GTN 650/750 SERIES SW V4.00 UPGRADE SUPPLEMENT

The Pilot's Guides have been revised for SW Version 4.00. This supplement provides information regarding new features of software version 4.00 for GTN 6XX/7XX Series units.

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

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

- GTN 650/750 Series SW Version 4.00 Upgrade Supplement

and either

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

or

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

Current documents are available at www.garmin.com for free download. Printed copies may be purchased by contacting Garmin Customer Support.

© 2013 Garmin Ltd. or its subsidiaries. All rights reserved.

This manual reflects the operation of System Software version 4.00, or later. Some differences in operation may be observed when comparing the information in this manual to later software versions.

Garmin International, Inc., 1200 East 151st Street, Olathe, KS 66062, U.S.A.
Tel: 913/397.8200 Fax: 913/397.8282

Garmin AT, Inc., 2345 Turner Road SE, Salem, OR 97302, U.S.A.
Tel: 503/391.3411 Fax 503/364.2138

Garmin (Europe) Ltd., Liberty House, Bulls Copse Road, Hounsdown Business Park, Southampton, SO40 9LR, U.K.
Tel. +44 (0) 23 8052 4000 Fax +44 (0) 23 8052 4004

Garmin Corporation, No. 68, Zhangshu 2nd Road, Xizhi Dist., New Taipei City 221, Taiwan
Tel: 886/02.2642.9199 Fax: 886/02.2642.9099

Garmin Singapore Pte. Ltd., 46 East Coast Road, #05-06 Eastgate, Singapore 428766
Tel : (65) 63480378 Fax : (65) 63480278

At Garmin, we value your opinion. For comments about this guide, please e-mail:
Techpubs.Salem@Garmin.com

www.garmin.com

Except as expressly provided herein, no part of this manual may be reproduced, copied, transmitted, disseminated, downloaded or stored in any storage medium, for any purpose without the express written permission of Garmin. Garmin hereby grants permission to download a single copy of this manual and of any revision to this manual onto a hard drive or other electronic storage medium to be viewed for personal use, provided that such electronic or printed copy of this manual or revision must contain the complete text of this copyright notice and provided further that any unauthorized commercial distribution of this manual or any revision hereto is strictly prohibited.

This part shall comply with Garmin Banned and Restricted Substances document, 001-00211-00.

Garmin®, FliteCharts®, and SafeTaxi® are registered trademarks of Garmin Ltd. or its subsidiaries. These trademarks may not be used without the express permission of Garmin.

NavData® is a registered trademark of Jeppesen, Inc.; StormScope® and SkyWatch® are registered trademarks of L-3 Communications; Sirius and XM are trademarks of SiriusXM Radio Inc.; Iridium® is a registered trademark of Iridium Communications Inc.; United States radar data provided by NOAA; European radar data collected and provided by Meteo France. SD and SDHC Logos are trademarks of SD-3C, LLC.

March 2013 Printed in the U.S.A

TABLE OF CONTENTS

This page intentionally left blank

1 GETTING STARTED

GTN 7XX - Page 1-14, GTN 6XX - Page 1-13

1.5.3 Dual GTN Installations

NOTE: *There is an installer option to turn on a system message that will be provided anytime crossfill is turned off to alert the pilot that flight plans are not being crossfilled.*

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

1.7 Selecting Com/Nav Frequencies

Remote Frequency Selection Control

On units configured for remote Com frequency Recall, pressing the remote recall switch will load the next preset Com frequency into the unit's Standby frequency window. The remote recall switch can be pressed multiple times to scroll the entire preset frequency list through the Standby frequency box (the list will "wrap" from the bottom of the list back up to the top, skipping any empty preset positions).

The standby frequency isn't activated until a Com **FLIP/FLOP** switch (either bezel-mounted or remote (COM RMT XFR) is pressed. Remote Frequency Selection only functions on units configured for a remote Com Frequency recall switch.

2 AUDIO AND TRANSPONDER CONTROLS (OPTIONAL)

GTN 7XX - Page 2-7, GTN 6XX - Page 2-9

2.1.11 Extended Squitter Transmission

The GTX 33ES is a remote mount transponder that functions as a transponder and also sends ADS-B Out message to ATC and other aircraft. The GTN can act as a control for a GTX 33 transponder including Extended Squitter functions. When "Enable ES" is selected, the GTX 33/330 turns on Extended Squitter (ES) transmissions.

GTN 7XX - Page 2-11

2.2.4 3D Audio

NOTE: *The stereo/mono headsets must be in the stereo position in order for 3D audio to function.*

GTN 7XX - Page 2-17

2.3 Intercom Setup

Depending on the installation and aircraft, the pilot and co-pilot positions on this page may be reversed (such as configured for rotorcraft).

3 NAV/COM

The GTN 750 features a digitally-tuned VHF Com radio and digitally-tuned Nav/localizer and glideslope receivers. The GTN 750's Com radio operates in the aviation voice band, from 118.000 to 136.975 MHz, in 25 kHz steps (default). For European operations, a Com radio configuration of 8.33 kHz steps is also available.

GTN 7XX - Page 3-12, GTN 6XX - Page 3-10

3.3.3 Emergency Frequency

The GTN 750's emergency frequency select provides a quick method of selecting 121.50 MHz as the active frequency in the event of an in-flight emergency. The emergency frequency select is available whenever the unit is on, regardless of GPS or cursor status, or loss of the display.

To quickly tune and activate 121.50, press and hold volume knob or the remote Com flip-flop key for approximately two seconds.

NOTE: *Pressing and holding the remote Com FLIP/FLOP key for approximately two seconds, on units so configured, will lock the COM board, preventing further changes in Com frequency until the Com board is unlocked, by pressing the remote Com FLIP/FLOP key again for two seconds. The following message will notify the pilot that the Com board has been locked: "COM LOCKED TO 121.5 MHZ. HOLD REMOTE COM TRANSFER KEY TO EXIT."*

NOTE: *Under some circumstances if the Com system loses communication with the main system, the radio will automatically tune to 121.50 MHz for transmit and receive regardless of the displayed frequency.*

GTN 7XX - Page 3-13, GTN 6XX - Page 3-11

3.3.5 Remote Frequency Selection Control

NOTE: *Frequencies must be stored in the User Frequency List prior to utilizing the remote channel select switch.*

4 FLIGHT PLANS

GTN 7XX - Page 4-1, GTN 6XX - Page 4-1

NOTE: *Navigation is provided for fixed wing aircraft above 30 kts and for rotorcraft above 10 kts.*

GTN 7XX - Page 4-10, GTN 6XX - Page 4-8

4.2.1.5 Load Procedures

NOTE: *For some procedures, due to very small position differences in the database, consecutive flight plan legs do not match up. The total effect on navigational guidance is negligible. The LOC BC 14 at KSLE via UBG shown below is an example of this.*

Figure 4-15 Procedure Flight Plan Leg Position Difference

6 PROCEDURES

GTN 7XX - Page 6-14, GTN 6XX - Page 6-10

6.6 Flying the Missed Approach

Upon reaching the Missed Approach Point, the GTN 7XX unit continues to give guidance along an extension of the final course segment (FAF to MAP) until you manually initiate the missed approach procedure (as mentioned previously in reference to the "SUSP" advisory).

