checked for any installation that meets all of the following criteria:

- The GPS SELECT discrete is set to "Prompt" on the ***Main System Config*** page (refer to Section 5.4.3.10)

NOTE

The GPS SELECT discrete output is connected to the GPS Select input (or equivalent) on the autopilot. This input is used by the autopilot to determine if the navigation source is GPS or VLOC. The autopilot typically goes to "wings-level" mode automatically when the navigation source changes between GPS and VLOC. In order to prevent the autopilot from entering "wings-level" mode without the pilot noticing the mode change, the unit prompts the pilot and requires pilot acknowledgment prior to switching the output signal state. Examples of autopilots that support this input are the Honeywell KAP 140 or KFC 225.

Box [2] is checked for any installation that meets all of the following criteria:

- The GPS SELECT discrete output is configured for "Auto" on the ***Main System Config*** page. Refer to Section 5.4.3.10
- The GTN Xi interface to the autopilot provides vertical deviation information

Box [3] is checked for any installation that meets all of the following criteria:

- The GPS SELECT discrete is set to "Auto" on the ***Main System Config*** page. Refer to Section 5.4.3.10
- The GTN Xi interface to the autopilot provides no vertical deviation information. This is the case for autopilots with LNAV and altitude hold modes only (i.e., the autopilot does not provide vertical capture and/or vertical tracking)

No limitations apply in this section for installations that have the autopilot wired to an EFIS/EHSI rather than directly to the GTN Xi.

6.4.2 Instructions for Continued Airworthiness (ICA)

Verify the applicable aircraft information is filled in on the Instructions for Continued Airworthiness (ICA) in *Maintenance Manual and ICA, GTN Xi Part 23 AML STC* (P/N 190-01007-C1), and ensure it is inserted in the aircraft permanent records.

1. Fill in the aircraft make, model, registration number, and serial number information in Table A-1 in Appendix A of the maintenance manual.
2. Fill in the GTN Xi and GMA (if installed) unit data in Table A-1 in Appendix A of the maintenance manual.
3. Fill in the configuration log in Appendix A of the maintenance manual.
4. Fill in the applicable wire routing and installed unit locations in Appendix A of the maintenance manual.
5. Create new wiring diagrams or markup the interconnect diagrams from the STC Installation Manual detailing which equipment was installed and how it was connected.
6. Insert the Instructions for Continued Airworthiness (Section 4) and the completed Appendix A of the maintenance manual into the aircraft permanent records.

6.4.3 Checkout Log

The following completed checkout log sheet should be performed for each installation, but does not need to be maintained with the aircraft permanent records.

NOTE

If a dual GTN Xi installation is being performed, a checkout log for each unit should be completed.

GTN Xi Post-Installation Checkout Log

By: ______________________________ Date: ____ /____ /____

INSTALLATION INFORMATION:

Aircraft Model: ________________ Aircraft Serial #: ________________
Unit P/N: ________________ Mod Level: ________________
Unit Model: ________________ Serial#: ________________
GPS Antenna P/N: ________________ GPS Ant Model: ________________

CONNECTOR ENGAGEMENT ***(Refer to Section 5.3)***

CONNECTOR ENGAGEMENT CHECK

- ❑ Connector engagement checked

BONDING REQUIREMENT ***(Refer Section 3.5.5)***

❑ ***Metal/Tube-and-Fabric:***	Resistance less than or equal to 2.5 milliohms.
❑ ***Composite:***	Resistance less than or equal to 5.0 milliohms.
❑ ***Flight Stream 210:***	Resistance less than or equal to 10.0 milliohms.

NOTES/COMMENTS:

GTN Xi Post-installation Checkout Log
Sheet 1 of 4

SYSTEM CHECKOUT

Ground Checks (Configuration Mode)

DISCRETE OUTPUTS

- ❑ [❑ N/A] OBS Annunciate
- ❑ [❑ N/A] GPS Annunciate
- ❑ [❑ N/A] Waypoint Annunciate
- ❑ [❑ N/A] Terminal Annunciate
- ❑ [❑ N/A] Terrain/TAWS Audio Active Annunciate
- ❑ [❑ N/A] VLOC Annunciate
- ❑ [❑ N/A] LOI Annunciate
- ❑ [❑ N/A] Message Annunciate
- ❑ [❑ N/A] Approach Annunciate
- ❑ [❑ N/A] ILS/GPS Approach Annunciate
- ❑ [❑ N/A] Terrain/TAWS Inhibit Annunciate
- ❑ [❑ N/A] Terrain/TAWS Warning Annunciate
- ❑ [❑ N/A] Terrain Not Available Annunciate
- ❑ [❑ N/A] Terrain/TAWS Caution Annunciate
- ❑ [❑ N/A] GPS Select Annunciate
- ❑ [❑ N/A] Traffic Test Annunciate
- ❑ [❑ N/A] Traffic Standby/Operate Annunciate
- ❑ [❑ N/A] Suspend Annunciate
- ❑ [❑ N/A] GSR Remote Power
- ❑ [❑ N/A] Radar On
- ❑ [❑ N/A] NAV ILS Energize
- ❑ [❑ N/A] Flight Stream 210
- ❑ [❑ N/A] GSR 56

MAIN ANALOG INDICATOR: [❑ N/A]

- ❑ CDI (left, centered, right)
- ❑ VDI (down, centered, up)
- ❑ TO/FROM flag (OFF, TO, FROM)
- ❑ Valid flags
- ❑ OBS (Selected Course)

LIGHTING BUS:

- ❑ [❑ N/A] Aircraft Lighting Bus

HSDB WIRING:

- ❑ [❑ N/A] HSDB checked per Section 6.1.5

GTN CROSSFILL: [❑ N/A]

- ❑ Crossfill checked in accordance with Section 6.1.6

DISCRETE INPUTS

- ❑ [❑ N/A] OBS Mode Select
- ❑ [❑ N/A] Terrain/TAWS Audio Inhibit
- ❑ [❑ N/A] Terrain/TAWS Inhibit
- ❑ [❑ N/A] Air/Ground
- ❑ [❑ N/A] CDI Source Select
- ❑ [❑ N/A] GRS Status
- ❑ [❑ N/A] MIC1 Transmit
- ❑ [❑ N/A] COM Remote Transfer
- ❑ [❑ N/A] COM Remote Tune Up
- ❑ [❑ N/A] COM Remote Tune Down
- ❑ [❑ N/A] NAV Remote Transfer
- ❑ [❑ N/A] Synchro Valid-High (GTN 7XX Xi)
- ❑ [❑ N/A] Synchro Valid-Low (GTN 7XX Xi)

VOR/ILS INDICATOR: [❑ N/A]

- ❑ CDI (left, centered, right)
- ❑ VDI (down, centered, up)
- ❑ TO/FROM flag (OFF, TO, FROM)
- ❑ Valid flags

AHRS/IRU/ADC:

- ❑ [❑ N/A] Air Data Computer
- ❑ [❑ N/A] AHRS/IRU

TAWS AUDIO: [❑ N/A]

- ❑ Audio checked
- ❑ Audio level adjusted

GAD 42:

- ❑ [❑ N/A] GAD 42 Interface Adapter

ADC / ENCODER / FUEL / F/ADC:

- ❑ [❑ N/A] Air Data Computer
- ❑ [❑ N/A] Altitude Encoder (serial)
- ❑ [❑ N/A] Fuel Sensor
- ❑ [❑ N/A] Fuel / Air Data Computer

GTN Xi Post-installation Checkout Log
Sheet 2 of 4

SYSTEM CHECKOUT (Continued)

GROUND CHECKS (NORMAL MODE)

SIGNAL ACQUISITION CHECK:
- ❑ Position checked
- ❑ Signal reception checked
- ❑ Interference from other avionics checked

VHF COM INTERFERENCE [❑ N/A]
- ❑ VHF COM interference checked

VHF NAV CHECKOUT (GTN 650Xi/750Xi) [❑ N/A]
- ❑ VOR reception checked
- ❑ Localizer reception checked
- ❑ Deviation needle and flag checked

GMA 35 CHECKOUT (GTN 7XX Xi ONLY) [❑N/A
- ❑ COM Transceiver check
- ❑ Alert audio check
- ❑ Intercom system check
- ❑ Music system check
- ❑ Failsafe operation check
- ❑ NAV audio check
- ❑ Receiver audio check
- ❑ Aircraft receivers check
- ❑ Bluetooth check

TVS ASSEMBLY CHECKS [❑N/A]
- ❑ TVSs checked in accordance with Section 4.6.3

AFMS COMPLETION CHECKS
- ❑ [❑ N/A] Autopilot coupling limitations checked
- ❑ Autopilot operation checked
- ❑ Coupling the autopilot during approaches checked
- ❑ Leg Sequencing checked
- ❑ Activate GPS missed approach checked
- ❑ Terrain Proximity/Terrain Alerting/TAWS checked
- ❑ Traffic system (optional) checked

❑ EMI/RFI CHECK

FLIGHT CHECKS

- ❑ GPS checked
- ❑ [❑ N/A] COM checked (GTN 635Xi/650Xi/750Xi Only)
- ❑ [❑ N/A] VOR checked (GTN 650Xi/750Xi Only)
- ❑ [❑ N/A] ILS checked (GTN 650Xi/750Xi Only)
- ❑ [❑ N/A] Autopilot checked
- ❑ [❑ N/A] Terrain/TAWS audio level checked
- ❑ [❑ N/A] Marker beacon receiver checked
- ❑ [❑ N/A] RNP 1.0 RF leg installation checked

ICA CHECKS
- ❑ Aircraft Make, Model, Reg # & Serial # filled in
- ❑ GTN, GMA, and Flight Stream unit data filled in
- ❑ Configuration log filled in
- ❑ Wire routing and unit location information filled in
- ❑ Interconnect wiring diagrams created or marked up for actual installation
- ❑ ICA and completed Appendix A of system maintenance manual inserted into aircraft records

INTERFACE CHECKS
- ❑ [❑ N/A] Honeywell EFS 40/50
- ❑ [❑ N/A] Sandel SN3308
- ❑ [❑ N/A] Sandel SN3500/4500
- ❑ [❑ N/A] Ryan TCAD
- ❑ [❑ N/A] EHSI Deviation Scaling
- ❑ [❑ N/A] ARINC 429 Traffic System
- ❑ [❑ N/A] L-3 Communications Stormscope
- ❑ [❑ N/A] Garmin GMX 200/MX20
- ❑ [❑ N/A] Garmin GDL 69/69A
- ❑ [❑ N/A] External RMI/OBI
- ❑ [❑ N/A] DME Tuning
- ❑ [❑ N/A] TIS (GTX 33/330)
- ❑ [❑ N/A] Transponder
- ❑ [❑ N/A] Fan wiring
- ❑ [❑ N/A] Weather Radar
- ❑ [❑ N/A] Garmin GSR 56
- ❑ [❑ N/A] Garmin GDL 88
- ❑ [❑ N/A] Autopilot
- ❑ [❑ N/A] Flight Stream 210

VHF COM CHECKOUT (GTN 635Xi/650Xi/750Xi)[❑N/A]
- ❑ Receiver/Transmitter operation checked
- ❑ Antenna checked VSWR __________

MAGNETIC COMPASS CHECK
- ❑ Compass swing performed

TERRAIN/TAWS SYSTEM: [❑ N/A]
- ❑ Terrain/TAWS System Test OK

SOFTWARE CHECKS
- ❑ Software versions verified to match *Equipment List, GTN Xi Part 23 AML STC*

GTN Xi Post-installation Checkout Log
Sheet 3 of 4

COMMENTS:

GTN Xi Post-installation Checkout Log
Sheet 4 of 4

APPENDIX A CONNECTORS AND PINOUT FUNCTION

A.1 GTN Xi

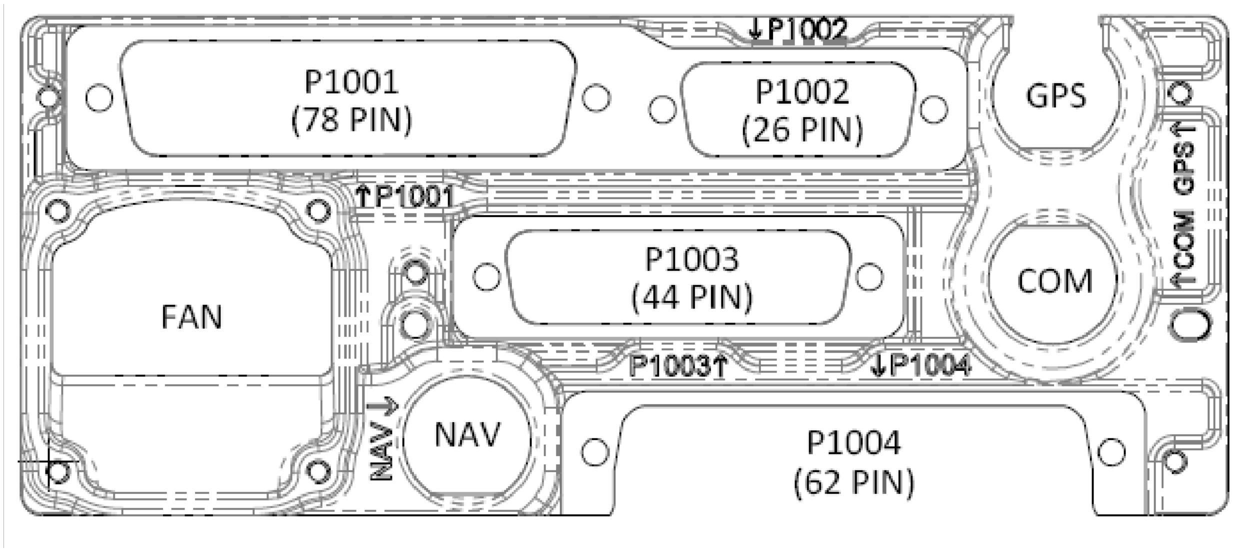


Figure A-1 GTN 6XX Xi Connector Layout Detail - Rear View

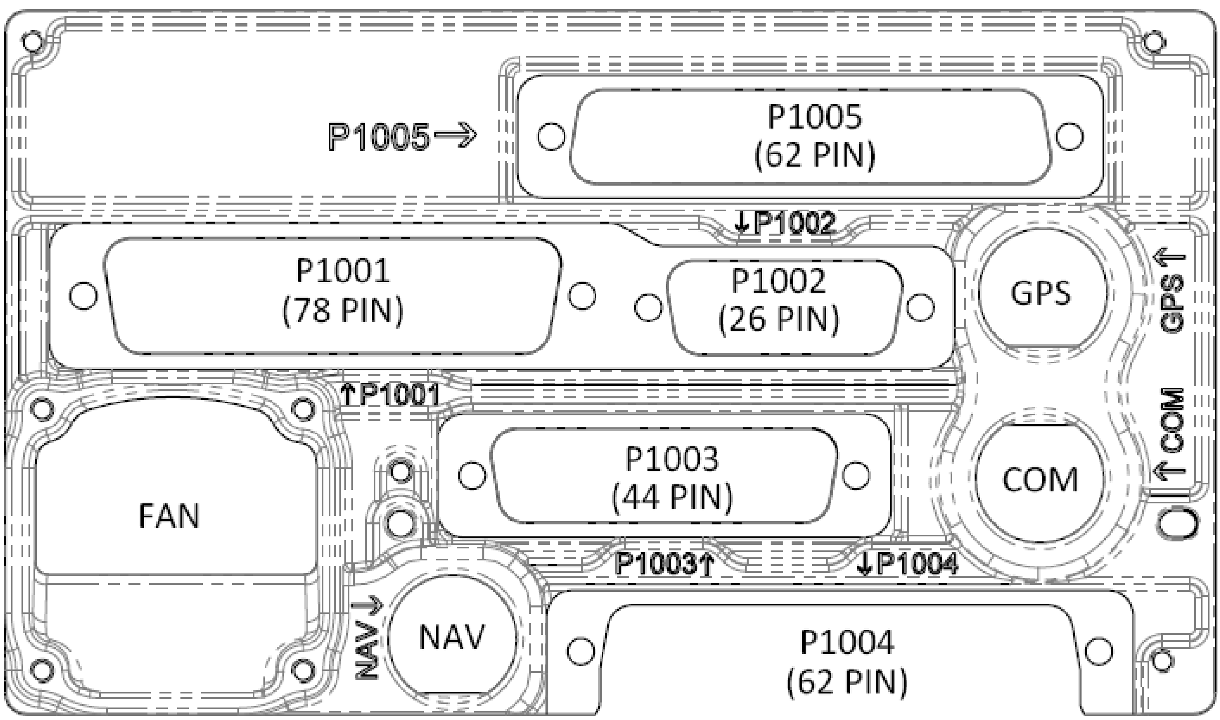
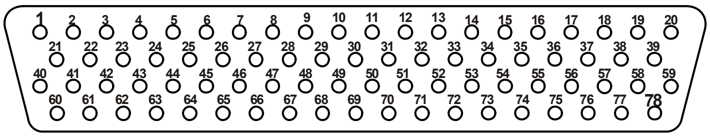


Figure A-2 GTN 7XX Xi Connector Layout Detail - Rear View

A.1.1 P1001 Connector



VIEW LOOKING FROM COCKPIT INTO GTN Xi MOUNTING TRAY

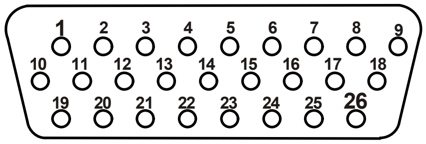
Pin	Pin Name	I/O	Pin	Pin Name	I/O
1	MAIN OBS ROTOR H (GND)	--	40	MAIN OBS STATOR E (GND)	--
2	MAIN OBS ROTOR C	OUT	41	MAIN OBS STATOR F	IN
3	TIME MARK OUT A	OUT	42	LIGHTING BUS 2 LO	IN
4	AUDIO OUT HI	OUT	43	FAN GROUND	--
5	RS-232 OUT 4	OUT	44	RS-232 GND 3/4	--
6	RS-232 OUT 3	OUT	45	RS-232 GND 2	--
7	RS-232 OUT 2	OUT	46	RS-232 GND 1	--
8	RS-232 OUT 1	OUT	47	ARINC 429 IN 2A	IN
9	ARINC 429 OUT 2A	OUT	48	ARINC 429 IN 1A	IN
10	ARINC 429 OUT 1A	OUT	49	MAIN LATERAL +LEFT OUT	OUT
11	MAIN +TO OUT	OUT	50	MAIN LATERAL +FLAG OUT	OUT
12	MAIN VERTICAL +UP OUT	OUT	51	MAIN VERTICAL +FLAG OUT	OUT
13	MAIN LATERAL SUPERFLAG OUT	OUT	52	VLOC ANNUNCIATE*	OUT
14	OBS ANNUNCIATE* [1]	OUT	53	LOI ANNUNCIATE* [1]	OUT
15	GPS ANNUNCIATE*	OUT	54	MESSAGE ANNUNCIATE* [1]	OUT
16	OBS/SUSP MODE SELECT* [1]	IN	55	APPROACH ANNUNCIATE* [1]	OUT
17	LIGHTING BUS 1 LO	IN	56	ILS/GPS APPROACH*	OUT
18	LIGHTING BUS 1 HI	IN	57	TERRAIN/TAWS INHIBIT ANNUN* [1]	OUT
19	AIRCRAFT POWER	IN	58	FAN TACH IN	IN
20	AIRCRAFT POWER	IN	59	FAN POWER OUT (12 VDC)	OUT
21	MAIN OBS STATOR D	IN	60	MAIN OBS STATOR G (GND)	--
22	TIME MARK OUT B	OUT	61	LIGHTING BUS 2 HI	IN
23	AUDIO OUT LO	OUT	62	CONFIG MODULE DATA	I/O
24	RS-232 IN 4	IN	63	CONFIG MODULE CLOCK	OUT
25	RS-232 IN 3	IN	64	CONFIG MODULE GND	OUT
26	RS-232 IN 2	IN	65	CONFIG MODULE POWER	OUT
27	RS-232 IN 1	IN	66	ARINC 429 IN 2B	IN
28	ARINC 429 OUT 2B	OUT	67	ARINC 429 IN 1B	IN
29	ARINC 429 OUT 1B	OUT	68	MAIN LATERAL +RIGHT OUT	OUT
30	MAIN +FROM OUT	OUT	69	MAIN LATERAL -FLAG OUT	OUT
31	MAIN VERTICAL +DOWN OUT	OUT	70	MAIN VERTICAL -FLAG OUT	OUT
32	MAIN VERTICAL SUPERFLAG OUT	OUT	71	TERRAIN/TAWS WARNING ANNUN* [1]	OUT
33	WAYPOINT ANNUNCIATE* [1]	OUT	72	TERRAIN/TAWS NOT AVAILABLE ANNUNCIATE* [1]	OUT
34	TERMINAL ANNUNCIATE* [1]	OUT	73	TERRAIN/TAWS CAUTION ANNUN* [1]	OUT
35	TAWS AUDIO ACTIVE OUT* [1]	OUT	74	GPS SELECT* [1]	OUT
36	AUDIO INHIBIT IN* [1]	IN	75	TRAFFIC TEST* [1]	OUT
37	TERRAIN/TAWS INHIBIT IN* [1]	IN	76	TRAFFIC STANDBY* [1]	OUT
38	AIR/GROUND* [1]	IN	77	AIRCRAFT GND	--
39	CDI SOURCE SELECT* [1]	IN	78	AIRCRAFT GND	--

* Indicates an Active-Low

Notes:

[1] This discrete may be configured to perform another function. Refer to Section 5.4.3.14 for details on how to configure discretes.

A.1.2 P1002 Connector



VIEW LOOKING FROM COCKPIT INTO GTN Xi MOUNTING TRAY

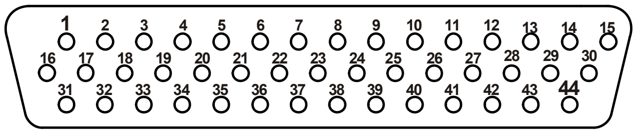
Pin	Pin Name	I/O
1	DEMO MODE SELECT*	IN
2	RESERVED	IN
3	SUSPEND ANNUNCIATE* [1]	OUT
4	ETHERNET OUT 4A	OUT
5	ETHERNET OUT 4B	OUT
6	ETHERNET IN 1A	IN
7	ETHERNET IN 1B	IN
8	ETHERNET OUT 1A	OUT
9	ETHERNET OUT 1B	OUT
10	SYSTEM ID PROGRAM* [1]	IN
11	GSR STATUS IN* [1]	IN
12	GSR REMOTE POWER OUT* [1]	OUT
13	ETHERNET IN 4A	IN
14	ETHERNET IN 4B	IN
15	ETHERNET IN 2A	IN
16	ETHERNET IN 2B	IN
17	ETHERNET OUT 2A	OUT
18	ETHERNET OUT 2B	OUT
19	RS-422 IN A	IN
20	RS-422 IN B	IN
21	RS-422 OUT A	OUT
22	RS-422 OUT B	OUT
23	ETHERNET IN 3A	IN
24	ETHERNET IN 3B	IN
25	ETHERNET OUT 3A	OUT
26	ETHERNET OUT 3B	OUT

* Indicates an Active-Low

Notes:

[1] This discrete may be configured to perform another function. Refer to Section 5.4.3.14 for details on how to configure discretes.

A.1.3 P1003 GTN Xi COM Connector (GTN 635Xi/650Xi/750Xi Only)



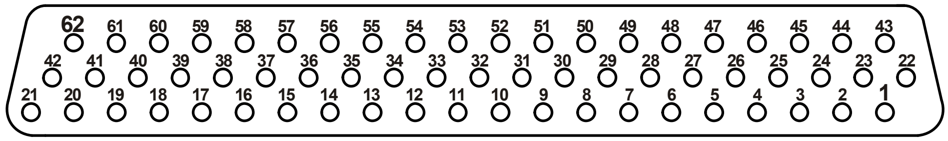
VIEW LOOKING FROM COCKPIT INTO GTN Xi MOUNTING TRAY

Pin	Pin Name	I/O
1	RESERVED	OUT
2	RESERVED	IN
3	RESERVED	--
4	RESERVED	--
5	COM MIC 1 AUDIO IN HI	IN
6	RESERVED	--
7	500 Ω COM AUDIO HI	OUT
8	RESERVED	IN
9	TRANSMIT INTERLOCK*	IN
10	RESERVED	IN
11	COM MIC 1 KEY*	IN
12	RESERVED	--
13	RESERVED	--
14	RESERVED	IN
15	RESERVED	OUT
16	RESERVED	IN
17	RESERVED	IN
18	500 Ω COM AUDIO LO	--
19	RESERVED	--
20	MIC AUDIO IN LO	IN
21	RESERVED	--
22	RESERVED	IN

Pin	Pin Name	I/O
23	RESERVED	OUT
24	RESERVED	OUT
25	RESERVED	OUT
26	RESERVED	--
27	COM REMOTE TRANSFER*	IN
28	COM REMOTE TUNE UP*	IN
29	COM REMOTE TUNE DOWN*	IN
30	AIRCRAFT POWER	IN
31	RESERVED	--
32	RESERVED	--
33	RESERVED	--
34	RESERVED	--
35	RESERVED	--
36	RESERVED	--
37	AIRCRAFT GND	--
38	AIRCRAFT GND	--
39	RESERVED	--
40	AIRCRAFT GND	--
41	RESERVED	IN
42	RESERVED	IN
43	AIRCRAFT POWER	IN
44	AIRCRAFT POWER	IN

* Indicates an Active-Low

A.1.4 P1004 GTN Xi NAV Connector (GTN 650Xi/750Xi Only)

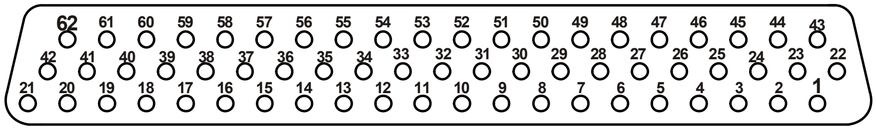


VIEW LOOKING FROM COCKPIT INTO GTN Xi MOUNTING TRAY

Pin	Pin Name	I/O
1	VOR/LOC +TO	OUT
2	VOR/LOC +FROM	OUT
3	VOR/LOC +FLAG	OUT
4	VOR/LOC -FLAG	OUT
5	VOR/LOC +LEFT	OUT
6	VOR/LOC +RIGHT	OUT
7	RESERVED	---
8	VOR/LOC COMPOSITE OUT	OUT
9	VOR OBS ROTOR C	OUT
10	VOR OBS ROTOR H (GND)	---
11	VOR OBS STATOR E (GND)	---
12	VOR OBS STATOR F	IN
13	VOR OBS STATOR D	IN
14	VOR OBS STATOR G (GND)	---
15	VOR/LOC SUPERFLAG	OUT
16	500 Ω VOR/LOC AUDIO OUT HI	OUT
17	500 Ω VOR/LOC AUDIO OUT LO	OUT
18	SERIAL DME – CLOCK	I/O
19	SERIAL DME – DATA	I/O
20	SERIAL DME – RNAV/CH REQ	IN
21	SERIAL DME – RNAV MODE	IN
22	AIRCRAFT GND	--
23	VOR/ILS ARINC 429 OUT B	OUT
24	VOR/ILS ARINC 429 OUT A	OUT
25	VOR OBI CLOCK	OUT
26	VOR OBI SYNC	OUT
27	VOR OBI DATA	OUT
28	VLOC REMOTE TRANSFER	IN
29	ILS ENERGIZE	OUT
30	RESERVED	--
31	RESERVED	--
32	GLIDESLOPE +FLAG	OUT

Pin	Pin Name	I/O
33	PAR DME 1MHZ-D/ SERIAL DME ON	OUT
34	GLIDESLOPE +UP	OUT
35	VOR/ILS ARINC 429 IN B	IN
36	VOR/ILS ARINC 429 IN A	IN
37	PAR DME 100KHZ-A/ SERIAL DME HOLD	OUT
38	GLIDESLOPE SUPERFLAG	OUT
39	PAR DME 100KHZ-B	OUT
40	PAR DME 100KHZ-C	OUT
41	DME COMMON	IN
42	PAR DME 100KHZ-D	OUT
43	PAR DME 50KHZ	OUT
44	SERIAL DME – DME REQUEST	I/O
45	PAR DME 1MHZ-A	OUT
46	PAR DME 1MHZ-B	OUT
47	PAR DME 1MHZ-C	OUT
48	RESERVED	--
49	AIRCRAFT GND	--
50	RESERVED	--
51	AIRCRAFT POWER	IN
52	AIRCRAFT POWER	IN
53	GLIDESLOPE -FLAG	OUT
54	PAR DME 100KHZ-E	OUT
55	GLIDESLOPE +DOWN	OUT
56	PAR DME 1MHZ-E	OUT
57	RESERVED	--
58	RESERVED	OUT
59	RESERVED	OUT
60	AIRCRAFT GND	--
61	AIRCRAFT GND	--
62	AIRCRAFT GND	--

A.1.5 P1005 Connector (GTN 7XX Xi Only)



VIEW LOOKING FROM COCKPIT INTO GTN Xi MOUNTING TRAY

Pin	Pin Name	I/O
1	RESERVED	--
2	RESERVED	--
3	RESERVED	--
4	RESERVED	--
5	RESERVED	--
6	RESERVED	--
7	ARINC 429 OUT 3B	OUT
8	RS-232 OUT 5	OUT
9	RS-232 OUT 6	OUT
10	RESERVED	--
11	RESERVED	--
12	RESERVED	--
13	RADAR ON* [1] [2]	OUT
14	SYNCHRO Y	IN
15	SYNCHRO REF LO	IN
16	ARINC 429 IN 3B	IN
17	ARINC 429 IN 4B	IN
18	ARINC 453/708 IN 1A	IN
19	ARINC 453/708 TERM 1B	--
20	ARINC 453/708 IN 2A	IN
21	ARINC 453/708 TERM 2B	--
22	RESERVED	--
23	RESERVED	--
24	RESERVED	--
25	RESERVED	--
26	RESERVED	--
27	RESERVED	--
28	ARINC 429 OUT 3A	OUT
29	RS-232 IN 5	IN
30	RS-232 IN 6	IN
31	RESERVED	--

Pin	Pin Name	I/O
32	RESERVED	--
33	SYNCHRO VALID INPUT (ACTIVE LO)	IN
34	SPARE OUTPUT C* [1]	OUT
35	SYNCHRO X	IN
36	SYNCHRO REF HIGH	IN
37	ARINC 429 IN 3A	IN
38	ARINC 429 IN 4A	IN
39	RESERVED	--
40	ARINC 453/708 TERM 1A	--
41	RESERVED	--
42	ARINC 453/708 TERM 2A	--
43	RESERVED	--
44	RESERVED	--
45	RESERVED	--
46	RESERVED	--
47	RESERVED	--
48	RESERVED	--
49	RS-232 GND 5	--
50	RS-232 GND 6	--
51	RESERVED	--
52	RESERVED	--
53	SPARE [1]	--
54	SYNCHRO VALID INPUT (ACTIVE-HI)	IN
55	RESERVED	--
56	SYNCHRO Z	IN
57	RESERVED	--
58	RESERVED	--
59	RESERVED	--
60	ARINC 453/708 IN 1B	IN
61	RESERVED	--
62	ARINC 453/708 IN 2B	IN

* Indicates an Active-Low

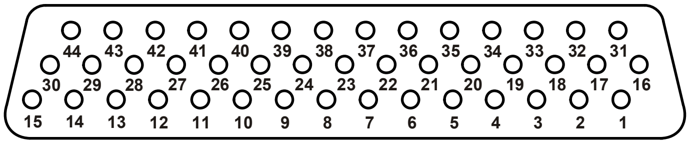
Notes:

[1] This discrete may be configured to perform another function. Refer to Section 5.4.3.14 for details on how to configure discretes.

[2] The RADAR ON* discrete output is allowed only on to be input on P1005 Pin 13.

A.2 GMA 35

A.2.1 P3501 Connector

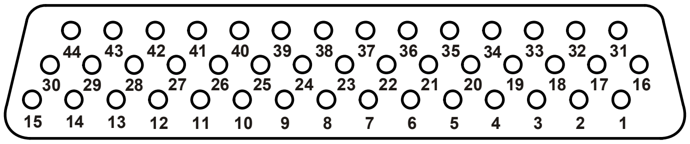


VIEW LOOKING FROM COCKPIT INTO GMA MOUNTING TRAY

Pin	Pin Name	I/O	Pin	Pin Name	I/O
1	MARKER ANTENNA IN HI	IN	23	RCVR 5 AUDIO IN HI	IN
2	MARKER ANTENNA IN LO	IN	24	COM ACTIVE* OUT	OUT
3	COM 3 AUDIO IN HI	IN	25	TEL 4 AUDIO IN HI	IN
4	COM 3 AUDIO LO	--	26	TEL 4 AUDIO IN LO	IN
5	COM 3 MIC AUDIO OUT HI	OUT	27	TEL 4 MIC OUT HI	OUT
6	COM 3 MIC KEY* OUT	OUT	28	TEL 4 MIC OUT LO	OUT
7	RCVR 4 AUDIO IN HI	IN	29	ALERT 3 AUDIO IN HI	IN
8	RCVR 4 AUDIO IN LO	IN	30	COM 2 MIC KEY* OUT	OUT
9	COM 1 AUDIO IN HI	IN	31	ALERT 1 AUDIO IN HI	IN
10	COM 1 AUDIO LO	--	32	ALERT 1 AUDIO IN LO	IN
11	COM 1 MIC AUDIO OUT HI	OUT	33	PILOT MIC AUDIO IN HI	IN
12	COM 1 MIC KEY* OUT	OUT	34	PILOT MIC KEY* IN	IN
13	COM 2 AUDIO IN HI	IN	35	PILOT MIC AUDIO IN LO	IN
14	COM 2 AUDIO LO	--	36	INNER MARKER LAMP OUT	OUT
15	COM 2 MIC AUDIO OUT HI	OUT	37	OUTER MARKER LAMP OUT	OUT
16	PILOT PUSH-TO-COMMAND KEY* IN	IN	38	MIDDLE MARKER LAMP OUT	OUT
17	NAV 1 AUDIO IN HI	IN	39	MIDDLE MARKER SENSE OUT	OUT
18	NAV 1 AUDIO IN LO	IN	40	PASS HEADSET AUDIO OUT LEFT	OUT
19	NAV 2 AUDIO IN HI	IN	41	PASS HEADSET AUDIO OUT RIGHT	OUT
20	NAV 2 AUDIO IN LO	IN	42	PASS HEADSET AUDIO OUT LO	OUT
21	RCVR 3 AUDIO IN HI	IN	43	ALERT 2,3,4 AUDIO IN LO	IN
22	RCVR 3 AUDIO IN LO	IN	44	ALERT 4 (TEL RING) AUDIO IN HI	IN

* Indicates an Active-Low

A.2.2 P3502 Connector



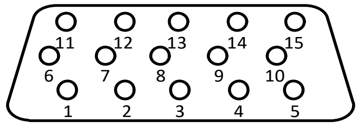
VIEW LOOKING FROM COCKPIT INTO GMA MOUNTING TRAY

Pin	Pin Name	I/O	Pin	Pin Name	I/O
1	PILOT HEADSET AUDIO OUT LO	OUT	23	MUSIC 1 IN LEFT	IN
2	COPILOT HEADSET AUDIO OUT LO	OUT	24	MUSIC 1 IN RIGHT	IN
3	COPILOT HEADSET AUDIO OUT LEFT	OUT	25	MUSIC 1 IN LO	IN
4	COPILOT HEADSET AUDIO OUT RIGHT	OUT	26	MUSIC 2 IN LEFT	IN
5	RESERVED	IN	27	MUSIC 2 IN RIGHT	IN
6	RESERVED	--	28	MUSIC 2 IN LO	IN
7	RESERVED	IN	29	FAILSAFE WARN AUDIO IN HI	IN
8	AIRCRAFT POWER	IN	30	COPILOT PUSH-TO-COMMAND KEY* IN	IN
9	AIRCRAFT POWER	IN	31	PILOT HEADSET AUDIO OUT RIGHT	OUT
10	AIRCRAFT GROUND	--	32	COPILOT MIC AUDIO IN HI	IN
11	AIRCRAFT GROUND	--	33	COPILOT MIC KEY* IN	IN
12	PASSENGER ADDRESS MUTE* OUT	OUT	34	COPILOT MIC AUDIO IN LO	IN
13	MARKER HI SENSE* IN	IN	35	PASS 1 MIC AUDIO IN HI	IN
14	PASS ICS KEY* IN	IN	36	PASS 1 MIC AUDIO IN LO	IN
15	ALERT 2 AUDIO IN HI	IN	37	PASS 2 MIC AUDIO IN HI	IN
16	PILOT HEADSET AUDIO OUT LEFT	OUT	38	PASS 2 MIC AUDIO IN LO	OUT
17	RS-232 IN	IN	39	PASS 3 MIC AUDIO IN HI	IN
18	RS-232 OUT	OUT	40	PASS 3 MIC AUDIO IN LO	IN
19	PA MODE SELECTED* OUT	OUT	41	PASS 4 MIC AUDIO IN HI	IN
20	COM CYCLE* IN	IN	42	PASS 4 MIC AUDIO IN LO	IN
21	RESERVED**	--	43	SPEAKER AUDIO OUT LO	IN
22	CLEARANCE RECORDER PLAYBACK* IN	IN	44	SPEAKER AUDIO OUT HI	OUT

* Indicates an Active-Low

** This is an Active-Low output, always asserted to ground.

A.3 Flight Stream 210 Connector



LOOKING AT UNIT

Pin	Pin Name	I/O
1	VOLUME LOCK DISCRETE INPUT*	IN
2	ARINC 429 IN A	IN
3	ARINC 429 IN B	IN
4	RS-422 IN A	IN
5	POWER INPUT	IN
6	RS-232 OUT 3	OUT
7	RS-232 IN 3	IN
8	RS-232 OUT 2	OUT
9	RS-232 IN 2	IN
10	RS-422 IN B	IN
11	RS-232 OUT 1	OUT
12	RS-232 IN 1	IN
13	RS-422 OUT A	OUT
14	RS-422 OUT B	OUT
15	GROUND	--

APPENDIX B INTERCONNECT DIAGRAMS

B.1 GTN Xi Interconnects

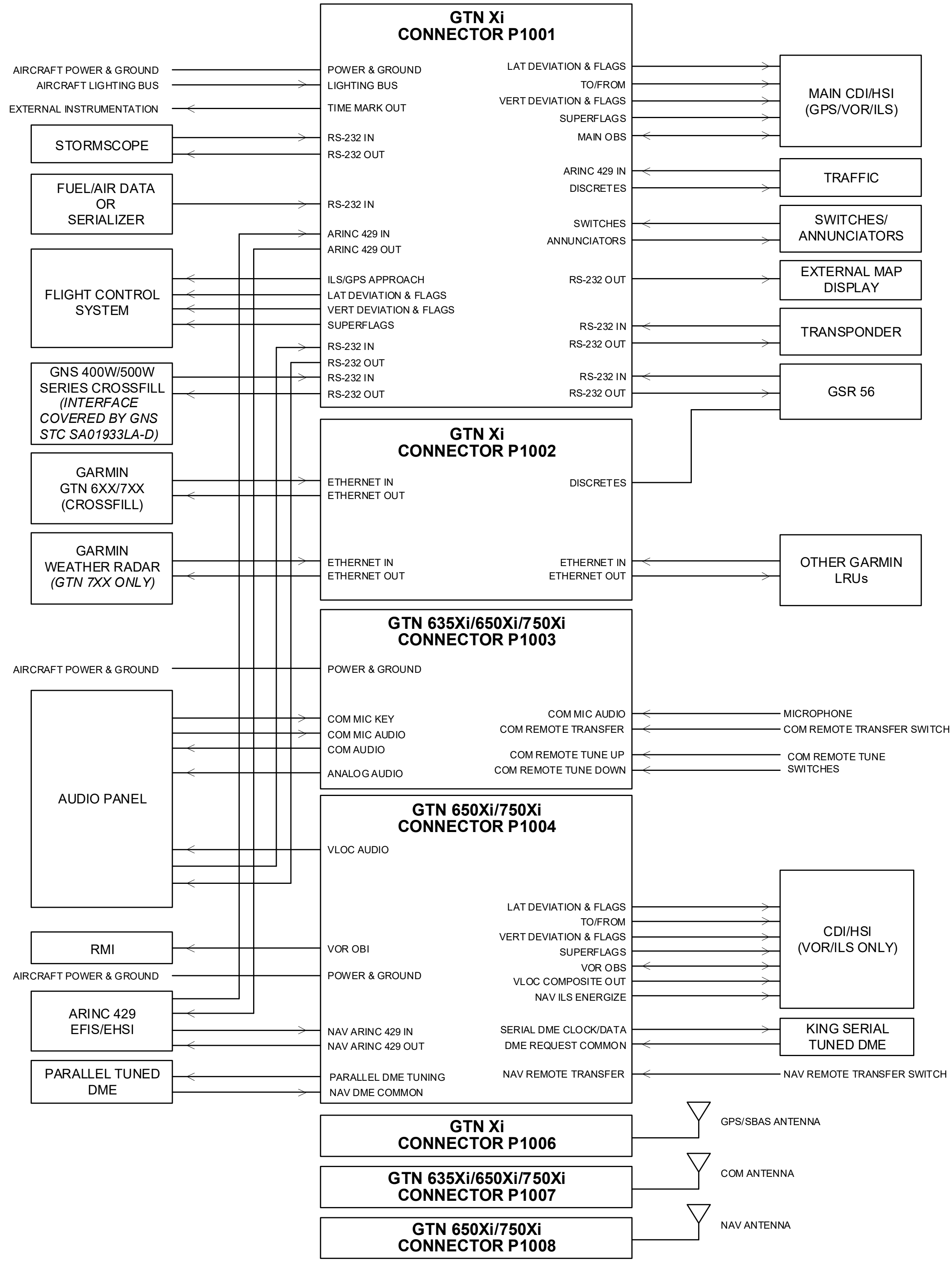


Figure B-1 GTN Xi System Interface Diagram

GTN 650Xi/750Xi TYPICAL INSTALLATION—SEE DETAIL DRAWINGS FOR WIRING

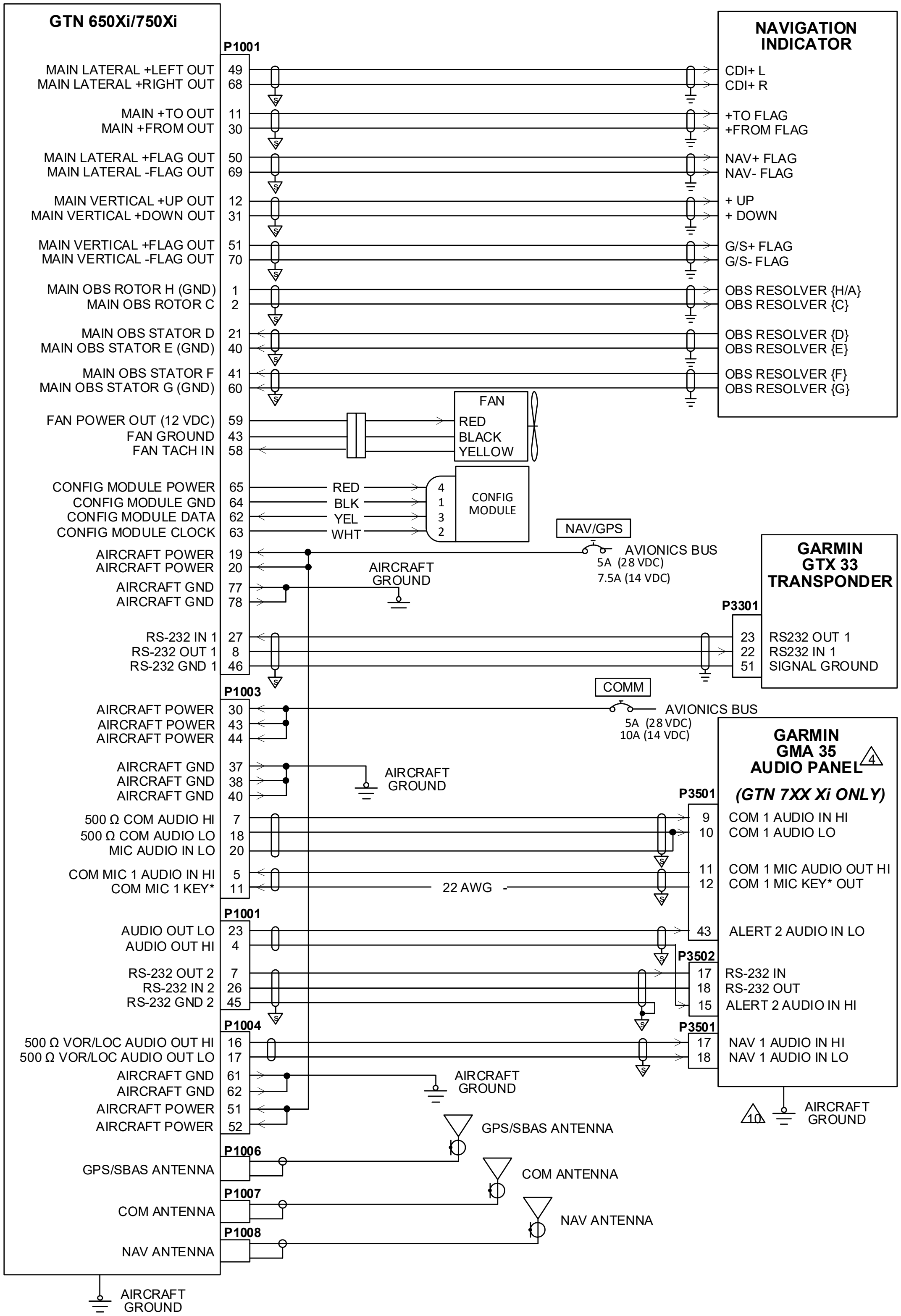


Figure B-2 GTN 650Xi/750Xi Typical Installation Interconnect
Sheet 1 of 2

NOTES

1 REFER TO THE DETAIL DRAWINGS FOR WIRE GAUGE INFO.

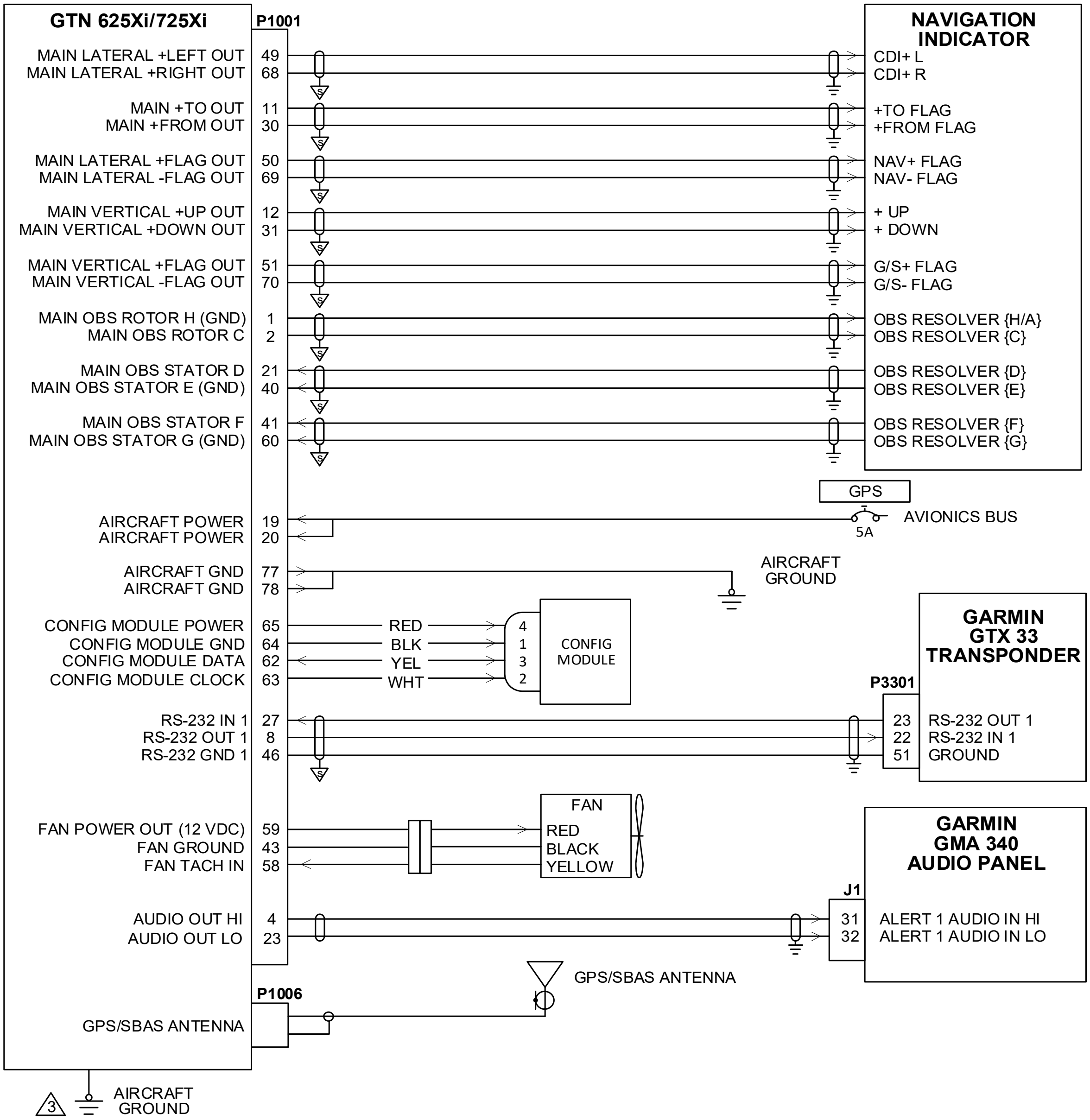
2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED 3.0 INCHES. REFER TO SECTION 3.6.12.3.

4 THE GMA 35 CAN ONLY BE INTERFACED AND CONTROLLED WITH THE GTN 7XX Xi. FOR GTN 6XX Xi INSTALLATIONS, USE AN ALTERNATE AUDIO PANEL.

Figure B-2 GTN 650Xi/750Xi Typical Installation Interconnect
Sheet 2 of 2

GTN 625Xi/725Xi TYPICAL INSTALLATION—SEE DETAIL DRAWINGS FOR WIRING



NOTES

1. REFER TO THE DETAIL DRAWINGS FOR WIRE GAUGE INFO.

2. GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3. AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED 3.0 INCHES. REFER TO SECTION 3.6.12.3.

Figure B-3 GTN 625Xi/725Xi Typical Installation Interconnect

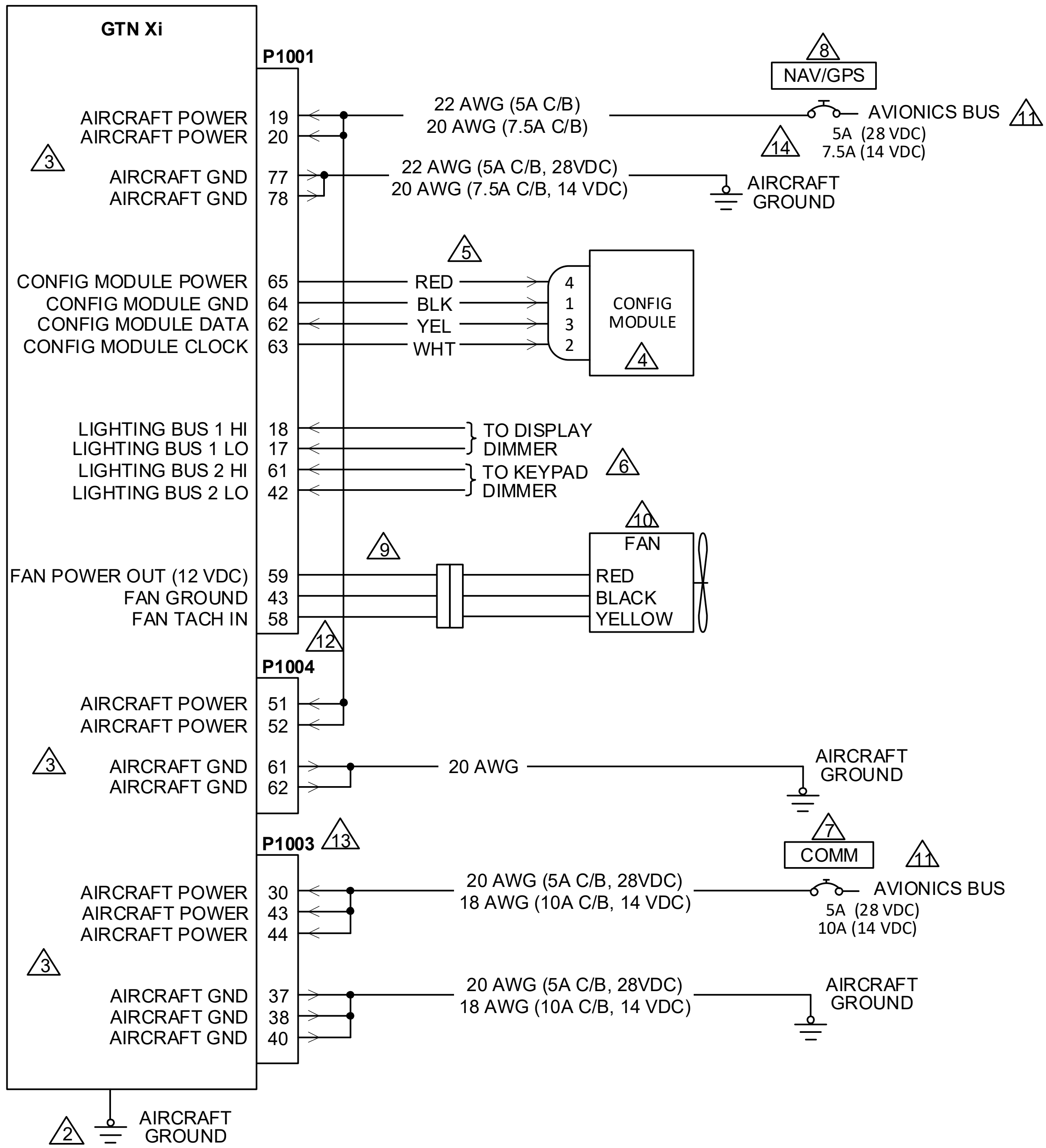


Figure B-4 GTN Xi Power Lighting Configuration Interconnect
Sheet 1 of 3

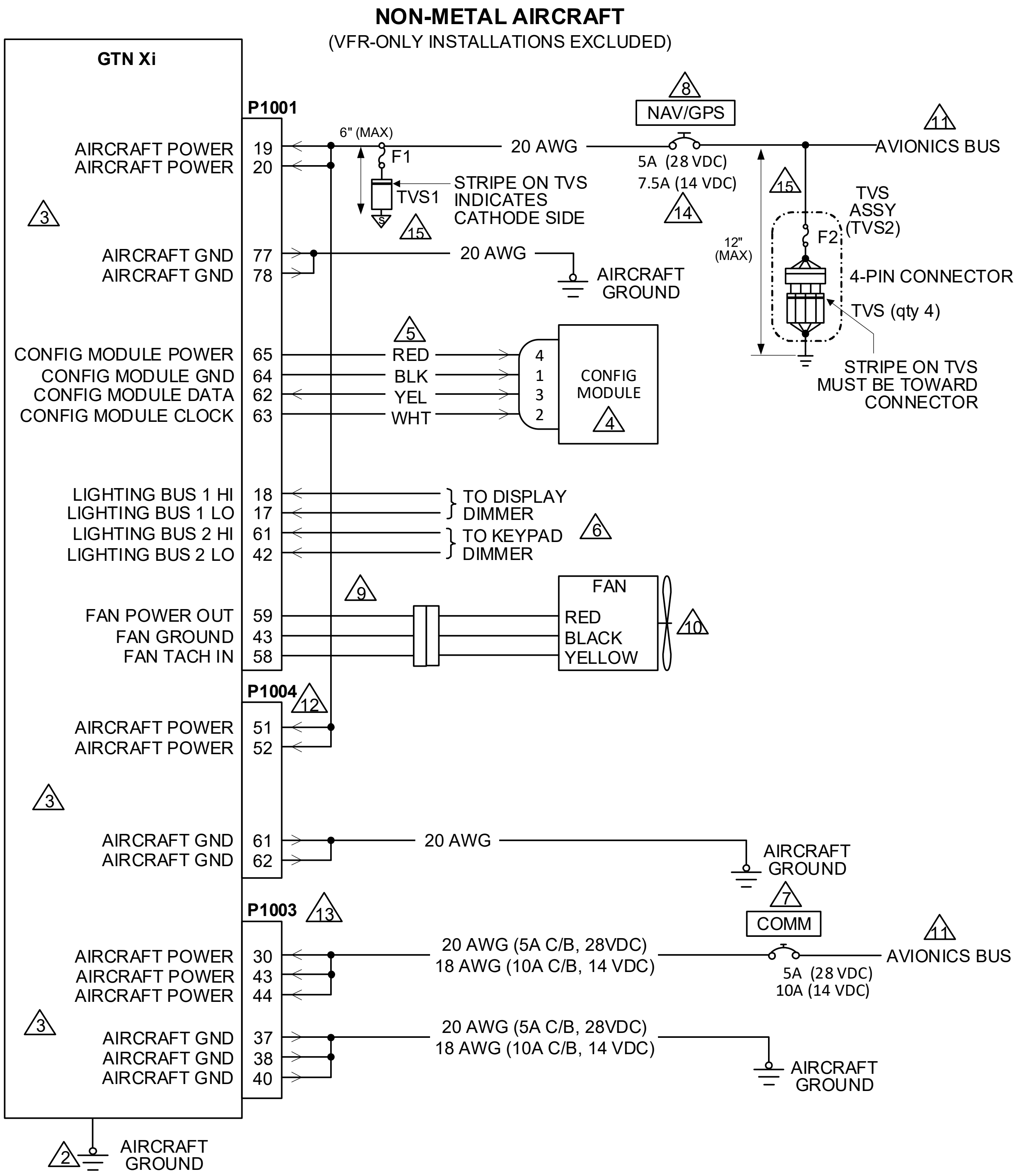


Figure B-4 GTN Xi Power Lighting Configuration Interconnect
Sheet 2 of 3

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND
VERIFY THE AIRCRAFT GROUND MEETS BONDING REQUIREMENTS IN SECTION 3.6.6.

