G1000H® Integrated Flight Deck

Cockpit Reference Guide for the Bell 407GX

GARMIN®

This manual reflects the operation of System Software 1237.11 or later for the Bell 407GX. Some differences in operation may be observed when comparing the information in this manual to earlier or later software versions.

Garmin International, Inc., 1200 East 151st Street, Olathe, Kansas 66062, U.S.A.
Tel: 913.397.8200 Fax: 913.397.8282
Aircraft On Ground (AOG) Hotline: 913.397.0836
Aviation Dealer Technical Support: 888.606.5482

Garmin AT, Inc., 2345 Turner Road SE, Salem, OR 97302, U.S.A.
Tel: 503.581.8101 Fax 503.364.2138

Garmin (Europe) Ltd.
Liberty House, Hounsdown Business Park, Southampton, Hampshire SO40 9LR U.K.
Tel: +44 (0) 238 052 4000 Fax: +44 (0) 238 052 4004
Aviation Support: +44 (0) 370 850 1243

Garmin Corporation, No. 68, Zhangshu 2nd Road, Xizhi District, New Taipei City, Taiwan
Tel: 34-93-357-2608 Fax: 34-93-429-4484

Web Site Address: www.garmin.com

SiriusXM Weather and SiriusXM Satellite Radio are provided by SiriusXM Satellite Radio, Inc.

AOPA Membership Publications, Inc. and its related organizations (hereinafter collectively "AOPA") expressly disclaim all warranties, with respect to the AOPA information included in this data, express or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. The information is provided "as is" and AOPA does not warrant or make any representations regarding its accuracy, reliability, or otherwise. Under no circumstances including negligence, shall AOPA be liable for any incidental, special or consequential damages that result from the use or inability to use the software or related documentation, even if AOPA or an AOPA authorized representative has been advised of the possibility of such damages. User agrees not to sue AOPA and, to the maximum extent allowed by law, to release and hold harmless AOPA from any causes of action, claims or losses related to any actual or alleged inaccuracies in the information. Some jurisdictions do not allow the limitation or exclusion of implied warranties or liability for incidental or consequential damages so the above limitations or exclusions may not apply to you.

AC-U-KWIK and its related organizations (hereafter collectively "AC-U-KWIK Organizations") expressly disclaim all warranties with respect to the AC-U-KWIK information included in this data, express or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. The information is provided "as is" and AC-U-KWIK Organizations do not warrant or make any representations regarding its accuracy, reliability, or otherwise. Licensee agrees not to sue AC-U-KWIK Organizations and, to the maximum extent allowed by law, to release and hold harmless AC-U-KWIK Organizations from any cause of action, claims or losses related to any actual or alleged inaccuracies in the information arising out of Garmin's use of the information in the datasets. Some jurisdictions do not allow the limitation or exclusion of implied warranties or liability for incidental or consequential damages so the above limitations or exclusions may not apply to licensee.

Printed in the U.S.A.

WARNING: *Do not use the terrain avoidance feature as the sole means of navigation and terrain separation. The terrain avoidance feature is only to be used as and aid to terrain avoidance. Garmin obtains terrain database content from third party sources and is not able to independently verify the accuracy of the terrain data.*

WARNING: *Do not rely on the displayed minimum safe altitude (MSAs) as the sole source of obstacle and terrain avoidance information. The displayed minimum safe altitudes (MSAs) are only advisory in nature. Always refer to current aeronautical charts for appropriate minimum clearance altitudes.*

WARNING: *Do not use GPS-derived geometric altitude for compliacne with air traffic control altitude requirements in the National Airspace System (NAS) or internationally. The primary barometric altimeter must be used for compliance with all air traffic control altitude regulations, requirements, instructions, and clearance.*

WARNING: *Do not use outdated database information. Databases used in the system must be updated regularly in order to ensure that the information remains current.*

WARNING: *Do not use basemap (land and water data) information for primary navigation. Basemap data is intended only to supplement other approved navigation data sources and should be considered only an aid to enhance situational awareness.*

WARNING: *Do not rely solely upon the display of traffic information for collision avoidance maneuvering. The traffic display does not provide collision avoidance resolution advisories and does not under any circumstances or conditions relieve the pilot's responsibility to see and avoid other aircraft.*

WARNING: *Do not rely solely upon the display of traffic information to accurately depict all of the traffic within range of the aircraft. Due to lack of equipment, poor signal reception, and/or inaccurate information from aircraft or ground stations, traffic may be present that is not represented on the display.*

WARNING: *Do not use data link weather information for maneuvering in, near or around areas of hazardous weather. Information contained within data link weather products may not accurately depict current weather conditions.*

WARNING: *Do not use the indicated data link weather product age to determine the age of the weather information shown by the data link weather product. Due to time delays inherent in gathering and processing weather data for data link transmission, the weather information shown by the data link weather product may be significantly older than the indicated weather product age.*

WARNING: *Do not rely on information from the lightning detection system display as the sole basis for hazard weather avoidance. Range limitations and interference may cause the system to display inaccurate or incomplete information. Refer to the documentation from the lightning detection system manufacturer for detailed information about the system.*

WARNING: *The Garmin system, as installed in this aircraft, has a very high degree of functional integrity. However, the pilot must recognize that providing monitoring and/or self-test capability for all conceivable system failures is not practical.*

WARNING: *Do not use the system until carefully reviewing, and gaining a thorough understanding of all aspects of the system's Pilot's Guide documentation and the Airplane Flight Manual. Do not attempt to learn system operational procedures while the aircraft is in the air. For safety reasons, system operational procedures must be learned on the ground.*

WARNING: *The United States government operates the Global Positioning System and is solely responsible for its accuracy and maintenance. The GPS system is subject to changes which could affect the accuracy and performance of all GPS equipment. Portions of the system utilize GPS as a precision electronic NAVigation AID (NAVAID). Therefore, as with all NAVAIDs, information presented by the system can be misused or misinterpreted and, therefore, become unsafe.*

WARNING: *To reduce the risk of unsafe operation, carefully review and understand all aspects of the G1000H Pilot's Guide documentation and the Bell 407GX Rotorcraft Flight Manual. Thoroughly practice basic operation prior to actual use. During flight operations, carefully compare indications from the system to all available navigation sources, including the information from other NAVAIDs, visual sightings, charts, etc. For safety purposes, always resolve any discrepancies before continuing navigation.*

WARNING: *Do not use the system to attempt to penetrate a thunderstorm. The illustrations in this guide are only examples. Both the FAA Advisory Circular, Subject: Thunderstorms, and the Aeronautical Information Manual (AIM) recommend avoiding any thunderstorm identified as severe of giving intense radar echo by at least 20 miles.*

WARNING: *Lamp(s) inside this product contain mercury (HG) and must be recycled or disposed of according to local, state, or federal laws. For more information, refer to our website at www.garmin.com/aboutGarmin/environment/disposal.jsp.*

WARNING: *Because of variation in the earth's magnetic field, operating the system within the following areas could result in loss of reliable attitude and heading indications. North of 72° North latitude at all longitudes. South of 70° South latitude at all longitudes. North of 65° North latitude between longitude 75° W and 120° W. (Northern Canada). North of 70° North latitude between longitude 70° W and 128° W. (Northern Canada). North of 70° North latitude between longitude 85° E and 114° E. (Northern Russia). South of 55° South latitude between longitude 120° E and 165° E. (Region south of Australia and New Zealand).*

WARNING: *Do not use GPS to navigate to any active waypoint identified as a 'NON WGS84 WPT' by a system message. 'NON WGS84 WPT' waypoints are derived from an unknown map reference datum that may be incompatible with the map reference datum used by GPS (known as WGS84) and may be positioned in error as displayed.*

WARNING: *Do not use a QFE altimeter setting with this system. System functions will not operate properly with a QFE altimeter setting. Use only a QNH altimeter setting for height above mean sea level, or the standard pressure setting, as applicable.*

CAUTION: *The PFD and MFD displays use a lens coated with a special anti-reflective coating that is very sensitive to skin oils, waxes, and abrasive cleaners. CLEANERS CONTAINING AMMONIA WILL HARM THE ANTI-REFLECTIVE COATING. It is very important to clean the lens using a clean, lint-free cloth and an eyeglass lens cleaner that is specified as safe for anti-reflective coatings.*

CAUTION: *The system does not contain any user-serviceable parts. Repairs should only be made by an authorized Garmin service center. Unauthorized repairs or modifications could void both the warranty and the pilot's authority to operate this device under FAA/FCC regulations.*

NOTE: *When using Stormscope, there are several atmospheric phenomena in addition to nearby thunderstons that can cause isolated discharge points in the strike display mode. However, clusters of two or more discharge points in the strike display mode do indicate thunderstorm activity if these points reappear after the screen has been cleaned.*

NOTE: *Do not rely upon data link services to provide Temporary Flight Restriction (TFR) information. Always confirm TFR information through official sources such as Flight Service Stations or Air Traffic Control.*

NOTE: *All visual depictions contained within this document, including screen images of the panel and displays, are subject to change and may not reflect the most current system and databases. Depictions of equipment may differ slightly from the actual equipment.*

NOTE: *This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.*

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

NOTE: *Interference from GPS repeaters operating inside nearby hangars can cause an intermittent loss of attitude and heading displays while the aircraft is on the ground. Moving the aircraft more than 100 yards away from the source of the interference should alleviate the condition.*

NOTE: *Use of polarized eyewear may cause the flight displays to appear dim or blank.*

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 informaiton. These discrepencies 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 if the air or on the ground. Go to FlyGarmin.com and select Aviation Data Error Report.*

NOTE: *Operate system power through at least one cycle in a period of four days of continuous operation to avoid an autonomous system reboot.*

NOTE: *The purpose of this Cockpit Reference Guide is to provide the pilot a resource with which to find operating instructions on the major features of the system more easily. It is not intended to be a comprehensive operating guide. Complete operating procedures for the system are found in the Pilot's Guide for this aircraft.*

NOTE: *The system supports approval of AC 120-76C Hardware Class 3, Software Type B Electronic Flight Bag (EFB) electronic aeronautical chart applications. Possible additional requirements may make a secondary source (traditional paper or additional electronic display) necessary onboard the aircraft. If the secondary source is a Portable Electronic Device (PED), its use must be consistent with guidance in AC 120-76C.*

Part Number	Change Summary
190-01254-00 (Rev A)	Initial Release
(Rev.B)	Update SiriusXM product references Updated Iridium registration procedure Added other GDU 12.01 parameters Added Worldwide Weather Added 3D audio Added Voice Recognition Added MV DB update procedure
190-01254-01	Added GDU 14.00 parameters Added Position Reporting feature Added Scheduler feature Added Pilot Profiles Added Temperature Compensated Altitude Added User-defined Holds Changed GFDS to Connext Added Weight and Balance Planning Added Hover Performance Added Stormscope Added Maintenance Logs
190-01254-02	Added GDU 15.02 parameters Added display of ADS-B traffic Added FIS-B weather Updated Pilot Profiles information Updated Transponder information Updated Engine Performance information Updated CAS Messages Updated System Messages

Part Number	Change Summary
190-01254-03	Added GDU 15.20 parameters Updated Sirius XM information Updated Hook Weight Information Added VRPs

Revision	Date of Revision	Affected Pages	Description
A	January, 2017	All	Production release

FLIGHT INSTRUMENTS

SELECTING THE ALTIMETER BAROMETRIC PRESSURE SETTING

Turn the **BARO** Knob to select the desired setting.

SELECTING STANDARD BAROMETRIC PRESSURE (29.92 IN HG)

1) Press the **PFD** Softkey.
2) Press the **STD BARO** Softkey to set standard barometric pressure.

CHANGE ALTIMETER BAROMETRIC PRESSURE SETTING UNITS

1) Press the **PFD** Softkey to display the second-level softkeys.
2) Press the **ALT UNIT** Softkey.
3) Press the **IN** Softkey to display the barometric pressure setting in inches of mercury (in Hg).

   Or:

   Press the **HPA** Softkey to display the barometric pressure setting in hectopascals.
4) Press the **BACK** Softkey to return to the top-level softkeys.

CHANGE NAVIGATION SOURCES

1) Press the **CDI** Softkey to change from GPS to VOR1 or LOC1. This places the cyan tuning box over the NAV1 standby frequency in the upper left corner of the PFD.
2) Press the **CDI** Softkey again to change from VOR1 or LOC1 to VOR2 or LOC2. This places the cyan tuning box over the NAV2 standby frequency.
3) Press the **CDI** Softkey a third time to return to GPS.

ENABLE/DISABLE OBS MODE WHILE NAVIGATING WITH GPS

1) Press the **OBS** Softkey to select OBS Mode.
2) Turn a **CRS** Knob to select the desired course to/from the waypoint. Press a **CRS** Knob to synchronize the Selected Course with the bearing to the next waypoint.
3) Press the **OBS** Softkey again to disable OBS Mode.

ENABLE HEADING PRESET MODE

1) Press the **SENSOR** Softkey on the PFD.
2) Press the **SET HDG** Softkey. The system is in Heading Preset Mode (HPM) as indicated by displaying 'SET' to the left of the heading value.
3) Press the **HDG +** and/or **HDG -** Softkeys to slew the heading value to the desired setting.

   Or:

   Set the Selected Heading Bug to the desired heading value, then press the **HDG SYNC** Softkey.

DISABLE HEADING PRESET MODE

Press the **HPM OFF** Softkey on the PFD to manually disable Heading Preset Mode.

Or:

Heading Preset Mode automatically disables after eight minutes.

If there is more than 10° difference between the Heading Preset value and the magnetic heading when Heading Preset Mode is disabled, the heading value is displayed in amber and 'ALN' will be displayed to the left of the heading. When the magnetic heading has properly aligned, the heading value will be displayed in white and 'ALN' will no longer be displayed.

GENERIC TIMER

1) Press the **TMR/REF** Softkey, then turn the large **FMS** Knob to select the time field (hh/mm/ss). Turn the **FMS** Knobs to set the desired time, then press the **ENT** Key. The UP/DOWN field is now highlighted.
2) Turn the small **FMS** Knob to display the UP/DOWN window. Turn the **FMS** Knob to select 'UP' or 'DOWN', then press the **ENT** Key. 'START?' is now highlighted.
3) Press the **ENT** Key to START, STOP, or RESET the timer (if the timer is counting DOWN, it starts counting UP after reaching zero). Press the **CLR** Key or the **TMR/REF** Softkey to remove the window.

SET BAROMETRIC/RADAR ALTIMETER (RA OPTIONAL) MINIMUM DESCENT ALTITUDE

1) Press the **TMR/REF** Softkey.
2) Turn the large **FMS** Knob to highlight the Minimums field.
3) Turn the small **FMS** Knob to select BARO, TEMP COMP, or RAD ALT. OFF is selected by default. Press the **ENT** Key or turn the large **FMS** Knob to highlight the next field.
4) Use the small **FMS** Knob to enter the desired altitude (from zero to 16,000 feet for BARO, or from zero to 2,500 for RAD ALT).
5) If TEMP COMP was selected, press the **ENT** Key or turn the large **FMS** Knob to highlight the next field and then enter the destination airport temperature (-59°C to 59°C). The temperature compensated altitude minimum is displayed below the previously enter minimum altitude value.
6) To remove the window, press the **CLR** Key or the **TMR/REF** Softkey.

DISPLAYING WIND DATA

1) Press the **PFD** Softkey.
2) Press the **WIND** Softkey to display wind data to the left of the HSI.
3) Press one of the **OPTN** softkeys to change how wind data is displayed.
4) To remove the Wind Data Window, press the **OFF** Softkey.

CHANGING HSI FORMAT

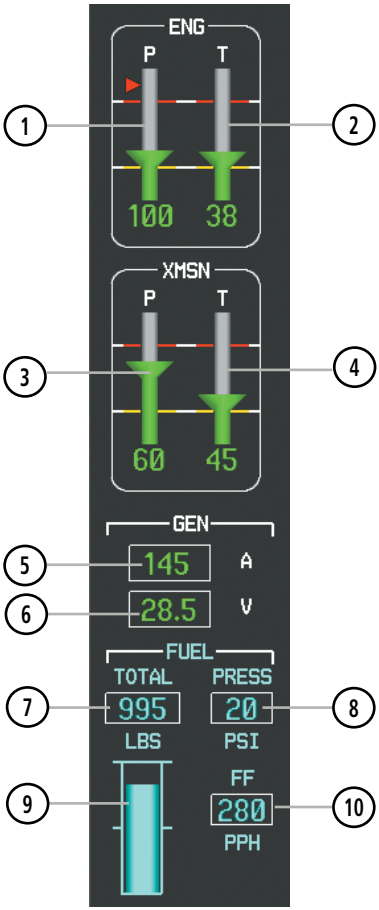
1) Press the **PFD** Softkey.
2) Press the **HSI FRMT** Softkey.
3) Press the **360 HSI** Softkey to display the full size HSI.

   Or:

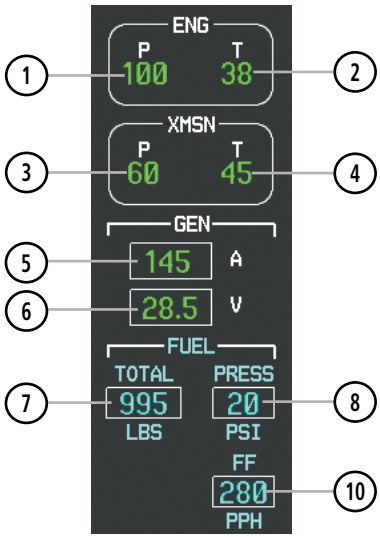
   Press the **ARC HSI** Softkey to display the arc style HSI.

Blank Page

ENGINE INDICATION SYSTEM



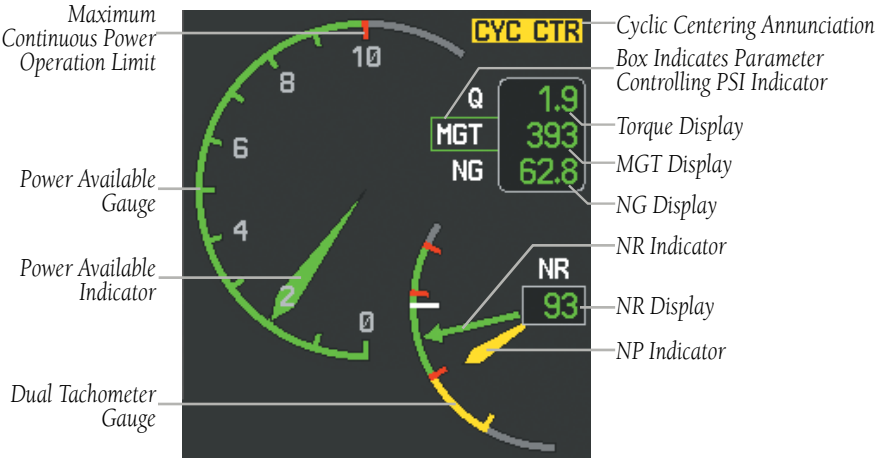
MFD EIS Display (Normal)



EIS Display (Reversionary)

1	**Engine Oil Pressure (P)**	Displays pressure of oil supplied to the engine in pounds per square inch (psi). A red triangle represents the oil pressure limitation during a cold start *(shown in normal mode only)*
2	**Oil Temperature Indicator (T)**	Displays engine oil temperature in degrees Celsius
3	**Transmission Oil Pressure (P)**	Displays pressure of oil supplied to the transmission in pounds per square inch (psi).
4	**Transmission Oil Temperature (T)**	Displays the transmission oil temperature in degrees Celsius
5	**Ammeter (A)**	Displays the DC load in amperes to the nearest 5 amps
6	**Voltmeter (V)**	Displays the electrical bus voltage
7	**Fuel Quantity (TOTAL LBS or FWD LBS)**	Displays the usable fuel quantity in pounds. By default, total usable fuel quantity is shown; when forward fuel tank is selected, 'FWD' is displayed above readout to indicate forward tank usable fuel quantity is shown.
8	**Fuel Pressure Indicator (PRESS PSI)**	Displays fuel pressure in pounds per square inch (psi)
9	**Total Fuel Quantity Gauge**	Displays total usable fuel quantity as a bar graph.
10	**Fuel Flow Indicator (FF PPH)**	Displays fuel flow in pounds per hour (PPH)

ENGINE POWER AND SPEED INDICATIONS



Power Situation Indicator Gauge and Dual Tachometer Gauge

Power Situation Indicator

The PSI provides the pilot with the amount of power available based on engine torque (Q; shown as a percentage), measured gas temperature (MGT, degrees Celsius, °C), and gas producer rotation speeds (NG; shown as a percentage) with respect to operating limitations. In normal conditions, a green box is shown around the label for the readout currently closest to its maximum continuous power (MCP) limits. This value also controls a green pointer along a numeric scale from 0 (no power) to 10 (MCP, shown with a red tick mark).

Operating limits are displayed along the PSI gauge and are calculated dynamically in response to all parameters, to show the range of needle movement available beyond MCP before any parameter reaches the operating limit. Green arcs indicate continuous operation ranges; amber arcs indicate transient operating limits. A gray arc becomes red if the Power Available Indicator enters this range; it indicates an exceedance is occurring.

During engine start, a red triangle appears on the PSI arc when MGT is shown to correspond with MGT starting limits, and remains displayed until the starter has been disengaged for 5 seconds.

Takeoff Timer

After the engine has been started, if Q or MGT are within the takeoff limitation ranges, the G1000H displays a 5-minute countdown timer inside the PSI gauge. The timer flashes beginning when 30 seconds remain until an exceedance will occur; the timer is automatically removed when either Q or MGT fall below takeoff limits.

Cyclic Centering Annunciation

The amber **CYC CTR** (cyclic centering) annunciation, located above and to the right of the PSI (Power Situation Indicator), alerts the pilot that the cyclic stick is not in the correct position when the helicopter is on the ground.

Dual Tachometer

The dual tachometer displays rotor speed (NR) and power turbine speed (NP) as a percentage of maximum rotation. A readout for NR is provided. The long pointer represents NR along the gauge scale; NP is shown with the short pointer. A white tick mark represents the FADEC normal governing point. When Quiet Mode is active, a magenta reference bug is shown on the tachometer to indicate the Quiet Mode governing point.

POWER ASSURANCE CHECK

NOTE: *Follow the procedures in the Rotorcraft Flight Manual (RFM) for configuring the helicopter for the power assurance check prior to activating the feature on the G1000H.*

1) If the Particle Separator or Snow Baffle are installed, proceed to step 2. If neither are installed, proceed to step 7.
2) Turn the large **FMS** Knob to select the AUX Page group.
3) Turn the small **FMS** Knob to select System Setup. If necessary, press the SETUP 1 Softkey to display the System Setup 1 Page
4) Press the **FMS** Knob momentarily to activate the flashing cursor.
5) Turn the large **FMS** Knob to highlight the desired option field in the Inlet Box.
6) Turn the small **FMS** Knob one click to the right to select ON or one click to the left to select OFF.
7) Press the **ENGINE** Softkey to display the Engine Page.
8) Press the **PWR CHK** Softkey.

When the Power Assurance Check is activated, a 'PWR CHECK' box is displayed containing a progress bar. If the helicopter configuration for the Power Assurance Check is invalid, the error message 'CHK LIMITS' is displayed. Otherwise, the Power Assurance Check will complete after ten seconds.

Engine parameters from the Power Assurance Check are automatically compared with the Power Assurance Check charts for the basic aircraft, and the Power Assurance Check charts from the Hot And High Operations RFM supplement.

If the comparison against Hot And High Operations yields positive margins, these margins will be displayed. A green "PASS H&H" message will also be displayed.

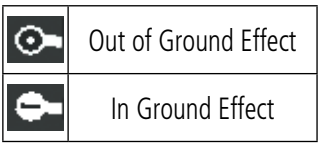
If the comparison with Hot And High Operations yields negative margins, but the comparison against basic aircraft yields a positive margin, the latter will be displayed. In this case, a white "H&H NOT AVAIL" message will be displayed.

Values equal to or exceeding performance minimums will be displayed in white; values that do not meet performance minimums will be shown with amber highlighted black displays. Dashes are displayed if data used to perform the power assurance check is not available.

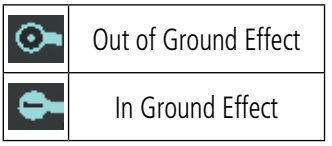
Power Assurance Check

HOVER PERFORMANCE

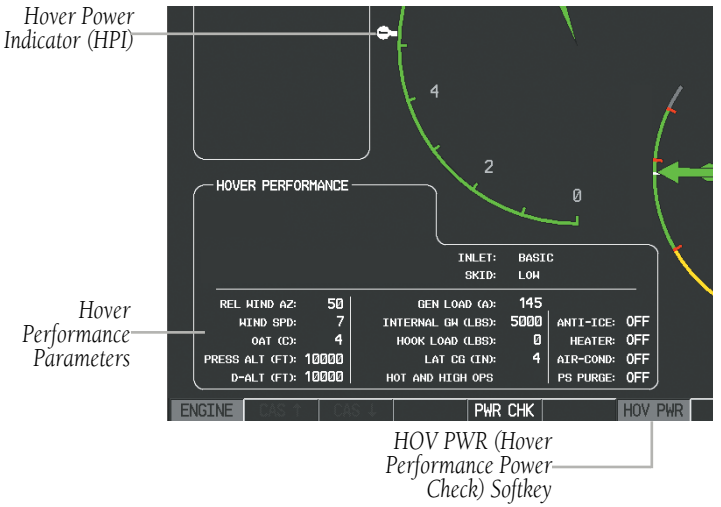
Pressing the HOV-P Softkey on the Engine Page displays the Hover Performance parameters. The Hover Power Indicator (HPI) is displayed on the Power Situation Indicator (PSI) arc. The HPI is white when not in Hover Prediction Mode, and cyan when in Hover Prediction Mode.



Hover Power Indicator (Real Time)



Hover Power Indicator (Hover Prediction Mode)



Hover Power Indicator and Hover Performance Parameters on the Engine Page

Hover Performance Power Check

The Hover Performance Power Check displays the power required to perform an OGE (Out of Ground Effect) or IGE (In Ground Effect) hover. The Hover Performance Power Check can be used in real time or during pre-flight planning.

Pressing the **HOV-P** (Hover Prediction Mode) Softkey while **HOV PWR** is selected allows the pilot to edit the hover performance parameters for pre-flight planning purposes. While in HOV-P (Hover Prediction Mode), the Hover Power Indicator

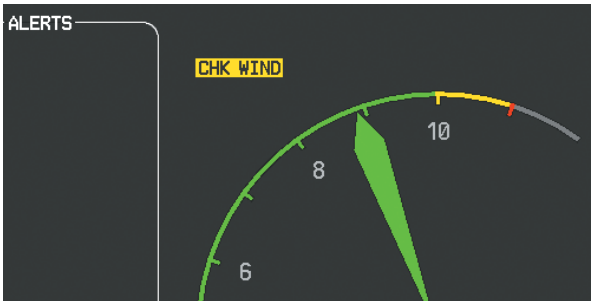
(HPI) and editable parameters are displayed in cyan, and the HOV PRED annunciation is displayed in amber.

When limit conditions are not satisfied, the respective parameters are displayed in amber, the CHK LIMIT annunciation is displayed, and the hover performance calculation is not performed.

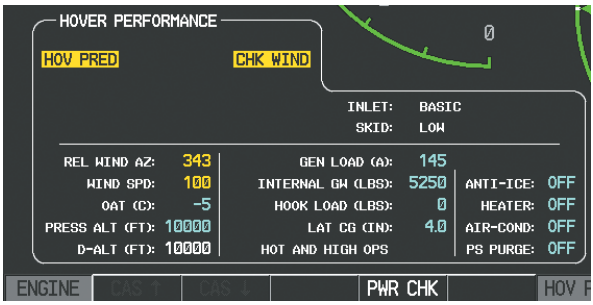
When the engine is not within the Hot and High performance range, the 'Hot and High OPS' text display will be removed and the system will revert back to the basic flight manual performance tables.

When wind conditions are not within the required range while performing a real time hover Hover Performance Power Check, an amber CHK WIND annunciation is displayed above the Power Situation Indicator. When wind conditions are not within the required range while in Hover Prediction Mode, an amber CHK WIND annunciation is displayed above the hover performance parameters.

Real Time



Hover Prediction Mode



CHK WIND (Check Wind) Annunciation

Performing a real time hover performance power check (out of ground effect):

1) Press the **ENGINE** Softkey or turn the large **FMS** Knob to display the EIS-Engine Page.
2) Press the **HOV PWR** Softkey. The **OGE** (out of ground effect) Softkey is automatically selected by default.
3) Press the **HOV PWR** Softkey a second time to disable the hover performance power check.

Performing a real time hover performance power check (in ground effect):

1) Press the **ENGINE** Softkey or turn the large **FMS** Knob to display the EIS-Engine Page.
2) Press the **HOV PWR** Softkey.
3) Press the **IGE** (in ground effect) Softkey.
4) Press the **HOV PWR** Softkey a second time to disable the hover performance power check.

Performing a pre-flight planning hover performance power check (out of ground effect):

1) Press the **ENGINE** Softkey or turn the large **FMS** Knob to display the EIS-Engine Page.
2) Press the **HOV PWR** Softkey. The **OGE** (out of ground effect) Softkey is automatically selected by default.
3) Press the **HOV-P** Softkey.
4) Press the **FMS** Knob momentarily to activate the flashing cursor on the first hover performance parameter.
5) Turn the large **FMS** Knob to highlight the desired parameter.
6) Turn the small **FMS** Knob to change the value.
7) Press the **HOV PWR** Softkey a second time to disable the hover performance power check.

Performing a pre-flight planning hover performance power check (in ground effect):

1) Press the **ENGINE** Softkey or turn the large **FMS** Knob to display the EIS-Engine Page.
2) Press the **HOV PWR** Softkey.
3) Press the **IGE** (in ground effect) Softkey.
4) Press the **HOV-P** Softkey.
5) Press the **FMS** Knob momentarily to activate the flashing cursor on the first hover performance parameter.
6) Turn the large **FMS** Knob to highlight the desired parameter.
7) Turn the small **FMS** Knob to change the value.
8) Press the **HOV PWR** Softkey a second time to disable the hover performance power check.

CREW ALERTING SYSTEM (CAS)

When Crew Alerting System (CAS) messages are generated, a CAS window containing messages appears to the right of the vertical speed indicator on the PFD. Pressing the **CAS** Softkey displays softkeys for scrolling up and down through the messages in the PFD CAS Window.

CAS Display (PFD)

CAS alerts are additionally displayed on the upper left of the EIS - Engine page. Up to 19 messages can be shown; when more than 19 messages accumulate, the **CAS↑** and **CAS↓** Softkeys will become available as needed to permit scrolling up and down through the messages on this page.

Engine Page CAS Display (MFD)

CAS Message Prioritization

NOTE: *Information on CAS messages in this pilot's guide is always superseded by the RFM. Refer to the RFM for recommended pilot actions.*

CAS messages are grouped by criticality (warning, caution, advisory, safe operating advisory) and sorted by order of appearance (most recent messages on top). The color of the message is based on its urgency and on required action. Refer to the Annunciations and Alerts section for a detailed listing of CAS alerts and alerting behavior.

- **Warning** (red) – Immediate crew awareness and immediate crew action required; accompanied by one or more aural tones; and a and a steady "WARN" PBA light is illuminated above the PFD.
- **Caution** (amber) – Immediate crew awareness and subsequent corrective action required; accompanied by a and a steady "CAUT" PBA light is illuminated above the PFD.
- **Advisory** (white) – Crew awareness required and subsequent action may be required.
- **Safe Operating Advisory** (green) – Crew awareness required.

A CAS message does not appear more than once at a given time. Warning and caution CAS messages flash when they are generated, and continue to flash until acknowledged, or until the triggered condition is inactive for more than 3 seconds. Advisory CAS messages are displayed steady until the triggered condition is inactive for more than 3 seconds.

After the acknowledgment, a message remains displayed at the top of its respective priority group in the CAS Window until either a newer message of the same priority appears or the condition(s) that caused the alert to display no longer exist.

Blank Page

NAV/COM/TRANSPONDER/AUDIO PANEL

ADF TUNING (OPTIONAL)

Tune the ADF using the remote ADF control head.

DME TUNING (OPTIONAL)

1) Press the **DME** Softkey.
2) Turn the large **FMS** to select the DME source field.
3) Turn the small **FMS** Knob to select the desired Nav radio.
4) Press the **ENT** Key to complete the selection.

ENTER A TRANSPONDER CODE

1) Press the **XPDR** Softkey to display the transponder mode selection softkeys.
2) Press the **CODE** Softkey to display the transponder code selection softkeys, for digit entry.
3) Press the digit softkeys to enter the code in the code field. When entering the code, the next key in sequence must be pressed within 10 seconds, or the entry is cancelled and restored to the previous code. Five seconds after the fourth digit has been entered, the transponder code becomes active.

ADS-B TX

Transmission of extended squitter containing ADS-B out information is enabled/disabled by pressing the **ADS-B TX** Softkey. ADS-B transimssion defaults to enabled at each power cycle. Do not disable ADS-B transmission unless requested to do so by ATC.