NOTE: *If the unit is not configured for a CDI key, then the "activate GPS missed approach" will only resume automatic waypoint sequencing. The user must switch to GPS navigation, if desired, by using their external source selection method (this is typical an EFIS system).*

GTN 7XX - Page 6-16, GTN 6XX - Page 6-12

6.9 Vectors to Final

NOTE: *Once VTF is activated all waypoints in the approach prior to the FAF are removed.*

GTN 7XX - Page 6-19, GTN 6XX - Page 6-15

6.12 Points to Remember for All Procedures

CAUTION: *Not all autopilots will follow guidance when on a heading leg using NAV, GPSS, or APR mode on the autopilot. Heading legs for procedures can be identified by "HDG XXX°" in white on the Flight Plan page, as well as the procedure chart indicating that the aircraft must fly a particular heading. Certain autopilots will revert to a "Roll Only" or "Wings Level" mode on these leg types and the pilot must engage the heading (HDG) mode of the autopilot and set the heading bug appropriately in order to use the autopilot on these legs.*

7 CHARTS

GTN 7XX - Page 7-13

7.2.7 Geo-Referenced Aircraft Position

The geo-referenced aircraft position is placed on the chart when a position is established. On the Map page, the chart and geo-referenced position are shown when the aircraft is in the air (such as, speed is greater than 30 knots). When a chart is viewed on the Map page, areas of the chart that do not support geo-referencing, such as expanded details and text blocks, are removed. Typically, SIDs and STARs are not geo-referenced and thus will not typically have ownships on those charts.

Figure 7-22 Areas of Chart Info Removed For Map Overlay and Geo-Reference

GTN 7XX - Page 7-14

NOTE: *The entire ownship symbol must be able to fit within the displayed chart area before it will be drawn.*

8 WAYPOINT INFO

GTN 7XX - Page 8-10, GTN 6XX - Page - Page 7-9

8.2.7 Helipads

1. Touch the **Helipad** tab next to the center window to view any information available for the selected helipad. Helipad information may not be complete or consistent due to the data available from the 3rd party sources.

Figure 8-14 Helipad Waypoint Info

GTN 7XX - Page 8-17, GTN 6XX - Page - Page 7-16

8.7 Create Waypoint

***NOTE**: If an external Mark On Target (MOT) switch is installed, pressing that switch will result in the creation of a User waypoint called MOTxxx at the point in space where the MOT switch was pushed. The waypoints are created in increasing numeric order up to number 999 at which point they will start replacing existing waypoints at the beginning of the list.*

9 MAP

GTN 7XX - Page 9-1, GTN 6XX - Page 8-1

The following information describes the ownship function in a helicopter that does not have a source of magnetic heading information connected to the GTN. When greater the 15 knots groundspeed the map is oriented either north up with ownship oriented to its track or track up. When less than 15 kts groundspeed, the directional ownship icon is replaced with a non-directional icon because it can't be determined if the rotorcraft is going sideways or backwards. The map will continue to orient to the current track if the map is selected for Track Up. If the map is oriented to track up, then below 5 kts groundspeed the map orientation will "latch" to the last valid track prior to the groudspeed going below 5 kts. The map will reorient when the groundspeed again exceeds 5 kts. The position of the ownship over the map is always correct.

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

9.1.1.6 StormScope® (Optional)

Stormscope and XM Lightning are mutually exclusive.

9.1.2.1 Map

GTN 7XX - Page 9-13, GTN 6XX - Page - Page Page 8-9

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

Feature	Selection
Topo Scale	**Off**, On
Obstacle Range	Off, 4 NM, **5 NM**, 7.5 NM, 10 NM, 15 NM
Chart Color Scheme	**Day**, Night
Restore Defaults	Returns values to original factory settings

Table 9-1 Map Setup Map Options

GTN 7XX - Page 9-15, GTN 6XX - Page 8-11

Auto Zoom

NOTE: *Rotorcraft use a Local Auto Zoom function where Auto Zoom will remain at the 1500 ft zoom scale until the rotorcraft is above 400 ft GSL or 40 kts.*

GTN 7XX - Page 9-16

Nav Range Ring

When turned on, the Nav Range Ring option will show a ring with a compass rose oriented to magnetic north around your present position on the Map page. When selected ON, the Enhanced Range Ring function (GTN 7XX only) provides a second ring at 1/2 the distance of the primary ring to allow the pilot to acccurately judge distance to objects depicted on the map.

GTN 7XX - Page 9-19, GTN 6XX - Page 8-15

9.1.2.2 Aviation

Feature	Selection
Airport Range	Off, 7.5 NM, 10 NM, 15 NM, **25 NM**, 40 NM, 50 NM, 75 NM, 100 NM, 150 NM
Heliports (Optional)	Off, **On**
SafeTaxi Diagrams	Off, 1000 ft, 1500 ft, 2500 ft, 0.5 NM, 0.75 NM, **1 NM**, 1.5 NM
Runway Extensions	Off, 1 NM, 1.5 NM, 2.5 NM, 4 NM, **5 NM**
Intersection Range	Off, 0.75 NM, 1 NM, 1.5 NM, 2.5 NM, **4 NM**, 5 NM, 7.5 NM, 10 NM
NDB Range	Off, 0.75 NM, 1 NM, 1.5 NM, 2.5 NM, 4 NM, **5 NM**, 7.5 NM, 10 NM

Feature	Selection
VOR Range	Off, **10 NM**, 15 NM, 25 NM, 40 NM, 50 NM, 75 NM, 100 NM
User Wpt 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
Airway Range	2.5 NM, 4 NM, 5 NM, 7.5 NM, 10 NM, 15 NM, **25 NM**
TFRs	**Off**, On
Restore Defaults	Returns values to original factory settings

Table 9-2 Map Setup Aviation Options

GTN 7XX - Page 9-33, GTN 6XX - Page 8-27

9.3.3.1 Adding a Waypoint Within an Existing Flight Plan

NOTE: *It is not possible to graphically add an intermediate waypoint between the current position and a direct-to waypoint unless that waypoint is in the flight plan. Garmin recommends deleting any flight plan prior to graphically editing a direct to waypoint.*

GTN 7XX - Page 9-36

9.4 CDI (GTN 750 only)

The GTN 750's **CDI** key is used to select data that is sent from the GPS or VLOC receiver to the external CDI (or HSI). When the external CDI (or HSI) is connected to the GPS receiver, "GPS" appears below the **CDI** key in the annunciation bar. When the external CDI (or HSI) is being driven by the VLOC receiver, "VLOC" appears instead.

