

**GARMIN**

# G3000® Integrated Avionics System

Cockpit Reference Guide



**Daher TBM 930**

System Software Version 2234.05 or later



**FLIGHT INSTRUMENTS**

**ENGINE & AIRFRAME SYSTEMS (EAS)**

**NAV/COM/TRANSPONDER/AUDIO PANEL**

**FLIGHT MANAGEMENT SYSTEM**

**HAZARD AVOIDANCE**

**AUTOMATIC FLIGHT CONTROL SYSTEM**

**ADDITIONAL FEATURES**

**ABNORMAL OPERATIONS**

**ANNUNCIATIONS & ALERTS**

**APPENDIX**

**INDEX**



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This manual reflects the operation of System Software version 2234.05 or later for the Daher TBM 930. Some differences in operation may be observed when comparing the information in this manual to earlier or later software versions.

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**WARNING:** Do not operate this equipment without first obtaining qualified instruction.

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**WARNING:** Always refer to current aeronautical charts and NOTAMs for verification of displayed aeronautical information. Displayed aeronautical data may not incorporate the latest NOTAM information.

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**WARNING:** Do not use geometric altitude for compliance with air traffic control altitude requirements. The primary barometric altimeter must be used for compliance with all air traffic control altitude regulations, requirements, instructions, and clearances.

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

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**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.

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**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.

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**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 older than the indicated weather product age.

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**WARNING:** Do not use terrain avoidance displays as the sole source of information for maintaining separation from terrain and obstacles. Garmin obtains terrain and obstacle data from third party sources and cannot independently verify the accuracy of the information.

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

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**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.

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**WARNING:** Do not rely on the autopilot to level the aircraft at the MDA/DH when flying an approach with vertical guidance. The autopilot will not level the aircraft at the MDA/DH even if the MDA/DH is set in the altitude preselect.

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**WARNING:** Do not rely on the accuracy of attitude and heading indications in the following geographic areas (due to variations in the earth's magnetic field): 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).

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

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**WARNING:** Do not use the Garmin 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.

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**WARNING:** Do not operate the weather radar in a transmitting mode when personnel or objects are within the MPEL boundary.

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**WARNING:** Always position the weather radar gain setting to Calibrated for viewing the actual intensity of precipitation. Changing the gain in weather mode causes precipitation intensity to be displayed as a color not representative of the true intensity.

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**WARNING:** Do not consider the overflight of thunderstorms to be safe, as extreme turbulence may exist significantly above observed returns.

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**WARNING:** Do not assume weather radar transmission is disabled unless all display panes displaying weather radar are set to Standby Mode, and are displaying 'STANDBY' in the center of each weather radar display. Transmission is also disabled by touching the Radar On Button or pressing the Radar On Softkey to set the weather radar system to Off Mode, as indicated by a gray annunciator.

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**WARNING:** Do not rely only on the Turbulence Detection function for hazardous weather avoidance, or to maneuver in, near, or around areas of hazardous weather.

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

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

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**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.

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**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.

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**WARNING:** Do not use SurfaceWatch™ information as the primary method of flight guidance during airborne or ground operations. SurfaceWatch does not have NOTAM or ATIS information regarding the current active runway, condition, or information about the position of hold lines.

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**CAUTION:** Do not clean display surfaces with abrasive cloths or cleaners containing ammonia. They will harm the anti-reflective coating.

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**CAUTION:** Do not allow repairs to be made by anyone other than an authorized Garmin service center. Unauthorized repairs or modifications could void both the warranty and affect the airworthiness of the aircraft.

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**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.

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**CAUTION:** Avoid areas on the radar display that appear “shadowed” (gray). The accuracy of the intensity of returns in the shaded areas should be treated as suspect. Exercise extreme caution, making maneuvering decisions with this information in mind.

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**CAUTION:** When all display panes displaying weather radar are set to Standby Mode, the antenna is parked at the center line. It is always a good idea to put the radar in Standby Mode before taxiing the aircraft to prevent the antenna from bouncing on the bottom stop and possibly causing damage to the radar assembly.

---



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

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**NOTE:** Do not rely solely 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.

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**NOTE:** *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.*

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**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.*

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

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**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](http://www.garmin.com/prop65).*

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**NOTE:** *Operating the system in the vicinity of metal buildings, metal structures, or electromagnetic fields can cause sensor differences that may result in nuisance miscompare annunciations during start up, shut down, or while taxiing. If one or more of the sensed values are unavailable, the annunciation indicates no comparison is possible.*

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**NOTE:** *The system responds to a terminal procedure based on data coded within that procedure in the Navigation Database. Differences in system operation may be observed among similar types of procedures due to differences in the Navigation Database coding specific to each procedure.*

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

- It is the pilot's responsibility to remain familiar with all FAA regulatory and advisory guidance and information related to the use of databases in the National Airspace System.
- Garmin equipment will only recognize and use databases that are obtained from Garmin or Jeppesen. Databases obtained from Garmin or Jeppesen that have a Type 2 Letter of Authorization (LOA) from the FAA are assured compliance with all data quality requirements (DQRs). A copy of the Type 2 LOA is available for each applicable database and can be viewed at [flygarmin.com](http://flygarmin.com) by selecting 'Aviation Database Declarations.'
- 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 pertinent aircraft documents 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 [flygarmin.com](http://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 [flygarmin.com](http://flygarmin.com) by selecting 'Aviation Database Alerts.'



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



**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](http://flygarmin.com) and select 'Aviation Data Error Report'.



**NOTE:** Electronic aeronautical charts displayed on this system have been shown to meet the guidance in AC 120-76D as a Type B Electronic Flight Bag (EFB) for FliteCharts and ChartView. The accuracy of the charts is subject to the chart data provider. Own-ship position on airport surface charts cannot be guaranteed to meet the accuracy specified in AC 120-76D. Possible additional requirements may make a secondary source of aeronautical charts, such as traditional paper charts or an additional electronic display, necessary on the aircraft and available to the pilot. If the secondary source of aeronautical charts is a Portable Electronic Device (PED), its use must be consistent with the guidance in AC 120-76D.

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**NOTE:** The navigation databases used in Garmin navigation systems contain Special Procedures. Prior to flying these procedures, pilots must have specific FAA authorization, training, and possession of the corresponding current, and legitimately-sourced chart (approach plate, etc.). Inclusion of the Special Procedure in the navigation database DOES NOT imply specific FAA authorization to fly the procedure.

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**NOTE:** Terrain and obstacle alerting is not available north of 89° North latitude and south of 89° South latitude. This is due to limitations present within the Terrain database and the system's ability to process the data representing the affected areas.

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**NOTE:** The nose of the 'own ship' symbol represents the location of the aircraft. The center of any traffic symbol represents the location of that traffic. The traffic and own ship symbols are an abstract representation and do not reflect the physical extent of the aircraft/traffic, and should not replace other methods for identifying traffic.

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**NOTE:** When using Stormscope, there are several atmospheric phenomena in addition to nearby thunderstorms 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 cleared.

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**NOTE:** Intruder aircraft at or below 500 ft. AGL may not appear on the Garmin SVT display or may appear as a partial symbol.

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**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.

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**NOTE:** Operate G3000 system power through at least one cycle in a period of four days of continuous operation to avoid an autonomous system reboot.

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**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.

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**FLIGHT INSTRUMENTS**

**FLIGHT INSTRUMENTS..... 1**  
 Airspeed Indicator ..... 1  
 Altimeter ..... 1  
**GARMIN SVT (SYNTHETIC VISION TECHNOLOGY)..... 4**  
 SVT Operation ..... 5  
**SUPPLEMENTAL FLIGHT DATA ..... 6**  
 Temperature Displays ..... 6  
 Generic Timer ..... 6  
 Wind Data..... 6  
 Angle of Attack (AOA) Indicator ..... 6  
**PFD ANNUNCIATIONS AND ALERTING FUNCTIONS..... 7**  
 Minimum Altitude Alerting ..... 7

**ENGINE INDICATION & CREW ALERTING SYSTEMS**

**ENGINE INDICATION SYSTEM (EIS)..... 9**  
 Electrical System ..... 15  
 Fuel System ..... 19  
 General Systems ..... 20  
**LANDING FIELD ELEVATION ..... 22**

**AUDIO AND CNS**

**COM OPERATION ..... 23**  
 COM Frequency Tuning ..... 23  
 HF COM Transceiver ..... 25  
 SELCAL..... 25  
**NAV OPERATION..... 26**  
 NAV Receiver Tuning..... 26  
**TRANSPONDER(S)..... 29**  
**ADDITIONAL AUDIO FUNCTIONS ..... 29**  
 Intercom ..... 29  
 Passenger Address (PA) System ..... 30  
 3D Audio..... 30  
 Auxiliary Audio ..... 30  
 Audio Feedback (Clicks)..... 31

## FLIGHT MANAGEMENT

<b>USING MAP DISPLAYS .....</b>	<b>33</b>
Map Settings Synchronization .....	33
Map Orientation .....	33
Map Range .....	34
Map Panning .....	34
Measuring Bearing and Distance .....	35
Absolute Terrain .....	35
Map Symbols .....	37
Additional Navigation Map Items .....	38
<b>WAYPOINTS .....</b>	<b>38</b>
Airports .....	38
Non-Airport and User Created Waypoints .....	40
<b>AIRSPACES .....</b>	<b>45</b>
Nearest Airspace .....	45
Smart Airspace .....	46
<b>DIRECT-TO NAVIGATION .....</b>	<b>46</b>
<b>FLIGHT PLANNING .....</b>	<b>49</b>
Creating a Flight Plan .....	50
Flight Plan Operations .....	56
Managing Flight Plans .....	61
<b>VERTICAL NAVIGATION .....</b>	<b>65</b>
Constraints .....	65
Vertical Situation Display .....	67
<b>PROCEDURES .....</b>	<b>69</b>
Departures .....	71
Arrivals .....	73
Approaches .....	75
<b>TRIP PLANNING .....</b>	<b>81</b>
<b>WEIGHT AND FUEL PLANNING .....</b>	<b>82</b>
Crew Profiles .....	85

**HAZARD AVOIDANCE**

**DATA LINK WEATHER.....87**

- Activating Data Link Weather Services .....87
- Registering the system for Garmin Connex Services .....87
- Accessing FIS-B Weather Information .....88
- Weather Product Age.....88
- Displaying Data Link Weather Products.....91
- Connex Weather Data Requests .....93
- Weather Product Overview.....94
- Data Link Weather Products .....98

**STORMSCOPE LIGHTNING DETECTION SYSTEM .....104**

- Using the Stormscope Pane .....104
- Stormscope Information on Navigation Maps .....105

**AIRBORNE COLOR WEATHER RADAR .....106**

- Basic Antenna Tilt and Range Setup .....106
- Weather Display And Interpretation.....109
- Ground Mapping and Interpretation .....112
- Additional Radar Displays .....112
- Vertical Situation Display Terrain.....115

**TERRAIN DISPLAYS .....117**

- Displaying Relative Terrain Information .....117

**TRAFFIC INFORMATION SERVICE (TIS) .....120**

- TIS Alerts .....122
- Additional Traffic Displays .....122

**TRAFFIC ADVISORY SYSTEM (TAS) .....123**

- Operations.....124

**ADS-B TRAFFIC .....127**

- Operation .....127
- Viewing ADS-B Traffic Status: .....129

**AUTOMATIC FLIGHT CONTROL SYSTEM**

**FLIGHT DIRECTOR OPERATION .....131**

- Activating the Flight Director .....131

**AFCS MODES.....132**  
 Vertical Modes..... 132  
 Lateral Modes..... 133  
 Combination Modes ..... 134

**ADDITIONAL FEATURES**

**SAFETAXI .....137**  
**SURFACEWATCH .....138**  
 SurfaceWatch Setup ..... 138  
**ELECTRONIC CHARTS .....138**  
 ChartView (Optional)..... 139  
 FliteCharts ..... 140  
**SATELLITE TELEPHONE AND DATALINK SERVICES.....142**  
 Registering the System with Garmin Connex..... 142  
 Contacts ..... 143  
 Telephone Communication (Optional) ..... 144  
 Text Messaging (SMS)..... 145  
**SIRIUSXM SATELLITE RADIO .....150**  
 Activating SiriusXM Satellite Services..... 150  
 Using SiriusXM Radio ..... 150  
**ELECTRONIC CHECKLISTS .....152**  
 Operation ..... 152  
**ELECTRONIC DOCUMENTS.....153**  
 Viewing Electronic Documents ..... 153

**ABNORMAL OPERATION**

**ABNORMAL GPS CONDITIONS .....157**  
**GARMIN SVT TROUBLESHOOTING .....157**  
**UNUSUAL ATTITUDES .....158**  
**SVT UNUSUAL ATTITUDES.....158**  
**ABNORMAL COM OPERATION.....159**  
 Stuck Microphone..... 159  
 COM Failure ..... 159  
 COM Tuning Failure..... 160

**DEAD RECKONING NAVIGATION ..... 160**

**ABNORMAL AFCS OPERATION ..... 160**

    Suspected Autopilot Malfunction ..... 160

    Overpowering Autopilot Servos ..... 161

    Emergency Descent Mode ..... 161

**DATALINK TROUBLESHOOTING ..... 162**

**ANNUNCIATIONS & ALERTS**

**COMPARATOR ANNUNCIATIONS..... 163**

**REVERSIONARY SENSOR ANNUNCIATIONS..... 164**

**NEAREST AIRSPACE..... 165**

**IMPORTING AND EXPORTING FLIGHT PLANS..... 165**

**VSD MESSAGES ..... 166**

**FIS-B WEATHER ANNUNCIATIONS..... 167**

**AIRBORNE WEATHER RADAR ANNUNCIATIONS..... 167**

**TERRAIN ANNUNCIATIONS ..... 168**

    Terrain-SVT and TAWS-B Impact Area Annunciations ..... 168

    Terrain-SVT Alerts ..... 169

    TAWS-B Alerts ..... 169

    Terrain-SVT Status Annunciations ..... 171

    TAWS-B Status Annunciations ..... 172

    TAWS-B Abnormal Status Annunciations ..... 172

**TRAFFIC ANNUNCIATIONS ..... 173**

    TIS Annunciations ..... 173

    TAS Annunciations ..... 174

    ADS-B Annunciations ..... 175

**AFCS ANNUNCIATIONS AND ALERTS..... 176**

**SURFACEWATCH ALERTS..... 177**

**DATALINK TROUBLESHOOTING ..... 178**

    CAS (Crew Alerting System) Messages ..... 179

**VOICE ALERTS ..... 181**

**SYSTEM MESSAGES ..... 182**

**APPENDIX**

**DATABASE MANAGEMENT .....205**

- Loading Updated Databases.....206
- Database Updates Using a Supplemental Data Card .....206
- Database Updates Using The Wireless Transceiver.....208
- Database Synchronization Feature .....211
- Database Deletion Feature .....211
- Magnetic Field Variation Database Update .....212

**PFD SOFTKEY MAPS.....212**

**TOUCHSCREEN CONTROLLER SCREEN OVERVIEW .....220**

- MFD Mode Screens .....220
- PFD Mode Screens .....230

**SCREEN CLEANING .....234**

**NAVIGATION STATUS BOX/MFD NAVIGATION DATA BAR.....235**

**MAP SYMBOLS .....235**

- Land Symbols .....235
- Aviation Symbols.....236
- Additional Navigation Map Items.....239
- Flight Planning .....240
- Obstacle Symbols .....241

**INDEX**

**INDEX .....Index-1**

# FLIGHT INSTRUMENTS

## FLIGHT INSTRUMENTS

### AIRSPPEED INDICATOR

#### Manually changing Vs speeds and enabling/disabling V speed bugs:

- 1) From PFD Home, touch **Speed Bugs**.
- 2) Touch the enable/disable button for the corresponding V speed. If the enable/disable button is disabled, a V speed value must be provided before the V speed bug can be enabled.
- 3) To change a V speed value, touch datafield button for the corresponding V speed. Then enter a value for the selected V speed using either the Keypad or the large and small upper knobs. When finished, touch **Enter**. The pencil icon next to the V speed value indicates the V speed is a pilot-entered value.

#### Enabling/disabling V speed bugs as a group:

- 1) From PFD Home, touch **Speed Bugs**.
- 2) To enable all V speed bugs, touch the **All On** Button. To disable all V speed bugs, touch the **All Off** Button.

#### Restoring all V speed default values:

- 1) From PFD Home, touch **Speed Bugs**.
- 2) Touch the **Restore All Defaults** Button. The system restores all takeoff and landing V speed reference settings to their default values, and disables the display of all V speed bugs.

### ALTIMETER

#### Setting the Selected Altitude:

Turn the **ALT SEL** Knob to set the Selected Altitude in 100-ft increments up to the aircraft's service ceiling. When meters are displayed, Selected Altitude is adjusted in 50-meter increments.

If set, the Minimum Altitude Alert value is also available for the Selected Altitude.

If desired, push the **ALT SEL** Knob to synchronize the selected altitude to the displayed altitude to the nearest 10 ft.

#### Displaying metric altitude overlay:

- 1) Press the **PFD Settings** Softkey to display the second-level softkeys.
- 2) Press the **Other PFD Settings** Softkey.
- 3) Press the **Altitude Units** Softkey.
- 4) Press the **Meters** Softkey to enable metric altitude overlay.
- 5) Press the **Back** Softkey three times to return to the top-level softkeys.



**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 the height above mean sea level, or the standard pressure setting, as applicable.

### Selecting the altimeter barometric pressure setting:

Turn the applicable **BARO** Knob (located on either side of the AFCS Controller) to select the desired setting.

### Selecting standard barometric pressure (STD BARO):

Push the **BARO** Knob to select standard pressure.

### Changing altimeter barometric pressure setting units:

- 1) Press the **PFD Settings** Softkey to display the second-level softkeys.
- 2) Press the **Other PFD Settings** Softkey.
- 3) Press the **Altitude Units** Softkey.
- 4) 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 (hPa).
- 5) Press the **Back** Softkey three times to return to the top-level softkeys.

### Synchronizing the altimeter barometric pressure settings:

- 1) From MFD Home, touch **Utilities > Setup > Avionics Settings**.
- 2) Touch the **System** Tab.
- 3) Scroll until Sync Altimeter Baro Pressure becomes visible.
- 4) To turn the function on or off, touch the Sync Altimeter Baro Pressure data field.
- 5) Touch the button for the desired synchronization setting (**On** or **Off**).

## Barometric Transition Altitude Alerts

### Setting the Baro Transition Alert:

- 1) From MFD Home, touch **Utilities > Setup > Avionics Settings**.
- 2) Touch the **Alerts** Tab.
- 3) To enable/disable the climbing baro transition alert, touch the **Baro Transition ALT Climb** Button.
- 4) If desired, touch the transition alert altitude button to change the value displayed on the button. Use the keypad or large and small upper knobs to provide a new transition altitude, then touch **Enter** or push the upper knob.
- 5) To enable/disable the descending flight level baro transition alert, touch the **BARO Transition LVL Descent** Button.

- 6) If desired, touch the transition alert flight level button to change the value displayed on the button. Use the keypad or large and small upper knobs to provide a new transition altitude, then touch **Enter** or push the upper knob.

### Reverting to the published Baro Transition Alert altitude or flight level:

- 1) From MFD Home, touch **Utilities > Setup > Avionics Settings**.
- 2) Touch the **Alerts** Tab.
- 3) Touch a datafield button for the transition altitude/flight level that was crew-modified, as indicated by a pencil icon.
- 4) Touch the **Revert to Published** Button.
- 5) Touch the **OK** Button to confirm or touch **Cancel** Button to return to the previous screen.

### Changing the HSI display format:

- 1) From PFD Home, press the **PFD Map Settings** button.
- 2) Press the **Layout** button.
- 3) Press the **HSI Map** button.

### Adjusting the Selected Heading:

Turn the **HDG** Knob to set the Selected Heading.

Push the **HDG** Knob to synchronize the bug to the current heading.

### Adjusting the Selected Course:

Turn the **CRS** Knob to set the Selected Course.

Push the **CRS** Knob to re-center the CDI and return the course pointer to the bearing of the active waypoint or navigation station (see OBS Mode for adjusting a GPS course).

### Changing the navigation angle setting:

- 1) From MFD Home, touch **Utilities > Setup > Avionics Settings**.
- 2) Touch the **Units** Tab.
- 3) Touch the **Nav Angle** Data Field.
- 4) Touch either the **Magnetic ( ° )** or **True ( °T )** Button.

## Bearing Pointers and Information Windows

### Selecting bearing display and changing sources:

- 1) Press the **PFD Settings** Softkey.
- 2) Press a **Bearing** Softkey to display the desired bearing pointer and information window with a NAV source.
- 3) Press the **Bearing** Softkey again to change the bearing source to FMS or ADF (optional).
- 4) To remove the bearing pointer and information window, press the **Bearing** Softkey again.

## Course Deviation Indicator (CDI)

### Changing navigation sources:

- 1) From PFD Home, touch the **Nav Source** Button to change from FMS to VOR1.
- 2) Touch the **Nav Source** Button again to change from VOR1 to VOR2.
- 3) Touch the **Nav Source** Button a third time to return to FMS.

### Turn CDI synchronization on:

- 1) From the MFD Home Screen, touch **Utilities > Setup > Avionics Settings**.
- 2) If necessary, touch the **System** Tab.
- 3) Scroll to and touch the Sync CDI Button to display the On or Off option.
- 4) Touch **On**.

### Turn CDI synchronization off:

- 1) From the MFD Home Screen, touch **Utilities > Setup > Avionics Settings**.
- 2) If necessary, touch the **System** Tab.
- 3) Scroll to and touch the Sync CDI Button to display the On or Off option.
- 4) Touch **Off**.

## GPS CDI Scaling

### Changing the selected FMS CDI setting:

- 1) From MFD Home, touch **Utilities > Setup > Avionics Settings**.
- 2) Touch the **System** Tab.
- 3) Scroll if necessary and touch the GPS CDI Data Field.
- 4) Touch a button for the desired setting (**0.30NM**, **1.00NM**, **2.00NM**, or **AUTO**).

### Enabling/disabling OBS Mode while navigating a FMS flight plan:

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

## GARMIN SVT (SYNTHETIC VISION TECHNOLOGY)



**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 either the accuracy or reliability upon which to solely base decisions and/or plan maneuvers to avoid terrain, obstacles, or traffic.

## SVT OPERATION

### Activating and deactivating SVT:

- 1) Press the **PFD Settings** Softkey.
- 2) Press the **Attitude Overlays** Softkey.
- 3) Press the **Synthetic Terrain** Softkey. The SVT display will cycle on or off with each press of the **Synthetic Terrain** Softkey.

### Activating and deactivating Pathways:

- 1) Press the **PFD Settings** Softkey.
- 2) Press the **Attitude Overlays** Softkey.
- 3) Press the **Pathways** Softkey. The horizon heading display will cycle on or off with each press of the **Pathways** Softkey.

### Activating and deactivating Horizon Heading:

- 1) Press the **PFD Settings** Softkey.
- 2) Press the **Attitude Overlays** Softkey.
- 3) Press the **Horizon Heading** Softkey. The horizon heading display will cycle on or off with each press of the **Horizon Heading** Softkey.

### Activating and deactivating Airport Signs:

- 1) Press the **PFD Settings** Softkey.
- 2) Press the **Attitude Overlays** Softkey.
- 3) Press the **Airport Signs** Softkey. Display of airport signs will cycle on or off with each press of the **Airport Signs** Softkey.



---

**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.

---



---

**WARNING:** Intruder aircraft at or below 500 ft. AGL may not appear on the SVT display or may appear as a partial symbol.

---

### Enabling or Disabling the field of view indication:

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If not already selected, touch the **Other** Tab.
- 3) Scroll to display the **Field of View** Annunciator Button.
- 4) Touch the **Field of View** Button to enable or disable the field of view indication. A green annunciator on the button indicates the field of view is enabled. A gray annunciator indicates the field of view is disabled.

## SUPPLEMENTAL FLIGHT DATA

### TEMPERATURE DISPLAYS

Changing temperature display units:

- 1) From MFD Home, touch **Utilities > Setup > Avionics Settings**.
- 2) If not already selected, touch the **Units** tab.
- 3) Scroll if necessary and touch the **External Temperature** datafield and select preferred units, Celsius or Fahrenheit.

### GENERIC TIMER

Setting the generic timer:

- 1) From PFD Home, touch **Timers**.
- 2) To start timer, touch the **Start** button. The button changes to **Stop**.

### WIND DATA

Displaying wind data:

- 1) Press the **PFD Settings** Softkey.
- 2) Press the **Other PFD Settings** Softkey.
- 3) Press the **Wind** Softkey to display wind data display options.
- 4) Press one of the **Option** softkeys to change how wind data is displayed:
  - **Option 1:** Headwind/tailwind and crosswind arrows with numeric speed components
  - **Option 2:** Total wind direction arrow with numeric speed
  - **Option 3:** Total wind direction arrow with digital numeric direction and speed
- 5) To remove the window, press the **Off** Softkey.

### ANGLE OF ATTACK (AOA) INDICATOR

Displaying the AOA Indicator:

- 1) Press the **PFD Settings** Softkey.
- 2) Press the **Other PFD Settings** Softkey.
- 3) Press the **AOA** Softkey to toggle Angle of Attack display options.

## PFD ANNUNCIATIONS AND ALERTING FUNCTIONS

### MINIMUM ALTITUDE ALERTING

**Setting the Baro/Temp Comp/Radio Alt Minimum Altitude Alert and bug:**

- 1) From MFD Home, touch **Utilities > Minimums > Minimums**.
- 2) Touch **Baro, Temp Comp**, or **Radio Alt** (**OFF** is selected by default.)
  - If **Temp Comp** is selected, touch **Temp at Dest**. Use the keypad to enter desired temperature, and touch **Enter**.
- 3) Use the keypad to enter the desired altitude from zero to 16,000 feet (zero to 2,500 feet for RA) and touch **Enter**.

Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCs

Additional Features

Abnormal Operation

Annun/Alerts

Appendix

Index

Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCS

Additional Features

Abnormal Operation

Annun/Alerts

Appendix

Index

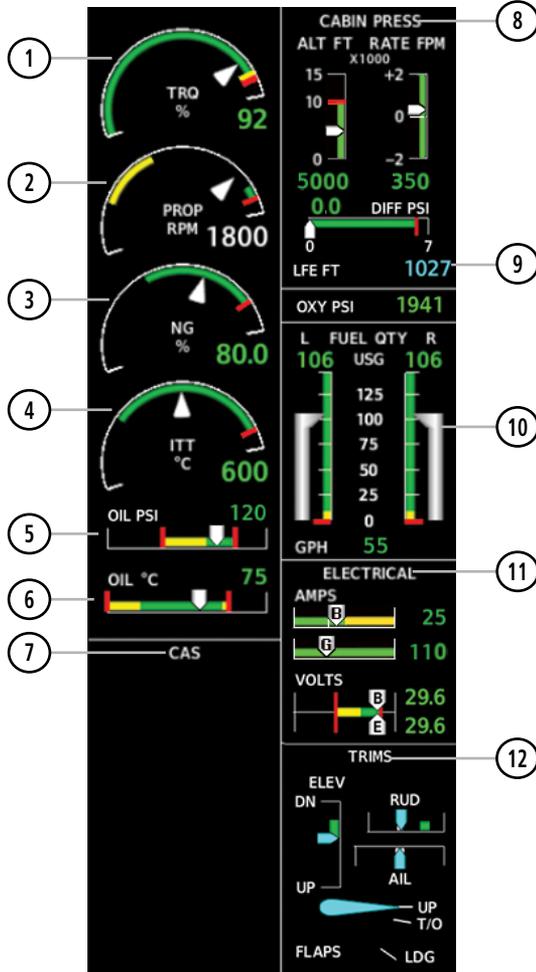
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# ENGINE INDICATION & CREW ALERTING SYSTEMS

## ENGINE INDICATION SYSTEM (EIS)



**NOTE:** Refer to the current version of the pertinent flight manual for limitations.



EICAS Display (Normal Mode)

Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCIS

Additional Features

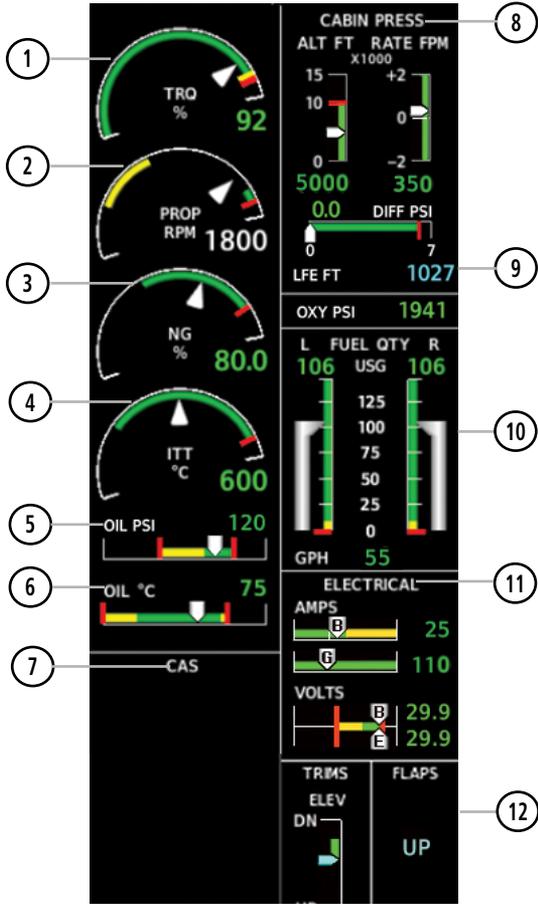
Abnormal Operation

Annun/Alerts

Appendix

Index

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCS
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

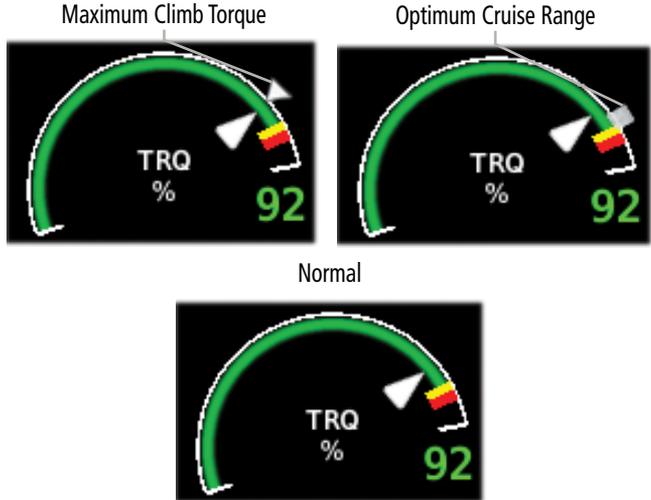


EICAS Display (Reversionary Mode)

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCs
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

### 1 Torque

The Torque Gauge displays values from 0 to 130% of maximum safe torque. If the torque remains above 100% for more than 5 seconds or exceeds the value indicated by the red tick mark, a warning condition occurs. The maximum climb torque is displayed as a white triangle (bug) while the optimum cruise range is displayed as a gray band on the Torque Gauge. When bleed pressure reaches its upper limit, 'BLEED HI' is annunciated above the Torque Gauge.



### 2 Propeller Speed

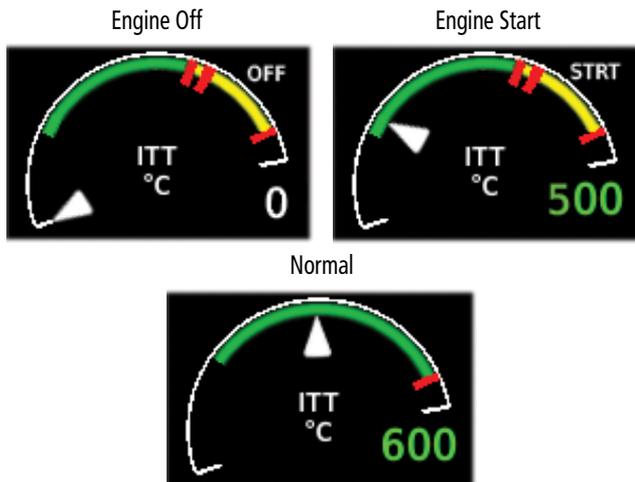
Propeller speed is shown in revolutions per minute (rpm) from zero to 2200. If propeller speed slows to where the gauge pointer enters the amber range, a caution is issued. A propeller overspeed warning is indicated if propeller speed exceeds the maximum safe operating speed.

### 3 Generator Speed

Generator speed is indicated as a percentage of maximum safe operating speed (rpm), from 0 to 120%. If generator speed exceeds 104% a warning condition occurs.

4 Interturbine Temperature

The Interturbine Temperature (ITT) Gauge ranges differ for engine off/start and running conditions. Values between 200 and 1200 degrees Celsius (°C) are shown at engine start; values change to 200 to 900°C when the engine starts running. When the engine is not running, 'OFF' is annunciated above the ITT display; this changes to 'STRT' upon engine start. No annunciation is shown when the engine is running normally.



5 Oil Pressure

Engine oil pressure is shown along horizontal bar indicators below the engine gauges. Oil pressure is shown in pounds per square inch (psi).

6 Oil Temperature

Engine oil temperature is shown along horizontal bar indicators below the engine gauges. Oil temperature in degrees Celsius (°C).

7 CAS Display

Crew alerting messages are displayed here. (See Crew Alerting System section for more information.)

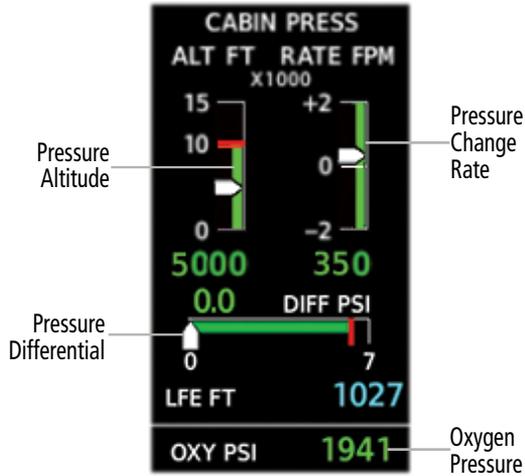
- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCS
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCs
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

**8 Cabin Pressurization**

Cabin pressurization information (cabin altitude, rate of change, and differential cabin pressure) is shown at the top of the right EICAS Display.

Cabin altitude (ALT FT) is shown on a color-coded scale labeled in 5,000-ft increments with a display (in feet) below. Cabin altitude change rate (RATE FPM) is displayed on a scale in terms of 2,000 fpm increments with a display (in fpm) below. Cabin pressure differential (DIFF PSI), in pounds per square inch (psi), is indicated on a color-coded scale with a display.



The pressure (in psi) for the oxygen system is shown below the cabin pressurization display under normal display conditions.

**9 Landing Elevation**

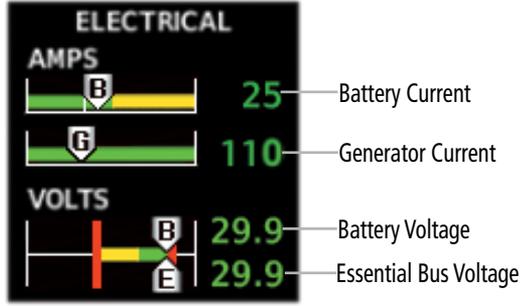
The Landing Elevation is displayed as magenta dashes until a flight plan destination is entered. Once a flight plan is entered, the Landing Elevation is updated to reflect the new destination elevation. Automatically entered values appear in magenta. Manually entered values are cyan. If the Landing Elevation data is invalid or not available, the digits are replaced with amber dashes. (See Landing Field Elevation section for more information.)

**10 Fuel Group**

The fuel display is located beneath the oxygen pressure display and shows the fuel quantity in each tank (in United States gallons, USG), and fuel flow (gallons per hour, gph). Fuel quantity for each tank is normally shown along a slider scale. Displays for fuel quantity and fuel flow are shown in Reversionary Mode.

11 Electrical Group

Electrical Information shows currents for the battery (pointers labeled "B") and generator (pointer labeled "G" for primary generator and "S" for standby generator) and voltages for the battery and essential bus (pointer labeled "E") are shown along color-coded scales, with displays to the right.



12 Flap and Trims

Elevator, rudder, and aileron trim indications are shown along slide bar scales next to the CAS messages in normal display mode. Flap deflection is normally displayed beneath the trim indications using a rotating pointer. Flap positions for takeoff, landing, and up positions are labeled. In Reversionary Mode, only elevator trim is indicated. Rudder trim is not shown in Reversionary Mode. Flap position (UP, T/O, LDG) is provided as a digital display in Reversionary Mode and when CAS scrolling is enabled.

Synoptics

The Synoptics pages show current conditions of certain aircraft functionality on aviation system diagrams, reducing workload by allowing the flight crew to rapidly analyze the situation. Aircraft systems graphically depicted in the synoptic diagrams include:

- Electrical system
- Fuel system
- Doors/De-ice system

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCS
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index



**Systems Overview**

Refer to the Flight Management Section for information on how to use the **Weight and Fuel** Button functions.

Refer to the System Overview for more information on how to use the **Lighting Config** Button functions.

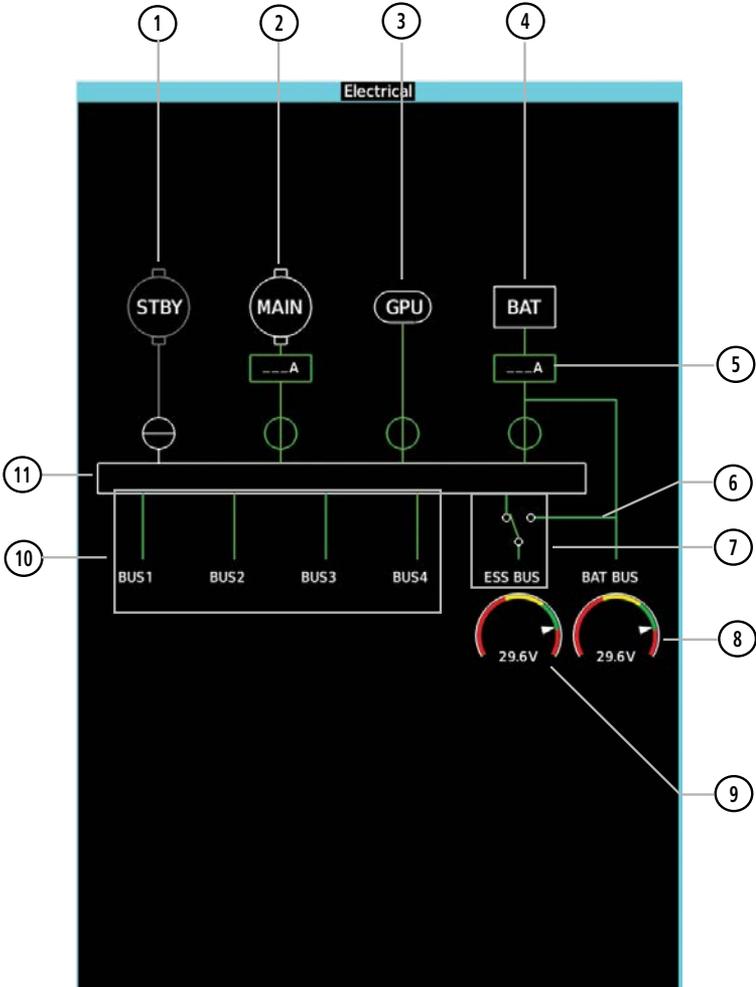
**ELECTRICAL SYSTEM**

The 'Electrical' Pane uses a diagram of the aircraft's electrical system to display the system status. The generators, ground power supply (GPU), batteries, and buses are shown in green to denote normal operation. Color of the units change depending on the condition.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCs
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

Accessing the Electrical System Synoptics:

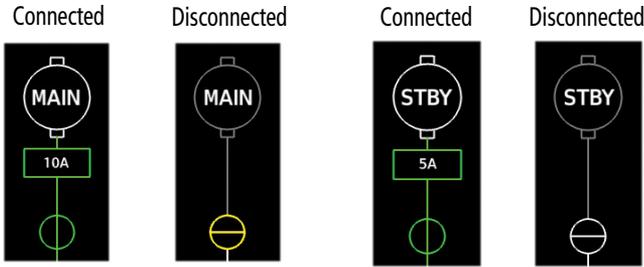
From MFD Home, touch **Aircraft Systems > Electrical Power**.



- ① Standby Generator
- ② Main Generator
- ③ Ground Power Unit Door
- ④ Battery
- ⑤ Amperage
- ⑥ Battery Bus
- ⑦ Essential Bus
- ⑧ Battery Bus Voltage
- ⑨ Essential Bus Voltage
- ⑩ DC Buses 1 through 4
- ⑪ Main Bus

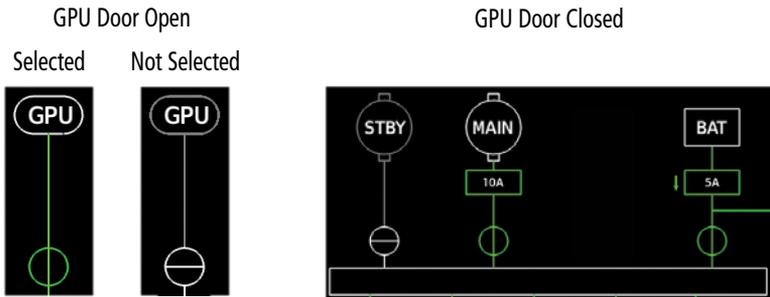
Electrical Synoptics Page

Active generator currents are displayed below the generator icons. A disconnected generator is indicated in gray; the current is removed from the display and the switch symbol is closed.



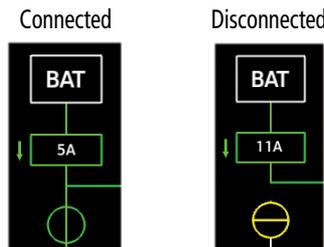
**Generator Status**

GPU status information is removed from the electrical diagram when the GPU door is closed. If the GPU door is open and selected, the GPU status is shown in green; when the door is open, but not selected, the status is shown in gray with the switch closed. A CAS message, 'GPU DOOR' is generated if the GPU door is open.



**GPU Door Status**

Battery connection status to the main bus is indicated in green; direction of current flow is indicated with an arrow next to the current display. If the battery is disconnected from the main bus, the switch is closed.



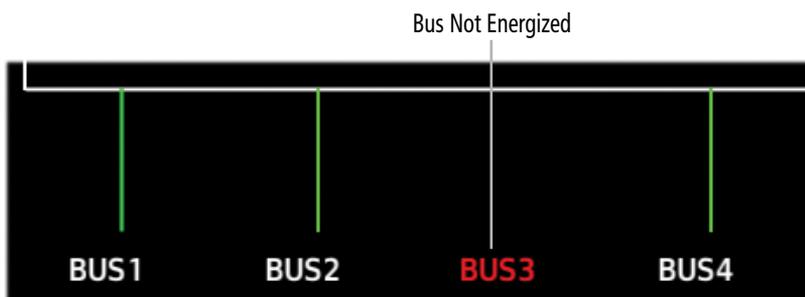
**Battery Status**

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCs
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

Battery and essential bus voltages are displayed using gauges. DC buses are shown in green when energized. When not energized, the connection line to the main bus is removed and the bus label is displayed in red.



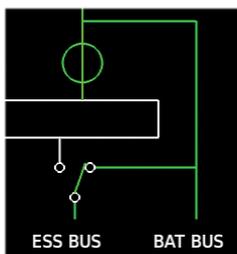
Essential Bus and Battery Over Voltage



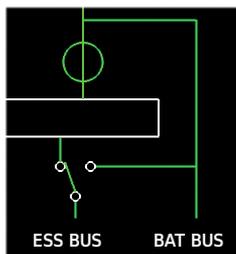
DC Bus Status

The Emergency Buses switch has two positions, UP (open) and DN (ground). If the switch is in the UP position, the essential bus is connected to the battery bus. If the switch is in the DN position, the essential bus is connected to the main bus.

Essential Bus Connected to the Battery Bus



Essential Bus Connected to the Main Bus



Essential Bus Connections

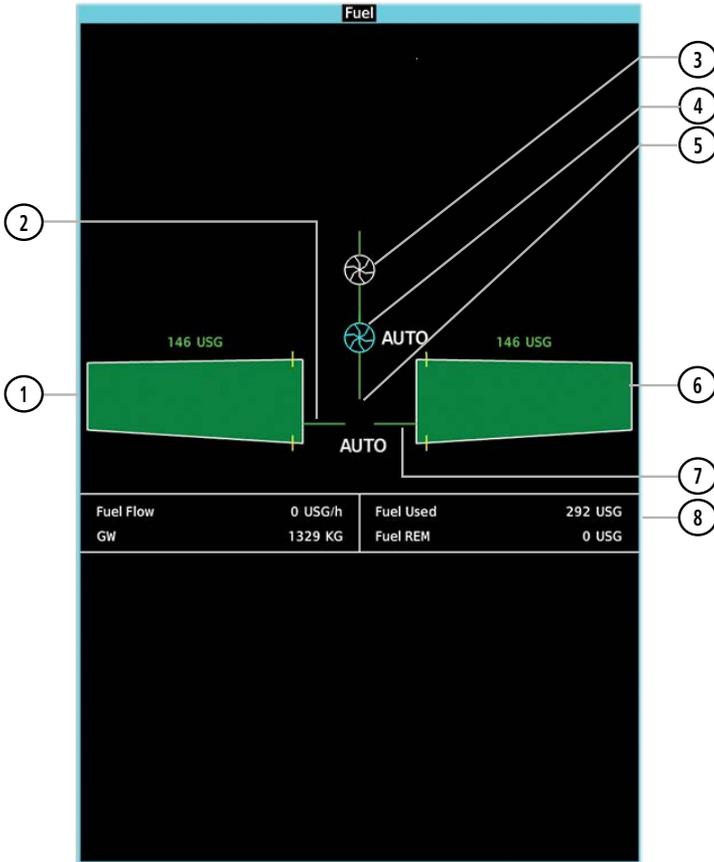
A red “X” over a component indicates invalid data or a failed unit.

**FUEL SYSTEM**

The Fuel Synoptics Page displays the status of the fuel tanks and feed system. Fuel quantity is depicted graphically; the color changes to amber if the fuel quantity drops below the threshold level.

**Accessing the Fuel System Synoptics:**

From MFD Home, touch **Aircraft Systems > Fuel**.

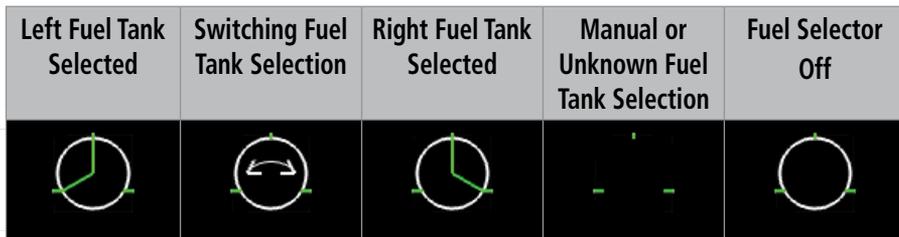


- ① Left Fuel Tank
- ② Left Fuel Line
- ③ Engine Driven Boost Pump
- ④ Auxiliary Boost Pump
- ⑤ Fuel Selector
- ⑥ Right Fuel Tank
- ⑦ Right Fuel Line
- ⑧ Fuel Flow Data

'Fuel' Pane

Flight Instruments

EAS



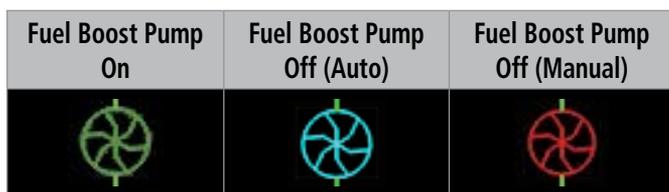
Fuel Selector Status

If the auxiliary fuel boost pump is on, the symbol is displayed in green. The mode, automatic (AUTO) or manual (MAN) is displayed next to the pump symbol. If the boost pump is off, the symbol is shown in cyan (automatic mode) or red (manual mode).

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance



Auxiliary Boost Pump Status

Fuel used and remaining are based on the fuel flow. The aircraft's weight is entered on the Weight and Fuel screen under Aircraft Systems on the Touchscreen Controller (see the Flight Management Section).

AFCs

Additional Features

Fuel Flow	0 USG/h	Fuel Used	292 USG
GW	1329 KG	Fuel REM	0 USG

Fuel Flow Data

A red "X" over a component indicated invalid data or a failed unit.

Abnormal Operation

**GENERAL SYSTEMS**

The General Synoptics Page aircraft diagram displays open doors in red (CAS messages also generated). Statuses of stall sensor, propeller, pitot probes, and windshield heat are also indicated on the diagram:

Annun/Alerts

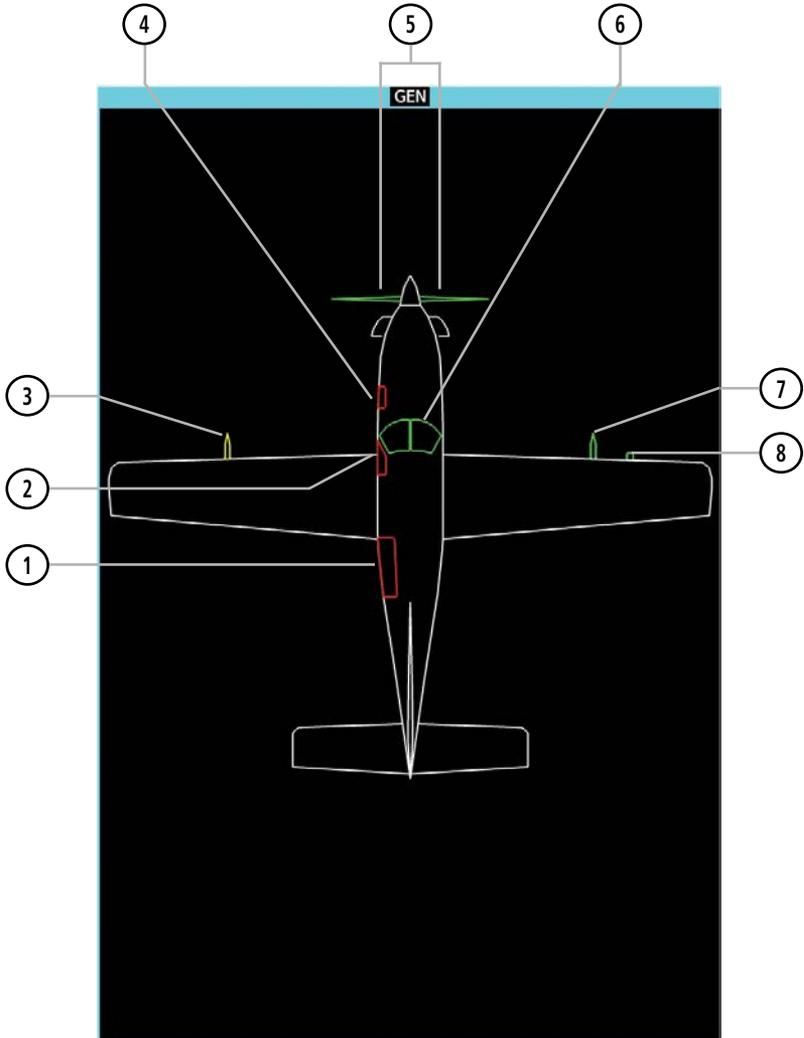
Appendix

- White indicates that heat is off (propeller and windshield)
- Cyan indicates heat has been selected (windshield)
- Green indicates heat is on
- Amber indicates heat has failed (stall sensor, propeller and pitot tube).
- Invalid sensor information is indicated with a red 'X'.

Index

**Accessing the General Systems Synoptics:**

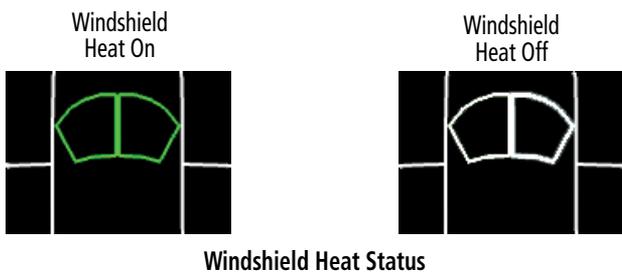
From MFD Home, touch **Aircraft Systems > General**.



- |                           |                            |
|---------------------------|----------------------------|
| ① Cabin Door Open         | ⑤ Propeller Heaters        |
| ② Pilot Door Open         | ⑥ Right Windshield Heat On |
| ③ Pitot Probe 1           | ⑦ Pitot Probe 2            |
| ④ Forward Cargo Door Open | ⑧ Stall Warning Sensor     |

**'GEN' Pane**

- Flight Instruments
- EAS**
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCs
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index



## LANDING FIELD ELEVATION

Adjusting the Landing Field Elevation Settings.

- 1) From MFD Home, touch **Aircraft Systems > Landing Field Elev.**
- 2) Touch the **FMS** or **Manual** Button as desired. If using FMS Destination, the Landing Elevation digits will be magenta. If using Manual Mode, the text will be cyan.
- 3) Touch **Landing Elevation** Button to set the Landing Elevation.
- 4) Input the Landing Elevation by touching the number keys, or touch the **Use FMS Destination** Button.

# AUDIO AND CNS

## COM OPERATION

### Selecting a COM Radio for transmission:

From NAV/COM Home, touch the **MIC** Button to switch between COM1 and COM2 radios.

### Selecting a COM Radio for monitoring:

From NAV/COM Home, touch the **MON** Button to monitor the COM radio not selected for transmission.

## COM FREQUENCY TUNING

### Tuning a standby COM frequency from the 'NAV/COM Home' Screen:

- 1) From NAV/COM Home, touch the COM1 or COM2 **STBY** Button to select radio for tuning.
- 2) Use the keypad to select the frequency.
- 3) Touch the **Enter** Button to accept the new frequency as the COM1 or COM2 standby frequency (not required if tuning with the upper knobs).
- 4) To accept the new frequency as the active frequency and transfer the previously active frequency to the standby frequency touch the **XFER** Button.

### Tuning a standby COM frequency from the 'Audio & Radios' Screen:

- 1) From NAV/COM Home, touch the **Audio & Radios** Button to display the 'Audio & Radios' Screen.
- 2) Touch the COM1 or COM2 frequency button to display the COM1/COM2 Standby Screen.
- 3) Use the keypad to select the frequency.
- 4) Touch the **Enter** Button to accept the new frequency as the COM1 or COM2 standby frequency.
- 5) To accept the new frequency as the active frequency and transfer the previously active frequency to the standby frequency touch the **XFER** Button.

### COM frequency tuning using the COM volume slider buttons:

- 1) From NAV/COM Home, touch the **Audio & Radios** Button to display the 'Audio & Radios' Screen.
- 2) Touch the COM1 or COM2 volume slider button to select desired COM for tuning.
- 3) Turn the large and small upper knobs to select the frequency (Large knob increases/decreases MHz; Small knob increases/decreases kHz).
- 4) If desired, push and hold the small upper knob to transfer the new frequency from standby to active COM.

### Selecting the Sync to Pilot Button:

- 1) From the 'NAV/COM Home' Screen, touch the **Audio & Radios** Button to display the 'Audio & Radios' Screen.
- 2) Touch the **Copilot** Tab or **Pass** Tab.
- 3) Touch the **Sync to Pilot** Button. Pilot 'Audio & Radios' Screen selections now change both Touchscreen Controllers.

### Finding and selecting a COM frequency from the 'NAV/COM Home' Screen:

- 1) From NAV/COM Home, touch the **Find** Button to display the Find COM1/COM2 Frequency Screen.
- 2) Touch desired tab for frequency type (Recent, Nearest, Dest, Flight Plan, or Favorite).
- 3) Scroll the list to find the desired frequency.
- 4) Touch the frequency button to accept the new frequency as the COM1/COM2 standby frequency. Selecting a **Multiple** Button accesses another level of selectable frequencies.

### Finding and selecting a COM frequency from the 'Airport Information' Screen:

- 1) From MFD Home, touch the **Waypoint Info** Button.
- 2) Touch the **Airport** Button to display the 'Airport Information' Screen.
- 3) If needed, touch the Airport Button to enter or find desired airport.
- 4) Touch the **Freqs** Tab to display the 'Airport Frequencies' Screen.
- 5) Scroll the list to find desired frequency.
- 6) Touch the frequency button to display the 'Load Frequency' Screen.
- 7) Touch desired Location Button to load frequency into COM1/COM2 Active, Standby, or Favorites.

