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GTX 335 Setup Wizard Guide

190-01499-40 February, 2018 Revision E

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Record of Revisions

Revision	Date	Description
A	03/13/17	Production release
B	03/29/17	Expand configuration selections and add interface descriptions
C	05/18/17	Updates for system software version 2.11
D	06/12/17	Updates for system software version 2.12
E	02/9/18	Updates for flight ID configuration

Current Revision Description

Revision	Section Number	Description of Change
E	2.1	Remove unsupported system versions
E	4.1	Removed the flight ID limitation as pilot entry of the flight ID is now allowed when configured.
E	5.4	Updated the flight ID description. Also removed redundant references to the front panel.

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1 First Time Setup: Quick Start Guide

This section is intended to give you a step by step guide to setting up the GTX 335 for the first time. More detailed descriptions of each item described exist in other sections of the document.

1. Install the GTX 335 Setup Wizard
2. Connect the transponder to your PC using a USB cable and apply power
3. Launch the GTX 335 Setup Wizard
4. Press “Set up Transponder” and wait for the unit to become connected
5. Follow the on-screen instructions to configure your transponder
6. Once you reach the apply configuration step, review and apply your configuration selections
7. Continue by pressing next, and perform any necessary calibration processes
8. Once you reach the final review step, review your transponders configuration summary and then save configuration to a file
9. Push to configuration module, if installed
10. Power cycle your transponder and verify it is operating normally

2 GTX 335 Setup Wizard

The GTX 335 Setup Wizard provides a means to configure a connected panel mount GTX 335 with internal GPS using a PC. Transponder system software can be loaded using this tool. The monitoring of status and diagnostic values is also provided. Configuration can be developed without having a unit physically connected. This tool is intended to cover majority of installations, refer to the GTX 335 with GPS Installation Guidance for additional details.

GTX 335 Setup Wizard v2.04 (006-A0284-04)

2.1 Product Components

A product component is part of the GTX 335 Setup Wizard that is designed for a specific version of transponder system software. The GTX 335 Setup Wizard is a collection of product components; the tool determines the unit software version of the connected unit and executes the appropriate product component. Product components may also be selected manually, which is necessary when using the Wizard without a connected unit. Some product components support multiple versions of transponder system software. Newer versions of the GTX 335 Setup Wizard usually include additional product components, and may include updates to previously released product components. This means that when updating to the most recent version of the GTX 335 Setup Wizard, the product component that supports your version of transponder system software may remain the same.

Table 1: Supported System Software

Transponder	Product Component	Supported System Software
GTX 3X5	v2.05.06	v2.05
GTX 3X5	v2.12.02	v2.12

2.2 Reference Documents

The following documents are referenced in this manual and provide additional information.

Table 2: Reference Documents

Part Number	Document
190-00734-17	GTX 335 with GPS Installation Guidance

2.3 Installation Procedure

Hardware/Software requirements for installation are as follows:

- Microsoft Windows XP or newer
- Microsoft .NET 4.0 or newer (included in installation)
- USB port

Follow these steps to install the GTX 335 Setup Wizard on your computer:

1. Download the latest version of the GTX 335 Setup Wizard
2. Run "setup.exe"
3. Follow the on-screen instructions:
    a. Read and accept the license agreement
    b. Select an installation directory
    c. Select appropriate product components to support your GTX version
    Note: Additional product components can be installed later by re-running the installer
    d. Select a start menu folder
    e. Select additional shortcuts, if desired
    f. Review your installation selection, and install
    g. If prompted, Install Microsoft .NET 4.0
    h. When prompted, install USB Garmin Aviation Device drivers
4. The GTX 335 Setup Wizard is now installed on your computer

2.3.1 Troubleshooting Installation Problems

Problem: My anti-virus software detects the GTX 335 Setup Wizard as a threat

1. Add the GTX 335 Setup Wizard to your anti-virus software's list of trusted applications
    a. Temporarily disable your anti-virus software
    b. Run "setup.exe" and follow the on-screen instructions to install the GTX 335 Setup Wizard
    c. Add the application to your anti-virus software's list of trusted applications
    d. Re-enable your anti-virus software
2. Report the GTX 335 Setup Wizard as a false positive to your anti-virus software provider

2.4 Connecting to the Transponder

When the GTX 335 Setup Wizard is launched, you will be presented with two options (See *Figure 1*). Pressing “Set up Transponder” will scan for a connected unit and then provide a step-by-step configuration walkthrough. Pressing “Load Software” will scan for a connected unit and then provide software upload options.

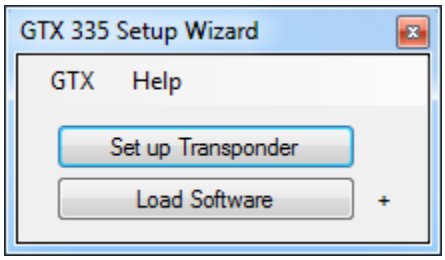

Figure 1: Main Menu

Follow these steps to connect the unit to the GTX 335 Setup Wizard:

1. Connect the unit to your computer via USB port
2. Apply power to the unit
3. Launch the GTX 335 Setup Wizard
4. Press “Set up Transponder” or “Load Software” as desired
5. Wait for the GTX to become connected

2.4.1 Connection Status

During transponder setup, connection status is always displayed in the bottom left corner of the window (See *Figure 2*). Steps that require a connected unit will also indicate connection status. The tool will automatically connect when the transponder is powered on.

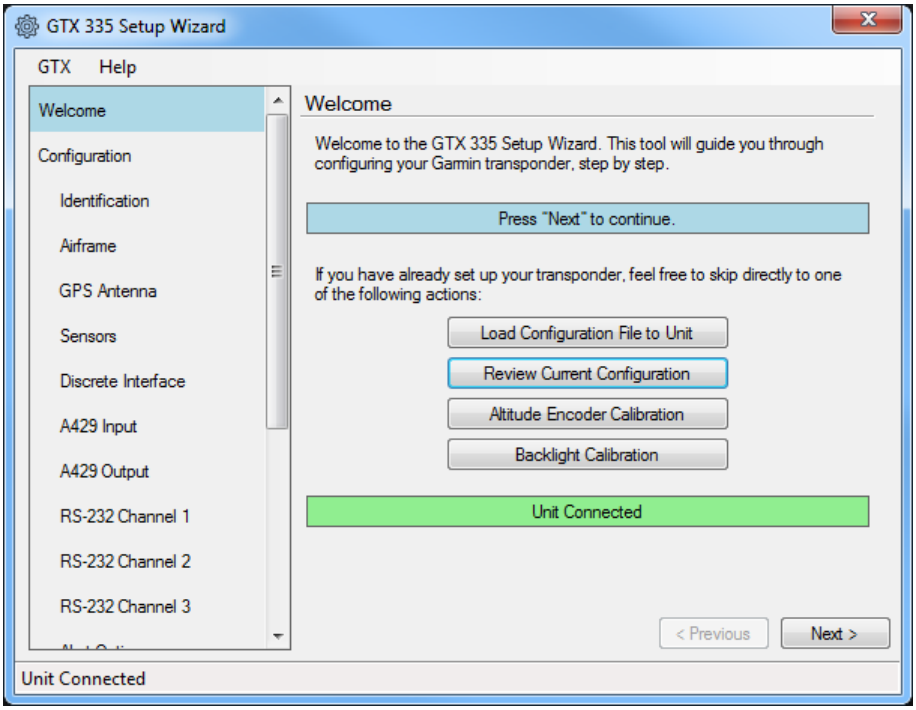

Figure 2: Transponder Setup Connection Status

During the software loading process, connection status is always displayed in the bottom left corner of the window (See *Figure 3*). Select USB and then press Connect to establish a connection to the transponder.

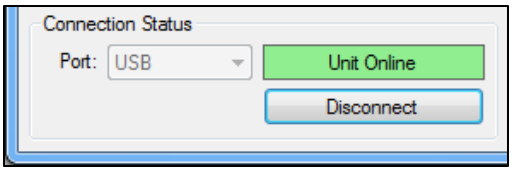

Figure 3: Software Load Connection Status

2.4.2 Troubleshooting Connection Problems

Problem: I can't connect using USB

1. Make sure there are no loose wires
2. Make sure the unit is powered on
3. Make sure another instance of the GTX 335 Setup Wizard is not open and connected
4. Power cycle the transponder
5. Make sure the unit appears in device manager:
    a. Connect the unit to your computer using USB
    b. Apply power to the unit
    c. Open Device Manager from the windows start menu
    d. Verify that a "Garmin Aviation Device" exists under "Garmin Devices"
    See *Figure 4*
    e. If the device does not appear re-run the installer and install USB Garmin Aviation Device drivers when prompted

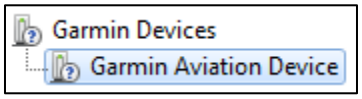

Figure 4: Garmin Aviation Device

6. Use a different USB port
7. Use a different USB cable (6ft is the maximum recommended length)
8. Reinstall USB device drivers
    a. An entry in Programs and Features should exist for the USB device driver
    See *Figure 5*
    b. Reinstall the driver by running the GTX 335 Setup Wizard Installer and, when prompted, install the Garmin Aviation Device USB driver

