

GTN 650/750 SERIES SOFTWARE VERSION 5.12 UPGRADE SUPPLEMENT

The Pilot's Guides have been revised for Software Version 5.12. This supplement provides information regarding new features of Software Versions 5.11 and 5.12 for GTN 6XX/7XX Series units.

- GTN 625/635/650 Pilot's Guide
(Garmin P/N 190-01004-03) Rev H
- GTN 725/750 Pilot's Guide
(Garmin P/N 190-01007-03) Rev H



NOTE: *The combination of the following documents is equivalent to the Pilot's Guide revisions listed above:*

- GTN 650/750 Series Software Version 5.12 Upgrade Supplement

and either

- GTN 625/635/650 Pilot's Guide
(Garmin P/N 190-01004-03) Rev F or G

or

- GTN 725/750 Pilot's Guide
(Garmin P/N 190-01007-03) Rev F or G

Current documents are available at <https://fly.garmin.com/fly-garmin/support/> for free download. Printed copies may be purchased by contacting Garmin Customer Support.



NOTE: *Depending on which version of software is installed and how it is configured, the actual features and screen images may differ from what is shown. Refer to the GTN 725/750 Pilot's Guide, P/N 190-01007-03 or GTN 625/635/650 Pilot's Guide, P/N 190-01004-03, for more information regarding feature availability for specific software versions.*



NOTE: *All sections are applicable to Rev F Pilot's Guides. Sections designated "SW Version 5.12" are applicable to Rev G Pilot's Guides.*

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This manual reflects the operation of System Software Version 5.12, or later. Some differences in operation may be observed when comparing the information in this manual to later software versions.

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NOTE: The FAA has asked Garmin to remind pilots who fly with Garmin database-dependent avionics of the following:

- It is the pilot's responsibility to remain familiar with all FAA regulatory and advisory guidance and information related to the use of databases in the National Airspace System.
- Garmin equipment will only recognize and use databases that are obtained from Garmin or Jeppesen. Databases obtained from Garmin or Jeppesen are assured compliance with all data quality requirements (DQRs) by virtue of a Type 2 Letter of Authorization (LOA) from the FAA. A copy of the Type 2 LOA is available for each database and can be viewed at <http://fly.garmin.com> by selecting "Type 2 LOA Status."
- Use of a current Garmin or Jeppesen database in your Garmin equipment is required for compliance with established FAA regulatory guidance, but does not constitute authorization to fly any and all terminal procedures that may be presented by the system. It is the pilot's responsibility to operate in accordance with established AFM(S) and regulatory guidance or limitations as applicable to the pilot, the aircraft, and installed equipment.



NOTE: The pilot/operator must review and be familiar with Garmin's database exclusion list as discussed in SAIB CE-14-04 to determine what data may be incomplete. The database exclusion list can be viewed at www.flygarmin.com by selecting "Database Exclusions List."



NOTE: The pilot/operator must have access to Garmin and Jeppesen database alerts and consider their impact on the intended aircraft operation. The database alerts can be viewed at www.flygarmin.com by selecting "Aviation Database Alerts."



NOTE: If the pilot/operator wants or needs to adjust the database, contact Garmin Product Support to coordinate the revised DQRs.



NOTE: Garmin requests the flight crew report any observed discrepancies related to database information. These discrepancies could come in the form of an incorrect procedure; incorrectly identified terrain, obstacles and fixes; or any other displayed item used for navigation or communication in the air or on the ground. Go to FlyGarmin.com and select "Aviation Data Error Report."

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1 GETTING STARTED

GTN 7XX - Page 1-11, GTN 6XX - Page 1-10

Removed the Ownship selection.

1.5.2 Setup Page

GTN 7XX/6XX system settings are managed from the System page. The following settings can be changed:

- System Status
- GPS Status
- External LRUs
- Setup
- Alerts Settings
- User Fields
- Units Settings
- Audio
- Backlight
- Connex Setup

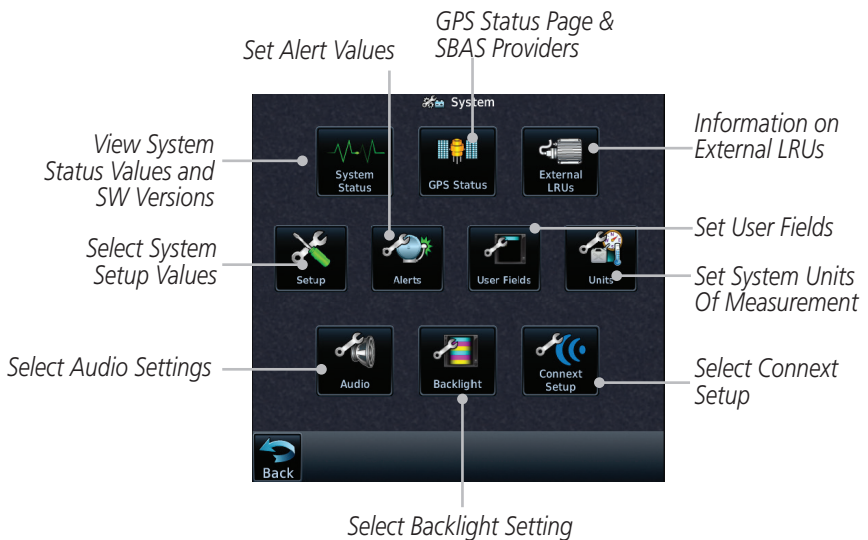


Figure 1-19 System Page

Added the Default Navigation section.

(1.11) Default Navigation

The Default Navigation display provides a text display of basic navigation functions.

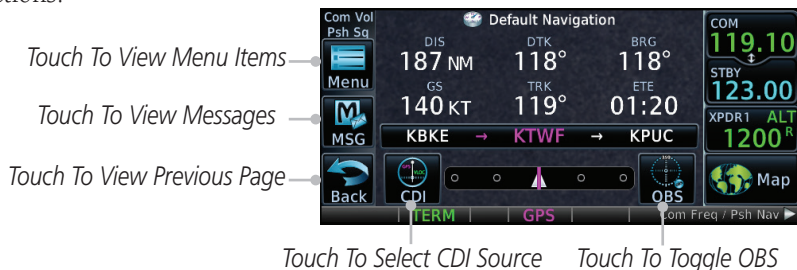


Figure 1-22 Touchscreen Key Control Example (Default Nav Page)

(1.11.1) Configuring User Fields

The Configure User Fields selection allows you to configure the Data, Function, and Page field type shown in each of the fields of the Default Navigation page. The information shown in each field may be selected from a list after *Configure User Fields* is selected.

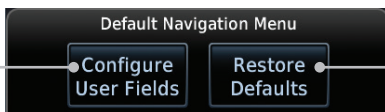


1. While viewing the Default Navigation page, touch the **Menu** key.



2. Touch the **Configure User Fields** key.

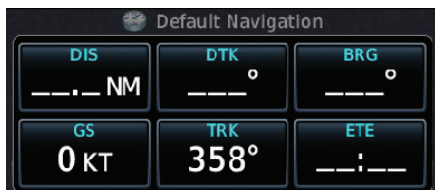
Touch to Configure the User Fields



Touch Restore the Default User Fields

Figure 1-23

3. Touch the desired user field key to choose the information type. A list of information types will be displayed.



Touch a Field to Change the User Field

Figure 1-24 Default Nav Page User Field Selection

4. Touch the **Data**, **Function**, or **Page** keys to select the information types.

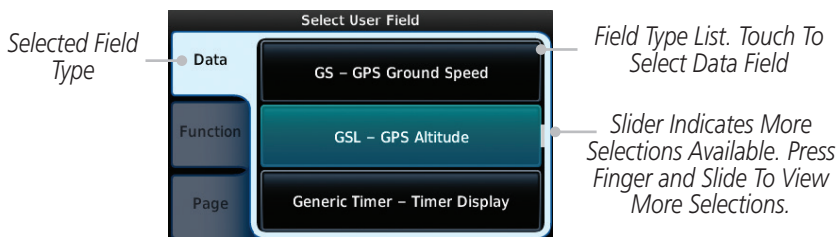


Figure 1-25 Map Data Field Type Selections



5. Touch the **Up** or **Down** keys or touch the display and drag your finger to scroll through the list. Touch the desired item to select it or touch the **Back** key to cancel selection.

Data Field Type	
ACTV WPT - Active Waypoint	Generic Timer - Timer Display
B/D AID - Bearing/DIS from NAV AID	MSA - Minimum Safe Altitude
B/D APT - BRG/DIS from Dest APT ¹	NAV/COM - Active NAV/COM FREQ
BRG - Bearing to Current Waypoint	OAT (static) - Static Air Temperature
DIS - Distance to Current Waypoint	OAT (total) - Total Air Temperature
DIS to Dest - Distance to Destination ²	RAD ALT - Radar Altimeter
DTK - Desired Track	Time - Current Time
ESA - Enroute Safe Altitude	TKE - Track Angle Error
ETA - Estimated Time of Arrival	TRK - Track
ETA at Dest - ETA at Destination	Trip Timer - Timer Display
ETE - Estimated Time Enroute	VOR/LOC - Tuned VOR/LOC Info
ETE to Dest - ETE to Destination	VSR - Vertical Speed Required
Fuel Flow - Total Fuel Flow	Wind - Wind Speed and Direction
GS - GPS Ground Speed	XTK - Cross Track Error
GSL - GPS Altitude	OFF - Do Not Display Data Field

Table 1-1 Data Field Types of Information

Note 1: B/D APT is the straight line distance.

Note 2: Dist to DEST is the distance along the flight plan.



NOTE: Data Field Types that use the term "Destination" refer to the final destination in the flight plan.



NOTE: ETE to Destination is not available when a procedure is loaded and there are waypoints in the Enroute section of the flightplan.

Function Field Type	
CDI - Course Deviation Indicator	OBS/Suspend/Unsuspend Button
Flap Override - Flap Override ¹	On Scene - "On Scene" Mode Toggle
GPWS Inhibit - GPWS Inhibit ¹	TAWS Inhibit - TAWS Inhibit
G/S Inhibit - G/S Inhibit ¹	Gen Timer - Generic Timer Control
HTAWS RP Mode - HTAWS RP Mode ²	OFF - Do Not Display Data Field

Table 1-2 Function Field Types of Information

Note 1: With TAWS-A enabled

Note 2: With HTAWS enabled

Page Field Type	
DFLT NAV - Default Navigation	Checklist - Checklist Page
Flight Plan - Flight Plan Page	Fuel PLAN - Fuel Planning Page
Map - Map Page	SCHEG MSG - Scheduled Messages
Nearest - Nearest Page	Trip PLAN - Trip Planning Page
NEAR APT - Nearest Airport Page	VCALC - VCALC Page
PROC - Procedures Page	User FREQ - User Frequencies
Approach - Approach Page	WPT INFO - Waypoint Information
Arrival - Arrival Page	Weather - Weather Page
Departure - Departure Page	CNXT WX - Connex WX Page
Services - Services Page	FIS-B WX - FIS-B Weather Page
Traffic - Traffic Page	Stormscope - Stormscope Page
Terrain - Terrain Page	SiriusXM WX - Sirius XM WX Page
Utilities - Utilities Page	OFF - Do Not Display Page Field

Table 1-3 Page Field Types of Information

(1.11.2) CDI (GTN 650 only)

See the CDI section in the Map chapter for details.

(1.11.3) OBS Function

See the OBS section in the Map chapter for details.

Added the FastFind feature.

1.11 (1.12) FastFind Predictive Waypoint Entry

FastFind provides the pilot with a shortcut to the nearest waypoint with an identifier that starts with the typed letters. As a result, the GTN can predict the pilot's entry within as little as one key press.

FastFind predictions are shown in the top right-hand corner of the keypad display. Touching the FastFind field will select the predicted waypoint. If the FastFind prediction is not what the pilot is looking for, keep typing until the desired waypoint is displayed.

1.11.1 FastFind With Waypoint Info

1. Use the alphanumeric keypad to begin selecting characters for the desired waypoint.

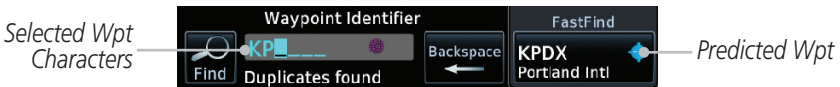


Figure 1-1 Select Characters for FastFind to Predict a Waypoint - KP Selected

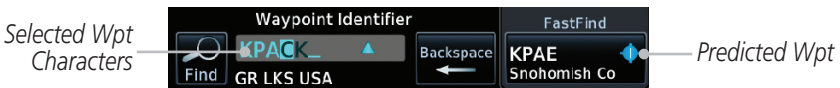


Figure 1-2 Select Characters for FastFind to Predict a Waypoint - KPA Selected

2. After selecting the desired waypoint, touch the **FastFind** key.

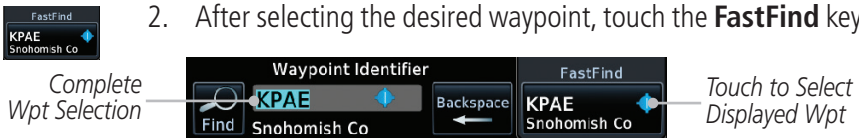


Figure 1-3 Select Characters for FastFind to Predict a Waypoint - KPAE Selected

1.11.2 FastFind With A Flight Plan

When creating a new flight plan or searching for a waypoint, the GTN will search for waypoints nearest the ownship. When adding waypoints in the middle of the flight plan, the GTN will search halfway between the previous and next waypoints. When adding waypoints at the end of the flight plan, the GTN will search for waypoints nearest the last waypoint in the flightplan.

1. When the ownship is located in KSLE, and the last waypoint in the flight plan is "DRK", the GTN will search for waypoints nearest "DRK".

- Typing **K**, will result in "KPRC" being displayed as the FastFind prediction because it is the nearest waypoint to "DRK" that starts with "K".

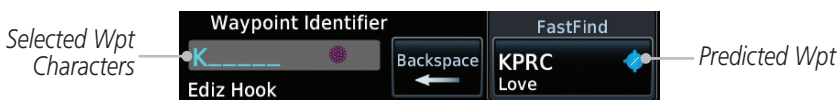


Figure 1-4 Using FastFind to Predict a Waypoint in a Flight Plan

2 AUDIO AND TRANSPONDER CONTROLS (OPTIONAL)

GTN 7XX - Page 2-1, GTN 6XX - Page 2-1

Added the following note.



NOTE: The transponder control panel on the GTN will not contain the Ground key when the GTN is interfaced with a GTX 33/330 with software version 8.00, or later.

GTN 7XX - Page 2-3, GTN 6XX - Page 2-4

Added the following note.



NOTE: Ground mode is not available with GTX 33/330 software version 8.00 or later. The GTN will automatically transition to Ground mode in the background when the aircraft is on the ground.