3 ALL POWER LEADS AND GROUND LEADS ARE REQUIRED. 22 AWG WIRE CAN BE USED FOR THE SPLICE. USE HEAT-SHRINK TUBING TO PROVIDE SUFFICIENT INSULATION FROM SURROUNDING CONTACTS.

4 CONFIGURATION MODULE IS MOUNTED IN THE BACKSHELL OF THE P1001 CONNECTOR.

5 CONFIGURATION MODULE HARNESS USES 28 AWG WIRES. CONTACTS SUPPLIED WITH CONFIGURATION MODULE MUST BE USED FOR CONNECTING CONFIGURATION MODULE HARNESS TO P1001.

6 OPTIONAL CONNECTION. LIGHTING CAN BE CONTROLLED BY THE INTEGRATED PHOTOCELL, A SINGLE LIGHTING BUS, OR DUAL LIGHTING BUSES. IF THE AIRCRAFT HAS A SINGLE LIGHTING BUS, ONLY LIGHTING BUS 1 NEEDS TO BE WIRED. REFER TO SECTION 5.4.3.6 FOR CONFIGURATION DETAILS.

7 CIRCUIT BREAKER SHOULD BE LABELED AS “COM”, “COM1”, OR “COM2” DIRECTLY ADJACENT TO THE CIRCUIT BREAKER. THE CIRCUIT BREAKER MUST BE READILY ACCESSIBLE TO THE PILOT. ALTERNATE SPELLINGS OF “COM” ARE ACCEPTABLE (E.G., “COMM”).

8 CIRCUIT BREAKER SHOULD BE LABELED AS: “GPS”, “GPS1”, OR “GPS 2” FOR THE GTN 625Xi/635Xi/725Xi, AND “NAV/GPS”, “NAV/GPS1”, OR “NAV/GPS2” FOR THE GTN 650Xi/750Xi, DIRECTLY ADJACENT TO THE CIRCUIT BREAKER. THE CIRCUIT BREAKER MUST BE READILY ACCESSIBLE TO THE PILOT.

9 IF MODIFICATION OF THE HARNESS FROM THE FAN TO THE P1001 CONNECTOR IS NECESSARY, THE MODIFIED LENGTH MUST NOT BE LONGER THAN 8 INCHES. THE FAN HARNESS (P/N 320-00600-00) IS SUPPLIED AS PART OF THE GTN 6XX Xi OR 7XX Xi CONNECTOR KIT.

10 FAN SUPPLIED AS PART OF BACKPLATE ASSEMBLY.

11 REFER TO SECTION 3.6.8 FOR SPECIFIC INSTRUCTIONS ON POWER DISTRIBUTION TO THE GTN Xi FOR SINGLE AND DUAL INSTALLATIONS.

12 GTN 650Xi AND GTN 750Xi ONLY.

13 GTN 635Xi/650Xi/750Xi ONLY.

14 THE GTN 625Xi AND GTN 725Xi ONLY REQUIRE A 5 AMP C/B.

15 TVS PROTECTION IS ONLY REQUIRED ON ONE GTN Xi IN A DUAL NAV/COM, NON-METAL AIRCRAFT INSTALLATION. FOR VFR-ONLY INSTALLATIONS, WIRE AS SHOWN ON SHEET 1. REFER TO SECTION 3.5.3 FOR PART NUMBERS AND SECTION 4.6.3 FOR ASSEMBLY INSTRUCTIONS.

Figure B-4 GTN Xi Power Lighting Configuration Interconnect
Sheet 3 of 3

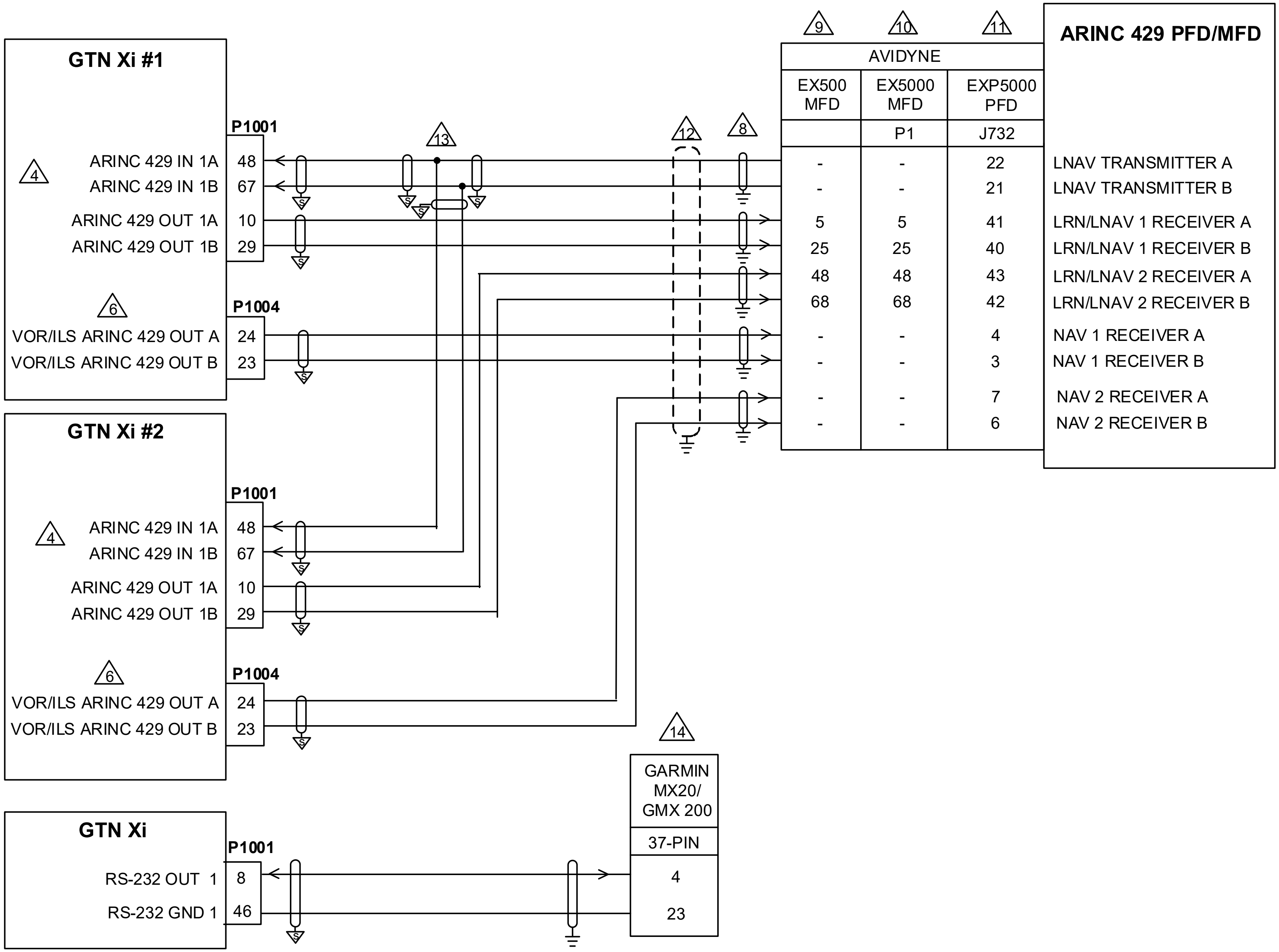


Figure B-5 GTN Xi - PFD/MFD Interconnect
Page 1 of 2

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED 3.0 INCHES. REFER TO SECTION 3.6.12.3.

4 IF THE ARINC 429 IN 1 PORT (P1001 PINS -48 AND -67) IS ALREADY IN USE FOR ANOTHER PURPOSE, ANY AVAILABLE ARINC 429 IN PORT MAY BE CONNECTED INSTEAD.

5 REFER TO MANUFACTURER'S DOCUMENTATION FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

6 THESE OUTPUTS ARE USED ON THE GTN 650Xi/750Xi ONLY.

7 REFER TO SECTION 5.4.3 FOR CONFIGURATION INFORMATION.

8 TERMINATE SHIELDS AT PFD/MFD IN ACCORDANCE WITH MANUFACTURER'S DOCUMENTATION.

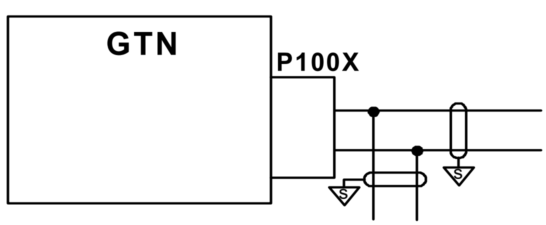
9 DISPLAY P/N 700-00007-( ) WITH SOFTWARE P/N 530-00193-( ) OR LATER IS REQUIRED FOR PROPER OPERATION WITH THE GTN Xi UNIT. REFER TO APPENDIX SECTION C.1.14 FOR CONFIGURATION SETTINGS.

10 DISPLAY P/N 700-00004-( ) OR P/N 700-00030-( ) WITH SOFTWARE P/N 530-00195-( ) OR LATER IS REQUIRED FOR PROPER OPERATION WITH THE GTN Xi UNIT. REFER TO APPENDIX SECTION C.1.14 FOR CONFIGURATION SETTINGS.

11 DISPLAY P/N 700-00006-( ) WITH SOFTWARE P/N 530-00194-( ) OR LATER IS REQUIRED FOR PROPER OPERATION WITH THE GTN Xi UNIT. REFER TO APPENDIX SECTION C.1.14 FOR CONFIGURATION SETTINGS.

12 ALL CONNECTIONS TO THE AVIDYNE EXP 5000 PFD MUST BE OVERBRAIDED PER THE AVIDYNE EXP 5000 INSTALLATION MANUAL. USE OVERBRAID P/N AND METHOD OUTLINED IN THE AVIDYNE EXP 5000 INSTALLATION MANUAL. CONNECTIONS TO THE EX 500/5000 MFD DO NOT NEED TO BE OVERBRAIDED.

13 THE SPLICE MUST BE PERFORMED AT THE GTN Xi CONNECTOR END OF THE WIRE. SPLICE AS SHOWN:



14 MAPMX IS THE PREFERRED COMMUNICATION PROTOCOL FOR THE MX20/GMX 200. OTHER INPUT PORTS ON THE MX20/GMX 200 MAY BE USED IN LIEU OF THE PORT SHOWN. REFER TO THE APPLICABLE INSTALLATION MANUAL FOR ADDITIONAL DETAILS.

Figure B-5 GTN Xi - PFD/MFD Interconnect
Sheet 2 of 2

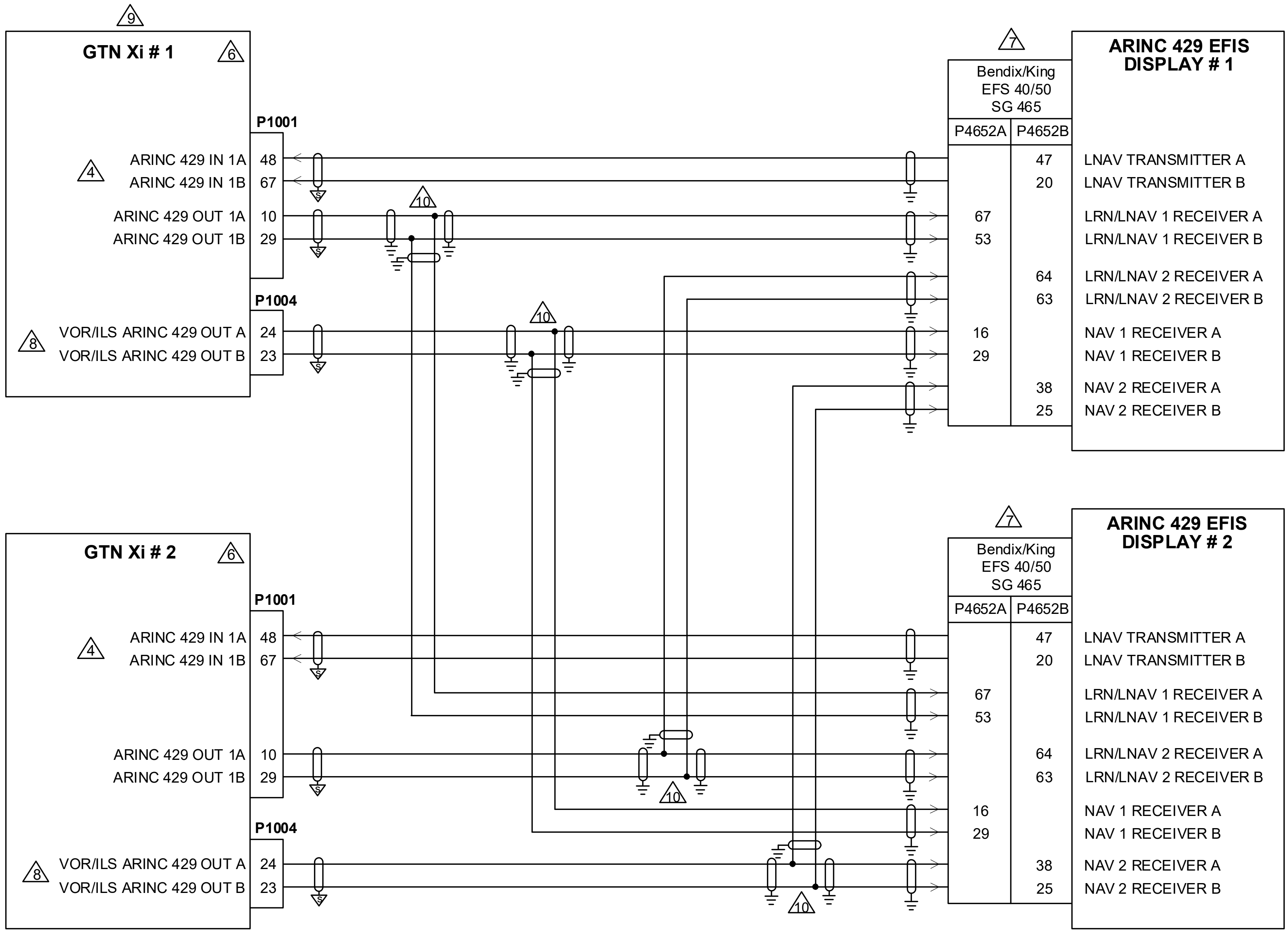


Figure B-6 GTN Xi - ARINC 429 EFIS Interconnect
Sheet 1 of 3

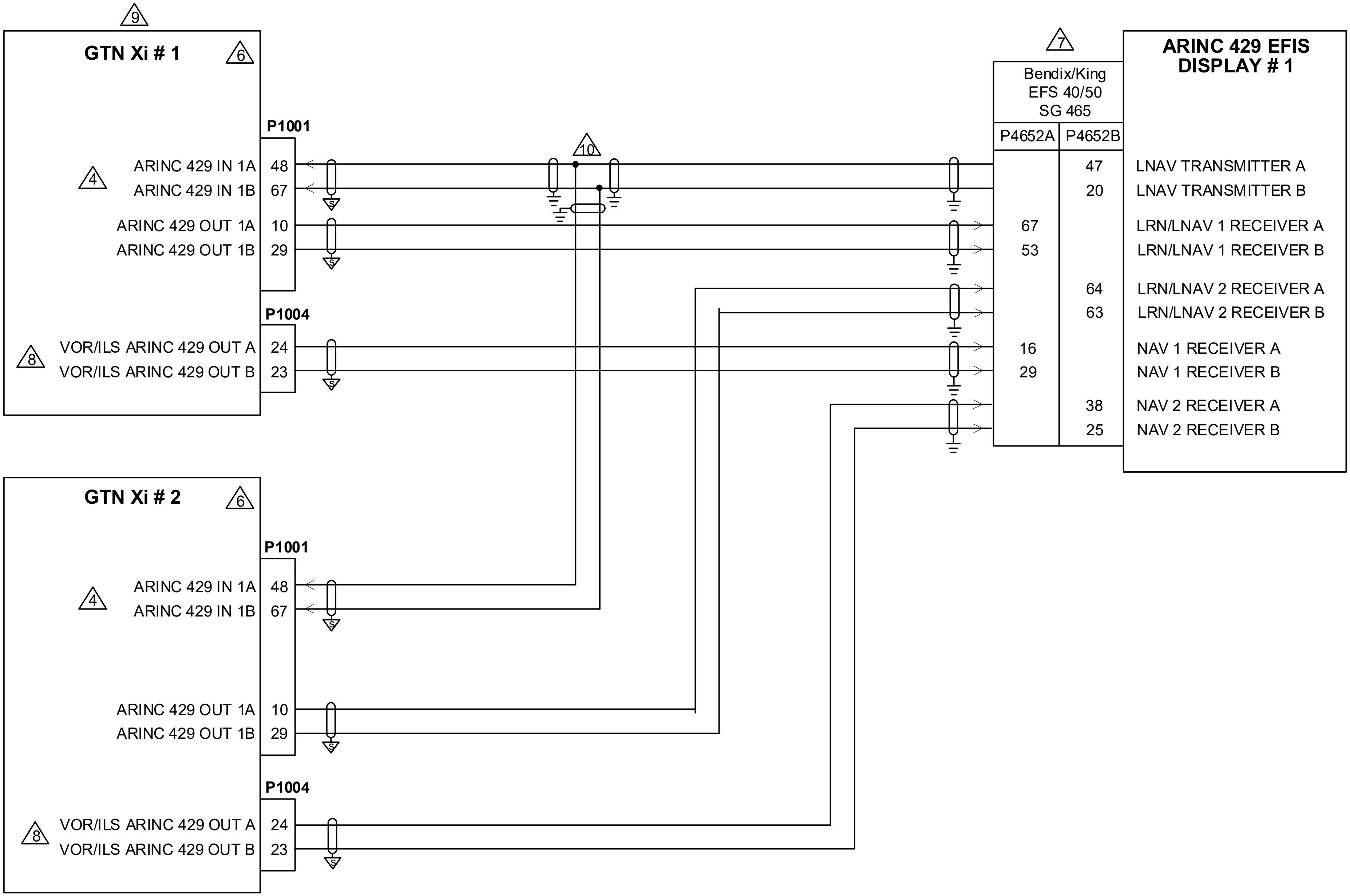


Figure B-6 GTN Xi - ARINC 429 EFIS Interconnect
Sheet 2 of 3

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED 3.0 INCHES. REFER TO SECTION 3.6.12.3.

4 IF THE ARINC 429 IN 1 PORT (P1001 PINS -48 AND -67) IS ALREADY USED FOR ANOTHER PURPOSE, ANY AVAILABLE ARINC 429 IN PORT MAY BE CONNECTED INSTEAD.

5 REFER TO MANUFACTURER'S DOCUMENTATION FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

6 REFER TO SECTION 5.4.3.1 FOR GTN Xi CONFIGURATION SETTINGS.

7 REFER TO APPENDIX SECTION C.1.5 FOR CONFIGURATION SETTINGS.

8 THESE OUTPUTS ARE USED ON THE GTN 650Xi/750Xi ONLY.

9 WIRE AS SHOWN FOR GTN Xi #1 IN A SINGLE GTN Xi INSTALLATION.

10 THE SPLICE MUST BE PERFORMED AT THE REMOTE END CONNECTOR IN ACCORDANCE WITH THE MANUFACTURER'S EQUIPMENT INSTALLATION MANUAL. SPLICE AS SHOWN:

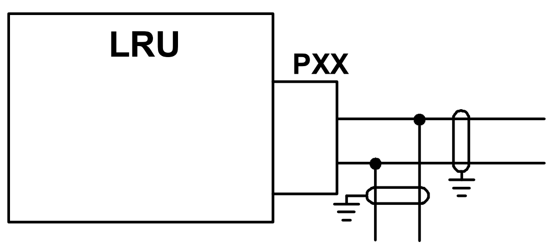
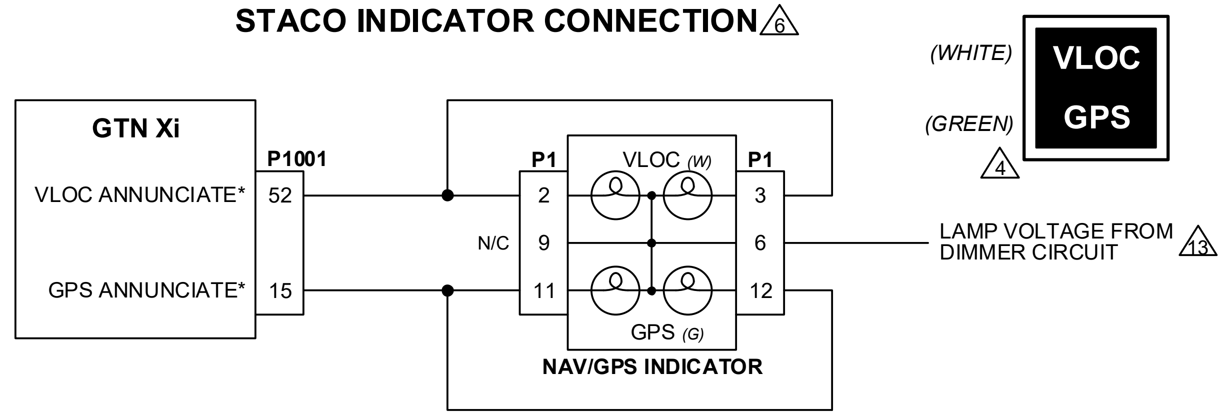


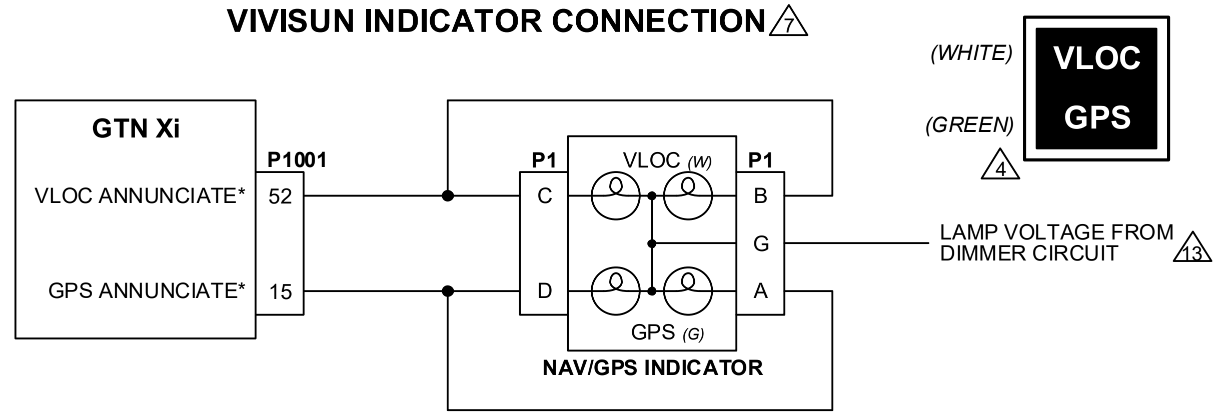
Figure B-6 GTN Xi - ARINC 429 EFIS Interconnect
Sheet 3 of 3

EXTERNAL NAVIGATION SOURCE SELECTION ANNUNCIATORS 5

STACO INDICATOR CONNECTION 6



VIVISUN INDICATOR CONNECTION 7



VIVISUN INDICATOR/SWITCH CONNECTION 8

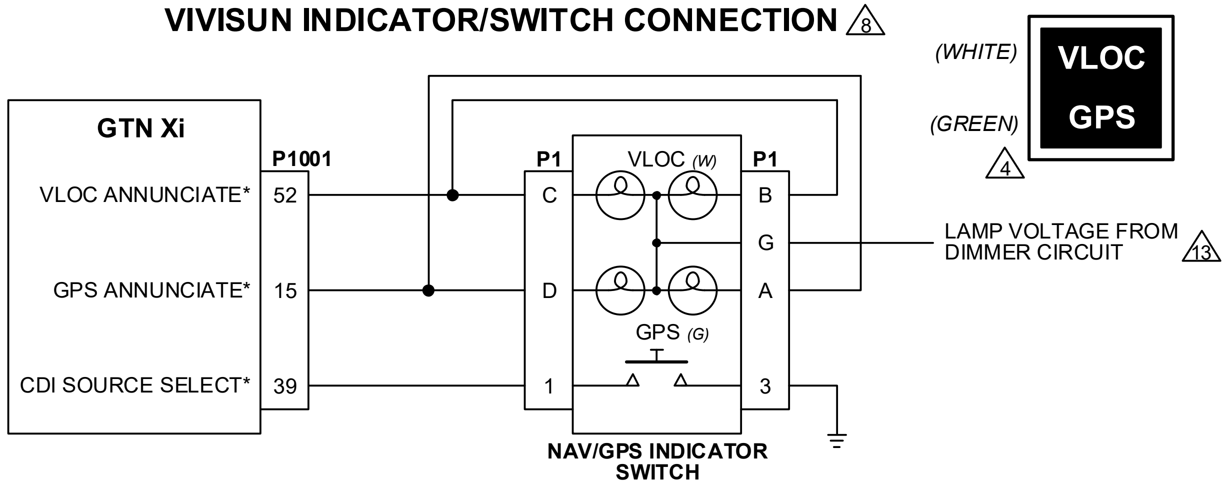
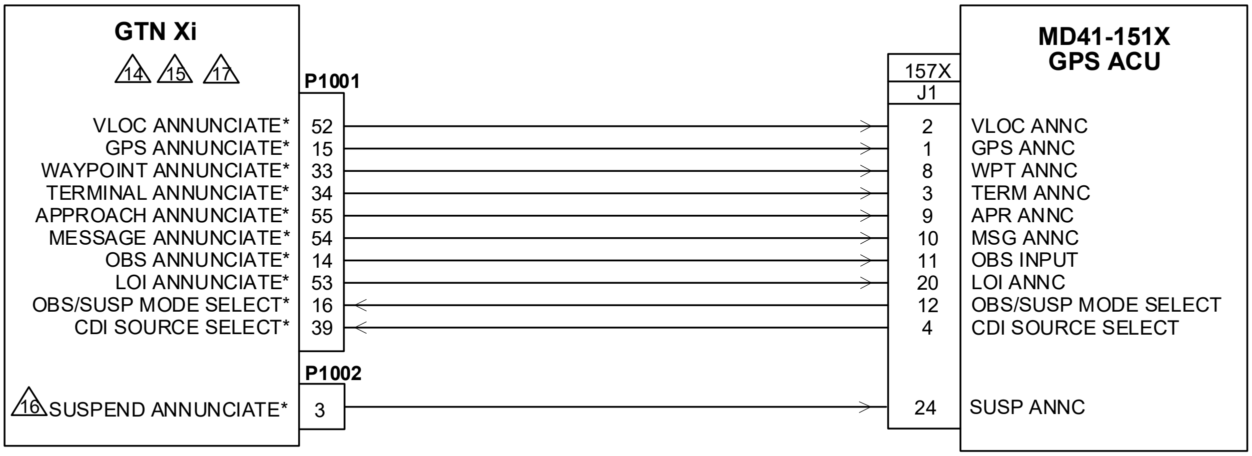


Figure B-7 External Navigation Source Selection Annunciator Interconnect Sheet 1 of 4

MID-CONTINENT PREFERRED SOURCE SELECTION ANNUNCIATOR (Pre-existing installations only)



MID-CONTINENT ACU CONNECTIONS FOR PRE-EXISTING ACUs ONLY

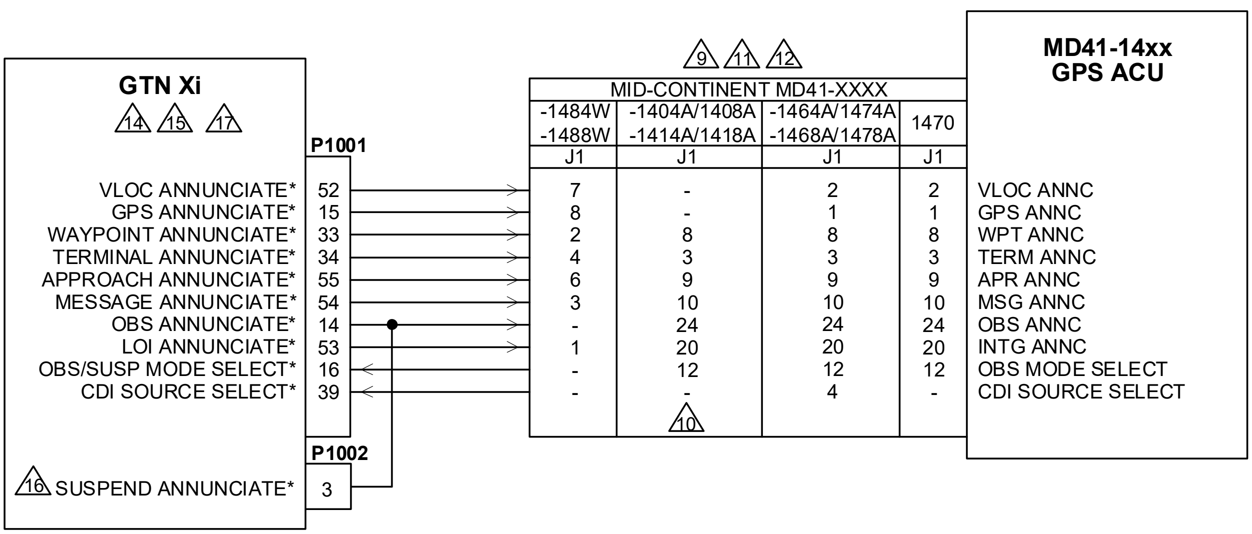


Figure B-7 External Navigation Source Selection Annunciator Interconnect
Sheet 2 of 4

NOTES

1 ALL WIRES 22 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 IF A CDI/HSI SOURCE SELECTION ANNUNCIATOR IS REQUIRED, INDICATORS ON THIS PAGE ARE SUITABLE TO MEET THE ANNUNCIATION REQUIREMENT.

4 LEGENDS ARE HIDDEN (BLACK) WHEN NOT ILLUMINATED.

5 THE PREFERRED ANNUNCIATION IS VLOC/GPS ALTHOUGH NAV/GPS IS ACCEPTABLE.

6 STACO SWITCH INDICATOR P/N 992561-1241762200 (14V SYSTEMS) AND P/N 992561-1241862200 (28V SYSTEMS) SHOWN.

7 VIVISUN INDICATOR P/N 95-40-17-B6-E1YGN (28V SYSTEMS) SHOWN. INDICATOR MAY BE CONVERTED TO 14V OPERATION BY REPLACING 28V LAMPS WITH 14V LAMPS P/N 14-113.

8 VIVISUN INDICATOR WITH MOMENTARY SWITCH P/N 95-45-11-B6-E1EMK (28V SYSTEMS) SHOWN. INDICATOR MAY BE CONVERTED TO 14V OPERATION BY REPLACING 28V LAMPS WITH 14V LAMPS P/N 14-113.

9 THESE UNITS ALSO PROVIDE NAVIGATION SOURCE SELECTION ANNUNCIATION. MID-CONTINENT ANNUNCIATION CONTROL UNITS FOR BOTH 14V AND 28V SYSTEMS SHOWN. REFER TO MID-CONTINENT INSTALLATION MANUAL FOR ADDITIONAL DETAILS.

10 CDI SOURCE SELECTION AND ANNUNCIATION IS DONE WITH EXTERNAL RELAYS. REFER TO MID-CONTINENT INSTALLATION MANUAL FOR ADDITIONAL INSTALLATION INFORMATION.

11 THE MD41-14XX ANNUNCIATORS SHOWN DO NOT PROVIDE A “SUSP” ANNUNCIATION AND ARE ONLY TO BE USED IF THEY ARE PRE-EXISTING IN THE AIRCRAFT. IF PERFORMING A NEW INSTALLATION AND SOURCE SELECTION ANNUNCIATIONS ARE REQUIRED, USE THE MD41-151X SHOWN ON THIS PAGE. REFER TO SECTION 3.6.10 FOR ADDITIONAL INFORMATION.

12 SINCE MD41-14XX ANNUNCIATORS DO NOT PROVIDE A “SUSP” ANNUNCIATION, THEY MUST BE PLACARDED DIRECTLY ADJACENT TO THE ACU: “GREEN OBS INDICATES OBS OR SUSP MODE--GTN Xi ANNUNCIATOR BAR INDICATES WHICH IS ACTIVE. PUSH OBS KEY TO CHANGE OBS OR SUSP MODE". AS AN ALTERNATIVE, THE MD41-151X MAY BE INSTALLED AS SHOWN ON THIS PAGE. REFER TO SECTION 3.6.10 FOR ADDITIONAL INFORMATION.

13 LAMPS SHOULD RECEIVE POWER FROM THE SAME POWER BUS TO WHICH THE GTN Xi IS CONNECTED.

14 FOR GTN 625Xi/635Xi/725Xi INSTALLATIONS, IF THE ACU CONTAINS A CDI SOURCE SELECT SWITCH, THEN THE CDI SOURCE SELECT SWITCH (LABELED “CDI" OR “NAV GPS") WILL NOT BE USED AND MUST BE PLACARDED DIRECTLY ADJACENT TO THE ACU: “CDI SWITCH UNUSED" OR “NAV GPS SWITCH UNUSED" (DEPENDING ON THE LABEL OF THE INSTALLED SWITCH).

Figure B-7 External Navigation Source Selection Annunciator Interconnect
Sheet 3 of 4

NOTES CONTINUED

15 FOR GTN 625Xi/635Xi/725Xi INSTALLATIONS, THE CONNECTIONS FROM THE ACU TO P1001-52, VLOC ANNUNCIATE* AND P1001-39, CDI SOURCE SELECT*, ARE NOT NECESSARY

16 DEFAULT DISCRETE FUNCTION FOR THIS PIN IS SHOWN. THIS PIN FUNCTION IS CONFIGURABLE AS DESCRIBED IN SECTION 5.

17 DEFAULT DISCRETE FUNCTION FOR PINS P1001-33, -34, -55, -54, -14, -53, -16, AND -39 IS SHOWN. THESE PIN FUNCTIONS ARE CONFIGURABLE AS DESCRIBED IN SECTION 5.

Figure B-7 External Navigation Source Selection Annunciator Interconnect
Sheet 4 of 4

GTN Xi (4)	P1001	MID-CONTINENT MD200-306/307 P1	MID-CONTINENT MD200-302/303 P1	MID-CONTINENT MD222-402 P1	MID-CONTINENT MD222-406 P1	GARMIN GI 102 GI 102A P1	GARMIN GI 106 GI 106B P1	HONEYWELL (BENDIX/KING) KI 206 P2061	HONEYWELL (BENDIX/KING) KI 525A P1	HONEYWELL (BENDIX/KING) KI 525A P2	HONEYWELL (BENDIX/KING) KPI 552 KPI 552B KPI 553 KPI 553A KPI 553B P101	NAVIGATION INDICATOR (7)
MAIN LATERAL +LEFT OUT	49	11	11	22	22	11	11	n	V	-	i	CDI+ L
MAIN LATERAL +RIGHT OUT	68	12	12	23	23	12	12	j	b	-	h	CDI+ R
MAIN +TO OUT	11	9	9	16	16	9	9	e	Z	-	j	+TO FLAG
MAIN +FROM OUT	30	10	10	17	17	10	10	S	T	-	k	+FROM FLAG
MAIN LATERAL +FLAG OUT	50	7	7	20	20	7	7	N	K	-	f	NAV+ FLAG
MAIN LATERAL -FLAG OUT	69	8	8	21	21	8	8	F	F	-	g	NAV- FLAG
MAIN VERTICAL +UP OUT	12	13	-	-	25	-	13	k	-	E	JJ	+ UP
MAIN VERTICAL +DOWN OUT	31	14	-	-	24	-	14	m	-	B	HH	+ DOWN
MAIN VERTICAL +FLAG OUT	51	15	-	-	18	-	15	H	-	J	FF	G/S+ FLAG
MAIN VERTICAL -FLAG OUT	70	16	-	-	19	-	16	J	W	-	GG	G/S- FLAG
MAIN OBS ROTOR H (GND)	1	1	1	1	1	1	1	c	-	X	W	OBS RESOLVER {H/A}
MAIN OBS ROTOR C	2	2	2	2	2	2	2	Z	-	a	N,V	OBS RESOLVER {C}
MAIN OBS STATOR D	21	3	3	3	3	3	3	L	-	V	Z	OBS RESOLVER {D}
MAIN OBS STATOR E (GND)	40	5	5	5	5	5	5	P	-	Y	a	OBS RESOLVER {E}
MAIN OBS STATOR F	41	4	4	6	6	4	4	T	-	b	Y	OBS RESOLVER {F}
MAIN OBS STATOR G (GND)	60	6	6	4	4	6	6	W	-	e	X	OBS RESOLVER {G}
GPS ANNUNCIATE* (22 AWG)	15	17	17	15	15	-	17 (5)	-	-	-	-	GPS ANNC
VLOC ANNUNCIATE* (22 AWG)	52	24	24	8	8	-	18 (5)	-	-	-	-	NAV ANNC

Figure B-8 GTN Xi - CDI Interconnect
Sheet 1 of 3

GTN Xi	P1001	S-TEC	SPERRY						ROCKWELL COLLINS					CENTURY	NAVIGATION INDICATOR
		ST 180	RD 444		RD 550A		RD 650		331A-6P	331A-9G		PN-101	IND 351D	NSD 1000 NSD 360A	
		P2	P1	P2	P1	P2	P1	P2	P1	P1	P2	P1	P1	CD132	
MAIN LATERAL +LEFT OUT	49	27	-	F	-	F	-	4	29	-	4	j	11	17	CDI+ L
MAIN LATERAL +RIGHT OUT	68	43	-	E	-	E	-	3	28	-	3	i	12	18	CDI+ R
MAIN +TO OUT	11	26	-	A	-	A	-	1	26	-	1	n	9	33	+TO FLAG
MAIN +FROM OUT	30	42	-	B	-	B	-	2	27	-	2	p	10	34	+FROM FLAG
MAIN LATERAL +FLAG OUT	50	37	-	-	-	-	-	-	31	-	-	k	7	31	NAV+ FLAG
MAIN LATERAL -FLAG OUT	69	38	-	-	-	-	-	-	32	-	-	m	8	32	NAV- FLAG
MAIN LAT SUPERFLAG OUT	13	-	-	P	-	P	39	-	-	-	37	-	-	-	NAV SUPERFLAG
		-	-	S	-	S	-	36	-	-	38	-	-	-	NAV SUPERFLAG LO
MAIN VERTICAL + UP OUT	12	44	-	C	-	C	-	5	33	-	5	r	13	27	+ UP
MAIN VERT + DOWN OUT	31	28	-	D	-	D	-	6	34	-	6	q	14	28	+ DOWN
MAIN VERTICAL +FLAG OUT	51	36	-	-	-	-	-	-	35	-	-	s	15	30	GS+ FLAG
MAIN VERTICAL -FLAG OUT	70	35	-	-	-	-	-	-	36	-	-	t	16	29	GS- FLAG
MAIN VERTICAL SUPERFLAG OUT	32 (22 AWG)	-	-	U	-	U	38	-	-	-	7	-	-	-	GS SUPERFLAG
		-	-	W	-	W	-	8	-	-	-	-	-	-	GS SUPERFLAG LO
MAIN OBS ROTOR H (GND)	1	22	DD	-	DD	-	6	-	1	1	-	a	1	15	OBS RESOLVER {H/A}
MAIN OBS ROTOR C	2	24	FF	-	FF	-	8	-	3	3	-	c	2	16	OBS RESOLVER {C}
MAIN OBS STATOR D	21	25	z	-	z	-	9	-	4	4	-	d	3	24	OBS RESOLVER {D}
MAIN OBS STATOR E (GND)	40	39	AA	-	AA	-	10	-	5	5	-	e	5	23	OBS RESOLVER {E}
MAIN OBS STATOR F	41	40	BB	-	BB	-	11	-	6	6	-	f	4	26	OBS RESOLVER {F}
MAIN OBS STATOR G (GND)	60	41	CC	-	CC	-	12	-	7	7	-	g	6	25	OBS RESOLVER {G}
△4 ILS/GPS APPROACH	56 (22 AWG)	-	a	-	-	-	-	47	-	-	-	-	-	-	ILS ENERGIZE

Figure B-8 GTN Xi - CDI Interconnect
Sheet 2 of 3

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED 3.0 INCHES. REFER TO SECTION 3.6.12.3.

4 THE ILS/GPS APPROACH DISCRETE IS REQUIRED BY SOME CDIs/HSIs THAT ARE USED WITH THE M4C/D AUTOPILOTS. IF REQUIRED, VERIFY THE SIGNAL SUPPLIED TO THE INDICATOR IS THE CORRECT POLARITY (ACTIVE-HIGH OR ACTIVE-LOW).

5 THESE INPUTS ARE NOT USED ON THE GI 106.

6 NOT USED.

7 THE OBS INTERFACE TO THE GTN Xi WORKS ONLY FOR KPI 552/553/553A UNITS THAT HAVE A COURSE KNOB.

8 IT IS NOT RECOMMENDED TO USE EXTERNAL CDIs IN CONJUNCTION WITH THE G500/G600 OR G500/G600 TXi SYSTEM. IF IT IS DESIRED TO UTILIZE ONE OR MORE EXTERNAL CDIs, THE CDI(s) CAN ONLY BE USED TO DISPLAY VOR/ILS INFORMATION. REFER TO *G500/G600 AML STC INSTALLATION MANUAL* (P/N 190-00601-06) OR *G500/G600 TXi PART 23 AML STC INSTALLATION MANUAL* (P/N 190-01717-B3) FOR ADDITIONAL DETAILS REGARDING EXTERNAL CDI INTERFACES WHEN THIS SYSTEM IS INSTALLED.

9 THIS STC DOES NOT APPROVE THE USE OF EXTERNAL CDIs IN CONJUNCTION WITH THE G5 HSI EFI INTERFACED TO THE SAME GTN Xi. REFER TO *G5 STC INSTALLATION MANUAL* (P/N 190-01112-10) FOR DETAILS.

Figure B-8 GTN Xi - CDI Interconnect
Sheet 3 of 3

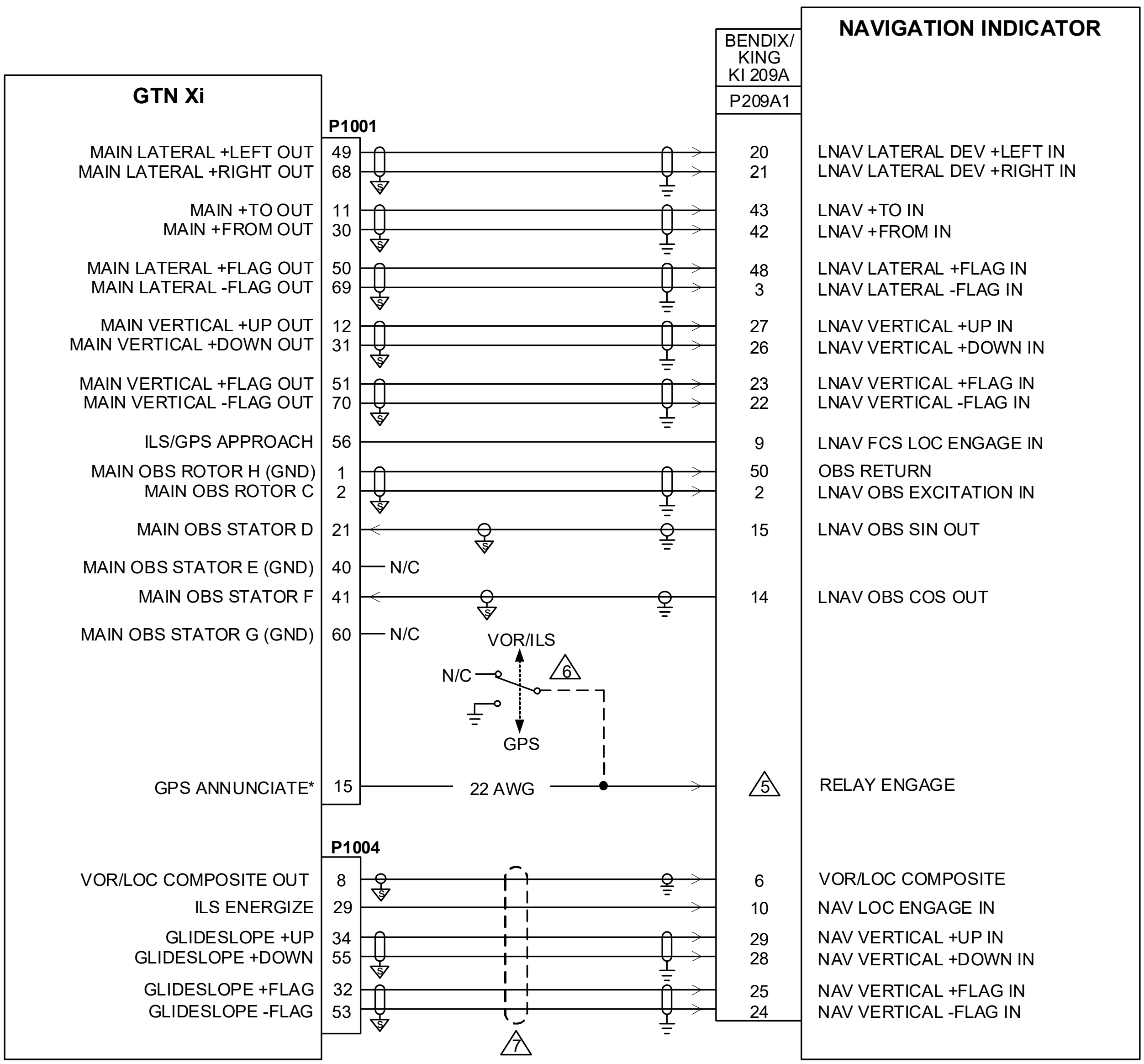


Figure B-9 GTN Xi - Bendix King KI 209A Interconnect
Sheet 1 of 2

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED 3.0 INCHES. REFER TO SECTION 3.6.12.3.

4 REFER TO MANUFACTURER'S DOCUMENTATION FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

5 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.

6 IF THE GTN 625Xi/635Xi/725Xi IS INSTALLED, AND ANOTHER VOR/ILS RECEIVER IS AVAILABLE TO DRIVE THE NAVIGATION INDICATOR, AN EXTERNAL SOURCE SELECTION SWITCH MUST BE USED IN LIEU OF THE GPS ANNUNCIATE OUTPUT. AN ACCEPTABLE SWITCH IS CARLING SWITCH (P/N 112-A-63). LABEL AS SHOWN. REFER TO SECTION 3.6.9 FOR ADDITIONAL SWITCH INSTALLATION REQUIREMENTS.

7 THESE CONNECTIONS ARE USED ON THE GTN 650Xi/750Xi ONLY.

Figure B-9 GTN Xi - Bendix King KI 209A Interconnect
Sheet 2 of 2

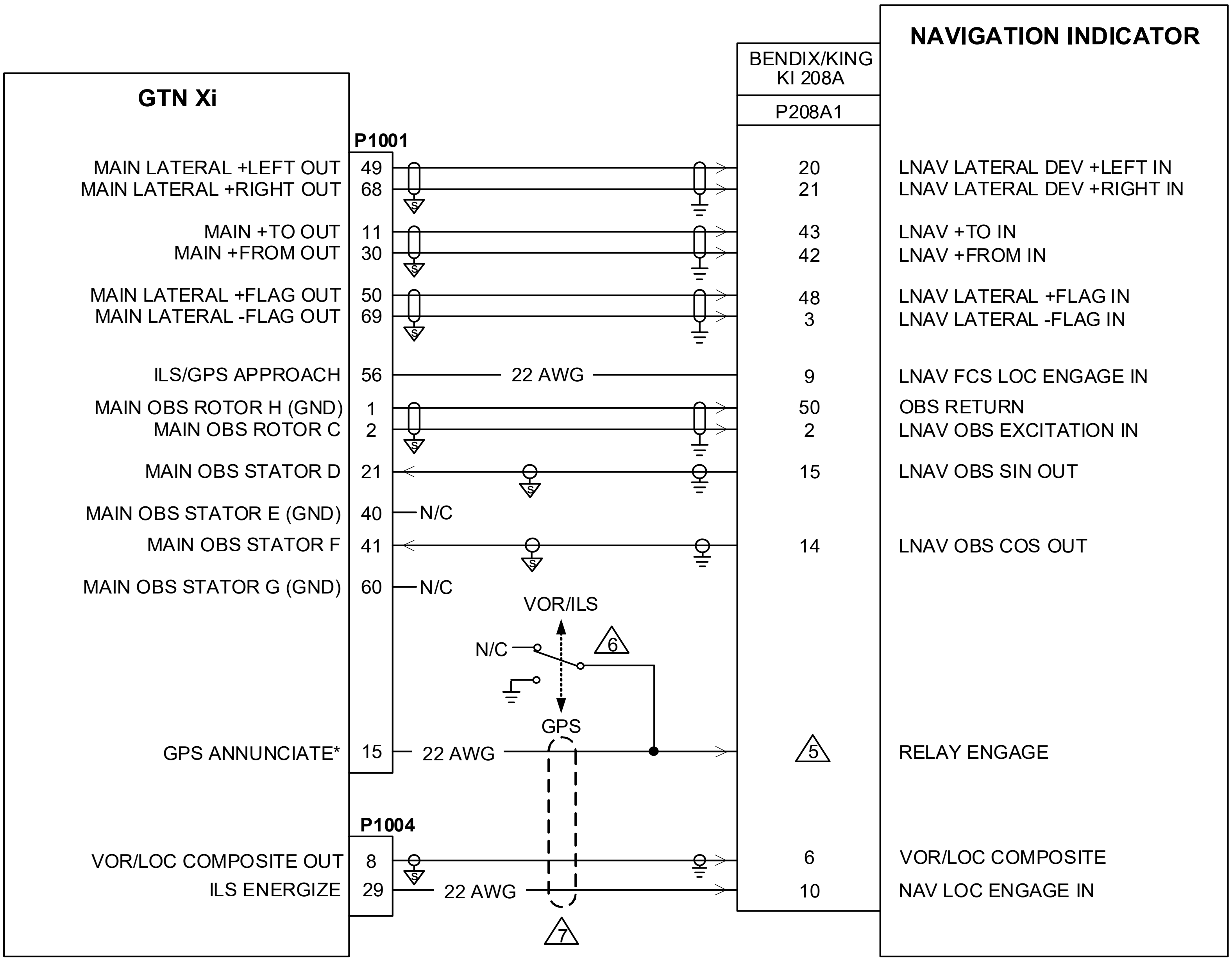


Figure B-10 GTN Xi - Bendix King KI 208A Interconnect
Sheet 1 of 2

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED 3.0 INCHES. REFER TO SECTION 3.6.12.3.

4 REFER TO MANUFACTURER'S DOCUMENTATION FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

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

6 IF THE GTN 625Xi/635Xi/725Xi IS INSTALLED, AND ANOTHER VOR/ILS RECEIVER IS AVAILABLE TO DRIVE THE NAVIGATION INDICATOR, AN EXTERNAL SOURCE SELECTION SWITCH MUST BE USED IN LIEU OF THE GPS ANNUNCIATE OUTPUT. AN ACCEPTABLE SWITCH IS CARLING SWITCH (P/N 112-A-63). LABEL AS SHOWN. REFER TO SECTION 3.6.9 FOR ADDITIONAL SWITCH INSTALLATION REQUIREMENTS.

7 THESE CONNECTIONS ARE USED ON THE GTN 650Xi/750Xi ONLY.

Figure B-10 GTN Xi - Bendix King KI 208A Interconnect
Sheet 2 of 2

GTN 650Xi/750Xi	P1004	GARMIN GI 102/A P1	GARMIN GI 106/A P1	BENDIX/KING KI 202 P2021	BENDIX/KING KI 203 P2031	BENDIX/KING KI 204 P2041	BENDIX/KING KI 206 P2061	BENDIX/KING KI 208 P2081	BENDIX/KING KI 209 P2091	BENDIX/KING KI 208A P208A1	BENDIX/KING KI 209A P209A1	NAVIGATION INDICATOR
VOR/LOC +LEFT	5	11	11	n	-	-	n	-	-	-	-	+LEFT
VOR/LOC +RIGHT	6	12	12	j	-	-	j	-	-	-	-	+RIGHT
VOR/LOC +TO	1	9	9	e	-	-	e	-	-	-	-	+TO
VOR/LOC +FROM	2	10	10	S	-	-	S	-	-	-	-	+FROM
VOR/LOC +FLAG	3	7	7	N	-	-	N	-	-	-	-	NAV +FLAG
VOR/LOC -FLAG	4	8	8	F	-	-	F	-	-	-	-	NAV -FLAG
VOR/LOC COMPOSITE OUT	8	-	-	-	Y	Y	-	2	2	6	6	VOR/LOC COMPOSITE
ILS ENERGIZE	29 (22 AWG)	-	-	-	K	K	-	4	4	10	10	ILS ENERGIZE
GLIDESLOPE +UP	34	-	13	-	-	k	k	-	3	-	29	+UP
GLIDESLOPE +DOWN	55	-	14	-	-	m	m	-	6	-	28	+DOWN
GLIDESLOPE +FLAG	32	-	15	-	-	H	H	-	9	-	25	GLIDESLOPE +FLAG
GLIDESLOPE -FLAG	53	-	16	-	-	J	J	-	12	-	24	GLIDESLOPE -FLAG
VOR OBS ROTOR H (GND)	10	1	1	c	-	-	c	-	-	-	-	OBS A/H
VOR OBS ROTOR C	9	2	2	Z	-	-	Z	-	-	-	-	OBS C
VOR OBS STATOR D	13	3	3	L	-	-	L	-	-	-	-	OBS D (COS HI)
VOR OBS STATOR E (GND)	11	5	5	P	-	-	P	-	-	-	-	OBS E (COS LO)
VOR OBS STATOR F	12	4	4	T	-	-	T	-	-	-	-	OBS F (SIN HI)
VOR OBS STATOR G (GND)	14	6	6	W	-	-	W	-	-	-	-	OBS G (SIN LO)

Figure B-11 GTN 650Xi/750Xi - VOR-ILS Indicator Interconnect
Sheet 1 of 2

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

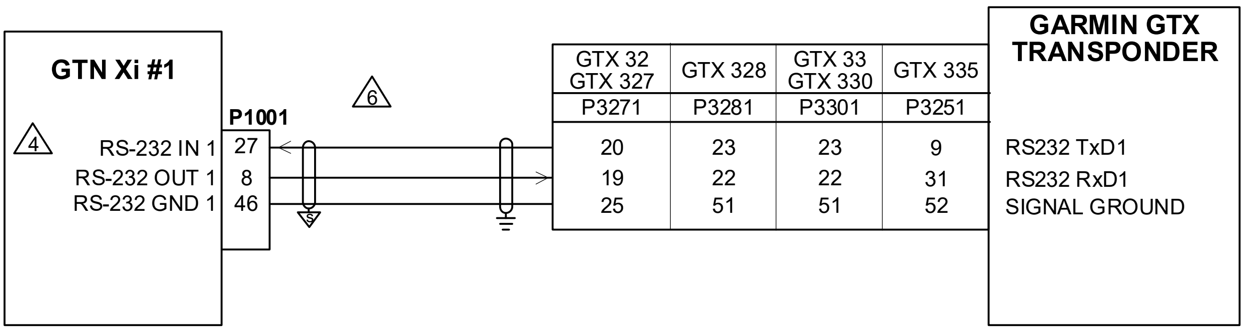
3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED 3.0 INCHES. REFER TO SECTION 3.6.12.3.

4 REFER TO MANUFACTURER'S DOCUMENTATION FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

5 THIS INTERCONNECT APPLIES ONLY WHEN IT IS DESIRED FOR A SEPARATE INDICATOR TO DISPLAY GTN 650Xi/750Xi VOR/ILS INFORMATION REGARDLESS OF THE GTN Xi'S CDI SELECTION (GPS OR VLOC).