### Finding and selecting a COM frequency from the 'Nearest Airport' Screen:

- 1) From MFD Home, touch the **Nearest** Button.
- 2) Touch the **Airport** Button to display the 'Nearest Airport' Screen.
- 3) Scroll the list to find the desired airport.
- 4) Touch the desired **Airport** Button to display the **Waypoint Options** Window.
- 5) Touch the **Airport Info** Button to display the 'Airport Information' Screen.
- 6) Touch the **Freqs** Tab to display the 'Airport Frequencies' Screen.
- 7) Scroll the list to find desired frequency.
- 8) Touch the frequency button to display the 'Load Frequency' Screen.
- 9) Touch desired Location Button to load the frequency into COM1/COM2 Active, Standby, or Favorites.

### Finding and selecting a COM frequency from the 'Nearest' Screen:

- 1) From MFD Home, touch the **Nearest** Button to display the 'Nearest' Screen.
- 2) Select the **Airspace**, **ARTCC**, **FSS**, or **Weather** Button.
- 3) Scroll the list to find desired frequency.
- 4) Touch the frequency button to display the 'Load Frequency' Screen.
- 5) Touch the Location Button to load the frequency into COM1/COM2 Active, Standby, or Favorites.

### Viewing Current COM selections from any COM 'Load Frequency' Screen:

- 1) From any COM 'Load Frequency' Screen, touch the **Audio & Radios** Button to display current COM selections.
- 2) Touch the **Back** Button to return to the 'Load Frequency' Screen.

### Changing COM frequency channel spacing:

- 1) From MFD Home, touch **Utilities > Setup > Avionics Settings**.
- 2) Scroll the list to show the **COM Channel Spacing** Button.
- 3) Touch the COM Channel Spacing Button to display the **25.0 kHz** and **8.33 kHz** Buttons.
- 4) Touch the desired channel Spacing Button.

## HF COM TRANSCEIVER

### Selecting the HF COM Radio for monitoring and transmitting:

- 1) From NAV/COM Home, touch the **Audio & Radios** Button
- 2) Touch the **HF** Button to select the HF COM radio for monitoring.
- 3) Touch the **HF MIC** Button to select the HF COM radio for transmission.

## SELCAL

### Entering the SELCAL Code

- 1) From NAV/COM Home, touch **Audio & Radios** Button.
- 2) Touch the **Pilot** Tab or **Copilot** Tab.
- 3) Scroll the list to find **SELCAL**.
- 4) Touch the **SELCAL ID** Button.
- 5) Enter the assigned 4 character SELCAL Code and touch the **ENTER** Button.
- 6) Touch the **OK** Button to confirm.

### Selecting/deselecting SELCAL

- 1) From NAV/COM Home, touch **Audio & Radios** Button.
- 2) Touch the **Pilot** Tab or **Copilot** Tab.
- 3) Scroll the list to find **SELCAL**.
- 4) Touch the **SELCAL** Button.

### Receiving and Acknowledging a SELCAL transmission:

- 1) Touch the **SELCAL** Button to display the 'Audio & Radios' Screen.
- 2) Touch the **Pilot** Tab or **Copilot** Tab.
- 3) Scroll the list to find the **SELCAL ACK** Button.
- 4) Touch the **SELCAL ACK** Button.
- 5) Touch the **HF** Button and **MIC** Buttons to receive and transmit on this radio.

## NAV OPERATION

### Selecting/deselecting a navigation radio for monitoring:

- 1) From NAV/COM Home, touch the **Audio & Radios** Button to display the 'Audio & Radios' Screen.
- 2) Touch the **NAV1** or **NAV2** Button to select/deselect the radio for monitoring.

## NAV RECEIVER TUNING

### Tuning a NAV frequency from the 'Audio & Radios' Screen:

- 1) From NAV/COM Home, touch the **Audio & Radios** Button to display the 'Audio & Radios' Screen.
- 2) Touch the NAV1 or NAV2 frequency button to display the NAV1/NAV2 Standby Screen.
- 3) Use the keypad to select the desired frequency.
- 4) To accept the new frequency as the NAV1 or NAV2 standby frequency touch the **Enter** Button.
- 5) To accept the new frequency as the active frequency and transfer the previously active frequency to the standby frequency touch the **XFER** Button.

### Finding and selecting a NAV frequency from the 'Airport Information' Screen:

- 1) From MFD Home, touch the **Waypoint Info** Button to display the 'Waypoint Info' Screen.
- 2) Touch the **Airport** Button to display the 'Airport Information' Screen.
- 3) If needed, touch the Airport Button to enter/find the desired airport.
- 4) Touch the **Freqs** Tab to display the 'Airport Frequencies' Screen.
- 5) Scroll the list to find the desired navigation frequency.
- 6) Touch the frequency button to display the 'Load Frequency' Screen.
- 7) Touch the Location Button to load the frequency to NAV1 or NAV2 Active, Standby, or Favorites.
- 8) Touch the **Done** Button or the **Back** Button to return to the 'Airport Frequencies' Screen.

### Finding and selecting a NAV frequency from the 'VOR Information' Screen:

- 1) From MFD Home, touch the **Waypoint Info** Button to display the 'Waypoint Info' Screen.
- 2) Touch the **VOR** Button to display the 'VOR Information' Screen.

- 3) If needed, touch the **VOR** Button to enter/find the desired VOR.
- 4) Touch the frequency button to display the 'Load Frequency' Screen.
- 5) Touch the Location Button to load the frequency to NAV1 or NAV2 Active, Standby, or Favorites.
- 6) Touch the **Done** Button or the **Back** Button to return to the 'VOR Information' Screen.

#### Finding and selecting a NAV frequency from the 'Nearest Airport' Screen:

- 1) From MFD Home, touch the **Nearest** Button to display the 'Nearest' Screen
- 2) Touch the **Airport** Button to display the 'Nearest Airport' Screen.
- 3) Scroll the list to find the desired airport.
- 4) Touch the Airport Button to display the 'Waypoint Options' Window.
- 5) Touch the **Airport Info** Button to display the 'Airport Information' Screen.
- 6) Touch the **Freqs** Tab to display the 'Airport Frequencies' Screen.
- 7) Scroll the list to find the desired frequency.
- 8) Touch the frequency button to display the 'Load Frequency' Screen.
- 9) Touch the Location Button to load the frequency to NAV1 or NAV2 Active, Standby, or Favorites.
- 10) Touch the **Done** Button or the **Back** Button to return to the 'Airport Frequencies' Screen.

#### Finding and selecting a NAV frequency from the 'Nearest VOR' Screen:

- 1) From MFD Home, touch the **Nearest** Button to display the 'Nearest' Screen.
- 2) Touch the **VOR** Button to display the 'Nearest VOR' Screen.
- 3) Scroll the list to find the desired frequency.
- 4) Touch the frequency button to display the 'Load Frequency' Screen.
- 5) Touch the Location Button to load the frequency to NAV1 or NAV2 Active, Standby, or Favorites.
- 6) Touch the **Done** Button or the **Back** Button to return to the 'Nearest VOR' Screen.

#### Viewing Current NAV selections from any NAV 'Load Frequency' Screen:

- 1) From any NAV 'Load Frequency' Screen, touch the **Audio & Radios** Button to display current NAV selections.
- 2) Touch the **Back** Button to return to the 'Load Frequency' Screen.

## ADF Tuning

#### Selecting an ADF frequency:

- 1) From NAV/COM Home, touch the **Audio & Radios** Button to display the 'Audio & Radios' Screen.
- 2) Scroll the list to find the ADF.

- 3) Touch the ADF Control Button to display the 'ADF Standby' Screen.
- 4) Use the keypad to select the desired frequency.
- 5) Touch the **Enter** Button to enter the new frequency as the ADF standby frequency.

#### Finding and selecting an ADF frequency:

- 1) From NAV/COM Home, touch the **Audio & Radios** Button to display the 'Audio & Radios' Screen.
- 2) Scroll the list to find the ADF.
- 3) Touch the ADF Control Button to display the 'ADF Standby' Screen.
- 4) Touch the **Find** Button to display the 'Find ADF Frequency' Screen.
- 5) Touch the tab for the desired type of frequency (Recent, Nearest, Dest, Flight Plan, or Favorite).
- 6) Scroll the list to find the desired frequency.
- 7) Touch the frequency button to load the new frequency into the standby frequency field on the 'ADF Standby' Screen.
- 8) Touch the **Enter** Button to enter the new frequency as the ADF standby frequency.

#### Transferring the active and standby ADF frequencies:

- 1) From NAV/COM Home, touch the **Audio & Radios** Button to display the 'Audio & Radios' Screen.
- 2) Scroll the list to find the ADF.
- 3) Touch the ADF volume slider to select the ADF for transfer.
- 4) Push and hold the small upper knob to transfer the frequencies.

#### Selecting an ADF receiver mode:

- 1) From NAV/COM Home, touch the **Audio & Radios** Button to display the 'Audio & Radios' Screen.
- 2) Scroll the list to find the ADF.
- 3) Touch the ADF Control Button to display the 'ADF Standby' Screen.
- 4) Touch the **ANT, ADF, ADF/BFO**, or **ANT/BFO** Button to select the ADF mode.

## DME Tuning

#### Selecting a DME mode:

- 1) From NAV/COM Home Screen, touch the **Audio & Radios** Button to display the 'Audio & Radios' Screen.
- 2) Scroll the list to find the **DME** Button.
- 3) Touch the DME Mode Control Button to display the 'DME1 Mode' Screen.
- 4) Touch the **NAV1**, **NAV2**, or **HOLD** Button to select desired DME mode. DME information will be displayed on the PFD in the Active NAV Source/Frequency Box. An 'H' next to the frequency indicates DME Hold mode.

## TRANSPONDER(S)

### Selecting active transponder:

- 1) From NAV/COM Home, touch the Transponder Code/Mode Button to display the 'Transponder' Screen.
- 2) Touch the **Active** Button to display the 'Select Active Transponder' Screen.
- 3) Touch the **XPDR1** or **XPDR2** Button.

### Selecting transponder mode:

- 1) From NAV/COM Home, touch the Transponder Code/Mode Button to display the 'Transponder' Screen.
- 2) Touch desired Mode Selection Button to activate desired transponder mode.

### Entering a transponder code with the keypad:

- 1) From NAV/COM Home, touch the Transponder Code/Mode Button to display the 'Transponder' Screen.
- 2) Use the keypad to select the desired code.
- 3) Touch the **Enter** Button to enter the new code.

### Entering a transponder code with the knobs:

- 1) From the NAV/COM Home, touch the Transponder Code/Mode Button to display the 'Transponder' Screen.
- 2) Turn the large upper knob one click in any direction to select the first digit of the existing code.
- 3) Turn the small upper knob to enter the desired first digit.
- 4) Turn the large upper knob clockwise to move the cursor to the next digit.
- 5) Turn the small upper knob to enter the next digit and repeat steps 4 and 5 until complete.
- 6) Touch the **Enter** Button, or push the small upper knob, to enter the new code.

## ADDITIONAL AUDIO FUNCTIONS

### INTERCOM

#### Enabling/Disabling Intercom Connections:

- 1) From NAV/COM Home, touch the **Intercom** Button.
- 2) Touch link arrow to enable/disable connection between desired positions.

#### Adjusting the intercom volume:

- 1) From NAV/COM Home, touch the **Intercom** Button to display the 'Intercom' Screen.
- 2) Touch the **Pilot Volume**, **Copilot Volume**, or **Pass Volume** Button to display the intercom settings screen.
- 3) Adjust the volume by using the middle knob.

### Adjusting the intercom squelch:

- 1) From NAV/COM Home, touch the **Intercom** Button to display the 'Intercom' Screen.
- 2) Touch the **Pilot Volume**, **Copilot Volume**, or **Pass Volume** Buttons to display the intercom settings screen.
- 3) Touch the **Auto Squelch** Button to disable automatic squelch.
- 4) Adjust squelch manually using the lower knob.

## PASSENGER ADDRESS (PA) SYSTEM

### Selecting the PA system for transmission:

- 1) From NAV/COM Home, touch the **Audio & Radios** Button to display the 'Audio & Radios' Screen.
- 2) Scroll the list to find the **PA** Button.
- 3) Touch the **PA** Button to enable PA for transmission.

## 3D AUDIO

### Enabling/Disabling 3D Audio:

- 1) From MFD Home, touch **Utilities > Setup > Avionics Settings**.
- 2) Touch the **Audio** Tab.
- 3) Touch the Pilot or Copilot 3D Audio Button.

### Enabling/Disabling Left-Right Swap:

- 1) From MFD Home, touch **Utilities > Setup > Avionics Settings**.
- 2) Touch the **Audio** Tab.
- 3) Touch the Pilot or Copilot L-R Swap Button.

## AUXILIARY AUDIO

### Selecting/Deselecting Auxiliary Audio:

From NAV/COM Home, touch the **Pilot Music 1** Button to select/deselect audio input for the pilot.

### Configuring Auxiliary Audio Mute Settings:

- 1) From NAV/COM Home, touch the **Audio & Radios** Button to display the 'Audio & Radios' Screen.
- 2) Touch the **Pilot** or **Copilot** Tab.
- 3) Scroll the list to find the **Music** Button.
- 4) Touch the **Mute Settings** Button to display the 'Music Mute Settings' Window.
- 5) Touch the **Intercom**, and/or the **Radio Inputs** Button to select which items will mute auxiliary audio. The **Aural Alerts** Button cannot be deselected.

## AUDIO FEEDBACK (CLICKS)

### Configuring audio feedback:

- 1) From NAV/COM Home, touch the **Audio & Radios** Button to display the 'Audio & Radios' Screen.
- 2) Touch the **Pilot** or **Copilot** Tab.
- 3) Scroll the list to find the **Clicks** Button.
- 4) Touch the **Clicks** Button to display the 'Audio Feedback Settings' Screen.
- 5) Touch the desired audio feedback setting.

Flight  
Instruments

EIS

Nav/Com/  
XPDR/Audio

Flight  
Management

Hazard  
Avoidance

AFCS

Additional  
Features

Abnormal  
Operation

Annun/Alerts

Appendix

Index

Blank Page

# FLIGHT MANAGEMENT

## Changing a field in the MFD Navigation Data Bar:

- 1) From MFD Home, touch **Utilities > Setup > Avionics Settings** to display the 'Avionics Settings' Screen.
- 2) Touch the **MFD Fields** Tab.
- 3) Touch the desired MFD Data Bar Field Button. The respective 'Select MFD Data Bar Field' Screen will open.
- 4) Scroll as required and touch the desired field description to replace the previous information.
- 5) Repeat Steps 3 and 4, as necessary.

## USING MAP DISPLAYS

### Viewing the map settings:

- 1) From MFD Home, touch **Map**.
- 2) Touch the **Map Selection** Button, if necessary. This button is available if IFR/VFR charts are installed.
- 3) Touch the **Map Settings** Button. The 'Map Settings' Screen is displayed.

**Or:**

- 1) From MFD Home, touch **Flight Plan**.
- 2) Touch the **Flight Plan Options** Button.
- 3) Touch the **Map Settings** Button. The 'Map Settings' Screen is displayed.

## MAP SETTINGS SYNCHRONIZATION

### Enabling/disabling map settings synchronization:

- 1) From MFD Home, touch **Map > Map Settings > Map Sync**.
- 2) Touch the **Onside** Button or the **All** Button.
- 3) Touch the button for the desired setting.

**Or:**

Touch the **Off** Button to disable synchronization.

## MAP ORIENTATION

### Changing the Navigation Map orientation:

- 1) From MFD Home, touch **Map > Map Settings**.
- 2) Touch the **Orientation** Button.
- 3) Touch the **Heading Up**, **Track Up**, or **North Up** Button to select the navigation map orientation.

**Enabling/disabling Auto North Up and selecting the minimum switching range:**

- 1) From MFD Home, touch **Map > Map Settings**.
- 2) If necessary, touch the **Other** Tab to display the options list.
- 3) Touch the **North Up Above** Button to enable/disable auto north up.
- 4) Touch the Auto North Up range Button to display the Map North Up Above Window.
- 5) Scroll the list if necessary to find the desired range, and touch the range button.

**MAP RANGE****Configuring automatic zoom:**

- 1) From MFD Home, touch **Map > Map Settings**.
- 2) If necessary, touch the **Other** Tab to display the options list.
- 3) Touch the **Auto Zoom** Button to enable/disable auto zoom.
- 4) Touch the Auto Zoom **Settings** Button to display the 'Auto Zoom Settings' Screen.
- 5) Touch the **Auto Zoom Max Look Fwd** Button to display the numeric keyboard.
- 6) Use the keypad to enter the maximum look forward time. Times are from zero to 999 minutes.
- 7) Repeat Steps 5 and 6 for 'Auto Zoom Min Look Fwd' (zero to 99 minutes) and 'Auto Zoom Time Out' (zero to 99 minutes) functions using the corresponding button names.

**MAP PANNING****Panning the map:**

- 1) Push the lower knob to display the Map Pointer.
- 2) Move the lower knob, or slide your finger on the **Touchpad**, to move the Map Pointer on the map. The map will pan when the pointer approaches the edge of the map.
- 3) Push either knob to remove the Map Pointer and recenter the map on the aircraft's current position.

**Or:**

Touch the **Back** Button on the Touchscreen Controller to remove the Map Pointer and recenter the map on the aircraft's current position.

**Reviewing information for a waypoint or airspace:**

- 1) Place the Map Pointer on an airport, intersection, NAVAID, VRP, user waypoint, or airspace.
- 2) Touch the **Info** Button to display the respective information screen.
- 3) Touch the **Back** Button on the Touchscreen Controller to return to the 'Map Pointer Control' Screen without removing the Map Pointer from the Navigation Map.

**Or:**

Push either knob to exit the waypoint information screen, remove the Map Pointer from the Navigation Map, and recenter the map on the aircraft's current position.

## MEASURING BEARING AND DISTANCE

### Measuring bearing and distance between the aircraft present position and any other point:

- 1) Push the lower knob (with a navigation map or data link weather map displayed).
- 2) Touch the **BRG/DIS** Button. A Measure Pointer is displayed on the map at the aircraft's present position.
- 3) Move the pointer using the lower knob, or the **Touchpad** to the desired location. A dashed Measurement Line is drawn from the aircraft present position to the location of the Measure Pointer. The latitude/longitude, distance, bearing and elevation data of the Measure Pointer are displayed at the top left of the map. Move the pointer again to measure to any other point.
- 4) To exit the Measure Bearing/Distance function, push either knob, or touch the **Back** Button.

### Measuring bearing and distance between any two points:

- 1) Push the lower knob (with a navigation map or data link weather map displayed).
- 2) Touch the **BRG/DIS** Button. A Measure Pointer is displayed on the map at the aircraft's present position.
- 3) Move the pointer using the lower knob, or the **Touchpad** to the desired reference location. A dashed Measurement Line is drawn from the aircraft present position to the location of the Measure Pointer. The latitude/longitude, distance, bearing and elevation data of the Measure Pointer are displayed at the top left of the map.
- 4) Touch the **Select Ref** Button to set the Measure Pointer location as the new reference point for measurement. The dashed Measurement Line is erased.
- 5) Move the pointer using the lower knob, or the **Touchpad** to the desired location. A dashed Measurement Line is drawn from the reference point to the location of the Measure Pointer. The latitude/longitude, distance, bearing and elevation data of the Measure Pointer are displayed at the top left of the map.
- 6) Repeat Steps 3 through 5 to measure between other points.
- 7) To exit the Measure Bearing/Distance function, push either knob, or touch the **Back** Button.

## ABSOLUTE TERRAIN

### Displaying/removing absolute terrain data on navigation maps:

- 1) From MFD Home, touch **Map > Map Settings**.
- 2) Touch the **Sensor** Tab, if necessary.

- 3) Touch the **Terrain** Button to display the 'Map Terrain Displayed' Window.
- 4) Touch the **Absolute** Button to display absolute terrain data on the navigation map, or touch the **Off** Button to remove absolute terrain data from the navigation map.

### Displaying/removing absolute terrain data on the PFD Map:

- 1) From PFD Home, touch **PFD Map Settings**.
- 2) Touch the **Terrain** Button to display the 'Inset Map Terrain Displayed' Screen.
- 3) Display or remove absolute terrain data:
  - Touch the **Absolute** Button to display absolute terrain data on the PFD Map.
  - Or:**
  - Touch the **Off** Button to remove absolute terrain data from the PFD Map.
- Or:**
- 1) Press the **PFD Map Settings** Softkey on the PFD.
- 2) Display or remove absolute terrain data:
  - Press the **Terrain** Softkey until 'Absolute' is shown to display absolute terrain data on the PFD Map.
  - Or:**
  - Press the **Terrain** Softkey until 'Off' is shown to remove absolute terrain data from the PFD Map.

### Selecting an absolute terrain data range on navigation map displays:

- 1) From MFD Home, touch **Map > Map Settings**.
- 2) Touch the **Sensor** Tab, if necessary.
- 3) Touch the Terrain **Settings** Button. A window is displayed providing terrain functions allowed by the system.
- 4) Touch the **Map Settings** Button. A window is displayed providing terrain settings for the navigation map.
- 5) Touch the **Terrain** Button to display the 'Map Terrain Range' Window.
- 6) Scroll the list if necessary to find the desired range, and touch the range button.

### Displaying/removing the absolute terrain scale on navigation map displays:

- 1) From MFD Home, touch **Map > Map Settings**.
- 2) Touch the **Sensor** Tab, if necessary.
- 3) Touch the Terrain **Settings** Button. A window is displayed providing terrain functions allowed by the system.
- 4) Touch the **Map Settings** Button. A window is displayed providing terrain settings for the navigation map.
- 5) Touch the **Absolute Terrain Scale** Button to display/remove the absolute terrain scale.

## MAP SYMBOLS

### Symbol Setup

#### Displaying/removing a navigation or land symbol type:

- 1) From MFD Home, touch **Map > Map Settings**.
- 2) Touch the **Aviation** or **Land**, Tab, if necessary.
- 3) Scroll the list to find the desired item.
- 4) Touch the annunciator button to display/remove the symbol type from navigation maps.

#### Selecting an Aviation or Land item maximum range:

- 1) From MFD Home, touch **Map > Map Settings**.
- 2) Touch the **Aviation** Tab or **Land** Tab, if necessary.
- 3) Scroll the list to find the desired item.
- 4) If necessary, touch the **Settings** Button to display the range buttons.
- 5) Touch the range button to display the range choices.
- 6) Touch a range selection button to select the maximum range.
- 7) Repeat Steps 3 through 6 as necessary.

#### Displaying/removing the VOR compass rose:

- 1) From MFD Home, touch **Map > Map Settings**.
- 2) Touch the **Aviation** Tab, if necessary.
- 3) Scroll the list to find the VOR buttons.
- 4) Touch the VOR **Settings** Button to display the 'VOR Settings' Window.
- 5) Touch the **Compass Rose** Button to display/remove the VOR compass rose.

### Map Detail

#### Adjusting the navigation map detail:

- 1) From MFD Home, touch **Map > Map Settings > Map Detail**.
- 2) Slide up or down on the Map Detail Slider to adjust the navigation map detail.

#### Adjusting the PFD Map Detail:

- 1) From PFD Home, touch **PFD Map Settings > Map Detail**.
- 2) Slide up or down on the Map Detail Slider to adjust the PFD Map detail.

#### Or:

- 1) Press the **PFD Map Settings** Softkey on the PFD.
- 2) Press the **Detail** Softkey, as required, to cycle to the desired PFD Map detail.

## ADDITIONAL NAVIGATION MAP ITEMS

### Displaying/removing Additional Navigation Map Items:

- 1) From MFD Home, touch **Map > Map Settings**.
- 2) Touch the **Other** Tab, if needed.
- 3) Scroll as required and touch the desired button to display/remove Map Items:

### Selecting track vector look-ahead time:

- 1) From MFD Home, touch **Map > Map Settings**.
- 2) Touch the **Other** Tab, if necessary.
- 3) Touch the track vector time button to display the time selection buttons.
- 4) Scroll the list, if necessary, and touch a time selection button to select the look-ahead time.

### Selecting fuel reserve time:

- 1) From MFD Home, touch **Map > Map Settings**.
- 2) Touch the **Other** Tab, if necessary.
- 3) Touch the fuel reserve time button to display the keypad.
- 4) Use the keypad to enter the fuel reserve time.

### Selecting the lat/lon line maximum range:

- 1) From MFD Home, touch **Map > Map Settings**.
- 2) Touch the **Other** Tab, if necessary.
- 3) Touch the latitude/longitude lines range button to display the range selection buttons.
- 4) Touch a range selection button to select the maximum map display range.

## WAYPOINTS

### AIRPORTS

#### Selecting an airport for review by identifier:

- 1) From MFD Home, touch **Waypoint Info > Airport**.
- 2) Touch the **Info** Tab, if necessary.
- 3) Touch the Selected Airport Button to display the keypad.
- 4) Use the keypad to enter the airport identifier.
- 5) Touch the **Enter** Button to accept the identifier and display the airport information on the Touchscreen Controller.
- 6) Touch the **Waypoint Options** Button, then the **Show on Map** Button to display the 'Airport Information' Pane, if necessary.

## Finding and selecting an airport for review by facility name or city name:

- 1) From MFD Home, touch **Waypoint Info > Airport**.
- 2) Touch the **Info** Tab, if necessary.
- 3) Touch the Selected Airport Button to display the keypad.
- 4) Touch the **Find** Button to display the 'Find Waypoint' Screen.
- 5) Touch the **Search** Tab to display the **Search By** Button.
- 6) If necessary, touch the **Search By** Button to choose Search by City or Search by Facility.
- 7) Touch the **Facility Name** Button or the **City Name** Button to display the keypad.
- 8) Use the keypad to enter the name.
- 9) Touch the **Enter** Button to accept the entry and display the search results.
- 10) Touch an airport selection button to display the airport information on the Touchscreen Controller.
- 11) Touch the **Waypoint Options** Button, then the **Show on Map** Button to display the 'Airport Information' Pane, if necessary.

## Finding and selecting an airport for review by category (Recent, Nearest, Flight Plan, or Favorites):

- 1) From MFD Home, touch **Waypoint Info > Airport**.
- 2) Touch the **Info** Tab, if necessary.
- 3) Touch the Selected Airport Button to display the keypad.
- 4) Touch the **Find** Button to display the 'Find Waypoint' Screen.
- 5) Touch the **Recent, Nearest, Flight Plan, or Favorites** Tab to display a list of airports in the selected category.
- 6) Touch an airport selection button to display the airport information on the Touchscreen Controller.
- 7) Touch the **Waypoint Options** Button, then the **Show on Map** Button to display the 'Airport Information' Pane, if necessary.

## Selecting a runway:

- 1) From MFD Home, touch **Waypoint Info > Airport**.
- 2) Touch the **Runways** Tab to display the runway information buttons.
- 3) Touch a Runway Information Button to select the runway.
- 4) Touch the **Waypoint Options** Button, then the **Show on Map** Button to view the runway on the navigation map, if necessary.

## Nearest Airport

### Viewing information for a nearest airport:

- 1) From MFD Home, touch **Nearest > Airport**.
- 2) Touch a nearest airport button to display the 'Waypoint Options' Window. If necessary, touch the **Show On Map** Button to highlight the airport on the 'Nearest Airport' Pane.
- 3) Touch the **Airport Info** Button to display the 'Airport Information' Screen.
- 4) Touch a tab to display the desired information on the Touchscreen Controller.

### Selecting nearest airport surface matching criteria:

- 1) From MFD Home, touch **Utilities > Setup > Avionics Settings**.
- 2) Touch the **System** Tab, if necessary.
- 3) Scroll the list to display the Nearest Airport Runway Surface Button.
- 4) Touch the Nearest Airport Runway Surface Button to display the surface choices.
- 5) Touch a Surface Selection Button to set the surface criteria.

### Selecting nearest airport minimum runway length matching criteria:

- 1) From MFD Home, touch **Utilities > Setup > Avionics Settings**.
- 2) Touch the **System** Tab, if necessary.
- 3) Scroll the list to display the Nearest Airport Min Rwy Length Button.
- 4) Touch the Nearest Airport Min Rwy Length Button to display the keypad.
- 5) Use the keypad to enter the minimum length.
- 6) Touch the **Enter** Button to accept the length criteria.

## NON-AIRPORT AND USER CREATED WAYPOINTS

### Waypoint Information

#### Selecting a non-airport waypoint or User Waypoint:

- 1) From MFD Home, touch the **Waypoint Info** Button.
- 2) Select the **INT, VRP, VOR, NDB, or User Waypoint** Button.
- 3) Choose the desired waypoint:
  - a) Touch the Selected Waypoint or available user waypoint button to display the keypad.
  - b) Use the keypad to enter the identifier or name.
  - c) Touch the **Enter** Button to accept the identifier and display the waypoint's information on the Touchscreen Controller.

**Or:**

  - a) For choosing a User Waypoint, touch the **WPT List** Tab.
  - b) Touch the desired waypoint button.

- 4) Touch the **Waypoint Options** Button, then the **Show on Map** Button to display the Intersection, VRP, VOR, NDB, or User Waypoint Information Pane, if needed.

### Finding and selecting a non-airport or User Waypoint by category (Recent, Nearest, Flight Plan, or Favorites):

- 1) From MFD Home, touch **Waypoint Info > INT, VRP, VOR, NDB** or **User Waypoint**.
- 2) Touch the Selected Waypoint Button to display the keypad.
- 3) Touch the **Find** Button to display the 'Find Waypoint' Screen.
- 4) Touch the **Recent, Nearest, Active Flight Plan,** or **Favorites** Tab to display a list of waypoints in the selected category.
- 5) Touch a Waypoint Selection Button to display that waypoint's information on the Touchscreen Controller.
- 6) Touch the **Waypoint Options** Button, then the **Show on Map** Button to display the Intersection, VRP, VOR, NDB, or User WPT Information Pane, if needed.

### Finding and selecting a non-airport waypoint for review by facility name or city name:

- 1) From MFD Home, touch **Waypoint Info > INT, VRP, VOR,** or **NDB**.
- 2) Touch the Selected Waypoint Button to display the keypad.
- 3) Touch the **Find** Button to display the 'Find Waypoint' Screen.
- 4) Touch the **Search** Tab to display the **Search By** Button.
- 5) If needed, touch the **Search By** Button to choose Search by City or Search by Facility.
- 6) Touch the **Facility Name** Button or the **City Name** Button to display the keypad.
- 7) Use the keypad to enter the name.
- 8) Touch the **Enter** Button to accept the entry and display the search results.
- 9) Touch a Waypoint Selection Button to display the waypoint information on the Touchscreen Controller.
- 10) Touch the **Waypoint Options** Button, then the **Show on Map** Button to display the Intersection, VRP, VOR, NDB, or User WPT Information Pane, if needed.

## Nearest Waypoints

### Viewing information for nearest Intersection, VRP, VOR, NDB, or User Waypoint:

- 1) From MFD Home, touch **Nearest > INT, VRP, VOR, NDB,** or **User**.
- 2) Touch a Nearest Waypoint Button to display the 'Waypoint Options' Window.
- 3) Touch the **Show on Map** Button to display the Nearest Intersection/VRP/VOR/NDB/User Pane, if needed.
- 4) Touch the **Intersection, VRP, VOR, NDB,** or **User Waypoint Info** Button to display the selected waypoint's information screen.

## Creating User Waypoints

### Creating user waypoints from the 'Create User Waypoint' Screen:

- 1) From MFD Home, touch **Waypoint Info** > **Create Waypoint**. The current aircraft position is the default location of the new waypoint.
- 2) Touch the User Waypoint Name Button to display the keypad.
- 3) Use the keypad and the **Enter** Button to select a User Waypoint Name (up to six characters).
- 4) If desired, define the location parameters of the waypoint in one of the following ways:
  - a) Touch the **Type** Button to display the 'Select User Waypoint Type' Screen.
  - b) Touch the **RAD/DIS** Button to select the bearing/distance from a waypoint type.
  - c) Touch the **REF** Button to display the keypad.
  - d) Use the keypad and the **Enter** Button, or the Find function, to select the reference waypoint.
  - e) Touch the **RAD** Button to display the keypad.
  - f) Use the keypad and the **Enter** Button to select the radial.
  - g) Touch the **DIS** Button to display the keypad.
  - h) Use the keypad and the **Enter** Button to select the distance.

**Or:**

  - a) Touch the **Type** Button to display the 'Select User Waypoint Mode' Screen.
  - b) Touch the **RAD/RAD** Button to select the bearings from two waypoints type.
  - c) Touch the **REF1** Button to display the keypad.
  - d) Use the keypad and the **Enter** Button, or the Find function, to select the waypoint.
  - e) Touch the **RAD1** Button to display the keypad.
  - f) Use the keypad and the **Enter** Button to select the radial.
  - g) Repeat Steps C through F for the second reference waypoint (**REF2** Button) and radial (**RAD2** Button).

**Or:**

  - a) Touch the **Type** Button to display the 'Select User Waypoint Mode' Screen.
  - b) Touch the **LAT/LON** Button to select the latitude/longitude type.
  - c) Touch the **LAT/LON** Button to display the keypad.
  - d) Use the keypad and the **Enter** Button to select the latitude and longitude.

**Or:**

  - a) Touch the **Type** Button to display the 'Select User Waypoint Mode' Screen.
  - b) Touch the **P. POS** Button to select the present position type as defined by latitude/longitude values.

- 5) If desired, change the waypoint comment.
  - a) Touch the **Comment** Button to display the keypad.
  - b) Use the keypad and the **Enter** Button to select the comment.
- 6) If desired, touch the **Temporary** Button to change the waypoint storage method. When the annunciator on the button is green, the waypoint is only stored until the next power cycle. When the annunciator is subdued, the waypoint is stored until manually erased.
- 7) Touch the **Create** Button to accept the new user waypoint. If RAD/RAD was used to define the waypoint, and the radials do not intersect, a message "The radials entered do not intersect" will be displayed. Touch the **OK** Button to return to the 'Create User Waypoint' Screen.

### Creating user waypoints from map displays:

- 1) Push the lower knob to activate the panning function and display the 'Map Pointer Control' Screen on the Touchscreen Controller.
- 2) Use the lower knob or the **Touchpad** to pan to the map location of the desired user waypoint.
- 3) Touch the **Create WPT** Button. The 'Create User Waypoint' Screen is displayed with the captured position.
- 4) Touch the user waypoint name button to display the keypad.
- 5) Use the keypad and the **Enter** Button to select a user waypoint name (up to six characters).
- 6) If desired, change the waypoint comment. The comment defaults to the abbreviated latitude/longitude of the user waypoint.
  - a) Touch the **Comment** Button to display the keypad.
  - b) Use the keypad and the **Enter** Button to select the comment.
- 7) Touch the **Create** Button to create the new waypoint.
- 8) Touch the **Back** Button to deactivate the panning function and return to the previous display on the Touchscreen Controller.

## Editing User Waypoints

### Editing a user waypoint comment:

- 1) From MFD Home, touch **Waypoint Info** > **User Waypoint**.
- 2) If needed, touch the **WPT List** Tab to display the list of user waypoints, and touch the desired User Waypoint Selection Button.
- 3) Touch the **Waypoint Options** Button to display the 'Waypoint Options' Window.
- 4) Touch the **Edit** Button to display the 'Edit User Waypoint' Screen.
- 5) Touch the **Comment** Button to display the keypad.
- 6) Use the keypad and the **Enter** Button to select a user waypoint comment (up to 25 characters).

- 7) Touch the **Save** Button to accept the new comment.
- 8) Touch the **OK** Button in response to the question "Are you sure you want to modify this waypoint?".

### Editing a user waypoint name:

- 1) From MFD Home, touch **Waypoint Info > User Waypoint**.
- 2) If needed, touch the **WPT List** Tab to display the list of user waypoints, and touch the desired User Waypoint Selection Button.
- 3) Touch the **Waypoint Options** Button to display the 'Waypoint Options' Window.
- 4) Touch the **Edit** Button to display the 'Edit User Waypoint' Screen.
- 5) Touch the user waypoint name button to display the keypad.
- 6) Use the keypad and the **Enter** Button to select a user waypoint name (up to six characters).
- 7) Touch the **Save** Button to accept the new name.
- 8) Touch the **OK** Button in response to the question "Are you sure you want to modify this waypoint?".

### Editing a user waypoint type and location:

- 1) From MFD Home, touch **Waypoint Info > User Waypoint**.
- 2) If necessary, touch the **WPT List** Tab to display the list of user waypoints, and touch the desired user waypoint selection button.
- 3) Touch the **Waypoint Options** Button to display the 'Waypoint Options' Window.
- 4) Touch the **Edit** Button to display the Edit User Waypoint Screen.
- 5) Touch the **Type** Button to display the 'User Waypoint Type' Window.
- 6) Touch the **RAD/DIS** Button, the **RAD/RAD** Button, the **LAT/LON** Button, or the **P. POS** Button to select the waypoint type.
- 7) If necessary, touch the **REF** Button, the **RAD** Button, the **DIS** Button, or the **LAT/LON** Button to bring up the keypad.
- 8) Use the keypad and the **Enter** Button to select the user waypoint location.
- 9) Touch the **Save** Button to accept the new type and location.
- 10) Touch the **OK** Button in response to the question "Are you sure you want to modify this waypoint?".

### Changing the location of an existing user waypoint to the aircraft present position:

- 1) From MFD Home, touch **Waypoint Info > User Waypoint**.
- 2) If necessary, touch the **WPT List** Tab to display the list of user waypoints, and touch the desired user waypoint selection button.
- 3) Touch the **Waypoint Options** Button to display the 'Waypoint Options' Window.
- 4) Touch the **Edit** Button to display the 'Edit User Waypoint' Screen.

- 5) Touch the **Type** Button to display the 'User Waypoint Type' Window.
- 6) Touch the **P. POS** Button to select the aircraft present position as the location.
- 7) Touch the **Save** Button to accept the new name.
- 8) Touch the **OK** Button in response to the question "Are you sure you want to modify this waypoint?".

## Deleting User Waypoints

### Deleting a single user waypoint:

- 1) From MFD Home, touch **Waypoint Info** > **User Waypoint**.
- 2) If needed, touch the **WPT List** Tab to display the list of user waypoints, and touch the desired User Waypoint Selection Button.
- 3) Touch the **Waypoint Options** Button to display the 'Waypoint Options' Window.
- 4) Touch the **Delete** Button.
- 5) Touch the **OK** Button in response to the question "Would you like to delete the user waypoint XXXXXX?".

### Deleting all user waypoints:

- 1) From MFD Home, touch **Waypoint Info** > **User Waypoint**.
- 2) If needed, touch the **WPT List** Tab to display the list of user waypoints, and touch the desired user Waypoint Selection Button.
- 3) Touch the **Waypoint Options** Button to display the 'Waypoint Options' Window.
- 4) Touch the **Delete All** Button.
- 5) Touch the **OK** Button in response to the question "Would you like to delete all user waypoints?".

## AIRSPACES

### Displaying and removing airspace altitude labels:

- 1) From MFD Home, touch **Map** > **Map Settings**.
- 2) Touch the **Aviation** Tab.
- 3) Touch the Airspaces **Settings** Button to display the 'Airspace Settings' Screen.
- 4) Touch the **Airspace Altitude Labels** Button to display/remove the labels from the navigation map.

## NEAREST AIRSPACE

### Setting the altitude buffer distance:

- 1) From MFD Home, touch **Utilities** > **Setup** > **Avionics Settings**.
- 2) Touch the **Alerts** Tab.
- 3) Touch the Airspace Alert Alt Buffer altitude Button (displays current selection in cyan).
- 4) Enter the desired altitude buffer value, then touch the **Enter** Button.

## Enabling/disabling an airspace alert:

- 1) From MFD Home, touch **Utilities > Setup > Avionics Settings**.
- 2) Touch the **Alerts** Tab.
- 3) Scroll as needed and touch any of the of the following buttons to enable/disable the corresponding alert: **CL B/TMA/Airway, CL C/CTA, CL A/D, Restricted, MOA (Military), Other**. The button annunciator is green when alert is enabled, subdued when disabled.

## Viewing information for the Nearest Airspace:

- 1) From MFD Home, touch **Nearest > Airspace**.
- 2) Touch a Nearest Airspace Button to display the 'Airspace Options' Window. If no airspace is projected, the 'Nearest Airspace' Screen will read "No Results Found".
- 3) Touch the **Show on Map** Button to display the selected airspace, if needed.
- 4) Touch the **Details** Button to display the selected 'Nearest Airspace' Screen information.

## SMART AIRSPACE

### Enabling/disabling the Smart Airspace function:

- 1) From MFD Home, touch **Map > Map Settings**.
- 2) Touch the **Aviation** Tab, if necessary.
- 3) Scroll the list to find the Airspaces buttons.
- 4) Touch the Airspaces **Settings** Button to display the 'Airspace Settings' Screen.
- 5) Touch the **Smart Airspace** Button to enable/disable the Smart Airspace function.

## DIRECT-TO NAVIGATION

### Selecting a waypoint as the direct-to destination by identifier, facility, or city name:

- 1) From MFD Home, touch **→**.
- 2) Touch the waypoint selection button to display the keypad (available waypoints in flight plan).

**Or:**

Touch the **Select Waypoint** Button to display the keypad.

- 3) Select a waypoint as a direct-to destination.

Input the waypoint identifier using the keypad and touch the **Enter** Button to accept the identifier, and return to the 'Direct To' Screen.

**Or:**

- a) Touch the **Find** Button to display the 'Find Waypoint' Screen.
- b) Touch the **Search** Tab to display the **Search By** Button.
- c) If needed, touch the **Search By** Button to choose Search by City or Search by Facility.
- d) Touch the **Facility Name** Button or the **City Name** Button to display the keypad.

- e) Use the keypad to select the name.
  - f) Touch the **Enter** Button to accept the entry and display the search results.
  - g) Touch a waypoint selection button to choose the waypoint as the direct-to destination, and return to the 'Direct To' Screen.
- 4) Touch the **Activate**  Button to activate the direct-to.
- Or:**
- a) Touch the **Activate and Insert in Flight Plan** Button (only available if the selected waypoint is not in the flight plan) to display the 'Insert and Activate  <waypoint> Before?' Window.
  - b) Touch the waypoint selection button to select the flight plan location to insert the direct to waypoint, and to activate the direct-to.

### Selecting a waypoint as the direct-to destination by category (Nearest or Recent):

- 1) From MFD Home, touch **Direct To**.
  - 2) Touch the **Nearest** Tab or the **Recent** Tab, as necessary.
  - 3) Touch a waypoint selection button to choose the waypoint as the direct-to destination, and return to the 'Direct To' Screen.
  - 4) Touch the **Activate**  Button to activate the direct-to.
- Or:**
- a) Touch the **Activate and Insert in Flight Plan** Button (only available if the selected waypoint is not in the flight plan) to display the 'Insert and Activate  <waypoint> Before?' Window.
  - b) Touch the waypoint selection button to select the flight plan location to insert the direct to waypoint, and to activate the direct-to.

### Selecting the active flight plan waypoint as the direct-to destination:

- 1) From MFD Home, touch **Flight Plan**.
  - 2) Touch a waypoint selection button to display the 'Waypoint Options' Window.
  - 3) Touch the  Button to choose the waypoint as the direct-to destination and display the 'Direct To' Screen.
  - 4) Touch the **Activate**  Button to activate the direct-to.
- Or:**
- 1) From MFD Home, touch **Direct To**.
  - 2) Touch the **Flight Plan** Tab.
  - 3) Touch a waypoint selection button to choose the waypoint as the direct-to destination, and return to the **Waypoint** Tab of the 'Direct To' Screen.
  - 4) Touch the **Activate**  Button to activate the direct-to.
- Or:**

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCs
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

Flight Instruments

- 1) From MFD Home, touch the **Direct To** Button to display the 'Direct To' Screen with the active flight plan waypoint selected as the direct-to destination.
- 2) Touch the **Activate Direct To** Button to activate the direct-to.

**Or:**

EAS

- 1) From MFD Home, touch **Flight Plan**.
- 2) Touch the **Direct To** Button to display the 'Direct To' Screen with the active flight plan waypoint selected the direct-to destination.

Nav/Com/XPDR/Audio

- 3) Touch the **Activate Direct To** Button to activate the direct-to.

### Selecting any waypoint as a direct-to destination:

Flight Management

- 1) Select the screen containing the desired waypoint type and select the desired waypoint.
- 2) Touch the **Waypoint Options** Button.
- 3) Touch the **Direct To** Button to choose the waypoint as the direct-to destination, and display the 'Direct To' Screen.
- 4) Touch the **Activate Direct To** Button to activate the direct-to.

**Or:**

Hazard Avoidance

- a) Touch the **Activate and Insert in Flight Plan** Button (only available if the selected waypoint is not in the flight plan) to display the 'Insert and Activate **Direct To** <waypoint> Before?' Window.
- b) Touch the waypoint selection button to select the flight plan location to insert the direct to waypoint, and to activate the direct-to.

AFCS

### Selecting a nearby airport as a direct-to destination:

Additional Features

- 1) From MFD Home, touch **Nearest > Airport**.
- 2) Touch a nearest airport button to display the 'Waypoint Options' Window.
- 3) Touch the **Direct To** Button to choose the waypoint as the direct-to destination, and display the 'Direct To' Screen.
- 4) Touch the **Activate Direct To** Button to activate the direct-to.

**Or:**

Abnormal Operation

- a) Touch the **Activate and Insert in Flight Plan** Button (only available if the selected waypoint is not in the flight plan) to display the 'Insert and Activate **Direct To** <waypoint> Before?' Window.
- b) Touch the waypoint selection button to select the flight plan location to insert the direct to waypoint, and to activate the direct-to.

Annun/Alerts

### Selecting a waypoint as a direct-to destination using the pointer:

Appendix

- 1) From the navigation map display, push the lower knob to display the pointer.
- 2) Use the lower knob or the **Touchpad** to place the pointer at the desired destination location.

Index

- 3) If the pointer is placed on an existing airport, NAVAID, or user waypoint, the waypoint ID is highlighted, and the **Direct To** Button is activated.
- 4) Touch the **Direct To** Button to display the 'Direct To' Screen with the selected point entered as the direct-to destination.
- 5) Touch the **Activate**  Button to activate the direct-to.

**Or:**

- a) Touch the **Activate and Insert in Flight Plan** Button (only available if the selected waypoint is not in the flight plan) to display the 'Insert and Activate  <waypoint> Before?' Window.
- b) Touch the waypoint selection button to select the flight plan location to insert the direct to waypoint, and to activate the direct-to.

### Canceling a Direct To:

- 1) From MFD Home, touch **Direct To**.
- 2) Touch the **Cancel**  Button.
- 3) Touch the **OK** Button in response to the question "Cancel  XXXXXX".

### Selecting a manual direct-to course:

- 1) From MFD Home, touch .
- 2) Touch the **Course** Button to display the keypad.
- 3) Use the keypad to select the course.
- 4) Touch the **Enter** Button to accept the course, and return to the 'Direct To' Screen.
- 5) Touch the **Activate**  Button to activate the direct-to using the manually selected course.

### Reselecting the direct course from the current position:

- 1) From MFD Home, touch .
- 2) Touch the **Activate**  Button to activate the direct-to using the direct course.

## FLIGHT PLANNING

### Changing a field in the Active or Standby Flight Plan Screen:

- 1) For an active flight plan, from MFD Home > **Flight Plan**.

**Or:**

For a standby flight plan, from MFD Home > **Flight Plan** > **Standby Flight Plan**.

- 2) Touch the **Flight Plan Options** Button.
- 3) Touch the **Edit Data Fields** Button.
- 4) Touch the **Data Field 1** or **Data Field 2** Button to edit.
- 5) Scroll as required and touch the desired field type.

## Displaying/removing the flight plan preview on the navigation map:

- 1) For the active flight plan: From MFD Home, touch **Flight Plan** > **Flight Plan Options**.  
**Or:**  
 For the standby flight plan: From MFD Home, touch **Flight Plan** > **Standby Flight Plan** > **Flight Plan Options**.
- 2) Touch the **Show on Map** Button. A preview of the flight plan is shown on the 'Flight Plan' Pane.
- 3) To view a flight plan segment:
  - a) Touch the **Back** Button.
  - b) Scroll as needed, and touch the selection button corresponding to the desired segment of the flight plan.
  - c) Touch the **Back** Button to return to the flight plan preview.
- 4) Touch the **Show on Map** Button again or return to MFD Home to turn off the **Show on Map** Button and remove the preview from the display.

## Displaying/removing flight plan text on the navigation map:

- 1) From MFD Home, touch **Map** > **Map Settings**.
- 2) Touch the **Inset Window** Tab.
- 3) Touch the **Flight Plan Text** Button to display/remove the active flight plan text on the 'Navigation Map' Pane.
- 4) Waypoint distances shown on the Flight Plan Text inset may be set as leg to leg distances or cumulative distance by selecting the **CUM** Button or **Leg-Leg** Button next to the **Flight Plan Text** Button.

## CREATING A FLIGHT PLAN

### Creating an active, standby or stored flight plan:

- 1) For an active flight plan, from MFD Home > **Flight Plan**.  
**Or:**  
 For a standby flight plan, from MFD Home > **Flight Plan** > **Standby Flight Plan**.  
**Or:**  
 For a stored flight plan.
  - a) From MFD Home, touch **Flight Plan** > **Flight Plan Options**.
  - b) Touch the **Flight Plan Catalog** Button to display the 'Flight Plan Catalog' Screen.
  - c) Touch the **Create New Catalog Flight Plan** Button to display the 'Edit Stored Flight Plan' Screen.
- 2) If the system correctly auto-designated (populated) the Origin, proceed to Step 4.  
**Or:**

If the system incorrectly auto-designated (populated) the Origin, touch the **Origin** Button; or if displayed, touch the **Add Origin** Button.

3) Enter the waypoint identifier:

Use the upper knobs or the keypad to enter the origin waypoint.

**Or:**

Touch the **Find** Button to display the 'Find Waypoint' Screen. Then, touch the **Nearest** Tab, **Recent** Tab, **Flight Plan** Tab, or **Favorites** Tab and select the waypoint from the list of waypoints.

**Or:**

- a) Touch the **Find** Button to display the 'Find Waypoint' Screen. Then, touch the **Search** Tab to display the **Search By** Button.
  - b) If necessary, touch the **Search By** Button to choose 'Search by City' or 'Search by Facility'.
  - c) Touch the **Facility Name** Button or the **City Name** Button to display the keypad.
  - d) Use the keypad to select the name, and the **Enter** Button to accept the entry and display the search results.
  - e) Touch a waypoint selection button to choose the waypoint.
- 4) If needed, touch the **Origin** Button to display the 'Select Runway' Screen. Touch a runway selection button to select the departure runway and return to the flight plan.
  - 5) Touch the **Add Destination** Button to display the keypad.
  - 6) Select the identifier of the destination waypoint using one of the Step 3 procedures.
  - 7) If needed, touch the **Destination** Button to display the 'Destination Options' Window. Touch the **Select Arrival Runway** Button to display the 'Select Runway' Screen. Touch a runway selection button to select the destination runway and return to the flight plan.
  - 8) Touch the **Add Enroute Waypoint** Button to display the keypad.
  - 9) Select enroute waypoints using one of the methods from Step 3 of this procedure.
  - 10) Repeat Steps 8 through 10 until the flight plan route is complete.
  - 11) If you are finished adding enroute waypoints, touch the **Done** Button to remove the **Add Enroute Waypoint** Button and the **Done** Button (This step is only necessary if creating a flight plan on the 'Active Flight Plan' Screen).
  - 12) If needed, touch the **Origin** Button to display the 'Origin Options' Window to select a new origin airport, departure runway, departure procedure or to remove the origin airport.
  - 13) If needed, touch the **Destination** Button to display the 'Destination Options' Window to select a new destination airport, arrival runway, arrival procedure, approach procedure, or to remove the destination airport.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCs
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCS
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

## Waypoint Modifications

### Adding a waypoint to a flight plan:

- 1) For an active flight plan, from MFD Home > **Flight Plan**.

**Or:**

For a standby flight plan, from MFD Home > **Flight Plan** > **Standby Flight Plan**.

**Or:**

For adding to a new stored flight plan:

- a) From MFD Home, touch **Flight Plan** > **Flight Plan Options**.
- b) Touch the **Flight Plan Catalog** Button to display the 'Flight Plan Catalog' Screen.
- c) Touch the **Create New Catalog Flight Plan** Button to display the 'Edit Stored Flight Plan' Screen.

For adding to an existing stored flight plan:

- a) From MFD Home, touch **Flight Plan** > **Flight Plan Options**.
- b) Touch the **Flight Plan Catalog** Button to display the 'Flight Plan Catalog' Screen.
- c) Scroll the list if needed and touch a stored flight plan button to display the 'Catalog Options' Window.
- d) Touch the **Edit** Button to display the 'Edit Stored Flight Plan' Screen.

- 2) Insert waypoint:

If adding a waypoint to the end of the enroute segment of the flight plan, touch the **Add Enroute Waypoint** Button to display the keypad.

**Or:**

- a) Touch a waypoint selection button to display the 'Waypoint Options' Window.
- b) Touch the **Insert Before** Button or the **Insert After** Button to select where the new waypoint will be placed in relation to the selected waypoint. The keypad is displayed.

**Or:**

- a) If adding a waypoint to the beginning of the enroute segment of an existing flight plan, touch the **Enroute** Button to display the 'Enroute Options' Window.
- b) Touch the **Insert Waypoint** Button to display the keypad.

- 3) Use the keypad, upper knobs, or the Find function to select the new waypoint.
- 4) Touch the **Enter** Button to accept the waypoint and place it in the flight plan.
- 5) If you are finished adding waypoint, touch the **Back** Button to return to the previous screen.

### Adding waypoints to the active or standby flight plan using the map pointer:

- 1) For the active flight plan: Go to step 2.

**Or:**

For the standby flight plan: From MFD Home, touch **Flight Plan** > **Standby Flight Plan**.

- 2) Push the lower knob on the Touchscreen Controller to the display 'Map Pointer Control' Screen on the Touchscreen Controller, and to activate the map pointer on the 'Navigation Map' Pane. Use the upper knob on the Touchscreen Controller or the **Touchpad** to move the pointer to the map location of the desired waypoint. When the pointer highlights a map location that can be added to the flight plan, the **Insert in FPL** Button is activated.
- 3) Touch the **Insert In FPL** Button. The 'Insert Before Waypoint' Screen is displayed.
- 4) Touch the waypoint selection button to select where to insert the new waypoint. The waypoint is inserted into the flight plan before the selected waypoint, and the Touchscreen Controller returns to the 'Map Pointer Options' Screen. Push either knob on the Touchscreen Controller to deactivate the map pointer and return to the previous screen.

### Removing an individual waypoint from a flight plan:

- 1) For the active flight plan: From MFD Home, touch **Flight Plan**.  
**Or:**  
 For the standby flight plan: From MFD Home, touch **Flight Plan > Standby Flight Plan**.  
**Or:**  
 For the stored flight plan:
  - a) From MFD Home, touch **Flight Plan > Flight Plan Options > Flight Plan Catalog** to display the 'Flight Plan Catalog' Screen.
  - b) Scroll the list if needed and touch a stored flight plan button to display the 'Catalog Options' Window.
  - c) Touch the **Edit** Button.
- 2) Scroll the list if necessary and touch a waypoint options button to display the 'Waypoint Options' Window. Then, touch the **Remove Waypoint** Button.
- 3) Touch the **OK** Button in response to 'Remove <waypoint name>?'. The waypoint is removed. To cancel the request, touch the **Cancel** Button.

### Enabling/disabling a fly over waypoint:

- 1) For the active flight plan: From MFD Home, touch **Flight Plan**.  
**Or:**  
 For the standby flight plan: From MFD Home, touch **Flight Plan > Standby Flight Plan**.  
**Or:**  
 For the stored flight plan:
  - a) From MFD Home, touch **Flight Plan > Flight Plan Options > Flight Plan Catalog** to display the 'Flight Plan Catalog' Screen.
  - b) Scroll the list if needed and touch a stored flight plan button to display the 'Catalog Options' Window.
  - c) Touch the **Edit** Button to display the 'Edit Stored Flight Plan' Screen.

