

GTX 327 INSTALLATION MANUAL

GARMIN Corporation
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Dwg. Number 190-00187-02 Rev. 1

	Approvals	Date
Drawn	MD	10/07/99
Chkd.		
Proj. Mgr.		
Released		

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Preliminary



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GARMIN International, Inc.
1200 E. 151st Street
Olathe, KS 66062 USA

190-00187-02 Revision 1
October 1999

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RECORD OF REVISIONS

Revision	Revision Date	Description	ECO #
1	10/07/99	Engineering Release	----

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1. GENERAL DESCRIPTION

1.1 INTRODUCTION

This manual provides the installation and operating instructions for the GARMIN GTX 327 Digital Display Transponder system. Information pertaining to the maintenance, alignment, and procurement of replacement parts is found in the GTX 327 Maintenance Manual, P/N 190-00187-05.

1.2 EQUIPMENT DESCRIPTION

The GARMIN GTX 327 is a panel-mounted transponder with the addition of timing functions. The transponder is a radio transmitter and receiver that operates on radar frequencies, receiving ground radar interrogations at 1030 MHz and transmitting a coded response of pulses to ground-based radar on a frequency of 1090 MHz.

As with other Mode A/Mode C transponders, the GTX 327 replies with any one of 4,096 codes, which differ in the position and number of pulses transmitted. By replying to ground transmissions, the GTX 327 enables ATC to display aircraft identification, altitude and groundspeed on ATC radar screens. The GTX 327 is equipped with IDENT capability that activates the Special Position Identification (SPI) pulse for 18 seconds.

The GTX 327 is configured with all key controls. The layout of the front panel keys and displays segregates the transponder's primary functions from the secondary timing functions. The unit can be configured so the aircraft avionics master bus can turn the unit on.

1.3 INTERFACE SUMMARY

The GTX 327 provides the following interface connections via the rear connector:

- Ten (10) encoding altimeter inputs.
- External IDENT input.
- External STBY input.
- External suppression pulse input.
- Switched power output of up to 1.5 amps (for digital altitude encoder power).
- Aircraft power input (11 to 33 volts).
- Aircraft dimming buss input voltage.
- Aircraft master switch turn-on option.
- Serial altitude input.
- Serial altitude output.

1.4 GTX 327 TRANSPONDER SPECIFICATIONS

SPECIFICATION	CHARACTERISTIC
TSO, JTSO	C74c Class 1A
TSO ENV CAT	Refer to appendix A
Applicable Documents	FAA TSO C74c; RTCA DO-160C
Temperature Range	-20°C to +55°C (Continuous Operation)
GTX 327 Unit Weight	1.60 lbs.
GTX 327 Rack Weight	0.64 lbs.
Power Requirements	11.0 to 33.0 Vdc; Max Power Input: 12 Watts
Humidity	95% @ +55°C for 16 Hours; 85% @ +38°C for 32 Hours
Altitude	50,000 Feet
Transmitter Frequency	1090 MHz
Transmitter Power	125 Watts minimum, 150 Watts nominal at the unit antenna port
Receiver Frequency	1030 MHz
Receiver Sensitivity	-72dBm Nominal for 90% replies
Mode A Capability	4096 Identification Codes
Mode C Capability	100 Foot Increments from -1000 to 63,000 feet
External Suppression Input	Low $\leq$ 0.5V; High $\geq$ 8V

1.5 EQUIPMENT AVAILABLE

ITEM	GARMIN P/N
GARMIN GTX 327 Transponder	010-00188-00
GARMIN GTX 327 Transponder, includes GARMIN installation kit, P/N 010-10216-00	010-00188-01
GARMIN GTX 327 Installation kit	010-10216-00
GARMIN GTX 327 Antenna kit	010-10160-00

1.6 INSTALLATION ACCESSORIES

The following installation accessories are available:

- GARMIN GTX 327 Installation Kit, P/N 010-10216-00 containing Connector/Rack Kit, P/N 011-00338-00 (see figure B-2 for connector/rack kit assembly drawing).
- GARMIN GTX 327 Antenna Kit, P/N 010-10160-00. Note: A transponder antenna approved to TSO C66() or C74() that has been installed to meet the requirements of this manual may be approved for use with the GTX 327.

1.7 ADDITIONAL EQUIPMENT REQUIRED

- Antenna Sealant - Use antenna manufacturer's instructions, install according to FAA AC 43.13-2A.
- Cables - The installer will supply all system cables. Cable requirements and fabrication is detailed in Section 2 of this manual.
- Hardware - #6 Flat Head Screw (6 ea.) and #6-32 Self-Locking Nut (6 ea.). Hardware required to mount installation rack is not provided.
- Encoding Altitude Digitizer - Use encoding altimeter manufacturer's instructions, install according to FAA AC 43.13-2A.

1.8 INSTALLATION APPROVAL

The conditions and tests required for TSO approval of the GTX 327 Transponder and antenna are minimum performance standards. It is the responsibility of those desiring to install this transponder and antenna either on or within a specific type or class of aircraft to determine that the aircraft installation standards are within the TSO standards. The GTX 327 and antenna may be installed only if further evaluation by the applicant documents an acceptable installation and is approved by the administrator. For GTX 327 TSO compliance, see Appendix A. For antenna TSO compliance, refer to antenna manufacturer's literature.