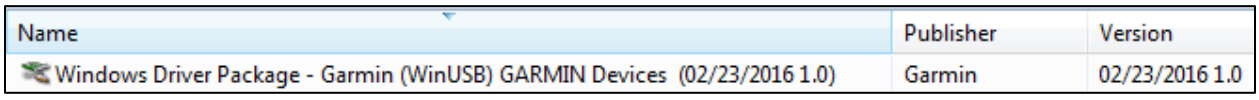

Figure 5: Garmin Aviation Device Driver

9. If you are still unable to connect, restart your computer and try again

Problem: My GTX is connected and powered on, but I get an "Unknown unit detected" message

1. Disconnect or power off all other Garmin products connected to your computer
2. Make sure there are no loose wires
3. Power cycle the transponder
4. If you are still unable to connect, restart your computer and try again

2.5 Transponder Version Information

Transponder version information of the transponder can be viewed from the software loading window. This information can also be viewed on the transponder display by pressing ENT when prompted during power up. The following steps describe how to view transponder product information:

1. Connect the transponder to your PC using a USB cable and apply power
2. Launch the GTX 335 Setup Wizard
3. Press "Load Software" and wait for the unit to become connected
4. The part number and version of each transponder component is displayed
   See *Figure 6*

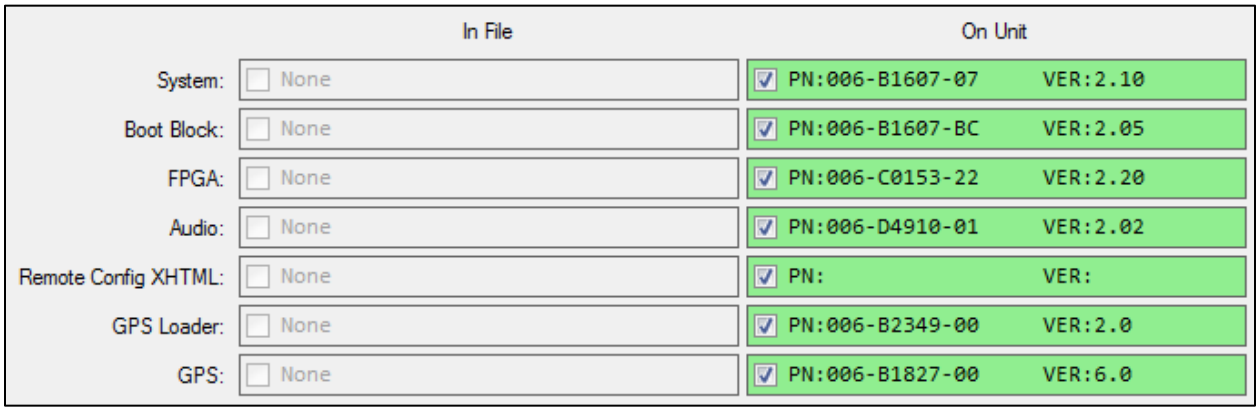

Figure 6: Transponder Version Information

2.6 Tool Version Information

Version and license information about the GTX 335 Setup Wizard can be viewed from the Help – About menu. (See *Figure 7*). The GTX Install Tool version and part number are displayed at the top. The table below lists the version, part number, and supported transponder system software of each installed product component. Once a product component has been selected, only that component will appear in this window.

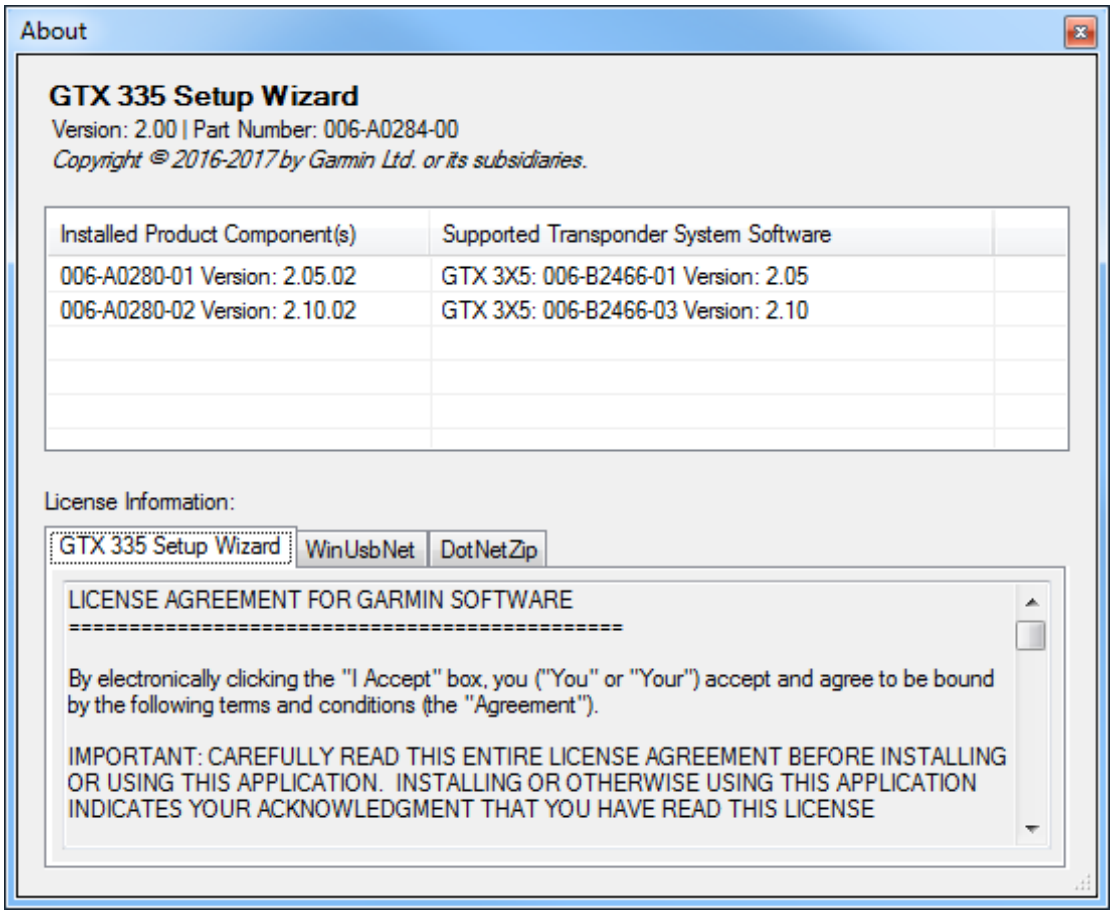

Figure 7: Tool Version Information

3 Uploading Software

Occasionally, it may be necessary to update transponder software. The following steps describe the software upload process:

1. Download the desired system software
2. Connect the transponder to your PC using a USB cable and apply power
3. Launch the GTX 335 Setup Wizard
4. Press “Load Software” and wait for the unit to become connected
5. Press “Browse” and select the GCA file downloaded in Step 1
6. Check items “In File” that are different than items “On Unit”, indicated by gray highlight See *Figure 8*
7. Review your selection, then press “Upload” and wait for the upload to complete
    a. Individual items will be marked as complete as they are installed
    b. If any item fails, repeat Steps 6-8
8. After loading software, perform any necessary *Post Software Upload Actions*