- 2) Touch a Waypoint Selection Button to display the 'Waypoint Options' Window.
- 3) Touch the **Fly Over Waypoint** Button to enable/disable the waypoint as a fly over waypoint.

## Airway Modifications

### Adding an individual airway to a flight plan:

- 1) For the active flight plan: From MFD Home, touch **Flight Plan**.

**Or:**

For the standby flight plan: From MFD Home, touch **Flight Plan > Standby Flight Plan**.

**Or:**

For the stored flight plan:

- a) From MFD Home, touch **Flight Plan > Flight Plan Options > Flight Plan Catalog** to display the 'Flight Plan Catalog' Screen.
  - b) Scroll the list if needed and touch a stored flight plan button to display the 'Catalog Options' Window.
  - c) Touch the **Edit** Button to display the 'Edit Stored Flight Plan' Screen.
- 2) Scroll the list if necessary and touch a waypoint options button to display the 'Waypoint Options' Window.
  - 3) Touch the **Load Airway** Button to display the 'Airway Selection' Screen.
  - 4) Touch the **Sort A→Z** Button to select/deselect alphabetical sorting of the airway waypoints.
  - 5) Scroll the list if necessary and touch an airway selection button to select the airway and display the 'Select Exit' Window (if Sort A→Z is selected, the exit points are displayed in alphabetical order, not the order they appear in the airway).
  - 6) Scroll the list if necessary and touch an airway exit point selection button to select the airway exit point. The airway waypoint sequence is now show on the 'Airway Selection' Screen.
  - 7) Touch the **Load Airway** Button to insert the airway into the active or standby flight plan.

### REMOVING AIRWAYS

#### Removing an entire airway from the flight plan:

- 1) For the active flight plan: From MFD Home, touch **Flight Plan**.

**Or:**

For the standby flight plan: From MFD Home, touch **Flight Plan > Standby Flight Plan**.

**Or:**

For the stored flight plan:

- a) From MFD Home, touch **Flight Plan > Flight Plan Options > Flight Plan Catalog** to display the 'Flight Plan Catalog' Screen.

- b) Scroll the list if needed and touch a stored flight plan button to display the 'Catalog Options' Window.
- c) Touch the **Edit** Button to display the 'Edit Stored Flight Plan' Screen.
- 2) Scroll the list if necessary and touch an airway selection button to display the 'Airway Options' Window.
- 3) Touch the **Remove Airway** Button.
- 4) Touch the **OK** Button in response to "Remove Airway – <airway name> from flight plan?". The airway is removed, but the starting and ending waypoints remain in the flight plan. To cancel the request, touch the **Cancel** Button.

### Collapsing/expanding the airways in the flight plan:

- 1) For the active flight plan: From MFD Home, touch **Flight Plan**.  
**Or:**  
 For the standby flight plan: From MFD Home, touch **Flight Plan > Standby Flight Plan**.  
**Or:**  
 For the stored flight plan:
  - a) From MFD Home, touch **Flight Plan > Flight Plan Options > Flight Plan Catalog** to display the 'Flight Plan Catalog' Screen.
  - b) Scroll the list if needed and touch a stored flight plan button to display the 'Catalog Options' Window.
  - c) Touch the **Edit** Button to display the 'Edit Stored Flight Plan' Screen.
- 2) Scroll the list if necessary and touch an airway selection button to display the 'Airway Options' Window.
- 3) Touch the desired selection button to collapse/expand an individual airway, or collapse/expand all airways.
- 4) Touch the **Back** Button to return to the flight plan.

### Changing collapsed/expanded settings for newly loaded airways:

- 1) For the active flight plan: From MFD Home, touch **Flight Plan**.  
**Or:**  
 For the standby flight plan: From MFD Home, touch **Flight Plan > Standby Flight Plan**.  
 (Not available for stored flight plans)
- 2) Scroll the list if necessary and touch an airway selection button to display the 'Airway Options' Window.
- 3) Touch the **Load New Airways** Button.
- 4) Touch the selection button for the desired setting.

## Inverting the active or standby flight plan:

- 1) For the active flight plan: From MFD Home, touch **Flight Plan**.

**Or:**

For the standby flight plan: From MFD Home, touch **Flight Plan > Standby Flight Plan**.

- 2) Touch the **Flight Plan Options** Button to display the 'Flight Plan Options' Window.
- 3) Touch the **Invert** Button.
- 4) Touch the **OK** Button in response to "Invert flight plan?". The flight plan is inverted. To cancel the request, touch the **Cancel** Button.

## FLIGHT PLAN OPERATIONS

### Activating a flight plan leg:

- 1) From MFD Home, touch **Flight Plan**.
- 2) Scroll the list, if necessary, and touch the waypoint options button to select the destination waypoint for the desired leg. The 'Waypoint Options' Window is displayed.
- 3) Touch the **Activate Leg to Waypoint** Button.
- 4) Touch the **OK** Button in response to "Activate Leg?". The new active flight plan leg is activated. To cancel the request, touch the **Cancel** Button.

### Switching between the active and standby flight plan screen:

- 1) From MFD Home, touch **Flight Plan**.
- 2) Touch the **Standby Flight Plan** Button to display the 'Standby Flight Plan' Screen.
- 3) Touch the **Active Flight Plan** Button to return to the 'Active Flight Plan' Screen.

### Activating the standby flight plan:

- 1) From MFD Home, touch **Flight Plan > Standby Flight Plan > Flight Plan Options**.
- 2) Touch the **Activate Standby** Button.
- 3) Touch the **OK** Button in response to "Activate Standby Flight Plan and Replace Current Active Route?". To cancel the request, touch the **Cancel** Button.

### Linking aircraft present position (Join From P. POS) to the standby flight plan:

- 1) From MFD Home, touch **Flight Plan > Standby Flight Plan**.
- 2) Touch a waypoint options button desired for linking the aircraft present position to.
- 3) Touch the **Join From P. POS** Button.
- 4) A **P. POS** Button is added to the standby flight plan with a white arrow drawn to indicate the link created. To change the waypoint that P. POS is linked to, repeat Steps 2 through 4 for the desired waypoint.

### Removing P. POS link from the standby flight plan:

- 1) From MFD Home, touch **Flight Plan > Standby Flight Plan**.
- 2) Touch the **P. POS** Button.

- 3) Touch the **Remove Link** Button.
- 4) Touch the **OK** Button in response to "Remove link from P. POS?". To cancel the request, touch the **Cancel** Button.

### Inserting an along track offset waypoint into the active or standby flight plan:

- 1) For the active flight plan: From MFD Home, touch **Flight Plan**.  
**Or:**  
 For the standby flight plan: From MFD Home, touch **Flight Plan > Standby Flight Plan**.
- 2) Touch a waypoint selection button to display the 'Waypoint Options' Window.
- 3) Touch the **Along Track Waypoint** Button to bring up the 'Along Track Waypoint Offset' Screen.
- 4) Use the keypad to select the distance in the range of 1 to 999 nm (limited by leg distances).
- 5) Touch the **(Before)** – Button or the **(After)** – Button to select the offset waypoint direction.
- 6) Touch the **Enter** Button to insert the offset waypoint into the flight plan.

### Removing an along track offset waypoint from the active or standby flight plan:

- 1) For the active flight plan: From MFD Home, touch **Flight Plan**.  
**Or:**  
 For the standby flight plan: From MFD Home, touch **Flight Plan > Standby Flight Plan**.
- 2) Touch the along track offset waypoint options button to display the 'Waypoint Options' Window.
- 3) Touch the **Remove Waypoint** Button.
- 4) Touch the **OK** Button to delete the waypoint from the flight plan.

### Activating parallel track:

- 1) From MFD Home, touch **Flight Plan > Flight Plan Options > Parallel Track**.
- 2) Touch the **Left** Button or the **Right** Button to choose the offset direction.
- 3) Touch the **Offset Distance** Button to display the keypad.
- 4) Use the keypad to select the distance.
- 5) Touch the **Enter** Button to accept the distance, and return to the 'Parallel Track' Screen.
- 6) Touch the **Activate Parallel Track** Button to activate the parallel track function.

### Cancelling parallel track:

- 1) From MFD Home, touch **Flight Plan > Flight Plan Options > Parallel Track**.
- 2) Touch the **Cancel Parallel Track** Button to cancel the parallel track function.

**Determining the closest point along the flight plan to a selected waypoint:**

- 1) For the active flight plan: From MFD Home, touch **Flight Plan**.  
**Or:**  
For the standby flight plan: From MFD Home, touch **Flight Plan** > **Standby Flight Plan**.  
**Or:**  
For the stored flight plan:
  - a) From MFD Home, touch **Flight Plan** > **Flight Plan Options** > **Flight Plan Catalog** to display the 'Flight Plan Catalog' Screen.
  - b) Scroll the list if needed and touch a stored flight plan button to display the 'Catalog Options' Window.
  - c) Touch the **Edit** Button to display the 'Edit Stored Flight Plan' Screen.
- 2) Touch the **Flight Plan Options** Button to display the 'Flight Plan Options' Window.
- 3) Touch the **Closest Point of Flight Plan** Button to display the 'Closest Point of Flight Plan' Screen.
- 4) Touch the **From** Waypoint Button to display the keypad.
- 5) Use the keypad and the **Enter** Button to select the "From" waypoint.
- 6) Touch the **Insert Point into Flight Plan** Button to add the calculated waypoint into the flight plan. The name for the new waypoint is derived from the identifier of the From waypoint.

**Creating or Editing a user-defined hold at an active or standby flight plan waypoint:**

- 1) For the active flight plan: From MFD Home, touch **Flight Plan**.  
**Or:**  
For the standby flight plan: From MFD Home, touch **Flight Plan** > **Standby Flight Plan**.
- 2) Scroll the list, if necessary, to display the waypoint at which to define the holding or edit the existing holding:
  - a) To create holding, touch the waypoint selection button to select the waypoint at which to define the holding pattern. The 'Waypoint Options' Window is displayed.
  - b) Touch the **Hold at Waypoint** Button. The 'Hold at Waypoint' Screen is displayed.  
**Or:**
    - a) To edit, touch the Hold waypoint selection button. The 'Waypoint Options' Window is displayed.
    - b) Touch the **Edit Hold** Button. The 'Hold at Waypoint' Screen is displayed.
- 3) Touch the **Turn** Button, and touch the **Right** Button or the **Left** Button to select the turn direction.

- 4) Touch the Course Direction (Inbound or Outbound) Button, and touch the **Inbound** Button or the **Outbound** Button to select the course direction.
- 5) Touch the **Course** Button to display the keypad. Use the keypad and the **Enter** Button to select the inbound or outbound course.
- 6) Touch the Leg Length Mode Button, and touch the **Distance** Button or the **Time** Button to select the length mode.
- 7) Touch the **Leg Time** Button or the **Leg Distance** Button to display the keypad. Use the keypad and the **Enter** Button to select the length of the leg.
- 8) Touch the **Expect Further Clearance** Button to display the keypad. Use the keypad and the **Enter** Button to select the time for a reminder. A system message (HOLD EXPIRED Holding EFC time expired.) will be triggered at the selected time.
- 9) Touch the **Create** Button to add the hold into the flight plan.

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

- 1) From MFD Home, touch **Flight Plan > Flight Plan Options**.
- 2) Touch the **Hold at P. POS** Button. The 'Hold at Waypoint' Screen is displayed.
- 3) Touch the **Turn** Button, and touch the **Right** Button or the **Left** Button to select the turn direction.
- 4) Touch the Course Direction (Inbound or Outbound) Button, and touch the **Inbound** Button or the **Outbound** Button to select the course direction.
- 5) Touch the **Course** Button to display the keypad. Use the keypad and the **Enter** Button to select the course.
- 6) Touch the Leg Length Mode Button, and touch the **Distance** Button or the **Time** Button to select the length mode.
- 7) Touch the **Leg Time** Button or the **Leg Distance** Button to display the keypad. Use the keypad and the **Enter** Button to select the length of the leg.
- 8) Touch the **Expect Further Clearance** Button to display the keypad. Use the keypad and the **Enter** Button to select the time for a reminder. A system message (HOLD EXPIRED Holding EFC time expired.) will be triggered at the selected time.
- 9) Touch the **Create** Button to create an Offroute Direct-to hold waypoint at the aircraft present position.
- 10) If desired, to enter the hold into the flight plan, touch the PPOS-H waypoint options button to display the 'Direct To' Screen.
- 11) Touch the **Insert in Flight Plan** Button. The 'Insert → PPOS-H Before?' Screen is displayed.
- 12) Touch the desired waypoint selection button, and the hold is inserted in the flight plan before the selected waypoint.

Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCS

Additional Features

Abnormal Operation

Annun/Alerts

Appendix

Index

**Creating a user-defined hold at a direct-to waypoint:**

- 1) From MFD Home, touch **Flight Plan**.
- 2) Touch the **➔** Button and set up the Direct To waypoint as desired.
- 3) Touch the **Hold** Button. The 'Direct To Hold' Screen is displayed.
- 4) Touch the **Turn** Button, and touch the **Right** Button or the **Left** Button to select the turn direction.
- 5) Touch the Course Direction (Inbound or Outbound) Button, and touch the **Inbound** Button or the **Outbound** Button to select the course direction.
- 6) Touch the **Course** Button to display the keypad. Use the keypad and the **Enter** Button to select the inbound or outbound course.
- 7) Touch the Leg Length Mode Button, and touch the **Distance** Button or the **Time** Button to select the length mode.
- 8) Touch the **Leg Time** Button or the **Leg Distance** Button to display the keypad. Use the keypad and the **Enter** Button to select the length of the leg.
- 9) Touch the **Expect Further Clearance** Button to display the keypad. Use the keypad and the **Enter** Button to select the time for a reminder. A system message (HOLD EXPIRED Holding EFC time expired.) will be triggered at the selected time.
- 10) Touch the **Enter** Button to return to the 'Direct To' Screen.
- 11) Touch the **Activate** **➔** Button to activate the Direct-To and add the hold into the flight plan.

**Removing a user-defined hold at an active flight plan waypoint or at a direct-to waypoint:**

- 1) From MFD Home, touch **Flight Plan**.
- 2) Scroll the list, if necessary, and touch the Hold waypoint options button. The 'Waypoint Options' Window is displayed.
- 3) Touch the **Remove Hold** Button.
- 4) Touch the **OK** Button in response to "Remove Holding Pattern?". The holding pattern is removed. To cancel the request, touch the **Cancel** Button.

**Exiting a user-defined hold at an active flight plan waypoint or at a direct-to waypoint (hold active):**

- 1) From MFD Home, touch **Flight Plan**.
- 2) Scroll the list, if necessary, and touch the Hold waypoint selection button. The 'Waypoint Options' Window is displayed.
- 3) Touch the **Exit Hold** Button.
- 4) Touch the **OK** Button in response to "Exit Hold at <identifier>?". The holding pattern will be exited at the hold waypoint. To cancel the request, touch the **Cancel** Button.

## Removing a user-defined hold at the aircraft present position:

- 1) From MFD Home, touch **Flight Plan**.
- 2) Scroll the list, if necessary, and touch the PPOS-H waypoint options button, or touch the **➔** Button. The 'Direct To' Screen is displayed.
- 3) Touch the **Cancel ➔ PPOS-H** Button.
- 4) Touch the **OK** Button in response to "Cancel D-> PPOS-H?". The holding pattern is removed. To cancel the request, touch the **Cancel** Button.

## Changing the Arrival Alert settings:

- 1) From MFD Home, touch **Utilities > Setup > Avionics Settings**.
- 2) Touch the **Alerts** Tab. Scroll to view the Arrival Alert settings.
- 3) Touch the **Arrival Alert** Button to enable/disable the alert.
- 4) Touch the Arrival Alert Distance Button to display the keypad.
- 5) Enter the arrival alert distance and touch the **Enter** Button.

## MANAGING FLIGHT PLANS

### Importing and Exporting Flight Plans

#### Ignoring a pending flight plan transfer from a wireless connection:

- 1) When a flight plan transfer has been initiated from a mobile device, the notification button will change to a flashing **Connex** Button on the Touchscreen Controller, and a Connex annunciation appears on the PFD.
- 2) Touch the **Connex** Button to see the notification of the pending flight plan on the 'Notifications' Screen.
- 3) Touch the **Connex** Button again to ignore the pending flight plan and return to the previous screen. The pending flight plan is not loaded into the system, though the notification message will still remain on the 'Notifications' Screen under the **Connex** Tab for future use.

#### Viewing and activating a pending flight plan from a wireless connection:

- 1) When a flight plan transfer has been initiated from a mobile device, the notification button will change to a flashing **Connex** Button on the Touchscreen Controller, and a Connex annunciation appears on the PFD.
- 2) Touch the **Connex** Button to see the notification of the pending flight plan on the 'Notifications' Screen.
- 3) Touch the **Flight Plan Received** Button to preview and add the pending flight plan to the standby flight plan. If there is already a loaded standby flight plan, a pop up window will confirm 'Replace Standby Flight Plan?'. Touch **OK** to continue.
- 4) The 'Standby Flight Plan' Screen is now shown on the Touchscreen Controller containing the flight plan which was transferred from the mobile device.
- 5) To activate the standby flight plan, touch the **Activate Standby** Button.

Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCS

Additional Features

Abnormal Operation

Annun/Alerts

Appendix

Index

## Importing a Flight Plan from an SD Card:

- 1) Insert the SD card containing the flight plan in the top card slot on the MFD.
- 2) From MFD Home, touch **Flight Plan > Flight Plan Options > Flight Plan Catalog > Create New Catalog Flight Plan > Flight Plan Options.**
- 3) Touch the **Import** Button to display the 'Import Flight Plan' Screen.
- 4) Touch a flight plan selection button to display the flight plan information and activate the **Import** Button.
- 5) Touch the **Import** Button.
- 6) Touch the **OK** Button to return to the 'Edit Stored Flight Plan' Screen.

## Exporting a stored Flight Plan to an SD Card:

- 1) Insert the SD card for storing the flight plan in the top card slot on the MFD.
- 2) From MFD Home, touch **Flight Plan > Flight Plan Options.**
- 3) Touch the **Flight Plan Catalog** Button to display the 'Flight Plan Catalog' Screen.
- 4) Touch a flight plan selection button to display the 'Catalog Options' Window.
- 5) Touch the **Export** Button to display the 'Export Flight Plan' Screen.
- 6) Touch the **File Name:** Button to rename the exported flight plan using the keypad or right knobs, if necessary.
- 7) Touch the **Export** Button.
- 8) Touch the **OK** Button in response to the "Flight Plan Successfully Exported." prompt to return to the 'Flight Plan Options' Window.

## Deleting the active or standby flight plan:

- 1) For the active flight plan: From MFD Home, touch **Flight Plan > Flight Plan Options.**  
**Or:**  
For the standby flight plan: From MFD Home, touch **Flight Plan > Standby Flight Plan > Flight Plan Options.**
- 2) Touch the **Delete Flight Plan** Button.
- 3) Touch the **OK** Button in response to "Delete all waypoints in flight plan?". The flight plan is deleted. To cancel the request, touch the **Cancel** Button.

## Viewing information about a stored flight plan:

- 1) From MFD Home, touch **Flight Plan > Flight Plan Options.**
- 2) Touch the **Flight Plan Catalog** Button to display the 'Flight Plan Catalog' Screen. The flight plan information is displayed showing departure, destination, and total distance information for the stored flight plans.
- 3) Touch a stored flight plan button to display the 'Catalog Options' Window.
- 4) Touch the **Edit** Button to display the 'Edit Stored Flight Plan' Screen to view the waypoints in the stored flight plan.

## Storing a flight plan from the 'Active Flight Plan' Screen or the 'Standby Flight Plan' Screen:

- 1) For the active flight plan: From MFD Home, touch **Flight Plan** > **Flight Plan Options**.  
**Or:**  
 For the standby flight plan: From MFD Home, touch **Flight Plan** > **Standby Flight Plan** > **Flight Plan Options**.
- 2) Touch the **Store** Button.
- 3) Touch the **OK** Button in response to the question "Store XXXX/XXXX into catalog?".

## Activating a stored flight plan:

- 1) From MFD Home, touch **Flight Plan** > **Flight Plan Options**.
- 2) Touch the **Flight Plan Catalog** Button to display the 'Flight Plan Catalog' Screen.
- 3) Touch a stored flight plan button to display the 'Catalog Options' Window.
- 4) Touch the **Activate** Button.
- 5) Touch the **OK** Button in response to "Activate Selected Flight Plan and Replace Current Active Route?". To cancel the request, touch the **Cancel** Button.

## Inverting and activating a stored flight plan:

- 1) From MFD Home, touch **Flight Plan** > **Flight Plan Options**.
- 2) Touch the **Flight Plan Catalog** Button to display the 'Flight Plan Catalog' Screen.
- 3) Scroll the list if necessary and touch a flight plan selection button to display the 'Catalog Options' Window.
- 4) Touch the **Invert and Activate** Button.
- 5) Touch the **OK** Button in response to "Invert and Activate Selected Flight Plan and Replace Current Active Route?". The stored flight is inverted (all procedures are removed) and becomes the active flight plan. The stored flight plan is not modified. To cancel the request, touch the **Cancel** Button.

## Copying a stored flight plan to another flight plan memory slot:

- 1) From MFD Home, touch **Flight Plan** > **Flight Plan Options**.
- 2) Touch the **Flight Plan Catalog** Button to display the 'Flight Plan Catalog' Screen.
- 3) Touch a stored flight plan button to display the 'Catalog Options' Window.
- 4) Touch the **Copy** Button.
- 5) Touch the **OK** Button in response to "Copy Flight Plan <flight plan name>?". The copied flight plan is placed at the end of the list of stored flight plans. To cancel the request, touch the **Cancel** Button.

## Copying a stored flight plan to the standby flight plan:

- 1) From MFD Home, touch **Flight Plan** > **Flight Plan Options**.
- 2) Touch the **Flight Plan Catalog** Button to display the 'Flight Plan Catalog' Screen.
- 3) Touch a stored flight plan button to display the 'Catalog Options' Window.
- 4) Touch the **Copy to Standby** Button. If the standby flight plan is empty, the selected flight plan is copied to the standby flight plan. If there is already a standby flight plan, then a confirmation message is displayed.
- 5) If necessary, touch the **OK** Button in response to "Copy Selected Flight Plan and Replace Current Standby Flight Plan?". The selected flight plan is copied to the standby flight plan. To cancel the request, touch the **Cancel** Button.

## DELETE A STORED FLIGHT PLAN

Individual flight plans can be deleted from the system memory.

### Deleting a stored flight plan:

- 1) From MFD Home, touch **Flight Plan** > **Flight Plan Options**.
- 2) Touch the **Flight Plan Catalog** Button to display the 'Flight Plan Catalog' Screen.
- 3) Touch a stored flight plan button to display the 'Catalog Options' Window.
- 4) Touch the **Delete** Button.
- 5) Touch the **OK** Button in response to "Delete Flight Plan <flight plan name>?". The flight plan is deleted, and any flight plans following it in the list are shifted up. To cancel the request, touch the **Cancel** Button.

### Changing a flight plan comment:

- 1) For the active flight plan: From MFD Home, touch **Flight Plan** > **Flight Plan Options**.

**Or:**

For the standby flight plan: From MFD Home, touch **Flight Plan** > **Standby Flight Plan** > **Flight Plan Options**.

**Or:**

For the stored flight plan:

- a) From MFD Home, touch **Flight Plan** > **Flight Plan Options**.
- b) Touch the **Flight Plan Catalog** Button to display the 'Flight Plan Catalog' Screen.
- c) Scroll the list if necessary and touch a stored flight plan button to display the 'Catalog Options' Window.
- 2) Touch the **Rename** Button to display the keypad.
- 3) Use the keypad to select the comment.
- 4) Touch the **Enter** Button to accept the comment, and return to the flight plan.

### VERTICAL NAVIGATION

Enabling/Disabling VNAV guidance:

- 1) From MFD Home, touch **Flight Plan** > **VNAV**.
- 2) Touch the **VNAV Enabled** Button to enable/disable vertical navigation.

### CONSTRAINTS

#### Altitude Constraints

**Altitude Constraints within a Flight Plan**

Active Flight Plan			
	KMKC / KCOS	ALT	DTK / DIS
→	<b>BRK</b> Black Forest	10500FT	353° 18.2NM
PROC	Approach – KCOS–RNAVGPs Y 35R LPV		
Standby Flight Plan	<b>HABUK</b> laf	9000FT	164° 4.7NM
VNAV	<b>FALUR</b>	8100FT	290° 5.3NM
Flight Plan Options	<b>CEGIX</b> faf	8100FT	352° 6.4NM

System Calculated Altitude not designated (White Text)

Manually Entered Altitude (Cyan Text with Pencil Icon)

Optional: Auto Designated Altitude (Cyan Text)

White Text with Altitude Restriction Bars not designated

#### Altitude Constraint Types

**5000FT**

Cross AT or ABOVE 5,000 ft

**2300FT**

Cross AT or BELOW 3,000 ft

**2300FT**

Cross AT 2,300 ft

**5000FT**  
**3000FT**

Cross BETWEEN 3,000 ft & 5,000 ft

**7898FT** ❄️

Manual Input of Temperature Compensation

#### Active Flight Plan – Waypoint Altitude Constraints

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCS
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

White Text	Cyan Text
<p style="text-align: center;"><b>5000FT</b></p> <p>Advisory altitudes calculated by the system estimating the altitude of the aircraft as it passes over the navigation point.</p> <p style="text-align: center;"><b>5000FT</b></p> <p>Altitude retrieved from the navigation database. White line above and/or below indicates the type of constraint, as shown in the preceding figure. These altitudes are provided as a reference, and are not designated for vertical guidance.</p>	<p style="text-align: center;"><b>5000FT</b></p> <p>Altitude is designated for use in determining vertical guidance. A pencil icon indicates manual designation or manual data entry.</p> <p style="text-align: center;"><del>5000FT</del></p> <p>The system cannot use this altitude in determining vertical guidance because of an invalid constraint condition.</p>

### Altitude Constraint Color Coding

#### Entering or modifying an altitude constraint:

- 1) For the active flight plan: From MFD Home, touch **Flight Plan**.  
**Or:**  
For the standby flight plan: From MFD Home, touch **Flight Plan > Standby Flight Plan**.
- 2) Scroll the list, if necessary, and touch the desired VNAV ALT Button. If the desired altitude is already displayed, skip to Step 5 to designate the altitude constraint for vertical guidance.
- 3) Use the keypad to input the altitude.
- 4) If necessary, touch the **Flight Level** Button or the **MSL** Button to select the altitude mode.
- 5) Touch the **Enter** Button to designate the altitude constraint. The altitude is now shown in cyan, indicating it is usable for vertical guidance.

#### Removing/undesignating an altitude constraint:

- 1) For the active flight plan: From MFD Home, touch **Flight Plan**.  
**Or:**  
For the standby flight plan: From MFD Home, touch **Flight Plan > Standby Flight Plan**.
- 2) Scroll the list, if necessary, and touch the desired VNAV ALT Button.
- 3) Touch the **Remove VNAV ALT** Button. A 'Remove VNAV altitude?' Window is displayed.
- 4) Touch the **OK** Button. The altitude is now shown in white (or possibly as white dashes if there are no other constraints in the flight plan), indicating it is not usable for vertical guidance. To cancel the request, touch the **Cancel** Button.

**Reverting a manually entered altitude constraint back to the navigation database value:**

- 1) For the active flight plan: From MFD Home, touch **Flight Plan**.  
**Or:**  
 For the standby flight plan: From MFD Home, touch **Flight Plan > Standby Flight Plan**.
- 2) Scroll the list, if necessary, and touch the desired VNAV ALT Button.
- 3) Touch the **Remove VNAV ALT** Button. A 'Remove or Revert to published VNAV altitude of nnnnnFT?' confirmation window is displayed.
- 4) Touch the **Revert** Button. The altitude is now the database altitude and is shown in cyan, indicating it is usable for vertical guidance.

**Vertical Speed Target and Flight Path Angle**

**Modifying the Vertical Speed Target and Flight Pat Angle:**

- 1) From MFD Home, touch **Flight Plan > VNAV**.
- 2) Touch the **Vertical Speed Target** Button or the **Flight Path Angle** Button to display the keypad.
- 3) Use the keypad and the **Enter** Button to select the vertical speed target or the flight path angle.

**VERTICAL SITUATION DISPLAY**

Constraint Type	Numeric Representation	Altitude Constraint Icon
AT (Designated Altitude Constraint)	<b>3000FT</b>	
AT or ABOVE (Un-designated Altitude Constraint derived from the database)	<b>3000FT</b>	
AT or BELOW (Un-designated Altitude Constraint derived from the database)	<b>5000FT</b>	

**Altitude Constraint Icons**

**Enabling/disabling the VSD:**

- 1) From MFD Home, touch **Map > Map Settings**.
- 2) Touch the **Inset Window** Tab.
- 3) Touch the **VERT Situation Display** Button to enable/disable display of the VSD.

Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCs

Additional Features

Abnormal Operation

Annun/Alerts

Appendix

Index

## Changing the VSD Mode:

- 1) From MFD Home, touch **Map > Map Settings**.
- 2) Touch the **Inset Window** Tab.
- 3) Touch the VERT Situation Display **Settings** Button.
- 4) Touch the **Mode** Button to display the 'Mode Selection' Window.
- 5) Touch a Mode Button to select the mode and return to the 'Vertical Situation Display Settings' Window.

Message	Description
'Loading...'	VSD is loading data due to a range change, full/half switch, or first being selected for display.
'Flight Plan Not Available'	Flight Plan mode is selected and there is not a flight plan loaded with at least one leg.
'Flight Plan mode unavailable because aircraft off course and active leg over 200 NM'	All of the following are true: <ul style="list-style-type: none"> <li>– Flight Plan mode is selected</li> <li>– The active leg is greater than 200 nm</li> <li>– The aircraft is outside the swath</li> </ul>
'VSD Not Available'	At least one of the following is true: <ul style="list-style-type: none"> <li>– Valid terrain database not available</li> <li>– GPS MSL altitude not available</li> <li>– Current barometric altitude not available</li> <li>– Neither current track nor current heading available</li> <li>– GPS position not available</li> <li>– Map range setting is less than 1 nm</li> </ul>
'VSD Data is old, disable and enable VSD'	The system has encountered a delay and VSD data has failed to update for 2 seconds or more. This message may be momentarily displayed and then removed as the delay is overcome.

## Vertical Navigation Direct-To

### Activating a vertical navigation direct-to:

- 1) From MFD Home, touch **Flight Plan**.
- 2) Scroll the active flight plan and touch the desired VNAV ALT Button.
- 3) Use the keypad to input the altitude. If the desired altitude is already displayed, skip to Step 4 to activate vertical navigation direct-to.
- 4) Touch the **VNAV**  $\rightarrow$  XXXXX Button to activate the vertical navigation direct-to. Vertical guidance begins to the altitude constraint for the selected waypoint.

**Or:**

- 1) From MFD Home, touch **Flight Plan > VNAV**.
- 2) Touch the **VNAV**  Button to display the 'Select VNAV Direct To' Screen with a list of possible Vertical navigation direct to choices.
- 3) Scroll the list, if necessary, and touch a VNAV waypoint selection button.
- 4) Touch the **OK** Button to activate the vertical navigation direct-to. Vertical guidance begins to the altitude constraint for the selected waypoint.
- 5) Touch the **Back** Button to exit and return to the previous screen.

### Removing an altitude constraint when vertical navigation direct-to is active:

- 1) From MFD Home, touch **Flight Plan**.
- 2) Scroll the active flight plan list and touch the VNAV ALT Button for the waypoint receiving VNAV direct-to guidance.
- 3) Touch the **Remove VNAV ALT** Button.
- 4) Touch the **OK** Button in response to the question "Remove Altitude Constraint?". Vertical navigation direct-to guidance for the altitude constraint is canceled, and the altitude constraint is removed from the flight plan.

## PROCEDURES

### Viewing available procedures at an airport:

- 1) From MFD Home, touch **Waypoint Info > Airport**.
- 2) If necessary, touch the Airport Selection Button to display the keypad and use it to select the airport.
- 3) Touch the **Proc** Tab to display the 'Airport Procedures' Screen.
- 4) Scroll the list if necessary and touch a procedure selection button. The procedure selection screen is displayed on the Touchscreen Controller for the selected procedure.
- 5) Touch the **Preview** Button, then the **Show on Map** Button to show the procedure on the navigation map or touch the **Show Chart** Button to show the chart instead of the navigation map.
- 6) Touch the **Back** Button to return to the 'Airport Procedures' Screen to view another procedure.
- 7) Repeat Steps 4 through 6 as necessary.

### Loading a procedure into the active flight plan from the 'Airport Information' Screen:

- 1) From MFD Home, touch **Waypoint Info > Airport**.
- 2) If necessary, touch the Airport Selection Button to display the keypad and use it to select the airport.
- 3) Touch the **Proc** Tab to display the 'Airport Procedures' Screen.
- 4) Scroll the list, if necessary, and touch a procedure selection button. The procedure selection screen is displayed on the Touchscreen Controller for the selected procedure.

- 5) Touch the **Preview** Button, then the **Show on Map** Button to show the preview of the procedure on the navigation map or touch the **Show Chart** Button to show the procedure chart instead of the navigation map.
- 6) Select a different procedure, if desired.
- 7) Touch the **Load** Button to insert the procedure into the active flight plan.

### Loading an procedure into the active flight plan from the 'Nearest Airport' Screen:

- 1) From MFD Home, touch **Nearest > Airport**.
- 2) If necessary, scroll the list to find the airport and touch the airport selection button to display the 'Waypoint Options' Window for the selected airport. If the airport is not listed, touch any airport selection button to display the 'Waypoint Options' Window.
- 3) Touch the **Airport Info** Button to display the 'Airport Information' Screen. If in the previous step, the airport was not listed, touch the airport button and use the keypad to select the destination airport.
- 4) Touch the **Proc** Tab to display the 'Airport Procedures' Screen.
- 5) Scroll the list, if necessary, and touch a procedure selection button. The procedure selection screen is displayed on the Touchscreen Controller for the selected procedure.
- 6) Touch the **Preview** Button, then the **Show on Map** Button to show the preview of the procedure on the navigation map or touch the **Show Chart** Button to show the procedure chart instead of the navigation map.
- 7) Select a different procedure, if desired.
- 8) Touch the **Load** Button to insert the procedure into the active flight plan.

### Removing an entire procedure from a flight plan:

- 1) For the active flight plan: From MFD Home, touch **Flight Plan**.  
**Or:**  
 For the standby flight plan: From MFD Home, touch **Flight Plan > Standby Flight Plan**.  
**Or:**  
 For the stored flight plan:
  - a) From MFD Home, touch **Flight Plan > Flight Plan Options > Flight Plan Catalog** to display the 'Flight Plan Catalog' Screen.
  - b) Scroll the list if needed and touch a stored flight plan button to display the 'Catalog Options' Window.
  - c) Touch the **Edit** Button to display the 'Edit Stored Flight Plan' Screen.
- 2) Scroll the list if necessary and touch a departure, arrival, or approach selection button to display the 'Departure Options', 'Arrival Options', or 'Approach Options' Window.
- 3) Touch the **Remove Departure** Button, the **Remove Arrival** Button, or the **Remove Approach** Button.

- 4) Touch the **OK** Button in response to "Remove <procedure> – <procedure name> from flight plan?". The procedure is removed. To cancel the request, touch the **Cancel** Button.

## DEPARTURES

### Loading a departure into the flight plan using the Touchscreen Controller:

- 1) For the active flight plan:
  - a) From MFD Home, touch **PROC**.
  - b) Touch the **Departure** Button to display the 'Departure Selection' Screen.

**Or:**

For the standby flight plan:

  - a) From MFD Home, touch **Flight Plan > Standby Flight Plan > PROC**.
  - b) Touch the **Departure** Button to display the 'Departure Selection' Screen.

**Or:**

For the stored flight plan:

  - a) From MFD Home, touch **Flight Plan > Flight Plan Options > Flight Plan Catalog** to display the 'Flight Plan Catalog' Screen.
  - b) Scroll the list if needed and touch a stored flight plan button to display the 'Catalog Options' Window.
  - c) Touch the **Edit** Button to display the 'Edit Stored Flight Plan' Screen.
  - d) Touch the **Flight Plan Options** Button to display the 'Flight Plan Options' Window.
  - e) Touch the **Load Departure** Button to display the 'Departure Selection' Screen.
- 2) If needed, touch the **Airport** Button to display the keypad and use it to select the origin airport.
- 3) Touch the **Enter** Button to accept the origin airport.
- 4) Touch the **Departure** Button to display the 'Select Departure' Screen with a list of available departures.
- 5) Scroll the list if needed and touch a departure selection button to select a departure. The 'Select Transition' Screen will open.
- 6) Scroll the list if needed and touch a transition selection button to select the transition. The 'Select Runway' Screen will open.
- 7) Scroll the list if needed and touch a runway selection button to select the runway and return to the 'Departure Selection' Screen.
- 8) Touch the **Preview** Button, then the **Show on Map** Button to show the preview of the departure on the navigation map or touch the **Show Chart** Button to show the departure chart instead of the navigation map.
- 9) Touch the **Load** Button to insert the departure into the active flight plan.

## Removing a departure from a flight plan using the Touchscreen Controller:

- 1) For the active flight plan:
  - a) From MFD Home, touch **PROC**.
  - b) Touch the **Departure** Button to display the 'Departure Selection' Screen.
  - c) Touch the **Remove** Button. A 'Remove Departure – <departure identifier> from flight plan?' Window is displayed.

**Or:**

- a) From MFD Home, touch **Flight Plan**.
- b) Touch the Departure Header Button to display the 'Departure Options' Window.
- c) Touch the **Remove Departure** Button. A 'Remove Departure – <departure identifier> from flight plan?' Window is displayed.

**Or:**

For the standby flight plan:

- a) From MFD Home, touch **Flight Plan > Standby Flight Plan > PROC**.
- b) Touch the **Departure** Button to display the 'Departure Selection' Screen.
- c) Touch the **Remove** Button. A 'Remove Departure – <departure identifier> from flight plan?' Window is displayed.

**Or:**

- a) From MFD Home, touch **Flight Plan > Standby Flight Plan**.
- b) Touch the Departure Header Button to display the 'Departure Options' Window.
- c) Touch the **Remove Departure** Button. A 'Remove Departure – <departure identifier> from flight plan?' Window is displayed.

**Or:**

For the stored flight plan:

- a) From MFD Home, touch **Flight Plan > Flight Plan Options > Flight Plan Catalog** to display the 'Flight Plan Catalog' Screen.
- b) Scroll the list if needed and touch a stored flight plan button to display the 'Catalog Options' Window.
- c) Touch the **Edit** Button to display the 'Edit Stored Flight Plan' Screen.
- d) Touch the **Flight Plan Options** Button to display the 'Flight Plan Options' Window.
- e) Touch the **Load Departure** Button to display the 'Departure Selection' Screen.
- f) Touch the **Remove** Button. A 'Remove Departure – <departure identifier> from flight plan?' Window is displayed.

- 2) Touch the **OK** Button. The departure is removed from the flight plan.

## ARRIVALS

### Loading an arrival into the flight plan using the Touchscreen Controller:

- 1) For the active flight plan:
  - a) From MFD Home, touch **PROC**.
  - b) Touch the **Arrival** Button to display the 'Arrival Selection' Screen.

**Or:**

For the standby flight plan:

  - a) From MFD Home, touch **Flight Plan > Standby Flight Plan > PROC**.
  - b) Touch the **Arrival** Button to display the 'Arrival Selection' Screen.

**Or:**

For the stored flight plan:

  - a) From MFD Home, touch **Flight Plan > Flight Plan Options > Flight Plan Catalog** to display the 'Flight Plan Catalog' Screen.
  - b) Scroll the list if needed and touch a stored flight plan button to display the 'Catalog Options' Window.
  - c) Touch the **Edit** Button to display the 'Edit Stored Flight Plan' Screen.
  - d) Touch the **Flight Plan Options** Button to display the 'Flight Plan Options' Window.
  - e) Touch the **Load Arrival** Button to display the 'Arrival Selection' Screen.
- 2) If needed, touch the **Airport** Button to display the keypad and use it to select the destination airport.
- 3) Touch the **Enter** Button to accept the destination airport.
- 4) Touch the **Arrival** Button to display the 'Select Arrival' Screen with a list of available arrivals.
- 5) Scroll the list if needed and touch an arrival selection button to select the arrival. The 'Select Transition' Screen will open.
- 6) Scroll the list if needed and touch a transition selection button to select the transition. The 'Select Runway' Screen will open.
- 7) Scroll the list if needed and touch a runway selection button to select the runway and return to the 'Arrival Selection' Screen.
- 8) Touch the **Preview** Button, then the **Show on Map** Button to show the preview of the arrival on the navigation map or touch the **Show Chart** Button to show the arrival chart instead of the navigation map.
- 9) Touch the **Load** Button to insert the arrival into the flight plan.

## Removing an arrival from a flight plan using the Touchscreen Controller:

- 1) For the active flight plan:
  - a) From MFD Home, touch **PROC**.
  - b) Touch the **Arrival** Button to display the 'Arrival Selection' Screen.
  - c) Touch the **Remove** Button. A 'Remove Arrival – <arrival identifier> from flight plan?' Window is displayed.
 

**Or:**

    - a) From MFD Home, touch **Flight Plan**.
    - b) Touch the Arrival Header Button to display the 'Arrival Options' Window.
    - c) Touch the **Remove Arrival** Button. A 'Remove Arrival – <arrival identifier> from flight plan?' Window is displayed.

**Or:**

For the standby flight plan:

    - a) From MFD Home, touch **Flight Plan > Standby Flight Plan > PROC**.
    - b) Touch the **Arrival** Button to display the 'Arrival Selection' Screen.
    - c) Touch the **Remove** Button. A 'Remove Arrival – <arrival identifier> from flight plan?' Window is displayed.

**Or:**

    - a) From MFD Home, touch **Flight Plan > Standby Flight Plan**.
    - b) Touch the Arrival Header Button to display the 'Arrival Options' Window.
    - c) Touch the **Remove Arrival** Button. A 'Remove Arrival – <arrival identifier> from flight plan?' Window is displayed.

**Or:**

For the stored flight plan:

    - a) From MFD Home, touch **Flight Plan > Flight Plan Options > Flight Plan Catalog** to display the 'Flight Plan Catalog' Screen.
    - b) Scroll the list if needed and touch a stored flight plan button to display the 'Catalog Options' Window.
    - c) Touch the **Edit** Button to display the 'Edit Stored Flight Plan' Screen.
    - d) Touch the **Flight Plan Options** Button to display the 'Flight Plan Options' Window.
    - e) Touch the **Load Arrival** Button to display the 'Arrival Selection' Screen.
    - f) Touch the **Remove** Button. A 'Remove Arrival – <arrival identifier> from flight plan?' Window is displayed.
- 2) Touch the **OK** Button. The arrival is removed from the flight plan.

**APPROACHES**

Approach Type (as shown on HSI)	Description	LNAV/VNAV or LNAV Minima Available?	When SBAS becomes unavailable prior to one minute to FAF, at one minute to FAF will initiate a switch/downgrade to:
<b>LNAV</b>	GPS approach using published LNAV minima	LNAV	N/A
<b>LNAV+V</b>	GPS approach using published LNAV minima. Advisory vertical guidance is provided	LNAV	LNAV+V (Baro VNAV)
<b>L/VNAV</b>	GPS approach using published LNAV/VNAV minima	LNAV/VNAV	LNAV/VNAV (Baro VNAV)
		LNAV	LNAV
		Neither	Approach Aborted
<b>LP</b> (available only if SBAS available)	GPS approach using published LP minima	LNAV	LNAV
		No LNAV	Approach Aborted
<b>LP+V</b> (available only if SBAS available)	GPS approach using published LP minima. Advisory vertical guidance is provided	LNAV	LNAV
		No LNAV	Approach Aborted
<b>LPV</b> (available only if SBAS available)	GPS approach using published LPV minima	LNAV/VNAV	LNAV/VNAV (Baro VNAV)
		LNAV	LNAV
		Neither	Approach Aborted



**Approach Type**

– LNAV, LNAV+V, L/VNAV, LP, LP+V, LPV

**Effects of SBAS Unavailability on Approaches**

**Loading and activating an approach**

**Loading an approach into the active/standby flight plan using the Touchscreen Controller:**

- 1) For the active flight plan: From MFD Home, touch **PROC**.  
For the standby flight plan: From MFD Home, touch **Flight Plan > Standby Flight Plan > PROC**.

Flight Instruments  
EAS  
Nav/Com/XPDR/Audio  
Flight Management  
Hazard Avoidance  
AFCS  
Additional Features  
Abnormal Operation  
Annun/Alerts  
Appendix  
Index

- 2) Touch the **Approach** Button to display the 'Approach Selection' Screen.
- 3) Select the airport and approach:
  - a) If needed, touch the **Airport** Button to display the keypad and use it to select the approach airport.
  - b) Touch the **Enter** Button to accept the approach airport.
  - c) If needed, touch the **Approach** Button to display the 'Select Approach' Screen with a list of available approaches.
  - d) Scroll the list if needed and touch an approach selection button to select the approach.

**Or:**

- a) If the **SBAS** Button is available, touch the **SBAS** Button to display the keypad and use it to select the SBAS channel number (The **SBAS** channel Button is only available when an RNAV or GPS based approach is selected).

If the **SBAS** Button is not available, touch the **Approach** Button to display the 'Select Approach' Screen. Scroll as needed and touch the **Select by SBAS Channel** Button to display the keypad, and use it to select the SBAS channel number (SBAS Channel information will be listed on a chart that has LPV or LP minima).

- b) Touch the **Enter** Button to accept the SBAS channel and return to the 'Approach Selection' Screen with the airport and approach selected.
- 4) If needed, touch the **Transition** Button to display the 'Select Transition' Screen with a list of available transitions. Normally, this screen will automatically appear with transition options.
- 5) Scroll the list if needed and touch a transition selection button to select the transition.
- 6) To set the minimums, touch the **Minimums** Button to display the 'Minimums' Screen. If the minimums were Off, then Baro is automatically selected.

- a) If Baro is desired, use the keypad to select the barometric minimum altitude.
- b) Touch the **Enter** Button to accept the barometric minimum altitude and return to the 'Approach Selection' Screen.

**Or:**

- a) If a radio altitude minimum is desired, touch the **Minimums** Button to display the 'Minimums Source' Window.
- b) Touch the **Radio Alt** Button to select radio altitude minimums and return to the 'Minimums' Screen.
- c) Use the keypad to select the minimums altitude.
- d) Touch the **Enter** Button to accept the radio altitude minimums and return to the 'Approach Selection' Screen.

**Or:**

- a) If temperature compensated minimum is desired, touch the **Minimums** Button to display the 'Minimums Source' Window.
  - b) Touch the **Temp Comp** Button to select temperature compensated minimums and display the 'Destination Temp' Screen. Use the numeric keypad to select the destination temperature.
  - c) Touch the **Enter** Button to accept the destination temperature and return to the 'Minimums' Screen.
  - d) Use the keypad to select the minimums altitude.
  - e) Touch the **Enter** Button to accept the temperature compensated minimums and return to the 'Approach Selection' Screen.
- 7) Touch the **Preview** Button, then the **Show on Map** Button to show the preview of the approach on the navigation map or touch a chart selection button to show the procedure chart instead of the navigation map.
- 8) Touch the **Load** Button to insert the approach into the flight plan; or if available, touch the **Load & Activate** Button to begin immediate navigation for the approach. When GPS is not approved for the selected final approach course, the message ' – NOT APPROVED FOR GPS – GPS guidance is for monitoring only. Load approach?' is displayed. Touch the **OK** Button to continue.
- If a visual approach was selected, the message 'Obstacle clearance is not provided for visual approaches' is displayed. Touch the **OK** Button to continue.

### Loading an approach procedure into a stored flight plan:

- 1) From MFD Home, touch **Flight Plan > Flight Plan Options**.
- 2) Touch the **Flight Plan Catalog** Button to display the 'Flight Plan Catalog' Screen.
- 3) Touch a flight plan selection button to display the 'Catalog Options' Screen.
- 4) Touch the **Edit** Button to display the 'Edit Stored Flight Plan' Screen.
- 5) Touch the **Flight Plan Options** Button to display the 'Flight Plan Options' Window.
- 6) Touch the **Load Approach** Button to display the 'Approach Selection' Screen.
- 7) Select the airport and approach:
  - a) If needed, touch the **Airport** Button to display the keypad and use it to select the approach airport.
  - b) Touch the **Enter** Button to accept the approach airport.
  - c) If needed, touch the **Approach** Button to display the 'Select Approach' Screen with a list of available approaches.
  - d) Scroll the list if needed and touch a approach selection button to select the approach and display the 'Select Transition' Screen.
  - e) Scroll the list if needed and touch a transition selection button to select the transition and return to the 'Approach Selection' Screen.

Or:

- a) If the **SBAS** Button is available, touch the **SBAS** Button to display the keypad and use it to select the SBAS channel number (The **SBAS** channel Button is only available when an RNAV or GPS based approach is selected, or no approach is selected).  
If the **SBAS** Button is not available, touch the **Approach** Button to display the 'Select Approach' Screen. Scroll as needed and touch the **Select by SBAS Channel** Button to display the keypad, and use it to select the SBAS channel number.
- b) Touch the **Enter** Button to accept the SBAS channel and return to the 'Approach Selection' Screen with the airport and approach selected.
- c) Touch the **Transition** Button to display the 'Select Transition' Screen with a list of available transitions.
- d) Scroll the list if needed and touch a transition selection button to select the transition and return to the 'Approach Selection' Screen.

8) Touch the **Preview** Button, then the **Show on Map** Button to show the preview of the approach on the navigation map or touch a chart selection button to show the procedure chart instead of the navigation map.

9) Touch the **Load** Button to insert the approach into the stored flight plan.

#### Activating a previously loaded approach using the Touchscreen Controller:

- 1) From MFD Home, touch **PROC**.
- 2) Touch the **Activate Approach** Button to activate the approach.

Or:

- 1) From MFD Home, touch **Flight Plan**.
- 2) Touch the Approach Header Button to display the Approach Options Window.
- 3) Touch the **Activate Approach** Button to activate the approach.

#### Activating a previously loaded approach with vectors to final using the Touchscreen Controller:

- 1) From MFD Home, touch **PROC**.
- 2) Touch the **Activate Vectors To Final** Button to activate vectors to final.

Or:

- 1) From MFD Home, touch **Flight Plan**.
- 2) Touch the Approach Header Button to display the Approach Options Window.
- 3) Touch the **Activate Vectors To Final** Button to activate vectors to final.

## Removing an Approach from the Active/Standby Flight Plan

### Removing an approach from the active/standby flight plan using the Touchscreen Controller:

- 1) For the active flight plan: From MFD Home, touch **PROC**.  
For the standby flight plan: From MFD Home, touch **Flight Plan > Standby Flight Plan > PROC**.
- 2) Touch the **Approach** Button to display the 'Approach Selection' Screen.
- 3) Touch the **Remove** Button. A 'Remove approach <approach> from flight plan?' Window is displayed.
- 4) Touch the **OK** Button. The approach is removed from the active flight plan. To cancel the request, touch the **Cancel** Button.

#### Or:

- 1) For the active flight plan: From MFD Home, touch **Flight Plan**.  
For the standby flight plan: From MFD Home, touch **Flight Plan > Standby Flight Plan**.
- 2) Touch the Approach Header Button to display the 'Approach Options' Screen.
- 3) Touch the **Remove Approach** Button. A 'Remove Approach – <approach> from flight plan?' Window is displayed.
- 4) Touch the **OK** Button. The approach is removed from the active flight plan. To cancel the request, touch the **Cancel** Button.

### Removing an approach procedure from a stored flight plan:

- 1) From MFD Home, touch **Flight Plan > Flight Plan Options > Flight Plan Catalog** to display the 'Flight Plan Catalog' Screen.
- 2) Scroll the list if needed and touch a stored flight plan button to display the 'Catalog Options' Window.
- 3) Touch the **Edit** Button.
- 4) Scroll the list if needed and touch the Approach Header button to display the 'Approach Options' Window.
- 5) Touch the **Remove Approach** Button.
- 6) Touch the **OK** Button in response to "Remove Approach – <procedure name> from flight plan?". The procedure is removed. To cancel the request, touch the **Cancel** Button.

## Missed Approach

### Activating a missed approach in the active flight plan:

Press the GA Button. The system begins automatic sequencing through the missed approach waypoints to the MAHP. See the AFCS section for more details.

#### Or:

Flight Instruments

- 1) From MFD Home, touch **PROC**.
- 2) Touch the **Activate Missed Approach** Button to activate the missed approach (only on RNAV approaches). The system begins automatic sequencing through the missed approach waypoints to the MAHP.

**Or:**

EAS

- 1) From MFD Home, touch **Flight Plan**.
- 2) Touch the Approach Header Button to display the Approach Options Window.
- 3) Touch the **Activate Missed Approach** Button to activate the missed approach (only on RNAV approaches). The system begins automatic sequencing through the missed approach waypoints to the MAHP.

Nav/Com/XPDR/Audio

Flight Management

## Temperature Compensated Altitude

**Manually enabling/disabling temperature compensation for altitudes loaded into approaches:**

Hazard Avoidance

- 1) For the active flight plan: From MFD Home, touch **Flight Plan > Flight Plan Options**.  
For the standby flight plan: From MFD Home, touch **Flight Plan > Standby Flight Plan > Flight Plan Options**.

AFCs

- 2) Touch the **APPR WPT TEMP COMP** Button to display the 'Temp Compensation' Screen.
- 3) Touch the **Temp Compensation** Annunciator Button to enable/disable temperature compensation.

Additional Features

- 4) Touch the **Temp at Dest** Button to display the numeric keypad. Use the keypad and the **Enter** Button to select the temperature at the <airport>. The compensated altitudes are computed and shown in the flight plan.

**Entering a temperature compensated minimum descent altitude:**

Abnormal Operation

- 1) From MFD Home, touch **PROC**.
- 2) Touch the **Approach** Button to display the 'Approach Selection' Screen.
- 3) Touch the **Minimums** Button to display the 'Minimums' Screen.
- 4) Touch the **Minimums** Button to display the 'Minimums Source' Window.
- 5) Touch the **Temp Comp** Button to select temperature compensated minimums and return to the 'Minimums' Screen.
- 6) Touch the **Temp at Dest** Button to display the numeric keypad.
- 7) Use the keypad to select the temperature.
- 8) Touch the **Enter** Button to accept the destination temperature and return to the 'Minimums' Screen.

Annun/Alerts

- 9) If not already entered, use the keypad to select the minimums altitude.

Appendix

- 10) Touch the **Enter** Button to return to the 'Approach Selection' Screen.

**Or:**

Index

- 1) From MFD Home, touch **Flight Plan**.
- 2) Touch the Approach Header Button to display the 'Approach Options' Window.
- 3) Touch the **Edit Approach** Button to display the 'Approach Selection' Screen.
- 4) Touch the **Minimums** Button to display the 'Minimums' Screen.
- 5) Touch the **Minimums** Button to display the 'Minimums Source' Window.
- 6) Touch the **Temp Comp** Button to select temperature compensated minimums and return to the 'Minimums' Screen.
- 7) Touch the **Temp at Dest** Button to display the numeric keypad.
- 8) Use the keypad to select the temperature.
- 9) Touch the **Enter** Button to accept the destination temperature and return to the 'Minimums' Screen.
- 10) If not already entered, use the keypad to select the minimums altitude.
- 11) Touch the **Enter** Button to return to the 'Approach Selection' Screen.

## TRIP PLANNING

### Selecting the Stored Flight Plan - Cumulative trip route mode:

- 1) From MFD Home, touch **Utilities > Trip Planning**.
- 2) Touch the **Trip Route** Button.
- 3) Touch the **Select from Flight Plan** Button to display the 'Select Flight Plan' Screen.
- 4) Scroll the list, if necessary, and touch a stored flight plan button.
- 5) Touch the **Cumulative Flight Plan** Button to select the mode and return to the 'Trip Planning' Screen.