1.9 LIMITED WARRANTY

GARMIN Corporation warrants this product to be free from defects in materials and manufacture for one year from the date of purchase. GARMIN will, at its sole option, repair or replace any components that fail in normal use. Such repairs or replacement will be made at no charge to the customer for parts or labor. The customer is, however, responsible for any transportation costs. This warranty does not cover failures due to abuse, misuse, accident or unauthorized alteration or repairs.

THE WARRANTIES AND REMEDIES CONTAINED HEREIN ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED OR STATUTORY, INCLUDING ANY LIABILITY ARISING UNDER ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, STATUTORY OR OTHERWISE. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, WHICH MAY VARY FROM STATE TO STATE.

IN NO EVENT SHALL GARMIN BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER RESULTING FROM THE USE, MISUSE, OR INABILITY TO USE THIS PRODUCT OR FROM DEFECTS IN THE PRODUCT. SOME STATES DO NOT ALLOW THE EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

To obtain warranty service, call the GARMIN Customer Service department (913-397-8200) for a returned merchandise tracking number. The unit should be securely packaged with the tracking number clearly marked on the outside of the package and sent freight prepaid and insured to a GARMIN warranty service station. A copy of the original sales receipt is required as the proof of purchase for warranty repairs. GARMIN retains the exclusive right to repair or replace the unit or software or offer a full refund of the purchase price at its sole discretion. SUCH REMEDY SHALL BE YOUR SOLE AND EXCLUSIVE REMEDY FOR ANY BREACH OF WARRANTY.

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2. INSTALLATION

2.1 INTRODUCTION

This section provides the necessary information for the installing the GTX 327 Transponder, and where required, optional accessories. Installation of the GTX 327 will differ according to equipment location and other factors. Cabling will be fabricated by the installing agency to fit these various requirements. This section contains interconnect diagrams, mounting dimensions, and information pertaining to installation. Any deviations from the installation instructions prescribed in this document shall be accomplished in accordance with the requirements set forth in FAA AC 43.13-2A.

2.2 UNPACKING AND INSPECTING EQUIPMENT

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

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

2.3 ANTENNA INSTALLATION

2.3.1 Location Considerations

- A. The antenna (GARMIN P/N 010-10160-00) should be well removed from any major protrusions, such as engine(s), propeller(s), and antenna masts. It should also be as far as practical from landing gear doors, access doors, or other openings that could effect its radiation pattern.
- B. The antenna should be mounted on the underside of the aircraft and in a vertical position when the aircraft is in level flight.
- C. Avoid mounting the antenna within three feet of the ADF sense antenna or any other communication antenna and six feet from the DME antenna.
- D. To prevent RF interference, the antenna must be physically mounted a minimum distance of three feet from the GTX 327.

NOTE

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

2.3.2 Antenna Installation

- A. Install the antenna according to the antenna manufacturer's instructions and FAA AC 43.13-2A.

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2.3.3 Antenna Cable Installation

When routing antenna cables, observe the following precautions:

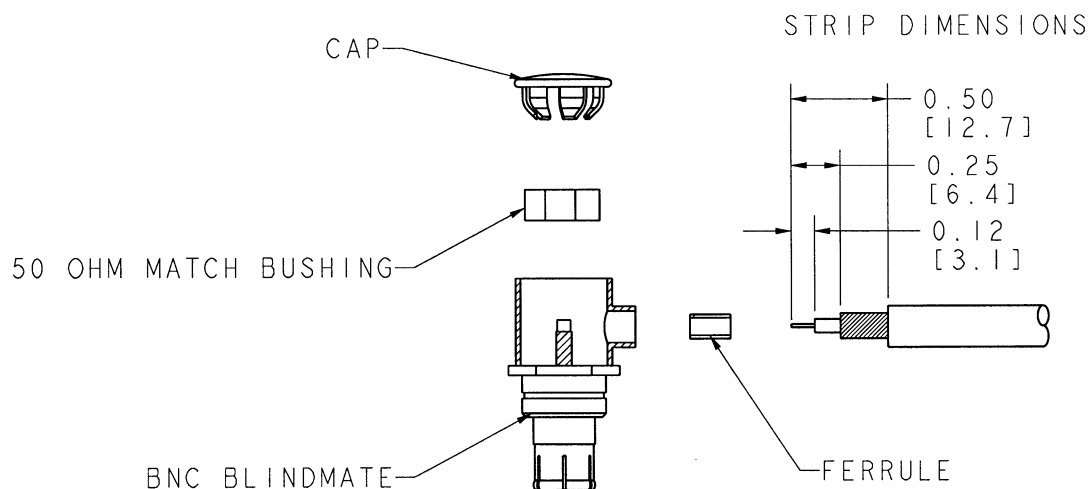
- All cable routing should be kept as short as possible and as direct as possible.
- Avoid sharp bends.
- Avoid routing cables near power sources (e.g., 400 Hz generators, trim motors, etc.) or near power for fluorescent lighting.
- Avoid routing cable near ADF antenna cable (allow at least a 12-inch separation).

The table below lists examples of the recommended antenna cable vendors and the type of cable to be used for specific lengths of cable. Any cable meeting specifications is acceptable for the installation.