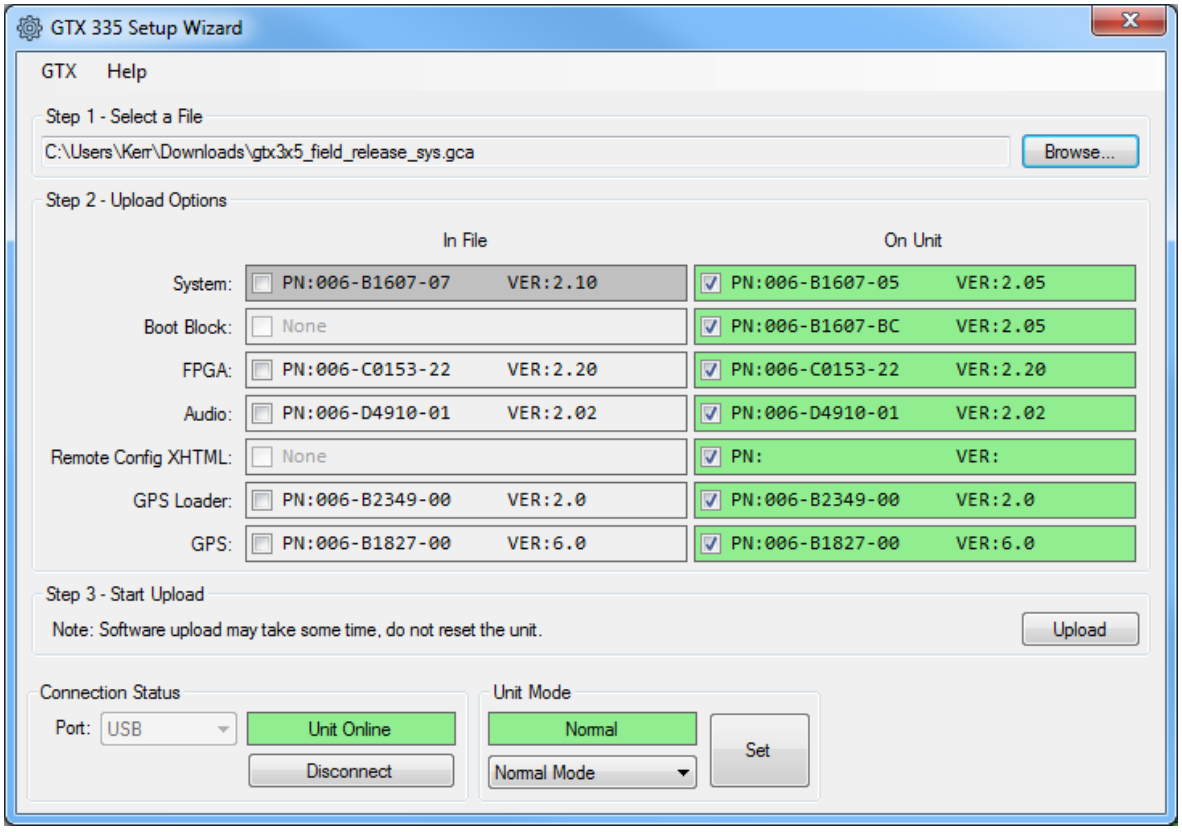

Figure 8: Software Upload

3.1 Post Software Upload Actions

Review New Configuration Items
A system software update may add new configuration items. Values for new items should be determined and assigned.

Resolve Service Soon Alert
After loading software, further action is needed under the following conditions:

1. System software was updated from version 2.02, 2.03, 2.05, or 2.10 to version 2.11 or later
2. The transponder is failed and reports a service soon message

In this situation, IO configuration will be defaulted due to an incompatibility in discrete configuration. To resolve this issue, perform the following actions:

1. Connect to a unit and select "Discrete Configuration" from the GTX menu
   See *Figure 9*
2. Re-assign discrete functions as desired and press "Apply Configuration to Unit"
3. Push to configuration module, if the installation includes a configuration module
   See the *Review* page
4. Power cycle the transponder

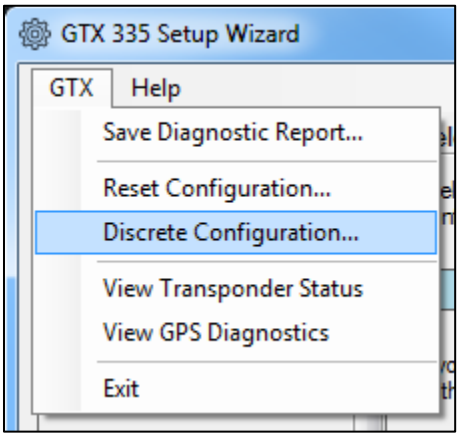

Figure 9: Discrete Configuration Menu

4 Transponder Setup

4.1 Limitations

When using the GTX 335 Setup Wizard, the following assumptions are made regarding transponder configuration:

1. Only internal GPS data will be used as a GPS source.
2. The unit will broadcast UAT In receive capability. This will allow portable ADS-B receivers, such as GDL-39, to receive ADS-B In data.
3. Discrete pin assignments are configured as described in *Table 3*. All other configurable discrete functions are unassigned.
4. Altitude source selection is performed automatically by the transponder.

4.2 Welcome

The Welcome page provides links to other pages that are most useful after first time setup has been completed. If the transponder is being setup for the first time, press Next.

Configuration files (saved in the final review step) can be loaded directly to the connected transponder. This can be done by pressing "Load Configuration File to Unit" and selecting a previously saved configuration file.

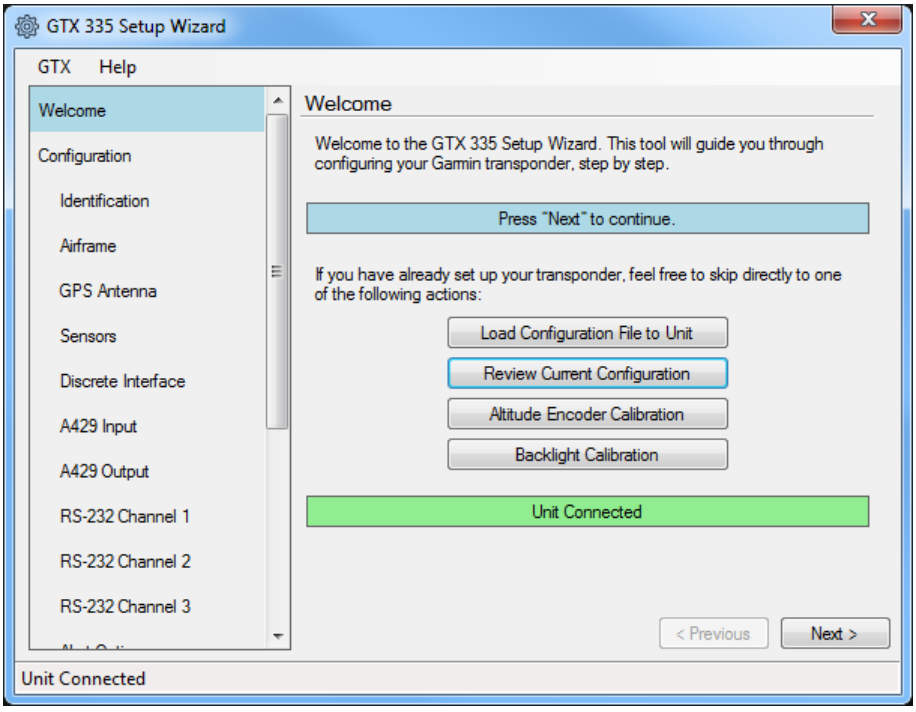

Figure 10: Transponder Setup Welcome

4.3 Configuration

Follow the instructions listed on steps in this section to initialize your unit's configuration. A connection to the unit is only required on the final step, where configuration is applied. If the transponder is being setup for the first time, press Next.

Configuration selections can be pre-populated with values retrieved from a file or a connected unit. This is different from the "Load Configuration to Unit" button on the welcome page, as configuration is loaded into the tool instead of onto the unit.

Press the "Start from unit" button to pre-populate selections based on the connected unit's current configuration. Press the "Start from previously saved file" button to pre-populate selections based on a configuration file previously saved from the review page of this tool.

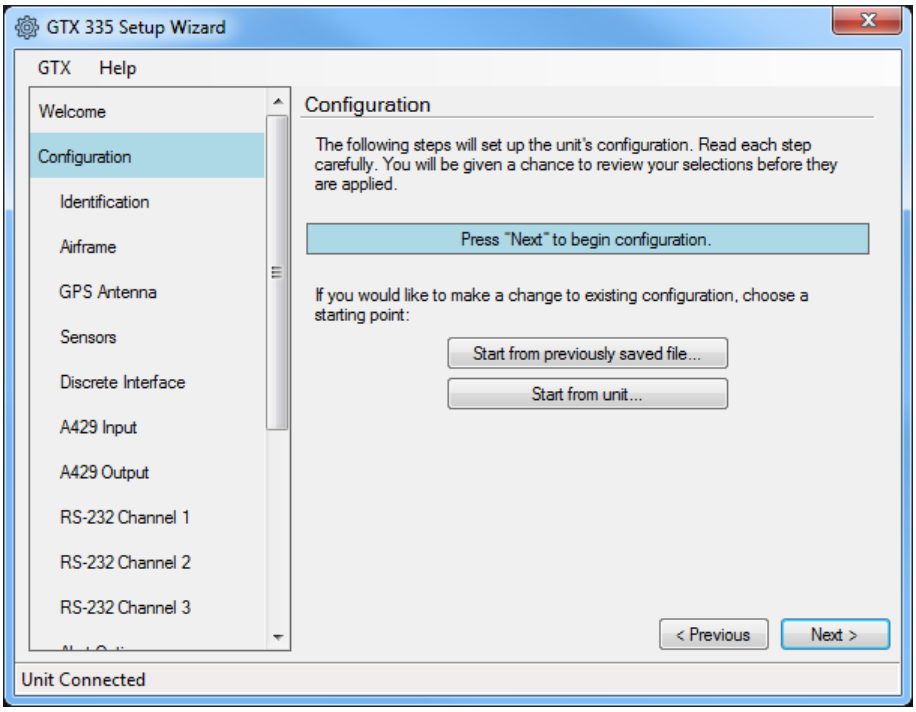

Figure 11: Transponder Setup Configuration

The apply configuration page gives you a chance to review all configuration selections. Values presented on this page represent configuration selections that will be applied, not configuration currently on the connected unit. It is important to review configuration, as some configuration items will be set to fixed values. This can potentially overwrite configuration selections previously made on the transponder display. Press the "Review Selections" button to review all configuration items that will be set (See *Figure 12*).

After confirming selections are correct, press the "Apply Configuration" button to send values to the connected transponder.