### Selecting the Stored Flight Plan - Leg trip route mode:

- 1) From MFD Home, touch **Utilities > Trip Planning**.
- 2) Touch the **Trip Route** Button.
- 3) Touch the **Select from Flight Plan** Button to display the 'Select Flight Plan' Screen.
- 4) Scroll the list, if necessary, and touch a stored flight plan button.
- 5) Scroll the list, if necessary, and touch a flight plan leg selection button to select the mode and return to the 'Trip Planning' Screen.

### Selecting the Active Flight Plan - Remaining trip route mode:

- 1) From MFD Home, touch **Utilities > Trip Planning**.
- 2) Touch the **Trip Route** Button to display the 'Input Selection' Window.
- 3) Touch the **Select from Flight Plan** Button.
- 4) Scroll the list, if necessary, and touch the active flight plan button.
- 5) Touch the **Remaining Flight Plan** Button to select the mode and return to the 'Trip Planning' Screen.

**Selecting the Active Flight Plan - Leg trip route mode:**

- 1) From MFD Home, touch **Utilities** > **Trip Planning**.
- 2) Touch the **Trip Route** Button to display the 'Input Selection' Window.
- 3) Touch the **Select from Flight Plan** Button.
- 4) Scroll the list, if necessary, and touch the active flight plan button.
- 5) Scroll the list, if necessary, and touch a flight plan leg selection button (P.POS → Waypoint or Waypoint → Waypoint) to select the mode and return to the 'Trip Planning' Screen.

**Selecting the waypoints trip route mode:**

- 1) From MFD Home, touch **Utilities** > **Trip Planning**.
- 2) Touch the **Trip Route** Button to display the 'Input Selection' Window.
- 3) Touch the **Select Starting and Ending Waypoints** Button.
- 4) Touch the starting waypoint button to display the 'Select Starting Location' Window.
- 5) Select the starting waypoint:

Touch the **Present Position** Button to use the present position of the aircraft and return to the 'Select Starting and Ending Locations' Window.

**Or:**

Touch the **Waypoint** Button to select a waypoint using the keypad and return to the 'Select Starting and Ending Locations' Window.

- 6) Touch the ending waypoint button to select a waypoint using the keypad and return to the 'Select Starting and Ending Locations' Window.
- 7) Touch the **Accept** Button to select the mode and return to the 'Trip Planning' Screen.

**Entering manual data for trip statistics calculations:**

- 1) From MFD Home, touch **Utilities** > **Trip Planning**.
- 2) Touch the **Manual Entry** Button to enable the manual entry data field buttons.
- 3) Touch an input data field button and use the keypad to select the value.
- 4) Touch the **Enter** Button to accept the value and return to the 'Trip Planning' Screen. Repeat steps 3 and 4 for each of the data fields.

**WEIGHT AND FUEL PLANNING****Calculating basic operating weight:**

- 1) From MFD Home, touch **Aircraft Systems** > **Weight and Fuel**.

**Or:**

From MFD Home, touch **PERF** > **Weight and Fuel** (with optional SurfaceWatch).

**Or:**

From MFD Home, touch **Utilities** > **Weight and Fuel** (without SurfaceWatch).

- 2) Touch the **Set Empty Weight** Button to display the keypad.

- 3) Use the keypad to enter the basic empty weight.
- 4) Touch the **Enter** Button to accept the entry, and return to the 'Weight and Fuel' Screen.
- 5) Touch the **Crew & Stores** Button to display the keypad.
- 6) Use the keypad to enter the crew and stores weight.
- 7) Touch the **Enter** Button to accept the entry, and return to the 'Weight and Fuel' Screen.

### Calculating zero fuel weight:

- 1) From MFD Home, touch **Aircraft Systems > Weight and Fuel**.  
**Or:**  
 From MFD Home, touch **PERF > Weight and Fuel** (with optional SurfaceWatch).  
**Or:**  
 From MFD Home, touch **Utilities > Weight and Fuel** (without SurfaceWatch).
- 2) Touch the **Payload** Tab to display the zero fuel weight calculation.
- 3) Touch the **Passengers** Button to display the keypad.
- 4) Use the keypad to enter the number of passengers.
- 5) Touch the **Enter** Button to accept the entry, and return to the 'Weight and Fuel' Screen.
- 6) Touch the **WT Each** Button to display the keypad.
- 7) Use the keypad to enter the average passenger weight.
- 8) Touch the **Enter** Button to accept the entry, and return to the 'Weight and Fuel' Screen.
- 9) Touch the **Cargo** Button to display the keypad.
- 10) Use the keypad to enter the cargo weight.
- 11) Touch the **Enter** Button to accept the entry, and return to the 'Weight and Fuel' Screen.

### Calculating aircraft weight:

- 1) From MFD Home, touch **Aircraft Systems > Weight and Fuel**.  
**Or:**  
 From MFD Home, touch **PERF > Weight and Fuel** (with optional SurfaceWatch).  
**Or:**  
 From MFD Home, touch **Utilities > Weight and Fuel** (without SurfaceWatch).
- 2) Touch the **Takeoff** Tab to display the aircraft weight calculation.
- 3) Enter fuel on board:  
 Touch the **FOB SYNC** Button to insert the fuel amount measured from the fuel sensors.  
**Or:**
  - a) Touch the **Fuel On Board** Button to display the keypad.
  - b) Use the keypad to enter the fuel on board.
  - c) Touch the **Enter** Button to accept the entry, and return to the 'Weight and Fuel' Screen.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCs
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

**Entering fuel reserve and estimated holding time:**

- 1) From MFD Home, touch **Aircraft Systems > Weight and Fuel**.

**Or:**

From MFD Home, touch **PERF > Weight and Fuel** (with optional SurfaceWatch).

**Or:**

From MFD Home, touch **Utilities > Weight and Fuel** (without SurfaceWatch).

- 2) Touch the **Landing** Tab to display the landing weight and fuel calculations.
- 3) Touch the **Fuel Reserves** Button to display the keypad.
- 4) Use the keypad to enter the fuel reserves.
- 5) Touch the **Holding Time** Button to display the keypad.
- 6) Use the keypad to enter the estimated holding time.
- 7) Touch the **Enter** Button to accept the entry, and return to the 'Weight and Fuel' Screen.

**RAIM (Receiver Autonomous Integrity Monitoring) Prediction**

In most cases performing a RAIM prediction is not necessary. However, in some cases, the selected approach may be outside the SBAS coverage area and it may be necessary to perform a RAIM prediction for the intended approach.

Receiver Autonomous Integrity Monitoring (RAIM) is a GPS receiver function that performs a consistency check on all tracked satellites. RAIM ensures the available satellite geometry allows the receiver to calculate a position within a specified RAIM protection limit (2.0 nautical miles for oceanic and enroute, 1.0 nm for terminal, and 0.3 nm for non-precision approaches). During oceanic, enroute, and terminal phases of flight, RAIM is available nearly 100% of the time.

The RAIM prediction function also indicates whether RAIM is available at a specified date and time. RAIM computations predict satellite coverage within  $\pm 15$  min of the specified arrival date and time.

Because of the tighter protection limit on approaches, there may be times when RAIM is not available. The system automatically monitors RAIM and warns with an alert message when it is not available. If RAIM is not predicted to be available for the final approach course, the approach does not become active, as indicated by the messages "Approach is not active" and "RAIM not available from FAF to MAP". If RAIM is not available when crossing the FAF, the missed approach procedure must be flown.

**Predicting RAIM availability:**

- 1) From MFD Home, touch **Utilities > GPS Status > Location**.
- 2) Touch the **Waypoint** Button to enter the location for which RAIM will be predicted. Touch the **Present Position** Button to enter the aircraft's current position as the prediction location.

- 3) If the **Waypoint** Button was touched in step 2, enter the waypoint identifier using the alphanumeric buttons or the large and small right knobs. If the **Present Position** Button was touched in step 2, proceed to step 5.
- 4) Touch the **Enter** Button.
- 5) The location selected for RAIM prediction is now displayed on the **Location** Button.
- 6) Touch the **Arrival Time** Button.
- 7) Enter the planned arrival time for the selected location using the numeric buttons
- 8) Touch the **Enter** Button. The time is now displayed on the **Arrival Time** Button.
- 9) Touch the **Arrival Date** Button.
- 10) Touch the button for the desired year. If necessary, touch and drag in the window, or use the **Up** and **Down** buttons to display the desired year.
- 11) Touch the button for the desired month. If necessary, touch and drag in the window, or use the **Up** and **Down** buttons to display the desired month.
- 12) Touch the button for the desired day. If necessary, touch and drag in the window, or use the **Up** and **Down** buttons to display the desired day. The selected date is now displayed on the **Arrival Date** Button.
- 13) Touch the **Compute RAIM** Button. One of the following will be displayed in the RAIM Status field.
  - 'Computing'—RAIM calculation in progress
  - 'Available'—RAIM is predicted to be available for the specified waypoint, time, and date
  - 'Not Available'—RAIM is predicted to be unavailable for the specified waypoint, time, and date
  - '------'—RAIM has not been computed for the specified waypoint, time, and date combination

## CREW PROFILES

### Adding a new crew profile:

- 1) From MFD Home, touch **Utilities > Crew Profile**.
- 2) Scroll if necessary, and touch the **Add Profile** Button.
- 3) Input the name to assign to the crew profile using the keypad or the large and small upper knobs, then touch **Enter** or press the upper knob. Crew Profiles may be up to 16 characters long, and cannot share the exact name of an existing crew profile.

### Activating a crew profile:

- 1) From MFD Home, touch **Utilities > Crew Profile**.
- 2) Scroll if necessary, and touch the button for the crew profile to be activated.
- 3) Touch the **Activate** Button. When finished, the system displays the name of the selected crew profile in the 'Active Profile' Window.

### Copying an existing crew profile:

- 1) From MFD Home, touch **Utilities > Crew Profile**.
- 2) Scroll if necessary, and touch the button for the crew profile to be copied.
- 3) Touch the **Copy** Button.
- 4) Input the name to assign to the copied crew profile using the keypad or the large and small upper knobs, then touch **Enter** or press the right knob. Crew Profiles may be up to 16 characters long, and cannot share the exact name of an existing crew profile. The 'Crew Profile' Screen displays the name of the copied profile in the list.

### Renaming an existing crew profile:

- 1) From MFD Home, touch **Utilities > Crew Profile**.
- 2) Scroll if necessary, and touch the button for the crew profile to be renamed.
- 3) Touch the **Rename** Button.
- 4) Input the new name to assign to the selected crew profile using the keypad or the large and small upper knobs, then touch **Enter** or press the upper knob. Crew Profiles may be up to 16 characters long, and cannot share the exact name of an existing crew profile. The Crew Profile screen displays the name of the renamed crew profile in the list.

### Deleting a crew profile:



**NOTE:** *The system cannot delete the currently active crew profile. If necessary, activate another crew profile prior to deletion.*

- 1) From MFD Home, touch **Utilities > Crew Profile**.
- 2) Scroll if necessary, and touch the button for the profile to be deleted.
- 3) Touch the **Delete** Button.
- 4) Touch the **OK** Button to confirm and delete the profile, or touch the **Cancel** Button.

### Importing a crew profile from an SD card:

- 1) If necessary, insert an SD card containing a crew profile into the top card slot on the MFD.
- 2) From MFD Home, touch **Utilities > Crew Profile**.
- 3) Touch the **Import** Button.
- 4) Scroll if necessary, and touch the button for the crew profile to be imported.

### Exporting a crew profile to an SD card:

- 1) If necessary, insert an SD card to store a crew profile into the top card slot on the MFD.
- 2) From MFD Home, touch **Utilities > Crew Profile**.
- 3) Scroll if necessary, and touch the button for the crew profile to be exported from the list.
- 4) Touch the **Export** Button.

# HAZARD AVOIDANCE

## DATA LINK 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 older than the indicated weather product age.

## ACTIVATING DATA LINK WEATHER SERVICES

### Establishing a SiriusXM Weather Data account:

- 1) From MFD Home, touch **Utilities > Setup > SiriusXM Info**.
- 2) Note the ID shown in the 'Data Radio' Window.
- 3) Contact SiriusXM customer service. Follow the instructions provided by SiriusXM customer service.

### Verifying SiriusXM Weather services:

- 1) Ensure the aircraft is outside, and the SiriusXM antenna away from obstructions such as buildings.
- 2) From MFD Home, touch **Utilities > Setup > SiriusXM Info**.
- 3) View the 'Service Class' window and verify the displayed Service Class corresponds to the chosen SiriusXM subscription type.
- 4) View the 'Weather Products' window, scrolling as needed to see all supported products. Available weather product names appear in white text; unavailable weather products appear with subdued text. When all weather products in the selected Service Class are available, activation is successful.

## REGISTERING THE SYSTEM FOR GARMIN CONNEXT SERVICES

### Registering the system to receive Garmin Connex Weather:

- 1) Ensure the aircraft is outside and has a clear view of the sky (if connecting via the Iridium network).
- 2) From MFD Home, touch **Utilities > Setup > Connex Registration**. If the Registration Information Window indicates 'Not Registered', continue with this procedure.
- 3) Touch the **Register** Button.

- 4) Use the keypad or large and small upper knobs to supply the access code provided from Garmin Connex customer service.
- 5) Touch the **Enter** Button or press the upper knob. The system contacts the Garmin Connex Weather service. Registration is complete when the 'Registration Information' Window displays the name of the airframe, tail number, and the serial numbers for the airframe and Iridium unit.

## ACCESSING FIS-B WEATHER INFORMATION

### Viewing the FIS-B Weather Pane:

From MFD Home, touch **Weather > Weather Selection > FIS-B Weather**.

### Enabling/disabling the FIS-B weather data reception:

- 1) From MFD Home, touch **Weather > Weather Selection > FIS-B Weather > FIS-B Settings**.
- 2) Touch the **Enable FIS-B** or **Disable FIS-B Button**.

## WEATHER PRODUCT AGE



**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 older than the indicated weather product age.

### Enabling/disabling weather product information on the PFD Navigation Maps:

- 1) From PFD Home, touch **PFD Map Settings**.
  - 2) Touch the **Map Layout** Button. If necessary, touch either the **HSI Map** or **Inset Map** Buttons.
  - 3) Touch the **Back** Button.
  - 3) Touch the **Weather Legend** Button.
- Or:**
- 1) With the PFD Inset Map or HSI Map shown, press the **PFD Map Settings** Softkey.
  - 2) Press the **Weather Legend** Softkey.

SiriusXM Weather Product	Product Symbol	Expiration Time (Minutes)
Next-generation Radar (NEXRAD)		30
Cloud Tops		60

SiriusXM Weather Product	Product Symbol	Expiration Time (Minutes)	
Echo Tops		30	Flight Instruments
SiriusXM Lightning		30	EAS
Storm Cell Movement		30	Nav/Com/XPDR/Audio
SIGMETs	<b>SIGM</b>	60	Flight Management
AIRMETs	<b>AIRM</b>	60	
METARs		90	Hazard Avoidance
City Forecast		90	
Surface Analysis		60	AFCS
Freezing Levels		120	
Winds Aloft		90	Additional Features
County Warnings		60	
Cyclone (Hurricane) Warnings		60	Abnormal Operation
Icing Potential (CIP and SLD)		90	Annun/Alerts
Pilot Weather Report (PIREPs)		90	
Air Report (AIREPs)		90	Appendix
Turbulence		180	
No Radar Coverage	No product symbol	30	Index

Flight Instruments	SiriusXM Weather Product	Product Symbol	Expiration Time (Minutes)
	Temporary Flight Restrictions (TFRs)		60
	Terminal Aerodrome Reports (TAFs)	No product symbol	60

## SiriusXM Weather Product Symbols and Expiration Times

Nav/Com/XPDR/Audio	FIS-B Weather Product	Product Symbol	Expiration Time (Minutes)
	NEXRAD Composite (US)		30
Flight Management	NEXRAD Composite (Regional)		30
Hazard Avoidance	METARs		90
	Pilot Weather Report (PIREP)		90
AFCS	Winds Aloft		*
	SIGMETs/AIRMETs		60
Additional Features	No Radar Coverage	No product image	30
	Terminal Aerodrome Forecast (TAF)	No product image	60
	Temporary Flight Restriction (TFR)		60

\* The Winds Aloft product no longer issues an expiration time. It uses the best applicable model data for the time given, if one is available, to set an expiration time.

## FIS-B Weather Product Symbols and Expiration Times

Annun/Alerts	Garmin Connex Weather Product	Product Symbol	Expiration Time (Minutes)
Appendix	Connex Radar		30
	IR Satellite		60
Index	Connex Lightning		30

Garmin Connex Weather Product	Product Symbol	Expiration Time (Minutes)
SIGMETs		60
AIRMETs		60
Meteorological Aerodrome Report (METARs)		90
Winds Aloft		90
Pilot Weather Reports (PIREPs)		90
Temporary Flight Restrictions (TFRs)		60
Terminal Aerodrome Reports (TAFs)	No product symbol	60

Garmin Connex Weather Product Symbols and Expiration Times

## DISPLAYING DATA LINK WEATHER PRODUCTS

Viewing the Weather Data Link Pane and changing the data link weather source, if applicable:

- 1) From MFD Home, touch the **Weather** Button. Button is highlighted and becomes **Weather Selection** Button. Selected display pane shows a weather pane. If a weather pane other than 'Data Link Weather' is shown (such as 'Weather Radar' in the pane title), continue with the procedure to view the desired Weather Pane. (SiriusXM, FIS-B, or Connex).
- 2) Touch the **Weather Selection** Button. The 'Weather Selection' Screen appears.
- 3) Touch either **SiriusXM Weather**, **Connex Weather** or **FIS-B Weather** Button. Touched button is highlighted and becomes the settings Button. For example, if the **SiriusXM Weather** Button is touched it becomes the **SiriusXM Settings** Button.
- 4) If necessary, touch either the **SiriusXM**, **Connex**, or **FIS-B Settings** Button to access controls for the selected weather pane.

Selecting a Data Link Weather Source for Navigation Map Panes:

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCS
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

Flight Instruments

- 3) Scroll if necessary to view the **WX Source** Button. Cyan text on the button indicates currently selected weather data link weather source.
- 4) Touch the **WX Source** Button.
- 5) Touch the button for the data link weather source to be used (such as **SiriusXM**, **Connex**, or **FIS-B**, if installed).

EAS

### Selecting a Data Link Weather Source for PFD Maps:

Nav/Com/XPDR/Audio

- 1) From PFD Home, touch the **PFD Map Settings** Button.
- 2) Scroll if necessary to view the **WX Source** Button. Cyan text on the button indicates currently selected weather data link weather source.
- 3) Touch the **WX Source** Button.
- 4) Touch the button for the data link weather source to be used (such as **SiriusXM**, **Connex**, or **FIS-B**, if installed).

Flight Management

#### Or:

Hazard Avoidance

- 1) With the Inset Map or HSI Map displayed, press the **PFD Map Settings** Softkey.
- 2) Press the **Data Link Settings** Softkey.
- 3) Press the **Data Link** Softkey. Each press cycles through an available data link weather source, displayed in cyan on the softkey.

AFCs

### Setting up and customizing 'Data Link' Weather Products on navigation maps:

Additional Features

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Scroll through the list to view the available weather products.
- 4) Touch a weather product annunciator button to enable/disable the selected weather product. Button annunciator is green when a weather product is enabled, or gray when disabled.
- 5) If necessary, touch a range button next to the corresponding weather product, then touch to select the maximum map range at which the system will display the selected weather product.

Abnormal Operation

### Viewing legends for weather products enabled on the 'Data Link' (SiriusXM, Connex, or FIS-B) Weather Pane:

Annun/Alerts

- 1) From MFD Home, touch **Weather > Weather Selection > 'Data Link' Weather > 'Data Link' Weather Settings**.
- 2) Touch the **Legend** Button. The 'Weather Legends' Window appears on the Touchscreen Controller.
- 3) Scroll as needed to view the weather legends in the 'Weather Legends' window.
- 4) To remove the 'Weather Legends' Window, touch **Back** or **Home**.

Appendix

Index

Selecting a map orientation for the Data Link (SiriusXM, Connex, or FIS-B) Weather Pane:

- 1) From MFD Home, touch **Weather > Weather Selection > 'Data Link' Weather > 'Data Link' Weather Settings**.
- 2) Touch the **Orientation** Button to change the selected map orientation (displayed in cyan)
- 3) Touch the desired map orientation button (**Heading Up, Track Up, North Up, Sync to Nav Map**).

## CONNEX WEATHER DATA REQUESTS

Defining Weather Data Request Coverage Area:

- 1) From MFD Home, touch **Weather > Weather Selection > Connex Weather > Connex Settings**.
- 2) Touch the **Define Coverage** Button.
- 3) To change the diameter and route width of the weather data request coverage area, touch the **Diameter/Width** Button. Scroll as needed and touch the desired distance button in the selection window.
- 4) To include/remove the present position in the weather data request, touch the **P.POS** Button.
- 5) To include/remove the destination of the active flight plan in the weather data request, touch the **Destination** Button.
- 6) To include/remove any portion of the active flight plan route in the weather data request, touch the **Flight Plan** Button.
- 7) To change distance of the flight plan to be used in the data request, touch the Flight Plan Distance Button. Scroll as needed and touch the desired distance of the flight plan to be used ('Remaining FPL' uses the remainder of the flight plan, or select a specified look-ahead distance from the list.).
- 8) To include/remove a specific waypoint to be used in the weather data request, touch the **Waypoint** Button.
  - a) Touch the waypoint entry Button (to the right of the **Waypoint** Button.)
  - b) Use Touchscreen Controller keypad or large and small upper knobs to enter a waypoint to include in the weather data request, then touch the **Enter** Button or press the small upper knob.
- 9) When finished, touch the **Back** Button to return to the Connex Weather Settings Screen, or touch the **Home** Button.

## Sending/Canceling an Immediate Weather Data Request:

- 1) From MFD Home, touch **Weather > Weather Selection > Connex Weather > Connex Settings**.
- 2) Touch the **Send Immediate Request** Button. The system contacts Garmin Connex services and displays the status in the Data Request Window. System displays 'Completed' when finished.
- 3) If desired, touch the **Cancel Immediate Request** Button while a request is occurring. Data Request Window displays 'Cancelled'.

## Enabling/disabling automatic Connex Data Requests:

- 1) From MFD Home, touch **Weather > Weather Selection > Connex Weather > Connex Settings**.
- 2) Touch the **Auto Request** Button.
- 3) From the selection window, touch an Auto Update Request Rate Button to select the desired weather request update interval in minutes or touch the **Off** Button to disable automatic Connex Data Requests.

## WEATHER PRODUCT OVERVIEW

### NEXRAD (SiriusXM)



**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.

### Selecting a Data Link Weather source for the (PFD Navigation Maps):

- 1) Press the **PFD Map Settings** Softkey.
- 2) Press the **Data Link Settings** Softkey.
- 3) Press the **Data Link** Softkey. Each selection of the softkey changes the source, which is displayed in cyan on the softkey.

### Displaying NEXRAD weather information on the 'SiriusXM Weather' Pane:

- 1) From MFD Home, touch **Weather > Weather Selection > SiriusXM Weather > SiriusXM Settings**.
- 2) Touch the **NEXRAD** Button in the Background Window to enable/disable the display of NEXRAD information.

### Changing the NEXRAD coverage area on the 'SiriusXM Weather' Pane:

- 1) From MFD Home, touch **Weather > Weather Selection > SiriusXM Weather > SiriusXM Settings**.

- 2) Touch the **NEXRAD Settings** Button. The 'NEXRAD Options' window appears.
- 3) Touch the **NEXRAD** Button.
- 4) Touch the **USA** or **Canada** Button, or touch **Back** or **Home** to exit without changing the coverage area.

### Displaying NEXRAD weather information ('Navigation Map' Pane)

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Scroll as needed and touch the **NEXRAD Data** Button in the 'Overlays' window to enable/disable the display of the NEXRAD weather product on the 'Navigation Map' Pane.

### Changing the NEXRAD coverage area ('Navigation Map' Pane):

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Scroll as needed and touch the **NEXRAD Data Settings** Button in the Overlays Tab.
- 4) Touch the **NEXRAD Region** Button (displaying either 'USA' or 'Canada' in cyan).
- 5) Touch the **USA** or **Canada** Button, or touch **Back** or **Home** to exit without changing the coverage area.

### Displaying NEXRAD weather information (PFD Navigation Maps):

- 1) If necessary, enable the Inset Map or HSI Map.
- 2) From PFD Home, touch **PFD Map Settings**.
- 3) Scroll as needed and touch the **NEXRAD Data** Button in the 'Overlays' window to enable/disable the display of the NEXRAD weather product on the PFD Inset or HSI Map.

### Displaying NEXRAD weather information (PFD Navigation Maps):

With SiriusXM Data Link Weather as the selected weather source.

- 1) If necessary, enable the Inset Map or HSI Map.
- 2) Press the **PFD Map Settings** Softkey.
- 3) Press the **WX Overlay** Softkey twice to enable/disable the display of SiriusXM NEXRAD Data.

### Changing the NEXRAD coverage area (PFD Navigation Maps):

- 1) From PFD Home, touch the **PFD Map Settings** Button.
- 2) Scroll as needed and touch the **NEXRAD Data Settings** Button in the Overlays Tab.
- 3) Touch the **NEXRAD Region** Button (displaying either 'USA' or 'Canada' in cyan).
- 4) Touch the **USA** or **Canada** Button, or touch **Back** or **Home** to exit without changing the coverage area.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCs
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

Flight Instruments

## Changing the NEXRAD coverage area (PFD Navigation Maps):

- 1) Press the **PFD Map Settings** Softkey.
- 2) Press the **Data Link Settings** Softkey.
- 3) Press the **Data Link** Softkey as needed to cycle among the options (SiriusXM, Connex, and FIS-B) until 'SiriusXM' appears on the softkey.
- 4) Press the **Source** Softkey. Each selection of the softkey changes the source 'USA' or 'Canada', which is displayed in cyan on the softkey.

EAS

Nav/Com/XPDR/Audio

## Displaying Time-Lapse NEXRAD Animation on the 'SiriusXM Weather' Pane:

- 1) From MFD Home, touch **Weather > Weather Selection > SiriusXM Weather > SiriusXM Settings**.
- 2) If necessary, touch the **NEXRAD** Button in the 'Background' Window to enable the display of NEXRAD weather data.
- 3) Touch the **NEXRAD Settings** Button.
- 4) Touch the **Animation** Button to enable/disable the animation.
- 5) When finished, touch **Back** or **Home**.

Flight Management

Hazard Avoidance

## Displaying Time-Lapse NEXRAD Animation on the 'Navigation Map' Pane:

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Scroll if necessary and touch the **NEXRAD Data Settings** Button.
- 4) Touch the **NEXRAD Animation** Button to enable/disable the animated NEXRAD information.
- 5) When finished, touch **Back** or **Home**.

AFCS

Additional Features

## Displaying Time-Lapse NEXRAD Animation on the (PFD Navigation Maps):

- 1) If necessary, enable the Inset Map.
- 2) From PFD Home, touch the **PFD Map Settings** Button.
- 3) Scroll and touch the **NEXRAD Data Settings** Button.
- 4) Touch the **NEXRAD Animation** Button to enable/disable the animated NEXRAD information on the selected PFD Navigation Map.

Abnormal Operation

Annun/Alerts

## NEXRAD (FIS-B)

Appendix

### Displaying the NEXRAD weather product on the 'FIS-B Weather' Pane (CONUS or Regional):

- 1) From MFD Home, touch **Weather > Weather Selection > FIS-B Weather > FIS-B Settings**.
- 2) Touch the **CONUS NEXRAD** or **Regional NEXRAD** Buttons in the 'Overlays' Window.

Index

**Displaying FIS-B weather information (Navigation Map Pane):**

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Scroll as needed and touch the **NEXRAD Data** Button. Touch either CONUS, Regional, or Combined to enable/disable the display of the NEXRAD weather product.
- 4) When finished, touch the **Back** Button or the **Home** Button.

**Selecting a Data Link Weather source for the (PFD Navigation Maps):**

- 1) Press the **PFD Map Settings** Softkey.
- 2) Press the **Data Link Settings** Softkey.
- 3) Press the **Data Link** Softkey. Each selection of the softkey changes the source, which is displayed in cyan on the softkey.

**Displaying NEXRAD weather information (PFD Navigation Maps):**

With FIS-B Data Link Weather as the selected weather source.

- 1) Press the **PFD Map Settings** Softkey.
- 2) Press the **WX Overlay** Softkey as needed to cycle among the options until the desired data link weather source is displayed.

**Precipitation (Garmin Connex)**

**Displaying Garmin Connex Radar information on the 'Connex Weather' Pane:**

- 1) From MFD Home, touch **Weather > Weather Selection > Connex Weather > Connex Settings**.
- 2) Touch the **Radar** Button in the 'Overlays' Window.

**Displaying Garmin Connex Radar information on the 'Navigation Map' Pane:**

- 1) From MFD Home, Touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** tab.
- 3) Scroll if needed and touch the **Connex Radar** Button.

**Displaying Garmin Connex Radar information (PFD Navigation Maps):**

- 1) From PFD Home, touch **PFD Map Settings**.
- 2) Scroll in the Overlays Tab, and touch the **Connex Radar** Button.

**Displaying Garmin Connex Radar information overlay (PFD Navigation Maps):**

With Connex Data Link Weather as the selected weather source.

- 1) Press the **PFD Map Settings** Softkey.
- 2) Press the **WX Overlay** Softkey. Each press cycles through an available option, displayed in cyan. When 'Connex' is displayed, Connex Radar is enabled. When 'Off' is displayed, Connex Radar is disabled.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCs
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

## DATA LINK WEATHER PRODUCTS

### Echo Tops (SiriUSXM)

**Enabling/Disabling Echo Tops information:**

- 1) From MFD Home, touch **Weather > Weather Selection > SiriusXM Weather > SiriusXM Settings**.
- 2) Touch the **Echo Tops** Button in the 'Background' window.

### Cloud Tops (SiriusXM)

**Enabling/Disabling Cloud Tops information:**

- 1) From MFD Home, touch **Weather > Weather Selection > SiriusXM Weather > SiriusXM Settings**.
- 2) Touch the **Cloud Tops** Button in the 'Background' Window.

### Data Link Lightning (SiriusXM, Garmin Connex)

**Enabling/Disabling 'Data Link' Lightning information (SiriusXM or Connex Weather Pane):**

- 1) From MFD Home, touch **Weather > Weather Selection > 'Data Link' Weather > 'Data Link' Weather Settings**.
- 2) Touch the **Lightning** Button in the 'Overlays' Window.

**Displaying 'Data Link' Lightning information on the 'Navigation Map' Page:**

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Scroll as needed and touch the **SiriusXM Lightning** Button.

**Displaying 'Data Link' Lightning information on PFD maps:**

- 1) From PFD Home, touch **PFD Map Settings**.
- 2) If necessary, touch either the **HSI Map** or **PFD Inset Map** Button to access overlays buttons.
- 3) Scroll if necessary in the 'Overlays' Tab, and touch the **SiriusXM Lightning** Button.

**Or:**

- 1) If necessary, enable the HSI Map or PFD Inset Map to access SiriusXM softkeys.
- 2) Press the **PFD Map Settings** Softkey.
- 3) Press the **SiriusXM Lightning** Softkey.

Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCS

Additional Features

Abnormal Operation

Annun/Alerts

Appendix

Index

## Storm Cell Movement (SiriusXM)

### Enabling/Disabling Storm Cell Movement Information on the 'SiriusXM Weather' Pane:

- 1) From MFD Home, touch **Weather > Weather Selection > SiriusXM Weather > SiriusXM Settings**.
- 2) Touch the **Storm Cell Movement** Button in the 'Overlays' Window.

### Displaying Storm Cell Movement Information on the 'Navigation Map' Panes:

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Scroll as needed and touch the NEXRAD Data **Settings** Button.
- 4) Touch the **Storm Cell Movement** Button. When button annunciator is green, the system shows Storm Cell Movement with the NEXRAD weather product on navigation map panes. When button annunciator is gray, system will not show the Storm Cell Movement weather product on navigation map panes.

### Displaying Storm Cell Movement with NEXRAD information (PFD Navigation Maps):

- 1) From PFD Home, touch **PFD Map Settings**.
- 2) If necessary, touch either the **HSI Map** or **Inset Map** Button to access overlays buttons.
- 3) Touch the NEXRAD Data **Settings** Button.
- 4) Touch the **Storm Cell Movement** Button.
- 5) When finished, touch **Back** or **Home**.

**Or:**

- 1) With the Inset Map or HSI Map shown, press the **PFD Map Settings** Softkey.
- 2) Press the **Data Link Settings** Softkey.
- 3) Press the **Storm Cell Movement** Softkey.
- 4) When finished, press the **Back** Softkey.

## Infrared Satellite (Garmin Connex)

### Displaying Cloud Tops information on the 'Connex Weather' Pane:

- 1) From MFD Home, touch **Weather > Weather Selection > Connex Weather > Connex Settings**.
- 2) Touch the **IR Satellite** Button in the 'Overlays' Window.

## SIGMETs and AIRMETs

### Enabling/disabling AIRMET and SIGMET information:

- 1) From MFD Home, touch **Weather > Weather Selection > 'Data Link' Weather > 'Data Link' Weather Settings**.
- 2) Scroll as needed and touch the **AIRMETs** and/or **SIGMETs** Buttons in the 'Overlays' Window.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCs
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

- 3) To view the text of an AIRMET or SIGMET, press the lower knob and move the map pointer with the large and small upper knobs or **Touchpad** over the SIGMET or AIRMET until it is highlighted.
- 4) Touch the **Info** Button to show the AIRMET / SIGMET Information Screen for the selected AIRMET or SIGMET.
- 5) Scroll as needed to view full text of the report, then touch the **Back** Button or the **Home** Button.

## METARs and TAFs

### Showing METAR text on the 'SiriusXM Weather' Pane:

- 1) From MFD Home, touch **Weather > Weather Selection > 'Data Link' Weather > 'Data Link' Weather Settings**.
- 2) Touch the **METARs** Button in the 'Overlays' Window. The system displays graphical METAR flags at available reporting stations when METARs are enabled (button annunciator is green).
- 3) To view METAR text, press the lower knob and move the map pointer with the large and small upper knobs or **Touchpad** over a METAR flag. The system displays the original METAR text near the METAR flag. If the display has not yet received the METAR text associated with the selected flag, it displays "Waiting for METAR text." until it receives this information.

### Showing METAR information on the 'Navigation Map' Pane:

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Touch the **Graphical METARs** Button. The system displays METAR flags at available reporting stations when METARs are enabled (button annunciator is green).
- 4) To view METAR text, press the lower knob and move the map pointer with the large and small upper knobs or **Touchpad** over a METAR flag. The system displays the original METAR text near the METAR flag. If the display has not yet received the METAR text associated with the selected flag, it displays "Waiting for METAR text." until it receives this information.

### Showing METAR information (PFD Navigation Maps):

- 1) From PFD Home, touch **PFD Map Settings**.
- 2) If necessary, touch the **HSI Map** or **PFD Inset Map** Button to access overlays buttons.
- 3) Scroll and touch the **Graphical METARs** Button. METAR flags appear on the map.
- 4) If the PFD Inset Map is shown, use the upper and lower knobs on the Touchscreen Controller to pan the Map Pointer over the desired METAR flag to view the original METAR text. METAR text is not available on the HSI map.

## Viewing textual METAR/TAF information on the Airport Information Screen:

- 1) From MFD Home, touch **Waypoint Info > Airport**.
- 2) If the desired airport identifier and name already appears in the airport button near the top of the screen, go to step 5.
- 3) Touch the airport button.
- 4) Enter the airport identifier using the keypad or the large and small upper knobs, then touch the **Enter** Button or push the upper knob.
- 5) Touch the **Weather** Tab.
- 6) Touch a button for an available weather product (**METAR Raw, METAR Decoded, TAF Raw, TAF Decoded**). If a button is subdued, that weather product is currently unavailable for the selected airport.
- 7) Scroll as necessary to view the weather text. Note raw weather products may provide additional information not present in the decoded version.

## Surface Analysis and City Forecast (SiriusXM)

### Displaying Surface Analysis and City Forecast information:

- 1) From MFD Home, touch **Weather > Weather Selection > SiriusXM Weather > SiriusXM Settings**.
- 2) Scroll as needed in the 'Overlays' Window and touch the **Surface Conditions** Button.
- 3) If needed, touch the Surface Conditions forecast period button (to the right of the **Surface Conditions** Button) and select from **Current, 12 Hours, 24 Hours, 36 hours, or 48 Hours** forecast periods from the selection window.

## Freezing Level (SiriusXM)

### Displaying Freezing Level information:

- 1) From MFD Home, touch **Weather > Weather Selection > SiriusXM Weather > SiriusXM Settings**.
- 2) Scroll as needed in the 'Overlays' Window and touch the **Freezing Level** Button.

## Winds Aloft

### Displaying Winds Aloft data:

- 1) From MFD Home, touch **Weather > Weather Selection > 'Data Link' Weather > 'Data Link' Weather Settings**.
- 2) Scroll as needed in the 'Overlays' Window and touch the **Winds Aloft** Button.
- 3) To change the selected winds aloft altitude, touch the Winds Aloft altitude button and select the desired winds aloft altitude from Surface to 42,000 feet MSL.

Flight Instruments

## Enabling/Disabling VSD (containing winds aloft data):

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Inset Window** Tab.
- 3) Touch the **VERT Situation Display** Button to enable/disable the VSD Inset Window. If the winds aloft weather product icon does not appear in the inset window, continue with this procedure to enable winds aloft information.
- 4) Touch the VERT Situation Display **Settings** Button.
- 5) Touch the **Winds** Button. When enabled, the system displays the winds aloft weather product inside the Vertical Situation Display.

EAS

Nav/Com/XPDR/Audio

## County Warnings (SiriusXM)

### Displaying County Warning information:

- 1) From MFD Home, touch **Weather > Weather Selection > SiriusXM Weather > SiriusXM Settings**.
- 2) Scroll as needed in the 'Overlays' Window and touch the **County Warnings** Button.
- 3) To view additional information (such as county name), press the lower knob to activate the map pointer and turn the large and small upper knobs or use the **Touchpad** to select a County Warning. County Warning information appears in a box near the map pointer.
- 4) When finished, press either knob to deactivate the map pointer.

Flight Management

Hazard Avoidance

AFCs

## Cyclone Warnings (SiriusXM)

### Enabling/Disabling cyclone (hurricane) weather product:

- 1) From MFD Home, touch **Weather > Weather Selection > SiriusXM Weather > SiriusXM Settings**.
- 2) Scroll as needed in the 'Overlays' Window and touch the **Cyclone Warnings** Button.

Additional Features

Abnormal Operation

## Icing (CIP & SLD) (SiriusXM)

### Displaying Icing data:

- 1) From MFD Home, touch **Weather > Weather Selection > SiriusXM Weather > SiriusXM Settings**.
- 2) Scroll as needed in the 'Overlays' Window and touch the **Current Icing Potential** Button to enable/disable icing information.
- 3) Touch the altitude button (to the right of the **Current Icing Potential** annunciator Button) and scroll to and touch the desired altitude Button (from 1,000 feet up to 30,000 feet.)

Annun/Alerts

Appendix

Index

## Turbulence (SiriusXM)

### Displaying Turbulence data:

- 1) From MFD Home, touch **Weather > Weather Selection > SiriusXM Weather > SiriusXM Settings**.
- 2) Scroll in the 'Overlays' Window and touch the **Turbulence** Button.
- 3) Touch the Turbulence altitude button (to the right of the **Turbulence** annunciator button) and touch to select an altitude from which to display turbulence data (from 21,000 feet up to 45,000 feet).

## PIREPs and AIREPs

### Displaying PIREP or AIREP information:

- 1) From MFD Home, touch **Weather > Weather Selection > 'Data Link' Weather > 'Data Link' Weather Settings**.
- 2) Scroll in the 'Overlays' Window as needed and touch the **AIREPs** or **PIREPs** Buttons.
- 3) To view PIREP/AIREP text, push the lower knob to activate the map pointer and use the large and small upper knobs or **Touchpad** to highlight a PIREP or AIREP symbol, then touch the **Info** Button.
- 4) Scroll as needed through the report text, then touch the **Back** Button or the **Home** Button.

## Temporary Flight Restrictions (TFRs)

### Enabling/disabling TFR information on the 'SiriusXM Weather' Pane:

- 1) From MFD Home, touch **Weather > Weather Selection > 'Data Link' Weather > 'Data Link' Weather Settings**.
- 2) Scroll in the 'Overlays' Window as needed and touch the **TFRs** Button.
- 3) To view TFR text, push the lower knob to activate the map pointer and move the pointer with the large and small upper knobs or **Touchpad** until the selected TFR is highlighted. The TFR text appears near the map pointer for the selected TFR.
- 4) When finished, push either knob, or touch the **Back** Button or the **Home** Button.

### Enabling/disabling TFR information on the 'Navigation Map' Pane:

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Scroll and touch the **TFR** Button.

### Enabling/disabling TFR information (Navigation Maps)

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Scroll to find the **TFR** Button, and touch to enable/disable TFR information.

Flight Instruments

## Selecting the maximum map range to display TFR information:

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Touch the TFR Range Button.
- 4) Scroll as necessary and touch the maximum navigation map range to display TFR information.

EAS

Nav/Com/XPDR/Audio

## STORMSCOPE LIGHTNING DETECTION SYSTEM



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

Flight Management

Hazard Avoidance

## USING THE STORMSCOPE PANE

### Viewing the 'Stormscope®' Pane:

- 1) From MFD Home, touch the **Weather** Button. Button is highlighted and becomes **Weather Selection** Button. Selected display pane shows a weather pane. If a weather pane other than 'Stormscope®' Pane is shown (such as 'Weather Radar' in the pane title), continue with the procedure to view the 'Stormscope®' Pane.
- 2) Touch the **Weather Selection** Button. The 'Weather Selection' Screen appears.
- 3) Touch the **Stormscope** Button. Button is highlighted and becomes **Stormscope Settings** Button. The system shows the 'Stormscope®' Pane.
- 4) If necessary, touch the **Stormscope Settings** Button to access Stormscope controls.

AFCs

Additional Features

Abnormal Operation

### Selecting a Stormscope Operating Mode on the 'Stormscope®' Pane:

- 1) From MFD Home, touch **Weather > Weather Selection > Stormscope > Stormscope Settings**.
- 2) Touch either the **Cell** Button or the **Strike** Button. Button annunciator is green for currently selected mode.

Annun/Alerts

### Manually clearing Stormscope information:

- 1) From MFD Home, touch **Weather > Weather Selection > Stormscope > Stormscope Settings**.

**Or:**

- a) From MFD Home, touch **Map > Map Selection > Map Settings**.
- b) If necessary, touch the **Sensor** Tab.
- c) Scroll and touch the Stormscope Lightning **Settings** Button.
- 2) Touch the **Clear Stormscope Lightning** Button.

Appendix

Index

## STORMSCOPE INFORMATION ON NAVIGATION MAPS

### Enabling/disabling Stormscope information on 'Navigation Map' Panes:

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Scroll as needed and touch the **Stormscope Lightning** Button to enable/disable Stormscope lightning on the 'Navigation Map' Pane.

### Selecting a Stormscope mode for the 'Navigation Map' Pane:

- 1) From MFD Home, **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Scroll as needed and touch the Stormscope Lightning **Settings** Button.
- 4) Touch either the **Cell** Button or the **Strike** Button. Button annunciator is green for currently selected mode.
- 5) When finished, touch **Back** or **Home**.

### Selecting a maximum Stormscope map range on the 'Navigation Map' Pane:

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Scroll as needed and touch the Stormscope Lightning **Settings** Button.
- 4) Touch the **Stormscope** Button.
- 5) Touch the Stormscope range button (current range setting displayed in cyan).
- 6) Scroll as needed and touch a desired map range setting from the list.
- 7) When finished, touch the **Back** Button or the **Home** Button.

### Enabling/Disabling Stormscope Lightning Information (PFD Navigation maps):

- 1) From PFD Home, touch **PFD Map Settings**.
- 2) If necessary, touch either the **HSI Map** or **Inset Map** Button to allow for selection of map overlays.
- 3) Scroll if necessary, and touch the **Stormscope Lightning** button to enable/disable Stormscope information.

**Or:**

- 1) With either the Inset Map or HSI Map shown, press the **PFD Map Settings** Softkey.
- 2) Press the **Stormscope** Softkey.

### Selecting a Stormscope operating mode (PFD Navigation maps):

- 1) From PFD Home, touch **PFD Map Settings**.
- 2) If necessary, touch either the **HSI Map** or **Inset Map** Button to allow for selection of map overlays.

Flight Instruments

- 3) Touch the Stormscope Lightning **Settings** Button.
- 4) Touch either the **Cell** or **Strike** Buttons.

### Clearing Stormscope Lightning (PFD Navigation maps):

EAS

- 1) From PFD Home, touch the **PFD Map Settings** Button.
- 2) If necessary, touch either the **HSI Map** or **Inset Map** Button to allow for selection of map overlays.
- 3) Touch the Stormscope Lightning **Settings** Button.
- 4) Touch the **Clear Stormscope Lightning** Button.

Nav/Com/XPDR/Audio

### Selecting a maximum Stormscope map range (PFD Navigation maps):

Flight Management

- 1) From PFD Home, touch **PFD Map Settings**.
- 2) If necessary, touch either the **HSI Map** or **Inset Map** Button to allow for selection of map overlays.
- 3) Scroll as needed and touch the Stormscope Lightning **Settings** Button.
- 4) Touch the **Stormscope** Button (current range setting displayed in cyan).
- 5) Scroll as needed and touch a desired map range setting from the list.

Hazard Avoidance

## AIRBORNE COLOR WEATHER RADAR

AFCS

### BASIC ANTENNA TILT AND RANGE SETUP

Additional Features

Proper antenna tilt management techniques are a major factor for the successful use of any airborne weather system. If the antenna tilt angle is set too low, the radar display will show excessive ground returns, making it difficult for the pilot to distinguish adverse weather phenomena from ground clutter. If the antenna tilt angle is set too high, the radar beam will overscan the top of the adverse weather. In either of these examples, the flight crew would be unable to adequately recognize critical weather information.

Abnormal Operation

The following discussion is a simple method for setting up the weather radar antenna tilt for most situations. It is not to be considered an all encompassing setup that works in all situations, but this method does provide good overall parameters for the monitoring of intense weather threats. Correct application of tilt angle is directly dependent on the storms height and intensity and its relative distance from own ship. Adjusting the airborne weather radar tilt angle setting until minimal ground clutter is displayed is the simplest setup method for general surveillance of precipitation returns. For ranges of up to 80 NM this ground clutter should appear on the outer portion of the radar display. At ranges greater than 80 NM, the displayed ground clutter will move lower on the radar display due to the curvature of the earth. By displaying a minimal amount of ground clutter on the installed weather radar system the flight crew can ensure the system is operating and the air mass above the ground clutter is being scanned.

Annun/Alerts

Appendix

Index

When a strong a weather return is detected within the ground clutter it must be further investigated to determine the source of this return. Further tilt angle adjustment of the airborne

radar may be required to explore this return. Adjusting the radar tilt angle upwards can reveal the radar tops of this return, while adjusting the tilt angle downwards may be necessary to investigate the strongest intensity of a particular return.

Effective airborne weather radar range management during all phases of flight should be based on the volume of air to be scanned for returns ahead of own aircraft, to allow sufficient time needed to investigate, analyze, decide, and tactically maneuver around these hazardous weather returns. Longer ranges may be used to tactically identify intense weather returns that may warrant further investigation, and closer ranges may be used during the investigation process.

There is no one tilt or range setting that works for all situations. It is best to remember that active tilt and range management is necessary to identify and then investigate returns.



**NOTE:** *When a strong weather return is displayed on the weather radar, the tilt angle may be adjusted to explore return intensities at various altitudes to aid in determination of radar tops.*



**NOTE:** *It is the sole responsibility of the flight crew to avoid areas of hazardous weather by adequate margins.*



**WARNING:** *Overflight of thunderstorms should not be considered safe, as extreme turbulence may exist significantly above observed returns.*

## Managing Tilt Angle and Range

There are many factors to be considered in order to become proficient at using airborne weather radar in all situations. The following setup provides a good starting point for the practical application of radar tilt management.

Radar tilt management can easily be remembered by use of the 1-10-1000 rule. The summary of this rule is the fact that when the flight crew changes the radar tilt angle by 1 degree the resulting change will displace the center of the beam 1000 feet vertically at a range of 10 nautical miles. Applying the 1-10-1000 rule to various distances provides the flight crew with the ability to determine how much a 1-degree change in tilt will move the beam vertically. The radar tilt angle is capable of being adjusted in one-quarter degree increments, allowing for greater accuracy in the placement of the beam center at desired altitudes.

The 10-inch phased array antenna has a certified beam width of 10 degrees, which means the beam is 10,000 feet in height (and width) at 10 NM and 100,000 feet in height (and width) at 100 NM.

- At 20 NM range the beam height changes by 2,000 ft. per degree of tilt change.
- At 40 NM range the beam height changes by 4,000 ft. per degree of tilt change.
- At 100 NM range the beam height changes by 10,000 ft. per degree of tilt change.

Additionally, setting the tilt to UP 4.00 degrees places the bottom of the certified beam at the same altitude as the aircraft, which is a technique used to determine whether radar tops reach your current altitude

Phase of Flight	Tilt Angle	Range Setting	Notes
<b>Taxi</b>	Up 7.50° to 10.00°	20 NM	Activate weather mode when clear of ramp area.
<b>Takeoff / Initial Climb</b>	Up 7.50° to 10.00° Altitude Compensated Tilt On	60 NM	If precipitation is observed in the departure path, gain can be reduced to aid in identification of intense returns.
<b>10,000 Ft. AGL</b>	Up 5.00° Altitude Compensated Tilt On	60 - 80 NM	Range setting is dependent upon ground speed and time available for deviations.
<b>Cruise</b>	Tilt to Minimize Clutter Altitude Compensated Tilt On	60 - 120 NM	Range setting is dependent upon ground speed and time available for deviations. Tilt angle set to show minimal ground clutter.
<b>Descent To 10,000 FT</b>	Tilt to Minimize Clutter Altitude Compensated Tilt On	60 - 120 NM	Range setting is dependent upon ground speed and time available for deviation.
<b>Descent Below 10,000 FT</b>	Up 7.50° to 10.00° Altitude Compensated Tilt On	40 - 60 NM	Range setting is dependent upon ground speed and time available for deviation. Tilt angle set to show ground clutter in outer 1/3 of radar display.
<b>Approach</b>	Up 7.50° to 10.00° Altitude Compensated Tilt On	20 NM	These settings allow for observation of the approach area and the missed approach holding area.

### Typical Tilt Settings by Phase of Flight

#### Altitude Compensated Tilt

The Altitude Compensated Tilt feature enables the equipped weather radar system to automatically adjust the antenna beam tilt angle setting based on changes of the aircraft's altitude. For example, if the ACT feature is enabled and the aircraft climbs, the system compensates by adjusting the tilt downward. As the aircraft descends with ACT enabled, the system adjusts the antenna tilt upward. The system uses the ground as a reference for adjusting the antenna tilt angle setting with ACT enabled.

## WEATHER DISPLAY AND INTERPRETATION

Weather Mode Color	Intensity (in dBZ)
Black	< 23 dBZ
Green	23 dBZ to < 33 dBZ
Yellow	33 dBZ to < 41 dBZ
Red	41 dBZ and greater
Magenta	TURB- (Optional) Turbulence Detection uses the color magenta to show areas of rain or hail that may also contain turbulence.

### Precipitation Intensity Levels

## Weather Radar Operation



**WARNING:** Do not operate the weather radar in a transmitting mode when personnel or objects are within the MPEL boundary.

### Showing Weather Radar Information on the Weather Radar Pane:

- 1) From MFD Home, touch **Weather > Weather Selection > WX RADAR > WX RADAR Settings**.
- 2) Touch the **Radar On** Button. Radar options are enabled when button annunciator is green, off when gray.
- 3) Touch the **Display** Button.
- 4) Touch the **Weather** Button. If the aircraft is airborne, the radar begins transmitting, and the Radar Mode indicates 'Weather'.
- 5) If the aircraft is on the ground, the Touchscreen Controller displays a prompt to confirm radar activation. Touch the **OK** Button to begin transmitting, or touch the **Cancel** Button to return to the 'Weather Radar Settings' screen, and the radar remains in Standby Mode.
- 6) Turn the lower knob to select the desired map range.
- 7) The system displays a horizontal scan. To change to a vertical scan, refer to the following procedure, "Vertically scanning a storm cell."

### Vertically scanning a storm cell:

- 1) From MFD Home, touch **Weather > Weather Selection > WX RADAR > WX RADAR Settings**.
- 2) While on a Horizontal Scan view, touch the **Bearing Line** Button if necessary to show the Bearing Line on the 'Weather Radar' Pane.
- 3) Press the upper knob. This enables the large upper knob to set the Bearing Line position and displays a bearing and tilt legend.

Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCS

Additional Features

Abnormal Operation

Annun/Alerts

Appendix

Index

- 4) Turn the large upper knob to place the Bearing Line on the desired storm cell or other area to be vertically scanned.
- 5) Touch the **Scan Mode** Button.
- 6) Touch the **Vertical** Button. The 'Weather Radar' Pane shows a vertical scan.
- 7) Turn the large upper knob to move the bearing line a few degrees left or right. When finished, push the knob to disable bearing line adjustment.
- 8) Turn the lower knob to adjust the map range as needed.
- 9) To select a new area to be vertically scanned, return to the Horizontal scan mode.
  - a) Touch the **Scan Mode** Button.
  - b) Touch the **Horizontal** Button.
  - c) Return to Step 2 of this procedure.

### Adjusting antenna tilt on the Weather Radar Pane:

- 1) Push the upper knob to activate the tilt adjustment function. The Weather Radar displays a bearing and tilt knob legend.
- 2) Turn the small upper knob to adjust the antenna tilt angle.
- 3) When finished, push the upper knob to disable the tilt adjustment function and remove the legend.

### Enabling/Disabling Altitude Compensated Tilt (ACT):

- 1) If necessary, refer to the previous procedures to initially set the antenna tilt angle to the desired setting.
- 2) From MFD Home, touch **Weather > Weather Selection > WX RADAR > WX RADAR Settings**.
- 3) Touch the **Altitude Comp Tilt** Button. The Radar Status indicator shows 'Altitude Comp Tilt On'.

### Adjusting gain on the Weather Radar Pane:

- 1) From MFD Home, touch **Weather > Weather Selection > WX RADAR > WX RADAR Settings**.
- 2) If the **Calibrated GAIN** button annunciator is green (enabled), touch the **Calibrated Gain** Button to disable Calibrated Gain. **Calibrated GAIN** Button annunciator is gray when disabled.
- 3) Touch and slide the Gain slider.

**Or:**

Touch the + pointer to increase gain, or - pointer to decrease gain. Each touch increases or decreases the gain by one increment. A gray bar across the slider bar serves as a reference to the calibrated gain setting position.

- 4) To return to the calibrated gain setting, touch the **Calibrated GAIN** Button.

### Enabling Sector Scanning:

- 1) From MFD Home, touch **Weather > Weather Selection > WX RADAR > WX RADAR Settings**.
- 2) While in Horizontal Scan Mode, touch the **Bearing Line** Button if necessary to show the Bearing Line on the 'Weather Radar' Pane.
- 3) Press the upper knob to enable bearing pointer adjustment.
- 4) Turn the large upper knob to place the Bearing Line in the desired position. The location of the Bearing Line will become the center point of the Sector Scan.
- 5) Touch the **Sector Scan** Button.
- 6) Touch a button to select a 20°, 40°, 60°, or touch the **FULL** Button to resume a 90° scan.
- 7) If desired, readjust the Bearing Line as discussed previously to change the center of the Sector Scan.
- 8) Press the upper knob again to remove the bearing selection function.

### Enabling/Disabling Turbulence Detection during a Horizontal Scan:

- 1) From MFD Home, touch **Weather > Weather Selection > WX RADAR > WX RADAR Settings**.
- 2) To activate or deactivate the turbulence detection feature, touch the **Turbulence Detection** Button. Turbulence detection is enabled when button annunciator is green; turbulence detection is disabled when button annunciator is gray. The system indicates the current turbulence detection feature status in the upper right of the 'Weather Radar' Pane.

### Enabling/Disabling WATCH display feature:

- 1) From MFD Home, touch **Weather > Weather Selection > WX RADAR > WX RADAR Settings**.
- 2) To activate or deactivate the WATCH feature, touch the **WX WATCH** Button.