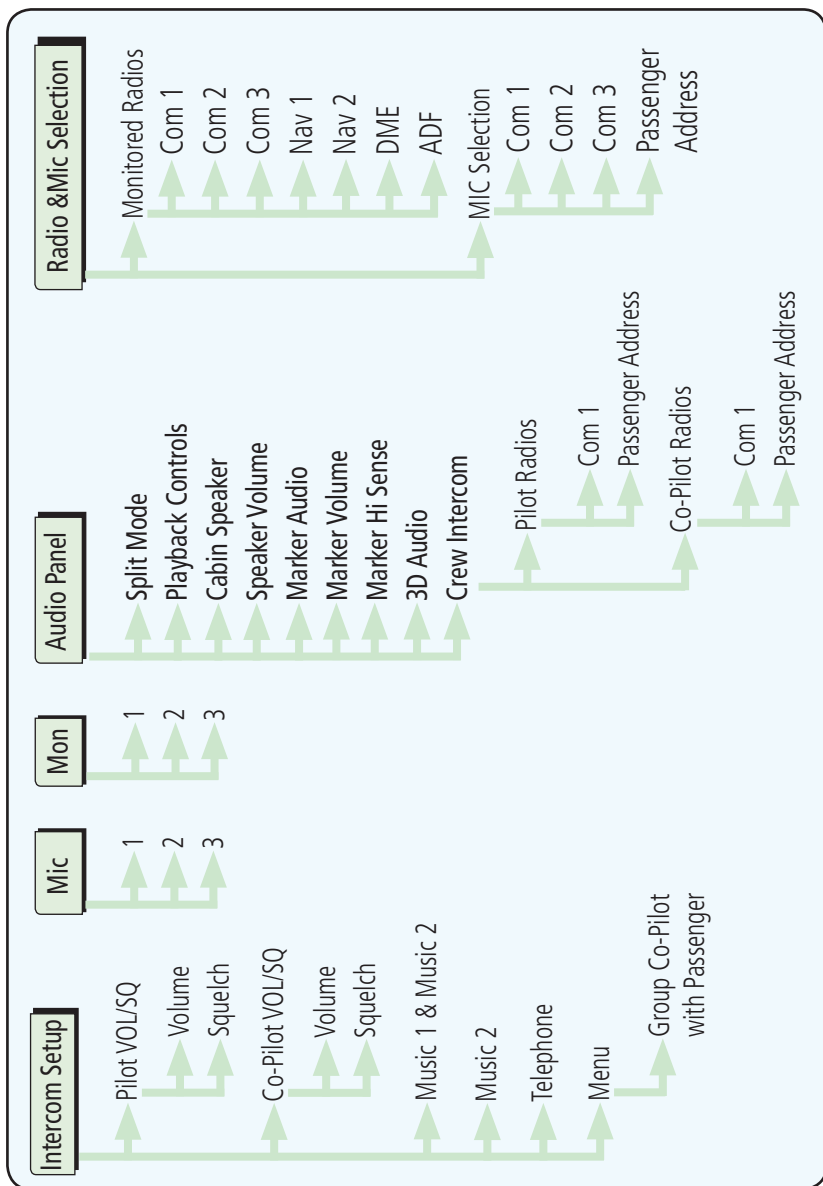


Figure 2-14 Audio Panel Functional Diagram

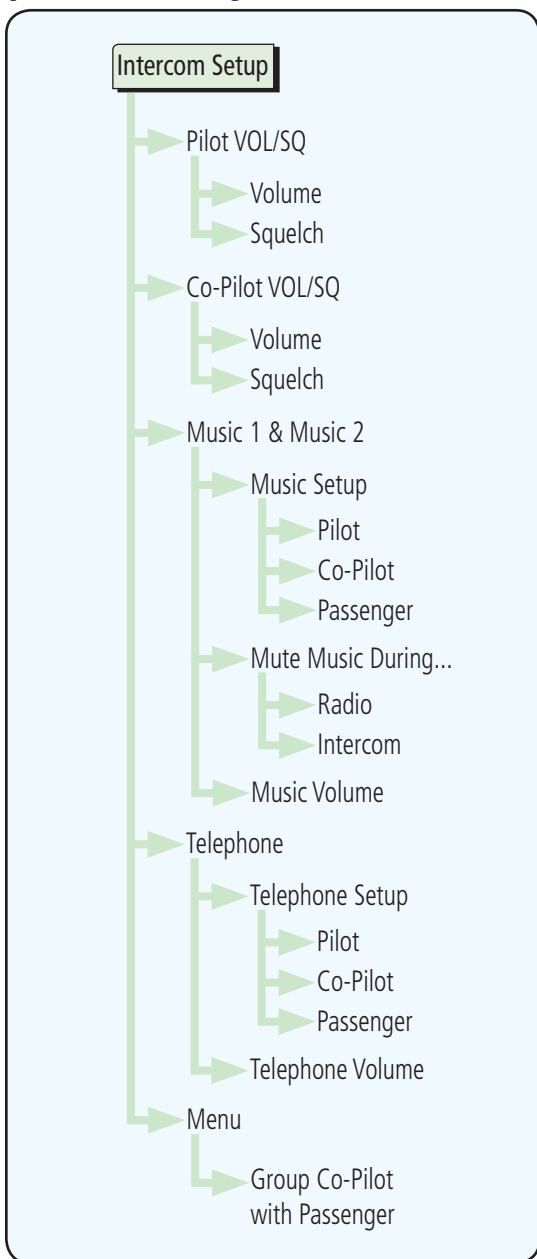


Figure 2-21 Intercom Setup Functional Diagram

2.3.2 Co-Pilot is Passenger

When the GTN 7XX is installed with a GMA 35, the GTN can place the GMA into “Co-Pilot is Passenger” mode. While in this mode, the GMA 35 treats the copilot headset as a passenger headset and the co-pilot only hears what the other passengers hear. This applies to intercom audio, alerts (if configured for the passengers), selected audio (if configured for passengers), and music/telephone distribution. “Co-Pilot is Passenger” mode allows simpler audio control for the pilot when the co-pilot is just a passenger and not involved in flying the aircraft.

1. To activate “Co-Pilot is Passenger” mode, open the Intercom Setup page and touch **Intercom**.
2. Touch **Menu**, to display the Intercom Menu, and then touch **Group Co-Pilot with Passenger** to enable “Co-Pilot is Passenger” mode.

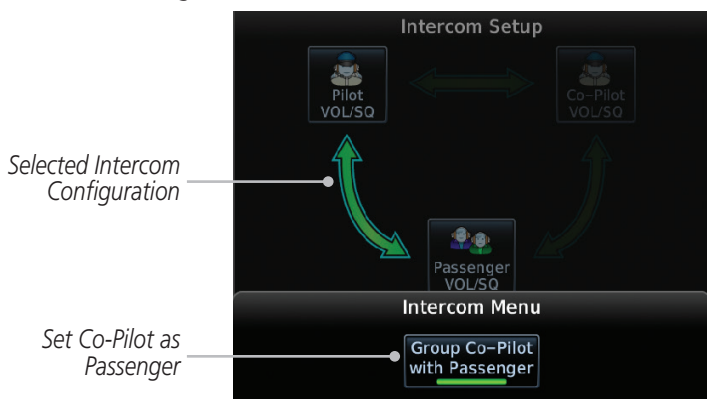


Figure 2-23 Set Co-Pilot as a Passenger in Intercom



NOTE: This feature should not be used for multi-crew aircraft. When the co-pilot is treated as a passenger, co-pilot position may not hear audio alerts or radios.



NOTE: While this mode is active, the co-pilot intercom and audio controls are unavailable because the co-pilot intercom/audio is controlled by the passenger controls. Split mode is also unavailable.

3 NAV/COM (GTN 750 NAV/COM)

GTN 7XX - Page 3-9, GTN 6XX - Page Page 3-8
Added Simple Frequency Entry feature.

3.3.2 Simple Frequency Entry

Frequencies can be entered on the GTN without the leading one and/or trailing zero(s). As a result, the pilot can touch “2”, “1”, and “5” for 121.50. If a number is pressed that is not valid for the cursor location, the pilot is presented with a confirmation pop-up upon selecting the typed frequency. Frequency entry can be accomplished by typing every digit in the frequency or by leaving off the leading one and/or trailing zero(s). The frequency that will be entered is always displayed in the cursor window.

2

1. Touch the Standby frequency field and then touch the **2** key.

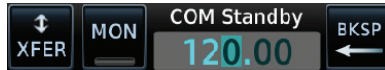


Figure 3-14 Simplified Frequency Entry Without Leading Number

7

2. Touch the **7** key.

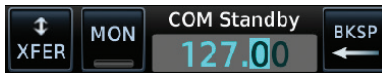


Figure 3-15 Second Frequency Number

2

3. Touch the **2** key.



Figure 3-16 Final Frequency Without Trailing Number



4. Touch **Enter**.



Entered Frequency Value

Figure 3-17 Completed Frequency Entry

3.3.7 Reverse Frequency Look-Up

When the Reverse Frequency Look-Up feature is enabled in System-Setup, the identifier and frequency type will be shown for the Com and Nav frequencies for the nearest station that is in the aviation database when the unit is receiving a valid position input. Station Identifiers with a “+” sign will have more stations associated with this frequency than just the type displayed.



Figure 3-23 Reverse Frequency Look-Up



NOTE: It can take up to 2 minutes for the RFL frequency to change after crossing the half way point when flying from one airport to another that both use the same frequency.

Added information about Morse code tones and Ident display.

3.5.2 Nav Tuning Window

Nav frequencies are selected with the tuning cursor in the standby Nav frequency field, and using the small and large right knobs to dial in the desired frequency. The keypad may also be used for frequency entry after touching the Standby window. The standby frequency always appears below the active frequency. The active frequency is the frequency currently in use. The GTN will automatically decode Morse code and display the Ident for the active frequency above it. The RFL (reverse frequency lookup) Identifier is displayed below the frequency and is only dependent on GPS position and database information.



NOTE: *Tuning is normally active in the Com window, unless placed in the Nav window by pressing the **small right** knob. When the tuning cursor is in the Nav window, it automatically returns to the Com window after 30 seconds of inactivity. The active frequency in either window cannot be accessed directly — only the standby frequency is active for editing.*

To select a VOR/localizer/ILS frequency:



1. Touch the **small right** knob momentarily to make the Nav Standby frequency value active for editing. The window will be highlighted momentarily.
2. Turn the **large right** knob to select the desired megaHertz (MHz) value. For example, the "117" portion of the frequency "117.80".
3. Turn the **small right** knob to select the desired kiloHertz (kHz) value. For example, the ".80" portion of the frequency "117.80".
4. Touch the Nav active (top) frequency to make the standby frequency.



5. The Active (top) and Standby frequencies will switch.

Nav Frequencies In The Database Will Display The Ident Based on GPS Position



Nav Frequencies Will Automatically Decode Morse Code And Display The Ident

Figure 3-27 Automatic Nav Frequency Ident Decoding

4 FLIGHT PLANS

GTN 7XX - Page 4-3 and 4-17, GTN 6XX - Page 4-2

Note added.



NOTE: Do not save flight plans that have modified procedures as this may produce undesirable results.

GTN 7XX - Page 4-30, GTN 6XX - Page 4-24

Connex and SD Card Flight Plan importing added.

4.5 Import Flight Plans with Connex

When the GTN is interfaced with a compatible Flight Stream device, flight plans can be wirelessly imported into the GTN from supported Apps (i.e. Garmin Pilot). The imported flight plans can then be activated or stored to the flight plan catalog once they are previewed by the pilot.



NOTE: Flight plans over 99 waypoints long are truncated at 99 waypoints and the last waypoint in the imported/uploaded flight plan may not be the destination airport.



NOTE: Flight plan information and user waypoints included as part of a flight plan will not necessarily retain their names when the flight plan is transferred from the portable device to the GTN via a Flight Stream device. Whenever a User Waypoint is imported, it is compared to the existing User Waypoint catalog. If it matches locations with an existing User Waypoint, the waypoint will utilize the name saved in the GTN for that waypoint. If there is not a location match, the waypoint is imported but without the name label that the import software may have used. Therefore all new User Waypoints will come in as USR### where the number is the lowest open User Waypoint slot in the catalog.



NOTE: This feature is available in software version 5.11 and later.

4.5.1 Operation

On the portable device, select the option to send a flight plan to the GTN. The GTN **MSG** key will appear and begin to flash.



1. Pressing the **MSG** key will open the message page with a message showing how many flight plans are ready to preview.

*Touch To Preview
Flight Plan*



Figure 4-47 Flight Plan Import Message



2. Touch the **New FPL** key to open the flight plan preview page when only one flight plan is imported, or the flight plan catalog when more than one flight plan is imported.



Figure 4-48 Preview for Single Flight Plan Import

*Touch To Select The
Desired Catalog*



Figure 4-49 Catalog for Multiple Flight Plan Import

3. Selecting a flight plan in the catalog that is "Pending Preview" will slide out a menu to preview or delete the flight plan. Once the flight plan has been previewed and then stored or activated, the other Route Options in the menu will be available.

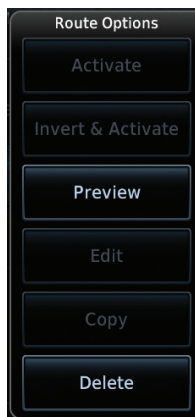


Figure 4-50 Route Options by Selecting Flight Plan with Pending Review

4.5.2 Potential Errors

If the GTN is unable to import a flight plan due to errors in the flight plan or a full catalog, the pilot will be alerted with a system message.

FLIGHT PLAN IMPORT
Flight plan import failed. Catalog is full.

Figure 4-51 Flight Plan Import Error Messages

If an imported flight plan contains any errors, pop-up messages will be displayed alerting the pilot of the issues and the resulting changes to the flight plan.

When the imported flight plan is too long, the GTN will truncate the flight plan to the correct length. The pilot should be aware that waypoints are missing from the end of the flight plan, including the destination waypoint.

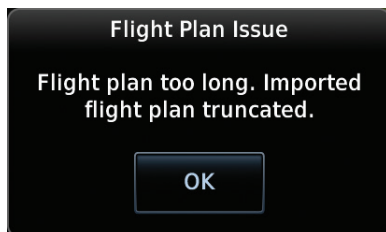


Figure 4-52 Pop-Up Message Reporting Flight Plan Errors

When the imported flight plan contains waypoints (non-user waypoints), procedures, or airways that are not found in navigation database, the GTN will replace those waypoints with locked (lockd) waypoints. These locked waypoints must be resolved prior to activating the flight plan to provide navigation along the flight plan.

When more than one error occurs during the flight plan import, the pilot will need to cycle through the errors by touching the **Next** key on the pop-up.

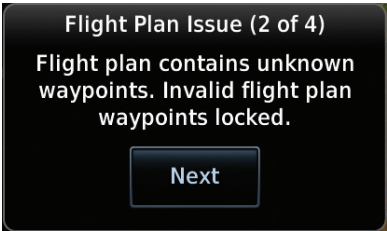


Figure 4-53 Pop-Up Message Reporting Unknown Waypoints

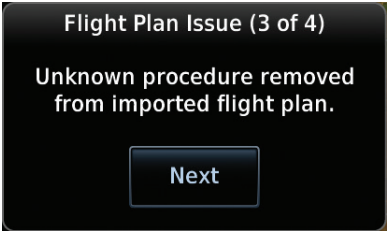


Figure 4-54 Pop-Up Message Reporting Unknown Procedure

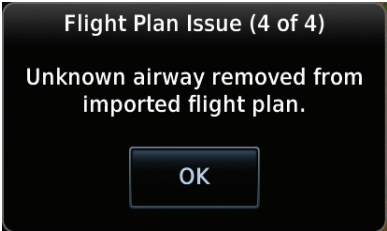


Figure 4-54 Pop-Up Message Reporting Unknown Airway

4.6 Import Flight Plans with an SD Card

Flight plans can be created on a computer using compatible flight planning software and saved to the SD card to be imported into the GTN. The imported flight plans can then be activated or stored to the flight plan catalog once they are previewed by the pilot.



NOTE: Flight plans over 99 waypoints long are truncated at 99 waypoints and the last waypoint in the imported/uploaded flight plan may not be the destination airport.



NOTE: This feature is available in software version 5.11 and later.



NOTE: The flight plan file format used by the GTN is different than the file format used by the GNS 400W/500W Series navigators.



1. While viewing the Flight Plan page, touch the **Menu** key and then the **Catalog** key to display the Flight Plan Catalog.



Flight Plan
On SD Card



Touch To Import
Flight Plan

Figure 4-55 Catalog for SD Card Flight Plan Import



2. An **Import** key will be present in the menu bar when flight plans are present on the SD card. Touch the **Import** key to open a pop-up with a list of the file names of the flight plans on the SD card.

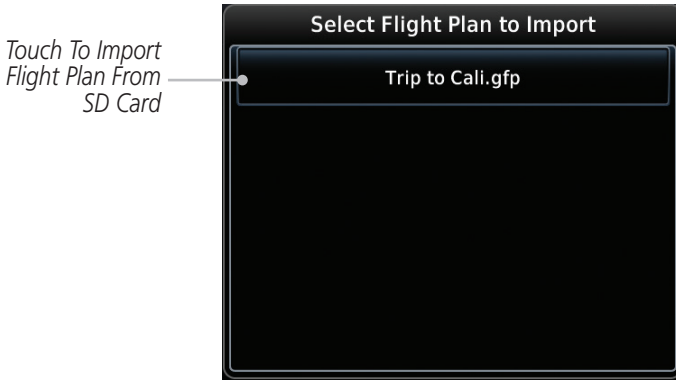


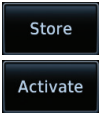
Figure 4-56 Flight Plan To Import From SD Card

Preview

3. After selecting the desired flight plan to import, the GTN will attempt to import the flight plan and open the Route Options slide out menu. The imported flight plan must be previewed before being activated. Touch **Preview** to view the flight plan.



Figure 4-57 Route Options For SD Card Flight Plan Import



4. Press **Store** to save the flight plan to the catalog. Press **Activate** to make the imported flight plan the active route.

Touch To Store To Save Flight Plan To The Catalog



Touch To Make The Imported Flight Plan The Active Route

Figure 4-58 Route Options For SD Card Flight Plan Import

4.6.1 Potential Errors

If the GTN is unable to import a flight plan due to errors in the flight plan or a full catalog, the pilot will immediately be alerted with a pop-up.



1. Touch OK at the prompt to continue.

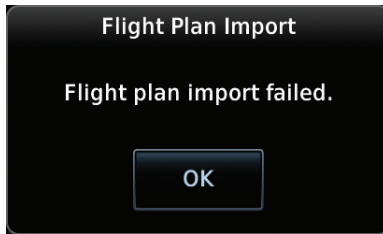


Figure 4-59 Flight Plan Import Fault

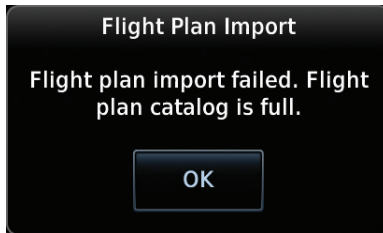


Figure 4-60 Flight Plan Import Fault - Catalog Full

OK

2. If an imported flight plan contains any errors, pop-up messages will be displayed alerting the pilot of the issues and the resulting changes to the flight plan. These pop-ups are presented the first time that the flight plan is viewed on the Flight Plan Preview page.