10 TRAFFIC

10.5 ADS-B Traffic

GTN 7XX - Page 10-18, GTN 6XX - Page 9-18

NOTE: *The "Next" key on the dedicated traffic page will cycle through all targets located in close proximity to where the pilot has touched the screen.*

10.5.1.3 Motion Vector

GTN 7XX - Page 10-22, GTN 6XX - Page 9-21

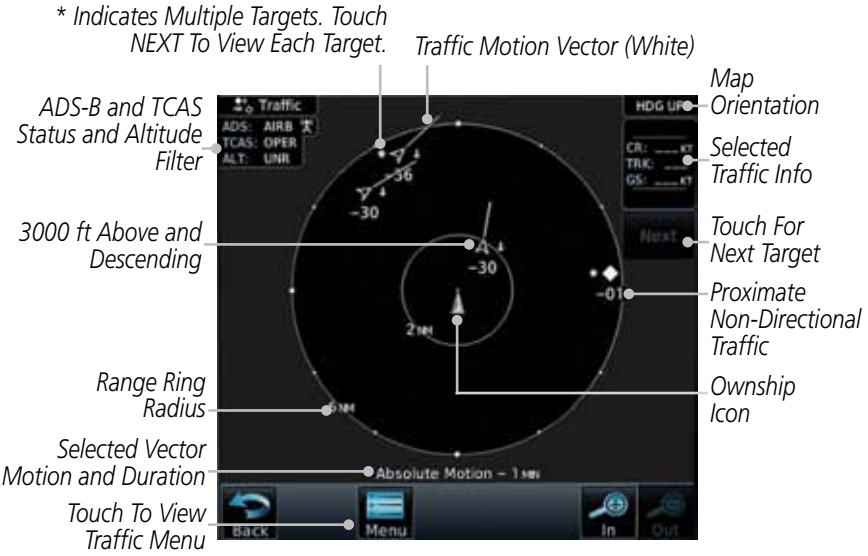

Figure 10-13 Absolute Motion (White Vectors)

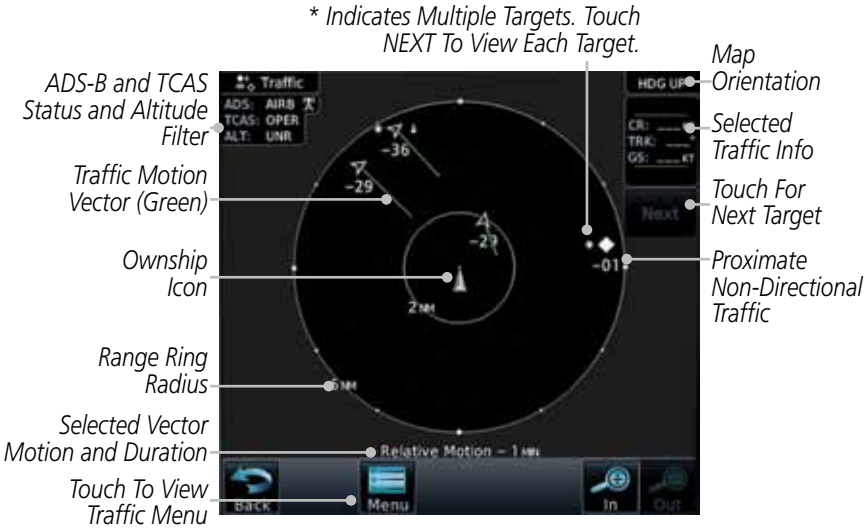

Figure 10-14 Relative Motion (Green Vectors)

10.7 TCAD 9900B Operation

Symbol		Description
Imminent Traffic (Traffic within ±500 feet AND 1.0 NM; OR no altitude AND within 1.0 NM)	Non-Imminent Traffic	
		Traffic Closing Vertically
		Traffic Diverging Vertically
		Traffic not Closing or Diverging Vertically

Table 10-15 9900B TCAD Symbols

11 TERRAIN

11.1 Terrain Configurations

During power-up of the GTN 7XX, the terrain/obstacle database versions are displayed along with a disclaimer. At the same time, the Terrain system self-test begins. A failure message is issued if the terrain test fails.

Garmin provides the following terrain awareness solutions within the GTN 7XX environment:

- Terrain Proximity - This is the standard Terrain function and refers to the display of the relative terrain elevations on the moving map. No aural alerts of any type are provided by a Terrain Proximity configuration.
- TAWS-B (Optional) - A system developed to meet the terrain alerting and ground proximity requirements for Class B TAWS systems as defined in TSO-C151b. Garmin's GTN 7XX Terrain Awareness and Warning System (TAWS-B) is an optional feature and is intended to provide the flight crew with both aural and visual alerts to aid in preventing inadvertent Controlled Flight Into Terrain (CFIT).
- HTerrain Proximity - This is the standard Terrain function and refers to the display of the relative terrain elevations on the moving map. No aural alerts of any type are provided by a Terrain Proximity configuration.
- HTAWS - (HTAWS) is an optional feature to increase situational awareness and aid in reducing controlled flight into terrain. Garmin TAWS satisfies TSO-C194 requirements for certification.

GTN 7XX - Page 11-20, GTN 6XX - Page 10-19

11.4 HTAWS (Optional)

11.4.1 Introduction

NOTE: *Either the TERRAIN, TAWS, HTAWS, or HTERRAIN PROXIMITY functionality will be available via the Terrain page, depending on the installed hardware and configuration. HTAWS or HTERRAIN PROXIMITY are available in software version 4.00, or later.*

11.4.1.1 Overview

Garmin's Helicopter Terrain Awareness Warning System (HTAWS) is an optional feature to increase situational awareness and aid in reducing controlled flight into terrain. Garmin HTAWS is TSO-C194 authorized. Units installed in

helicopters that do not have HTAWS installed will display HTerrain Proximity. This is noted by the five color terrain scale which is appropriate to the low altitude operating environment for helicopters.

HTAWS provides visual and aural annunciations when terrain and obstacles are a hazard to the aircraft.

Figure 11-17 Map Page with Terrain

NOTE: *HTAWS-enabled units can be identified by going to the Terrain page and checking the lower right-corner for "HTAWS."*

11.4.1.2 Operating Criteria

Garmin HTAWS requires the following to operate properly:

- The system must have a valid 3D GPS position solution
- The system must have a valid terrain/obstacle database.

11.4.1.3 Limitations

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

HTAWS displays terrain and obstructions relative to the flight path of the aircraft. Individual obstructions may be shown if available in the database. However, all obstructions may not be available in the database and data may be inaccurate. Never use this information for navigation.

NOTE: *Terrain databases do not consistently represent foliage. Some trees may extend above HTAWS protection limits in some operating modes.*

Terrain information is based on terrain elevation data contained in a database that may contain inaccuracies. Terrain information should be used as an aid to situational awareness. Never use it for navigation or to maneuver to avoid terrain.

HTAWS uses terrain and obstacle information supplied by government 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.