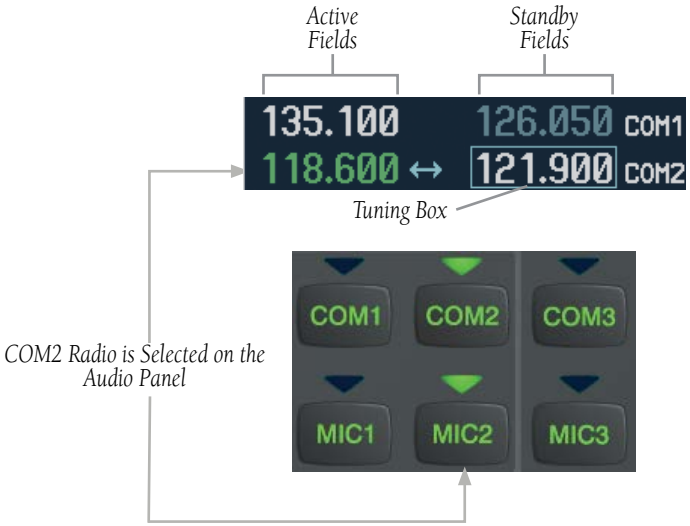
With ADS-B TX enabled, transmission of extended squitter containing ADS-B out information will vary based on the current mode of the transponder.

SELECTING A COM RADIO

The COM transceiver is selected for transmitting by pressing the **MIC** Keys on the Audio Panel. During reception of audio from the COM radio selected for transmission, audio from the other COM radio is muted.

An active COM frequency displayed in green indicates that the COM transceiver is selected on the Audio Panel (**MIC1** or **MIC2** Key).

Frequencies in the standby field are displayed in either white or gray. The standby frequency in the tuning box is white. The other standby frequency is gray.



Selecting a COM Radio for Transmit

SELECTING A NAV RADIO

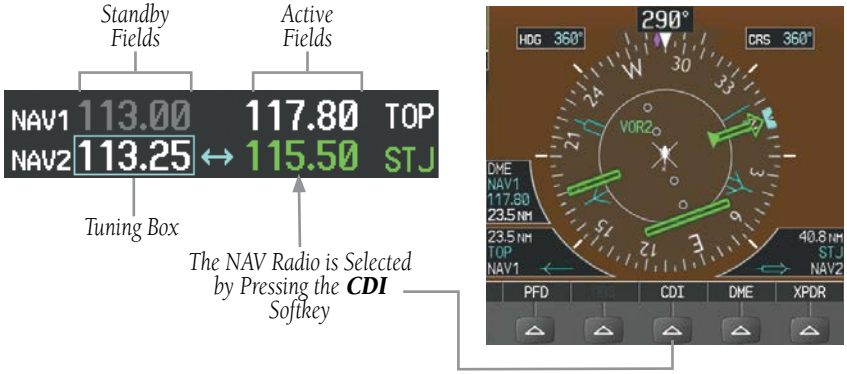
A NAV radio is selected for navigation by pressing the **CDI** Softkey located on the PFD. The active NAV frequency selected for navigation is displayed in green. Pressing the **CDI** Softkey once selects NAV1 as the navigation radio. Pressing the **CDI** Softkey a second time selects NAV2 as the navigation radio. Pressing the **CDI** Softkey a third time activates GPS mode. Pressing the **CDI** Softkey again cycles back to NAV1.

While cycling through the **CDI** Softkey selections, the NAV Tuning Box and the Frequency Transfer Arrow are placed in the active NAV Frequency Field and the active NAV frequency color changes to green.

The three navigation modes that can be cycled through are:

- VOR1 (or LOC1) – If NAV1 is selected, a green single line arrow (not shown) labeled either VOR1 or LOC1 is displayed on the HSI and the active NAV1 frequency is displayed in green.
- VOR2 (or LOC2) – If NAV2 is selected, a green double line arrow (shown) labeled either VOR2 or LOC2 is displayed on the HSI and the active NAV2 frequency is displayed in green.

- GPS – If GPS Mode is selected, a magenta single line arrow (not shown) appears on the HSI and neither NAV radio is selected. Both active NAV frequencies are then displayed in white.



Selecting a NAV Radio for Navigation

See the Flight Instruments Section for selecting the DME (optional) and Bearing Information windows and using VOR as the source for the bearing pointer.

NAV radios are selected for listening by pressing the corresponding keys on the Audio Panel. Pressing the **NAV1**,or **NAV2** Key selects and deselects the navigation radio source. Selected audio can be heard over the headset and the speaker (if selected). All radios can be selected individually or simultaneously.

Selecting a NAV Radio Receiver

NAV/COM TUNING

1) Press the small tuning knob to select the desired radio for tuning. A cyan box highlights the radio frequency to be tuned.

2) Turn the respective tuning knobs to enter the desired frequency into the standby frequency field. The large knob enters MHz and the small knob enters kHz.

3) Press the **Frequency Transfer** Key to place the frequency into the active frequency field.

DIGITAL CLEARANCE RECORDER AND PLAYER (OPTIONAL)

The Audio Panel contains a digital clearance recorder that records up to 2.5 minutes of the selected COM radio signal. Recorded COM audio is stored in separate memory blocks. Once 2.5 minutes of recording time have been reached, the recorder begins recording over the stored memory blocks, starting from the oldest block.

An optional external Play button controls the play function. Pressing the Play button once plays the latest recorded memory block.

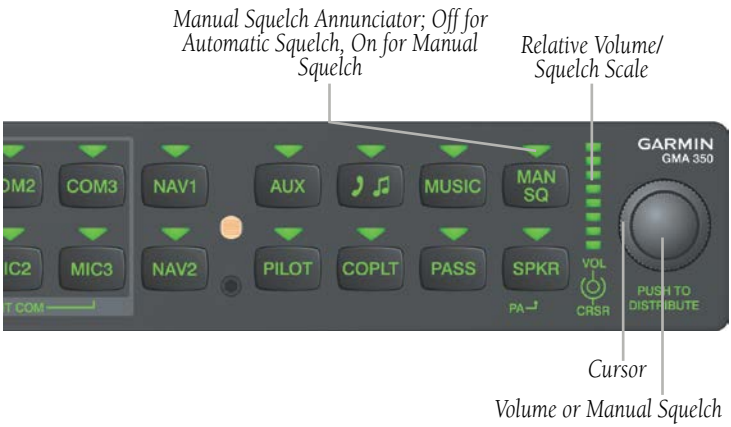
Pressing the **MKR/MUTE** Key during play of a memory block stops play. If a COM input signal is detected during play of a recorded memory block, play is halted.

Pressing the optional Play button while audio is playing begins playing the previously recorded memory block. Each subsequent press of the Play button selects the previously recorded memory block.

Powering off the unit automatically clears all recorded blocks.

INTERCOM VOLUME AND SQUELCH

The **VOL/CRSR** Knob controls selection and volume or manual intercom squelch adjustment for audio sources that may not be adjustable anywhere else in the system. The small knob controls the volume or squelch. Turning the large knob activates and/or moves the cursor (flashing green annunciator or flashing blue annunciator in Blue-Select Mode) to select the audio source to adjust. The cursor will time-out after a few seconds and the position of the cursor will always default back to the **PILOT** Key. Pressing the small knob cancels the cursor.



Volume/Squelch Control

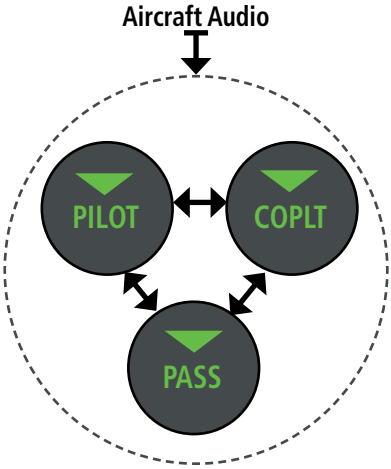
INTERCOM MODES

NOTE: *When in Split-COM mode, the copilot will only hear alerts and the higher numbered of the two selected COMs (COM2 or COM3).*

All Intercom Mode

In 'All Intercom' mode the Pilot, Copilot, and Passengers hear each other and hear the aircraft audio.

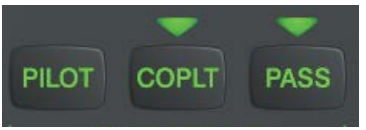
ICS Keys



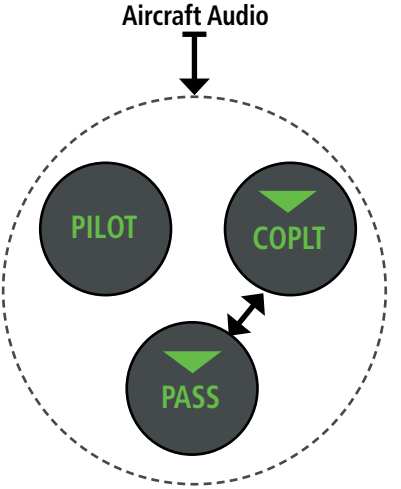
Mode Operation

Pilot Isolate Mode

In 'Pilot Isolate' mode the Pilot, Copilot, and Passengers hear the aircraft audio. The Copilot and Passengers also hear each other.



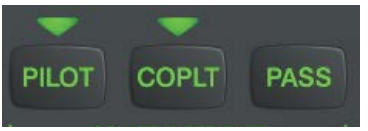
ICS Keys



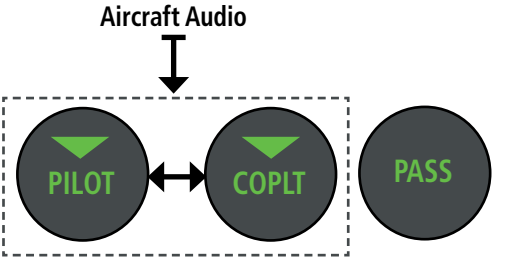
Mode Operation

Passenger/Crew Isolate Mode

In 'Passenger/Crew Isolate' mode the Pilot and Copilot hear the aircraft audio and each other. The Passengers hear each other.



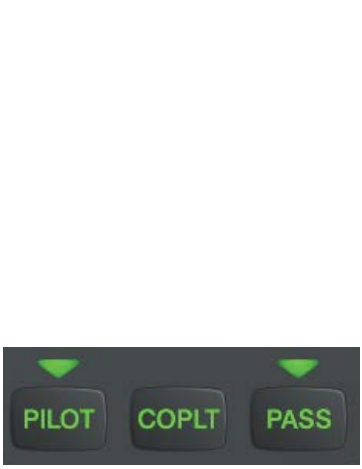
ICS Keys



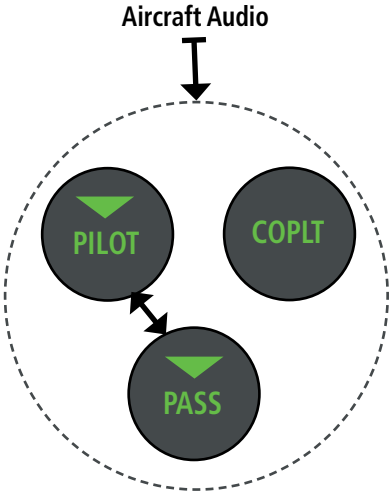
Mode Operation

Copilot Isolate Mode

In 'Copilot Isolate' mode the Pilot, Copilot, and Passengers hear the aircraft audio. The Pilot and Passengers also hear each other. The Copilot has the option to use Split-COM mode.



ICS Keys

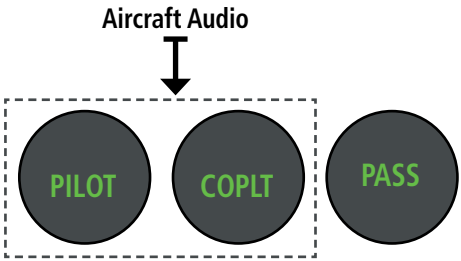


Mode Operation

All Isolate Mode

In 'All Isolate' mode the Pilot and Copilot hear the aircraft audio. The Copilot has the option to use Split-COM mode. The Passengers hear each other.

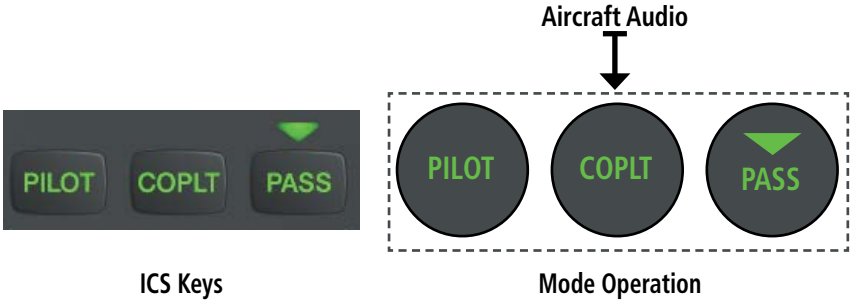
ICS Keys



Mode Operation

Pilot & Copilot Isolate Mode

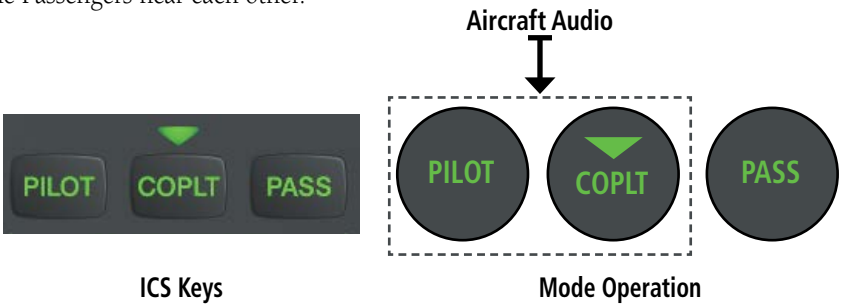
In 'Pilot & Copilot Isolate' mode the Pilot, Copilot, and Passengers hear the aircraft audio. The Passengers hear each other. The Copilot has the option to use Split-COM mode.



ICS Keys Mode Operation

Pilot & Passenger Isolate Mode

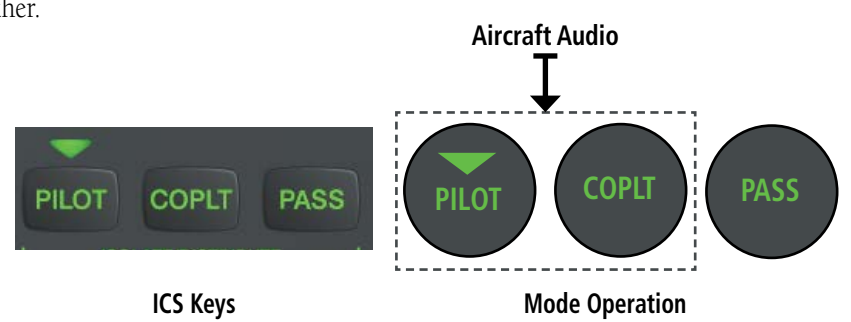
In 'Pilot & Passenger Isolate' mode the Pilot and Copilot hear the aircraft audio. The Passengers hear each other.



ICS Keys Mode Operation

Copilot & Passenger Isolate Mode

In 'Copilot & Passenger Isolate' mode the Pilot and Copilot can hear the aircraft audio. The Copilot has the option to use Split-COM mode. The Passengers hear each other.



ICS Keys Mode Operation

Blue-Select Mode (Telephone/Entertainment Distribution)

The music (MUSIC) and telephone/entertainment ( ) audio are distributed using the Blue-Select Mode. The following example indicates that the pilot, copilot, and passengers will all hear the telephone/entertainment audio.

Blue-Select Mode (Telephone/Entertainment Distribution)

The Blue-Select Mode is entered by pressing the small knob when the volume control cursor (flashing green annunciator) is not active. If the volume control cursor is active, press the small knob twice. The first press will cancel the volume control cursor, the second will activate Blue-Select Mode.

The annunciator over the Button will be flashing blue. Any combination of the annunciators over the **PILOT**, **COPLT**, and **PASS** buttons may be blue. Select the desired button to turn the blue annunciator on or off to distribute the telephone audio to selected crew/passenger positions. Turn the large knob to select **MUSIC**, and select the crew/passenger positions to receive the music audio.

Selecting any button other than **PILOT**, **COPLT**, **PASS** , **MUSIC** or will cancel Blue-Select Mode. Pressing the small knob will also cancel Blue-Select Mode. After approximately ten seconds with no input, the Blue-Select Mode will automatically cancel.

PASSENGER ADDRESS MODE (PA MODE)

Press and hold the **SPKR** Key for 2 seconds to initiate Passenger Address Mode. PA Mode is annunciated by a rapid blinking of the SPKR annunciator. When in PA Mode the crew can use the PTT "Push-to-Talk" button to deliver announcements over the speaker, to the passenger headsets, or both depending on configuration.

SPLIT-PA MODE

During Split-PA Mode the pilot can continue to use the radio(s) while the copilot delivers PA announcements. To initiate Split-PA Mode, first enter Split-COM Mode by pressing more that one **MIC** Keys simultaneously, then press and hold the **SPKR** Key for 2 seconds.

3D AUDIO

3D Audio is useful when multiple audio sources are present. By using different responses in each ear, 3D audio processing creates the illusion that each audio source is coming from a unique location or seat position.

Because this feature uses different signals for left and right channels, it requires wiring for stereo intercom and stereo headsets. If 3D audio is activated when mono headsets are in use, the listener will still hear all audio sources; however, there is no benefit from location separation.

With a single COM selected and 3D Audio enabled, the listener hears the audio source at the 12 o'clock position. If all three COMs are selected, the listener hears the audio sources at the 11, 12 and 1 o'clock positions with the COM numbers increasing clockwise. If two COMs are selected, the listener hears COM1 at the 11 o'clock position and COM2 at the 1 o'clock position. All other intercom positions are processed to sound like their relative seat location. By default, the GMA 350H assumes the pilot sits in the right seat. A Garmin authorized service center can make changes to the default configuration.

ENABLING 3D AUDIO

Press and hold the **PILOT** Key to toggle 3D audio processing on and off for all headset positions. When 3D Audio is enabled, the aural message "3D audio left" is heard in the left ear followed by "3D audio right" in the right ear.

3D AUDIO TROUBLESHOOTING

If the aural messages are not heard in only the left and then the right ear respectively the cause may be aircraft wiring or headset settings. Refer to the following table if a headset or aircraft wiring problem is suspected.

3D Audio Troubleshooting				
Symptom(s)	**Cause(s)**		**Solution(s)**	
"3D audio left" message heard in both ears. "3D audio right" message not heard	**1)**	Mono headset in use	**1)**	Use a stereo headset
	2)	Stereo headset in use with mono/stereo switch set to 'mono'	**2)**	Set mono/stereo switch on headset to 'stereo'
	3)	Aircraft wiring has left audio wired to both left and right channels of stereo headset jack	**3)**	If after checking solutions #1 and #2 see a service center as soon as possible to inspect/correct wiring. This wiring fault can cause fail-safe audio not to function.
"3D audio left" message heard in both ears, followed by "3D audio right" message heard in both ears	**1)**	Mono headset in use	**1)**	Use a stereo headset
	2)	Stereo headset in use with mono/stereo switch set to mono	**2)**	Set mono/stereo switch on headset to 'stereo'
	3)	Incorrect aircraft wiring (left/right shorted together)	**3)**	If after checking solutions #1 and #2 see a service center as soon as possible to inspect/correct wiring. This wiring fault can cause fail-safe audio not to function.
"3D audio right" message heard in both ears. "3D audio left" not heard	**1)**	Incorrect aircraft wiring (right channel used for mono instead of left or left/right swapped)	**1)**	See a service center as soon as possible to inspect/correct wiring. This wiring fault can cause fail-safe audio not to function.
"3D audio left" message heard in right ear only followed by "3D audio right" message heard in left ear only	**1)**	Stereo headset is on backwards	**1)**	Verify correct orientation from the left/right indication on each side of the headset or the position of the boom mic (usually attached on left side). If the headset is backwards left/right position information will be swapped.
	2)	Incorrect aircraft wiring (left/right channels swapped)	**2)**	See a service center as soon as possible to inspect/correct wiring. This wiring fault can cause fail-safe audio not to function.

3D Audio Troubleshooting				
Symptom(s)	**Cause(s)**		**Solution(s)**	
"3D audio left" message heard in left ear only, no audio heard in right ear.	**1)**	Aircraft wired for mono intercom	**1)**	See a service center to wire the installation for stereo headsets.
"3D audio right" message heard in right ear only, no audio heard in left ear	**1)**	Incorrect aircraft wiring (right channel used for mono instead of left, or left/right swapped)	**1)**	See a service center as soon as possible to inspect/correct wiring. This wiring fault can cause fail-safe audio not to function.

3D Audio Troubleshooting

VOICE RECOGNITION

Voice Recognition allows the pilot (and optionally copilot) to control the GMA 350H using spoken commands. To activate Voice Recognition, push and hold the Push-To-Command (PTC) button while speaking a command. When the Push-To-Command button is released, the GMA 350H will respond.

If a command is correctly interpreted by the GMA 350H, a positive acknowlegement chime will be played, and the pilot should verify that the correct button selection is indicated by the triangular annunciator lights. Alternatively, some commands will be indicated by a voice response from the GMA 350H. If the desired modes are not indicated by annunciator lights or a voice response, the pilot should repeat the command by using the Push-To-Command button, or by manually using the front panel controls of the GMA 350H.

If a command is incorrectly interpreted by the GMA 350H, a negative acknowlegement tone will be played. The pilot should repeat the command by using the Push-To-Command button, or by manually using the front panel controls of the GMA 350H. In the event of any abnormal Voice Recognition operation, at any time the front panel controls may be used manually to control the GMA 350H.

The following table lists the available Voice Recognition commands, the associated actions, and the voice response if applicable:

Control	Spoken Command	Action	Confirmation of Action
COM	"COM one"	Toggles COM1	Illuminate/Extinguish COM1 Annunciator
	"MIC one"	Selects MIC1	Illuminate MIC1 Annunciator
	"COM one MIC"		
	"COM two"	Toggles COM2	Illuminate/Extinguish COM2 Annunciator
	"MIC two"	Selects MIC2	Illuminate MIC2 Annunciator
	"COM two MIC"		
	"COM three"	Toggles COM3	Illuminate/Extinguish COM3 Annunciator
	"MIC three"	Selects MIC3	Illuminate MIC3 Annunciator
	"COM three MIC"		
	"Split COM"	Selects split COM 1/2	Illuminate MIC1/MIC2 Annunciators
	"Split COM one, two" or "Split one, two"	Selects split COM 1/2	Illuminate MIC1/MIC2 Annunciators
	"Split COM one, three" or "Split one, three"	Selects split COM 1/3	Illuminate MIC1/MIC3 Annunciators
	"Split COM two, three" or "Split two, three"	Selects split COM 2/3	Illuminate MIC2/MIC3 Annunciators
	"Monitored COM mute" or "Mute monitored COM"	Mutes monitored COM on primary COM reception	Voice Response: "Monitor mute enabled"
	"Disable monitored COM mute" or "Monitored COM mute disable" or "Disable mute monitored COM" or "Mute monitored COM disable"	Disables monitored COM mute on primary COM reception	Voice Response: "Monitor mute disabled"

Control	Spoken Command	Action	Confirmation of Action
NAV	"NAV one"	Toggles NAV1	Illuminate/Extinguish NAV1 Annunciator
	"NAV two"	Toggles NAV2	Illuminate/Extinguish NAV2 Annunciator
	"NAV"	Toggles NAV	Illuminate/Extinguish Annunciator
AUX	"AUX" or "Auxiliary"	Toggles AUX	Illuminate/Extinguish AUX Annunciator
	"Telephone" or "Phone" or "Jack"	Toggles Telephone/ Jack	Illuminate/Extinguish  Annunciator
	"Telephone mute" or "Phone mute" or "Jack mute"or "Mute telephone" or "Mute phone" or "Mute jack"	Mutes Telephone/ Jack on radio reception	Voice Response: "Tel and jack mute enabled"
	"Disable telephone mute" "Mute telephone disable" "Disable phone mute" "Mute phone disable" "Disable jack mute" "Mute jack disable" "Telephone mute disable" "Disable mute telephone" "Phone mute disable" "Disable mute phone" "Jack mute disable" OR "Disable mute jack"	Disables Telephone/ Jack mute on radio reception	Voice Response: "Tel and jack mute disabled"
Speaker (SPKR)	"Speaker"	Toggles SPKR on/off	Illuminate/Extinguish SPKR Annunciator
PA	"P - A"	Toggles PA on/off	SPKR Annunciator blinks in PA mode

Control	Spoken Command	Action	Confirmation of Action
MUSIC	"MUSIC"	Toggles MUSIC	Illuminate/Extinguish MUSIC Annunciator
	"MUSIC mute" or "Mute MUSIC"	Mutes MUSIC on radio reception	Voice Response: "Music mute enabled"
	"Disable MUSIC mute" "MUSIC mute disable" "Disable mute MUSIC" OR "Mute MUSIC disable"	Disables MUSIC mute on radio reception	Voice Response: "Music mute disabled"
ICS Isolation	"Pilot"	Toggles PILOT button	Illuminate/Extinguish PILOT Annunciator
	"Copilot"	Toggles COPLT button	Illuminate/Extinguish COPLT Annunciator
	"Passenger" or "Pass"	Toggles PASS button	Illuminate/Extinguish PASS Annunciator
	"Passenger mute" or "Pass mute" or "Mute passenger" or "Mute pass"	Mutes passengers during radio reception	Voice Response: "Passenger mute enabled"
	"Disable passenger mute" or "Disable pass mute" or "Disable mute passenger" or "Disable mute pass" or "Passenger mute disable" or "Pass mute disable" or "Mute passenger disable" or "Mute pass disable"	Disables muting of passengers during radio reception	Voice Response: "Passenger mute disabled"
Copilot Configuration	"Copilot is passenger" or "Copilot is pass"	Configures Copilot as a passenger	Voice Response: "Copilot is passenger"
	"Copilot is crew"	Configures Copilot as flight crew	Voice Response: "Copilot is crew"

Control	Spoken Command	Action	Confirmation of Action
Marker Beacon (MKR/ MUTE)	"Marker" or "Mute marker" or "Marker mute"	Marker Beacon audio on/ off (refer to Marker Beacon section for details)	Illuminate/Extinguish MKR/ MUTE Annunciator
Cursor	"Cursor off" or "Cursor cancel" or "Cancel cursor"	Cancels cursor when cursor is flashing	Cursor is removed
Manual Squelch	"Manual squelch" or "Man squelch"	Toggles manual squelch	Illuminate/Extinguish MAN SQ Annunciator
	"Manual squelch threshold up" or "Manual squelch volume up" or "Man squelch threshold up" or "Man squelch volume up"	Increases manual squelch threshold	Manual squelch threshold increased
	"Manual squelch threshold down" or "Manual squelch volume down" or "Man squelch threshold down" or "Man squelch volume down"	Decreases manual squelch threshold	Manual squelch threshold decreased
	NOTE: Finer manual squelch adjustment may be made using the dual concentric knobs on the GMA 350H. The voice command "Up" or "Down" is equivalent to three clicks of the inner knob..		
COM Clearance Recorder	"Play" or "Read back" or "Say again"	Plays recorded clearance audio (refer to Clearance Recorder section for details)	Recorded audio playing

Control	Spoken Command	Action	Confirmation of Action
Distribution (Blue Mode)	"Distribute telephone to (**desired position(s))" or "Distribute phone to (**desired position(s))" or "Distribute jack to (**desired position(s))"	Distributes TEL/JACK to desired positions	TEL/JACK audio heard at desired position(s)
	"Distribute music to (**desired position(s))"	Distributes MUSIC to desired position(s)	MUSIC heard at desired position(s)
	** Desired position(s) = "All", "none", "pilot", "copilot", "passenger", "pass", or any combination of pilot, copilot, passenger, or pass.		
Volume Adjustments	"(*Desired selection) volume up"	Increases volume of desired selection	Volume of desired selection increased
	"(*Desired selection) volume down"	Decreases volume of desired selection	Volume of desired selection decreased
	"(Desired selection*) volume	Displays the current volume but does not change it	Current volume displayed
	NOTE: Finer volume adjustment may be made using the dual concentric knobs on the GMA 350H. The voice command "Up" or "Down" is equivalent to three click of the inner knob.		
	* Desired selection = "speaker", "pilot", "copilot", "passenger", "pass", "marker", "aux", "auxiliary", "telephone", "phone", "jack", or "music".		

Control	Spoken Command	Action	Confirmation of Action
3D Audio	"Three-D audio"	Enables 3D audio	Voice Response: "Three-D audio left, three-D audio right"
	"Standard audio"	Enables standard audio (disables 3D audio)	Voice Response: "Standard Audio"

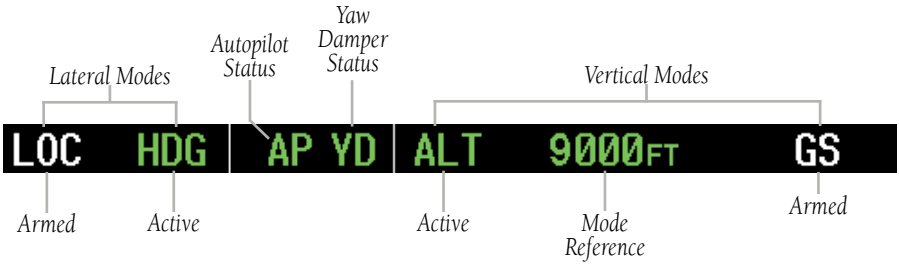
Voice Recognition Commands

AUTOMATIC FLIGHT CONTROL SYSTEM

Refer to the Rotorcraft Flight Manual (RFM) for information regarding the installed autopilot.

AFCS STATUS BOX

Autopilot mode annunciations are displayed on the PFD when the autopilot is active. Autopilot status is displayed in the center of the AFCS Status Box. Lateral flight director modes are displayed on the left and vertical on the right. Armed modes are annunciated in white and active in green.



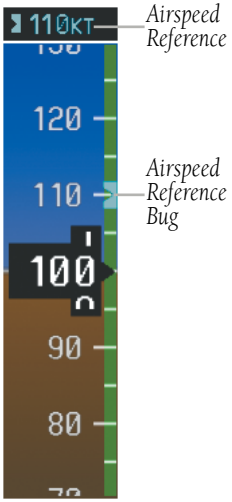
AFCS Status Box

Lateral		Vertical	
Armed	Active	Armed	Active
VORA	VORA	ALTS	ALTS
VOR	VOR	GS	GS
LNVA	LNVA	VNVA	VNVA
GPS	GPS		ALT
LOC	LOC		GA
BC	BC		ASPD
	HDG		VS
	GA		

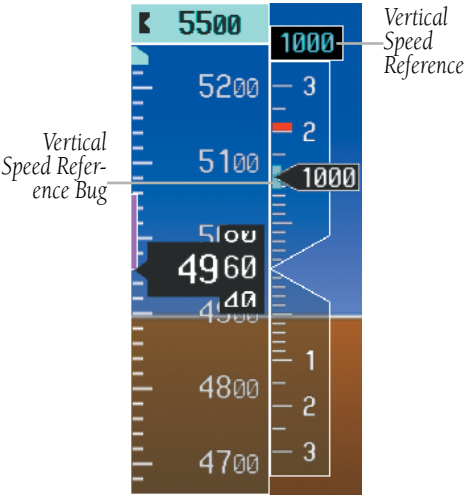
407GX Autopilot Mode Annunciations

SPEED REFERENCES

Airspeed and Vertical Speed References are indicated as shown in the following figures. Refer to the approved Bell 407GX Pilot's Operating Handbook (POH) for further discussion regarding the use of these reference indications.



Airspeed Reference



Vertical Speed Reference

GPS NAVIGATION

DIRECT-TO NAVIGATION

Direct-to Navigation from the MFD

1) Press the **Direct-to** (D▸) Key.
2) Enter the waypoint identifier.
3) Press the **ENT** Key to confirm the identifier. The 'Activate?' field is highlighted.
4) If no altitude constraint or course is desired, press the **ENT** Key to activate. To enter an altitude constraint, proceed to step 5.
5) Turn the large **FMS** Knob to place the cursor over the 'VNV' altitude field.
6) Enter the desired altitude.
7) Press the **ENT** Key. If the waypoint entered is an airport, the option to select MSL or AGL is now displayed. If the waypoint is not an airport, proceed to step 9.
8) Turn the small **FMS** Knob to select 'MSL' or 'AGL'.
9) Press the **ENT** Key. The cursor is now flashing in the VNV offset distance field.
10) Enter the desired offset distance before (-) the waypoint.
11) Press the **ENT** Key. The 'Activate?' field is highlighted.
12) Press the **ENT** Key to activate.

Direct-to Navigation from the PFD

1) Press the **Direct-to** Key (D▸).
2) Turn the large **FMS** Knob to place the cursor in the desired selection field.
3) Turn the small **FMS** Knob to begin selecting the desired identifier, location, etc.
4) Press the **ENT** Key.
5) The cursor is now flashing on 'ACTIVATE?'. If no altitude constraint or course is desired, press the **ENT** Key to activate. To enter an altitude constraint, proceed to step 6.
6) Turn the large **FMS** Knob to place the cursor over the 'ALT' altitude field.

7) Turn the small **FMS** Knob to enter the desired altitude.
8) Press the **ENT** Key. If the waypoint entered is an airport, the option to select MSL or AGL is now displayed. If the waypoint is not an airport, proceed to step 10.
9) Turn the small **FMS** Knob to select 'MSL' or 'AGL'.
10) Press the **ENT** Key. The cursor is placed in the OFFSET distance field.
11) Turn the small **FMS** Knob to enter the desired target altitude offset from the selected Direct-to.
12) Press the **ENT** Key to highlight 'Activate?' or turn the large **FMS** Knob to highlight the 'CRS' field.
13) Turn the small **FMS** Knob to enter the desired course to the waypoint.
14) Press the **ENT** Key to highlight 'ACTIVATE?'.
15) Press the **ENT** again to activate the Direct-to.

ACTIVATE A STORED FLIGHT PLAN

1) Press the **FPL** Key on the MFD and turn the small **FMS** Knob to display the Flight Plan Catalog Page.
2) Press the **FMS** Knob to activate the cursor.
3) Turn the large **FMS** Knob to highlight the desired flight plan
4) Press the **ACTIVE** Softkey. The confirmation window is now displayed.
5) With 'OK' highlighted, press the **ENT** Key to activate the flight plan. To cancel the flight plan activation, turn the large **FMS** Knob to highlight 'CANCEL' and press the **ENT** Key.