When the imported flight plan is too long, the GTN will truncate the flight plan to the correct length. The pilot should be aware that waypoints are missing from the end of the flight plan.

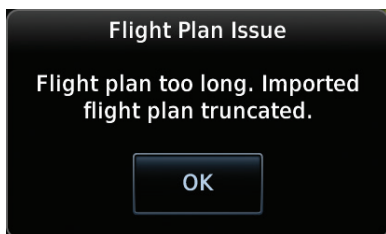


Figure 4-61 Flight Plan Import Issue - Flight Plan Too Long

3. When the imported flight plan contains waypoints (non-user waypoints), procedures, or airways that are not found in navigation database, the GTN will replace those waypoints with locked waypoints. These locked waypoints must be resolved prior to activating the flight plan.

When more than one error occurs during the flight plan import, the pilot will need to cycle through the errors by touching the **Next** key on the pop-up.

Next

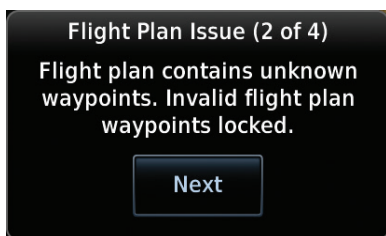


Figure 4-62 Flight Plan Import Issue - Flight Plan Contains Unknown Waypoints

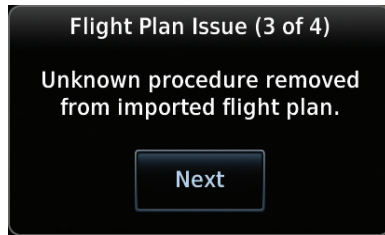


Figure 4-63 Flight Plan Import Issue - Unknown Procedure Removed From Flight Plan

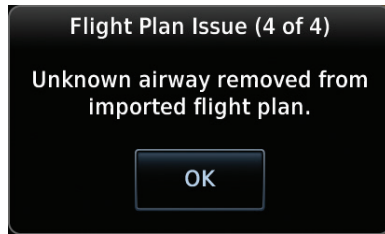


Figure 4-64 Flight Plan Import Issue - Unknown Airway Removed From Flight Plan

6 PROCEDURES

6.6 Flying the Missed Approach

GTN 7XX - Page 6-14, GTN 6XX - Page 6-11 (SW Version 5.12)

Added information about the Missed Approach Point.

The Activate GPS Missed Approach function is the same for the on screen controls or a remote switch. Activating the missed approach prior to the MAP can be accomplished on either the Flight Plan or Procedures pages. If using the Flight Plan page, the approach banner must be touched to display the Approach Options where Activate Missed Approach can be selected.



Figure 6-19 Approach Option Selection on the Flight Plan Page

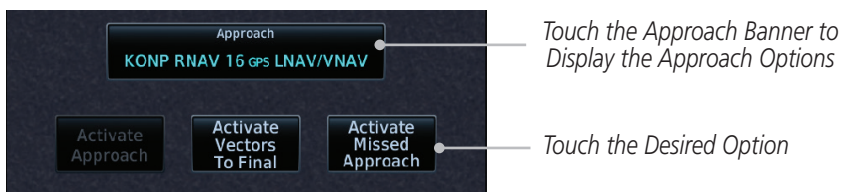


Figure 6-20 Approach Option Selection on the Procedures Page

Once an option is selected, the GTN will continue to provide guidance along the final approach course. Upon reaching the MAP, the unit will automatically sequence to the first leg of the missed approach. This is used when a pilot needs to execute the missed approach prior to reaching the MAP.

6.11 RNAV Approach Procedures

6.11.1 Flying the LPV Approach

1. Within 31 NM of the destination, the GTN switches from en route mode to terminal mode and the CDI scale transitions from 2.0 to 1.0 NM, full scale deflection.
2. As you approach the IAF, a waypoint message appears on the bottom of the screen.
3. As the distance (DIST) to the IAF approaches zero, the message is replaced by a turn advisory that counts down 10 seconds prior to the turn.
4. As you approach the FAF, the GTN will begin to automatically rescale in an angular fashion. This will allow the LPV approach to be flown in an identical fashion to a standard ILS. At 2.0 NM from the FAF, CDI scaling is tightened from 1.0 NM to the angular full scale deflection (typically the angular full-scale deflection is 2.0° , but will be as defined for the approach).
5. Sixty seconds prior to reaching the FAF, the unit will check the required Horizontal Alarm Limit (HAL) and Vertical Alarm Limit (VAL) to ensure the GPS position integrity is within limits to complete the LPV precision approach. In the event the HAL or VAL limits are exceeded, the approach will be downgraded to a non-precision approach indicated by "LNAV" on the moving map, a message that the approach is downgraded ("APPROACH DOWNGRADE - GPS approach downgraded. Use LNAV minima."), and the glideslope indicator will be flagged. You may continue the approach using LNAV non-precision minimums if there are LNAV minimums for this approach. In the rare event the GPS integrity cannot meet the non-precision HAL limits, the unit will send a message to the pilot to abort the approach ("ABORT APPROACH - GPS approach no longer available."). The unit will revert to terminal limits to support navigation to the missed approach when the message is acknowledged. After the aircraft has passed the FAF, a loss of WAAS integrity will cause the approach to abort instead of downgrade.

6. Capture the glideslope as you would an ILS glideslope.
7. As you cross FAF, the destination sequences to the MAP (e.g. "RW31", the runway threshold). With the needle on the external CDI (or HSI) centered, fly toward the MAP, observing the altitude minimums dictated by the approach plate.
8. When viewing the Map Page, you'll note that the final course segment is displayed in magenta (the active leg of the flight plan always appears in magenta).
9. As you approach the MAP, a waypoint message appears on the bottom of the screen.
10. Once the unit crosses the MAP (defined as the runway end waypoint), sequencing will be suspended. Prepare the aircraft for missed approach operation. Touch the **Unsuspend** key to sequence to the Missed Approach procedure.
11. Fly the guidance provided by the unit to the MAHP and hold.

6.11.2 Flying the LP Approach

An LP approach is flown similarly to an LNAV approach, except the precision is greater as it utilizes the SBAS accuracy. It has similar lateral accuracy as an LPV approach. Angular scaling is similar to a localizer approach. Most LP approaches have step down altitudes associated with them. The approach still results in an MDA and missed approach point.

1. Within 30 NM of the destination, the GTN switches from en route mode to terminal mode and the CDI scale transitions from 2.0 to 1.0 NM, full scale deflection.
2. As you approach the IAF, a turn direction message appears on the bottom of the screen.
3. As the distance (DIST) to the IAF approaches zero, the message is replaced by a time to turn advisory that counts down 10 seconds prior to the turn.
4. As you approach the FAF, the GTN will begin to automatically rescale in an angular fashion. This will allow the LP approach to be flown in the same fashion as a standard localizer approach. At 2.0 NM from the FAF, CDI scaling is tightened from up to either 2° or 0.3 NM, full scale deflection, whichever is smaller.

5. Sixty seconds prior to reaching the FAF, the GTN will check the required Horizontal Alarm Limit (HAL) to ensure the GPS position integrity is within limits to complete the LP non-precision approach. In the event the HAL limits are exceeded, the approach will be downgraded, when available, indicated by "LNAV" on the moving map, otherwise the approach will be aborted. A message will note that the approach is downgraded and the NAV indicator will be flagged. You may continue the approach using LNAV non-precision minimums if there are LNAV minimums for this approach. In the rare event the GPS HAL limits cannot meet non-precision limits, the GTN will notify the pilot with a message to abort the approach. The GTN will revert to terminal limits of 1.0 NM to support navigation to the missed approach.
6. As you cross the FAF, the destination sequences to the MAP. With the needle on the external CDI (or HSI) centered, fly toward the MAP, observing the altitude minimums dictated by the approach plate.
7. When viewing the Map Page, you'll note that the final course segment is displayed in magenta (the active leg of the flight plan always appears in magenta).
8. As you approach the MAP, a waypoint message ("Arriving at Waypoint") appears on the bottom of the screen.
9. At the MAP initiate the missed approach, if necessary. Once the GTN crosses the MAP, sequencing will be suspended. Prepare the aircraft for missed approach operation. Touch the **Unsuspend** key to sequence to the Missed Approach procedure.



NOTE: *For missed approaches with heading legs, fly manually until the first active course leg is reached.*

10. Fly the guidance provided by the GTN to the MAHP and hold.

8 (7) WAYPOINT INFO

GTN 7XX - Page 8-1, GTN 6XX - Page 7-1
Added Import Waypoints to the Waypoint Info page.

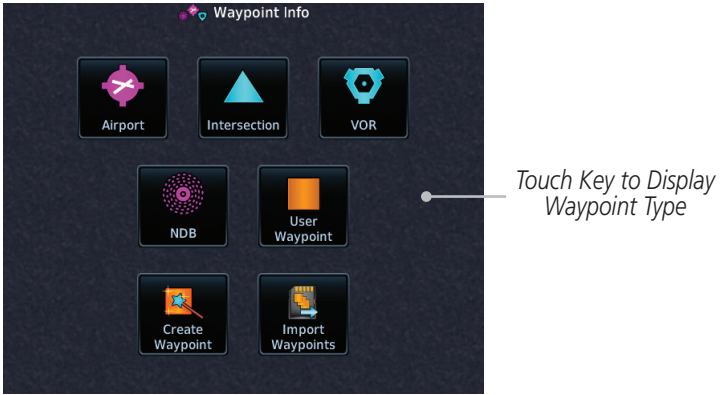


Figure 8-1 GTN 7XX Waypoint Info Page

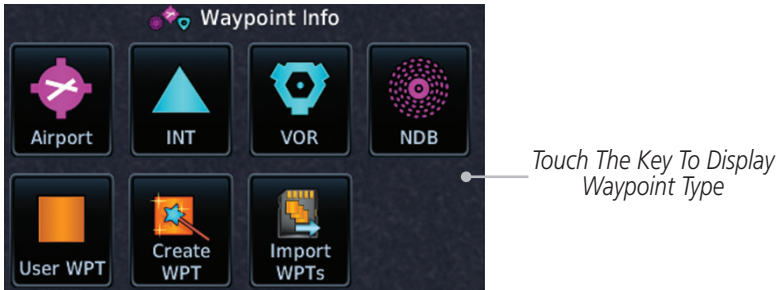


Figure 7-1 GTN 6XX Waypoint Info Page



Figure 8-2 Waypoint Info Functional Diagram

Added the Import User Waypoints section.

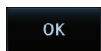
8.8 (7.8) Import User Waypoints (SD Card)

The GTN can import user generated waypoints from a file on the SD card. The created waypoints will be at the latitude and longitude specified in the file with the specified name and comment.



NOTE: *This feature is available in software version 5.11 and later.*

When a user waypoint file is on the SD card, a key will be available on the Waypoint Info page for importing user waypoints.



1. Insert an SD card with the User waypoints into the the GTN.
2. From the Waypoint Info page, touch the **Import Waypoints** key.
3. Touch **OK** to acknowledge the pop-up to import all of the user waypoints in the file.



Figure 8-27 Start User Waypoint Import

4. The pilot is informed of the status of the user waypoint import via one of the following system messages.

Message	Description
USER WAYPOINT IMPORT - User waypoints were imported successfully.	All user waypoints were imported successfully.
USER WAYPOINT IMPORT - User waypoint import failed.	User waypoint import failed due to improper file format.
USER WAYPOINT IMPORT - User waypoint import failed. User waypoint database is full.	User waypoint catalog is full and the requested user waypoints could not be imported.
USER WAYPOINT IMPORT - User waypoints imported successfully - existing waypoints reused.	User waypoints imported and existing waypoints are used instead of creating duplicate waypoints. This occurs when a waypoint to be imported is within 0.001° latitude and longitude of an existing user waypoint (roughly a few hundred feet, depending on latitude).

Table 8-1 User Waypoint Import Messages

9 (8) MAP

GTN 7XX - Page 9-4, GTN 6XX - Page 8-4 (SW Version 5.12)
Added Overlay Priority.

9.1.1.1 Overlay Priority

The data overlaid on the map is displayed according the following priorities (from highest to lowest):

1 - Traffic	10 - Freezing Levels	19 - PIREPs	28 - Echo Tops
2 - Ownship	11 - Cell Movement	20 - AIREPS	29 - NEXRAD
3 - Flight Plan	12 - Lightning	21 - City Forecast	30 - Cloud Tops
4 - TAWS Alerts	13 - METARs	22 - Surface Analysis	31 - IR Satellite
5 - Weather Radar	14 - Winds Aloft	23 - Airspace	32 - SafeTaxi
6 - Charts	15 - SIGMETs	24 - Waypoints	33 - Terrain
7 - Stormscope	16 - AIRMETs	25 - Airways	34 - Base Map
8 - Obstacles	17 - Cyclone Warning	26 - Turbulence	35 - Topo
9 - TFRs	18 - County Warning	27 - Icing Potential	

Table 1-1 Data Overlay Priority

Changed Obstacle to Point Obstacle and added Wire Obstacle.

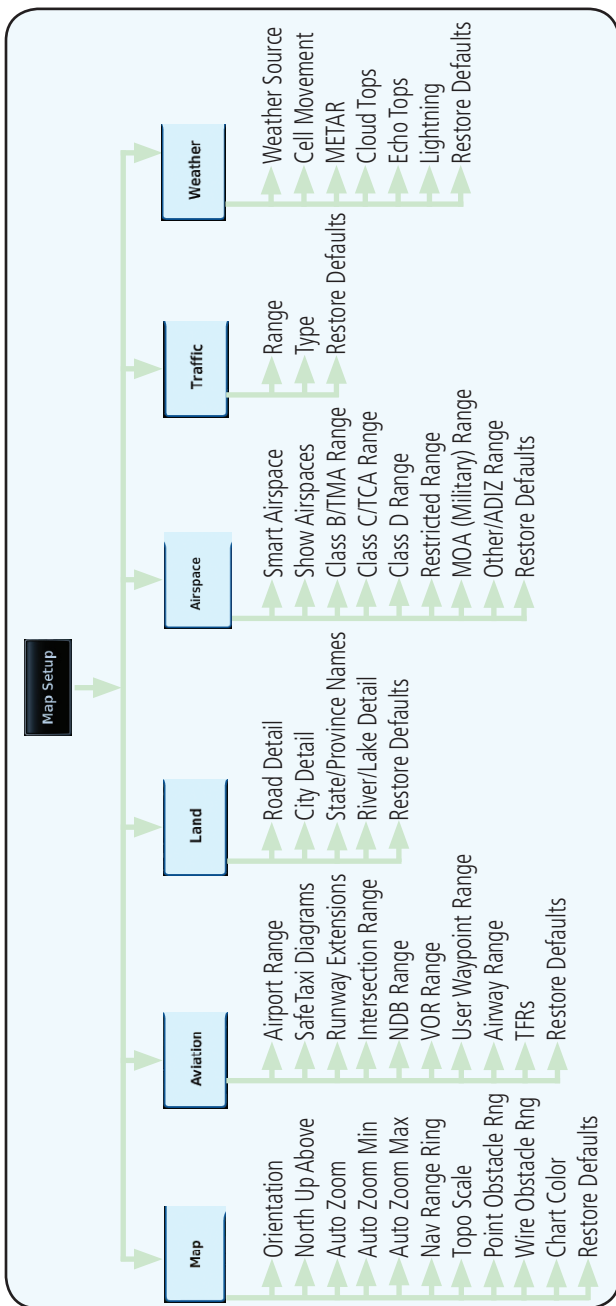


Figure 9-13 Map Setup Functional Diagram

Changed Obstacle to Point Obstacle and added Wire Obstacle.

9.1.2.1 (8.1.2.1) Map

The Map option defines the behavior and display of information on the Map page such as: Orientation, North Up Above, Auto Zoom, Nav Range Ring, Topo Scale, Point Obstacle Range, Wire Obstacle Range, Chart Color Scheme, and Restore Defaults. The default values are shown in **bold** type.

Feature	Selection
Orientation	North Up, Track Up , Heading Up
North Up Above	Off, 10 NM, 15 NM, 25 NM, 40 NM , 50 NM, 75 NM, 100 NM, 150 NM, 250 NM
Auto Zoom	Off, On
Auto Zoom Min	250 ft, 400 ft, 500 ft, 750 ft, 1000 ft, 1500 ft, 2500 ft, 0.5 NM, 0.75 NM, 1 NM, 1.5 NM , 2.5 NM, 4 NM, 5 NM, 7.5 NM, 10 NM, 15 NM, 25 NM, 40 NM, 50 NM, 75 NM, 100 NM, 150 NM, 250 NM, 400 NM
Auto Zoom Max	250 ft, 400 ft, 500 ft, 750 ft, 1000 ft, 1500 ft, 2500 ft, 0.5 NM, 0.75 NM, 1 NM, 1.5 NM, 2.5 NM, 4 NM, 5 NM, 7.5 NM, 10 NM, 15 NM, 25 NM , 40 NM, 50 NM, 75 NM, 100 NM, 150 NM, 250 NM, 400 NM
Nav Range Ring	Off, On , Enhanced
Topo Scale	Off , On
Point Obstacle Range	Off, 4 NM, 5 NM , 7.5 NM, 10 NM, 15 NM
Wire Obstacle Range	Off, 1 NM, 1.5 NM , 2.5 NM
Chart Color Scheme	Day , Night
Restore Defaults	Returns values to original factory settings

Table 9-1 Map Setup Map Options

Updated the Point Obstacle and Wire Obstacle information.