11.4.2 HTAWS Operation

11.4.2.1 HTAWS Alerting

HTAWS uses information provided from the GPS receiver to provide a horizontal position and altitude. GPS altitude is derived from satellite measurements. GPS altitude is converted to a mean sea level (MSL)-based altitude (GSL altitude) and is used to determine HTAWS alerts. GSL altitude accuracy is affected by factors such as satellite geometry, but it is not subject to variations in pressure and temperature that normally affect pressure altitude devices. GSL altitude does not require local altimeter settings to determine MSL altitude. Therefore, GPS altitude provides a highly accurate and reliable MSL altitude source to calculate terrain and obstacle alerts.

HTAWS utilizes terrain and obstacle databases that are referenced to mean sea level (MSL). Using the GPS position and GSL altitude, HTAWS displays a 2-D picture of the surrounding terrain and obstacles relative to the position and altitude of the aircraft. The GPS position and GSL altitude are used to calculate and "predict" the aircraft's flight path in relation to the surrounding terrain and obstacles. In this manner, HTAWS can provide advanced alerts of predicted dangerous terrain conditions. Detailed alert modes are described later in this section.

11.4.2.2 Power Up

During power-up of the unit, the terrain/obstacle database versions are displayed along with a disclaimer to the pilot. At the same time, HTAWS self-test begins. HTAWS gives the following aural messages upon test completion:

- "***HTAWS System Test, OK***", if the system passes the test
- "***HTAWS System Failure***", if the system fails the test

A test failure is also annunciated visually for HTAWS, as shown in the HTAWS Alert Summary table.

11.4.3 HTAWS Page

HTAWS is shown on the Terrain page when HTAWS is available.

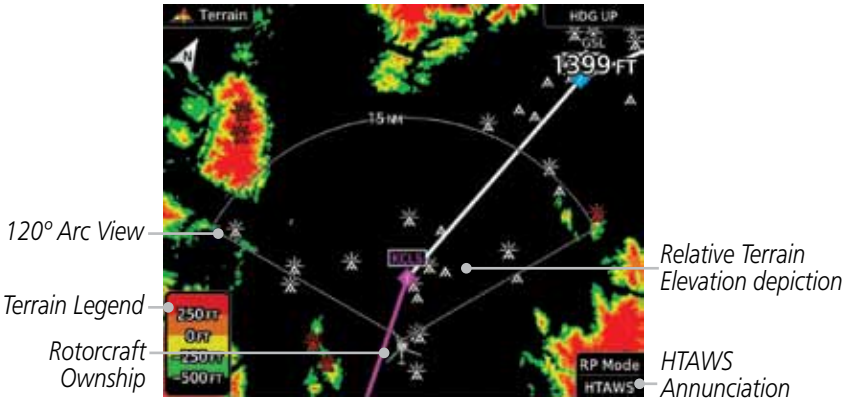

Figure 11-18 Terrain/HTAWS Page

Terrain information, aircraft ground track, and GPS-derived MSL altitude are displayed on the page. The "GSL" above altitude display in the top right corner of the display reminds the pilot that altitude is GPS-derived.

11.4.4 Terrain Page Menu

The HTAWS page menu provides options to acknowledge caution alerts, reduce protection, or inhibit alerting.

Figure 11-19 HTAWS Terrain Menu

11.4.4.1 View Selection

The HTAWS Page has two selectable view settings:

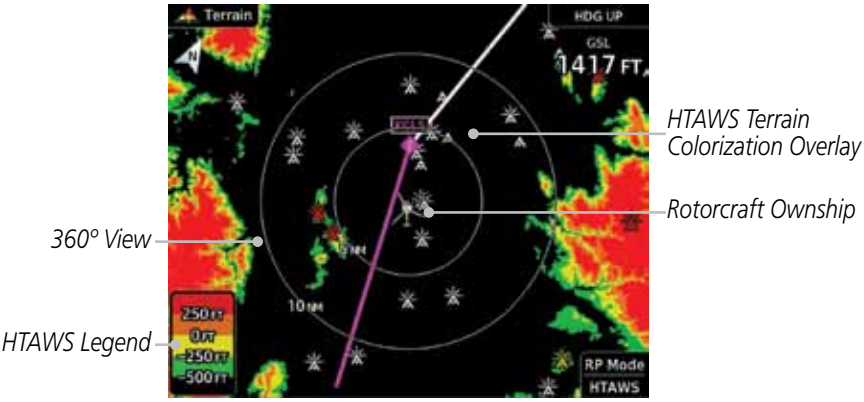

Figure 11-20 Terrain Page with HTAWS - 360° View

- 360° View—View from above aircraft depicting surrounding terrain on all sides.
- Arc (120°) View—View of terrain ahead of and 60° to either side of the aircraft flight path.

NOTE: *If a heading source is available the HTAWS page will be oriented heading up. If no heading source is available the HTAWS page will be oriented track up.*

1. While viewing the Terrain/HTAWS Page, touch **MENU**. Touch **Arc** or **360°**.

2. Touch **Back** to return to the Terrain/HTAWS display. The HTAWS Page displays the selected view. Repeat step 1 to select the alternate view, and touch **Back**.

11.4.4.2 HTAWS Inhibit

HTAWS provides an "inhibit mode." This mode deactivates aural and visual alerts when they are deemed unnecessary by the aircrew. Pilots should use discretion when inhibiting the HTAWS system and always remember to enable the system when appropriate. VCO's are not inhibited in Inhibit Mode. See section 3 for more information on HTAWS alerts. When alerting is inhibited, all FLTA aural and visual alerting is suppressed. HTAWS should only be inhibited when in visual contact with terrain and when the pilot can be assured of maintaining clearance from terrain and obstacles. When conducting en route operations and operations from published airports and heliports, HTAWS should be operated in Normal mode. HTAWS configured units will always start up with HTAWS alerts uninhibited.

To inhibit HTAWS alerts:

1. While viewing the Terrain/HTAWS page, touch **MENU**.

2. Touch **HTAWS Inhibit**. The green bar will show when HTAWS Inhibit is active.

3. Touch **Back** to return to the Terrain/HTAWS display. The HTAWS alerts are inhibited. The HTAWS INHB annunciation is displayed in the terrain annunciator field whenever HTAWS is inhibited.

NOTE: *When the ground speed is less than 30 knots HTAWS will automatically display the "HTAWS INHB" annunciation. This indicates that HTAWS is no longer providing protection.*

This automatic "TAWS INHB" cannot be removed by menu option selection. Menu selections for INHIBIT HTAWS and RP Mode remain available when HTAWS is automatically inhibited due to groundspeed. If the pilot selects a mode on the menu while HTAWS is auto inhibited because it is less than 30 knots then the unit will enter that mode once ground speed exceeds 30 knots. Hence, the presence of these selections on the Menu.

11.4.4.3 External HTAWS Inhibit Control

An optional installation is allowed for providing an external HTAWS Inhibit switch. Touching the external HTAWS Inhibit switch toggles the HTAWS inhibit on and off in the same manner as using the Terrain Menu selection.