ACTIVATE A FLIGHT PLAN LEG

1) From the Active Flight Plan Page, press the **FMS** Knob to activate the cursor and turn the large **FMS** Knob to highlight the desired waypoint.
2) Press the **ACT LEG** Softkey on the MFD.

   OR

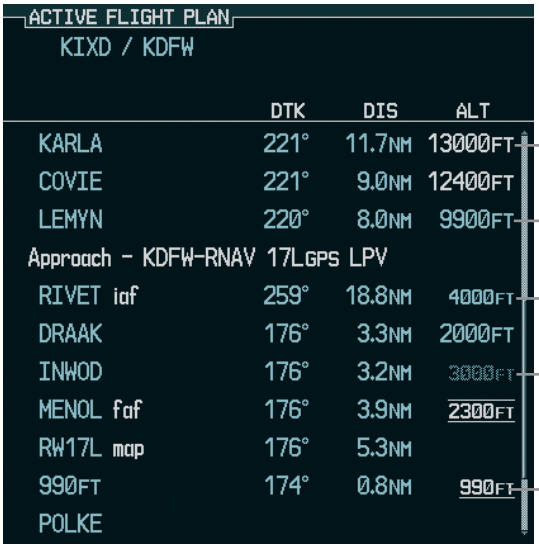
3) Press the **MENU** Key, select the 'Activate Leg' option from the page menu and press the **ENT** Key. This step must be used when activating a leg from the PFD.
4) With 'Activate' highlighted, press the **ENT** Key.

STOP NAVIGATING A FLIGHT PLAN

1) Press the **FPL** Key to display the Active Flight Plan Page.
2) Press the **MENU** Key to display the Page Menu Window.
3) Turn the large **FMS** Knob to highlight 'Delete Flight Plan' and press the **ENT** Key. With 'OK' highlighted, press the **ENT** Key to deactivate the flight plan. This does not delete the stored flight plan, only the active flight plan.

VERTICAL NAVIGATION (VNAV)

The navigation database only contains altitudes for procedures that call for "Cross at" altitudes. If the procedure states "Expect to cross at," the altitude is not in the database. In this case the altitude may be entered manually.



Cross AT or ABOVE 5,000 ft

Cross AT 2,300 ft

Cross AT or BELOW 3,000 ft

Altitudes associated with approach procedures are "auto-designated". This means the system automatically uses the altitudes loaded with the approach for giving vertical flight path guidance outside the FAF. Note these altitudes are displayed as small cyan text.

Altitudes associated with arrival procedures are "manually-designated". This means the system does not use the altitudes loaded with the arrival for giving vertical flight path guidance until designated to do so by the pilot. Note that these altitudes are initially displayed as white text. These altitudes may be "designated" by placing the cursor over the desired altitude and pressing the **ENT** Key. After designation, the text changes to cyan.

Altitudes that have been designated for use in vertical navigation may also be made "non-designated" by placing the cursor over the desired altitude and pressing the **CLR** Key. The altitude is now displayed only as a reference. It will not be used to give vertical flight path guidance. Other displayed altitudes may change due to re-calculations or rendered invalid as a result of manually changing an altitude to a non-designated altitude.

	White Text	Cyan Text	Cyan Subdued Text
Large Text	Altitude calculated by the system estimating the altitude of the aircraft as it passes over the navigation point. This altitude is provided as a reference and is not designated to be used in determining vertical flight path guidance.	Altitude has been entered by the pilot. Altitude is designated for use in giving vertical flight path guidance. Altitude does not match the published altitude in navigation database or no published altitude exists.	The system cannot use this altitude in determining vertical flight path guidance.
Small Text	Altitude is not designated to be used in determining vertical flight path guidance. Altitude has been retrieved from the navigation database and is provided as a reference.	Altitude is designated for use in giving vertical flight path guidance. Altitude has been retrieved from the navigation database or has been entered by the pilot and matches a published altitude in the navigation database.	The system cannot use this altitude in determining vertical flight path guidance.

NOTE: *Making course changes greater than 90° during a descent with vertical guidance may cause excessive and rapid movement of the vertical deviation indicator, and SVS Pathways.*

The system updates vertical path guidance continuously using ground speed and the calculated distance to the Bottom of Descent (BOD). Due to turn anticipation guidance (turn-smoothing), distance to the BOD can be affected by course changes greater than approximately 5 degrees. Ground speed can be affected by factors such as shifts in wind direction, aircraft power management, pitch angle, and course changes. Abrupt and/or substantial changes to either the distance to the BOD, ground speed, or both can cause similarly abrupt/substantial changes in vertical path guidance.

Because of turn-smoothing, changes to both distance to the BOD and ground speed tend to be more extreme when the BOD is also a waypoint that marks a large course change. These speed and distance changes will be accounted for in the computed required vertical path and reflected in the vertical guidance indications.

Blank Page

FLIGHT PLANNING

WEIGHT AND BALANCE PLANNING

NOTE: *All weight & balance page data fields display data rounded to the nearest 5 pounds or 5 kilograms*

All procedures apply to the AUX - WEIGHT & BALANCE Page on the MFD unless otherwise stated.

Modifying basic empty weight:

1) Select the **W&B CFG** Softkey; or press the **MENU** Key, highlight 'Weight & Balance Configuration', and press the **ENT** Key to display the Weight & Balance Configuration Page.
2) Press the **FMS** Knob to activate the cursor, and turn the large **FMS** Knob to select the 'ARCRFT' or 'ENG OIL' weight.
3) Turn the small **FMS** Knob to enter the weight. The new weight will be reflected in the Basic Empty Weight shown at the top of the page.
4) Press the **GO BACK** Softkey to return to the AUX - WEIGHT & BALANCE Page.

The 'BASIC EMPTY WEIGHT" is calculated by summing the weights of all items marked as present.

Entering the aircraft load weights:

1) Press the **FMS** Knob to activate the cursor.
2) Turn the large **FMS** Knob to highlight the 'PILOT' field.
3) Turn the small **FMS** Knob to enter the weight.
4) Press the **ENT** Key to confirm the entry and move the cursor to the next field.
5) Repeat steps 3 and 4 as necessary.
6) Press the **FMS** Knob to remove the flashing cursor.

The 'ZERO FUEL WEIGHT' is calculated by adding the basic empty weight and the aircraft load weights.

Entering the fuel on board weight:

1) Press the **FMS** Knob to activate the cursor and highlight the 'FUEL ON BOARD' field.
2) Turn the small **FMS** Knob to enter the fuel on board weight.
3) Press the **ENT** Key to confirm the entry.
4) Press the **FMS** Knob to remove the flashing cursor.

The 'TAKEOFF WEIGHT' is calculated by adding the zero fuel weight and the fuel on board weight.

Entering the hook weight:

1) Select the **HOOK WT** Softkey to activate the cursor on the 'HOOK WEIGHT' field.
2) Turn the small **FMS** Knob to enter the hook weight.
3) Press the **ENT** Key to confirm the entry.
4) Press the **FMS** Knob to remove the flashing cursor.

NOTE: *Hook Weight is used in the calculation of Gross Weight only and not used in CG calculation.*

The 'GROSS WEIGHT' is calculated by adding the zero fuel weight, the hook weight, and the current fuel on board (updated based on fuel flow).

Entering the fuel reserve weight:

1) Press the **FMS** Knob to activate the cursor and highlight the 'FUEL RESERVES' field.
2) Turn the small **FMS** Knob to enter the fuel reserves weight.
3) Press the **ENT** Key to confirm the entry.
4) Press the **FMS** Knob to remove the flashing cursor

TRIP PLANNING

1) Turn the large **FMS** Knob to select the 'AUX' page group.
2) Turn the small **FMS** Knob to select the Trip Planning Page.

3) The current 'PAGE MODE' is displayed at the top of the page: 'AUTOMATIC' or 'MANUAL'. To change the page mode, press the **AUTO** or **MANUAL** Softkey.

4) For Direct-to planning:

a) Press the **WPTS** Softkey and verify that the starting waypoint field indicates 'P.POS' (present position).

b) If necessary, press the **MENU** Key and select 'Set WPT to Present Position' to display 'P.POS'.

c) Press the **ENT** Key and the flashing cursor moves to the ending waypoint field.

d) Enter the identifier of the ending waypoint and press the **ENT** Key to accept the waypoint.

Or:

For point-to-point planning:

a) Enter the identifier of the starting waypoint.

b) Once the waypoint's identifier is entered, press the **ENT** Key to accept the waypoint. The flashing cursor moves to the ending waypoint.

c) Again, enter the identifier of the ending waypoint.

d) Press the **ENT** Key to accept the waypoint.

Or:

For flight plan leg planning:

a) Press the **FPL** Softkey (at the bottom of the display).

b) Turn the small **FMS** Knob to select the desired flight plan (already stored in memory), by number.

c) Turn the large **FMS** Knob to highlight the 'LEG' field.

d) Turn the small **FMS** Knob to select the desired leg of the flight plan, or select 'CUM' to apply trip planning calculations to the entire flight plan. Selecting 'FPL 00' displays the active flight plan. If an active flight plan is selected, 'REM' is an available option to display planning data for the remainder of the flight plan.

NOTE: *The page mode must be set to 'MANUAL' to perform the following steps.*

5) Turn the large **FMS** Knob to highlight the departure time (DEP TIME) field.

NOTE: *The departure time on the Trip Planning Page is used for preflight planning. Refer to the Utility Page for the actual flight departure time.*

6) Enter the departure time. Press the **ENT** Key when finished. Departure time may be entered in local or UTC time, depending upon system settings.

7) The flashing cursor moves to the ground speed (GS) field. Enter the ground speed. Press the **ENT** Key when finished. Note that in 'automatic' page mode, ground speed is provided by the system.

8) The flashing cursor moves to the fuel flow field. Enter the fuel flow. Press the **ENT** Key when finished. Note that in 'AUTOMATIC' page mode, fuel flow is provided by the system.

9) The flashing cursor moves to the fuel onboard field. Enter the fuel onboard. Press the **ENT** Key when finished. Note that in 'AUTOMATIC' page mode, fuel onboard is provided by the fuel totalizer.

10) The flashing cursor moves to the calibrated airspeed (CALIBRATED AS) field. Enter the calibrated airspeed. Press the **ENT** Key when finished. Note that in 'AUTOMATIC' page mode, calibrated airspeed is provided by the system.

11) The flashing cursor moves to the altitude (IND ALTITUDE) field. Enter the altitude. Press the **ENT** Key when finished. Note that in 'AUTOMATIC' page mode, altitude is provided by the system.

12) The flashing cursor moves to the barometric setting (PRESSURE) field. Enter the desired baro setting. Press the **ENT** Key when finished. Note that in 'AUTOMATIC' page mode, the baro setting is provided by the setting entered on the PFD.

13) The flashing cursor moves to the air temperature (TOTAL AIR TEMP) field. Enter the desired air temperature. Press the **ENT** Key when finished. Note that in 'AUTOMATIC' page mode, air temperature is provided by the system outside air temperature.

CREATE A USER WAYPOINT DEFINED BY LATITUDE & LONGITUDE

1) Turn the large **FMS** Knob on the MFD to select the 'WPT' page group.

2) Turn the small **FMS** Knob to select the User WPT Information Page.

3) Press the **NEW** Softkey. A waypoint is created at the current aircraft position.

4) Enter the desired waypoint name.
5) Press the **ENT** Key.
6) The cursor is now in the 'WAYPOINT TYPE' field. If desired, the waypoint can be made temporary (deleted automatically when the system is turned off). If the waypoint is to remain in the system, proceed to step 7.
   a) Turn the large **FMS** Knob one click to the left to highlight 'TEMPORARY'.
   b) Press the **ENT** Key to place a check-mark in the box. Turn the large **FMS** Knob to place the cursor back in the 'WAYPOINT TYPE' field.
7) With the cursor in the 'WAYPOINT TYPE' field, turn the small **FMS** Knob to display a list of waypoint types.
8) Turn the small **FMS** Knob to select LAT/LON (latitude and longitude).
9) Press the **ENT** Key.

CREATE A USER WAYPOINT DEFINED BY RADIALS FROM OTHER WAYPOINTS

1) Turn the large **FMS** Knob on the MFD to select the 'WPT' page group.
2) Turn the small **FMS** Knob to select the User WPT Information Page.
3) Press the **NEW** Softkey. A waypoint is created at the current aircraft position.
4) Enter the desired waypoint name.
5) Press the **ENT** Key.
6) The cursor is now in the 'WAYPOINT TYPE' field. If desired, the waypoint can be made temporary (deleted automatically when the system is turned off). If the waypoint is to remain in the system, proceed to step 7.
   a) Turn the large **FMS** Knob one click to the left to highlight 'TEMPORARY'.
   b) Press the **ENT** Key to place a check-mark in the box. Turn the large **FMS** Knob to place the cursor back in the 'WAYPOINT TYPE' field.
7) With the cursor in the 'WAYPOINT TYPE' field, turn the small **FMS** Knob to display a list of waypoint types.
8) Turn the small **FMS** Knob to select RAD/RAD (radial/radial).
9) Press the **ENT** Key.

10) The cursor moves to the 'REFERENCE WAYPOINTS' field. With the first waypoint name highlighted, use the **FMS** Knobs to enter the desired waypoint name. Waypoints may also be selected as follows:

a) When a flight plan is active, turning the small **FMS** Knob to the left will display a list of the flight plan waypoints.

b) Turn the large **FMS** Knob to select the desired waypoint.

c) Press the **ENT** Key.

Or:

a) Turn the small **FMS** Knob to the left. Initially, a flight plan waypoint list is displayed.

b) Turn the small **FMS** Knob to the right to display the 'NRST' airports to the aircraft's current position.

c) Turn the large **FMS** Knob to select the desired waypoint.

d) Press the **ENT** Key.

Or:

a) Turn the small **FMS** Knob to the left. Initially, a flight plan waypoint list is displayed.

b) Turn the small **FMS** Knob to the right to display the 'RECENT' waypoints.

c) Turn the large **FMS** Knob to select the desired waypoint.

d) Press the **ENT** Key.

Or:

a) Turn the small **FMS** Knob to the left. Initially, a flight plan waypoint list is displayed.

b) Turn the small **FMS** Knob to the right to display the 'USER' waypoints.

c) Turn the large **FMS** Knob to select the desired waypoint.

d) Press the **ENT** Key.

11) Press the **ENT** Key. The cursor is displayed in the 'RAD' (radial) field. Enter the desired radial from the reference waypoint.

12) Press the **ENT** Key.

13) Repeat step 10 to enter the next waypoint name.

14) Press the **ENT** Key. The cursor is displayed in the 'RAD' (radial) field for the second waypoint. Enter the desired radial from the reference waypoint.

15) Press the **ENT** Key.

16) Press the **FMS** Knob to remove the flashing cursor.

CREATE A USER WAYPOINT DEFINED BY A RADIAL & DISTANCE FROM ANOTHER WAYPOINT

1) Turn the large **FMS** Knob on the MFD to select the 'WPT' page group.

2) Turn the small **FMS** Knob to select the User WPT Information Page.

3) Press the **NEW** Softkey. A waypoint is created at the current aircraft position.

4) Enter the desired waypoint name.

5) Press the **ENT** Key.

6) The cursor is now in the 'WAYPOINT TYPE' field. If desired, the waypoint can be made temporary (deleted automatically when the system is turned off). If the waypoint is to remain in the system, proceed to step 7.

- **a)** Turn the large **FMS** Knob one click to the left to highlight 'TEMPORARY'.
- **b)** Press the **ENT** Key to place a check-mark in the box. Turn the large **FMS** Knob to place the cursor back in the 'WAYPOINT TYPE' field.

7) With the cursor in the 'WAYPOINT TYPE' field, turn the small **FMS** Knob to display a list of waypoint types.

8) Turn the small **FMS** Knob to select RAD/DIS (radial/distance).

9) Press the **ENT** Key.

10) The cursor moves to the 'REFERENCE WAYPOINTS' field. With the first waypoint name highlighted, use the **FMS** Knobs to enter the desired waypoint name. Waypoints may also be selected as follows:

- **a)** When a flight plan is active, turning the small **FMS** Knob to the left will display a list of the flight plan waypoints.
- **b)** Turn the large **FMS** Knob to select the desired waypoint.
- **c)** Press the **ENT** Key.

Or:

- **a)** Turn the small **FMS** Knob to the left. Initially, a flight plan waypoint list is displayed.
- **b)** Turn the small **FMS** Knob to the right to display the 'NRST' airports to the aircraft's current position.

c) Turn the large **FMS** Knob to select the desired waypoint.

d) Press the **ENT** Key.

Or:

a) Turn the small **FMS** Knob to the left. Initially, a flight plan waypoint list is displayed.

b) Turn the small **FMS** Knob to the right to display the 'RECENT' waypoints.

c) Turn the large **FMS** Knob to select the desired waypoint.

d) Press the **ENT** Key.

Or:

a) Turn the small **FMS** Knob to the left. Initially, a flight plan waypoint list is displayed.

b) Turn the small **FMS** Knob to the right to display the 'USER' waypoints.

c) Turn the large **FMS** Knob to select the desired waypoint.

d) Press the **ENT** Key.

11) Press the **ENT** Key. The cursor is displayed in the 'RAD' (radial) field. Enter the desired radial from the reference waypoint.

12) Press the **ENT** Key.

13) The cursor is now displayed in the 'DIS' (distance) field. Enter the desired distance from the reference waypoint.

14) Press the **ENT** Key.

15) Press the **FMS** Knob to remove the flashing cursor.

DELETE A USER WAYPOINT

1) Turn the large **FMS** Knob to select the 'WPT' page group.

2) Turn the small **FMS** Knob to select the User WPT Information Page.

3) Press the **FMS** Knob to activate the cursor.

4) Turn the large **FMS** Knob to the place the cursor in the 'USER WAYPOINT LIST' field.

5) Turn the small **FMS** Knob to highlight the desired waypoint.

6) Press the **DELETE** Softkey.

7) The message 'Would you like to delete the user waypoint?' is displayed. With 'YES' highlighted, press the **ENT** Key.

CREATE A FLIGHT PLAN

NOTE: When creating a flight plan in the Active Flight Plan Window, the first leg is activated automatically after it is created.

Creating an active flight plan:

1) Press the **FPL** Key.
2) Press the **FMS** Knob to activate the cursor (only on MFD).
3) Turn the small **FMS** Knob to display the Waypoint Information Window. (Turning it clockwise displays a blank Waypoint Information Window, turning it counter-clockwise displays the Waypoint Information Window with a waypoint selection submenu allowing selection of active flight plan, nearest, recent, user, or airway waypoints).
4) Enter the identifier, facility, or city name of the departure waypoint or select a waypoint from the submenu of waypoints and press the **ENT** Key. The active flight plan is modified as each waypoint is entered.
5) Repeat step numbers 3 and 4 to enter each additional flight plan waypoint.
6) When all waypoints have been entered, press the **FMS** Knob to remove the cursor.

Creating a stored flight plan:

1) Press the **FPL** Key.
2) Turn the small **FMS** Knob clockwise to display the Flight Plan Catalog Page.
3) Press the **NEW** Softkey; or press the **MENU** Key, highlight 'Create New Flight Plan', and press the **ENT** Key to display a blank flight plan for the first empty storage location.
4) Turn the small **FMS** Knob to display the Waypoint Information Window. (Turning it clockwise displays a blank Waypoint Information Window, turning it counter-clockwise displays the Waypoint Information Window with a waypoint selection submenu allowing selection of active flight plan, nearest, recent, user, or airway waypoints).
5) Enter the identifier, facility, or city name of the departure waypoint or select a waypoint from the submenu of waypoints and press the **ENT** Key.
6) Repeat step numbers 4 and 5 to enter each additional flight plan waypoint.
7) When all waypoints have been entered, press the **FMS** Knob to return to the Flight Plan Catalog Page. The new flight plan is now in the list.

IMPORT A FLIGHT PLAN FROM AN SD CARD

NOTE: See the Annunciations & Alerts section for flight plan import message descriptions.

1) Insert the SD card containing the flight plan in the top card slot on the MFD.
2) Press the **FPL** Key on the MFD to display the Active Flight Plan Page.
3) Turn the small **FMS** Knob to select the Flight Plan Catalog Page.
4) Press the **FMS** Knob to activate the cursor.
5) Turn either **FMS** Knob to highlight an empty or existing flight plan.
6) Press the **IMPORT** Softkey.

   If an empty flight plan is selected, a list of the available flight plans on the SD card will be displayed.

   Or:

   If an existing flight plan is selected, an 'Overwrite existing flight plan? OK or CANCEL' prompt is displayed. Press the **ENT** Key to choose to overwrite the selected flight plan and see a list of the available flight plans on the SD card. If overwriting the existing flight plan is not desired, select 'CANCEL' using the **FMS** Knob, press the **ENT** Key, select another existing or empty flight plan, and again press the **IMPORT** Softkey.
7) Turn the small **FMS** Knob to highlight the desired flight plan for importing.
8) Press the **ENT** Key.

INSERT A WAYPOINT IN THE ACTIVE FLIGHT PLAN

1) Press the **FPL** Key to display the active flight plan.
2) If required, press the **FMS** Knob to activate the cursor.
3) Turn the large **FMS** Knob to highlight the desired flight plan waypoint. The new waypoint is inserted before the highlighted waypoint.
4) Turn the small **FMS** Knob. The Waypoint Information Window is now displayed.

5) Enter the new flight plan waypoint by one of the following:
   a) Enter the user waypoint identifier, facility, or city.
   b) Press the **ENT** Key.

   Or:

   a) Turn the small **FMS** Knob to the left. Initially, a flight plan waypoint list is displayed.
   b) Turn the small **FMS** Knob to the right to display the 'NRST' airport waypoints to the aircraft's current position.
   c) Turn the large **FMS** Knob to select the desired waypoint.
   d) Press the **ENT** Key.

   Or:

   a) Turn the small **FMS** Knob to the left. Initially, a flight plan waypoint list is displayed.
   b) Turn the small **FMS** Knob to the right to display the 'RECENT' waypoints.
   c) Turn the large **FMS** Knob to select the desired waypoint.
   d) Press the **ENT** Key.
   e) Press the **ENT** Key again to accept the waypoint.

ENTER AN AIRWAY IN A FLIGHT PLAN

1) Press the **FPL** Key.
2) Press the **FMS** Knob to activate the cursor (not required on the PFD).
3) Turn the large **FMS** Knob to highlight the waypoint after the desired airway entry point. If this waypoint is not a valid airway entry point, a valid entry point should be entered at this time.
4) Turn the small **FMS** Knob one click clockwise and press the **LD AIRWY** Softkey, or press the **MENU** Key and select "Load Airway". The Select Airway Page is displayed. The **LD AIRWY** Softkey or the "Load Airway" menu item is available only when an acceptable airway entry waypoint has been chosen (the waypoint ahead of the cursor position).
5) Turn the **FMS** Knob to select the desired airway from the list, and press the **ENT** Key. Low altitude airways are shown first in the list, followed by "all" altitude airways, and then high altitude airways.

6) Turn the **FMS** Knob to select the desired airway exit point from the list, and press the **ENT** Key. 'LOAD?' is highlighted.

7) Press the **ENT** Key. The system returns to editing the flight plan with the new airway inserted.

USER-DEFINED HOLDING PATTERNS

A holding pattern can be defined at any active flight plan waypoint, or at the aircraft present position.

Creating a user-defined hold at an active flight plan waypoint:

1) Press the **FPL** Key to display the Active Flight Plan Page (MFD) or the Active Flight Plan Window (PFD).
2) Press the **FMS** Knob to activate the cursor (not required on the PFD) and turn the large **FMS** Knob to highlight the waypoint for the hold.
3) Press the **MENU** Key, highlight 'Hold At Wpt', and press the **ENT** Key. The HOLD AT window appears with the course field highlighted.
4) Use the **FMS** Knobs to edit the entry course, and press the **ENT** Key.
5) Use the small **FMS** Knob to select 'INBOUND' or 'OUTBOUND' course direction, and press the **ENT** Key.
6) Use the small **FMS** Knob to select 'TIME' or 'DIST' length mode, and press the **ENT** Key.
7) Use the **FMS** Knobs to edit the length, and press the **ENT** Key.
8) Use the small **FMS** Knob to select 'RIGHT' or 'LEFT' turn direction, and press the **ENT** Key.
9) Use the **FMS** Knobs to edit the Expect Further Clearance Time (EFC TIME), and press the **ENT** Key.
10) Press the **ENT** Key while 'LOAD?' is highlighted to add the hold into the flight plan.

Creating a user-defined hold at the aircraft present position:

1) Press the **FPL** Key to display the Active Flight Plan Page (MFD) or the Active Flight Plan Window (PFD).
2) Press the **MENU** Key, highlight 'Hold At Present Position', and press the **ENT** Key. The HOLD AT window appears with the Length mode highlighted.

3) Use the small **FMS** Knob to select 'TIME' or 'DIST' length mode, and press the **ENT** Key.
4) Use the **FMS** Knobs to edit the length, and press the **ENT** Key.
5) Use the small **FMS** Knob to select 'RIGHT' or 'LEFT' turn direction, and press the **ENT** Key.
6) Use the **FMS** Knobs to edit the Expect Further Clearance Time (EFC TIME), and press the **ENT** Key.
7) Press the **ENT** Key while 'ACTIVATE?' is highlighted to immediately activate the hold.

Creating a User-Defined Hold at a Direct-To Waypoint:

1) Press a **Direct-to** Key and set up the Direct To waypoint as desired, but select 'HOLD?' instead of 'ACTIVATE?' when finished.
2) Use the **FMS** Knobs to edit the entry course, and press the **ENT** Key.
5) Use the small **FMS** Knob to select 'INBOUND' or 'OUTBOUND' course direction, and press the **ENT** Key.
6) Use the small **FMS** Knob to select 'TIME' or 'DIST' length mode, and press the **ENT** Key.
7) Use the **FMS** Knobs to edit the length, and press the **ENT** Key.
8) Use the small **FMS** Knob to select 'RIGHT' or 'LEFT' turn direction, and press the **ENT** Key.
9) Use the **FMS** Knobs to edit the Expect Further Clearance Time (EFC TIME), and press the **ENT** Key.
10) Press the **ENT** Key while 'ACTIVATE?' is highlighted to activate the Direct To with the user-defined hold defined at the Direct To waypoint.

Removing a user-defined hold (created at the aircraft present position or at a Direct-To waypoint):

1) Press the **Direct To** Key to display the DIRECT TO Window (PFD or MFD).
2) Press the **MENU** Key to display the PAGE MENU with the cursor on the 'Cancel Direct To NAV' selection.
3) Press the **ENT** Key. The holding pattern is removed.

Removing a user-defined hold (created at an active flight plan waypoint):

1) Press the **FPL** Key to display the Active Flight Plan Page (MFD) or the Active Flight Plan Window (PFD).
2) Press the **FMS** Knob to activate the cursor (not required on the PFD) and turn the large **FMS** Knob to highlight the HOLD waypoint.
3) Press the **CLR** Key. A 'Remove Holding Pattern?' confirmation window is displayed.
4) Select 'OK' and press the **ENT** Key. The holding pattern is removed from the active flight plan. Select 'CANCEL' and press the **ENT** Key to cancel the removal of the holding pattern.

SELECTING AN NDB

1) With the NDB Information Page displayed, enter an identifier, the name of the NDB, or the city in which it's located in the NDB Box.
2) Press the **ENT** Key.
3) Press the **FMS** Knob to remove the flashing cursor.

SELECTING A VOR

1) With the VOR Information Page displayed, enter an identifier, the name of the VOR, or the city in which it's located in the VOR Box.
2) Press the **ENT** Key.
3) Press the **FMS** Knob to remove the flashing cursor.

SELECTING A VRP

1) With the VRP Information Page displayed, enter the identifier or the name of the VRP in the VRP Box.
2) Press the **ENT** Key.
3) Press the **FMS** Knob to remove the flashing cursor.

INVERT AN ACTIVE FLIGHT PLAN

1) Press the **FPL** Key to display the active flight plan.
2) Press the **MENU** Key to display the Page Menu.

3) Turn the large **FMS** Knob to highlight 'Invert Flight Plan'.
4) Press the **ENT** Key. The original flight plan remains intact in its flight plan catalog storage location.
5) With 'OK' highlighted, press the **ENT** Key to invert the flight plan.

REMOVE A DEPARTURE, ARRIVAL, APPROACH, OR AIRWAY FROM A FLIGHT PLAN

1) Press the **FPL** Key to display the active flight plan. Press the **FMS** Knob to activate the cursor.

   Or, for a stored flight plan:

   a) Press the **FPL** Key on the MFD.
   b) Turn the small **FMS** Knob to select the Flight Plan Catalog Page.
   c) Press the **FMS** Knob to activate the cursor.
   d) Turn the large **FMS** Knob to highlight the desired flight plan.
   e) Press the **EDIT** Softkey.

2) Turn the large **FMS** Knob to highlight the title for the approach, departure, arrival, or airway to be deleted. Titles appear in white directly above the procedure's waypoints.
3) Press the **CLR** Key to display a confirmation window.
4) With 'OK' highlighted, press the **ENT** Key to remove the selected procedure or airway.

STORE A FLIGHT PLAN

1) After creating a flight plan on either the PFD or MFD, it may be saved by pressing the **MENU** Key.
2) Turn the large **FMS** Knob to highlight 'Store Flight Plan' and press the **ENT** Key.
3) With 'OK' highlighted, press the **ENT** Key to store the flight plan.

EDIT A STORED FLIGHT PLAN

1) Press the **FPL** Key on the MFD, then turn the small **FMS** Knob to display the Flight Plan Catalog Page.
2) Press the **FMS** Knob to activate the cursor.
3) Turn the large **FMS** Knob to highlight the desired flight plan.

4) Press the **EDIT** Softkey.
5) Turn the large **FMS** Knob to place the cursor in the desired location.
6) Enter the changes, then press the **ENT** Key.
7) Press the **FMS** Knob to return to the Flight Plan Catalog Page.

DELETE A WAYPOINT FROM THE FLIGHT PLAN

1) Press the **FPL** Key to display the active flight plan. Press the **FMS** Knob to activate the cursor.

   Or, for a stored flight plan:

   a) Press the **FPL** Key on the MFD.
   b) Turn the small **FMS** Knob to select the Flight Plan Catalog Page.
   c) Press the **FMS** Knob to activate the cursor.
   d) Turn the large **FMS** Knob to highlight the desired flight plan.
   e) Press the **EDIT** Softkey.

2) Turn the large **FMS** Knob to highlight the waypoint to be deleted.
3) Press the **CLR** Key to display a 'REMOVE (Wpt Name)?' confirmation window.
4) With 'OK' highlighted, press the **ENT** Key to remove the waypoint. To cancel the delete request, turn the large **FMS** Knob to highlight 'CANCEL' and press the **ENT** Key.
5) Once all changes have been made, press the **FMS** Knob to remove the cursor.

INVERT AND ACTIVATE A STORED FLIGHT PLAN

1) Press the **FPL** Key on the MFD.
2) Turn the small **FMS** Knob to select the Flight Plan Catalog Page.
3) Press the **FMS** Knob to activate the cursor.
4) Turn the large **FMS** Knob to highlight the desired flight plan.
5) Press the **INVERT** Softkey. 'Invert and activate stored flight plan?' is displayed.
6) With 'OK' highlighted, press the **ENT** Key. The selected flight plan is now inverted and activated. The original flight plan remains intact in its flight plan catalog storage location.

COPY A FLIGHT PLAN

1) Press the **FPL** Key on the MFD.
2) Turn the small **FMS** Knob to select the Flight Plan Catalog Page.
3) Press the **FMS** Knob to activate the cursor.
4) Turn the large **FMS** Knob to highlight the flight plan to be copied.
5) Press the **COPY** Softkey. A 'Copy to flight plan #?' confirmation window is displayed.
6) With 'OK' highlighted, press the **ENT** Key to copy the flight plan. To cancel, turn the large **FMS** Knob to highlight 'CANCEL' and press the **ENT** Key.

DELETE A FLIGHT PLAN

1) Press the **FPL** Key on the MFD.
2) Turn the small **FMS** Knob to select the Flight Plan Catalog Page.
3) Press the **FMS** Knob to activate the cursor.
4) Turn the large **FMS** Knob to highlight the flight plan to be deleted.
5) Press the **DELETE** Softkey. A 'Delete flight plan #?' confirmation window is displayed.
6) With 'OK' highlighted, press the **ENT** Key to delete the flight plan. To cancel, turn the large **FMS** Knob to highlight 'CANCEL' and press the **ENT** Key.

GRAPHICAL FLIGHT PLAN CREATION

1) Press the **FPL** Key on the MFD to display the Active Flight Plan Page.
2) Press the **Joystick** to activate the map pointer. Use the **Joystick** to move the pointer to the desired point on the map to be inserted as a waypoint in the flight plan.
3) The default insertion point is at the end of the flight plan. If the selected waypoint is to be placed anywhere other than the end of the flight plan, press the **FMS** Knob to activate the cursor. Waypoints are inserted *ABOVE* the cursor. Turn the large **FMS** Knob to select the desired insertion point.
4) Press the **LD WPT** Softkey. The selected waypoint is inserted at the selected point. The default user waypoint naming is USR000, USR001, USR002, and so on.
5) To change the user waypoint name, follow the procedure for modifying a user waypoint.

EXPORT A FLIGHT PLAN TO AN SD CARD

NOTE: *See the Annunciations & Alerts section for flight plan export message descriptions.*

1) Insert the SD card into the top card slot on the MFD.
2) Press the **FPL** Key to display the Active Flight Plan Page on the MFD.
3) Turn the small **FMS** Knob to select the Flight Plan Catalog Page.
4) Press the **FMS** Knob to activate the cursor.
5) Turn the large **FMS** Knob to highlight the flight plan to be exported.
6) Press the **EXPORT** Softkey.
7) Press the **ENT** Key to confirm the export.