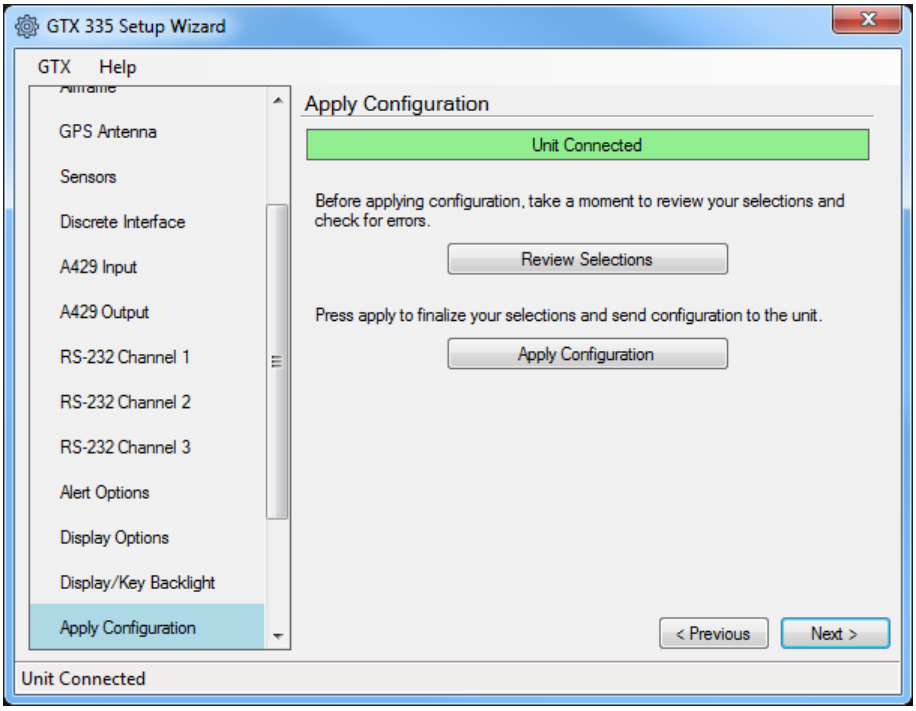

Figure 12: Transponder Setup Apply Configuration

4.4 Audio Test

Testing audio will repeatedly play the selected audio clip. Press the test audio button to begin the test, and again to stop. Adjust the volume and voice settings until you are satisfied with the transponder's audio levels.

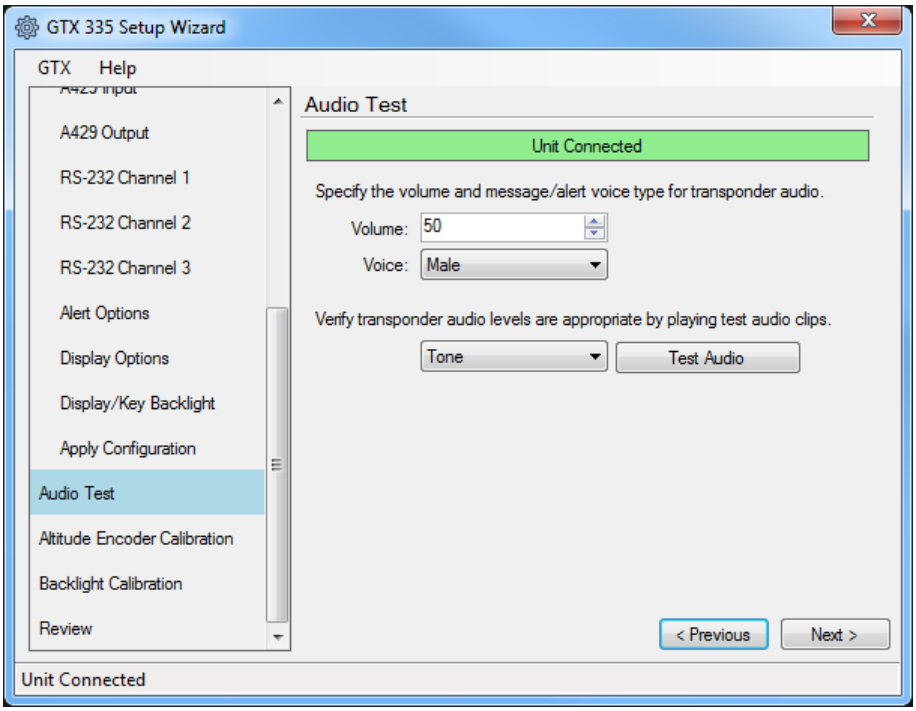

Figure 13: Audio Test

4.5 Altitude Encoder Calibration

The Garmin Altitude Encoder (GAE) module supplies the required barometric altitude source for ADS-B Out compliance. This page provides a method to configure and adjust the reported altitude.

Ceiling refers to the maximum operating altitude of the aircraft. Point count refers to number of altitude points that corrections are applied to. One point is always placed at -1000ft and another at the altitude ceiling plus 5000ft. Remaining points are spaced evenly between these two points. The minimum point count required is 3. If the altitude is out of tolerance while conducting the return to service inspection IAW FAR part 43 Test and inspection, then readjust the GAE with additional points. The maximum number of points depends on the altitude ceiling; a higher ceiling means a higher maximum point count. Linear interpolation is performed on the measured altitude using the correction of each point. This is demonstrated in the *Figure 14*, where an altitude encoder is configured to a ceiling of 9000ft with 5 points:

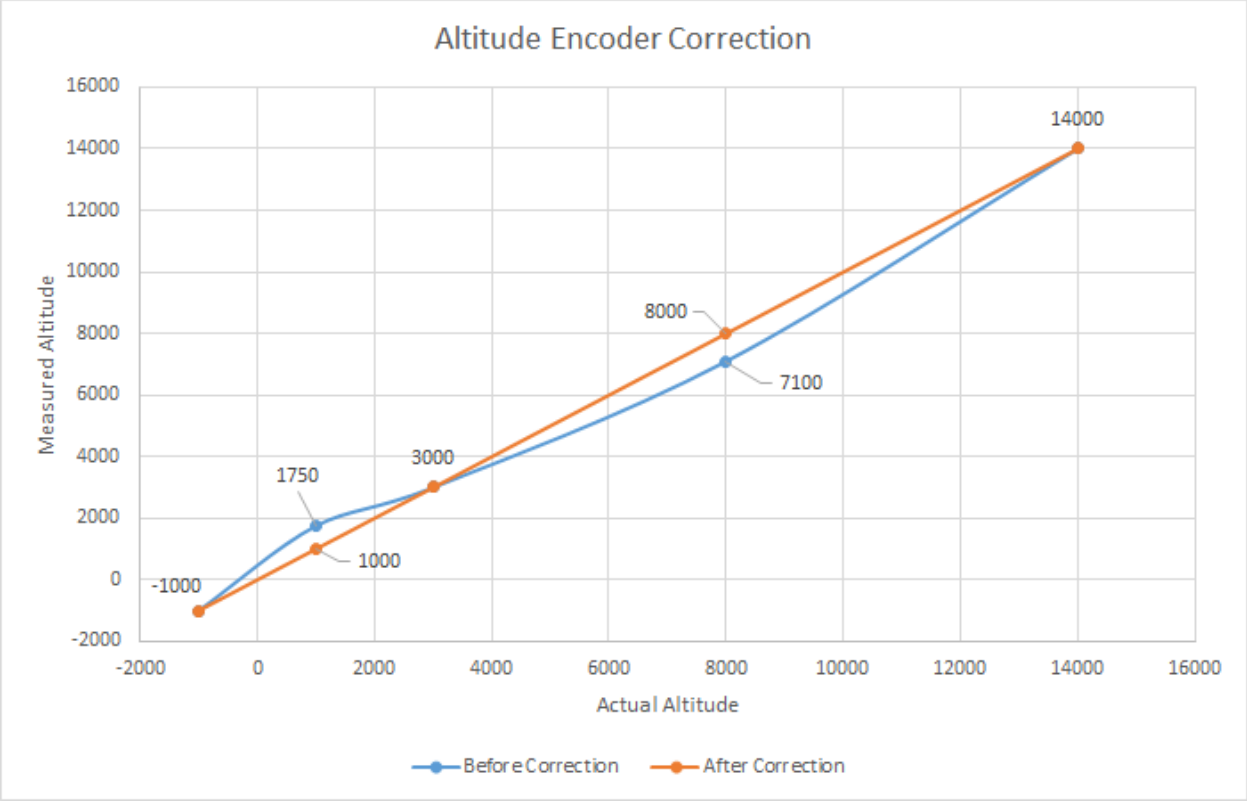

Figure 14: Altitude Encoder Correction

Before the adjustment was performed, an actual altitude of 1000ft was incorrectly reported as 1750ft. Likewise, an actual altitude of 8000ft was incorrectly reported as 7100ft. To fix this, a correction of -750ft was applied to the 1000ft point and a correction of 900ft was applied to the 8000ft point. No correction was applied to the -1000ft, 3000ft, and 14000ft points. Notice how the correction applied at 1000ft affected altitude ranging from -1000ft to 3000 ft. Increasing the number of points increases the granularity of corrections that are applied, but is only necessary when additional corrections are needed to satisfy the return to service inspection. Modifying the ceiling or point count will require corrections to be reapplied to every point. Corrections can be determined automatically (*Automatic Adjustment*) or enter manually for each point (*Manual Adjustment*).