11.4.4.4 Reduced Protection Mode

The Reduce Protection (RP) functionality allows operating with a reduction in the alerting thresholds, and suppresses visual and aural annunciation of caution alerts. Reduced protection allows low level operations and landings off airport with a minimum number of alerts while continuing to provide protection from terrain and obstacles. Reduced Protection should only be selected when operating in visual contact with the terrain as alerting times are significantly less than in normal mode. There is support for an external RP Mode switch and an external Alert Acknowledge switch.

To toggle protection:

1. While viewing the Terrain/HTAWS Page, touch **MENU**.

2. Touch the **RP Mode** key to toggle the RP mode on and off. The green bar will show when RP mode is active.

3. Touch **Back** to return to the Terrain/HTAWS display. The "RP Mode" annunciation is displayed in the terrain annunciator field and in the lower right corner of the terrain page whenever protection is reduced.

11.4.4.5 Alert Acknowledge

In NORMAL mode (RP Mode not active) - when a caution is active touch the Alert ACK key to suppress the aural alert for the active caution. In RP mode - when a warning is active then this will muffle the alert audio to 40% of normal volume for 10 seconds.

To acknowledge an alert:

1. While viewing the Terrain/HTAWS page, when an alert is received, the **Alert ACK** key will be show the green bar.

2. Touch **MENU** and then touch the Alert ACK key to acknowledge the alert.

To activate RP Mode:

1. While viewing the Terrain/HTAWS page, touch **MENU**.

2. Toggle activation of RP Mode by touching the **RP Mode** key. RP Mode will be active when the green bar is present.

11.4.4.6 HTAWS Manual Test

Garmin HTAWS provides a manual test capability which verifies the proper operation of the aural and visual annunciations of the system prior to a flight.

To manually test the HTAWS system:

1. While viewing the Terrain/HTAWS Page, touch **MENU**.

2. Touch the **Test HTAWS** key.

3. Touch **Back** to return to the Terrain/HTAWS display.

An aural message is played giving the test results:

- "***HTAWS System Test, OK***" if the system passes the test
- "***HTAWS System Failure***" if the system fails the test

NOTE: *HTAWS System Testing is disabled when in the air so as not to impede HTAWS alerting.*

11.4.4.7 HTAWS Legend

1. While viewing the Terrain/HTAWS page, touch **MENU**.

2. Touch the **Legend** key to toggle the legend on or off. The green bar will show when the Legend is active.

3. Touch **Back** to return to the Terrain/HTAWS display.

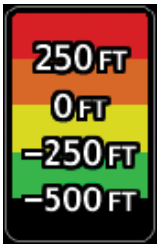

Figure 11-21 HTAWS Terrain Legend

Color	Description
Red	Terrain is more than 250 ft above the aircraft.
Orange	Terrain is between 0 ft and 250 ft above the aircraft.
Yellow	Terrain is between 250 ft and 0 ft below the aircraft.
Green	Terrain is between 250 ft and 500 ft below the aircraft.
Black	Terrain is more than 500 ft below the aircraft.

Table 11-6 HTAWS Terrain Altitude Color Description

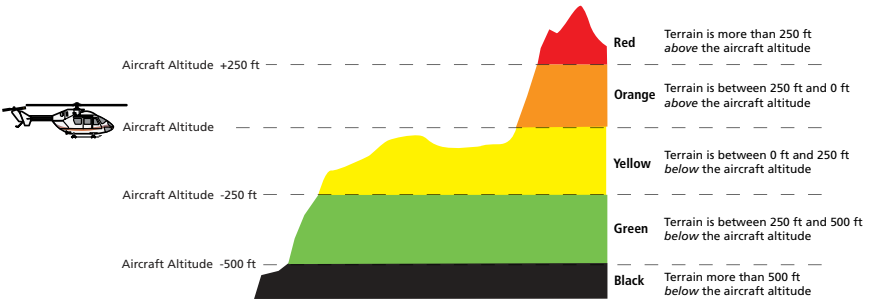

Figure 11-22 HTAWS Terrain Altitude Colors

11.4.4.8 Flight Plan Overlay

1. While viewing the Terrain/HTAWS page, touch **MENU**.

2. Touch the **Flight Plan** key to toggle the overlay of the active flight plan on or off. The green bar will show when the Flight Plan overlay is shown.

3. Touch **Back** to return to the Terrain/HTAWS display.

11.4.5 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.*

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

Figure 11-23 HTAWS Obstacle Colors and Symbology

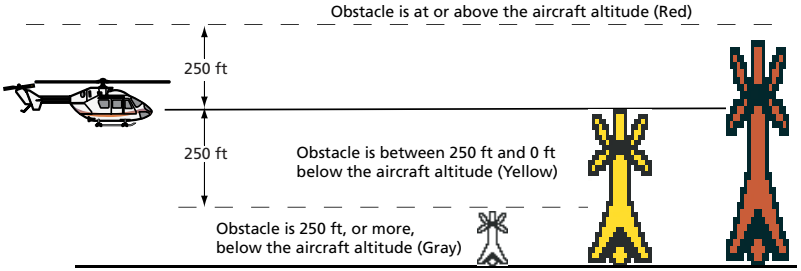

Figure 11-24 HTAWS Obstacle Altitude Colors and Symbology

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

Table 11-7 HTAWS Alert Coloring and Symbology

11.4.6 General Database Information

Garmin HTAWS uses terrain and obstacle information supplied by government 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 agencies. Garmin accurately processes and cross-validates the data, but cannot guarantee the accuracy and completeness of the data.*

The terrain/obstacle databases are contained on the datacard.

11.4.7 Database Versions

The version and area of coverage of each terrain/obstacle database is shown on the Terrain Database Versions Page, located 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 HTAWS system fails the self-test and displays the HTAWS system failure message.

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

11.4.8 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 HTAWS system passes self-test.

11.4.9 Terrain Database Areas of Coverage

The following describes the area of coverage available in each 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 11-8 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.*

11.4.10 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 11-9 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.*

11.4.11 HTAWS Alerts

Alerts are issued when flight conditions meet parameters that are set within HTAWS software algorithms. HTAWS alerts employ either a CAUTION or a WARNING alert severity level. When an alert is issued, visual annunciations are displayed. Aural alerts are simultaneously issued. Annunciations appear in a dedicated field in the lower left corner of the display.

Annunciations are color-coded according to the HTAWS Alert Summary table. Pop-up terrain alerts will occur if an HTAWS alert is activated while not on the HTAWS page. There are two options when an alert is displayed:

To acknowledge the pop-up alert and return to the currently viewed page:

Touch the **Close** key.

To acknowledge the pop-up alert and quickly access the HTAWS Page:

Touch the **ENT** key.