PROCEDURES

LOAD AND ACTIVATE A DEPARTURE PROCEDURE

1) Press the **PROC** Key.
2) Turn the large **FMS** Knob to highlight 'SELECT DEPARTURE'.
3) Press the **ENT** Key. The cursor is displayed in the 'DEPARTURE' field with a list of available departures.
4) Turn the large **FMS** Knob to highlight the desired departure.
5) Press the **ENT** Key. A list of runways may be displayed for the departure. If so, turn either **FMS** Knob to select the desired runway.
6) Press the **ENT** Key. The cursor is displayed in the 'TRANSITION' field with a list of available transitions.
7) Turn the large **FMS** Knob to highlight the desired transition.
8) Press the **ENT** Key.
9) With 'LOAD?' highlighted, press the **ENT** Key. The departure is active when the flight plan is active.

ACTIVATE A DEPARTURE LEG

1) Press the **FPL** Key on the MFD to display the active flight plan.
2) Press the **FMS** Knob to activate the cursor.
3) Turn the large **FMS** Knob to highlight the desired waypoint within the departure.
4) Press the **ACT LEG** Softkey. A confirmation window showing the selected leg is displayed.
5) With 'ACTIVATE' highlighted, press the **ENT** Key.

LOAD AN ARRIVAL PROCEDURE

1) Press the **PROC** Key.
2) Turn the large **FMS** Knob to highlight 'SELECT ARRIVAL'.
3) Press the **ENT** Key. The cursor is displayed in the 'ARRIVAL' field with a list of available arrivals.
4) Turn the large **FMS** Knob to highlight the desired arrival.
5) Press the **ENT** Key. A list of transitions is displayed for the selected arrival.
6) Turn either **FMS** Knob to select the desired transition.
7) Press the **ENT** Key. A list of runways may be displayed for the selected arrival.
8) Turn the large **FMS** Knob to highlight the desired runway.
9) Press the **ENT** Key.
10) With 'LOAD?' highlighted, press the **ENT** Key.
11) The arrival becomes part of the active flight plan.
12) If an altitude associated with a waypoint in an arrival procedure is to be used to calculate vertical guidance perform the following steps:
    a) Press the **FMS** Knob to activate the cursor.
    b) Turn the large **FMS** Knob to highlight the desired waypoint altitude.
    c) Press the **ENT** Key to designate the altitude for use in giving vertical guidance.

ACTIVATE AN ARRIVAL LEG

1) Press the **FPL** Key to display the active flight plan.
2) Press the **FMS** Knob to activate the cursor.
3) Turn the large **FMS** Knob to highlight the desired waypoint within the arrival.
4) Press the **ACT LEG** Softkey. A confirmation window showing the selected leg is displayed.
5) With 'ACTIVATE' highlighted, press the **ENT** Key.

LOAD AND/OR ACTIVATE AN APPROACH PROCEDURE

NOTE: *If certain GPS parameters (SBAS, RAIM, etc.) are not available, some published approach procedures for the desired airport may not be displayed in the list of available approaches.*

1) Press the **PROC** Key.

2) Turn the large **FMS** Knob to highlight 'SELECT APPROACH'.

3) Press the **ENT** Key. A list of available approaches for the destination airport is displayed.

4) Turn either **FMS** Knob to highlight the desired approach.

5) Press the **ENT** Key. A list of available transitions for the selected approach procedure is now displayed.

6) Turn either **FMS** Knob to select the desired transition. The "Vectors" option assumes vectors will be received to the final course segment of the approach and will provide navigation guidance relative to the final approach course.

7) Press the **ENT** Key. The cursor moves to the MINIMUMS field.

8) If desired, the DA/MDA for the selected approach procedure may be entered and displayed on the PFD. Turn the small **FMS** Knob in the direction of the green arrow to change the display from OFF to BARO, TEMP COMP or optional RAD ALT.

9) Press the **ENT** Key. The cursor moves to the altitude field. Turn the small **FMS** Knob to enter the published DA/MDA for the selected approach procedure.

10) Press the **ENT** Key. If BARO, or OFF was selected step 8, proceed to step 11. If TEMP COMP was selected in step 8, the cursor moves to the 'TEMP AT...." field. Turn the small **FMS** Knob to enter the temperature at the destination airport. The temperature compensated altitude minimum is displayed below the previously enter minimum altitude value.

11) Press the **ENT** Key. 'LOAD? or ACTIVATE?' is now displayed with 'LOAD?' highlighted.

12) Turn the large **FMS** Knob to select either 'LOAD?' or 'ACTIVATE?'.

Selecting 'LOAD?' enters the selected approach procedure into the active flight plan, but is not currently active. Selecting 'ACTIVATE?' enters the selected approach procedure into the active flight plan and activates the first leg of the approach.

13) Press the **ENT** Key.

ACTIVATE AN APPROACH IN THE ACTIVE FLIGHT PLAN

1) Press the **PROC** Key.

2) Turn the large **FMS** Knob to highlight 'ACTIVATE APPROACH'.

3) Press the **ENT** Key.

ACTIVATE A VECTOR TO FINAL APPROACH FIX

1) Press the **PROC** Key.

2) Turn the large **FMS** Knob to highlight 'ACTIVATE VECTOR-TO-FINAL'.

3) Press the **ENT** Key.

4) The final approach course becomes the active leg.

ACTIVATE A MISSED APPROACH IN THE ACTIVE FLIGHT PLAN

1) Press the **PROC** Key.

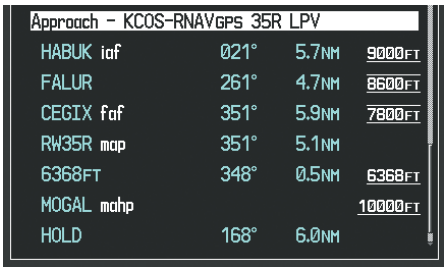
2) Turn the large **FMS** Knob to highlight 'ACTIVATE MISSED APPROACH'.

3) Press the **ENT** Key. A confirmation window is displayed.

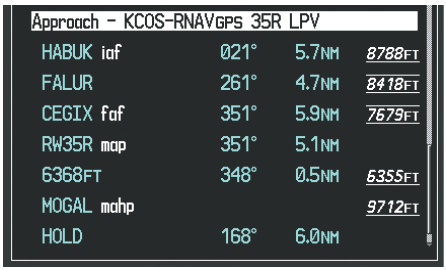
4) With 'ACTIVATE' highlighted, press the **ENT** Key.

TEMPERATURE COMPENSATED ALTITUDE

When temperature compensated altitude is enabled for the loaded approach, the altitudes associated with the approach waypoints are displayed in slanted text.



Altitudes Displayed Without Temperature Compensation



Altitudes Displayed With Temperature Compensation

Enabling temperature compensated altitude:

1) From the Active Flight Plan Page, press the **MENU** Key. The Page Menu is displayed.
2) Turn the **FMS** Knob to highlight 'Temperature Compensation'.
3) Press the **ENT** Key. The TEMPERATURE COMPENSATION Window is displayed.
4) Use the small **FMS** Knob to select the temperature at the <airport>. The compensated altitude is computed as the temperature is selected.
5) Press the **ENT** Key. 'ACTIVATE COMPENSATION?' is highlighted.
6) Press the **ENT** Key. The compensated altitudes for the approach are shown in the flight plan.

Disabling temperature compensated altitude:

1) From the Active Flight Plan Page, press the **MENU** Key. The Page Menu is displayed.
2) Turn the **FMS** Knob to highlight 'Temperature Compensation'.
3) Press the **ENT** Key. The TEMPERATURE COMPENSATION Window is displayed.
4) Press the **ENT** Key. 'CANCEL COMPENSATION?' is highlighted.
5) Press the **ENT** Key. The temperature compensated altitude at the FAF is cancelled.

Blank Page

HAZARD AVOIDANCE

CUSTOMIZING THE HAZARD DISPLAYS ON THE NAVIGATION MAP

1) With the Navigation Map Page displayed, press the **MENU** Key to display the Navigation Map Page Menu. The cursor flashes on the 'Map Setup' option.
2) Press the **ENT** Key. The Map Setup Menu is displayed. Turn the small **FMS** Knob to select 'Weather' to customize the display of weather features. Select 'Traffic' to customize the display of traffic.
3) Press the small **FMS** Knob to return to the Navigation Map Page.

STORMSCOPE® (OPTIONAL)

WARNING: *The Stormscope system is not intended to be used for hazardous thunderstorm penetration. Weather information on the G1000 MFD is approved for weather avoidance only. Refer to the WX-500 Pilot's Guide for detailed operation.*

Displaying Stormscope Lightning Data on the Navigation Map Page

1) Press the **MAP** Softkey.
2) Press the **STRMSCP** Softkey. Press the **STRMSCP** Softkey again to remove Stormscope Lightning Data from the Navigation Map Page.

Lightning Age	Symbol
Strike is less than 6 seconds old	
Strike is between 6 and 60 seconds old	
Strike is between 1 and 2 minutes old	
Strike is between 2 and 3 minutes old	

Select 'Cell' or 'Strike' as the Stormscope Lightning Mode

1) Press the **MENU** Key (with the Navigation Map Page displayed).
2) Turn either **FMS** Knob to highlight 'Map Setup'.
3) Press the **ENT** Key.
4) Turn the small **FMS** Knob to highlight 'Weather'.

5) Press the **ENT** Key.
6) Turn the large **FMS** Knob to place the cursor in the 'STRMSCP MODE' field.
7) Turn the small **FMS** Knob to display the 'Cell/Strike' window.
8) Turn either **FMS** Knob to select 'Cell' or 'Strike'. Press the **ENT** Key.
9) Push the **FMS** Knob to return to the Navigation Map Page.

Clear Stormscope Lightning Data from the Navigation Map Page

1) Press the **MENU** Key (with the Navigation Map Page displayed).
2) Turn either **FMS** Knob to highlight the 'Clear Stormscope® Lightning' field and press the **ENT** Key.

NOTE: *If heading input is lost, strikes and/or cells must be cleared manually after the execution of each turn. This is to ensure that the strike and/or cell positions are depicted accurately in relation to the nose of the aircraft.*

Stormscope Page

1) Turn the large **FMS** Knob until the Map Page group is selected.
2) Turn the small **FMS** Knob until the Stormscope Page is selected.

Change the Stormscope Lightning Mode Between 'Cell' and 'Strike'

1) Select the Stormscope Page.
2) Press the **MODE** Softkey. The **CELL** and **STRIKE** Softkeys are displayed. Press the **CELL** Softkey to display 'CELL' data or press the **STRIKE** Softkey to display 'STRIKE' data. 'CELL' or 'STRIKE' is displayed in the mode box located in the upper left corner of the Stormscope Page.

NOTE: *"Cell mode" uses a clustering program to identify clusters of electrical activity that indicate cells.*

Change the Viewing Mode Between 360° and 120°

1) Select the Stormscope Page.
2) Press the **VIEW** Softkey. The **360** and **ARC** Softkeys are displayed. Press the **360** Softkey to display a 360° viewing area or press the **ARC** Softkey to display a 120° viewing area.

   Press the **CLEAR** Softkey to remove all Stormscope lightning data from the display.

SIRIUSXM WEATHER (OPTIONAL)

WARNING: *Do not use data link weather information for maneuvering in, near or around areas of hazardous weather. Information contained within data link weather products may not accurately depict current weather conditions.*

WARNING: *Do not use the indicated data link weather product age to determine the age of the weather information shown by the data link weather product. Due to time delays inherent in gathering and processing weather data for data link transmission, the weather information shown by the data link weather product may be significantly older than the indicated weather product age.*

Displaying SiriusXM Weather on the Navigation Map Page

1) Press the **MAP** Softkey.
2) Press the **NEXRAD** or **XM LTNG** Softkey to display the desired weather. Press the applicable softkey again to remove weather data from the Navigation Map Page.

Display METAR and TAF information on the Airport Information Page

1) Turn the large **FMS** Knob to select the WPT Page Group.
2) Turn the small **FMS** Knob to select the Airport Information Page.
3) Press the **WX** Softkey to display METAR and TAF text (METAR and TAF information is updated every 12 minutes).

Displaying Weather on the Weather Data Link Page

1) Turn the large **FMS** Knob to select the Map Page Group.
2) Turn the small **FMS** Knob to select the Weather Data Link Page.
3) Press the available softkeys to select the desired SiriusXM weather product.
4) Press the **LEGEND** Softkey to view the legends for the selected products. If necessary, turn either **FMS** Knob to scroll through the list. Press the small **FMS** Knob or the **ENT** Key to return to the map.

Map Panning Information – Weather Data Link Page

1) Push in the **Joystick** to display the panning arrow.
2) Move the **Joystick** to place the panning arrow on AIRMETs, TFRs, METARs, or SIGMETs.
3) Press the **ENT** Key to display pertinent information for the selected product.

   Note that pressing the **ENT** Key when panning over an AIRMET or a SIGMET displays an information box that shows the text of the report. Panning over an airport with METAR information does not display more information but allows the user to press the **ENT** Key and select that Airport's Information Page to display the text of the report. Pressing the **ENT** Key when panning over a TFR displays TFR specific information.

SiriusXM Weather Products and Symbols

Weather Product	Symbol	Expiration Time (Minutes)	Refresh Rate (Minutes)
Next-generation Radar (NEXRAD)		30	5 (U.S.) 10 (Canada)
Cloud Top		60	15 (69AH) 30 (69AH SXM)
Echo Top		30	7.5
SiriusXM Lightning		30	5
Cell Movement		30	12
SIGMETs/AIRMETs		60	12
Meteorological Aerodrome Report (METARS)		90	12
City Forecast		60	12

Weather Product	Symbol	Expiration Time (Minutes)	Refresh Rate (Minutes)
Surface Analysis		90	12
Freezing Levels		120	12
Winds Aloft		90	12
County Warnings		60	5
Cyclone Warnings		60	12
Icing Potential (CIP and SLD)		90	22
Pilot Weather Report (PIREPs)		90	12
Air Report (AIREPs)		90	12
Turbulence		180	12
Radar Coverage	no product image	30	5
Temporary Flight Restrictions	no product image	60	12
Terminal Aerodrome Reports	no product image	60	12

CONNEXT WEATHER (OPTIONAL)

NOTE: *The availability of specific Garmin Connext Weather products varies by region. For product coverage information, refer to fly.garmin.com/fly-garmin/gfds-weather.*

Weather data is provided when the pilot initiates either a manual or automatic Connext data request on the Weather Data Link (CNXT) Page on the MFD. No weather data is displayed until the first Connext Weather Data Request is made.

Registering with Garmin Flight Data Services

A subscriber account must be established prior to receiving Connext Weather products. Contact Garmin Flight Data Services at https://fly.garmin.com/fly-garmin/support/applications/satelliteservices/ or by calling 1-866-739-5687 in the United States or (011) 913-440-1135. The following information is required to register for Connext Weather services: G1000 System ID, GSR56 (GSR1) Serial Number(s), Tail Number, Serail/Airframe Number, Country of Registration, Aircraft Manufacturer, and Aircraft Model.

1) Turn the large **FMS** Knob on the MFD to select the AUX page group.
2) Turn the small **FMS** Knob to select the AUX-SYSTEM STATUS. Note the System ID and GSR1 Serial Number in the AIRFRAME field.

Activating Connext Weather Registration:

After a subscriber account has been established, the system must be activated for data link features such as reporting services or Connext Weather. Activation is accomplished by entering the required access code. This process is only performed when initially setting up the system for Connext services.

1) Ensure the aircraft is outside with a clear view of the sky.
2) Turn the large **FMS** Knob to select the MAP Page group.
3) Turn the small **FMS** Knob to select the MAP-WEATHER DATA LINK (CNXT) Page.
4) Press the **MENU** Key. If necessary, select 'Display Connext Weather'.
5) Press **ENT** Key. The 'CONNEXT REGISTRATION' Window is now displayed.
6) Using the **FMS** Knob enter the access code obtained from Garmin Flight Data Services in the ACCESS CODE field.

7) Press the **ENT** Key. REGISTER will now be highlighted.

8) Press the **ENT** Key. System registration is complete when 'REGISTERED' is displayed in the STATUS field.

Accessing Connext Weather Products

1) Turn the large **FMS** Knob to select the Map Page Group.

2) Turn the small **FMS** Knob to select the Weather Data Link (CNXT) Page.

When a weather product is selected for display on the Weather Data Link (CNXT) Page, a box containing a symbol for the product and its age (in minutes) are shown in the upper right. If weather data has not been requested, 'N/A' is shown next to the product symbol instead of age. The age of the weather product is based on the time difference between when the data was assembled on the ground and the current GPS time. Weather products are updated continuously or refreshed at specific intervals (defined in the **Broadcast Rate** column in the following table).

If for any reason, a weather product is not refreshed within the defined **Expiration Time** intervals, the data is considered expired and is removed from the display. The age of the expired product is replaced by dashes. If more than half of the expiration time has elapsed, the color of the product age readout changes to amber.

The refresh rate represents the interval at which the Garmin Connext ground-based servers make available the most current known weather data. It does not necessarily represent the rate at which new content is received from weather sources.

Garmin Connext Weather Product	Symbol	Expiration Time (Minutes)	Broadcast Rate (Minutes)
Radar Precipitation (PRECIP)		30	U.S.: 3* Canada: 3*† Europe: 15 Australia: 15^
Infrared Satellite (IR SAT)		60	30
Data Link Lightning (DL LTNG)		30	Continuous
SIGMETs/AIRMETs (SIG/AIR)		60	Continuous

Garmin Connext Weather Product	Symbol	Expiration Time (Minutes)	Broadcast Rate (Minutes)
Meteorological Aerodrome Report (METARs)		90	Continuous
Winds Aloft (WIND)		60	Continuous
Pilot Weather Report (PIREPs)		90	Continuous
Temporary Flight Restrictions (TFRs)	no product image	60	Continuous
Terminal Aerodrome Reports (TAFs)	no product image	60	Continuous

** The composite precipitation image is updated every 3 minutes, but individual radar sites may take between 3 and 10 minutes to provide new data.*
† Canadian radar precipitation data provided by Environment Canada.
ˆ Australian radar precipitation data provided by the Australia Bureau of Meteorology

Setting Up and Customizing the Connext Weather Data Link (CNXT) Page

1) Select the Weather Data Link (CNXT) Page.
2) Press the **MENU** Key.
3) With 'Weather Setup' highlighted, press the **ENT** Key.
4) Turn the small **FMS** Knob to select 'Product Group 1' or 'Product Group 2', and press the **ENT** Key.
5) Turn the large **FMS** Knob or press the **ENT** Key to scroll through product selections.
6) Turn the small **FMS** Knob to scroll through options for each product (ON/ OFF, range settings, etc.).
7) Press the **ENT** Key to select an option.
8) Press the **FMS** Knob or **CLR** Key to return to the Weather Data Link (CNXT) Page with the changed settings.

Restoring Default Connext Weather Data Link Page (CNXT) Settings

1) Select the Weather Data Link (CNXT) Page.
2) Press the **MENU** Key.
3) With 'Weather Setup' highlighted, press the **ENT** Key.
4) Press the **MENU** Key.
5) Highlight the desired default(s) to restore (all or for selection) and press **ENT** Key.

Viewing Legends for Displayed Connext Weather Products

1) Select the Weather Data Link (CNXT) Page.
2) Select the **LEGEND** Softkey to display the legends for the displayed weather products.

   Or:

   a) Press the **MENU** Key.

   b) Select 'Weather Legend' and press the **ENT** Key.
3) Turn the **FMS** Knob to scroll through the legends if more are available than fit in the window.
4) To remove the Legend Window, select the **LEGEND** Softkey, the **ENT** or the **CLR** Key, or press the **FMS** Knob.

Connext Weather Data Requests

The Connext Data Request window provides the flight crew with the options to define the requested weather coverage area(s), choose automatic weather update intervals (if desired), and the ability to send or cancel weather data requests. The window also displays the status of the Connext data request process.

Requesting Connext Weather Data Manually

1) Select the Weather Data Link (CNXT) Page.
2) Press the **MENU** Key.
3) With 'Connext Data Request' highlighted, press the **ENT** Key.

4) Turn the large **FMS** Knob to highlight the desired coverage option(s) and press the **ENT** Key to check or uncheck one of more of the following coverage selections:

- PRESENT POSITION – Requests data based on current location.
- DESTINATION – Requests data based on active flight plan destination (if the flight plan contains no destination, dashes '------" are displayed.)
- FPL – Requests data based on active flight plan. Turn the small **FMS** Knob to select the desired flight plan look-ahead distance option (or choose 'REMAINING FPL' to request the remainder of the flight plan).
- WAYPOINT – Requests data based on any valid waypoint.

5) Turn the large **FMS** Knob highlight to the 'DIAMETER / RTE WIDTH' distance field and turn the small **FMS** Knob to select the desired diameter and route width of the request, then press the **ENT** Key.

6) Turn the large **FMS** Knob until the 'SEND REQ' button is highlighted. Press the **ENT** Key to initiate the request immediately or press the **FMS** Knob to return to the Connext Data Link Page without requesting data.

During a Connext Data Request, the REQUEST STATUS window initially displays "Contacting Connext...". Once a connection is established, the REQUEST STATUS window displays "Receiving Wx Data... Time Remaining:" with an estimated data transfer time (either in minutes or seconds). If desired, the Connext Data Request window may be closed while the data request is processing by pressing the **FMS** Knob; the data request will continue to process in the background. Connext Data Requests typically take between 1 to 4 minutes to complete depending on the size of the selected weather coverage area(s), the amount of weather activity present (such as precipitation), and the Iridium signal strength.

The system retrieves all available Garmin Connext weather products within the selected coverage area(s) during an initial Connext Data Request. Enabling or disabling the display of the weather product does not affect which weather products are retrieved during a Connext Data Request.

To reduce data usage during subsequent requests, the system retains previously retrieved textual weather products such as METARs and TAFs, so long as they have not expired. The system also retrieves any new textual weather products matching the current coverage area, and all graphical weather products during each data request.

If the Connext Data Request was successful, the REQUEST STATUS window (if shown) indicates 'OK'. Refer to the Abnormal Operations discussion later in this section for more information on the messages received if the request is unsuccessful, with possible causes.

Weather Request Status Message	Description
Auto requests inhibited Send manual request to reset.	The system has disabled automatic weather data requests due to excessive errors. Automatic weather data requests have stopped. Send a manual weather data request to resume automatic updates.
Auto update retry: ## Seconds	The system will attempt another automatic weather data request after an error occurred during the previous request. Timer counts down until the next automatic request occurs.
Connext Comm Error [2]	A communications error has occurred with the GIA or GDL 59. The system should be serviced.
Connext Comm Error [4]	This occurs if multiple automatic weather data requests have recently failed, or the GIA is off-line.
Connext Comm Error [5]	The Iridium or Garmin Connext services are not accessible. Check Iridium signal strength. If this error persists, the system should be serviced.
Connext Comm Error [6]	A communications error has occurred. It this error persists, the system should be serviced.
Connext Comm Error [7]	A weather data transfer has timed out. Check Iridium signal strength and re-send the Connext Data Request.
Connext Comm Error [8]	A server error has occurred or invalid data received.
Connext Login Invalid	There is a problem with the Garmin Connext registration. Contact Garmin Connext at 1-866-739-5687 in the United States or 913-440-1135 for assistance.
Connext Server Temporarily Inop	The Garmin Connext weather data server is temporarily out of service, but is expected to return to service in less than 30 minutes.

Weather Request Status Message	Description
Connext Server Inop	The Garmin Connext weather data server will be out of service for at least 30 minutes.
Invalid Coverage Area	The weather data request coverage area does not contain at least one of the following: a waypoint, a flight plan, or a flight plan destination. Verify at least one of the coverage options is enabled and contains required criteria, then re-send the data request.
No Connext Subscription	The system is not be currently subscribed to the Garmin Connext Weather service, or the access code is incorrect. Verify the access code. Contact Garmin Connext at 1-866-739-5687 in the United States or 913-440-1135 for assistance.
Reduce Request Area	The weather data request area exceeds size limits. Reduce weather coverage area and re-send data request.
Request Cancelled	The user has cancelled a weather data request.
Requested area too large. Reduce coverage area.	The size of the weather data request has exceeded limits. Reduce the size of the coverage area and try the weather data request again.
Request Failed - Try Again	The weather data request timed-out. Re-send data request.
Transfer Preempted	The data link is busy. Retry request later.

Abnormal Weather Data Request Status Messages

Cancelling Connext Data Request in Progress:

1) Select the Weather Data Link (CNXT) Page.
2) Press the **MENU** Key.
3) With 'Connext Data Request' highlighted, press the **ENT** Key.
4) With the 'CANCEL REQ' option highlighted, press the **ENT** Key. The REQUEST STATUS window indicates 'Request Canceled'.
5) Press the **FMS** Knob to return to the Weather Data Link (CNXT) Page.

Enabling Automatic Connext Data Requests

1) Select the Weather Data Link (CNXT) Page.
2) Press the **MENU** Key.
3) With 'Connext Data Request' highlighted, press the **ENT** Key.
4) Choose the desired weather coverage options.
5) Turn the large **FMS** Knob to select the 'UPDATE RATE' setting. Then turn the small **FMS** Knob to highlight the desired automatic update frequency (OFF, 5 Min, 10 Min, 15 Min, 20 Min, 25 Min, 30 Min, 45 Min, or 60 Min), then press the **ENT** Key.
6) The 'SEND REQ" button is highlighted and a countdown timer is displayed in the 'REQUEST STATUS' based on the currently selected update rate. Press the **ENT** Key to immediately send an immediate Connext Data Request.

   Or:

   Press the **FMS** Knob to return to the Connext Weather Data Link Page.

Connext Weather Products

Precipitation

Precipitation data is not real-time. The lapsed time between collection, processing, and dissemination of radar images can be significant and may not reflect the current radar synopsis. Due to the inherent delays and the relative age of the data, it should be used for long-range planning purposes only.

NOTE: *Precipitation data cannot be displayed on the Navigation Map Page at the same time as terrain.*

Displaying Precipitation Weather Information

1) Select the **MAP** Softkey (for the PFD Inset Map, select the **INSET** Softkey). This step is not necessary on the Connext Weather Data Link Page.
2) Select the **PRECIP** Softkey.

Radar data shown represents lowest level, base reflectivity, of radar returns. The display of the information is color-coded to indicate the weather severity level. All weather product legends can be viewed on the Connext Weather Data Link Page. For the Precipitation legend, select the **LEGEND** Softkey when Precipitation is selected for display.

Precipitation Limitations

Radar images may have certain limitations:

- Radar base reflectivity does not provide sufficient information to determine cloud layers or precipitation characteristics (wet hail vs. rain). For example, it is not possible to distinguish between wet snow, wet hail, and rain.
- Radar base reflectivity is sampled at the minimum antenna elevation angle. An individual radar site cannot depict high altitude storms at close ranges. It has no information about storms directly over the site.
- When zoomed in to a range of 30 nm, each square block on the display represents an area of four square kilometers.

The following may cause abnormalities in displayed radar images:

- Ground clutter
- Strobes and spurious radar data
- Sun strobes (when the radar antenna points directly at the sun)
- Interference from buildings or mountains, which may cause shadows
- Metallic dust from military aircraft, which can cause alterations in radar scans

Infrared Satellite

Infrared Satellite (IR SAT) data depicts cloud top temperatures from satellite imagery. Brighter cloud top colors indicate cooler temperatures occurring at higher altitudes.

Displaying Cloud Tops information

1) Select the Weather Data Link (CNXT) Page.
2) Select the **IR SAT** Softkey.

To display the Infrared Satellite legend, select the **LEGEND** Softkey when Infrared Satellite data is selected for display.

Data Link Lightning

Lightning data shows the approximate location of cloud-to-ground lightning strikes. A strike icon represents a strike that has occurred within a two-kilometer region. Neither cloud-to-cloud nor the exact location of the lightning strike is displayed.

If the aircraft is also equipped with an on-board lightning detection system (e.g., L-3 WX-500 Stormscope®), only one lightning product may be enabled for display at a time.

Displaying Data Link Lightning information

1) Select the **MAP** Softkey (for the PFD Inset Map, select the **INSET** Softkey). This step is not necessary on the Connext Weather Data Link Page.
2) Select the **DL LTNG** Softkey.

To display the Data Link Lightning legend on the Weather Data Link (CNXT) Page, select the **LEGEND** Softkey when Data Link Lightning is selected for display.

SIGMETs and AIRMETs

The entire SIGMET or AIRMET is displayed as long as any portion of it is occurring within the coverage area of the Connext data request.

Displaying SIGMETs and AIRMETs

1) Select the Weather Data Link (CNXT) Page.
2) Select the **SIG/AIR** Softkey.
3) To view the text of the SIGMET or AIRMET, press the **Joystick** and move the Map Pointer over the icon.
4) Press the **ENT** key.

To display the SIGMET and AIRMET legend on the Weather Data Link (CNXT) Page, select the **LEGEND** Softkey when SIGMETs and AIRMETs are selected for display.

METARs and TAFs

NOTE: *METAR information is only displayed within the installed navigation database service area.*

METAR and TAF text are displayed on the WPT-Weather Information Page. TAF information is displayed in its raw form when it is available.

Displaying METAR and TAF text

1) On the Weather Data Link (CNXT) Page, select the **METAR** Softkey.
2) Press the **Joystick** and pan to the desired airport.
3) Press the **ENT** Key. The Weather Information Page is shown with METAR and TAF text.

4) Use the **FMS** Knob or the **ENT** Key to scroll through the METAR and TAF text. METAR text must be completely scrolled through before scrolling through the TAF text.

5) Press the **FMS** Knob or the **CLR** Key to return to the Connext Weather Data Link Page.

Or:

1) Select the Weather Information Page.
   a) Turn the large **FMS** Knob to select the Waypoint Page Group.
   b) Select the **WX** Softkey to select the Weather Information Page.
2) Press the **FMS** Knob to display the cursor.
3) Use the **FMS** Knob to enter the desired airport and press the **ENT** Key.
4) Use the **FMS** Knob or the **ENT** Key to scroll through the METAR and TAF text. Note that the METAR text must be completely scrolled through before scrolling through the TAF text.

To display the METAR legend on the Weather Data Link (CNXT) Page, select the **LEGEND** Softkey when METARs are selected for display.

Winds Aloft

Winds Aloft data shows the forecasted wind speed and direction at the surface and at selected altitudes. Altitude can be displayed in 3,000-foot increments up to 42,000 feet MSL.

Displaying Winds Aloft data

1) Select the Weather Data Link (CNXT) Page.
2) Select the **MORE WX** Softkey.
3) Select the **WIND** Softkey.
4) Select the desired altitude level: SFC (surface) up to 42,000 feet. Select the **NEXT** or **PREV** Softkey to cycle through the altitude softkeys. The **WIND** Softkey label changes to reflect the altitude selected.

To display the Winds Aloft legend on the Weather Data Link (CNXT) Page, select the **LEGEND** Softkey when Winds Aloft is selected for display.

PIREPs

Pilot Weather Reports (PIREPs) describe in-flight weather encountered by pilots. A PIREP may contain unforecast adverse weather conditions, such as low in-flight visibility, icing conditions, wind shear, turbulence, and type of aircraft flown. PIREPs are issued as either Routine (UA) or Urgent (UUA).

Displaying PIREP text

1) Select the Weather Data Link (CNXT) Page.
2) Select the **MORE WX** Softkey.
3) Select the **PIREPS** Softkey.
4) Press the **Joystick** and pan to the desired weather report. A gray circle will appear around the weather report when it is selected.
5) Press the **ENT** Key. The PIREP text is first displayed in a decoded fashion, then as raw text.
6) Use the **FMS** Knob or the **ENT** Key to scroll through the PIREP text.
7) Press the **FMS** Knob or the **CLR** Key to close the PIREP text window and return to the Connext Weather Data Link Page.

To display the PIREP or AIREP legend, select the **LEGEND** Softkey when PIREPs or AIREPs are selected for display. The PIREP color is determined by the type (routine or urgent).

FIS-B WEATHER

WARNING: *Do not use data link weather information for maneuvering in, near, or around areas of hazardous weather. Information contained within data link weather products may not accurately depict current weather conditions.*

WARNING: *Do not use the indicated data link weather product age to determine the age of the weather information shown by the data link weather product. Due to time delays inherent in gathering and processing weather data for data link transmission, the weather information shown by the data link weather product may be significantly older than the indicated weather product age.*

NOTE: *Flight Information Services-Broadcast (FIS-B) weather is only available in the continental United States, Alaska, Hawaii, Guam, and Puerto Rico.*

The optional GDL 88H receives Flight Information Services - Broadcast (FIS-B) weather data from a network of UAT ground-based transceivers (GBTs).

FIS-B weather data reception requires the aircraft being within range and line-of-sight of an operating GBT broadcasting FIS-B weather data. Reception may be affected by factors including altitude or terrain.

Reception of FIS-B weather data occurs automatically without any pilot action. FIS-B broadcasts provide weather data in a repeating cycle which may take approximately ten minutes to transmit all available weather data. Therefore, not all available weather data may be available immediately upon initial FIS-B signal acquisition.

Viewing the Weather Data Link (FIS-B) Page

1) Turn the large **FMS** Knob to select the Map Page Group.
2) Turn the small **FMS** Knob to select the Weather Data Link (FIS-B, XM, or CNXT) Page.
3) If the page title displays a weather data link weather source other than 'FIS-B', such as 'XM' or 'CNXT', proceed to the following steps to change the data link weather source.
4) Press the **MENU** Key.
5) Turn the small **FMS** Knob to select 'Display FIS-B Weather'.
6) Press the **ENT** Key. The page title will display 'MAP - WEATHER DATA LINK (FIS-B)' to indicate FIS-B is now the selected data link weather source.