### Enabling/disabling WX Alert Indication and System Message:

- 1) From MFD Home, touch **Weather > Weather Selection > WX RADAR > WX RADAR Settings**.
- 2) To enable or disable the WX Alert system message, touch the **WX Alert** Button. WX Alert system messages are enabled when button annunciator is green, and disabled when annunciator is gray.

### Enabling/Disabling Ground Clutter Suppression:

- 1) From MFD Home, touch **Weather > Weather Selection > WX RADAR > WX RADAR Settings**.
- 2) To enable or disable the ground clutter suppression feature, touch the **GND Clutter Suppression** Button. Ground clutter suppression is enabled when button annunciator is green; ground clutter suppression is disabled when annunciator is gray.

## GROUND MAPPING AND INTERPRETATION

Ground Map Mode Color	Intensity
Black	0 dB
Cyan	3 dB to < 13 dB
Yellow	13 dB to < 21 dB
Magenta	21 dB to < 29 dB
Blue	29 dB and greater

Ground Radar Return Intensity Levels

### Operation in Ground Map Mode

- 1) From MFD Home, touch **Weather > Weather Selection > WX RADAR > WX RADAR Settings**.
- 2) Touch the **Display** Button.
- 3) Touch the **Ground** Button to place the radar in Ground Map mode.
- 4) Press the upper knob to activate the antenna tilt selection function.
- 5) Turn the small upper knob to select the desired antenna tilt angle.
- 6) When ground returns are shown at the desired distance, press the upper knob to disable the tilt adjustment function.

## ADDITIONAL RADAR DISPLAYS

### Enabling/disabling the display of Weather Radar information on Navigation Map Panes:

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Touch the **Weather Radar** Button to enable or disable the display of weather radar information on the selected navigation map pane.
- 4) To access controls for weather radar information on the 'Navigation Map' Pane, touch the Weather Radar **Settings** Button.

### Adjusting bearing or antenna tilt angle on Navigation Map Panes:

- 1) With the airborne weather overlay enabled on the 'Navigation Map' Pane, push the upper knob. The tilt and bearing legend appears in the lower-left corner of the maps. The Touchscreen Controller displays the 'Weather Radar Settings' Screen.
- 2) To adjust radar bearing, turn the large upper knob. A dashed white bearing line appears during adjustment and momentarily after adjustment.
- 3) To increase antenna tilt angle, turn the small upper knob clockwise. To decrease antenna tilt angle, turn the small upper knob counter-clockwise.
- 4) When finished with these adjustments, push the upper knob. The Touchscreen Controller returns to the 'Map Settings' Screen.

### Enabling/disabling the Airborne Weather Radar Overlay on the HSI Map:

- 1) With the HSI Map enabled, press the **PFD Map Settings** Softkey.
- 2) Press the **WX Overlay** Softkey as needed to cycle among the options until 'WX Radar' appears on the softkey.

### Selecting Airborne Weather Standby or On Mode on the HSI Map:

- 1) With the weather radar in the 'On' Mode on the HSI Map, press the **WX Radar Controls** Softkey.
- 2) To select between 'Standby' or 'On' Modes, press the **Mode** Softkey.

### Selecting Airborne Weather or Ground Mode on the HSI Map:

- 1) With the weather radar in the 'On' Mode on the HSI Map, press the **WX Radar Controls** Softkey.
- 2) To select between 'Weather' and 'Ground' Modes, press the **Display** Softkey.

### Adjusting antenna tilt angle on the HSI Map:

- 1) With the weather radar in the 'On' Mode on the HSI Map, press the **WX Radar Controls** Softkey.
- 2) Press either the **Tilt Up** or **Tilt Down** Softkey to adjust the antenna tilt angle in the respective direction. The current antenna tilt angle setting appears on the HSI Map.

### Adjusting Airborne Weather gain on the HSI Map:

- 1) With the weather radar in the 'On' Mode on the HSI Map, press the **WX Radar Controls** Softkey.
- 2) Press the **Gain +** or **Gain -** Softkeys to adjust the gain setting. Each softkey press adjusts the gain in 0.5 increments.

### Enabling/disabling Turbulence Detection or Ground Clutter Suppression on the HSI Map:

- 1) With the weather radar in the 'On' Mode on the HSI Map, press the **WX Radar Controls** Softkey.
- 2) Press the **GND Clutter Suppression** Softkey to enable/disable Ground Clutter Suppression.
- 3) To enable the 'Turbulence Detection' feature, press the **Features** Softkey.
- 4) Press the **Turbulence Detection** Softkey to enable/disable **Turbulence Detection** feature.

### Enabling/Disabling WATCH display feature on the HSI Map:

- 1) With the weather radar in the 'On' Mode on the HSI Map, press the **WX Radar Controls** Softkey.
- 2) To enable the 'WATCH' feature, press the **Features** Softkey.
- 3) Press the **WX WATCH** Softkey to enable/disable the **WATCH** feature.

Flight Instruments

## Enabling/disabling Altitude Compensated Tilt on the HSI Map:

- 1) With the weather radar in the 'On' Mode on the HSI Map, press the **WX Radar Controls** Softkey.
- 2) Press the **Features** Softkey.
- 3) Press the **Altitude COMP Tilt** Softkey to enable/disable the **Altitude Compensated Tilt** feature.

EAS

Nav/Com/XPDR/Audio

## Enabling/disabling the Airborne Weather Radar Overlay on the HSI Map (PFD in Split Mode):

- 1) If necessary, enable the HSI Map on the PFD.
- 2) Press the **PFD Map Settings** Softkey.
- 3) Press the **Map Overlays** Softkey.
- 4) Press the **WX Overlay** Softkey to cycle through an overlay setting with each softkey press until 'WX Radar' is displayed in cyan on the softkey.

Flight Management

Hazard Avoidance

## Selecting Airborne Weather Standby or On Mode on the HSI Map (PFD in Split Mode):

- 1) If necessary, enable the HSI Map on the PFD.
- 2) Press the **PFD Map Settings** Softkey.
- 3) Press the **WX Radar Controls** Softkey.
- 4) To change between Standby Mode or On Mode, press the **Mode** Softkey. The selected mode appears in cyan text on the softkey.
- 5) With the weather radar in On Mode, press the **Display** Softkey to change between Weather Mode and Ground Mode. The selected mode appears in cyan text on the softkey.

AFCs

Additional Features

## Adjusting antenna tilt angle on the HSI Map (PFD in Split Mode):

- 1) If necessary, enable the HSI Map on the PFD.
- 2) Press the **PFD Map Settings** Softkey.
- 3) Press the **WX Radar Controls** Softkey.
- 4) Press either the **Tilt Up** or **Tilt Down** Softkey as needed to increase/decrease the antenna tilt angle in 0.25° increments. Press and hold the softkey to continue adjustment while the softkey is held.

Abnormal Operation

Annun/Alerts

## Adjusting Airborne Weather gain on the HSI Map (PFD in Split Mode):

- 1) If necessary, enable the HSI Map on the PFD.
- 2) Press the **PFD Map Settings** Softkey.
- 3) Press the **WX Radar Controls** Softkey.
- 4) Press the **Gain/More** Softkey.
- 5) Press either the **Gain -** or **Gain +** Softkey once to decrease/increase the gain in increments of 0.5, or press and hold the softkey to continue adjustment while the softkey is held. A manual setting of '0.0' is equivalent to the calibrated gain setting.

Appendix

Index

## Enabling/disabling Altitude Compensated Tilt or Turbulence Detection on the HSI Map (PFD in Split Mode):

- 1) If necessary, enable the HSI Map on the PFD.
- 2) Press the **PFD Map Settings** Softkey.
- 3) Press the **WX Radar Controls** Softkey.
- 4) Press the **Gain/More** Softkey.
- 5) To enable/disable turbulence detection, press the **Turbulence Detection** Softkey.
- 6) To enable/disable Altitude Compensated Tilt, press the **Features** Softkey.
- 7) Press the **Altitude COMP Tilt** Softkey.

## Enabling/disabling Ground Clutter Suppression on the HSI Map (PFD in Split Mode):

- 1) If necessary, enable the HSI Map on the PFD.
- 2) Press the **PFD Map Settings** Softkey.
- 3) Press the **WX Radar Controls** Softkey.
- 4) Press the **Gain/More** Softkey.
- 5) To enable/disable Ground Clutter Suppression, press the **GND Clutter Suppression** Softkey.

## Enabling/disabling WATCH Feature on the HSI Map (PFD in Split Mode):

- 1) If necessary, enable the HSI Map on the PFD.
- 2) Press the **PFD Map Settings** Softkey.
- 3) Press the **WX Radar Controls** Softkey.
- 4) Press the **Gain/More** Softkey.
- 5) To enable/disable Altitude Compensated Tilt, press the **Features** Softkey.
- 6) Press the **WX WATCH** Softkey.

## VERTICAL SITUATION DISPLAY TERRAIN

### Enabling/Disabling VSD Inset Window:

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Inset Window** Tab.
- 3) Touch the **VERT Situation Display** Button to enable/disable the VSD Inset Window.

### Enabling/disabling Relative Terrain information in the VSD and 'Navigation Map' Pane:

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Touch the **Terrain** Button.
- 4) Touch the **Relative** Button to enable the display of Relative Terrain information on the 'Navigation Map' Pane and VSD, or touch the **Off** Button to remove this information.

Flight Instruments

## Enabling/disabling Point Obstacle information in the VSD and Navigation Map Pane:

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Land** Tab.
- 3) Touch the **Point Obstacle** Button to enable the display of Point Obstacle information on the Navigation Map Pane and VSD, or touch the **Off** Button to remove this information.

EAS

## Changing the Vertical Situation Display Mode:

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) Touch the **Inset Window** Tab.
- 3) Touch the VERT Situation Display **Settings** Button.
- 4) Touch the **Mode** Button.
- 5) Touch one of the following buttons to select a mode:
  - **Auto:** VSD shows terrain along the active flight plan route, or current track if there is no active flight plan.
  - **Flight Plan:** VSD shows terrain along the active flight plan route. VSD is unavailable if there is no active flight plan.
  - **Track:** VSD shows terrain along the current track.
- 6) When finished, touch the **Back** Button or the **Home** Button.

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCs

## Enabling/disabling the Track Mode Boundary:

- 1) From Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Inset Window** Tab.
- 3) Touch the VERT Situation Display **Settings** Button.
- 4) If the **Track Mode Boundary** Button is subdued, it will be necessary to change the Mode to either Auto or Track before continuing to the next step; refer to the procedure 'Changing the VSD Mode' for more information.
- 5) Touch the **Track Mode Boundary** Button to enable/disable the display of the boundary on the 'Navigation Map' Pane.
- 6) Touch the Track Mode Boundary range button.
- 7) Scroll as needed and touch a button for the desired maximum 'Navigation Map' Pane range for the system to display the Profile Boundary (above this selection, the system will remove the Profile Boundary from the pane.).
- 8) When finished, touch the **Back** Button or the **Home** Button.

Additional Features

Abnormal Operation

Annun/Alerts

Appendix

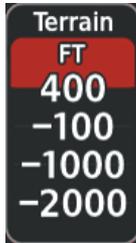
Index

TERRAIN DISPLAYS



**WARNING:** Do not use terrain avoidance displays as the sole source of information for maintaining separation from terrain and obstacles. Garmin obtains terrain and obstacle data from third party sources and cannot independently verify the accuracy of the information.

On-Ground Legend



In-Air Legend



Terrain SVT Relative Terrain Legends

**DISPLAYING RELATIVE TERRAIN INFORMATION**

**Showing the Terrain Pane:**

From MFD Home, touch the [Terrain] Button. [Terrain] can be **Terrain-SVT**, or **TAWS**.

**Enabling/disabling aviation information on the Terrain Pane:**

- 1) From MFD Home, touch the [Terrain] Button. [Terrain] can be **Terrain-SVT**, or **TAWS**.
- 2) Touch Terrain Setting Button. [Terrain Settings Button] can be **Terrain-SVT Settings** Button or **TAWS Settings** Button.
- 3) Touch the **Show Aviation Data** Button to enable/disable aviation information (airports, VORs, NDBs, Intersections) for the terrain pane.

**Relative Terrain on the Navigation Maps**

**Controlling Relative Terrain Information Navigation Map Panes:**

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Touch the **Terrain** Button.
- 4) Touch the **Relative** Button to enable Relative Terrain, or **Off** to remove terrain information.

Flight Instruments  
EAS  
Nav/Com/XPDR/Audio  
Flight Management  
Hazard Avoidance  
AFCS  
Additional Features  
Abnormal Operation  
Annun/Alerts  
Appendix  
Index

## Controlling Obstacle Information on Navigation Maps:

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Land** Tab.
- 3) Touch the **Obstacle Data** Button to enable/disable the display of relative obstacle information.
- 4) To change the maximum map range to display obstacle information, touch the Obstacle Data Range Button, then scroll and select a maximum map range from the list.
- 5) If necessary, touch the **Map Sync** Button to enable map synchronization. This is used to synchronize map settings (including obstacle settings) with other Navigation Maps.
- 6) Touch the **Onside** Button to synchronize the selected Navigation Map settings to onside Navigation Maps, then touch either the **PFD 1** or **MFD Left** Buttons to select which Navigation Map settings should be initially be applied to onside Navigation Maps.

**Or:**

Touch the **All** Button to synchronize all navigation maps, then touch a button to select which Navigation Map settings should initially be applied to all Navigation Maps (**MFD Left, MFD Right, PFD1, PFD2**).

## Controlling Relative Terrain Information (Inset and HSI Map):

- 1) From PFD Home, touch **PFD Map Settings**.
- 2) If the Inset Map or HSI Map is not presently shown on the PFD, do the following:
  - a) Touch the **Layout** Button.
  - b) Touch the **Inset Map** Button to display the Inset Map, or touch the **HSI Map** Button to display the His Map.
- 3) Touch the **Terrain** Button.
- 4) Touch the **Relative** Button to enable Relative Terrain, or **Off** to remove terrain information.

## Customizing terrain and obstacle display on the 'Navigation Map' Pane:

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Touch the Terrain **Settings** Button.
- 4) Touch the **Map Settings** Button.
- 5) The **Terrain** Button displays the maximum navigation map range to show relative terrain information in cyan. To change this value, touch the **Terrain** Button.
- 6) Scroll as needed, and touch a maximum navigation map range to display relative terrain information.
- 7) Touch the **Back** Button three times to return to the 'Map Settings' Screen.

Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCS

Additional Features

Abnormal Operation

Annun/Alerts

Appendix

Index

- 8) Touch the **Land** Tab.
- 9) Touch the **Point Obstacle** Button to enable/disable the display of point obstacles on navigation maps.
- 10) The Point Obstacle Range Button displays the maximum map range to show point obstacles in cyan. Touch this button to change the value.
- 11) Scroll as needed, and touch a maximum navigation map range to display point obstacle information.
- 12) When finished, touch the **Back** Button or the **Home** Button.

## Inhibiting FLTA and PDA Alerts

### Inhibiting Terrain-SVT or TAWS-B FLTA and PDA Alerting:

- 1) From MFD Home, touch the [Terrain] Button. [Terrain] can be **Terrain-SVT**, or **TAWS**.
- 2) Touch Terrain Setting Button. [Terrain Settings Button] can be **Terrain-SVT Settings** Button or **TAWS Settings** Button.
- 3) Touch the either the **Terrain Inhibit** or **TAWS Inhibit** Button. When the annunciator on the button is green, Terrain-SVT or TAWS-B alerting is inhibited. When the button annunciator is gray, Terrain-SVT or TAWS-B alerting is enabled.

**Or:**

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Touch the Terrain **Settings** Button.
- 4) Touch the either the **Terrain Inhibit** or **TAWS Inhibit** Button. When the annunciator on the button is green, Terrain SVT or TAWS-B alerting is inhibited. When the annunciator is gray, Terrain SVT or TAWS-B alerting is enabled.

**Or:**

- 1) From PFD Home, touch **PFD Map Settings**.
- 2) Touch the Terrain **Settings** Button in the 'Overlays' Window.
- 3) Touch the either the **Terrain Inhibit** or **TAWS Inhibit** Button.

### Inhibiting Terrain-SVT or TAWS-B alerting while an alert is occurring:

- 1) Touch the **Inhibit Terrain** or **Inhibit TAWS** Button on the Terrain Alert pop-up window on the Touchscreen Controller.
- 2) Touch the **OK** Button to confirm and inhibit of either Terrain-SVT or TAWS-B or touch the **Cancel** Button to return to the previous screen or Terrain Alert pop-up window.

TRAFFIC INFORMATION SERVICE (TIS)



**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 displays.

TIS Symbol	Description
	Other Traffic
	Traffic Advisory (TA)
	Traffic Advisory Off Scale

TIS Traffic Symbols

Viewing the Traffic Map Pane:

From MFD Home, touch the **Traffic** Button.

**Or:**

If the PFD is in Split Mode, from PFD Home, touch the **Traffic Map** Button.

**Or:**

If the PFD is in Split Mode, press the **Traffic** Softkey.

Selecting a TIS mode:

- 1) From MFD Home, touch **Traffic > Traffic Settings**.

**Or:**

- a) From MFD Home, touch **Map > Map Settings**.
- b) If necessary, touch the **Sensor** Tab.
- c) Touch the **Traffic Settings** Button.

**Or:**

- a) From **PFD Home**, touch **PFD Map Settings**.
- b) Touch the **Traffic Settings** Button.

- 2) Touch the **Operate** Button or the **Standby** Button.

## Enabling/disabling the display traffic information the Navigation Map Pane:

- 1) From MFD **Home**, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Touch the **Traffic** Button to enable/disable the display of traffic.

## Displaying traffic information on the PFD Inset Map and HSI Map:

Press the **Traffic Map** Softkey to display traffic data on the PFD Inset navigation map.

**Or:**

- 1) From PFD Home, touch **PFD Map Settings**.
- 2) Touch the **Traffic** Button.

## Displaying/removing the Traffic Inset Map on the PFD:

Press the **Traffic Inset** Softkey.

**Or:**

- 1) From PFD Home, touch **PFD Map Settings**.
- 2) Touch the **Traffic Inset** Button.

## Customizing traffic display on the navigation maps:

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Touch the **Traffic Settings** Button.
- 4) Touch the **Map Settings** Button.
- 5) Touch the **Labels** button to enable/disable the display of traffic labels on navigation maps.
- 6) To change the map maximum navigation map range to show traffic symbols, touch the **Symbols** Button, then scroll as needed and touch a button for the desired range.
- 7) To change the map maximum navigation map range to show traffic labels, touch the **Labels** Button, then scroll as needed and touch a button for the desired range.

**Or:**

- 1) From PFD Home, touch **Inset Map Settings**.
- 2) In the **Overlays** Tab, touch the **Traffic Settings** Button.
- 3) Touch the **Map Settings** Button.
- 4) Touch the **Labels** button to enable/disable the display of traffic labels on navigation maps.
- 5) To change the map maximum navigation map range to show traffic symbols, touch the **Symbols** Button, then scroll as needed and touch a button for the desired range.
- 6) To change the map maximum navigation map range to show traffic labels, touch the **Labels** Button, then scroll as needed and touch a button for the desired range.

## TIS ALERTS

### Muting the “Traffic Not Available” voice alert:

- 1) From MFD Home, touch **Traffic > Traffic Settings**.
- 2) Touch the **Mute “Traffic Not Available”** Button. ‘TNA MUTE ON’ appears in the upper right corner of the Traffic Map.

**Or:**

- 1) From MFD **Home**, touch **Map > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Touch the **Traffic Settings** Button.
- 4) Touch the **Mute “Traffic Not Available”** Button. ‘TNA MUTE ON’ appears in the upper right corner of the Traffic Map.

**Or:**

- 1) From PFD Home, touch **Inset Map Settings**.
- 2) Scroll in the **Overlays** Tab and touch the **Traffic Settings** Button.
- 3) Touch the **Mute “Traffic Not Available”** Button. ‘TNA MUTE ON’ appears in the upper right corner of the Traffic Map.

## ADDITIONAL TRAFFIC DISPLAYS

### Enabling/disabling the Traffic Inset Map on the PFD:

With the PFD in Full Mode, press the **Traffic Inset** Softkey.

**Or:**

- 1) From PFD Home, touch **PFD Map Settings**.
- 2) Touch the **Traffic Inset** Button.

### Showing the HSI Traffic Map:

- 1) From PFD Home, touch **PFD Map Settings**.
- 2) Touch the **Layout** Button.
- 3) Touch the **HSI Traffic** Button.

**Or:**

- 1) On the PFD, press the **PFD Map Settings** Softkey.
- 2) Press the **Map Layout** Softkey.
- 3) Press the **HSI Traffic** Softkey.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCS
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

TRAFFIC ADVISORY SYSTEM (TAS)



**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.

TAS Symbol	Description
	Non-Threat Traffic
	Proximity Advisory (PA)
	Traffic Advisory (TA)
	Traffic Advisory Off Scale

TAS Symbology (GTX 33D ES Transponder)

Symbol	Description
	Traffic Advisory with ADS-B directional information. Arrow points in the direction of the intruder aircraft track.
	Traffic Advisory without directional information.
	Traffic Advisory with ADS-B directional information is beyond the selected display range. Displayed at outer range ring at proper bearing. Arrow points in the direction of the intruder aircraft track.

	Symbol	Description
Flight Instruments		Traffic Advisory out of the selected display range without directional information. Displayed at outer range ring at proper bearing.
EAS		Proximity Advisory with ADS-B directional information. Arrow points in the direction of the aircraft track.
Nav/Com/XPDR/Audio		Proximity Advisory without directional information.
Flight Management		Other Non-Threat traffic with ADS-B directional information. Arrow points in the direction of the intruder aircraft track.
Hazard Avoidance		Other Non-Threat traffic without directional information.
AFCs		Traffic located on the ground with ADS-B directional information. Arrow 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.
Additional Features		Ground traffic without ADS-B directional information. Ground traffic is only displayed when ADS-B is in Surface (SURF) Mode or own aircraft is on the ground.
Abnormal Operation		Non-aircraft ground traffic with ADS-B directional information. Pointed end indicates direction of travel. Ground traffic is only displayed when ADS-B is in Surface (SURF) Mode or own aircraft is on the ground.
		Non-aircraft ground traffic without ADS-B directional information. Ground traffic is only displayed when ADS-B is in Surface (SURF) Mode or own aircraft is on the ground.

**TAS Traffic with ADS-B Symbology (GTX 345R Transponder)**

**OPERATIONS**

**Displaying the Traffic Map Pane:**

From MFD Home on the Touchscreen Controller, touch the **Traffic** Button.

**Or:**

If the PFD is in Split Mode, press the **Traffic** Softkey or touch the **Traffic Map** Button from **PFD Home** on the touchscreen controller.

**Changing the altitude range:**

- 1) From MFD Home, touch **Traffic > Traffic Settings**.

Or:

- 1) From MFD Home, touch **Map > Map Selection > Map Settings > Traffic Settings** Button.
- 2) Touch the **Altitude Range** Button:
- 3) Touch one of the following buttons from the list:
  - **Unrestricted:** All traffic is displayed from 9900 feet above and 9900 feet below the aircraft.
  - **Above:** Displays non-threat and proximity traffic from 9900 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 9900 feet below the aircraft. Typically used during descent phase of flight.

### Changing the display range on the Traffic Map Pane:

- 1) Turn the **Joystick**.
- 2) The following range options are available:
  - 750 ft (with optional ADS-B).
  - 750 ft and 1500 ft (with optional ADS-B).
  - 1500 ft and 0.5 nm (with optional ADS-B).
  - 0.5 nm and 1 nm (with optional ADS-B).
  - 1 nm and 2 nm (with optional ADS-B).
  - 2 and 6 nm.
  - 6 and 12 nm.
  - 12 and 24 nm.
  - 24 and 40 nm.

### Enabling/disabling display of traffic information on the 'Navigation Map' Pane:

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Touch the **Traffic** Button.

### Enabling/disabling the display of traffic information (HSI Map or Inset Map):

- 1) From PFD Home, touch **PFD Map Settings**.
- 2) If necessary, touch the **HSI Map** Button or **Inset Map** Button to access the Overlays settings.
- 3) Touch the **Traffic** Button in the 'Overlays' Window to enable/disable the display of traffic on the HSI Map or Inset Map.

**Or:**

- 1) If necessary, enable the Inset Map or HSI Map.
- 2) Press the **PFD Map Settings** Softkey.
- 3) Press the **Traffic** Softkey.

### Customizing the display of traffic on the navigation maps:

- 1) From MFD Home, touch **Map > Map Selection > Map Settings**.
- 2) If necessary, touch the **Sensor** Tab.
- 3) Touch the **Traffic Settings** Button.
- 4) Touch the **Map Settings** Button.
- 5) Touch the **Labels** Button to enable/disable the display of labels on traffic (such as relative altitude).
- 6) To change the map range above which the system removes traffic symbols from the display, touch the **Symbols** Button, then scroll to and touch to select a map range above which the system will remove the traffic symbols..
- 7) To change the map range at which the system removes traffic labels from the display (such as, touch the Labels range button, then scroll to and touch to select a map range above which the system removes traffic labels from the display.
- 8) When finished, touch the **Back** Button or the **Home** Button.

### Enabling/disabling the Traffic Inset Map on the PFD:

With the PFD in Full Mode, press the **Traffic Map** Softkey.

**Or:**

- 1) On the PFD, press the **PFD Map Settings** Softkey.
- 2) Press the **Map Layout** Softkey.
- 3) Press the **Inset Traffic** Softkey.

**Or:**

- 1) From PFD Home, touch **PFD Map Settings**.
- 2) Touch the **Traffic Inset** Button.

### Enabling the HSI Traffic Map on the PFD:

- 1) From PFD Home, touch **PFD Map Settings**.
- 2) Touch the **Layout** Button.
- 3) Touch the **HSI Traffic** Button.

**Or:**

- 1) On the PFD, press the **PFD Map Settings** Softkey.
- 2) Press the **Map Layout** Softkey.
- 3) Press the **HSI Traffic** Softkey.

**ADS-B TRAFFIC**



**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.

**OPERATION**

**Enabling/disabling the display of ADS-B traffic:**

- 1) From MFD Home, touch **Traffic > Traffic Settings**.
  - Or:**
    - a) From MFD Home, touch **Map > Map Selection > Map Settings**.
    - b) Touch the **Traffic Settings** Button on the Sensor Tab.
  - Or:**
    - a) From PFD Home, touch **PFD Map Settings**.
    - b) Touch the **Traffic Settings** Button.
- 2) Touch the **ADS-B Display** Button.

**Changing the altitude range:**

- 1) From MFD Home, touch **Traffic > Traffic Settings**.
  - Or:**
    - 1) From MFD Home, touch **Map > Map Selection > Map Settings > Traffic Settings** Button.
    - 2) Touch the **Altitude Range** Button:
    - 3) Touch one of the following buttons from the list:
      - **Unrestricted:** All traffic is displayed from 9900 feet above and 9900 feet below the aircraft.
      - **Above:** Displays non-threat and proximity traffic from 9900 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 9900 feet below the aircraft. Typically used during descent phase of flight.

Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCs

Additional Features

Abnormal Operation

Annun/Alerts

Appendix

Index

## Selecting a Motion Vector display:

- 1) From MFD Home, touch **Traffic > Traffic Settings**.
  - Or:**
    - a) From MFD Home, touch **Map >Map Selection > Map Settings**.
    - b) Touch the Traffic **Settings** Button.
  - Or:**
    - a) From PFD Home, touch **PFD Map Settings**.
    - b) Touch the Traffic **Settings** Button.
- 2) Touch the ADS-B **Motion Vector** Button.
- 3) Touch a button to select the desired Motion Vector display mode: **Off**, **Absolute**, or **Relative**.
- 4) To change the duration of time used to forecast motion vectors, touch the **Vector Duration** Button.
- 5) Touch a button for the desired duration: **30SEC**, **1MIN**, **2MIN**, or **5MIN**.

## Changing the display range on the Traffic Map Pane:

- 1) Turn the **Joystick**.
- 2) The following range options are available:
  - 750 ft.
  - 750 ft and 1500 ft.
  - 1500 ft and 0.5 nm.
  - 0.5 nm and 1 nm.
  - 1 nm and 2 nm.
  - 2 and 6 nm.
  - 6 and 12 nm.
  - 12 and 24 nm.
  - 24 and 40 nm.

## Additional Traffic Displays

### Showing additional traffic information:

- 1) From Home, touch **Traffic > Traffic Settings**.
- 2) Touch the ADS-B **Target Selection** Button.
- 3) Turn the upper knob. A cyan border appears on the first selected traffic symbol. Additional information appears in a window in the lower-left corner of the 'Traffic Map' Pane.
- 4) To select a different aircraft symbol, turn the upper knob.
- 5) When finished, touch the **Target Selection** Button again to disable the button.

## VIEWING ADS-B TRAFFIC STATUS:

- 1) From MFD Home, touch **Utilities > Setup > ADS-B Status**.
- 2) View the status of the traffic applications, then touch the **Back** Button or the **Home** Button when finished.

Flight  
Instruments

EAS

Nav/Com/  
XPDR/Audio

Flight  
Management

**Hazard  
Avoidance**

AFCS

Additional  
Features

Abnormal  
Operation

Annun/Alerts

Appendix

Index

Blank Page

# AUTOMATIC FLIGHT CONTROL SYSTEM

## FLIGHT DIRECTOR OPERATION

### ACTIVATING THE FLIGHT DIRECTOR

An initial press of a key listed in the following table (when the flight director is not active) activates the flight director in the listed modes. The flight director may be turned off and the command bars removed from the display by pressing the **FD** Key again. The **FD** Key is disabled when the autopilot is engaged.

Control Pressed	Modes Selected			
	Lateral		Vertical	
<b>FD</b> Key	Roll Hold (default)	ROL	Pitch Hold (default)	PIT
<b>AP</b> Key	Roll Hold (default)	ROL	Pitch Hold (default)	PIT
<b>CWS</b> Button	Roll Hold (default)	ROL	Pitch Hold (default)	PIT
<b>GA</b> Switch	Roll Hold (default)	TO	Takeoff (on ground)	TO
	Roll Hold (default)	GA	Go Around (in air)	GA
<b>ALT</b> Key	Roll Hold (default)	ROL	Altitude Hold	ALT
<b>VS</b> Key	Roll Hold (default)	ROL	Vertical Speed	VS
<b>VNV</b> Key	Roll Hold (default)	ROL	VNAV Path Tracking*	V PATH
<b>NAV</b> Key	Navigation**	FMS	Pitch Hold (default)	PIT
		VOR		
		LOC		
<b>BC</b> Key	Backcourse***	BC	Pitch Hold (default)	PIT
<b>APR</b> Key	Approach**	FMS	Pitch Hold (default)	PIT
		VAPP		
		LOC		
<b>HDG</b> Key	Heading Select	HDG	Pitch Hold (default)	PIT
<b>LVL</b> Key	Level Mode	LVL	Level Mode	PIT

\* Valid VNAV flight plan must be entered before **VNV** Key press activates flight director. When the **VNV** Key is pressed in conjunction with another mode selection, a 'V' is displayed with the selected mode annunciation.

\*\*The selected navigation receiver must have a valid VOR or LOC signal or active FMS course before **NAV** or **APR** Key press activates flight director.

\*\*\*The selected navigation receiver must have a valid LOC signal before **BC** Key press activates flight director.

### Flight Director Activation

## AFCS MODES

### VERTICAL MODES

Vertical Mode	Description	Control	Annunciation	
Pitch Hold	Holds aircraft pitch attitude; may be used to climb/descend to the Selected Altitude	(default)	PIT	
Selected Altitude Capture	Captures the Selected Altitude	*	ALTS	
Altitude Hold	Holds current Altitude Reference	<b>ALT</b> Key	ALT	XX,XXX FT
Vertical Speed	Holds aircraft vertical speed; may be used to climb/descend to the Selected Altitude	<b>VS</b> Key	VS	XXX FPM
Flight Level Change (IAS)	Holds aircraft airspeed (in IAS or Mach) while aircraft is climbing/descending to the Selected Altitude	<b>FLC</b> Key	FLC	XXX KT
Flight Level Change (Mach)				M .XXX

\* *ALTS is armed automatically when the Selected Altitude is to be captured instead of the VNAV Target Altitude.*

### Flight Director Vertical Modes

**LATERAL MODES**

Lateral Mode	Description	Control	Annunciation
Roll Hold	Holds the current aircraft roll attitude or rolls the wings level, depending on the commanded bank angle	(default)	ROL
Low Bank	Limits the maximum commanded roll angle	<b>BANK</b> Key	*
Heading Select **	Captures and tracks the Selected Heading	<b>HDG</b> Key	HDG
Navigation Mode			
FMS**	Captures and tracks the selected navigation source (FMS, VOR, LOC)	<b>NAV</b> Key	FMS
VOR Enroute/Capture/Track**			VOR
LOC Capture/Track (No Glideslope)			LOC

*The AFCS limits turn rate to 3 degrees per second (standard rate turn), therefore, the maximum roll angle may not reach the command limit at slower speeds.*

\* No annunciation appears in the AFCS Status Box. The acceptable bank angle range is indicated in green along the roll scale of the Attitude Indicator.

\*\*The Heading, Navigation FMS and Navigation VOR mode maximum roll command limit will be limited to the Low Bank mode value if it is engaged.

**Flight Director Lateral Modes**

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCS
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

**COMBINATION MODES**

Mode	Description	Control	Annunciation
<b>Vertical Navigation Modes</b>			
Vertical Path Tracking	Captures and tracks descent legs of an active vertical profile	VNV Key	V PATH
VNAV Target Altitude Capture	Captures the Vertical Navigation (VNAV) Target Altitude	*	ALTV
<b>VOR Approach Mode</b>			
VOR Arm/Capture/Track	Captures and tracks VOR navigation source	APR Key	VAPP
<b>FMS Approach Mode</b>			
FMS Arm/Capture/Track	Captures and tracks FMS navigation source	APR Key	FMS
Glidepath Mode	Captures and tracks the SBAS glidepath on approach		GP
<b>LOC Approach Mode</b>			
LOC Arm/Capture/Track	Captures and tracks the LOC navigation source	APR Key	LOC
Glideslope	Captures and tracks the ILS glideslope on approach		GS
Backcourse Arm/Capture/Track	Captures and tracks the LOC source for backcourse approaches	BC Key	BC
<b>Additional Modes</b>			
Takeoff	Commands a constant pitch angle on the ground in preparation for takeoff	GA Switch	TO
Go Around	Disengages the autopilot and commands a constant pitch angle and wings level in the air		GA

\* ALTV is armed automatically under V PATH when VNAV Target Altitude is to be captured instead of Selected Altitude.

**Flight Director Combination Modes****Selecting VOR Approach Mode:**

- 1) Ensure a valid VOR frequency is tuned.
- 2) Ensure that VOR is the selected navigation source.
- 3) Press the **APR** Key.

### Selecting FMS Approach Mode without a glidepath:

- 1) Ensure an RNAV Approach is loaded into the active flight plan. The active waypoint must be part of the flight plan (cannot be a direct-to a waypoint not in the flight plan).
- 2) Ensure that FMS is the selected navigation source (use the **Active NAV** Softkey to cycle through navigation sources if necessary).
- 3) Press the **NAV** Key.

### Selecting FMS Approach Mode with a glidepath:

- 1) Ensure an RNAV approach with vertical guidance (LPV, LNAV/VNAV, LP+V, LNAV+V) is loaded into the active flight plan. The active waypoint must be part of the flight plan (cannot be a direct-to a waypoint not in the flight plan).
- 2) Ensure that FMS is the selected navigation source (use the **Active NAV** Softkey to cycle through navigation sources if necessary).
- 3) Press the **APR** Key.



**WARNING:** Do not rely on the autopilot to level the aircraft at the MDA/DH when flying an approach with vertical guidance. The autopilot will not level the aircraft at the MDA/DH even if the MDA/DH is set in the altitude preselect.

### Selecting LOC Approach Mode:

- 1) Ensure a valid localizer frequency is tuned.
- 2) Ensure that LOC is the selected navigation source (use the **Active NAV** Softkey to cycle through navigation sources if necessary).
- 3) Press the **NAV** Key.

### Selecting Glideslope Mode:

- 1) Ensure a valid localizer frequency is tuned.
- 2) Ensure that LOC is the selected navigation source (use the **Active NAV** Softkey to cycle through navigation sources if necessary).
- 3) Press the **APR** Key.

**Or:**

- 1) Ensure that FMS is the selected navigation source (use the **Active NAV** Softkey to cycle through navigation sources if necessary).
- 2) Ensure a ILS approach is loaded into the active flight plan.
- 3) Ensure the corresponding LOC frequency is tuned.
- 4) Press the **APR** Key.

Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

**AFCS**

Additional Features

Abnormal Operation

Annun/Alerts

Appendix

Index

Blank Page

# ADDITIONAL FEATURES

## SAFETAXI



**WARNING:** Always refer to current aeronautical charts and NOTAMs for verification of displayed aeronautical information. Displayed aeronautical data may not incorporate the latest NOTAM information.

SafeTaxi is an enhanced feature that gives greater map detail when viewing airports at close range on the 'Navigation Map' Page or the Inset Map on the PFD. The maximum map ranges for enhanced detail are pilot configurable. When viewing at ranges close enough to show the airport detail, the map reveals taxiways with identifying letters, numbers, airport Hot Spots, and airport landmarks including ramps, buildings, control towers, and other prominent features. Resolution is greater at lower map ranges. When the aircraft's current position is within the SafeTaxi view, the airplane symbol on the airport provides enhanced position awareness. To view the full capability of the SafeTaxi feature, 'Airports' must be enabled on the 'Map Settings' Page through the **Aviation** Tab on the Touchscreen Controller.

Designated Hot Spots are recognized at airports with many intersecting taxiways and runways, and/or complex ramp areas. Airport Hot Spots are outlined to caution pilots of areas on an airport surface where positional awareness confusion or runway incursions happen most often. Hot Spots are defined with a magenta circle or outline around the region of possible confusion.

### Enabling/disabling SafeTaxi:

- 1) From MFD Home, touch **Map > Map Settings**.
- 2) If not already selected, touch the **Aviation** Tab.
- 3) If necessary, scroll to display the **SafeTaxi** Annunciator Button.
- 4) Touch the **SafeTaxi** Button to enable or disable the display of SafeTaxi on the Navigation and inset maps. A green annunciator on the button indicates SafeTaxi is enabled.

### Configuring SafeTaxi range:

- 1) From MFD Home, touch **Map > Map Settings**.
- 2) If not already selected, touch the **Aviation** Tab.
- 3) If necessary, scroll to display the **SafeTaxi** Range Button.
- 4) Touch the **SafeTaxi** Range Button. A selection of ranges are displayed.
- 5) Touch the desired range. 1.5 NM has been selected. With this setting, SafeTaxi will be displayed on the 'Navigation Map' Page for range settings up to and including 1.5 NM.

## SURFACEWATCH



**WARNING:** Do not use SurfaceWatch™ information as the primary method of flight guidance during airborne or ground operations. SurfaceWatch does not have NOTAM or ATIS information regarding the current active runway, condition, or information about the position of hold lines.

### Enabling/disabling SurfaceWatch:

- 1) From MFD Home, touch **Utilities > Setup > Avionics Settings**.
- 2) If not already selected, touch the **Alerts** Tab and scroll to view the **SurfaceWatch Inhibit** Button.
- 3) Touch the **SurfaceWatch Inhibit** Button to enable or disable SurfaceWatch. A green annunciator indicates SurfaceWatch is inhibited, or disabled. The inhibit setting will be canceled after a power cycle.

## SURFACEWATCH SETUP

### Entering origin/destination airport when no flight plan has been entered:

- 1) From MFD Home, touch **Flight Plan > Add Origin** or **Add Destination** as appropriate.
- 2) Use the keypad to enter the Airport Identifier and touch **Enter**.

### Selecting origin runway:

- 1) From MFD Home, touch **Flight Plan > Origin**.
- 2) On the 'Select Runway' Screen, scroll down as required and select the appropriate runway.

### Selecting destination runway:

- 1) From MFD Home, touch **Flight Plan > Destination > Select Arrival Runway**.
- 2) On the 'Select Runway' Screen, scroll down as required and select the appropriate runway.

## ELECTRONIC CHARTS



**WARNING:** Always refer to current aeronautical charts and NOTAMs for verification of displayed aeronautical information. Displayed aeronautical data may not incorporate the latest NOTAM information.



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

## Selecting Preferred Charts Source:

- 1) From MFD Home, touch **Charts > Chart Selection > Chart Options > Preferred Source**.
- 2) Touch either **ChartView** or **FliteCharts** to set as the preferred chart source

## CHARTVIEW (OPTIONAL)

ChartView Electronic Charts resemble the paper version of Jeppesen Terminal Procedures Charts and can be viewed on the MFD or PFD. The charts are displayed in full color with high-resolution. The display pane depiction shows the aircraft position on the moving map in the plan view of approach charts and on airport diagrams.

The geo-referenced aircraft position is indicated by an aircraft symbol displayed on the chart when the current position is within the boundaries of the chart. Inset boxes are not considered within the chart boundaries. Therefore, when the aircraft symbol reaches a chart boundary line, or inset box, the aircraft symbol is removed from the display.

## Chart Selection

### Selecting charts using the 'Charts' Screen:

- 1) From MFD Home, touch **Charts > Chart Selection**.
- 2) The airport for which charts will be displayed is shown at the top of the 'Charts' Screen. Touch the **Airport** Button to enter another airport.
- 3) Touch the **Info** Tab to display the airport information selection buttons for the selected airport.
  - a) Touch the **Departure** Tab to display a list of possible departures for the selected airport.
  - b) Touch the **Arrival** Tab to display a list of possible arrivals for the selected airport.
  - c) Touch the **Approach** Tab to display a list of possible approaches for the selected airport.
- 4) Touch the desired information button in any of these lists to display the applicable chart on the selected display pane.
- 5) Touch the **Charts Options** Button to select the desired display option for the selected chart.
- 6) Touch **All** to display the complete Airport Diagram. **Fit Width** displays the full width of the Airport Diagram. **Plan** displays only the diagram portion of the chart. **Minimums** displays only the approach minimums on an approach chart. **Profile** displays only the descent profile on the approach chart. **Header** displays the chart header. Only appropriate views are available for the selected chart.
- 7) Touch the **Back** Button to return to the 'Charts' Screen.

Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCs

Additional Features

Abnormal Operation

Annun/Alerts

Appendix

Index

Flight Instruments

## Zooming-in, zooming-out, rotating, and panning the displayed chart:

- 1) From MFD Home, touch **Charts > Chart Selection**.
- 2) Select the desired chart for display in the selected pane.
- 3) Push the Lower Knob. The 'Charts Pan/Zoom Control' Screen is displayed on the Touchscreen Controller.
- 4) Turn the lower knob, or use the pinch-and-zoom feature on the Touchpad to adjust the chart zoom.
- 5) Move a finger along the Touchpad, or turn the upper knobs to pan the displayed chart.
- 6) Touch the **Rotate** buttons to rotate the chart clockwise or counter-clockwise, as indicated on the button. Each touch of the button rotates the chart 90 degrees in the designated direction.

EAS

Nav/Com/XPDR/Audio

Flight Management

## Selecting airport diagrams from the 'Nearest Airports' Screen:

- 1) From MFD Home, touch **Nearest > Airport**.
- 2) Touch the desired airport button. KCOS is selected in this example. The **Waypoint Options** buttons are displayed.
- 3) Touch the **Airport Chart** Button. The **Info** Tab selections are displayed on the Touchscreen Controller and the Airport Diagram is displayed on the selected display pane.

Hazard Avoidance

AFCS

## Day/Night View

### Selecting Day, Night, or Auto View:

- 1) From MFD Home, touch **Charts > Chart Selection > Charts Options**.
- 2) Touch the **Light Mode** Button.
- 3) Touch the **Day, Night, or Auto** Button. When **Auto** is selected, the display will change to the appropriate day or night setting, dependent on ambient lighting.
- 4) With 'Auto' selected, touch the **Threshold** Button. The 'Auto Light Mode Threshold' Window is displayed.
- 5) Move the slider left or right to set the desired threshold. Setting the Threshold Level percentage to the same percentage shown as the Current MFD Backlight Level will cause the Day/Night view to switch at the current backlight setting. Adjusting the Threshold Level setting larger than the Current MFD Backlight Level will cause the display to remain in Night Mode longer. Adjusting the Threshold Level setting smaller than the Current MFD Backlight Level will cause the display to change to Day Mode sooner.

Additional Features

Abnormal Operation

Annun/Alerts

Appendix

## FLITECHARTS

FliteCharts are electronic charts that resemble the paper version of AeroNav Services Terminal Procedures Charts. The charts are displayed with high-resolution and in color for applicable charts. The display pane depiction shows the aircraft position on the moving map and on airport diagrams.

Index

The geo-referenced aircraft position is indicated by an aircraft symbol displayed on the chart when the current position is within the boundaries of the chart. Inset boxes are not considered within the chart boundaries. Therefore, when the aircraft symbol reaches a chart boundary line, or inset box, the aircraft symbol is removed from the display.

## Chart Selection

### Selecting charts using the 'Charts' Screen:

- 1) From MFD Home, touch **Charts > Chart Selection**.
- 2) The airport for which charts will be displayed is shown at the top of the 'Charts' Screen. Touch the **Airport** Button to enter another airport.
- 3) Touch the **Info** Tab to display the airport information selection buttons for the selected airport.
  - a) Touch the **Departure** Tab to display a list of possible departures for the selected airport.
  - b) Touch the **Arrival** Tab to display a list of possible arrivals for the selected airport.
  - c) Touch the **Approach** Tab to display a list of possible approaches for the selected airport.
- 4) Touch the desired information button in any of these lists to display the applicable chart on the selected display pane.
- 5) Touch the **Charts Options** Button to select the desired display option for the selected chart.
- 6) Touch **Fit Width** to display the full width of the chart.
- 7) Touch the **Back** Button to return to the 'Charts' Screen.

### Zooming-in, zooming-out, rotating, and panning the displayed chart:

- 1) From MFD Home, touch **Charts > Chart Selection**.
- 2) Select the desired chart for display in the selected pane.
- 3) Push the Lower Knob. The 'Charts Pan/Zoom Control' Screen is displayed on the Touchscreen Controller.
- 4) Turn the lower knob, or use the pinch-and-zoom feature on the Touchpad to adjust the chart zoom.
- 5) Move a finger along the Touchpad, or turn the upper knobs to pan the displayed chart.
- 6) Touch the **Rotate** buttons to rotate the chart clockwise or counter-clockwise, as indicated on the button. Each touch of the button rotates the chart 90 degrees in the designated direction.

### Selecting airport diagrams from the 'Nearest Airports' Screen:

- 1) From MFD Home, touch **Nearest > Airport**.
- 2) Touch the desired airport button. KCOS is selected in this example. The **Waypoint Options** buttons are displayed.

- 3) Touch the **Airport Chart** Button. The **Info** Tab selections are displayed on the Touchscreen Controller and the Airport Diagram is displayed on the selected display pane.

### Day/Night View

#### Selecting Day, Night, or Auto View:

- 1) From MFD Home, touch **Charts > Chart Selection > Charts Options**.
- 2) Touch the **Light Mode** Button.
- 3) Touch the **Day, Night, or Auto** Button. When **Auto** is selected, the display will change to the appropriate day or night setting, dependent on ambient lighting.
- 4) With 'Auto' selected, touch the **Threshold** Button. The 'Auto Light Mode Threshold' Window is displayed.
- 5) Move the slider left or right to set the desired threshold. Setting the Threshold Level percentage to the same percentage shown as the Current MFD Backlight Level will cause the Day/Night view to switch at the current backlight setting. Adjusting the Threshold Level setting larger than the Current MFD Backlight Level will cause the display to remain in Night Mode longer. Adjusting the Threshold Level setting smaller than the Current MFD Backlight Level will cause the display to change to Day Mode sooner.

## SATELLITE TELEPHONE AND DATALINK SERVICES



**NOTE:** *Separate accounts must be established to access the Iridium Satellite Network for voice and Garmin Connex for data transmission of maintenance reports.*

## REGISTERING THE SYSTEM WITH GARMIN CONNEXT

A subscriber account must be established prior to using the Iridium Satellite System. Before setting up an Iridium account, obtain the System ID and serial number of the Iridium Transceiver (GSR1) by performing the following procedure. Contact Garmin Connex at flygarmin.com.

#### Registering the system for datalink services:

- 1) From MFD Home, touch **Utilities > Setup > Avionics Status**.
- 2) If necessary, touch the **Airframe** Tab. Note the System ID. This number will be needed when contacting Garmin Connex to establish the account.
- 3) Touch the **LRU Info** Tab. Scroll to view 'GSR1.' Note the serial number of each will also be needed when contacting Garmin Connex.
- 4) Contact Garmin Connex to establish an account and receive an access code.
- 5) From MFD Home, touch **Utilities > Setup > Connex Registration**.
- 6) Press the **Register** Button.
- 7) Enter the access code.
- 8) Touch the **Enter** Button.

## CONTACTS

### Creating a new contact:

- 1) From MFD Home, touch **Services > Contacts**.
- 2) The 'Contacts' Screen is displayed.
- 3) Touch the **Create New** Button.
- 4) Touch the **Name** Button. The 'Contact Name' Entry Screen is displayed.
- 5) Enter the name of the new contact.
- 6) Touch the **Enter** Button.
- 7) If desired, touch the **Favorite** Button to designate the new contact as a favorite. A green annunciator indicates the contact is now designated as a favorite.
- 8) Touch the **Telephone Number** Button. The Telephone Number entry screen is displayed.
- 9) Enter the telephone number of the new contact.
- 10) Touch the **Enter** Button.
- 11) Touch the **Email Address** Button (scroll down as required). The 'Email Address' Entry Screen is displayed.
- 12) Enter the email address of the new contact.
- 14) Touch the **Create** Button. The new contact is created and appears in the list of contacts. If the contact was selected as a 'Favorite,' a star symbol will display on the right side of the contact button to indicate this selection.

### Editing a contact:

- 1) From MFD Home, touch **Services > Contacts**.
- 2) Touch the contact you desire to edit.
- 3) Touch the information field that you would like to edit.
- 4) When changes are complete, touch the **Save** Button.

### Deleting a contact:

- 1) From MFD Home, touch **Services > Contacts**.
- 2) Touch the contact you desire to delete.
- 3) Touch **Delete**.
- 4) Touch **OK**.

### Deleting all contacts:

- 1) From MFD Home, touch **Services > Contacts**.
- 2) Touch **Options**.
- 3) Touch **Delete All Contacts**.
- 4) Touch **OK**.

Flight Instruments

## TELEPHONE COMMUNICATION (OPTIONAL)

### Viewing the 'Telephone' Screen:

- 1) From MFD Home, touch **Services** > **Telephone**.
- 2) The 'Telephone' Screen is displayed.

EAS

### Enabling/Disabling the Iridium Telephone System

#### Enabling/disabling the Iridium telephone system:

- 1) From MFD Home, touch **Services** > **Telephone**.
- 2) Touch the **Iridium #1** Button to display the 'Iridium #1 Transceiver' Screen.
- 3) Touch the **Disable Iridium Transmission** Button to disable the transceiver. A green annunciator indicates Iridium transmission is disabled. Touch the button again to enable the transceiver. A gray annunciator indicates Iridium transmission is enabled.

Nav/Com/XPDR/Audio

Flight Management

### Incoming Calls

#### Answering a call:

- 1) Touch the flashing **TEL** Button. The 'Notifications' Screen is displayed.
- 2) Touch the **Answer** Button. The call is now connected as indicated. Touching the **Ignore** Button extinguishes the new call annunciation and the call remains disconnected.
- 3) When the call is finished, touch the **End Call** Button to disconnect the call.

Hazard Avoidance

AFCs

### Outgoing Calls

#### Making an external call using a telephone number:

- 1) From MFD Home, touch **Services** > **Telephone**.
- 2) Touch the **Cockpit** Phone Button. The 'Cockpit Phone' Screen is displayed.
- 3) Touch the **Dial** Button. The phone number entry screen is displayed.
- 4) Using the number keys, enter the phone number. Touch the **Find** Button to select a phone number from the Contact List.

The International dialing sequence is necessary to place a call from the cockpit to an external phone: Country Code + City/Area Code (if any) + Telephone Number. The following country codes may be used when calling other satellite telephone systems.

Additional Features

Abnormal Operation

Annun/Alerts

Appendix

Index

Satellite System	Country Code
Inmarsat	870
ICO	8810 or 8811
Ellipso	8812 or 8813
Iridium	8816 or 8817
Globalstar	8818 or 8819

### International Calling Codes

- 5) Touch the **Enter** Button. The system now begins establishing a connection. The system indicates a completed connection when the telephone is answered.

#### Making an external call by selecting a contact:

- 1) From MFD Home, touch **Services > Contacts**.
- 2) Touch the button corresponding to the desired contact. The selected contact is displayed.
- 3) Touch the **Call or Send Text** Button. A selection screen is displayed.
- 4) Touch the **Make Phone Call** Button. The system initiates the call. The system indicates a completed connection when the telephone is answered.

#### Ending a call:

- 1) From MFD Home, touch **Services > Telephone**.
- 2) Touch the **Cockpit Phone** Button. The 'Cockpit Phone' Screen is displayed.
- 3) Touch the **End Call** Button.

#### Using the keypad during a call:

- 1) From MFD Home, touch **Services > Telephone**.
- 2) Touch the **Cockpit Phone** Button. The 'Cockpit Phone' Screen is displayed.
- 3) Touch the **Open Keypad** Button if you need to enter numbers during a call (e.g., to enter a PIN).
- 4) Touch the **Back** Button when finished to return to the 'Cockpit Phone' Screen.

## Managing Telephone Audio

#### Enabling/disabling telephone audio and adjusting volume:

- 1) After a call is connected, from MFD Home, touch **Services > Telephone**.
- 2) Touch the **Cockpit Phone** Button. The 'Cockpit Phone' Screen is displayed.
- 3) Touch the **Pilot Audio** or **Copilot Audio** Annunciator Button to disable telephone audio, including microphone (gray annunciator).
- 4) Touch the Annunciator Button again to enable telephone audio, including microphone (green annunciator).
- 5) Touch and move the **Volume** Slider on the appropriate Touchscreen Controller to adjust the telephone volume.

## TEXT MESSAGING (SMS)

#### Viewing the 'SMS Text Messaging' Screen:

From MFD Home, touch **Services > SMS Text**.

#### Sending a text message:

- 1) From MFD Home, touch **Services > SMS Text**.
- 2) Touch the **Draft New** Button. The 'SMS Text Message Draft' Screen is displayed. The **Draft New Message** Button is also available from within the **Drafts** and **Outbox** Tabs.

Flight Instruments

3) Touch the **To** Window. A selection screen is displayed. If the text message is to be sent to an SMS compatible telephone, touch the **Phone** Button. If the message is to be sent to an email address, touch the **Email** Button.

EAS

4) Enter the telephone number or email address. The number or address may be obtained from stored Contacts by touching the **Find** Button.

5) If a phone number or address was entered manually, touch the **Enter** Button. The number or address is now displayed.

Nav/Com/XPDR/Audio

6) Touch the **Message** Window. The alphanumeric buttons are displayed.

7) Enter the message text. The large upper knob on the Touchscreen Controller may be used to move the cursor within the message text in order to select the location for adding new text, or delete existing text.

Flight Management

8) Touch the **Enter** Button. The message text is displayed in the **Message** Window.

9) Touch the **Send** Button.

### Sending a new text message to a saved contact:

Hazard Avoidance

1) From MFD Home, touch **Services > Contacts**.

2) Scroll down as required to find a contact. Touch the contact's name on the Touchscreen Controller.

AFCs

3) Touch the **Call or Send Text** Button.

4) Touch the **Draft SMS Text Message** Button. The 'SMS Text Message Draft' Screen is displayed.

Additional Features

5) Follow the steps in the previous procedure to fill out and send the text message.

### Viewing a text message when received:

Abnormal Operation

1) Touch the flashing **SMS** Button on the Touchscreen Controller. The **SMS Text Inbox** Tab is automatically selected and the newly received text message is shown at the top of the list.

2) Touch the desired message to display its contents.

3) If desired, touch the **Reply** Button to create a reply to the message.

Annun/Alerts

4) Touch the **Delete** Button to delete the message from the list.