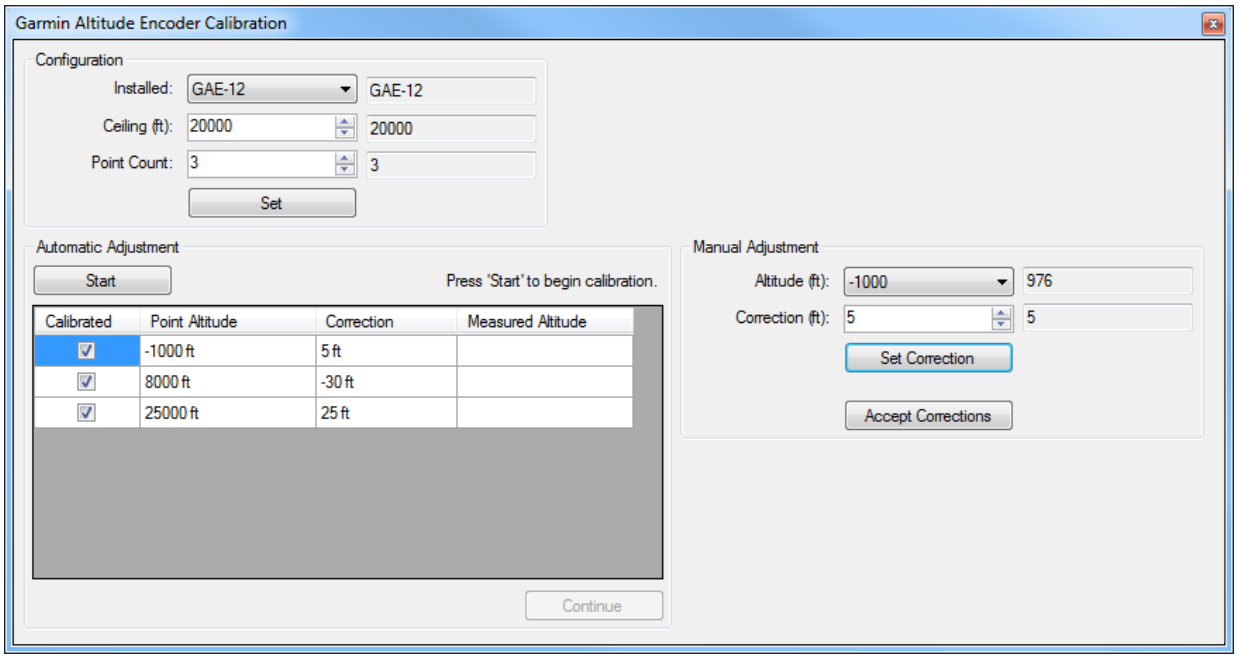

Figure 15: Altitude Encoder Calibration

Follow these steps to configure the Garmin Altitude Encoder:

1. With a Pitot/static test set connected, select the Garmin Altitude Encoder tab See *Figure 15*
2. In the "Configuration" box, set values for the following items:
    a. **Installed** - GAE-12
    b. **Ceiling** - maximum operating altitude of the aircraft
    c. **Point Count** - desired number of points to apply corrections to
3. Press the "Set" button to apply selected configuration
4. Follow the steps in *Automatic Adjustment* or *Manual Adjustment* below

Automatic Adjustment

1. Adjust the Pitot/static test set to match the first or last point's altitude
2. Wait for the measured altitude to stabilize, then press "Start"
3. Wait for a correction to be calculated, then press "Continue"
4. Set the Pitot/static test set to the next point's altitude
5. Wait for the measured altitude to stabilize, then press "Continue"
6. Repeat steps 3-5 until adjustments have been applied to all points
7. Press "Accept" to finalize adjustment

Manual Adjustment

1. Adjust the Pitot/static test set to match the selected point's altitude
2. Enter a correction, then press "Set Correction"

a. If the measured altitude is too high, enter a negative correction

b. If the measured altitude is too low, enter a positive correction

3. Make additional correction adjustments until the measured altitude is as close to the point's altitude as possible
4. Repeat, until adjustments have been applied to all desired points
5. Press "Accept Corrections" to finalize adjustments

4.6 Backlight Calibration

The backlight calibration process adjusts the brightness of the display and keypad.

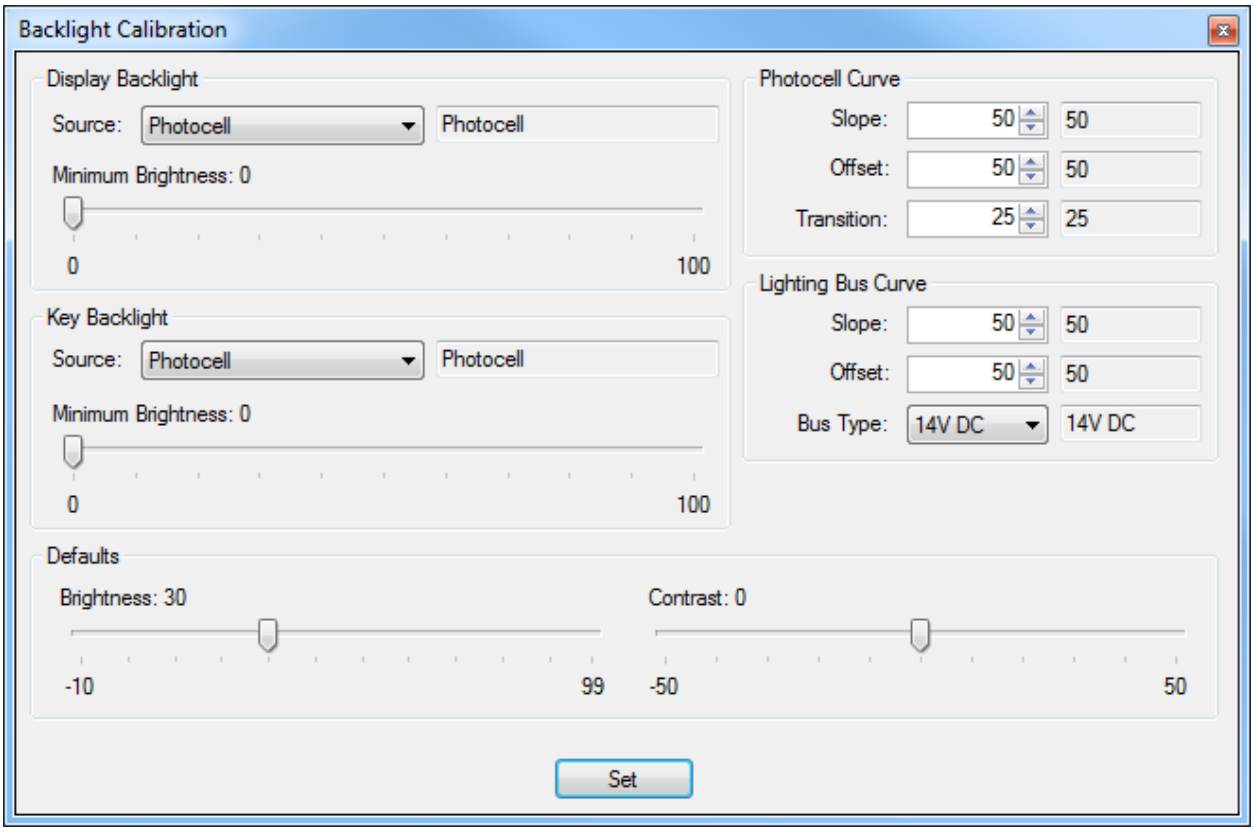

Figure 16: Display Calibration

Display Backlight and Key Backlight
Allows the lighting of the display and keypad to be configured, respectively. See below for details.

Backlight Source
Configures the source for the backlight control and adjustment. Select “Photocell” if the lighting level uses ambient lighting. Select “Lighting Bus” if an input from the lighting bus is used to dim the lighting.

Backlight Minimum Brightness
Configures the minimum brightness. The range is 0 to 100. The higher the number, the brighter the minimum brightness.

Brightness Offset
The default brightness offset, ranging from -10 to 99.

Contrast Offset
The default contrast offset, ranging from -50 to 50.

Photocell and Lighting Bus Slope
Configures the sensitivity of the input level. The field has a range of 0 to 100. Set the slope higher for a brighter display for a given increase in the input level.

Photocell and Lighting Bus Offset
Configures the lighting level up or down for any given input level. This field has a range of 0 to 100. Use the offset setting to match lighting curves with other equipment in the panel.

Photocell Transition
Configures a point on the lighting bus. When the lighting bus is below this point, the GTX uses the photocell to adjust the display brightness. The range is 5 to 50.

Lighting Bus Type
Configures the voltage of the lighting bus input.

4.7 Review

Values presented on this page represent values retrieved directly from the unit, regardless of previous configuration selections. In other words, this page can be used to view and save transponder configuration without going through the entire setup process.