Enabling/Disabling FIS-B Weather

1) Select the Weather Data Link (FIS-B) Page.
2) Press the **MENU** Key.
3) Turn the small **FMS** Knob to highlight 'Enable FIS-B Weather' or 'Disable FIS-B Weather', and press the **ENT** Key.

FIS-B Weather Product	Symbol	Expiration Time (Minutes)	Broadcast Rate (Minutes)
NEXRAD Composite (US)		30	15
NEXRAD Composite (Regional)		30	2.5

FIS-B Weather Product	Symbol	Expiration Time (Minutes)	Broadcast Rate (Minutes)
Meteorological Aerodrome Report (METARs)		90	5
Pilot Weather Report (PIREPs)		90	10
Winds Aloft (WIND)		90	10
SIGMETs/AIRMETs (SIG/AIR)		60	5
No Radar Coverage	no product image	30	2.5
Terminal Aerodrome Forecast	no product image	60	10
Temporary Flight Restriction (TFR)	no product image		10

Weather Product Symbols and Data Timing

Setting Up and Customizing the Weather Data Link (FIS-B) Page

1) Select the Weather Data Link (FIS-B) Page.
2) Press the **MENU** Key.
3) With 'Weather Setup' highlighted, press the **ENT** Key.
4) Turn the small **FMS** Knob to select 'Product Group 1', and press the **ENT** Key.
5) Turn the large **FMS** Knob or press the **ENT** Key to scroll through product selections.
6) Turn the small **FMS** Knob to scroll through options for each product (ON/OFF, range settings, etc.).
7) Press the **ENT** Key to select an option.
8) Press the **FMS** Knob or **CLR** Key to return to the Weather Data Link (FIS-B) Page with the changed settings.

Setting Up and Customizing FIS-B Weather on the Navigation Map Page

1) Select the Navigation Map Page.
2) Press the **MENU** Key.
3) With 'Map Setup' highlighted, press the **ENT** Key.
4) Turn the small **FMS** Knob to select the 'Weather' Group and press the **ENT** Key.
5) Turn the large **FMS** Knob or press the **ENT** Key to scroll through product selections.
6) Turn the small **FMS** Knob to scroll through options for each product (ON/ OFF, range settings).
7) Press the **ENT** Key to select an option.
8) Press the **FMS** Knob or **CLR** Key to return to the Navigation Map Page with the changed settings.

Displaying/Removing the Weather Product Information Box on the PFD Inset Map

1) On the PFD, press the **INSET** Softkey.
2) Press the **WX LGND** Softkey.
3) To remove the weather product information box, press the **WX LGND** Softkey again.

Viewing Legends for Displayed Weather Products on the Weather Data Link (FIS-B) Page

1) Select the Weather Data Link (FIS-B) Page.
2) Press the **LEGEND** Softkey to display the legends for the displayed weather products.

   Or:

   a) Press the **MENU** Key.

   b) Select 'Weather Legend' and press the **ENT** Key.
3) To remove the Legend Window, press the **LEGEND** Softkey, the **ENT** or the **CLR** Key, or press the **FMS** Knob.

Viewing Legends for Displayed Weather Products on the Navigation Map Page

1) Select the Navigation Map Page.
2) Press the **MAP** Softkey.
3) Press the **LEGEND** Softkey (available if one or more FIS-B weather products are enabled for display).
4) To remove the Legend Window, press the **LEGEND** Softkey, the **ENT** or the **CLR** Key, or press the **FMS** Knob.

Displaying NEXRAD Data

1) Press the **MAP** Softkey (for the PFD Inset Map, press the **INSET** Softkey). This step is not necessary on the Weather Data Link (FIS-B) Page.
2) Press the **NEXRAD** Softkey. This softkey becomes the **US** Softkey. A mosaic of NEXRAD data for the continental United States (CONUS) is displayed.
3) To display the regional version of the NEXRAD weather product, press the **US** Softkey. Softkey becomes the **RGNL** Softkey.
4) To remove the NEXRAD weather product, press the **RGNL** Softkey. Softkey becomes the **NEXRAD** Softkey.

Displaying SIGMETs and AIRMETs

1) Select the Weather Data Link (FIS-B) Page.
2) Press the **SIG/AIR** Softkey.
3) To view the text of the SIGMET or AIRMET, press the **Joystick** and move the Map Pointer over the icon.
4) Press the **ENT** key.

Displaying METAR and TAF Text

1) On the Weather Data Link (FIS-B) Page, press the **METAR** Softkey.
2) Press the **Joystick** and pan to the desired airport.
3) Press the **ENT** Key. The Weather Information Page is shown with METAR and TAF text.

4) Use the **FMS** Knob or the **ENT** Key to scroll through the METAR and TAF text. METAR text must be completely scrolled through before scrolling through the TAF text.

5) Press the **FMS** Knob or the **CLR** Key to return to the Weather Data Link (FIS-B) Page.

Or:

1) Select the Weather Information Page.
   a) Turn the large **FMS** Knob to select the Waypoint Page Group.
   b) Press the **WX** Softkey to select the Weather Information Page.
2) Press the **FMS** Knob to display the cursor.
3) Use the **FMS** Knob to enter the desired airport and press the **ENT** Key.
4) Use the **FMS** Knob or the **ENT** Key to scroll through the METAR and TAF text. Note that the METAR text must be completely scrolled through before scrolling through the TAF text.

Displaying Raw METAR Text on the Active Flight Plan Page

1) Select the Active Flight Plan Page on the MFD.
2) Press the **FMS** Knob to activate the cursor.
3) Turn the large **FMS** Knob to highlight the desired waypoint. The METAR text will appear in the 'SELECTED WAYPOINT WEATHER' window below.
4) When finished, press the **FMS** Knob to remove the cursor or press the **FPL** Key to exit the Active Flight Plan Page.

Displaying Winds Aloft Information

1) Select the Weather Data Link (FIS-B) Page.
2) Press the **MORE WX** Softkey.
3) Press the **WIND OFF** Softkey.
4) Press the softkey for the desired altitude. Press the **NEXT** or **PREV** Softkey to cycle through the altitude softkeys. The **WIND** Softkey label changes to reflect the altitude selected.

Enabling/Disabling Predicted Temperatures with Winds Aloft Data

1) Select the Weather Data Link (FIS-B) Page.
2) Press the **MENU** Key.

3) Turn the small **FMS** Knob to highlight 'Weather Setup' and press the **ENT** Key.
4) Turn the small **FMS** Knob to highlight 'PRODUCT GROUP 1' and press the **ENT** Key.
5) Turn the small **FMS** Knob to highlight the Temp (•) 'ON' or 'OFF' field, then press the **ENT** Key.
6) When finished, push the **FMS** Knob or the **CLR** Key.

Displaying PIREP Text

1) Select the Weather Data Link (FIS-B) Page.
2) Press the **MORE WX** Softkey.
3) Press the **PIREPS** Softkey.
4) Press the **Joystick** and pan to the desired weather report. A gray circle will appear around the weather report when it is selected.
5) Press the **ENT** Key. The PIREP text is first displayed in a decoded fashion, followed by the original text. Note the original text may contain additional information not shown in the decoded version.
6) Use the **FMS** Knob or the **ENT** Key to scroll through the PIREP text.
7) Press the **FMS** Knob or the **CLR** Key to close the PIREP text window and return to the Weather Data Link (FIS-B) Page.

Displaying TFR Data

1) Select the Weather Data Link (XM) Page or Navigation Map Page.
2) Press the **Joystick** and pan the map pointer over a TFR to highlight it. The system displays TFR summary information above the map.
3) Press the **ENT** Key. The system displays a pop-up menu.
4) If necessary, turn the **FMS** Knob to select 'Review Airspaces' and press the **ENT** Key. The system displays the INFORMATION window.
5) Press the **FMS** Knob or the **CLR** Key to remove the INFORMATION window.

Viewing FIS-B Weather Status

1) Turn the large **FMS** Knob to select the AUX Page Group.
2) Turn the small **FMS** Knob to select the AUX - ADS-B Status Page.

ADS-B Status Page Item	Status Message	Description
FIS-B Weather Status: FIS-B Processing	ENABLED	The FIS-B weather feature is enabled to process and display FIS-B weather products.
	DISABLED	The FIS-B weather feature is disabled.
	----------	No data received from the GDL 88H UAT.
Weather Products: AIRMET CONUS NEXRAD METAR METAR GRAPHICAL NOTAM/TFR PIREP REGIONAL NEXRAD SIGMET TAF WINDS/TEMPS ALOFT	AVAILABLE	FIS-B weather data is available for display for the weather product.
	NOT AVAILABLE	FIS-B weather data is not available for the weather product, and/or the system is not receiving the FIS-B weather service.
	AWAITING DATA	The system is receiving the FIS-B weather service, and is waiting to receive the weather product from the FIS-B data broadcast.

AUX-ADS-B Status Page Messages for FIS-B Weather

TRAFFIC SYSTEMS

WARNING: *Do not rely solely upon the display of traffic information for collision avoidance maneuvering. The traffic display does not provide collision avoidance resolution advisories and does not under any circumstances or conditions relieve the pilot's responsibility to see and avoid other aircraft.*

WARNING: *Do not rely solely upon the display of traffic information to accurately depict all of the traffic information within range of the aircraft. Due to lack of equipment, poor signal reception, and/or inaccurate information from other aircraft, traffic may be present but not represented on the display.*

- If Traffic information Service (TIS) is configured, **STANDBY**, **OPERATE**, and **TNA MUTE** softkeys are displayed.
- If a Traffic Advisory System (TAS) is configured, **STANDBY**, **NORMAL**, **TEST**, and **ALT MODE** softkeys are displayed.

TIS Symbol	Description
	Non-Threat Traffic
	Traffic Advisory (TA)
	Traffic Advisory Off Scale

TIS Traffic Symbols

Symbol	Description
	Traffic Advisory with directional information. Points in the direction of the intruder aircraft track.
	Traffic Advisory without directional information.
	Traffic Advisory out of the selected display range. Displayed at outer range ring at proper bearing.
	Proximity Advisory with directional information. Points in the direction of the aircraft track.
	Proximity Advisory without directional information.
	Non-threat traffic with directional information. Points in the direction of the intruder aircraft track.
	Non-threat traffic without directional information.
	Traffic located on the ground with directional information. Points in the direction of the aircraft track. Ground traffic is only displayed when ADS-B is in Surface (SURF) Mode or own aircraft is on the ground.

TAS and ADS-B Traffic Symbology

Symbol	Description
	Ground traffic without directional information. Ground traffic is only displayed when ADS-B is in Surface (SURF) Mode or own aircraft is on the ground.
	Non-aircraft ground traffic. Ground traffic is only displayed when ADS-B is in Surface (SURF) Mode or own aircraft is on the ground.

TAS and ADS-B Traffic Symbology

Traffic Information Service (TIS)

WARNING: *The Traffic Information Service (TIS) is intended for advisory use only. TIS is intended to help the pilot locate traffic visually. It is the responsibility of the pilot to see and maneuver to avoid traffic.*

NOTE: *TIS is disabled if a Traffic Advisory System (TAS) is installed.*

NOTE: *TIS is available only when the aircraft is within the service volume of a TIS-capable terminal radar site. Aircraft without an operating transponder are invisible to both Traffic Advisory Systems (TAS) and TIS. Aircraft without altitude reporting capability are shown without altitude separation data or climb descent indication.*

Displaying Traffic on the Traffic Map Page

1) Turn the large **FMS** Knob to select the Map Page Group.
2) Turn the small **FMS** Knob to select the Traffic Map Page.
3) Press the **OPERATE** Softkey to begin displaying traffic. 'OPERATING' is displayed in the Traffic Mode field.
4) Press the **STANDBY** Softkey to place the system in the Standby Mode. 'STANDBY' is displayed in the Traffic Mode field.
5) Rotate the **Joystick** clockwise to display a larger area or rotate counter-clockwise to display a smaller area.
6) Press the **TNA MUTE** Softkey to mute the "Traffic Not Available" aural alert.

Displaying Traffic on the Navigation Map

1) Ensure TIS is operating. With the Navigation Map displayed, press the **MAP** Softkey.
2) Press the **TRAFFIC** Softkey. Traffic is now displayed on the map.

Traffic Advisory System (TAS) (Optional)

NOTE: *Radar altimeter data is optional for the Traffic Advisory System (TAS). If radar altimeter data is detected by the TAS at the beginning of a power cycle and that data is subsequently lost, the TAS will declare a fault and will not provide traffic information.*

NOTE: *Pilots should be aware of TAS system limitations. TAS systems require transponders of other aircraft to respond to system interrogations. If the transponders do not respond to interrogations due phenomena such as antenna shading or marginal transponder performance, traffic may be displayed intermittently, or not at all. Aircraft without altitude reporting capability are shown without altitude separation data or climb descent indication. Pilots should remain vigilant for traffic at all times.*

NOTE: *Radar altimeter data is optional for the Traffic Advisory System (TAS). If radar altimeter data is detected by the TAS at the beginning of a power cycle and that data is subsequently lost, the TAS will declare a fault and will not provide traffic information.*

NOTE: *TIS is disabled when TAS is installed.*

NOTE: *If the system has the ability to receive Automatic Dependent Surveillenace-Broadcast (ADS-B) traffic, refer to the ADS-B traffic section for more information.*

Displaying Traffic on the Traffic Map Page

1) Turn the large **FMS** Knob to select the Map Page Group.
2) Turn the small **FMS** Knob to select the Traffic Map Page.
3) Press the **OPERATE** or **NORMAL** Softkey to begin displaying traffic. 'OPERATING' is displayed in the Traffic Mode field.

4) Press the **ALT MODE** Softkey to change the altitude volume. Select the desired altitude volume by pressing the **BELOW**, **NORMAL**, **ABOVE**, or **UNREST** (unrestricted) Softkey. The selection is displayed in the Altitude Mode field.

5) Press the **STANDBY** Softkey to place the system in the Standby Mode. 'STANDBY' is displayed in the Traffic Mode field.

6) Rotate the **Joystick** clockwise to display a larger area or rotate counter-clockwise to display a smaller area.

7) Press the **FLT ID** Softkey to enable or disable Flight ID displayed with the intruder information.

System Self Test

1) With the Traffic Map Page displayed, set the range to 2/6 nm.
2) Press the **STANDBY** Softkey.
3) Press the **TEST** Softkey.
4) Self test takes approximately eight seconds to complete. When completed successfully, traffic symbols are displayed and a voice alert is heard (see Alerts and Annunciations section). If the self test fails, the system reverts to Standby Mode and a voice alert is heard.

Displaying Traffic on the Navigation Map

1) Ensure TAS is operating.
2) With the Navigation Map displayed, press the **MAP** Softkey.
3) Press the **TRAFFIC** Softkey. Traffic is now displayed on the map.

ADS-B Traffic (Optional)

Enabling/Disabling the Display of ADS-B Traffic

1) Select the Traffic Map Page.
2) Press the **ADS-B** Softkey.

Testing ADS-B Traffic

1) Select the Traffic Map Page.
2) If necessary, turn the Joystick to select a map range of 2 and 6 nm to ensure full test pattern display.

3) Ensure the the **ADS-B** Softkey is disabled.
4) If the optional TAS/TCAS I is installed, ensure the **TAS STBY** Softkey is enabled.
5) Press the **Test** Softkey.

Enabling/Disabling the Display of Flight IDs

1) Select the Traffic Map Page.
2) Press the **FLT ID** Softkey to enable/disable the display of Flight IDs.

Changing the Altitude Range

1) On the Traffic Map Page, select the **ALT MODE** Softkey.
2) Press one of the following Softkeys:
   - **ABOVE:** Displays non-threat and proximity traffic from 9000 feet above the aircraft to 2700 feet below the aircraft. Typically used during climb phase of flight.
   - **NORMAL:** Displays non-threat and proximity traffic from 2700 feet above the aircraft to 2700 feet below the aircraft. Typically used during enroute phase of flight.
   - **BELOW:** Displays non-threat and proximity traffic from 2700 feet above the aircraft to 9000 feet below the aircraft. Typically used during descent phase of flight.
   - **UNREST** (unrestricted)**:** All traffic is displayed from 9900 feet above and 9900 feet below the aircraft.
3) To return to the Traffic Map Page, press the **BACK** Softkey.

Enabling/Disabling the Motion Vector Display

1) Select the Traffic Map Page.
2) Press the **MOTION** Softkey.
3) Press one of the following softkeys:
   - **ABS:** Displays the motion vector pointing in the absolute direction.
   - **REL**: Displays the motion vector relative to own aircraft
   - **OFF**: Disables the display of the motion vector.

Adjusting the Duration for the Motion Vector Projected Time

1) Select the Traffic Map Page.

2) Press the **MOTION** Softkey.
3) Press the **DURATION** Softkey.
4) Press a softkey for the desired duration (**30 SEC**, **1 MIN**, **2 MIN**, **5 MIN**).
5) When finished, press the **BACK** Softkey to return to the Traffic Map Page.

Showing Additional Traffic Information

1) Select the Traffic Map Page.
2) Press the **FMS** Knob. A cyan bracket highlights the first selected traffic symbol. Additional information appears in a window in the upper-right corner of the Traffic Map Page.
3) To select a different aircraft symbol, turn the **FMS** Knob to move the cyan bracket until the selected aircraft traffic symbol is highlighted.
4) When finished, press the **FMS** Knob again to remove the cyan selection bracket.

Viewing ADS-B Traffic Status

1) Turn the large **FMS** Knob to select the AUX Page Group.
2) Turn the small **FMS** Knob to select the AUX - ADS-B Status Page.

ADS-B Status Page Item	Status Message	Description
Traffic Application Status: AIRBORNE (AIRB), SURFACE (SURF), AIRBORNE ALERTS (CSA)	ON	Traffic application is currently on. Required input data is available, and it meets performance requirements.
	AVAILABLE TO RUN	Traffic application is not currently active, but application is ready to run when condition(s) determine the application should be active. Required input data is available, and it meets performance requirements.
	NOT AVAILABLE	Traffic application is not available. Required input data is available, but it does not meet performance requirements.
	FAULT	Traffic application is not available. Required input data is not available or the application has failed.
	NOT CONFIGURED	Traffic application is not available, because it has not been configured. If this annunciation persists, the system should be serviced.
	----------	Traffic application status is invalid or unknown.
TIS-B/ADS-R Coverage	AVAILABLE	The system is receiving the ADS-R coverage from an FAA ground station.
	NOT AVAILABLE	The system is not receiving the ADS-R coverage from an FAA ground station.
	----------	ADS-R coverage is invalid or unknown.
GPS Status: GPS Source	External #1	The GDL 88H is using the #1 GPS receiver for the GPS position source.
	External #2	The GDL 88H is using the #2 GPS receiver for the GPS position source.
	---------	The GPS source is invalid or unknown.

ADS-B Status Page Item	Status Message	Description
Ground Uplink Status: Last uplink	Number of minutes, or '------'	Displays the number of minutes since the last uplink from a ground station occurred. If no uplink has been received, or the status is invalid, dashes appear instead of a number of minutes.

AUX-ADS-B Status Page Messages for ADS-B Traffic

TERRAIN AWARENESS & WARNING SYSTEM (HTAWS) DISPLAY

WARNING: *Do not use HTAWS information for primary terrain avoidance. HTAWS is intended only to enhance situational awareness.*

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

NOTE: *Terrain data is not displayed when the aircraft is outside the installed terrain database coverage area.*

Displaying the HTAWS Page:

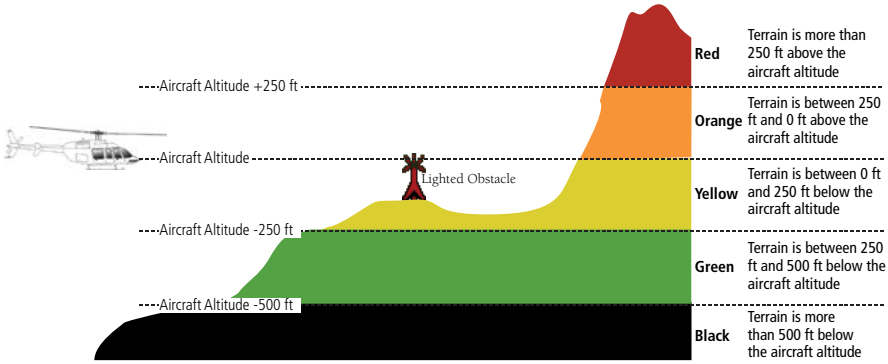
1) Turn the large **FMS** Knob to select the Map Page Group.
2) Turn the small **FMS** Knob to select HTAWS Page.

Changing the HTAWS Page view:

1) Press the **VIEW** Softkey.
2) Press the **360** or **ARC** Softkey to select the desired view.

Or:

1) Press the **MENU** Key.
2) Select 'View Arc' or 'View 360º' and press the **ENT** Key to change the view.



Terrain Altitude/Color Correlation for HTAWS

Unlighted Obstacle		Lighted Obstacle		Obstacle Location
< 1000′ AGL	> 1000′ AGL	< 1000′ AGL	> 1000′ AGL	
				Red obstacle is at or above current aircraft altitude
				Yellow obstacle is between 0′ and 250′ below current aircraft altitude
				Gray obstacle is 250′ or more below current aircraft altitude

HTAWS Obstacle Colors and Symbology

Potential Impact Point Symbol	Alert Type	Example Annunciation
	Warning	
	Caution	

HTAWS Potential Impact Point Symbols with Alert Types

Showing/hiding aviation information on the HTAWS Page:

1) Press the **MENU** Key.
2) Select 'Show Aviation Data' or 'Hide Aviation Data' (choice dependent on current state) and press the **ENT** Key.

Manually testing the HTAWS System:

1) Select the HTAWS Page.
2) Press the **MENU** Key.
3) Select 'Test HTAWS System' and press the **ENT** Key to confirm the selection.

Muting/Unmuting Caution Alerts:

1) Turn the large **FMS** Knob to select the HTAWS Page on the MFD.
2) Press the **MUTE CTN** Softkey.

Or:

1) Press the **MENU** Key.
2) Select 'Mute Active Caution' or 'Unmute Active Caution' (choice dependent on current state) and press the **ENT** Key.

Inhibiting/enabling PDA and FLTA alerting:

1) Select the HTAWS Page.
2) Press the **INHIBIT** Softkey to inhibit or enable HTAWS (choice dependent on current state).

Or:

1) Press the **MENU** Key.
2) Select 'Inhibit HTAWS' or 'Enable HTAWS' (choice dependent on current state) and press the **ENT** Key.

Configuring VCO alerting altitudes:

1) Turn the large **FMS** knob to select the AUX - System Setup Page.
2) If the Aux - System Setup 2 Page is not already displayed, press the **SETUP 2** Softkey.
3) Press the **FMS** Knob to activate the cursor.
4) Turn the large **FMS** Knob to highlight the altitude shown in the MAX SELECTED field.
5) Turn the small **FMS** Knob to select the maximum altitude at which VCO alerts will be enabled from (from 50 to 500 feet), or select NONE to disable all VCO alerts.
6) When finished, press the **FMS** Knob.

Blank Page

ADDITIONAL FEATURES

SYNTHETIC VISION

WARNING: *Use appropriate primary systems for navigation, and for terrain, obstacle, and traffic avoidance. SVT is intended as an aid to situational awareness only and may not provide the accuracy and/or fidelity upon which to solely base decisions and/or plan maneuvers to avoid terrain, obstacles, or traffic.*

WARNING: *Do not use SVT runway depiction as the sole means for determining the proximity of the aircraft to the runway or for maintaining the proper approach path angle during landing.*

Synthetic Vision Technology (SVT) functionality is offered as an enhancement to the G1000H Integrated Flight Deck System.

SVT is primarily comprised of a computer-generated forward-looking, attitude aligned view of the topography immediately in front of the aircraft from the pilot's perspective. SVT information is shown on the primary flight display (PFD).

SVT offers a three-dimensional view of terrain and obstacles. Terrain and obstacles that pose a threat to the aircraft in flight are shaded yellow or red.

In addition to SVT enhancement to the PFD, the following feature enhancements have been added to the PFD:

- Pathways
- Flight Path Marker
- Horizon Heading Marks
- Terrain and Obstacle Alerting
- Three-dimensional Traffic
- Airport Signs
- Runway Display

Displaying SVT Terrain

1) Press the **PFD** Softkey.
2) Press the **SYN VIS** Softkey.
3) Press the **SYN TERR** Softkey.
4) Press the **BACK** Softkey to return to the previous page.

Displaying Pathways

1) Press the **PFD** Softkey.
2) Press the **SYN VIS** Softkey.
3) If not already enabled, press the **SYN TERR** Softkey.
4) Press the **PATHWAY** Softkey.
5) Press the **BACK** Softkey to return to the previous page.

Displaying Heading on the Horizon

1) Press the **PFD** Softkey.
2) Press the **SYN VIS** Softkey.
3) If not already enabled, press the **SYN TERR** Softkey.
4) Press the **HRZN HDG** Softkey.
5) Press the **BACK** Softkey to return to the previous page.

Displaying Airport Signs

1) Press the **PFD** Softkey.
2) Press the **SYN VIS** Softkey.
3) If not already enabled, press the **SYN TERR** Softkey.
4) Press the **APTSIGNS** Softkey.
5) Press the **BACK** Softkey to return to the previous page.

TERMINAL PROCEDURE CHARTS

NOTE: With the availability of SafeTaxi®, ChartView, or FliteCharts®, it may be necessary to carry another source of charts on-board the aircraft.

SafeTaxi® (Optional)

SafeTaxi® gives greater map detail as the map range is adjusted in on the airport. The airport display on the map reveals runways with numbers, taxiways identifiers, and airport landmarks including ramps, buildings, control towers, and other prominent features. Resolution is greater at lower map ranges. The aircraft symbol provides situational awareness while taxiing.

Pressing the **DCLTR** Softkey (declutter) once removes the taxiway markings and airport identification labels. Pressing the **DCLTR** Softkey twice removes VOR station ID, the VOR symbol, and intersection names if within the airport plan view. Pressing

the **DCLTR** Softkey a third time removes the airport runway layout, unless the airport in view is part of an active route structure. Pressing the **DCLTR** Softkey again cycles back to the original map detail.

The SafeTaxi database contains detailed airport diagrams for selected airports. These diagrams provide the pilot with situational awareness by displaying the aircraft position in relation to taxiways, ramps, runways, terminals, and services. This information should not be used by the pilot as the basis for maneuvering the aircraft on the ground. This database is updated on a 56-day cycle.

ChartView (Optional)

ChartView resembles the paper version of Jeppesen terminal procedures charts. The charts are displayed in full color with high-resolution. The MFD depiction shows the aircraft position on the moving map in the plan view of most approach charts and on airport diagrams.

The ChartView database is updated on a 14-day cycle. If the ChartView database is not updated within 70 days of the expiration date, ChartView will no longer function.

FliteCharts® (Optional)

FliteCharts® resemble the paper version of AeroNav Services terminal procedures charts. The charts are displayed with high-resolution and in color for applicable charts. The selected Display Pane depiction shows the aircraft position on the moving map in the plan view of most approach charts and on airport diagrams.

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 will no longer function.

View Charts from the Navigation Map Page

1) Press the **SHW CHRT** Softkey when displayed.

   Or:

   Move the map pointer to point to a desired point on the map and press the **SHW CHRT** Softkey.

2) Press the **DP, STAR, APR, WX,** and **NOTAM** softkeys to access charts for departures, arrivals, approaches, weather and NOTAMs Note that NOTAMS are only available with ChartView.

3) Press the **GO BACK** Softkey to return to the previous page.

View Charts from the Active Flight Plan Page

1) While viewing the Active Flight Plan Page, press the **FMS** Knob to activate the cursor.
2) Turn the large **FMS** Knob to select the departure airport, destination airport, departure, arrival, or approach.
3) Press the **SHW CHRT** Softkey. The appropriate chart is displayed, if available for the item selected.
4) Press the **GO BACK** Softkey to return to the previous page.

Change Day/Night View

1) While viewing a chart press the **MENU** Key to display the Page Menu OPTIONS.
2) Turn the large **FMS** Knob to highlight the 'Chart Setup' Menu Option and press the **ENT** Key.
3) Turn the large **FMS** Knob to move between the 'FULL SCREEN' and 'COLOR SCHEME' Options.
4) Turn the small **FMS** Knob to choose between the 'On' and 'Off' Full Screen Options.
5) Turn the small **FMS** Knob to choose between 'Day', 'Auto', and 'Night' Options.
6) In Auto Mode, turn the large **FMS** Knob to select the percentage field and change percentage with the small **FMS** Knob. The percentage of change is the day/night crossover point based on backlighting intensity.
7) Press the **FMS** Knob when finished to remove the Chart Setup Menu.

AIRPORT DIRECTORY

The Aircraft Owners and Pilots Association (AOPA) and optional AC-U-KWIK Airport Directory add enhanced airport information when viewing airports on the WPT-Airport Information Page.

Both Airport Directories are available for downloading at flygarmin.com. However, copy only one of the databases to the Supplemental Data Card. The system cannot recognize both databases simultaneously.

View Airport Directory Information

While viewing the WPT-Airport Information Page, if necessary, press the **INFO-1** Softkey to change the softkey label to display **INFO-2**. AOPA airport information is displayed on the right half of the display.

SATELLITE TELEPHONE AND DATA LINK SERVICES

NOTE: *Separate accounts must be established to access the Iridium satellite network for voice/SMS and low speed data transmission, and high speed data transmission for the maintenance reports.*

Operation of these features in the cockpit is accomplished through the AUX-TELEPHONE, AUX-TEXT MESSAGING, and AUX-WI-FI SETUP Pages. For operation using the cabin handset, consult the instructions provided with the handset.

Registering with Garmin Flight Data Services

A subscriber account must be established prior to receiving Connext Weather products. Contact Garmin Flight Data Services at https://fly.garmin.com/fly-garmin/support/applications/satelliteservices/ or by calling 1-866-739-5687 in the United States or (011) 913-440-1135. The following information is required to register for Connext Weather services: G1000 System ID, GSR56 (GSR1) Serial Number(s), Tail Number, Serail/Airframe Number, Country of Registration, Aircraft Manufacturer, and Aircraft Model.

1) Turn the large **FMS** Knob on the MFD to select the AUX page group.
2) Turn the small **FMS** Knob to select the AUX-SYSTEM STATUS. Note the System ID and GSR1 Serial Number in the AIRFRAME field.

Activating Connext Weather Registration:

After a subscriber account has been established, the system must be activated for data link features such as reporting services or Connext Weather. Activation is accomplished by entering the required access code. This process is only performed when initially setting up the system for Connext services.

1) Ensure the aircraft is outside with a clear view of the sky.
2) Turn the large **FMS** Knob to select the MAP Page group.
3) Turn the small **FMS** Knob to select the MAP-WEATHER DATA LINK (CNXT) Page.

4) Press the **MENU** Key. If necessary, select 'Display Connext Weather'.
5) Turn the large **FMS** Knob to hightlight 'Register With Connext'.
6) Press the **ENT** Key. The 'CONNEXT REGISTRATION' Window is now displayed.
7) Using the **FMS** Knob enter the access code obtained from Garmin Flight Data Services in the ACCESS CODE field.
8) Press the **ENT** Key. REGISTER will now be highlighted.
9) Press the **ENT** Key. System registration is complete when 'REGISTERED' is displayed in the STATUS field.

Disable/Enable Iridium Transceiver

Iridium telephone and data communications may be turned on or off by performing these simple steps.

Disabling/enabling telephone and low speed data services:

1) Turn the large **FMS** Knob on the MFD to select the AUX page group.
2) Turn the small **FMS** Knob to select REPORTS/DATA LINK.
3) If necessary, select the **REPORTS** Softkey. The AUX-REPORT STATUS Page is now displayed.
4) Press the **MENU** Key. The Page Menu window is now displayed.
5) Turn the **FMS** Knob to select 'Disable Iridium Transmission' in the menu list.
6) Press the **ENT** Key. The Iridium transceiver is now disabled.
7) To enable the Iridium transceiver, repeat steps 1 through 4, then select 'Enable Iridium Transceiver'.

Telephone Communication

The pilot or copilot can place and answer calls on the Iridium satellite network. Control and monitoring of telephone functions are accomplished through the AUX-TELEPHONE Page.

To view the Telephone Page:

1) Turn the large **FMS** Knob on the MFD to select the AUX page group.
2) Turn the small **FMS** Knob to select the AUX-TELEPHONE Page.

Internal Phone	External Phone	Description
		Phone is Idle
		Phone is ringing
		Phone has a dial tone (off hook) or connected to another phone
		Phone dialed is busy
		Phone is dialing another phone
		Phone has failed
		Phone status not known
		Phone is disabled
		Phone is reserved for data transmission
		Calling other phone or incoming call from other phone
		Other phone is on hold
		Phones are connected

Incoming Calls

When viewing MFD pages other than the AUX-TELEPHONE Page, a pop-up alert will be displayed. The pop-up alert may be inhibited at times, such as during takeoff. In addition to the pop-up alert, a ringing phone symbol will be displayed to the right of the MFD page title. Also, the voice alert "Incoming Call" will be heard on the selected cockpit audio.

Answering an incoming call:

1) Press the **TEL** Key on the appropriate audio panel.
2) Select the **ANSWER** Softkey on the MFD.

   Or:

   While viewing the AUX-TELEPHONE Page:

NOTE: *The Push-to-Talk switch is not utilized for telephone communication. The microphone is active after selecting the* ***ANSWER*** *Softkey, and stays active until the call is terminated.*

1) Press the **TEL** Key on the appropriate audio panel.
2) Press the **MENU** Key to display the Page Menu.
3) Turn either **FMS** Knob to place the cursor on 'Answer Incoming Call'.
4) Press the **ENT** Key.