Figure B-11 GTN 650Xi/750Xi - VOR-ILS Indicator Interconnect
Sheet 2 of 2

SINGLE GTN Xi/SINGLE GTX WITH OR WITHOUT TIS



SINGLE GTN Xi/DUAL GTXs WITH OR WITHOUT TIS

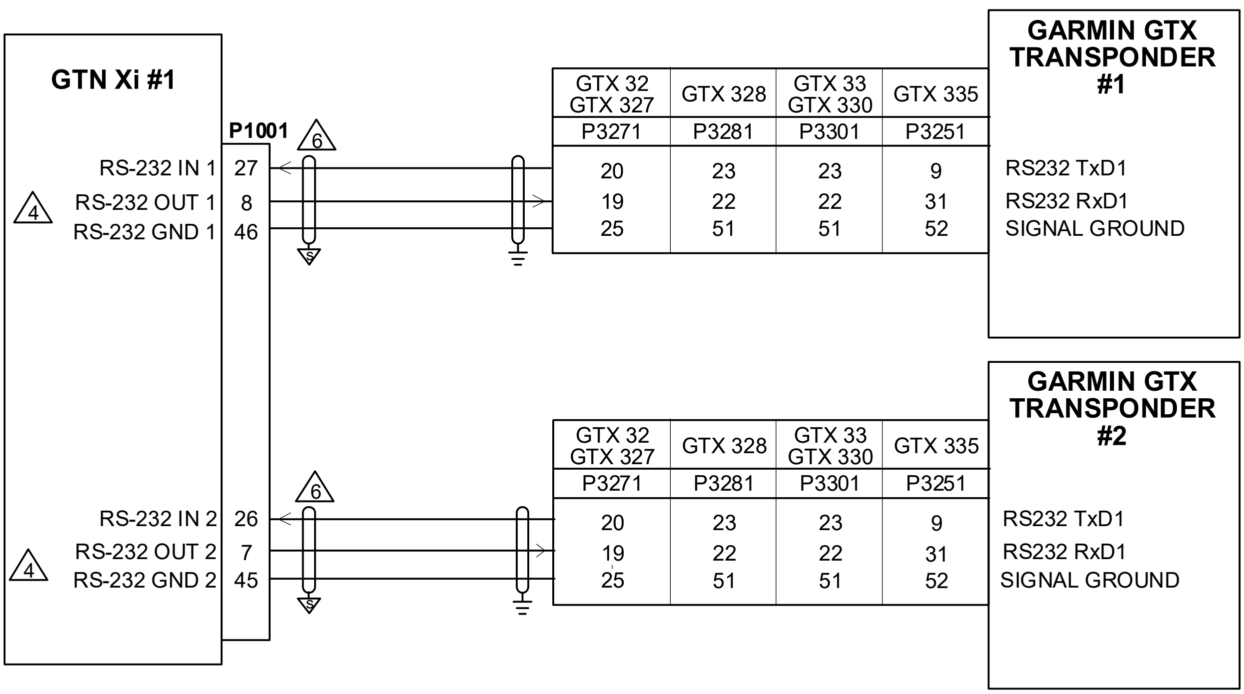
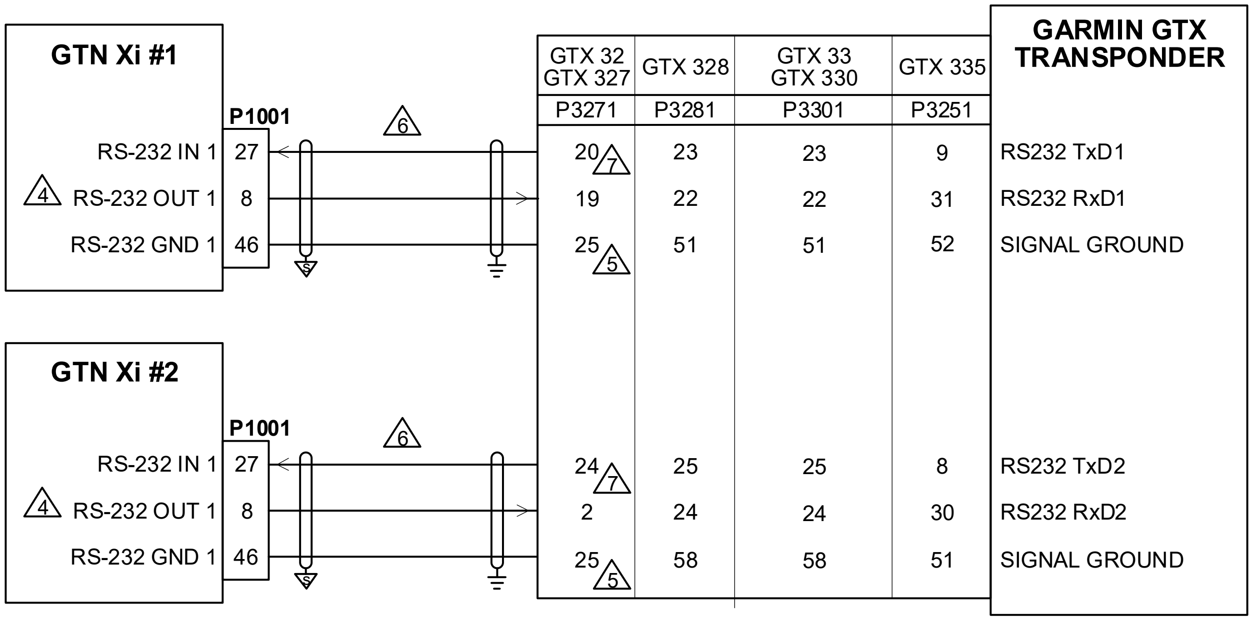


Figure B-12 GTN Xi - Transponder Interconnect
Sheet 1 of 6

DUAL GTN Xi/SINGLE GTX WITH OR WITHOUT TIS



DUAL GTN Xi/DUAL GTX WITHOUT TIS

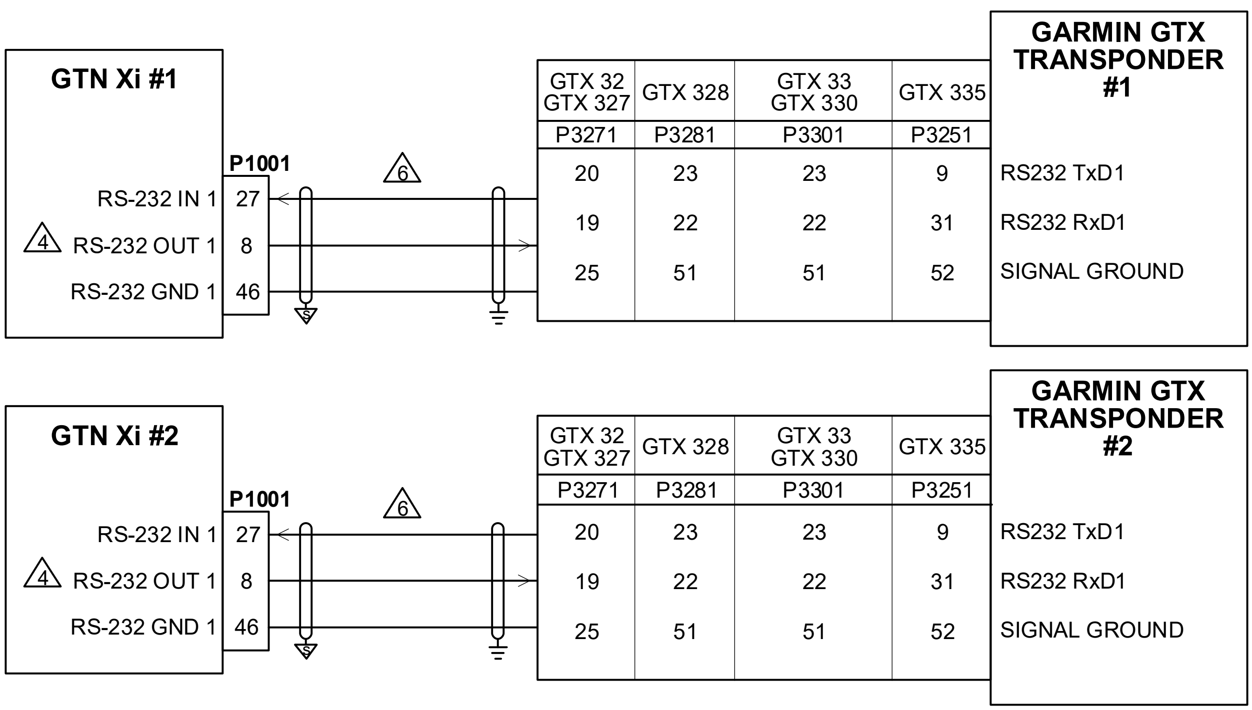


Figure B-12 GTN Xi - Transponder Interconnect
Sheet 2 of 6

DUAL GTN Xi/DUAL GTXs WITH TIS

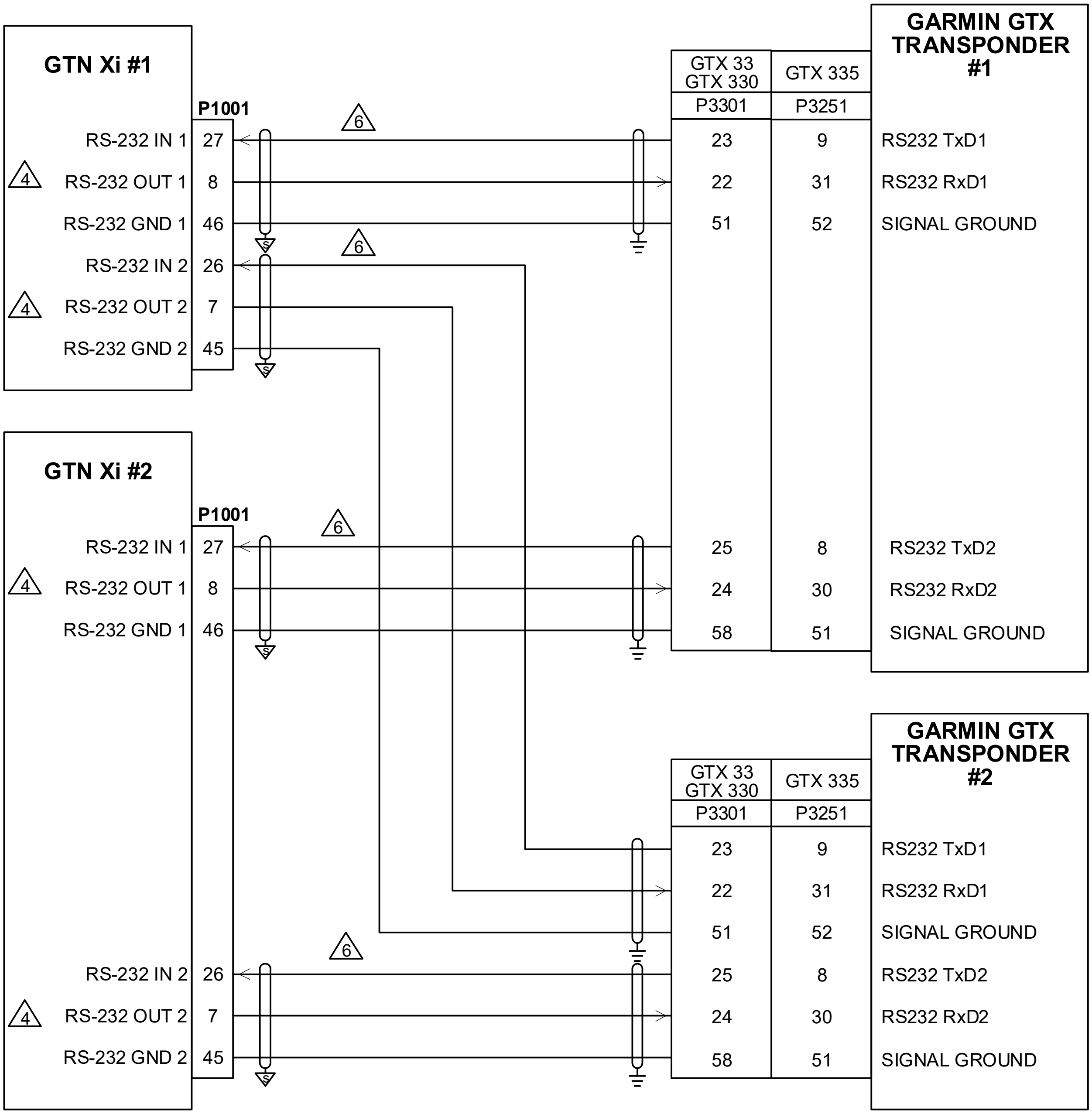
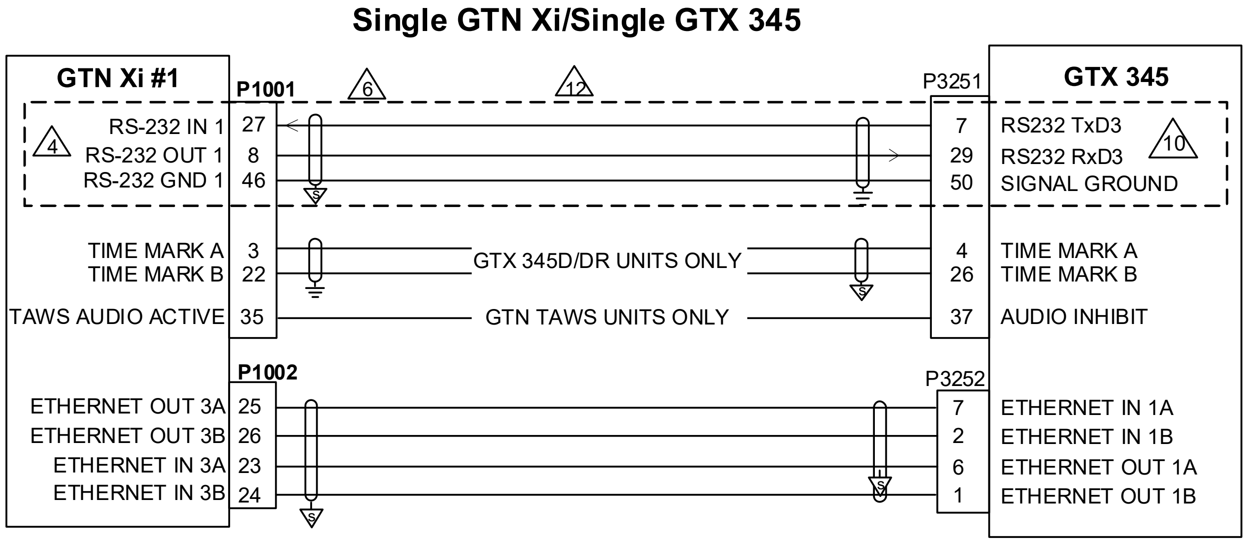


Figure B-12 GTN Xi - Transponder Interconnect
Sheet 3 of 6



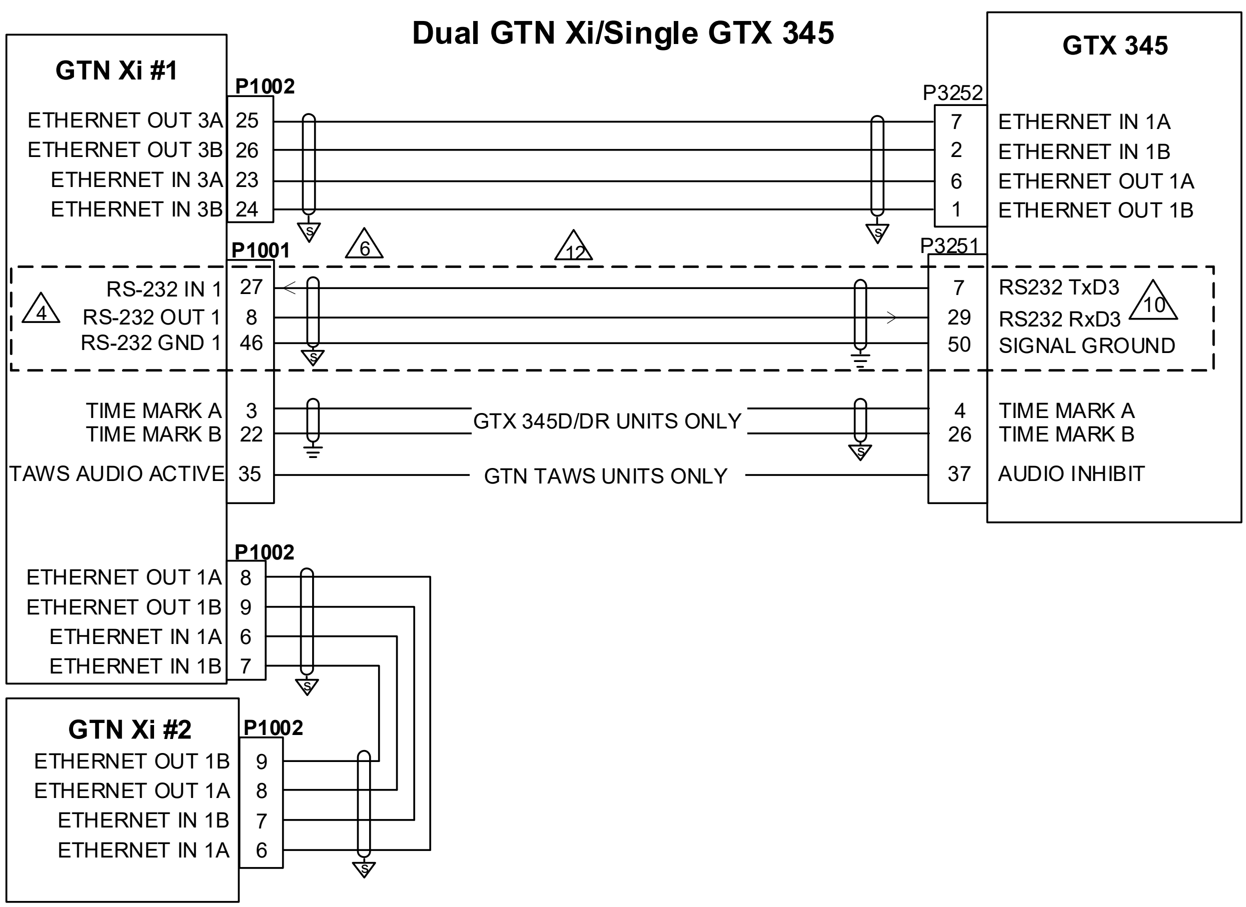


Figure B-12 GTN Xi - Transponder Interconnect
Sheet 4 of 6

Single GTN Xi with GTX 345 and 335

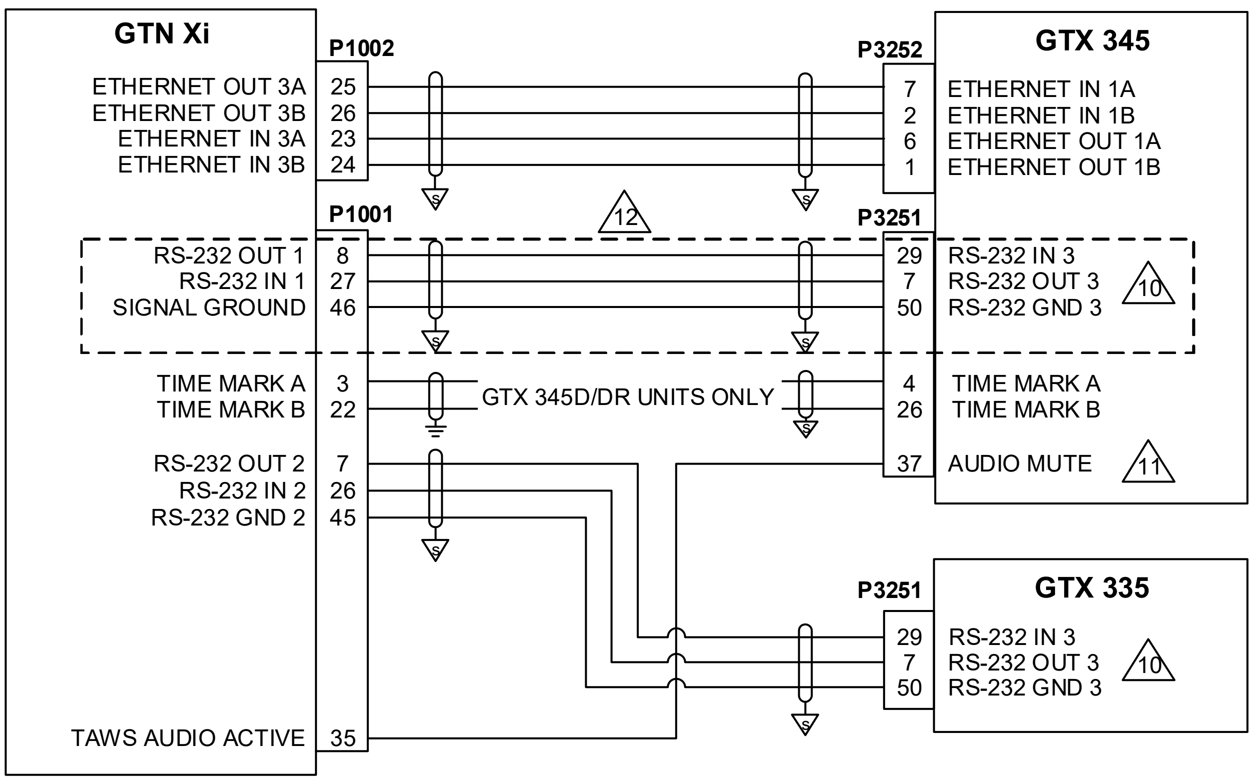


Figure B-12 GTN Xi - Transponder Interconnect
Sheet 5 of 6

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED 3.0 INCHES. REFER TO SECTION 3.6.12.3.

4 ANY RS-232 PORT MAY BE CONNECTED IN LIEU OF THESE PORTS. REFER TO SECTION 5.4.3.2 FOR RS-232 SETTINGS.

5 SPLICE BOTH RS-232 SIGNAL GROUND WIRES TOGETHER AND TERMINATE INTO PIN 25.

6 IF THIS INSTALLATION IS REPLACING A GNS 400W/500W SERIES UNIT, THE RS-232 DATA PATH REPLACES THE ARINC 429 AND DISCRETE SIGNALS PREVIOUSLY USED TO INTERFACE THE TRANSPONDER TO THE GNS 400W/500W SERIES.

7 CONNECTOR P3271 PIN 24 IS APPLICABLE TO THE GTX 32 ONLY. FOR THE GTX 327, SPLICE CONNECTOR P3271 PIN 20 TO BOTH GTN Xi UNITS.

8 TIS TRAFFIC IS NOT AVAILABLE FROM THE GTX 32, 327, OR 328. REFER TO SECTION 1.4.3 FOR MORE INFORMATION.

9 REFER TO APPENDIX SECTION C.1.8 FOR TRANSPONDER RS-232 PORT SETTINGS.

10 RS-232 PORTS 1 THROUGH 3 AVAILABLE.

11 ANY AUDIO MUTE CONFIGURABLE DISCRETE CAN BE USED.

12 RS-232 IS NOT NECESSARY IF GTN Xi CONTROL OF GTX 345 IS NOT DESIRED.

Figure B-12 GTN Xi - Transponder Interconnect
Sheet 6 of 6

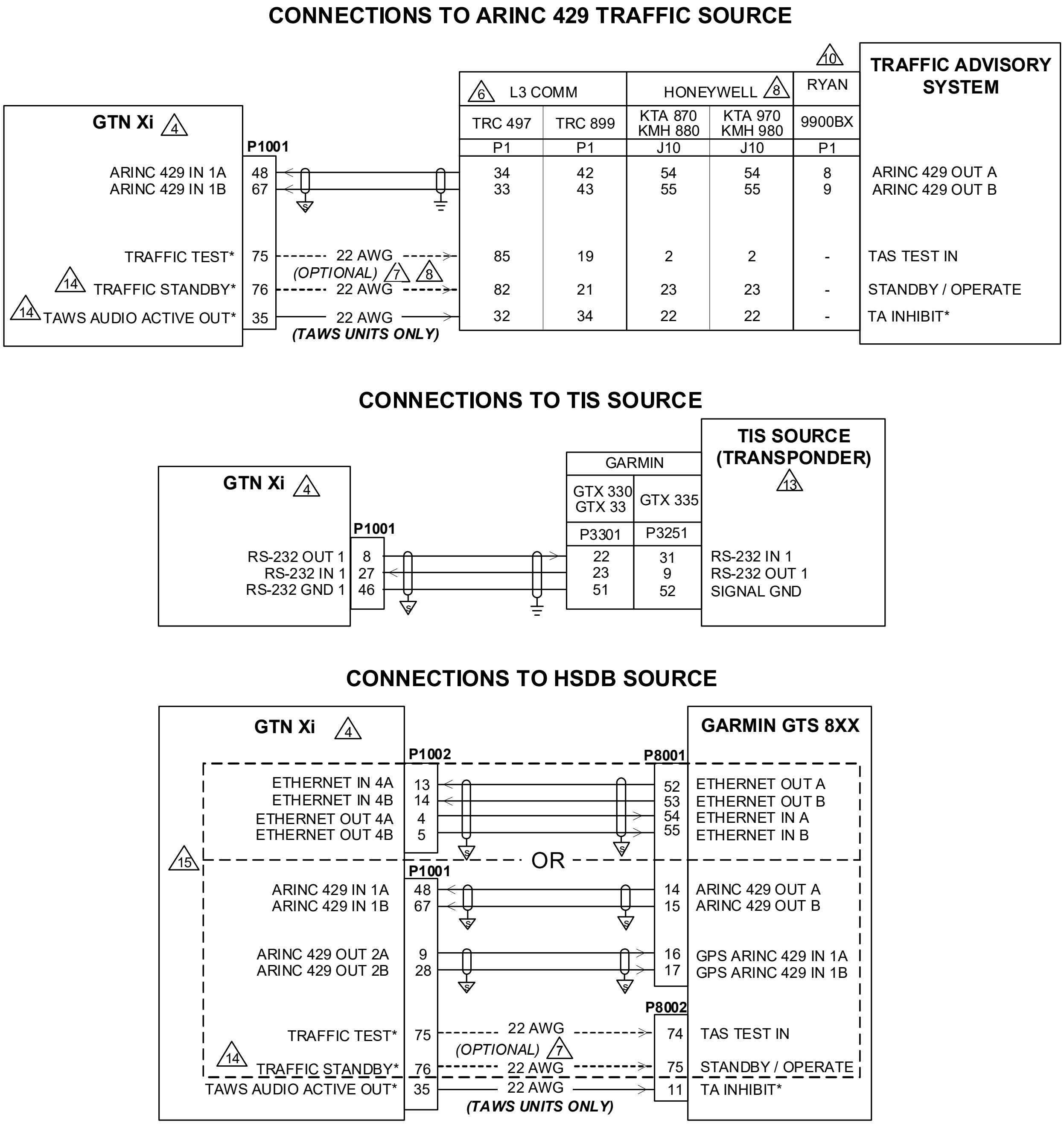
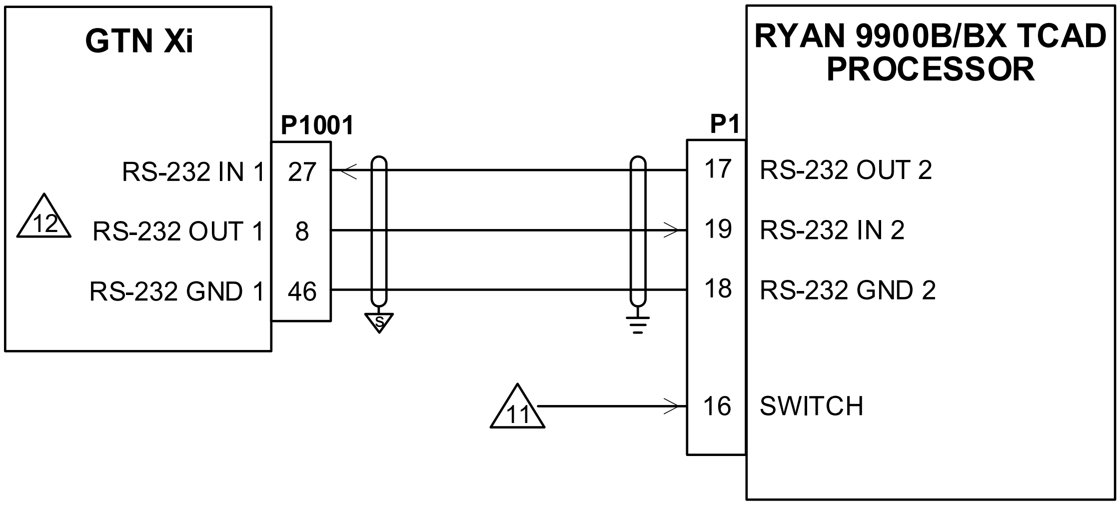


Figure B-13 GTN Xi - Traffic Source Interconnect
Sheet 1 of 3

CONNECTION TO RS-232 TRAFFIC SOURCE



DUAL GTN CONNECTION TO RS-232 TRAFFIC SOURCE

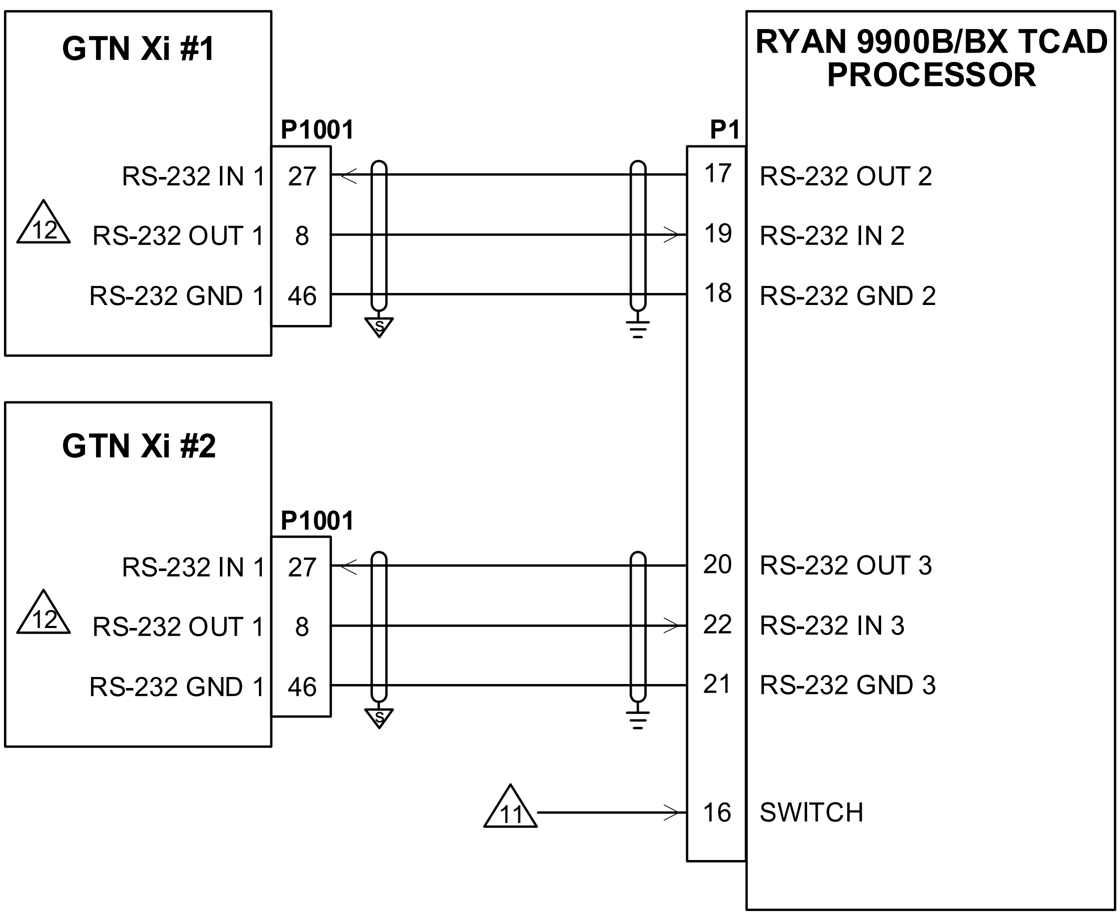


Figure B-13 GTN Xi - Traffic Source Interconnect
Sheet 2 of 3

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER SHIELD GROUNDS TO AIRCRAFT CHASSIS WITH AS SHORT A CONDUCTOR AS PRACTICAL.

4 ONLY ONE TRAFFIC SOURCE MAY BE CONNECTED TO THE GTN Xi. IN DUAL GTN Xi INSTALLATIONS, THE TRAFFIC SOURCE SHOULD BE CONNECTED TO EACH GTN Xi ON WHICH TRAFFIC IS TO BE DISPLAYED. IF A GTX 345 IS INSTALLED WITH ANOTHER TRAFFIC SOURCE, REFER TO *GTX 3XX PART 23 AML STC INSTALLATION MANUAL* (P/N 190-00734-10).

5 REFER TO SECTIONS 5.4.3.1 AND 5.4.3.2 FOR GTN Xi CONFIGURATION SETUP.

6 SOFTWARE VERSION 1.6 OR HIGHER REQUIRED FOR THE TRC 497.

7 THESE OPTIONAL DISCRETE CONNECTIONS ARE NOT REQUIRED IF THE GTN Xi IS CONFIGURED FOR “GTN Xi CONTROL OF TRAFFIC SYSTEM=NO.” IN THIS CASE, THE GTN Xi WILL ONLY BE A TRAFFIC DISPLAY AND WILL NOT CONTROL THE TRAFFIC ADVISORY SYSTEM OPERATION. REFER TO SECTION 5.4.3.9 FOR THIS SETTING.

8 FOR HONEYWELL TRAFFIC SYSTEMS, THE “FUNCTIONAL TEST" AND “STBY/OPERATE" DISCRETE INPUTS TO THE TRAFFIC COMPUTER MUST BE CONNECTED TO **ONE** DISPLAY ONLY.

9 REFER TO MANUFACTURER’S DOCUMENTATION FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

10 FOR NEW RYAN 9900BX INSTALLATIONS, IT IS RECOMMENDED TO USE THE RS-232 INTERFACE. WHEN INTERFACING THE GTN Xi TO THE RYAN 9900BX VIA ARINC 429, THE “GTN Xi CONTROL OF TRAFFIC SYSTEM” CONFIGURATION SETTING MUST BE SET TO “NO.” THE RYAN 9900BX DOES NOT INCLUDE THE NECESSARY DISCRETE INPUTS TO CONTROL THE TRAFFIC SYSTEM MODE.

11 THE RYAN TCAD PROCESSOR SWITCH PIN (P1-16) SHOULD BE GROUNDED TO TURN THE PROCESSOR UNIT ON, AND OPEN TO TURN THIS UNIT OFF. IF A RYAN TCAD DISPLAY UNIT IS NOT IN THE INSTALLATION, A DEDICATED SWITCH MAY BE REQUIRED TO TURN THE TCAD PROCESSOR UNIT ON AND OFF. REFER TO *9900BX INSTALLATION MANUAL* (P/N 32-2351) FOR ADDITIONAL INFORMATION.

12 ANY RS-232 PORT MAY BE CONNECTED IN LIEU OF THESE PORTS. REFER TO SECTION 5.4.3.2 FOR RS-232 SETTINGS.

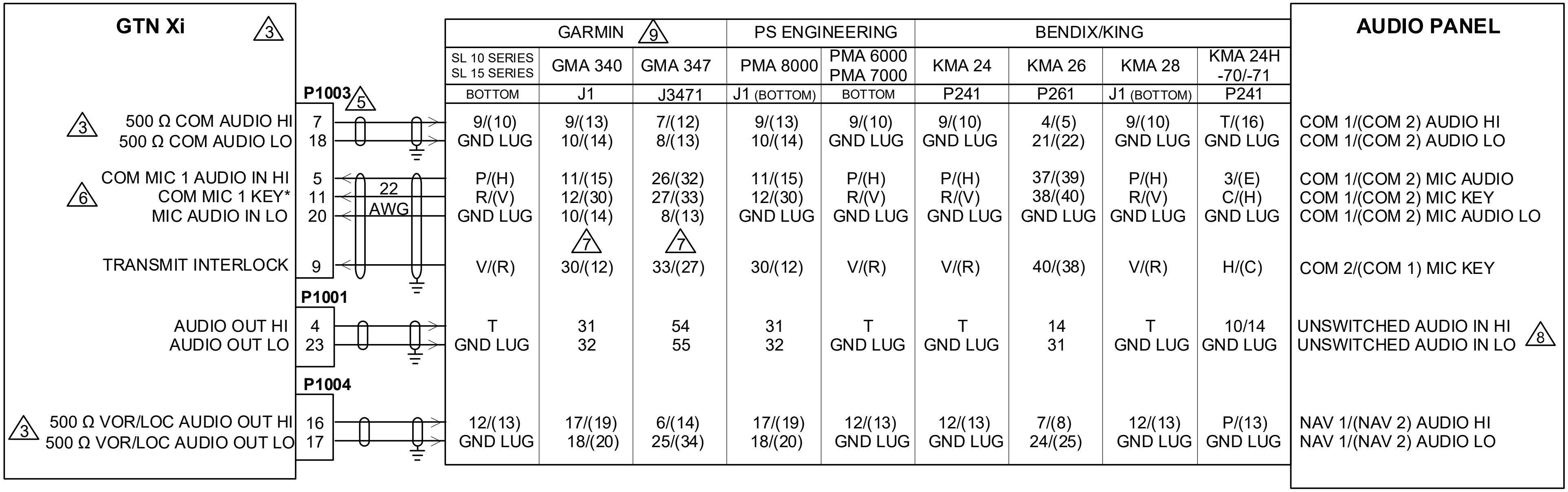
13 REFER TO FIGURE B-12 FOR ADDITIONAL TRANSPONDER CONNECTION INFORMATION.

14 DEFAULT DISCRETE FUNCTION FOR PINS P1001-75, -76, -35 IS SHOWN. THESE PIN FUNCTIONS ARE CONFIGURABLE AS DESCRIBED IN SECTION 5.

15 IF HSDB INTERFACE BETWEEN GTS AND GTN Xi IS CONNECTED, DO NOT CONNECT ARINC 429 AND DISCRETE CONNECTIONS.

Figure B-13 GTN Xi - Traffic Source Interconnect
Sheet 3 of 3

AUDIO PANEL INTERCONNECT



GTN Xi	Pin	SL 10 SERIES / SL 15 SERIES (BOTTOM)	GMA 340 (J1)	GMA 347 (J3471)	PMA 8000 (J1 (BOTTOM))	PMA 6000 / PMA 7000 (BOTTOM)	KMA 24 (P241)	KMA 26 (P261)	KMA 28 (J1 (BOTTOM))	KMA 24H -70/-71 (P241)	AUDIO PANEL
P1003											
△3 500 Ω COM AUDIO HI	7	9/(10)	9/(13)	7/(12)	9/(13)	9/(10)	9/(10)	4/(5)	9/(10)	T/(16)	COM 1/(COM 2) AUDIO HI
500 Ω COM AUDIO LO	18	GND LUG	10/(14)	8/(13)	10/(14)	GND LUG	GND LUG	21/(22)	GND LUG	GND LUG	COM 1/(COM 2) AUDIO LO
△6 COM MIC 1 AUDIO IN HI	5	P/(H)	11/(15)	26/(32)	11/(15)	P/(H)	P/(H)	37/(39)	P/(H)	3/(E)	COM 1/(COM 2) MIC AUDIO
COM MIC 1 KEY*	11	R/(V)	12/(30)	27/(33)	12/(30)	R/(V)	R/(V)	38/(40)	R/(V)	C/(H)	COM 1/(COM 2) MIC KEY
MIC AUDIO IN LO	20	GND LUG	10/(14)	8/(13)	GND LUG	GND LUG	GND LUG	GND LUG	GND LUG	GND LUG	COM 1/(COM 2) MIC AUDIO LO
TRANSMIT INTERLOCK	9	V/(R)	△7 30/(12)	△7 33/(27)	30/(12)	V/(R)	V/(R)	40/(38)	V/(R)	H/(C)	COM 2/(COM 1) MIC KEY
P1001											
AUDIO OUT HI	4	T	31	54	31	T	T	14	T	10/14	UNSWITCHED AUDIO IN HI △8
AUDIO OUT LO	23	GND LUG	32	55	32	GND LUG	GND LUG	31	GND LUG	GND LUG	UNSWITCHED AUDIO IN LO
P1004											
△3 500 Ω VOR/LOC AUDIO OUT HI	16	12/(13)	17/(19)	6/(14)	17/(19)	12/(13)	12/(13)	7/(8)	12/(13)	P/(13)	NAV 1/(NAV 2) AUDIO HI
500 Ω VOR/LOC AUDIO OUT LO	17	GND LUG	18/(20)	25/(34)	18/(20)	GND LUG	GND LUG	24/(25)	GND LUG	GND LUG	NAV 1/(NAV 2) AUDIO LO

MIXING AUDIO SIGNALS USING RESISTORS △8

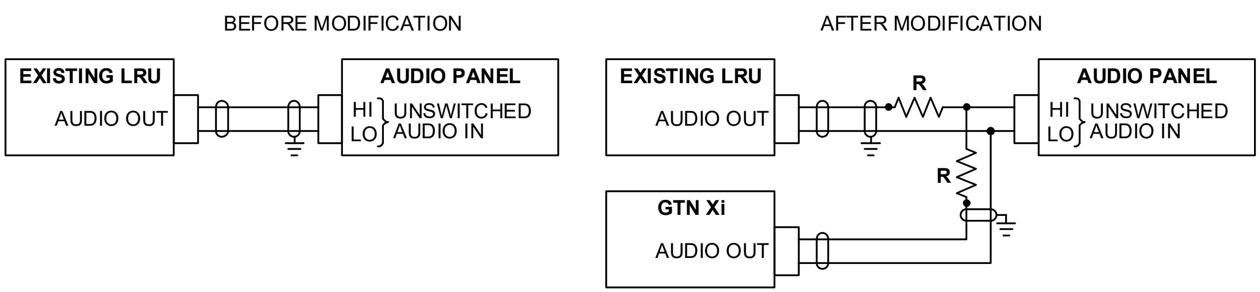


Figure B-14 GTN Xi Audio Panel Interconnect
Sheet 1 of 3

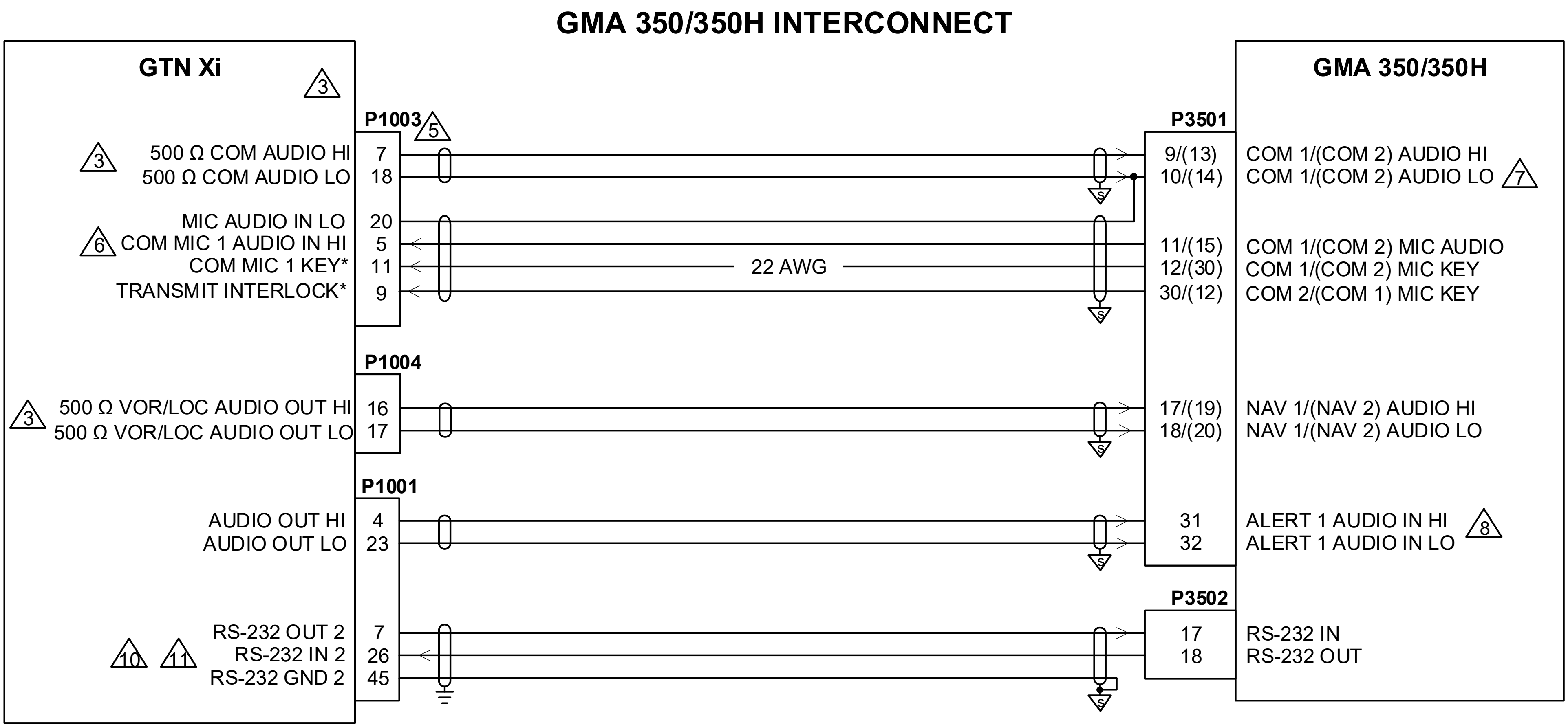


Figure B-14 GTN Xi Audio Panel Interconnect
Sheet 2 of 3

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 THE 500 OHM AUDIO OUTPUTS ARE BALANCED OUTPUTS, AND THE LO OUTPUTS MUST BE CONNECTED. IF THE AUDIO PANEL DOES NOT HAVE A LO INPUT, THE LO OUTPUT SHOULD BE CONNECTED TO A GROUND LUG AT THE AUDIO PANEL.

4 REFER TO MANUFACTURER'S DOCUMENTATION FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

5 SHIELDS FOR AUDIO CABLES SHOULD BE GROUNDED AT ONE END (WITH LEADS LESS THAN 3.0 INCHES) AND LEFT FLOATING AT THE OTHER END. IF SHIELDED AUDIO CABLE IS CARRIED THROUGH A DISCONNECT, CARRY THE SHIELD GROUND THROUGH THE DISCONNECT ON A SEPARATE PIN.

6 CONNECTING TWO MICROPHONES TO MIC AUDIO HI/LO AT THE SAME TIME MAY RESULT IN WEAK OR DISTORTED AUDIO. MIC ISOLATION RELAYS ARE RECOMMENDED SO ONLY ONE MIC IS ACTIVE AT A TIME.

7 SPLICE 500 Ω COM AUDIO LO AND MIC AUDIO IN LO TOGETHER INTO THE SAME PIN ON AUDIO PANEL.

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

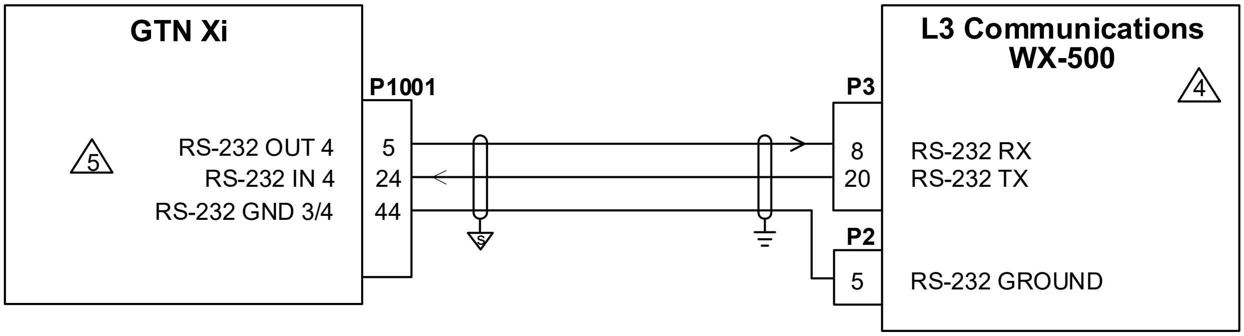
9 FOR GMA 35 INTERCONNECT WIRING, REFER TO APPENDIX SECTION B.2.

10 THIS CONNECTION CAN ONLY BE MADE TO ONE GTN Xi PER INSTALLATION. IT IS RECOMMENDED TO MAKE THIS CONNECTION TO GTN Xi #1.

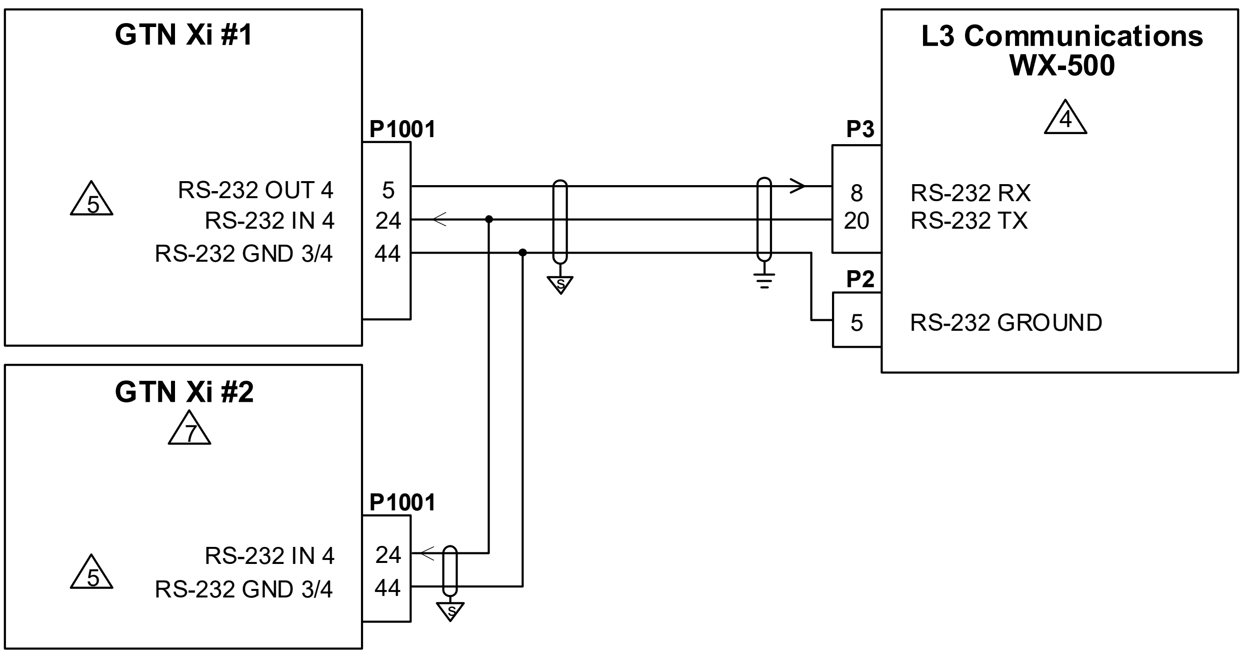
11 ANY AVAILABLE RS-232 PORT MAY BE USED. REFER TO SECTION 5.4.3.2 FOR RS-232 CHANNEL SETTINGS.

Figure B-14 GTN Xi Audio Panel Interconnect
Sheet 3 of 3

SINGLE GTN CONNECTION TO WX-500



DUAL GTN CONNECTIONS TO WX-500



GTN CONNECTION TO KGP 560

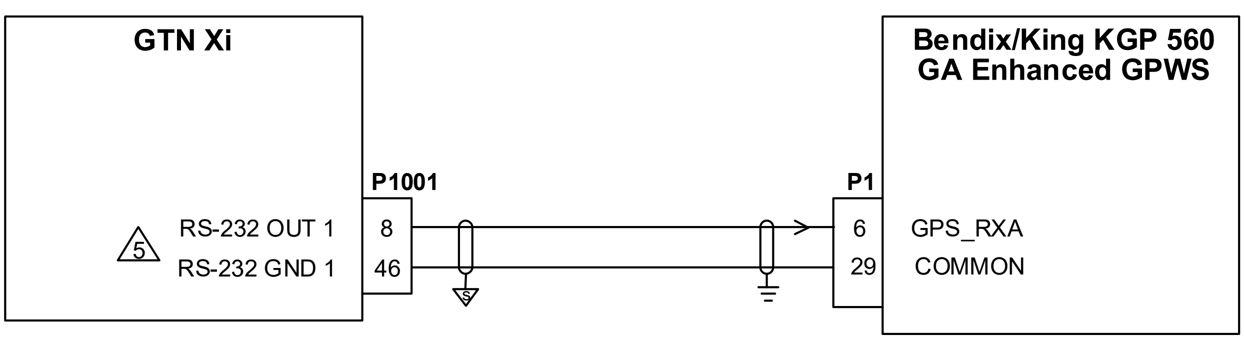


Figure B-15 GTN Xi - Weather Terrain Interconnect
Sheet 1 of 2

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED 3.0 INCHES. REFER TO SECTION 3.6.12.3.

4 FOR WX-500 DATA TO BE DISPLAYED ON THE GTN Xi MAP PAGE, THE GTN Xi MUST HAVE A DIGITAL HEADING SOURCE, OR THE WX-500 MUST HAVE A SYNCHRO OR SERIAL HEADING SOURCE. A STEPPER HEADING SOURCE WILL NOT ALLOW WX-500 DATA TO BE DISPLAYED ON THE MAP PAGE.

5 ANY AVAILABLE RS-232 PORT MAY BE USED. REFER TO SECTION 5.4.3.2 FOR RS-232 CHANNEL SETTINGS.

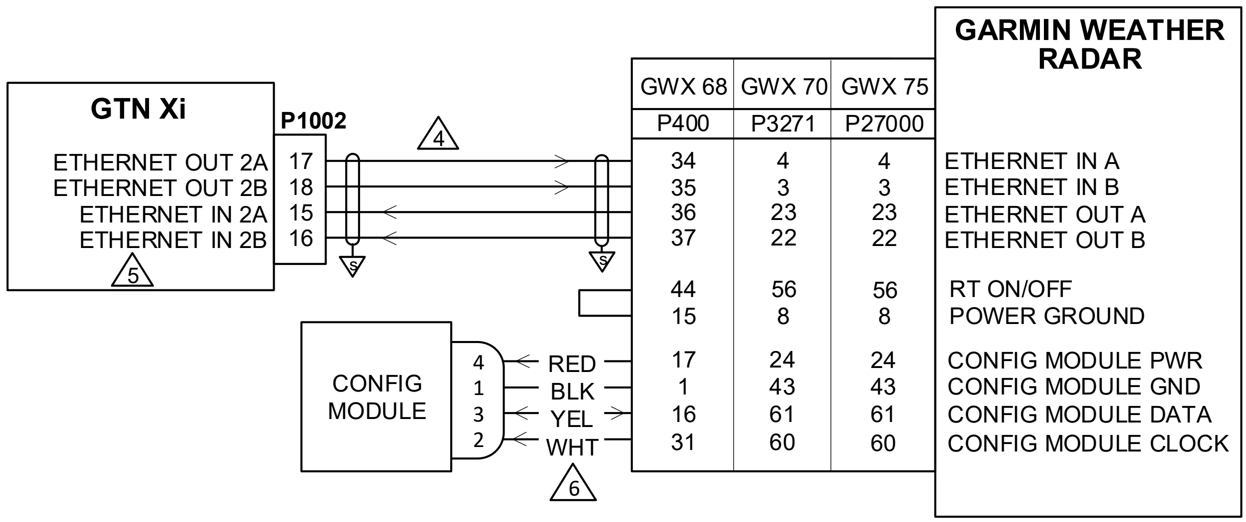
6 REFER TO MANUFACTURER'S DOCUMENTATION FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

7 WHEN CONNECTING TWO GTN Xi UNITS TO THE WX-500, CONFIGURE ONLY RS-232 TX/RX THAT ARE ACTUALLY CONNECTED TO THE WX-500.

Figure B-15 GTN Xi - Weather Terrain Interconnect
Sheet 2 of 2

METAL AIRCRAFT ONLY

SINGLE GTN INSTALLATIONS



DUAL GTN INSTALLATIONS

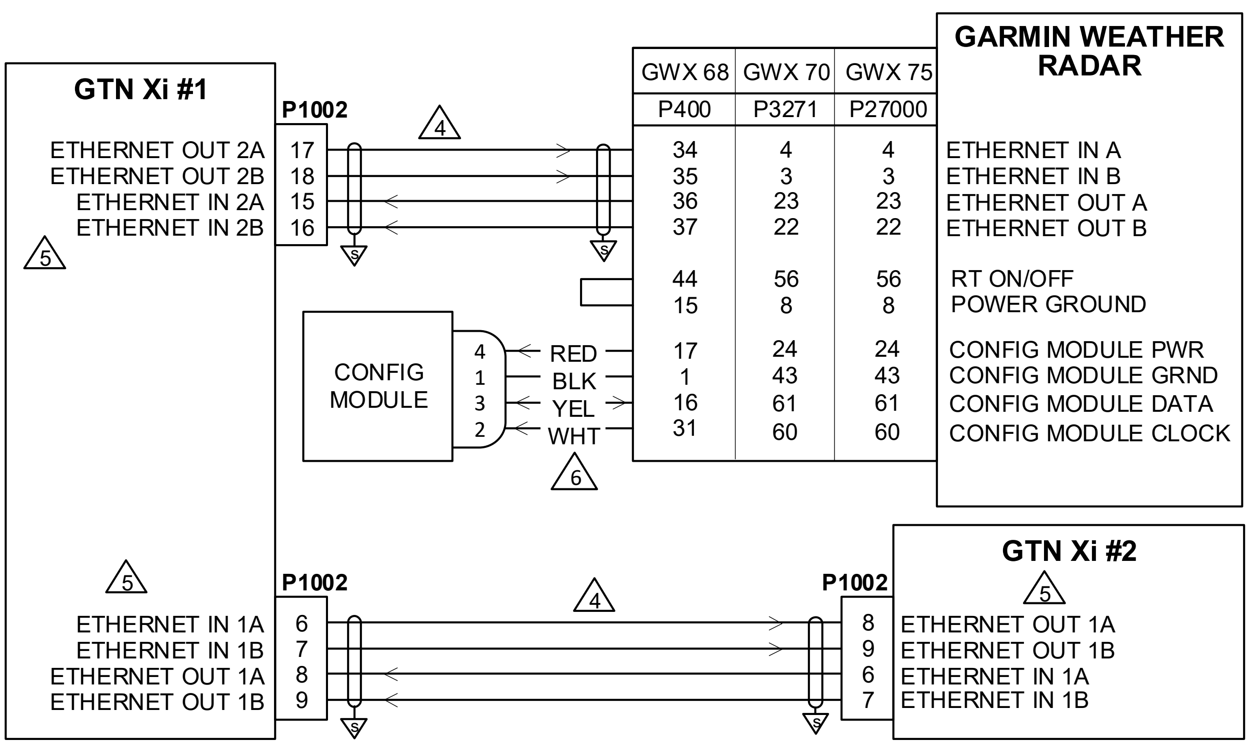
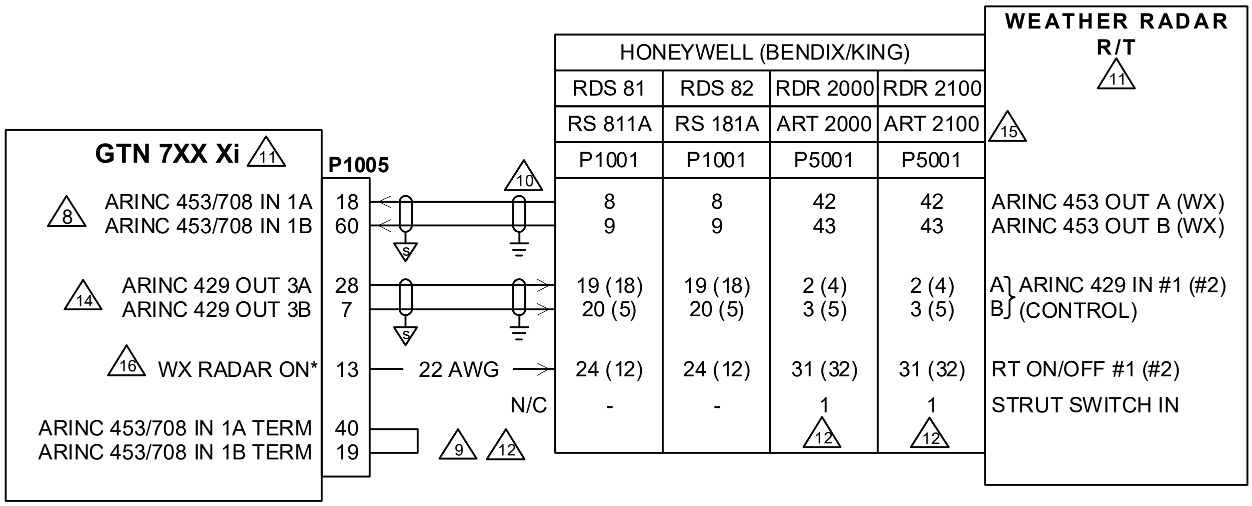


Figure B-16 GTN Xi - Weather Radar Interconnect
Sheet 1 of 3

ARINC 708 WXR – SINGLE GTN INSTALLATIONS



ARINC 708 WXR – DUAL GTN INSTALLATIONS

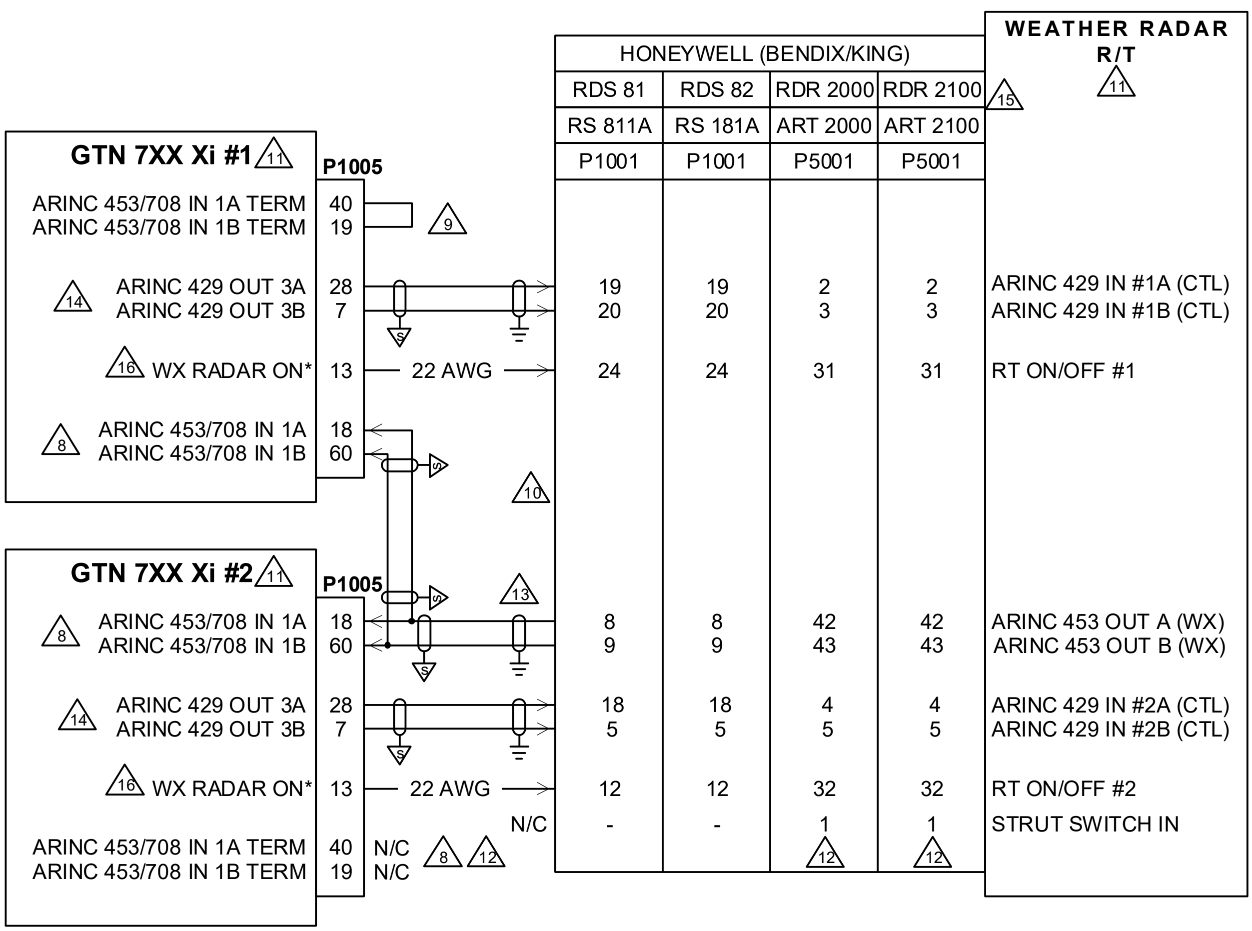


Figure B-16 GTN Xi - Weather Radar Interconnect
Sheet 2 of 3

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER SHIELD GROUNDS TO AIRCRAFT CHASSIS WITH AS SHORT A CONDUCTOR AS PRACTICAL.