Cable Length (in feet)	Use Times Microwave Systems Part Number	Times Microwave Systems, P.O. Box 5039 Wallington, CT 06492-5039 Tel: 203-949-8400 Fax: 203-949-8423
5.5 to 10	M17/111-RG303	
10 to 17.5	SF-304 or M17/127	
17.5 to 27	SF-5394 or M17/79	
Cable Length (in feet)	Use Electronic Cable Specialists Part Number	Electronic Cable Specialists, 5300 W. Franklin Drive Franklin, WI 53132 Tel: 800-327-9473 414-421-5300 Fax: 414-421-5301
5.5 to 10	ECS 3C142B	
10 to 17.5	ECS 311601	
17.5 to 27	ECS 311201	
27 to 41	ECS 310801	

2.3.4 Antenna Cable Connectors

The antenna cable requires a BNC connector at the antenna and a male BNC “Blindmate” connector (P/N 330-00198-00, supplied with GTX 327 installation kit 010-10216-00) at the transponder. Instructions for installing the Blindmate BNC are shown in steps A-G. Follow BNC connector manufacturer instructions for assembly of the BNC connector.



- A. Trim coax outer insulation back 0.50”.
- B. Trim braid (not center conductor or insulation) back 0.25”.
- C. Strip Insulation back 0.120”.

NOTE

Place the ferrule over the coax braid, flush against the coax outer insulation before performing the next step if the outside diameter of the coax braid is smaller than the inside diameter of the center connector sidewall opening.

- D. Insert cable (center conductor, dielectric and shield braid) through the sidewall of the connector and solder the center conductor to the center pin of the connector.

NOTE

When using low loss cable it may be necessary to flatten the solid wire center conductor slightly so it can fit the slot on the RF connector center pin. When soldering, avoid applying excess heat to the connector body, and center conductor insulator.

- E. Heat the outside of the connector sleeve and at the same time apply solder between the braid and the sleeve. Continue to apply heat until the solder flows evenly.
- F. Install 50 Ω Matching Bushing.
- G. Insert connector cap and tack solder in two places.

2.4 GTX 327 INSTALLATION

NOTES

Avoid installing the unit near heat sources. If this is not possible, ensure that additional cooling is provided. Allow adequate space for installation of cables and connectors. The installer will supply and fabricate all of the cables. All wiring must be in accordance with FAA AC 43.13-2A.

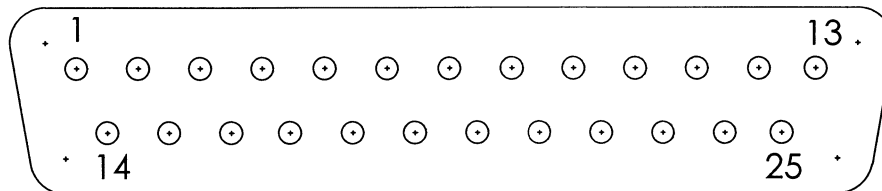
- A. Assemble the connector/rack kit according to figure B-2. Install the rack assembly according to the dimensions given in figure B-1. Mounting brackets are not supplied due to the wide range of mounting configurations available. Suitable mounting brackets may be fabricated from sheet metal or angle stock. To insure a sturdy mount, rear support for the unit should be provided.
- B. Looking at the bottom of the transponder, make sure the front lobe of the hold down device is in a vertical position. This can be accomplished by using a 3/32" Allen wrench through the face plate.
- C. Slide the unit into the rack until the front lobe of the unit touches the rack. Guide pins on the back plate will help in the proper alignment of the unit in the rack.
- D. Turn the Allen wrench clockwise until unit is secured in the rack. Continue turning until tight. Do not overtighten the screw.
- E. To remove the unit from the rack, turn the 3/32" Allen wrench counterclockwise until it disengages from the rack.

2.5 COOLING AIR

The GTX 327 meets all TSO requirements without forced air-cooling. However Garmin recommends forced air-cooling for all products to increase the long-term reliability. The GTX 327 was designed to handle a constant 450 PRF, with short periods of 1200 PRF. Rate limit is set at 1200PRF. A typical radar site would interrogate the transponder once every 5 to 10 seconds for approximately 100 msec at a 400 PRF rate. In very high traffic areas with multiple ground stations and TCAS traffic it is possible to have long term PRF rates above 450 PRF. The GTX 327 measures the unit temperature and without force air-cooling the reply rate will be reduced to protect the transmitter from overheating.

2.6 ELECTRICAL CONNECTIONS

All electrical connections, except for the antenna, are made through a single, 25 pin D connector. Figure 2-1 defines the electrical characteristics of all input and output signals and identifies the cable requirements for each signal. Required connector and associated hardware are supplied in the installation kit (P/N 010-10216-00). See figures B-3 and B-4 for interconnect wiring diagrams.



PIN	DESCRIPTION	I/O
1	AVIONICS MASTER ON	In
2	DO NOT CONNECT	--
3	ALTITUDE A1	In
4	ALTITUDE C2	In
5	ALTITUDE A2	In
6	ALTITUDE A4	In
7	ALTITUDE C4	In
8	EXTERNAL IDENT INPUT	In
9	ALTITUDE B1	In
10	ALTITUDE C1	In
11	ALTITUDE B2	In
12	ALTITUDE B4	In
13	POWER GROUND	In
14	SWITCHED POWER OUTPUT	Out
15	POWER INPUT (+11 TO +33 VDC)	In
16	EXTERNAL STANDBY	In
17	EXTERNAL SUPPRESSION	In
18	ALTITUDE D4	In
19	RS232	In
20	RS232	Out
21	RESERVED	--
22	SQUAT SWITCH	In
23	28 VDC PANEL LIGHTING INPUT	In
24	14 VDC/5 VDC PANEL LIGHTING INPUT	In
25	POWER GROUND	In

Figure 2-1. DB-25 Pin-Out Definitions

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3. POST INSTALLATION CONFIGURATION & CHECKOUT PROCEDURE

3.1 AIRCRAFT STATION LICENSING REQUIREMENTS

The Telecommunications Act of 1996, effective February 8, 1996, provides the FCC discretion to eliminate radio station license requirements for aircraft and ships. The GTX 327 installation must comply with current transmitter licensing requirements. To find out the specific details on whether a particular installation is exempt from licensing, please see FCC Fact Sheet PR 5000 or contact the FCC at (800)-322-1117.