5) Touching the **Save Contact** Button saves the contact information in the system contact list.

Appendix

### Replying to a text message:

While viewing the text message content, touch the **Reply** Button.

**Or:**

Index

1) From MFD Home, touch **Services > SMS Text**.

2) If necessary, scroll to the desired message. Touch the desired text message in the Inbox list. The text message is displayed.

- 3) Touch the **Reply** Button. The opened 'SMS Text Message' Screen is displayed.
- 4) Touch the **Message** Window to display the alphanumeric buttons.
- 5) Enter the reply text. The large upper knob on the Touchscreen Controller may be used to move the cursor within the message text in order to select the location for adding new text, or delete existing text.
- 6) Touch the **Enter** Button. The reply message is displayed.
- 7) Touch the **Send** Button. The 'SMS Message Replied To' Screen is displayed.
- 8) If desired, touch the **Reply Again** Button to resend the reply.
- 9) Touch the **Delete** Button to delete the message from the list.
- 10) Touching the **Save Contact** Button saves the contact information in the system contact list.

## Text Message Boxes

### Viewing Inbox messages:

- 1) From MFD Home, touch **Services > SMS Text**.
- 2) Touch the **Inbox** Tab. A list of received messages is displayed. The **Inbox** Tab is selected by default when accessing the 'SMS Text Messaging' Screen.

### Viewing Draft messages:

- 1) From MFD Home, touch **Services > SMS Text**.
- 2) Touch the **Drafts** Tab. A list of draft messages is displayed; provided messages have been previously saved.
- 3) Touch a message to access the **Send** or **Delete** Buttons.

### Viewing Outbox messages:

- 1) From MFD Home, touch **Services > SMS Text**.
- 2) Touch the **Outbox** Tab. A list of sent or unsent messages is displayed.
- 3) Touch a message to access the **Send Again**, **Delete**, and **Save Contact** Buttons.

## Managing Text Messages

The following table illustrates the various message status icons.

Message Symbol	Description
	Received text message that has not been opened
	Received text message that has been opened
	A reply has been sent for this text message

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCs
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

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

### Text Message Symbols

#### Viewing messages sorted by message date/time:

- 1) From MFD Home, touch **Services** > **SMS Text**.
- 2) Touch the **Options** Button. The 'Sort Messages By' selections are displayed.
- 3) Touch the **Time** Button. A green annunciator indicates an active selection.
- 4) Touch the **Back** Button to return to the previously selected message box.

#### Viewing messages sorted by address:

- 1) From MFD Home, touch **Services** > **SMS Text**.
- 2) Touch the **Options** Button. The 'Sort Messages By' selections are displayed.
- 3) Touch the **Address** Button. A green annunciator indicates an active selection.
- 4) Touch the **Back** Button to return to the previously selected message box.

#### Marking all messages as read:

- 1) From MFD Home, touch **Services** > **SMS Text**.
- 2) Touch the **Options** Button. The selection buttons are displayed.
- 3) Touch the **Mark All Read** Button. All messages in the Inbox now indicate they have been opened.
- 4) Touch the **Back** Button to return to the Inbox.

#### Deleting all messages:

- 1) From MFD Home, touch **Services** > **SMS Text**.
- 2) Touch the **Options** Button. The selection buttons are displayed.
- 3) Touch the **Delete All Messages** Button. A confirmation screen is displayed.
- 4) Touch the **Back** Button to return to the Inbox.
- 4) Touch the **OK** Button.

## Viewing the 'Connex Setup' Screen:

- 1) From MFD Home, touch **Utilities > Setup**.
- 2) Touch **Connex Setup**.

## Changing the Bluetooth Name:

- 1) From MFD Home, touch **Utilities > Setup > Connex Setup**.
- 2) From the 'Connex Setup' Screen, touch the **Bluetooth** Tab.
- 3) Touch the **Bluetooth Device Name** Window to display the alphanumeric buttons.
- 4) Enter the desired name using the alphanumeric buttons.
- 5) Press the **Enter** Button upon completion.

## Selecting crew position for Garmin Pilot control of Connex Bluetooth volume:

- 1) From MFD Home, touch **Utilities > Setup > Connex Setup**.
- 2) From the 'Connex Setup' Screen, touch the **Bluetooth** Tab.
- 3) In the center of the GTC Touchscreen, touch the **Volume Control** Button.
- 4) Touch **Pilot, Copilot, or Pass** (indicated by a green annunciator) to enable SiriusXM remote volume control on a mobile device running Garmin Pilot.
- 5) Once a selection has been made, press the **Back** Button to return to the previous screen.

## Enabling/Disabling Flight Plan Importing from Garmin Pilot:

- 1) From MFD Home, touch **Utilities > Setup > Connex Setup**.
- 2) While viewing the 'Connex Setup' Screen, touch **Functions** Tab.
- 3) Touch the **Enable** Button to enable (green annunciator) Flight Plan Import from Garmin Pilot.

## Enabling/Disabling WiFi Database Importing from Garmin Pilot:

- 1) From MFD Home, touch **Utilities > Setup > Connex Setup**.
- 2) While viewing the 'Connex Setup' Screen, touch **Functions** Tab.
- 3) Touch the **Enable** Button to enable (green annunciator) WiFi Database Import from Garmin Pilot.

## Enabling/disabling automatic reconnection of a specific paired device:

- 1) From MFD Home, touch **Utilities > Setup > Connex Setup**.
- 2) While viewing the 'Connex Setup' Screen, touch the **Paired Devices** Tab.
- 3) Touch the **Enable** Button to enable (green annunciator) auto reconnect to the desired paired device.

## Removing a specific paired device from the list of paired devices:

- 1) From MFD Home, touch **Utilities > Setup > Connex Setup**.
- 2) While viewing the 'Connex Setup' Screen, touch **Paired Devices** Tab.

- 3) Touch the Bluetooth device name to be removed.
- 4) A confirmation screen is displayed asking to remove the paired Bluetooth device.
- 5) Touch **OK** to remove the device from the list of paired devices.

## SIRIUSXM SATELLITE RADIO

### ACTIVATING SIRIUSXM SATELLITE SERVICES

The SiriusXM Radio services are activated by first establishing an account with SiriusXM Satellite Radio. The Audio Radio ID and/or Data Radio ID must be provided to SiriusXM Satellite Radio to activate the entertainment subscription.

SiriusXM Satellite Radio uses the coded radio ID to send an activation signal that, when received by the SiriusXM Datalink Receiver, allows it to play entertainment programming.

These radio IDs are located:

- On the label on the back of the Datalink Receiver.
- On the ‘SiriusXM Info’ Screen on the Touchscreen Controller.

Contact the installer if the radio ID cannot be located.

#### Establishing a SiriusXM Satellite Radio account:

- 1) From MFD Home, touch **Utilities > Setup > SiriusXM Info**.
- 2) Note the Audio Radio ID and/or Data Radio ID.
- 3) Contact SiriusXM Satellite Radio. Follow the instructions provided by SiriusXM Satellite Radio services.

#### Activating SiriusXM Satellite Services on the system:

- 1) After contacting SiriusXM in the above procedure, from MFD Home, touch **Utilities > Setup > SiriusXM Info**.
- 2) Verify the Data Radio and/or Audio Radio show a signal strength, indicating the system is communicating with the satellite.
- 3) Touch the **Start Activation** Button in the ‘Activation’ Field.
- 4) Touch the **LOCK** Button in the ‘Activation’ Field. The system is now activated and ready for use.

## USING SIRIUSXM RADIO

### Selecting Channels

#### Selecting a channel from the channel list:

- 1) From MFD Home, touch **Services > Music** to access the ‘Music’ Screen.
- 2) Touch the desired channel in the channel list. The selected channel is now shown in the ‘Now Playing’ Field.

## Selecting a channel directly:

- 1) From MFD Home, touch **Services > Music > Channel**.
- 2) The numeric keypad is displayed. Enter the desired channel number.
- 3) Press the **Enter** Button. The selected channel is now shown in the 'Now Playing' Field.

## Entertainment Categories

### Selecting a category:

- 1) From MFD Home, touch **Services > Music > Category**.
- 2) The list of categories is displayed.
- 3) Scroll to view the available categories.
- 4) Touch the desired category to select. The selected category is displayed on the **Category** Button and the channel list displays channels available for the selected category.

## Favorites

### Saving a channel to favorites list:

- 1) From MFD Home, touch **Services > Music** to access the 'Music' Screen.
- 2) Select a desired channel as the 'Now Playing' Channel.
- 3) Touch the **Favorite** Annunciator Button. The current channel is placed in the favorites list. Note, a green annunciator indicates a favorite channel is 'Now Playing.'

### Selecting a favorite channel for listening:

- 1) From MFD Home, touch **Services > Music > Category**.
- 2) The list of categories is displayed.
- 3) If necessary, scroll to view the **Favorites** Button.
- 4) Touch the **Favorites** Button to view the 'Favorites' Channel List.
- 5) Touch the desired channel in the list. The channel is now displayed in the 'Now Playing' Field.

## Adjusting Volume

### Adjusting SiriusXM pilot volume:

- 1) From MFD Home, touch **Services > Music > Volume**.
- 2) The volume adjustment slider is displayed.
- 3) Touch and drag the slider to the right or left to adjust the volume. Dragging to the right increases volume. Dragging to the left to decrease the volume.

**Or:**

Turn the **Volume** Knob on the Touchscreen Controller.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCs
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

### Muting or unmuting the volume:

- 1) From MFD Home, touch **Services > Music > Volume**.
- 2) Touch the **Music** Annunciator Button to mute or unmute the volume. Muted volume is indicated by a gray annunciator. Unmuted volume is indicated by a green annunciator.
- 3) Touch the **Back** Button to return to the 'Music' Screen. When the volume is muted, 'Muted' is displayed in the 'Music Volume' Field.

## Automatic Music Muting

### Enabling/disabling soft mute settings:

- 1) From MFD Home, touch **Services > Music > Volume > Mute Settings**.
- 2) Touch the **Intercom** Annunciator Button to select/deselect automatic soft muting of entertainment audio when intercom audio is present. This function is active when the annunciator is green.
- 3) Touch the **Radio Inputs** Annunciator Button to allow automatic soft muting of entertainment audio when COM, NAV, ADF, etc. audio is present. This function is active when the annunciator is green.
- 4) Touch the **Aural Alerts** Annunciator Button to allow automatic soft muting of entertainment audio when alert audio is present. This function is active when the annunciator is green.
- 5) Touch the **Back** Button to return to the Music Screen.

## ELECTRONIC CHECKLISTS

### OPERATION

The following discussion on Dual Pilot Control operation is based on the assumption that PFDs are operating in 60/40 viewing mode. This scheme has four panes available for electronic checklist display.

Press the small right knob on the Touchscreen Controller to check/uncheck a checklist item. Press and hold the small right knob to open and close a checklist.

### Dual Pilot Control

In dual pilot control, the pilot controls checklists on the pilot-side PFD and on the left half of the MFD. The copilot controls checklists on the right half of the MFD and on the copilot-side PFD.

### Accessing and navigating checklists:

- 1) From MFD Home, touch **Checklist**. The checklist structure is displayed.
- 2) Touch the desired checklist from those listed in the center of the screen. If necessary, scroll through the list to see all the available checklists for the selected group. **Before Start** is selected and the checklist is displayed in the previously selected GDU display pane. The first checklist item is selected as indicated by the white text surrounded by a cyan box.

- 3) Press the lower knob on the Touchscreen Controller to check the selected checklist item. The line item turns green and a checkmark is placed in the associated box. The next line item is automatically selected for checking.  
Turn the lower knob on the Touchscreen Controller to scroll through the checklist and select the desired checklist item.  
Selecting a checked item and pushing the lower knob on the Touchscreen Controller will return the item to the unchecked state.
- 4) When all checklist items have been checked, **“\*Checklist Finished\*”** is displayed in green text at the bottom left of the checklist window and **‘Go To Next Checklist?’** is highlighted. If **‘Go To Next Checklist?’** is selected prior to checking all the checklist items, **“\*Checklist Not Finished\*”** will be displayed in amber text.
- 5) While the **‘Go To Next Checklist?’** text is highlighted, push the small right knob on the Touchscreen Controller to display the next checklist in the group or choose another by touching the desired checklist on the Touchscreen Controller.

### Resetting a specific checklist:

- 1) From MFD Home, touch **Checklist**.
- 2) Touch the desired checklist to reset. **Before Start** is selected.
- 3) Touch the **Checklist Options** Button.
- 4) Touch the **Reset Checklist** Button.

### Resetting all checklists:

- 1) From MFD Home, touch **Checklist**.
- 2) Touch the **Checklist Options** Button.
- 3) Touch **Reset All Checklists**.

## ELECTRONIC DOCUMENTS

### VIEWING ELECTRONIC DOCUMENTS

#### Selecting a document:

- 1) From MFD Home, touch **Utilities > Documents**. The ‘Document Viewer’ Screen is now displayed.
- 2) Touch the **Selected Document** Button.
- 3) Touch the **Installed** or **User** Tab to select the desired document source.
- 4) Touch the desired document button. The selected document name is displayed in the **Selected Document** Button. The document is displayed in the selected pane.

#### Changing Document Viewer options:

- 1) From MFD Home, touch **Utilities > Documents > Options**. The ‘Document Viewer Options’ Screen is displayed.

- 2) Touch the **Document Info** Button to view information pertaining to the document, such as the document name, the file size, and the creation date.
- 3) After touching the **Back** Button, touch the **Fit Page** Button to view the complete page in the selected pane.
- 4) Touch the **Fit Width** Button to enlarge the displayed page to fill the width of the selected pane.
- 5) Touching the **Rotate Page** buttons will rotate the displayed page 90 degrees to the right or left within the selected pane. Each subsequent touch will rotate the page another 90 degrees.
- 6) Touch the **Brightness** Slider to adjust the brightness of the displayed page.

**Or:**

Touch the **+** Button to increase brightness, or the **-** Button to decrease brightness. Each touch increases or decreases the brightness by approximately five percent.

### Browsing the document:

- 1) After selecting the desired document, touch the **Next Page** and **Prev Page** buttons to increment and decrement one page with each touch.
- 2) The page select button shows the number of pages contained in the document and the page currently being displayed.
- 3) Touch the page select button to jump to a specific page number. The 'Enter Page Number' Screen is displayed.
- 4) From the 'Document Viewer' Screen, touch the **Find** Button to display the 'Document Viewer Find' Screen.
- 5) If necessary, touch the **Table of Contents** Tab to display the document's Table of Contents.
- 6) Touch the **[+]** Button to expand a topic. Touch the **[-]** Button to return to the collapsed view of the topic.
- 7) Touch the desired topic to jump to that portion of the document. In this example, the Flight Plan Section is selected.

### Zooming in and out on a document page:

- 1) With the document displayed, press the lower knob. The 'Document Pointer Options' Screen is now displayed on the Touchscreen Controller. Also, a flashing pointer is shown on the document display.
- 2) Turn the lower knob, or use the pinch-and-zoom feature on the Touchpad to zoom in or zoom out on the document page display.
- 3) Turn the upper knobs, or move a finger across the Touchpad to move the pointer within the document. When the pointer reaches the edge of the display, the display will scroll to show more of the document page.

### Navigating links within the document:

- 1) With the document displayed, press the lower knob. The 'Document Pointer Options' Screen is now displayed on the Touchscreen Controller. Also, a flashing pointer is shown on the document display.
- 2) Turn the upper knobs, or move a finger across the Touchpad to move the pointer to the desired document link.
- 3) With the link highlighted, touch the **Follow Link** Button. The selected link destination is now displayed in the selected pane.
- 4) Touch the **Return To Link** Button to return to the link origin.
- 5) Touch the **Back** Button, press the upper knob, or press the lower knob to remove the pointer from the display and return to the link origin.

### Creating bookmarks in the document:

- 1) While viewing the page to bookmark, touch the **Find** Button on the 'Document Viewer' Screen.
- 2) Touch the **Bookmark** Tab to display the 'Bookmark' Window.
- 3) Touch the **Bookmark Current Page** Button. The 'Enter Bookmark Name' Screen is displayed.
- 4) After naming the bookmark, touch the **Enter** Button. A confirmation screen is displayed.
- 5) Touch the **OK** Button. The newly created bookmark is displayed.

### Deleting document bookmarks:

- 1) With the desired document displayed, touch the **Find** Button to display the 'Document Viewer Find' Screen.
- 2) Touch the **Bookmark** Tab to display the 'Bookmark' Window.
- 3) Touch the **X** Button next to the bookmark to be deleted.
- 4) Touch the **OK** Button on the confirmation screen.
- 5) To acknowledge deletion of the bookmark, touch the **OK** Button.

### Enabling/disabling ESP:

- 1) From MFD Home, touch **Utilities > Setup > Avionics Settings**.
- 2) If necessary, scroll to display the **Stability & Protection** Button.
- 3) Touch the **Stability & Protection** Button to enable or disable ESP. A green annunciator on the button indicates ESP is enabled.

ESP is automatically enabled when power is applied to the system.

### Viewing database information:

- 1) From MFD Home, touch **Utilities > Setup > Avionics Status**.
- 2) Touch the **Database** Tab.

- 3) Touch the button corresponding to the display (**MFD1**, **PFD1**, **PFD2**, **GTC1**, or **GTC2**) for which the database information will be viewed.
- 4) Scroll to display the appropriate database information.

Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCS

Additional Features

Abnormal Operation

Annun/Alerts

Appendix

Index

# ABNORMAL OPERATION

## ABNORMAL GPS CONDITIONS

The annunciations listed in the following table can appear on the HSI when abnormal GPS conditions occur. Refer to the Flight Management Section for more information on Dead Reckoning Mode.

**GPS LOI**

**GPS  
INTEG  
OK**



**Example of HSI Annunciations**

Dead Reckoning (DR) Mode causes the following items on the PFD to be shown in amber when FMS is the selected navigation source:

It is important to note that estimated navigation data supplied by the system in DR Mode may become increasingly unreliable and must not be used as a sole means of navigation. See the Flight Management section for more information about DR mode.

## GARMIN SVT TROUBLESHOOTING

Garmin SVT™ is intended to be used with traditional attitude, heading, obstacle, terrain, and traffic inputs. SVT is disabled when valid attitude or heading data is not available for the display. In case of invalid SVT data, the PFD display reverts to the standard blue-over-brown attitude display.

SVT becomes disabled without the following data resources:

- Attitude data
- Heading data
- GPS position data
- Obstacle data
- TAWS function is not available, in test mode, or failed
- 4.9 arc-second terrain data

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCS
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCS

Additional Features

Abnormal Operation

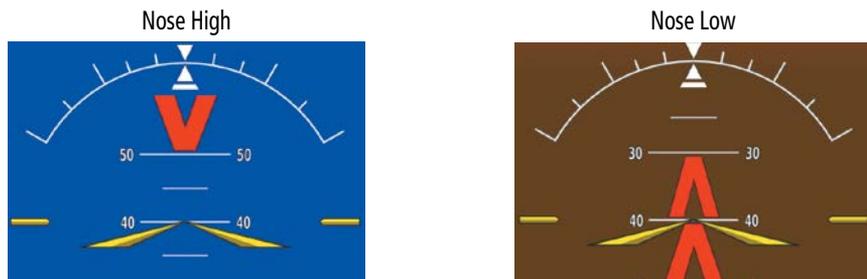
Annun/Alerts

Appendix

Index

## UNUSUAL ATTITUDES

When the aircraft enters an unusual pitch attitude, red extreme pitch warning chevrons pointing toward the horizon are displayed on the Attitude Indicator, starting at 50° above and 30° below the horizon line.



Pitch Attitude Warnings

If pitch exceeds +30°/-20° or bank exceeds 65°, some information displayed on the PFD is removed. The Altimeter and Airspeed, Attitude, Vertical Speed, and Horizontal Situation indicators remain on the display and the Bearing Information, Alerts, and Annunciation windows can be displayed during such situations. The following information is removed from the PFD (and corresponding softkeys are disabled) when the aircraft experiences unusual attitudes:

- Traffic Annunciations
- Selected Course indication
- AFCS Annunciations
- System Time
- Flight director Command Bars
- Minimum Altitude Alerting indication
- Inset Map
- Vertical Deviation, Glideslope, and Glide-path Indicators
- Outside air temperature (OAT)
- Altimeter Barometric Setting
- DME Information Window
- Selected Altitude
- Wind data
- VNV Target Altitude
- Selected Heading indication

## SVT UNUSUAL ATTITUDES

During extreme pitch attitudes, the display shows either a brown or blue colored bar at the top or bottom of the screen to represent earth or sky. The blue colored bar is also displayed when terrain gradient is great enough to completely fill the display. This is intended to prevent losing sight of the horizon during extreme pitch attitudes.

Blue Band



Terrain Completely Fills Display

Blue Sky Bar with Full Display Terrain

## ABNORMAL COM OPERATION

### STUCK MICROPHONE

If a push-to-talk (PTT) Key becomes stuck, the COM transmitter stops transmitting after 35 seconds of continuous operation. An 'L MIC STUCK ON' (pilot side) or an 'R MIC STUCK ON' (copilot side) CAS message will appear to advise the crew of a stuck microphone.

The **MIC** Button Annunciator flashes as long as the PTT Key remains stuck.

### COM FAILURE

In case of a COM system failure, an amber X may appear on the frequency display.



GTC



PFD



MFD

COM Failure

## COM TUNING FAILURE

A discrepancy between the active COM frequency on the GTC, and the actual tuned frequency reported by the controlling GIA, causes the active COM frequency digits on the GTC and PFD to turn amber.

## DEAD RECKONING NAVIGATION

The system will revert to Dead Reckoning (DR) Mode if the system is no longer using GPS for position fixing.) In DR mode, the system uses its last-known position combined with continuously updated airspeed and heading data (if available) to calculate and display the aircraft's current estimated position. It is important to note that estimated navigation data supplied by the system in DR mode may become increasingly unreliable and must not be used as a sole means of navigation.

DR mode is inherently less accurate than the other modes due to the lack of satellite measurements or DME inputs needed to determine a position. Changes in wind speed and/or wind direction compound the relative inaccuracy of DR mode. Because of this degraded accuracy, other navigation equipment must be relied upon for position awareness until other position data is restored.

DR mode is indicated on the system by the appearance of the letters "DR" displayed in amber on the HSI below and to the left of the aircraft symbol, and on top of the aircraft symbol on navigation maps. The CDI deviation bar is displayed in amber, but is removed from the display after 20 minutes in DR mode. The autopilot will remain coupled in DR mode as long as the lateral deviation guidance is available (20 min).

As a result of operating in DR mode, all data that is dependent upon GPS is displayed as amber text to denote degraded navigation source information. If the VSD Inset is enabled, 'VSD Not Available' will be displayed. Airspace alerts continue to function, but with degraded accuracy. Also, while the system is in DR mode, SVT and terrain alerting functions are disabled.

## ABNORMAL AFCS OPERATION

### SUSPECTED AUTOPILOT MALFUNCTION

#### **Mitigating suspected autopilot failure or trim failure:**

- 1) Firmly grasp the control wheel.
- 2) Press and hold the **AP DISC** Switch. The autopilot will disconnect and power is removed from the trim motor. Power is also removed from all primary servo motors and engaged solenoids. Note the visual and aural alerting indicating autopilot disconnect.
- 3) Retrim the aircraft as needed. Substantial trim adjustment may be needed.
- 4) Pull the appropriate circuit breaker(s) to electrically isolate the servo and solenoid components.
- 5) Release the **AP DISC** Switch.

## OVERPOWERING AUTOPILOT SERVOS

In the context of this discussion, “overpowering” refers to any pressure or force applied to the pitch controls when the autopilot is engaged. A small amount of pressure or force on the pitch controls can cause the autopilot automatic trim to run to an out-of-trim condition. Therefore, any application of pressure or force to the controls should be avoided when the autopilot is engaged.

Overpowering the autopilot during flight will cause the autopilot’s automatic trim to run, resulting in an out-of-trim condition or cause the trim to hit the stop if the action is prolonged. In this case, larger than anticipated control forces are required after the autopilot is disengaged.

### **Checking autopilot servos during the preflight check:**

- 1) Check for proper autopilot operation and ensure the autopilot can be overpowered.
- 2) Note the forces required to overpower the autopilot servo clutches.

## EMERGENCY DESCENT MODE

### **Activation**

The Daher TBM 930 is equipped with an Emergency Descent Mode (EDM). EDM is automatically activated when the autopilot is engaged and:

- » Pressure Altitude is greater than 15,000 feet MSL,
- AND
- » Cabin Altitude is too high.

Power lever should be reduced to idle to achieve a maximum rate of decent. EDM is annunciated on the PFD and the following AFCS modes are engaged: FLC Mode with a target speed of 255 KIAS or Mach equivalent, Heading Mode with a course 90° left of current heading, and a target altitude of 15,000 feet MSL.



**NOTE:** Refer to the current version of the pertinent flight manual for specific instructions regarding emergency procedures.

### **EDM Override**

To exit the EDM Mode press the **AP** Key on the AFCS Controller. If the **AP** Key is pressed again an EDM Override caution will appear. EDM Mode cannot be reentered until the EDM Override is cleared. To clear the EDM Override the cabin altitude will need to descend to below 14,900 ft and the **AP** Key needs to be cycled off and back on again.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCS
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

## DATALINK TROUBLESHOOTING

For troubleshooting purposes, check the LRU Information Box on the 'Avionics Status' Page for Iridium Receiver (GSR 56) or the XM Datalink Receiver (GDL 69) status, serial number, and software version number. If a failure has been detected in the GDL 69 the status is marked with a red X.

### Viewing the 'Avionics Status' Screen:

- 1) From MFD Home, touch **Utilities > Setup > Avionics Status**.
- 2) Touch the **LRU Info** Tab.
- 3) Scroll to display the appropriate database information.
- 4) Touch an LRU to view further information.

# ANNUNCIATIONS & ALERTS

## COMPARATOR ANNUNCIATIONS

Annunciation	Condition
<b>ALT</b>	Difference in altitude sensors is > 200 ft.
<b>IAS</b>	If either airspeed sensor detects > 35 knots, and the difference in sensors is > 10 knots.
	If either airspeed sensor detects > 80 knots, and the difference in sensors is > 7 knots.
<b>HDG</b>	Difference in heading sensors is > 6 degrees.
<b>PIT</b>	Difference in pitch sensors is > 5 degrees.
<b>ROL</b>	Difference in roll sensors is > 6 degrees.
<b>VDI</b>	Difference in temperature compensated altitudes is > 50 ft.
<b>ALT</b>	No data from one or both altitude sensors.
<b>IAS</b>	No data from one or both airspeed sensors.
<b>HDG</b>	No data from one or both heading sensors.
<b>PIT</b>	No data from one or both pitch sensors.
<b>ROL</b>	No data from one or both roll sensors.
<b>VDI</b>	No temperature compensated altitude data available from one or both sources.

### Sensor Comparator Annunciations

Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCs

Additional Features

Abnormal Operation

Annun/Alerts

Appendix

Index

## REVERSIONARY SENSOR ANNUNCIATIONS

Reversionary Sensor Window Text	Condition
<b>BOTH ON ADC1</b>	Both PFDs are displaying data from ADC1.
<b>BOTH ON ADC2</b>	Both PFDs are displaying data from ADC2
<b>BOTH ON AHRS1</b>	Both PFDs are displaying data from AHRS1.
<b>BOTH ON AHRS2</b>	Both PFDs are displaying data from AHRS2.
<b>BOTH ON GPS1</b>	Both PFDs are displaying data from GPS1.
<b>BOTH ON GPS2</b>	Both PFDs are displaying data from GPS2.
<b>USING ADC1</b>	PFD2 is displaying data from ADC1. Shown while PFD1 is displaying data from ADC2.
<b>USING ADC2</b>	PFD1 is displaying data from ADC2. Shown while PFD2 is displaying data from ADC1.
<b>USING AHRS1</b>	PFD2 is displaying data from AHRS1. Shown while PFD1 is displaying data from AHRS2.
<b>USING AHRS2</b>	PFD1 is displaying data from AHRS2. Shown while PFD2 is displaying data from AHRS1.
<b>USING GPS1</b>	PFD2 is displaying data from the #1 GPS.
<b>USING GPS2</b>	PFD1 is displaying data from the #2 GPS.

## Reversionary Sensor Annunciations

## NEAREST AIRSPACE

Message	Comments
<b>INSIDE ARSPC</b> – Inside airspace.	The aircraft is inside the airspace.
<b>ARSPC AHEAD</b> – Airspace ahead – less than 10 minutes.	Special use airspace is ahead of aircraft. The aircraft current ground track penetrates the airspace within 10 minutes.
<b>ARSPC NEAR</b> – Airspace near and ahead.	Special use airspace is near and ahead of the aircraft position.
<b>ARSPC NEAR</b> – Airspace near – less than 2 nm.	Special use airspace is within 2 nm of the aircraft position.

### Airspace Alert Messages

## IMPORTING AND EXPORTING FLIGHT PLANS

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. In addition, one or more of these waypoints may not have imported 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.
'Some waypoints not loaded. Waypoints locked.'	The flight plan on the SD card contains one or more waypoints 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.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCS
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

Flight Instruments	Flight Plan Import/Export Results	Description
EAS	'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.
Nav/Com/XPDR/Audio	'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 Management	'Flight plan successfully exported.'	The stored flight plan was successfully exported to the SD card.
Hazard Avoidance	'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.

### Flight Plan Import/Export Messages

## VSD MESSAGES

	Message	Description
AFCs	'Loading...'	VSD is loading data due to a range change, full/half switch, or first being selected for display.
Additional Features	'Flight Plan Not Available'	Flight Plan mode is selected and there is not a flight plan loaded with at least one leg.
Abnormal Operation	'Flight Plan mode unavailable because aircraft off course and active leg over 200 NM'	All of the following are true: <ul style="list-style-type: none"> <li>- Flight Plan mode is selected</li> <li>- The active leg is greater than 200 nm</li> <li>- The aircraft is outside the swath</li> </ul>
Annun/Alerts	'VSD Not Available'	At least one of the following is true: <ul style="list-style-type: none"> <li>- Valid terrain database not available</li> <li>- GPS MSL altitude not available</li> <li>- Current barometric altitude not available</li> <li>- Neither current track nor current heading available</li> <li>- GPS position not available</li> <li>- Map range setting is less than 1 nm</li> </ul>
Appendix	'VSD Data is old, disable and enable VSD'	The system has encountered a delay and VSD data has failed to update for 2 seconds or more. This message may be momentarily displayed and then removed as the delay is overcome.
Index		

### VSD System Messages

**FIS-B WEATHER ANNUNCIATIONS**

FIS-B Weather Status Banner Annunciation	Description
<b>FIS-B WEATHER UNAVAILABLE</b>	Current aircraft position is outside the FIS-B Coverage area.
<b>NOT RECEIVING WEATHER DATA</b>	GTX 345 is currently offline or not receiving FIS-B Weather data from the antenna.

FIS-B Weather Status Annunciation

**AIRBORNE WEATHER RADAR ANNUNCIATIONS**

Radar Mode	Radar Mode Annunciation Box	Center Banner Annunciation
Standby	<b>STANDBY</b>	<b>STANDBY</b>
Weather	<b>WEATHER</b>	None
Ground Mapping	<b>GROUND</b>	None
Radar Failed*	<b>FAIL</b>	<b>RADAR FAIL</b>

\* See following table for additional failure annunciations

Radar Mode Annunciations on the 'Weather Radar' Pane

Radar Feature Status	Description
<b>STAB INOP</b>	The radar is not receiving pitch and roll information. The antenna stabilization feature is inoperative.
<b>ALTITUDE COMP TILT ON</b>	The altitude-compensated tilt feature is selected on.
<b>ALTITUDE COMP TILT OFF</b>	The altitude-compensated tilt feature is selected off.
<b>GND CLTR SUPPRESS ON</b>	The ground clutter suppression feature is selected on.
<b>GND CLTR SUPPRESS OFF</b>	The ground clutter suppression feature is selected off.
<b>GND CLTR SUPPRESS INACTIVE</b>	The ground clutter suppression feature is enabled, but the radar is in a mode which cannot support ground clutter suppression (e.g. vertical scan or sector scan).
<b>GND CLTR SUPPRESS UNAVAILABLE</b>	The radar is missing data needed to suppress ground clutter.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCs
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

Flight Instruments  
EAS  
Nav/Com/XPDR/Audio  
Flight Management  
Hazard Avoidance  
AFCS  
Additional Features  
Abnormal Operation  
Annun/Alerts  
Appendix  
Index

Radar Feature Status	Description
<b>TURB DETECTION ON</b>	The turbulence detection feature is selected on.
<b>TURB DETECTION OFF</b>	The turbulence detection feature is selected off.
<b>TURB DETECTION INACTIVE</b>	Turbulence detection is inactive when map range is greater than 160 nm, or radar is in a mode which cannot support turbulence detection.
<b>TURB DETECTION UNAVAILABLE</b>	The radar is missing data needed to detect turbulence.

### Radar Feature Status Annunciations on the 'Weather Radar' Pane

Weather Radar Pane Center Banner Annunciation	Description
<b>BAD CONFIG</b>	The radar configuration is invalid. The radar should be serviced.
<b>RDR FAULT</b>	The radar unit is reporting a fault. The radar should be serviced.
<b>RADAR FAIL</b>	The system is not receiving valid data from the radar unit. The system should be serviced.

### Abnormal Radar Status Annunciations on the 'Weather Radar' Pane

## TERRAIN ANNUNCIATIONS

### TERRAIN-SVT AND TAWS-B IMPACT AREA ANNUNCIATIONS

Potential Impact Area Examples	Alert Type	Example Annunciation
	Warning	TAWS-B Warning <b>PULL UP</b> Terrain-SVT Warning <b>TERRAIN</b>
	Caution	<b>TERRAIN</b>

### Terrain-SVT and TAWS-B Potential Impact Area with Annunciations

## TERRAIN-SVT ALERTS

Alert Type	PFD/Terrain- SVT Pane Alert	Touchscreen Controller Pop-Up Alert	Voice Alert
Reduced Required Terrain Clearance Warning (RTC)	<b>TERRAIN</b>	<b>WARNING - TERRAIN</b>	"Warning; Terrain, Terrain"
Imminent Terrain Impact Warning (ITI)	<b>TERRAIN</b>	<b>WARNING - TERRAIN</b>	"Warning; Terrain, Terrain"
Reduced Required Obstacle Clearance Warning (ROC)	<b>TERRAIN</b>	<b>WARNING - OBSTACLE</b>	"Warning; Obstacle, Obstacle"
Imminent Obstacle Impact Warning (IOI)	<b>TERRAIN</b>	<b>WARNING - OBSTACLE</b>	"Warning; Obstacle, Obstacle"
Reduced Required Terrain Clearance Caution (RTC)	<b>TERRAIN</b>	<b>CAUTION - TERRAIN</b>	"Caution; Terrain, Terrain"
Imminent Terrain Impact Caution (ITI)	<b>TERRAIN</b>	<b>CAUTION - TERRAIN</b>	"Caution; Terrain, Terrain"
Reduced Required Obstacle Clearance Caution (ROC)	<b>TERRAIN</b>	<b>CAUTION - TERRAIN</b>	"Caution; Obstacle, Obstacle"
Imminent Obstacle Impact Caution (IOI)	<b>TERRAIN</b>	<b>CAUTION - TERRAIN</b>	"Caution; Obstacle, Obstacle"

Terrain SVT Alerts Summary

## TAWS-B ALERTS

Alert Type	PFD/TAWS Pane Annunciation	Touchscreen Controller Pop-Up Alert	Voice Alerts
Excessive Descent Rate Warning (EDR)	<b>PULL UP</b>	<b>PULL-UP</b>	"Pull Up"
Reduced Required Terrain Clearance Warning (RTC)	<b>PULL UP</b>	<b>TERRAIN - PULL-UP</b> or <b>TERRAIN AHEAD - PULL-UP</b> *	"Terrain, Terrain; Pull Up, Pull Up" * or "Terrain Ahead, Pull Up; Terrain Ahead, Pull Up"
Imminent Terrain Impact Warning (ITI)	<b>PULL UP</b>	<b>TERRAIN - PULL-UP</b> * or <b>TERRAIN AHEAD - PULL-UP</b>	"Terrain, Terrain; Pull Up, Pull Up" or "Terrain Ahead, Pull Up; Terrain Ahead, Pull Up" *

Alert Type	PFD/TAWS Pane Annunciation	Touchscreen Controller Pop-Up Alert	Voice Alerts
Reduced Required Obstacle Clearance Warning (ROC)	<b>PULL UP</b>	<b>OBSTACLE - PULL-UP</b> or <b>OBSTACLE AHEAD - PULL-UP</b> *	"Obstacle, Obstacle; Pull Up, Pull Up"* or "Obstacle Ahead, Pull Up; Obstacle Ahead, Pull Up"
Imminent Obstacle Impact Warning (IOI)	<b>PULL UP</b>	<b>OBSTACLE - PULL-UP</b> * or <b>OBSTACLE AHEAD - PULL-UP</b>	"Obstacle, Obstacle; Pull Up, Pull Up" or "Obstacle Ahead, Pull Up; Obstacle Ahead, Pull Up"*
Reduced Required Terrain Clearance Caution (RTC)	<b>TERRAIN</b>	<b>CAUTION - TERRAIN</b> or <b>TERRAIN AHEAD</b> *	"Caution, Terrain; Caution, Terrain"* or "Terrain Ahead; Terrain Ahead"
Imminent Terrain Impact Caution (ITI)	<b>TERRAIN</b>	<b>CAUTION - TERRAIN</b> * or <b>TERRAIN AHEAD</b>	"Caution, Terrain; Caution, Terrain" or "Terrain Ahead; Terrain Ahead"*
Reduced Required Obstacle Clearance Caution (ROC)	<b>TERRAIN</b>	<b>CAUTION - OBSTACLE</b> or <b>OBSTACLE AHEAD</b> *	"Caution, Obstacle; Caution, Obstacle"* or "Obstacle Ahead; Obstacle Ahead"
Imminent Obstacle Impact Caution (IOI)	<b>TERRAIN</b>	<b>CAUTION - OBSTACLE</b> * or <b>OBSTACLE AHEAD</b>	"Caution, Obstacle; Caution, Obstacle" or "Obstacle Ahead; Obstacle Ahead"*
Premature Descent Alert Caution (PDA)	<b>TERRAIN</b>	<b>TOO LOW - TERRAIN</b>	"Too Low, Terrain"
Altitude Callout "500"	None	None	"Five-Hundred"

Alert Type	PFD/TAWS Pane Annunciation	Touchscreen Controller Pop-Up Alert	Voice Alerts
Excessive Descent Rate Caution (EDR)	<b>TERRAIN</b>	<b>SINK RATE</b>	"Sink Rate"
Negative Climb Rate Caution (NCR)	<b>TERRAIN</b>	<b>DONT SINK</b> * or <b>TOO LOW - TERRAIN</b>	"Don't Sink"* or "Too Low, Terrain"

\* Alerts with multiple messages are configurable at installation and are installation-dependent. Alerts for the default configuration when more than one option is available are indicated with asterisks.

### TAWS-B Alerts Summary

## TERRAIN-SVT STATUS ANNUNCIATIONS

Alert Type	PFD/Terrain SVT Display Annunciation	Terrain SVT Display Center Banner Annunciation	Voice Alert
System Test in Progress.	<b>TER TEST</b>	<b>TERRAIN TEST</b>	None
System Test Pass.	None	None	"Terrain System Test OK"
Terrain Alerting Inhibited.	<b>TER INH</b>	None	None
No FMS position.	<b>TER N/A</b>	<b>NO FMS POSITION</b>	"Terrain System Not Available"*
Excessively degraded GPS signal; or Out of database coverage area.	<b>TER N/A</b>	None	"Terrain System Not Available"*
Terrain System Test Fail; Terrain or Obstacle database unavailable or invalid; Invalid software configuration; or System audio fault.	<b>TER FAIL</b>	<b>TERRAIN FAIL</b>	"Terrain System Failure"
MFD Terrain or Obstacle database unavailable or invalid, and Terrain SVT operating with PFD Terrain or Obstacle databases.	None	<b>TERRAIN DATABASE FAILURE</b>	None

### Terrain SVT System Status Annunciations

## TAWS-B STATUS ANNUNCIATIONS

Alert Type	TAWS Pane Annunciation	TAWS Pane Center Banner Annunciation	Voice Alert
TAWS System Fail	<b>TAWS FAIL</b>	<b>TAWS FAIL</b>	"TAWS System Failure"
TAWS Not Available	<b>TAWS N/A</b>	<b>NO FMS POSITION</b> (if FMS position lost)	"TAWS Not Available"
TAWS Available	None	None	"TAWS Available"
System Test in progress	<b>TAWS TEST</b>	<b>TAWS TEST</b>	None
TAWS System Test pass	None	None	"TAWS System Test OK"
TAWS PDA/FLTA Alerting Inhibited	<b>TAWS INH</b>	None	None

### TAWS-B System Status Annunciations

## TAWS-B ABNORMAL STATUS ANNUNCIATIONS

Alert Cause	TAWS Pane Annunciation(s)	TAWS Alert Types Not Available
TAWS System Test Fail; Terrain, Airport Terrain or Obstacle database unavailable or invalid on all displays; software mismatch among displays; TAWS audio fault.	<b>TAWS FAIL</b> and <b>TAWS FAIL</b>	FLTA, PDA
MFD Terrain or Obstacle database unavailable or invalid. TAWS operating with PFD Terrain or Obstacle databases.	<b>TERRAIN DATABASE FAILURE</b>	
No GPS position.	<b>TAWS N/A</b> and <b>NO FMS POSITION</b>	FLTA, PDA, VCO
Excessively degraded GPS signal, or out of database coverage area.	<b>TAWS N/A</b>	FLTA, PDA

### TAWS-B Abnormal Status Annunciations

### TRAFFIC ANNUNCIATIONS

### TIS ANNUNCIATIONS

Traffic Map Mode Annunciation	Traffic Map Center Banner Annunciation	Traffic Overlay Status Icon (Navigation Maps)	Description
<b>DATA FAILED</b>	<b>TRFC FAIL</b>		Data is being received from the transponder, but a failure is detected in the data stream.*
<b>NO DATA</b>	<b>TRFC FAIL</b>		Data is not being received from the transponder.*
<b>OPERATING</b>	None		TIS is operating and is receiving traffic data from a data link..
<b>OPERATING</b>	<b>UNAVAILABLE</b>		TIS is operating, but the traffic service is currently unavailable or is out of reception range.
<b>STANDBY</b>	<b>STANDBY</b>		TIS is in Standby Mode.
<b>UNIT FAILED</b>	<b>TRFC FAIL</b>		The transponder has failed.*

\* Contact a service center or Garmin dealer for corrective action.

### TIS Modes and Status Annunciations

Traffic Status Banner Annunciation	Description
<b>TA OFF SCALE *</b>	A Traffic Advisory is outside the selected display range. Annunciation is removed when traffic comes within the selected display range.
<b>TA X.X ± XX ↓</b>	System cannot determine bearing of Traffic Advisory. Annunciation indicates distance in nm, altitude separation in hundreds of feet, and altitude trend, if available ('<UP>' indicates climbing, '<DN>' indicates descending).
<b>AGE MM:SS †</b>	Appears if traffic data is not refreshed within 6 seconds. If after another 6 seconds data is not received, traffic is removed from the display. The quality of displayed traffic information is reduced as the age increases.
<b>TRFC COAST †</b>	The displayed data is not current (6 to 12 seconds since last message). † The quality of displayed traffic information is reduced when this message is displayed.

Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCS

Additional Features

Abnormal Operation

Annun/Alerts

Appendix

Index

Traffic Status Banner Annunciation	Description
<b>TRFC RMVD†</b>	Traffic is removed because it is too old for coasting (12 to 60 seconds since last message). Traffic may exist within the selected display range, but it is not displayed.
<b>TRFC FAIL**</b>	Traffic data has failed.
<b>NO TRFC DATA</b>	Traffic has not been detected.
<b>TRFC UNAVAIL</b>	The traffic service is unavailable or is out of reception range.

\* Shown as symbol on traffic maps.

\*\*Also shown in center of traffic maps.

† Also shown in lower left corner of traffic maps.

### TIS Traffic Status Annunciations

## TAS ANNUNCIATIONS

Traffic System Mode	Traffic Map Mode Annunciation	Traffic Overlay Status Icon
Operating	<b>OPERATING</b>	
Standby	<b>STANDBY</b> (also shown in white in center of Traffic Map Pane)	
Failed*	<b>UNIT FAILED</b>	

\* See following table for additional failure annunciations.

### TAS Mode Annunciations

Traffic Map Pane Center Annunciation	Description
<b>NO DATA</b>	System is not receiving any data from the traffic unit.
<b>DATA FAILED</b>	System is receiving data from the traffic unit, but the unit is reporting a failure.
<b>FAILED</b>	The traffic unit is sending invalid data to the system.

### TAS Failure Annunciations

Traffic Status Banner Annunciation	Description
<b>TA OFF SCALE</b>	A Traffic Advisory is outside the selected display range.* Annunciation is removed when traffic comes within the selected display range.
<b>TA X.X ± XX ↕</b>	System cannot determine bearing of Traffic Advisory.** Annunciation indicates distance in NM, altitude separation in hundreds of feet, and an altitude trend ('<UP>' indicates climbing, '<DN>' indicates descending), if a trend of at least 500 fpm is detected.
<b>TRFC FAIL</b>	The traffic unit has failed (unit is self-reporting a failure or sending incorrectly formatted data).
<b>NO TRFC DATA</b>	Data is not being received from the traffic unit.

\* Shown as symbol on 'Traffic Map' Pane.

\*\*Shown in center of 'Traffic Map' Pane.

**TAS Traffic Status Annunciations**

**ADS-B ANNUNCIATIONS**

ADS-B Mode	Traffic Mode Annunciation (Traffic Map Pane)	'Traffic Map' Pane Center Banner Annunciation	Traffic Display Status Icon (Other Maps)
ADS-B Operating in Airborne Mode	<b>ADS-B: AIRB</b>	None	
ADS-B Operating in Surface Mode	<b>ADS-B: SURF</b>	None	
ADS-B Traffic Off	<b>ADS-B: OFF</b>	<b>ADS-B TRFC OFF</b>	
ADS-B Traffic Not Available	<b>ADS-B: N/A</b>	<b>ADS-B TRFC N/A</b>	
ADS-B Failed*	<b>ADS-B: FAIL</b>	<b>ADS-B TRFC FAIL</b>	

\* See following table for additional failure annunciations.

**ADS-B Modes**

Flight Instruments	ADS-B Ground Station Reception Status	Traffic Map Pane Icon
	Receiving ADS-B traffic services from a ground station.	
EAS	Not receiving ADS-B traffic services from a ground station.	

## ADS-B Modes

Nav/Com/XPDR/Audio	'Traffic Map' Pane Center Annunciation	Description
	<b>NO DATA</b>	Data is not being received from the traffic unit.
Flight Management	<b>DATA FAILED</b>	Data is being received from the traffic unit, but the unit is self-reporting a failure.
Hazard Avoidance	<b>FAILED</b>	Incorrect data format received from the traffic unit.

## Traffic Failure Annunciations

AFCS	Traffic Status Banner Annunciation	Description
	<b>TA OFF SCALE</b>	A Traffic Advisory is outside the selected display range.* Annunciation is removed when traffic comes within the selected display range.
Additional Features	<b>TA X.X ± XX ↓</b>	System cannot determine bearing of Traffic Advisory.** Annunciation indicates distance in nm, altitude separation in hundreds of feet, and altitude trend arrow (climbing/descending).
Abnormal Operation	<b>TRFC FAIL</b>	Traffic unit has failed (unit is self-reporting a failure or sending incorrectly formatted data).
Annun/Alerts	<b>NO TRFC DATA</b>	Data is not being received from the traffic unit.

\* Shown as symbol on 'Traffic Map' Pane.

\*\*Shown in center of 'Traffic Map' Pane.

## Traffic Status Annunciations

### AFCS ANNUNCIATIONS AND ALERTS

Appendix	Alert Condition	Annunciation	Description
Index	Rudder Mistrim Right	<b>RUD→</b>	Yaw servo providing sustained force in the indicated direction.
	Rudder Mistrim Left	<b>←RUD</b>	

Alert Condition	Annunciation	Description
Aileron Mistrim Right	<b>AIL→</b>	Roll servo providing sustained force in the indicated direction
Aileron Mistrim Left	<b>←AIL</b>	
Elevator Mistrim Down	<b>↓ELE</b>	Pitch servo providing sustained force in the indicated direction.
Elevator Mistrim Up	<b>↑ELE</b>	
Pitch Trim Failure (or stuck <b>MEPT</b> Switch)	<b>PTRM</b>	If AP engaged, take control of the aircraft and disengage AP. If AP disengaged, move <b>MEPT</b> switches separately to unstick
Yaw Trim Failure (or stuck <b>MEYT</b> Switch)	<b>YTRM</b>	If AP engaged, take control of the aircraft and disengage AP. If AP disengaged, move the <b>MEYT</b> switch to check if a stuck switch is causing the annunciation
Yaw Damper Failure	<b>YAW</b>	YD control failure
Roll Failure	<b>ROLL</b>	Roll axis control failure; AP inoperative
Pitch Failure	<b>PTCH</b>	Pitch axis control failure; AP inoperative
System Failure	<b>AFCS</b>	AP and MEPT are unavailable; FD may still be available
Preflight Test	<b>PFT</b>	Performing preflight system test; aural alert sounds at completion. Do not press the <b>AP DISC</b> Switch during servo initialization and preflight system tests as this may cause the preflight system test to fail or never to start (if servos fail their initialization tests). Power must be cycled to the servos to remedy the situation.
	<b>PFT</b>	Preflight system test failed; aural alert sounds at failure

### AFCS Status Alerts

## SURFACEWATCH ALERTS

Alert Annunciation	Associated Voice Alert	Description
<b>TWY TAKEOFF</b>	"Taxiway"	Issued when the aircraft is taking off from a non-runway (e.g., a taxiway).
<b>RWY TOO SHORT</b>	"Runway too short"	Issued when the aircraft is taking off from or landing on a runway with a length less than needed as calculated by the TOLD function.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCS
- Additional Features
- Abnormal Operation
- Annunciations
- Appendix
- Index

Alert Annunciation	Associated Voice Alert	Description
<b>CHECK RUNWAY</b>	"Check runway"	Issued when the aircraft is taking off from or landing on a runway different than that entered in TOLD.
<b>TWY LANDING</b>	"Taxiway"	Issued when the aircraft is landing on a non-runway (e.g., a taxiway).

### SurfaceWatch Alert Annunciations

## DATALINK TROUBLESHOOTING

Message	Message Location	Description
<b>CHECK ANTENNA</b>	'XM Information' Screen (Touchscreen Controller)	Datalink Receiver antenna error; service required
<b>UPDATING</b>	'XM Information' Screen (Touchscreen Controller)	Datalink Receiver updating encryption code
<b>NO SIGNAL</b>	'XM Information' Screen (Touchscreen Controller) Weather Datalink Display (selected display pane)	Loss of signal; signal strength too low for receiver
<b>LOADING</b>	'Music' Screen (Touchscreen Controller)	Acquiring channel audio or information
<b>OFF AIR</b>	'Music' Screen (Touchscreen Controller)	Channel not in service
<b>---</b>	'Music' Screen (Touchscreen Controller)	Missing channel information
<b>WEATHER DATA LINK FAILED</b>	Weather Datalink Display (selected display pane)	No communication from Datalink Receiver within last 5 minutes
<b>ACTIVATION REQUIRED</b>	'XM Information' Screen (Touchscreen Controller) Weather Datalink Display (selected display pane)	SiriusXM subscription is not activated

### SiriusXM Datalink Receiver Messages

**CAS (CREW ALERTING SYSTEM) MESSAGES**

**Warning Messages**

Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCS

Additional Features

Abnormal Operation

Annun/Alerts

Appendix

Index

Message	Description
<b>ABORT APR</b>	Loss of GPS navigation. Abort approach
<b>AURAL WRN FAIL</b>	Aural warning system failure due to non-communicating LRUs
<b>AURAL WARN 1 CHNL</b>	Aural warning failure of one LRU
<b>CABIN ALTITUDE</b>	Cabin altitude over 10,000 ft
<b>CABIN DIFF PRESS</b>	Cabin pressure differential over 6.4 psi
<b>DOOR</b>	Pilot or cabin door open
<b>ELEC FEATH FAULT</b>	Feathering system failure
<b>EDM</b>	Autopilot has activated emergency descent mode
<b>FIRE</b>	Engine compartment fire (temperature over 200°C; if installed)
<b>FLAPS ASYM</b>	Dissymmetry between left- and right-hand flaps
<b>FUEL OFF</b>	Fuel tank selectors set to "Off"
<b>FUEL PRESS</b>	Fuel pressure below 10 psi
<b>GEAR UNSAFE</b>	Gears are in an unsafe configuration
<b>ITT</b>	Engine start: ITT over 1000°C, 870°C (5 s), or 840°C (20 s) Engine running : ITT over 840°C
<b>OIL PRESS</b>	Oil pressure below 60 psi
<b>O2 CYL CLOSED</b>	Oxygen cylinder closed
<b>PARK BRAKE</b>	Parking brake applied
<b>PRESSU OFF</b>	No bleed air provided to cabin
<b>USP ACTIVE</b>	Underspeed protection is active

**Caution Messages**

Message	Description
<b>AP ON YD OFF</b>	The autopilot is ON while the Yaw Damper is OFF
<b>APR DWNGRADE</b>	Approach downgraded , vertical guidance generated by SBAS is unavailable, Use LNAV only minimums
<b>AUTO SEL</b>	Fuel timer off or out of service
<b>AUX BOOST PMP ON</b>	Electric fuel pump running (manual or automatic mode)
<b>BAT AMP</b>	Battery current over 50 A while on ground
<b>BAT OFF</b>	Battery off
<b>CARGO DOOR</b>	Forward cargo door open
<b>CHIP</b>	Oil chip detector on (if installed)

	Message	Description
Flight Instruments	<b>ESP DEGRADED - AOA</b>	Electronic Stability and Protection (ESP™) angle of attack (AOA) mode is inoperative. The system should be serviced
EAS	<b>ESP DEGRADED - IAS</b>	Electronic Stability and Protection (ESP™) indicated air speed (IAS) mode is inoperative. The system should be serviced
	<b>ESP FAIL</b>	The ESP function has failed and is inoperative. The system should be serviced
	<b>FUEL IMBALANCE</b>	Fuel tanks imbalanced by more than 15 USGAL for >30 seconds
Nav/Com/XPDR/Audio	<b>FUEL LOW L-R*</b>	Fuel quantity less than or equal to 9.1 USGAL in specified tank
	<b>GAS DEGRADED</b>	Global Air System failure. The system should be serviced.
	<b>GAS EVENT</b>	Global Air System needs servicing
Flight Management	<b>GPU DOOR</b>	GPU receptacle door not closed
	<b>GWX FAIL</b>	The GDU is not receiving status packet from the GWX 70 is reporting a fault. The GWX 70 radar system should be serviced
	<b>IGNITION</b>	Ignition exciter running
Hazard Avoidance	<b>INERT SEP FAIL</b>	Inertial separator failure
	<b>LOW LVL FAIL L-R*</b>	Low fuel level sensor failure for specified tank
	<b>LOW VOLTAGE</b>	Battery voltage below 26 V
AFCS	<b>MAIN GEN</b>	Starter generator unconnected
	<b>NG HI</b>	Generator speed is more than 103%
	<b>OIL PRESS</b>	Oil pressure between 60 and 100 psi
	<b>OIL TEMP</b>	Oil temperature below 0°C or above 104°C
Additional Features	<b>PITOT HT ON L-R*</b>	Specified pitot heat (left or right) on while engine off
	<b>PITOT NO HT L-R*</b>	Specified pitot heat (left or right) off
Abnormal Operation	<b>PRESSU BACKUP</b>	GASC cannot compute optimal cabin altitude (cabin altitude default value is set at 9800 feet)
	<b>PROP DEICE FAIL</b>	Prop deice selected and not on
	<b>PROP DEICE ON</b>	Prop deice on while engine off
Annun/Alerts	<b>STALL HEAT ON</b>	Stall heat on
	<b>STALL NO HEAT</b>	Stall heat off
	<b>TCAS FAIL</b>	TCAS has failed and is inoperative. The system should be serviced
	<b>TRAFFIC FAIL</b>	Traffic has failed and is inoperative. The system should be serviced
Appendix	<b>VACUUM LOW</b>	Vacuum pressure less than 3.75 in Hg
	<b>USE OXYGEN MASK</b>	Cabin altitude high
	<b>XPDR1 ADS-B FAIL</b>	ADS-B of XPDR1 is inoperative. The transponder may not be receiving a valid GPS position. Other transponder functions may be available. Service when possible.
Index	<b>XPDR1 FAIL</b>	XPDR1 has failed and is inoperative. The system should be serviced

Message	Description
<b>XPDR2 ADS-B FAIL</b>	ADS-B of XPDR2 is inoperative. The transponder may not be receiving a valid GPS position. Other transponder functions may be available. Service when possible.
<b>XPDR2 FAIL</b>	XPDR2 has failed and is inoperative. The system should be serviced

\* Only affected side (L, R, or L-R) displayed in CAS message; applicable messages listed here display L-R for example

## ADVISORY Messages

Message	Description
<b>EDM OVERRIDE</b>	Emergency Descent Mode has been overridden by the crew
<b>ESP OFF</b>	Electronic Stability and Protection has been disabled on the Avionics Settings Screen
<b>INERT SEP ON</b>	Inertial separator extended
<b>MAX DIFF MODE</b>	Cabin pressurization system in MAX DIFF MODE.
<b>STARTER</b>	Starter generator running

## 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.
"Airspeed"	Played when the indicated airspeed is below a given threshold for a given aircraft configuration. Note this alert may be heard under normal conditions during the landing flare.
"Engaging Autopilot"	The autopilot is being engaged automatically by the system. Only available when ESP™ is installed.
"Incoming Call"	Satellite telephone is receiving a call.
"ATC Message"	New Data Link message received from ATC.
"Traffic"	Played when a Traffic Advisory (TA) is issued with the TIS system.
"Traffic Not Available"	The aircraft is outside the Traffic Information Service (TIS) coverage area.
"Traffic, Traffic"	Played when a Traffic Advisory (TA) is issued with a TAS system.
"TAS System Test OK"	Played when the TAS system passes a pilot-initiated self test.
"TAS System Test Failed"	Played when the TAS system fails a pilot-initiated self test.