View Summary
To view all transponder settings, press view summary. Any configuration issues will be indicated by red or yellow highlight. This summary can be printed by selecting File – Print.

Save to File
Additionally, the unit's configuration can be saved to a file for the purpose of later loading the saved values to the unit (from the Welcome page) or pre-populating configuration selections in this wizard (from the Configuration page).

Push to Configuration Module
Enabling "Push to configuration module" will cause the unit to push its internal configuration to the configuration module. The unit's configuration is saved with the aircraft once it has been pushed. This allows the GTX to be replaced without having to reconfigure the new unit. Push to configuration module is achieved using the Configuration menu.

If the configuration module is connected, enabling push to configuration module will push all configuration data immediately. If the configuration module is disconnected (i.e. the unit that has been removed from the aircraft), internal configuration is pushed on the next power cycle instead of pulled from the configuration module. When a unit is configured while a configuration module is connected, configuration data is pushed to the configuration module automatically.

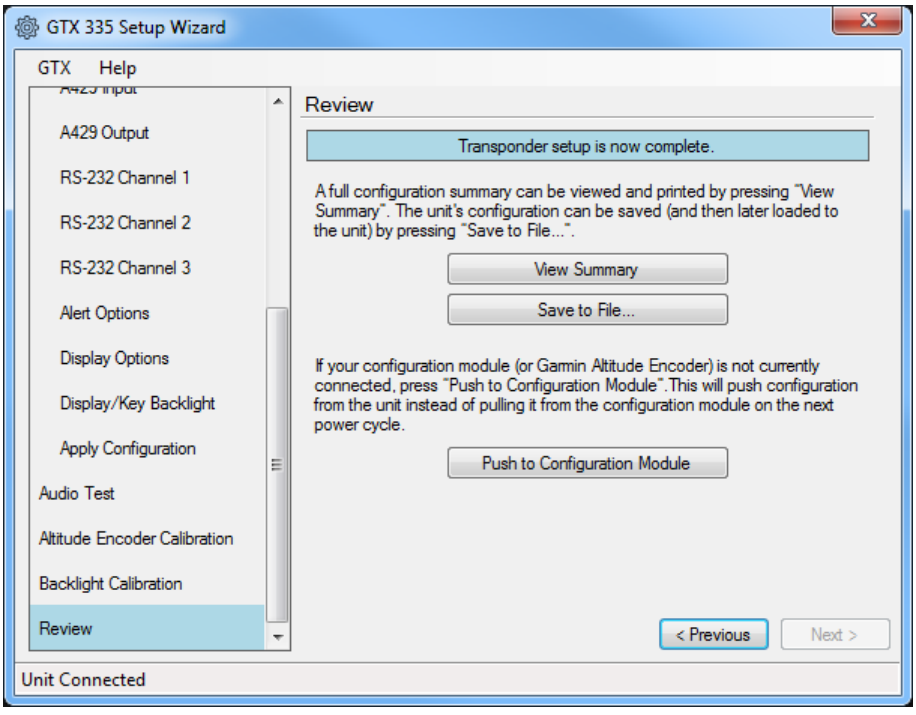

Figure 17: Transponder Setup Review

4.8 Transponder Setup Without a Unit Connected

It is possible to complete the entire GTX 335 Setup Wizard without connecting a unit. In this situation, a configuration file is created, and can be quickly loaded from the Welcome page to a connected unit later. Doing this will set some items to default values, such as the altitude encoder point count and ceiling. Loading a configuration file saved this way may require the altitude encoder to be re-calibrated.

Creating a Configuration File

Follow these steps to create a configuration file without connecting to a transponder:

1. Launch the GTX 335 Setup Wizard
2. Expand connection options (See *Figure 18*)

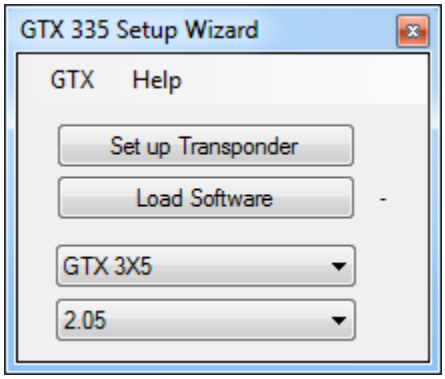

Figure 18: Connection Options

3. Select the appropriate software version, and press Set up Transponder
4. Proceed through the configuration section normally
    a. Skip the "Apply Configuration" step
5. Navigate to the final "Review" step
    a. Press the "View Summary" button, and verify all configuration values are correct
    b. Save configuration selections to a file by pressing the "Save to File" button

Loading a Configuration File

Follow these steps to load a previously saved configuration file:

1. Connect the unit to your computer via USB port and apply power
2. Launch the GTX 335 Setup Wizard
3. Press "Set up Transponder" and wait for the GTX to become connected
4. On the "Welcome" page, press "Load Configuration File to Unit" and select a previously saved configuration file
5. If necessary, perform calibration processes
6. Complete transponder *Review* normally

5 Transponder Diagnostics

Transponder diagnostics are accessed from the GTX menu (See *Figure 19*). Connection to a unit is required to view diagnostics.

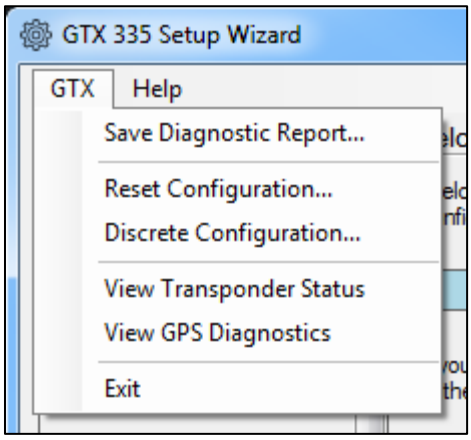

Figure 19: GTX Menu

5.1 Saving a Diagnostic Report

A diagnostic report can be used to aid product support in diagnosing issues with the transponder. Creating a diagnostic report only takes a few seconds, follow the steps below:

1. Connect the unit to your computer via USB port and apply power
2. Launch the GTX 335 Setup Wizard
3. Press “Set up Transponder” and wait for the GTX to become connected
4. Select Save Diagnostic Report from the GTX menu (See *Figure 19*)
5. Confirm the diagnostic report creation
6. Choose a location to save the file
7. Wait a few seconds for the diagnostic report to be created
8. Send the report to product support, along with a description of your problem

5.2 Resetting Configuration

Resetting configuration will set all configuration items on the connected unit to their default values. Follow these steps to reset the unit’s configuration:

1. Connect the unit to your computer via USB port and apply power
2. Launch the GTX 335 Setup Wizard
3. Press “Set up Transponder” and wait for the GTX to become connected
4. Select Reset Configuration from the GTX menu (See *Figure 19*)
5. Confirm the configuration reset
6. The unit’s configuration will be reset, and the transponder will reboot

5.3 Discrete Configuration

The discrete configuration menu item provides a way to modify discrete configuration of the connected unit. Pressing “Apply Configuration to Unit” will apply selections and fixed discrete assignments as described in *Table 3*.

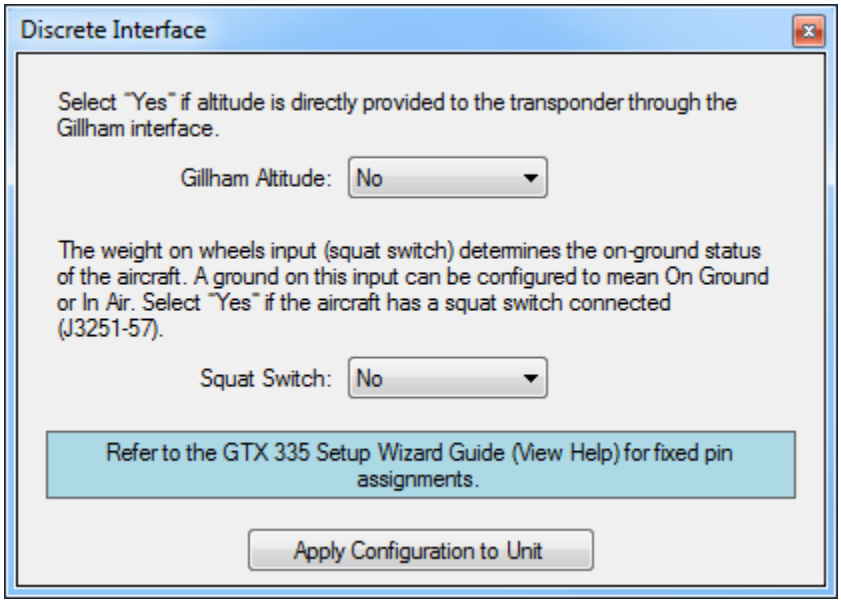

Figure 20: Discrete Configuration

5.4 Status Information

To view transponder status information, select "View Transponder Status" from the GTX menu (See *Figure 19*). Transponder state information such as normal operation status indications, pressure altitude, and the transponder mode is displayed in this window.