If an aircraft license is required, make application for a license on FCC form 404, Application for Aircraft Radio Station License. The FCC also has a fax-on-demand service to provide forms by fax at (202)-418-0177.

The GTX 327 owner accepts all responsibility for obtaining the proper licensing before using the transponder.

3.2 OPERATION

NOTE

The coverage you can expect from the GTX 327 is limited to line of sight. Low altitude or aircraft antenna shielding by the aircraft itself may result in reduced range. Range can be improved by climbing to a higher altitude. It may be possible to minimize antenna shielding by locating the antenna where dead spots are only noticed during abnormal flight attitudes.



Figure 3-1. GTX 327 Front Panel

NOTE

The GTX 327 should be turned off before starting aircraft engine(s).

3.2.1 Function Selection Switches

The function selection switches are:

- **OFF** — Turns the GTX 327 off.
- **STBY** — Turns the transponder ON in STBY mode or selects STBY mode. When in STBY the transponder will not reply to any interrogations from the ground radar system. At power on the last active identification code will be selected.
- **ON** — Turns the transponder ON in Mode A, the identification mode or selects Mode A. At power on the last active identification code will be selected. In addition to the aircraft's identification code, the transponder will also reply to altitude interrogations (mode C) with signals that do not contain altitude information. The Reply Symbol "))) " will be displayed when the transponder replies to ground interrogation.
- **ALT** — Turns the transponder on in Mode A and Mode C, or, if already on, selects Mode A and Mode C. This is the identification and altitude-reporting modes to respond to ATC aircraft identification interrogations and altitude interrogations with standard pressure altitude (29.92 inches Hg.) received from an external altitude digital encoder. The ALT position may be used in aircraft that are not equipped with the optional altitude encoder, however, the only response will be discreet signals that do not contain altitude information. The Reply Symbol "))) " will be displayed when the transponder replies to ground interrogation.

NOTE

Any time the ON or ALT function is selected the transponder becomes an active part of the beacon system. Select ON or ALT as late as practical prior to takeoff and to OFF or STBY as soon as practical after landing unless previously changed to STBY at the request of ATC. An optional Squat Switch can automate transponder control during take off and landing. If installed and configured the Squat Switch will automatically transition the transponder to the ALT mode at take off. Upon landing the Squat Switch will automatically transition the transponder to STBY mode after a preset time delay. This time delay can be selected via a configuration page.

- **IDENT** — On occasion, the controller will request to SQUAWK IDENT. Respond by momentarily pressing and releasing the IDENT button. Pressing the IDENT button activates the Special Position Identification (SPI) Pulse for 18 seconds identifying your transponder return from other aircraft on the controller's scope. The word IDENT will be displayed in the upper left corner of the display while the IDENT feature is active.
- **VFR** — Programs transponder code to the default VFR code. Default code is programmed on a configuration page. Pressing the VFR button again will restore the last identification code.

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- **FUNC** — Changes modes displayed on the right side of the display. Displayed data includes Flight Level, Flight Time, Count Up timer, Count Down timer, screen Contrast, and Display brightness (if configured for manual contrast and brightness.)

Flight Level: Displays the altitude data supplied to the GTX 327 in feet, flight level format or meters depending on configuration setup.

Flight Time: Displays the flight time controlled by the Start/Stop button if no Squat Switch is configured or timer starts when the altitude begins to increase. Under Squat Switch control the timer begins when lift off is sensed.

Count Up Timer: Controlled by START/STOP and CLR button.

Count Down Timer: Controlled by START/STOP, CLR, and CRSR buttons. Count down timer entered with 0 – 9 buttons.

Contrast: Controlled by 8 and 9 buttons.

Display Brightness: Controlled by 8 and 9 buttons

- **START/ STOP** — Starts and stops the Count Up and Count Down timers.
- **CRSR** — Activates the change fields for the Count Down timer when selected by the FUNC key.
- **CLR** — Resets the Count Up and Count Down timers.
- **8** — Reduces screen Contrast and display Brightness. Enters the number eight into the Count Down timer.
- **9** — Increases screen Contrast and display Brightness. Enters the number nine into the Count Down timer.

3.2.2 Code Selection

The code selector consists of eight push button (0 – 7) switches that provide 4,096 active identification codes. Pushing one of these buttons begins the code selection sequence. The new code will not be activated and stored in EEPROM until the forth button is pressed. Pressing the CLR button will cancel the previous button press and restore the code prior to the last button press. Pressing the CRSR button when data entry has begun will remove the cursor and cancel data entry. If an identification code entry is not completed or there is no other key press for four seconds the last active code will be restored.

NOTE

Attention should be paid to the selected identification code. The selected code should be the one assigned by air traffic control for IFR flight or rules applicable to transponder use for VFR flight.