4 USE AIRCRAFT GRADE CATEGORY 5 ETHERNET CABLE. REFER TO SECTION 3.5.2.2 FOR PART NUMBERS.

5 IF ETHERNET PORT IS ALREADY USED FOR ANOTHER PURPOSE, ANY ETHERNET PORT MAY BE CONNECTED. REFER TO APPENDIX A FOR PINOUT INFORMATION. ONLY THE GTN 7XX Xi IS CAPABLE OF DISPLAYING GWX DATA. IT IS RECOMMENDED TO CONNECT THE GTN 725Xi OR GTN 750Xi DIRECTLY TO THE GWX. REFER TO SECTION 3.6.19 FOR MORE INFORMATION.

6 CONFIGURATION MODULE HARNESS USES 28 AWG WIRES. CONTACTS SUPPLIED WITH CONFIGURATION MODULE MUST BE USED FOR CONNECTING CONFIGURATION MODULE HARNESS TO P400/P3271.

7 NOT USED.

8 THE WXR ARINC 453/708 INPUT IS UNTERMINATED.

9 IF THE GTN Xi IS THE ONLY EQUIPMENT ON THE ARINC 453/708 OUTPUT BUS FROM THE WEATHER RADAR, OR IF IT IS DESIRED TO UTILIZE THE GTN Xi INTERNAL TERMINATION RESISTOR, INSTALL THE TERMINATION JUMPER SHOWN. THIS LENGTH OF THIS JUMPER SHOULD NOT EXCEED 3 INCHES. IF MULTIPLE PIECES OF EQUIPMENT ARE ON THE ARINC 453/708 BUS, ONLY ONE TERMINATION RESISTOR SHOULD BE UTILIZED, AT THE LAST LRU ON THE ARINC 453/708 BUS.

10 AT WEATHER RADAR UNIT, CONNECT SHIELD GROUNDS TO AIRCRAFT CHASSIS WITH AS SHORT A CONDUCTOR AS PRACTICAL.

11 THE GTN Xi MAY BE CONNECTED AS INDICATOR #1 OR INDICATOR #2. REFER TO SECTION 5.4.6.10.2 FOR DETAILS ON HOW TO CONFIGURE GTN Xi DISPLAY HEAD #1/#2.

12 IF THE STRUT SWITCH INPUT IS CONNECTED TO THE WXR, DISCONNECT IT. THE GTN Xi WILL AUTOMATICALLY COMMAND THE WXR TO STANDBY UPON LANDING. THIS ALSO ALLOWS THE PILOT TO TURN THE WXR ON PRIOR TO TAKEOFF.

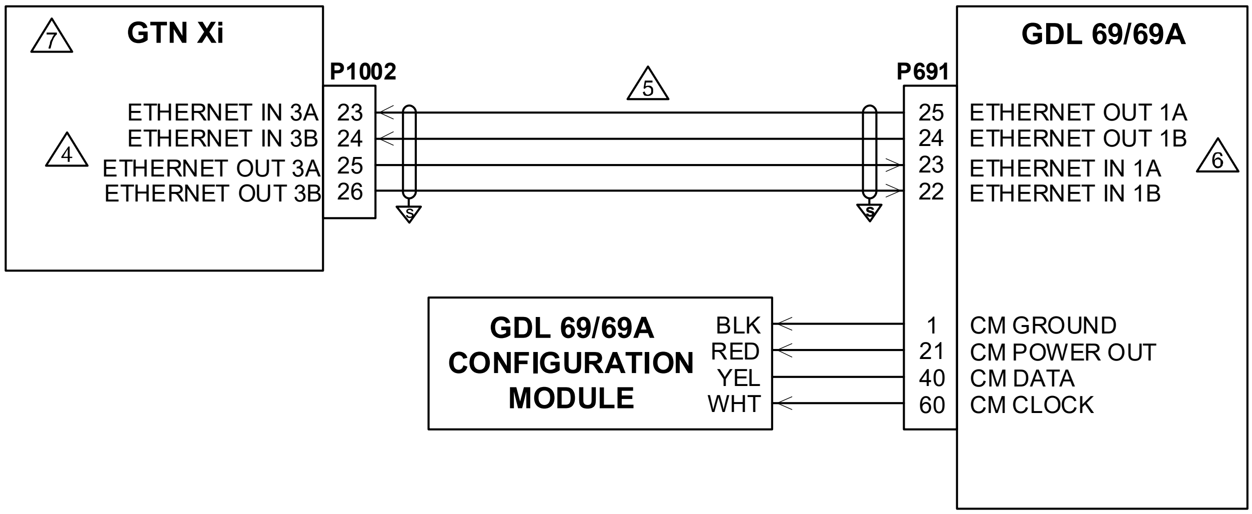
13 SPLICE MUST BE MADE WITHIN 6 INCHES OF CONNECTOR BACKSHELL (WITHIN CONNECTOR BACKSHELL IS PREFERRED).

14 ARINC 429 OUTPUT PORT 3 MUST BE USED FOR CONTROLLING THE WEATHER RADAR.

15 THE ART 2100 IS SUPPORTED WHEN CONFIGURED TO EMULATE AN ART 2000. ONLY ART 2000 FUNCTIONS ARE AVAILABLE. REFER TO APPENDIX C FOR REQUIRED ART 2100 CONFIGURATION SETTINGS.

16 DEFAULT DISCRETE FUNCTION FOR PINS P1005-13 IS SHOWN. THESE PIN FUNCTIONS ARE CONFIGURABLE AS DESCRIBED IN SECTION 5.

Figure B-16 GTN Xi - Weather Radar Interconnect
Sheet 3 of 3



NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT THE GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT THE SHIELD GROUNDS AT THE GDL 69/69A TO ITS CONNECTOR BACKSHELL IN ACCORDANCE WITH THE GDL 69/69A INSTALLATION INSTRUCTIONS.

4 ANY ETHERNET PORT MAY BE USED IN LIEU OF ETHERNET PORT 3. IF THERE ARE NO FREE PORTS ON THE GTN Xi, THE OTHER LRU CAN BE DISCONNECTED FROM THE GTN Xi AND THE GDL 69/69A CAN BE CONNECTED TO THE GTN Xi IN ITS PLACE. THE DISCONNECTED LRU CAN BE CONNECTED TO ETHERNET PORT 2, 3, OR 4 ON THE GDL 69/69A.

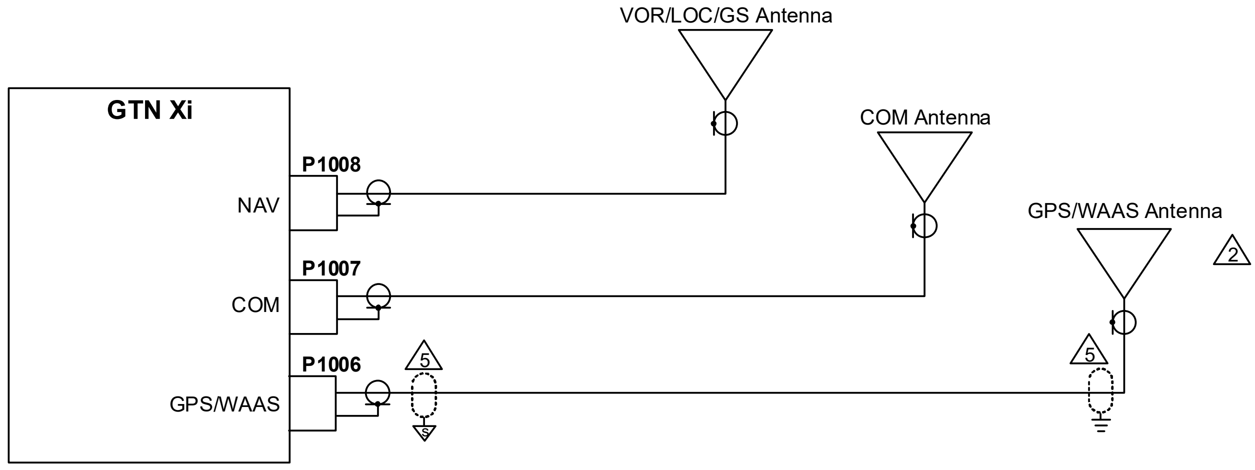
5 USE AIRCRAFT GRADE CATEGORY 5 ETHERNET CABLE. REFER TO SECTION 3.5.2.2 FOR PART NUMBERS.

6 ETHERNET PORTS 2, 3, OR 4 MAY BE USED LIEU OF PORT 1. THE PORT USED MUST BE ENABLED IN CONFIGURATION MODE. REFER TO *GDL 69/69A INSTALLATION MANUAL* FOR ADDITIONAL DETAILS.

7 IN DUAL GTN Xi INSTALLATIONS, GDL 69 DATA WILL BE FORWARDED TO THE OTHER GTN Xi VIA HSDB.

Figure B-17 GTN Xi - GDL 69/69A Interconnect

SINGLE GTN INSTALLATION 1



DUAL GTN INSTALLATION 1

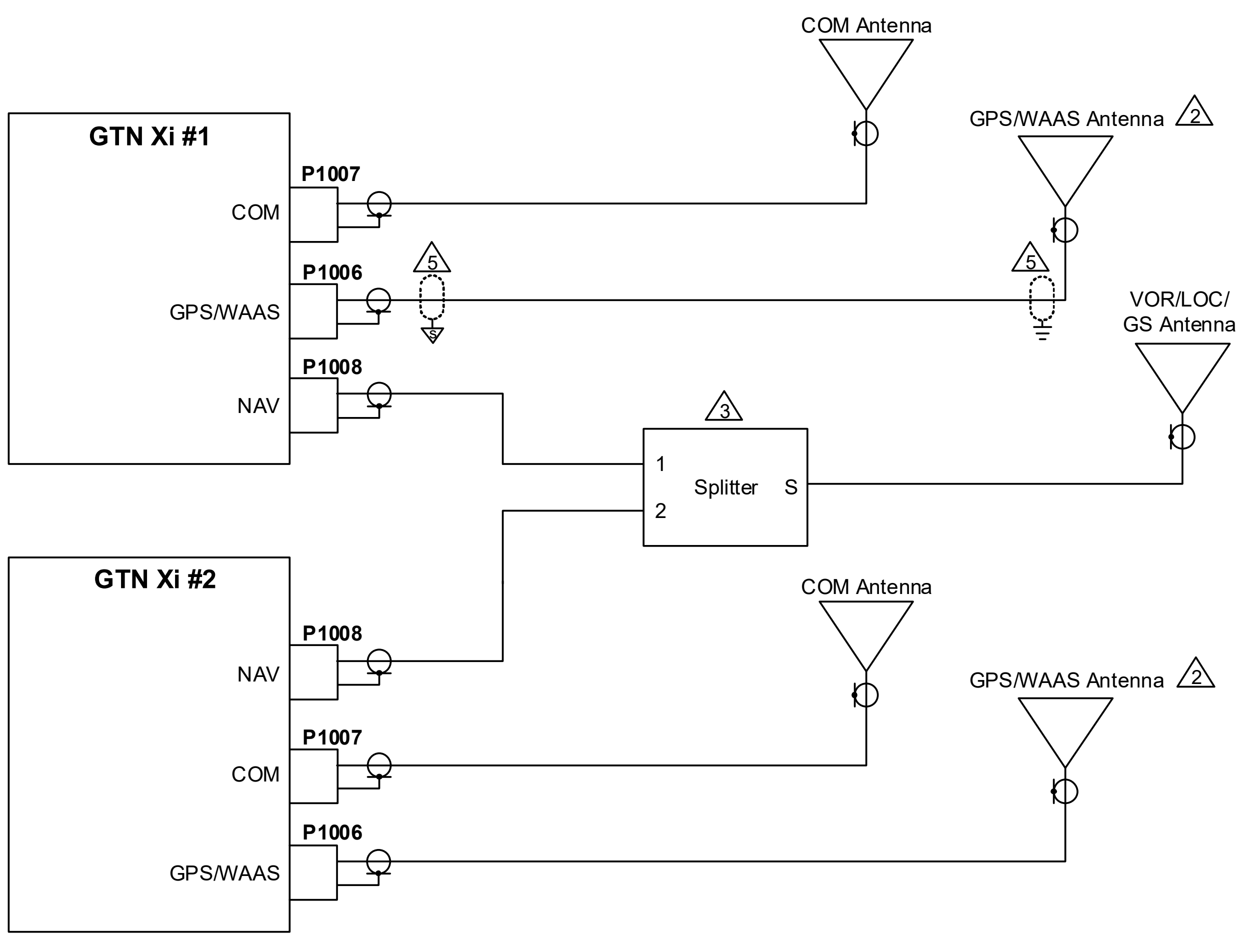
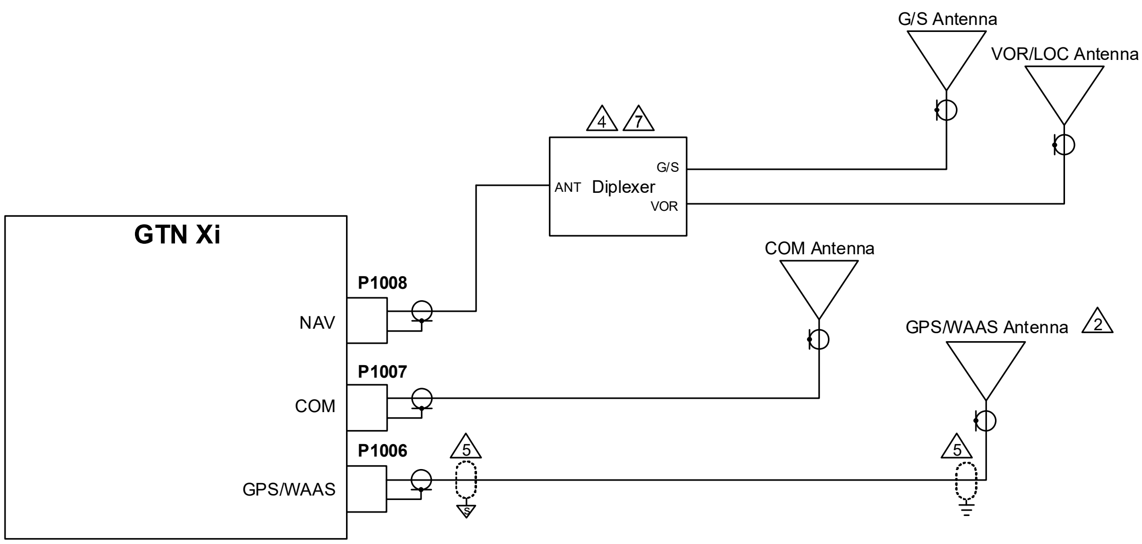


Figure B-18 GTN Xi Antenna Interconnect
Sheet 1 of 5

SINGLE GTN/DUAL NAV ANTENNA INSTALLATION 1



DUAL GTN/DUAL NAV ANTENNA INSTALLATION 1

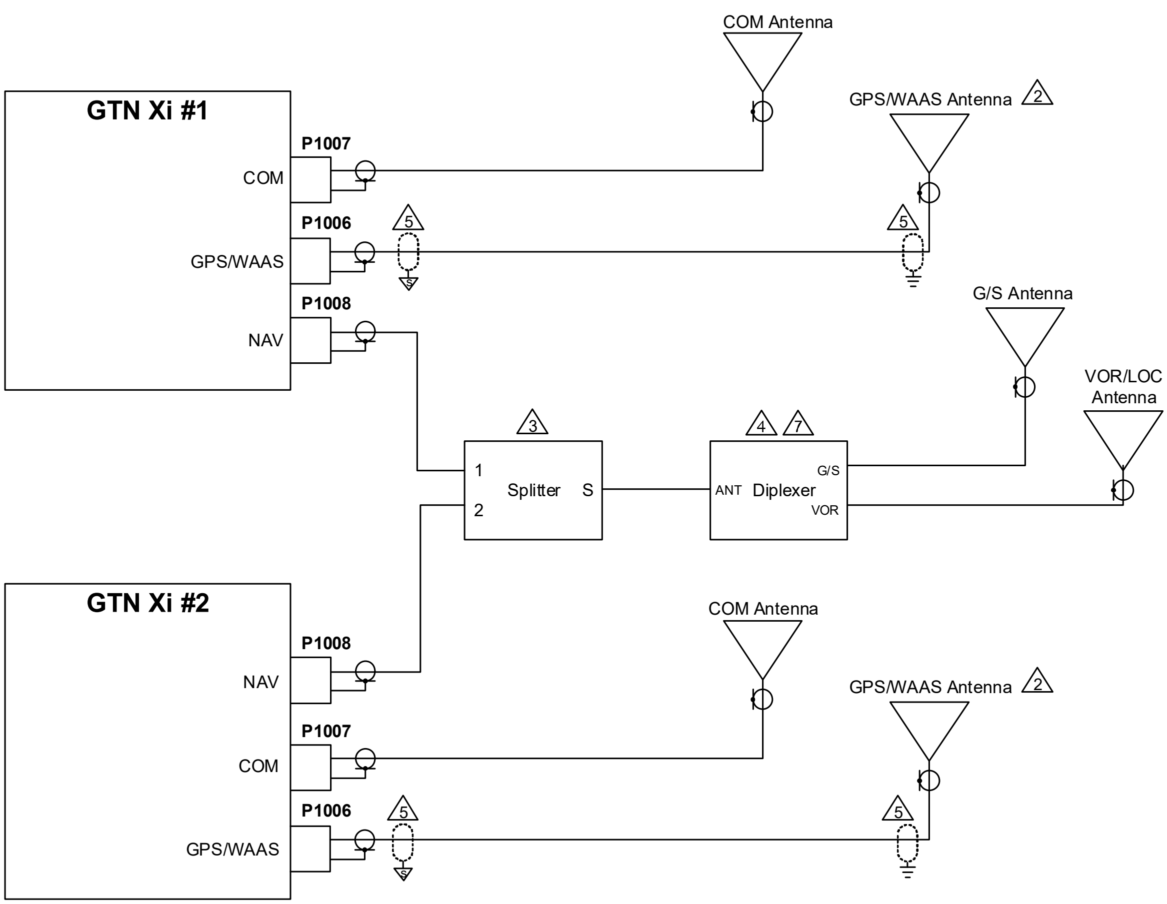
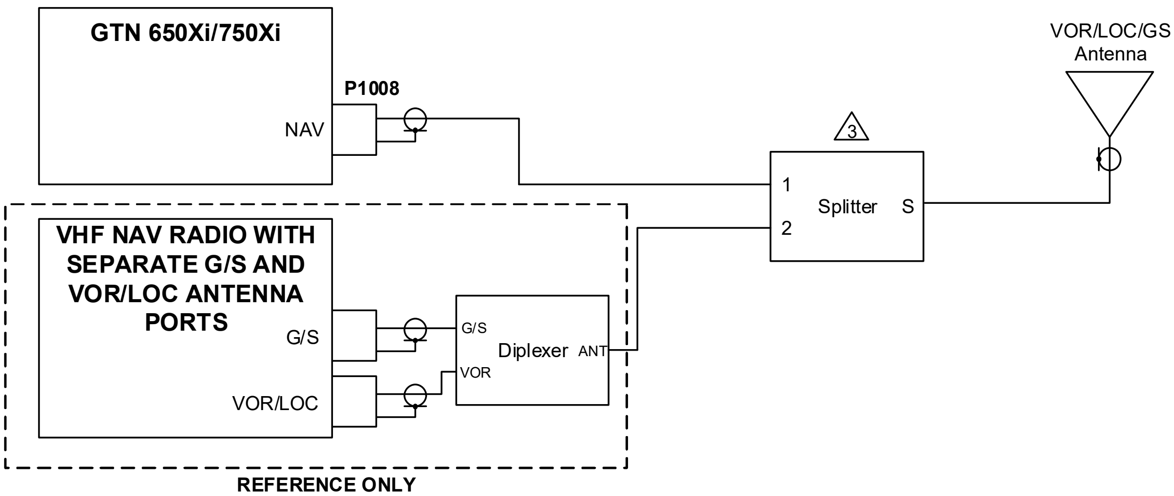


Figure B-18 GTN Xi Antenna Interconnect
Sheet 2 of 5

SINGLE GTN, OTHER RADIO (SEPARATE G/S AND VOR/LOC ANTENNA PORTS), AND SINGLE ANTENNA



SINGLE GTN, OTHER RADIO (SEPARATE G/S AND VOR/LOC ANTENNA PORTS), AND DUAL ANTENNAS

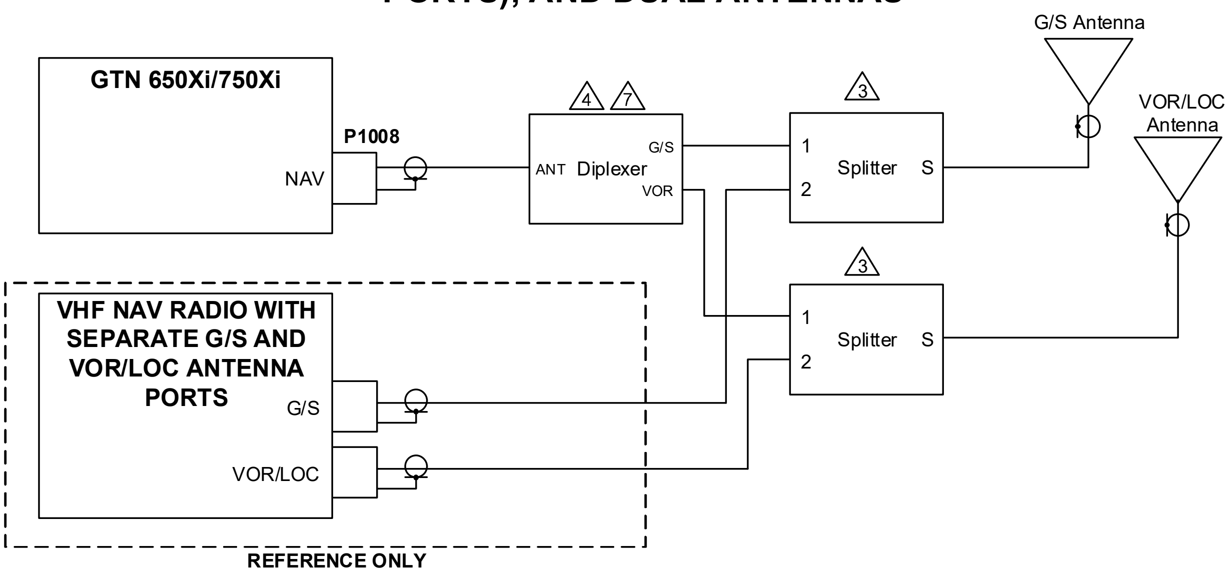
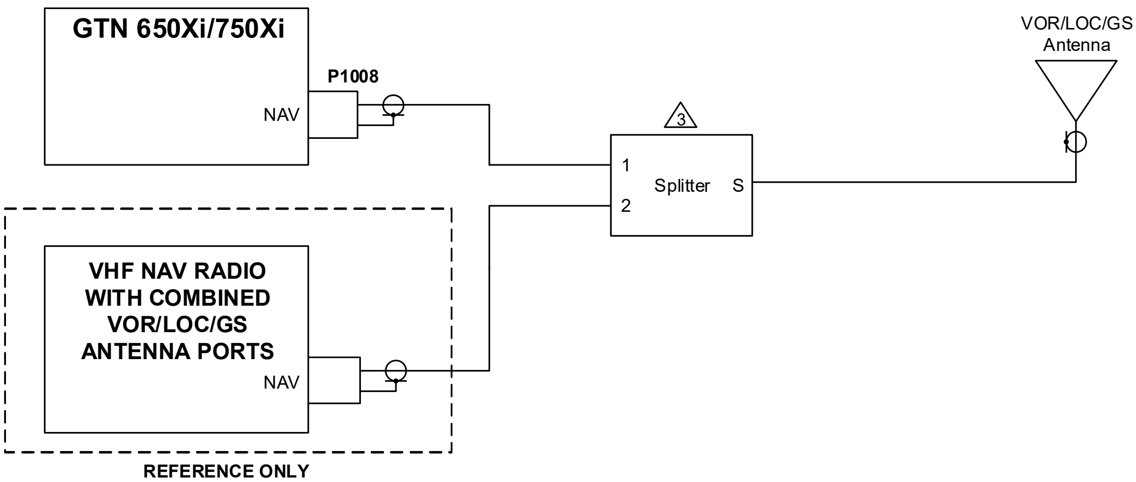


Figure B-18 GTN Xi Antenna Interconnect
Sheet 3 of 5

SINGLE GTN, OTHER RADIO, AND SINGLE ANTENNA



SINGLE GTN, OTHER RADIO, AND DUAL ANTENNAS

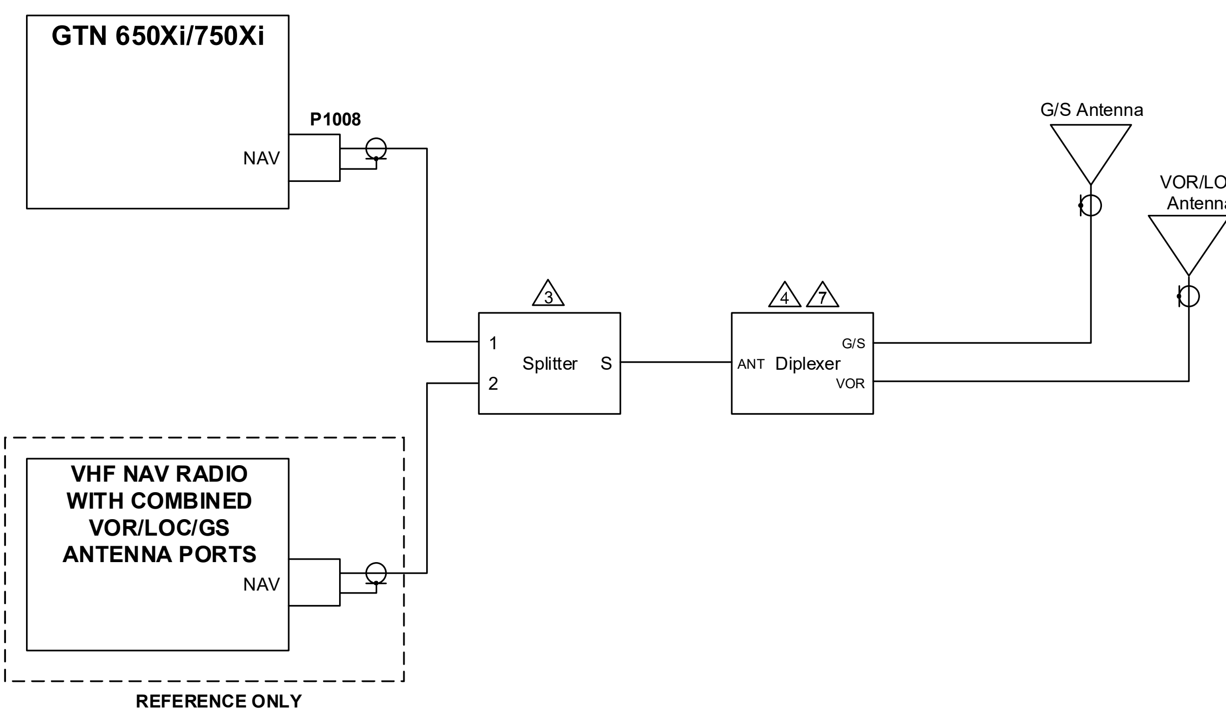


Figure B-18 GTN Xi Antenna Interconnect
Sheet 4 of 5

NOTES

1 REFER TO SECTION 4.1.1, SECTION 4.1.2, AND SECTION 4.1.3 FOR ANTENNA CABLE SPECIFICATIONS.

2 THE GPS ANTENNA COAXIAL CABLE MUST BE DOUBLE OR TRIPLE SHIELDED AND THE LOSS (INCLUDING CONNECTORS) MUST USUALLY BE GREAT THAN 1.5 DB AND LESS THAN 6.5 Db. REFER TO FIGURE 3-21 FOR ADDITIONAL INFORMATION.

3 GARMIN P/N 013-00112-00 (MINI-CIRCUITS SPLITTER P/N ZFSC-2-1B+) MUST BE USED.

4 COMANT DIPLEXER P/N CI 507 MUST BE USED.

5 NOT USED.

6 REFER TO SECTION 4.1.3.1 AND SECTION 4.1.3.2 FOR SPLITTER AND DIPLEXER INSTALLATION GUIDANCE.

7 THE DIPLEXER IS INSTALLED BACKWARDS FROM TRADITIONAL APPLICATIONS. WHEN A GS AND VOR/ LOC ANTENNA IS INSTALLED, IT IS REQUIRED TO JOIN THE SIGNALS OF BOTH ANTENNAS WITH THE CI-507 DIPLEXER.

Figure B-18 GTN Xi Antenna Interconnect
Sheet 5 of 5

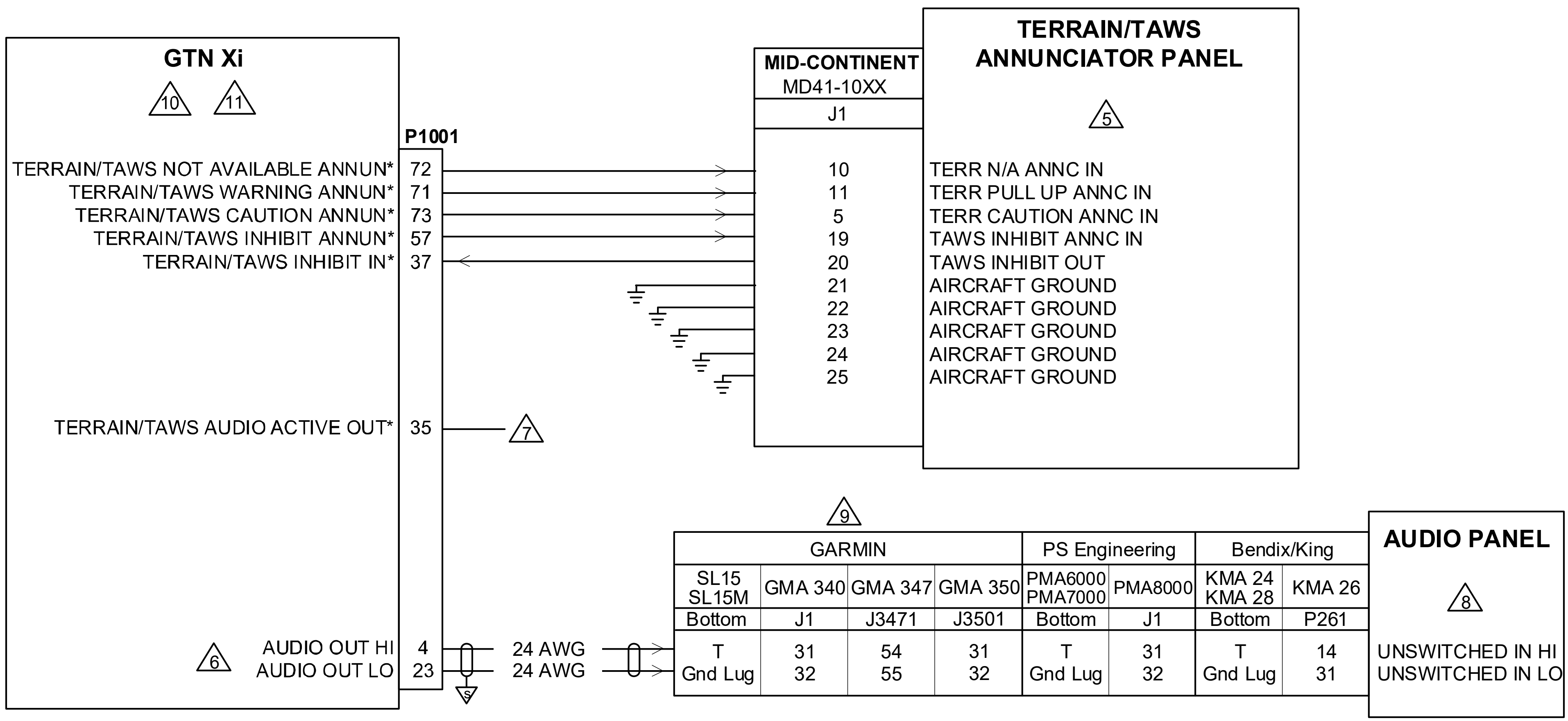


Figure B-19 GTN Xi - Terrain/TAWS Annunciators Interconnect
Sheet 1 of 2

NOTES

1 ALL WIRES 22 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED 3.0 INCHES. REFER TO SECTION 3.6.12.3.

4 REFER TO MANUFACTURER'S DOCUMENTATION FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

5 REFER TO SECTION 3.6.11.1.4 TO DETERMINE IF EXTERNAL TAWS ANNUNCIATION IS REQUIRED.

6 ONLY ONE GTN Xi SHOULD HAVE TERRAIN ALERTING OR TAWS ENABLED TO PREVENT CONFLICTING AUDIO MESSAGES.

7 CONNECT TO THE AUDIO INHIBIT INPUTS OF OTHER SYSTEMS WITH LOWER PRIORITY AURALS THAN TERRAIN ALERTING OR TAWS, SUCH AS TRAFFIC. REFER TO TRAFFIC INTERCONNECT DRAWING FOR CONNECTIONS.

8 OTHER UNSWITCHED, UNMUTED INPUTS ON THE AUDIO PANEL MAY BE USED IN LIEU OF THOSE SHOWN.

9 FOR GMA 35 INTERCONNECT WIRING, REFER TO APPENDIX SECTION B.2.

10 DEFAULT DISCRETE FUNCTION FOR PINS P1001-72, -71, -73, -57, -37, AND -35 IS SHOWN. THESE PIN FUNCTIONS ARE CONFIGURABLE AS DESCRIBED IN SECTION 5.

11 A RELAY MUST BE USED ON THE TERRAIN/TAWS NOT AVAILABLE ANNUNCIATE DISCRETE IF USING A CUSTOM LAMP OR ANY ANNUNCIATOR THAT DOES NOT CONTAIN AN INTERNAL RELAY. THE MID-CONTINENT MD41-10XX HAS AN INTERNAL RELAY.

Figure B-19 GTN Xi - Terrain/TAWS Annunciators Interconnect
Sheet 2 of 2

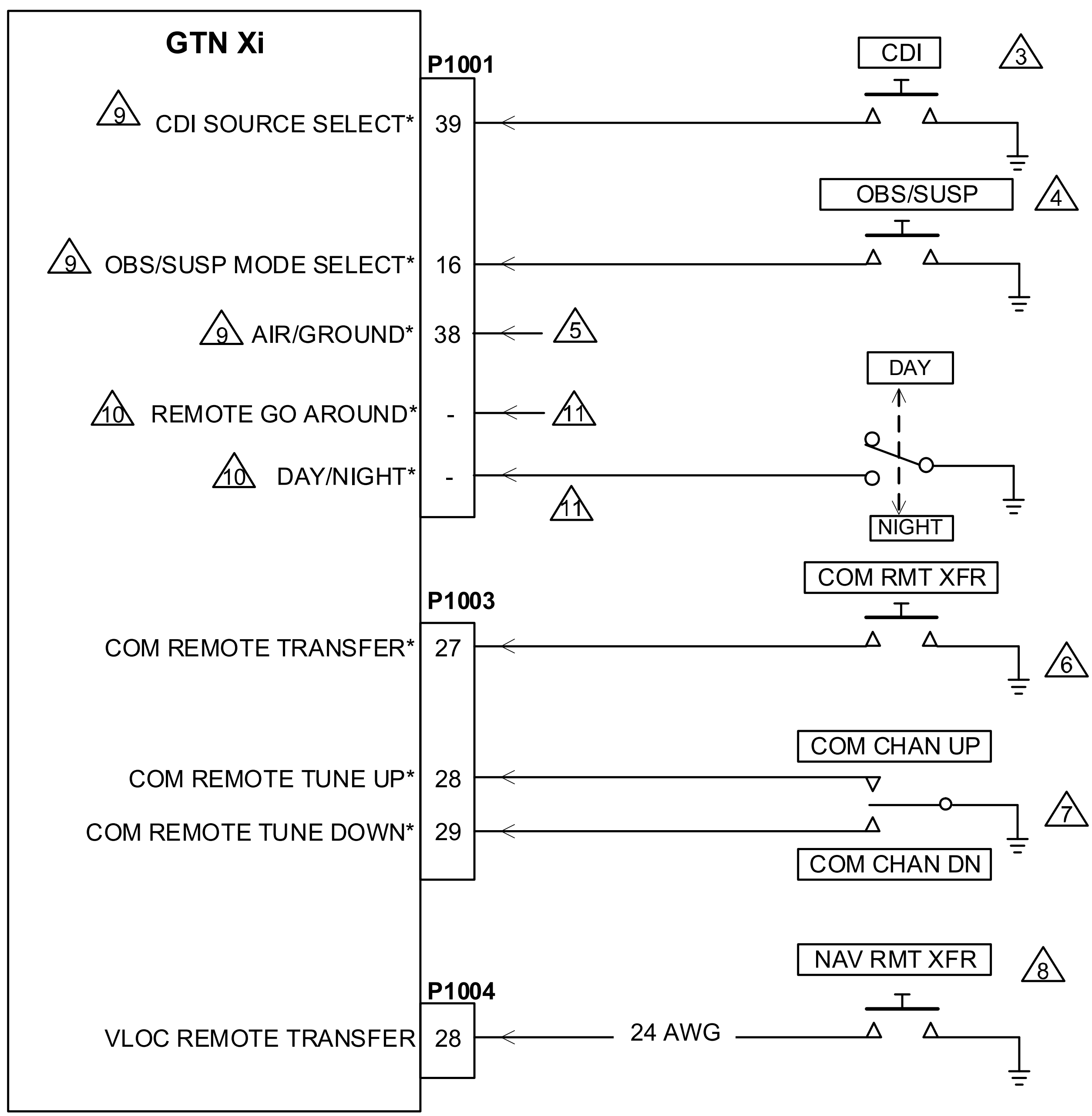


Figure B-20 GTN Xi Switch Interconnect (Optional)
Sheet 1 of 3

Smart Glide Activation Switch 12

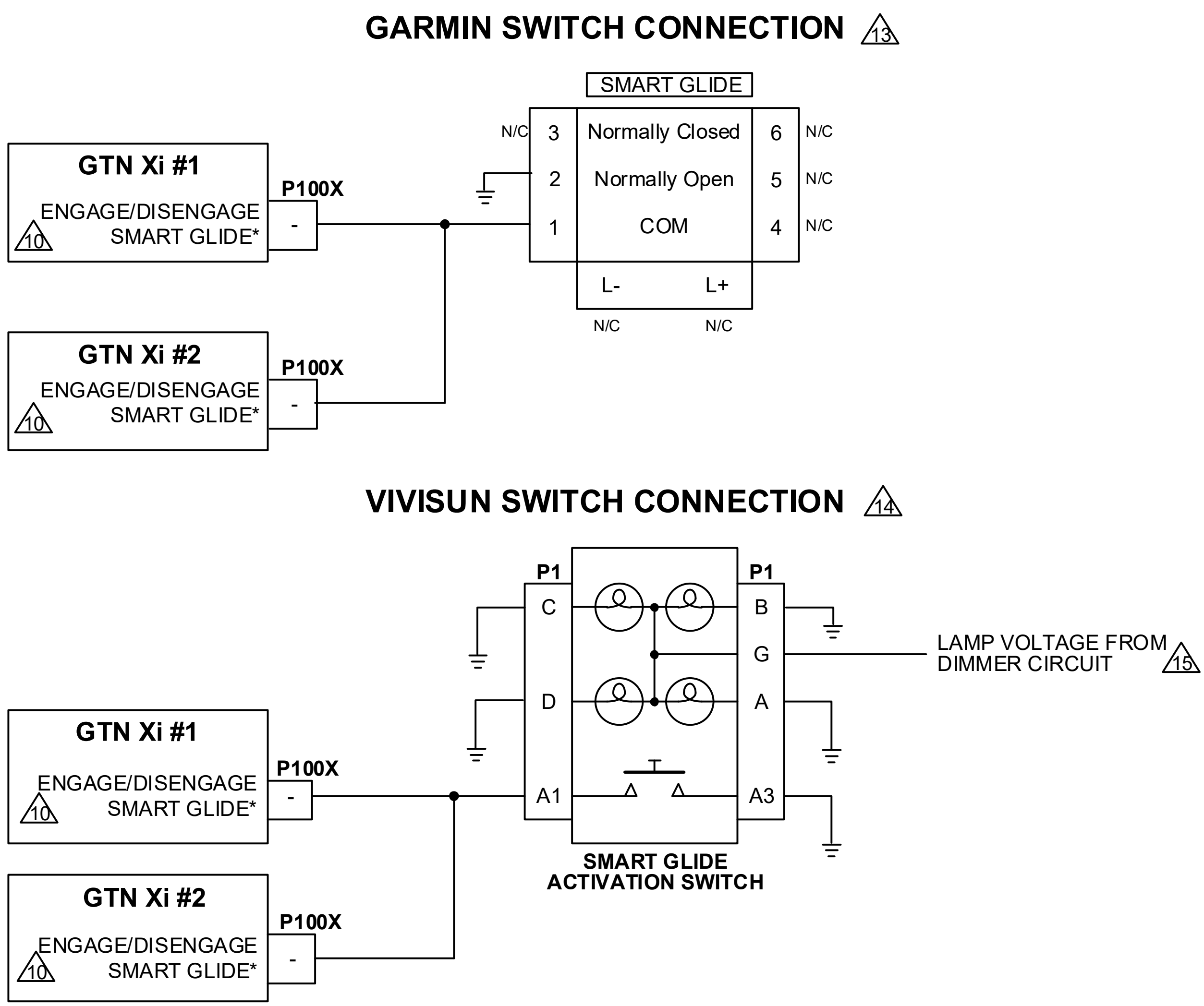


Figure B-20 GTN Xi Switch Interconnect (Optional)
Sheet 2 of 3

NOTES

1 ALL WIRES 22 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 THE CDI SOURCE SELECT INPUT MAY BE USED TO TOGGLE BETWEEN GPS AND VLOC COURSE DEVIATION SOURCES. USE GRAYHILL SWITCH P/N 30-3. THE SWITCH MUST BE LABELED AS SHOWN DIRECTLY ADJACENT TO THE SWITCH. REFER TO SECTION 3.6.9 FOR ADDITIONAL SWITCH INSTALLATION REQUIREMENTS. THIS SWITCH MUST NOT BE INSTALLED IF A REMOTE ANNUNCIATOR PANEL WITH A CDI SWITCHING FUNCTION IS CONNECTED TO THE GTN Xi.

4 OBS/SUSP MODE SELECT* MAY BE USED TO REMOTELY TOGGLE BETWEEN GPS AUTO AND GPS OBS/SUSP MODE. USE GRAYHILL SWITCH P/N 30-3. THE SWITCH MUST BE LABELED AS SHOWN DIRECTLY ADJACENT TO THE SWITCH. REFER TO SECTION 3.6.9 FOR ADDITIONAL SWITCH INSTALLATION REQUIREMENTS. THIS SWITCH MUST NOT BE INSTALLED IF A REMOTE ANNUNCIATOR PANEL WITH AN OBS/SUSP SWITCHING FUNCTION IS CONNECTED TO THE GTN Xi.

5 THE AIR/GROUND* INPUT IS USED TO CONTROL THE AIR/GROUND STATUS OF THE GTN Xi. THIS INPUT MUST BE GROUNDED TO ACTIVATE. REFER TO SECTION 5.4.3.10 FOR CONFIGURATION INFORMATION.

6 COM REMOTE TRANSFER MAY BE USED TO TRANSFER THE STANDBY COM FREQUENCY TO THE ACTIVE COM FREQUENCY VIA REMOTE SWITCH. USE GRAYHILL SWITCH P/N 30-3. THE SWITCH MUST BE LABELED AS SHOWN DIRECTLY ADJACENT TO THE SWITCH. REFER TO SECTION 3.6.9 FOR ADDITIONAL SWITCH INSTALLATION REQUIREMENTS.

7 COM REMOTE TUNE UP AND COM REMOTE TUNE DOWN MAY BE USED TO SCROLL THROUGH A LIST OF PRESET COM FREQUENCIES. MAY USE TWO GRAYHILL SWITCHES P/N 30-3. THE SWITCHES MUST BE LABELED AS SHOWN DIRECTLY ADJACENT TO THE SWITCH. ADDITIONALLY, AN ON-OFF-ON SWITCH, CARLING SWITCH P/N 62012481-0-0 CAN BE USED. REFER TO SECTION 3.6.9 FOR ADDITIONAL SWITCH INSTALLATION REQUIREMENTS.

8 VLOC REMOTE TRANSFER MAY BE USED TO TRANSFER THE STANDBY NAV FREQUENCY TO THE ACTIVE NAV FREQUENCY VIA REMOTE SWITCH. USE GRAYHILL SWITCH P/N 30-3. THE SWITCH MUST BE LABELED AS SHOWN DIRECTLY ADJACENT TO THE SWITCH. REFER TO SECTION 3.6.9 FOR ADDITIONAL SWITCH INSTALLATION REQUIREMENTS.

9 DEFAULT DISCRETE FUNCTION FOR THIS PIN IS SHOWN. THESE PIN FUNCTIONS ARE CONFIGURABLE AS DESCRIBED IN SECTION 5.

10 THERE IS NO DEFAULT PIN FOR THE THIS FUNCTION. REFER TO SECTION 5.4.3.14 FOR DETAILS ON CONFIGURING AN INPUT FOR THIS FUNCTION. EITHER P1001 OR P1002 MAY BE USED.

11 CONNECT TO EXISTING SWTICH.

12 IF SMART GLIDE IS ENABLED AS DESCRIBED IN SECTION 5.4.3.15, THERE MUST BE EITHER A GUARDED DISCRETE ACTIVATION SWITCH INSTALLED OR A PLACARD PLACED ADJACENT TO THE #1 GTN Xi IN A SINGLE OR DUAL GTN Xi INSTALLATION. FOR A GTN Xi-GTN 6XX/7XX INSTALLATION, THE PLACARD MUST BE ADJACENT TO THE GTN XI AS DESCRIBED IN SECTION 3.6.7.1.

13 THE RECOMMENDED GUARDED SWITCH IS GARMIN P/N 011-05930-00. MS27718-26-1 OR EQUIVALENT TOGGLE SWITCH WITH A MS25224-3 GUARD IS AN ACCEPTABLE ALTERNATIVE. SINGLE POLE MODELS DO NOT HAVE TERMINALS 4-6.

IF A SMART GLIDE ACTIVATION SWITCH IS INSTALLED, IT MUST BE CONNECTED TO ALL GTN Xi UNITS.

14 USE VIVISUN MOMENTARY SWITCH P/N LED-52-11-HAE-E2WE7 FOR 28V SYSTEMS AND P/N 95-52-11-H4-E2WFN FOR 14 V SYSTEMS. VIVISUN MOMENTARY SWITCHES MUST BE INSTALLED WITH A RED OUTLINE GUARD P/N 17-672.

15 LAMPS SHOULD RECEIVE POWER FROM THE SAME POWER BUS TO WHICH THE GTN XI IS CONNECTED.

Figure B-20 GTN Xi Switch Interconnect (Optional)
Sheet 3 of 3

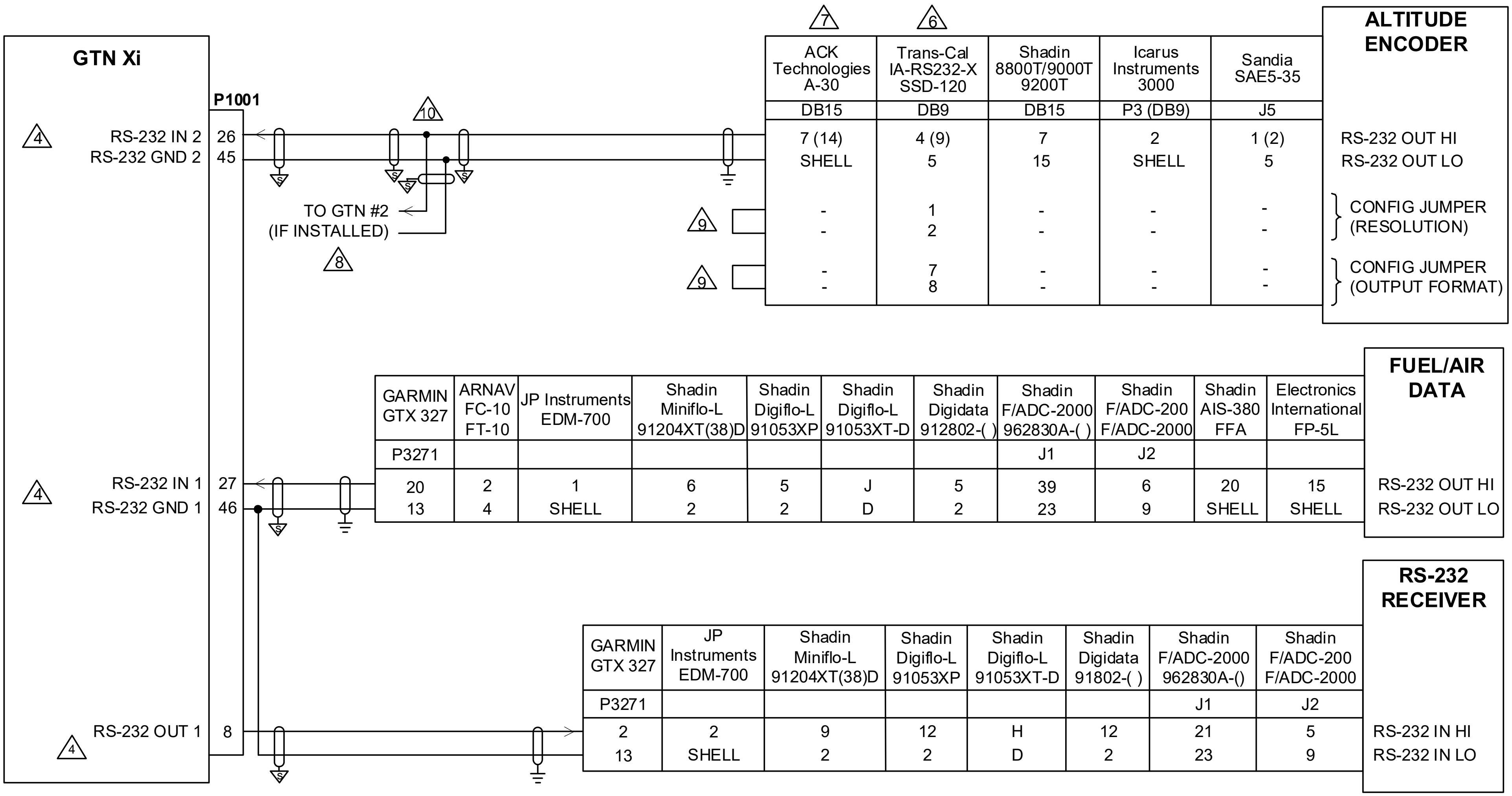


Figure B-21 GTN Xi - RS-232 Interconnect
Sheet 1 of 2

NOTES

1 ALL WIRES 22 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED 3.0 INCHES. REFER TO SECTION 3.6.12.3.

4 RS-232 CHANNEL PORTS 1 TO 3 ARE SHOWN. ANY AVAILABLE RS-232 PORT MAY BE USED. REFER TO SECTION 5.4.3.2 FOR PORT CONFIGURATION.

5 REFER TO MANUFACTURER'S DOCUMENTATION FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

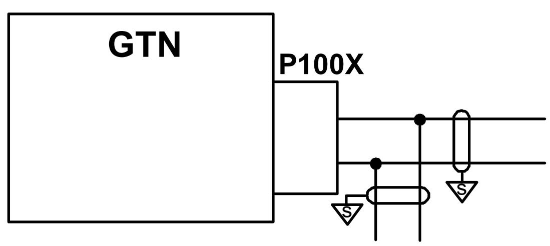
6 IF USING THE SERIAL PORT SOFTWARE METHOD TO CONFIGURE THE OUTPUT OF THE ENCODER, VERIFY THE "TRIMBLE/GARMIN 9600 BPS" FORMAT IS SELECTED.

7 MOD LEVEL 8 (OR HIGHER) IS REQUIRED TO SUPPORT RS-232 INTERFACE. VERIFY THE JUMPERS ARE SET FOR "TRIMBLE/GARMIN 9600 BPS" AND "10 FOOT RESOLUTION."

8 IN A DUAL GTN Xi INSTALLATION, CONNECT THE ALTITUDE SOURCE TO BOTH GTN Xi #1 AND GTN Xi #2. USE NEXT AVAILABLE RS-232 IN PORT. VERIFY BOTH PORTS ARE CONFIGURED TO THE CORRECT DATA FORMAT SETTING AS DESCRIBED IN SECTION 5.4.3.2.