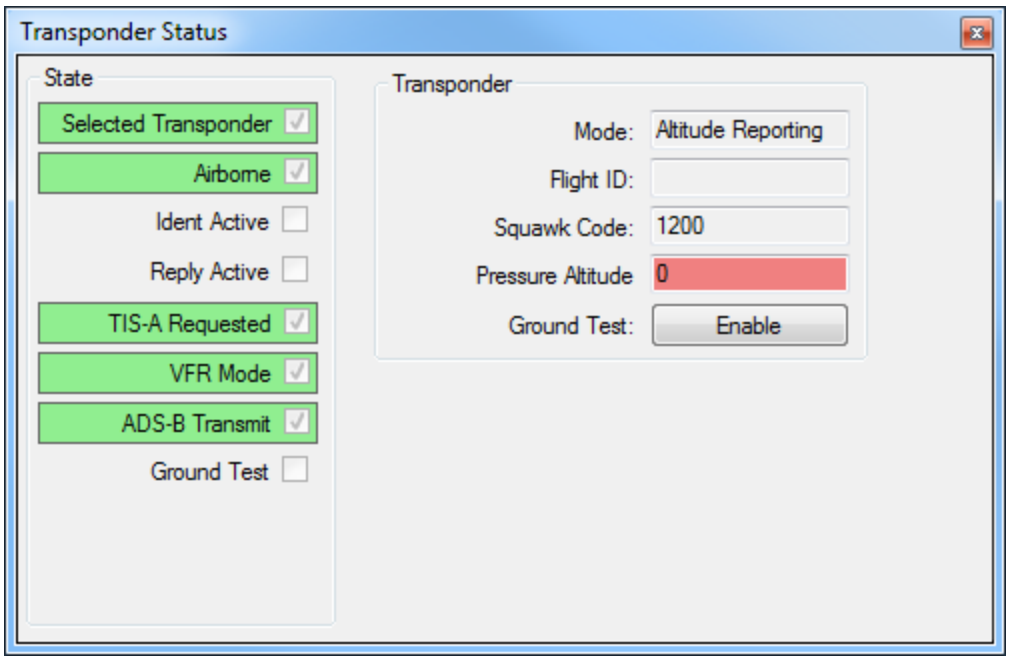

Figure 21: Transponder Status Information

Selected Transponder
In a dual transponder installation, this indicates whether or not the GTX is the active transponder. When a transponder is not active, it will be in standby mode.

Airborne
Indicates that the current air state is airborne.

Ident Active
Indicates that ident is active.

Reply Active
Indicates that the GTX is replying to interrogations.

TIS-A Requested
Indicates that the transponder is currently requesting TIS-A traffic.

VFR Mode
Indicates that the GTX is currently transmitting in VFR mode. When VFR mode is active, the active squawk code is the configured VFR code. Activate by pressing the "VFR" key on the front panel.

ADS-B Transmit
Indicates that ADS-B transmissions are enabled. ADS-B transmissions are inhibited while the transponder is in Standby.

Ground Test
Indicates that the unit is operating in ground test mode. When ground test mode is active the unit will behave as if it was airborne, and thus reply to interrogations. This is intended to be used when testing transponder functionality while on the ground. Enable by pressing "Ground Test: Enable" and again to disable. This mode can be entered by holding the CRSR key on the front panel during a power cycle.

Transponder Mode
The current mode of the transponder. These modes can be entered on panel mount display units by pressing the "SBY", "ON", and "ALT" keys. The three transponder modes are described below:

- **Standby**: All transmissions are disabled
- **On**: Transmissions do not include pressure altitude information
- **Altitude Reporting**: Transmissions include pressure altitude information

Flight ID
The current flight ID, can be entered on the front panel when pilot entry is allowed per configuration. Otherwise, it is fixed to the aircraft's tail number.

Squawk Code
The current squawk code, can be entered using the front panel.

Pressure Altitude
The current pressure altitude reported by the transponder. Green indicates a valid pressure altitude, red indicates an invalid pressure altitude.

5.5 GPS Diagnostics

The Internal GPS page reports satellite strength and location, as well as some GPS parameters. Signal strength is shown on a graph at the top of the page. Satellite positions are shown in a sky plot on the bottom left. The same satellite ID's and colors are used on the sky plot and signal strength graph.

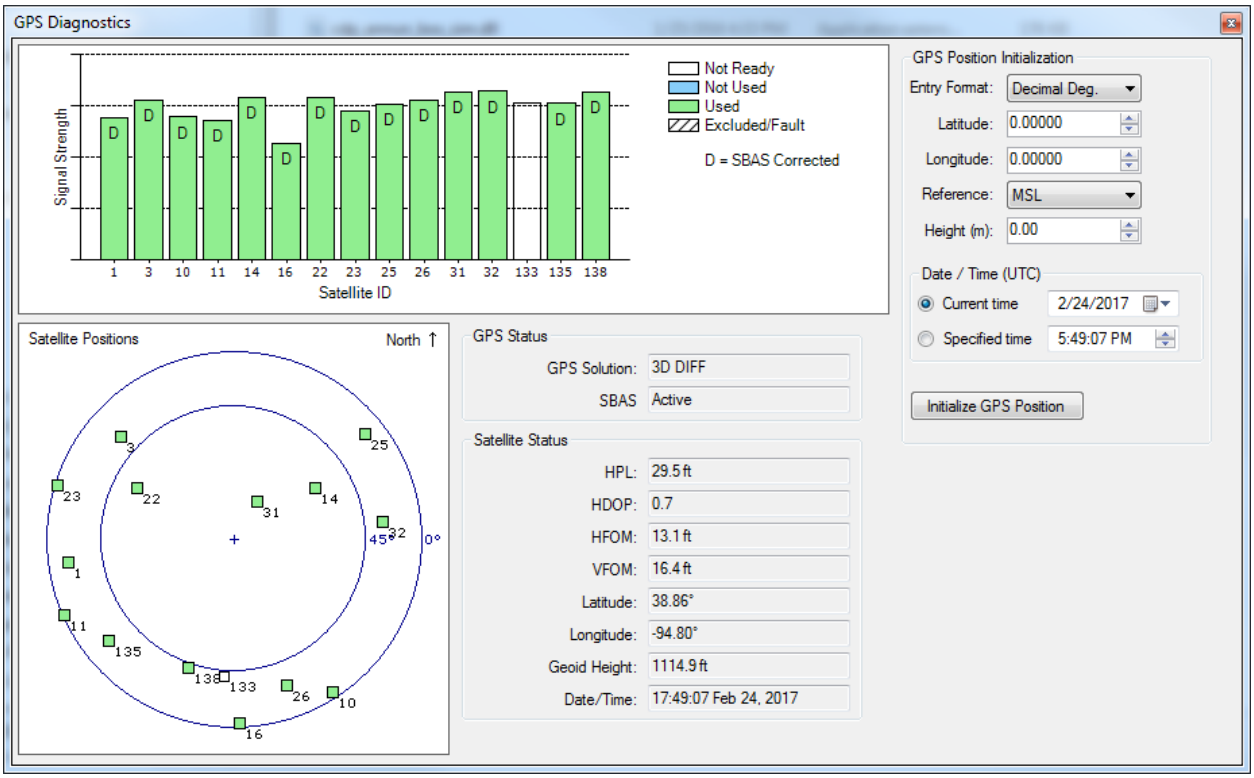

Figure 22: GPS Diagnostics

GPS Position Initialization

Initializing the GPS position can reduce the time it takes for the Internal GPS to get a fix. This may be useful if the GPS is taking a long time to initialize, especially if the unit has moved a great distance since the last time it had a GPS fix. Follow these steps to initialize the GPS position:

1. Connect to a unit
2. Navigate to the Internal GPS diagnostics page
3. Enter an approximate latitude, longitude, and height
4. Verify the time displayed (UTC) is correct
   Local PC time is used and converted to UTC. If this value is incorrect select "Specified Time" and enter the correct Date/Time
5. Press "Initialize GPS Position"
6. Wait for GPS to initialize

6 Transponder Interfaces

6.1 Discretes

Table 3: Discrete Interface Pin Assignments

Function	Direction	Pin
Audio Mute (Inhibit #1)	Input	Fixed: J3251-16
Audio Cancel (Inhibit #2)	Input	Fixed: J3251-37
Ident	Input	Fixed: J3251-36
Standby	Input	Fixed: J3251-14
TIS Select	Input	Fixed: J3251-15
Squat Switch	Input	Configurable: J3251-57

6.2 ARINC 429 Input

Table 4: Air Data Computer (ADC) Input Labels

Label	Data	Units	Periodic Timeout (milliseconds)
203	Altitude	Feet	250
204	Baro-Corrected Altitude #1	Feet	250
205	Mach	Mach	500
206	Indicated Airspeed	Knots	500
210	True Airspeed	Knots	500
211	Total Air Temperature	Celsius	2000
212	Altitude Rate	Feet/minute	250
213	Static Air Temperature	Celsius	2000

Table 5: EFIS Air Data Input Labels

Label	Data	Units	Periodic Timeout (milliseconds)
100	Selected Course #1	Degrees	250
102	Selected Altitude	Feet	800
164	Radio Height	Feet	250
203	Altitude	Feet	250
204	Baro-Corrected Altitude #1	Feet	250
205	Mach	Mach	500