NOTE: *To further capture the attention of the pilot, HTAWS issues aural (voice) messages that accompany visual annunciations and pop-up alerts. For a summary of aural messages, see the HTAWS Alert Summary table.*

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.*

11.4.12 Forward Looking Terrain Avoidance

The unit will issue terrain alerts not only when the aircraft altitude is below the terrain elevation but also when the aircraft is projected to come within minimum clearance values of the terrain. This alerting, called Forward Looking Terrain Avoidance (FLTA), is also provided for obstacles.

The FLTA functionality looks ahead of the aircraft using GPS position information and the terrain and obstacle databases to provide alerts when the predicted flight path does not clear the terrain or obstacle by the required clearance. The amount of clearance required varies depending on position relative to airports and heliports, in order to reduce the occurrence of nuisance alerting.

Any potential impact points are depicted on the display. There are 2 levels of severity for FLTA alerts. They are cautionary (amber) and warning (red) in nature and are described in further detail below.

FLTA CAUTION—Estimated potential impact in approximately 30 seconds after a caution pop-up alert and annunciation. FLTA caution alerts are accompanied by the aural message "*Caution Terrain; Caution Terrain*". Similarly, a "*Caution Obstacle; Caution Obstacle*" alert is also provided. The time to an alert can vary with conditions, therefore there is no guarantee of a 30 second caution alert being issued.

FLTA WARNING—Warning pop-up alerts are issued 15 seconds prior to an estimated potential impact in normal mode and approximately 10 seconds in RP Mode. FLTA warning alerts are accompanied by the aural message "*Warning - Terrain, Terrain*" . Similarly, a "*Warning - Obstacle, Obstacle*" alert is also provided. The time to an alert can vary with conditions, therefore there is no guarantee of a 15/10 second warning alert being issued.

The alerts are annunciated visually through the annunciator status bar, a pop-up alert box, and the red and yellow X's on the HTAWS page. The alerts are annunciated aurally through a voice message indicating the potential threat, such as "Caution - Terrain, Terrain" or "Warning - Obstacle, Obstacle".

11.4.13 Voice Call Out Aural Alert

The purpose of the Voice Call Out aural alert messages are to provide an advisory alert to the pilot that the aircraft is between 500 feet and 100 feet above terrain in 100 foot increments. When the aircraft descends within the selected distance from the terrain, the aural message for the selected height above terrain is generated. There are no display annunciations or pop-up alerts that accompany the aural message.

11.4.14 Voice Call Out Selection

The Voice Call Out (VCO) selection is available when HTAWS is installed. The VCO functionality provides a voice annunciation of the aircraft's height above terrain or the nearest airport, heliport, runway, or helipad when that threshold is first crossed. The available call outs include "Five Hundred" through "One Hundred" in one hundred foot intervals. The voice call outs can be enabled and disabled through the Voice Call Outs Selection option on the System - Audio page.

***NOTE**: VCOs are available down to 100 feet above terrain when HTAWS is installed and use GSL above terrain to generate callouts (no radar altimeter required). If a radar altimeter is interfaced to the GTN, alerts are available down to 50 feet and the height above terrain when the radar altimeter is used to generate the callouts.*

To select the Voice Call Out choices in the System - Audio page, select the Voice Call Out Selection item and then select the desired value.


1. From the Main page, touch **System** and then **Audio**.

2. Touch the **Voice Callouts** key to view the Voice Callouts page.

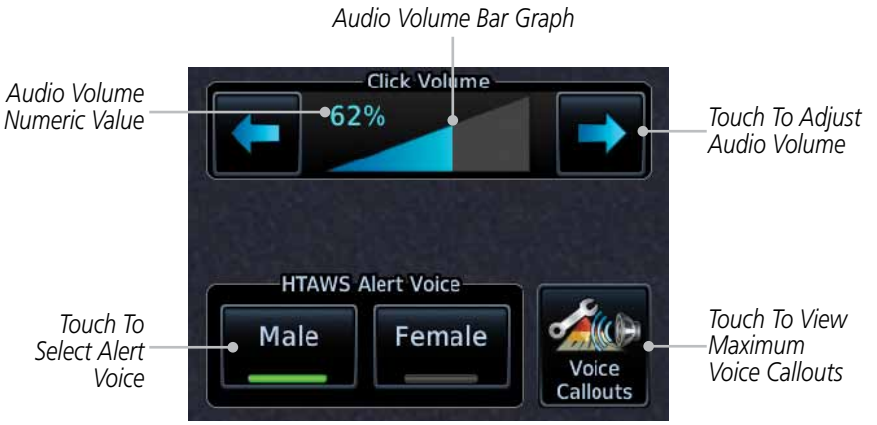

Figure 11-25 Select Voice Callouts from the System Audio Page

3. Touch the **MAX Voice Callout** key to select the Voice Callouts.

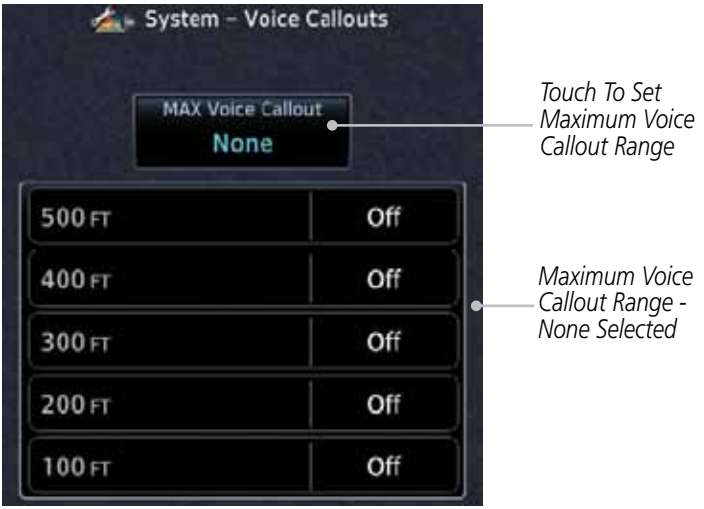

Figure 11-26 View the Maximum Voice Callout Range (None Selected)

4. The values above the selected value will be disabled (Off).

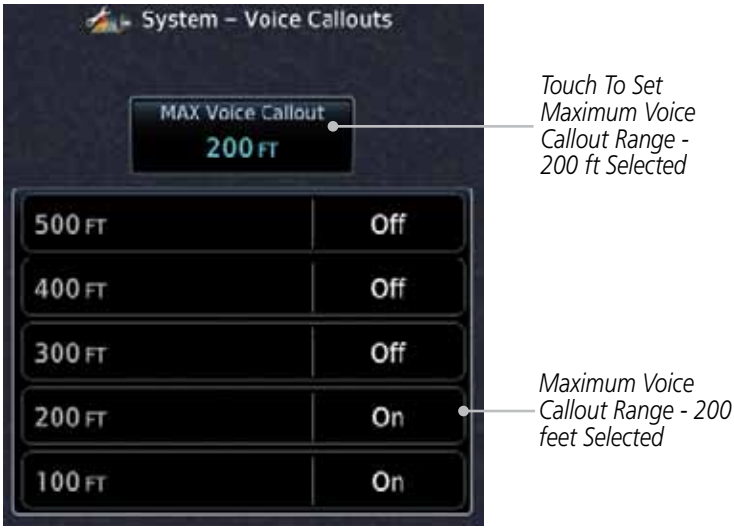

Figure 11-27 View the Maximum Voice Callout Range (200 ft Selected)

11.4.15 HTAWS Not Available Alert

Garmin HTAWS requires a 3-D GPS navigation solution along with specific vertical accuracy minimums. Should the navigation solution become degraded, or if the aircraft is out of the database coverage area, the annunciation "HTAWS N/A" is shown in the annunciation window. When the GPS signal is re-established and the aircraft is within the database coverage area, the "HTAWS N/A" annunciation is removed.