	Voice Alert	Description
Flight Instruments	"One o'clock" through "Twelve o'clock" or "No Bearing"	Played to indicate bearing of traffic from own aircraft.
EAS	"High", "Low", "Same Altitude" (if within 200 feet of own altitude), or "Altitude not available"	Played to indicate altitude of traffic relative to own aircraft.
Nav/Com/XPDR/Audio	"Less than one mile", "One Mile" through "Ten Miles", or "More than ten miles"	Played to indicate distance of traffic from own aircraft.
Flight Management	"Stall"	Imminent stall is sensed.
	"Landing Gear"	Indicates to the pilot the landing gear should be down.
Hazard Avoidance	"Overspeed"	Indicates the aircraft is exceeding 265 knots.
	"Use Oxygen Mask"	Indicates that there is a cabin depressurization and the pilots should use oxygen mask.

## SYSTEM MESSAGES

	System Message	Comments
Additional Features	<b>ADC1 SERVICE</b> – GDC1 needs service. Return unit for repair.	A failure has been detected in the GDC1. The system should be serviced.
Abnormal Operation	<b>ADC2 SERVICE</b> – GDC2 needs service. Return unit for repair.	A failure has been detected in the GDC2. The system should be serviced.
Annun/Alerts	<b>AHRS MAG DB</b> – AHRS magnetic model database version mismatch.	AHRS1 and AHRS2 magnetic model database versions do not match.
	<b>AHRS1 CAL</b> – AHRS1 calibration version error. Srvc req'd.	AHRS1 calibration version error. The system should be serviced.
Appendix	<b>AHRS1 CONFIG</b> – AHRS1 config error. Config service req'd.	AHRS configuration settings do not match those of backup configuration memory. The system should be serviced.
Index	<b>AHRS1 GPS</b> – AHRS1 not receiving any GPS information.	AHRS1 is not receiving any or any useful GPS information. Check current version of the pertinent flight manual limitations. The system should be serviced.

System Message	Comments
<b>AHRS1 GPS</b> – AHRS1 not receiving backup GPS information.	AHRS1 is not receiving backup GPS information. The system should be serviced.
<b>AHRS1 GPS</b> – AHRS1 operating exclusively in no-GPS mode.	AHRS1 is operating exclusively in no-GPS mode. The system should be serviced.
<b>AHRS1 GPS</b> – AHRS1 using backup GPS source.	AHRS1 is using the backup GPS path. Primary GPS path has failed. The system should be serviced when practical.
<b>AHRS1 SERVICE</b> – AHRS1 needs service. Return unit for repair.	A failure has been detected in the #1 AHRS. The system should be serviced.
<b>AHRS1 SRVC</b> – AHRS1 Magnetic-field model needs update.	AHRS1 earth magnetic field model is out of date. Update magnetic field model when practical.
<b>AHRS1 TAS</b> – AHRS1 not receiving valid airspeed.	AHRS1 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.
<b>AHRS2 CAL</b> – AHRS2 calibration version error. Svc req'd.	AHRS2 calibration version error. The system should be serviced.
<b>AHRS2 CONFIG</b> – AHRS2 config error. Config service req'd.	AHRS configuration settings do not match those of backup configuration memory. The system should be serviced.
<b>AHRS2 GPS</b> – AHRS2 not receiving any GPS information.	AHRS2 is not receiving any or any useful GPS information. Check current version of the pertinent flight manual limitations. The system should be serviced.
<b>AHRS2 GPS</b> – AHRS2 not receiving backup GPS information.	AHRS2 is not receiving backup GPS information. The system should be serviced.
<b>AHRS2 GPS</b> – AHRS2 operating exclusively in no-GPS mode.	AHRS2 is operating exclusively in no-GPS mode. The system should be serviced.
<b>AHRS2 GPS</b> – AHRS2 using backup GPS source.	AHRS2 is using the backup GPS path. Primary GPS path has failed. The system should be serviced when practical.
<b>AHRS2 SERVICE</b> – AHRS2 needs service. Return unit for repair.	A failure has been detected in the AHRS2. The system should be serviced.

Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCS

Additional Features

Abnormal Operation

Annun/Alerts

Appendix

Index

	System Message	Comments
Flight Instruments	<b>AHRS2 SRVC</b> – AHRS2 Magnetic-field model needs update.	AHRS2 earth magnetic field model is out of date. Update magnetic field model when practical.
EAS	<b>AHRS2 TAS</b> – AHRS2 not receiving valid airspeed.	AHRS2 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.
Nav/Com/XPDR/Audio	<b>APR INACTV</b> – Approach is not active.	The system notifies the pilot the loaded approach is not active. Activate approach when required.
Flight Management	<b>ARSPC AHEAD</b> – Airspace ahead - less than 10 minutes.	Special use airspace is ahead of aircraft. The aircraft will penetrate the airspace within 10 minutes.
	<b>ARSPC NEAR</b> – Airspace near – less than 2 nm.	Special use airspace is within 2 nm of the aircraft position.
Hazard Avoidance	<b>ARSPC NEAR</b> – Airspace near and ahead.	Special use airspace is near and ahead of the aircraft position.
AFCs	<b>AUDIO MANIFEST</b> – Audio software mismatch, communication halted.	The GIA has incorrect software installed. The system should be serviced.
Additional Features	<b>CHECK CRS</b> – Database course for LOC1 / [LOC ID] is [CRS]°.	Selected course for LOC1 differs from published localizer course by more than 10 degrees.
	<b>CHECK CRS</b> – Database course for LOC2 / [LOC ID] is [CRS]°.	Selected course for LOC2 differs from published localizer course by more than 10 degrees.
Abnormal Operation	<b>CNFG MODULE</b> – PFD1 configuration module is inoperative.	The specified GDU's configuration module backup memory has failed. The system should be serviced.
Annun/Alerts	<b>COM1 CONFIG</b> – COM1 config error. Config service req'd.	The COM1 configuration settings do not match backup configuration memory. The system should be serviced.
Appendix	<b>COM1 MANIFEST</b> – COM1 software mismatch, communication halted.	The COM 1 has incorrect software installed. The system should be serviced.
Index	<b>COM1 PTT</b> – COM1 push-to-talk key is stuck.	The COM1 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.

System Message	Comments
<b>COM1 SERVICE</b> – COM1 needs service. Return unit for repair.	The system has detected a failure in COM1. COM1 may still be usable. The system should be serviced when practical.
<b>COM1 TEMP</b> – COM1 over temp. Reducing transmitter power.	The system has detected an over temperature condition in COM1. The transmitter operates at reduced power. If the problem persists, the system should be serviced.
<b>COM2 CONFIG</b> – COM2 config error. Config service req'd.	The COM2 configuration settings do not match backup configuration memory. The system should be serviced.
<b>COM2 MANIFEST</b> – COM2 software mismatch, communication halted.	The COM 2 has incorrect software installed. The system should be serviced.
<b>COM2 PTT</b> – COM2 push-to-talk key is stuck.	The 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.
<b>COM2 SERVICE</b> – COM2 needs service. Return unit for repair.	The system has detected a failure in COM2. COM2 may still be usable. The system should be serviced when practical.
<b>COM2 TEMP</b> – COM2 over temp. Reducing transmitter power.	The system has detected an over temperature condition in COM2. The transmitter operates at reduced power. If the problem persists, the system should be serviced.
<b>COPILOT PRIM PTT KEYSTK</b> – Copilot primary push-to-talk key is stuck.	The GMA 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.
<b>COPILOT SEC PTT KEYSTK</b> – Copilot secondary push-to-talk key is stuck.	The GMA 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.
<b>CRUISE I</b> – Cruise I conditions met.	Cruise I engine trend data log has been captured.
<b>CRUISE II</b> – Cruise II conditions met.	Cruise II engine trend data log has been captured.
<b>DATA LOST</b> – 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 & PFDs with preferred settings, if desired.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCs
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

	System Message	Comments
Flight Instruments	<b>DATABASE CHANGE</b> – 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 a navigation database update. Verify use of airways in stored flight plans and reload airways as needed.
EAS	<b>DATABASE CHANGE</b> – Verify user modified procedures.	This occurs when a stored flight plan contains procedures that have been manually edited. This alert is issued only after a navigation database update. Verify the user-modified procedures in stored flight plans are correct and current.
Nav/Com/XPDR/Audio	<b>DB MISMATCH</b> – Navigation database mismatch. Xtalk is off.	The GDUs have different navigation database versions or regions installed. Crossfill is off. Check the 'Avionics Status' Screen to determine versions or regions. Also, check the 'Avionics Status' Screen for a database synchronization function not completed. After synchronization is complete, power must be turned off, then on.
Flight Management	<b>DB MISMATCH</b> – Obstacle database mismatch.	The GDUs have different obstacle database versions or regions installed. Check the 'Avionics Status' Screen to determine versions or regions. Also, check the 'Avionics Status' Screen for a database synchronization function not completed. After synchronization is complete, power must be turned off, then on.
Hazard Avoidance	<b>DB MISMATCH</b> – Standby Navigation database mismatch.	The GDUs have different standby navigation database versions or regions installed. Check the 'Avionics Status' Screen to determine versions or regions. Also, check the 'Avionics Status' Screen for a database synchronization function not completed. After synchronization is complete, power must be turned off, then on.
AFCs	<b>DB MISMATCH</b> – Terrain database mismatch.	The GDUs have different terrain database versions or regions installed. Check the 'Avionics Status' Screen to determine versions or regions. Also, check the 'Avionics Status' Screen for a database synchronization function not completed. After synchronization is complete, power must be turned off, then on.
Additional Features	<b>DIG GMA1 MANIFEST</b> – DIG GMA 1 software mismatch, communication halted.	The digital audio controller has incorrect software installed. The system should be serviced.
Abnormal Operation	<b>EXCEEDANCE</b> – Exceedance data is being logged.	An exceedance log has been captured.
Annun/Alerts	<b>FAILED PATH</b> – A data path has failed.	A data path between two or more LRUs has failed. The system should be serviced when practical.
Appendix		
Index		

System Message	Comments
<b>FPL TRUNC</b> – 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.
<b>FPL WPT LOCK</b> – Flight plan waypoint is locked.	Upon applying power to the system, the system detects that a stored flight plan waypoint is locked. This occurs when an aviation 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 flight plans that are 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.
<b>FPL WPT MOVE</b> – 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.
<b>FS510 CARD ERROR</b> – FS510 not detected in MFD Bottom Slot.	The wireless transceiver (FS 510) multimedia card for the wireless transceiver (FS 510) was removed from the bottom card slot of the MFD. The multimedia card needs to be reinserted.
<b>G/S1 FAIL</b> – G/S1 is inoperative.	A failure has been detected in glideslope receiver 1. The system should be serviced.
<b>G/S1 SERVICE</b> – G/S1 needs service. Return unit for repair.	A failure has been detected in glideslope receiver 1. The receiver may still be available. The system should be serviced when practical.
<b>G/S2 FAIL</b> – G/S2 is inoperative.	A failure has been detected in glideslope receiver 2. The system should be serviced.
<b>G/S2 SERVICE</b> – G/S2 needs service. Return unit for repair.	A failure has been detected in glideslope receiver 2. The receiver may still be available. The system should be serviced when practical.
<b>GDC1 MANIFEST</b> – GDC1 software mismatch, communication halted.	The GDC1 has incorrect software installed. The system should be serviced.
<b>GDC2 MANIFEST</b> – GDC2 software mismatch, communication halted.	The GDC2 has incorrect software installed. The system should be serviced.
<b>GDL69 CONFIG</b> – GDL 69 config error. Config service req'd.	GDL 69A SXM configuration settings do not match those of backup configuration memory. The system should be serviced.
<b>GDL69 FAIL</b> – GDL 69 has failed.	A failure has been detected in the GDL 69A SXM. The receiver is unavailable. The system should be serviced.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCs
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

	System Message	Comments
Flight Instruments	<b>GDL69 MANIFEST</b> – GDL69 software mismatch, communication halted.	The GDL 69A SXM has incorrect software installed. The system should be serviced.
EAS	<b>GEA1 CONFIG</b> – GEA1 config error. Config service req'd.	The GEA1 configuration settings do not match those of backup configuration memory. The system should be serviced.
Nav/Com/XPDR/Audio	<b>GEA1 MANIFEST</b> – GEA1 software mismatch, communication halted.	The GEA1 has incorrect software installed. The system should be serviced.
Flight Management	<b>GEO LIMITS</b> – AHRS1 too far north/south, no magnetic compass.	The aircraft is outside geographical limits for approved AHRS operation. Heading is annunciated as invalid.
Hazard Avoidance	<b>GEO LIMITS</b> – AHRS2 too far North/South, no magnetic compass.	The aircraft is outside geographical limits for approved AHRS operation. Heading is flagged as invalid.
AFCs	<b>GFC MANIFEST</b> – GFC software mismatch, communication halted.	Incorrect servo software is installed, or gain settings are incorrect.
Additional Features	<b>GIA1 CONFIG</b> – GIA1 audio config error. Config service req'd.	The GIA1 have an error in the audio configuration. The system should be serviced.
	<b>GIA1 CONFIG</b> – GIA1 config error. Config service req'd.	The GIA1 configuration settings do not match backup configuration memory. The system should be serviced.
Abnormal Operation	<b>GIA1 COOLING</b> – GIA1 over temperature.	The GIA1 temperature is too high. If problem persists, the system should be serviced.
	<b>GIA1 COOLING</b> – GIA1 temperature too low.	The GIA1 temperature is too low to operate correctly. Allow units to warm up to operating temperature.
Annun/Alerts	<b>GIA1 MANIFEST</b> – GIA1 software mismatch, communication halted.	The GIA1 has incorrect software installed. The system should be serviced.
Appendix	<b>GIA1 SERVICE</b> – GIA1 needs service. Return the unit for repair.	The GIA1 self-test has detected a problem in the unit. The system should be serviced.
Index	<b>GIA2 CONFIG</b> – GIA2 audio config error. Config service req'd.	The GIA2 have an error in the audio configuration. The system should be serviced.

System Message	Comments
<b>GIA2 CONFIG</b> – GIA2 config error. Config service req'd.	The GIA2 configuration settings do not match backup configuration memory. The system should be serviced.
<b>GIA2 COOLING</b> – GIA2 over temperature.	The GIA2 temperature is too high. If problem persists, the system should be serviced.
<b>GIA2 COOLING</b> – GIA2 temperature too low.	The GIA2 temperature is too low to operate correctly. Allow units to warm up to operating temperature.
<b>GIA2 MANIFEST</b> – GIA2 software mismatch, communication halted.	The GIA2 has incorrect software installed. The system should be serviced.
<b>GIA2 SERVICE</b> – GIA2 needs service. Return the unit for repair.	The GIA2 self-test has detected a problem in the unit. The system should be serviced.
<b>GMA1 AUX MANIFEST</b> – GMA 1 AUX software mismatch, communication halted.	The digital audio controller has incorrect software installed. The system should be serviced.
<b>GMA1 CONFIG</b> – GMA1 config error. Config service req'd.	The audio controller configuration settings do not match backup configuration memory. The system should be serviced.
<b>GMA1 FAIL</b> – GMA1 is inoperative.	The audio controller has detected a failure. The audio controller is unavailable. The system should be serviced.
<b>GMA1 MANIFEST</b> – DIG GMA 1 software mismatch, communication halted.	The audio controller has incorrect software installed. The system should be serviced.
<b>GMA1 SERVICE</b> – GMA1 needs service. Return unit for repair.	The audio controller self-test has detected a problem in the unit. Certain audio functions may still be available, and the audio controller may still be usable. The system should be serviced when practical.
<b>GMC1 CONFIG</b> – GMC Config error. Config service req'd.	Error in the configuration of GMC1.
<b>GMC1 FAIL</b> – GMC is inoperative.	A failure has been detected in GMC1. GMC1 is unavailable.
<b>GMC1 KEYSTK</b> – GMC [key name] key is stuck.	A key is stuck on the GMC1 bezel. Attempt to free the stuck key by pressing it several times. The system should be serviced if the problem persists.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCS
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

	System Message	Comments
Flight Instruments	<b>GMC1 MANIFEST</b> – GMC software mismatch. Communication halted.	GMC1 has incorrect software installed. The system should be serviced.
EAS	<b>GMU1 MANIFEST</b> – GMU1 software mismatch, communication halted.	GMU1 has incorrect software installed. The system should be serviced.
Nav/Com/XPDR/Audio	<b>GPS NAV LOST</b> – Loss of GPS navigation. Enable GPS sensors.	Loss of GPS navigation due to GPS being disabled
Flight Management	<b>GPS NAV LOST</b> – Loss of GPS navigation. GPS fail.	Loss of GPS navigation due to GPS failure.
	<b>GPS NAV LOST</b> – Loss of GPS navigation. Position error.	Loss of GPS navigation due to position error.
Hazard Avoidance	<b>GPS1 CHECK POSITION</b> – Position difference. Check position sensors.	A difference has been detected in the current position. Check position sensors.
AFCs	<b>GPS1 FAIL</b> – GPS1 is inoperative.	A failure has been detected in GPS1 receiver. The system should be serviced.
Additional Features	<b>GPS1 SERVICE</b> – GPS1 needs service. Return unit for repair.	A fault has been detected in the GPS1 receiver. The receiver may still be available. If the message persists through a normal power cycle, the system should be serviced when practical.
Abnormal Operation	<b>GPS2 CHECK POSITION</b> – Position difference. Check position sensors.	A difference has been detected in the current position. Check position sensors.
	<b>GPS2 FAIL</b> – GPS2 is inoperative.	A failure has been detected in GPS2 receiver. The system should be serviced.
Annun/Alerts	<b>GPS2 SERVICE</b> – GPS2 needs service. Return unit for repair.	A fault has been detected in the GPS2 receiver. The receiver may still be available. If the message persists through a normal power cycle, the system should be serviced when practical.
Appendix	<b>GRA1 CAL</b> – GRA1 calibration error. Service req'd.	A calibration error has been detected in the GRA. The system should be serviced.
Index	<b>GRA1 CONFIG</b> – GRA1 config error. Config service req'd.	The GRA configuration settings do not match those of backup configuration memory. The system should be serviced.

System Message	Comments
<b>GRA1 MANIFEST</b> – GRA1 software mismatch, communication halted.	The GRA has incorrect software installed. The system should be serviced.
<b>GRA1 SERVICE</b> – GRA1 needs service. Return unit for repair.	A failure has been detected in the GRA. The system should be serviced.
<b>GRA1 TEMP</b> – GRA1 over temperature.	The GRA temperature is too high. If the problem persists, the system should be serviced.
<b>GRS1 CONFIG</b> – GRS1 config error. Config service req'd.	GRS configuration settings do not match those of backup configuration memory. The system should be serviced.
<b>GRS1 MANIFEST</b> – GRS1 software mismatch, communication halted.	The AHRS1 has incorrect software installed. The system should be serviced.
<b>GRS1 SERVICE</b> – GRS1 needs service. Return unit for repair.	The AHRS1 should be serviced when practical.
<b>GSR1 FAIL</b> – GSR1 has failed.	A failure has been detected in GSR1. The system should be serviced.
<b>GTC1 CARD1 ERR</b> – GTC1 card 1 is invalid.	The internal SD card in the Touchscreen Controller contains invalid data. The system should be serviced.
<b>GTC1 CARD1 REM</b> – GTC1 card 1 was removed. Reinsert card.	The internal SD card in the Touchscreen Controller was removed. The system should be serviced.
<b>GTC1 CONFIG</b> – GTC1 config error. Config service req'd.	Touchscreen Controller configuration settings do not match those of backup configuration memory. The system should be serviced.
<b>GTC1 COOLING</b> – GTC1 has poor cooling. Reducing power usage.	The Touchscreen Controller has insufficient cooling. If the problem persists, the system should be serviced.
<b>GTC1 DB ERR</b> – GTC1 database error exists.	The Touchscreen Controller detected a failure in one or more databases. Reload databases with new data card. If problem persists, delete databases and reload with a new card.
<b>GTC1 FAN FAIL</b> – GTC1 internal fan failure. Unit needs service.	The internal fan in the Touchscreen Controller has failed. The system should be serviced.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCs
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

	System Message	Comments
Flight Instruments	<b>GTC1 KEYSTK</b> – GTC1 [key name] key is stuck.	A knob or key is stuck on the GTC bezel. Attempt to free the stuck control by pushing or turning it several times. The system should be serviced if the problem persists.
EAS	<b>GTC1 MANIFEST</b> – GTC1 software mismatch, communication halted.	The Touchscreen Controller has incorrect software installed. The system should be serviced.
Nav/Com/XPDR/Audio	<b>GTC1 SERVICE</b> – GTC1 needs service. Return unit for repair.	The Touchscreen Controller should be serviced..
Flight Management	<b>GTC2 CARD1 ERR</b> – GTC2 card 1 is invalid.	The internal SD card in the Touchscreen Controller contains invalid data. The system should be serviced.
	<b>GTC2 CARD1 REM</b> – GTC2 card 1 was removed. Reinsert card.	The internal SD card in the Touchscreen Controller was removed. The system should be serviced.
Hazard Avoidance	<b>GTC2 CONFIG</b> – GTC2 config error. Config service req'd.	Touchscreen Controller configuration settings do not match those of backup configuration memory. The system should be serviced.
AFCs	<b>GTC2 COOLING</b> – GTC2 has poor cooling. Reducing power usage.	The Touchscreen Controller has insufficient cooling. If the problem persists, the system should be serviced.
Additional Features	<b>GTC2 DB ERR</b> – GTC2 database error exists.	The Touchscreen Controller detected a failure in one or more databases. Reload databases with new data card. If problem persists, delete databases and reload with a new card.
Abnormal Operation	<b>GTC2 FAN FAIL</b> – GTC2 internal fan failure. Unit needs service.	The internal fan in the Touchscreen Controller has failed. The system should be serviced.
	<b>GTC2 KEYSTK</b> – GTC2 [key name] key is stuck.	A knob or key is stuck on the GTC bezel. Attempt to free the stuck control by pushing or turning it several times. The system should be serviced if the problem persists.
Annun/Alerts	<b>GTC2 MANIFEST</b> – GTC2 software mismatch, communication halted.	The Touchscreen Controller has incorrect software installed. The system should be serviced.
Appendix	<b>GTC2 SERVICE</b> – GTC2 needs service. Return unit for repair.	The Touchscreen Controller should be serviced..
Index	<b>GTS CONFIG</b> – GTS Config error. Config service req'd.	The GTS and GDU have different copies of the GTS configuration, or the Mode S address is invalid. The system should be serviced.

System Message	Comments
<b>GTS MANIFEST</b> – GTS software mismatch, communication halted.	The GTS has incorrect software installed. The system should be serviced.
<b>GTX1 MANIFEST</b> – GTX1 software mismatch, communication halted.	The transponder has incorrect software installed. The system should be serviced.
<b>GTX2 MANIFEST</b> – GTX2 software mismatch, communication halted.	The transponder has incorrect software installed. The system should be serviced.
<b>GWX CONFIG</b> – GWX config error. Config service req'd.	GWX configuration settings do not match those of the GDU configuration. The system should be serviced.
<b>GWX MANIFEST</b> – GWX software mismatch, communication halted.	The GWX has incorrect software installed. The system should be serviced.
<b>GWX SERVICE</b> – GWX needs service. Return unit for repair.	A failure has been detected in the GWX. The GWX may still be usable.
<b>HDG FAULT</b> – AHRS1 magnetometer fault has occurred.	A fault has occurred in AHRS1. Heading is flagged as invalid. The AHRS uses GPS for backup mode operation. The system should be serviced.
<b>HDG FAULT</b> – AHRS2 magnetometer fault has occurred.	A fault has occurred in the AHRS2. Heading is flagged as invalid. The AHRS uses GPS for backup mode operation. The system should be serviced.
<b>HF1 FAIL</b> – HF1 antenna coupler failure.	HF1 antenna coupler has failed. The system should be serviced.
<b>HF1 FAIL</b> – HF1 antenna coupler pressure fail -TX 50W.	HF1 antenna coupler pressure fail.
<b>HF1 FAIL</b> – HF1 antenna coupler pressure warning.	HF1 antenna coupler pressure is too high.
<b>HF1 FAIL</b> – HF1 power amplifier failure.	HF1 power amplifier has failed. The system should be serviced.
<b>HF1 FAIL</b> – HF1 receiver exciter failure.	HF1 receiver exciter has failed. The system should be serviced.
<b>HOLD EXPIRED</b> – Holding EFC time expired.	Expect Further Clearance (EFC) time has expired for the User Defined Hold.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCs
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

	System Message	Comments
Flight Instruments	<b>HW MISMATCH</b> – GIA hardware mismatch, GIA2 communication halted.	A GIA mismatch has been detected, where only one is SBAS capable.
EAS	<b>HW MISMATCH</b> – GIA1 hardware mismatch, GIA1 communication halted.	A GIA mismatch has been detected, where only one is SBAS capable.
Nav/Com/XPDR/Audio	<b>INSIDE ARSPC</b> – Inside airspace.	The aircraft is inside the airspace.
Flight Management	<b>LOI</b> – GPS integrity lost. Crosscheck with other NAVS.	GPS integrity is insufficient for the current phase of flight.
Hazard Avoidance	<b>LOCKED FPL</b> – 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.
AFCs	<b>LOSS OF GPS NAVIGATION</b> – Poor Satellite Coverage.	Loss of GPS navigation due to insufficient/poor satellite coverage.
Additional Features	<b>LOW BANK ACTIVE</b> – Disengage for approach.	Low Bank mode is active. Disengage to continue approach.
Abnormal Operation	<b>LOW BANK ACTIVE</b> – Disengage for RNP less than 1.0.	Low Bank mode is active. Disengage to continue RNP 1.0.
Annun/Alerts	<b>LRG MAG VAR</b> – 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°.
Appendix	<b>MFD1 BACKLIGHT CALIBRATION</b> – MFD1 calibration lost. Return for repair.	The specified GDU's backlight calibration cannot be found or is invalid. The system should be serviced.
Index	<b>PFD1 CARD 1 ERR</b> – Card 1 is invalid.	The SD card in the top card slot of the specified PFD contains invalid data.
	<b>PFD1 CARD 1 REM</b> – Card 1 was removed. Reinsert card.	The SD card was removed from the top card slot of the specified PFD. The SD card needs to be reinserted.
	<b>PFD1 CARD 2 ERR</b> – Card 2 is invalid.	The SD card in the bottom card slot of the specified PFD contains invalid data.

System Message	Comments
<b>PFD1 CARD 2 REM</b> – Card 2 was removed. Reinsert card.	The SD card was removed from the bottom card slot of the specified PFD. The SD card needs to be reinserted.
<b>MFD1 DB ERR</b> – MFD1 multiple database errors exists.	The MFD detected a failure in more than one database. Reload databases with new data card. If problem persists, delete databases and reload with a new card.
<b>MFD1 DB ERR</b> – MFD1 obstacle database error exists.	The MFD detected a failure in the obstacle database. Reload databases with new data card. If problem persists, delete databases and reload with a new card.
<b>MFD1 DB ERR</b> – MFD1 obstacle database missing.	The obstacle database is present on another LRU, but is missing on the specified LRU.
<b>MFD1 DB ERR</b> – MFD1 terrain database error exists.	The MFD detected a failure in the terrain database. Reload databases with new data card. If problem persists, delete databases and reload with a new card.
<b>MFD1 DB ERR</b> – MFD1 terrain database missing.	The terrain database is present on another LRU, but is missing on the specified LRU.
<b>MFD1 CONFIG</b> – MFD1 config error. Config service req'd.	The MFD configuration settings do not match backup configuration memory. The system should be serviced.
<b>MFD1 COOLING</b> – MFD1 has poor cooling. Reducing power usage.	The MFD is overheating and is reducing power consumption by dimming the display. If problem persists, the system should be serviced.
<b>MFD1 DB ERR</b> – MFD1 multiple database errors exists.	The MFD detected a failure in more than one database. Reload databases with new data card. If problem persists, delete databases and reload with a new card.
<b>MFD1 DB ERR</b> – MFD1 obstacle database error exists.	The MFD detected a failure in the obstacle database. Reload databases with new data card. If problem persists, delete databases and reload with a new card.
<b>MFD1 DB ERR</b> – MFD1 obstacle database missing.	The obstacle database is present on another LRU, but is missing on the specified LRU.
<b>MFD1 DB ERR</b> – MFD1 terrain database error exists.	The MFD detected a failure in the terrain database. Reload databases with new data card. If problem persists, delete databases and reload with a new card.
<b>MFD1 DB ERR</b> – MFD1 terrain database missing.	The terrain database is present on another LRU, but is missing on the specified LRU.
<b>MFD1 FAN FAIL</b> – MFD1 internal fan failure. Return for repair.	The specified GDU's internal cooling fan has failed. The system should be serviced.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCs
- Additional Features
- Abnormal Operation
- Annunciations
- Appendix
- Index

	System Message	Comments
Flight Instruments	<b>MFD1 KEYSTK</b> – MFD1 [key name] is stuck.	A key is stuck on the MFD bezel. Attempt to free the stuck key by pressing it several times. The system should be serviced if the problem persists.
EAS	<b>MFD1 MANIFEST</b> – MFD1 software mismatch, communication halted.	The MFD has incorrect software installed. The system should be serviced.
Nav/Com/XPDR/Audio	<b>MFD1 SERVICE</b> – MFD1 needs service. Return unit for repair.	The MFD self-test has detected a problem. The system should be serviced.
Flight Management	<b>MFD1 SOFTWARE</b> – MFD1 mismatch, communication halted.	The MFD has different software versions installed. The system should be serviced.
Hazard Avoidance	<b>MFD1 TERRAIN DSP</b> – MFD1 Terrain awareness display unavailable.	One of the terrain or obstacle databases required for TAWS in the MFD is missing or invalid.
AFCs	<b>MFD1 VOLTAGE</b> – MFD1 has low voltage. Reducing power usage	The MFD voltage is low. The system should be serviced.
Additional Features	<b>NAV DB UPDATED</b> – Active navigation database updated.	System has updated the active navigation database from the standby navigation database.
Abnormal Operation	<b>NAV1 MANIFEST</b> – NAV1 software mismatch, communication halted.	The NAV 1 has incorrect software installed. The system should be serviced.
Annun/Alerts	<b>NAV1 RMT XFR</b> – NAV1 remote transfer key is stuck.	The remote NAV1 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.
Appendix	<b>NAV1 SERVICE</b> – NAV1 needs service. Return unit for repair.	A failure has been detected in the NAV1 receiver. The receiver may still be available. The system should be serviced.
Index	<b>NAV2 MANIFEST</b> – NAV2 software mismatch, communication halted.	The NAV 2 has incorrect software installed. The system should be serviced.
	<b>NAV2 RMT XFR</b> – NAV2 remote transfer key is stuck.	The remote 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.
	<b>NAV2 SERVICE</b> – NAV2 needs service. Return unit for repair.	A failure has been detected in the NAV2 receiver. The receiver may still be available. The system should be serviced.

System Message	Comments
<b>NON-MAG UNITS</b> – Non-magnetic NAV ANGLE display units are active.	Navigation angle is not set to MAGNETIC after applying power to the system.
<b>NON WGS84 WPT</b> – Do not use GPS for navigation to [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.
<b>NO RUNWAY POSITION DATA</b> – Inhibit SurfaceWatch. No runway position data.	Inhibit SurfaceWatch.
<b>PFD POSITIONS DIFFERENT</b> – PFD position mismatch. Check position sensors.	A difference has been detected in the displayed position on the PFDs. Check position sensors.
<b>PFD1 BACKLIGHT CALIBRATION</b> – PFD1 calibration lost. Return for repair.	The PFD1 backlight calibration cannot be found or is invalid. The system should be serviced.
<b>PFD1 CARD 1 ERR</b> – Card 1 is invalid.	The SD card in the top card slot of the specified PFD contains invalid data.
<b>PFD1 CARD 1 REM</b> – Card 1 was removed. Reinsert card.	The SD card was removed from the top card slot of the specified PFD. The SD card needs to be reinserted.
<b>PFD1 CARD 2 ERR</b> – Card 2 is invalid.	The SD card in the bottom card slot of the specified PFD contains invalid data.
<b>PFD1 CARD 2 REM</b> – Card 2 was removed. Reinsert card.	The SD card was removed from the bottom card slot of the specified PFD. The SD card needs to be reinserted.
<b>PFD1 CONFIG</b> – PFD1 config error. Config service req'd.	The PFD1 configuration settings do not match backup configuration memory. The system should be serviced.
<b>PFD1 COOLING</b> – PFD1 has poor cooling. Reducing power usage.	PFD1 is overheating and is reducing power consumption by dimming the display. If problem persists, the system should be serviced.
<b>PFD1 DB ERR</b> – PFD1 multiple database errors exists.	The PFD detected a failure in more than one database. Reload databases with new data card. If problem persists, delete databases and reload with a new card.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCs
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

	System Message	Comments
Flight Instruments	<b>PFD1 DB ERR</b> – PFD1 obstacle database error exists.	The PFD detected a failure in the obstacle database. Reload databases with new data card. If problem persists, delete databases and reload with a new card.
EAS	<b>PFD1 DB ERR</b> – PFD1 obstacle database missing.	The obstacle database is present on another LRU, but is missing on the specified LRU.
Nav/Com/XPDR/Audio	<b>PFD1 DB ERR</b> – PFD1 terrain database error exists.	The PFD detected a failure in the terrain database. Reload databases with new data card. If problem persists, delete databases and reload with a new card.
Flight Management	<b>PFD1 DB ERR</b> – PFD1 terrain database missing.	The terrain database is present on another LRU, but is missing on the specified LRU .
Hazard Avoidance	<b>PFD1 FAN FAIL</b> – PFD1 internal fan failure. Unit needs service.	The PFD1 internal cooling fan has failed. The system should be serviced.
AFCs	<b>PFD1 KEYSTK</b> – PFD1 [key name] is stuck.	A key is stuck on the PFD1 bezel. Attempt to free the stuck key by pressing it several times. The system should be serviced if the problem persists.
Additional Features	<b>PFD1 MANIFEST</b> – PFD1 software mismatch, communication halted.	PFD1 has incorrect software installed. The system should be serviced.
Abnormal Operation	<b>PFD1 SERVICE</b> – PFD1 needs service. Return unit for repair.	The PDF1 self-test has detected a problem. The system should be serviced.
Annun/Alerts	<b>PFD1 SOFTWARE</b> – PFD1 mismatch, communication halted.	PFD1 has different software versions installed. The system should be serviced.
Appendix	<b>PFD1 TERRAIN DSP</b> – PFD1 Terrain awareness display unavailable.	One of the terrain or obstacle databases required for TAWS in PFD1 is missing or invalid.
Index	<b>PFD1 VOLTAGE</b> – PFD1 has low voltage. Reducing power usage	The PFD1 voltage is low. The system should be serviced.
	<b>PFD2 BACKLIGHT CALIBRATION</b> – PFD2 calibration lost. Return for repair.	The PFD2 backlight calibration cannot be found or is invalid. The system should be serviced.
	<b>PFD2 CARD 1 ERR</b> – Card 1 is invalid.	The SD card in the top card slot of the specified PFD contains invalid data.

System Message	Comments
<b>PFD2 CARD 1 REM</b> – Card 1 was removed. Reinsert card.	The SD card was removed from the top card slot of the specified PFD. The SD card needs to be reinserted.
<b>PFD2 CARD 2 ERR</b> – Card 2 is invalid.	The SD card in the bottom card slot of the specified PFD contains invalid data.
<b>PFD2 CARD 2 REM</b> – Card 2 was removed. Reinsert card.	The SD card was removed from the bottom card slot of the specified PFD. The SD card needs to be reinserted.
<b>PFD2 CONFIG</b> – PFD2 config error. Config service req'd.	The PFD2 configuration settings do not match backup configuration memory. The system should be serviced.
<b>PFD2 COOLING</b> – PFD2 has poor cooling. Reducing power usage.	PFD2 is overheating and is reducing power consumption by dimming the display. If problem persists, the system should be serviced.
<b>PFD2 DB ERR</b> – PFD2 multiple database errors exists.	The PFD2 detected a failure in more than one database. Reload databases with new data card. If problem persists, delete databases and reload with a new card.
<b>PFD2 DB ERR</b> – PFD2 obstacle database error exists.	The PFD2 detected a failure in the obstacle database. Reload databases with new data card. If problem persists, delete databases and reload with a new card.
<b>PFD1 DB ERR</b> – PFD2 obstacle database missing.	The obstacle database is present on another LRU, but is missing on the specified LRU.
<b>PFD2 DB ERR</b> – PFD2 terrain database error exists.	The PFD2 detected a failure in the terrain database. Reload databases with new data card. If problem persists, delete databases and reload with a new card.
<b>PFD2 DB ERR</b> – PFD2 terrain database missing.	The terrain database is present on another LRU, but is missing on the specified LRU.
<b>PFD2 FAN FAIL</b> – PFD2 internal fan failure. Unit needs service.	The PFD2 internal cooling fan has failed. The system should be serviced.
<b>PFD2 KEYSTK</b> – PFD2 [key name] is stuck.	A key is stuck on the PFD2 bezel. Attempt to free the stuck key by pressing it several times. The system should be serviced if the problem persists.
<b>PFD2 MANIFEST</b> – PFD 1 software mismatch, communication halted.	PFD2 has incorrect software installed. The system should be serviced.
<b>PFD2 SERVICE</b> – PFD2 needs service. Return unit for repair.	The PFD1 self-test has detected a problem. The system should be serviced.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCS
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

	System Message	Comments
Flight Instruments	<b>PFD2 SOFTWARE</b> – PFD2 mismatch, communication halted.	PFD2 has different software versions installed. The system should be serviced.
EAS	<b>PFD2 TERRAIN DSP</b> – PFD2 Terrain awareness display unavailable.	One of the terrain or obstacle databases required for TAWS in PFD2 is missing or invalid.
Nav/Com/XPDR/Audio	<b>PFD2 VOLTAGE</b> – PFD2 has low voltage. Reducing power usage	The PFD2 voltage is low. The system should be serviced.
Flight Management	<b>PILOT PRIM PTT KEYSTK</b> – Pilot primary push-to-talk key is stuck.	The GMA 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.
Hazard Avoidance	<b>PILOT SEC PTT KEYSTK</b> – Pilot secondary push-to-talk key is stuck.	The GMA 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.
AFCS	<b>PTK FAIL</b> – Parallel track unavailable: bad geometry.	Bad parallel track geometry.
Additional Features	<b>PTK FAIL</b> – Parallel track unavailable: invalid leg type.	Invalid leg type for parallel offset.
Abnormal Operation	<b>PTK FAIL</b> – Parallel track unavailable: past IAF.	IAF waypoint for parallel offset has been passed.
Annun/Alerts	<b>RAIM UNAVAIL</b> – RAIM not available from FAF to MAP waypoints.	GPS satellite coverage is insufficient to perform Receiver Autonomous Integrity Monitoring (RAIM) from the FAF to the MAP waypoints.
Appendix	<b>RECORDER SERVICE REQUIRED</b> – The CVDR needs service.	The CVDR should be serviced.
Index	<b>REGISTER CONNEXT</b> – Data services inop, register w/Connex.	The system is not registered with Garmin Connex, or its current registration data has failed authentication.
	<b>SCHEDULER [#]</b> – <message>.	Message criteria entered by the user.
	<b>SLCT FREQ</b> – 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.
	<b>SLCT MAG</b> – Select MAGNETIC NAV ANGLE display units.	The system notifies the pilot to set the Nav Angle units on the ‘Avionics Settings’ Screen to Magnetic.

System Message	Comments
<b>SLCT NAV</b> – 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.
<b>SLCT NON-MAG</b> – Select alternate NAV ANGLE display units.	The system notifies the pilot to set the Nav Angle units on the 'Avionics Settings' Screen to True.
<b>STEEP TURN</b> – Steep turn ahead.	The computed bank angle needed to execute the turn ahead may exceed the current bank angle limit.
<b>STRMSCP FAIL</b> – Stormscope has failed.	Stormscope has failed. The system should be serviced.
<b>SURFACEWATCH DISABLED</b> – Too far north/south.	The SurfaceWatch system has been disabled.
<b>SURFACEWATCH FAIL</b> – Invalid audio configuration.	The SurfaceWatch system has failed due to an invalid audio configuration.
<b>SURFACEWATCH FAIL</b> – Invalid configurable alerts.	The SurfaceWatch system has failed due to invalid configurable alerts.
<b>SURFACEWATCH FAIL</b> – One or more inputs invalid.	The SurfaceWatch system has failed due to one or more invalid inputs.
<b>SURFACEWATCH INHIBITED</b> – Surfacewatch inhibited.	The SurfaceWatch system has been inhibited.
<b>SVT DISABLED</b> – Out of available terrain region.	Synthetic Vision is disabled because the aircraft is not within the boundaries of the installed terrain database.
<b>SVT DISABLED</b> – 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.
<b>TERRAIN AUD CFG</b> – Trn Awareness audio config error. Service req'd.	TAWS is disabled because the audio configuration is invalid. The system should be serviced.
<b>TERRAIN DISABLED</b> – Terrain Awareness DB resolution too low.	TAWS is disabled because a terrain database of sufficient resolution (9 arc-second or better) is not currently installed.
<b>TIMER EXPIRD</b> – Timer has expired.	The system notifies the pilot the timer has expired.
<b>TRN AUD FAIL</b> – Trn Awareness audio source unavailable.	TAWS is disabled because an aural alert audio source is unavailable.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCS
- Additional Features
- Abnormal Operation
- Annunciations/Alerts
- Appendix
- Index

	System Message	Comments
Flight Instruments	<b>UNABLE V WPT</b> – 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.
EAS	<b>UNABLE VNAV</b> – Excessive cross-track error.	The current cross-track exceeds the limit, causing vertical deviation to go invalid.
Nav/Com/XPDR/Audio	<b>UNABLE VNAV</b> – Excessive track angle error.	The current track angle error exceeds the limit, causing the vertical deviation to go invalid.
	<b>UNABLE VNAV</b> – Reverted to PIT.	The current VNAV is not supported, the Flight Director has reverted to PIT mode.
Flight Management	<b>UNABLE VNAV</b> – Parallel course selected.	A parallel course has been selected, causing the vertical deviation to go invalid.
	<b>UNABLE VNAV</b> – 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.
Hazard Avoidance	<b>UNABLE VNAV ALTITUDE</b> – Cannot meet VNAV altitude constraint.	The current vertical speed is insufficient to make the active flight plan altitude constraint prior to crossing the waypoint.
AFCs	<b>VNAV CONFIG</b> – VNAV config error Config service req'd.	VNAV configuration error. The system should be serviced.
Additional Features	<b>WPT ARRIVAL</b> – Arriving at waypoint - [xxxx]	Arriving at waypoint [xxxx], where [xxxx] is the waypoint name.
	<b>WX ALERT</b> – Possible severe weather ahead.	The GWX indicates severe weather within ±10 degrees of the aircraft heading at a range of 80 to 320 nm.
Abnormal Operation	<b>XPDR1 ADS-B 1090</b> – Datalink: ADS-B 1090 receiver has failed.	A failure has been detected in the 1090 receiver.
Annun/Alerts	<b>XPDR1 ADS-B NO POS</b> – Transponder: ADS-B is not transmitting position.	The transponder is not able to receive position information.
Appendix	<b>XPDR1 ADS-B TRFC</b> – Transponder: ADS-B traffic has failed	The Transponder is incapable of processing traffic information.
Index	<b>XPDR1 ADS-B NO TX</b> – Transponder: ADS-B out has failed.	ADS-B is inoperative. The transponder may not be receiving a valid GPS position. Other transponder functions may be available. Service when possible.

System Message	Comments
<b>XPDR1 ADS-B UAT</b> – Datalink: ADS-B in UAT receiver has failed.	A failure has been detected in the UAT receiver.
<b>XPDR1 CONFIG</b> – XPDR1 config error. Config service req'd.	The transponder configuration settings do not match those of backup configuration memory. The system should be serviced.
<b>XPDR1 CSA FAIL</b> – Traffic: ADS-B In traffic alerting has failed.	ADS-B Conflict Situational Awareness (CSA) is unavailable.
<b>XPDR1 FAULT</b> – Datalink: ADS-B in has failed.	The transponder is unable to receive ADS-B information.
<b>XPDR1 FIS-B WX</b> – Datalink: FIS-B Weather has failed.	The transponder is unable to receive FIS-B weather information.
<b>XPDR1 OVER TEMP</b> – Transponder: Transponder over temp.	The system has detected an over temperature condition in XPDR1. The transmitter operates at reduced power. If the problem persists, the system should be serviced.
<b>XPDR1 PRES ALT</b> – Transponder: ADS-B no pressure altitude.	Unable to provide pressure altitude information.
<b>XPDR1 SERVICE</b> – XPDR1 needs service. Return unit for repair.	The #1 transponder should be serviced when possible.
<b>XPDR1 UNDER TEMP</b> – Transponder: Transponder under temp.	The system has detected an under temperature condition in XPDR1. The transmitter operates at reduced power. If the problem persists, the system should be serviced.
<b>XPDR2 ADS-B 1090</b> – Datalink: ADS-B 1090 receiver has failed.	A failure has been detected in the 1090 receiver.
<b>XPDR2 FIS-B WX</b> – Datalink: FIS-B Weather has failed.	The transponder is unable to receive FIS-B weather information.
<b>XPDR2 ADS-B NO POS</b> – Transponder: ADS-B is not transmitting position.	The transponder is not able to receive position information.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCS
- Additional Features
- Abnormal Operation
- Annunciations/Alerts
- Appendix
- Index

	System Message	Comments
Flight Instruments	<b>XPDR2 ADS-B TRFC</b> – Transponder: ADS-B traffic has failed	The Transponder is incapable of processing traffic information.
EAS	<b>XPDR2 ADS-B UAT</b> – Datalink: ADS-B in UAT receiver has failed.	A failure has been detected in the UAT receiver.
Nav/Com/XPDR/Audio	<b>XPDR2 CONFIG</b> – XPDR2 config error. Config service req'd.	The transponder configuration settings do not match those of backup configuration memory. The system should be serviced.
Flight Management	<b>XPDR2 CSA FAIL</b> – Traffic: ADS-B In traffic alerting has failed.	ADS-B Conflict Situational Awareness (CSA) is unavailable.
Hazard Avoidance	<b>XPDR2 FAULT</b> – Datalink: ADS-B in has failed.	The transponder is unable to receive ADS-B information.
AFCs	<b>XPDR2 OVER TEMP</b> – Transponder: Transponder over temp.	The system has detected an over temperature condition in XPDR2. The transmitter operates at reduced power. If the problem persists, the system should be serviced.
Additional Features	<b>XPDR2 PRES ALT</b> – Transponder: ADS-B no pressure altitude.	Unable to provide pressure altitude information.
Abnormal Operation	<b>XPDR2 SERVICE</b> – XPDR2 needs service. Return unit for repair.	The #2 transponder should be serviced when possible.
Annun/Alerts	<b>XPDR2 UNDER TEMP</b> – Transponder: Transponder under temp.	The system has detected an under temperature condition in XPDR2. The transmitter operates at reduced power. If the problem persists, the system should be serviced.
	<b>XTALK ERROR</b> – Flight display crosstalk error has occurred.	The GDUs and/or GTCs are not communicating with each other. The system should be serviced.

## APPENDIX

## DATABASE MANAGEMENT

Database information is obtained from third party sources. Inaccuracies in the data may be discovered from time to time. Garmin communicates this information by issuing a Database Alert. These notifications are available on [flygarmin.com](http://flygarmin.com).

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](http://flygarmin.com) and select Aviation Data Error Report.

The system uses Secure Digital (SD) cards to load various types of data. For basic flight operations, SD cards are required for database updates. Use only 32 GB cards that are Garmin, OEM, or dealer provided.



**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.*



**NOTE:** *When loading database updates, the 'DB Mismatch' system message will be displayed until database synchronization is complete, followed by turning system power off, then on. Synchronization can be monitored on the 'Database Status' Screen.*



**NOTE:** *Loading a database in the system prior to its effective date will result in the expiration date on the Power-on Display and the effective date on the 'Database Status' Screen being displayed in amber.*



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



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

## LOADING UPDATED DATABASES

The cycles and dates for both standby and active databases are displayed on the “Database Status” Screen on the touchscreen controller. Any active databases with expiration dates in the past will be highlighted with amber text. When an expired active database has a standby database that is ready to become effective, a cyan double-sided arrow will be displayed between the database cycles. When this arrow is visible, it indicates the standby and active databases in that row will be switched on the next power cycle, activating the current standby database. Databases can also be manually selected (or deselected) by touching the database list item, then touching the **Swap** Button.

When utilizing the Wireless Transceiver, multiple regional databases (e.g. North America and Europe) may available to be loaded to the system depending on the database type. Some databases offer only one region. Only one database region may be active on the system at any time for each database. If desired, a database compatible with the aircraft’s current region of operation may be loaded as the active database through the preferred mobile device, replacing the existing region specific database. The regions loaded become the Preferred Region for each 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.

## DATABASE UPDATES USING A SUPPLEMENTAL DATA CARD

All databases are updated through an SD card in the bottom slot of each unit, or on a single card on the bottom slot of the MFD. Updating three SD cards, each loaded with new databases, will reduce the time needed for synchronization. After update, the databases are stored on the SD card in the bottom slot so the card must remain in the bottom slot of the GDU. For updating using a single SD card, see ‘Automatic Database Synchronization Feature’ below. When in standby, databases are not immediately available for use, but stored to be activated at a later time.

Database updates can be obtained by following the instructions detailed in the ‘Aviation Databases’ section of the Garmin website ([flygarmin.com](http://flygarmin.com)). Once the updated files have been downloaded from the website, a PC equipped with an appropriate SD card reader is used to unpack and program the new databases onto an existing Supplemental Data Card. When database files are loaded to the SD card, any previously loaded database files of the same type residing on the SD card will be overwritten. This includes loading a database of a different coverage area or data cycle than that currently residing on the SD card. Equipment required to perform the update is as follows:

- Windows-compatible PC computer
- SD Card Reader: SanDisk SDDR-93, SanDisk SDDR-99, Verbatim #96504, or equivalent
- Updated database obtained from the Garmin website
- Supplemental SD Cards



**NOTE:** If the FS510 is used as the Supplemental Data Card, the card reader supplied with the FS510 must be used to load the databases onto the FS510.

## Updating Databases using an SD Card:



**NOTE:** When using the automatic synchronization feature, it is only necessary to use a single card on the MFD. The Chartview and terrain databases are too large to synchronize using this method.

- 1) Download and install the databases on three SD cards.
- 2) Put an SD Card in the bottom SD card slot of the each display.
- 3) Turn the system ON.
- 4) Press the right-most softkey to acknowledge the startup screen.
- 5) Touch **Database Status** on the 'Initialization' Screen on either Touchscreen Controller.

**Or:**

From Home, touch **Utilities > Setup > Database Status**.

- 6) The database update status will appear in the status window at the top of the screen. The load is complete when 'Databases Ready' is displayed.
- 7) A cyan double-arrow will appear between the Standby and Active columns to show which standby databases will be transferred to Active at the next power cycle.
- 8) The status window will display the message 'Activate databases with on ground restart.'
- 9) Remove and reapply power to the system.
- 10) Touch **Database Status** on the 'Initialization' Screen on the either Touchscreen Controller.

**Or:**

From Home, touch **Utilities > Setup > Database Status**.

- 11) Verify the standby databases transferred and are now in the Active database column.
- 12) To manually activate any databases that did not transfer to the active column:
  - a) Touch **Database Status** on the 'Initialization' Screen on either Touchscreen Controller.

**Or:**

From Home, touch **Utilities > Setup > Database Status**.

- b) Scroll down and touch the database title.
- c) Touch **Swap > OK**. The cyan double-arrows will now appear beside the selected databases.

- d) Remove and reapply power to the system.
- e) Press the right-most softkey on MFD display to acknowledge the startup screen.
- f) Touch **Database Status** on the 'Initialization' Screen of either Touchscreen Controller.

**Or:**

From Home, touch **Utilities > Setup > Database Status**.

- g) Verify the standby databases transferred and are now in the Active database column.

13) To view database status:

- a) Touch **Database Status** on the 'Initialization' Screen on either Touchscreen Controller.

**Or:**

From Home, touch **Utilities > Setup > Database Status**.

- b) To view database status for an individual display, touch **Database Options > LRU Database Info**.

**Or:**

To view database status from "Avionics Status" Screen, touch **Utilities > Setup > 'Avionics Status'**. Touch the **Database Tab**.

- c) Touch a button from the list to view database information associated with that display.
- d) Scroll through the database information to view database status.

## DATABASE UPDATES USING THE WIRELESS TRANSCEIVER

In order to load databases through Garmin Pilot™ and the Wireless Transceiver, the Wireless Transceiver must be enabled on the system with the Multimedia card inserted in the bottom SD slot of the MFD. A mobile device with Garmin Pilot™ must be paired with the Wireless Transceiver over Bluetooth. The system's preferred mobile device may be selected on the Touchscreen Controller 'Database Status' Screen from a menu list of devices that have been paired to the system. When the system is enabled it will automatically connect to the preferred device. If the preferred device has not been selected or is not available, the system will automatically connect to the first of any available, paired devices.

Once a Bluetooth connection to the paired mobile device is made, Garmin Pilot™ makes available databases that can be transferred via WIFI to the Wireless Transceiver. If any of these databases is more recent than the respective standby database on the system, (or if there is no standby database on the system) those databases will be automatically selected to load. The database updates may be initiated from the 'Database Status' Screen on the Touchscreen Controller.

**NOTE:** *The system will only provide a WIFI connection if new databases have been detected for download on Garmin Pilot™ via a valid Bluetooth connection. If there are no database updates required, the system will not provide a WIFI signal.*



**NOTE:** If the mobile device has previously connected to the Wireless Transceiver, and is not connected to another Bluetooth device, the mobile device should connect automatically to the Wireless Transceiver. If the mobile device is connected to another Bluetooth device, then the Wireless Transceiver will not automatically connect.

### Updating Databases using the Wireless Transceiver:

- 1) With the system OFF, insert the Flight Stream Multimedia Card in the bottom slot of the MFD if not already inserted.
- 2) Turn the system on.