Selecting the **IGNORE** Softkey will extinguish the pop-up window and leave the current call unanswered. Selecting the **IGNRE ALL** Softkey will extinguish the pop-up window for the current and all future incoming calls and leave the current call unanswered. Selecting the **TEL** Softkey will display the AUX-TELEPHONE Page allowing additional call information to be viewed before answering.

Disabling incoming call alerts:

1) With the AUX-TELEPHONE Page displayed, press the **MENU** Key on the MFD to display the Page Menu.
2) Turn either **FMS** Knob to place the cursor on 'Disable Incoming Call Alerts'.
3) Press the **ENT** Key. The voice and pop-up alert will not be displayed now when an incoming call is received.

Outgoing Calls

Voice calls can be made from the cockpit through the Iridium Satellite Network.

To make a call from the cockpit using the Iridium satellite network:

1) Press the **TEL** Key on the audio panel.
2) Select the **DIAL** Softkey on the MFD.
3) Enter the desired telephone number (country code first) by selecting the number softkeys on the MFD.
4) Press the **ENT** Key. 'OK' is highlighted.
5) Press the **ENT** Key. The system will begin calling the number.

When the phone is answered, the connection is established. To exit the call, select the **HANGUP** Softkey.

Placing The Call on Hold

Select the **HOLD** Softkey on the MFD.

Or:

1) Press the **MENU** Key to display the Page Menu.
2) Turn either **FMS** Knob to place the cursor on 'Put Current Call On Hold'.
3) Press the **ENT** Key.

The phone is now isolated from the call. Select the **HOLD** Softkey again to resume the call.

Text Messaging (SMS)

Messages may be sent to an email address or text message capable cellular telephone. Message length is limited to 160 characters, including the email address.

The text messaging user interface is mainly through the AUX-TEXT MESSAGING Page.

Viewing the Text Messaging Page

1) Turn the large **FMS** Knob on the MFD to select the AUX page group.
2) Turn the small **FMS** Knob to select SATELLITE PHONE.
3) If necessary, press the **SMS** Softkey to display the AUX-TEXT MESSAGING Page.

Message Symbol	Description
	Received text message that has not been opened
	Received text message that has been opened
	Saved text message, draft not sent
	System is sending text message
	Text message has been sent
	System failed to send text message
	Predefined text message

Viewing a Text Message When Received

When viewing MFD pages other than the AUX-TEXT MESSAGING Page, a pop-up alert will be displayed when a new text message is received.

Press the **VIEW** Softkey to view the message. Pressing the **IGNORE** Softkey will extinguish the pop-up window and leave the text message unopened. Pressing the **IGNR ALL** Softkey will extinguish the pop-window and ignore all future incoming text messages. Pressing the **SMS** Softkey will display the AUX-TEXT MESSAGING Page.

The pop-up alerts may be enabled or disabled through the Page Menu.

Enable/Disable Incoming Text Message Pop-Up Alerts

1) With the AUX-TEXT MESSAGING Page displayed, press the **MENU** Key on the MFD to display the Page Menu.
2) Turn either **FMS** Knob to place the cursor on 'Disable New Message Popups' or 'Enable New Message Popups'.
3) Press the **ENT** Key. The pop-up alert will not be displayed when an incoming text message is received.

Reply to a Text Message

While viewing the text message, press the **REPLY** Softkey.

Or:

a) Press the **MENU** Key to display the Page Menu.

b) Turn either **FMS** Knob to place the cursor on 'Reply To Message'.

c) Press the **ENT** Key.

Sending a Text Message

1) While viewing the AUX-TEXT MESSAGING Page, press the **NEW** Softkey.

   Or:

   a) Press the **MENU** Key to display the Page Menu.

   b) Turn either **FMS** Knob to place the cursor on 'Draft New Message'.

   c) Press the **ENT** Key.

2) The TEXT MESSAGE DRAFT Window is now displayed with the cursor in the 'TO' field. Enter the desired telephone number or email address. Entry can be accomplished through the **FMS** Knob and softkeys on the MFD. The **FMS** Knob is used to enter letters and numbers, or numbers can be entered from the MFD by pressing the **NUMBERS** Softkey. Press the **CAP LOCK** Softkey to create upper and lower case alpha characters. Special characters can be accessed by pressing the **SYMBOLS** Softkey.
3) Press the **ENT** Key. The cursor is now displayed in the 'MESSAGE' field.
4) Enter the desired message using any combination of entry methods as described in step 2.
5) Press the **ENT** Key.
6) Press the **SEND** Softkey to send the message immediately, or press the **SAVE** Softkey to save the message in Outbox for sending at a later time. Press the **CANCEL** Softkey to delete the message.

Predefined Text Messages

Time and effort can be saved in typing text messages that are used repeatedly by saving these messages as a predefined message.

Create a Predefined Text Message

1) While viewing the AUX-TEXT MESSAGING Page, press the **MENU** Key to display the Page Menu.
2) Turn either **FMS** Knob to select 'Edit Predefined Messages'.
3) Press the **ENT** Key. The PREDEFINED MESSSAGES view is now displayed.
4) Press the **NEW** Softkey.

   Or:

   a) Press the **MENU** Key to display the Page Menu.

   b) Turn either **FMS** Knob to place the cursor on 'Draft New Predefined Message'.

   c) Press the **ENT** Key. The PREDEFINED SMS TEXT MESSAGE Window is now displayed.
5) The cursor is displayed in the 'TITLE' field. Enter the desired message title. Entry can be accomplished through the **FMS** Knob and softkeys on the MFD. The **FMS** Knob is used to enter letters and numbers, or numbers can be entered from the MFD by pressing the **NUMBERS** Softkey. Press the **CAP LOCK** Softkey to create upper and lower case alpha characters. Special characters can be accessed by pressing the **SYMBOLS** Softkey.
6) Press the **ENT** Key. The cursor is now displayed in the 'MESSAGE' field.
7) Enter the desired message using any combination of entry methods as described in step 5.
8) Press the **ENT** Key.
9) Press the **SAVE** Softkey. The new predefined message is now shown in the displayed list. Pressing the **CANCEL** Softkey will delete the message without saving.
10) Press the **MENU** Key to display the Page Menu.
11) Turn either **FMS** Knob to place the cursor on 'Stop Editing Predefined Message'.
12) Press the **ENT** Key.

Send a Predefined Text Message

1) While viewing the AUX-TEXT MESSAGING Page, press the **NEW** Softkey.

2) The TEXT MESSAGE DRAFT Window is now displayed with the cursor in the 'TO' field. Enter the desired telephone number or email address. Entry can be accomplished through the **FMS** Knob and softkeys on the MFD. The **FMS** Knob is used to enter letters and numbers, or numbers can be entered from the MFD by pressing the **NUMBERS** Softkey. Press the **CAP LOCK** Softkey to create upper and lower case alpha characters. Special characters can be accessed by pressing the **SYMBOLS** Softkey.

3) Press the **ENT** Key. The cursor is now displayed in the 'MESSAGE' field.

4) Press the **PREDEFD** Softkey. The PREDEFINED MESSAGE MENU Window is displayed.

6) Press the **ENT** Key. The predefined message text is inserted into the message field. If desired, the message can be edited by using the FMS Knobs.

7) Press the **ENT** Key.

8) Press the **SEND** Softkey to transmit the message.

Text Message Boxes

Received text messages reside in the Inbox as 'Read' or 'Unread' messages. The Outbox contains 'Sent" and 'Unsent' text messages. Saved messages that are meant to be sent later are stored as Drafts. Each text message box may be viewed separately, or together in any combination.

Show Inbox Messages

While viewing the AUX-TEXT MESSAGING Page, press the **ARRANGE** Softkey, then press the **INBOX** Softkey.

Or:

a) Press the **MENU** Key to display the Page Menu.

b) Turn either **FMS** Knob to place the cursor on 'Show Inbox Messages'.

c) Press the **ENT** Key. The message box selected for viewing is indicated at the bottom left of the list window.

Show Outbox Messages

While viewing the AUX-TEXT MESSAGING Page, press the **ARRANGE** Softkey, then press the **OUTBOX** Softkey.

Or:

a) Press the **MENU** Key to display the Page Menu.

b) Turn either **FMS** Knob to place the cursor on 'Show Outbox Messages'.

c) Press the **ENT** Key. The message box selected for viewing is indicated at the bottom left of the list window.

Show Draft Messages

While viewing the AUX-TEXT MESSAGING Page, press the **ARRANGE** Softkey, then press the **DRAFTS** Softkey.

Or:

a) Press the **MENU** Key to display the Page Menu.

b) Turn either **FMS** Knob to place the cursor on 'Show Draft Messages'.

c) Press the **ENT** Key. The message box selected for viewing is indicated at the bottom left of the list window.

Arranging Text Messages

The viewed messages may be listed according to the date/time the message was sent or received, the type of message (read, unread, sent, unsent, etc.), or by message address.

View Messages Sorted by Message Date/Time:

While viewing the AUX-TEXT MESSAGING Page, press the **ARRANGE** Softkey, then press the **TIME** Softkey.

Or:

a) Press the **MENU** Key to display the Page Menu.

b) Turn either **FMS** Knob to place the cursor on 'Sort By Date/Time'.

c) Press the **ENT** Key. The sorting selection is indicated at the bottom center of the list window.

View Messages Sorted by Message Type

While viewing the AUX-TEXT MESSAGING Page, press the **ARRANGE** Softkey, then press the **TYPE** Softkey.

Or:

a) Press the **MENU** Key to display the Page Menu.

b) Turn either **FMS** Knob to place the cursor on 'Sort By Type'.

c) Press the **ENT** Key. The sorting selection is indicated at the bottom center of the list window.

View Messages Sorted by Address:

While viewing the AUX-TEXT MESSAGING Page, press the **ARRANGE** Softkey, then press the **ADDRESS** Softkey.

Or:

a) Press the **MENU** Key to display the Page Menu.

b) Turn either **FMS** Knob to place the cursor on 'Sort By Address'.

c) Press the **ENT** Key. The sorting selection is indicated at the bottom center of the list window.

Viewing The Content of a Text Message

1) While viewing the AUX-TEXT MESSAGING Page, select the desired message box.

2) Press the **FMS** Knob to activate the cursor.

3) Turn either **FMS** Knob to select the desired message.

4) Press the **VIEW** Softkey.

Or:

Press the **ENT** Key.

Or:

a) Press the **MENU** Key to display the Page Menu.

b) Turn either **FMS** Knob to place the cursor on 'View Selected Message'.

c) Press the **ENT** Key.

5) To close the text message, press the **CLOSE** Softkey.

Or:

a) Press the **MENU** Key to display the Page Menu.

b) Turn either **FMS** Knob to place the cursor on 'Close Message'.

c) Press the **ENT** Key.

Mark Selected Message As Read

1) While viewing the Inbox on the AUX-TEXT MESSAGING Page, press the **FMS** Knob to activate the cursor.
2) Turn either **FMS** Knob to select the desired message.
3) Press the **MRK READ** Softkey.

Or:

a) Press the **MENU** Key to display the Page Menu.

b) Turn either **FMS** Knob to place the cursor on 'Mark Selected Message As Read'.

c) Press the **ENT** Key.

The message symbol now indicates the message has been opened.

Mark All Messages As Read

1) While viewing the Inbox on the AUX-TEXT MESSAGING Page, press the **MENU** Key to display the Page Menu.
2) Turn either **FMS** Knob to place the cursor on 'Mark All New Messages As Read'.
3) Press the **ENT** Key. A confirmation window is displayed.
4) With cursor highlighting 'YES', press the **ENT** Key. The message symbols now indicate all the message have been opened.

Delete a Message

1) While viewing the Inbox on the AUX-TEXT MESSAGING Page, press the **FMS** Knob to activate the cursor.
2) Turn either **FMS** Knob to select the desired message.

3) Press the **DELETE** Softkey.

Or:

a) Press the **MENU** Key to display the Page Menu.

b) Turn either **FMS** Knob to place the cursor on 'Delete Selected Message'.

c) Press the **ENT** Key.

WI-FI CONNECTIONS (OPTIONAL)

Control and monitoring of Wi-Fi functions are accomplished through the AUX-WI-FI SETUP Page.

Viewing the Wi-Fi Setup Page

1) Turn the large **FMS** Knob on the MFD to select the AUX page group.
2) Turn the small **FMS** Knob to select REPORTS/DATA LINK.
3) If necessary, press the **WI-FI** Softkey to display the AUX-WI-FI SETUP Page.

Setting Up a New Wi-Fi Connection

1) Press the **AVAIL** Softkey on the MFD. A list of available networks will be displayed in the AVAILABLE NETWORKS window. Signal strength is shown for each network, as well as security methods and whether the network has been saved in the system's memory.
2) If necessary, press the **RESCAN** Softkey to have the system scan again for available networks.
3) Press the **FMS** Knob to place the cursor in the list of networks.
4) Turn either **FMS** Knob to select the desired network.
5) Press the **CONNECT** Softkey.
6) If the network is secured, enter the necessary passcode. Use the **FMS** Knobs to enter the desired alpha numeric characters. Press the **CAP LOCK** Softkey to enter upper case letters. If there is no security associated with the network, proceed to step 9.
7) Press the **ENT** Key. 'OK' will be highlighted.
8) Press the **ENT** Key again.
9) The SAVE SETTINGS window is now displayed with the cursor highlighting 'SAVE CONNECTION'.

10) The selected network can be saved to system memory to make reconnection easier at a later time.

To connect the selected network without saving:

a) Turn the large FMS Knob to move the cursor to highlight 'CONNECT'.

b) Press the **ENT** Key.

To save and connect the selected network:

a) Press the **ENT** Key. A checkmark is placed in the checkbox and the cursor moves to the airport field.

b) Using the **FMS** Knobs, enter an airport identifier to be associated with the saved network. This aids in identifying the network later in the event of duplicate network names.

c) Press the **ENT** Key. The cursor moves to 'CONNECT'.

d) Press the **ENT** Key again to connect to the selected network.

Editing a Saved Network

1) While viewing list of saved networks, press the **FMS** Knob to activate the cursor.

2) Turn either **FMS** Knob to highlight the network to be edited.

3) Pressing the **ENT** Key at this point will check or uncheck the AUTO CONNECT checkbox. When a checkmark is present, the system will automatically connect to the network when within range.

4) Press the **EDIT** Softkey. The cursor now appears in the CONNECTION SETTINGS window.

5) Turn the large **FMS** Knob to select the network attribute to be edited.

6) Turn the small **FMS** Knob to begin editing the field.

7) When the entry is complete, press the **ENT** Key.

8) Turn the large **FMS** Knob or press the **ENT** Key until 'SAVE' is highlighted.

9) Press the **ENT** Key.

Disconnecting a Wi-Fi Network

Press the **DISCNCT** Softkey.

Deleting a Saved Wi-Fi Network

1) While viewing the list of saved networks, press the **FMS** Knob to activate the cursor.
2) Turn either **FMS** Knob to highlight the network to be deleted.
3) Press the **DELETE** Softkey. The selected network is removed from the list.

MAINTENANCE LOGS (OPTIONAL)

The system provides recording of CAS, CMC, exceedances, and other critical aircraft data that occur while the aircraft is on the ground or in flight. This information may be used by aircraft maintenance personnel in determining specific maintenance requirements.

Viewing the Maintenance Logs Page:

1) Turn the large **FMS** Knob on the MFD to select the AUX page group.
2) Turn the small **FMS** Knob to select AUX-MAINTENANCE LOGS Page. Available transmission options are displayed in the Connection Status Window.

Selecting the desired log folder:

1) While viewing the Maintenance Logs Page, press the small **FMS** Knob to activate the cursor in the Folders Window.
2) Turn the small **FMS** Knob to display the list of available folders. 'INT' displayed next to the folder name indicates that folder of log files is stored in internal system memory. 'EXT' displayed next to a folder name indicates the folder, and its contents, is saved to the SD Card located in the bottom card slot of MFD.
3) Turn either **FMS** Knob to select the desired folder.
4) Press the **ENT** Key. The log files for the selected folder are displayed.
5) Press the small **FMS** Knob to remove the cursor.

Selecting folder transmission settings:

1) While viewing the Maintenance Logs Page, press the **FMS** Knob to activate the cursor.
2) Turn the small **FMS** Knob to display the list of available folders.

3) Turn either **FMS** Knob to select the desired folder.

4) Press the **ENT** Key.

5) Press the **MENU** Key to display the Maintenance Logs Page Menu.

6) Press the **ENT** Key to display the Folder Transmission Settings. Four different transmission modes may be set. 'TX MODE 1' is the first transmit method the system will attempt to use when sending data. If the system is unable to connect using the first method, the system will automatically attempt to use the second method, 'TX MODE 2'. The system will attempt to connect using mode 1 through 4 until a connection is successful.

7) Turn the small **FMS** Knob to display the available transmission settings.

8) Turn the either **FMS** Knob to the desired transmission setting. Selecting 'WI-FI', will set the system to transmit log data over a Wi-Fi network when the system connects using 'TX MODE 1'. Selecting 'SAT SHORT BURST' or 'SAT RUDICS' will set the system to use one of the two Iridium telephone system options for transmission. Selecting 'NONE' will disable the transmit mode.

9) Press the **ENT** Key to complete the selection.

10) Turn the large **FMS** Knob to move the cursor to the 'TX MODE 2' field.

11) Repeat steps 7 through 9 to set the transmission methods for transmit modes 2 through 4.

12) Turn the large **FMS** Knob to move the cursor to the 'TX TYPE' field.

13) Turn the small **FMS** Knob to display the list of transmit type options.

14) Turn the either **FMS** Knob to place the cursor on the desired transmit type option.

15) Press the **ENT** Key.

16) The next steps vary based on the previous selection. Perform the following based on the transmit type selected.

    a) Select 'AUTOMATIC' as the transmission type. Data is transmitted when specific alert triggers become valid. Turn the large **FMS** Knob to select the 'ALERT (ID)' field.

    b) Using the **FMS** Knobs, enter the appropriate alert ID (provided by the aircraft manufacturer).

    c) Press the **ENT** Key.

Or:

a) Select 'PERIODIC' as the transmission type. Data is transmitted at specific time intervals. Turn the large **FMS** Knob to select the 'PERIOD' field.

b) Using the **FMS** Knobs, enter the desired time interval (hours, minutes, and seconds).

c) Press the **ENT** Key.

Or:

Select 'IMMEDIATE' as the transmission type. Data is transmitted immediately after it is logged.

Or:

Select 'Manual' as the transmission type. Data is transmitted only when the 'EXPORT' Button associated with a specific log file selected.

17) With the cursor in the 'PRIORITY' field, use the **FMS** Knobs to enter the desired value.

18) Press the **ENT** Key. The cursor is now displayed in the 'RETRY COUNT' field.

19) Use the **FMS** Knobs to enter the number of times the system will try to connect to a Wi-Fi network or make a connection to the Iridium system.

20) Press the **ENT** Key.

21) Press the small **FMS** Knob to remove the Folder Transmission Settings Window from the display.

Send a transmission manually:

1) While viewing the Maintenance Logs Page, press the **FMS** Knob to activate the cursor.

2) Turn the large **FMS** Knob to display the list of available folders.

3) Turn either **FMS** Knob to select the desired folder.

4) Press the **ENT** Key.

5) Turn the large **FMS** Knob to place the cursor on the 'EXPORT' button to the right of the log file to be transmitted.

6) Press the **ENT** Key.

7) Turn the large **FMS** Knob to place cursor on 'SELECT EXPORT MODE' field.

8) Turn the small **FMS** Knob to display the export mode options.

9) Turn the small **FMS** Knob to select 'TRANSMIT'.

10) Press the **ENT** Key.

11) Turn the large **FMS** Knob to place the cursor in the 'SELECT DATA TO EXPORT' field.

12) Turn the small **FMS** Knob to display the selection options. In this example, 'COMPLETE LOG' is selected. This option sends all the data contained in the file. Choosing 'NEW DATA ONLY' will send only new data not sent in previous transmissions.

13) Press the **ENT** Key. The 'OK' Button is highlighted. To cancel the transmission, select the 'CANCEL' Button.

14) Press the **ENT** Key. The selected data is being sent as indicated by the status 'SENDING' on the selected log file. The following are indications used to show the status of a log files transmission.

- 'SENDING' - The file is currently transmitting.
- 'SENT' - The file has been completely transmitted.
- 'UNSENT' - The file has neither been transmitted nor queued up for transmission.
- 'QUEUED' - The file is queued up for transmission when a connection is available.
- 'PARTIAL' - The log has been transmitted, but more data has been logged since the last transmission.
- 'CANCELED' - Transmission was stopped or the file was removed from the transmit queue.
- 'FAILED' - The log failed to transmit.

15) Press the **TX INFO** Softkey to view information for the last data transmission.

Copy a log file to an SD Card:

1) Place an SD Card in the top card slot of the MFD.

2) While viewing the Maintenance Logs Page, press the **FMS** Knob to activate the cursor.

3) Turn the large **FMS** Knob to display the list of available folders.

4) Turn either **FMS** Knob to select the desired folder.

5) Press the **ENT** Key.

6) Turn the large **FMS** Knob to place the cursor on the 'EXPORT' button to the right of the log file to be transmitted.
7) Press the **ENT** Key. The Export Log Window is displayed and the 'OK' Button highlighted.
8) Press the **ENT** Key. A .csv file is copied to the SD Card in top card slot of the MFD.

Delete all logs from a select folder:

1) While viewing the Maintenance Logs Page, press the **FMS** Knob to activate the cursor.
2) Turn the large **FMS** Knob to display the list of available folders.
3) Turn either **FMS** Knob to select the desired folder.
4) Press the **ENT** Key.
5) Press the **MENU** Key to display the Page Menu.
6) Turn either **FMS** Knob to highlight 'Delete All Logs In Folder'.
7) Press the **ENT** Key. The Confirmation Window is displayed.
8) With 'YES' highlighted, press the **ENT** Key.

Delete all logs from internal memory:

1) While viewing the Maintenance Logs Page, press the **MENU** Key to display the Page Menu.
2) Turn either **FMS** Knob to highlight 'Delete All Logs'.
3) Press the **ENT** Key. The Confirmation Window is displayed.
4) With 'YES' highlighted, press the **ENT** Key. All log files located in the internal system memory will be deleted. Log files in folders located on the SD Card in the bottom card slot of the MFD are not affected.

POSITION REPORTING

The Position Reporting feature allows the system to send position reporting information to a provider, such as FlightAware.com.

Viewing the Connext Page:

1) Turn the large **FMS** Knob on the MFD to select the AUX page group.
2) Turn the small **FMS** Knob to select AUX-CONNEXT Page.

Setting up Position Reporting:

1) With the 'AUX-CONNEXT' Page displayed, press the **FMS** Knob to display the cursor in the TRANSMISSION PERIOD field.
2) Turn the small **FMS** Knob to select 'AUTO' for automatic transmission of position reports or 'OFF' to disable transmission of position reports.
3) Press the **ENT** Key. The selection is entered and the cursor is placed in the TRANSMISSION RATE field.
4) Turn the small **FMS** Knob to highlight the first digit.
5) Again, turn the small **FMS** Knob to enter the desired number.
6) Turn the large **FMS** Knob to highlight the second digit.
7) Turn the small **FMS** Knob to enter the desired number.
8) Press the **ENT** Key. The selection is entered and the cursor is placed in the PASSENGERS ON BOARD field.
9) Turn the small **FMS** Knob left or right to select 'YES' or 'NO'.
10) Press the **FMS** Knob to remove the cursor.

To send a position report manually:

1) Turn the large **FMS** Knob on the MFD to select the AUX page group.
2) Turn the small **FMS** Knob to select 'AUX-CONNEXT' Page.
3) If necessary, set the TRANSMISSION PERIOD to 'AUTO'.
4) Press the **SEND RPT** Softkey.

SIRIUSXM RADIO ENTERTAINMENT (OPTIONAL)

The XM Radio Page provides information and control of the audio entertainment features of the SiriusXM Satellite Radio.

Selecting the XM Radio Page

1) Turn the large **FMS** Knob to select the Auxiliary Page Group.
2) Turn the small **FMS** Knob to select the displayed 'AUX - XM RADIO' Page.
3) Press the **RADIO** Softkey to show the XM Radio Page where audio entertainment is controlled.

Active Channel and Channel List

The Active Channel Box on the XM Radio Page displays the currently selected channel. The Channels List Box of the XM Radio Page shows a list of the available channels for the selected category.

Selecting a Category

The Category Box of the XM Radio Page displays the currently selected category of audio.

1) Press the **CATGRY** Softkey on the XM Radio Page.
2) Press the **CAT +** and **CAT -** Softkeys to cycle through the categories.

   Or:

   Turn the small **FMS** Knob to display the 'Categories' list. Highlight the desired category with the small **FMS** Knob.
3) Press the **ENT** Key.

Select an Available Channel within the Selected Category

1) While on the XM Radio Page, press the **CHNL** Softkey.
2) Press the **CH +** Softkey to go up through the list in the Channel Box, or move down the list with the **CH –** Softkey.

   Or:

   Press the **FMS** Knob to highlight the channel list and turn the large **FMS** Knob to scroll through the channels.
3) With the desired channel highlighted, press the **ENT** Key.

Entering a Channel Directly

1) While on the XM Radio Page, press the **CHNL** Softkey.
2) Press the **DIR CH** Softkey. The channel number in the Active Channel Box is highlighted.
3) Press the numbered softkeys located on the bottom of the display to directly select the desired channel number.
4) Press the **ENT** Key to activate the selected channel.

Assigning Channel Presets

Up to 15 channels from any category can be assigned a preset number.

1) On the XM Radio Page, while listening to an Active Channel that is wanted for a preset, press the **PRESETS** Softkey to access the first five preset channels (**PS1 - PS5**).
2) Press the **MORE** Softkey to access the next five channels (**PS6 – PS10**), and again to access the last five channels (**PS11 – PS15**). Pressing the **MORE** Softkey repeatedly cycles through the preset channels.
3) Press the **SET** Softkey.
4) Press any one of the (**PS1 - PS15**) softkeys to assign a number to the active channel.

Adjusting Volume

1) On the XM Radio Page, press the **RADIO** Softkey.
2) Press the **VOL** Softkey to access the volume control softkeys.
3) Press **VOL +** or **VOL -** softkeys to adjust the volume level.
4) Press the **MUTE** Softkey to mute the radio audio.

SCHEDULER

The Scheduler feature can be used to enter and display reminder messages (e.g., Phase 1 Inspection, Switch fuel tanks, or Altimeter-Transponder Check) in the Messages Window on the PFD. Messages can be set to display based on a specific date and time (event), once the message timer reaches zero (one-time; default setting), or recurrently whenever the message timer reaches zero (periodic). Message timers set to periodic alerting automatically reset to the original timer value once the message is displayed. When power is cycled, all messages are retained until deleted, and message timer countdown is resumed.

Scheduler messages appear in the Messagess Window on the PFD. When a scheduler message is waiting, the **MSG** Softkey flashes. Pressing the **MSG** Softkey opens the Messages Window and acknowledges the scheduler message. The softkey label no longer flashes after pressing the **MSG** Softkey. Pressing the **MSG** Softkey again removes the Messages Window from the display, and the scheduler message is deleted from the message queue.

Entering a scheduler message:

1) Select the AUX - Utility Page.
2) Press the **FMS** Knob momentarily to activate the flashing cursor.
3) Turn the large **FMS** Knob to highlight the first empty scheduler message naming field.
4) Use the **FMS** Knob to enter the message text to be displayed in the Messages Window and press the **ENT** Key.
5) Press the **ENT** Key again or use the large **FMS** Knob to move the cursor to the field next to Type.
6) Turn the small **FMS** Knob to select the message type:
   - Event—Message issued at the specified date/time
   - One-time—Message issued when the message timer reaches zero (default setting)
   - Periodic—Message issued each time the message timer reaches zero
7) Press the **ENT** Key again or use the large **FMS** Knob to move the cursor to the next field.
8) For periodic and one-time message, use the **FMS** Knob to enter the timer value (HH:MM:SS) from which to countdown and press the **ENT** Key.
9) For event-based messages:
   a) Use the **FMS** Knob to enter the desired date (DD-MM-YY) and press the **ENT** Key.
   b) Press the **ENT** Key again or use the large **FMS** Knob to move the cursor to the next field.
   c) Use the **FMS** Knob to enter the desired time (HH:MM) and press the **ENT** Key.
10) Press the **ENT** Key again or use the large **FMS** Knob to move the cursor to enter the next message.

Deleting a scheduler message:

1) Select the AUX - Utility Page.
2) Press the **FMS** Knob momentarily to activate the flashing cursor.
3) Turn the large **FMS** Knob to highlight the name field of the scheduler message to be deleted.

4) Press the **CLR** Key to clear the message text. If the **CLR** Key is pressed again, the message is restored.

5) Press the **ENT** Key while the message line is cleared to clear the message text.

AUXILIARY VIDEO (OPTIONAL)

Display Auxiliary Video

1) Turn the large **FMS** Knob to select the AUX page group.

2) Turn the small **FMS** Knob to select VIDEO and display the AUX-VIDEO Page.

Adjusting Video Settings

1) With the AUX-VIDEO Page displayed, press the **SETUP** Softkey.

2) Press the **BRIGHT -** or **BRIGHT +**, to adjust display brightness in five percent increments from 0 to 100%.

3) Press the **CNTRST-** or **CNTRST +**, to adjust display contrast in five percent increments from 0 to 100%.

4) Press the **SAT -** or **SAT +**, to adjust display saturation in five percent increments from 0 to 100%.

5) Press the **BACK** Softkey to return to the previous softkey level.

Press the **RESET** Softkey to return the display to the default settings.

Input Selection

With the AUX-VIDEO Page displayed, press the **INPUT** Softkey to switch between Input 1 and Input 2.

Display Selection

With the AUX-VIDEO Page displayed, press the **HIDE MAP** Softkey to switch between Split-Screen and Full Display.

Zoom/Range

1) Press the **VID ZM +** or **VID ZM -** Softkeys to increase or decrease the video display magnification between 1x and 10x.

2) Use the Joystick to adjust the current displayed portion of the full display.

The **Joystick** can be used to increase or decrease the range setting on the map display or zoom in and out on the video display. While in the Split-Screen mode, pressing the **MAP ACTV** or **VID ACTV** Softkey determines which display the **Joystick** adjusts. Pressing the softkey to display MAP ACTV allows the **Joystick** to control the range setting of the map display. Pressing the softkey to display VID ACTV allows the **Joystick** to control the zoom setting of the video display.

PILOT PROFILES

Creating a profile:

1) Use the **FMS** Knob to select the AUX - System Setup Page.

2) Press the **FMS** Knob momentarily to activate the flashing cursor.

3) Turn the large **FMS** Knob to highlight 'CREATE' in the Pilot Profile Box.

4) Press the **ENT** Key. A 'Create Profile' window is displayed.

5) Use the **FMS** Knob to enter a profile name up to 16 characters long and press the **ENT** Key. Pilot profile names cannot begin with a blank as the first letter.

6) In the next field, use the small **FMS** Knob to select the desired settings upon which to base the new profile. Profiles can be created based on Garmin factory defaults, default profile settings (initially based on Garmin factory defaults unless edited by the pilot), or current system settings.

7) Press the **ENT** Key.

8) With 'CREATE' highlighted, press the **ENT** Key to create the profile

Or:

Use the large **FMS** Knob to select 'CREATE and ACTIVATE' and press the **ENT** Key to activate the new profile.

9) To cancel the process, select 'CANCEL' with the large FMS Knob and press the **ENT** Key.

Selecting an active profile:

1) Use the **FMS** Knob to select the AUX - System Setup Page.

2) Press the **FMS** Knob momentarily to activate the flashing cursor.

3) Turn the large **FMS** Knob to highlight the active profile field in the Pilot Profile Box.

4) Turn the small **FMS** Knob to display the pilot profile list and highlight the desired profile.

5) Press the **ENT** Key. The system loads and displays the system settings for the selected profile.

Renaming a profile:

1) Use the **FMS** Knob to select the AUX - System Setup Page.
2) Press the **FMS** Knob momentarily to activate the flashing cursor.
3) Turn the large **FMS** Knob to highlight 'RENAME' in the Pilot Profile Box.
4) Press the **ENT** Key.
5) In the 'Rename Profile' window, turn the **FMS** Knob to select the profile to rename.
6) Press the **ENT** Key.
7) Use the **FMS** Knob to enter a new profile name up to 16 characters long and press the **ENT** Key.
8) With 'RENAME' highlighted, press the **ENT** Key.
9) To cancel the process, use the large **FMS** Knob to select 'CANCEL' and press the ENT Key.

Deleting a profile:

1) Use the **FMS** Knob to select the AUX - System Setup Page.
2) Press the **FMS** Knob momentarily to activate the flashing cursor.
3) Turn the large **FMS** Knob to highlight 'DELETE' in the Pilot Profile Box.
4) Press the **ENT** Key.
5) In the 'Delete Profile' window, turn the **FMS** Knob to select the profile to delete.
6) Press the **ENT** Key.
7) With 'DELETE' highlighted, press the **ENT** Key.
8) To cancel the process, use the large **FMS** Knob to select 'CANCEL' and press the **ENT** Key.

Importing a profile:

1) Insert the SD card containing the Pilot Profile into the top card slot on the MFD.

2) Use the **FMS** Knob to select the AUX - System Setup Page.

3) Press the **IMPORT** softkey. If the correct Pilot Profile file is selected; with 'IMPORT' highlighted press the **ENT** Key.

Or:

If the SD card contains more than one Pilot Profile:

a) Turn the large **FMS** Knob to highlight the select file field in the Pilot Profile Importing Box.

b) Turn the small **FMS** Knob to display the pilot profile list and highlight the desired profile to import and press the **ENT** Key.

c) With 'IMPORT' highlighted, press the **ENT** Key.