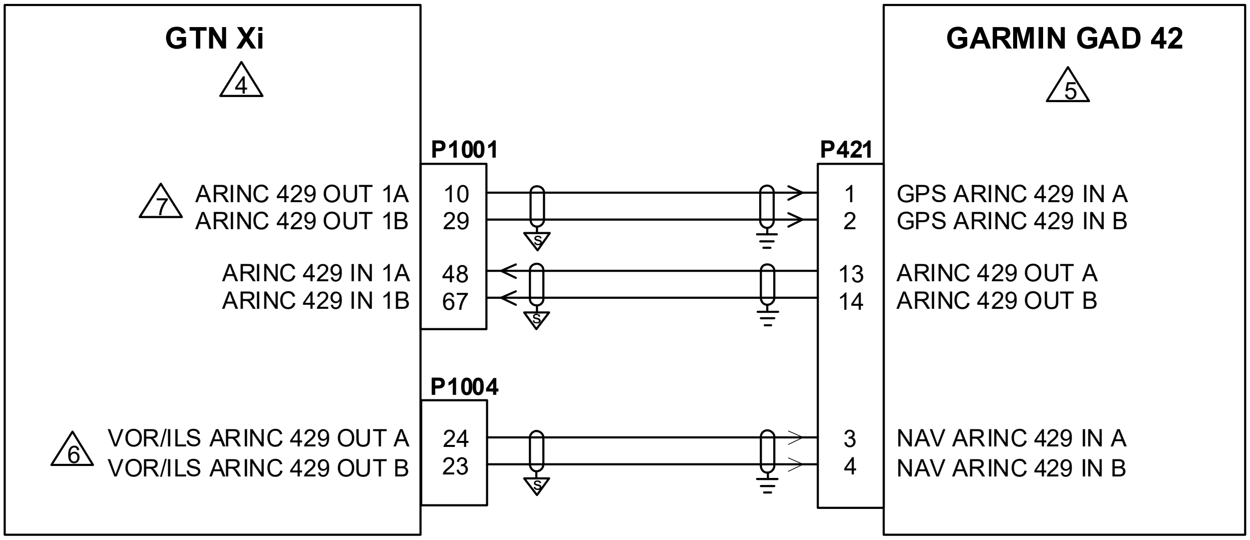
9 THE LENGTH OF THE STRAPS MUST BE LIMITED TO THE LENGTH SPECIFIED IN THE MANUFACTURER'S INSTALLATION MANUAL.

10 THE SPLICE MUST BE PERFORMED AT THE GTN Xi CONNECTOR END OF THE WIRE. SPLICE AS SHOWN:



11 CONNECT TO EXISTING SWTICH. SWITCH MUST BE LABELED AS SHOWN DIRECTLY ADJACENT TO THE SWITCH.

Figure B-21 GTN Xi - RS-232 Interconnect
Sheet 2 of 2



NOTES

1 ALL WIRES 22 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE GAD 42 INSTALLATION MANUAL.

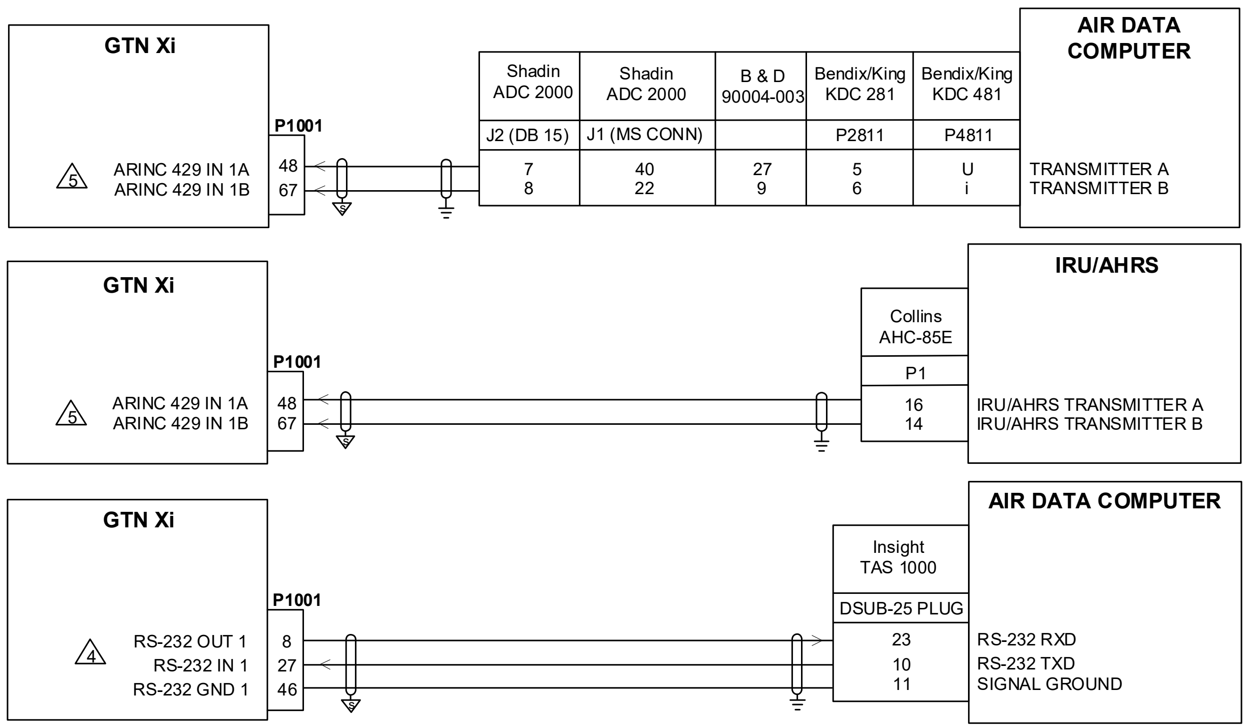
4 FOR GTN Xi CONFIGURATION SETTINGS, REFER TO SECTION 5.4.3.1.

5 REFER TO THE GARMIN GAD 42 INSTALLATION MANUAL FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. CONFIGURE THE ARINC 429 BUS SPEED TO MATCH THE GTN 650Xi/750Xi OUTPUT SPEED.

6 THESE CONNECTIONS ARE ONLY USED ON THE GTN 650Xi/750Xi.

7 IF THE ARINC 429 OUT 1 PORT (P1001 PINS -10 AND -29) IS ALREADY USED FOR ANOTHER PURPOSE, ANY ARINC 429 OUT PORT MAY BE CONNECTED INSTEAD. REFER TO SECTION 5.4.3.1 FOR ARINC 429 CONFIGURATION SETTINGS AND APPENDIX A FOR PINOUT.

Figure B-22 GTN Xi - GAD 42 Interconnect



NOTES

1. ALL WIRES 22 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2. GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3. AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED 3.0 INCHES. REFER TO SECTION 3.6.12.3.

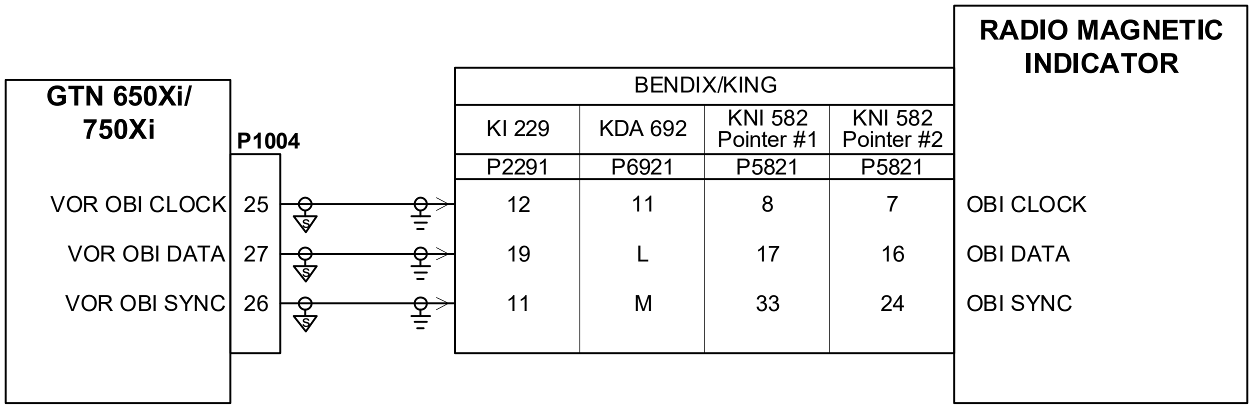
4. REFER TO SECTION 5.4.3.2 FOR RS-232 CHANNEL SETTINGS. RS-232 CHANNEL 1 PORT IS SHOWN. ANY AVAILABLE RS-232 PORT MAY BE USED.

5. REFER TO SECTION 5.4.3.1 FOR ARINC 429 CHANNEL SETTINGS. IF ARINC 429 IN 1 PORT IS BEING USED FOR ANOTHER PURPOSE, ANY AVAILABLE ARINC 429 IN PORT MAY BE CONNECTED INSTEAD.

6. REFER TO MANUFACTURER'S DOCUMENTATION FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

Figure B-23 GTN Xi - Air Data/AHRS Computer Interconnect

TYPICAL CONNECTIONS TO RMI



NOTES

1 ALL WIRES 22 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED 3.0 INCHES. REFER TO SECTION 3.6.12.3.

4 REFER TO MANUFACTURER'S DOCUMENTATION FOR COMPLETE PINOUT AND INTERCONNECT/ CONFIGURATION INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

Figure B-24 GTN 650Xi/750Xi - RMI Interconnect

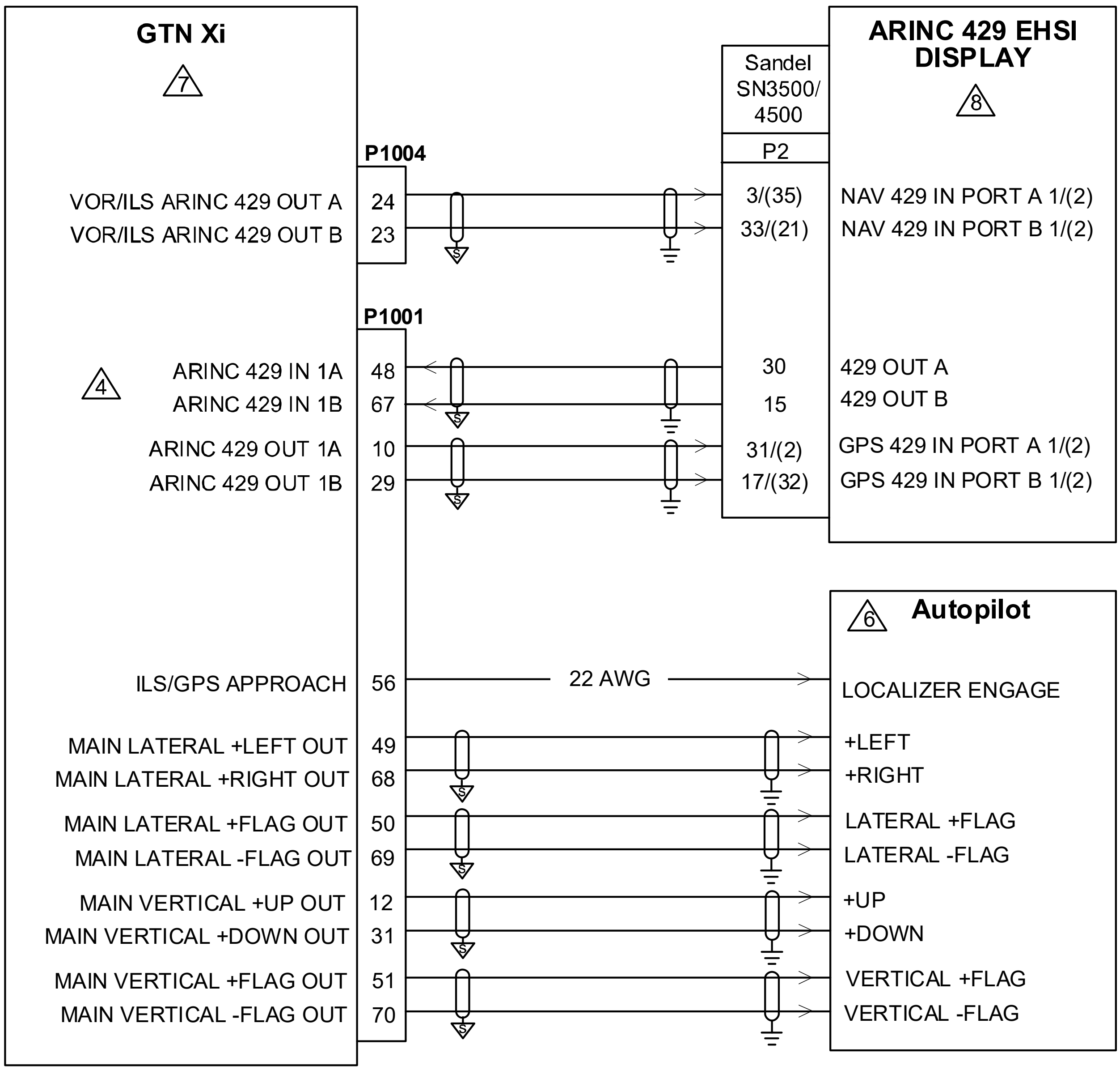


Figure B-25 GTN Xi - Sandel SN3500/4500 Interconnect
Sheet 1 of 2

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED 3.0 INCHES. REFER TO SECTION 3.6.12.3.

4 IF THE ARINC 429 IN 1 PORT (P1001 -48 AND -67) IS ALREADY USED FOR ANOTHER PURPOSE, ANY AVAILABLE ARINC 429 IN PORT MAY BE CONNECTED INSTEAD. REFER TO APPENDIX A FOR PINOUT INFORMATION.

5 REFER TO MANUFACTURER'S DOCUMENTATION FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

6 AUTOPILOT SHOWN FOR REFERENCE ONLY. REFER TO THE APPLICABLE AUTOPILOT INTERCONNECT DIAGRAM.

7 REFER TO SECTION 5.4.3.1 FOR GTN Xi CONFIGURATION SETTINGS.

8 REFER TO APPENDIX SECTION C.1.6 FOR CONFIGURATION SETTINGS.

Figure B-25 GTN Xi - Sandel SN3500/4500 Interconnect
Sheet 2 of 2

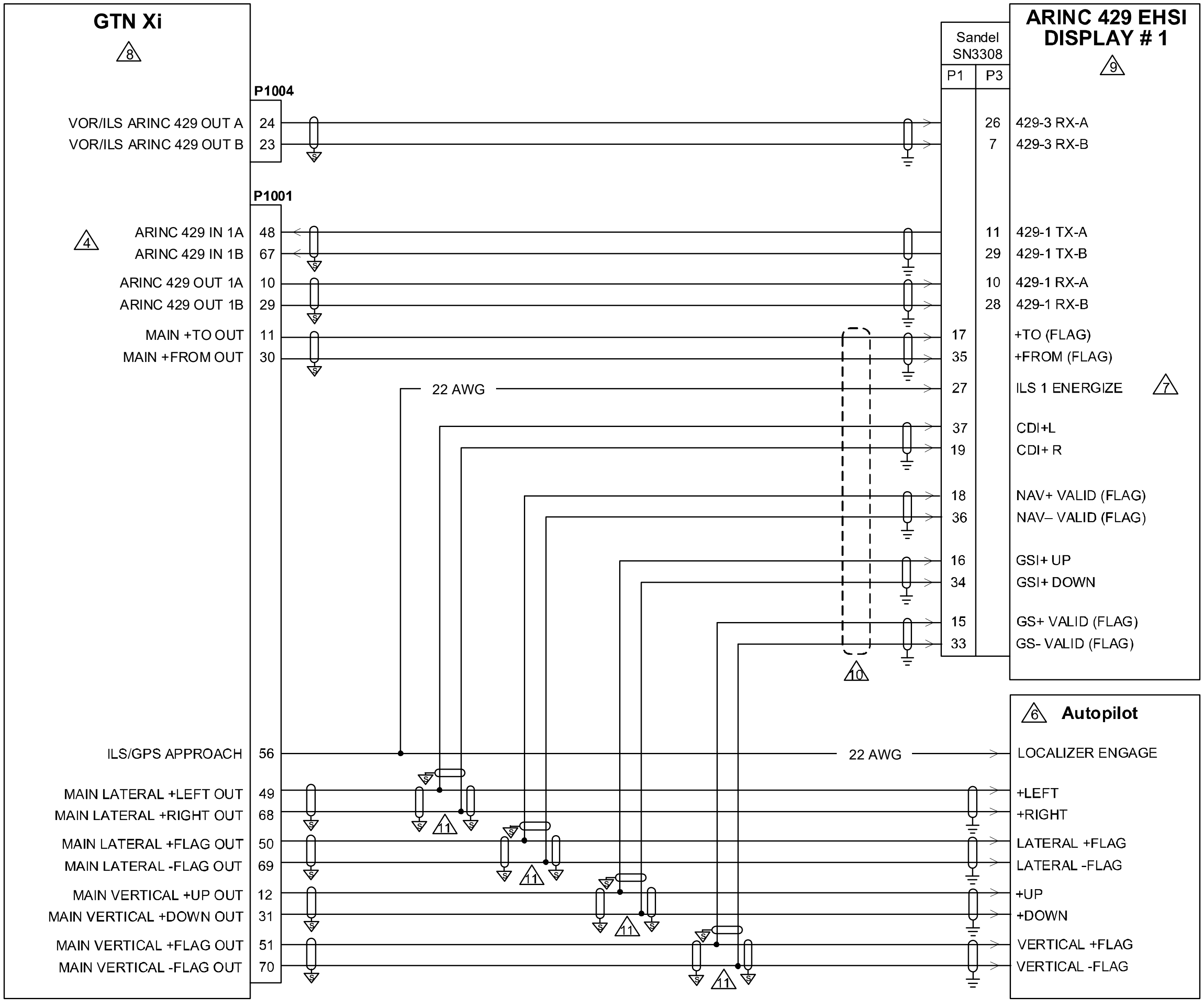


Figure B-26 GTN Xi - Sandel SN3308 Interconnect
Sheet 1 of 2

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED 3.0 INCHES. REFER TO SECTION 3.6.12.3.

4 IF THE ARINC 429 IN 1 PORT IS ALREADY USED FOR ANOTHER PURPOSE, ANY AVAILABLE ARINC 429 IN PORT MAY BE CONNECTED INSTEAD.

5 REFER TO MANUFACTURER'S DOCUMENTATION FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

6 AUTOPILOT SHOWN FOR REFERENCE ONLY. REFER TO THE APPLICABLE AUTOPILOT INTERCONNECT DIAGRAM.

7 USE ILS ENERGIZE 2 (P1-8) IF GTN Xi UNIT IS BEING CONNECTED AS GPS2/NAV2.

8 REFER TO SECTION 5.4.3.1 FOR ARINC 429 CONFIGURATION SETTINGS.

9 REFER TO APPENDIX SECTION C.1.6 FOR CONFIGURATION SETTINGS.

10 FOR SN3308 SOFTWARE VERSIONS PRIOR TO 2.30, ANALOG CONNECTIONS TO THE 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.

11 THE SPLICE MUST BE PERFORMED AT THE GTN Xi CONNECTOR END OF THE WIRE. SPLICE AS SHOWN:

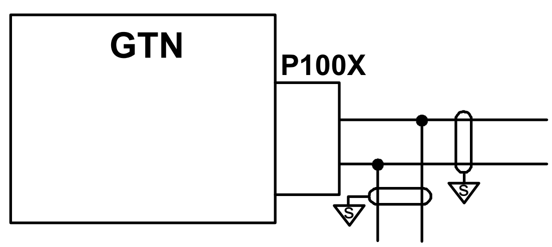


Figure B-26 GTN Xi - Sandel SN3308 Interconnect
Sheet 2 of 2

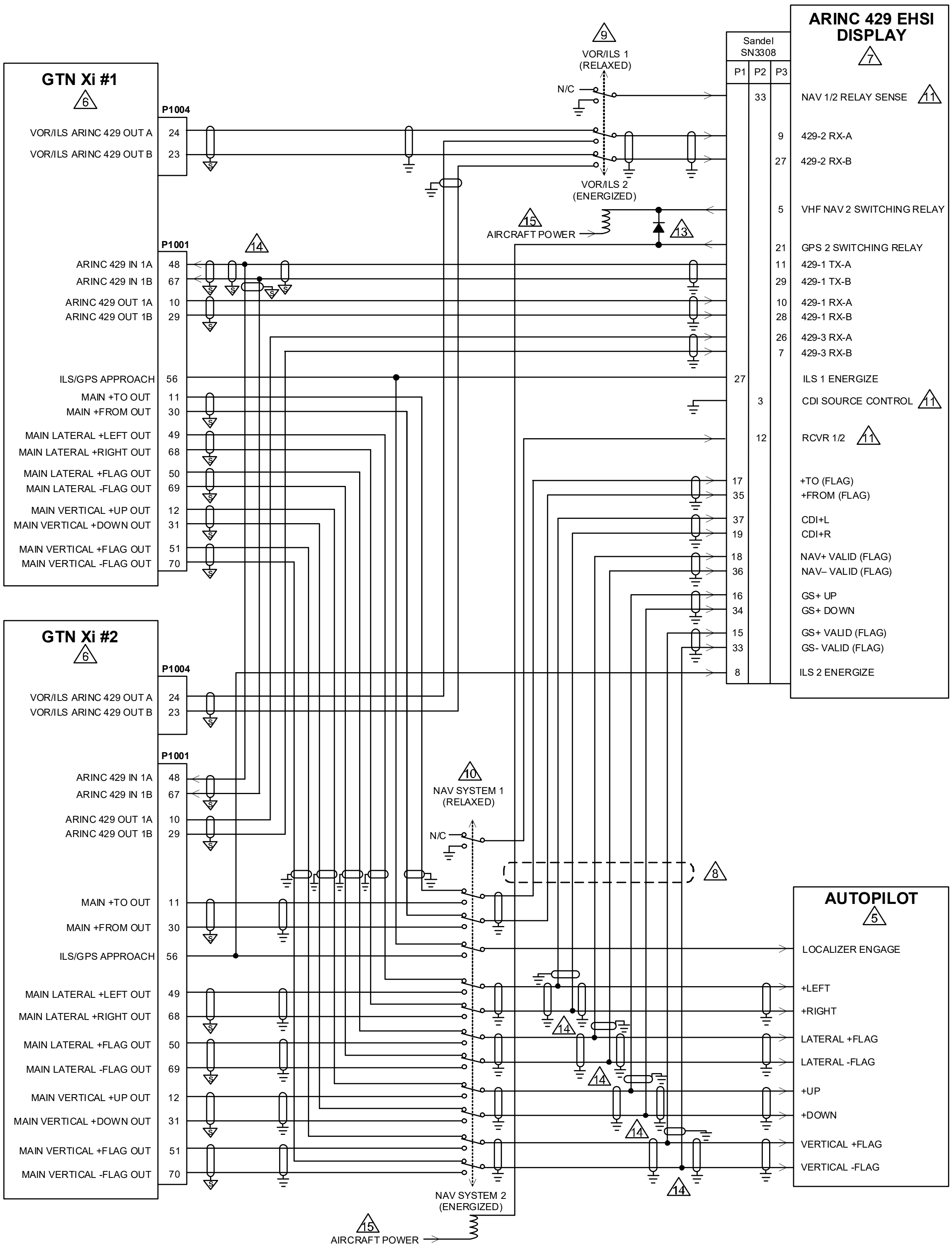


Figure B-27 GTN Xi - SN3308 - Two GTN Xi Units Interconnect
Sheet 1 of 3

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED. SINGLE DISCRETE WIRES 22 AWG OR LARGER.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED 3.0 INCHES. REFER TO SECTION 3.6.12.3.

4 REFER TO MANUFACTURER'S DOCUMENTATION FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

5 AUTOPILOT SHOWN FOR REFERENCE ONLY. REFER TO THE APPLICABLE INSTALLED A/P INTERCONNECT DIAGRAM.

6 REFER TO SECTION 5.4.3.1 FOR GTN XI #1 AND #2 ARINC 429 CONFIGURATION SETTINGS.

7 REFER TO APPENDIX SECTION C.1.6 FOR CONFIGURATION SETTINGS.

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

9 USE RELAY LEACH P/N WN-460-( )( )( ).

10 USE AN MD41-244 OR MD41-248 REMOTE RELAY OR EQUIVALENT PREVIOUSLY FAA-APPROVED REMOTE RELAY.

11 THESE PINS ON THE SN3308 ARE CONFIGURABLE AND CAN BE CHANGED TO SUIT THE PARTICULAR INSTALLATION.

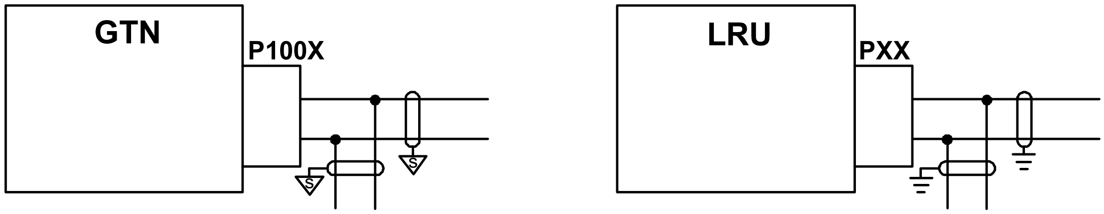
12 IF IT IS DESIRED TO USE THE NAV RECEIVERS AS A SOURCE FOR THE SN3308 BEARING POINTERS, IT IS RECOMMENDED THE GTN XI #1/#2 COMPOSITE OUTPUTS (P1004-8) BE CONNECTED TO THE SN3308 COMPOSITE INPUTS (P1-29 AND P1-10, #1 AND #2, RESPECTIVELY) AND THE SN3308 BRG NAV-1/NAV-2 BE SET TO "429+COMP."

Figure B-27 GTN Xi - SN3308 - Two GTN Xi Units Interconnect
Sheet 2 of 3

NOTES CONTINUED

13 USE DIODE P/N 1N4004 OR EQUIVALENT.

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



15 CONNECT TO SANDEL 3308 EFIS CIRCUIT BREAKER FOR AIRCRAFT POWER.

Figure B-27 GTN Xi - SN3308 - Two GTN Xi Units Interconnect
Sheet 3 of 3

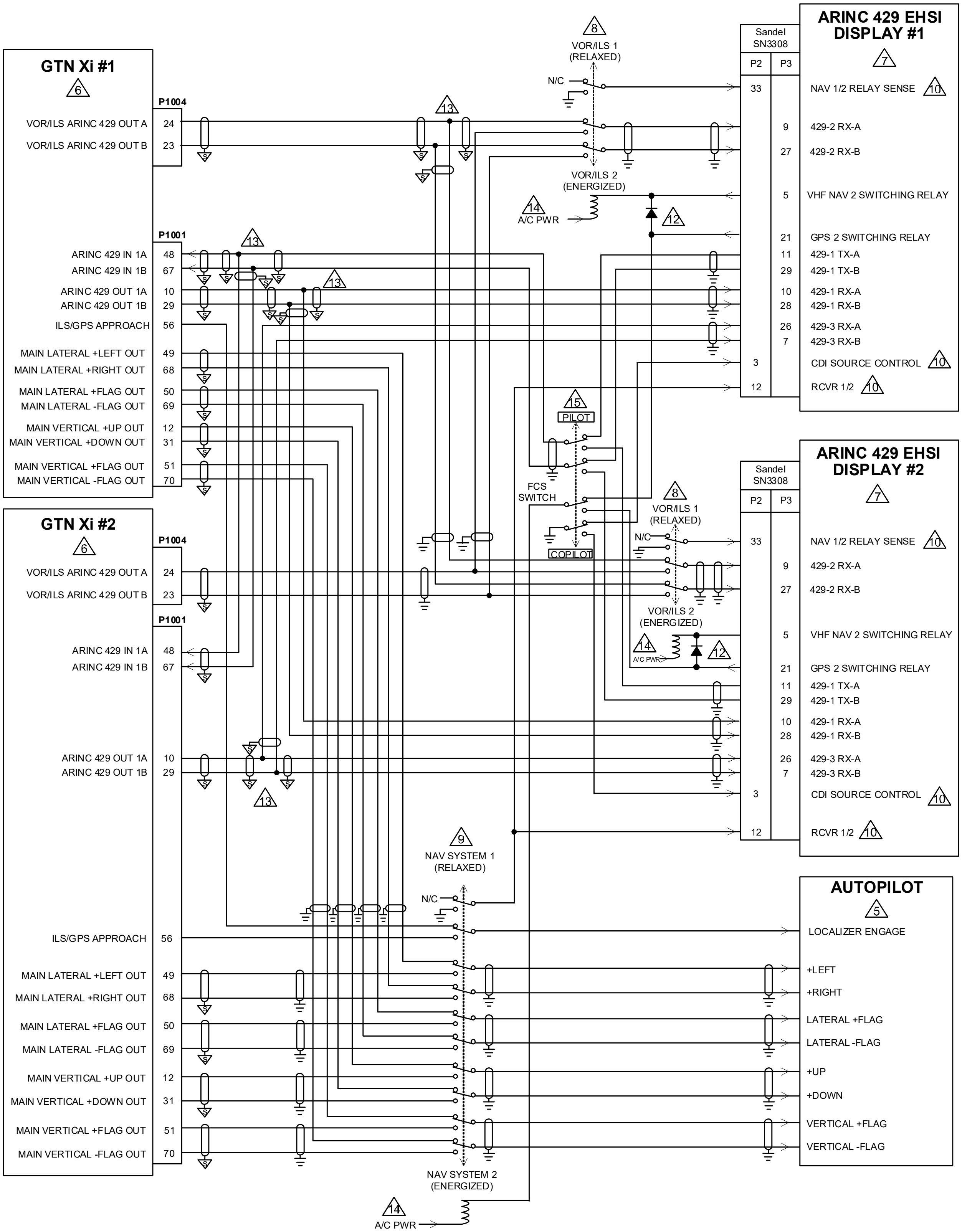


Figure B-28 GTN Xi - SN3308 - Two GTN Xi Units and Two SN3308s Interconnect Sheet 1 of 3

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED. SINGLE DISCRETE WIRES 22 AWG OR LARGER.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED 3.0 INCHES. REFER TO SECTION 3.6.12.3.

4 REFER TO MANUFACTURER'S DOCUMENTATION FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

5 AUTOPILOT SHOWN FOR REFERENCE ONLY. REFER TO THE APPLICABLE AUTOPILOT INTERCONNECT DIAGRAM.

6 REFER TO SECTION 5.4.3.1 FOR GTN Xi #1 AND #2 CONFIGURATION SETTINGS.

7 REFER TO APPENDIX SECTION C.1.6 FOR CONFIGURATION SETTINGS.

8 USE RELAY LEACH P/N WN-460-( )( )( ) OR EQUIVALENT.

9 USE AN MD41-244 OR MD41-248 REMOTE RELAY OR EQUIVALENT PREVIOUSLY FAA-APPROVED REMOTE RELAY.

10 THESE PINS ON THE SN3308 ARE CONFIGURABLE AND CAN BE CHANGED TO SUIT THE PARTICULAR INSTALLATION.

11 IF IT IS DESIRED TO USE THE NAV RECEIVERS AS A SOURCE FOR THE SN3308 BEARING POINTERS, IT IS RECOMMENDED THE GTN Xi #1/#2 COMPOSITE OUTPUTS (P1004-8) BE CONNECTED TO THE SN3308 COMPOSITE INPUTS (P1-29 AND P1-10, #1 AND #2, RESPECTIVELY) AND THE SN3308 BRG NAV-1/NAV-2 BE SET TO "429+COMP."

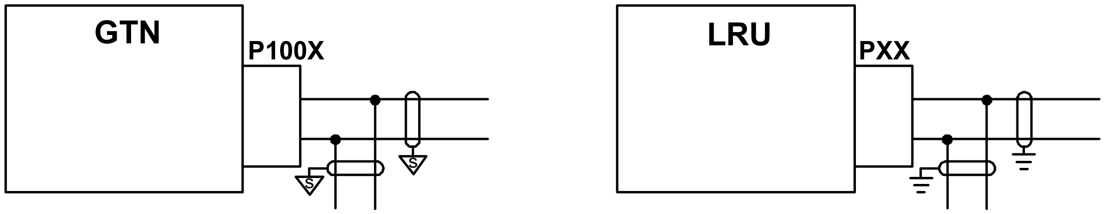
12 USE DIODE P/N 1N4004 OR EQUIVALENT.

Figure B-28 GTN Xi - SN3308 - Two GTN Xi Units and Two SN3308s Interconnect Sheet 2 of 3

NOTES CONTINUED

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

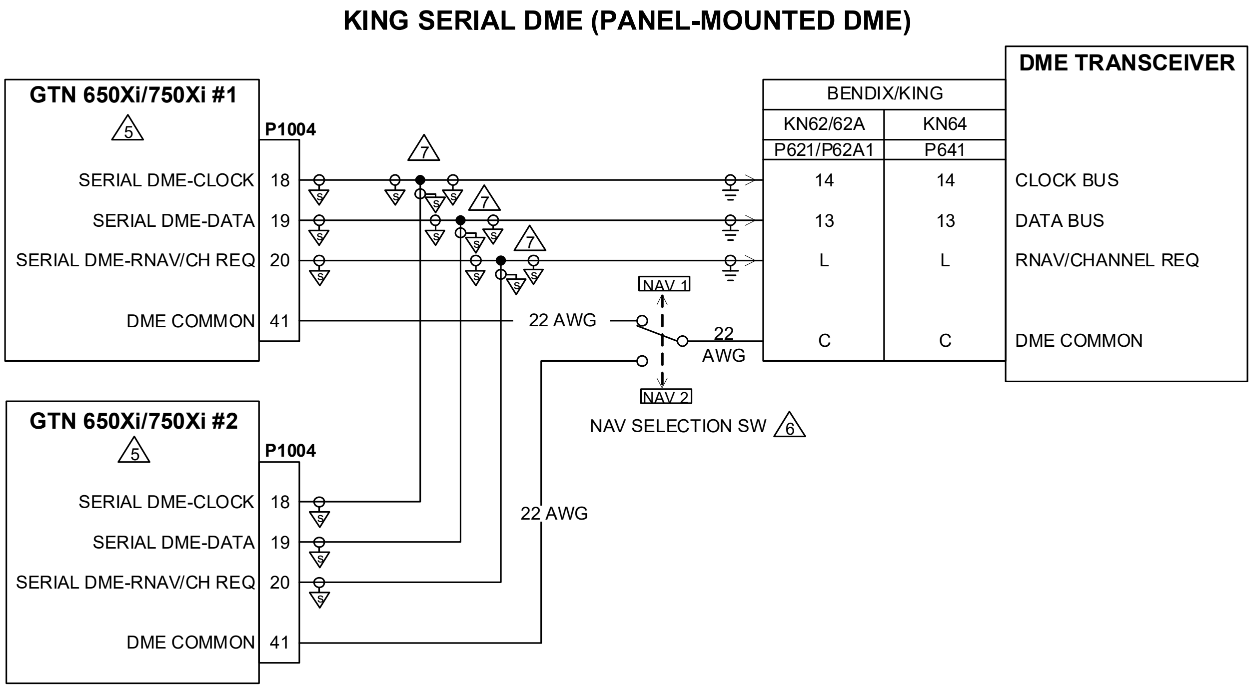
13



14 CONNECT TO SANDEL 3308 EFIS CIRCUIT BREAKER FOR AIRCRAFT POWER.

15 USE GRAYHILL SWITCH SERIES 34A-4P1. LABEL AS SHOWN. REFER TO SECTION 3.6.9 FOR ADDITIONAL SWITCH INSTALLATION REQUIREMENTS.

Figure B-28 GTN Xi - SN3308 - Two GTN Xi Units and Two SN3308s Interconnect Sheet 3 of 3



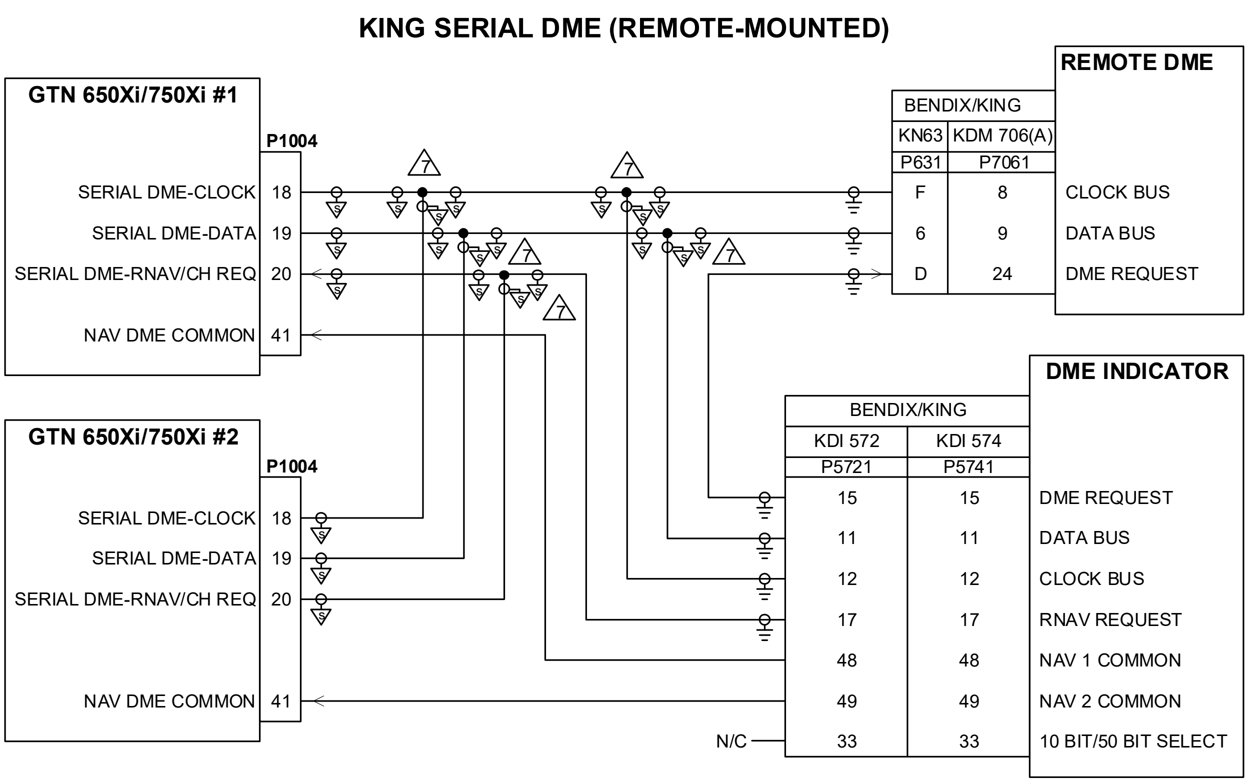


Figure B-29 GTN 650Xi/750Xi - Bendix King DME Interconnect
Sheet 1 of 2

NOTES

1 ALL WIRES 22 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN 650Xi/750Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED 3.0 INCHES. REFER TO SECTION 3.6.12.3.

4 REFER TO MANUFACTURER'S DOCUMENTATION FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

5 THE GTN 650Xi/750Xi MUST BE CONFIGURED AT INSTALLATION TO OUTPUT KING SERIAL DME TUNING DATA UNDER THE DME CHANNEL MODE. REFER TO SECTION 5.4.3.12 FOR CONFIGURATION SETTINGS.

6 THE NAV SELECTION SWITCH IS ONLY REQUIRED IF TWO GTN 650Xi/750Xi ARE INSTALLED. FOR SINGLE GTN Xi INSTALLATIONS, WIRE AS SHOWN FOR GTN Xi #1. AN ACCEPTABLE SWITCH IS CARLING SWITCH P/N 112-A-63. LABEL AS SHOWN. REFER TO SECTION 3.6.9 FOR ADDITIONAL SWITCH INSTALLATION REQUIREMENTS.

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

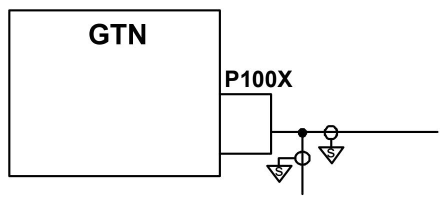


Figure B-29 GTN 650Xi/750Xi - Bendix King DME Interconnect
Sheet 2 of 2

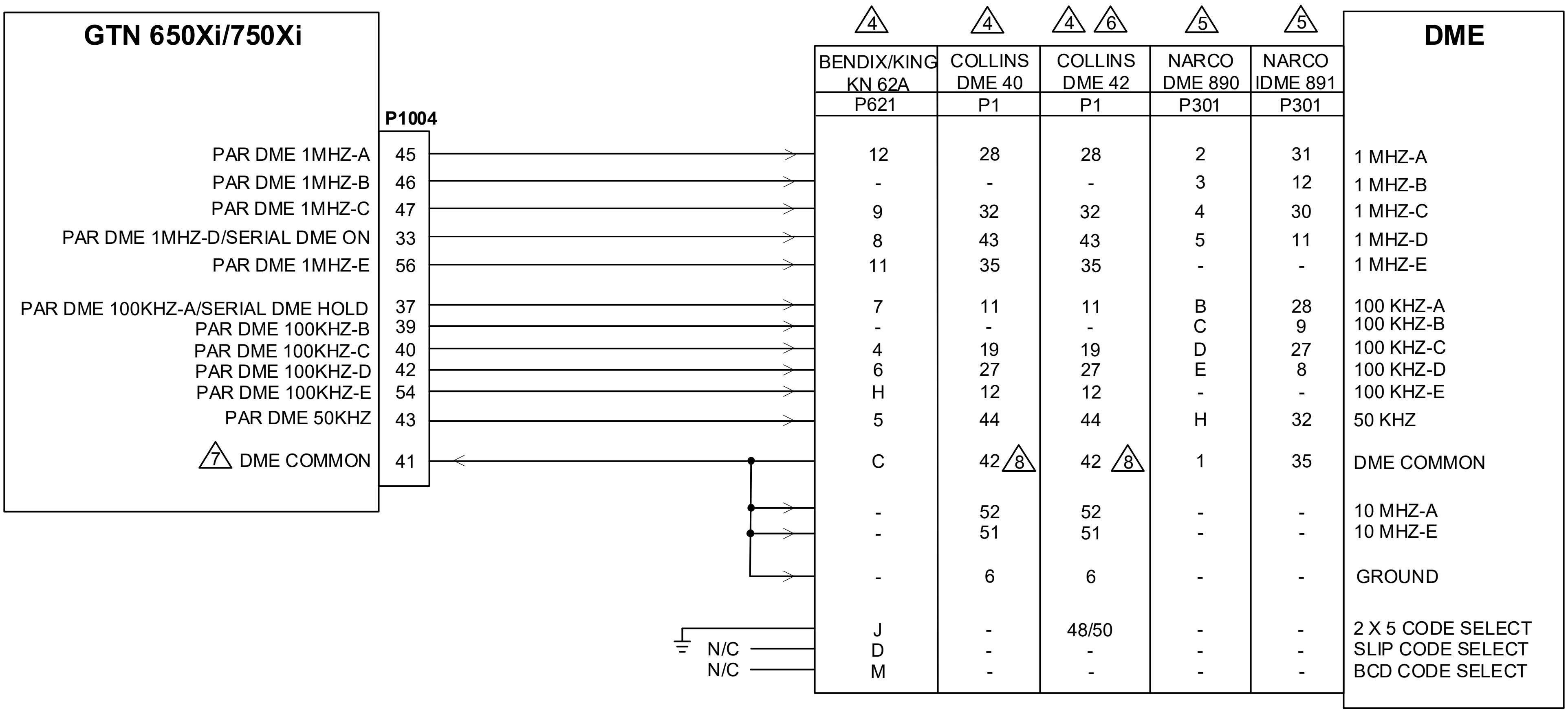


Figure B-30 GTN 650Xi/750Xi - DME Interconnect
Sheet 1 of 2

NOTES

1 ALL WIRES 22 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 REFER TO MANUFACTURER'S DOCUMENTATION FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY. REFER TO SECTION FOR GTN Xi CONFIGURATION SETTINGS.

4 THE GTN 650Xi/750Xi MUST BE CONFIGURED FOR PARALLEL 2X5 DME CHANNELING MODE FOR PROPER OPERATION WITH THIS MODEL OF DME TRANSCEIVER.

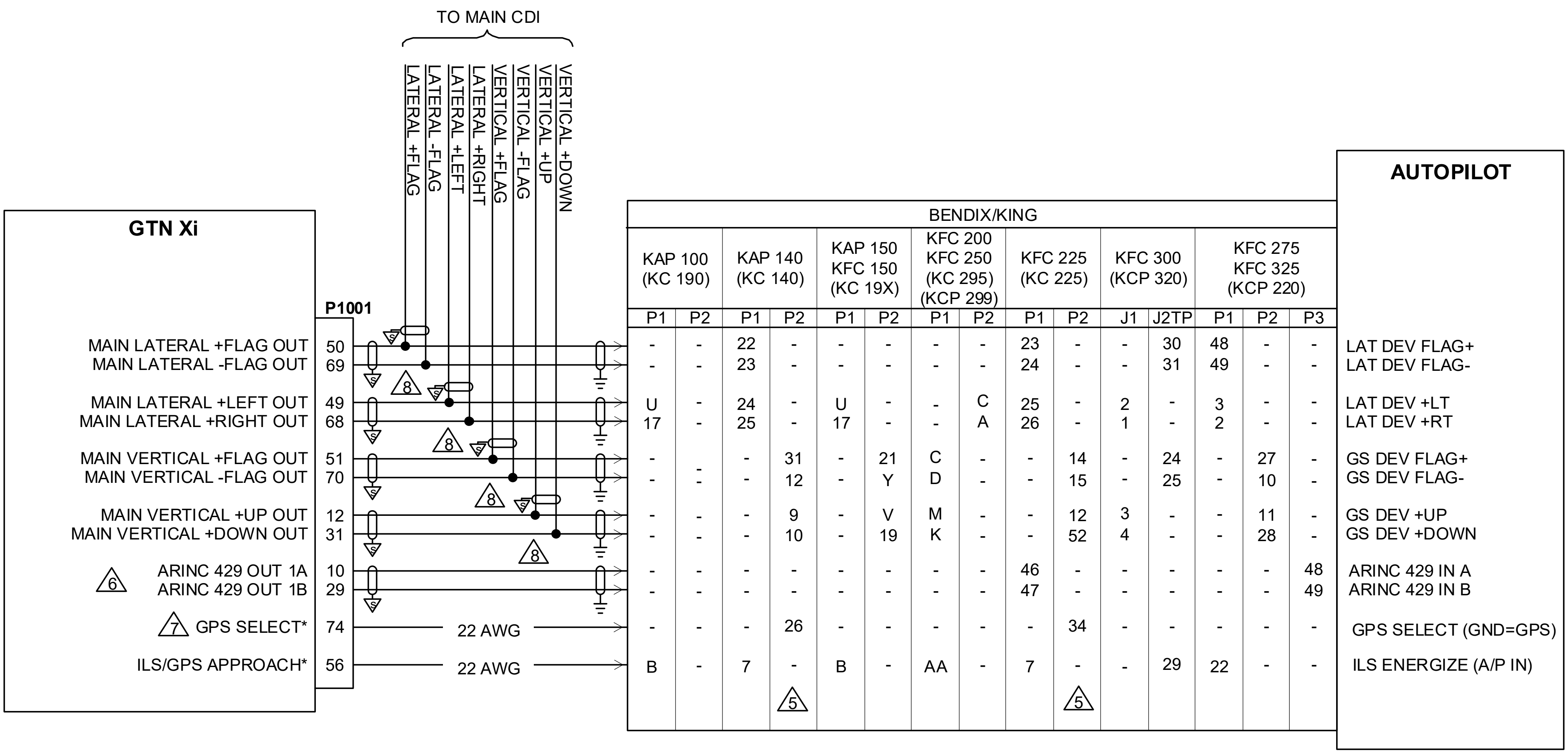
5 THE GTN 650Xi/750Xi MUST BE CONFIGURED FOR NARCO 890/891 DME CHANNELING MODE FOR PROPER OPERATION WITH THIS MODEL OF DME TRANSCEIVER.

6 DME 42 MUST BE STRAPPED FOR 2X5 TUNING. REFER TO THE DME 42 INSTALLATION MANUAL FOR STRAPPING INFORMATION.

7 FOR DUAL GTN Xi INTERFACES TO THE DME, IT MAY BE NECESSARY TO INSTALL A TOGGLE SWITCH FOR THE "DME COMMON" INPUT. INSTALL SWITCH AS SHOWN FOR KING SERIAL PANEL DME INTERCONNECT.

8 P1-42 AND P3-46 ON THE HPU-74 NEED TO BE DISCONNECTED FROM GROUND IN ORDER TO ENTER DME HOLD MODE.

Figure B-30 GTN 650Xi/750Xi - DME Interconnect
Sheet 2 of 2



BENDIX/KING	KAP 100 (KC 190)		KAP 140 (KC 140)		KAP 150 KFC 150 (KC 19X)		KFC 200 KFC 250 (KC 295) (KCP 299)		KFC 225 (KC 225)		KFC 300 (KCP 320)		KFC 275 KFC 325 (KCP 220)			AUTOPILOT
	P1	P2	P1	P2	P1	P2	P1	P2	P1	P2	J1	J2TP	P1	P2	P3	
	-	-	22	-	-	-	-	-	23	-	-	30	48	-	-	LAT DEV FLAG+
	-	-	23	-	-	-	-	-	24	-	-	31	49	-	-	LAT DEV FLAG-
	U	-	24	-	U	-	-	C	25	-	2	-	3	-	-	LAT DEV +LT
	17	-	25	-	17	-	-	A	26	-	1	-	2	-	-	LAT DEV +RT
	-	-	-	31	-	21	C	-	-	14	-	24	-	27	-	GS DEV FLAG+
	-	-	-	12	-	Y	D	-	-	15	-	25	-	10	-	GS DEV FLAG-
	-	-	-	9	-	V	M	-	-	12	3	-	-	11	-	GS DEV +UP
	-	-	-	10	-	19	K	-	-	52	4	-	-	28	-	GS DEV +DOWN
	-	-	-	-	-	-	-	-	46	-	-	-	-	-	48	ARINC 429 IN A
	-	-	-	-	-	-	-	-	47	-	-	-	-	-	49	ARINC 429 IN B
	-	-	-	26	-	-	-	-	-	34	-	-	-	-	-	GPS SELECT (GND=GPS)
	B	-	7	-	B	-	AA	-	7	-	-	29	22	-	-	ILS ENERGIZE (A/P IN)
				5						5						

Figure B-31 GTN Xi - Bendix King Autopilot Interconnect
Sheet 1 of 3

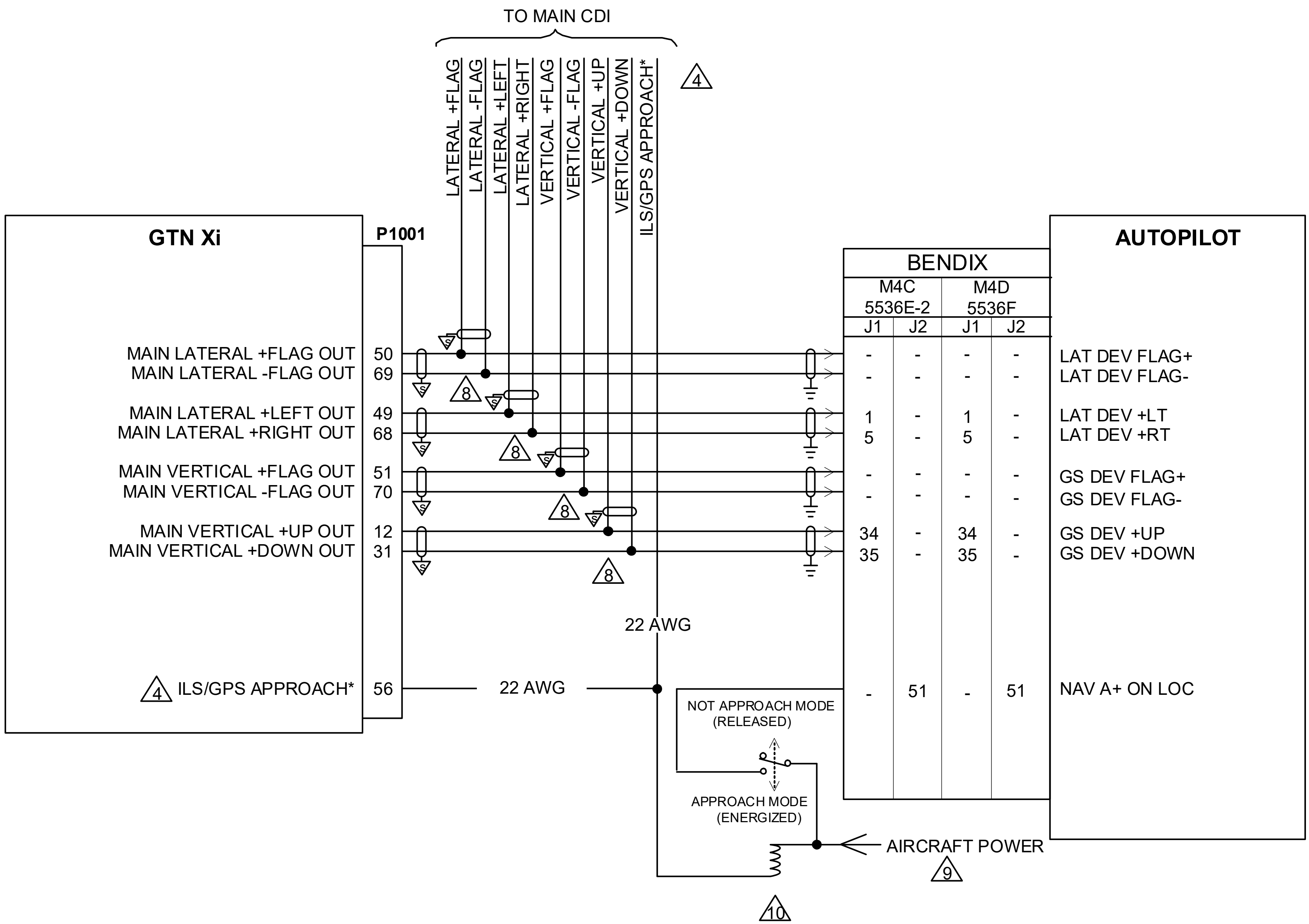


Figure B-31 GTN Xi - Bendix King Autopilot Interconnect
Sheet 2 of 3

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT THE GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER SHIELD GROUNDS TO AIRCRAFT GROUND WITH AS SHORT A CONDUCTOR AS PRACTICAL.

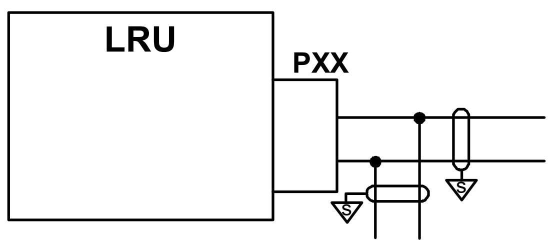
4 THE ILS/GPS APPROACH DISCRETE IS REQUIRED BY SOME CDIs/ HSIs THAT ARE USED WITH THE M4C/D AUTOPILOTS. IF REQUIRED, VERIFY THE SIGNAL SUPPLIED TO THE INDICATOR IS THE CORRECT POLARITY (ACTIVE-HIGH OR ACTIVE-LOW).

5 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.

6 ALL GAMA 429 CONFIGURATIONS OF THE GPS ARINC 429 OUTPUT PROVIDE DATA REQUIRED BY THE AUTOPILOT FOR GPSS. THE ARINC 429 CONFIGURATION CANNOT BE USED.