Care should be taken not to select code 7500 and all codes in the 7600 and 7700 series (i.e., 7600-7677, 7700-7777) which trigger special indicators in automated facilities. Only nondiscrete code 7500 will be decoded as the hijack code. An aircraft's transponder code (when available) is utilized to enhance the tracking capabilities of the ATC facility, therefore care should be taken when making routine code changes.

3.2.3 Configuration Pages

Holding down the CRSR button and pressing the ON button provides access to the configuration pages. The FUNC button will sequence through the configuration pages. The CRSR button will highlight selectable fields on each page. When a field is highlighted, numeric data entry will be performed with the 0-9 buttons, and list selections will be performed with the 8 or 9 buttons. Changes made through the configuration pages are stored in EEPROM memory.

- **Display Backlight Page**
Current display backlight intensity: displayed value
Select manual or automatic backlight source
Automatic backlight source: Select automatic backlight source (Photocell, 28Vdc, 5Vdc)
Display backlight filter response time: Select display backlight response time (3-7) (default to 4)
Display backlight filter slope: Select display backlight filter slope value (0-99) (default to 50)
Display backlight filter minimum value: Select display minimum filter slope value (0-99) (default to 50)
Display backlight filter offset: Select display backlight filter offset value (0-99) (default to 50)
- **Key Backlight Page**
Current key backlight intensity: Displayed value
Automatic key backlight source: Select automatic key backlight source (Photocell, 28Vdc, 5Vdc)
Key backlight filter response time: Select key backlight response time (3-7) (default to 4)
Key backlight filter slope: Select key backlight filter slope value (0-99) (default to 50)
Key backlight filter minimum value: Select key minimum filter slope value (0-99) (default to 50)
Key backlight filter offset: Select key backlight filter offset value (0-99) (default to 50)
- **Contrast Configuration Page**
Select contrast mode (Auto, Manual) (default, to Auto)
Select contrast offset (0 to 99) (default, to 50)
- **Operation Configuration Page #1**
VFR identification code: Enter the VFR identification code (default 1200)
Altitude Input source: Select the altitude input source [Gray code(default), Icarus, Shadin]
Altitude display format: Select altitude display format [Flight level (default), Feet, Meters]
Aircraft climb rate: Enter aircraft climb rate [100 to 2000 fpm (500 fpm default)]
- **Operation Configuration Page #2**
SQUAT SWITCH sense
Automatic STBY operation enabled
Automatic STBY delay duration
- **Gray Code Input Configuration Page**
Gray Code discretes
Gray Code altitude
- **Discrete Input Configuration Page**
EXTERNAL IDENT input:
EXTERNAL STANDBY input:
SQUAT SWITCH input: On ground equals High or Low

A.1 CONTINUED AIRWORTHINESS

Other than for regulatory periodic functional checks, maintenance of the GTX 327 is “on condition” only. Refer to the GTX 327 Maintenance Manual, (Garmin P/N 190-00187-05). Periodic maintenance of the GTX 327 is not required.

Preliminary**A.2 ENVIRONMENTAL QUALIFICATION FORM****NOMENCLATURE:** GTX 327 Airborne ATC Transponder Equipment**TYPE/MODEL/PART NO.:** 010-00188-()**TSO/JTSO COMPLIANCE:** TSO - C74c Class 1A
JTSO**MANUFACTURER'S SPECIFICATION AND/OR OTHER****APPLICABLE SPECIFICATION:** 004-00070-00 minimum Performance Specification**MANUFACTURER:** GARMIN INTERNATIONAL**ADDRESS:** 1200 E 151st St, Olathe, Kansas 66062

Conditions	Section	Description of Conducted Tests
Temperature and Altitude	4.0	Equipment tested to Categories A1 & D1 except as noted
Low Temperature	4.5.1	-20° C
High Temperature	4.5.2. & 4.5.3	+55° C
In-Flight Loss of Cooling	4.5.4	Cooling air not required
Altitude	4.6.1	50,000 Feet
Decompression	4.6.2	8,000 to 50,000 Feet
Overpressure	4.6.3	-15,000 Feet
Temperature Variation	5.0	Equipment tested to Category C
Humidity	6.0	Equipment tested to Category A
Shock	7.0	Equipment tested according to DO-160C, Par. 7.2.1
Operational	7.2	6 g's
Crash Safety	7.3	15 g's
Vibration	8.0	Equipment tested without shock mounts to Categories B, M and N (Table 8-1)
Explosion	9.0	Equipment identified as Category X, no test required
Waterproofness	10.0	Equipment identified as Category X, no test required
Fluids Susceptibility	11.0	Equipment identified as Category X, no test required

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Conditions	Section	Description of Conducted Tests
Sand and Dust	12.0	Equipment identified as Category X, no test required
Fungus	13.0	Equipment identified as Category X, no test required
Salt Spray	14.0	Equipment identified as Category X, no test required
Magnetic Effect	15.0	Equipment tested to Class Z
Power Input	16.0	Equipment tested to Category B
Voltage Spike	17.0	Equipment tested to Category A
Audio Frequency Susceptibility	18.0	Equipment tested to Category B
Induced Signal Susceptibility	19.0	Equipment tested to Category A
Radio Frequency Susceptibility	20.0	Equipment tested to Category T
Radio Frequency Emission	21.0	Equipment tested to Category Z
Lightning Induce Transient Susceptibility	22.0	Equipment identified as Category XXXX, no test required
Lightning Direct Effects	23.0	Equipment identified as Category X, no test required
Icing	24.0	Equipment identified as Category X, no test required