11.4.16 HTAWS Failure Alert

HTAWS continually monitors several system-critical items, such as database validity, hardware status, and GPS status. If the terrain/obstacle database is not available, the aural message *"HTAWS System Failure"* is issued along with the "HTAWS FAIL" annunciation.

11.4.17 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
RP MODE	None	None	Alerting thresholds are reduced. Visual and aural annunciation of caution alerts are suppressed.

HTAWS Annunciation	Pop-Up Alert	Aural Message	Description
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 11-10 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.

11.4.18 Pilot Actions

If an HTAWS warning and associated aural are received, the pilot should immediately maneuver the rotorcraft in response to the alert unless the terrain or obstacle is clearly identified visually and determined by the pilot not to be a factor to the safety of the operation.

A HTAWS caution alert indicates terrain or obstacle nearby. If possible visually locate the terrain or obstacle for avoidance. A HTAWS warning alert may follow a HTAWS caution unless the aircraft's path towards the terrain or obstacle is changed.

NOTE: *Display of terrain and obstacles on the display is supplemental data only. Maneuvering solely by reference to the terrain and obstacle data is not recommended or authorized.*

12 WEATHER

GTN 7XX - Page 12-1, GTN 6XX - Page - 11-2

NOTE: *Stormscope and XM Lightning are mutually exclusive.*

GTN 7XX - Page 12-28, GTN 6XX - Page 11-28

12.2.1 StormScope® (Optional)

Symbol	Time Since Strike (Seconds)
	6
	60
	120
	180

Table 12-4 Stormscope Symbols

GTN 7XX - Page 12-40

Weather Mode Color	GWX 68 Radars		GWX 70 Radars	3rd Party Radars
	Approximate Intensity	Approximate Rainfall Rate (in/hr)	Approximate Intensity	Radar Return Level (see radar documentation for details)
BLACK	< 23 dBZ	< .01	< 23 dBZ	0
GREEN	23 dBZ to < 33 dBZ	.01 - 0.1	23 dBZ to < 33 dBZ	1
YELLOW	33 dBZ to < 41 dBZ	0.1 - 0.5	33 dBZ to < 41 dBZ	2
RED	41 dBZ to < 50 dBZ	0.5 - 2	> 41 dBZ	3
MAGENTA	50 dBZ and greater	> 2	Turbulence Detection	4

Table 12-5 Precipitation Intensity Levels

12.6 FIS-B Weather

Weather Product	Expiration Time (Minutes)	Transmission Interval (Minutes)	Update Interval (Minutes)
CONUS NEXRAD	60	15	15
Regional NEXRAD	30	2.5	5
AIRMETs	60	5	As Available (Typically 20 minutes)
SIGMETs	60	5	As Available (Typically 20 minutes), then at 15 minute intervals for 1 hour
METARs	90	5	1 minute (where available), As Available otherwise (Typically ≤ 20 minutes)
Winds and Temperatures Aloft	90 or at the end of the valid period	10	12 hours
Pilot Weather Report (PIREP) (Blue - Regular, Yellow - Urgent)	90	10	As available |(Typically 20 minutes)
TAFs	60	10	8 hours
TFRs	60	10	20
NOTAMs	60	10	As available (Typically 20 minutes)

Table 12-8 FIS-B Weather Products and Aging

16 SYSTEM

GTN 7XX - Page 16-4, GTN 6XX - Page 15-5

16.1.3 Database Information

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.

GTN 7XX - Page 16-5, GTN 6XX - Page 15-5

- **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.

GTN 7XX - Page 16-6, GTN 6XX - Page 15-6

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.

Database Name	Function	Where Stored	Update Cycle	Provider	Notes
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 For helicopter applications an Obstacle database that includes additional low height obstacles is 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

GTN 7XX - Page 16-20, GTN 6XX - Page 15-21

16.4.1.4 Crossfill

NOTE: *When GPS navigation is lost in either unit, crossfilling may not be available until GPS is restored in both units. Crossfilling will resume once the flightplan is changed on one of the units or crossfill is re-enabled.*

NOTE: *There is an installer option to turn on a system message that will be provided anytime crossfill is turned off to alert the pilot that flight plans are not being crossfilled.*

GTN 7XX - Page 16-25, GTN 6XX - Page Page 15-26

16.6 Units Settings

The Units Setup page allows you to select the conventions for the various units that are displayed.

Units Type	Units Values
Nav Angle	Magnetic (°), True (°T), User (°u)
Magnetic Variation	Enter numeric value, E or W
Temperature	Celsius (°C) or Fahrenheit (°F)
Fuel	Gallons (GAL), Kilograms (KG), Liters (LT), or Pounds (LB)

Table 16-2 System Units Setup

GTN 7XX - Page 16-29, GTN 6XX - Page 15-29

16.8 Audio

NOTE: *VCOs are available down to 100 feet above terrain when HTAWS is installed and use GSL above terrain to generate callouts (no radar altimeter required). If a radar altimeter is interfaced to the GTN, alerts are available down to 50 feet and the height above terrain from the radar altimeter is used to generate the callouts.*

GTN 7XX - Page 16-31, GTN 6XX - Page 15-30

16.9 Backlight Settings

The backlighting of the display and bezel keys can be adjusted automatically or manually. The default setting (automatic backlighting adjustment) uses photocell technology to automatically adjust for ambient lighting conditions. Photocell calibration curves are pre-configured to optimize display appearance through a broad range of cockpit lighting conditions. A manual offset creates a deviation form the normal curve. Manual adjustments may be made from +100% to -10%. The negative adjustment is limited to prevent the backlight from being accidently decreasing the backlight to the point where the display of information could not be seen.

The backlight offset function is not available when a dimmer input is active. The GTN is capable of accepting lighting inputs from the built-in photocell, aircraft dimmer bus, or both. If the lighting is not satisfactory, contact the installer to adjust the curves.

17 MESSAGES

When a Message has been issued by the unit, the Message (**MSG**) key/annunciator in the lower left of the display will blink. Touch the **MSG** key to view the messages. After viewing the messages, touch the **Back** key to return to the previously viewed page. The Messages provide an aid to troubleshooting system operation.