4) "Pilot profile import succeeded." is shown in the import results box. Press the **ENT** Key. The imported profile becomes the active Pilot Profile.

Exporting a profile:

1) Insert the SD card for storing the Pilot Profile into the top card slot on the MFD.

2) Use the **FMS** Knob to select the AUX - System Setup Page.

3) Activate the desired Pilot Profile to export. Only the active Pilot Profile can be exported.

4) Press the **EXPORT** softkey.

5) With 'EXPORT' highlighted press the **ENT** Key.

6) "Pilot profile export succeeded." is shown in the export results box. Press the **ENT** Key to exit the Pilot Profile Exporting Box.

Blank Page

ABNORMAL OPERATION

REVERSIONARY MODE

Should a system detected failure occur in either display, the G1000H automatically enters reversionary mode. In reversionary mode, critical flight instrumentation is combined with engine instrumentation on the remaining display.

Reversionary display mode can be manually activated by pressing the DU BACKUP Button on the instrument panel.

NOTE: *The Bell 407GX Rotorcraft Flight Manual (RFM) always takes precedence over the information found in this section.*

ABNORMAL COM OPERATION

When a COM tuning failure is detected by the system, the emergency frequency (121.500 MHz) is automatically loaded into the active frequency field of the COM radio for which the tuning failure was detected. In the event of a failure of both PFDs, the emergency frequency (121.500 MHz) automatically becomes the active frequency on both COM radios.

HAZARD DISPLAYS WITH LOSS OF GPS POSITION

If GPS position is lost, or becomes invalid, selected hazards being displayed on the Navigation Map Page are removed until GPS position is again established.

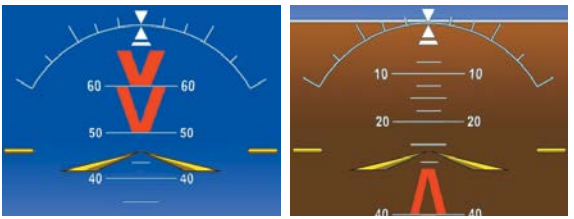
Loss of Hazard Functions with Loss of GPS Position

UNUSUAL ATTITUDES

The PFD 'declutters' when the aircraft enters an unusual attitude. Only the primary functions are displayed in these situations.

The following information is removed from the PFD (and corresponding softkeys are disabled) when the aircraft experiences unusual attitudes:

- Traffic Annunciations
- AFCS Annunciations
- Flight director Command Bars
- Inset Map
- Temperatures
- DME Information Window
- Wind Data
- Selected Heading Box
- Selected Course Box
- Transponder Status Box
- System Time
- PFD Setup Menu
- Windows displayed in the lower right corner of the PFD:
  - Timer/References
  - Nearest Airports
  - Flight Plan
  - Messages
  - Procedures
  - DME Tuning
- Barometric Minimum Descent Altitude Box
- Glideslope, Glidepath, and Vertical Deviation Indicators
- Altimeter Barometric Setting
- Selected Altitude
- VNV Target Altitude



Extreme Pitch Indication

DEAD RECKONING

While in Enroute or Oceanic phase of flight, if the G1000H detects an invalid GPS solution or is unable to calculate a GPS position, the system automatically reverts to Dead Reckoning (DR) Mode. In DR Mode, the G1000H uses its last-known position combined with continuously updated airspeed and heading data (when available) to calculate and display the aircraft's current estimated position.

NOTE: *Dead Reckoning Mode only functions in Enroute (ENR) or Oceanic (OCN) phase of flight. In all other phases, an invalid GPS solution produces a "NO GPS POSITION" annunciation on the map and the G1000H stops navigating in GPS Mode.*

DR Mode is indicated on the G1000H by the appearance of the letters 'DR' superimposed in amber over the 'own aircraft' symbol as shown in the following figure. In addition, 'DR' is prominently displayed, also in amber, on the HSI slightly above and to the right of the aircraft symbol on the CDI as shown in the following figure. Also, the CDI deviation bar is removed from the display. Lastly, but at the same time, a 'GPS NAV LOST' alert message appears on the PFD.

Normal navigation using GPS/SBAS source data resumes automatically once a valid GPS solution is restored.

It is important to note that estimated navigation data supplied by the G1000H in DR Mode may become increasingly unreliable and must not be used as a sole means of navigation. If, while in DR Mode, airspeed and/or heading data is also lost or not available, the DR function may not be capable of estimating your position and, consequently, the system may display a path that is different than the actual movement of the aircraft. Estimated position information displayed by the G1000H through DR while there is no heading and/or airspeed data available should not be used for navigation.

DR Mode is inherently less accurate than the standard GPS/SBAS Mode due to the lack of satellite measurements needed to determine a position. Changes in wind speed and/or wind direction compounds the relative inaccuracy of DR Mode. Because of this degraded accuracy, the crew must maintain position awareness using other navigation equipment until GPS-derived position data is restored.

CDI 'DR' Indication on PFD

Symbolic Aircraft (Map pages and Inset Map)

Dead Reckoning Indications

As a result of operating in DR Mode, all GPS-derived data is computed based upon an estimated position and is displayed as amber text on the display to denote degraded navigation source information. This data includes the following:

- Navigation Status Box fields except Active Leg, TAS, and DTK
- GPS Bearing Pointer
- Wind data and pointers in the Wind Data Box on the PFD
- Current Track Indicator
- All Bearing Pointer Distances
- Active Flight Plan distances, bearings, and ETE values

Also, while the G1000H is in DR Mode, HTAWS is disabled. Additionally, the accuracy of all nearest information (airports, airspaces, and waypoints) is questionable. Finally, airspace alerts continue to function, but with degraded accuracy.

ANNUNCIATIONS & ALERTS

G1000H SYSTEM ANNUNCIATIONS

When an LRU or an LRU function fails, a large red "X" is typically displayed on windows associated with the failed data. Refer to the RFM for additional information regarding pilot responses to these annunciations

System Annunciation	Comment
	Attitude and Heading Reference System is aligning.
	Display system is not receiving attitude information from the AHRS.
	GPS information is either not present or is invalid for navigation use. Note that AHRS utilizes GPS inputs during normal operation. AHRS operation may be degraded if GPS signals are not present (see RFM).
	Display system is not receiving valid heading input from AHRS.
	Display system is not receiving heading information, but track is available.
	Display system is not receiving valid transponder information.

System Annunciation	Comment
	CDI is not receiving valid data from the corresponding GIA. Does not apply when the CDI is set to GPS.
	Display system is not receiving airspeed input from air data computer.
	Display system is not receiving altitude input from the air data computer.
	Display system is not receiving vertical speed input from the air data computer.
Other Various Red X Indications	A red 'X' through any other display field (such as engine instrumentation display) indicates that the field is not receiving valid data.

WARNING MESSAGES

See the Rotorcraft Flight Manual (RFM) for recommended pilot actions.

Annunciation Text	Description	Aural Alert
BATTERY HOT	Battery overheat detected.	Single Chime
ENGINE FIRE	Fire/Overheat detector senses a temperature greater than or equal to 338°F.	Continuous Chime
ENGINE OUT	Ng less than 55% or FADEC senses engine out.	Continuous Fast-Pulsing Chime
ENGINE OVSPD	Ng greater than 110% or NP vs torque is above maximum continuous limit.	Single Chime
FADEC FAIL	Both the primary and reversionary channels have failed.	Repeating Ding-Dong Chime
XMSN OIL PRESS	Transmission oil pressure is low.	Single Chime
XMSN OIL TEMP	Transmission oil overheat is detected.	Single Chime

CAUTION MESSAGES

See the Rotorcraft Flight Manual (RFM) for recommended pilot actions.

Annunciation Text	Description	Aural Alert
AP DEGRADED	Fault that prevents operation of some AP functions such as loss or degraded operation of an axis. Loss of airspeed gain scheduling, stuck trim beep switch, etc.	Single Ping
AP FAILED	AP Fault related to the loss of one Flight Control Computer channel, AHRS data, linear actuator or communication between involved LRUs.	
AUTOTRIM	Trim system not responding to Flight Control Computer commands.	
BAGGAGE DOOR	Baggage door is not securely latched.	
BATTERY RLY	Battery relay energized when battery switch is off. Battery still connected to DC bus.	
ENGINE CHIP	Chip detector has detected debris in engine oil.	
EXT PWR DOOR	External power door not securely closed.	
FADEC DEGRADED	FADEC fault detected that may result in degraded engine performance.	

Annunciation Text	Description	Aural Alert
FADEC FAULT	A fault is recorded in the FADEC.	Single Ping
FADEC MANUAL	FADEC is in manual operating mode.	
FLOAT ARM	Floats Arm switch is in the armed position.	
FUEL FILTER	External fuel filter is partially blocked before impending bypass.	
FUEL LOW	Fuel feed tank sensor indicates low fuel. 100 ± 10 pounds of fuel remain in aft tank.	
FUEL VALVE	Fuel valve is in transition or is not in the commanded position.	
GEN FAIL	Generator not connected to DC bus.	
HEATER OVERTMP	An over temperature condition has been detected either under the pilot's seat, copilot's seat, or in the vertical tunnel.	
HYDRAULIC SYS	Low pressure in hydraulic system.	
L/FUEL BOOST	Left fuel boost pump has failed.	
L/FUEL XFR	Left fuel transfer pump has failed.	
LITTER DOOR	Litter door is not securely latched.	
MGT EXCEED	MGT is in exceedance.	
MGT MISCOMP	MGT miscompare event.	
NG EXCEED	Engine Ng is in exceedance.	
NG MISCOMP	Ng miscompare event.	
NP EXCEED	Engine NP is in exceedance.	
NP MISCOMP	NP miscompare event.	
NR MISCOMP	NR miscompare event.	
PEDAL STOP	Pedal stop check or failed to engage or disengage upon command. Or, loss of ADC inputs.	
Q EXCEED	Engine torque is in exceedance.	
Q MISCOMP	Q miscompare event.	
R/FUEL BOOST	Right fuel boost pump has failed.	
R/FUEL XFR	Right fuel transfer pump has failed.	
SLIDING DOOR	Left or right Sliding Door not securely closed	

Annunciation Text	Description	Aural Alert
T/R CHIP	T/R Chip Detector has detected debris.	Single Ping
XMSN CHIP	Transmission Chip Detector has detected debris in transmission oil.	

ADVISORY MESSAGES

See the Rotorcraft Flight Manual (RFM) for recommended pilot actions.

Annunciation Text	Description
ALTN DATA FAIL	Alternate engine data source is not available.
AUTO RELIGHT	Engine igniter is operating.
ENG ANTI-ICE	Engine Anti-Ice valve is open, pressure is high.
FADEC MAINT	FADEC lamp test failure during power-up self test and in flight.
INSTR FAN	Instrument panel area fan has failed.
LASER FIRE	Laser Fire operating.
NG OAT LIMIT	Engine Ng limited due to OAT.
QUIET MODE SEL	Quiet Mode switch is in quiet position.
RESTART FAULT	ECU fault will not allow start in AUTO (ECU) Mode.
START	Engine starter is engaged.

SAFE OPERATING ANNUNCIATION

Annunciation Text	Description
FLOAT TEST	Float system is in test mode.
LASER ARMED	Laser armed.
QUIET MODE ON	Engine Quiet Mode is on.
WOG	Aircraft is on the ground.

HTAWS ALERTS

Alert Type	PFD/HTAWS Page Alert Annunciation	MFD Pop-Up Alert (except HTAWS Page)	Voice Message
Reduced Required Terrain Clearance Warning (RTC)	TERRAIN	WARNING – TERRAIN	"Warning; Terrain, Terrain"
Imminent Terrain Impact Warning (ITI)	TERRAIN	WARNING – TERRAIN	"Warning; Terrain, Terrain"
Reduced Required Obstacle Clearance Warning (ROC)	OBSTACLE	WARNING – OBSTACLE	"Warning; Obstacle, Obstacle"
Imminent Obstacle Impact Warning (IOI)	OBSTACLE	WARNING – OBSTACLE	"Warning; Obstacle, Obstacle"
Reduced Required Terrain Clearance Caution (RTC)	TERRAIN	CAUTION – TERRAIN	"Caution; Terrain, Terrain"
Imminent Terrain Impact Caution (ITI)	TERRAIN	CAUTION – TERRAIN	"Caution; Terrain, Terrain"
Reduced Required Obstacle Clearance Caution (ROC)	OBSTACLE	CAUTION – OBSTACLE	"Caution; Obstacle, Obstacle"
Imminent Obstacle Impact Caution (IOI)	OBSTACLE	CAUTION – OBSTACLE	"Caution; Obstacle, Obstacle"
Voice Callout (VCO)	None	None	"Five Hundred" "Four Fifty" "Four Hundred" "Three Fifty" "Three Hundred" "Two Fifty", "Two Hundred" "One Fifty" "One Hundred" "Fifty"

HTAWS SYSTEM STATUS ANNUNCIATIONS

Alert Type	PFD/HTAWS Page Status Annunciation	HTAWS Page Center Banner Annunciation	Voice Message
System Test in Progress	HTAWS TEST	HTAWS TEST	None
System Test Pass	None	None	"HTAWS Test OK"
HTAWS System Failure	HTAWS FAIL	HTAWS FAIL	"HTAWS Failure"
HTAWS Not Available	HTAWS N/A	None	"HTAWS Not Available"
HTAWS FLTA Alerting Inhibited	HTAWS INH	None	None
HTAWS Availability Restored	None	None	"HTAWS Available"*
Reduced Protection Mode Enabled	RP MODE	None	None
MFD Terrain or Obstacle database unavailable or invalid. HTAWS operating with PFD Terrain or Obstacle databases	None	TERRAIN DATABASE FAILURE	None
Terrain or Obstacle database unavailable or invalid on all displays, invalid software configuration, HTAWS audio fault	HTAWS FAIL	HTAWS FAIL	"HTAWS Failure"
No GPS position	HTAWS N/A	NO GPS POSITION	"HTAWS Not Available" "HTAWS Available" when GPS position returns. and HTAWS is not inhibited.

Alert Type	PFD/HTAWS Page Status Annunciation	HTAWS Page Center Banner Annunciation	Voice Message
Excessively degraded GPS signal	HTAWS N/A	None	"HTAWS Not Available" "HTAWS Available" when sufficient GPS signal is received. and HTAWS is not inhibited.
Out of database coverage area	HTAWS N/A	None	"HTAWS Not Available" "HTAWS Available" when aircraft enters database coverage area and HTAWS is not inhibted.

** Aural message not issued if HTAWS is inhibited.*

VOICE ALERTS

Voice Alert	Description
"Minimums, minimums"	The aircraft has descended below the preset barometric minimum descent altitude.
"Vertical track"	The aircraft is one minute from Top of Descent. Issued only when vertical navigation is enabled.
"Traffic"	Played when a Traffic Advisory (TA) is issued (TIS and GTS 800).
"TIS Not Available"	The aircraft is outside the Traffic Information Service (TIS) coverage area.
"Traffic, Traffic"	Played when a Traffic Advisory (TA) is issued (Skywatch TAS system).
"TAS System Test Passed"	Played when the GTS 800 TAS system passes a pilot-initiated self test.
"TAS System Test Failed"	Played when the GTS 800 TAS system fails a pilot-initiated self test.
"One o'clock" through "Twelve o'clock" or "No Bearing"	Intruder bearing (GTS 800 only)

Voice Alert	Description
"High", "Low", "Same Altitude" (if within 200 feet of own altitude), or "Altitude not available"	Intruder relative altitude (GTS 800 only)
"Less than one mile", "One Mile" through "Ten Miles", or "More than ten miles"	Intruder distance (GTS 800 only)

GDL 69AH/GDL 69AH SXM DATA LINK RECEIVER MESSAGES

Message	Message Location	Description
CHECK ANTENNA	XM Information Page (MFD)	Data Link Receiver antenna error; service required
UPDATING	XM Information Page (MFD)	Data Link Receiver updating encryption code
NO SIGNAL	XM Information Page Weather Datalink Page (MFD)	Loss of signal; signal strength too low for receiver
LOADING	XM Radio Page (MFD)	Acquiring channel audio or information
OFF AIR	XM Radio Page (MFD)	Channel not in service
--------	XM Radio Page (MFD)	Missing channel information
WEATHER DATA LINK FAILED	Weather Datalink Page (MFD)	No communication from Data Link Receiver within last 5 minutes
ACTIVATION REQUIRED	XM Information Page (MFD)	SiriusXM subscription is not activated
DETECTING ACTIVATION	Weather Datalink Page (MFD)	SiriusXM subscription is activating.
WAITING FOR DATA...	Weather Datalink Page (MFD)	SiriusXM subscription confirmed downloading weather data.

GDL 69AH/GDL 69AH SXM Data Link Receiver Messages

G1000H SYSTEM MESSAGE ADVISORIES

NOTE: *The Bell 407GX Rotorcraft Flight Manual (AFM) and Rotorcraft Flight Manual Supplement (AFMS) takes precedence over any conflicting guidance found in this section.*

Message	Comments
ABORT APR – Loss of GPS navigation. Abort approach.	Abort approach due to loss of GPS navigation.
ADC1 ALT EC – ADC1 altitude error correction is unavailable.	GDC is reporting that the altitude error correction is unavailable.
ADC1 AS EC – ADC1 airspeed error correction is unavailable.	GDC is reporting that the airspeed error correction is unavailable.
AHRS1 GPS – AHRS1 using backup GPS source.	The #1 AHRS is using the backup GPS path. Primary GPS path has failed. The system should be serviced when possible.
AHRS1 GPS – AHRS1 not receiving any GPS information.	The #1 AHRS is not receiving any or any useful GPS information. Check AFMS limitations. The system should be serviced.
AHRS1 GPS – AHRS1 not receiving backup GPS information.	The #1 AHRS is not receiving backup GPS information. The system should be serviced.
AHRS1 GPS – AHRS1 operating exclusively in no-GPS mode.	The #1 AHRS is operating exclusively in no-GPS mode. The system should be serviced.
AHRS MAG DB – AHRS magnetic model database version mismatch.	The #1 AHRS and #2 AHRS magnetic model database versions do not match.
AHRS1 SRVC – AHRS1 Magnetic-field model needs update.	The #1 AHRS earth magnetic field model is out of date. Update magnetic field model when practical.
AHRS1 TAS – AHRS1 not receiving valid airspeed.	The #1 AHRS is not receiving true airspeed from the air data computer. The AHRS relies on GPS information to augment the lack of airspeed. The system should be serviced.

Message	Comments
APR DWNGRADE – Approach downgraded.	Vertical guidance generated by SBAS is unavailable, use LNAV only minimums.
APR INACTV – Approach is not active.	The system notifies the pilot that the loaded approach is not active. Activate approach when required.
ARSPC AHEAD – Airspace ahead less than 10 minutes.	Special use airspace is ahead of aircraft. The aircraft will penetrate the airspace within 10 minutes.
ARSPC NEAR – Airspace near and ahead.	Special use airspace is near and ahead of the aircraft position.
ARSPC NEAR – Airspace near – less than 2 nm.	Special use airspace is within 2 nm of the aircraft position.

CHECK CRS – Database course for LOC1 / [LOC ID] is [CRS]°.	Selected course for LOC1 differs from published localizer course by more than 10 degrees.
CHECK CRS – Database course for LOC2 / [LOC ID] is [CRS]°.	Selected course for LOC2 differs from published localizer course by more than 10 degrees.
COM1 PTT – COM1 push-to-talk key is stuck.	The COM1 and/or COM2 external push-to-talk switch is stuck in the enable (or "pressed") position. Press the PTT switch again to cycle its operation. If the problem persists, the system should be serviced.
COM2 PTT – COM2 push-to-talk key is stuck.	
COM1 RMT XFR – COM1 remote transfer key is stuck.	The COM1 and/or COM2 transfer switch is stuck in the enabled (or "pressed") position. Press the transfer switch again to cycle its operation. If the problem persists, the system should be serviced.
COM2 RMT XFR – COM2 remote transfer key is stuck.	
COM1 SERVICE – COM1 needs service. Return unit for repair.	The system has detected a failure in COM1 and/or COM2. COM1 and/or COM2 may still be usable. The system should be serviced when possible.
COM2 SERVICE – COM2 needs service. Return unit for repair.	

Message	Comments
COM1 TEMP – COM1 over temp. Reducing transmitter power.	The system has detected an over temperature condition in COM1 and/or COM2. The transmitter is operating at reduced power. If the problem persists, the system should be serviced.
COM2 TEMP – COM2 over temp. Reducing transmitter power.	
CNFG MODULE – PFD1 configuration module is inoperative.	The PFD1 configuration module backup memory has failed. The system should be serviced.

DATA LOST – Pilot stored data was lost. Recheck settings.	The pilot profile data was lost. System reverts to default pilot profile and settings. The pilot may reconfigure the MFD & PFD with preferred settings, if desired.
DB CHANGE – Database changed. Verify user modified procedures.	This occurs when a stored flight plan contains procedures that have been manually edited. This alert is issued only after an navigation database update. Verify that the user-modified procedures in stored flight plans are correct and up to date.
DB CHANGE – Database changed. Verify stored airways.	This occurs when a stored flight plan contains an airway that is no longer consistent with the navigation database. This alert is issued only after an navigation database update. Verify use of airways in stored flight plans and reload airways as needed.
DB MISMATCH – Navigation database mismatch. Xtalk is off.	The PFDs and MFD have different navigation database versions or types (Americas, European, etc.) installed. Crossfill is off. Install correct navigation database version or type in all displays.
DB MISMATCH – Obstacle database mismatch.	The PFDs and MFD have different obstacle database installed. Install correct obstacle database in all displays.
DB MISMATCH – Terrain database mismatch.	The PFDs and MFD have different terrain database versions or types installed. Install correct terrain database version or type in all displays.

FAILED PATH – A data path has failed.	A data path connected to the GDU, GSD 41, or the GIA 63/W has failed.

Message	Comments
FPL TRUNC – Flight plan has been truncated.	This occurs when a newly installed navigation database eliminates an obsolete approach or arrival used by a stored flight plan. The obsolete procedure is removed from the flight plan. Update flight plan with current arrival or approach.
FPL WPT LOCK – Flight plan waypoint is locked.	Upon power-up, the system detects that a stored flight plan waypoint is locked. This occurs when an navigation database update eliminates an obsolete waypoint. The flight plan cannot find the specified waypoint and flags this message. This can also occur with user waypoints in a flight plan that is deleted. Remove the waypoint from the flight plan if it no longer exists in any database, Or update the waypoint name/identifier to reflect the new information.
FPL WPT MOVE – Flight plan waypoint moved.	The system has detected that a waypoint coordinate has changed due to a new navigation database update. Verify that stored flight plans contain correct waypoint locations.

GDC1 MANIFEST – GDC1 software mismatch, communication halted.	The GDC 74 has incorrect software installed. The system should be serviced.
GDC2 MANIFEST – GDC1 software mismatch, communication halted.	The GDC 74 has incorrect software installed. The system should be serviced.
GDL59 CONFIG – GDL 59 config error. Config service req'd.	GDL 59H configuration settings do not match those of backup configuration memory. The system should be serviced.
GDL59 FAIL – GDL 59 has failed.	A failure has been detected in the GDL 59H. The receiver is unavailable. The system should be serviced.
GDL59 MANIFEST – GDL59 software mismatch, communication halted.	The GDL 59H has incorrect software installed. The system should be serviced.

Message	Comments
GDL59 RTR FAIL – The GDL 59 router has failed.	A failure has been detected in the GDL 59H router. The system should be serviced.
GDL59 SERVICE – GDL 59 needs service. Return unit for repair.	A failure has been detected in the GDL 59H. The system should be serviced.
GDL69 CONFIG – GDL 69 config error. Config service req'd.	GDL 69 configuration settings do not match those of backup configuration memory. The system should be serviced.
GDL69 FAIL – GDL 69 has failed.	A failure has been detected in the GDL 69. The receiver is unavailable. The system should be serviced
GDL69 MANIFEST – GDL69 software mismatch, communication halted.	The GDL 69 has incorrect software installed. The system should be serviced.
GDL88 ADS-B 1090 – ADS-B fault. 1090 receiver failure.	A failure has been detected in the 1090 receiver.
GDL88 ADS-B NO POS – GDL88 is not receiving position information.	The GDL 88 is not able to receive position information.
GDL88 ADS-B NO TX – GDL88 Failure	Unable to transmit GDL 88 messages.
GDL88 ADS-B TRFC – GDL 88 ADS-B traffic has failed	The GDL 88 is incapable of processing traffic information.
GDL88 ADS-B UAT – ADS-B fault. UAT receiver failure.	A failure has been detected in the UAT receiver.
GDL88 ANTENNA – GDL 88 Antenna fault	The GDL 88 Antenna has failed.
GDL88 CONFIG – GDL88 config error.	The GDL 88 and GDU have incompatible configurations. This alert is also set when the GDL 88 has an invalid mode S address configured or the mode S address does not match both XPDR mode S addresses.
GDL88 CSA FAIL - GDL88 CSA FAIL - ADS-B Airborne alerts failure.	GDL 88 ADS-B Conflict Situational Awareness (CSA) is unavailable.

Message	Comments
GDL88 FAIL - Unable to transmit ADS-B messages.	The PFD has lost connection with the GDL 88.
GDL88 MANIFEST – GDL88 software mismatch, communication halted.	The GDL 88 has incorrect software installed. The system should be serviced.
GDL88 PRES ALT - GDL88 is not receiving pressure altitude.	The GDL 88 is not receiving pressure altitude data.
GDL88 SERVICE – GDL88 needs service.	Return unit for repair.
GEA1 CONFIG – GEA1 config error. Config service req'd.	The GEA1 configuration settings do not match those of backup configuration memory. The system should be serviced.
GEA1 MANIFEST – GEA1 software mismatch, communication halted.	The #1 GEA 1 has incorrect software installed. The system should be serviced.
GEO LIMITS – AHRS1 too far North/South, no magnetic compass.	The aircraft is outside geographical limits for approved AHRS operation. Heading is flagged as invalid.
GFC MANIFEST – GFC software mismatch, communication halted.	Incorrect servo software is installed, or gain settings are incorrect.
GIA1 COOLING – GIA1 temperature too low.	The GIA1 and/or GIA2 temperature is too low to operate correctly. Allow units to warm up to operating temperature.
GIA2 COOLING – GIA2 temperature too low.	
GIA1 COOLING – GIA1 over temperature.	The GIA1 and/or GIA2 temperature is too high. If problem persists, the system should be serviced.
GIA2 COOLING – GIA2 over temperature.	
GIA1 CONFIG – GIA1 config error. Config service req'd.	The GIA1 and/or GIA2 configuration settings do not match backup configuration memory. The system should be serviced.
GIA2 CONFIG – GIA2 config error. Config service req'd.	

Message	Comments
GIA1 CONFIG – GIA1 audio config error. Config service req'd.	The GIA1 and/or GIA2 have an error in the audio configuration. The system should be serviced.
GIA2 CONFIG – GIA2 audio config error. Config service req'd.	
GIA1 MANIFEST – GIA1 software mismatch, communication halted.	The GIA1 and/or GIA 2 has incorrect software installed. The system should be serviced.
GIA2 MANIFEST – GIA2 software mismatch, communication halted.	
GIA1 SERVICE – GIA1 needs service. Return the unit for repair.	The GIA1 and/or GIA2 self-test has detected a problem in the unit. The system should be serviced.
GIA2 SERVICE – GIA2 needs service. Return the unit for repair.	
GMA1 CONFIG – GMA1 config error. Config service req'd.	The audio panel configuration settings do not match backup configuration memory. The system should be serviced.
GMA1 FAIL – GMA1 is inoperative.	The audio panel self-test has detected a failure. The audio panel is unavailable. The system should be serviced.
GMA1 MANIFEST – GMA1 software mismatch, communication halted.	The audio panel has incorrect software installed. The system should be serviced.
GMA1 SERVICE – GMA1 needs service. Return unit for repair.	The audio panel self-test has detected a problem in the unit. Certain audio functions may still be available, and the audio panel may still be usable. The system should be serviced when possible.
GMA XTALK – GMA crosstalk error has occurred.	An error has occurred in transferring data between the two GMAs. The system should be serviced.

Message	Comments
GMU1 MANIFEST – GMU1 software mismatch, communication halted.	The GMU 44 has incorrect software installed. The system should be serviced.
GPS NAV LOST – Loss of GPS navigation. Insufficient satellites.	Loss of GPS navigation due to insufficient satellites.
GPS NAV LOST – Loss of GPS navigation. Position error.	Loss of GPS navigation due to position error.
GPS NAV LOST – Loss of GPS navigation. GPS fail.	Loss of GPS navigation due to GPS failure.
GPS1 SERVICE – GPS1 needs service. Return unit for repair.	A failure has been detected in the GPS1 and/or GPS2 receiver. The receiver may still be available. The system should be serviced.
GPS2 SERVICE – GPS2 needs service. Return unit for repair.	
GSR1 FAIL – GSR1 has failed.	A failure has been detected in the #1 GSR 56H. The system should be serviced.
GRS1 MANIFEST – GRS1 software mismatch, communication halted.	The #1 AHRS has incorrect software installed. The system should be serviced.
G/S1 FAIL – G/S1 is inoperative.	A failure has been detected in glideslope receiver 1 and/ or receiver 2. The system should be serviced.
G/S2 FAIL – G/S2 is inoperative.	
G/S1 SERVICE – G/S1 needs service. Return unit for repair.	A failure has been detected in glideslope receiver 1 and/ or receiver 2. The receiver may still be available. The system should be serviced when possible.
G/S2 SERVICE – G/S2 needs service. Return unit for repair.	
GTS CONFIG – GTS config error. Config service req'd.	The GTS and GDU have incompatible configurations. This alert is also set when the GTS has an invalid mode S addres sconfigured or the mode S address does not match both XPDR mode S addresses.
GTS MANIFEST – GTS software mismatch, communication halted.	The GTS 800 has incorrect software installed. The G1000H system should be serviced.

Message	Comments
GTX1 MANIFEST – GTX1 software mismatch, communication halted.	The transponder has incorrect software installed. The system should be serviced.
GWX CONFIG – GWX config error. Config service req'd.	GWX 68 configuration settings do not match those of the GDU configuration. The system should be serviced.
GWX FAIL – GWX is inoperative.	The GDU is not recieving status packet from the GWX 68 is reporting a fault. The GWX 68 radar system should be serviced.
GWX MANIFEST – GWX software mismatch, communication halted.	The GWX 68 has incorrect software installed. The system should be serviced.
GWX SERVICE – GWX needs service. Return unit for repair.	A failure has been detected in the GWX 68. The GWX 68 may still be usable.

HDG FAULT – AHRS1 magnetometer fault has occurred.	A fault has occurred in the #1 GMU 44. Heading is flagged as invalid. The AHRS uses GPS for backup mode operation. The system should be serviced.
HW MISMATCH – GIA hardware mismatch. GIA1 communication halted.	A GIA mismatch has been detected, where only one is SBAS capable.
HW MISMATCH – GIA hardware mismatch. GIA2 communication halted.	
HDG PRESET MODE – Magnetic anomoly detected. HPM is available.	The magnetometer has detected a magnetic anomoly that could affect heading indications. Heading Preset Mode may be used.

INSIDE ARSPC – Inside airspace.	The aircraft is inside the airspace.

Message	Comments
LRG MAG VAR – Verify all course angles.	The GDU's internal model cannot determine the exact magnetic variance for geographic locations near the magnetic poles. Displayed magnetic course angles may differ from the actual magnetic heading by more than 2°.
LOCKED FPL – Cannot navigate locked flight plan.	This occurs when the pilot attempts to activate a stored flight plan that contains locked waypoint. Remove locked waypoint from flight plan. Update flight plan with current waypoint.
LOI – GPS integrity lost. Crosscheck with other NAVS.	GPS integrity is insufficient for the current phase of flight.

MFD1 DB ERR – MFD1 Airport Directory database error exists.	The MFD detected a failure in the Airport Directory database. Ensure that the data card is properly inserted. Replace data card. If problem persists, the system should be serviced.
MFD1 DB ERR – MFD1 basemap database error exists.	The MFD and/or PFD detected a failure in the basemap database.
PFD1 DB ERR – PFD1 basemap database error exists.	
MFD1 DB ERR – MFD1 basemap database error exists.	The MFD and/or PFD detected a failure in the basemap database.
MFD1 DB ERR – MFD1 Chartview database error exists.	The MFD detected a failure in the ChartView database (optional feature). Ensure that the data card is properly inserted. Replace data card. If problem persists, the system should be serviced.
MFD1 CONFIG – MFD1 config error. Config service req'd.	The MFD configuration settings do not match backup configuration memory. The system should be serviced.
MFD1 DB ERR – MFD1 FliteCharts database error exists.	The MFD detected a failure in the FliteCharts database (optional feature). Ensure that the data card is properly inserted. Replace data card. If problem persists, the system should be serviced.
MFD1 DB ERR – MFD1 navigation database error exists.	The MFD and/or PFD detected a failure in the navigation database. Attempt to reload the navigation database. If problem persists, the system should be serviced.