7 REFER TO SECTION 5.4.3.10 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.”

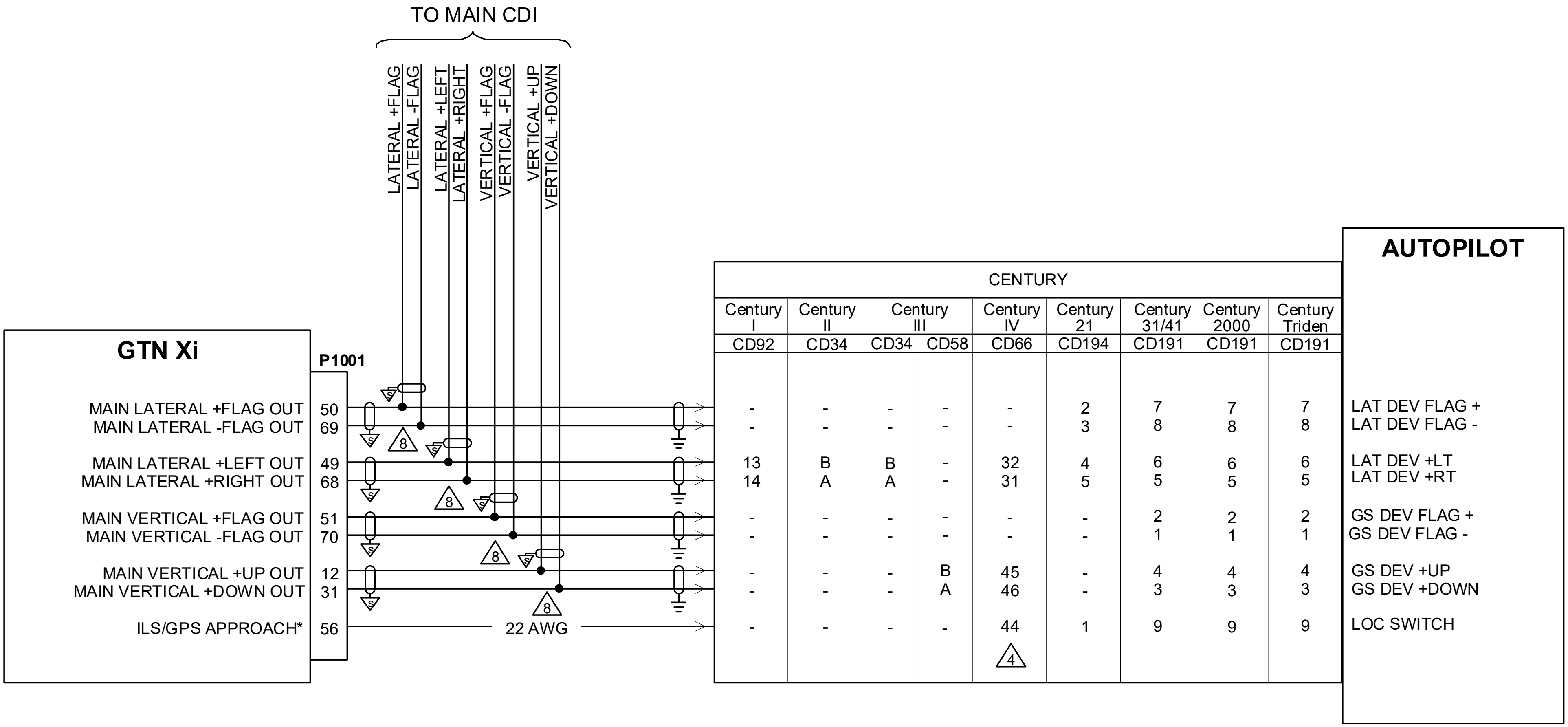
8 THE SPLICE MUST BE PERFORMED AT THE CONNECTOR END OF THE WIRE. SPLICE AS SHOWN:



9 CONNECT TO BENDIX AUTOPILOT CIRCUIT BREAKER FOR AIRCRAFT POWER.

10 AN ACCEPTABLE RELAY IS LEACH P/N WN460-( )( )( ).

Figure B-31 GTN Xi - Bendix King Autopilot Interconnect
Sheet 3 of 3



	Century I	Century II	Century III		Century IV	Century 21	Century 31/41	Century 2000	Century Triden	
	CD92	CD34	CD34	CD58	CD66	CD194	CD191	CD191	CD191	
50	-	-	-	-	-	2	7	7	7	LAT DEV FLAG +
69	-	-	-	-	-	3	8	8	8	LAT DEV FLAG -
49	13	B	B	-	32	4	6	6	6	LAT DEV +LT
68	14	A	A	-	31	5	5	5	5	LAT DEV +RT
51	-	-	-	-	-	-	2	2	2	GS DEV FLAG +
70	-	-	-	-	-	-	1	1	1	GS DEV FLAG -
12	-	-	-	B	45	-	4	4	4	GS DEV +UP
31	-	-	-	A	46	-	3	3	3	GS DEV +DOWN
56	-	-	-	-	44	1	9	9	9	LOC SWITCH

Figure B-32 GTN Xi - Century Autopilot Interconnect
Sheet 1 of 2

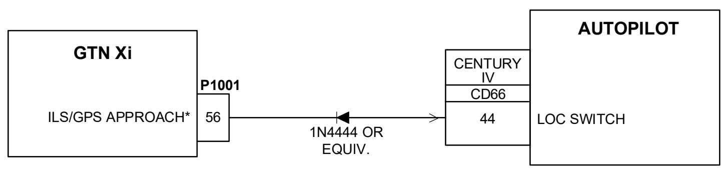
NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

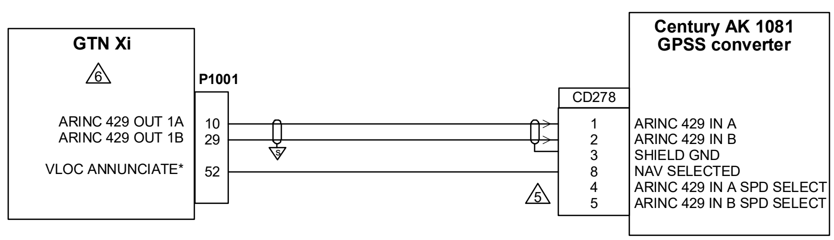
2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED 3.0 INCHES. REFER TO SECTION 3.6.12.3.

4 THE CENTURY IV REQUIRES AN ISOLATION DIODE TO BE INSTALLED ON THE LOCALIZER SWITCHING INPUT AS SHOWN BELOW. THE ILS/GPS APPROACH OUTPUT MUST BE CONNECTED TO THE LOC SWITCH 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.



5 INSTALL JUMPER AS REQUIRED TO SET AK 1081 ARINC 429 SPEED TO MATCH THE GTN Xi OUTPUT SETTING. REFER TO MANUFACTURER'S DOCUMENTATION FOR ADDITIONAL DETAILS.



6 THE GTN Xi CAN BE CONFIGURED TO ANY GPS ARINC 429 OUTPUT TO PROVIDE GPSS DATA. REFER TO SECTION 5.4.3.1 FOR CONFIGURATION SETTINGS.

7 REFER TO MANUFACTURER'S DOCUMENTATION FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

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

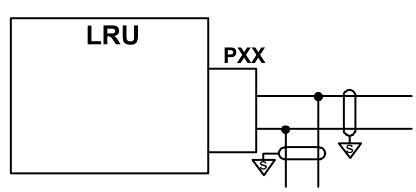
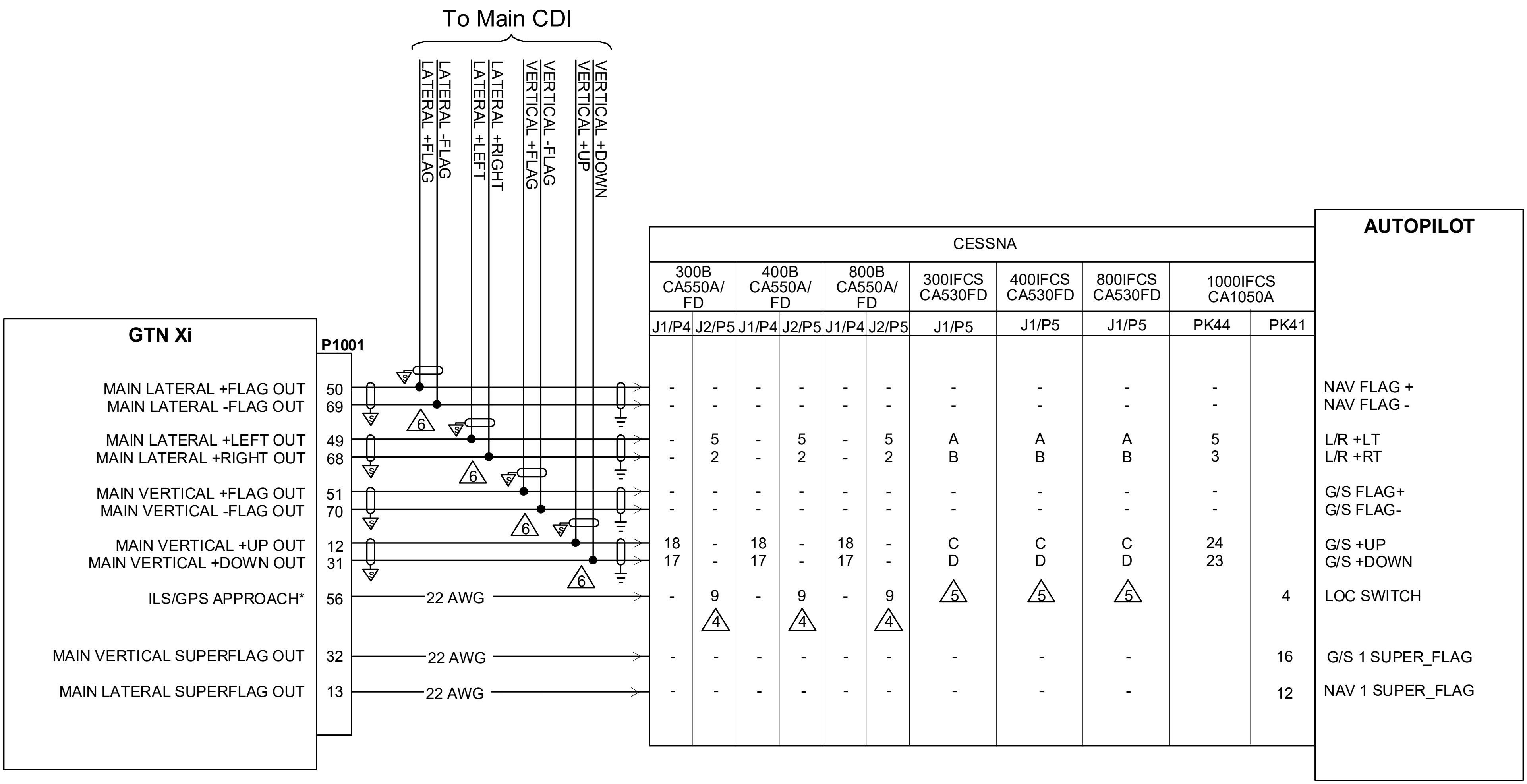


Figure B-32 GTN Xi - Century Autopilot Interconnect
Sheet 2 of 2



	300B CA550A/ FD J1/P4	300B CA550A/ FD J2/P5	400B CA550A/ FD J1/P4	400B CA550A/ FD J2/P5	800B CA550A/ FD J1/P4	800B CA550A/ FD J2/P5	300IFCS CA530FD J1/P5	400IFCS CA530FD J1/P5	800IFCS CA530FD J1/P5	1000IFCS CA1050A PK44	1000IFCS CA1050A PK41	AUTOPILOT
50	-	-	-	-	-	-	-	-	-	-		NAV FLAG +
69	-	-	-	-	-	-	-	-	-	-		NAV FLAG -
49	-	5	-	5	-	5	A	A	A	5		L/R +LT
68	-	2	-	2	-	2	B	B	B	3		L/R +RT
51	-	-	-	-	-	-	-	-	-	-		G/S FLAG+
70	-	-	-	-	-	-	-	-	-	-		G/S FLAG-
12	18	-	18	-	18	-	C	C	C	24		G/S +UP
31	17	-	17	-	17	-	D	D	D	23		G/S +DOWN
56	-	9 (4)	-	9 (4)	-	9 (4)	(5)	(5)	(5)		4	LOC SWITCH
32	-	-	-	-	-	-	-	-	-		16	G/S 1 SUPER_FLAG
13	-	-	-	-	-	-	-	-	-		12	NAV 1 SUPER_FLAG

Figure B-33 GTN Xi - Cessna Autopilot Interconnect
Sheet 1 of 2

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED 3.0 INCHES. REFER TO SECTION 3.6.12.3.

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

5 REFER TO MANUFACTURER'S DOCUMENTATION FOR CORRECT CONNECTION OF THE VOR/LOC RELAY USING AN ACTIVE LOW INPUT.

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

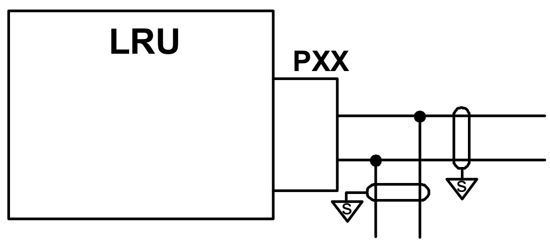


Figure B-33 GTN Xi - Cessna Autopilot Interconnect
Sheet 2 of 2

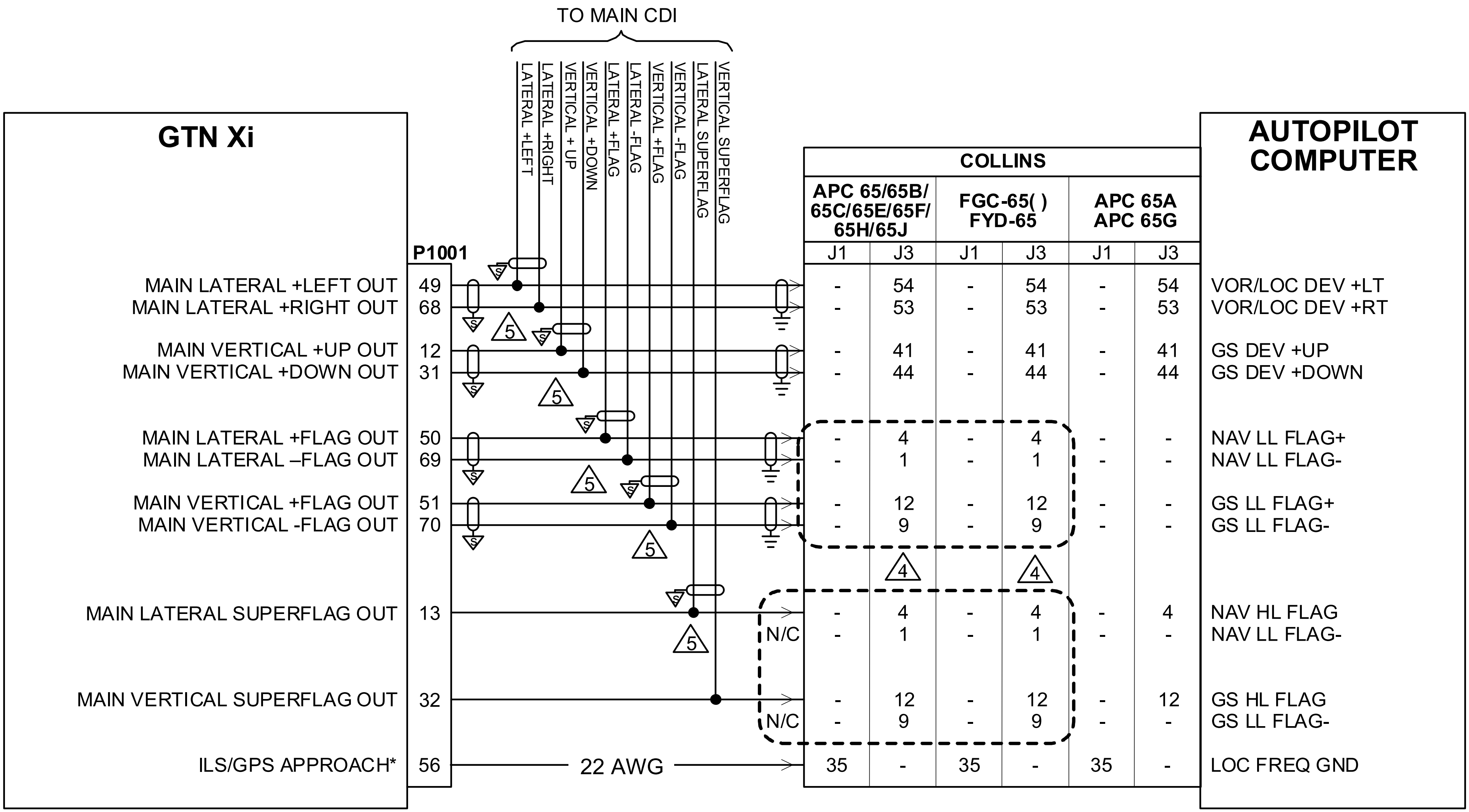


Figure B-34 GTN Xi - Collins Autopilot Interconnect
Sheet 1 of 2

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED 3.0 INCHES. REFER TO SECTION 3.6.12.3.

4 CONNECT EITHER THE LOW-LEVEL FLAGS OR THE SUPERFLAGS. DO NOT CONNECT BOTH SETS OF FLAGS IN A PARTICULAR INSTALLATION. IF ONE SET OF FLAGS IS ALREADY WIRED, USE THE PRE-EXISTING FLAG WIRING TO THE GTN Xi.

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

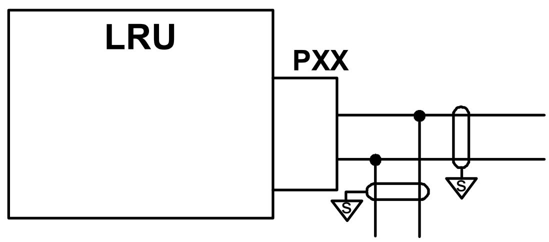
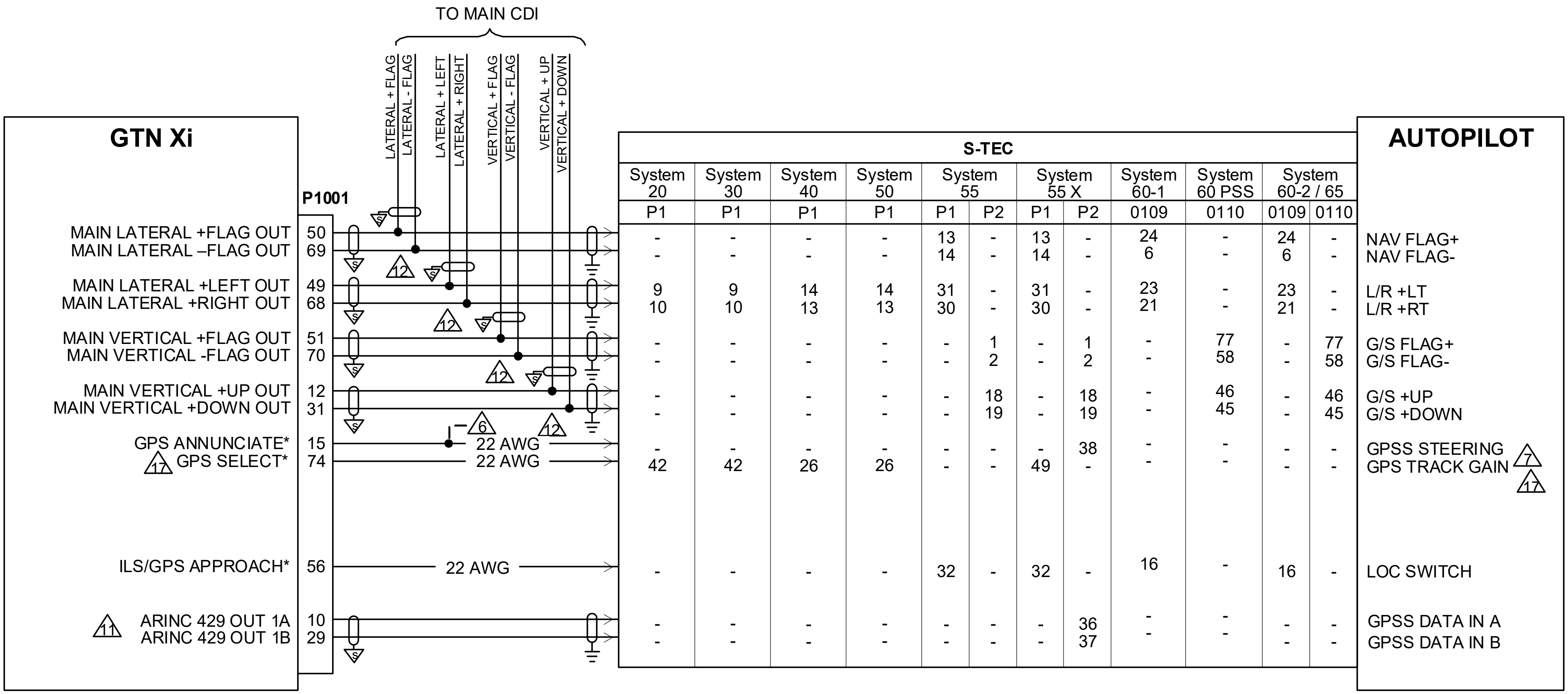


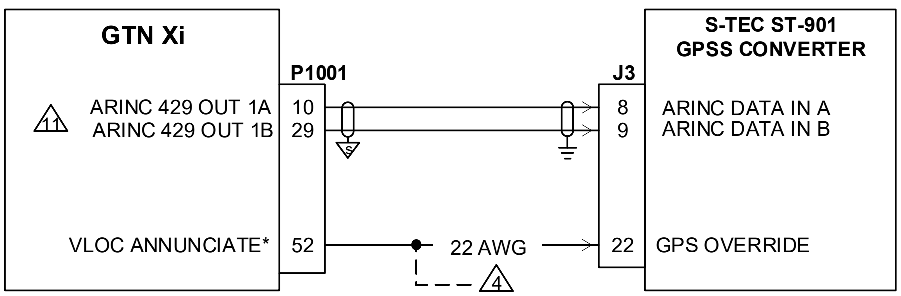
Figure B-34 GTN Xi - Collins Autopilot Interconnect
Sheet 2 of 2



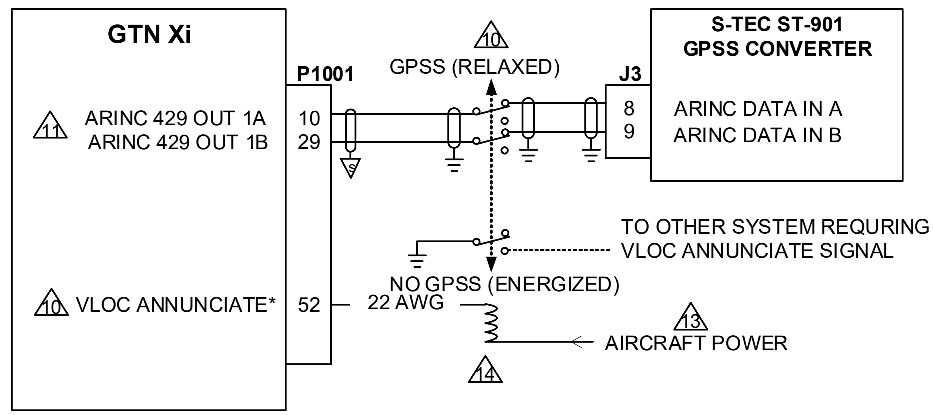
AUTOPILOT	System 20 P1	System 30 P1	System 40 P1	System 50 P1	System 55 P1	System 55 P2	System 55 X P1	System 55 X P2	System 60-1 0109	System 60 PSS 0110	System 60-2 / 65 0109	System 60-2 / 65 0110
NAV FLAG+	-	-	-	-	13	-	13	-	24	-	24	-
NAV FLAG-	-	-	-	-	14	-	14	-	6	-	6	-
L/R +LT	9	9	14	14	31	-	31	-	23	-	23	-
L/R +RT	10	10	13	13	30	-	30	-	21	-	21	-
G/S FLAG+	-	-	-	-	-	1	-	1	-	77	-	77
G/S FLAG-	-	-	-	-	-	2	-	2	-	58	-	58
G/S +UP	-	-	-	-	-	18	-	18	-	46	-	46
G/S +DOWN	-	-	-	-	-	19	-	19	-	45	-	45
GPSS STEERING	-	-	-	-	-	-	-	38	-	-	-	-
GPS TRACK GAIN	42	42	26	26	-	-	49	-	-	-	-	-
LOC SWITCH	-	-	-	-	32	-	32	-	16	-	16	-
GPSS DATA IN A	-	-	-	-	-	-	-	36	-	-	-	-
GPSS DATA IN B	-	-	-	-	-	-	-	37	-	-	-	-

Figure B-35 GTN Xi - S-TEC Interconnect
Sheet 1 of 4

S-TEC ST-901 GPSS CONVERTER CONNECTION 8

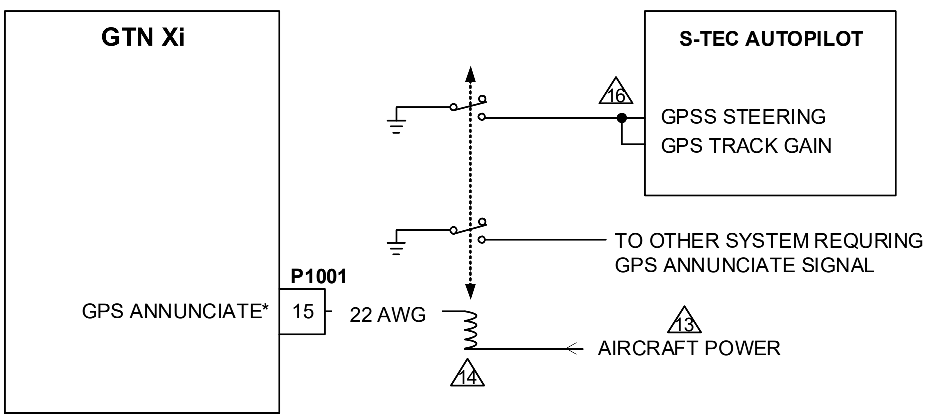


S-TEC ST-901 GPSS CONVERTER CONNECTION 9



CONNECTION TO OTHER SYSTEMS

GPS ANNUNCIATE



VLOC ANNUNCIATE

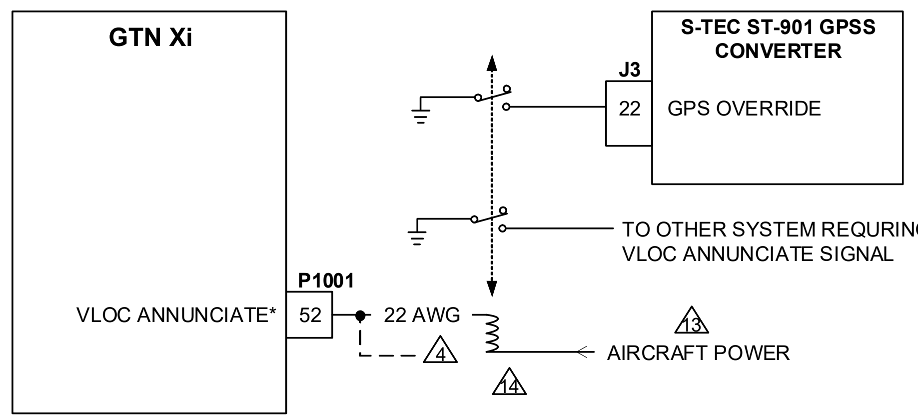


Figure B-35 GTN Xi - S-TEC Interconnect
Sheet 2 of 4

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT THE GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER SHIELD GROUNDS TO AIRCRAFT GROUND WITH AS SHORT A CONDUCTOR AS PRACTICAL.

4 IF VLOC ANNUNCIATE SIGNAL IS USED ONLY BY AUTOPILOT, THIS MAY BE CONNECTED DIRECTLY. IF VLOC ANNUNCIATE SIGNAL IS REQUIRED BY OTHER SYSTEMS, CONNECT AS SHOWN IN ABOVE FIGURE LABELED “CONNECTION TO OTHER SYSTEMS.”

5 CONNECT OTHER PINS THAT ARE NOT SHOWN IN ACCORDANCE WITH THE MANUFACTURER’S INSTRUCTIONS.

6 IF GPS ANNUNCIATE SIGNAL IS USED ONLY BY AUTOPILOT, THIS MAY BE CONNECTED DIRECTLY. IF GPS ANNUNCIATE SIGNAL IS REQUIRED BY OTHER SYSTEMS (E.G., CDI, REMOTE ANNUNCIATOR), CONNECT AS SHOWN IN ABOVE FIGURE LABELED “CONNECTION TO OTHER SYSTEMS.”

7 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).

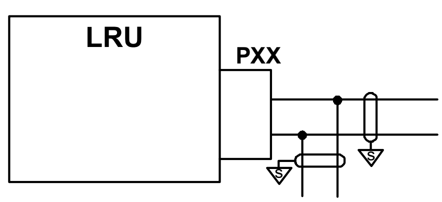
8 FOR CONVERTERS 01278-() S/N 600A AND ABOVE.

9 FOR CONVERTERS 01278-() S/N 599 AND BELOW.

10 ONLY REQUIRED FOR GTN 650Xi/750Xi.

11 ALL GAMA FORMAT CONFIGURATIONS OF THE GPS ARINC 429 OUTPUT PROVIDE DATA REQUIRED BY THE AUTOPILOT FOR GPSS. THE ARINC 429 CONFIGURATION CANNOT BE USED. REFER TO SECTION 5.4.3.1 FOR CONFIGURATION SETTINGS.

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



13 CONNECT TO AUTOPILOT CIRCUIT BREAKER FOR AIRCRAFT POWER.

14 AN ACCEPTABLE RELAY IS LEACH P/N WN460-( )( )( ).

Figure B-35 GTN Xi - S-TEC Interconnect
Sheet 3 of 4

NOTES CONTINUED

15 NOT USED.

16 REFER TO SHEET 1 OF THIS FIGURE FOR PINOUT INFORMATION.

17 THE AUTOPILOT GPS TRACK GAIN INPUT MAY BE CONNECTED TO THE GTN XI GPS ANNUNCIATE OUTPUT (P1001-15) INSTEAD OF THE GPS SELECT OUTPUT (P1001-74). THIS IS NOT RECOMMENDED FOR NEW INSTALLATIONS.

Figure B-35 GTN Xi - S-TEC Interconnect
Sheet 4 of 4

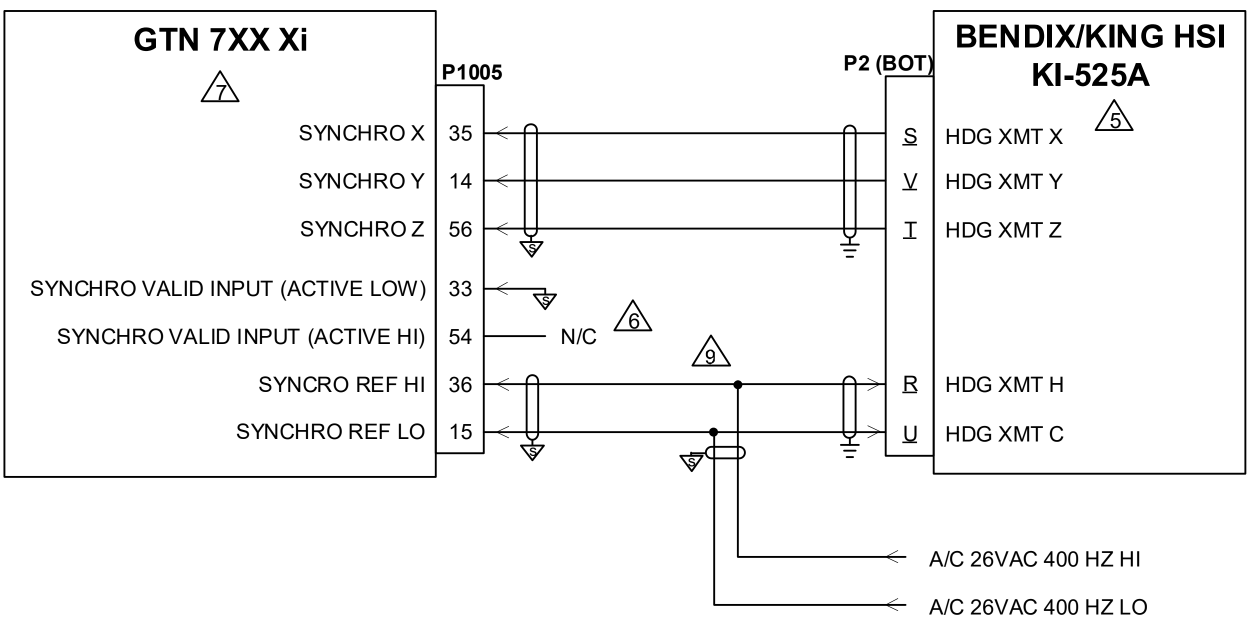


Figure B-36 GTN 7XX Xi - Heading Synchro Interconnect
Sheet 1 of 2

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED 3.0 INCHES. REFER TO SECTION 3.6.12.3.

4 REFER TO MANUFACTURER'S DOCUMENTATION FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

5 A DIRECTIONAL GYRO OR HSI BOOTSTRAP OUTPUT MAY BE USED TO PROVIDE SYNCHRO HEADING TO THE GTN 7XX Xi. IN A DUAL GTN Xi INSTALLATION, THE GTN 7XX Xi WILL CROSSFILL SYNCHRO HEADING TO THE OTHER GTN Xi.

6 **EITHER** THE HDG VALID IN (ACTIVE HI) **OR** HDG VALID IN (ACTIVE LO) SHOULD BE CONNECTED. DO NOT CONNECT BOTH OF THESE INPUTS TO THE SYNCHRO.

7 REFER TO SECTION 5.4.3.10 FOR CONFIGURATION SETTINGS. THE SYNCHRO HEADING INPUT MUST BE CONFIGURED AS "CONNECTED."

8 LOWER CASE LETTERS ARE SHOWN AS UNDERLINED UPPERCASE LETTERS.

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

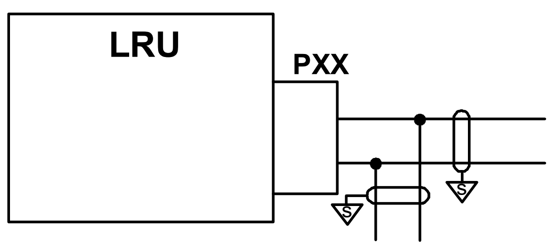
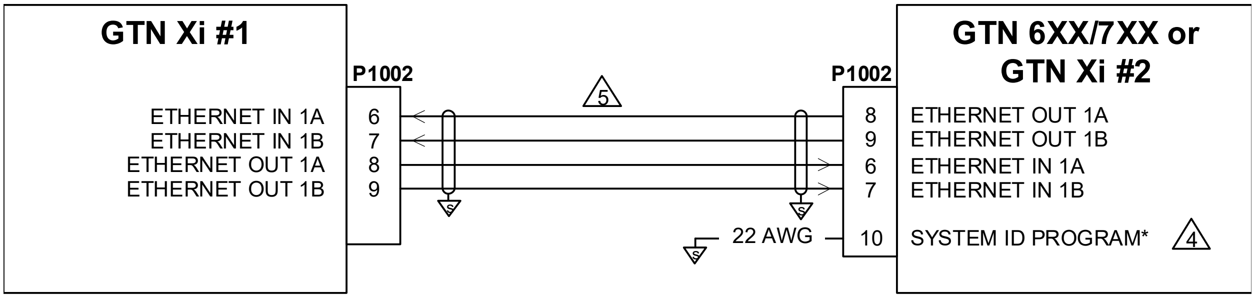


Figure B-36 GTN 7XX Xi - Heading Synchro Interconnect
Sheet 2 of 2



NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

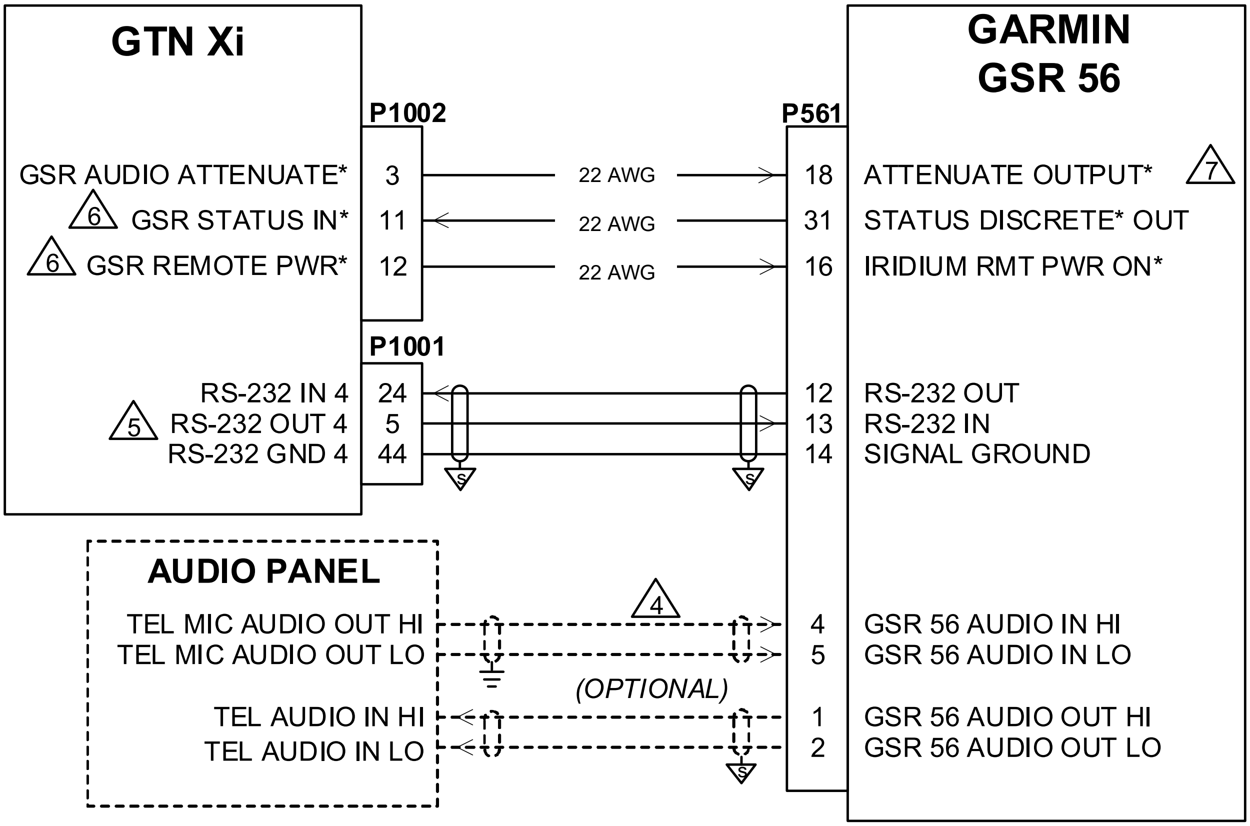
2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES.

4 GROUNDING THIS PROGRAM PIN TO THE CONNECTOR BACKSHELL ALLOWS THE SYSTEM TO IDENTIFY ITSELF AS GTN 2.

5 USE AIRCRAFT GRADE CATEGORY 5 ETHERNET CABLE. REFER TO SECTION 3.5.2.2 FOR PART NUMBERS.

Figure B-37 GTN Xi - GTN Xi or GTN 6XX/7XX Crossfill Interconnect



NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT THE SHIELD GROUNDS AT THE GSR 56 TO ITS CONNECTOR BACKSHELL IN ACCORDANCE WITH GSR 56 INSTALLATION INSTRUCTIONS.

4 OPTIONAL AUDIO CONNECTIONS ARE REQUIRED IF THE PHONE FEATURE OF THE GSR 56 IS UTILIZED.

5 IF THIS RS-232 PORT IS ALREADY USED FOR ANOTHER PURPOSE, ANY RS-232 PORT MAY BE CONNECTED IN LIEU OF THIS PORT. REFER TO SECTION 5.4.3.2 FOR RS-232 SETTINGS.

6 DEFAULT DISCRETE FUNCTION SHOWN FOR GSR STATUS AND GSR REMOTE PWR. GSR AUDIO ATTENUATE ON THE GTN Xi MUST BE CONFIGURED TO AN AVAILABLE DISCRETE OUTPUT. DISCRETE CONFIGURATION IS IN SECTION 5.

7 ATTENUATE OUTPUT* IS NOT AVAILABLE ON GSR 56 (P/N 011-01706-00).

Figure B-38 GTN Xi - GSR 56 Interconnect

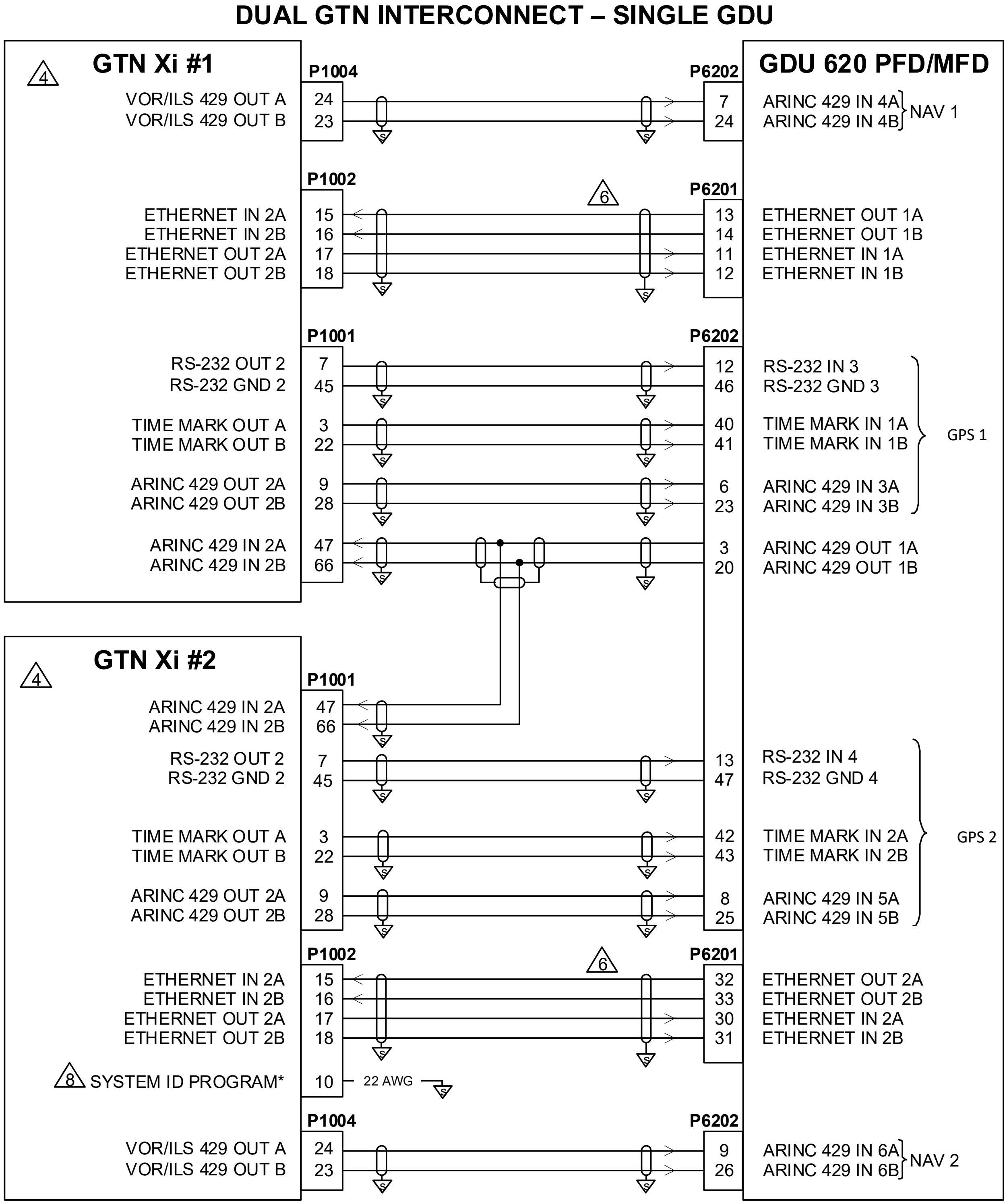


Figure B-39 GTN Xi - GDU 620 Interconnect
Sheet 1 of 2

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 IF ONLY ONE GTN Xi IS INSTALLED, CONNECT AS SHOWN FOR GTN Xi #1. FOR GTN Xi WITH SOFTWARE PRIOR TO v5.00, GROUNDING THE SYSTEM ID PROGRAM PIN TO THE CONNECTOR BACKSHELL ALLOWS THE SYSTEM TO IDENTIFY ITSELF AS GTN 2.

4 IF A TAWS-EQUIPPED GTN Xi UNIT IS INSTALLED, OR TERRAIN ALERTING IS ENABLED, IT **MUST** BE CONNECTED AS GTN Xi #1 – ONLY TAWS ANNUNCIATIONS FROM GTN 1 ARE DISPLAYED ON THE PFD.

5 REFER TO THE GDU 620 INSTALLATION MANUAL FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

6 USE AIRCRAFT GRADE CATEGORY 5 ETHERNET CABLE. REFER TO SECTION 3.5.2.2 FOR PART NUMBERS.

7 CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD LEADS MUST BE LESS THAN 3.0 INCHES.

8 THIS PIN IS NOT REQUIRED. DEFAULT DISCRETE FUNCTION FOR THIS PIN IS SHOWN. THE SYSTEM ID FUNCTION IS CONFIGURABLE AS DESCRIBED IN SECTION 5.4.3.10.

Figure B-39 GTN Xi - GDU 620 Interconnect
Sheet 2 of 2

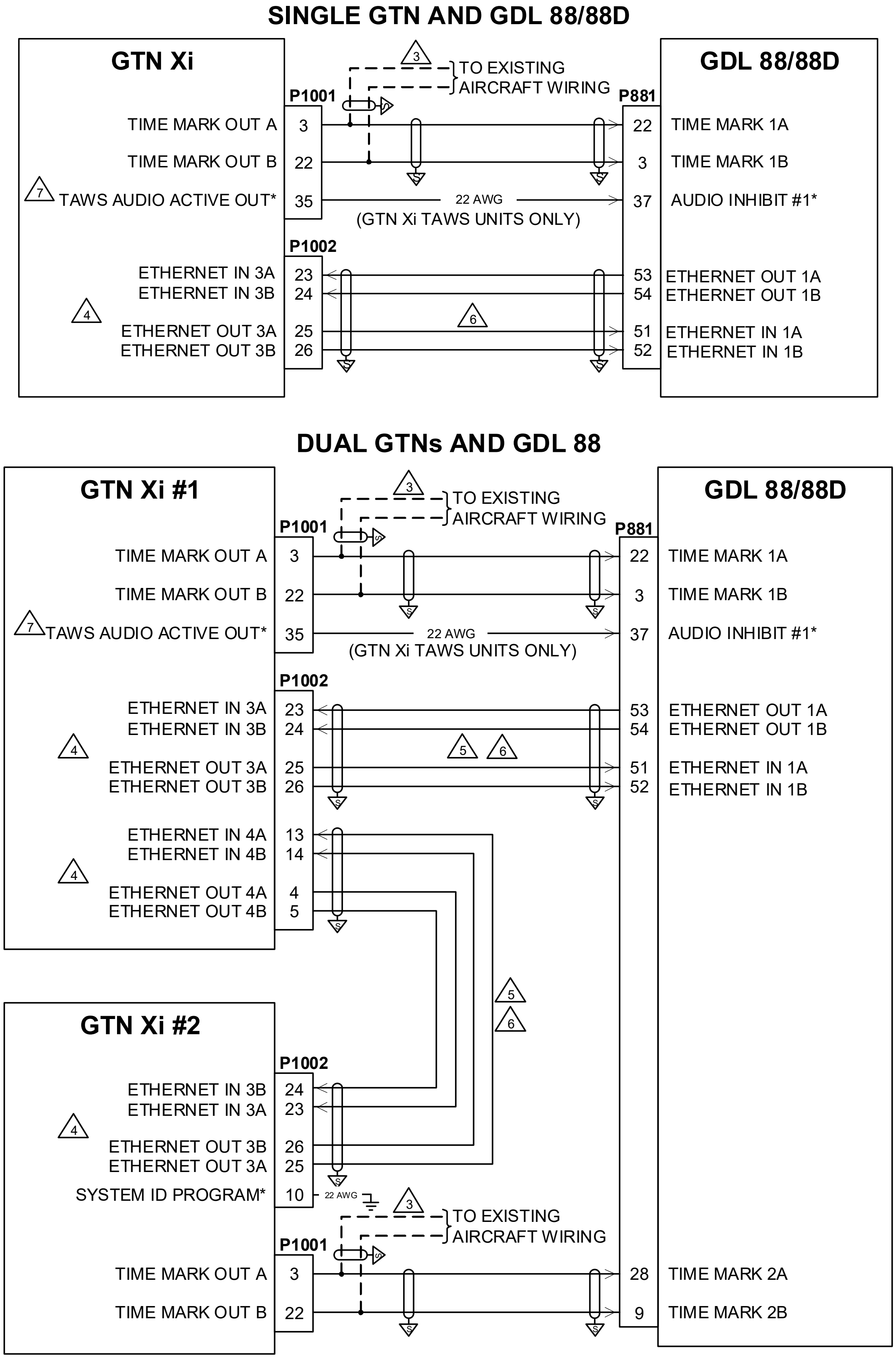


Figure B-40 GTN Xi - GDL 88/88D Interconnect
Sheet 1 of 2

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 IF GTN Xi TIME MARK OUTPUT IS ALREADY CONNECTED TO AIRCRAFT WIRING, SPLICE INTO THIS WIRING FOR THE CONNECTION TO THE GDL 88.

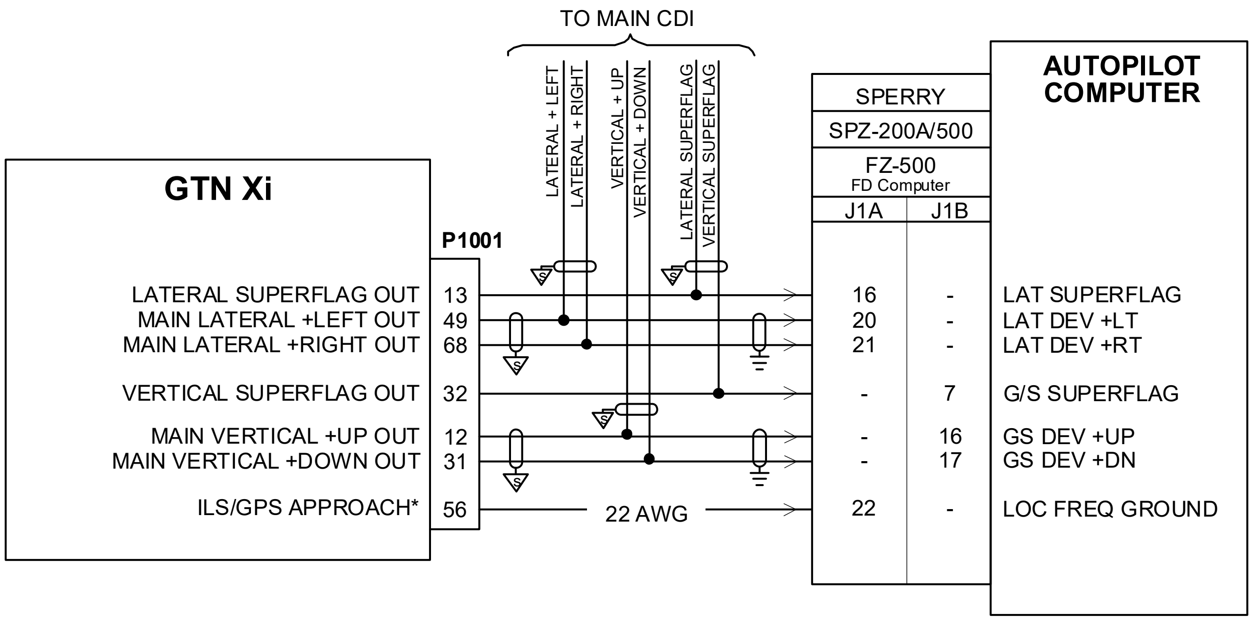
4 IF ETHERNET PORT IS ALREADY USED FOR ANOTHER PURPOSE, ANY ETHERNET PORT MAY BE CONNECTED. REFER TO APPENDIX A FOR PINOUT INFORMATION.

5 CONNECTION MAY BE MADE TO GTN Xi #2 IN LIEU OF GTN Xi #1.

6 USE AIRCRAFT GRADE CATEGORY 5 ETHERNET CABLE. REFER TO SECTION 3.5.2.2 FOR PART NUMBERS.

7 DEFAULT DISCRETE FUNCTION FOR THIS PIN IS SHOWN. THIS PIN FUNCTION IS CONFIGURABLE AS DESCRIBED IN SECTION 5.

Figure B-40 GTN Xi - GDL 88/88D Interconnect
Sheet 2 of 2



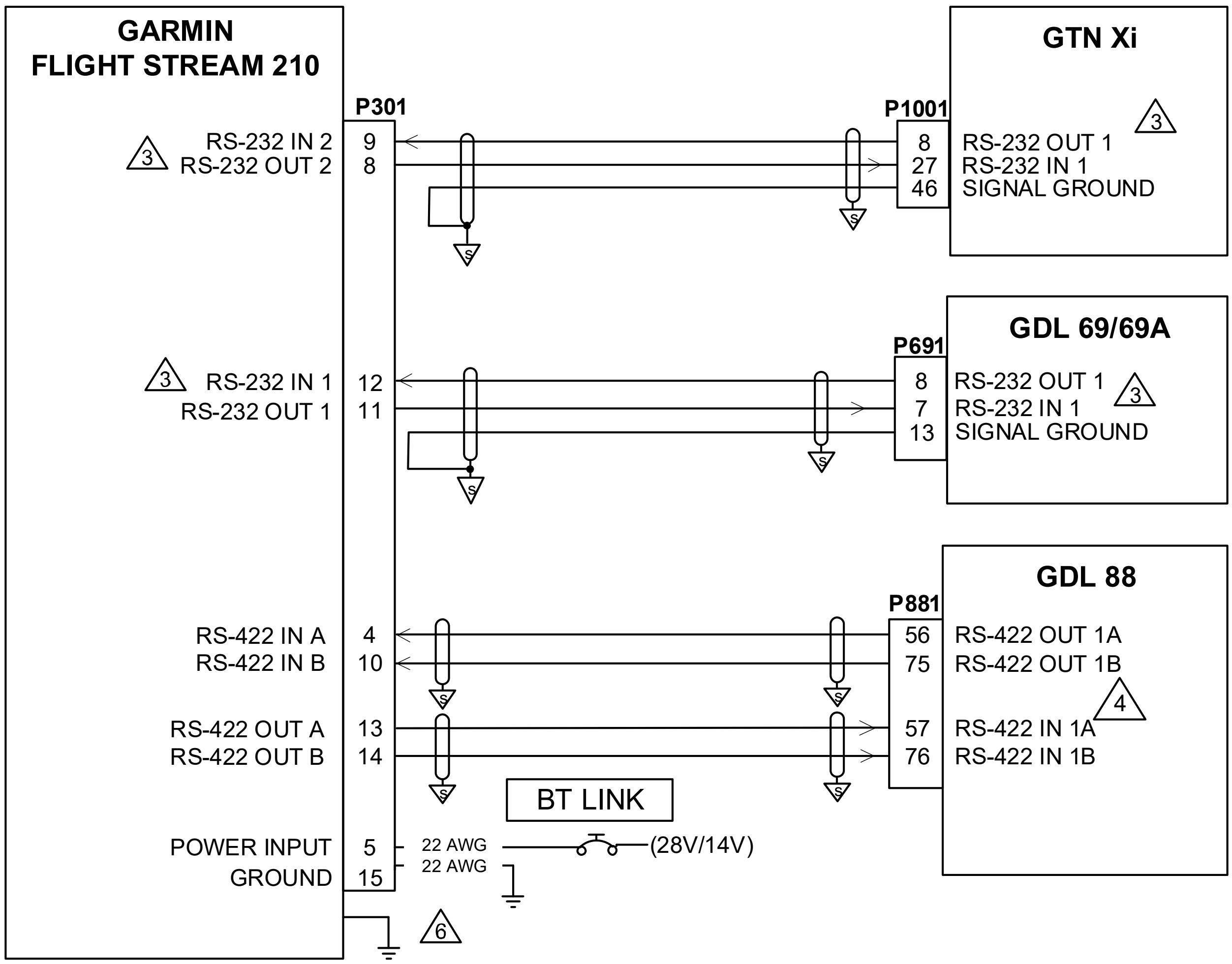
NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 AT THE GTN Xi, CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER SHIELD GROUNDS TO AIRCRAFT GROUND WITH AS SHORT A CONDUCTOR AS PRACTICAL

Figure B-41 GTN Xi - Sperry Autopilot Interconnect



NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 ANY RS-232 PORT MAY BE CONNECTED IN LIEU OF THESE PORTS. REFER TO APPLICABLE MANUAL FOR ADDITIONAL DETAILS.

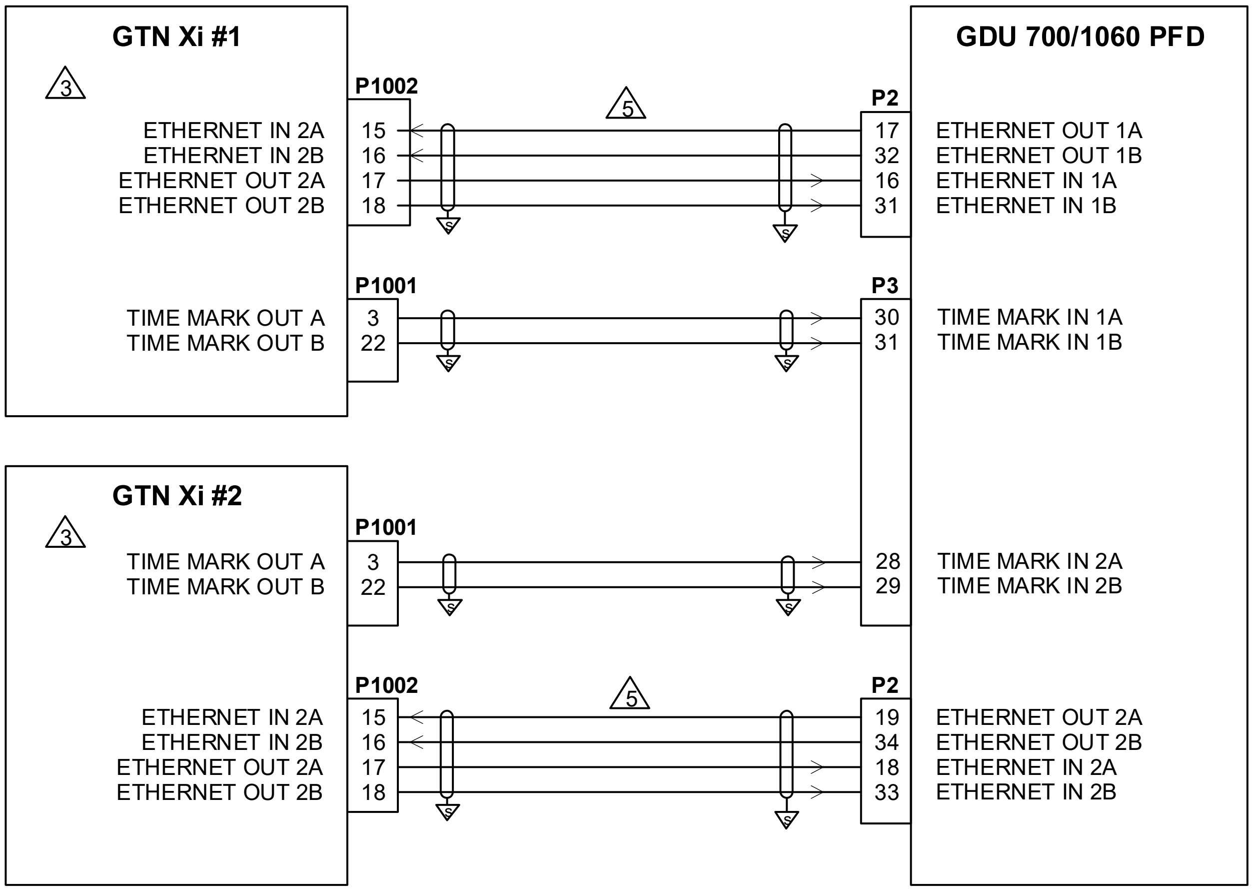
4 ANY RS-422 PORT MAY BE CONNECTED IN LIEU OF THESE PORTS. REFER TO *GDL 88 INSTALLATION MANUAL* (P/N 190-01122-00) FOR ADDITIONAL DETAILS.