Message	Description	Action
DATABASE - Terrain display unavailable for current location.	The aircraft is outside the terrain database coverage area.	Terrain and TAWS functions will be unavailable. If terrain coverage is desired in the area, load appropriate coverage area on the external SD card.
DATA SOURCE - Radar Altimeter source inoperative or connection to GTN lost.	The GTN is configured to receive radio altitude information but is not receiving it from any source.	50 foot aural annunciation is unavailable for HTAWS installations. Contact dealer for service.
HTAWS - Invalid Terrain Database.	The terrain database is of insufficient resolution for use with HTAWS.	Load HTAWS specific terrain database on the external SD card.
MARK ON TARGET - Waypoint creation has failed. MOT requires GPS position.	Mark on target waypoint creation has failed because of missing GPS position.	Wait for GPS satellite geometry to improve. Ensure the aircraft has a clear view of the sky. Reattempt waypoint creation. Contact dealer for service.

Message	Description	Action
REMOTE KEY STUCK - Remote go around key is stuck.	The remote go around (RMT GO ARND) key/switch has been in pressed position for at least 30 seconds. This input will now be ignored. This input is not available in all installations.	Verify the RMT GO ARND key/switch is not suck. Contact dealer for service if this message persists.
REMOTE KEY STUCK - Alert Acknowledge key is stuck.	The remote TAWS alert acknowledge (ALRT ACK) key/switch has been in pressed position for at least 30 seconds. This input will now be ignored. This input is not available in all installations.	Verify the ALRT ACK key/switch is not suck. Contact dealer for service if this message persists.
REMOTE KEY STUCK - RP Mode key is stuck.	The remote RP MODE key/switch has been in pressed position for at least 30 seconds. This input will now be ignored. This input is not available in all installations.	Verify the RP MODE key/switch is not suck. Contact dealer for service if this message persists.
TRAFFIC - Traffic device battery low. Traffic device user config settings not saved.	The TCAD system has indicated that its battery is low.	Contact dealer for service.
WX ALERT - Possible severe weather ahead.	The weather radar system is indicating the presence of severe weather ahead.	Check weather radar. See Section12.4.8.2 for more information.

Table 17-1 Messages

18 SYMBOLS

GTN 7XX - Page 18-3, GTN 6XX - Page 17-3

18.3 Traffic Symbols

Symbol		Description
Imminent Traffic (Traffic within ±500 feet AND 1.0 NM; OR no altitude AND within 1.0 NM)	Non-Imminent Traffic	
		Traffic Closing Vertically
		Traffic Diverging Vertically
		Traffic not Closing or Diverging Vertically

Table 18-5 9900B TCAD Symbols

GTN 7XX - Page 18-5, GTN 6XX - Page 17-5

18.5 HTAWS Obstacle Symbols

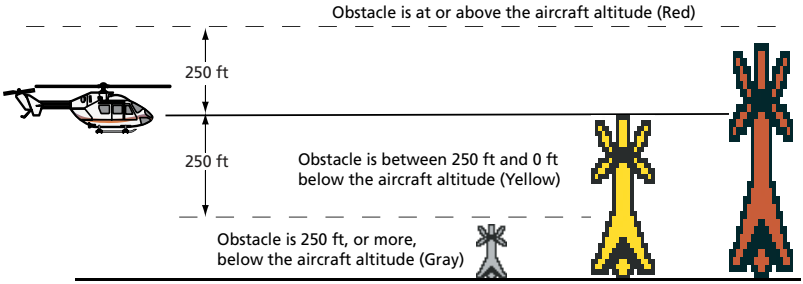

Figure 18-3 HTAWS Obstacle Altitude Correlation

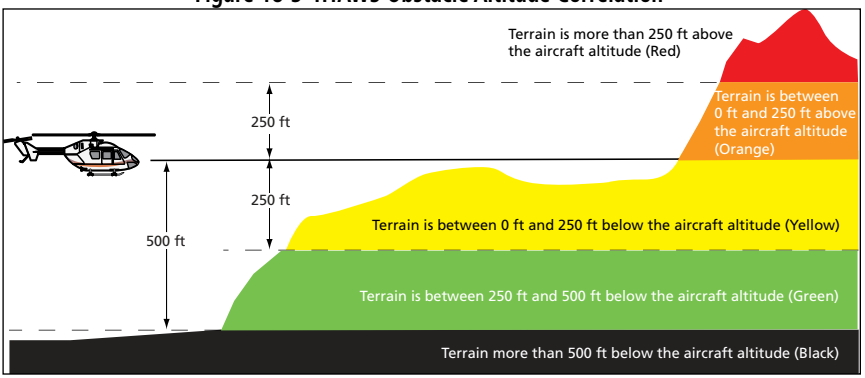

Figure 18-4 HTAWS Altitude/Color Correlation

18.8 Miscellaneous Symbols

Symbol	Description
	Low-Wing Prop (Default Ownship)
	High-Wing Prop
	Kit Plane
	Turboprop
	Twin-Engine Prop
	Single-Engine Jet
	Business Jet
	2-Blade Rotorcraft
	3-Blade Rotorcraft
	4-Blade Rotorcraft
	Non-directional ownship is shown if there is no heading or ground track. This typically only occurs during start-up. In helicopters without a heading source, the non-directional ownship symbol will also appear below 15 kts.
	Parallel Track Waypoint
	Restricted/Prohibited/Warning/Alert
	TFR (Temporary Flight Restrictions)
	MOA
	Class B Airspace
	Class C Airspace

Symbol	Description
	Class D Airspace
	User Waypoint

Table 18-10 Miscellaneous Symbols

GTN 7XX - Page 18-8, GTN 6XX - Page 17-8

18.9 Stormscope Symbols

Symbol	Time Since Strike (Seconds)
	6
	60
	120
	180

Table 18-11 Stormscope Symbols

© 2013 GARMIN Corporation

GARMIN International, Inc.
1200 East 151st Street, Olathe, Kansas 66062, U.S.A.
Tel. 913/397.8200 or 866/739.5687
Fax 913/397.8282

Garmin AT, Inc.
2345 Turner Rd., S.E., Salem, Oregon 97302, U.S.A.
Tel. 503/581.8101 or 800/525.6726
Fax. 503/364.2138

Garmin (Europe) Ltd.
Liberty House, Bulls Copse Road, Hounsdown Business Park,
Southhampton, SO40 9LR, U.K.
Tel. +44 (0) 23 8052 4000
Fax +44 (0) 23 8052 4004

GARMIN Corporation
No. 68, Jangshu 2nd Road, Shijr, Taipei County, Taiwan
Tel. 886/2.2642.9199
Fax 886/2.2642.9099

Garmin Singapore Pte. Ltd.
46 East Coast Road, #05-06 Eastgate
Singapore 428766
Tel. (65) 63480378 Fax (65) 63480278

www.garmin.com
https://fly.garmin.com/fly-garmin

March 2013 190-01007-10 Rev A