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APPENDIX B

ASSEMBLY AND INSTALLATION DRAWINGS

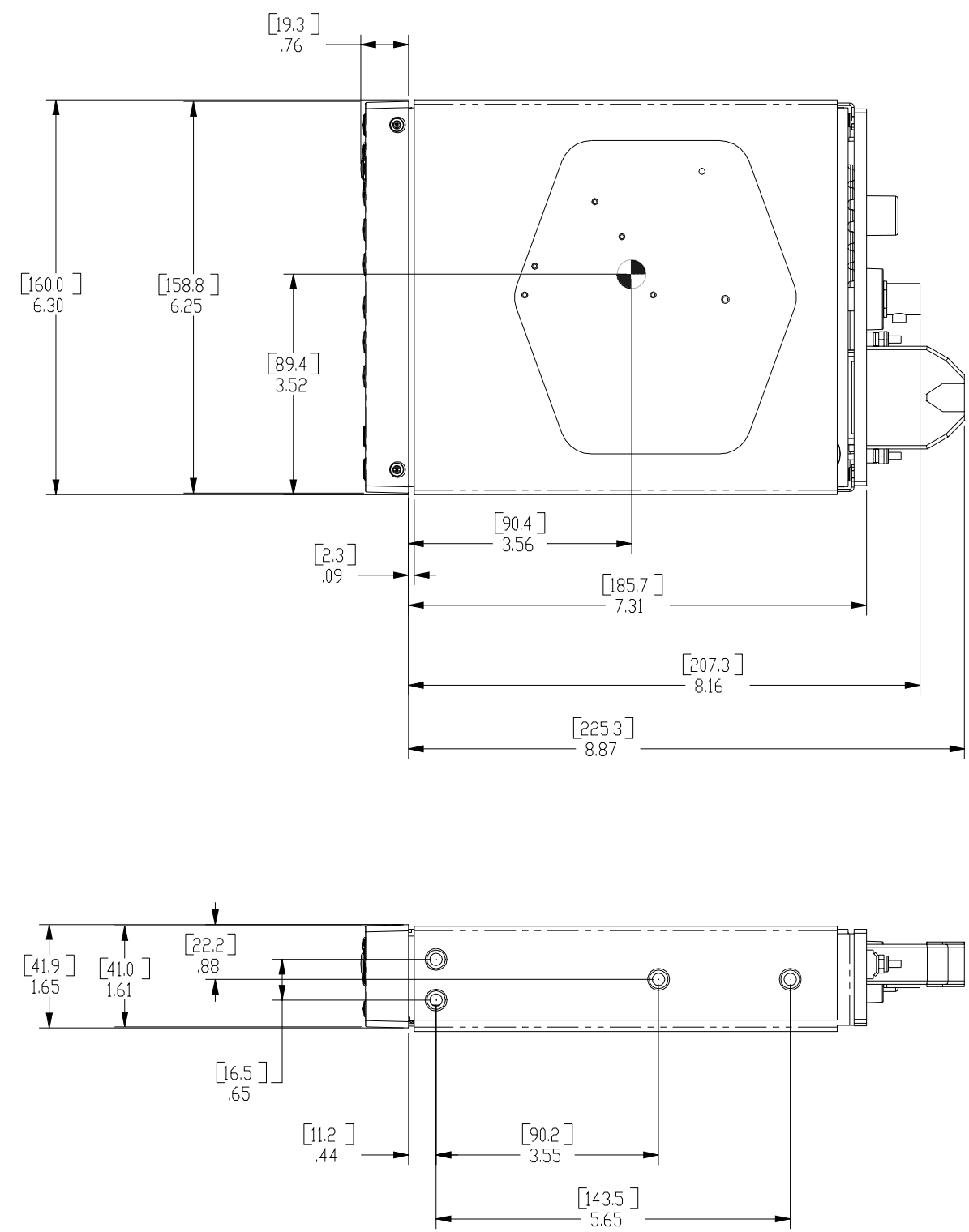


Figure B1 GTX 327 OUTLINE DRAWING

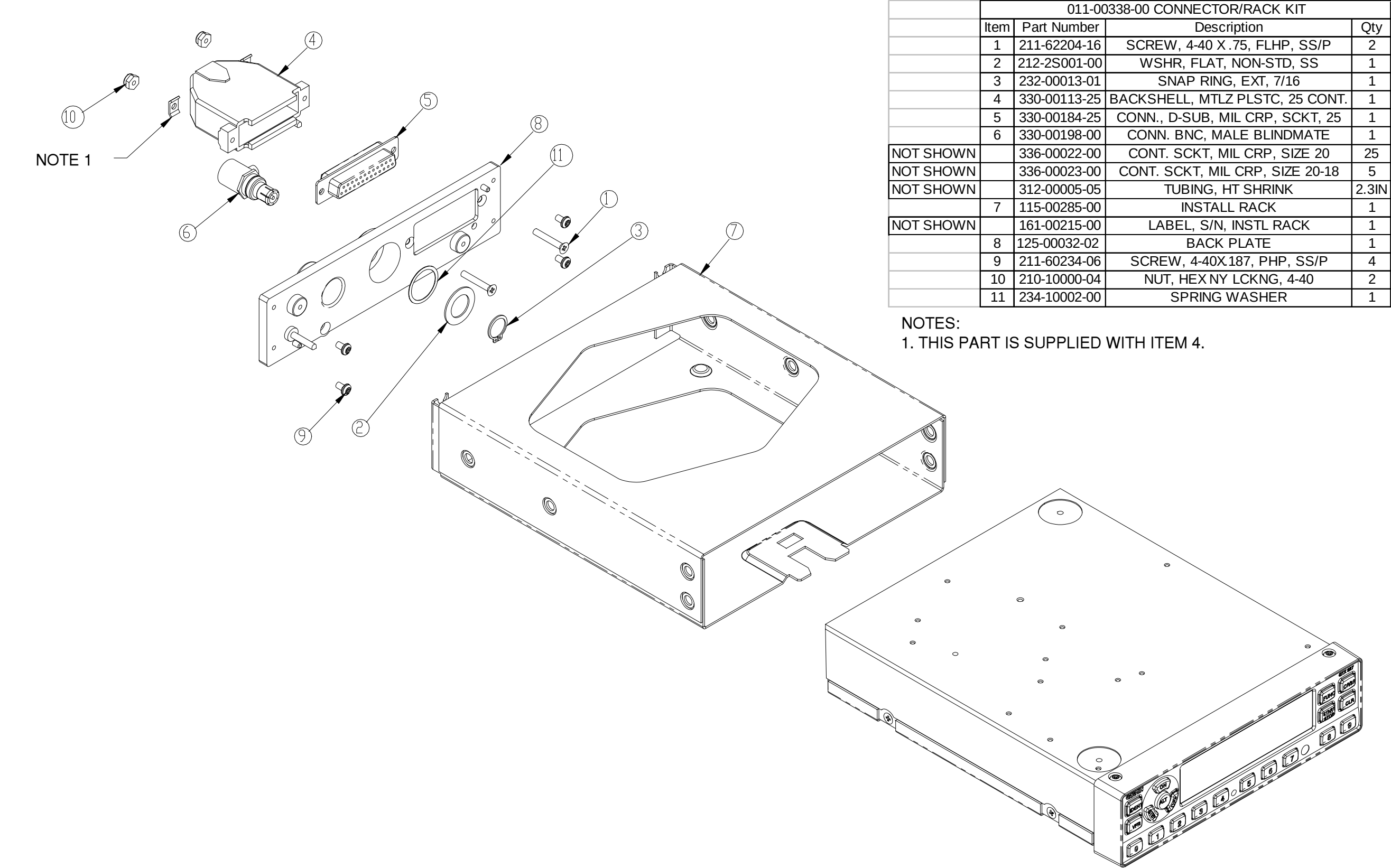