206	Indicated Airspeed	Knots	500
210	True Airspeed	Knots	500
211	Total Air Temperature	Celsius	2000
212	Altitude Rate	Feet/minute	250
213	Static Air Temperature	Celsius	2000
234	Baro Setting	hPa	500
235	Baro Setting	Inches Hg	500
306	Joystick Waypoint Latitude	Degrees	500
307	Joystick Waypoint Longitude	Degrees	500
314	True Heading	Degrees	200
320	Magnetic Heading	Degrees	200
325	Roll Angle	Degrees	200

6.3 ARINC 429 Output

Table 6: Garmin Concentrator Output Labels

Label	Data	Units	Periodic Rate (milliseconds)
100	Selected Course #1	Degrees	200
203	Altitude	Feet	100
204	Baro-Corrected Altitude #1	Feet	100
206	Indicated Airspeed	Knots	100
210	True Airspeed	Knots	100
211	Total Air Temperature	Celsius	100
213	Static Air Temperature	Celsius	100
306	Joystick Waypoint Latitude	Degrees	500
307	Joystick Waypoint Longitude	Degrees	500
314	Own Aircraft True Heading	Degrees	100
320	Own Aircraft Magnetic Heading	Degrees	100

Table 7: Garmin TIS Output Labels

Label	Data	Units	Periodic Rate (milliseconds)
130	Intruder Range	NM	Non-periodic

131	Intruder Altitude	Feet	Non-periodic
132	Intruder Bearing	Degrees	Non-periodic
274	TCAS Output	N/A	500
313	Own Aircraft Track Angle	Degrees	500
350	TCAS Fault Summary	N/A	500
357	Request to Send	N/A	Non-periodic
357	End of Transmission	N/A	Non-periodic
371	GA Equipment Identifier	N/A	500

Table 8: Garmin TAS Output Labels

Label	Data	Units	Periodic Rate (milliseconds)
272	TCAS Coordination Data (MID Part 1)	N/A	Non-periodic
274	TCAS Coordination Data (MID Part 2)	N/A	Non-periodic

Table 9: GPS Data Output Labels

Label	Data	Units	Periodic Rate (milliseconds)
76	GNSS Altitude (MSL)	Feet	200
110	GNSS Latitude	Degrees	200
111	GNSS Longitude	Degrees	200
112	GNSS Ground Speed	Knots	200
120	GNSS Latitude Fine	Degrees	200
121	GNSS Longitude Fine	Degrees	200
130	Horizontal Protection Limit	Meters	200
136	Vertical Figure of Merit	Feet	200
150	UTC	N/A	200
260	Date	N/A	200
273	GNSS Sensor Status	N/A	200

7 Equipment Interfaces and Configuration

7.1 GNS 400W/500W Series (Including Non-WAAS Units)

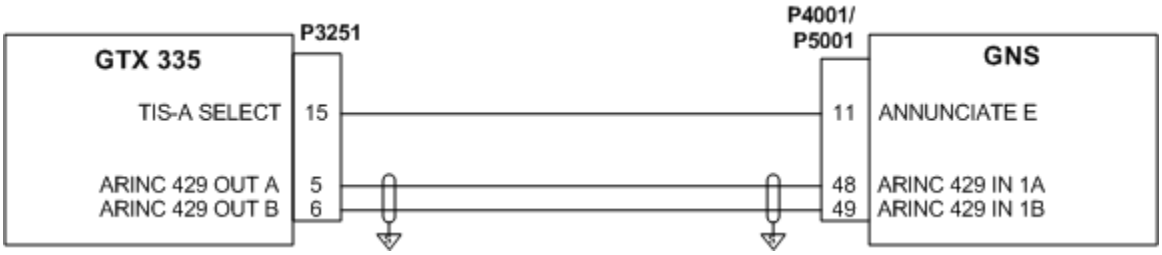

Figure 23: GNS 400W/500W Interconnect Drawing

Follow these steps to configure the GNS to receive TIS from the GTX:

1. Put the GNS into configuration mode:
    a. Power off the GNS
    b. Hold the ENT key and apply power to the GNS
    c. Release the ENT key when the display activates
    d. The "Main ARINC 429 Config" page should be shown
    e. Use the following controls to adjust configuration:
        i. Press the small right knob to activate the cursor
        ii. Rotate the large right knob to select the desired field
        iii. Rotate the small right knob to choose a value for the selected field
        iv. Press enter to accept the selected value
2. Set up A429 configuration:
    a. Select "Garmin GTX 330" and "High Speed" for A429 Input Channel 1 (See *Figure 24*)
3. Power cycle the GNS

Follow these steps to configure the GTX using the GTX 335 Setup Wizard:

1. Select "Garmin Concentrator, Garmin TIS Device" and "High Speed" for A429 Channel 1 output
2. Finish the transponder setup normally

Note: On the transponder display, this equates to selecting "Format 9" and "High Speed" for A429 output.

Figure 24: GNS A429 Configuration

7.2 GTN 6XX/7XX

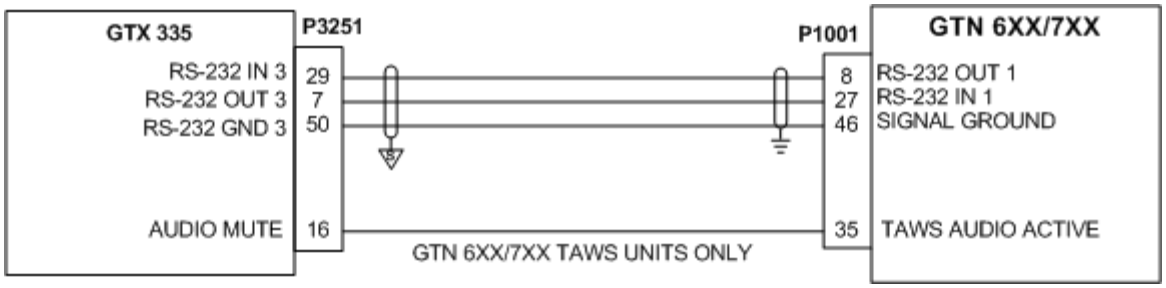

Figure 25: GTN 6XX/7XX Interconnect Drawing

Follow these steps to configure the GTN to receive TIS from the GTX:

1. Put the GTN into configuration mode:
    a. Power off the GTN
    b. Hold the HOME key and apply power to the GTN
    c. Release the HOME key when the display activates and the Garmin logo appears fully lit on the screen
2. Set up RS-232 configuration:
    a. Touch the GTN Setup key (See *Figure 26*)
    b. Touch the RS-232 key (See *Figure 27*)
    c. Select "Panel GTX w/TIS+ #1" as input and output for the RS-232 channel connected to the transponder (See *Figure 28*)
3. Set up discrete configuration (TAWS units only):
    a. Touch the Back key, to return to the GTN Setup page
    b. Press the Discretes key
    c. Press the Down key to scroll J1001-35 into view
    d. Select "TAWS Audio Active Annunciate" as the output function for J1001-35
4. Power cycle the GTN

Follow these steps to configure the GTX using the GTX 335 Setup Wizard:

1. Observe that the TIS-A Select discrete input is always configured to J3251-15
2. Select "TIS Display: GTN" for the RS-232 Channel connected to the GTN
3. Finish the transponder setup normally

Note: On the transponder display, this equates to selecting "REMOTE FMT 2" as the input/output format for the RS-232 Channel connected to the GTN and assigning the "AUD MUTE" discrete input function to J3251-15.

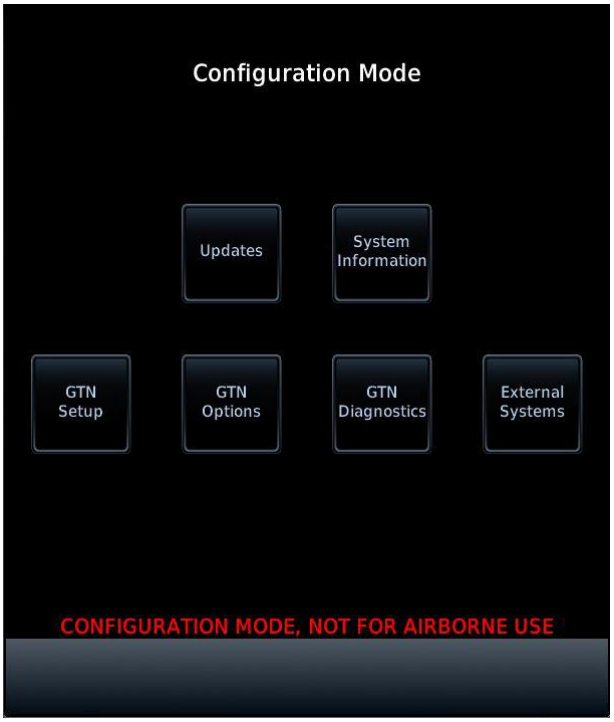

Figure 26: GTN Configuration Mode

Figure 27: GTN Setup

Figure 28: GTN RS-232 Configuration

Figure 29: GTN Discrete Configuration

Part Information

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