5 RS-232 PORT 1 SHOULD BE USED WHEN CONNECTING A GDL 69/69A TO THE FLIGHT STREAM 210.

6 VERIFY THE AIRCRAFT GROUND MEETS BONDING REQUIREMENTS IN SECTION 3.6.6.

Figure B-42 Flight Stream 210 Interconnect

DUAL GTN INTERCONNECT – SINGLE GDU



NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: S SHIELD BLOCK GROUND. AIRFRAME GROUND

3 IF TAWS-EQUIPPED GTN Xi UNIT IS INSTALLED, OR TERRAIN ALERTING ENABLED, IT MUST BE CONNECTED AS GTN #1—ONLY TAWS/TERRAIN ALERTING ANNUNCIATIONS FROM GTN 1 ARE DISPLAYED ON THE PFD.

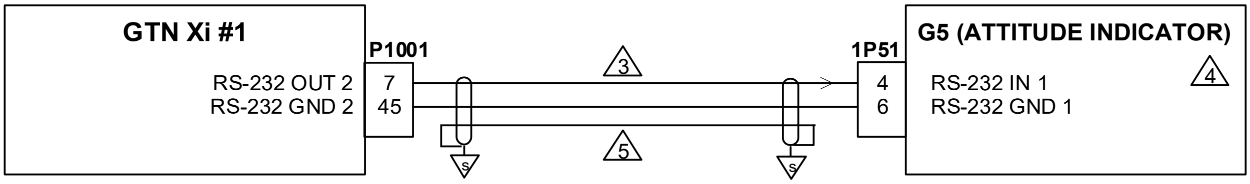
4 REFER TO *G500/G600 TXI PART 23 AML STC INSTALLATION MANUAL* (P/N190-01717-B3) FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

5 USE AIRCRAFT GRADE CATEGORY 5 ETHERNET CABLE. REFER TO SECTION 3.5.2.2 FOR PART NUMBERS.

6 CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD LEADS MUST BE LESS THAN 3.0 INCHES.

Figure B-43 GTN Xi - GDU 700/1060 Interconnect

SINGLE GTN INTERCONNECT – SINGLE G5 ADI w/GPS



SINGLE GTN INTERCONNECT – SINGLE G5 (HSI) w/ GPS/VHF NAVIGATOR

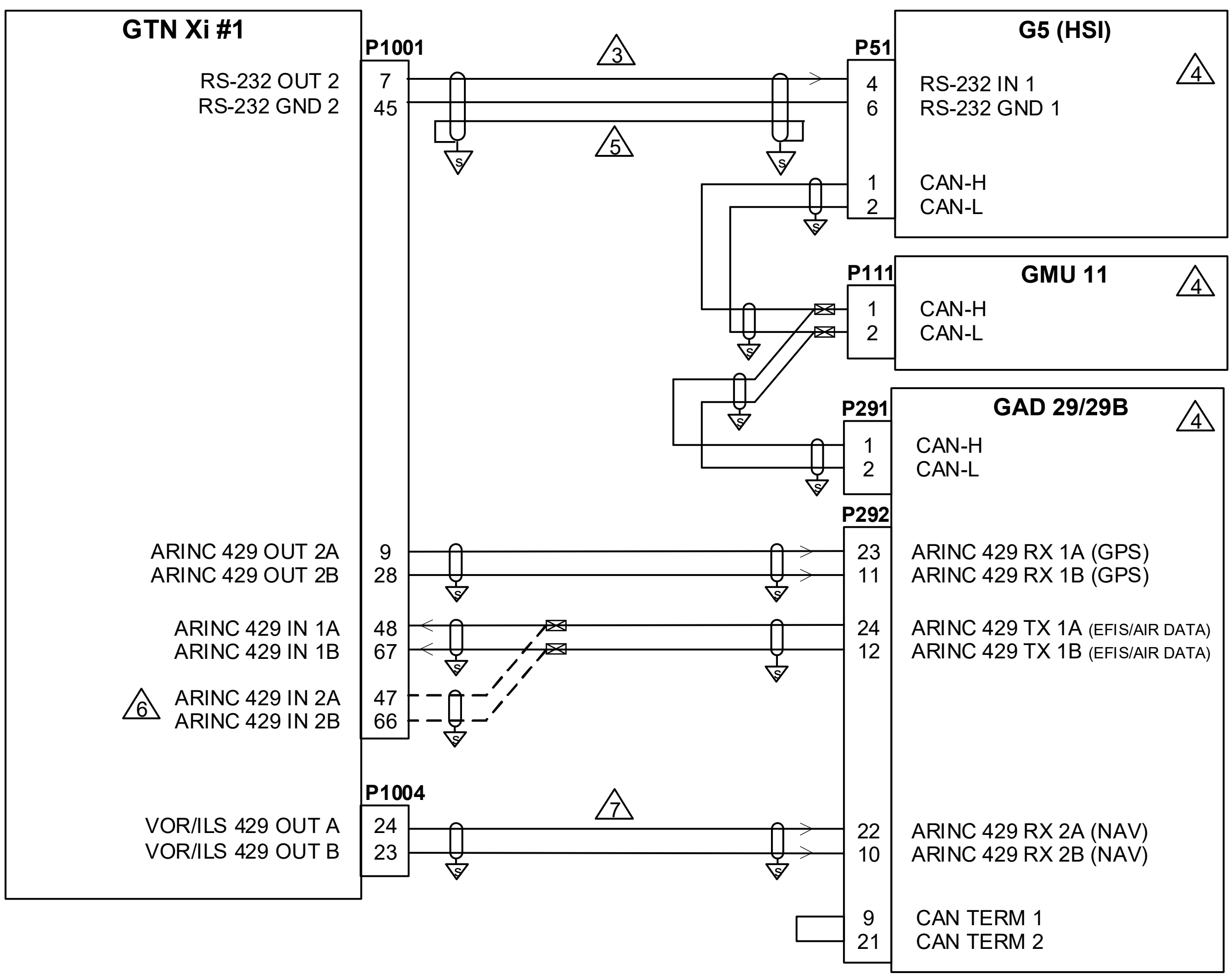


Figure B-44 GTN Xi - G5 Interconnect
Sheet 1 of 2

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND. AIRFRAME GROUND

3 IT IS ACCEPTABLE TO SPLICE WIRES TO EXISTING WIRING.

4 REFER TO *G5 ELECTRONIC FLIGHT INSTRUMENT PART 23 AML STC INSTALLATION MANUAL* (GARMIN P/N 190-01112-10) FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY. CAN BUS MUST BE TERMINATED IN ACCORDANCE WITH THE G5 STC INSTALLATION MANUAL.

5 CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD MUST BE LESS THAN 3.0 INCHES.

6 CONNECTION ONLY REQUIRED WHEN INTERFACING TO A NON-GARMIN AUTOPILOT. SEE THE G5 STC INSTALLATION MANUAL FOR DETAILS.

7 GTN Xi VOR/ILS 429 OUT CONNECTION IS ONLY APPLICABLE WITH GTN 650Xi AND GTN 750Xi.

8 THIS STC DOES NOT APPROVE THE USE OF EXTERNAL CDIs IN CONJUNCTION WITH THE G5 HSI EFI INTERFACED TO THE SAME GTN Xi UNIT.

Figure B-44 GTN Xi - G5 Interconnect
Sheet 2 of 2

GTN INTERCONNECT – GFC 600 (GMC 605)

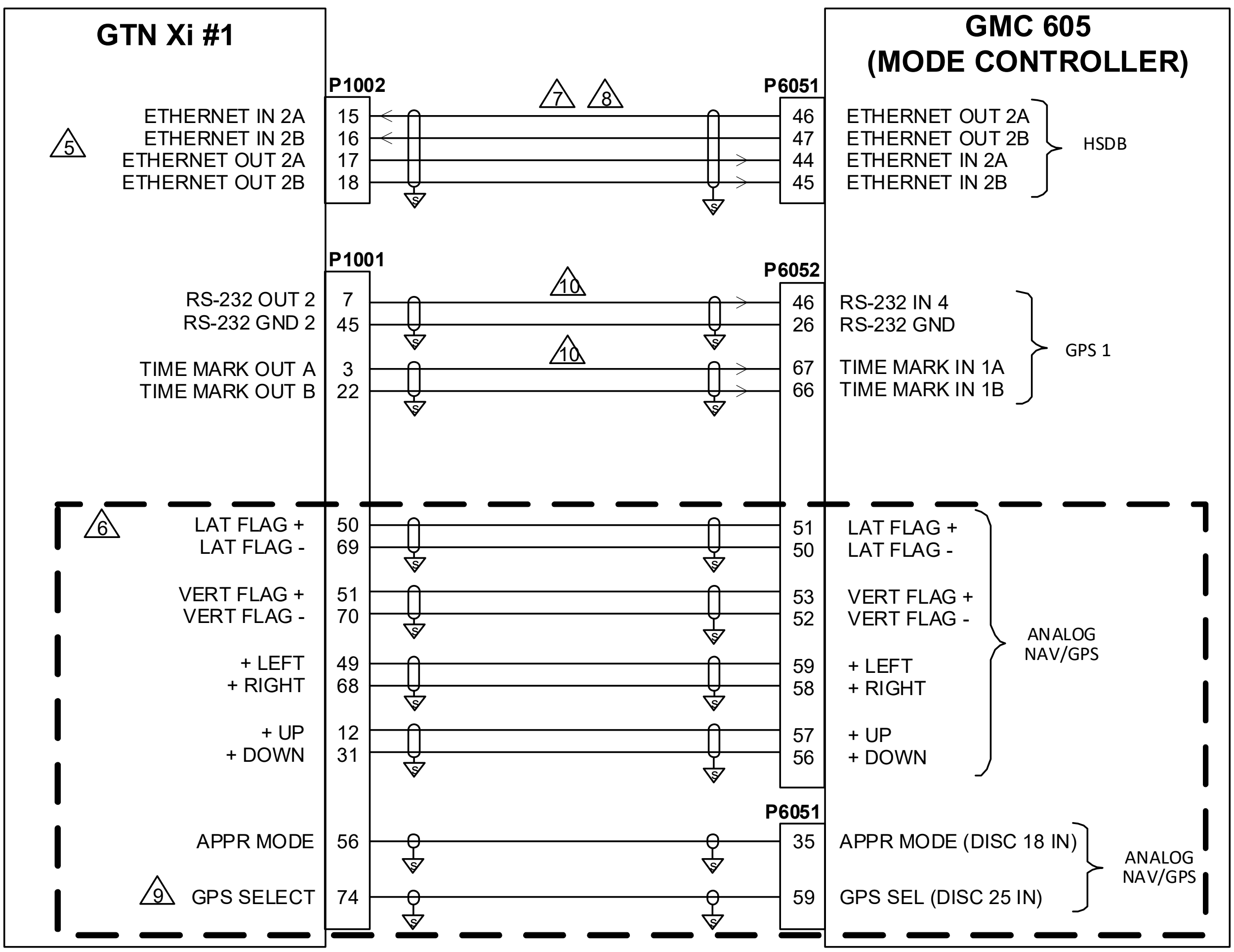


Figure B-45 GTN Xi - GFC 600 Interconnect
Sheet 1 of 2

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND. AIRFRAME GROUND

3 CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD LEADS MUST BE LESS THAN 3.0 INCHES.

4 REFER TO *GFC 600 AFCS PART 23 AML STC INSTALLATION MANUAL* (P/N 190-01937-00) FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

5 IF A SINGLE OR DUAL GTN Xi INSTALLATION WITHOUT A GARMIN GDU, ONLY CONNECT THE ETHERNET (HSDB) WIRING TO GTN Xi #1.

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

7 IF INSTALLATION HAS AN EXISTING NAV 1/NAV 2 SWITCH WITHOUT A GARMIN GDU OR EFIS, DO NOT CONNECT THE ETHERNET (HSDB) WIRING TO THE GTN Xi.

8 USE AIRCRAFT GRADE CATEGORY 5 ETHERNET CABLE. REFER TO SECTION 3.5.2.2 FOR PART NUMBERS.

9 DEFAULT DISCRETE FUNCTION FOR THIS PIN IS SHOWN. THIS PIN FUNCTION IS CONFIGURABLE AS DESCRIBED IN SECTION 5.4.3.14.

10 IT IS ACCEPTABLE TO SPLICE WIRES TO EXISTING WIRES.

Figure B-45 GTN Xi - GFC 600 Interconnect
Sheet 2 of 2

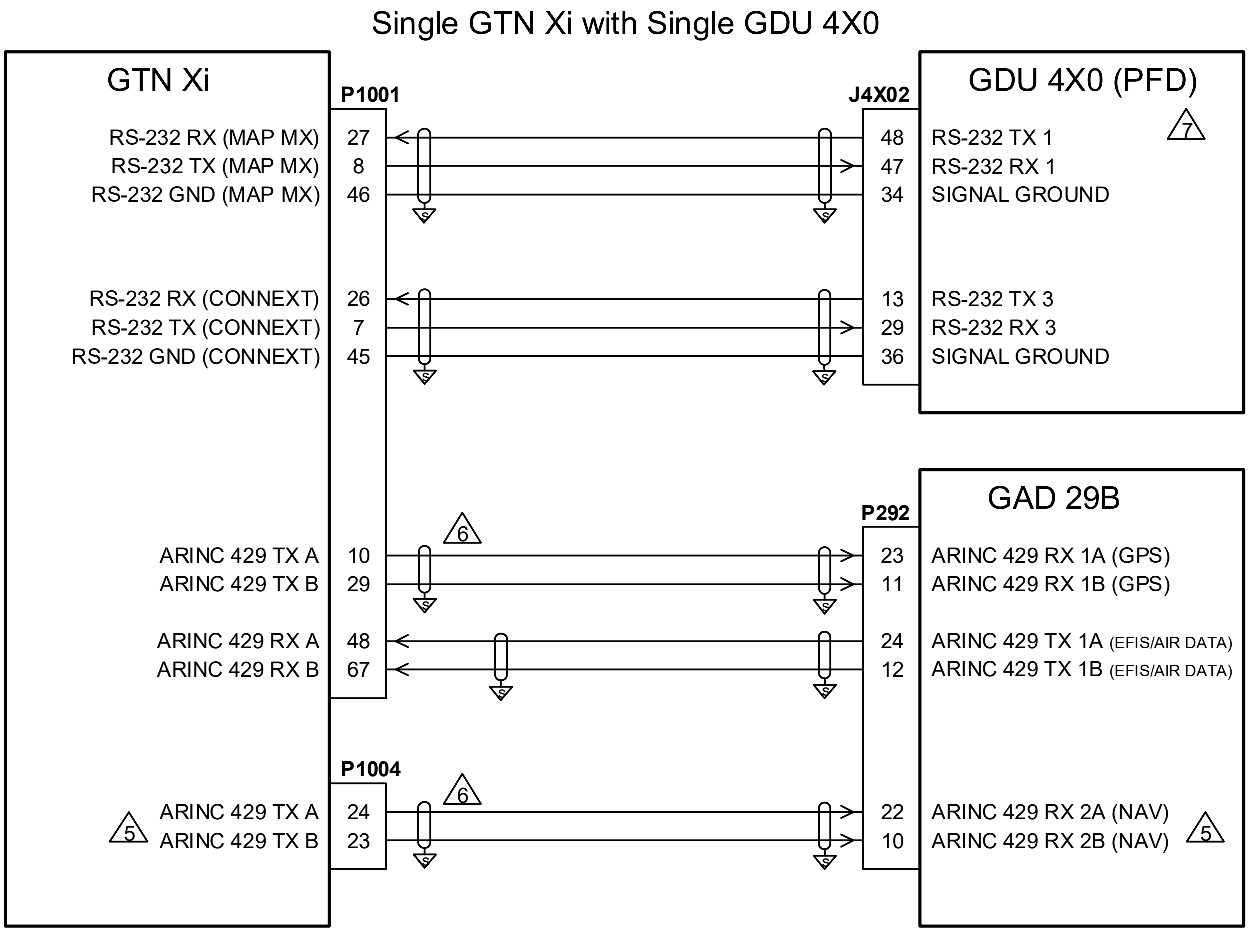


Figure B-46 GTN Xi - G3X Interconnect
Sheet 1 of 4

Dual GTN Xi with Single GDU 4X0 (RS-232 Interfaces)

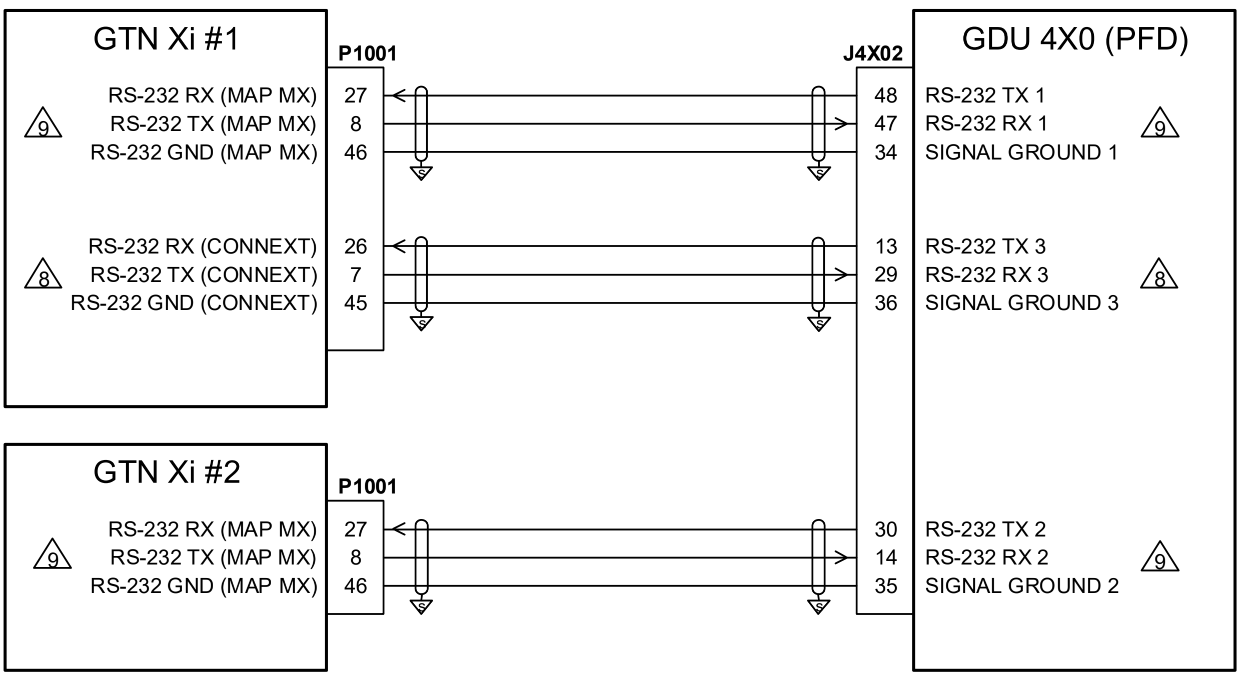


Figure B-46 GTN Xi - G3X Interconnect
Sheet 2 of 4

Dual GTN Xi with Single GDU 4X0 (ARINC 429 Interfaces)

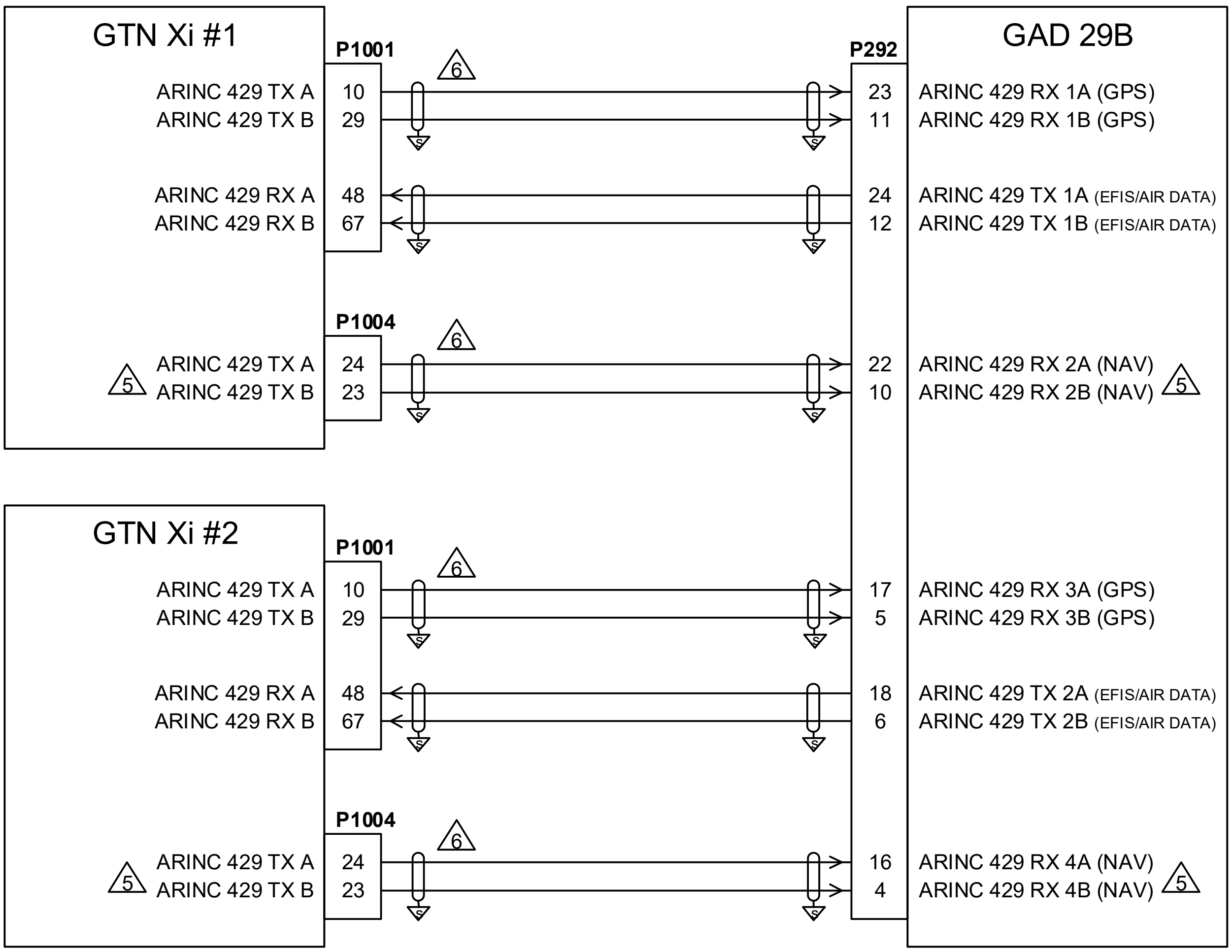


Figure B-46 GTN Xi - G3X Interconnect
Sheet 3 of 4

NOTES

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2. GROUND DESIGNATIONS: SHIELD BLOCK GROUND. AIRFRAME GROUND

3. CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. THE SHIELD LEADS MUST BE LESS THAN 3.0 INCHES.

4. REFER TO G3X TOUCH EFIS PART 23 AML STC INSTALLATION MANUAL (P/N 190-02472-01) FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION AND DUAL DISPLAY INSTALLATION (PFD AND MFD). PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

5. ARINC 429 TX (NAV) CONNECTION NOT APPLICABLE WHEN INTERFACING WITH GTN 625Xi/725Xi UNITS.

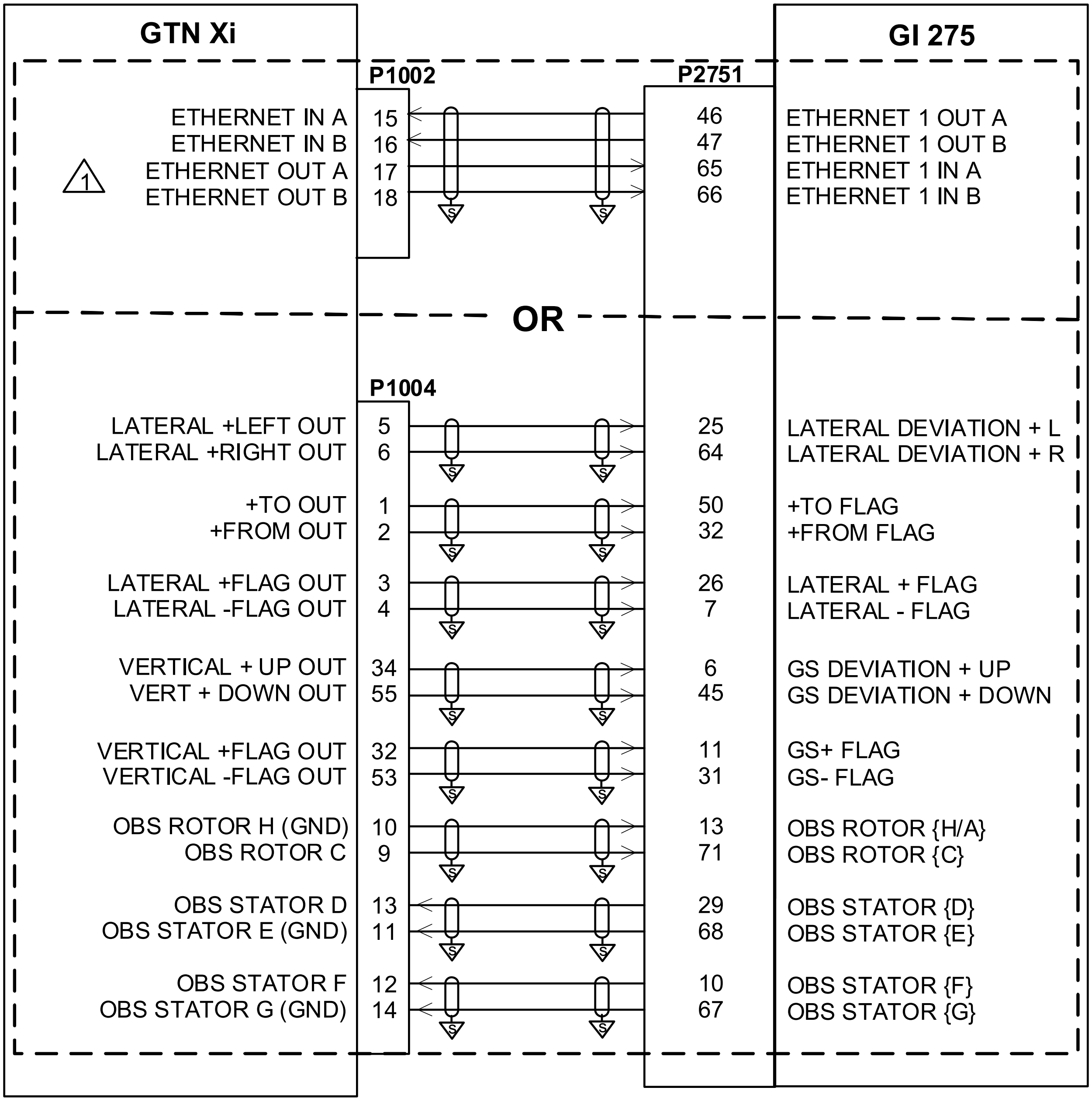
6. IT IS ACCEPTABLE TO SPLICE WIRES TO EXISTING WIRING.

7. THESE RS-232 CONNECTIONS ARE APPLICABLE TO SINGLE AND DUAL GDU INSTALLATIONS WITH A SINGLE GPS/VHF NAVIGATOR INSTALLED.

8. THE CONNEXT BUS MUST BE CONNECTED TO GTN Xi #1.

9. IN DUAL GTN Xi INSTALLATIONS, THE #1 GTN Xi MapMX BUS MUST BE CONNECTED TO A LOWER NUMBERED PORT ON THE PFD THAN THE #2 GTN Xi. ONE CONNECTION IS REQUIRED TO EACH GTN Xi MapMX BUS.

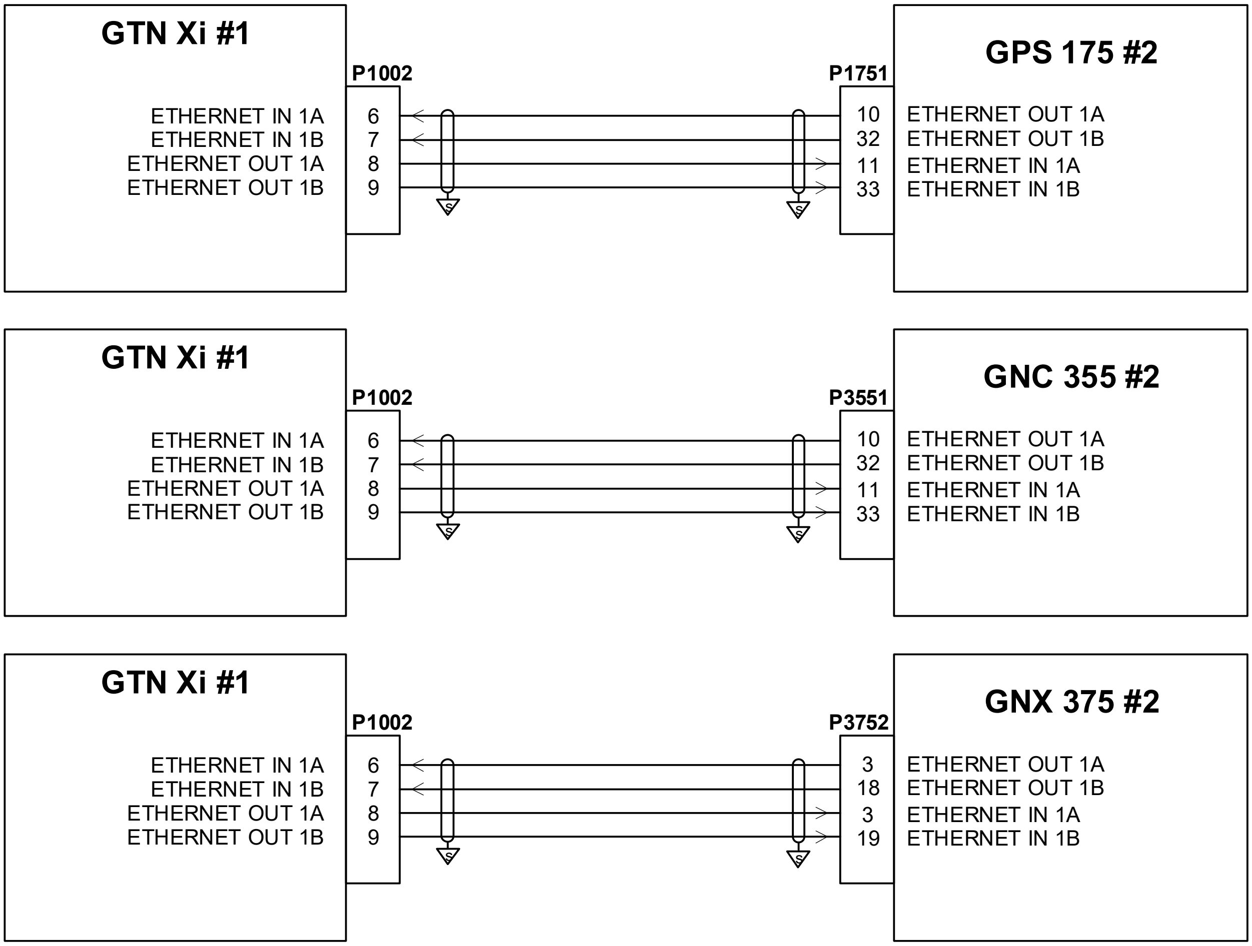
Figure B-46 GTN Xi - G3X Interconnect
Sheet 4 of 4



NOTES

1. HSDB IS THE RECOMMENDED CONNECTION METHOD FOR GI 275 INTERFACE TO ALLOW FULL INTENDED FUNCTIONALITY. ANALOG CDI CONNECTIONS CAN BE USED WITH LIMITED FUNCTIONALITY. DO NOT USE BOTH INTERFACES. REFER TO GI 275 PART 23 AML STC INSTALLATION MANUAL (P/N 190-02246-10) FOR MORE INFORMATION.

Figure B-47 GTN Xi - GI 275 Interconnect



NOTES

1. THIS INTERFACE ALLOWS DATABASE SYNC FUNCTIONS, BUT DOES NOT PROVIDE CROSSFILL FUNCTIONALITY.

Figure B-48 GTN Xi - GPS 175/GNC 355/GNX 375 Interconnect

B.2 GMA 35 Interconnects

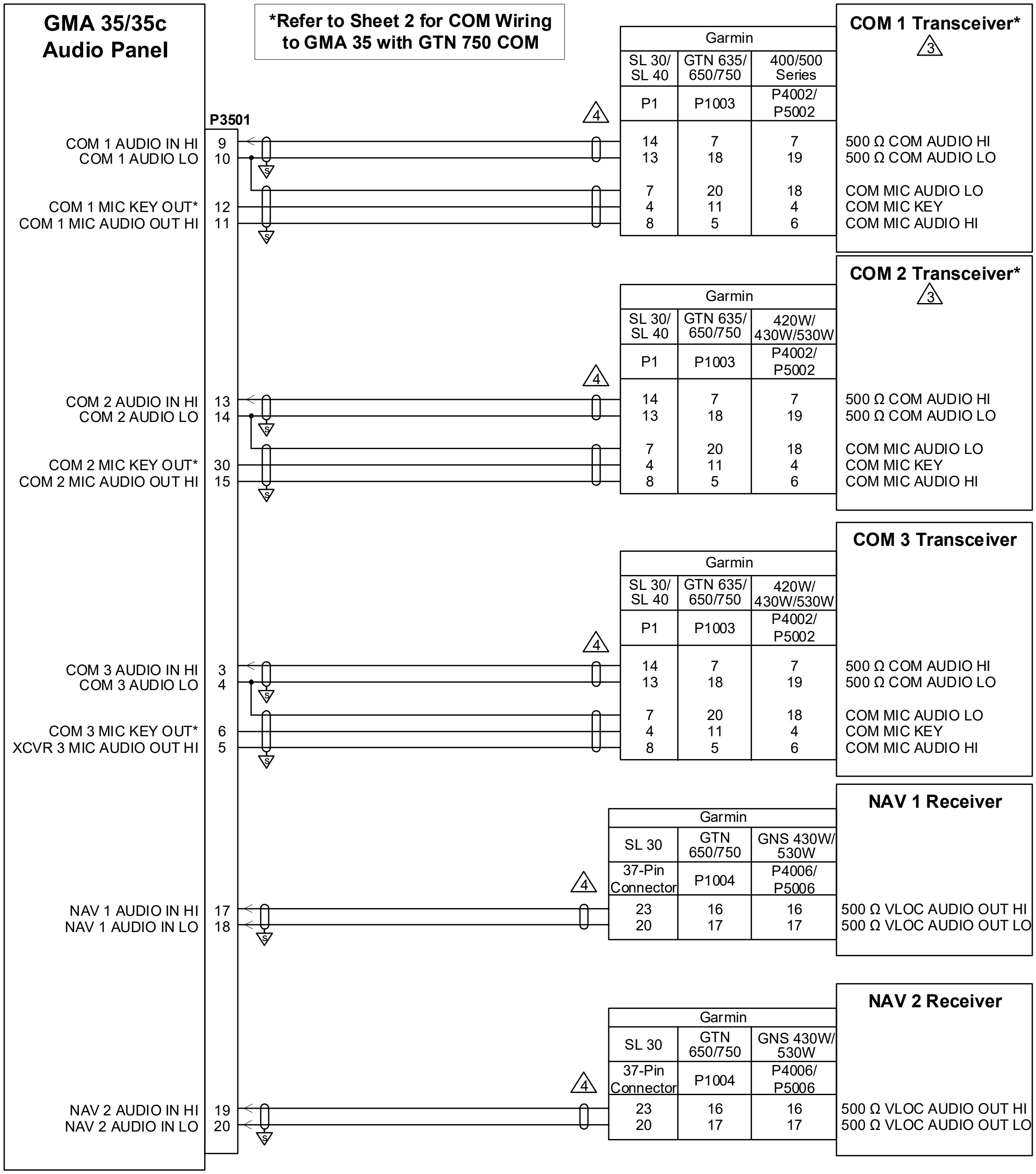
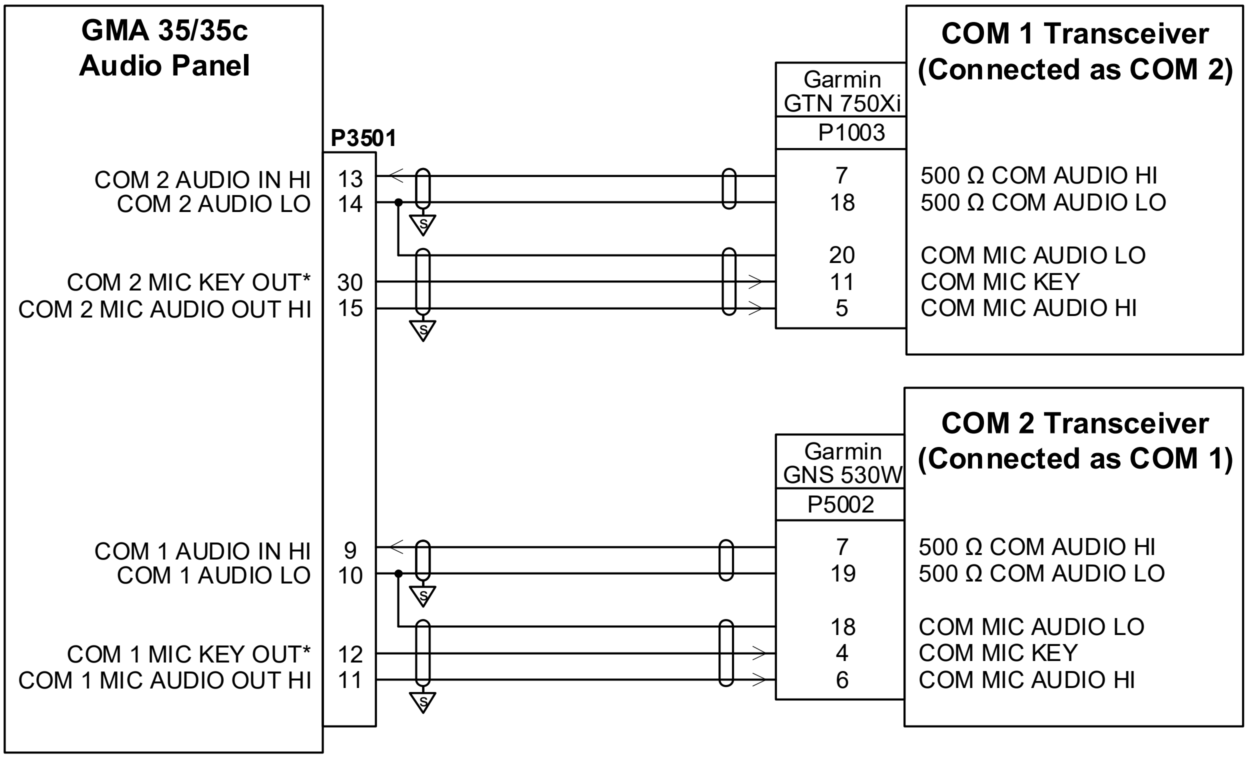


Figure B-49 GMA 35/35c - COM/NAV Interconnect
Sheet 1 of 2

GTN 750Xi Installation with Second COM 3



NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 WHEN A SECOND COM RADIO IS INSTALLED WITH THE GTN 750Xi AND GMA 35, THE GTN 750Xi SHOULD BE CONNECTED TO THE GMA 35 COM 2 PINS AND THE OTHER RADIO SHOULD BE CONNECTED TO COM 1 PINS. THIS WILL PREVENT LOSS OF BOTH COM RADIOS IN THE EVENT THE GTN 750Xi LOSES RS-232 COMMUNICATION WITH THE GMA 35. A FAILSAFE CIRCUIT IN THE GMA 35 CONNECTS THE PILOT'S HEADSET AND MICROPHONE DIRECTLY TO COM 1 IN CASE POWER TO THE GMA 35 OR RS-232 COMMUNICATION WITH THE GTN 750Xi IS LOST. REFER TO SECTION 5.4.6.6.2.2 FOR CONFIGURATION SETTINGS. REFER TO SECTION 3.6.17 FOR ADDITIONAL CONSIDERATIONS FOR FAILSAFE OPERATION.

4 TO PREVENT COUPLED INTERFERENCE AND GROUND LOOPS FROM BEING INJECTED INTO THE AUDIO INPUTS, GROUND THE SHIELDS AT ONLY ONE END. EITHER END OF THE SHIELD MAY BE GROUNDED.

Figure B-49 GMA 35/35c - COM/NAV Interconnect
Sheet 2 of 2

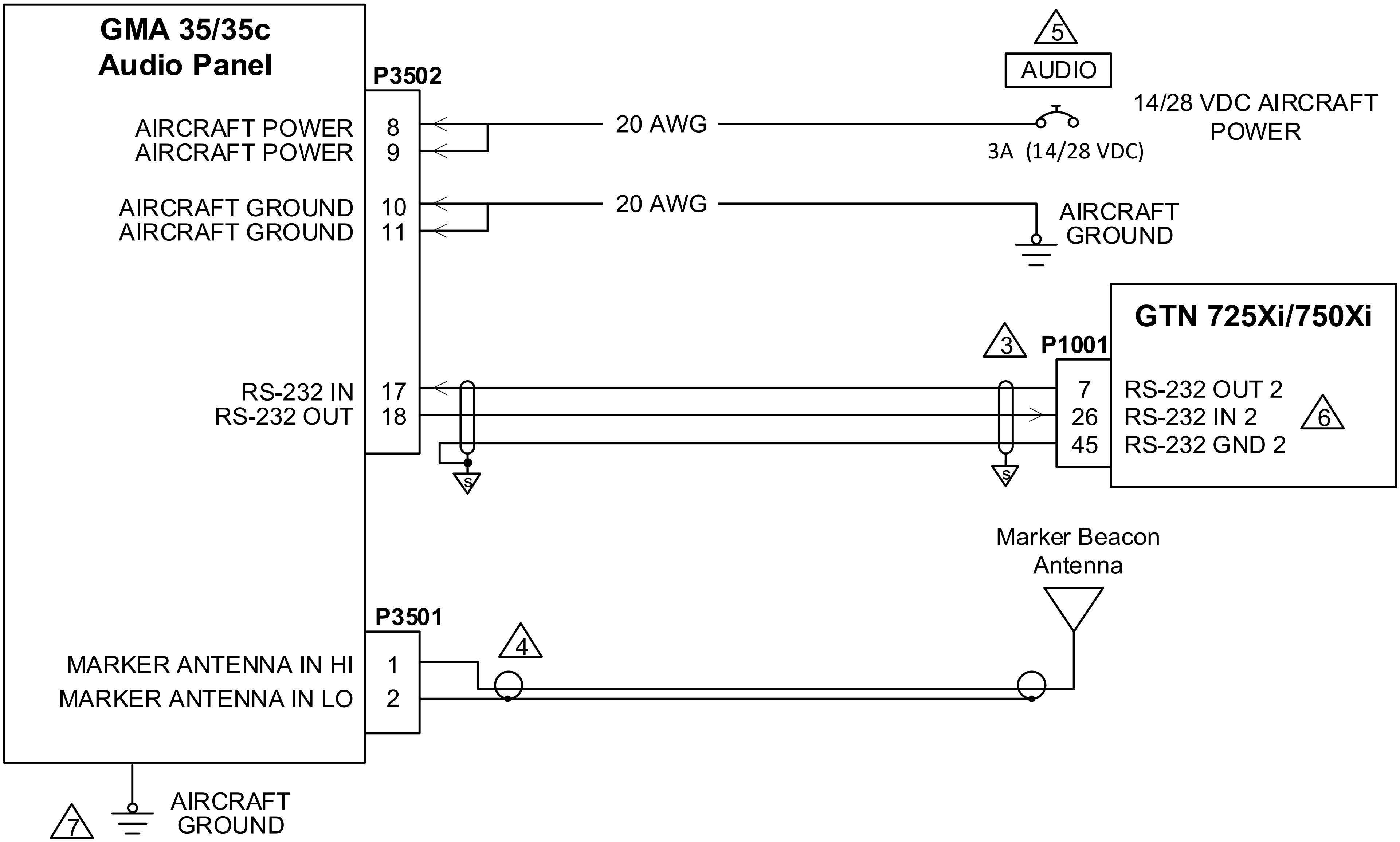


Figure B-50 GMA 35 Power/RS-232/Marker Beacon Interconnect
Sheet 1 of 2

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 THE RS-232 CONNECTION TO THE GTN 725Xi/750Xi IS REQUIRED FOR COMMAND AND CONTROL OF THE AUDIO PANEL FUNCTIONS. THE GTN 7XX Xi IS THE CONTROLLER FOR THE GMA 35.

4 REFER TO SECTION 4.1 FOR INSTRUCTIONS ON WIRING THE ANTENNA CONNECTIONS TO THE GMA 35.

5 THE CIRCUIT BREAKER SHOULD BE LABELED AS SHOWN DIRECTLY ADJACENT TO THE CIRCUIT BREAKER. THE CIRCUIT BREAKER MUST BE READILY ACCESSIBLE TO THE PILOT.

6 IF THIS RS-232 PORT IS ALREADY USED FOR ANOTHER PURPOSE, ANY RS-232 PORT MAY BE CONNECTED IN LIEU OF THIS PORT. REFER TO SECTION 5.4.3.2 FOR RS-232 SETTINGS.

7 VERIFY THE AIRCRAFT GROUND MEETS BONDING REQUIREMENTS IN SECTION 3.6.6.

Figure B-50 GMA 35 Power/RS-232/Marker Beacon Interconnect
Sheet 2 of 2

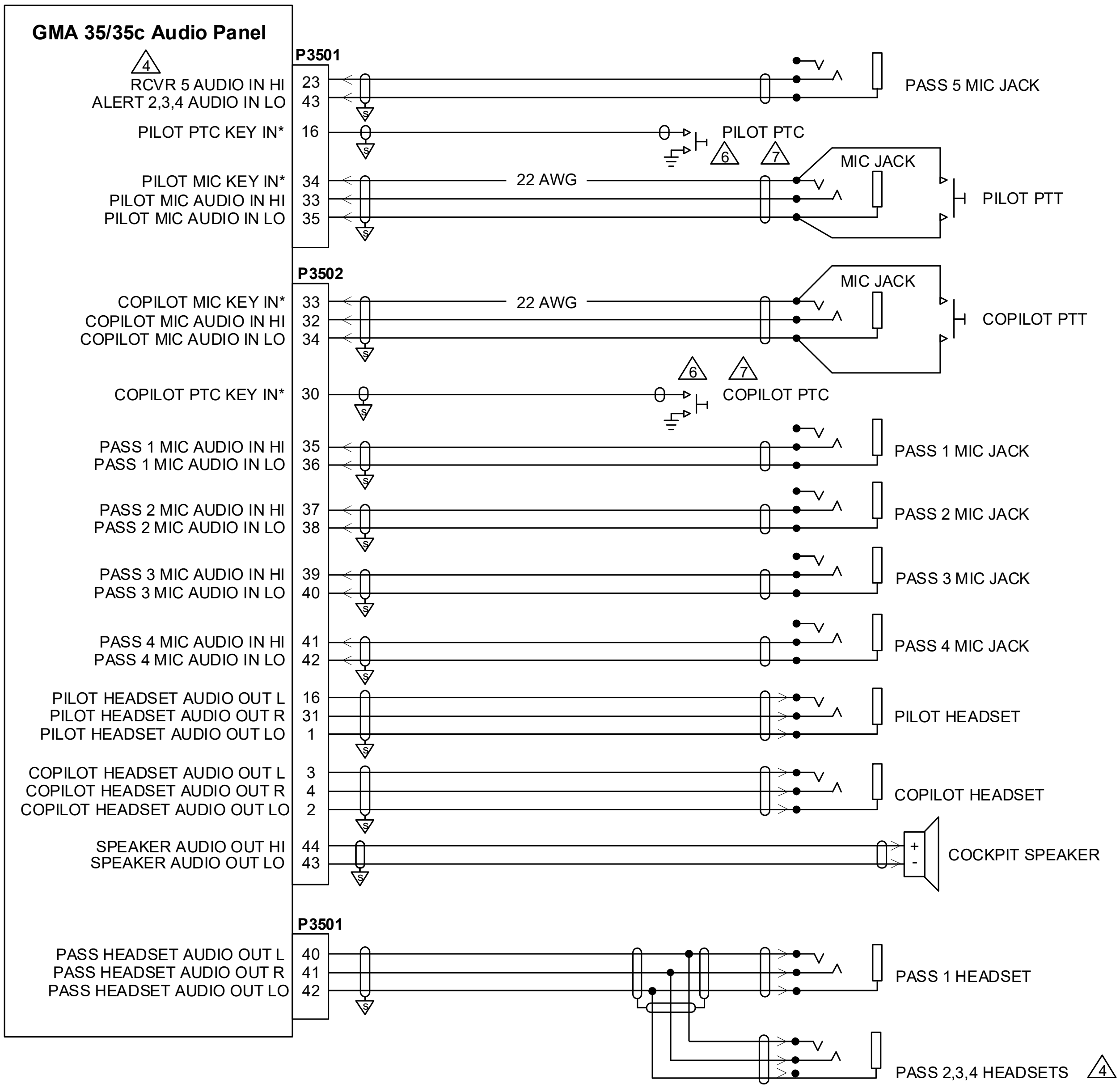


Figure B-51 GMA 35 - Headset Interconnect
Sheet 1 of 2

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

3 THE RS-232 CONNECTION TO THE GTN 725Xi/750Xi IS REQUIRED FOR COMMAND AND CONTROL OF THE GMA 35 AUDIO PANEL FUNCTIONS. THE GTN 7XX Xi IS THE CONTROLLER FOR THE GMA 35.

4 RCVR 5 AUDIO IN HI MAY BE CONFIGURED FOR A FIFTH PASSENGER MIC AUDIO SOURCE. REFER TO SECTION 5.4.6.6.2 FOR DETAILS CONFIGURING INPUT FOR PASSENGER MIC AUDIO.

5 ALL HEADSET, MICROPHONE, AND MUSIC PHONE PLUGS MUST BE ELECTRICALLY ISOLATED FROM GROUND. THIS MAY REQUIRE THE USE OF INSULATING WASHERS WHEN MOUNTING THE PHONE PLUGS. ADDITIONALLY, THE SPEAKER RETURN MUST BE ISOLATED FROM GROUND.

6 SWITCH REQUIREMENTS:

- USE ANY OF THE OTTO P7-81612X SERIES OF SWITCHES, EXCEPT P7-816121, P7-816123, AND P7-816124

OR FOLLOW THE GUIDELINES BELOW:

- ALTERNATE SWITCHES MUST MEET MIL-PRF-8805/110
- A SWITCH THAT HAS A DIFFERENT TACTILE FEEL (BUTTON SHAPE, ACTUATION PRESSURE, BUTTON PROFILE, BUTTON BEZEL SHAPE, ETC.) THAN THE PUSH TO TALK SWITCH
- THE SWITCH MUST NOT BE RED OR AMBER
- SWITCH MUST BE MOMENTARY OR NON-LATCHING

7 INSTALLATION REQUIREMENTS:

- SWITCH SHOULD BE INSTALLED IN A LOCATION THAT USES A DIFFERENT HAND THAN THE PUSH-TO-TALK SWITCH. IT IS ALSO ACCEPTABLE FOR THE PTC TO BE INSTALLED ON THE SAME GRIP/YOKE, BUT IT MUST BE OPERATED WITH A SEPARATE FINGER
- SWITCH MUST BE LABELED “PTC”

Figure B-51 GMA 35 - Headset Interconnect
Sheet 2 of 2

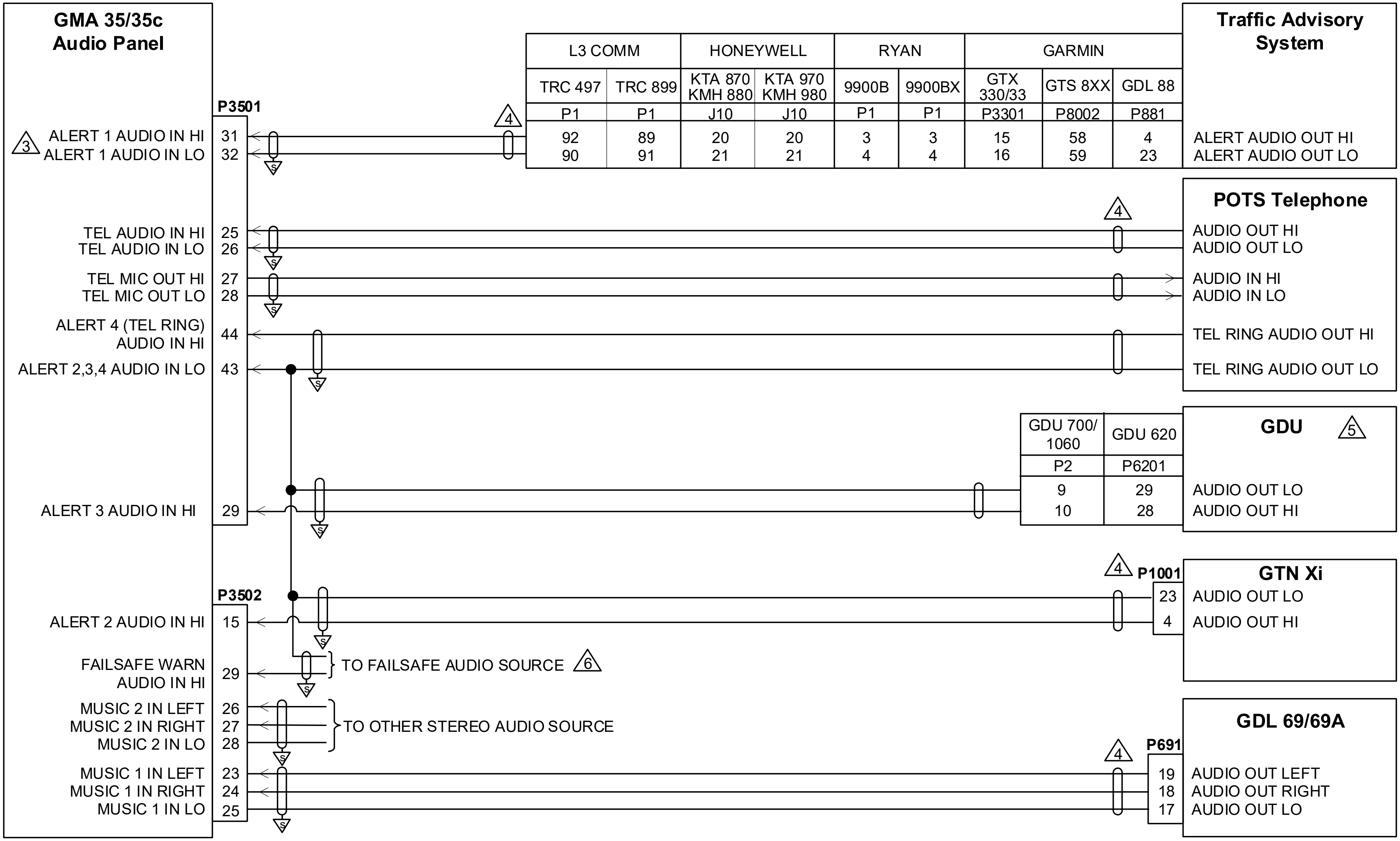


Figure B-52 GMA 35/35c - Other Audio Sources Interconnect
Sheet 1 of 2

NOTES

1 ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND

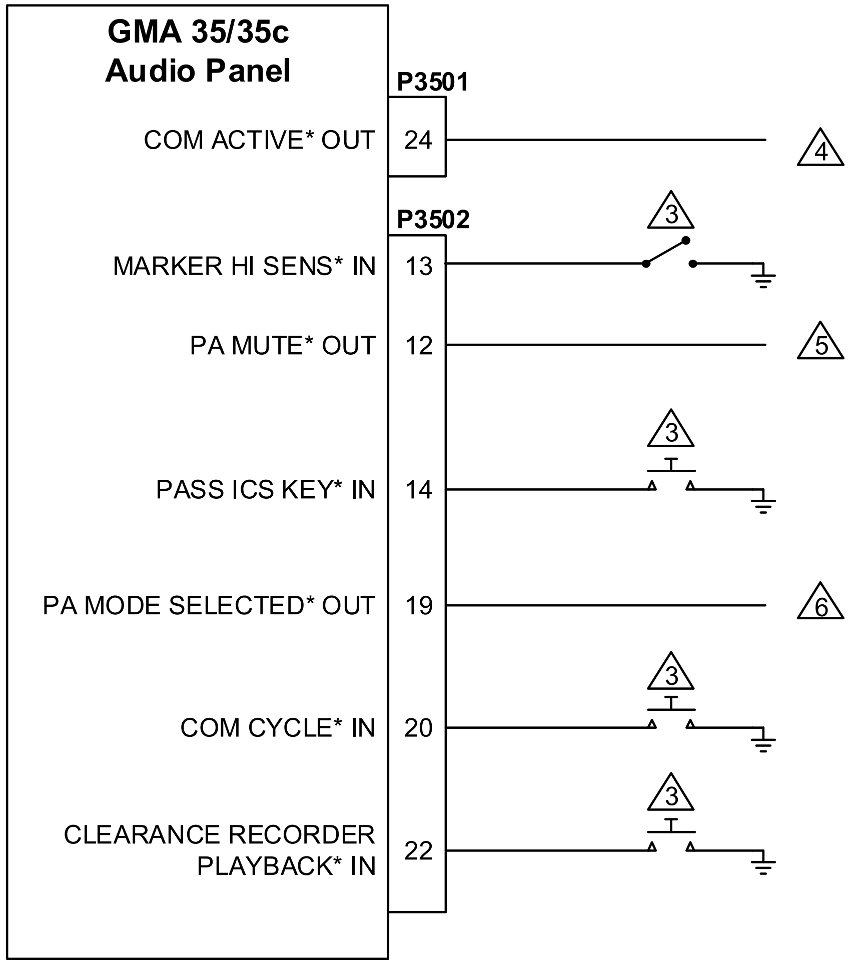
3 THE GMA 35 HAS FIVE UNSWITCHED ALERT AUDIO INPUTS (ALERT 1-4 AND FAILSAFE WARN). THIS STC ONLY APPROVES THE ALERT AUDIO INPUTS FOR TRAFFIC ALERTS, CLASS B TAWS ALERTS, AUTOPILOT DISCONNECT TONES, ALTITUDE ALERTING, AND OVERSPEED WARNING.