Point Obstacle Range

The Point Obstacle Range option selects whether the Point Obstacle Data is shown on the Map page at and below the selected Point Obstacle range. Map ranges above this value will not show the Point Obstacle Data. An obstacle with an asterisk indicates a group of the same obstacle type.





Unlighted Obstacle (Height is less than 1000 ft AGL)	Lighted Obstacle (Height is less than 1000 ft AGL)	Unlighted Obstacle (Height is greater than 1000 ft AGL)	Lighted Obstacle (Height is greater than 1000 ft AGL)
			

Table 9-2 Navigation Map Point Obstacle Icons by Elevation





Tower	Windmill	Windmill in Group	Power Line
			

Table 9-3 Obstacle Icon Types

Color	Description
None	Lines are removed when they are more than 2000 ft below the aircraft.
White	Lines are white when they are within 2000 ft below the aircraft.
Amber	Lines are amber when they are within 1000 ft below the aircraft.
Red	Lines are red when they are within 100 ft below or above the altitude of the airplane.

Table 9-4 Fixed Wing Color Scheme for Obstacles and Wires

Color	Description
None	Lines are removed when they are more than 500 ft below the rotorcraft.
White	Lines are white when they are within 500 ft below the rotorcraft.
Amber	Lines are amber when they are within 250 ft below the rotorcraft.
Red	Lines are red when they are at or above the altitude of the rotorcraft.

Table 9-5 Rotorcraft Color Scheme for Obstacles and Wires

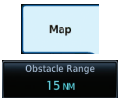
Grouped obstacles are shown with an asterisk. The color of the asterisks is tied to the relative altitude of the highest obstacle in the group, not other obstacles within that group. Obstacles are grouped when they would otherwise overlap.



1. While viewing the Map function, touch the **Menu** key.



2. Touch the **Map Setup** key.



3. Under the **Map** tab touch the **Point Obstacle Range** key and select the maximum range where obstacles will be displayed.



Figure 1-5 Navigation Map Point Obstacles

* The icon on the left shows that the point obstacle overlay is active. The icon on the right shows that the wire obstacle overlay is active. These icons are available in software version 5.12 or later.



4. Touch an obstacle on the map and the elevation will be shown. If there are nearby or overlaid objects (obstacle, airspace, airport, etc), touch the **Next** key to step through the nearby objects. Touch the **Back** key to return to the normal map view.



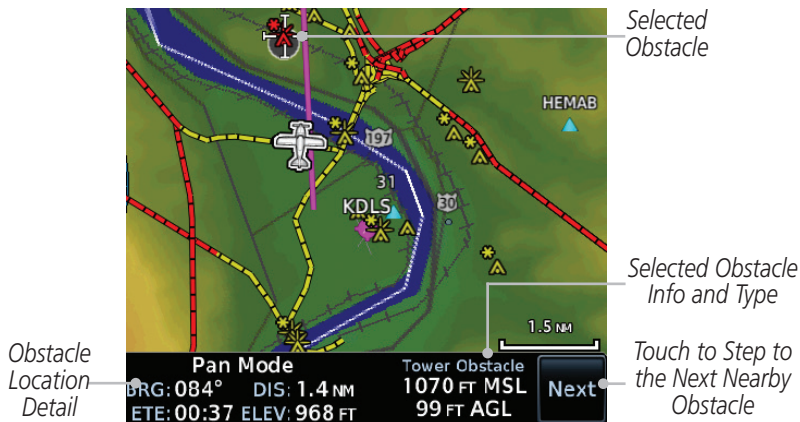


Figure 9-22 Point Obstacle Detail

Wire Obstacle Range

The Wire Obstacle Range option selects whether the power lines are shown on the Map page at and below the selected Wire Obstacle range. Map ranges above this value will not show the Wire Obstacle Data.



NOTE: This feature is available in software version 5.11 and later and requires the use of obstacle databases that contain wire obstacle data.



Figure 9-23 Wire Obstacles

Added the Airspace Label Range.

9.1.2.4 (8.1.2.4) Airspace

The Airspace viewing range options select whether the Airspaces are shown on the Map and at and below the selected map ranges. The Smart Airspaces selection filters airspaces to show the ones appropriate for your altitude.

Feature	Selection
Airspace Label Range	Off, 7.5 NM, 10 NM, 15 NM, 25 NM , 40 NM, 50 NM
Smart Airspace	Off , On
Show Airspaces	All , Below 18000 ft, Below 15000 ft, Below 12000 ft, Below 9000 ft, Below 6000 ft, Below 3000 ft
Class B/TMA Range	Off, 1 NM, 1.5 NM, 2.5 NM, 4 NM, 5 NM
Class C/TCA Range	Off, 0.75 NM, 1 NM, 1.5 NM, 2.5 NM, 4 NM , 5 NM, 7.5 NM, 10 NM
Class D Range	Off, 0.75 NM, 1 NM, 1.5 NM, 2.5 NM, 4 NM, 5 NM , 7.5 NM, 10 NM
Restricted Range	Off, 10 NM , 15 NM, 25 NM, 40 NM, 50 NM, 75 NM, 100 NM
MOA (Military) Range	Off, 0.75 NM, 1 NM, 1.5 NM, 2.5 NM, 4 NM, 5 NM , 7.5 NM, 10 NM, 15 NM, 25 NM, 40 NM, 50 NM, 75 NM, 100 NM
Other/ADIZ Range	None, Least, Less, Normal , More, Most
Restore Defaults	Returns values to original factory settings

Table 9-9 Map Setup Airspace Options



NOTE: *Prohibited Airspaces cannot be disabled.*

Airspace Labels

The Airspace Label feature shows the airspace altitude limits within the selected range.



Figure 9-25 Display of Airspace Labels

9.1.3 (8.1.3) Change User Fields

The Change User Fields selection allows you to configure the Data, Function, and Page field type shown in each of the four corners of the Map page. The information shown in each field may be selected from a list after *Change User Fields* is selected.



1. While viewing the Map page, touch the **Menu** key.



2. From the Map Menu screen, touch the **Change User Fields** key.



Touch To Select Data Field
(TRK Currently Shown)

Touch To Select Data Field
(DIS Currently Shown)

Touch To Cancel Any Changes

Figure 9-28 Map Data Fields Selection



NOTE: Map Data Field Types that use the term "Destination" refer to the final destination in the flight plan.



NOTE: ETE to Destination is not available when a procedure is loaded and there are waypoints in the Enroute section of the flightplan.

3. Touch the corner data field key you want to select. Touch the **Data**, **Function**, or **Page** keys to select the User Field type. A list of information types will be displayed.

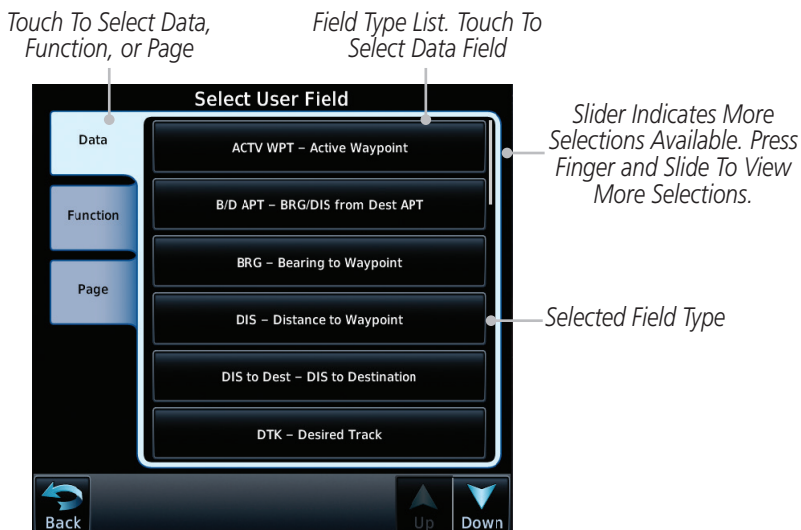


Figure 9-29 Map Data Field Type Selections



4. Touch the **Up** or **Down** keys or touch the display and drag your finger to scroll through the list. Touch the desired item to select it or touch the **Back** key to cancel selection.

Map Data Field Type	
ACTV WPT - Active Waypoint	Generic Timer - Timer Display
B/D AID - Bearing/DIS from NAV AID	MSA - Minimum Safe Altitude
B/D APT - BRG/DIS from Dest APT ¹	NAV/COM - Active NAV/COM FREQ ³
BRG - Bearing to Current Waypoint	OAT (static) - Static Air Temperature
DIS - Distance to Current Waypoint	OAT (total) - Total Air Temperature
DIS to Dest - Distance to Destination ²	RAD ALT - Radar Altimeter
DTK - Desired Track	Time - Current Time
ESA - Enroute Safe Altitude	TKE - Track Angle Error
ETA - Estimated Time of Arrival	TRK - Track
ETA at Dest - ETA at Destination	Trip Timer - Timer Display
ETE - Estimated Time Enroute	VOR/LOC - Tuned VOR/LOC Info
ETE to Dest - ETE to Destination	VSR - Vertical Speed Required
Fuel Flow - Total Fuel Flow	Wind - Wind Speed and Direction
GS - GPS Ground Speed	XTK - Cross Track Error
GSL - GPS Altitude	OFF - Do Not Display Data Field

Table 9-14 Map Data Field Types of Information

Note 1: B/D APT is the straight line distance.

Note 2: Dist to DEST is the distance along the flight plan.

Note 3: NAV/COM is only applicable to GTN 6XX units.

Function Field Type	
CDI - Course Deviation Indicator	Passenger Address - PA Toggle ³
Flap Override - Flap Override ¹	Playback - Play Last Recording ³
GPWS Inhibit - GPWS Inhibit ¹	TAWS Inhibit - TAWS Inhibit
G/S Inhibit - G/S Inhibit ¹	Gen Timer - Generic Timer Control
HTAWS RP Mode - HTAWS RP Mode ²	WX RDR Controls - Weather Radar Controls ³
OBS/Suspend/Unsuspend Button	OFF - Do Not Display Data Field
On Scene - "On Scene" Mode Toggle	

Table 9-15 Map Function Field Types of Information

Note 1: With TAWS-A enabled

Note 2: With HTAWS enabled

Note 3: Only applicable to GTN 7XX units.

Map Page Field Type	
DFLT NAV - Default Navigation ¹	Checklist - Checklist Page
Charts - Charts Page ²	Fuel PLAN - Fuel Planning Page
Flight Plan - Flight Plan Page	SCHED MSG - Scheduled Messages
Map - Map Page	Trip PLAN - Trip Planning Page
Nearest - Nearest Page	VCALC - VCALC Page
NEAR APT - Nearest Airport Page	User FREQ - User Frequencies
PROC - Procedures Page	WPT INFO - Waypoint Information
Approach - Approach Page	Weather - Weather Page
Arrival - Arrival Page	CNXT WX - Connex WX Page
Departure - Departure Page	FIS-B WX - FIS-B Weather Page
Services - Services Page	Stormscope - Stormscope Page
Traffic - Traffic Page	WX Radar - Weather Radar Page ²
Terrain - Terrain Page	SiriusXM WX - Sirius XM WX Page
Utilities - Utilities Page	OFF - Do Not Display Page Field

Table 9-16 Map Page Field Types of Information

Note 1: Only applicable to GTN 6XX units.

Note 2: Only applicable to GTN 7XX units.

9.2 (8.2) Map Panning

GTN 7XX - Page 9-30, GTN 6XX - Page 8-25

Added the note about multiple vertically stacked airspaces.



NOTE: *It is possible that multiple airspaces can be stacked vertically and be difficult to visually identify them. Touching the **Next** key will step through the airspaces.*

10 (9) TRAFFIC

GTN 7XX - Page 10-25, GTN 6XX - Page 9-24 (SW Version 5.12)
Updated On Scene mode and Rotorcraft Traffic Page Orientation

10.5.1.6 (9.5.1.7) On Scene Mode

When a GDL 88 (with software version 3.00, or later) is installed with a GTN in a helicopter, the GTN provides controls for enabling/disabling “On Scene” mode in the GDL 88. “On Scene” mode decreases traffic alerts when operating near other helicopters (e.g., news reporting).



1. While viewing the Traffic page, touch the **Menu** key.



2. Touch the **On Scene** key to enable/disable On Scene mode.

10.5.2 (9.5.2) Rotorcraft Traffic Page Orientation



NOTE: *Rotorcraft Traffic Page Orientation functionality is available in software version 5.12 or later.*

When flying at low speeds in a helicopter, heading may not always be closely aligned with track (it could easily be up to 180 degrees different). If the GTN is interfaced with a heading source, the ADS-B traffic page will remain fixed with the ownship heading pointed up. However, if heading is not being received by the GTN, the display of ADS-B traffic will be unavailable.

When one of the following conditions is true, the ADS-B traffic page will be unavailable:

- Ownship directionality is invalid (no valid heading or track)
- GPS ground speed is less than 15 knots and ownship heading is not available

While the traffic display is unavailable due to these conditions, traffic alerts will be provided in a non-bearing textual form at the top of the traffic page.

11 (10) TERRAIN

GTN 7XX - Page 11-2, GTN 6XX - Page 10-2

Section was moved, restructured, and added information related to Line Obstacles.

11.2 (10.2) General Database Information

Garmin TAWS and HTAWS use terrain and obstacle information supplied by government and private sources. The data undergoes verification by Garmin to confirm accuracy of the content. **However, the displayed information should never be understood as being all-inclusive. Pilots must familiarize themselves with the appropriate charts for safe flight.**



NOTE: *The data contained in the terrain and obstacle databases comes from government and private agencies. Garmin accurately processes and cross-validates the data, but cannot guarantee the accuracy and completeness of the data.*

The terrain database is contained on the datacard.

11.2.1 (10.2.1) Database Versions

The version and area of coverage of each terrain/obstacle database is shown on the System-System Status page. Databases are checked for integrity at power-up. If a database is found to be missing and/or deficient, the TAWS/HTAWS system fails the self-test and displays the TAWS/HTAWS system failure message.

11.2.2 (10.2.2) HTAWS Database Requirements

To function properly, HTAWS requires the use of databases specific to helicopters and HTAWS. The databases required are:

- 2.5 arc-second Terrain Database
- Helicopter Obstacle Database
- Helicopter Navigation Database

11.2.3 (10.2.3) Database Updates

Terrain and obstacle databases are updated periodically with the latest terrain and obstacle data. Visit the Garmin website to check for newer versions of terrain/obstacle databases. Compare database cycle numbers to determine if a newer version is available.

The database update process includes either reprogramming or replacing the database card and inserting the updated card in the card slot on the unit front panel. The terrain/obstacle database may be downloaded via the internet and the card reprogrammed using a USB programmer available from Garmin. Contact Garmin at 866-739-5687 or at www.garmin.com or <http://fly.garmin.com> for more information.

To update your terrain/obstacle databases:

1. Prepare the card with new terrain data.
2. Turn off the power to the unit.
3. Remove the old terrain data card and insert the new card into the unit.
4. Turn on the unit and verify that the Terrain Database verification is successful.
5. Verify that TAWS/HTAWS passes the self-test (if configured for TAWS or HTAWS).

11.2.4 (10.2.4) Terrain Database Areas of Coverage

The fixed-wing terrain database provides worldwide coverage. The following describes the area of coverage available in each helicopter terrain database. Regional definitions may change without notice.

Database	Coverage Area
Americas - North	Latitudes: 0° to N90° Longitudes: W180° to W30°
Americas - South	Latitudes: N30° to S90° Longitudes: W180° to W30°
Atlantic - North	Latitudes: 0° to N90° Longitudes: W30° to E90°
Atlantic - South	Latitudes: N30° to S90° Longitudes: W30° to E90°
Pacific - North	Latitudes: 0° to N90° Longitudes: E60° to E180°
Pacific - South	Latitudes: N30° to S90° Longitudes: E60° to E180°

Table 11-1 Terrain Database Coverage



NOTE: Because of higher resolution helicopter terrain data, the world-wide data won't fit on the terrain database card. Therefore, data is regionalized. If you have the wrong region database for your present position, then you get the message that terrain is unavailable for the current location and a crosshatched pattern on the terrain display.

11.2.5 (10.2.5) Obstacle Database Areas of Coverage

The following describes the area of coverage available in each database. Regional definitions may change without notice.