**NOTE:** The Flight Stream Multimedia Card should not be removed while the system is powered on. If the Multimedia Card is removed while the system is powered on, reinsert the card after the 'FS510 Card Error' System Message appears on the 'Notifications' Screen of the Touchscreen Controller.

- 3) Press the right-most softkey on MFD display to acknowledge the startup screen.
- 4) From Home, touch **Utilities > Setup > Wireless Setup > Connex**.
- 5) Touch the **Functions** Tab and ensure the WiFi Database Import **Enable** Button is selected.
- 6) Touch the **Bluetooth** Tab to ensure Bluetooth is enabled.
- 7) On the mobile device, connect via Bluetooth to the Wireless Transceiver.
- 8) Touch the **Database Status > Device Databases** on the 'Initialization' Screen on either Touchscreen Controller.

**Or:**

From Home, touch **Utilities > Setup > Database Status > Device Databases**.

- 9) The 'Database Status' Screen will show the databases connected to the mobile device in place of the active databases on the system. Databases selected to load will be indicated by a cyan arrow.
- 10) If required, select the Preferred Device.
  - a) Touch the **Select Preferred Device** Button.
  - b) Touch the button for the desired mobile device from the list.
- 11) If desired, change the Preferred Region for the database.
  - a) Touch a database button from the list.
  - b) Touch the **Select Preferred Region** Button.
  - c) Touch the button for the desired database region from the list. The database for the region selected will be loaded at the next power cycle.

d) Touch **Load** > **OK**.

e) Repeat steps a) through d) above for additional databases.

- 12) Touch the **Start Transfer** Button on the 'Database Status' Screen.
- 13) On the mobile device, connect to the indicated SSID Wi-Fi network shown on the **WiFi** Tab of the 'Connex Setup' Screen.
- 14) On the mobile device, start Garmin Pilot™ and touch **Home** > **Connex** > **Database Concierge**.
- 15) Monitor the Sync Status on the 'Database Status' Screen. Wait for all databases to complete syncing, indicated by 'Sync Complete' being displayed.
- 16) The database update status will appear in the status window at the top of the screen. The load is complete when 'Databases Ready' is displayed.
- 17) A cyan double-arrow will appear between the Standby and Active columns to show which standby databases will be transferred to Active at the next power cycle. For any databases not selected to load with cyan double-arrows, touch the database title and then touch **Swap** > **OK**.
- 18) The system will display the message 'Activate databases with on ground restart.'
- 19) Remove and reapply power to the system.
- 20) Touch **Database Status** on the 'Initialization' Screen on either Touchscreen Controller.
- Or:**  
From Home, touch **Utilities** > **Setup** > **Database Status**.
- 21) Verify the standby databases transferred and are now in the Active database column.
- 22) To manually activate any databases that did not transfer to the Active column:
- a) Touch the **Database Status** Button on the 'Initialization' Screen of either touchscreen controller.
- Or:**  
From Home, touch **Utilities** > **Setup** > **Database Status**.
- b) Scroll down and touch the database title.
- c) Touch **Swap** > **OK**. The cyan double-arrows will now appear beside the selected databases.
- d) Touch **Database Options** > **Restart Displays**.
- e) Press the right-most softkey on MFD display to acknowledge the startup screen.
- f) Touch **Database Status** on the 'Initialization' Screen of either touchscreen controller.
- Or:**  
From Home, touch **Utilities** > **Setup** > **Database Status**.
- g) Verify the standby databases transferred and are now in the Active database column.

- 23) To view database status:
- a) Touch **Database Status** on the 'Initialization' Screen on the MFD touchscreen controller.  
**Or:**  
From Home, touch **Utilities > Setup > Database Status**.
  - b) To view database status for an individual display, touch **Database Options > LRU Database Info**.  
**Or:**  
To view database status from "Avionics Status" Screen, touch **Utilities > Setup > 'Avionics Status'**. Touch the **Database** Tab.
  - c) Touch a button from the list to view database information associated with that display.
  - d) Scroll through the database information to view database status.

## DATABASE SYNCHRONIZATION FEATURE

When a PFD or MFD has failed, any database updates will not be automatically synchronized to the other displays. When this occurs, the database synchronization feature allows synchronizing to be completed on the remaining powered displays.

### **Synchronizing databases:**

- 1) Follow the procedures for loading databases in this section. The databases will not sync to any of the displays when a display is not powered.
- 2) Touch the **Database Status** Button on the 'Initialization' Screen on either Touchscreen Controller.  
**Or:**  
From Home, touch **Utilities > Setup > Database Status**.
- 3) Scroll down and touch **Database Options > Sync Databases**.
- 4) From the 'Sync From Display' Screen, touch the button for the display the databases will be synced from (this will be the display containing the SD Card or multimedia card with the proper databases).
- 5) The database sync process will begin. Follow the procedures for loading databases in this section to complete the database updates.

## DATABASE DELETION FEATURE

If databases are not properly loading or functioning, and an attempt has been made to load the databases using a new SD card or multimedia card, it may be necessary to delete the databases from the system.

**Deleting the databases:**

- 1) Touch the **Database Status** Button on the 'Initialization' Screen on either Touchscreen Controller.  
**Or:**  
From Home, touch **Utilities > Setup > Database Status**.
- 2) Scroll down and touch **Database Options > Delete Databases**.
- 3) A prompt will appear to confirm deletion of all internal databases. Touch the **OK** Button.
- 4) Another confirmation prompt will appear. Touch the **OK** Button.
- 5) Touch the **Database Status** Button on the 'Initialization' Screen on either Touchscreen Controller.  
**Or:**  
From Home, touch **Utilities > Setup > Database Status**.
- 6) Confirm that all databases have been deleted from the system.

**MAGNETIC FIELD VARIATION DATABASE UPDATE****Loading the Magnetic Field Variation Database update:**

- 1) With the MV DB prompt displayed, touch the **OK** Button. A progress monitor is displayed.
- 2) When the upload is complete, the prompt for the next GRS upload is displayed. A database mismatch message indicates the second GRS has not yet been updated.
- 3) Touch the **OK** Button. A progress monitor for the next GRS is displayed as in step 1. When the upload is complete, the system is ready for use.

**PFD SOFTKEY MAPS**

Level 1	Level 2	Level 3	Level 4	Description
Map Range -				Decreases the PFD Map display range
Map Range +				Increases the PFD Map display range
PFD Map Settings				Displays the PFD Map display settings softkeys
	Map Layout			Displays softkeys used to select map layouts
		Map Off		Removes the PFD Map from the display
		Inset Map		Displays the Inset Map
		HSI Map		Displays the HSI Map

Level 1	Level 2	Level 3	Level 4	Description
		<b>Inset Traffic</b>		Overlays a dedicated traffic display on the Inset Map.
		<b>HSI Traffic</b>		Overlays a dedicated traffic display on the HSI.
	<b>Detail</b>			<p>Selects desired amount of map detail; cycles through declutter levels:</p> <ul style="list-style-type: none"> <li>- <b>All</b> (No Declutter): All map features visible</li> <li>- <b>DCLTR 1</b>: Declutters land data</li> <li>- <b>DCLTR 2</b>: Declutters land and SUA data</li> <li>- <b>Least</b>: Removes everything except for the active flight plan</li> </ul>
	<b>Weather Legend</b>			Displays/removes the name of the selected data link weather provider (SiriusXM, Connex, FIS-B) and the weather product icon and age box (for enabled weather products).
	<b>Traffic</b>			Adds or removes the display of traffic on the PFD Map. The softkey annunciator is green when the traffic function is on. When the traffic function is off, the annunciator is gray.
	<b>Storm-scope</b>			Adds or removes the display of Stormscope information on the PFD Map. The softkey annunciator is green when the function is on. When the function is off, the annunciator is gray.
	<b>Terrain</b>			<ul style="list-style-type: none"> <li>- <b>Off</b>: Removes terrain information from the PFD Map.</li> <li>- <b>Absolute</b>: Displays Absolute terrain information on the PFD Map.</li> <li>- <b>Relative</b>: Displays relative terrain information on the PFD Map.</li> </ul>
	<b>Data Link Settings</b>			<ul style="list-style-type: none"> <li>- Displays Data Link settings softkeys.</li> </ul>

	Level 1	Level 2	Level 3	Level 4	Description
Flight Instruments			<b>Data Link</b>		<p>Selects the data link source for the PFD Map:</p> <ul style="list-style-type: none"> <li>- <b>Connex</b>: Selects Garmin Connex (optional) as the weather source for the display of weather data on the PFD Map.</li> <li>- <b>SiriusXM</b>: Selects SiriusXM (optional) as the weather source for the display of weather data on the PFD Map.</li> <li>- <b>FIS-B</b>: Selects FIS-B (optional) as the weather source for the display of weather data on the PFD Map.</li> </ul>
EAS					
Nav/Com/XPDR/Audio					
Flight Management			<b>NEXRAD</b>		<p>Selects type of NEXRAD coverage:</p> <ul style="list-style-type: none"> <li>- <b>CONUS</b>: Selects NEXRAD coverage for continental U.S.</li> <li>- <b>Regional</b>: Selects NEXRAD coverage for a region which provides a higher resolution.</li> <li>- <b>Combined</b>: Combines CONUS and Regional coverages.</li> </ul>
Hazard Avoidance					
AFCS			<b>Source</b>		Selects <b>USA</b> or <b>Canada</b> as the source when SiriusXM is enabled as the datalink setting.
Additional Features			<b>Storm Cell Movement</b>		Adds or removes the display of storm cell movement. Available when SiriusXM is selected as the weather source.
Abnormal Operation			<b>NEXRAD Animation</b>		Animates NEXRAD Data. Available when SiriusXM is selected as the weather source.

Level 1	Level 2	Level 3	Level 4	Description
	<b>WX Overlay</b>			<p>Selects the display of weather information on the PFD Map:</p> <ul style="list-style-type: none"> <li>- <b>SiriusXM:</b> Selects SiriusXM as the weather source for the display of weather data when SiriusXM is selected as the weather source using the Data Link softkey.</li> <li>- <b>Connex:</b> Selects Connex as the weather source for the display of weather data when Connex is selected as the weather source using the Data Link softkey.</li> <li>- <b>WX Radar:</b> Displays airborne weather radar map overlay on the Inset or HSI Map.</li> <li>- <b>FIS-B:</b> Selects FIS-B as the weather source for the display of weather data when FIS-B is selected as the weather source using the Data Link softkey.</li> <li>- <b>Off:</b> Removes weather data from HSI Map.</li> </ul>
	<p><b>SiriusXM Lightning</b></p> <p style="text-align: center;">Or</p> <p><b>Connex Lightning</b></p>			<p>Softkey is available when SiriusXM is selected as the weather source under Data Link Settings. Adds/removes the display of SiriusXM information on the PFD Map. The softkey annunciator is green when the lightning function is on. When the lightning function is off, the annunciator is gray.</p> <p>Softkey is available when Connex is selected as the weather source Data Link Settings. Adds/removes the display of Connex information on the PFD Map. The softkey annunciator is green when the lightning function is on. When the lightning function is off, the annunciator is gray.</p>
	<b>METAR</b>			<p>Adds or removes the display of SiriusXM, Connex, or FIS-B sourced METAR data on the PFD Map. The softkey annunciator is green when the METAR data is enabled. When the METAR data is off, the annunciator is gray.</p>

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCS
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

	Level 1	Level 2	Level 3	Level 4	Description
Flight Instruments	<b>Traffic Map</b>				Replaces the PFD Map with a dedicated traffic display. The softkey annunciator is green when the dedicated traffic display on. When the PFD Map is on, the softkey annunciator is gray.
EAS	<b>PFD Settings</b>				Displays the PFD settings softkeys.
Nav/Com/XPDR/Audio		<b>Attitude Overlays</b>			Displays the softkeys for enabling or disabling Synthetic Vision features.
Flight Management			<b>Pathways</b>		Displays Pathway Boxes on the Synthetic Vision Display.
			<b>Synthetic Terrain</b>		Enables synthetic terrain depiction.
Hazard Avoidance			<b>Horizon Heading</b>		Displays compass heading along the Zero-Pitch line.
AFCS			<b>Airport Signs</b>		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.
Additional Features		<b>PFD Mode</b>			Enables or disables a multi-function Display Pane to the right or left (depending on pilot-side or copilot-side) on the PFD. <ul style="list-style-type: none"> <li>- <b>FULL:</b> Display Pane is disabled. The PFD display occupies the full screen.</li> <li>- <b>Split:</b> Display Pane is enabled. The PFD screen is split between the PFD display and the Display Pane.</li> </ul>
Abnormal Operation		<b>Bearing 1</b>			Cycles the Bearing 1 Information Window through NAV1, NAV2, FMS/waypoint identifier and GPS-derived distance information, ADF1/frequency, and Off.
Annun/Alerts		<b>Bearing 2</b>			Cycles the Bearing 2 Information Window through NAV1, NAV2, FMS/waypoint identifier and GPS-derived distance information, ADF1/frequency, and Off.
Appendix		<b>Other PFD Settings</b>			Displays additional PFD settings softkeys.
Index					

Level 1	Level 2	Level 3	Level 4	Description
		<b>Wind</b>		Displays the wind option softkeys
			<b>Option 1</b>	Headwind/tailwind and crosswind arrows with numeric speed components.
			<b>Option 2</b>	Total wind direction arrow with numeric speed.
			<b>Option 3</b>	Total wind direction arrow with digital numeric direction and speed.
			<b>Off</b>	Information not displayed.
		<b>AOA</b>		Selects the display mode for the Angle of Attack (AOA) indicator on the PFD <ul style="list-style-type: none"> <li>- <b>On</b>: Displays AOA indicator on the PFD</li> <li>- <b>Off</b>: Removes AOA indicator from the PFD</li> </ul>
		<b>Altitude Units</b>		Displays softkeys to select altitude unit parameters.
			<b>Meters</b>	When enabled, adds altimeter meters overlay.
			<b>IN</b>	Press to display the BARO setting as inches of mercury
			<b>HPA</b>	Press to display the BARO setting as hectopascals.
		<b>COM1 121.5</b>		Sets COM1 to 121.50 MHz.
<b>OBS</b>				Selects OBS mode on the CDI when navigating by FMS (only available with active leg). When OBS is on, the softkey annunciator is green.
<b>Active NAV</b>				Cycles through FMS, VOR1, and VOR2 navigation modes on the CDI.
<b>Sensors</b>				Displays the sensor selection softkeys.
	<b>ADC Settings</b>			Displays the ADC selection softkeys.
		<b>ADC 1</b>		Selects the number 1 ADC. The softkey annunciator is green when selected.
		<b>ADC 2</b>		Selects the number 2 ADC. The softkey annunciator is green when selected.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCs
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

	Level 1	Level 2	Level 3	Level 4	Description
Flight Instruments		<b>AHRS Settings</b>			Displays the AHRS selection softkeys.
EAS			<b>AHRS 1</b>		Selects the number 1 AHRS. The softkey annunciator is green when selected.
			<b>AHRS 2</b>		Selects the number 2 AHRS. The softkey annunciator is green when selected.
Nav/Com/XPDR/Audio	<b>WX Radar Controls</b>				Displays the WX Radar softkeys.
Flight Management		<b>Mode</b>			Selects the display mode for the display of weather radar on the HSI map: <ul style="list-style-type: none"> <li>- <b>Standby:</b> Sets the weather radar displayed on the HSI map to Standby when airborne.</li> <li>- <b>On:</b> Enables display of weather radar on the HSI Map.</li> </ul>
Hazard Avoidance		<b>Display</b>			If enabled (Mode Softkey <b>On</b> ), selects the mode of weather radar displayed. If not enabled, this softkey is subdued. <ul style="list-style-type: none"> <li>- <b>Ground:</b> Allows ground mapping returns to be displayed on the HSI map.</li> <li>- <b>Weather:</b> Allows weather returns to be displayed on the HSI map.</li> </ul>
AFCS		<b>Tilt Down</b>			Pressing the softkey once adjusts the antenna tilt angle down in 0.25° increments. Pressing and holding the softkey continues adjustment.
Abnormal Operation		<b>Tilt Up</b>			Pressing the softkey once adjusts the antenna tilt angle up in 0.25° increments. Pressing and holding the softkey continues adjustment.
Annun/Alerts		<b>Gain -</b>			Pressing the softkey once decreases the gain in increments of 0.5. Pressing and holding the softkey continues adjustment. A manual setting of '0.0' is equivalent to the calibrated gain setting.

Level 1	Level 2	Level 3	Level 4	Description
	<b>Gain +</b>			Pressing the softkey once increases the gain in increments of 0.5. Pressing and holding the softkey continues adjustment. A manual setting of '0.0' is equivalent to the calibrated gain setting, NEXRAD
	<b>GND Clutter Suppression</b>			(Optional) Toggles ground clutter suppression.
	<b>Features</b>			Displays softkeys for enabling/disabling Altitude Compensated Tilt and Antenna Stabilization.
		<b>WX WATCH</b>		Toggles the Weather Attenuated Color Highlight feature.
		<b>Altitude COMP Tilt</b>		Toggles the Altitude Compensated Tilt (ACT) feature. Used to automatically adjust tilt as aircraft climbs or descends.
		<b>Turbulence Detection</b>		(Optional) Toggles Turbulence Detection.

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCS
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

## TOUCHSCREEN CONTROLLER SCREEN OVERVIEW

The following is a brief overview of the major screens used to access Touchscreen Controller functions. Additional specific screens used to perform functions are shown and discussed in detail throughout this Pilot's Guide.



**NOTE:** Screen appearance varies based on the installed options.

### MFD MODE SCREENS

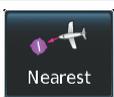
#### MFD Home



<p>Map</p>	<p>Shows 'Navigation Map' Pane in the selected display Pane. Touch the button again to access the 'Map Settings' Screen on the Touchscreen Controller.</p>
<p>Traffic</p>	<p>Shows 'Traffic Map' Pane in the selected Display Pane. Touch the button again to access the 'Traffic Settings' Screen on the Touchscreen Controller.</p>
<p>Weather</p>	<p>Shows a Weather (SiriusXM, Connex, Stormscope, Radar, FIS-B) Pane in the selected Display Pane. Touch the button again to access Weather Selection Screen on Touchscreen Controller.</p>
<p>TAWS</p>	<p>Shows the Terrain SVT or TAWS Pane (optional) in the selected Display Pane. Touch the button again to access TAWS Settings screen on Touchscreen Controller.</p>

 Direct To	Accesses 'Direct-To' Screen on Touchscreen Controller.	Flight Instruments
 Flight Plan	Accesses 'Active Flight Plan' Screen on the Touchscreen Controller. A Flight Plan display is shown on the selected Display Pane.	EAS
 PROC	Accesses 'Procedures' Screen on Touchscreen Controller. Additional map displays may be shown as procedures are selected.	Nav/Com/XPDR/Audio
 Charts	Accesses 'Charts' Screen on Touchscreen Controller. Charts are shown on the selected Display Pane.	Flight Management
 Aircraft Systems	Accesses 'Aircraft Systems' Screen on Touchscreen Controller. Systems data can be selected for display on the Touchscreen Controller, and displayed on a Display Pane. Also provides access to systems controls, systems tests, and optional video controls.	Hazard Avoidance
 Checklist	Accesses the Checklists for display in the selected Display Pane (if electronic checklists are available).	AFCS
 Services	Accesses the 'Services' Screen on Touchscreen Controller. Includes Music, optional Iridium phone and text messaging services, and Contacts.	Additional Features
 Utilities	Accesses the 'Utilities' Screen on Touchscreen Controller. Includes Weight and Fuel, Trip Planning functions, Minimums, Trip Statistics, Timer, Scheduled Messages, GPS Status, Initialization, Electronic Documents (optional), Screen Cleaning, Crew Profile, and Setup.	Abnormal Operation
 PERF	Accesses the 'PERF' Screen. Provides controls for entering takeoff, landing, and weight data as well as enabling and disabling speed bugs.	Annun/Alerts
 Waypoint Info	Provides information about Airports, Intersections, VORs, NDBs, User Waypoints. Also allows creation of User Waypoints.	Appendix

Flight Instruments



Provides information about the nearest Airports, Intersections, VORs, NDBs, User Waypoints, Airspace, ARTCC facilities, Flight Service Stations, and Weather reporting stations.

EAS

## 'Weather Selection' Screen

Nav/Com/XPDR/Audio



Flight Management



Hazard Avoidance

AFCS

Additional Features



Shows optional SiriusXM Weather data in the selected Display Pane. When the 'SiriusXM Weather' Pane is displayed, the button becomes the **SiriusXM Settings** Button. Touch the button again to access the 'SiriusXM Weather Settings' Screen on the Touchscreen Controller.

Abnormal Operation



Shows optional Connex Weather data in the selected Display Pane. When the 'Connex Weather' Pane is displayed, the button becomes the **Connex Settings** Button. Touch the button again to access the 'Connex Weather Settings' Screen on the Touchscreen Controller.

Annun/Alerts



Shows optional Stormscope data in the selected Display Pane. When the 'Stormscope' Pane is displayed, the button becomes the **Stormscope Settings** Button. Touch the button again to access the 'Stormscope Settings' Screen on the Touchscreen Controller.

Appendix

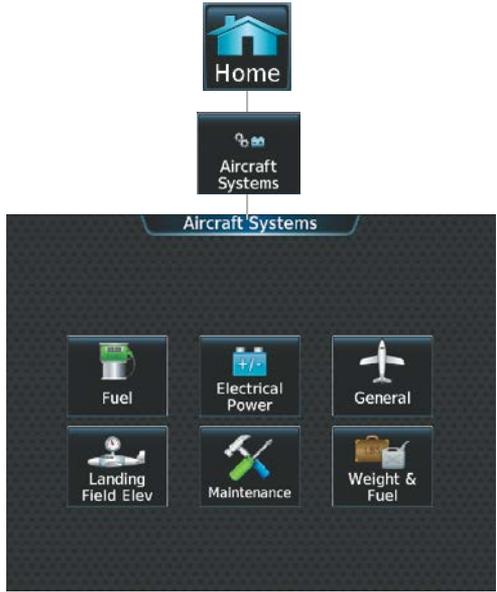


Shows optional Weather Radar data in the selected Display Pane. When the 'Weather Radar' Pane is displayed, the button becomes the **Weather Radar Settings** Button. Touch the button again to access the 'Weather Radar Settings' Screen on the Touchscreen Controller.

Index

	<p>Shows optional Flight Information System-Broadcast data in the selected Display Pane. When the 'FIS-B Weather' Pane is displayed, the button becomes the <b>FIS-B Settings</b> Button. Touch the button again to access the 'FIS-B Weather Settings' Screen on the Touchscreen Controller.</p>
---	---

**'Aircraft Systems' Screen**



	<p>Shows the status of the fuel tanks and feed system on the selected Display Pane. Fuel quantity is depicted graphically.</p>
	<p>Shows information about the batteries, generators, and electrical busses on the selected Display Pane.</p>
	<p>Shows open doors in red (CAS messages also generated) on the selected Display Pane as well as statuses of stall sensor, propeller, pitot probes, and windshield heat</p>
	<p>Shows the 'Landing Field Elevation' Screen. Provides controls for entering the landing field elevation, and selecting the source of landing field elevation data.</p>
	<p>Provides functions accessible to maintenance personnel.</p>

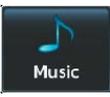
- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCS
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index

Flight Instruments	 <p>Shows the 'Weight and Fuel' Screen for entering weight and fuel information and performing computations.</p>
EAS	 <p>Provides control for master lighting setting, which affects display brightness on the 'Lighting Configuration' Screen. .</p>

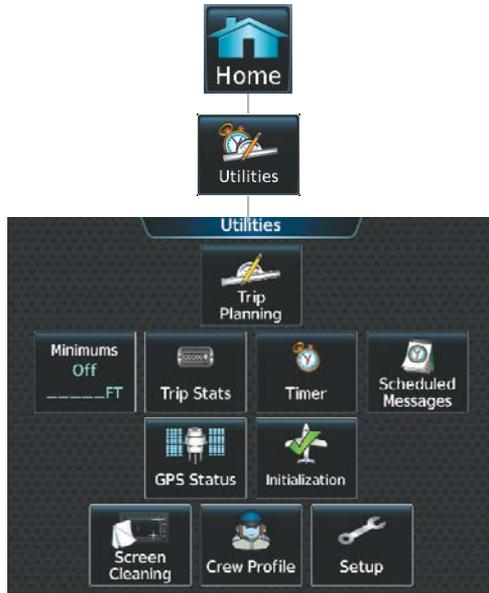
## 'Services' Screen

- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCS
- Additional Features



Abnormal Operation	 <p>The 'Music' Screen provides controls for the optional SiriusXM Satellite Radio including channel information, selection, and volume settings.</p>
Annun/Alerts	 <p>Accesses the optional 'Contacts' Screen for management of contact information including phone and email addresses. Also provides quick access to stored contacts via phone, SMS, or email.</p>
Appendix	 <p>The 'Telephone' Screen (available with the Iridium voice telephone option) shows the status of the Iridium satellite telephone connection and provides telephone controls.</p>
Index	 <p>The 'SMS Text Messaging' Screen (available with the Iridium voice telephone option) provides management of incoming and outgoing SMS (short message service) text messages.</p>

'Utilities' Screen



Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCs

Additional Features

Abnormal Operation

Annun/Alerts

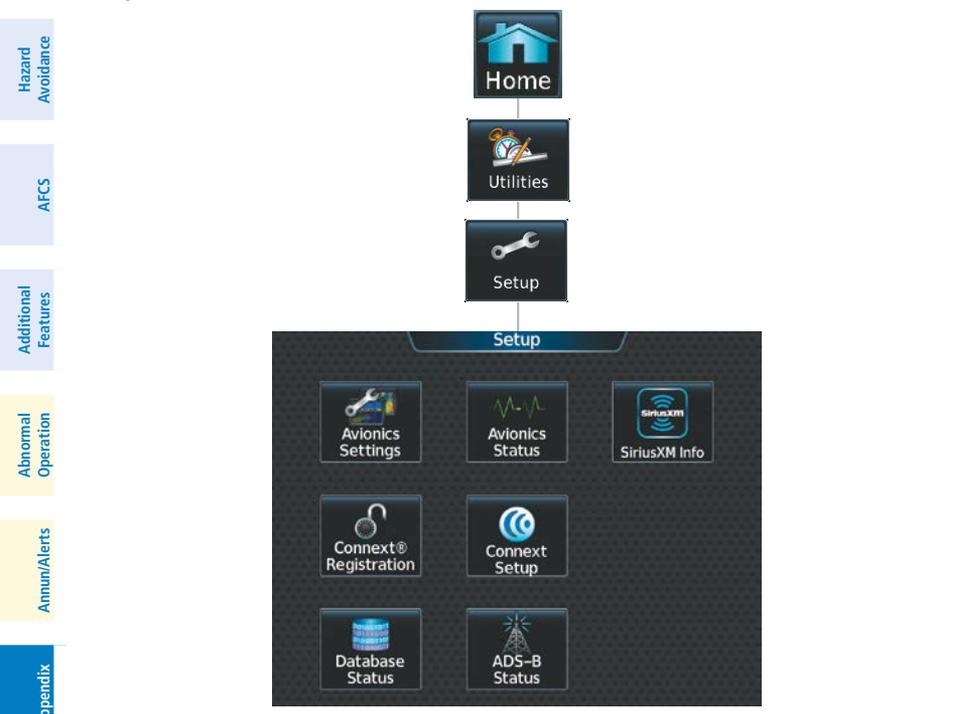
Appendix

Index

 <p>Trip Planning</p>	<p>Shows the Trip 'Planning' Pane in the selected Display Pane, and accesses the 'Trip Planning' Screen on the Touchscreen Controller.</p>
 <p>Minimums Off</p> <p>_____FT</p>	<p>Accesses the 'Minimums' Screen on the Touchscreen Controller. Provides controls for the Minimum Descent Altitude/Decision Height alerting function. Button displays the current minimums altitude and source if provided.</p>
 <p>Trip Stats</p>	<p>Accesses the 'Trip Statistics' Screen on the Touchscreen Controller. Shows information regarding Flight Time, Departure/Arrival Time, Odometer, Trip Odometer, Fuel Used, Average Ground Speed, Maximum Ground Speed, Trip Air Odometer, Average Wind Speed, and Average Wind Direction. Also provides settings for resetting trip statistics.</p>
 <p>Timer</p>	<p>Accesses the 'Timer' Screen on the Touchscreen Controller. Controls the timer on PFD1.</p>
 <p>Scheduled Messages</p>	<p>Used to create custom messages to be displayed one-time or periodically. The Touchscreen Controller displays these System Messages on the 'Notifications' Screen.</p>
 <p>GPS Status</p>	<p>Accesses the GPS1 and GPS 2 Status screens for control of GPS sensors. Shows the GPS Status Pane in the Selected Display Pane.</p>

Flight Instruments		Displays the 'Initialization' Screen on the Touchscreen Controller. Provides controls for selecting the Crew Profile, and checking Database Status, Weight and Fuel, and Flight Plan.
EAS		Feature temporarily disables touchscreen glass input to allow for manual cleaning. Turn or press any knob or softkey on the Touchscreen Controller to exit Screen Cleaning Mode.
Nav/Com/XPDR/Audio		Displays 'Crew Profile' Screen, which provides controls for activating and managing crew profiles.
Flight Management		Displays the 'Setup' Screen, which provides controls for avionics settings, avionics status, data link settings, and for displaying the status of avionics databases and ADS-B.

### 'Setup' Screen

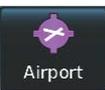


Avionics Settings	Provides controls for changing system avionics settings, such as time format, units of measure, airspace alert settings, MFD Data Bar Fields, and Audio.
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 <p>Avionics Status</p>	<p>Displays information on the Touchscreen Controller for installed LRUs, system software, and databases.</p>
 <p>SiriusXM Info</p>	<p>Shows the 'SiriusXM Info' Screen on the Touchscreen Controller. Used to activate audio and data services from SiriusXM Satellite Radio and to verify subscriptions of SiriusXM Weather products.</p>
 <p>Connex Registration</p>	<p>Used to register with the optional Garmin Connex. Also provides information on current Connex registration.</p>
 <p>Database Status</p>	<p>Provides access to the 'Database Status' Screen for checking database cycle information.</p>

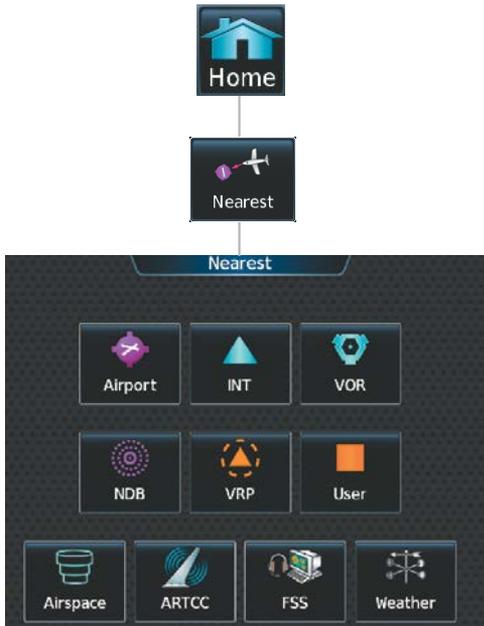
### Waypoint Info Screen



 <p>Airport</p>	<p>Accesses airport information including frequencies, weather, procedures, charts, runways, and airport directory data.</p>
 <p>INT</p>	<p>Shows information for a selected intersection including bearing, distance, and location.</p>

Flight Instruments	 VOR	Provides VOR information including frequencies and location.
EAS	 NDB	Provides NDB information including frequencies and locations.
Nav/Com/XPDR/Audio	 VRP	Provides location information for Visual Reporting Points including a list of VRPs.
Flight Management	 User Waypoint	Provides location information for User Waypoints including a list of User Waypoints.
Hazard Avoidance	 Create Waypoint	Create User Waypoints based on present position or a designated location.

### 'Nearest' Screen



 <p>Airport</p>	<p>Displays a list of the nearest airports, with runway, bearing, and distance information.</p>	<p>Flight Instruments</p>
 <p>INT</p>	<p>Displays a list of the nearest intersections with bearing and distance information.</p>	<p>EAS</p>
 <p>VOR</p>	<p>Displays a list of the nearest VORs with bearing, distance, and frequency information.</p>	<p>Nav/Com/XPDR/Audio</p>
 <p>NDB</p>	<p>Displays a list of the nearest NDBs with bearing, distance, and frequency information.</p>	<p>Flight Management</p>
 <p>VRP</p>	<p>Displays a list of the nearest Visual Reporting Points with bearing and distance information.</p>	<p>Hazard Avoidance</p>
 <p>User</p>	<p>Displays a list of the nearest User Waypoints with bearing and distance information.</p>	<p>AFCS</p>
 <p>Airspace</p>	<p>Displays information about the nearest airspace and status.</p>	<p>Additional Features</p>
 <p>ARTCC</p>	<p>Displays information about the nearest ARTCC facilities including bearing, distance, and frequencies.</p>	<p>Abnormal Operation</p>
 <p>FSS</p>	<p>Displays the nearest Flight Service Stations with bearing, distance, and frequency information.</p>	<p>Annun/Alerts</p>
 <p>Weather</p>	<p>Displays the nearest weather reporting sources, bearings, distances, and frequencies.</p>	<p>Appendix</p>

Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCS

Additional Features

Abnormal Operation

Annun/Alerts

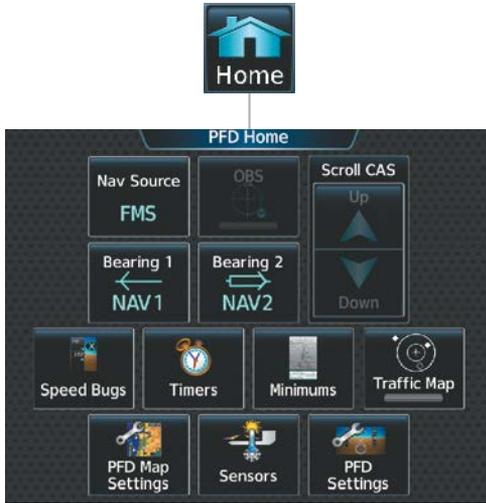
Appendix

Appendix

Index

**PFD MODE SCREENS**

**PFD Home**



<p>AFCS</p> 	<p>Cycles through FMS, LOC1/VOR1 and LOC2/VOR2 navigation modes on the CDI</p>
<p>Additional Features</p> 	<p>Selects OBS mode on the CDI when navigating by FMS (only available with active leg). When OBS is active the annunciator is green.</p>
<p>Abnormal Operation</p> <p>or</p> 	<p>Selects SUSP mode on the CDI when navigating by FMS. When SUSP is active the annunciator is green.</p>
<p>Annun/Alerts</p> 	<p>Cycles the Bearing 1 through OFF, NAV1, NAV2, FMS, and ADF1 (if installed)</p>
<p>Appendix</p> 	<p>Cycles the Bearing 2 through OFF, NAV1, NAV2, FMS, and ADF1 (if installed).</p>

	<p>Scrolls CAS messages up and down.</p>	<p>Flight Instruments</p>
	<p>Accesses the 'Speed Bugs' Screen on Touchscreen Controller, where the speed bugs can be configured.</p>	<p>EAS Nav/Com/ XPDR/Audio</p>
	<p>Accesses the 'Timer' Screen on the Touchscreen Controller. Controls timer on PFD.</p>	<p>Flight Management</p>
	<p>Accesses the 'Minimums' Screen on the Touchscreen Controller. Set Minimum Altitude Alerting.</p>	<p>Hazard Avoidance</p>
	<p>Shows the Traffic Map on the PFD in inset format when the PFD is in Full Mode. Shows the 'Traffic Map' Pane on the PFD when the PFD is in Split Mode.</p>	<p>AFCS</p>
	<p>Accesses the 'PFD Map Settings' Screen on the Touchscreen Controller. The Inset Map or HSI Map is not available when in split mode.</p>	<p>Additional Features</p>
	<p>Accesses the 'Sensors' Screen. Allows for selection of ADC and AHRS sensors.</p>	<p>Abnormal Operation</p>
	<p>Accesses the 'PFD Settings' Screen to view or set PFD Mode, AOA, Flight Director Active Format, SVT Terrain, SVT Pathways, Horizon Heading, SVT Airport Signs, Wind, Time Format, Time Offset, COM Channel Spacing, Baro Select Units, Meters Overlay, and Screen Cleaning function.</p>	<p>Annun/Alerts</p>

PFD Settings

- Flight Instruments
- EAS
- Nav/Com/XPDR/Audio
- Flight Management
- Hazard Avoidance
- AFCS
- Additional Features
- Abnormal Operation
- Annun/Alerts
- Appendix
- Index



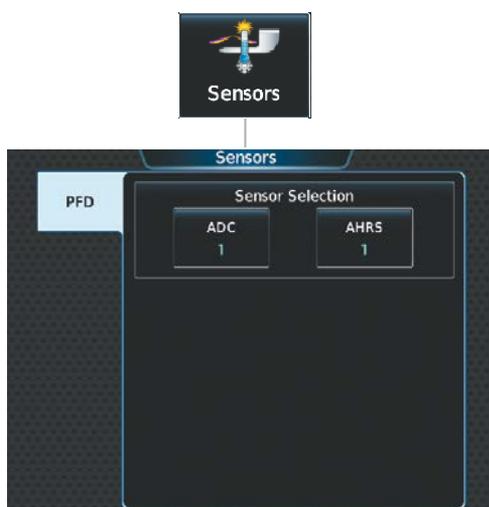
Deactivates touch input on the Touchscreen Controller to facilitate cleaning. Press or turn a knob on the controller to resume touch input.

PFD Settings

<p>PFD Mode <b>Full</b></p>	<p>Allows the GDU to be split into a condensed PFD and Display Pane, which appears on the inboard portion of the screen.</p> <ul style="list-style-type: none"> <li>- <b>Full</b>: Selects full size PFD display.</li> <li>- <b>Split</b>: Selects a condensed PFD and a display pane</li> </ul>
<p>AOA <b>On</b></p>	<p>Selects the display mode for the Angle of Attack (AOA) indicator on the PFD.</p> <ul style="list-style-type: none"> <li>- <b>On</b>: Displays AOA indicator on the PFD.</li> <li>- <b>Off</b>: Removes AOA indicator from the PFD.</li> </ul>
<p>Flight Director Active Format <b>Single Cue</b></p>	<p>Shows the type of Flight Director available.</p>

<p>SVT Terrain <b>Enable</b></p>	<p>Enables/disables synthetic terrain depiction. When Enabled, the annunciator is green.</p>	<p>Flight Instruments</p>
<p>SVT Pathways <b>Enable</b></p>	<p>Enables/disables synthetic terrain pathways depiction. When enabled., the annunciator is green. When synthetic terrain is disabled, button is subdued.</p>	<p>EAS</p>
<p>Horizon Heading <b>Enable</b></p>	<p>Enables/disables display of compass heading along the Zero-Pitch line. When Enabled, the annunciator is green. Button is subdued when synthetic terrain is disabled.</p>	<p>Nav/Com/XPDR/Audio</p>
<p>SVT Airport Signs <b>Enable</b></p>	<p>Enables/disables the display of 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. When Enabled, the annunciator is green. Button is subdued when synthetic terrain is disabled.</p>	<p>Flight Management</p>
<p>Wind <b>Off</b></p>	<ul style="list-style-type: none"> <li>- <b>Option 1:</b> Wind direction arrows with headwind and crosswind components</li> <li>- <b>Option 2:</b> Wind direction arrow and speed</li> <li>- <b>Option 3:</b> Wind direction arrow with direction and speed</li> <li>- <b>Off:</b> Wind information not displayed.</li> </ul>	<p>Hazard Avoidance</p>
<p>Time Format <b>UTC</b></p>	<p>Selects the Time Format: Local 12hr, Local 24hr, or UTC</p>	<p>AFCS</p>
<p>Time Offset --:--</p>	<p>Displays the Local and UTC time offset.</p>	<p>Additional Features</p>
<p>COM Channel Spacing <b>25.0 kHz</b></p>	<p>Selects the COM Channel Spacing: 25 kHz or 8.33 kHz</p>	<p>Abnormal Operation</p>
<p>Baro Select Units <b>Inches (IN)</b></p>	<p><b>Inches (IN):</b> Displays the BARO setting as inches of mercury. <b>Hectopascals (HPA):</b> Displays the BARO setting as hectopascals.</p>	<p>Annun/Alerts</p>
<p>Meters Overlay <b>Enable</b></p>	<p>Enables/disables the display of the meter overlay on the Altimeter.</p>	<p>Appendix</p>
		<p>Index</p>

## PFD Sensors



Accesses the 'ADC Sensor' Screen where the Air Data Computer (ADC) used by the on-side PFD can be manually selected.



Accesses the 'AHRS Sensor' Screen where the Attitude and Heading reference system sensors used can be manually selected.

## SCREEN CLEANING

Screen Cleaning mode temporarily deactivates touch input on the Touchscreen Controller screen to facilitate cleaning. The screen can be cleaned using a microfiber or soft cotton cloth lightly dampened with clean water. Do not use chemical cleaning agents, as these may damage the coating on the glass surface.

## Cleaning the Touchscreen Controller screen:

- 1) From MFD Home, touch **Utilities > Screen Cleaning**.

**Or:**

From PFD Home, touch **PFD Settings > Screen Cleaning**.

- 2) The Touchscreen Controller indicates the screen may be cleaned. Clean the screen as needed.
- 3) Press or turn any knob or softkey to return to the 'Utilities' Screen.

## NAVIGATION STATUS BOX/MFD NAVIGATION DATA BAR

The symbols used in the PFD status box are:

Symbol	Description	Symbol	Description
	Active Leg		Right Holding Pattern
	Direct-to		Left Holding Pattern
	Right Procedure Turn		Right DME Arc / Radius to Fix Leg
	Left Procedure Turn		Left DME Arc / Radius to Fix Leg
	Vector to Final		

PFD Navigation Status Box Symbols

## MAP SYMBOLS

### LAND SYMBOLS

The following table describes items that are configured on the **Land** Tab on the 'Map Settings' Screen.

Land Symbols	Symbol	Default Range (nm)	Maximum Range (nm)
Obstacles (Point)	See Hazard Avoidance Section	10	25
Roads		see below	
- Interstate Highway (Freeway)		50	400
- International Highway (Freeway)		50	400
- US Highway (National Highway)		15	150
- State Highway (Local Highway)		2.5	100
- Local Road (Local Road)	N/A	4	25

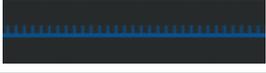
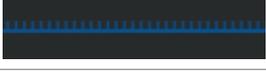
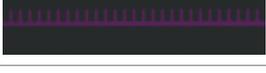
Flight Instruments	Land Symbols	Symbol	Default Range (nm)	Maximum Range (nm)
EAS	Railroad		7.5	25
Nav/Com/XPDR/Audio	Large City (> 200,000)		100	1000
	Medium City (> 50,000)		50	400
	Small City (> 5,000)		25	100
Flight Management	State/Province		400	1000
Hazard Avoidance	Rivers and Lakes (River/Lake)		75	100

Land Symbol Information

### AVIATION SYMBOLS

The following items are configured on the **Aviation** Tab of the 'Map Settings' Screen.

AFCS	Aviation Symbols	Symbol	Default Range (nm)	Maximum Range (nm)
Additional Features	Low Altitude Airways (V and T Routes)		50	100
Abnormal Operation	High Altitude Airways (J and Q Routes)		50	100
Annun/Alerts	Class B Airspace Altitude Label (ceiling/floor)		Label placement and ranges are variable, in order to provide the best representation and minimal clutter	
	Class C Airspace Altitude Label (ceiling/floor)			
	Class D Airspace Altitude Label (ceiling)			

Aviation Symbols	Symbol	Default Range (nm)	Maximum Range (nm)
CL B/TMA/AWY	(see below)		
Class B (CL B) and Terminal Manoeuvring Area (TMA)*		50	150
Airway (AWY)*			
CL C/CTA	(see below)		
Class C Airspace (CL C)		50	150
Control Area (CTA)*			
CL A/D	(see below)		
Terminal Radar Service Area (TRSA), Controlled Traffic Region (CTR)*, and Class A (CL A)*		10	100
Class D			
Aerodrome Traffic Zone (ATZ)*			
Traffic Information Zone (TIZ)*			
Restricted and Prohibited Areas (Restricted)		50	100
Military Operations Areas (MOA (Military))		50	250

Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCs

Additional Features

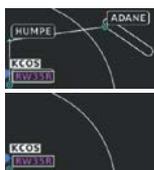
Abnormal Operation

Annun/Alerts

Appendix

Index

Flight Instruments	Aviation Symbols	Symbol	Default Range (nm)	Maximum Range (nm)
	Other	(see below)		
EAS	- ADIZ		50	250
Nav/Com/XPDR/Audio	- Alert			
Flight Management	- Class E*			
Hazard Avoidance	- Class G*			
AFCS	- Temporary*			
Additional Features	- Danger, Warning, Unknown, Special Rules*, and Training*			
Abnormal Operation	Large Airport (Longest Runway ≥ 8100 ft)		100	1000
Annun/Alerts	Medium Airport (8100 ft > Longest Runway ≥ 5000 ft, or Longest Runway < 5000 ft with control tower)		50	400
Appendix	Small Airport (Longest Runway < 5000 ft without control tower)		25	150
Index	VOR: (VOR, VOR/DME, DME, VORTAC, TACAN)		50	250
	- VOR Compass Rose On/Off		N/A	N/A
	INT Waypoint		25	40
	NDB Waypoint		25	50
	VRP Waypoint		25	40
	User Waypoint		25	1000
	SafeTaxi	See Additional Features	1.5	5

Aviation Symbols	Symbol	Default Range (nm)	Maximum Range (nm)
Runway Extension		7.5	150
Missed Approach Preview On/Off		N/A	N/A
Altitude/Speed Constraints		1000	1000

\* Not located in the United States

### Aviation Symbol Information

## ADDITIONAL NAVIGATION MAP ITEMS

The icons in the following table will be displayed when specific navigation map functions are conducted or the heading or GPS solution is invalid:

Symbol Name	Description	Symbol
ARTCC Frequency or FSS Frequency	Displayed when using the Nearest Frequencies function (see Audio Panel and CNS Section)	
Map Pointer	Displayed when panning (see Using Map Displays in Flight Management)	
Measuring Pointer	Displayed when measuring bearing and distance (see Using Map Displays in Flight Management)	
No heading aircraft icon	Replaces the normal aircraft icon when aircraft GPS location is valid, but the heading is invalid.	
Dead reckoning aircraft icon	'DR' text displayed over the aircraft icon when the GPS solution is invalid (see Abnormal Operations in Flight Management)	

### Miscellaneous Navigation Map Symbols

## FLIGHT PLANNING

Symbol Name	Description	Symbol
Course Leg	Course leg currently flown	
	A future course leg in the current phase of flight	
	A course leg in either a previously flown course leg, or a future course leg not in the current phase of flight	
Heading Leg	Heading leg currently flown	
	Future heading leg	
Roll Steering Path*	Turning path currently flown	
	Turning path for the next flight plan leg	
	Turning path beyond the next flight plan leg	
Turn Anticipation Arc	Displayed when sequencing to the next flight plan leg via a fly-by waypoint, a lead turn is created, adjusting for groundspeed	
Fly-Over Waypoint	Displayed as a fly-over waypoint (see the Flight Planning portion in the Flight Management Section)	
Along Track Waypoint	Displayed when an along track waypoint is created (see the Flight Planning portion in the Flight Management Section)	
Flight Path Fix	A fix that terminates: manually, at a specified altitude, or at a specified distance or radial when flying a heading	
Top of Descent (TOD) and Bottom of Descent (BOD)	When vertically navigating, the system will display where the aircraft will begin complete the descent (see the Vertical Navigation portion in the Flight Management Section)	
Parallel Track Waypoint	Displayed when a parallel track is created (see Flight Planning portion in the Flight Management Section)	

\* Roll Steering Path transitions between two disconnected legs (i.e. holding), some procedure turn segments, parallel track segments, or after some fly-over waypoints (discussed later in this section).

### Flight Plan Symbols

**OBSTACLE SYMBOLS**

Unlighted Obstacle		Lighted Obstacle		Obstacle Location
< 1000' AGL	> 1000' AGL	< 1000' AGL	> 1000' AGL	
				Red obstacle is above or within 100 ft below the aircraft altitude.
				Yellow obstacle is between 100 ft and 1000 ft below the aircraft altitude.
				White obstacle is more than 1000 ft below aircraft altitude.

**Terrain SVT Relative Point Obstacle Symbols and Colors**

Unlighted Wind Turbine Obstacle	Lighted Wind Turbine Obstacle	Wind Turbine Obstacle Location
		Red obstacle is above or within 100 ft below the aircraft altitude.
		Yellow obstacle is between 100 ft and 1000 ft below the aircraft altitude.
		White obstacle is more than 1000 ft below aircraft altitude.

**Wind Turbine Obstacles and Colors**

Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCs

Additional Features

Abnormal Operation

Annun/Alerts

Appendix

Index

Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCS

Additional Features

Abnormal Operation

Annun/Alerts

Appendix

Index

Blank Page

**A**

- Absolute Terrain Data 36
- Activate a Flight Plan 56
- ADF frequency tuning 27
- ADS-B Traffic 127
  - System Status 129
  - ADS-B Modes 175
  - Traffic Failure Annunciations 176
  - Traffic Status Annunciations 176
- AHRS 188
- Airborne Color Weather Radar 106
  - Principles of Airborne Weather Radar
  - Altitude Compensated Tilt 108
  - Basic Antenna Tilt and Range Setup 106
  - System Status 115
- Abnormal Radar Status Annunciations 168
- Radar Feature Status Annunciations 168
- Radar Mode Annunciations 167
- Weather Display And Interpretation 109
- Weather Radar Operation 109
  - Ground Mapping 112
- Airspace
  - Alerts 165
  - Altitude Labels 45
  - On the Map 46, 239
  - Smart Airspace 46
- Altimeter
  - Barometric Setting
  - STD BARO 2
  - Synchronization 2
- Altitude Constraints 65, 66, 67
- Angle of Attack (AOA) Indicator 6
- Annunciations
  - Baro Transition Alert 2

Approaches

- Activating 78
- Missed Approach 79
- Arrival Procedures
  - Loading 73
  - Removing 74
- Aviation Symbols 236

**B**

- Battery
  - Alerts 179
- Bearing Pointer 3
- Bus 18

**C**

- Cabin pressure altitude
  - Warning 179
- ChartView 139
- Closest Point 58
- Combination Modes 134
- COM Frequency Tuning 23
- COM tuning failure 159

**D**

- Databases
  - Deletion 211
  - Loading 206
  - Navigation 206
  - Preferred Device 209
  - Preferred Region 206, 209
  - Synchronization 211
  - Updates using Wireless Transceiver 208
- Data Link Weather 87
  - Activating Data Link Weather Services 87
  - Connex Weather Data Requests 93
  - Data Link Weather Products
  - County Warnings (SiriusXM) 102

Flight Instruments

EAS

Nav/Com/XPDR/Audio

Flight Management

Hazard Avoidance

AFCS

Additional Features

Abnormal Operation

Annun/Alerts

Appendix

Index

- Data Link Lightning (SiriusXM, Garmin Connex) 98
  - Echo Tops (SiriUSXM) 98
  - Storm Cell Movement (SiriusXM) 99
  - Surface Analysis and City Forecast (SiriusXM) 101
  - Garmin Connex Weather Product Symbols 91
  - Weather Product Age 88
- Dead Reckoning Navigation 160
- Delete Flight Plans 64
- Departure Procedures
  - Loading 71
  - Removing 72
- Differential cabin pressure
  - Warning 179
- E**
  - Electrical System 15
  - Emergency Descent Mode 161
- F**
  - Flap position
    - Asymmetrical deflection warning 179
  - Flight Director Operation 131
  - Flight Path Angle (FPA) 67
  - Flight Planning
    - Activating a Stored Flight Plan 63
    - Activating the Standby Flight Plan 56
    - Deleting 64
    - Importing and Exporting 62
    - Inverting 63
    - Leg Type 240
    - Pending Flight Plan Transfer 61
  - Frequency
    - Nearest 45
  - Fuel
    - Alerts 179–180
    - Reserves 84
  - Fuel System 19
- G**
  - Garmin Pilot 208
  - Garmin SVT 4
  - Global Positioning System (GPS) Navigation 46–151
  - GPS CDI Scaling 4
  - GTX 33 Transponder 29
- I**
  - Intersection Information 41
  - Interturbine Temperature (ITT) Warning 179
  - Inverting a Flight Plan 63
- L**
  - Lateral Modes 133
  - Link P.POS to Standby Flight Plan 56
- M**
  - Magnetic Field Variation Database 212
  - Map
    - Detail 37
    - Land Symbols 235
    - Orientation 33
    - Range 34
    - Settings Synchronization 33
    - Symbols 37, 235
  - Metric Units 1
  - Minimum Altitude Alerting
    - Barometric 7
    - Temperature Compensated 7
  - Minimums 181
  - Missed Approach 79
- N**
  - Navigation Status Box 235
  - NAV Receiver Tuning 26
  - NDB Information 41
  - Nearest Airport 40
    - Minimum Runway Length 40
    - Surface Matching 40

Nearest Airspace 45, 165  
 Nearest Non-Airport Waypoints 41

**O**

Oil, engine  
     Alerts 179  
 Oxygen  
     Warning 179

**P**

Passenger Address (PA) 30  
 PFD Map 37  
     Inset Map 36  
 P. POS Link 56  
 Procedures  
     Loading 70

**R**

Receiver Autonomous Integrity Monitoring (RAIM) 84–85

**S**

SBAS 179  
 Secure Digital (SD) Card 205  
 Simultaneous COM Operation 30  
 Stormscope Lightning Detection System 104  
     Using the Stormscope Pane 104  
 Stuck microphone 159  
 Symbols  
     Aviation 236  
     Flight Plan 240  
     Map 37, 235  
     Setup 37  
 Synoptics 14  
 Synthetic Vision Technology (SVT)  
     Troubleshooting 157  
 System Message 182

**T**

TA 181  
 TAS 181

Temperature Compensated Minimums 77, 80, 81  
 Temperatures 6  
 Terrain  
     Absolute Terrain Data 36  
     Map 35  
 Terrain Displays 117  
     Inhibiting FLTA and PDA Alerts 119  
     System Status  
     TAWS-B  
     TAWS-B Abnormal Status Annunciations 172  
     TAWS-B System Status Annunciations 172  
     Terrain-SVT  
     Terrain SVT System Status Annunciations 171  
 Text Messaging (SMS) 145  
 Timer  
     Generic 6  
 Torque Gauge 11  
 Track Vector 38, 239  
 Traffic Advisory System (TAS) 123  
     Operations 124  
     System Status  
     TAS Failure Annunciations 174  
     TAS Mode Annunciations 174  
     TAS Traffic Status Annunciations 175  
 Traffic Advisory (TA) 181  
 Traffic Information Service (TIS) 120  
     Additional Traffic Displays 122  
     System Status  
     TIS Modes and Status Annunciations 173  
     TIS Traffic Status Annunciations 174  
     TIS Alerts 122  
     TIS Traffic Symbols 120  
 Trip Planning 82

Flight Instruments
EAS
Nav/Com/XPDR/Audio
Flight Management
Hazard Avoidance
AFCs
Additional Features
Abnormal Operation
Annun/Alerts
Appendix
Index

Flight Instrument

**U**

- Unusual Attitudes 158
- User Waypoints
  - Creating 42

EAS

**V**

Nav/Com/XPDR/Audio

- Vertical Modes 132
- Vertical Navigation (VNAV)
  - Direct-To 69
  - Enabling Guidance 65
- Vertical Situation Display Terrain
  - Enabling/Disabling VSD 115
- Vertical Speed Target 67
- Vertical track 181

Flight Management

**W**

Hazard Avoidance

- Waypoint
  - Airport 38
  - Waypoint Information 40

AFCS

- Weight and Fuel Planning
  - Aircraft Weight 83
  - Basic Operating Weight 82
  - Cargo Weight 83
  - FOB Synchronization 83
  - Zero Fuel Weight 83

Additional Features

- Wind Data 6

Abnormal Operation

- Windshield Heat 22
- Wireless Transceiver 206, 208, 209

Annun/Alerts

Appendix

Index





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