Figure B2 GTX 327 CONNECTOR/RACK KIT ASSEMBLY DRAWING

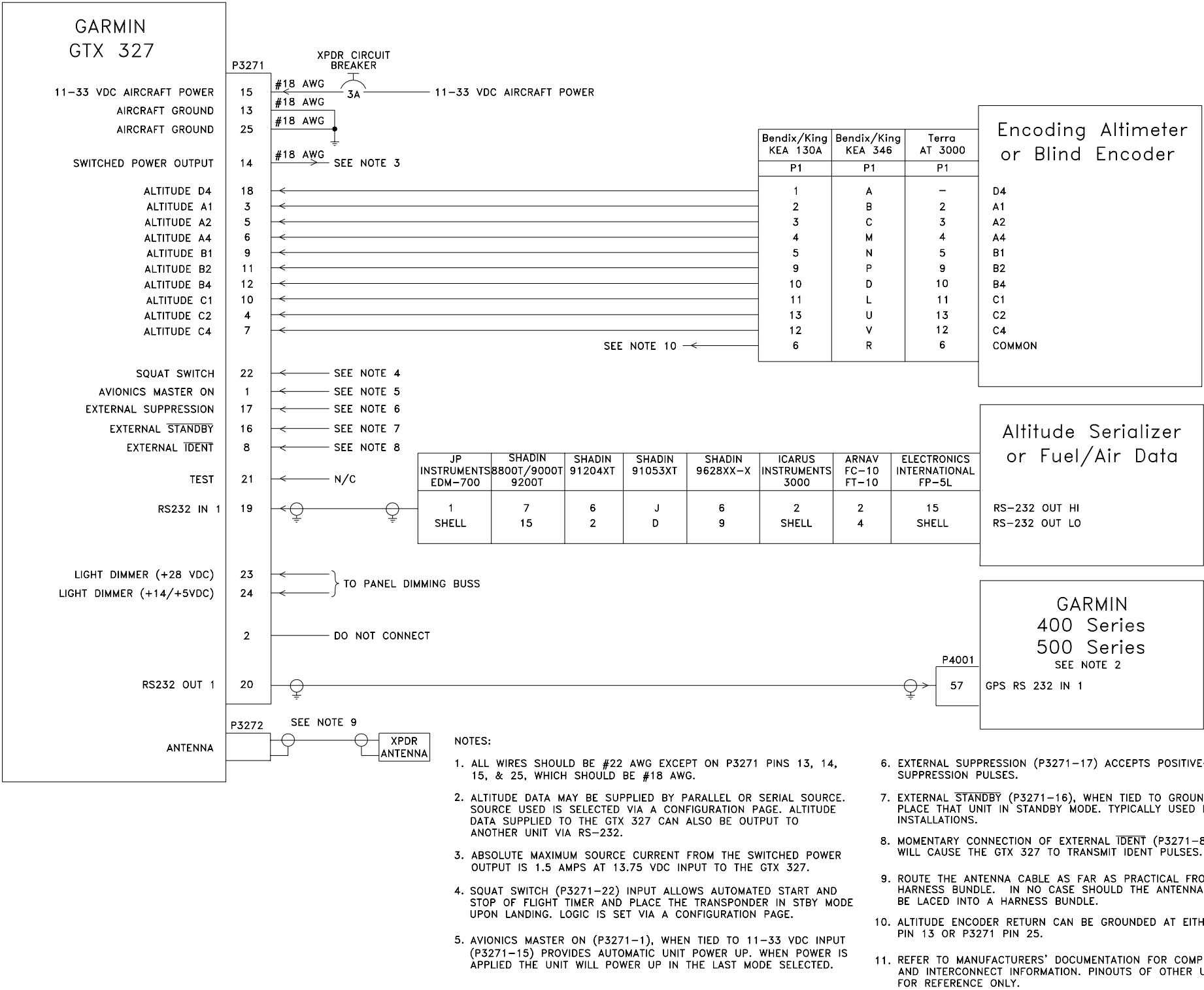


Figure B3 GTX 327 INTERCONNECT WIRING DIAGRAM

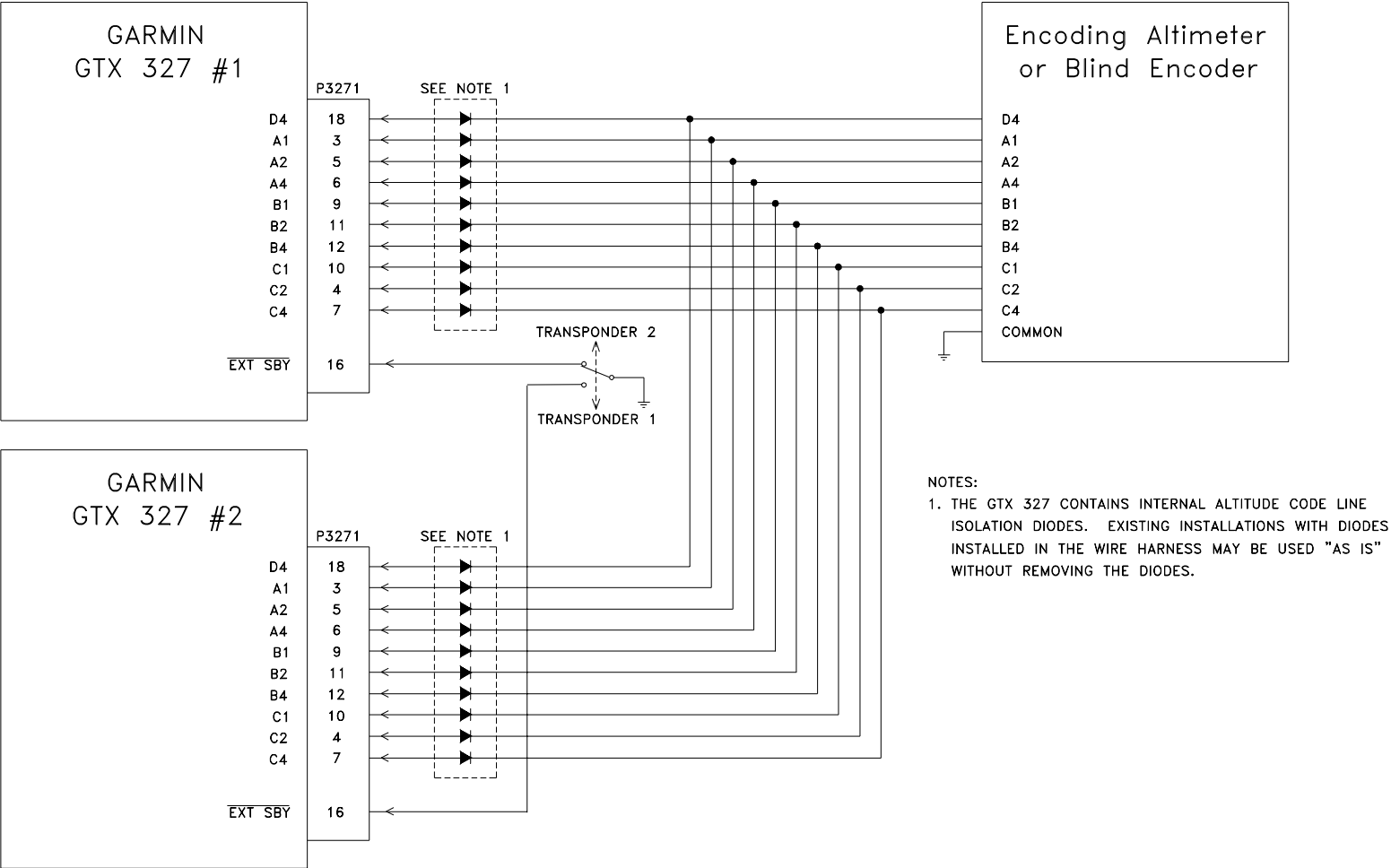


Figure B4 DUAL TXP INTERCONNECT WIRING DIAGRAM, ENCODING ALTITUDE CONNECTIONS

APPENDIX C

STC PERMISSION

Consistent with N8110.69 or Order 8110.4, Aviation Authority approved installations are hereby granted permission to use ST2484WI-A data to modify aircraft.