Database	Coverage Area
United States (US)	Limited to the United States plus some areas of Canada, Mexico, Caribbean, and the Pacific.
US/Europe	Alaska, Austria, Belgium, Canada*, Caribbean*, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hawaii, Iceland, Ireland, Italy, Latvia, Lithuania, Mexico*, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland, United Kingdom, United States
* Indicates partial coverage	

Table 11-2 Obstacle Database Coverage



NOTE: *It is very important to note that not all obstacles are necessarily charted and therefore may not be contained in the Obstacle Database.*

Obstacle databases created for GTN software version 5.10 or later include all power lines or only HOT lines depending on the type of obstacle database installed. Hazardous Obstacle Transmission (HOT) Lines are those power lines that are co-located with other FAA-identified obstacles. The installed obstacle database type can be verified on the System Status page. Power line data is available for the contiguous United States as well as small parts of Canada and Mexico.

GTN 7XX - Page 11-13, GTN 6XX - Page 10-12

Added new symbols and edited the TAWS-B Alerts Colors and Symbology table and the TAWS-B Alerts Summary table.

11.4.8.1 (10.4.8.1) TAWS-B Alerting Colors and Symbology

Color and symbols are also associated with TAWS alerts. The alert annunciations show in the bottom left corner of the display. The three TAWS alert levels and their associated text coloring as well as any associated symbology are shown in the following table.






Alert Level	Annunciator Text	Threat Location Indicator	Example Visual Annunciation
Warning	White text on red background		
Caution	Black text on yellow background		
Informational	Black text on white background	Not Applicable	

Table 11-5 TAWS-B Alert Colors and Symbology

Alert Type	Alert Annunciation	Aural Message
Excessive Descent Rate Warning (EDR-W)	PULL UP	"Pull Up"
FLTA Terrain Warning (RTC-W, ITI-W)	PULL UP	"Terrain Ahead, Pull Up; Terrain Ahead, Pull Up"* or "Terrain, Terrain; Pull Up, Pull Up"
FLTA Obstacle Warning (ROC-W, IOI-W)	PULL UP	"Obstacle Ahead, Pull Up; Obstacle Ahead, Pull Up"* or "Obstacle, Obstacle; Pull Up, Pull Up"
FLTA Wire Warning (ILI-W, RLC-W)	PULL UP	"Wire Ahead Pull Up, Wire Ahead Pull Up"
FLTA Terrain Caution (RTC-C, ITI-C)	TERRAIN	"Terrain Ahead; Terrain Ahead"* or "Caution, Terrain; Caution, Terrain"
FLTA Obstacle Caution (ROC-C, IOI-C)	OBSTCL	"Obstacle Ahead; Obstacle Ahead"* or "Caution, Obstacle; Caution, Obstacle"
FLTA Wire Caution (ILI-C, RLC-C)	WIRE	"Wire Ahead"
Premature Descent Alert Caution (PDA)	TERRAIN	"Too Low, Terrain"
Excessive Descent Rate Caution (EDR-C)	TERRAIN	"Sink Rate"
Negative Climb Rate Caution (NCR-C)	TERRAIN	"Don't Sink"* or "Too Low, Terrain"
Voice Call Out (VCO-500)	None	"Five-Hundred"

* Alerts with multiple messages are configurable at installation and are installation-dependent. Alerts for the default configuration are indicated with asterisks.

Table 11-6 TAWS-B Alerts Summary

11.4.8.7 (10.4.8.7) Altitude Voice Call Out (VCO)

TAWS-B provides aural advisory alerts as the aircraft descends, beginning at 500 feet above the terrain, as determined by the radar altimeter (if greater than 5 NM from the nearest airport) or 500 feet above the nearest runway threshold elevation (if less than 5 NM from the nearest airport). Upon descent to this altitude, TAWS-B issues the aural alert message “Five-hundred”.

Added new symbols and edited the HTAWS Alert Coloring and Symbology table.

11.5.4 (10.5.5) HTAWS Symbols

The symbols and colors in the following figures and table are used to represent obstacles and the location of terrain threats on the HTAWS Page. Each color is associated with a height above terrain.

Obstacles are ALWAYS shown on the TAWS page at 10 NM and below.



NOTE: *If an obstacle or terrain cell and the projected flight path of the aircraft intersect, the display automatically zooms in to the closest threat location on the HTAWS Page.*





Tower	Windmill	Windmill in Group	Power Line
			

Table 11-10 Obstacle Icon Types

Grouped obstacles are shown with an asterisk (as shown in the Windmill in Group example above). The color of the asterisks is tied to the relative altitude of the highest obstacle in the group, not other obstacles within that group. Obstacles are grouped when they would otherwise overlap.













Obstacle Symbol	Unlighted Obstacle		Lighted Obstacle		Obstacle Color	Obstacle Location
	< 1000 ft AGL	> 1000 ft AGL	< 1000 ft AGL	> 1000 ft AGL		
				Red	Obstacle is at or above current aircraft altitude	
				Yellow	Obstacle is between 250 ft and 0 ft below current aircraft altitude	
				White	Obstacle is 250 ft, or more, below current aircraft altitude. Obstacles are removed when more than 500 ft below the helicopter.	

Table 11-11 HTAWS Obstacle Colors and Symbology

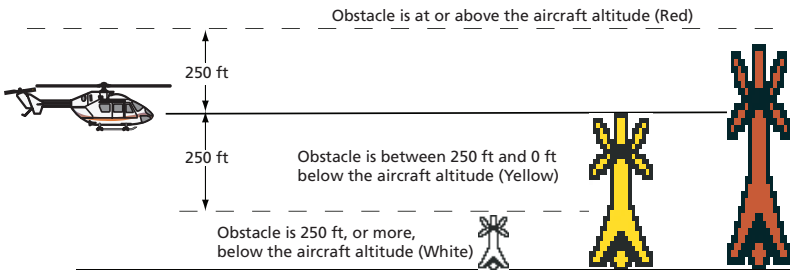


Figure 11-23 HTAWS Obstacle Altitude Colors and Symbology



Threat Location Indicator	Alert Level
	WARNING (Red)
	CAUTION (Yellow)

Table 11-12 HTAWS Alert Coloring and Symbology

Added Wire Alerts to the the HTAWS Alerts Summary table.

11.5.5.6 (10.5.12) HTAWS Alert Summary

The aural alert voice gender is configurable to be either male or female. See your Garmin installer for further information on configuring the alert system.

HTAWS Annunciation	Pop-Up Alert	Aural Message	Description
HTAWS FAIL	None	"HTAWS System Failure"	HTAWS has failed
HTAWS INHB	None	None	HTAWS has been inhibited by the crew, or the aircraft ground-speed is below 30 knots (automatic inhibiting).
HTAWS N/A	None	"HTAWS Not Available"	HTAWS not available.
TERRAIN	CAUTION - TERRAIN	"Caution - Terrain, Terrain"	Forward Looking Terrain Avoidance Caution for Terrain
TERRAIN	WARNING - TERRAIN	"Warning - Terrain, Terrain"	Forward Looking Terrain Avoidance Warning for Terrain
OBSTACLE	CAUTION - OBSTACLE	"Caution - Obstacle, Obstacle"	Forward Looking Terrain Avoidance Caution for Obstacle
OBSTACLE	WARNING - OBSTACLE	"Warning - Obstacle, Obstacle"	Forward Looking Terrain Avoidance Warning for Obstacle

HTAWS Annunciation	Pop-Up Alert	Aural Message	Description
RP MODE	None	None	Alerting thresholds are reduced. Visual and aural annunciation of caution alerts are suppressed.
WIRE	CAUTION – WIRE	"Wire Ahead"	Forward Looking Terrain Avoidance Caution for Wire.
WIRE	WARNING – WIRE	"Wire Ahead Pull Up, Wire Ahead Pull Up"	Forward Looking Terrain Avoidance Warning for Power Lines
None	None	"Five Hundred" "Four Hundred" "Three Hundred" "Two Hundred" "One Hundred" "Fifty"	HTAWS provides optional 500 ft through 100 ft (in 100 ft increments) altitude call out alerts. An additional value of 50 ft is available if a radar altimeter is installed.

Table 11-13 HTAWS Alert Summary



NOTE: HTAWS Caution Alerts are displayed as constant black text on a yellow background; HTAWS Warning Alerts are displayed as constant white text on a red background.

Added new symbols and edited the TAWS-A Alert Coloring and Symbology table.

11.6.1.1 (10.6.1.1) Displaying TAWS-A Data

TAWS-A uses yellow (caution) and red (warning) to depict terrain and obstacle (with a height greater than 200 feet above ground level, AGL) alerts relative to aircraft altitude. Depictions of obstacles more than 200 feet below the aircraft are removed. Colors are adjusted automatically as the aircraft altitude changes. The colors and symbols in Figure 11-28 and Tables 11-11 and 11-12 are used to represent terrain, obstacles, and threat locations.

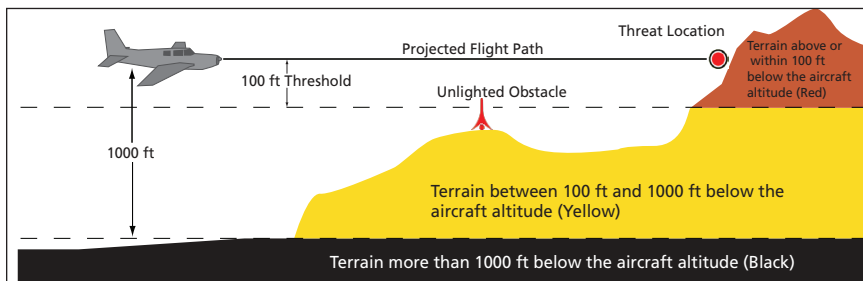


Figure 11-27 Terrain Altitude/Color Correlation for TAWS-A

Alert Level	Annunciator Text	Threat Location Indicator	Example Visual Annunciation
Warning	White text on red background		
Caution	Black text on yellow background		
Informational	Black text on white background	Not Applicable	

Table 11-14 TAWS-A Alert Colors and Symbology

Tower	Windmill	Windmill in Group	Power Line

Table 11-15 Obstacle Icon Types

Grouped obstacles are shown with an asterisk (as shown in the Windmill in Group example above). The color of the asterisks is tied to the relative altitude of the highest obstacle in the group, not other obstacles within that group. Obstacles are grouped when they would otherwise overlap.

Obstacle Symbol	Unlighted Obstacle		Lighted Obstacle		Threat Location Indicator	Terrain Color	Terrain/Obstacle Location	Alert Level
	< 1000 ft AGL	> 1000 ft AGL	< 1000 ft AGL	> 1000 ft AGL				
					Yellow	Terrain/Obstacle between 100 ft and 1000 ft below current aircraft altitude	CAUTION (Yellow)	

Table 11-16 TAWS-A Terrain/Obstacle Colors and Symbology

GTN 7XX - Page 11-47, GTN 6XX - Page 10-44

Added Wire Alerts to the the TAWS-A Alerts Summary table.

11.6.3.1 (10.6.3.1) TAWS-A Alerts Summary

Alert Type	Alert Annunciation	Pop-Up Alert (Except TAWS-A Page)	Aural Message
Reduced Required Terrain Clearance Warning (RTC)	PULL UP	TERRAIN – PULL-UP * or TERRAIN AHEAD – PULL-UP	"Terrain, Terrain; Pull Up, Pull Up" * or "Terrain Ahead, Pull Up; Terrain Ahead, Pull Up"
Imminent Terrain Impact Warning (ITI)	PULL UP	TERRAIN – PULL-UP * or TERRAIN AHEAD – PULL-UP	"Terrain, Terrain; Pull Up, Pull Up" * or "Terrain Ahead, Pull Up; Terrain Ahead, Pull Up"

Alert Type	Alert Annunciation	Pop-Up Alert (Except TAWS-A Page)	Aural Message
Reduced Required Obstacle Clearance Warning (ROC)	PULL UP	OBSTACLE – PULL-UP * or OBSTACLE AHEAD – PULL-UP	"Obstacle, Obstacle; Pull Up, Pull Up"* or "Obstacle Ahead, Pull Up; Obstacle Ahead, Pull Up"
Imminent Obstacle Impact Warning (IOI)	PULL UP	OBSTACLE – PULL-UP * or OBSTACLE AHEAD – PULL-UP	"Obstacle, Obstacle; Pull Up, Pull Up"* or "Obstacle Ahead, Pull Up; Obstacle Ahead, Pull Up"
Excessive Descent Rate Warning (EDR)	PULL UP	PULL-UP	"<whoop> <whoop> Pull Up"
Excessive Closure Rate Warning (ECR)	PULL UP	PULL-UP	"<whoop> <whoop> Pull Up"
Imminent Line Impact Warning (ILI)	PULL UP	WIRE AHEAD – PULL-UP	"Wire Ahead, Pull Up; Wire Ahead, Pull Up" or "Wire, Wire; Pull Up, Pull Up"
Reduced Line Clearance Warning (RLC)	PULL UP	WIRE AHEAD – PULL-UP	"Wire Ahead, Pull Up; Wire Ahead, Pull Up" or "Wire, Wire; Pull Up, Pull Up"
Reduced Required Terrain Clearance Caution (RTC)	TERRAIN	CAUTION – TERRAIN * or TERRAIN AHEAD	"Caution, Terrain; Caution, Terrain"* or "Terrain Ahead; Terrain Ahead"
Imminent Terrain Impact Caution (ITI)	TERRAIN	CAUTION – TERRAIN * or TERRAIN AHEAD	"Caution, Terrain; Caution, Terrain" or "Terrain Ahead; Terrain Ahead"

Alert Type	Alert Annunciation	Pop-Up Alert (Except TAWS-A Page)	Aural Message
Reduced Required Obstacle Clearance Caution (ROC)	OBSTCL	CAUTION - OBSTACLE * or OBSTACLE AHEAD	"Caution, Obstacle; Caution, Obstacle" * or "Obstacle Ahead; Obstacle Ahead"
Imminent Obstacle Impact Caution (IOI)	OBSTCL	CAUTION - OBSTACLE * or OBSTACLE AHEAD	"Obstacle Ahead; Obstacle Ahead" * or "Caution, Obstacle; Caution, Obstacle"
Imminent Line Impact Caution (ILI)	WIRE	WIRE AHEAD	"Wire Ahead; Wire Ahead" * or "Caution, Wire; Caution, Wire"
Reduced Line Clearance Caution (RLC)	WIRE	WIRE AHEAD	"Wire Ahead; Wire Ahead" * or "Caution, Wire; Caution, Wire"
Premature Descent Alert Caution (PDA)	TERRAIN	TOO LOW - TERRAIN	"Too Low, Terrain"
Excessive Descent Rate Caution (EDR)	TERRAIN	SINK RATE	"Sink Rate"
Excessive Closure Rate Caution (ECR)	TERRAIN	TERRAIN	"Terrain, Terrain"
Negative Climb Rate Caution (NCR)	TERRAIN	DON'T SINK * or TOO LOW - TERRAIN	"Don't Sink" * or "Too Low, Terrain"
Flight Into Terrain High Speed Caution (FIT)	TERRAIN	TOO LOW - TERRAIN	"Too Low, Terrain"
Flight Into Terrain Gear Caution (FIT)	TERRAIN	TOO LOW - GEAR	"Too Low, Gear"
Flight Into Terrain Flaps Caution (FIT)	TERRAIN	TOO LOW - FLAPS	"Too Low, Flaps"
Flight Into Terrain Takeoff Caution (FIT)	TERRAIN	TOO LOW - TERRAIN	"Too Low, Terrain"

Alert Type	Alert Annunciation	Pop-Up Alert (Except TAWS-A Page)	Aural Message
Glide Slope Deviation Caution (GSD)	GLIDESLOPE	GLIDESLOPE	"Glideslope"
Altitude Voice Call Out (VCO)	None	None	"Five-Hundred", "Four-Hundred"*, "Three-Hundred"*, "Two-Hundred"*, "One-Hundred"*
TAWS Available	None	N/A	"TAWS Available"
TAWS System Test in Progress	TAWS TEST	N/A	None
TAWS System Test Pass	None	N/A	"TAWS System Test OK"
TAWS N/A	TAWS N/A	N/A	TAWS Not Available
TAWS Alerting is Disabled	TAWS INHB	N/A	None
TAWS System Test Fail	TAWS FAIL	N/A	"TAWS System Failure"
Incorrect TAWS configuration, invalid/missing terrain, airport, or obstacle database, or TAWS audio fault.	TAWS FAIL **	N/A	"TAWS System Failure"
No GPS position	TAWS N/A	N/A	"TAWS Not Available"
GPS position unavailable/ degraded, outside of terrain database coverage	TAWS N/A	N/A	"TAWS Not Available"
Sufficient GPS signal reception restored	None	N/A	"TAWS Available" (aural message only in flight)

Alert Type	Alert Annunciation	Pop-Up Alert (Except TAWS-A Page)	Aural Message
Incorrect TAWS configuration, radar altimeter unavailable, GPS position unavailable/degraded, TAWS audio fault	GPWS FAIL *	N/A	"GPWS System Failure"
GPWS Inhibit	GPWS INHB	N/A	"GPWS System Failure"
GPWS Not Available. Incorrect TAWS configuration, radar altimeter unavailable, GPS position unavailable/degraded, TAWS audio fault.	GPWS N/A	N/A	None
Glideslope Inhibit	G/S INHB	N/A	None
FLAP Override	FLAP OVRD	N/A	None

* Alerts with multiple messages are configurable. Alerts for the default configuration are indicated with asterisks.