Message	Comments
MFD1 DB ERR – MFD1 obstacle database error exists.	The MFD and/or PFD detected a failure in the obstacle database. Ensure that the data card is properly inserted. Replace data card. If problem persists, the system should be serviced.
MFD1 DB ERR – MFD1 obstacle database missing.	The obstacle database is present on another LRU, but is missing on the specified LRU.
MFD1 DB ERR – MFD1 Safe Taxi database error exists.	The MFD and/or PFD detected a failure in the Safe Taxi database. Ensure that the data card is properly inserted. Replace data card. If problem persists, the system should be serviced.
MFD1 DB ERR – MFD1 terrain database error exists.	The MFD and/or PFD detected a failure in the terrain database. Ensure that the terrain card is properly inserted in display. Replace terrain card. If problem persists, the system should be serviced.
MFD1 DB ERR – MFD1 terrain database missing.	The terrain database is present on another LRU, but is missing on the specified LRU.
MFD1 VOLTAGE – MFD1 has low voltage. Reducing power usage	The MFD voltage is low. The system should be serviced.
MFD1 COOLING – MFD1 has poor cooling. Reducing power usage.	The PFD and/or MFD is overheating and is reducing power consumption by dimming the display. If problem persists, the system should be serviced.
MFD1 KEYSTK – MFD [key name] Key is stuck.	A key is stuck on the PFD and/or MFD bezel. Attempt to free the stuck key by pressing it several times. The system should be serviced if the problem persists.
MFD1 MANIFEST – MFD1 software mismatch, communication halted.	The PFD and/or MFD has incorrect software installed. The system should be serviced.
MFD1 SERVICE – MFD1 needs service. Return unit for repair.	The PFD and/or MFD self-test has detected a problem. The system should be serviced.

NAV DB UPDATED – Active navigation database updated.	System has updated the active navigation database from the standby navigation database.

Message	Comments
NAV1 RMT XFR – NAV1 remote transfer key is stuck.	The remote NAV1 and/or NAV2 transfer switch is stuck in the enabled (or "pressed") state. Press the transfer switch again to cycle its operation. If the problem persists, the system should be serviced.
NAV1 SERVICE – NAV1 needs service. Return unit for repair.	A failure has been detected in the NAV1 and/or NAV2 receiver. The receiver may still be available. The system should be serviced.
NAV2 SERVICE – NAV2 needs service. Return unit for repair.	A failure has been detected in the NAV1 and/or NAV2 receiver. The receiver may still be available. The system should be serviced.
NO WGS84 WPT – Non WGS 84 waypoint for navigation -[xxxx]	The position of the selected waypoint [xxxx] is not calculated based on the WGS84 map reference datum and may be positioned in error as displayed. Do not use GPS to navigate to the selected non-WGS84 waypoint.
PFD1 COOLING – PFD1 has poor cooling. Reducing power usage.	The PFD and/or MFD is overheating and is reducing power consumption by dimming the display. If problem persists, the system should be serviced.
PFD1 CONFIG – PFD1 config error. Config service req'd.	The PFD configuration settings do not match backup configuration memory. The system should be serviced.
PFD1 DB ERR – PFD1 basemap database error exists.	The MFD and/or PFD detected a failure in the basemap database.
PFD1 DB ERR – PFD1 navigation database error exists.	The MFD and/or PFD detected a failure in the navigation database. Attempt to reload the navigation database. If problem persists, the system should be serviced.
PFD1 DB ERR – PFD1 obstacle database error exists.	The MFD and/or PFD detected a failure in the obstacle database. Ensure that the data card is properly inserted. Replace data card. If problem persists, the system should be serviced.
PFD1 DB ERR – PFD1 obstacle database missing.	The obstacle database is present on another LRU, but is missing on the specified LRU.

Message	Comments
PFD1 DB ERR – PFD1 Safe Taxi database error exists.	The MFD and/or PFD detected a failure in the Safe Taxi database. Ensure that the data card is properly inserted. Replace data card. If problem persists, the system should be serviced.
PFD1 DB ERR – PFD1 terrain database error exists.	The MFD and/or PFD detected a failure in the terrain database. Ensure that the terrain card is properly inserted in display. Replace terrain card. If problem persists, the system should be serviced.
PFD1 DB ERR – PFD1 terrain database missing.	
PFD1 KEYSTK – PFD1 [key name] Key is stuck.	A key is stuck on the PFD and/or MFD bezel. Attempt to free the stuck key by pressing it several times. The system should be serviced if the problem persists.
PFD1 MANIFEST – PFD1 software mismatch, communication halted.	The PFD and/or MFD has incorrect software installed. The system should be serviced.
[PFD1 or MFD1] CARD 1 REM – Card 1 was removed. Reinsert card.	The SD card was removed from the top card slot of the specified PFD or MFD. The SD card needs to be reinserted.
[PFD1 or MFD1] CARD 2 REM – Card 2 was removed. Reinsert card.	The SD card was removed from the bottom card slot of the specified PFD or MFD. The SD card needs to be reinserted.
[PFD1 or MFD1] CARD 1 ERR – Card 1 is invalid.	The SD card in the top card slot of the specified PFD or MFD contains invalid data.
[PFD1 or MFD1] CARD 2 ERR – Card 2 is invalid.	The SD card in the bottom card slot of the specified PFD or MFD contains invalid data.
PFD1 SERVICE – PFD1 needs service. Return unit for repair.	The PFD and/or MFD self-test has detected a problem. The system should be serviced.
PFD1 VOLTAGE – PFD1 has low voltage. Reducing power usage	The PFD1 voltage is low. The system should be serviced.
PTK FAIL – Parallel track unavailable: bad geometry.	Bad parallel track geometry.

Message	Comments
PTK FAIL – Parallel track unavailable: invalid leg type.	Invalid leg type for parallel offset.
PTK FAIL – Parallel track unavailable: past IAF.	IAF waypoint for parallel offset has been passed.

REGISTER GFDS – Data services are inoperative, register w/GFDS.	The GDL 59H is not registered with Garmin Flight Data Services, or it's current registration data has failed authentication.

SCHEDULER [#] – <message>.	Message criteria entered by the user.
SLCT FREQ – Select appropriate frequency for approach.	The system notifies the pilot to load the approach frequency for the appropriate NAV receiver. Select the correct frequency for the approach.
SLCT MAG – Select MAGNETIC NAV ANGLE display units.	The Navigation angle is non-magnetic. Select the MAGNETIC NAV ANGLE display units.
SLCT NAV – Select NAV on CDI for approach.	The system notifies the pilot to set the CDI to the correct NAV receiver. Set the CDI to the correct NAV receiver.
SLCT NON-MAG – Select alternate NAV ANGLE display units.	The Navigation angle is magnetic. Select the alternate NAV ANGLE display units.
STEEP TURN – Steep turn ahead.	A steep turn is 15 seconds ahead. Prepare to turn.
SVT DISABLED – Out of available terrain region.	Synthetic Vision is disabled because the aircraft is not within the boundaries of the installed terrain database.
SVT DISABLED – Terrain DB resolution too low.	Synthetic Vision is disabled because a terrain database of sufficient resolution (9 arc-second or better) is not currently installed.
SW MISMATCH – GDU software version mismatch. Xtalk is off.	The MFD and PFDs have different software versions installed. The system should be serviced.

Message	Comments
TERRAIN DSP – [PFD1 or MFD1] Terrain awareness display unavailable.	One of the terrain or obstacle databases required for HTAWS in the specified PFD or MFD is missing or invalid.
TIMER EXPIRD – Timer has expired.	The system notifies the pilot that the timer has expired.
TRAFFIC FAIL – Traffic device has failed.	The system is no longer receiving data from the traffic system. The traffic device should be serviced.
TCAS FAIL - TCAS system is inoperative.	The TCAS or TAS system is not operational.
TRUE APR – True north approach. Change HDG reference to TRUE.	Displayed after passing the first waypoint of a true north approach when the nav angle is set to 'AUTO'.
UNABLE V WPT – Can't reach current vertical waypoint.	The current vertical waypoint can not be reached within the maximum flight path angle and vertical speed constraints. The system automatically transitions to the next vertical waypoint.
VNV – Unavailable. Excessive track angle error.	The current track angle error exceeds the limit, causing the vertical deviation to go invalid.
VNV – Unavailable. Excessive crosstrack error.	The current crosstrack exceeds the limit, causing vertical deviation to go invalid.
VNV – Unavailable. Parallel course selected.	A parallel course has been selected, causing the vertical deviation to go invalid.
VNV – Unavailable. Unsupported leg type in flight plan.	The lateral flight plan contains a procedure turn, vector, or other unsupported leg type prior to the active vertical waypoint. This prevents vertical guidance to the active vertical waypoint.
WPT ARRIVAL – Arriving at waypoint -[xxxx]	Arriving at waypoint [xxxx], where [xxxx] is the waypoint name.
WX ALERT – Possible severe weather ahead.	Possible severe weather detected within +/- 10 degrees of the aircraft heading at a range of 80 to 320 nm.

Message	Comments
XPDR1 CONFIG – XPDR1 config error. Config service req'd.	The transponder configuration settings do not match those of backup configuration memory. The system should be serviced.
XPDR1 FAIL – XPDR1 is inoperative.	There is no communication with the #1 transponder.
XPDR1 SRVC – XPDR1 needs service. Return unit for repair.	The #1 transponder should be serviced when possible.
XTALK ERROR – A flight display crosstalk error has occurred.	The MFD and PFDs are not communicating with each other. The system should be serviced.

FLIGHT PLAN IMPORT/EXPORT MESSAGES

In some circumstances, some messages may appear in conjunction with others.

Flight Plan Import/Export Results	Description
'Flight plan successfully imported.'	A flight plan file stored on the SD card was successfully imported as a stored flight plan.
'File contained user waypoints only. User waypoints imported successfully. No stored flight plan data was modified.'	The file stored on the SD card did not contain a flight plan, only user waypoints. These waypoints have been saved to the system user waypoints. No flight plans stored in the system have been modified.
'No flight plan files found to import.'	The SD card contains no flight plan data.
'Flight plan import failed.'	Flight plan data was not successfully imported from the SD card.
'Flight plan partially imported.'	Some flight plan waypoints were successfully imported from the SD card, however others had errors and were not imported. A partial stored flight plan now exists in the system.
'File contained user waypoints only.'	The file stored on the SD card did not contain a flight plan, only user waypoints. One or more of these waypoints did not import successfully.
'Too many points. Flight plan truncated.'	The flight plan on the SD card contains more waypoints than the system can support. The flight plan was imported with as many waypoints as possible.

Flight Plan Import/Export Results	Description
'Some waypoints not loaded. Waypoints locked.'	The flight plan on the SD card contains one or more waypoints that the system cannot find in the navigation database. The flight plan has been imported, but must be edited within the system before it can be activated for use.
'User waypoint database full. Not all loaded.'	The flight plan file on the SD card contains user waypoints. The quantity of stored user waypoints has exceeded system capacity, therefore not all the user waypoints on the SD card have been imported. Any flight plan user waypoints that were not imported are locked in the flight plan. The flight plan must be edited within the system before it can be activated for use.
'One or more user waypoints renamed.'	One or more imported user waypoints were renamed when imported due to naming conflicts with waypoints already existing in the system.
'Flight plan successfully exported.'	The stored flight plan was successfully exported to the SD card.
'Flight plan export failed.'	The stored flight plan was not successfully exported to the SD card. The SD card may not have sufficient available memory or the card may have been removed prematurely.

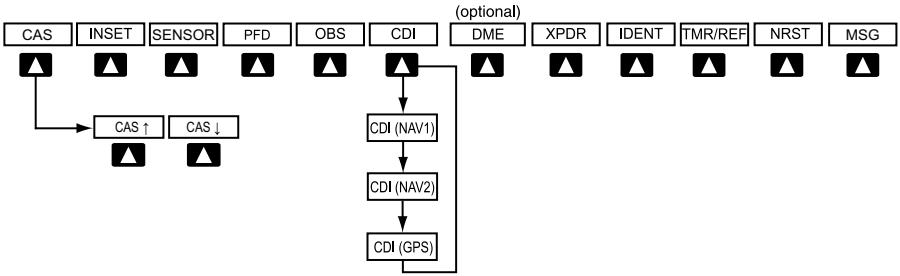
PILOT PROFILE IMPORT/EXPORT MESSAGES

Pilot Profile Import/Export Results	Description
'No pilot profile plan files found to import.'	Displayed if the SD card does not have one or more valid pilot profile filenames.
'Overwrite existing profile?'	Displayed if the profile name matches the name of existing profile.
'Profile name invalid. Enter a different profile name.'	Displayed if the profile name is invalid.
'All available pilot profiles in use. Delete a profile before importing another.'	Displayed if the maximum number for pilot profiles has been reached.
'Pilot profile import failed.'	Displayed if the importing operation fails for any other reason.
'Pilot profile import succeeded.'	Displayed if the importing operation succeeds.
'Overwrite existing file?'	Displayed if the filename matches the name of an existing file on the SD card.
'Pilot profile export failed.'	Displayed if the export operation fails.
'Pilot profile export succeeded.'	Displayed if the export operation succeeds.

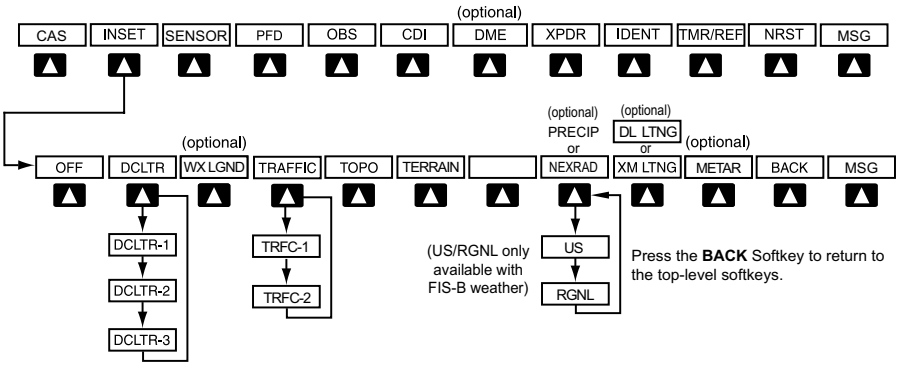
Blank Page

APPENDIX

PFD SOFTKEY MAP



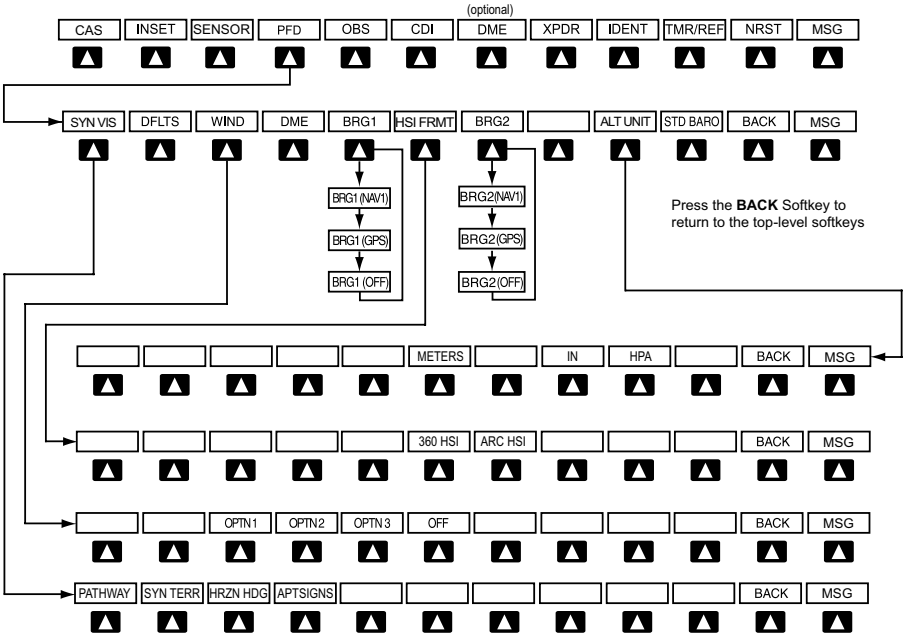
Top Level PFD Softkeys



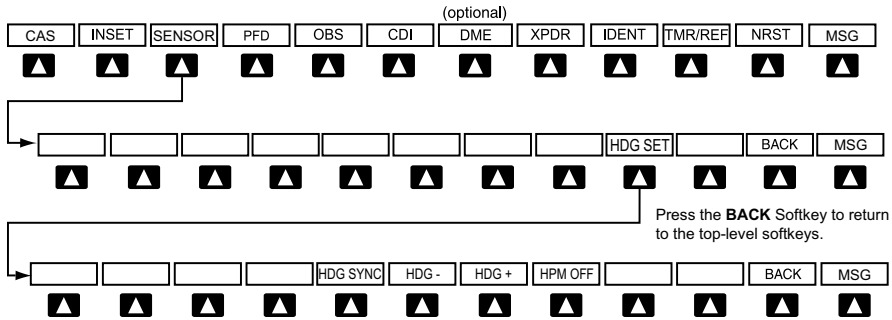
Inset Map Softkeys

Level 1	Level 2	Level 3	Description
CAS			Displays the scroll-up and scroll-down softkeys when the number of CAS messages exceeds the maximum capable of being displayed in the window
	CAS ↑		Moves the cursor up through the displayed messages
	CAS ↓		Moves the cursor down through the displayed messages
INSET			Displays Inset Map in PFD lower left corner
	OFF		Removes Inset Map

Level 1	Level 2	Level 3	Description
	DCLTR (3)		Selects desired amount of map detail; cycles through declutter levels: DCLTR (No Declutter): All map features visible DCLTR-1: Declutters land data DCLTR-2: Declutters land and SUA data DCLTR-3: Removes everything except the active flight plan
	WX LGND		Displays icon and age on the Inset Map for the selected weather products (optional)
	TRAFFIC		Cycles through traffic display options: TRFC-1: Traffic displayed on inset map TRFC-2: Traffic Map Page is displayed in the inset map window
	TOPO		Displays topographical data (e.g., coastlines, terrain, rivers, lakes) and elevation scale on Inset Map
	TERRAIN		Displays/removes terrain information on Inset Map
	PRECIP **or** **NEXRAD**		Displays Connext precipitation on Inset Map (optional GSR 56 only) Displays XM NEXRAD weather and coverage on PFD Map (subscription optional)
	XM LTNG **or** **DL LTNG**		Displays SiriusXM lightning information on Inset Map (optional) Displays Worldwide Weather lightning information on Inset Map (optional)
	METAR		Displays METAR flags on airport symbols shown on the Inset Map (optional)



PFD Configuration Softkeys

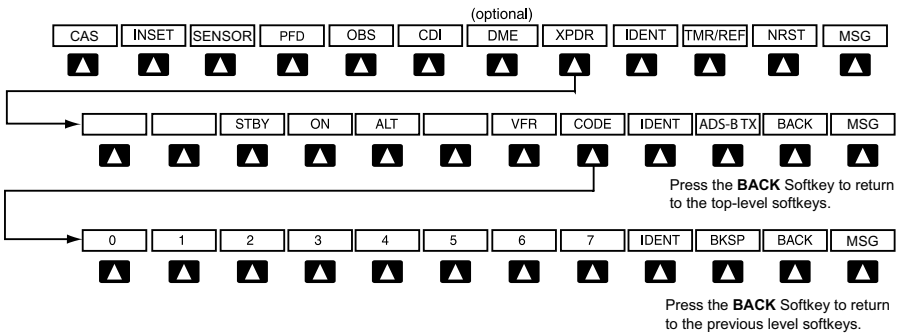


Sensor Softkeys

Level 1	Level 2	Level 3	Description
SENSOR			Provides access to the HDG SET Softkey
	SET HDG		Enables Heading Preset Mode
		HDG SYNC	Synchronizes heading to the selected heading
		HDG -	Slews heading counterclockwise

Level 1	Level 2	Level 3	Description
		HDG +	Slews heading clockwise
		HPM OFF	Manually disables Heading Preset Mode
PFD			Displays second-level softkeys for additional PFD configurations
	SYN VIS		Displays the softkeys for enabling or disabling Synthetic Vision features
		PATHWAY	Displays rectangular boxes representing the horizontal and vertical flight path of the active flight plan
		SYN TERR	Enables synthetic terrain depiction
		HRZN HDG	Displays compass heading along the Zero-Pitch line
		APTSIGNS	Displays position markers for airports within approximately 15 nm of the current aircraft position. Airport identifiers are displayed when the airport is within approximately 9 nm.
	DFLTS		Resets PFD to default settings, including changing units to standard
	WIND		Displays softkeys to select wind data parameters
		OPTN 1	Headwind/tailwind and crosswind arrows with numeric speed components
		OPTN 2	Wind direction arrow and numeric speed
		OPTN 3	Wind direction arrow with numeric direction and speed
		OFF	Information not displayed
	DME		Displays the DME Information Window
	BRG1		Cycles the Bearing 1 Information Window through NAV1 or GPS/ waypoint identifier and GPS-derived distance information.

Level 1	Level 2	Level 3	Description
	HSI FRMT		Displays the HSI formatting softkeys
		360 HSI	Displays the HSI in a 360 degree format
		ARC HSI	Displays the HSI in an arc format
	BRG2		Cycles the Bearing 2 Information Window through NAV2 or GPS/ waypoint identifier and GPS-derived distance information.
	ALT UNIT		Displays softkeys for setting the altimeter and BARO settings to metric units
		METERS	When enabled, displays altimeter in meters
		IN	Press to display the BARO setting as inches of mercury
		HPA	Press to display the BARO setting as hectopacals
	STD BARO		Sets barometric pressure to 29.92 in Hg (1013 hPa)



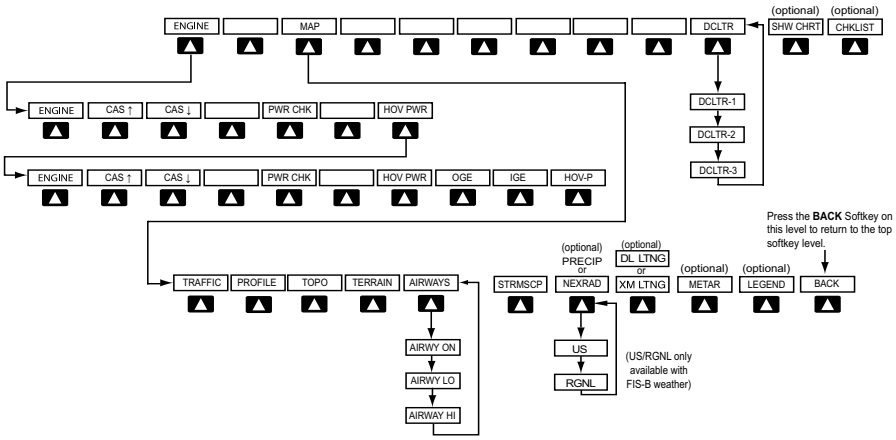
Transponder Softkeys

Level 1	Level 2	Level 3	Description
XPDR			Displays transponder mode selection softkeys
	STBY		Selects Standby Mode (transponder does not reply to any interrogations)

Level 1	Level 2	Level 3	Description
	ON		Selects Mode A (transponder replies to interrogations).
	ALT		On Ground - (White mode indication) Generates Mode S replies to discrete interrogations as well as transmission of acquisition and extended squitters, including ADS-B out. Mode A, Mode C, and Mode S all-call replies are inhibited Airborne - (Green mode indication) Generates Mode A, Mode C, and Mode S replies as well as transmissions of acquisition and extended squitters, including ADS-B out.
	VFR		Automatically enters the VFR code (1200 in the U.S.A. only)
	CODE		Displays transponder code selection softkeys 0-7
	IDENT		Activates the Special Position Identification (SPI) pulse for 18 seconds, identifying the transponder return on the ATC screen
	ADS-B TX		Enables the transmission of extended squitters containing ADS-B out information.
		0 — 7	Use numbers to enter code
		BKSP	Removes numbers entered, one at a time
IDENT			Activates the Special Position Identification (SPI) pulse for 18 seconds, identifying the transponder return on the ATC screen

Level 1	Level 2	Level 3	Description
TMR/REF			Displays Timer/References Window
NRST			Displays Nearest Airports Window
MSG			Displays Messages Window

MFD SOFTKEY MAP



MFD Softkeys

Level 1	Level 2	Level 3	Description
ENGINE			Displays the EIS-Engine Page
	CAS ↑		Scroll up (Displayed only when a sufficient number of items are displayed in the Crew Alerting System Display to warrant scrolling)
	CAS ↓		Scroll down (Displayed only when a sufficient number of items are displayed in the Crew Alerting System Display to warrant scrolling)
	PWR CHK		Displays fuel system softkeys
	HOV PWR		Performs real time hover performance check
		OGE	Performs OGE hover power check

Level 1	Level 2	Level 3	Description
		IGE	Performs IGE hover power check
		HOV-P	Enables Hover Prediction Mode
MAP			Enables second-level Navigation Map softkeys
	TRAFFIC		Displays traffic information on Navigation Map
	PROFILE		Displays/removes Profile View on Navigation Map Page
	TOPO		Displays topographical data (e.g., coastlines, terrain, rivers, lakes) and elevation scale on Navigation Map
	TERRAIN		Displays terrain information on Navigation Map
	AIRWAYS		Displays airways on the map; cycles through the following: AIRWAYS: No airways are displayed AIRWY ON: All airways are displayed AIRWY LO: Only low altitude airways are displayed AIRWY HI: Only high altitude airways are displayed
	STRMSCP		Displays Stormscope weather and coverage information on Navigation Map (optional feature)
	PRECIP **or** **NEXRAD**		Displays Connext precipitation on Inset Map (optional GSR 56 only) Displays XM NEXRAD weather and coverage on PFD Map (subscription optional)
	XM LTNG **or** **DL LTNG**		Displays SiriusXM lightning information on Inset Map (optional) Displays Worldwide Weather lightning information on Inset Map (optional)

Level 1	Level 2	Level 3	Description
	METAR		Displays METAR flags on airport symbols shown on the Navigation Map
	LEGEND		Displays the legend for the selected weather products. Available only when NEXRAD, XM LTNG, and/or METAR softkeys are selected.
	BACK		Returns to top-level softkeys
DCLTR			Selects desired amount of map detail; cycles through declutter levels: DCLTR (No Declutter): All map features visible DCLTR-1: Declutters land data DCLTR-2: Declutters land and SUA data DCLTR-3: Removes everything except the active flight plan
SHW CHRT			When available, displays optional airport and terminal procedure charts
CHKLIST			When available, displays optional checklists

DATABASE MANAGEMENT

CAUTION: *Never disconnect power to the system when loading a database. Power interruption during the database loading process could result in maintenance being required to reboot the system.*

The system uses Secure Digital (SD) cards to load and store various types of data. For basic flight operations, SD cards are required for database storage as well as navigation updates. Not all SD cards are compatible with this system.

NOTE: *Loading a database in the system prior to its effective date will result in the expiration date on the power-up screen and the effective date on the AUX-System Status Page being displayed in amber.*

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.*

Updating the active navigation database (not using the Dual Navigation Database or Automatic Database Synchronization Features):

1) Go to www.flygarmin.com or www.jeppesen.com. Download the applicable software and install the navigation database on a blank SD card.

2) With the system OFF, insert the SD card containing the new navigation database version into the top card slot of the display (label of SD card facing left).

3) Turn the system ON. A prompt similar to the following is displayed in the upper left corner of the display:

4) Press the **NO** Softkey to proceed to loading only the active database.

5) A prompt similar to the following is displayed, press the **YES** Softkey to update the active navigation database.

6) After the update completes, the display starts in normal mode. Do not remove power while the display is starting.

7) Turn the system OFF and remove the SD card from the top card slot.

8) Repeat steps 2 through 7 for the other display. Remove the SD card when finished.

9) Apply power to the system and press the **ENT** Key or the right-most softkey on the MFD to acknowledge the startup screen.

10) Turn the large **FMS** Knob to select the AUX Page group on the MFD.

11) Turn the small **FMS** Knob to select the System Status Page.

12) Press the Display Database Selection Softkey to show active navigation database information for each display.

13) Verify the correct navigation database cycle information is shown for each display.

NOTE: *Make sure that no messages related to database errors are displayed in the Messages window of the PFD.*

14) Remove power from the system.

Loading a standby navigation database:

NOTE: *After the standby navigation database is installed, the card must be removed.*

NOTE: *To do this procedure, use a blank SD card to copy the navigation database. Garmin SD Cards (bottom SD card slots) must NOT be used. The use of SanDisk SD Card is recommended to update the navigation database file. Before utilization, it is recommended to format the SD Card with the FAT32 file system so that displays will read it.*

1) Go to www.flygarmin.com or www.jeppesen.com. Download the applicable software and install the navigation database on a blank SD card.

2) With the system OFF, insert the SD card containing the new navigation database version into the top card slot of the display.

3) Verify that an SD card is inserted in the bottom slot of each display.

4) Turn the system ON. A prompt similar to the following is displayed.

5) Press the **YES** softkey. The navigation database is copied to the SD card in the bottom of the display.

6) After the navigation database files are copied to the bottom SD card, the display will appear.

7) As instructed on the display, press any key to continue.

8) Press any key to continue.

9) Press the **NO** Softkey. The display now starts in normal mode. Since the database effective date is not yet valid, it should not be loaded as the active database. The display now starts in normal mode. Do not remove power while the display is starting.

10) Turn the system OFF and remove the SD card from the top card slot.

11) Repeat steps 2 through 10 for the other display.

12) Apply power to the system and press the **ENT** Key on the MFD display to acknowledge the startup screen.

13) Turn the large **FMS** Knob to select the AUX Page group on the MFD.

14) Turn the small **FMS** Knob to select the System Status Page.

15) Press the Display Database Selection Softkey to show standby navigation database information for each display.

16) Verify the correct standby navigation database cycle information is shown for each display.

NOTE: *Make sure that no messages related to database errors are displayed in the Messages window of the PFD.*

17) Press the **MSG** Softkey and determine if any message related to databases is active.

18) Remove power from the system.

GARMIN DATABASES/JEPPESEN CHARTVIEW DATABASE

In some cases it may be necessary to obtain an unlock code from Garmin in order to make the database product functional. It may also be necessary to have the system configured by a Garmin authorized service facility in order to use some database features.

If an error occurs during synchronization, an error message will be displayed, followed by the affected display in the Sync Status section of the Database Window. If synchronization completes on one display, but an error occurs on another, the error message will be displayed with the affected displays listed after it. When an error message is displayed, the problem must be corrected before synchronization can be completed. A power cycle is required to restart synchronization when 'Card Full' or 'Err' is shown.

Error Message	Description
Canceled	Database synchronization has been canceled by removing the bottom SD card in display being updated
Card Full	SD card does not contain sufficient memory
Err	Displayed for all other errors that may cause the synchronization process to be halted
Timeout	System timed-out prior to the database transfer completing

Updating Basemap, SafeTaxi, Obstacle, and Airport Directory Databases:

NOTE: *The Basemap, SafeTaxi, Obstacle and Airport Directory databases may be copied to one Supplemental Data Card, then automatically synchronized to the other card(s) in the system.*

1) With the system OFF, remove the Garmin SD Cards from the bottom SD card slot of each flight display unit.

2) Go to www.flygarmin.com. Download the applicable software and install the databases on the Garmin SD card for the MFD.

4) Turn the system ON.

5) During MFD power-up, check the MFD Power-Up screen and make sure that the database is initialized and shown on the database information.

6) Press the ENT Key on MFD display to acknowledge the startup screen.

7) Turn the large **FMS** Knob to select the AUX Page group on the MFD.

8) Turn the small **FMS** Knob to select the System Status Page.

9) Press the Display Database Selection Softkey to show database information for each display.

10) Verify the correct database cycle information is shown for each display.

11) Press the **MSG** Softkey and determine if any message related to databases is active.

12) Remove power from the system.

Updating Terrain, and Chartview or Flitecharts Databases:

NOTE: *Jeppesen ChartView can be updated at either www.flygarmin.com or www.jeppesen.com, but must be purchased first from Jeppesen.*

1) With the system OFF, remove the Garmin SD Cards from the bottom SD card slot of each flight display unit.

NOTE: *Label the SD cards for each display.*

2) Go to www.flygarmin.com or www.jeppesen.com (for ChartView only). Download the applicable software and install the databases on the Garmin SD card for each display. (*The FliteCharts or ChartView database must only be installed on the MFD SD Card).*

3) Put the Garmin SD Cards back in the bottom SD card slots of each flight display unit.

4) Turn the system ON.

5) During MFD power-up, check the MFD Power-Up screen and make sure that the database is initialized and shown on the database information.

6) Press the ENT Key on MFD display to acknowledge the startup screen.

7) Turn the large **FMS** Knob to select the AUX Page group on the MFD.

8) Turn the small **FMS** Knob to select the System Status Page.

9) Press the Display Database Selection Softkey to show database information for each display.

10) Verify the correct database cycle information is shown for each display.

11) Press the **MSG** Softkey and determine if any message related to databases is active.

12) Remove power from the system.

Magnetic Field Variation Database Update

A copy of the current magnetic field variation database (MV DB) is included with the navigation database. At startup, the system compares this version of the MV DB with that presently being used by the AHRS (GRS). If the system determines the MV DB needs to be updated, a prompt is displayed on the Navigation Map Page.

Loading the magnetic field variation database update:

1) With 'OK' highlighted, press the **ENT** Key on the MFD. A progress monitor is displayed.

2) When the upload is complete, the system is ready for use.

T

V

W

Z

Blank Page

Garmin International, Inc.
1200 East 151st Street
Olathe, Kansas 66062, U.S.A.
Tel: 913.397.8200
Fax: 913.397.8282
Aircraft On Ground (AOG) Hotline: 913.397.0836
Aviation Dealer Technical Support: 888.606.5482

Garmin (Europe) Ltd.
Liberty House, Hounsdown Business Park
Southampton, Hampshire SO40 9LR U.K.
Tel: +44 (0) 238 052 4000
Fax: +44 (0) 238 052 4004
Aviation Support: +44 (0) 370 850 1243

Garmin AT, Inc.
2345 Turner Road SE
Salem, OR 97302, U.S.A.
Tel: 503.581.8101
Fax 503.364.2138

Garmin Corporation
No. 68, Zhangshu 2nd Road
Xizhi District, New Taipei City, Taiwan
Tel: 34-93-357-2608
Fax: 34-93-429-4484

www.garmin.com

190-01254-03 Rev A