4 TO PREVENT COUPLED INTERFERENCE AND GROUND LOOPS FROM BEING INJECTED INTO THE AUDIO INPUTS, GROUND THE SHIELDS AT ONLY ONE END. EITHER END OF THE SHIELD MAY BE GROUNDED.

5 FOR REFERENCE ONLY. REFER TO *G500/G600 STC INSTALLATION MANUAL* FOR MORE DETAIL.

6 FAILSAFE WARN AUDIO IN HI IS HEARD DURING NORMAL OPERATION AS A FIFTH ALERT INPUT. DURING FAILSAFE MODE, BOTH FAILSAFE WARN AUDIO IN HI AND COM 1 AUDIO INPUT ARE CONNECTED TO THE PILOT HEADSET LEFT OUTPUT. DURING THIS TIME, THE OUTPUT OF THE COM 1 RADIO AND THE OUTPUT OF THE DEVICE CONNECTED TO FAILSAFE WARN AUDIO IN HI WILL BECOME SHORTED TOGETHER, POTENTIALLY CAUSING DAMAGE OR INTERFERENCE. IF THE FAILSAFE WARN AUDIO IN HI IS USED, INSTALL SUMMING RESISTORS IN SERIES BETWEEN THESE SOURCES AND THE INPUTS TO THE AUDIO PANEL TO PROTECT THE OUTPUTS FROM DAMAGE. A TYPICAL VALUE FOR MIXING RESISTORS IS 390 Ω ¼ W. THE AUDIO LEVELS OF EXISTING AUDIO SOURCES WILL HAVE TO BE RE-EVALUATED AFTER MIXING RESISTORS ARE INSTALLED.

Figure B-52 GMA 35/35c - Other Audio Sources Interconnect
Sheet 2 of 2



NOTES

1 ALL WIRES 22 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2 GROUND DESIGNATIONS: S SHIELD BLOCK GROUND AIRFRAME GROUND

3 THESE SWITCHES ARE SHOWN FOR REFERENCE ONLY. INSTALLATION OF THESE SWITCHES IS NOT COVERED BY THIS STC.

4 THIS OUTPUT MAY BE USED BY OTHER SYSTEMS TO MUTE APPLICABLE AUDIO SOURCES WHEN COM RECEIVE IS ACTIVE. REFER TO THE MANUFACTURER'S DOCUMENTATION FOR THESE SYSTEMS FOR MORE DETAIL.

5 THIS OUTPUT MAY BE USED BY EXTERNAL PA SYSTEMS TO MUTE THE PA WHEN PA MODE IS ACTIVE AND THE **PTT** KEY IS PRESSED. REFER TO THE EXTERNAL PA SYSTEM DOCUMENTATION FOR MORE DETAIL.

6 THIS OUTPUT MAY BE USED BY EXTERNAL PA SYSTEMS TO ENABLE THE EXTERNAL PA SYSTEM WHEN PA MODE IS ACTIVE. REFER TO THE EXTERNAL PA SYSTEM DOCUMENTATION FOR MORE DETAIL.

Figure B-53 GMA 35/35c - Discrete Connect (Optional)

APPENDIX C EQUIPMENT COMPATIBILITY AND CONFIGURATION

C.1 GTN Xi

The equipment listed in this appendix is compatible with the GTN Xi system when configured as described herein. For detailed configuration information, refer to Section 5.

C.1.1 Audio Panel

Audio panels not listed below can still be approved under this GTN AML STC if **all** of the following conditions are met:

- The installation of the audio panel was previously FAA-approved
- The VHF COM audio and VHF NAV audio (if applicable) must be verified as described in Section 6.2.4 and Section 6.2.4.1
- The audio panel must have an unswitched audio input that is used for the GTN Xi audio.

Table C-1 Compatible Audio Panels

Mfr	Model	Data Format	Notes
Garmin	SL10, SL10MS, SL10M, SL10S, SL15, SL15M	Analog Audio	
	GMA 340, GMA 347		
	GMA 35 (P/N 011-02299-00)	Analog Audio RS-232	GTN Xi RS-232 format must be configured for “GMA Format 1”. GMA SW v4.20A or later is required.
	GMA 35 (P/N 011-02299-20)		GMA SW v4.21C or later is required.
	GMA 35c (P/N 011-02299-40)		
	GMA 350/350H/ 350C	Analog Audio RS-232	GTN Xi RS-232 format must be configured for “GMA Format 2”. GMA SW v4.20A/4.21C or later is required.
Honeywell (Bendix/King)	KMA 24, KMA 24H-70/71, KMA 26, KMA 28	Analog Audio	
PS Engineering	PMA 6000	Analog Audio	
	PMA 7000 Series		
	PMA 8000 Series		

C.1.2 Air Data Computer

Air data computers not listed below can still be approved under this GTN AML STC if **all** of the following conditions are met:

- The air data computer provides the following labels:

  203 – Pressure Altitude

  204 – Barometric-Corrected Altitude

  210 – True Airspeed

- The interface check for the altitude encoder described in Section 6.1.10 must be successfully completed
- The installation of the air data computer was previously FAA-approved
- The air data computer is TSO-approved
- The connections to the GTN Xi must utilize shielding wiring of the type specified in this manual. Shields must be terminated on the GTN Xi side to connector shield block ground and on the air data computer side in accordance with the air data computer installation data. If the air data computer installation data does not specify a shielding method, then terminate the shield at the air data computer using the guidelines provided in Section 3.6.12.3

Table C-2 Compatible Air Data Computers

Mfg	Model	Data Format	Configuration
B & D	90004-003	ARINC 429	Airdata, low speed
Honeywell (Bendix/King)	KDC 281	ARINC 429	Airdata, low speed
	KDC 481	ARINC 429	Airdata, low speed
Insight	TAS 1000	RS-232	FADC Format 1

C.1.3 Altitude Serializer or Fuel/Air Data

Altitude serializers/encoders not listed below can still be approved under this GTN AML STC if **all** of the following conditions are met:

- The altitude serializer/encoder is TSO-approved
- The installation of the altitude serializer/encoder was previously FAA-approved
- The interface check for the altitude serializer/encoder described in Section 6.1.10 must be successfully completed
- The connections to the GTN Xi must utilize shielding wiring of the type specified in this manual. Shields must be terminated on the GTN Xi side to connector shield block ground and on the altitude serializer or fuel/air data installation data. If the altitude serializer or fuel/air data installation data does not specify a shielding method, then terminate the shield at the Altitude Serializer or Fuel/Air Data using the guidelines provided in Section 3.6.12.3

Table C-3 Compatible Altitude Serializers and Fuel/Air Data Models

Mfg	Model	Data Format	Configuration
ACK Technologies	A-30 (Mod 8 and above)	RS-232	Altitude Format 1
ARNAV	FC-10	RS-232	Fuel Format 1
	FT-10	RS-232	Fuel Format 1
Electronics International	FP-5L	RS-232	Fuel Format 1
Garmin	GTX 327	RS-232	Altitude Format 1
Icarus Instruments	3000	RS-232	Altitude Format 1
JP Instruments	EDM-700	RS-232	Fuel Format 2
Sandia	SAE 5-35	RS-232	Altitude Format 1
Shadin	833811-00 (AIS-380)	RS-232	FADC Format 1
	8800T	RS-232	Altitude Format 3
	9000T [1]	RS-232	Altitude Format 3
	9200T [1]	RS-232	Altitude Format 3
	F/ADC-200 [2]	RS-232	Airdata Format 1 or FADC Format 1
	F/ADC-2000 [2]	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
Trans-Cal Industries	IA-RS232-X	RS-232	Altitude Format 1
	SSD120	RS-232	Altitude Format 1

Notes:

[1] This source must not be connected to the GTN Xi if the GTN Xi is the pressure altitude source for a Mode S transponder.

[2] Configure the Shadin F/ADC to Garmin G Format to provide fuel and air data to the GTN Xi. Garmin G Format should only be configured if the GTN Xi is set to FADC Format 1.

C.1.4 Autopilot

Use Appendix Section C.1.4 to determine whether an autopilot can be directly wired to the GTN Xi and the interface is approved under this STC. This STC imposes no additional vertical coupling limitations for installations when the autopilot is wired to an EFIS/EHSI rather than directly to the GTN Xi. Some EFIS/EHSI may not be capable of coupling vertical guidance to the autopilot. Autopilots that will be coupled to GPS for *vertical* guidance during approaches must be specifically listed in Table C-4.

Autopilots not listed below can still be approved for lateral coupling under the GTN AML STC if **all** of the following conditions are met:

- The installation of the autopilot was previously FAA-approved
- All interfaces between the GTN Xi and the autopilot are analog
- The installation must use existing navigation signals that interface the autopilot to a standard VHF navigation receiver (i.e., CDI/HSI L/R)
- A successful in-air flight check must be completed prior to returning the aircraft to service
- The AFMS is properly completed, limiting the GPS to lateral coupling only (LNAV), unless the interface to the autopilot is listed as an approved interface in the G500/G600 AML STC

These autopilots are limited to those operations for which they were previously FAA-approved when interfaced with the other TC'd or STC'd navigation units (i.e., if the previous unit was installed and approved for coupled VOR, ILS, LOC, BC, and GPS LNAV approaches, this upgraded installation will also be approved for these operations; however, GPS and RNAV approaches with GPS/SBAS-based vertical guidance (LNAV+V, L/VNAV, LP+V, and LPV modes on the GTN Xi) are not authorized when coupled to the autopilot).

Table C-4 Compatible Autopilots

Mfr.	Model	Data Format	Notes
Honeywell (Bendix/King)	KAP 100/140/150, KFC 150/200/250/300	Analog Deviation, Discrete	[1] (KAP 140)
	KFC 225/275/325	Analog Deviation, Discrete, ARINC 429 GPSS	[1] (KFC 225) [2]
Century	I / II / III / IV, 21/31/41, 2000, Trident	Analog Deviation, Discrete	
	AK 1081	ARINC 429 GPSS	[2] [3]
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	[2]
	ST-901	ARINC 429 GPSS	[2] [3]
Cessna	300B/400B/800B	Analog Deviation, Discrete	(CA550A/FD computer)
	300 IFCS/400 IFCS/800 IFCS/1000 IFCS		400A Nav-o-matic (CA530FD computer)
Bendix	M4C, M4D	Analog Deviation, Discrete	
Collins	APS 65 ( )		
Sperry	SPZ 200A/500	Analog Deviation, Discrete	
Garmin	GFC 500	ARINC 429, RS-232	[4]
	GFC 600	HSDB, Analog Deviation, Discrete	[5] [6] [7]

Notes:

[1] GPS Select configuration should be set to “Prompt.”

[2] Configure output to any ARINC or GAMA format.

[3] GPSS Roll Steering converter.

[4] The GFC 500 system requires the G5 to be installed per *Garmin G5 Electronic Flight Instrument Part 23 AML STC Installation Manual* (P/N 190-01112-10) as a prerequisite. Refer to *GFC 500 Autopilot with Electronic Stability and Protection Part 23 AML STC Installation Manual* (P/N 190-02291-00) for details.

[5] If the GTN Xi is interfaced to a non-Garmin EFIS, then do not connect the HSDB interface from the GTN Xi to the GMC 605. Only connect the analog navigation signals from the EFIS to the GMC 605. Refer to *GFC 600 Automatic Flight Control System Part 23 AML STC Installation Manual* (P/N 190-01937-00) for details.

[6] GTN Xi interface to GFC 600 installation requirements:

- In a single or dual GTN Xi installation with a Garmin G500/G600 system, connect GTN Xi #1 to the GMC 605 via HSDB
- In a single or dual GTN Xi installation with a Garmin G500/G600 TXi system, connect the GMC 605 to the GDU 700/1060 via HSDB
- In a single or dual GTN Xi installation with no EFIS display, connect GTN Xi #1 to the GMC 605 via HSDB **and** the analog interfaces. For installations without a Garmin GDU or G5, the GFC 600 must disable VNAV on the GMC 605

[7] GMC 605 SW v2.21 or later is required.

C.1.5 EFIS Displays

Table C-5 Avidyne EFIS Display

<table>
<tr><th>Manufacturer</th><th>Model</th><th>Data Format</th><th>Notes</th></tr>
<tr><td>Avidyne</td><td>EXP5000 P/N 700-00006-()</td><td>ARINC 429</td><td>[1] [2]</td></tr>
<tr><td colspan="4">EXP5000 Configuration Settings:
GPS 1: GARMIN 430/530 ON ARINC 1
GPS 2: GARMIN 430/530 ON ARINC 3
VHF 1: GARMIN 430/530 ON ARINC 2
VHF 2: GARMIN 430/530 ON ARINC 4

GTN Xi Configuration Settings:
ARINC 429 Setup: IN: Low, EFIS Format 4
OUT: Low, GAMA Format 2
VOR/LOC/GS Setup: ARINC 429 Config: Tx Speed: Low
SDI: VOR/ILS 1 (for NAV 1)
VOR/ILS 2 (for NAV 2)</td></tr>
</table>

Notes:

[1] PFD software P/N 530-00194-( ) or later is required.

[2] Capable of Source Selection annunciation that meets the requirements in Section 3.6.11.1.2.

Table C-6 Honeywell (Bendix/King) EFIS Display

Manufacturer	Model	Data Format	Notes
Honeywell (Bendix/King)	EFS 40/50 (SG 465)	ARINC 429	[1] [2] [3]
EFS 40/50 Configuration Settings: (software 1101 or later)			
FMS VNAV:	2:	FEET OR ANGLE	
VARIABLE LNAV:	LNAV 1/2:	VAR	
FMS #1 / #2:	5: KLN 90-GPS (KLN 90-GPS must be used for vertical GPS deviation to be displayed correctly)		
GTN Xi Configuration Settings:			
ARINC 429 Setup:	IN:	Low, EFIS Format 2	
	OUT:	Low, GAMA Format 6	
VOR/LOC/GS Setup:	ARINC 429 Config:	Tx Speed: Low	
		SDI: VOR/ILS 1 (for NAV 1)	
		VOR/ILS 2 (for NAV 2)	
EFS 40/50 Configuration Settings: (software 1501 or later)			
FMS #1 / #2:	7:	GAM 429-GPS	
LNAV X-TRACK SCALE FACTOR:	LNAV 1 / 2:	VAR (as applicable)	
VNAV DEVIATION SCALE FACTOR:	LNAV 1 / 2:	VAR (as applicable)	
LNAV VERT APR COUPLING TO AFCS:	LNAV 1 / 2:	YES (as applicable)	
L/VNAV VERT APR COUPLING TO AFCS:	LNAV 1 / 2:	YES (as applicable)	
LP VERT APR COUPLING TO AFCS:	LNAV 1 / 2:	YES (as applicable)	
LPV VERT APR COUPLING TO AFCS:	LNAV 1 / 2:	YES (as applicable)	
LNAV SELECT OUT:	1:	EN ROUTE ONLY (Setting does not matter if this discrete output is not used in the installation)	
GTN Xi Configuration Settings:			
ARINC 429 Setup:	IN:	Low, EFIS Format 1	
	OUT:	Low, GAMA Format 1	
VOR/LOC/GS Setup:	ARINC 429 Config:	Tx Speed: Low	
		SDI: VOR/ILS 1 (for NAV 1)	
		VOR/ILS 2 (for NAV 2)	

Notes:

[1] SG 465 software 1101 or later is required. Vertical guidance is provided for GPS approaches. SG 465 software 1201 or later will provide air data to the GTN Xi. This setting allows the use of EFIS course pointer to set OBS.

[2] SG 465 software 1501. Vertical guidance is provided for GPS approaches. This setting does not allow the use of EFIS course pointer to set OBS.

[3] Capable of Source Selection annunciation that meets the requirements in Section 3.6.11.1.2.

Table C-7 Garmin G500/G600 EFIS Display

Manufacturer	Model	Data Format	Notes
Garmin	GDU 620	ARINC 429, RS-232, HSDB	[1] [2] [3]

GDU 620 Configuration Settings:

ARINC 429 INPUT:	IN 3:	High, GPS1	
	IN 4:	Low, NAV1	
ARINC 429 OUTPUT:	OUT 1:	Low, GPS NAVIGATOR	
RS-232:	CHNL 3:	GPS1	
SYSTEM CONFIGURATION: INTERFACING SYSTEMS	GPS1: (PRESENT)	TYPE:	

UNIT	TYPE
625Xi	GPS 400W
635Xi	GNC 420W
650Xi	GNS 430W
725Xi	GNC 500W
750Xi	GNS 530W

NAV1: (PRESENT) TYPE:

UNIT	TYPE
650Xi	GNS 430W
750Xi	GNS 530W

GTN Xi Configuration Settings:

Interfaced Equipment	GDU #1: Present	Settings:	GDU 620
ARINC 429 Setup:	IN:	Low, GDU Format 1	
	OUT:	High, GAMA Format 1	
	SDI:	LNAV 1 (for GPS 1)	
		LNAV 2 (for GPS 2)	
RS-232 Setup:	OUT:	MapMX Format 1	
Main Indicator (Analog) CDI:	CDI Key:	Enabled (for single GDU install)	
		(i.e., Main CDI/VDI outputs can be GPS or VLOC)	
		Disabled (for Dual GDU install)	
		(i.e., Main CDI/VDI outputs can only be GPS)	
VOR/LOC/GS Setup:	ARINC 429 Config:	Tx Speed:	Low
		SDI:	VOR/ILS 1 (for NAV 1)
			VOR/ILS 2 (for NAV 2)

Notes:

[1] GDU 620 settings are for reference only. To ensure all configuration items for the GDU 620 are set in accordance with the G500/G600 Part 23 STC, refer to *G500/G600 AML STC Installation Manual* (Garmin P/N 190-00601-06).

[2] GDU 620 software v7.30 or later is required for the GDU 620 to receive VNAV features from a GTN Xi.

[3] Capable of Source Selection annunciation that meets the requirements in Section 3.6.11.1.2.

Table C-8 Garmin G5 Display

Manufacturer	Model	Data Format	Notes
Garmin	G5 (GAD 29)	ARINC 429, RS-232	[1] [2] [3] [4] [5]

G5 Configuration Settings:			
RS-232 Configuration:	Input Format:	MapMX	
ARINC 429 Configuration:	Output 1:	EFIS/Airdata 1 (SDI 1)	
	Input 1:	Garmin GPS (SDI 1)	
	Input 2: (Only set VOR/ILS input for GTN 650Xi/750Xi)	Garmin VOR/ILS (SDI 1)	
GTN Xi Configuration Settings:			
ARINC 429 Setup:	IN (any available port):	Low, EFIS Format 2	
	IN (any available port):	Low, GAD Format 1	
	OUT (any available port):	Low, GARMIN 429	
RS-232 Setup:	OUT:	MapMX Format 1	
Main Indicator (Analog) CDI:	CDI Key:	Enabled	
	Selected Course for GPS:	Allowed	
	Selected Course for VLOC:	Allowed	
	V-Flag State:	Normal	
VOR/LOC/GS Setup: (GTN 650Xi/750Xi Only)	Nav Radio:	Enabled	
	ARINC 429 Config:	Tx Speed:	Low
		SDI:	VOR/ILS 1 (for NAV 1)

Notes:

[1] G5 settings are for reference only. To ensure all configuration items for the G5 are set in accordance with the G5 STC, refer to *Garmin G5 Electronic Flight Instrument Part 23 AML STC Installation Manual* (Garmin P/N 190-01112-10).

[2] For installations where the G500/G600 system (i.e., GDU 620) is interfaced to the G5/GAD 29(B), the only direct connection from the GTN Xi to the G5/GAD 29(B) may be via an optional RS-232 MapMX interface, which provides the G5 with attitude GPS data (refer to Figure B-44, Sheet 1). Thus, the GTN Xi to GDU 620 configuration settings in Table C-7 must be used.

[3] The ARINC 429 configuration settings between the G5 and GTN Xi are only necessary when a GAD 29(B) is installed (refer to Figure E-44, Sheet 2). If a G500/G600 GDU 620 is present and interfaced to the GAD 29(B), then the GTN Xi ARINC 429 interface must not be connected to the GAD 29(B).

[4] G5 software v5.50 or later is required for G5 to receive VNAV features from a GTN Xi.

[5] Capable of Source Selection annunciation that meets the requirements in Section 3.6.11.1.2.

Table C-9 Garmin G500/G600 TXi EFIS Display

Manufacturer	Model	Data Format	Notes
Garmin	GDU 700/1060	HSDB	[1] [2] [3] [4] [5]

GDU 700/1060 Configuration Settings:		
GDU 1/2/3/4	Interfaces:	
	GPS 1	GTN 6XX or GTN 7XX
	NAV 1	GTN 650 or GTN 750
GTN Xi Configuration Settings:		
Interfaced Equipment	GDU #1: Present	Settings: GDU TXi
Main Indicator (Analog) CDI:	CDI Key:	Enabled/Disabled [6]
	Selected Course for GPS:	Allowed
	Selected Course for VLOC:	Allowed
	V-Flag State:	Normal

Notes:

[1] GDU 700/1060 settings are for reference only. To ensure all configuration items for the GDU 700/1060 are set in accordance with the G500/G600 TXi Part 23 STC, refer to *G500/G600 TXi Part 23 AML STC Installation Manual* (Garmin P/N 190-01717-B3).

[2] GDU 700/1060 software v3.01 or later is required.

[3] Set each GPS/NAV format for the number of GTN Xi units present for each GDU. Set GDU TXi on the GTN Xi for each interfaced GDU.

[4] For installations with a TXi GDU 700/1060 interfaced to the G5/GAD 29( ), the ARINC 429 interfaces between the GTN Xi and G5/GAD 29( ) (refer to Figure B-44, Sheet 1) may be retained for reversionary purposes.

[5] Capable of Source Selection annunciation that meets the requirements in Section 3.6.11.1.2.

[6] For GDU 700/1060 software prior to v3.10, set CDI Key to *Disabled*. For GDU 700/1060 software v3.10 or later, set CDI Key to *Enabled* to enable localizer autoswitch.

Table C-10 G3X EFIS Display

Manufacturer	Model	Data Format	Notes
Garmin	G3X	ARINC 429, RS-232	[1] [2]

G3X Configuration Settings:		
RS-232 Config:	Serial Port ‘x’:	MapMX (PFD)
	Serial Port ‘y’:	GTN Connext 2 (PFD)
	(For dual GTN Xi, configure above for GTN Xi #1 and below for GTN Xi #2)	
	Serial Port ‘z’:	MapMX (PFD or MFD) for GTN Xi #2
	Note: Letters denote the connected ports	
ARINC 429 Config:	429 Output 1:	EFIS/Airdata Format 1 and NAV 1
	429 Input 1:	Garmin GPS and NAV 1
	429 Input 2:	Garmin VOR/ILS and NAV 1 (Only set VOR/ILS input for GTN 650Xi/750Xi)
	(For dual GTN Xi, configure above for GTN Xi #1 and below for GTN Xi #2)	
	429 Output 2:	EFIS/Airdata Format 1 and NAV 2
	429 Input 3:	Garmin GPS and NAV 2 for GTN Xi #2
	429 Input 4:	Garmin VOR/ILS and NAV 2 for GTN Xi #2 (Only set VOR/ILS input for GTN 650Xi/750Xi)
GTN Xi Configuration Settings:		
RS-232 Config:	RS-232 x/z Input/Output:	MapMX Format 2
	RS-232 y Input/Ouput:	Connext Format 2 (When Connext is used, GTN Xi #1 only)
	Note: Letters denote the connected ports	
ARINC 429 Config:	ARINC 429 IN 1:	Low, EFIS Format 2
	ARINC 429 OUT 1:	Low, Garmin 429
	SDI:	LNAV 1 (for GTN Xi #1) LNAV 2 (for GTN Xi #2)
	(Only used when non-Garmin autopilots are interfaced to GTN Xi)	
Main Indicator (Analog):	Selected Course for VLOC:	Ignored
VOR/LOC/GS Config:	Nav Radio:	Enabled (GTN 650Xi/750Xi only)
	ARINC 429 Configuration:	Tx Speed: Low
		SDI: VOR/ILS 1 (for NAV 1) VOR/ILS 2 (for NAV 2)

Notes:

[1] In dual GTN Xi installations, GTN Xi #1 must be connected to a lower number RS-232 port than GTN Xi #2. In dual G3X installations, GTN Xi #2 may be connected to any port on the MFD/EHSI.

[2] Capable of Source Selection annunciation that meets the requirements in Section 3.6.11.1.2.

Table C-11 GI 275 EFIS Display

Manufacturer	Model	Data Format	Notes
Garmin	GI 275	HSDB	[1] [2] [3] [4] [5]
GI 275 Configuration Settings:			
GI 1/2/3/4/5/6	Interfaces:		
	GPS 1/2:	GTN 6XX or GTN 7XX	
	NAV 1/2:	GTN 650 or GTN 750	
		Course Selection: Enabled/ Disabled	
		Transmit Selected Course to the GTN: Enabled/Disabled	
GTN Xi Configuration Settings:			
	Interfaced Equipment:		
	GI 275:	Present	
		Select IDs: (select GI 275 Unit IDs in system)	
	Main Indicator (Analog):		
	CDI Key:	Disabled	
	Selected Course for GPS:	Allowed	
	Selected Course for VLOC:	Allowed	
	V-Flag State:	Normal	

Notes:

[1] GI 275 settings are for reference only. Refer to *GI 275 Part 23 AML STC Installation Manual*.

[2] Set each GPS/NAV format for the number of GTN Xi units present for each GI 275. Select the number of interfaced GI 275s under “Select IDs” on each GTN Xi.

[3] The GI 275 is capable of Source Selection annunciation if configured to display the HSI or CDI page.

[4] If Course Selection is disabled, configure CRS A429 port and speed. Disabling Course Selection allows the GI 275 to slave to the Selected Course from an external source. Disable this setting when an external system is providing the primary Selected Course data. Enable when the GI 275 is the primary source for selected course data.

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

C.1.6 EHSI

Table C-12 Compatible EHSIs

Manufacturer	Model	Data Format	Configuration	Notes
Garmin	GI 275	HSDB		The GI 275 must be configured to display the HSI page. Refer to *GI 275 Part 23 AML STC Installation Manual* for more information.
Sandel	SN 3308	Analog ARINC 429	GAMA Format 3, low speed	GPS lateral and vertical guidance is provided using the analog interface.
	SN3500/4500	ARINC 429	GAMA Format 3	Vertical guidance is provided for GPS approaches. Software v3.06 or later is required for SN3500.

SINGLE GTN Xi INSTALLATIONS:

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: SERIAL GPS-2: OFF
OBS ROT: NORMAL CDI SRC SEL: OFF
OBS CAL: 000.0 RCVR 1/2: OFF
NAV/ILS/DME-1/2 ENABLE: YES
PORT: 429 PORT-3 (For software version prior to 2.30, NAV 1/2 must temporarily be set to “ANALOG” and ILS must be set to “VALID LOW” for proper operation of the VDI).

DUAL GTN Xi INSTALLATIONS:

SN 3308 Configuration Settings:

LNAV 1/2 SELECT: GNS 530 (ARINC) NAV CHANGE: NAV-1 ENABLE: YES

SN 3500/4500 Configuration Settings:

LNAV 1/2 SELECT: GNS 530 (ARINC) ANNUN: SERIAL
LAT DV: SERIAL
VERT DV: SERIAL
VERT ENA: SERIAL
NAV/ILS/DME-1/2: NAV TYPE: 429 TO

C.1.7 IRU/AHRS

IRU/AHRS not listed below can still be approved under the GTN AML STC if **all** of the following conditions are met:

- The IRU/AHRS provides ARINC 429 labels 314 and/or 320
- The IRU/AHRS is TSO-approved
- The installation of the IRU/AHRS is previously FAA-approved
- The checkout procedure described in Section 6.1.11 must be completed successfully before approving the aircraft for return to service
- The connections to the GTN Xi must utilize shielding wiring of the type specified in this manual. Shields must be terminated on the GTN Xi side to connector shield block ground and on the IRU/AHRS side in accordance with the IRU/AHRS installation data. If the IRU/AHRS installation data does not specify a shielding method, then terminate the shield at the IRU/AHRS using the guidelines provided in Section 3.6.12.3

Table C-13 Compatible IRU/AHRSs

Manufacturer	Model	Data Format	Configuration
Collins	AHS-85E	ARINC 429	INS/IRU, high speed

C.1.8 Transponder

Table C-14 Compatible Transponders

<table>
<tr><th>Manufacturer</th><th>Model</th><th>Data Format</th><th>Notes</th></tr>
<tr><td rowspan="10">Garmin</td><td>GTX 32</td><td rowspan="2">RS-232</td><td rowspan="2">GTX software v2.10 or later.</td></tr>
<tr><td>GTX 327</td></tr>
<tr><td>GTX 328</td><td rowspan="5">RS-232</td><td rowspan="5">GTX software v6.11 or later.</td></tr>
<tr><td>GTX 33/33D</td></tr>
<tr><td>GTX 33/33D with ES</td></tr>
<tr><td>GTX 330/330D</td></tr>
<tr><td>GTX 330/330D with ES</td></tr>
<tr><td>GTX 335/335D/335R/
335DR</td><td>RS-232</td><td>GTX software v2.02 or later is required.</td></tr>
<tr><td rowspan="2">GTX 345/345D/345R/
345DR</td><td>RS-232</td><td rowspan="2">GTX software v2.02 or later is required.</td></tr>
<tr><td>HSDB</td></tr>
<tr><td colspan="4">GTN Xi Configuration Settings:
GTX 32: GTX MODE C #1 OR #2
GTX 327: GTX MODE C #1 OR #2 (GTN Xi CONTROL OF GTX 327)
AVIATION OUTPUT 1 - OUTPUT (NO GTN Xi CONTROL OF GTX 327) TO SEND GPS GROUNDSPEED
ALTITUDE FORMAT 1 - INPUT OPTIONAL (NO GTN Xi CONTROL OF GTX 327) TO RECEIVE PRESSURE ALTITUDE
GTX 328: GTX MODE S #1 OR #2
GTX 33/33D: GTX (MODE S OR W/TIS) #1 OR #2
GTX 33/33D with ES: GTX (MODE S+ OR W/TIS+) #1 OR #2
GTX 330/330D: GTX (MODE S OR W/TIS) #1 OR #2 (GTN Xi CONTROL OF GTX 330)
PANEL GTX W/TIS #1 OR #2 (NO GTN Xi CONTROL OF GTX 330)
ADS-B (NO CONTROL OF GTX 330 AND NO TIS)
GTX 330/330D with ES: GTX (MODE S+ OR W/TIS+) #1 OR #2 (GTN Xi CONTROL OF GTX 330)
PANEL GTX W/TIS+ #1 OR #2 (NO GTN Xi CONTROL OF GTX 330)
ADS-B + FORMAT 1 (NO CONTROL OF GTX 330 AND NO TIS)
GTX 335/335D/335R/335DR: GTX Mode S+ #1 or #2 or GTX w/TIS+ #1 or #2 (GTN Xi CONTROL OF GTX 335/335D/335R/335DR)
Panel GTX W/TIS+ #1 or #2 (No Control of GTX 335)
GTX 345/345D/345R/345DR: RS-232: GTX Mode S+ #1 or #2 (GTN Xi CONTROL OF GTX 345/345D/345R/345DR.
HSDB: Interfaced Equipment ADS-B In Source: GTX #1 or #2</td></tr>
</table>

Manufacturer	Model	Data Format	Notes
Transponder RS-232 Port Settings:			
GTX 32:	IN: REMOTE		
	OUT: REMOTE		
GTX 33:	IN: REMOTE		
	OUT: REMOTE (FOR NON-TIS) OR REMOTE W/TIS (FOR TIS UNITS)		
GTX 327 (GTN Xi CONTROL):	IN: REMOTE		
	OUT: REMOTE		
GTX 327 (NO GTN Xi CONTROL):	IN: GPS		
	OUT: ICARUS ALT (WHEN THE GTX 327 IS NOT BEING CONTROLLED BY THE GTN Xi, CONNECT THE OUTPUT OF THE TRANSPONDER TO THE GTN Xi AND USE ICARUS ALT AS THE OUTPUT FORMAT ONLY IF THE TRANSPONDER IS USED TO SUPPLY PRESSURE ALTITUDE TO THE GTN Xi).		
GTX 328:	IN: REMOTE		
	OUT: REMOTE		
GTX 330:	IN: REMOTE		
	OUT: REMOTE		
GTX 335/335D/335R/335DR:	IN: REMOTE OUT: REMOTE		
GTX 345/345D/345R/345DR:	IN: REMOTE OUT: REMOTE		

NOTE

When the GTN Xi is interfaced with a GTX 32, GTX 33, or GTX 33D installed using STC SA01473SE, then the limitation in STC SA01473SE requiring use of the GNS 480 (CNX 80) is no longer applicable and all configuration and operation functions of the GNS 480 are replaced by the GTN Xi.

C.1.9 NAV Indicator

Interface to NAV indicators not listed below can be approved under the GTN AML STC if **all** of these conditions are met. Refer to Section 5.4.3.5 for OBS resolver calibration.

- The NAV indicator interface to the GTN Xi conforms to the limitations in Section 2
- The OBS resolver is calibrated and correctly functioning when performing the self-test sequence
- The NAV indicator vertical deviation, horizontal deviation, and flags correctly respond when performing the self-test sequence
- The switching functionality correctly operates if the NAV indicator is switched between display of GPS or VLOC. Refer to Section 6.1.4
- The NAV indicator function works with the GTN Xi during applicable ground and flight checkout procedures prior to returning the aircraft to service
- The connections to the GTN Xi must use shielding wiring of the type specified in Appendix B
- Shields must be terminated on the GTN Xi side to connector shield block ground and on the NAV indicator side in accordance with the NAV indicator installation data
- If the NAV indicator installation data does not specify a shielding method, terminate the shield at the NAV indicator. Refer to Section 3.6.12.3
- The NAV indicator meets TSO-C34( ), -C36( ), and -C40( )

Table C-15 Compatible NAV Indicators

Manufacturer	Model	Data Format	Notes
Honeywell (Bendix/King)	KI 202, KI 203, KI 204, KI 206, KI 208/A, KI 209/A, KI 525A, KPI 552/B, KPI 553/A/B	Analog	[1]
Century	NSD 360A, NSD 1000	Analog	[1]
Collins	331A-6P, 331A-9G, PN101 (331A-3F/3G), IND-351D	Analog	[1]
Garmin	GI 102/A, GI 106/A	Analog	[1]
Mid Continent	MD222-402, MD222-406, MD200-302/303/306/307	Analog	[1]
Sperry	RD 444, RD 550A, RD 650	Analog	[1]
S-TEC	ST 180	Analog	[1]

Notes:

[1] Interfacing to the Collins IND-351 (P/N 622-2083-001) is not covered by this STC.

C.1.10 Weather, Traffic, and Terrain

Table C-16 Compatible Weather, Traffic, and Terrain Models

Manufacturer	Model	Data Format	Configuration	Notes
Garmin	GDL 69/69A	HSDB		GDL 69/69A software v4.02 or later.
	GTX 330/33/330D/33D (with or without ES)	RS-232	Refer to Appendix Section C.1.8	
	GTS 800	ARINC 429 (out)	Traffic Format 1	High Speed
	GTS 820/850	ARINC 429 (out)	Traffic Format 2	High Speed
	GTS 800/820/850	ARINC 429 (in)	Any GAMA Format 1 through 6	High Speed
Honeywell (Bendix/King)	KGP 560	RS-232	External EGPWS	
	KTA 870 (KTA 810), KMH 880 (KMH 820), KTA 970 (KTA 910), KMH 980 (KMH 920)	ARINC 429	Traffic Format 4	High Speed
Avidyne (Ryan)	TAS 6XX (TCAD 9900BX)	ARINC 429 or RS-232	Traffic Format 5	[1]
	TCAD 9900B	RS-232	Traffic Format 7	
L-3 Communications	SKY497 (Skywatch)	ARINC 429	Traffic Format 6	High Speed, TRC 497 software v1.6 or later.
	SKY899 (Skywatch HP)	ARINC 429	Traffic Format 3	High Speed
	WX-500	RS-232	Lightning Detector 1	

Notes:

[1] If using the RS-232: I/O must be set to Traffic Format 8. When interfacing over RS-232, the GTN Xi can serve as the control display for the 9900BX. To allow this function, the GTN Xi control of traffic system must be set to “YES”. If a GNS and GTN Xi are connected to the 9900BX via RS-232 at the same time, and the GNS is controlling the device, set the GTN Xi control of traffic system to “NO”.

If using ARINC 429: Configure the GTN Xi ARINC 429 input to “Traffic Format 5, High Speed”. For ARINC 429 installations, GTN Xi control of traffic system must be set to “NO”.

C.1.11 DME

Table C-17 Compatible DMEs

Manufacturer	Model	Data Format	Notes
Collins	DME 40, DME 42	Parallel 2x5	
Honeywell (Bendix/King)	KN62/62A	Parallel 2x5 **or** King Serial	
	KN63/KDI 572/KDI 574	King Serial	
	KN64	King Serial	
	KDM 706(A)/KDI 572/KDI 574	King Serial	
Narco	DME 890, IDME 891	Narco 890/891	

C.1.12 CDI/HSI Source Selection Annunciators

An external CDI/HSI Source Selection Annunciation or external GPS annunciations may be required for some installations. Refer to Section 3.6.11.1 for additional information describing when external annunciation is required. The following indicators and indicator/switches are suitable for external annunciation:

Table C-18 Compatible CDI/HSIs

Manufacturer	P/N	Type	Notes
Garmin	011-03809-00	G5 HSI	
	011-04489-00, 011-04489-10, 011-04489-20, 011-04489-30, 011-04489-40	GI 275	The GI 275 must be configured to display the CDI or HSI page. Refer to *GI 275 Part 23 AML Installation Manual* for more information.
Mid-Continent	MD41-1510, MD41-1511, MD41-1512, MD41-1513, MD41-1514, MD41-1515, MD41-1408A, MD41-1404A, MD41-1418A, MD41-1414A, MD41-1468A, MD41-1478A, MD41-1464A, MD41-1474A, MD41-1470, MD41-1484W, MD41-1488W	Indicator/Switch/ GPS Annunciations	Both 14 VDC and 28 VDC indicators (refer to Mid-Continent documentation for availability of switch functions on each unit). The MD41-151X ACU is the preferred indicator, although the MD41-14XX ACU is acceptable. Refer to Section 3.6.10 for more information. Interface to these annunciators to provide GPS annunciations is limited to replacement of existing approved GTN 6XX/7XX installations. New installations of the GTN Xi cannot utilize these annunciators to satisfy the requirements of Section 3.6.11.1.2.
Staco Switch	992561-1241762200	Indicator	14 VDC Indicator.
	992561-1241862200	Indicator	28 VDC Indicator.
Vivisun	95-40-17-B6-E1YGN	Indicator	28 VDC Indicator (can be converted to 14 VDC operation by replacing four 28 VDC lamps with 14 VDC lamps P/N 14-113).
	95-45-11-B6-E1EMK	Indicator/Switch	28 VDC Indicator with momentary switch (can be converted to 14 VDC operation by replacing four 28 VDC lamps with 14 VDC lamps P/N 14-113).

Vendor Contact Information (provided for convenience only)

Staco Switch
1139 Baker Street
Costa Mesa, CA 92626
Phone: (877) STACO4U

Mid-Continent Instrument Co Inc.
9400 E. 34th Street N
Wichita, KS 67226
Phone: (316) 630-0101, Website: www.mcico.com

Vivisun Aerospace Optics
3201 Sandy Lane
Fort Worth, Texas 76112
Phone: (888) VIVISUN

C.1.13 TAWS Annunciator Panels

An external TAWS annunciator may be required for some installations. Refer to Section 3.6.11.1 for additional information describing when a TAWS annunciator is required. The following indicators are suitable for external annunciation:

Table C-19 Compatible TAWS Annunciator Panels

Manufacturer	P/N	Type	Notes
Mid-Continent	MD41-1024	14V, Horizontal	Refer to applicable Mid-Continent documentation for availability of switch functions on each unit. Include the prefix “Kit” to the part number when ordering to receive the annunciator and installation kit.
	MD41-1028	28V, Horizontal	
	MD41-1028(5V)	28V, Horizontal, 5V lighting	
	MD41-1034	14V, Vertical	
	MD41-1038	28V, Vertical	
	MD41-1038(5V)	28V, Vertical, 5V lighting	

Vendor Contact Information (provided for convenience only)

Mid-Continent Instruments and Avionics

9400 E. 34th Street N
Wichita, KS 67226
Phone: (316) 630-0101
Website: www.mcico.com

C.1.14 Multifunction Displays

Table C-20 Compatible MFDs

<table>
<tr><th>Manufacturer</th><th>Model</th><th>Data Format</th><th>Notes</th></tr>
<tr><td rowspan="3">Garmin</td><td>MX20</td><td rowspan="2">RS-232</td><td>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 for MX20 v5.6 or later.
Refer to Section 5.4.3.15 if installation enables RF Leg navigation on the GTN Xi.</td></tr>
<tr><td>GMX 200</td><td>Aviation Output 1 format.
MapMX format (preferred).
Refer to Section 5.4.3.15 if installation enables RF Leg navigation on the GTN Xi.</td></tr>
<tr><td>GI 275</td><td>HSDB</td><td>The GI 275 must be configured to display MFD pages. Refer to GI 275 Part 23 AML STC Installation Manual for more information</td></tr>
<tr><td rowspan="2">Avidyne</td><td rowspan="2">EX500
(P/N 700-00007-( )),
EX5000
(P/N 700-00004-( )
or P/N 700-00030-( ))</td><td rowspan="2">ARINC 429</td><td>MFD software P/N 530-00193-( ) or later is required.</td></tr>
<tr><td>MFD software P/N 530-00195-( ) or later is required.</td></tr>
<tr><td colspan="4">EX500 Configuration Settings:
RECEIVER 1: GAMA 429 FORMAT
PORT: ARINC 429 1 - GPS A DEFAULT
SPEED: LOW
RECEIVER 2: GAMA 429 FORMAT
PORT: ARINC 429 4
SPEED: LOW
EX5000 Configuration Settings:
RECEIVER 1: GAMA 429 FORMAT
PORT: ARINC 429 1
SPEED: LOW
RECEIVER 2: GAMA 429 FORMAT
PORT: ARINC 429 4
SPEED: LOW</td></tr>
</table>

C.1.15 Interface Adapters

Table C-21 Compatible Interface Adapters

Manufacturer	Model	Data Format	Notes/Configuration
Garmin	GAD 42	ARINC 429	GAD Format 1, low speed. Any ARINC 429 output format may be used to allow configuration of the GAD 42.

C.1.16 Synchro Heading Sources

Table C-22 Compatible Synchro Heading Sources

Manufacturer	Model	Data Format	Notes/Configuration
Bendix/King	KI-525A	Analog	Synchro Heading Input = “Connected.” Refer to Section 5.4.3.10.

C.1.17 Weather Radar

Table C-23 Compatible Weather Radar Models

Manufacturer	Model	Data Format	Configuration	Notes/Configuration
Garmin	GWX 68	HSDB	HSDB	Configured for Return Bins: 600. GWX 68 SW v2.12 or later.
	GWX 70	HSDB	HSDB	Configured for Return Bins: 600. Installations using the 10" antenna need GWX software v2.30 or later for ground clutter suppression and turbulence detection.
	GWX 75	HSDB	HSDB	Configured for Return Bins: 600.
Bendix/King	RDS 81 (RS 811A), RDS 82 (RS 181A), RDR 2000 (ART 2000) RDR 2100 (ART 2100)	ARINC 429, ARINC 708, Discrete	ARINC 429 Setup: OUT: Low, Radar Format 1	Overbraiding not required. Only horizontal scan is supported with the RDS 82. Configure RDR 2100 (ART 2100) as “ART 2000” on ***ARINC 453/708 Configuration*** page.
RDR 2000 Configuration Settings: Desired Antenna Sweep 100 Map Gain Change Accepted Target Alert Disabled **RDR 2100 Configuration Settings:** Desired Antenna Sweep 100 Wx Gain Change Ignored Map Gain Change Accepted ARL Disabled Auto Step Scan Disabled Autotilt Disabled Target Alert Disabled				

C.1.18 Iridium Transceiver

Table C-24 Compatible Iridium Transceivers

Manufacturer	Model	Data Format	Configuration	Notes
Garmin	GSR 56	RS-232	GSR Format 1	

C.1.19 ADS-B Traffic and FIS-B Weather Sources

Table C-25 Compatible ADS-B Traffic and FIS-B Weather Sources

Manufacturer	Model	Data Format	Configuration	Notes
Garmin	GDL 88	HSDB	HSDB	Refer to Section 5.4.3.4. GDL 88 software v2.06 or later is required.
	GTX 345/345D/ 345R/345DR	RS-232, HSDB	RS-232, HSDB	Refer to Section 5.4.3.2. GTX software v2.02 or later is required.
	GNX 375	HSDB	HSDB	Refer to Section 5.4.3.4. GNX 375 software v3.10 or later is required.

C.1.20 Flight Stream

Table C-26 Compatible Flight Stream Models

Manufacturer	Model	Data Format	Configuration	Notes
Garmin	Flight Stream 210	RS-232 RS-422	None	Flight Stream 210 ports will automatically configure when interfaced to connected LRUs (e.g., GTN Xi, GDL 88, GDL 69).
	Flight Stream 510	N/A	N/A	Flight Stream automatically configures when inserted into the data card slot.

C.1.21 Flight Stream 210/510 Equipment Compatibility

Table C-27 Compatible Flight Stream 210/510 Equipment

Manufacturer	Model	Data Format	Configuration	Notes
Garmin	GTN Xi	RS-232	Connext 1	GTN Xi GPS/GBAS v8.0 or later for the Flight Stream 210. GTN Xi GPS/GBAS v5.0 or later for the Flight Steam 510.
	GDL 88	RS-422	Connext 1	GDL 88 v3.00 or later.
	GDL 69	N/A	None	GDL 69 v3.30 or later.

C.2 GMA 35

The following equipment listed in this appendix is compatible with the GMA 35 Audio Panel when configured as described in this section. For detailed configuration information, refer to Section 5.4.6.5.5.

C.2.1 COM Radios

COM radios not listed below can still be approved under this GTN AML STC if **all** of the following conditions are met:

- The installation of the COM radio was previously FAA-approved
- The operational check for the COM radio described in Section 6.2.6.3 must be successfully completed

Table C-28 Compatible COM Radios

Manufacturer	Model	Data Format	Notes
Garmin	GNS 430W	Analog Audio	
	GNS 530W		
	GTN 635Xi/650Xi/750Xi		
	SL 30		
	SL 40		

C.2.2 NAV Radios

NAV radios not listed below can still be approved under this GTN AML STC if **all** of the following conditions are met:

- The installation of the NAV radio was previously FAA-approved
- The audio check for the NAV radio described in Section 6.2.6.4 must be successfully completed

Table C-29 Compatible NAV Radios

Manufacturer	Model	Data Format	Notes
Garmin	GNS 430W	Analog Audio	
	GNS 530W		
	GTN 650Xi/750Xi		
	SL 30		

C.2.3 Other Audio Sources

Audio sources listed in Appendix Section B.2 may be interfaced to the GMA 35. Other analog audio sources may also be interfaced to the GMA 35 under this GTN AML STC if **all** of the following conditions are met:

- The installation of the audio source was previously FAA-approved
- The audio source provides standard analog audio designed to drive at least a 600 Ω load
- The applicable audio check described in Section 6.2.6.5, Section 6.2.6.6, or Section 6.2.6.9 must be successfully completed

APPENDIX D AIRCRAFT MODEL-SPECIFIC INFORMATION

Additional requirements and limitations that are placed on some aircraft as a part of this STC are provided in Table D-1.

Table D-1 Aircraft Model Specific Information

Aircraft Make (TCDS Holder) [common name or previous make]	**Aircraft Model**	**Requirements and Limitations**
Air Tractor (Air Tractor, Inc.)	AT-401, AT-401B, AT-402, AT-402A, AT-402B, AT-502, AT-502A, AT-502B, AT-504, AT-602 AT-802, AT-802A	The AT-401 series, AT-402 series, and AT-502 series must have optional avionics mounting installation (P/N 61337-X) installed as a prerequisite for the installation of the GTN Xi. AT-504 airplanes must have optional avionics mounting installation (P/N 13750-X) installed as a prerequisite for the installation of the GTN Xi. The AT-602 series and AT-802 series must have either the optional avionics mounting installation (P/N 61337-X) or (P/N 60663-X) as a prerequisite for the installation of the GTN Xi. **Installation approved for VFR operation only.**
Beechcraft (Beechcraft Corporation)	D17S	Approved for aircraft with approved firewall modification to accommodate the depth of the LRU.
Diamond (Diamond Aircraft Industries, Inc.)	DA20-A1, DA20-C1	Installation approved for VFR operation only.
Diamond (Diamond Aircraft Industries GmbH)	DA 40/DA 40F	Diamond DA 40 and DA 40F aircraft with Diamond OSB 40-004/3 incorporated, or aircraft with similar factory-installed lightning protection supporting IFR operation.
Extra (Extra Flugzeugproduktions-undVertriebs GmbH)	EA-300/L, EA-300/LC	One of the following sub-panels must be installed: • EA-8D501.20 Sub Panel GTN 635/650 • EA-8D501.21 Sub Panel GTN 750 Alternately, aircraft with the following sub panels previously installed may be used with modifications to the sub-panel side walls for the GTN Xi installation rack mounting hole pattern. • EA-86501.4 • EA-86501.8 • EA-86501.10 For more information, contact Extra Aircraft (www.extraaircraft.com/contact.php). Installation approved for VFR operation only.
GROB [GROB-WERKE)	G115, G115A, G115B, G115C, G115C2, G115D, G115D2, G115EG	Installation approved for VFR operation only.
Piaggio (Piaggio Aero Industries S.p.A.)	PIAGGIO P-180	Installation in this aircraft is only approved for models equipped with a Garmin G600 system.
Rushmeyer (Rushmeyer Luftfahrttechnik GmbH)	R90-230RG	Installation approved for VFR operation only.

Aircraft Make (TCDS Holder) [common name or previous make]	**Aircraft Model**	**Requirements and Limitations**
Slingsby (Slingsby Aviation Ltd.)	T67M260	Installation approved for VFR operation only.
Vulcanair S.p.A. (Vulcanair S.p.A.) [Partenavia]	P68 Observer, P68TC Observer, P68 Observer 2	This STC only approves the installation of the GTN Xi and GMA 35 in the console and not in the instrument panel.
WACO (WACO Classic Aircraft Corporation) [Great Lakes Aircraft Company] [John Duncan]	2T-1A, 2T-1A-1, 2T-1A-2	Installation approved for VFR operation only.

APPENDIX E LIGHTNING PROTECTION

The following sections provide lightning protection and electrical bonding guidance.

Section 4.2 applies to all aircraft with vibration isolated instrument panels that require electrical bonding. Refer to Section 3.6.6 for additional information.

E.1 Lightning Protection for IFR Nonmetallic Aircraft

Detailed information about the lightning protection components that are required for particular aircraft models is provided in Table E-1. Only nonmetallic models are listed. A "Y" in the Protection Required column indicates the TVS and fuse combination or GPS coax overbraid is required for the particular model. An "N" indicates the TVS and fuse combination or GPS coax overbraid is not required. The interconnect diagrams showing how the TVS and fuse are connected to the GTN Xi are found in Appendix B.

NOTE

Aircraft models that are limited to VFR operations only are not required to have TVSs and associated fuses installed. Consequently, these models do not appear in Table E-1. Refer to Table D-1 for aircraft that are limited to VFR operations.

Table E-1 Lightning Protection for IFR Nonmetallic Aircraft

Aircraft Make (TCDS Holder) [common name or previous make]	**Aircraft Model Designation**	**Protection Required?**		
		TVS1	**TVS2**	**GPS Coaxial Cable Overbraid**
Alexandria Aircraft (Alexandria Aircraft LLC)[Bellanca, Inc.]	14-19, 14-19-2, 14-19-3, 14-19-3A, 17-30, 17-31,17-31TC	Y	N	N
Alexandria Aircraft (Alexandria Aircraft LLC) [Bellanca Aircraft Corp;Viking Aviation, Inc.;Bellanca, Inc.]	17-30A, 17-31A, 17-3A1TC	Y	N	N
American Champion (American Champion Aircraft Corporation)	8KCAB, 8GCBC	Y	N	N
American Champion (American Champion Aircraft Corporation)	7GCA, 7GCB, 7KC, 7GCBA, 7GCAA, 7GCBC, 7KCAB, 7ECA	Y	N	N
APEX Aircraft (APEX Aircraft) [AVIONS PIERRE ROBIN]	R 3000/160	Y	N	N
Bellanca (Bellanca Aircraft Corporation)	14-13, 14-13-2, 14-13-3, 14-13-3W	Y	N	N
Cessna (Cessna Aircraft Company) [Columbia Aircraft Manufacturing, The Lancair Company]	LC40-550FG, LC41-550FG, LC42-550FG	Y	Y	N
Cessna (Cessna Aircraft Company)	T-50 (Army AT-17, UC-78 Series, Navy JRC-1)	Y	N	N
Cirrus Design Corporation (Cirrus Design Corporation)	SR20, SR22	Y	Y	N
Cub Crafters (Cub Crafters, Inc.)	CC18-180, CC18-180A	Y	N	N
Diamond (Diamond Aircraft Industries GmbH)	DA 40, DA 40F	Y	Y	N
Extra (Extra Flugzeugproduktions- und Vertriebs- GmbH)[Extra Flugzeugbau GmbH]	EA-400	Y	Y	N

Aircraft Make (TCDS Holder) [common name or previous make]	**Aircraft Model Designation**	**Protection Required?**		
		TVS1	**TVS2**	**GPS Coaxial Cable Overbraid**
FS2003 Corp. (FS 2003 Corporation [New Piper Aircraft]	PA-12, PA-12S	Y	N	N
GROB(GROB-WERKE)	G120A	Y	Y	N
Hawker Beechcraft (Hawker Beechcraft Corporation) [Beech Aircraft Company; Raytheon Aircraft Company]	D17S (UC43, UC43B, GB-1, GB-2), SD17S	Y	N	N
Hawker Beechcraft (Hawker Beechcraft Corporation) [Beech Aircraft Company; Raytheon Aircraft Company]	G17S	Y	N	N
Howard (Howard Aircraft Foundation) [Jobmaster Co]	DGA-15P (UC-70, GH-1, GH-2, GH-3, NH-1), DGA-15J (UC-70B), DGA15W	Y	N	N
Liberty (Liberty Aerospace Incorporated)	XL-2	Y	Y	N
Maule (Maule Aerospace Technology, Inc.)	Bee Dee M-4, M-4, M-4C, M-4S, M-4T, M-4-180C, M-4-180S, M-4-180T, M-4-210, M-4-210C,M-4-210S, M-4-210T, M-4-220, M-4-220C,M-4-220S, M-4-220T, M-5-180C, M-5-200,M-5-210C, M-5-210TC, M-5-220C, M-5-235C,M-6-180, M-6-235, M-7-235, MX-7-235, MX-7-180,MX-7-420, MXT-7-180,MT-7-235, M-8-235, MX-7-160, MXT-7-160, MX-7-180A, MXT-7-180A, MX-7-180B, M-7-235B, M-7-235A, M-7-235C, MX-7-180C, M-7-260, MT-7-260, M-7-260C, M-7-420AC, MX-7-160C, MX-7-180AC, M-7-420A, MT-7-420, M-4-180V, M-9-235	Y	N	N
Piper Aircraft, Inc. (Piper Aircraft, Inc.) [New Piper]	PA-18, PA-18S, PA-18 “105” (Special), PA-18S “105” (Special), PA-18A, PA-18 “125”, PA-18S “125”, PA-18AS “125”, PA-18 “135”, PA-18A “135”, PA-18S “135”, PA-18AS “135”, PA-18 “150”, PA-18A “150”, PA-18S “150”, PA-18AS “150”, PA-19, PA-19S	Y	N	N
Piper Aircraft, Inc. (Piper Aircraft, Inc.) [New Piper]	PA-20, PA-20S, PA-20 “115”, PA-20S “115”, PA-20 “135”, PA-20S “135”	Y	N	N
Piper Aircraft, Inc. (Piper Aircraft, Inc.) [New Piper]	PA-22, PA-22-108, PA-22-135, PA-22S-135, PA-22-150, PA-22S-150, PA-22-160, PA-22S-160	Y	N	N
Sky International (Sky International, Inc.) [Christen Industries; Aviat, Inc.; White International, LTD.; Pitts]	A-1, A-1A, A-1B, A-1C-180, A-1C-200	Y	N	N
Symphony Aircraft Industries Inc. (Symphony Aircraft Industries Inc.)[OMF]	OMF-100-160, SA 160	Y	N	N
Tecnam (Constrzioni Aeronautiche Tecnam srl)	P2010	Y	Y	N

Aircraft Make (TCDS Holder) [common name or previous make]	**Aircraft Model Designation**	**Protection Required?**		
		TVS1	**TVS2**	**GPS Coaxial Cable Overbraid**
Triton Aerospace LLC (Triton Aerospace LLC) [Triton America LLC;AAI Acquisition, Inc.; Adam Aircraft]	A500	Y	Y	N
Univair (Univair Aircraft Corporation) [Stinson]	108, 108-1, 108-2, 108-3, 108-5	Y	N	N
Vulcanair (Vulcanair S.p.A)	Vulcanair V1.0	Y	N	N
WACO (The WACO Aircraft Company)	YMF	Y	N	N

GARMIN®