** VCO alerts are not issued if both TAWS and GPWS systems have failed or are not available

† GSD alert will be available if a valid ILS is being used for navigation, even in no valid GPS signal is being received.

Table 11-17 TAWS-A Alerts Summary

GTN 7XX - Page 11-60, GTN 6XX - Page 10-57

Clarified VCO for TAWS-A.

11.6.4 (10.6.4) Altitude Voice Call Out (VCO)

TAWS-A provides aural advisory alerts as the aircraft descends, beginning at 500 feet above the terrain, as determined by the radar altimeter (if greater than 5 NM from the nearest airport) or 500 feet above the nearest runway threshold elevation (if less than 5 NM from the nearest airport). Upon descent to this altitude, TAWS-A issues the aural alert message “Five-hundred”.

12 (11) WEATHER

GTN 7XX - Page 12-11, GTN 6XX - Page 11-11

Added information about “base” reflectivity.

12.1.5.2 (11.1.5.2) NEXRAD Limitations

- In the Cell Movement function, “Base” height is actually the height of maximum radar reflection and that the “Base” and “Top” heights are based on radar height and not MSL or AGL.

GTN 7XX - Page 12-15, GTN 6XX - Page 11-15

Added “base” reflectivity information and Cell Movement detail.

12.1.8 (11.1.8) Cell Movement

Cell Movement data shows the location and movement of storm cells as identified by a ground-based system. Cells are represented by yellow squares, with direction of movement indicated with short, orange arrows.



NOTE: In the Cell Movement function, “Base” height is actually the height of maximum radar reflection and that the “Base” and “Top” heights are based on radar height and not MSL or AGL.



1. While viewing the Data Link Weather menu, touch the **Cell Movement** key.

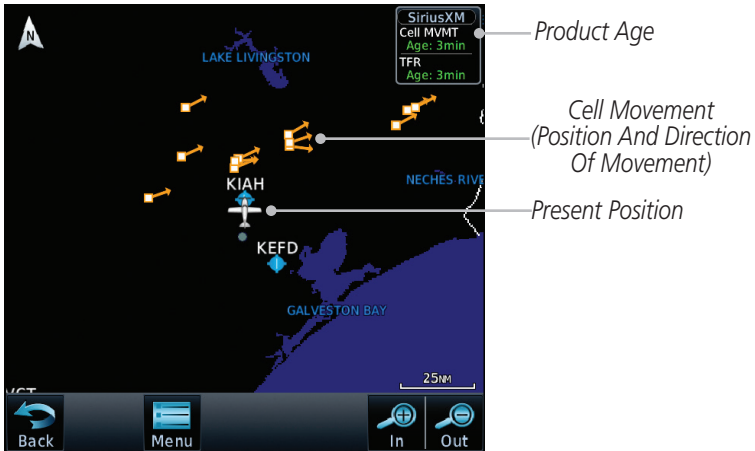


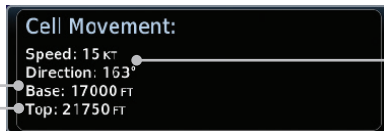
Figure 12-17 Cell Movement



2. Touch a Cell Movement icon to view cell details.

Top Height Reported as Maximum Altitude of Reflected Precip.

Base Height Reported as Altitude of Maximum Reflectivity



Cell Speed and Direction

Figure 12-18 Cell Movement Detail



3. In the Menu, Touch the **Cell Movement** key again to turn it off.

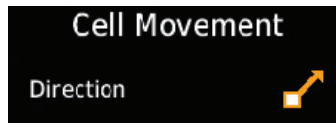


Figure 12-19 Cell Movement Legend

15 (14) UTILITIES

GTN 7XX - Page 15-1, GTN 6XX - Page 14-1
Updated the Utilities Home Page figure.



Figure 15-1 Utilities Home Page

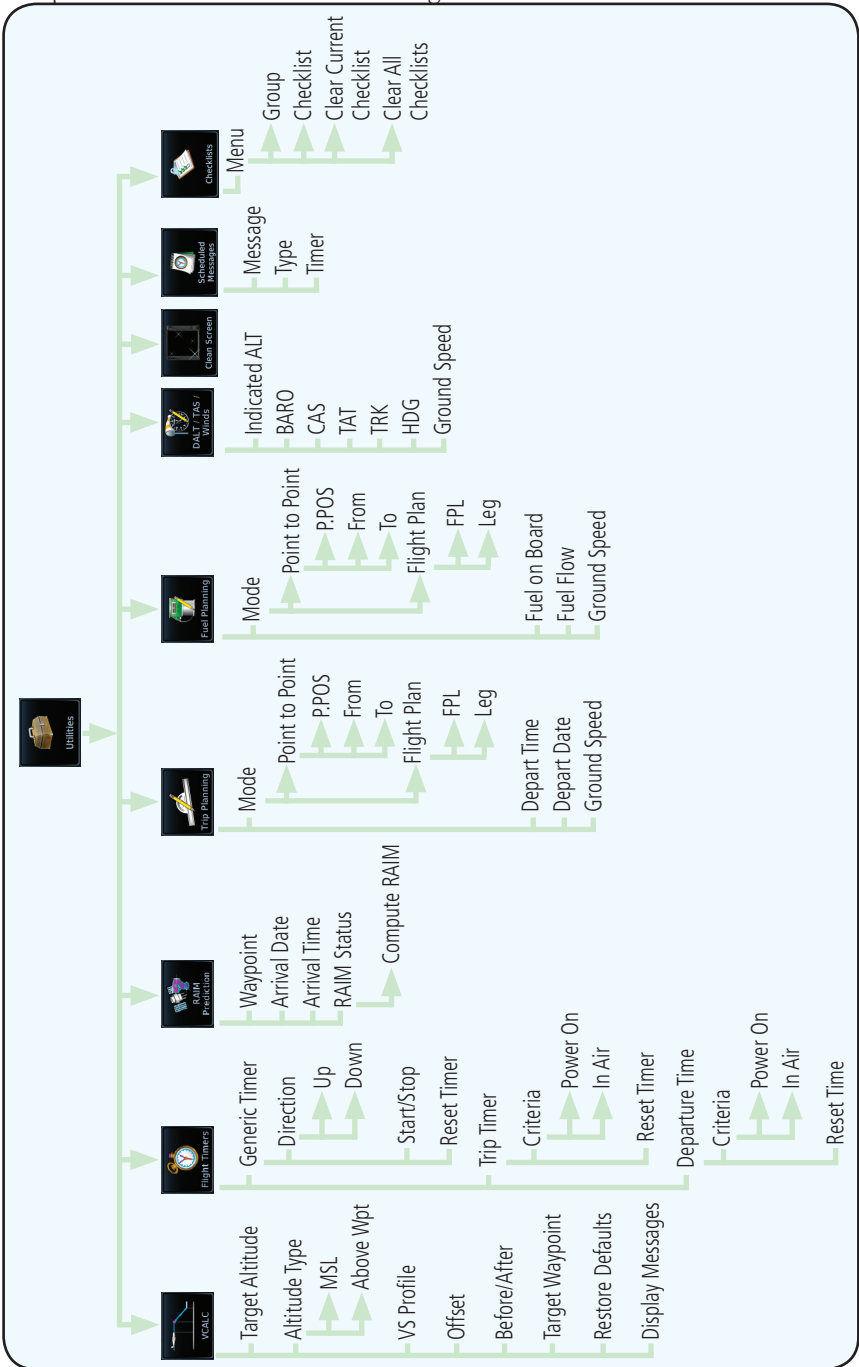


Figure 15-2 Utilities Functional Diagram

Added the Checklists section.

15.9 (14.9) Checklists

The Checklists function provides a built-in method of reviewing your aircraft checklist. Checklists are created using the Garmin Checklist Editor software (available online) and stored on the data card. As each Checklist is completed, you can advance to the next one in order. In the Checklist Menu, you can access any Checklist, or group of Checklists, and clear the current or all Checklists.



NOTE: This feature is available in Software Versions 5.11, and later.

15.9.1 (14.9.1) Checklists Menu



1. While viewing the Utilities page group, touch the **Checklists** key to start the Checklists function.



2. Touch the **Menu** key to select an option from the Checklist Menu.

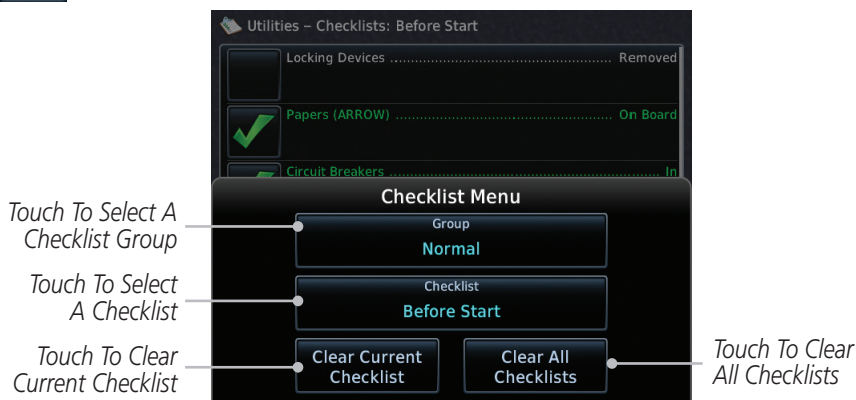


Figure 15-49 Utility Checklist Menu

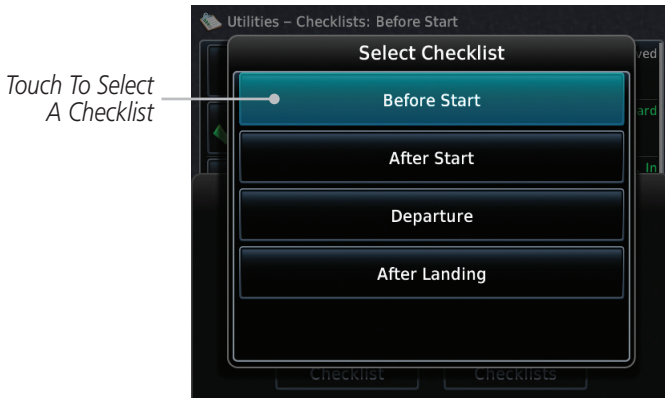


Figure 15-50 Select a Checklist from the Checklist Menu

15.9.2 (14.9.2) Viewing Checklists



1. While viewing the Utilities function, touch the **Checklist** key. Use the existing Checklists in the order provided or touch the **Menu** key to select another checklist.

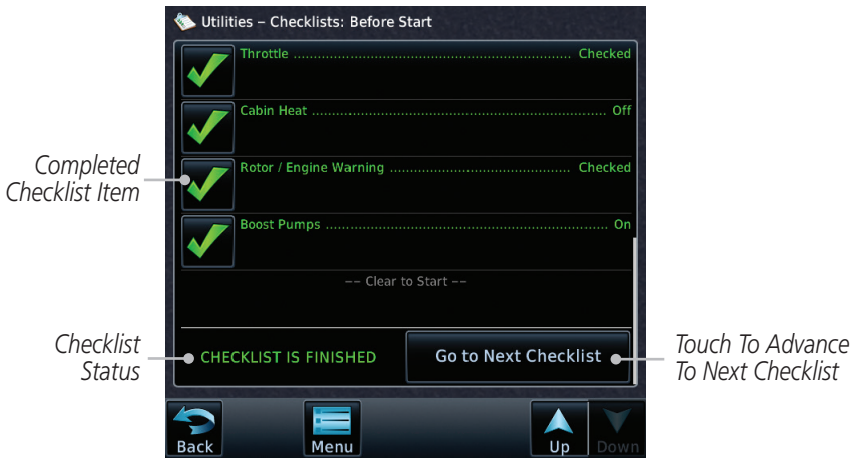


Figure 15-51 Checklist Completion

2. After completing the Checklist, touch **Go to Next Checklist**, **Menu**, or **Back** to exit the Checklist function.



NOTE: All checklists are cleared after a power cycle.

16 (15) SYSTEM

GTN 7XX - Page 16-1, GTN 6XX - Page 15-1
Updated the System page diagram.

The System function allows you to change unit settings, customize operation to your preferences, and check on the operation of your unit. The System pages cover System Status, Database Info and transfer, GPS Status, External LRUs, Setup, Alerts, Units, Audio, Backlight control function, and Connex Setup.



1. From the Home page, touch the **System** key.



Figure 16-1 System Home Page



2. Touch the desired key to reach that function. To return to the System page, touch the **Back** key.

Updated the System Function Summary.



Figure 16-2 System Function Summary

Updated the System Status Functional diagram and Status Page Description figures. Added Database SYNC info the this section.

16.1 (15.1) System Status

The System status page of the System function provides information about the GTN unit and the equipment attached to it. This information is useful if it is necessary to contact Customer Service. The System Status page shows the System ID and serial number for the GTN unit, hardware and software versions, as well as a list of the installed databases.

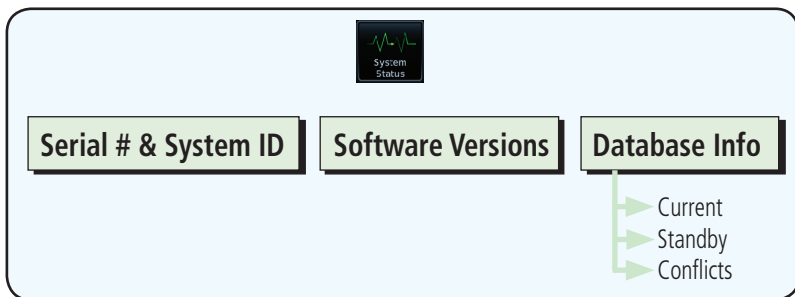


Figure 16-3 System Status Functional Diagram

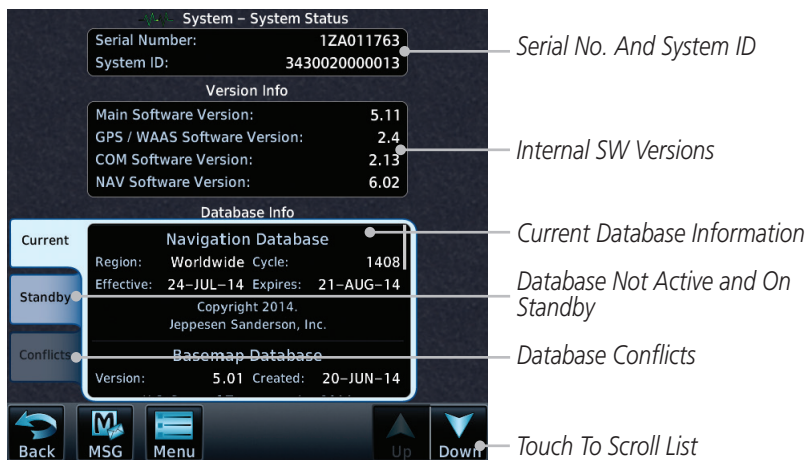


Figure 16-4 System Function System Status Page Description



NOTE: In the GTN 6XX, from the Home page touch the **System**, the **System Status**, and then the **System Info** keys to view the Serial Number, System ID, and Software Versions.

16.1.3 (15.1.3) Database Information

The Database Information section lists the name of the database, its version, and expiration date for the currently used databases, and also contains the Database SYNC function. Standby databases are listed for databases not currently used, but available on the data card. Database conflicts will be shown in the Conflicts section.



NOTE: *The data contained in the terrain and obstacle databases comes from government and private agencies. Garmin accurately processes and cross-validates the data, but cannot guarantee the accuracy and completeness of the data.*

The following databases are stored on Supplemental Data Cards provided by Garmin:

- **Terrain** – The terrain database contains terrain mapping data. It is updated periodically and has no expiration date. Approximately one minute is required to verify the rotorcraft terrain database on start up.
- **Obstacles** – The obstacles database contains data for obstacles, such as towers, that pose a potential hazard to aircraft. Obstacles 200 feet and higher are included in the obstacle database. The rotorcraft database includes all reported obstacles regardless of height. It is very important to note that not all obstacles are necessarily charted and therefore may not be contained in the obstacle database. This database is updated on a 56-day cycle. Obstacles will still be shown after the database has expired. Several obstacle database options are available. Obstacle databases created for GTN software version 5.10 or later include all power lines or only HOT lines depending on the type of obstacle database installed. Hazardous Obstacle Transmission (HOT) Lines are those power lines that are co-located with other FAA-identified obstacles. The installed obstacle database type can be verified on the System Status page. Power line data is available for the contiguous United States as well as small parts of Canada and Mexico.
- **SafeTaxi** – The SafeTaxi database contains detailed airport diagrams for selected airports. These diagrams aid in following ground control instructions by accurately displaying the aircraft position on the map in relation to taxiways, ramps, runways, terminals, and services. This database is updated on a 56-day cycle. SafeTaxi will still be shown after it has expired.

- **FliteCharts** – The FliteCharts database contains procedure charts for the United States only. This database is updated on a 28-day cycle. If not updated within 180 days of the expiration date, FliteCharts no longer functions.
- **Basemap** - The Basemap database contains land and water data, such as roads, boundaries, rivers, and lakes.
- **Aviation** – The Navigation database is updated on a 28 day cycle. Navigation database updates are provided by Garmin and may be downloaded from the Garmin web site “<http://fly.garmin.com>” or from Jeppesen at “<http://www.jeppdirect.com/Garmin>” onto a Garmin provided Supplemental Datacard. Contact Garmin at <http://fly.garmin.com> for navigation database updates and update kits.
- **Charts** – The optional ChartView database is updated on a 14 day cycle. The ChartView database is provided directly from Jeppesen. Contact Jeppesen (www.jeppesen.com) for ChartView subscription and update information.



NOTE: Do not use SafeTaxi or Chartview functions as the basis for ground maneuvering. SafeTaxi and Chartview functions do not comply with the requirements of AC 20-159 and are not qualified to be used as an airport moving map display (AMMD). SafeTaxi and Chartview are to be used by the flight crew to orient themselves on the airport surface to improve pilot situational awareness during ground operations.

Database Name	Function	Where Stored	Update Cycle	Provider	Notes
Aviation	Airport, NAVAID, Waypoint, and Airspace information	Internal memory	28 days	fly.garmin.com	Updates installed via SD card and copied into internal memory. For helicopter applications an Aviation database that includes additional heliports is available.
SafeTaxi	Airport surface diagrams	Internal memory	56 days	fly.garmin.com	Updates installed via SD card and copied into internal memory
Terrain	Topographic map, Terrain/TAWS	SD card	As required	fly.garmin.com	Systems using HTAWS require a 2.5 arc-second database.
Obstacle	Obstacle information for map, and TAWS	Internal memory	56 days	fly.garmin.com	Updates installed via SD card and copied into internal memory. Databases that include HOT lines and power lines are available for use with GTN software version 5.10, or later. For helicopter applications, Obstacle databases that include additional low height obstacles and power lines are available.
Basemap	Boundary and road information	Internal Memory	As required	fly.garmin.com	Updates installed via SD card and copied into internal memory
FliteCharts	FAA-published terminal procedures	SD card	28 days	fly.garmin.com	Disables 180 days after expiration date.
ChartView	Jeppesen terminal procedures	SD card	14 days	Contact Jeppesen	Optional feature that requires Garmin dealer enablement. Disables 70 days after expiration date.

Table 16-1 Database List

16.1.3.1 (15.1.3.1) Database Info

The Database Info page shows the Current databases, databases on Standby on the SD card for future use, and database conflicts. Current databases show all databases that are currently being used. Standby databases are loaded onto the card, but are not being used. Database conflicts are shown and can be resolved in the Conflicts tab.

16.1.3.2 (15.1.3.2) Database Sync Operation

Database SYNC allows the GTN to synchronize databases from a single unit. The pilot only needs to update a single database card and the new databases are automatically SYNC'd through the units connected in the cockpit and configured for Database Syncing.

Database SYNC is supported by these database types:

- Navigation
- Obstacle
- SafeTaxi
- Airport Directory
- Chartview (when support is added by Jeppesen)
- FliteCharts
- Basemap

When Database SYNC is enabled in the LRUs and a database card is inserted that is created for Database SYNC, the GTN will coordinate with the other LRUs in the cockpit to determine which unit has the newest databases. Once the determination has occurred, the connected LRUs will begin to transfer the databases. This process may take several minutes. The status of the database transfers to a unit can be viewed on the System Status page under the “Standby” tab. The GTN will display the source of the received databases (in this example: “Database SYNC - GTN #2”). If a database transfer is pending, completed, or not authorized, the status will also be indicated.

When the transfer is complete, if there are new and current databases to be used, and if the aircraft is stopped and has yet to takeoff, the pilot will be prompted with the option to restart the unit that has the new databases transferred to it. During the restart process, the unit will prompt you to update (transfer from the card to the unit's memory) to the newer databases so they can be used.



NOTE: This feature is available in Software Versions 5.11, and later.

NOTE: When a database card is inserted into a GTN that does not support certain types of databases (charts in a GTN 6XX or an airport directory in any GTN), the GTN is still capable of SYNCING the database to other LRUs that do support that database.



NOTE: Restarting the GTN must only be performed when the aircraft is on the ground as navigation and communication from the restarted unit will be lost for a period of time.

1. With the GTN turned off, insert the database card.
2. Turn the GTN on. The Database SYNC will occur automatically in the background. During the Database SYNC process, normal operation of the GTN is not affected.
3. On the System Status page, touch the **Standby** tab to view the transfer process.

Standby

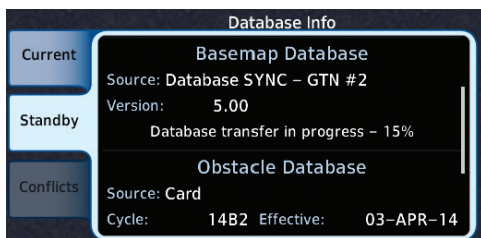


Figure 16-5 Database Transfer In Process

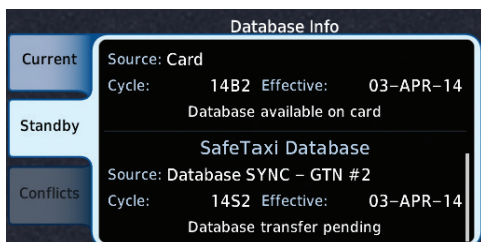


Figure 16-6 Database Pending

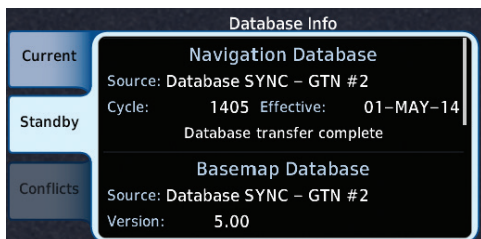


Figure 16-7 Database Transfer Complete

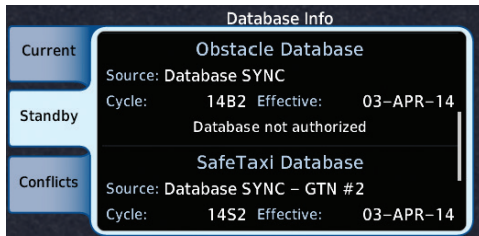


Figure 16-8 Database Transfer Not Authorized

- Once all of the database transfers have completed, if the GTN determines that at least one of the newly transferred databases is effective and the aircraft is on the ground and stopped prior to a flight, a pop-up and confirmation will be presented to restart the GTN. No pop-up will appear if the aircraft is moving or has been in the air since the GTN was turned on.
- Touch **Yes** to continue updating the database.

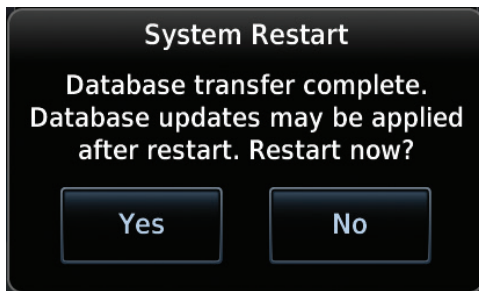


Figure 16-9 System Restart - Step 1

- Touch **OK** to complete the restart process. Following the restart, the pilot will be prompted to update to the effective databases (just like when a new database card is inserted).

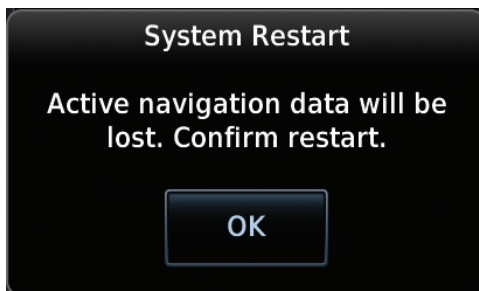


Figure 16-10 System Restart - Step 2



WARNING: The unit will reset and all GPS navigation and moving map functions may be lost while the unit regains GPS position. Communication functions will be lost for a few seconds while the unit resets. Additionally, if the user selects to update databases at that point, the ability to interact with the GMA 35 audio panel, or change com frequencies will be lost until all databases are updated.

7. When the unit restarts, the pilot will be prompted to update the GTN to the newly transferred databases.

16.1.3.3 (15.1.3.3) Database Sync Setup

When the GTN installer option is turned on to allow Database SYNC, the pilot controls are available to turn Database SYNC on or off (Database SYNC is turned on by default).

To change the Database SYNC preference:



1. While viewing the System Status page, touch the **Menu** key and then touch the **Database SYNC** key to enable or disable the Database SYNC feature. Once the feature is enabled, Database SYNC will occur automatically when a card is inserted into the GTN.

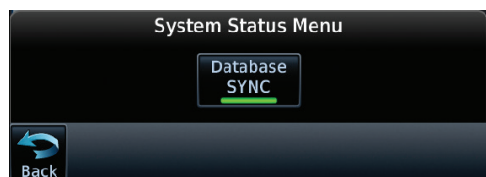


Figure 16-11 Database Sync from System Status Menu



2. Touch **OK** at the prompt to confirm the enabling of Database SYNC.

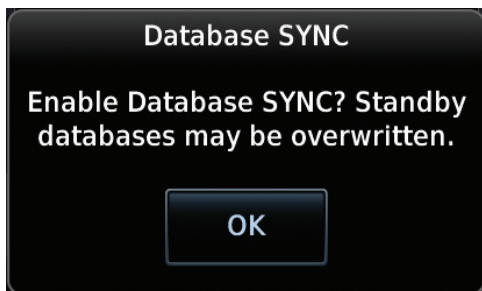


Figure 16-12 Prompt to Continue Database Transfer

16.1.3.4 (15.1.3.4) Standby Databases

The GTN supports a standby copy of each database, allowing the pilot to pre-load the next cycle without losing the active cycle. The GTN will automatically treat any received database (via SD card or Database SYNC) as the standby database until it is activated by the pilot. The standby databases are listed on the System Status page.

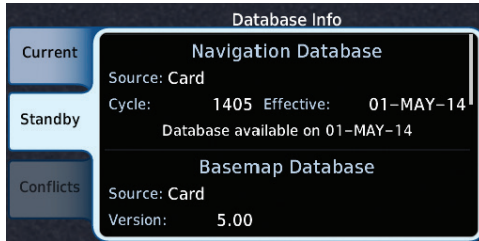


Figure 16-13 Database Standby Display

The GTN will use Database SYNC in the background to SYNC the standby database with other LRUs in the cockpit. As a result, when the standby database becomes effective, the pilot will be prompted on all LRUs to update to the new database.

If a the standby database is out of date or not yet effective, the pilot will not be prompted to update to that database until it becomes effective. This prevents the pilot from accidentally overwriting the effective, active database.

If the pilot does actually want to overwrite the active database with a not yet effective or out of date database, they can do so by pressing and holding the small right knob while applying power to the GTN.

16.1.3.5 (15.1.3.5) Resolving Database Conflicts

If the GTN determines that there are multiple LRUs with the newest cycle of a database, but they have different regions or types of that database (i.e.; Fixed-wing vs. Rotorcraft navigation database, different regions of the navigation database, or different obstacle database types) then a database conflict will occur. When a database conflict occurs, that database will not be SYNC'd until the pilot resolves the conflict. Initiate the resolve conflicts function on the unit that has the databases to send to the other units.

Conflicts

1. Touch the **Conflicts** tab, and then touch **Resolve Conflicts** on the LRU with the desired databases.



Figure 16-14 Database Conflicts

OK

2. Touch **OK** at the prompt to continue conflict resolution.

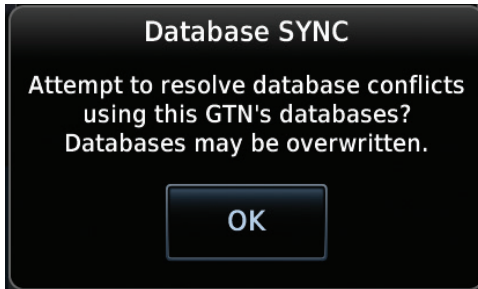


Figure 16-15 Confirm Conflict Resolution

- Once touched, the desired database will be SYNC'd to the other LRUs and "Initiated" will be displayed on the **Resolve Conflicts** field.



Figure 16-16 Database Conflicts Resolved (Initiated)

GTN 7XX - Page 16-16, GTN 6XX - Page 15-16
Updated System Setup information.

16.4 (15.4) Setup

System Setup allows setting the time convention, Com channel spacing, crossfilling to a second GTN or GNS unit, and Nearest Airport search filtering.

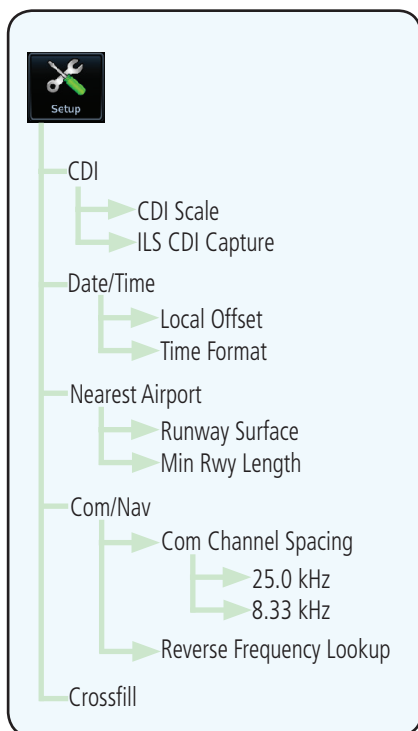


Figure 16-28 System Setup Functions



1. While viewing the System page, touch the **Setup** key.

Touch Key to Select CDI Scale

Touch Key to Set ILS CDI Capture

Touch Key to Set Time Offset

Touch Key to Set Time Format



Touch Key to Set Runway Surface Type

Touch Key to Set Min Runway Length

Touch Key to Set Com Channel spacing

Touch Key to Activate Rev Freq Lookup

Touch Key to Enable Crossfill With Dual GTN Units

Figure 16-29 System Setup Page



2. After making the desired selections, touch the **Back** key to return to the Setup page.

GTN 7XX - Page 16-18, GTN 6XX - Page 15-20
Added Reverse Frequency Look-Up information.

16.4.3 (15.4.4.2) Reverse Frequency Look-Up

The identifier and frequency type will be shown for Com and Nav frequencies that are in the database when the unit is receiving a valid position input. Station Identifiers with a “+” sign will have more stations associated with this frequency than just the type displayed.



1. While viewing the System Setup page, touch the **Reverse Frequency Lookup** key to toggle the function.

Airport Identifier and Type Shown For Freqs In Database.

The “+” Sign Indicates More Stations Associated With This Frequency



Identifier and Type Shown For Freqs In Database

Reverse Frequency Lookup Selected

Figure 16-30 Reverse Frequency Lookup Selected

16.4.6 (15.4.1) CDI Scale Selection

The CDI source and ILS CDI Capture type may be selected manually or automatically. The selected CDI Scale will be reflected in the annunciation bar at the bottom of the display.

CDI Scale Selection allows you to define the scale for the GTN unit on-screen course deviation indicator. The scale values represent full scale deflection for the CDI to either side. The default setting is “Auto”. At this setting, the CDI scale is set to 2.0 NM during the “en route” phase of flight. Within 31 NM of your destination airport, the CDI scale gradually ramps down to 1.0 NM (terminal area). Likewise, when leaving your departure airport the CDI scale is set to 1.0 NM and gradually ramps up to 2 NM beyond 30 NM (from the departure airport). During approach operations the CDI scale gradually transitions down to an angular CDI scale. At 2.0 NM of the final approach fix (FAF), CDI scaling is tightened from 1.0 to the angular full scale deflection (typically the angular full-scale deflection is 2.0°, but will be as defined for the approach).

If a lower CDI scale setting is selected (i.e., 1.0 or 0.3 NM), the higher scale settings are not selected during ANY phase of flight. For example, if 1.0 NM is selected, the GTN unit uses this for en route and terminal phases and ramps down further during an approach. Note that the Horizontal Alarm (HAL) protection limits listed below follow the selected CDI scale, unless corresponding flight phases call for lower HAL. For example, if the 1.0 NM CDI setting is selected, full-scale deflection during approach will still follow the approach CDI scale settings.

CDI Scale	Horizontal Alarm Limit
Auto (oceanic)	2.0 NM
±2.0 NM or Auto (en route)	2.0 NM
±1.0 NM or Auto (terminal)	1.0 NM
±0.3 NM or Auto (approach)	0.3 NM

Table 16-5 CDI Scale and Horizontal Alarm Limits

An “auto” ILS CDI selection allows the GTN unit to automatically switch the external CDI from the GPS receiver to the VLOC receiver, when intercepting the final approach course. Or, select “manual” to manually switch the external CDI connection, as needed (using the **CDI** key). If the unit is installed with a KAP140/KFC225 autopilot, automatic switching will not take place.

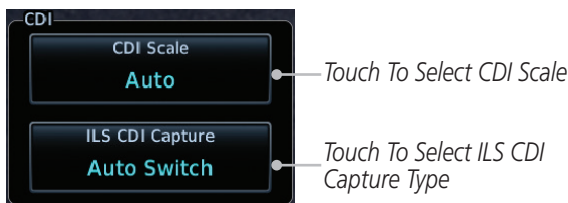


Figure 16-39 CDI Selection



1. While viewing the System Setup page, touch the **CDI Scale** key to allow automatic selection or to choose a CDI Scale manually.

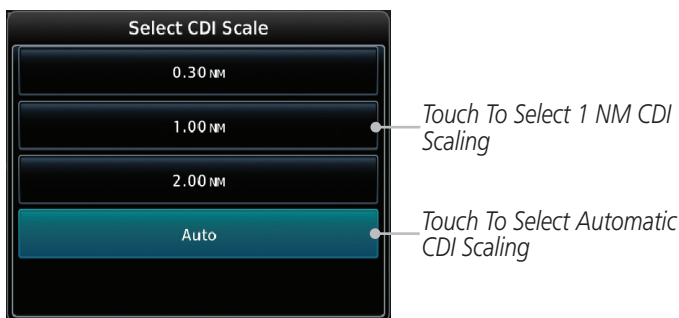


Figure 16-40 CDI Scale Selection



2. Touch the **ILS CDI Capture** key to select automatic or manual. This feature enables the unit to automatically switch from GPS to VLOC on an ILS approach. See *Procedures-ILS Approaches* for more detail on ILS approaches.

GTN 7XX - Page 16-29, GTN 6XX - Page 15-26
Added User Fields information.

16.7 (15.6) User Fields

The User Fields selection allows you to configure the data field type shown at the top of the GTN 7XX display in the center fields when they are not occupied by controls for an audio panel or transponder, or at the right of the GTN 6XX display when it is not occupied by the control for a transponder. The data shown in each field may be selected from a list after touching the desired field.



NOTE: Data Field Types that use the term "Destination" refer to the final destination in the flight plan.



NOTE: ETE to Destination is not available when a procedure is loaded and there are waypoints in the Enroute section of the flight plan.



1. While viewing the System page, touch the **User Fields** key, then touch an available field in the top of the GTN 7XX display or on the side of the GTN 6XX display.



Figure 16-54 User Fields Selection

2. Touch the **Data**, **Function**, or **Page** tab to display a list of available selections. A list of information types will be displayed.



3. Touch the **Up** or **Down** keys or touch the display and drag your finger to scroll through the list. Touch the desired item to select it or touch the **Back** key to cancel selection.

Field Type List. Touch To Select Data Field

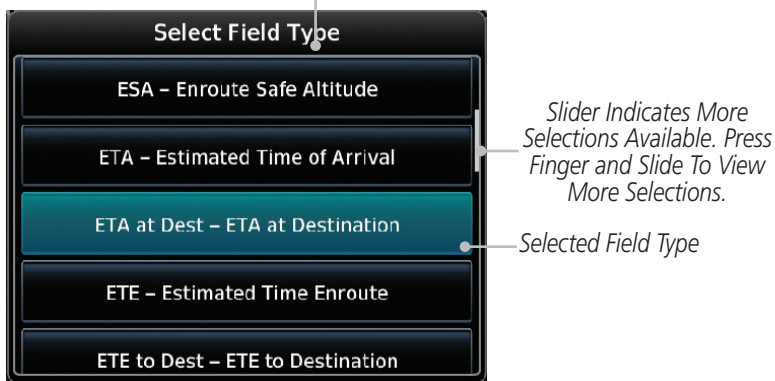


Figure 16-55 Map Data Field Type Selections

The options available are shown in the following tables. Selections available vary depending on installed equipment.

Data Field Type	
ACTV WPT - Active Waypoint	Generic Timer - Timer Display
B/D AID - Bearing/DIS from NAV AID	MSA - Minimum Safe Altitude
B/D APT - BRG/DIS from Dest APT ¹	NAV/COM - Active NAV/COM FREQ ³
BRG - Bearing to Current Waypoint	OAT (static) - Static Air Temperature
DIS - Distance to Current Waypoint	OAT (total) - Total Air Temperature
DIS to Dest - Distance to Destination ²	RAD ALT - Radar Altimeter
DTK - Desired Track	Time - Current Time
ESA - Enroute Safe Altitude	TKE - Track Angle Error
ETA - Estimated Time of Arrival	TRK - Track
ETA at Dest - ETA at Destination	Trip Timer - Timer Display
ETE - Estimated Time Enroute	VOR/LOC - Tuned VOR/LOC Info
ETE to Dest - ETE to Destination	VSR - Vertical Speed Required
Fuel Flow - Total Fuel Flow	Wind - Wind Speed and Direction
GS - GPS Ground Speed	XTK - Cross Track Error
GSL - GPS Altitude	OFF - Do Not Display Data Field

Table 16-7 Data User Field Selections

Note 1: B/D APT is the straight line distance.

Note 2: Dist to DEST is the distance along the flight plan.

Note 3: NAV/COM is only applicable to GTN 6XX units.

Function Field Type	
CDI - Course Deviation Indicator	Passenger Address - PA Toggle ³
Flap Override - Flap Override ¹	Playback - Play Last Recording ³
GPWS Inhibit - GPWS Inhibit ¹	TAWS Inhibit - TAWS Inhibit
G/S Inhibit - G/S Inhibit ¹	Gen Timer - Generic Timer Control
HTAWS RP Mode - HTAWS RP Mode ²	WX RDR Controls - Weather Radar Controls ³
OBS/Suspend/Unsuspend Button	OFF - Do Not Display Data Field
On Scene - "On Scene" Mode Toggle	

Table 16-8 Function User Field Selections

Note 1: With TAWS-A enabled.

Note 2: With HTAWS enabled.

Note 3: Only applicable to GTN 7XX units.

Map Page Field Type	
DFLT NAV - Default Navigation ¹	Checklist - Checklist Page
Charts - Charts Page ²	Fuel PLAN - Fuel Planning Page
Flight Plan - Flight Plan Page	SCHED MSG - Scheduled Messages
Map - Map Page	Trip PLAN - Trip Planning Page
Nearest - Nearest Page	VCALC - VCALC Page
NEAR APT - Nearest Airport Page	User FREQ - User Frequencies
PROC - Procedures Page	WPT INFO - Waypoint Information
Approach - Approach Page	Weather - Weather Page
Arrival - Arrival Page	CNXT WX - Connex WX Page
Departure - Departure Page	FIS-B WX - FIS-B Weather Page
Services - Services Page	Stormscope - Stormscope Page
Traffic - Traffic Page	WX Radar - Weather Radar Page ²
Terrain - Terrain Page	SiriusXM WX - Sirius XM WX Page
Utilities - Utilities Page	OFF - Do Not Display Page Field

Table 16-9 Page User Field Selections

Note 1: Only applicable to GTN 6XX units.

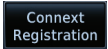
Note 2: Only applicable to GTN 7XX units.

16.10 (15.10) Connex Setup - GSR 56

This page provides information about the GSR 56 and the Connex Registration page. See section 16.3.3 (15.3.3) *GSR 56 Status* for more details.



1. While viewing the System page, touch **Connex Setup** to access the GSR 56 LRU Status page.



2. Touch **Connex Registration** to set up the Connex account. Follow the information provided in 16.3.3 (15.3.3) *GSR 56 Status*.

GTN 7XX - Page 16-33, GTN 6XX - Page 15-33
Added Connex - Flight Stream 210 Setup information.

16.11 (15-11) Connex Setup - Flight Stream 210

The GTN can interface with the Flight Stream 210 Bluetooth transceiver. Using the Flight Stream 210 and the GTN, flight plans can be sent and received over Bluetooth. In addition, GPS position is provided from the GTN and attitude can be forwarded from a connected GDU. The GTN can also configure the Flight Stream's Bluetooth.

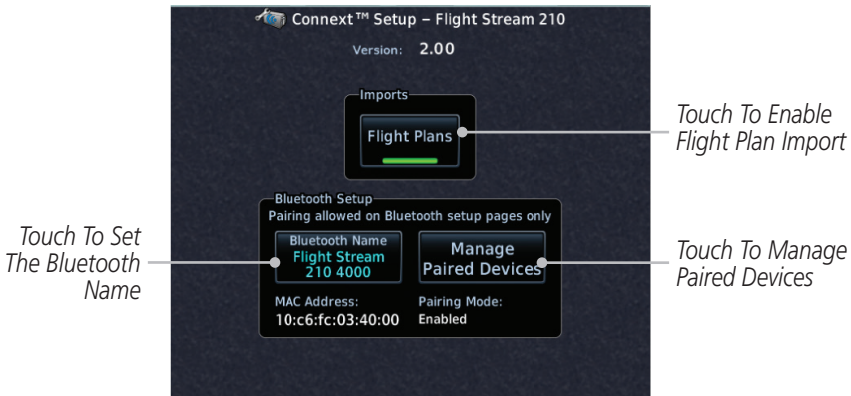


Figure 16-59 Connex Setup for Flight Stream 210



NOTE: Turning Flight Plan imports off will remove the ability of the GTN to receive flight plans from the Flight Stream 210. This could be used if there are repeated erroneous attempts by a portable electronic device application to send flight plans to the GTN.

16.11.1 (15.11.1) Operation

Data output from the GTN and Flight Stream 210 occurs automatically and requires no pilot action (such as, flight plan, GPS position, and attitude). Additionally, ADS-B traffic and weather can be output from the Flight Stream when connected to a GDL 88 and XM WX and SiriusXM satellite radio information can output when connected a GDL 69.

From the Connex Setup page, the pilot can enable/disable flight plan importing, change the Flight Stream Bluetooth name, and manage paired devices.

The device status indicates if the portable device is connected and communicating with the Flight Stream. The “Auto-Reconnect” setting determines if the Flight Stream will automatically connect to up to four devices when in range. When this setting is disabled, the pilot must initiate the connection from the device. Removing a device from this page by pressing “Remove” will require the device to be paired again before transferring data.



NOTE: *If the pairing is removed from either device (portable device or GTN) it must be removed on the other device before a new pairing to that same device is established again. Essentially, pairing must be removed on both devices before repairing.*

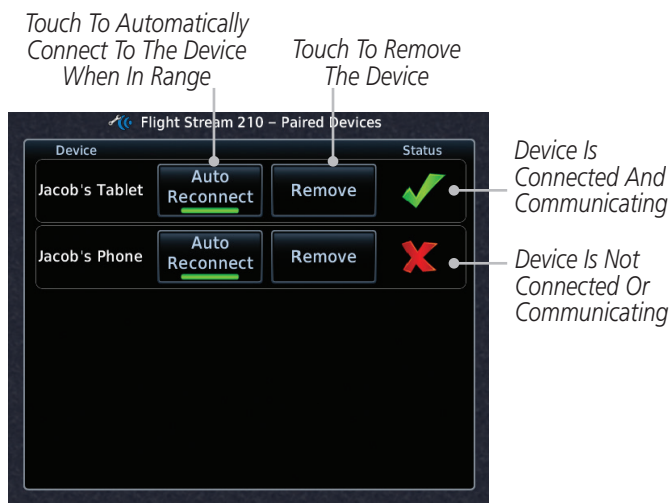


Figure 16-60 Managing Paired Devices

16.11.2 (15.11.2) Pairing a Device

New devices can only be paired with the Flight Stream when it is in “Pairing Mode”. The Flight Stream will be in pairing mode when the GTN is navigated to the Connex Setup page and/or the Manage Paired Devices page. The pairing must be initiated by the portable device. Pop-ups displayed on the portable device and GTN will be displayed to confirm the pairing.

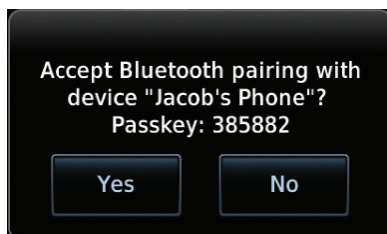


Figure 16-61 Confirm Pairing With A New Device

Selecting “Manage Paired Devices” opens a page that lists all of devices paired to the Flight Stream 210.

17 (16) MESSAGES

GTN 7XX - Page 17-2, GTN 6XX - Page 16-1

Added the following messages to the Message section.

Message	Description	Action
DATALINK - GDL 88 external traffic system has been in standby for more than 60 seconds.	The aircraft is airborne and the GDL 88 is reporting that the external traffic system has been in standby for more than 60 seconds.	Set the TAS/TCAS/TCAD traffic device to “operate” on the traffic page if traffic alerts are desired.
FLIGHT PLAN IMPORT - Flight plan import failed. Catalog is full.	The flight plan catalog is full and the requested flight plan could not be imported.	Edit the flight plan catalog to remove unneeded flight plans.

Message	Description	Action
FLIGHT PLAN IMPORT - Flight plan import failed.	The requested flight plan could not be imported because the GTN was unable to decode the contents of the flight plan.	Check for proper operation of the needed components. If the problem persists. Contact dealer for service.
FLIGHT PLAN IMPORT - New imported flight plan(s) available for preview.	The GTN has received a new flight plan that is available for preview by the pilot.	No action is necessary; message is informational only.
USER WAYPOINT IMPORT - User waypoints were imported successfully.	All user waypoints were imported successfully.	No action is necessary; message is informational only.
USER WAYPOINT IMPORT - User waypoint import failed.	User Waypoint import failed due to improper file format.	Ensure the media has the correct file format. If the problem persists. Contact dealer for service.
USER WAYPOINT IMPORT - User waypoint import failed. User waypoint database is full.	User Waypoint catalog is full and the requested user waypoints could not be imported.	Edit the User Waypoint catalog to remove unneeded user waypoints.
USER WAYPOINT IMPORT - User waypoints imported successfully - existing waypoints reused.	User waypoints imported and existing waypoints are used instead of creating duplicate waypoints.	No action is necessary; message is informational only.

18 (17) SYMBOLS

GTN 7XX - Page 18-5, GTN 6XX - Page 17-5
Updated the symbols section.

18.4 (17.4) Terrain Obstacle Symbols





Unlighted Obstacle (Height is less than 1000 ft AGL)	Lighted Obstacle (Height is less than 1000 ft AGL)	Unlighted Obstacle (Height is greater than 1000 ft AGL)	Lighted Obstacle (Height is greater than 1000 ft AGL)
			

Table 18-8 Obstacle Altitude/Color Correlation





Tower	Windmill	Windmill in Group	Power Line
			

Table 18-9 Obstacle Icon Types

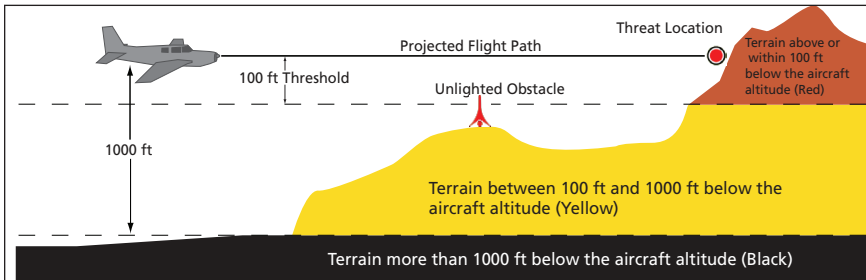


Figure 18-1 Terrain Altitude/Color Correlation

18.7 (17.7) Map Tool Bar Symbols












Symbol	Description
	Terrain Proximity Enabled and Available Indicator
	Terrain Proximity Enabled and Not Available Indicator
	Point Obstacle Enabled and Available Indicator (Software version 5.12 and later)
	Point Obstacle Enabled and Not Available Indicator (Software version 5.12 and later)
	Wire Obstacles Enabled and Available Indicator (Software version 5.12 and later)
	Wire Obstacles Enabled and Not Available Indicator (Software version 5.12 and later)
	StormScope
	Ownship is receiving TIS-B and ADS-R services (Software version 5.11 or earlier)
	Possible incomplete traffic picture – ownship is not receiving one (or both) of the TIS-B or ADS-R services (Software version 5.11 or earlier)
	Traffic Enabled and Available Indicator
	Traffic Enabled and Not Available Indicator

Table 18-11 Map Tool Bar Symbols

18.8 (17.8) Miscellaneous Symbols

GTN 7XX - Page 18-7, GTN 6XX - Page 17-7 (SW Ver 5.12)
 Added Note.



NOTE: Ownship icons are configured by the installer and can be colored magenta for enhanced visibility (Software version 5.12 or later).



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